



Sri Lanka Institute of Information and Technology

Department of Mechanical Engineering

Engineering Drawing – ME2031

SolidWorks Laboratory - 1

Mr. Thilina Weerakkody
Mr. Kulunu Samarakrama

Due date : 19/02/2019 @ 12.00 pm
Submission Method : Online

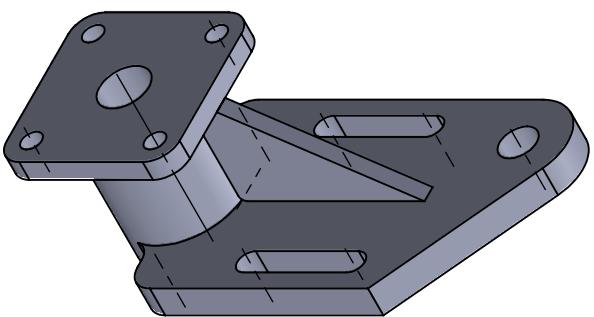
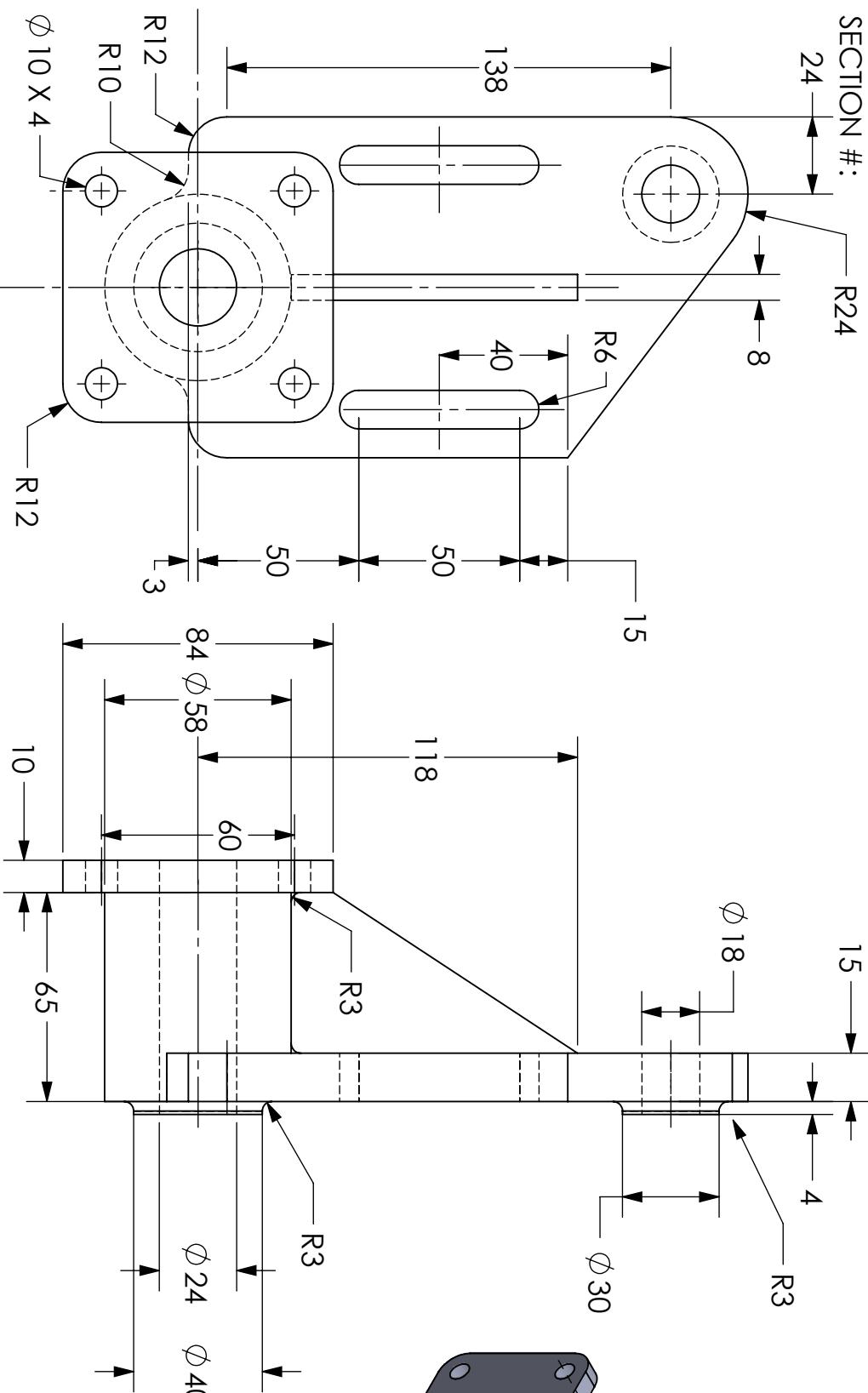
1. This assignment tests your knowledge and skills on following topics

- Introduction to SolidWorks Environment
- Sketching in SolidWorks
- Implementation of Basic features
 - Extrude Boss/Base
 - Extrude cut
 - Revolve cut & Mirror
 - Linear Pattern & Fillet
 - Mass properties

2. Instructions:

- Construct the 3D model of the given drawing as a SolidWorks part file
- Zip .SLDPRT file and if any other files
- Part name: Surename_Index.No_Assignment1 (e.g:
Smith_EN14XXXXXX_Assignment1)
- If any dimensions are not given you can assume a reasonable value to continue
- Submission should be done on **Take Home Assignment 1_Due 19 February**
submission on courseweb

NAME:
STUDENT #:
SECTION #:
24



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Assignment 01

APPLICATION		USED ON		FINISH		MATERIAL		INTERPRET GEOMETRIC TOLERANCING PER:		COMMENTS:		SIZE A	DWG. NO.	SCALE: 1:5	WEIGHT:	SHEET 1 OF 1
DRAWN	NAME	DATE	TITLE:	CHECKED	ENG APPR.	MFG APPR.	Q.A.	REV A								
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MM TOLERANCES: FRACTIONAL MIA ANGULAR: MACH $\pm 0.1^\circ$ BEND $\pm 1^\circ$ ONE PLACE DECIMAL TWO PLACE DECIMAL MATERIAL: INTERPRET GEOMETRIC TOLERANCING PER:																



Sri Lanka Institute of Information and Technology

Department of Mechanical Engineering

Engineering Drawing – ME2031

SolidWorks Assignment - 2

Mr. Thilina Weerakkody
Mr. Kulunu Samarakrama

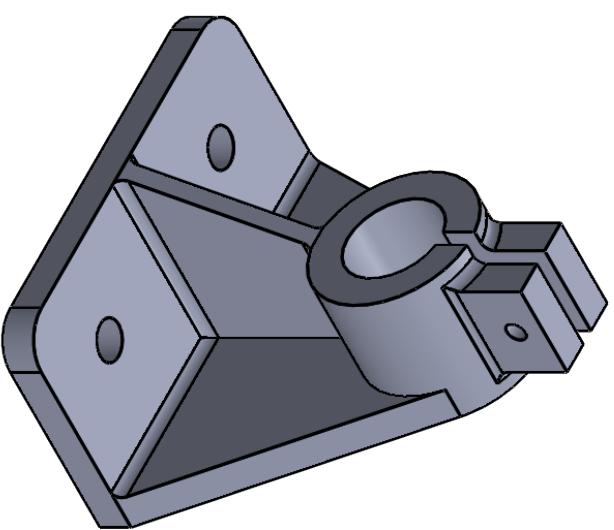
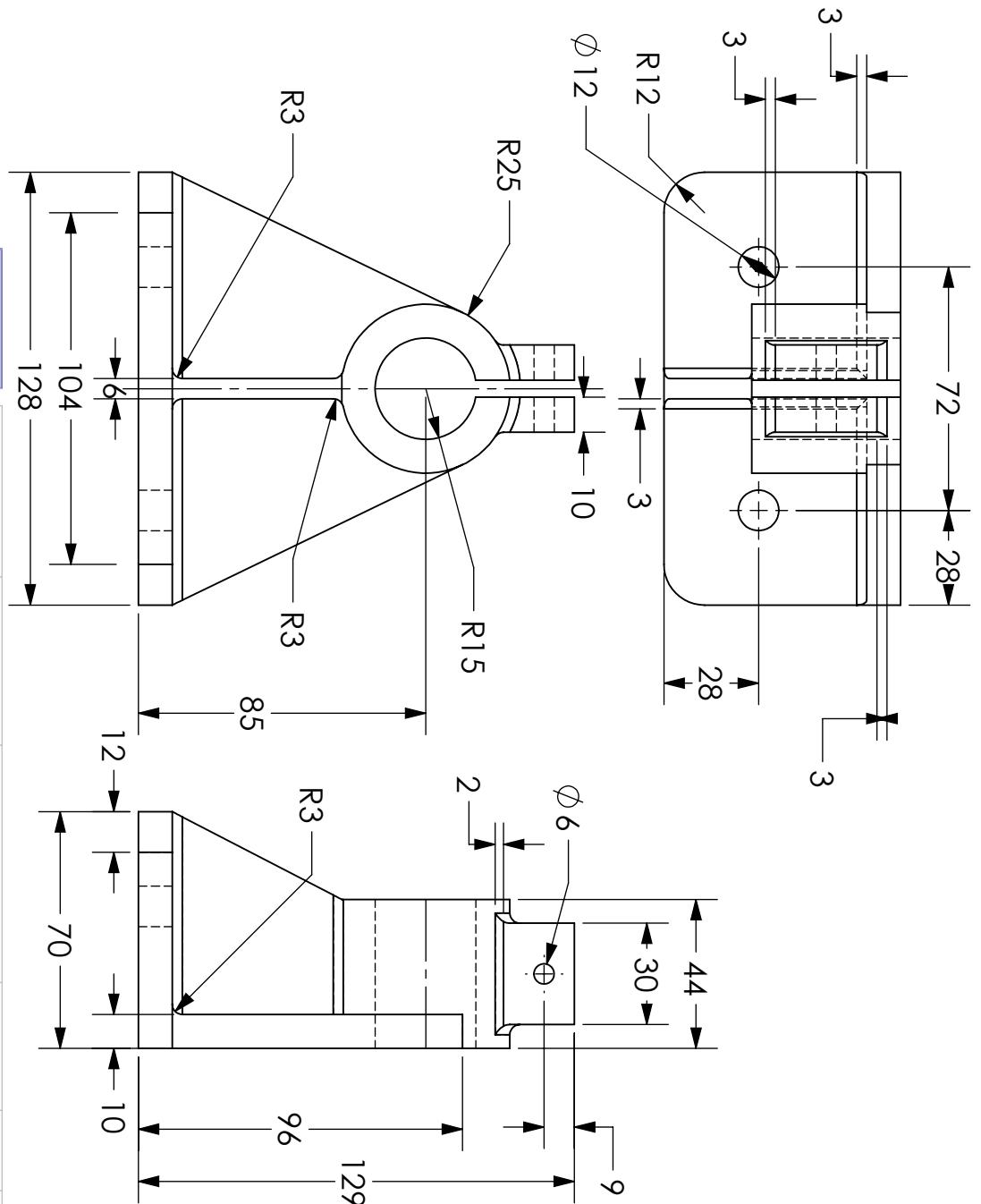
Due date : 26/02/2019 @ 12.00 pm
Submission Method : Online

1. This assignment tests your knowledge and skills on following topics

- Introduction to SolidWorks Environment
- Sketching in SolidWorks
- Implementation of Basic features
 - Extrude Boss/Base
 - Extrude cut
 - Revolve cut & Mirror
 - Linear Pattern & Fillet
 - Mass properties

2. Instructions:

- Construct the 3D model of the given drawing as a SolidWorks part file
- Zip .SLDPRT file and if any other files
- Part name: Surename_Index.No_Assignment2 (e.g:
Smith_EN14XXXXXX_Assignment2)
- If any dimensions are not given you can assume a reasonable value to continue
- Submission should be done on **Take Home Assignment 2_Due 26 February**
submission on courseweb



Assignment 02



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DIMENSIONS ARE IN MM

TOLERANCES:

FRACTIONAL MIA

ANGULAR: MACH $\pm 0.1^\circ$

BEND $\pm 1^\circ$

ONE PLACE DECIMAL

Two place decimal

± 0.1

± 0.01

MFG APPR.

ENG APPR.

CHECKED

DRAWN

NAME

DATE

TITLE:

DUE 26/02/2019

INTERPRET GEOMETRIC
TOLERANCING PER:
MATERIAL

COMMENTS:

THIRD
ANGLE
PROJECTION

DO NOT SCALE DRAWING

REV

A

SCALE: 1:2

WEIGHT:

SHEET 1 OF 1



Sri Lanka Institute of Information and Technology

Department of Mechanical Engineering

Engineering Drawing – ME2031

SolidWorks Assignment - 3

Mr. Thilina Weerakkody
Mr. Kulunu Samarakrama

Due date : 02/03/2019 @ 12.00 pm
Submission Method : Online

1. This assignment tests your knowledge and skills on following topics

- Sketching in SolidWorks
- Implementation of Basic features
 - Extrude Boss/Base
 - Extrude cut
 - Revolve cut & Mirror
 - Linear Pattern & Fillet
 - Mass properties

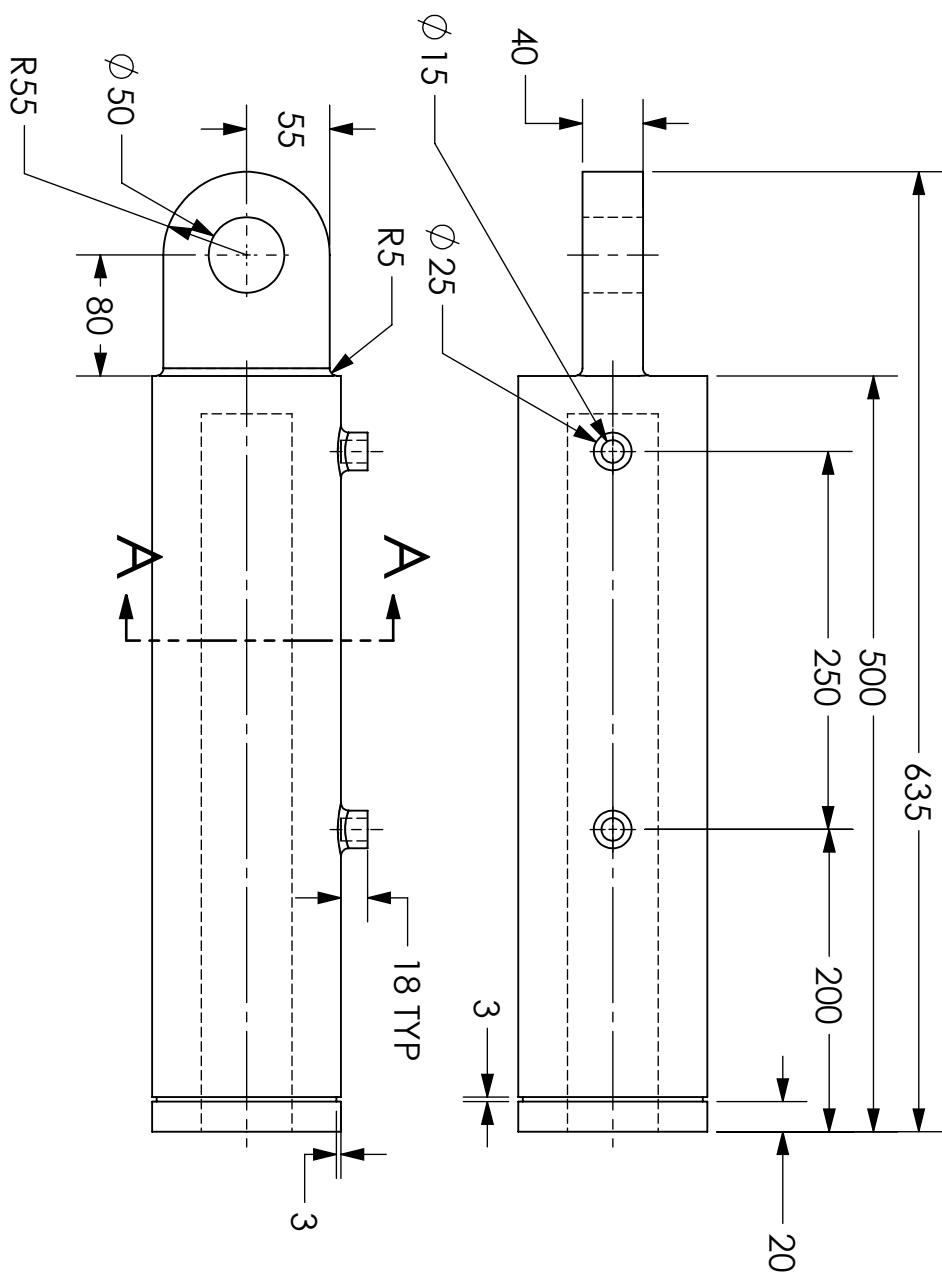
2. Instructions:

- Analyze the drawings in the annex
- Construct the 3D models of the given drawings (Part A & Part B) as separate SolidWorks part files
- Save the two parts as Part A and Part B in separate part files
- Create the SolidWorks Assembly as described in the Drawing – Assembly
- Save the Assembly as Assembly 1
- Zip .SLDPRT file and if any other files
- Part name: Surename_Index.No_Assignment3 (e.g:
Smith_EN14XXXXXX_Assignment3)
- If any dimensions are not given you can assume a reasonable value to continue
- Submission should be done on **Take Home Assignment 3_Due 02 March** submission on course web

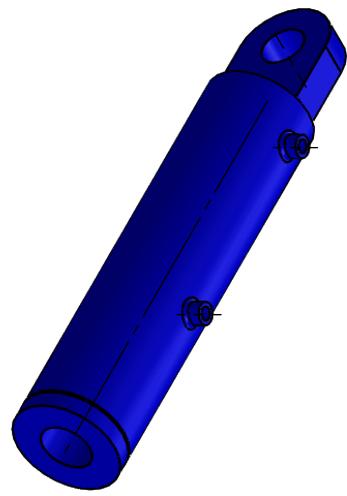
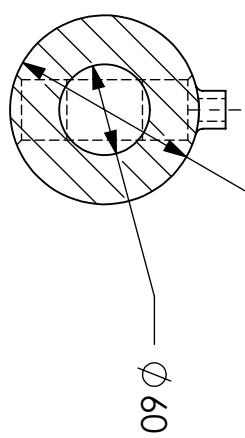


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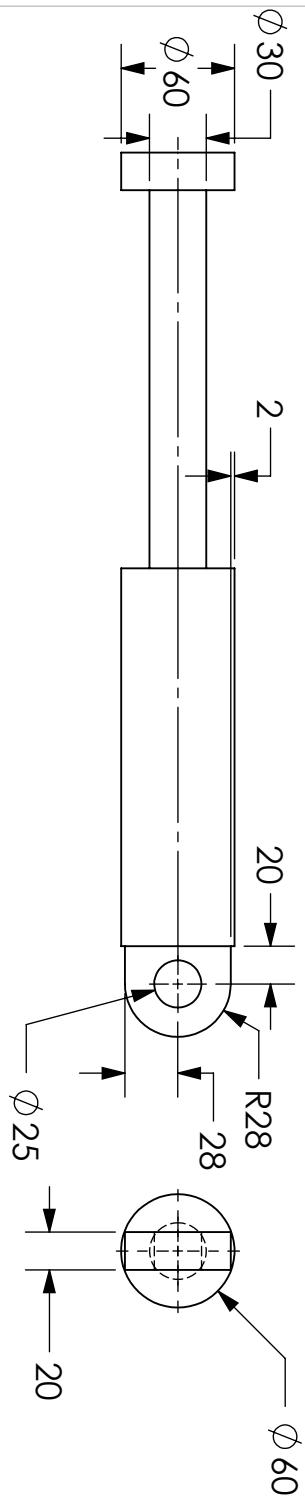
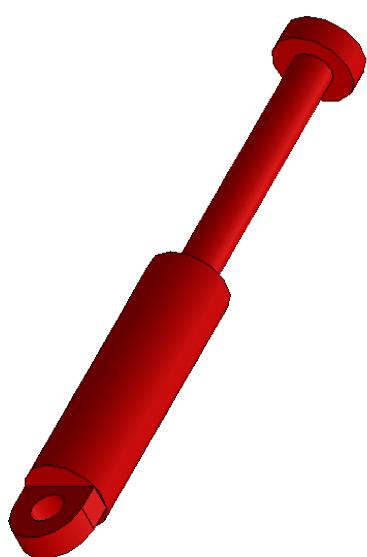
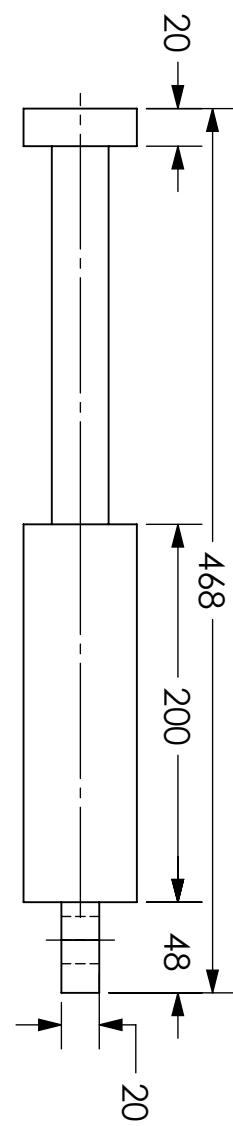


SECTION A-A



Part A - Outer piston

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MM TOLERANCES: FRACTIONAL MIA ANGULAR: MACH $\pm 0.1^\circ$ BEND $\pm 1^\circ$ ONE PLACE DECIMAL TWO PLACE DECIMAL		DRAWN 27/02/2019	NAME TITLE	DATE
INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL Steel				
USED ON	FINISH		THIRD ANGLE PROJECTION	SIZE DWG. NO.
	DO NOT SCALE DRAWING		A	SCALE: 1:5 REV A
				WEIGHT: SHEET 1 OF 1



PROPRIETARY AND CONFIDENTIAL

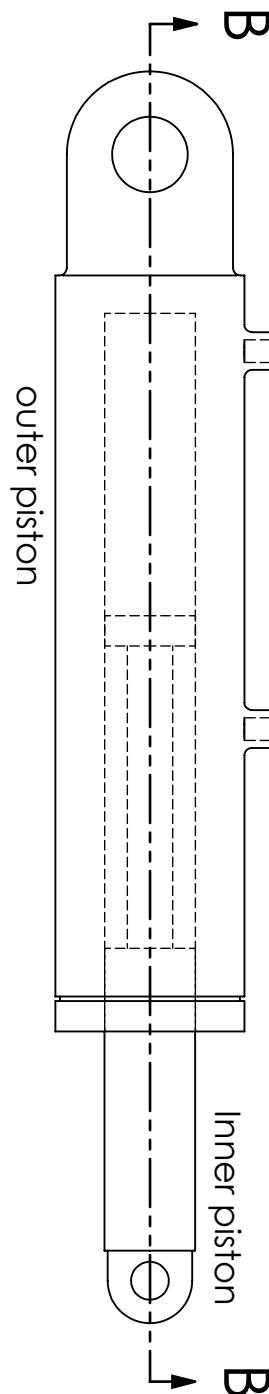
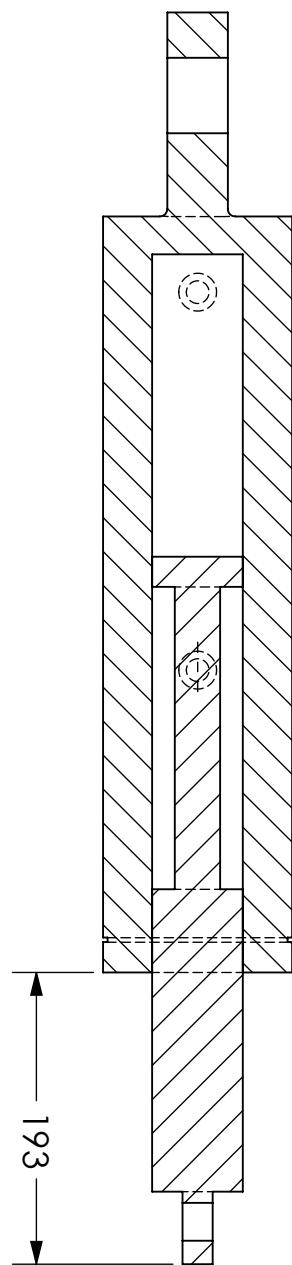
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INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL		COMMENTS:		
USED ON FINISH		— — — —		THIRD ANGLE PROJECTION
APPLICATION		DO NOT SCALE DRAWING		

Part B - Inner Piston

SIZE A	DWG. NO.	REV A
SCALE: 1:5	WEIGHT:	SHEET 1 OF 1

SECTION B-B
SCALE 1 : 5



outer piston

Inner piston

B



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Assembly

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MM				DRAWN	NAME	DATE	TITLE:
TOLERANCES: FRACTIONAL IN/A ANGULAR: MACH $\pm 0.1^\circ$ BEND $\pm 1^\circ$				CHECKED	ENG APPR.	MFG APPR.	
ONE PLACE DECIMAL	± 0.1			Q.A.			
TWO PLACE DECIMAL	± 0.01						
INTERPRET GEOMETRIC TOLERANCING PER:							
MATERIAL							
FINISH							
USED ON							
APPLICATION							
DO NOT SCALE DRAWING							

COMMENTS:

THIRD
ANGLE
PROJECTION

SIZE

A

DWG. NO.

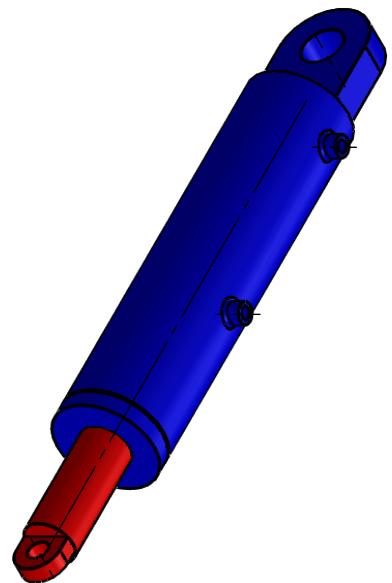
REV

A

SCALE: 1:10

WEIGHT:

SHEET 1 OF 1





Sri Lanka Institute of Information and Technology

Department of Mechanical Engineering

Engineering Drawing – ME2031

SolidWorks Assignment - 04

Mr. Thilina Weerakkody
Mr. Kulunu Samarakrama

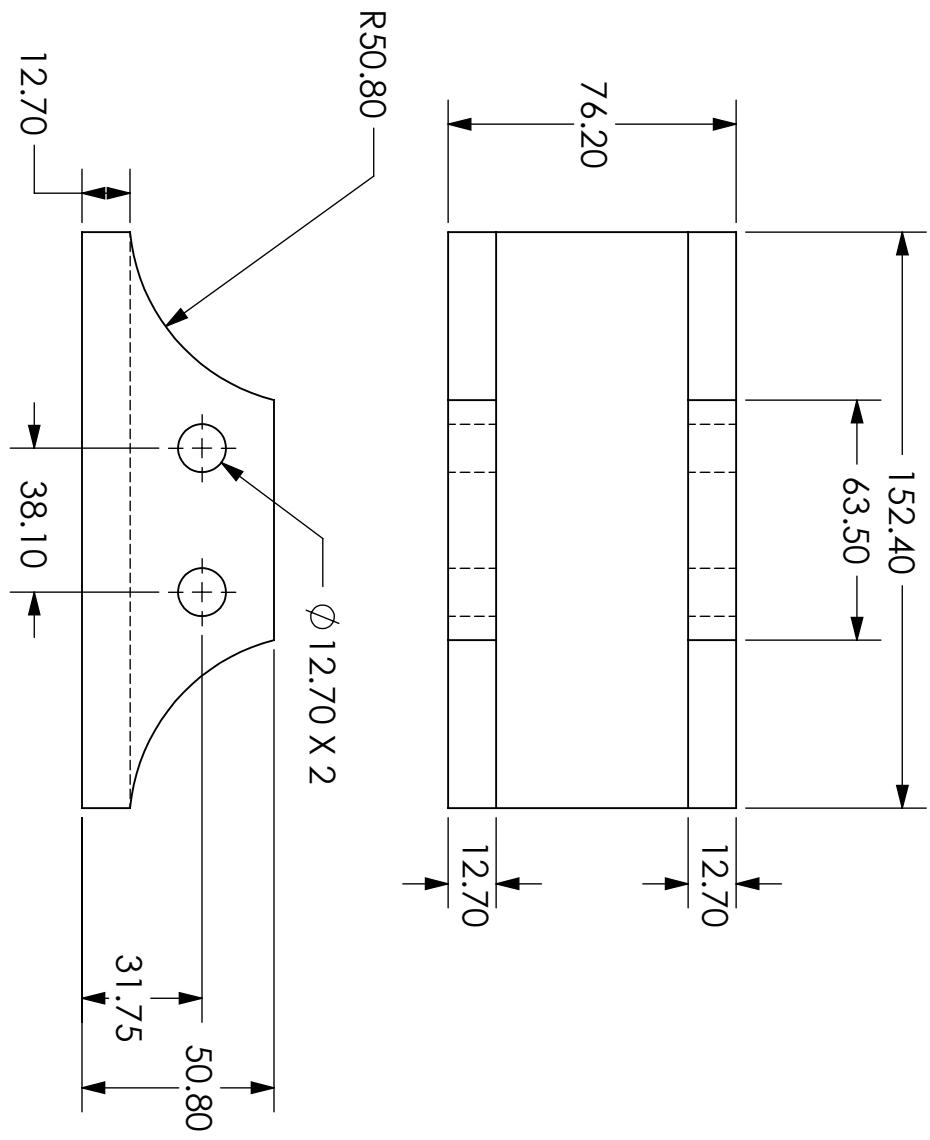
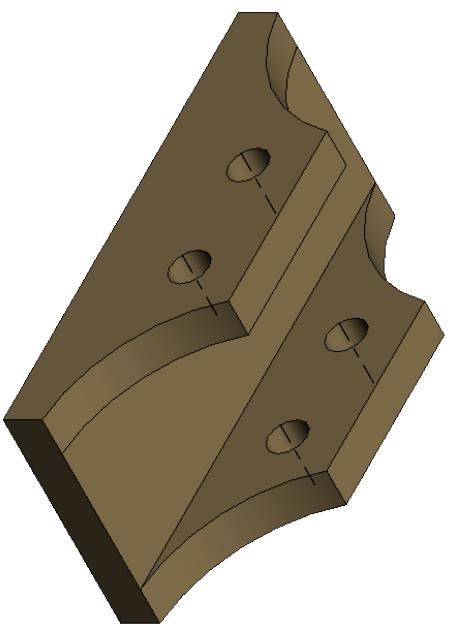
Due date : 12/03/2019 @ 12.00 pm
Submission Method : Online

1. This assignment tests your knowledge and skills on following topics

- Sketching in SolidWorks
- Implementation of Basic features
 - Extrude Boss/Base , Extrude cut
 - Revolve cut & Mirror
 - Linear Pattern & Fillet
 - Mass properties
- Assembly in SolidWorks
 - Mates feature
- SolidWorks Drawings
 - Part file Drawing
 - Assembly Drawing

2. Instructions:

- Analyze the drawings of the part files and the assembly
- Construct the 3D models of the given drawings as separate SolidWorks part files
- Save the part files with their respective names
- Create the SolidWorks Assembly as described in the Drawing – Assembly
- Use the most appropriate mate features to assemble
- Use different colors to parts and improve clarity of the assembly
- Save the Assembly as Assembly 1
- Construct the SolidWorks Drawings for each part file in the standard SLIIT template provided in the previous lab
- Zip .SLDPRT files and the .SLDASM file
- Zip the submission files with the name: Surename_Index.No_Assignment4 (e.g: Smith_EN14XXXXXX_Assignment4)
- Submission should be done on **Take Home Assignment 4_Due 12 March** submission on course web



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DIMENSIONS ARE IN MM
TOLERANCES:
FRACTIONAL N/A
ANGULAR: MACH $\pm 0.1^\circ$ BEND $\pm 1^\circ$
ONE PLACE DECIMAL
TWO PLACE DECIMAL
 ± 0.1
 ± 0.01

DRAWN
CHECKED
ENG APPR.
MFG APPR.
Q.A.

TITLE:
Base

INTERPRET GEOMETRIC
TOLERANCING PER:
MATERIAL

COMMENTS:
FINISH

 THIRD
ANGLE
PROJECTION

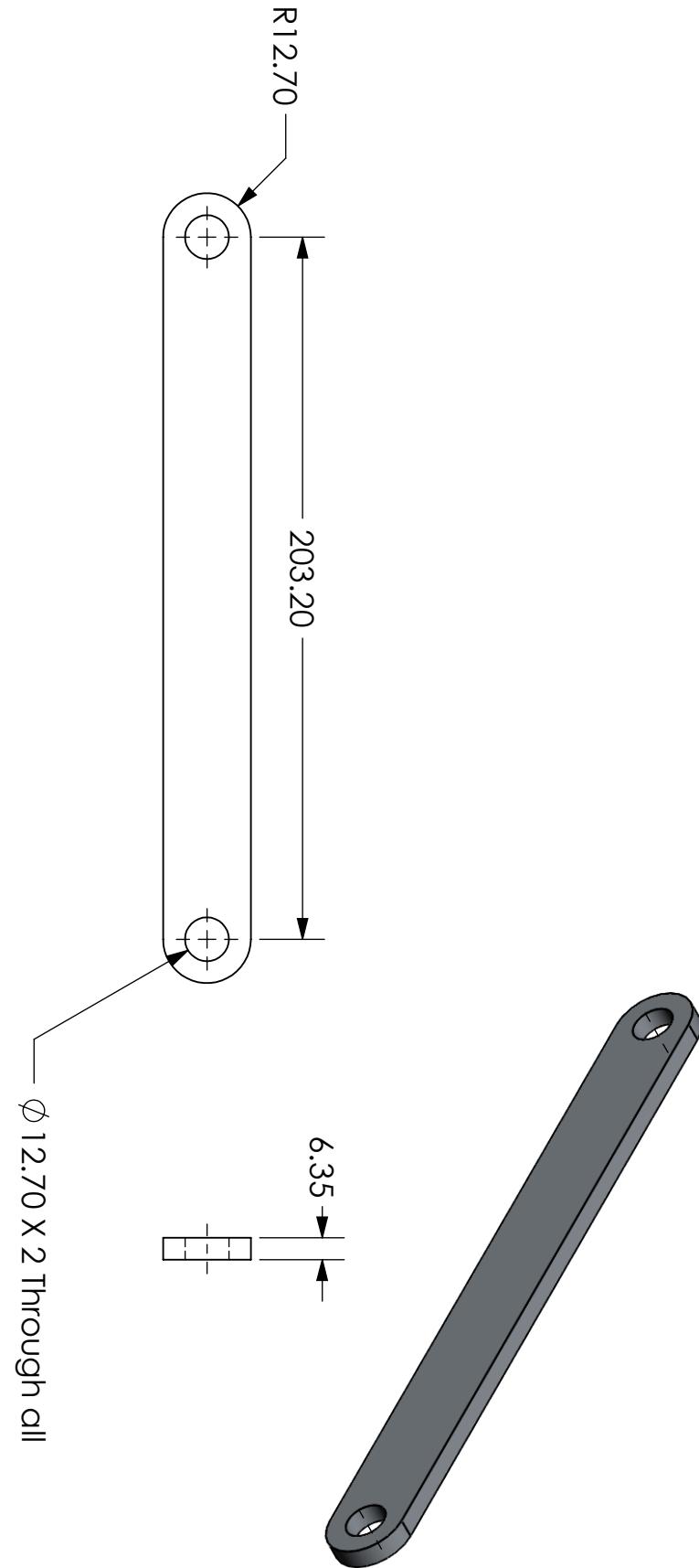
SIZE
A

DWG. NO.
2

SCALE: 1:2

WEIGHT:
A

REV
SHEET 1 OF 1



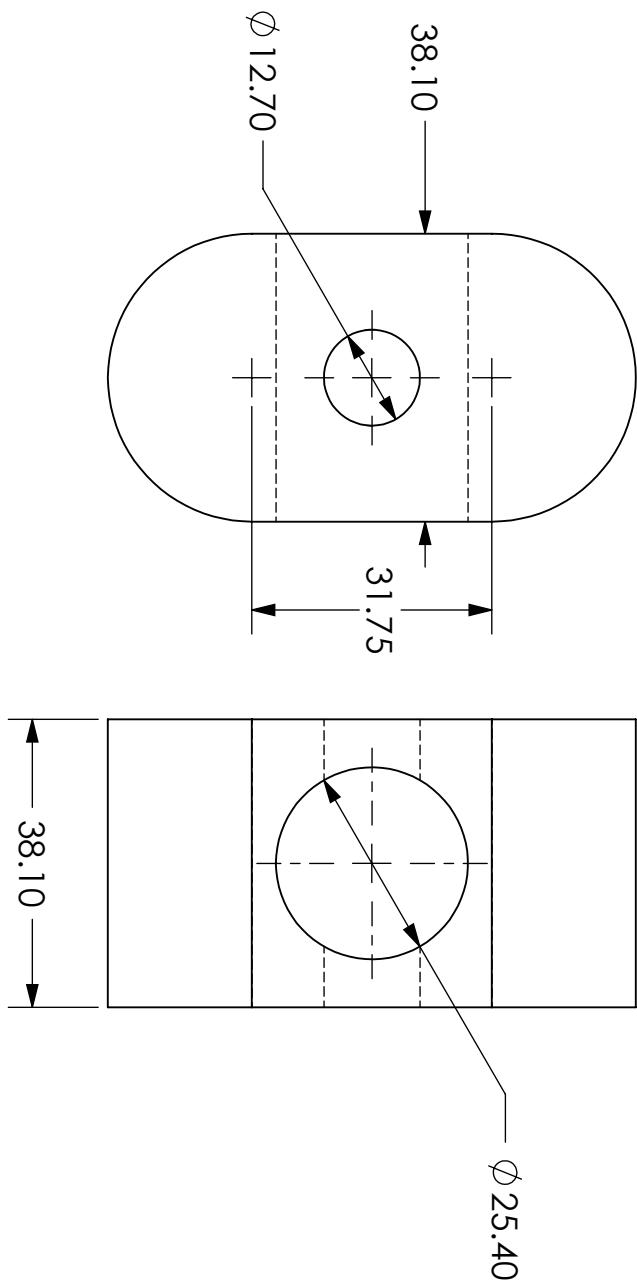
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APPLICATION	USED ON	DWG. NO.	REV
		A	A
DO NOT SCALE DRAWING	SCALE: 1:2	WEIGHT:	SHEET 1 OF 1



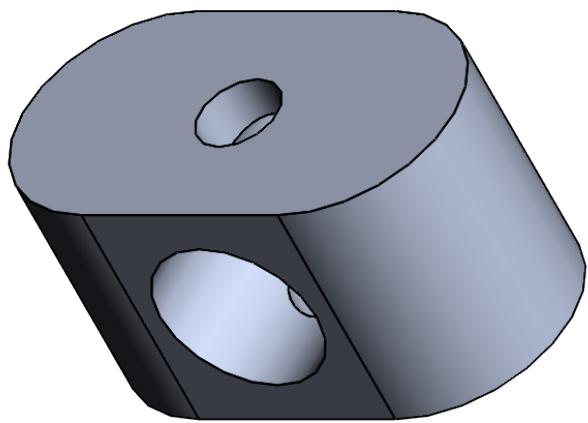
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Q.A.	ENG APPR.	MFG APPR.	INTERPRET GEOMETRIC TOLERANCING PER:	CHECKED			
COMMENTS:			MATERIAL				
USED ON	FINISH						
APPLICATION	DO NOT SCALE DRAWING						



Slider 1_Support



SIZE **A** DWG. NO. **3** REV **A**
SCALE: 1:1 WEIGHT: SHEET 1 OF 1

SECTION B-B
SCALE 1 : 3

pitch 5mm
depth of cut 3.5mm

B

$\phi 13$

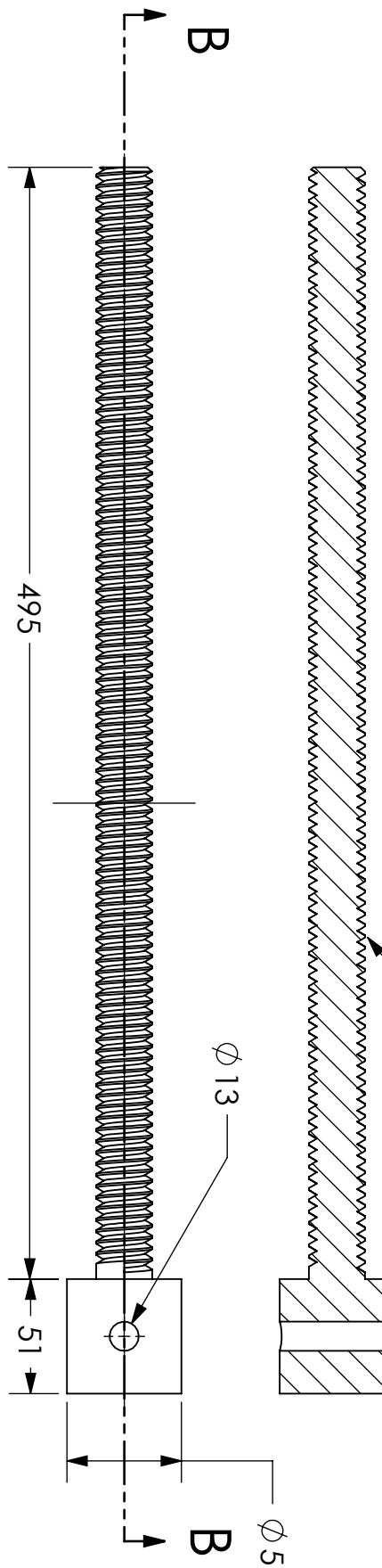
B

$\phi 51$

495

51

Screw rod



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5

4

4

3

2

1

APPLICATION

USED ON

FINISH

DO NOT SCALE DRAWING

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MM

TOLERANCES:

FRACTIONAL N/A

ANGULAR: MACH $\pm 0.1^\circ$

BEND $\pm 1^\circ$

ONE PLACE DECIMAL

Two place decimal

± 0.1

± 0.01

MFG APPR.

ENG APPR.

Q.A.

CHECKED

DRAWN

NAME

DATE

TITLE:

COMMENTS:

MATERIAL

INTERPRET GEOMETRIC
TOLERANCING PER:

THIRD
ANGLE
PROJECTION

A

DWG. NO.

4

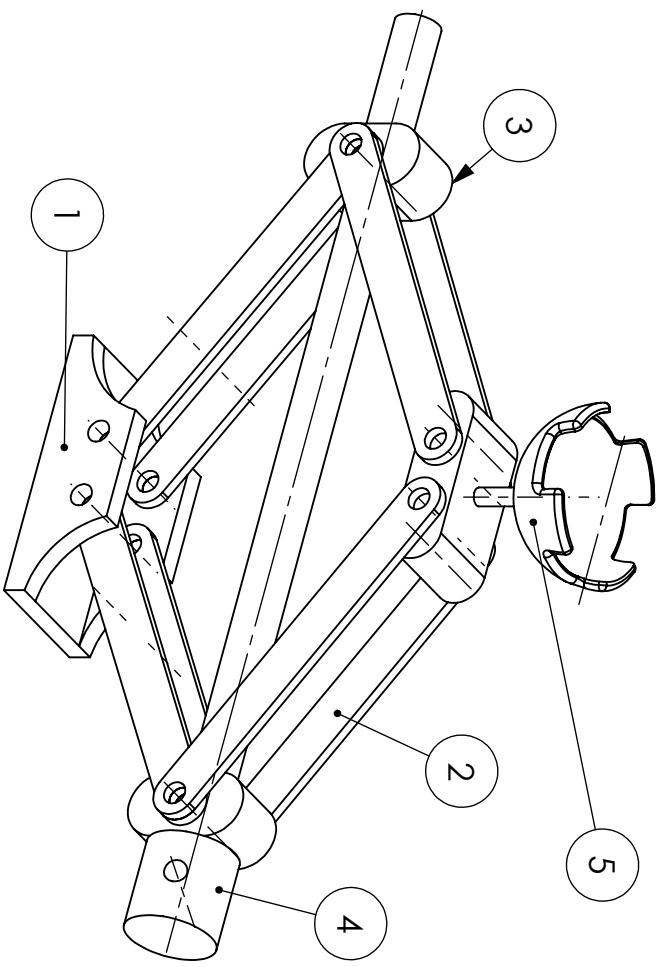
REV
A

SIZE

SCALE: 1:5

WEIGHT:

SHEET 1 OF 1



Screw Jack

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APPLICATION	USED ON
FINISH	INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL
DO NOT SCALE DRAWING	COMMENTS:
	DRAWN TOLERANCES: FRACTIONAL N/A ANGULAR: MACH $\pm 0.1^\circ$ BEND $\pm 1^\circ$ ONE PLACE DECIMAL TWO PLACE DECIMAL ± 0.1 ± 0.01 ENG APPR. MFG APPR. Q.A.
	THIRD ANGLE PROJECTION
	SIZE A
	DWG. NO.
	REV A
	SCALE: 1:5
	WEIGHT:
	SHEET 1 OF 1



Sri Lanka Institute of Information and Technology

Department of Mechanical Engineering

Engineering Drawing – ME2031

SolidWorks Assignment – 5

Mr. Thilina Weerakkody
Mr. Kulunu Samarakrama

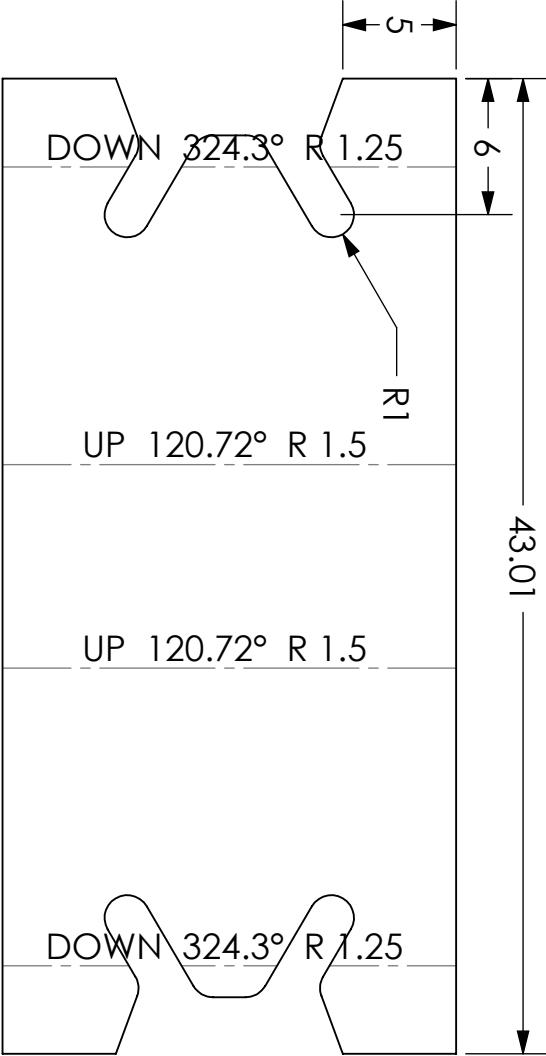
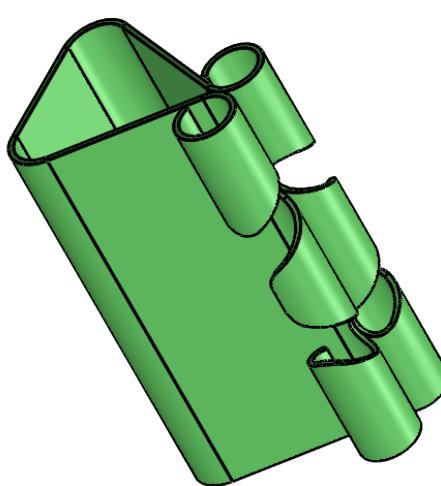
Due date : 19/03/2019 @ 1.00 pm
Submission Method : Online

1. This assignment tests your knowledge and skills on following topics

- Sketching in SolidWorks
- SolidWorks Sheet Metal feature

2. Instructions:

- Follow one of the following guided video tutorials to assist your assignment
 - <https://www.youtube.com/watch?v=lt3YnzRV6KI>
 - <https://youtu.be/lt3YnzRV6KI>
- Construct the 3D models of the given drawings 1 & 2
- Save the two parts as “Clip” and “Pin” in separate part files
- Create the SolidWorks Assembly as described in the Drawing – Assembly
- Save the Assembly as Assembly 1
- Zip .SLDPRT files, SLDASM files and if any other files
- Zip file name: Surename_Index.No_Assignment5 (e.g:
Smith_EN14XXXXXX_Assignment5)
- Submission should be done on **Take Home Assignment 5_Due 19 March** submission on course web

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<p>All fillet radius are 1mm</p>  					

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 TOLERANCES:
 FRACTIONAL N/A
 ANGULAR: MACH $\pm 0.1^\circ$ BEND $\pm 1^\circ$
 ONE PLACE DECIMAL
 TWO PLACE DECIMAL

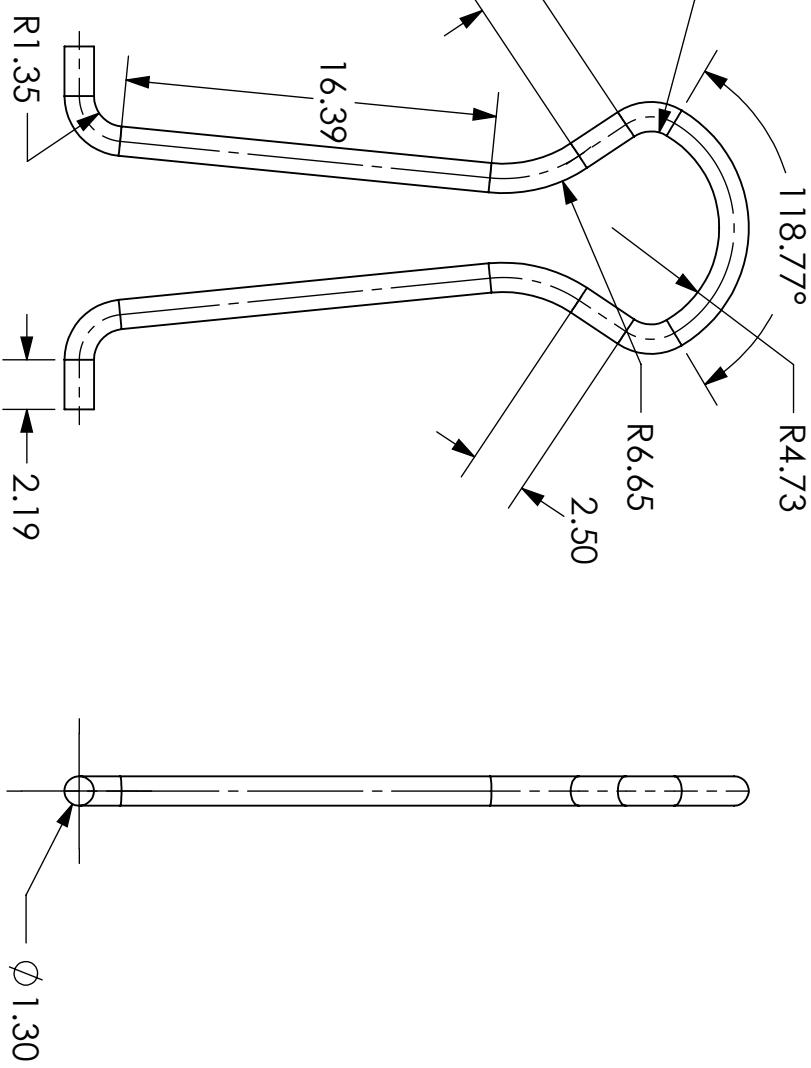
± 0.1
 ± 0.01

ENG APPR.

MFG APPR.

Q.A.

COMMENTS:



Assignment 5

TITLE:

Pin

INTERPRET GEOMETRIC
 TOLERANCING PER:

MATERIAL

FINISH

DO NOT SCALE DRAWING

SCALE: 2:1

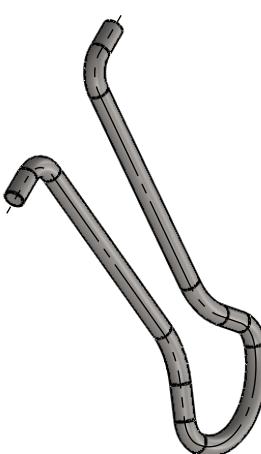
2

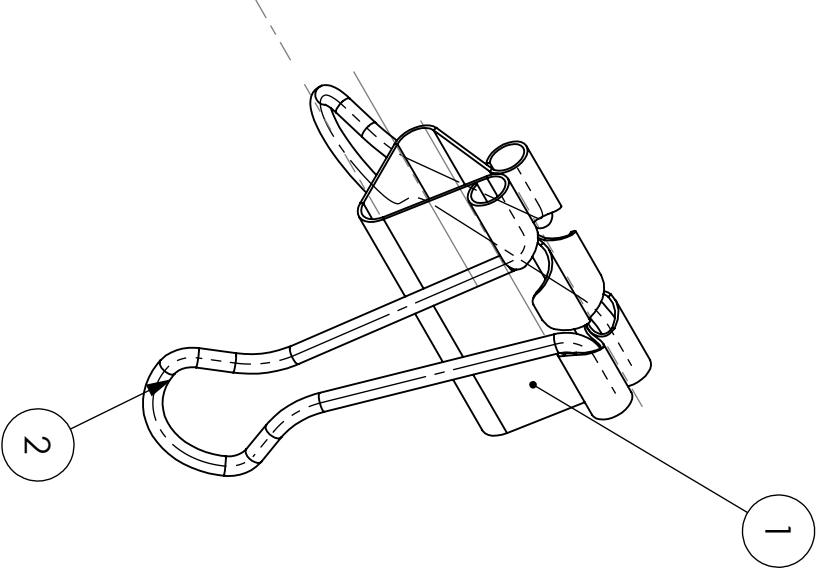
A

REV A

WEIGHT:

SHEET 1 OF 1



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<p align="center">Assignment 5</p>												
<p align="center">Assembly</p>												
<p>UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MM TOLERANCES: FRACTIONAL N/A ANGULAR: MACH$\pm 0.1^\circ$ BEND $\pm 1^\circ$ ONE PLACE DECIMAL TWO PLACE DECIMAL</p> <p>± 0.1 ± 0.01</p> <p>INTERPRET GEOMETRIC TOLERANCING PER:</p> <p>MATERIAL</p> <p>FINISH</p> <p>COMMENTS:</p>		<table border="1"> <thead> <tr> <th>ITEM NO.</th> <th>PART NUMBER</th> <th>QTY.</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Clip</td> <td>1</td> </tr> <tr> <td>2</td> <td>Pin</td> <td>2</td> </tr> </tbody> </table> <p>DRAWN CHECKED ENG APPR. MFG APPR. Q.A.</p> <p>THIRD ANGLE PROJECTION</p>		ITEM NO.	PART NUMBER	QTY.	1	Clip	1	2	Pin	2
ITEM NO.	PART NUMBER	QTY.										
1	Clip	1										
2	Pin	2										
APPLICATION	DO NOT SCALE DRAWING	SIZE A	DWG. NO. 3									
USED ON		SCALE: 2:1	REV A									
		WEIGHT:	SHEET 1 OF 1									



Sri Lanka Institute of Information and Technology

Department of Mechanical Engineering

Engineering Drawing – ME2031

SolidWorks Assignment – 6

Mr. Kulunu Samarawickrama

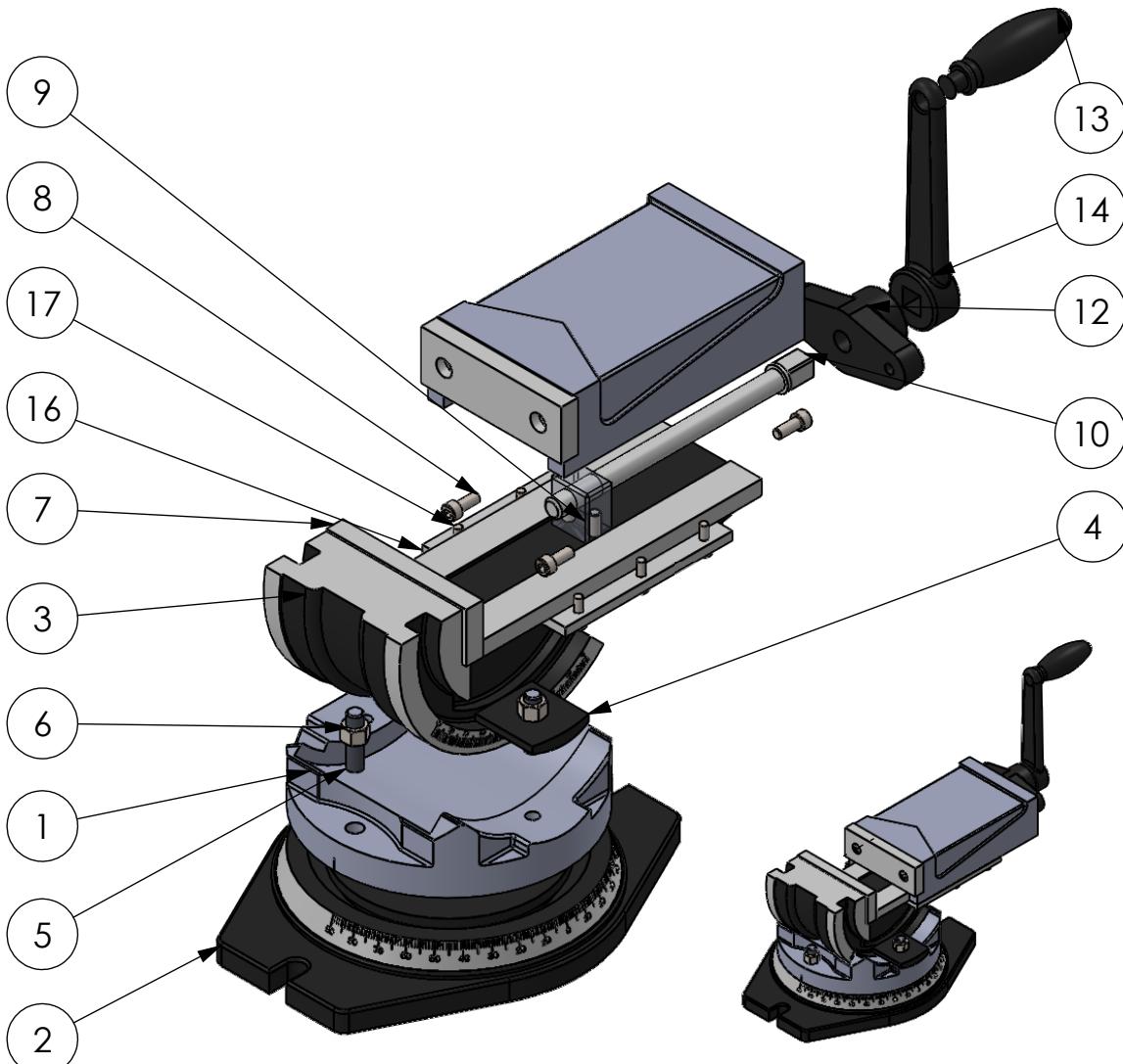
Mr. Thilina Weerakkody

Due date : 09/04/2019 @ 12.00 pm

Submission Method : Online

Instructions:

- Download **ME2031_Assignment06.Zip** file from the Course web. Use the Password given in the Course web to unzip the files. Unzip the files to a folder on your computer.
- Open a new Assembly file and Save it as “Assembly1”.
- Analyse the detailed drawings attached thoroughly and assemble the component.
- A guide tutorial is provided with this assignment to assist you. However, following the guide tutorial is not mandatory! You can complete the assembly with the aid of detailed drawings. Also note that the guide tutorial is **only providing you with guidelines** and not describing every step of assembling the component.
- Refer to **3D_View_Assembly.pdf** to visualize the assembly in 3D if needed. Make sure you open the file in newest version of **Adobe Acrobat Reader DC**.
- Zip **both** the **Part files (.SLDPRT)** and **Assembly file (.SLDASM)** together and Name the Zip file with your index number and submit it on or before the deadline.

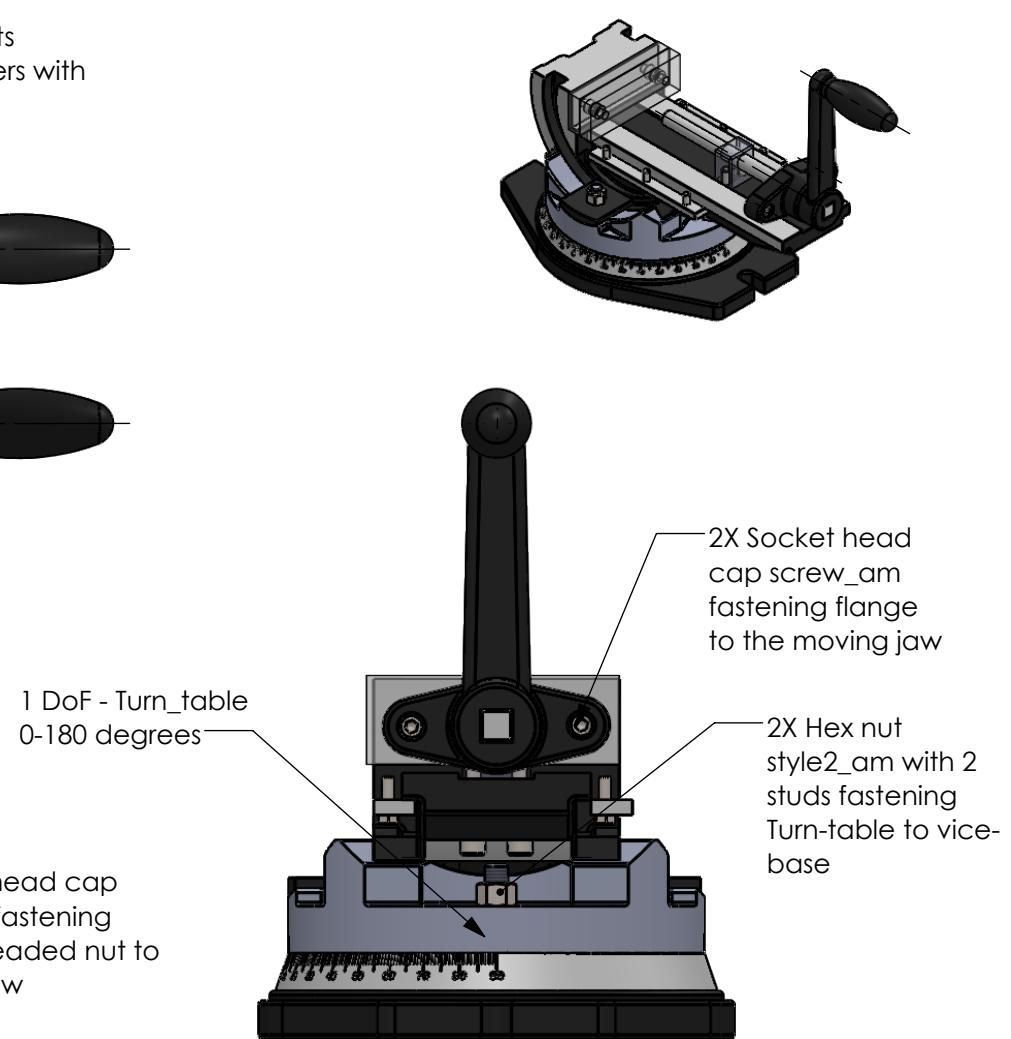
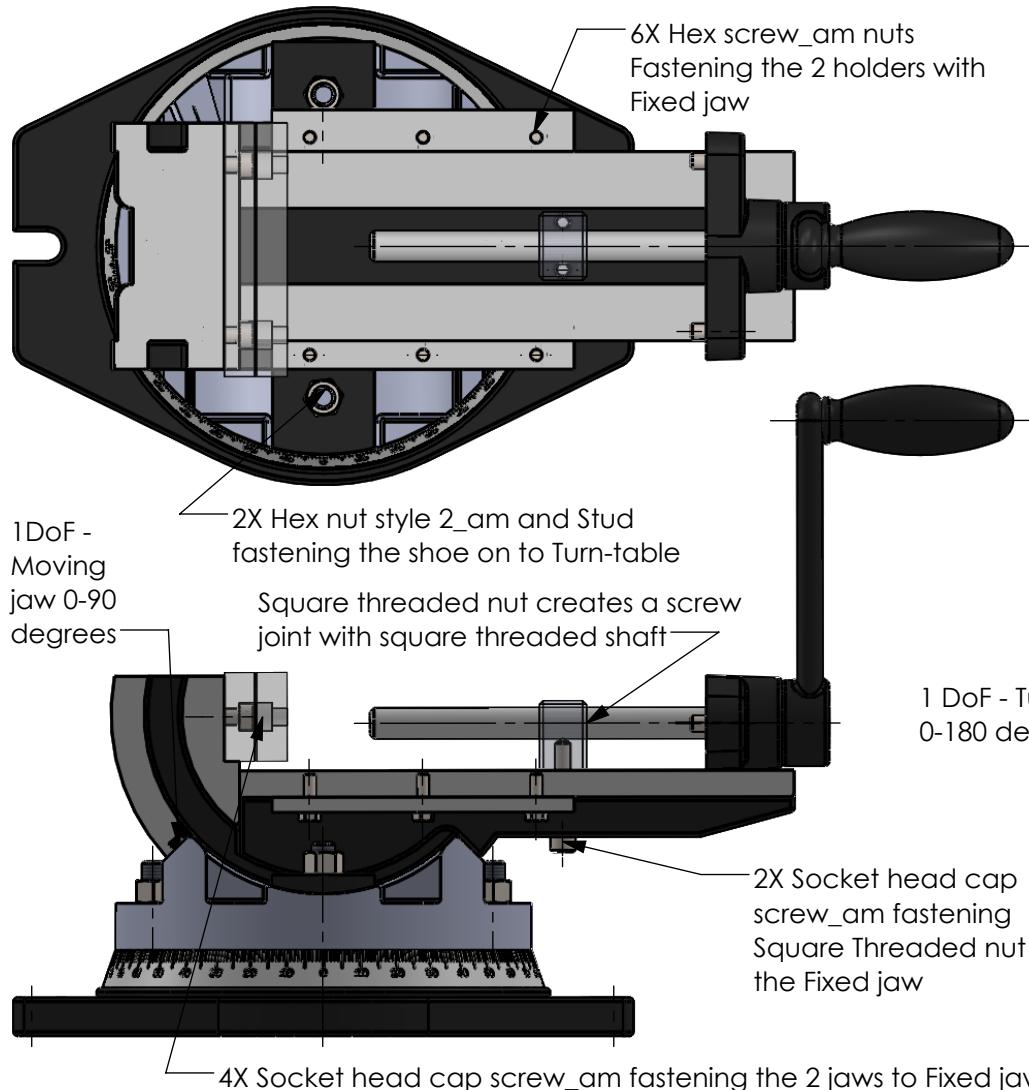


ITEM NO.	PART NUMBER	QTY.
1	Turntable	1
2	Vice Base	1
3	Fixed Jaw	1
4	Shoe	2
5	Stud	4
6	B18.2.4.2M - Hex nut, Style 2, M12 x 1.75 --D-N	4
7	Jaw	2
8	B18.3.1M - 8 x 1.25 x 20 Hex SHCS -- 20NHX	6
9	Square Thread Nut	1
10	Square Thread Shaft	1
11	B18.3.1M - 8 x 1.25 x 50 Hex SHCS -- 28NHX	2
12	Flange	1
13	Handle	1
14	Arm	1
15	Moving Jaw	1
16	Holder	2
17	B18.6.7M - M6 x 1.0 x 20 Indented HHMS --20N	6



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UNLESS OTHERWISE SPECIFIED:		DRAWN	NAME	DATE	TITLE: 2 -Way Angle Vise Exploded view
DIMENSIONS ARE IN MM					
TOLERANCES: FRACTIONAL N/A		CHECKED	ENG APPR.		
ANGULAR: MACH $\pm 0.1^\circ$ BEND $\pm 1^\circ$					
ONE PLACE DECIMAL ± 0.1		MFG APPR.	Q.A.		
TWO PLACE DECIMAL ± 0.01					
INTERPRET GEOMETRIC TOLERANCING PER:		COMMENTS:			
MATERIAL					
USED ON	FINISH				
APPLICATION	DO NOT SCALE DRAWING	THIRD ANGLE PROJECTION			
5	4	3	2	1	
SIZE		DWG. NO.		REV	
A		1		A	
SCALE: 1:10		WEIGHT:		SHEET 1 OF 1	



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INTERPRET GEOMETRIC TOLERANCING PER:	CHECKED	ENG APPR.	MFG APPR.			
MATERIAL	Q.A.	COMMENTS: Part -Moving jaw is hidden for ease of illustration				
USED ON	FINISH	SCALE: 1:10 WEIGHT:				SIZE DWG. NO. REV
APPLICATION	DO NOT SCALE DRAWING	THIRD ANGLE PROJECTION	A	2	A	SHEET 1 OF 1



Sri Lanka Institute of Information and Technology

Department of Mechanical Engineering

Engineering Drawing – ME2031

SolidWorks Assignment – 6 (Guide Tutorial)

Mr. Kulunu Samarawickrama

Mr. Thilina Weerakkody

Due date : 09/04/2019 @ 12.00 pm

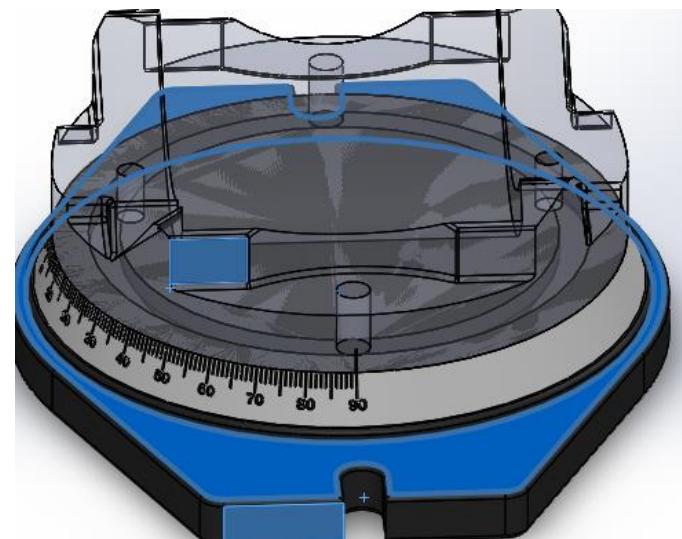
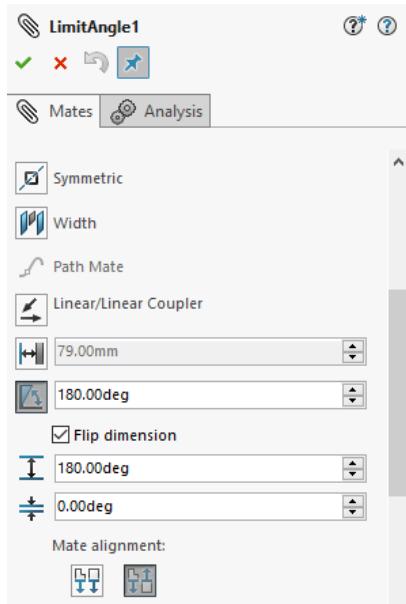
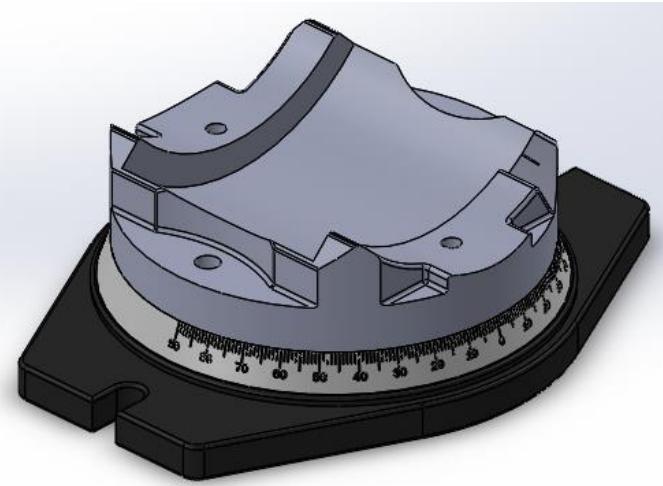
Submission Method : Online

Instructions:

1. Download **ME2031_Assignment06.Zip** file from the Course web. Use the Password given in the Course web to unzip the files. Unzip the files to a folder on your computer.
2. Open a new Assembly file and Save it as “Assembly1”.
3. Analyse the detailed drawings attached with this guide thoroughly.
4. Complete the assembly while following the guidelines step-by-step
5. Zip **both** the **Part files (.SLDPRT)** and **Assembly file (.SLDASM)** together and Name the Zip file with your index number and submit it on or before the deadline.

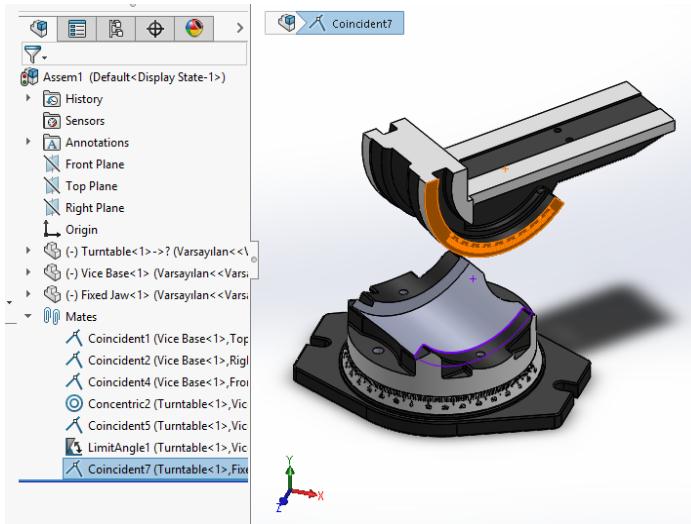
- 1) Insert the part files “ Vice Base” and “Turntable”.

- Use appropriate **Standard mates** to assemble the 2 parts
- Use an **Advanced mate** to restrict the angle of rotation of Turntable
- Make sure the calibration lines overlap on the 0-degree and 180-degree limits at the 2 limit ends after Advanced mate is applied



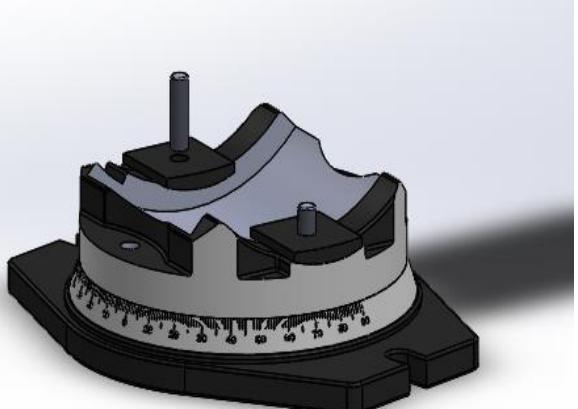
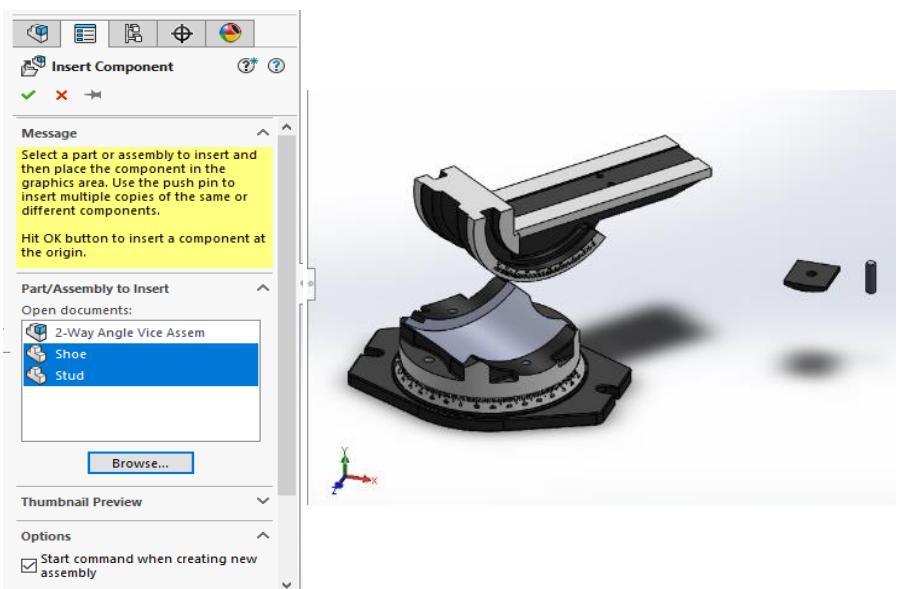
2) Insert the “Fixed Jaw” part file

- Use **standard mates** to assemble the part file as shown

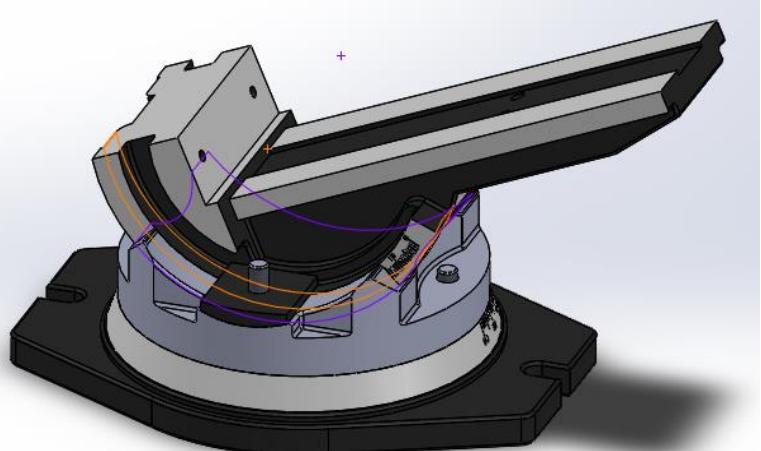


3) Insert the part files “stud” and “Shoe” two from each

- Use **standard mates** to fasten shoe to the “Vice Base” as shown

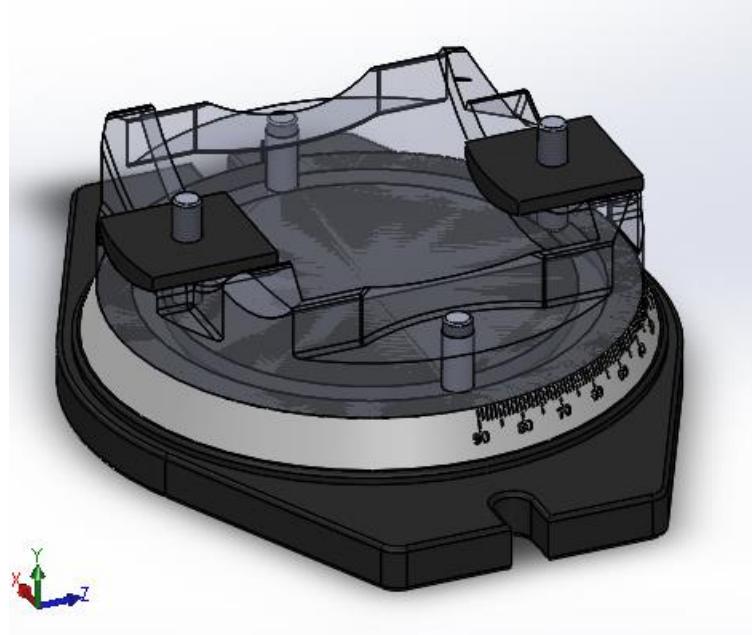


- 4) Use **Standard mates** to align the “Fixed Jaw” to the “Turntable” as shown



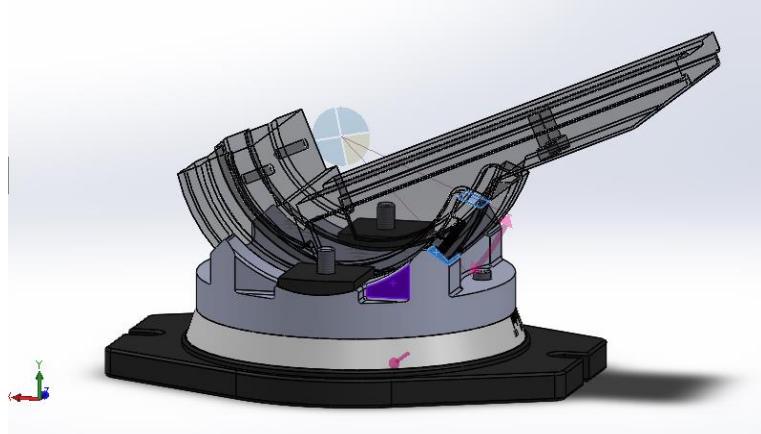
- 5) Insert two more “Studs” to fill the rest of the two holes in the “Turntable”

- Use appropriate **Standard mates**
- Choose the relevant surface of the “Turntable” to be mated with “stud” by analysing the mechanism

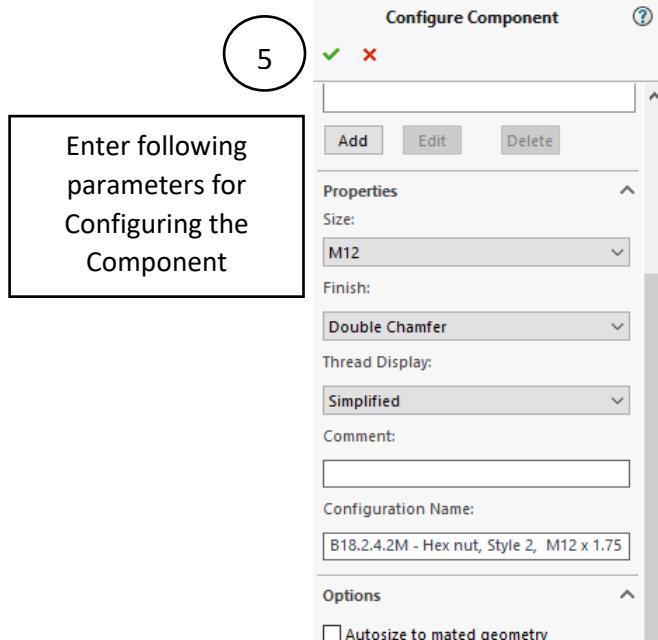
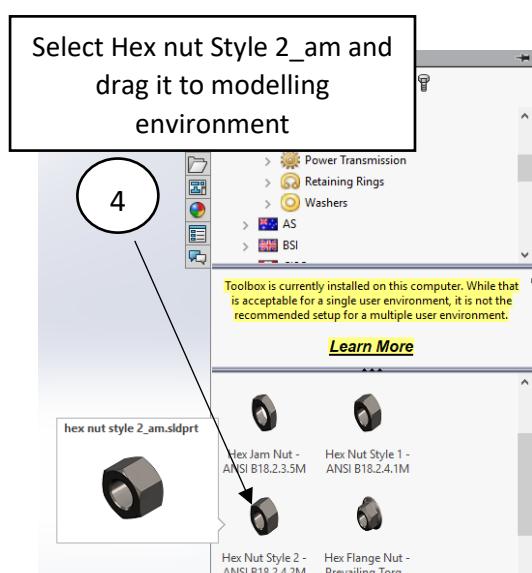
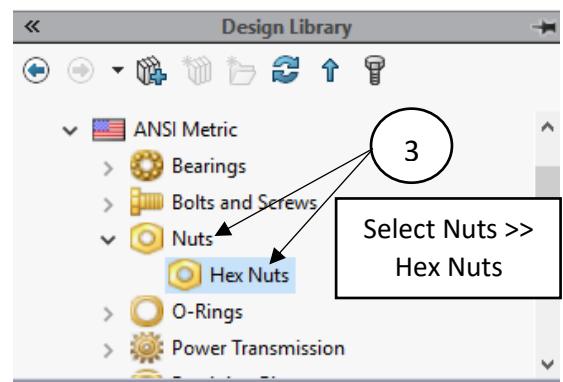
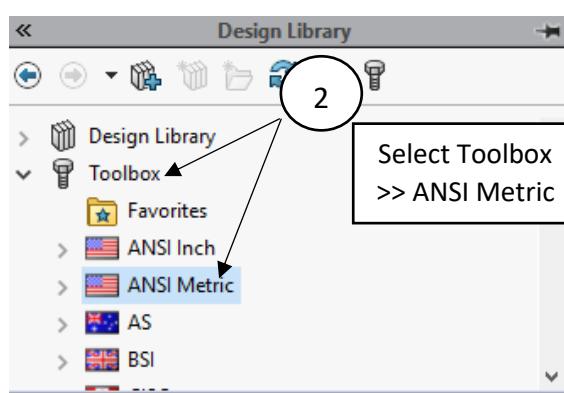
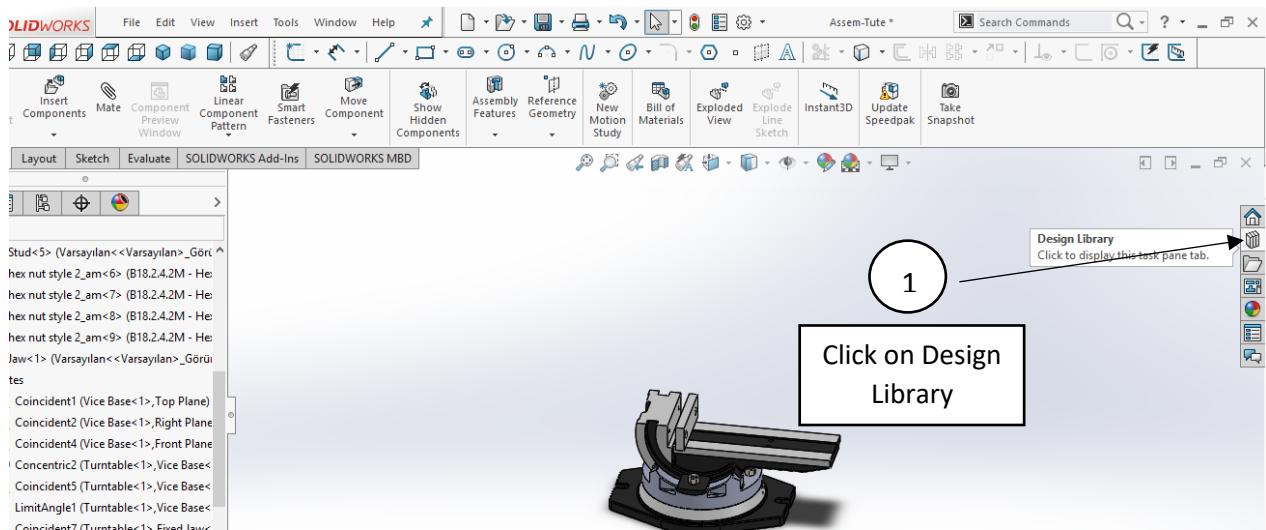


- 6) Use **Advanced mates** to limit the angle of rotation between the “Fixed jaw” and “Turntable” as shown.

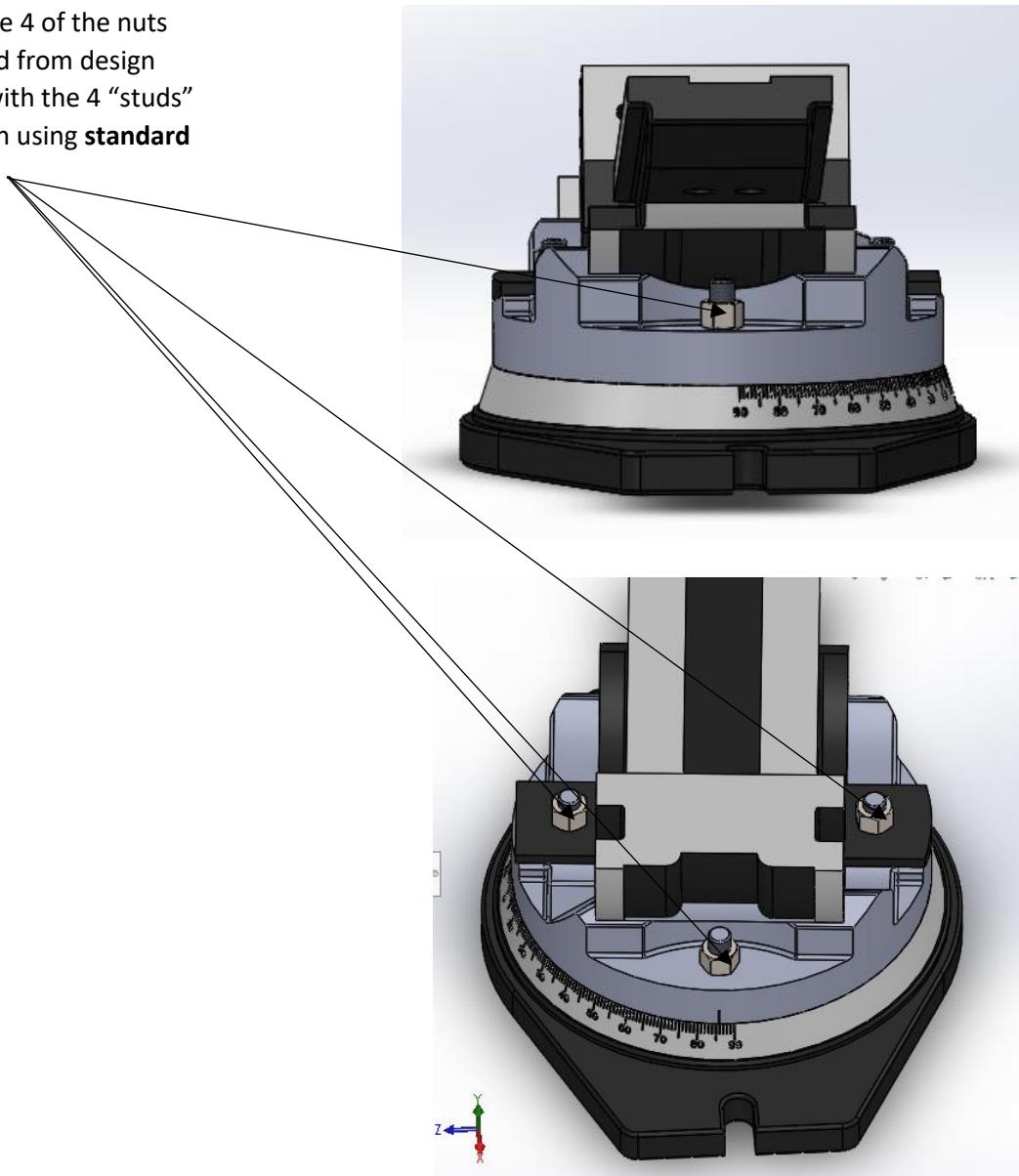
- The “Fixed jaw” has one degree of freedom.
- Configure the limit angles by analysing the mechanism



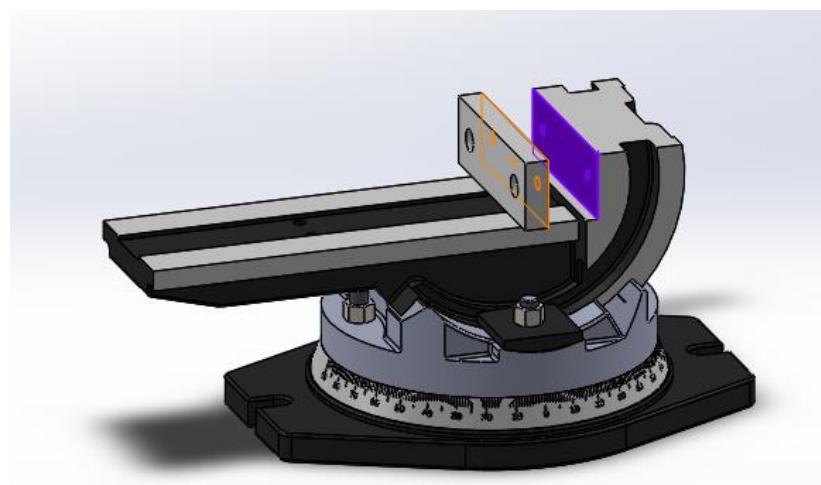
7) Follow guidelines to Insert Nuts/Screws from SolidWorks Design Library Toolbox



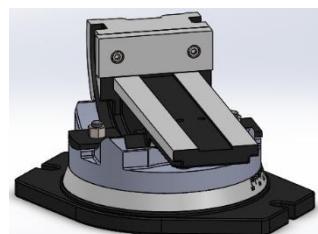
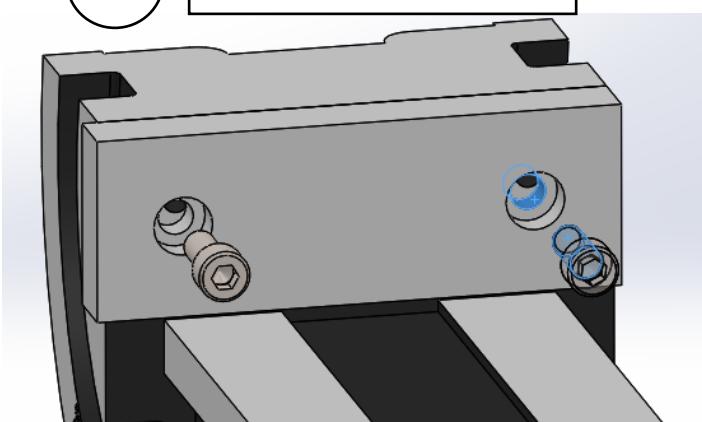
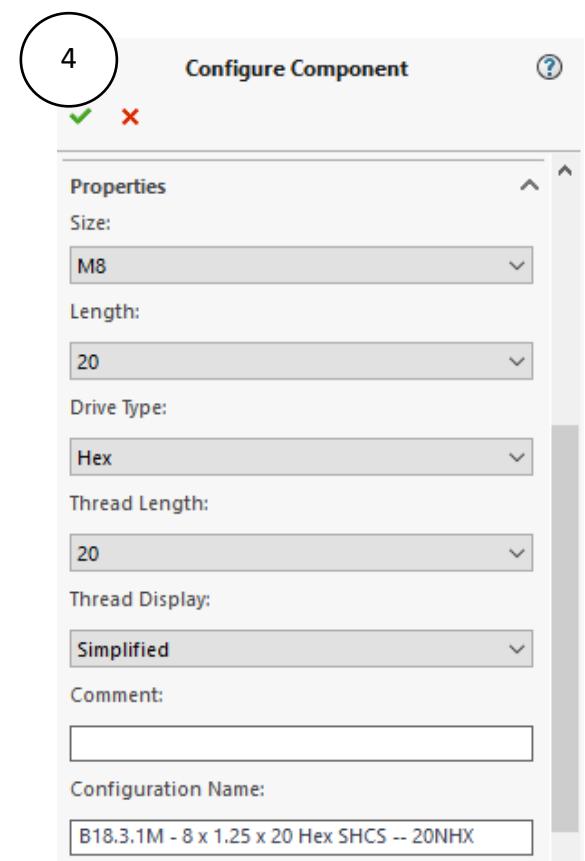
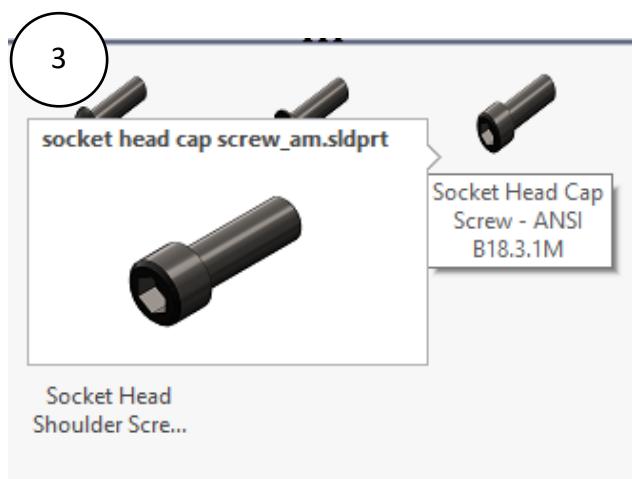
- 8) Assemble 4 of the nuts imported from design library with the 4 "studs" as shown using **standard mates**



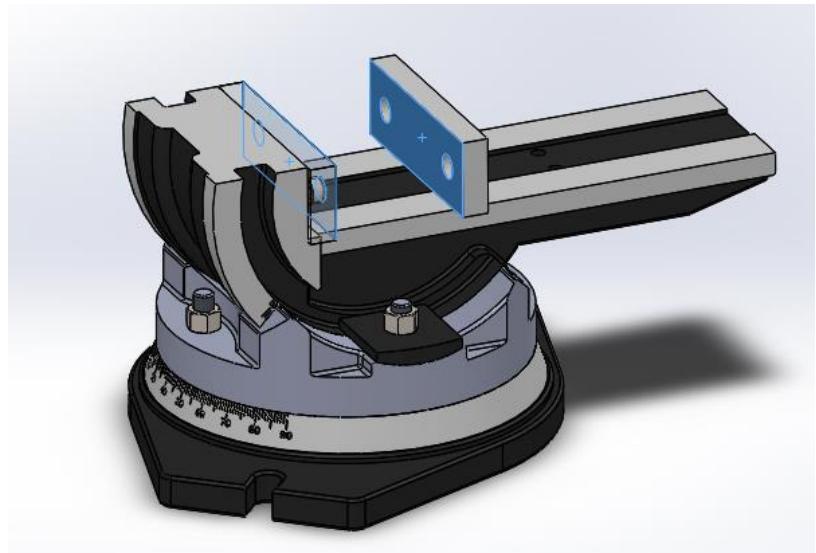
- 9) Insert 1 'Jaw' and Assemble it as shown using **Standard mates**



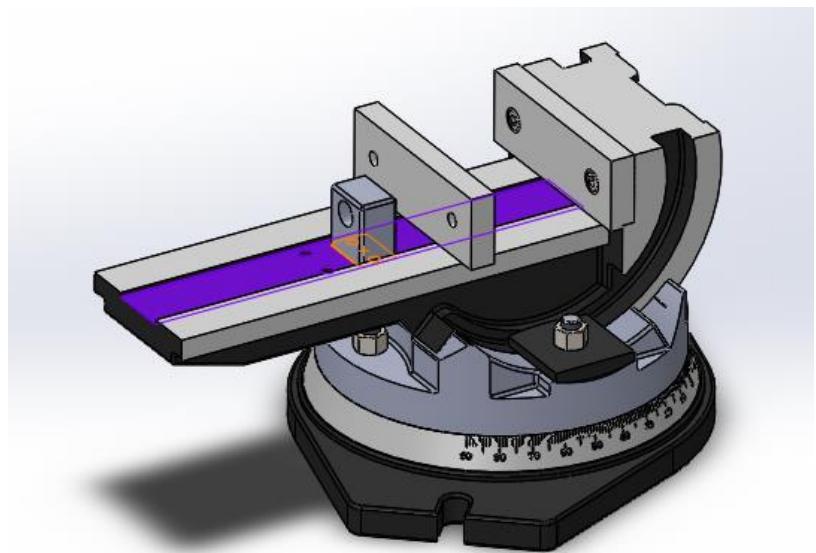
- 10) Insert the Screw from Design Library same as in the previous step



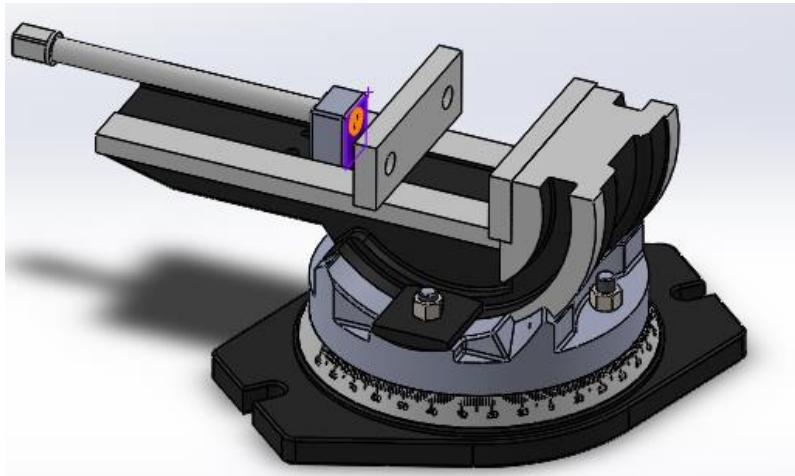
- 11) Insert another "Jaw" and assemble it as shown using **Standard mates**



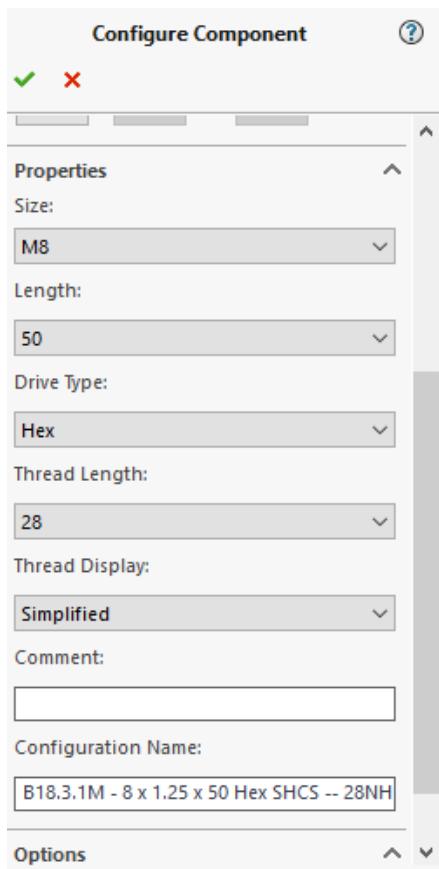
- 12) Insert the "Square Thread Nut" part file and Assemble it as shown using **Standard mates**



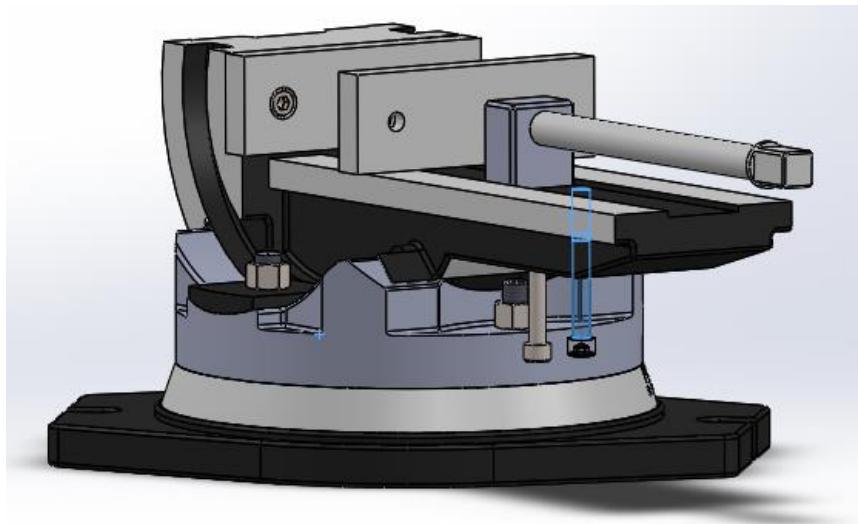
- 13) Assemble the "Square threaded shaft" with "Square threaded Nut" using **concentric mate**



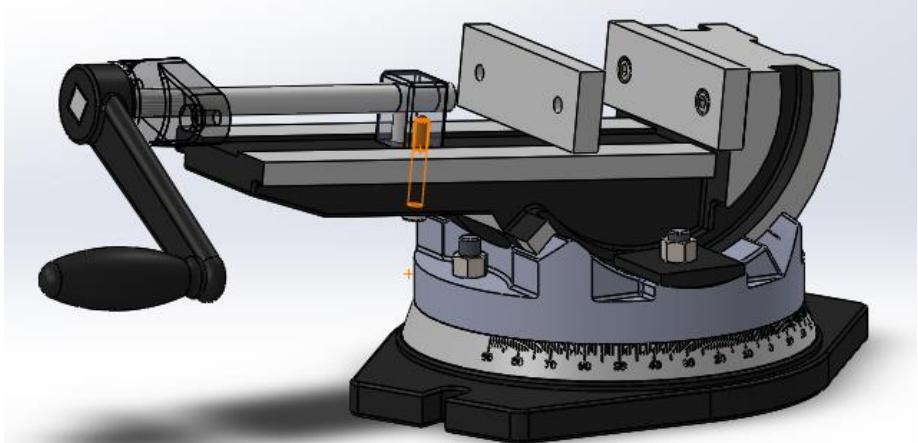
- 14) Insert 2 socket head cap screw_am and configure it as below.



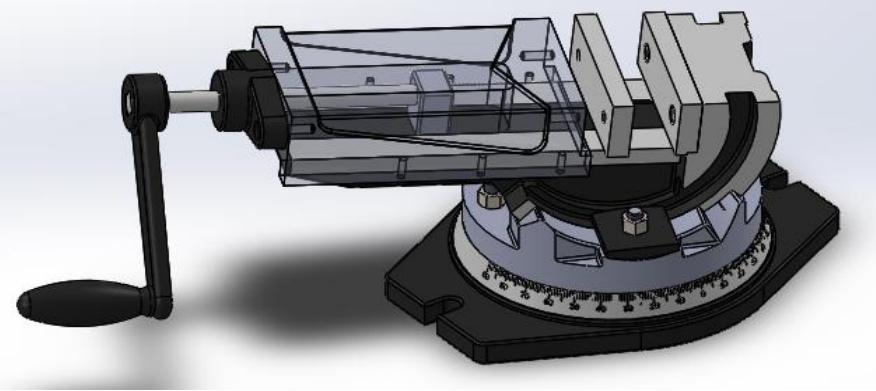
- 15) Assemble them as shown in the diagram with the "Fixed jaw"



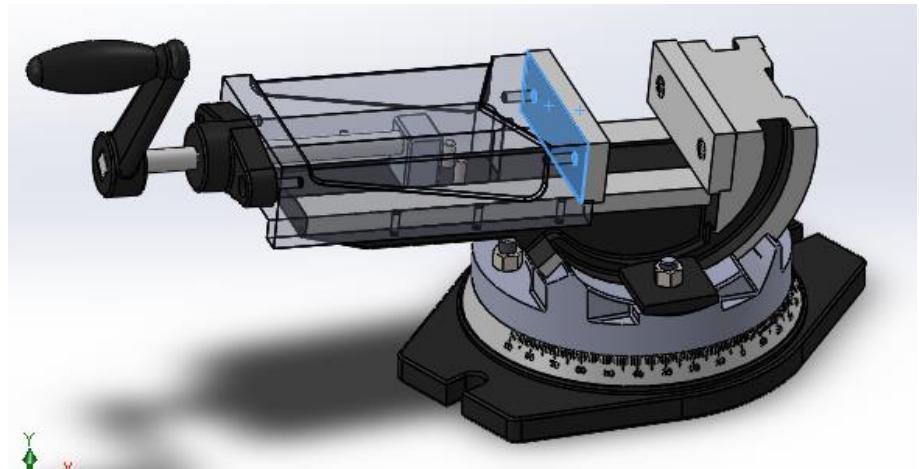
- 16) Use standard mates to assemble the 2 cap screws with the "Square threaded nut".



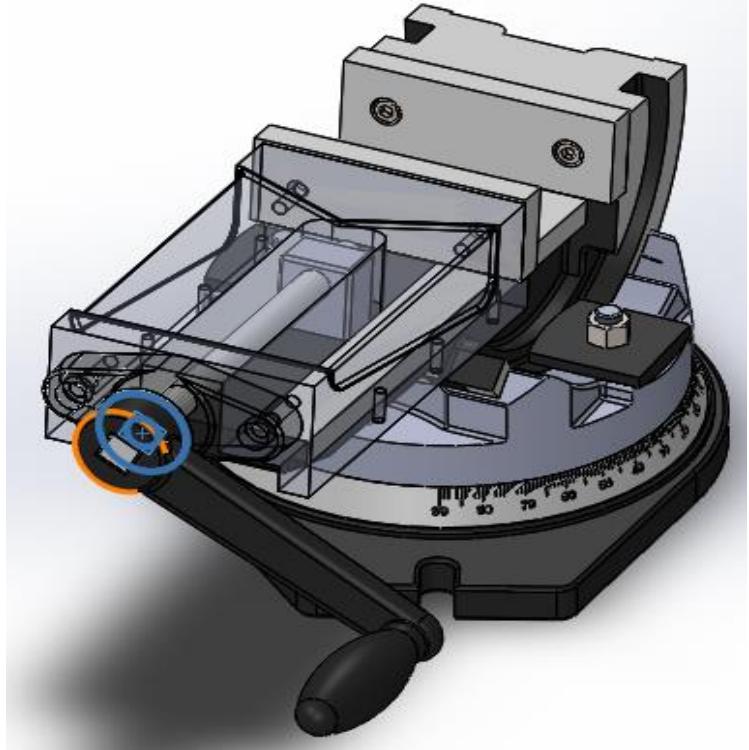
- 17) Insert rest of the components and assemble them using **standard mates** as shown



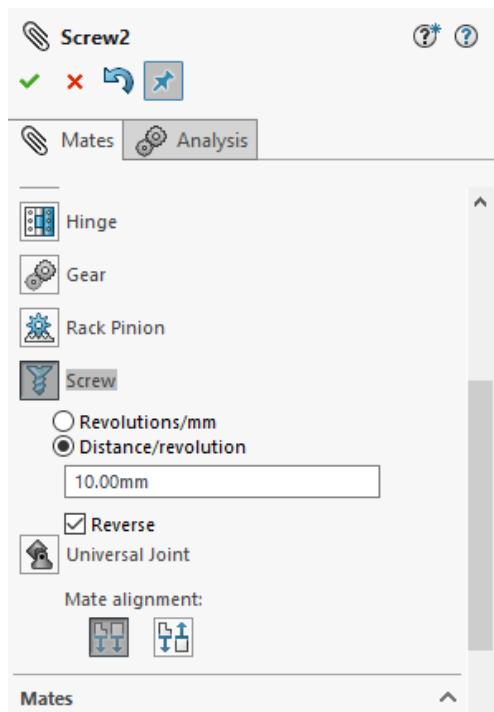
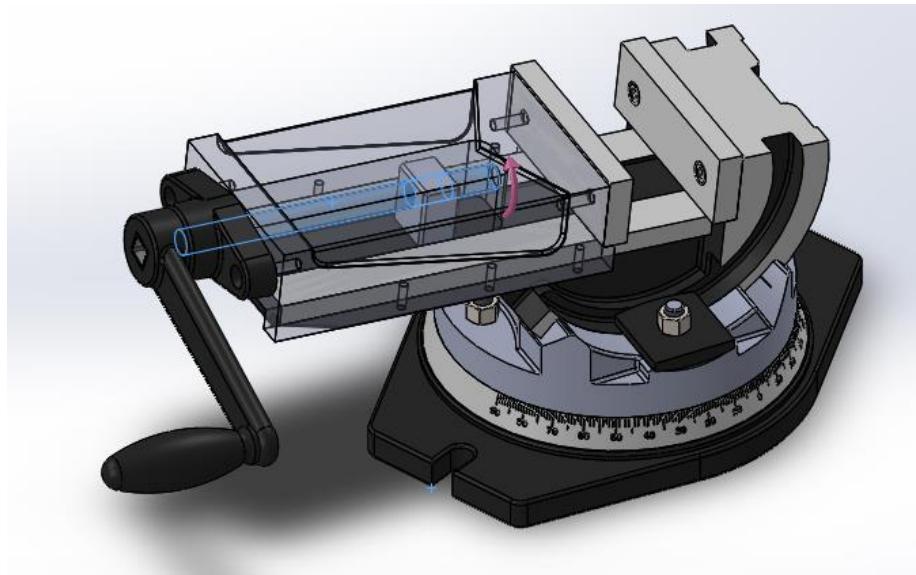
- 18) Assemble the "Jaw" with "Moving jaw" using **standard mates** as shown



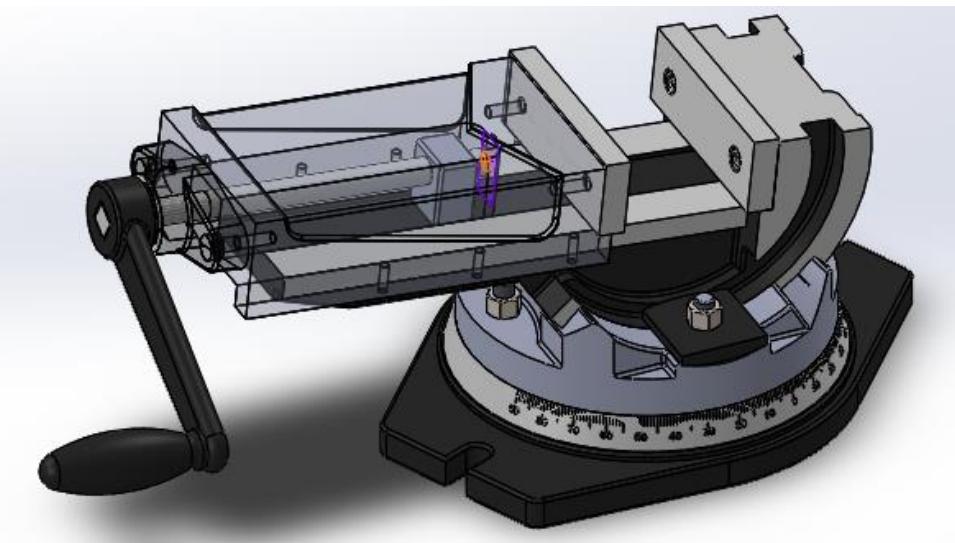
- 19) Assemble the "Arm" with the "Flange" using standard mates

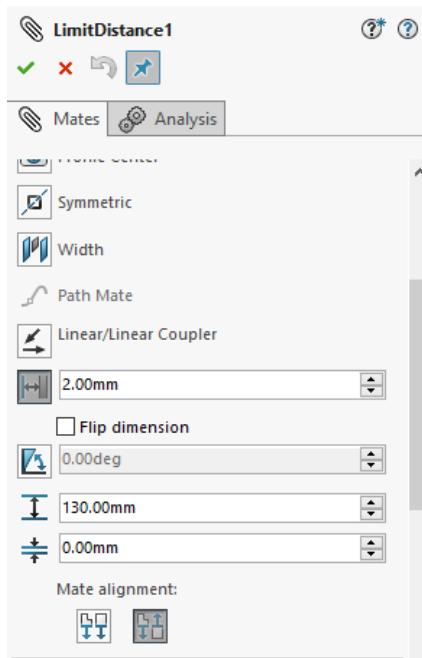


- 20) Use **Mechanical mate** type **Screw** to create a screw joint between the "Square Threaded nut" and "Square Threaded Shaft".

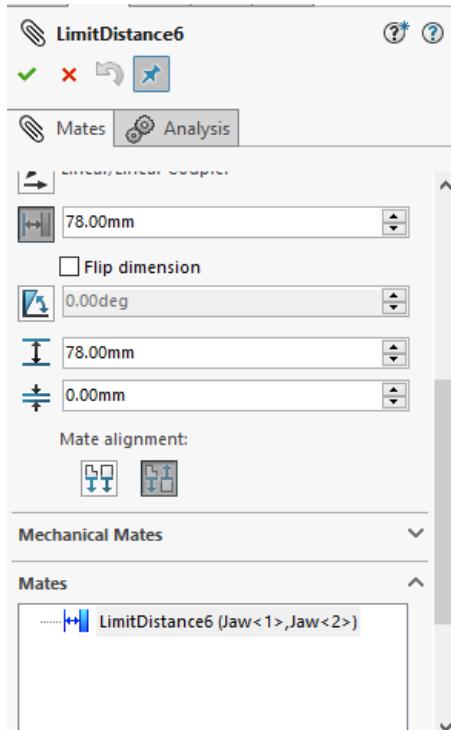
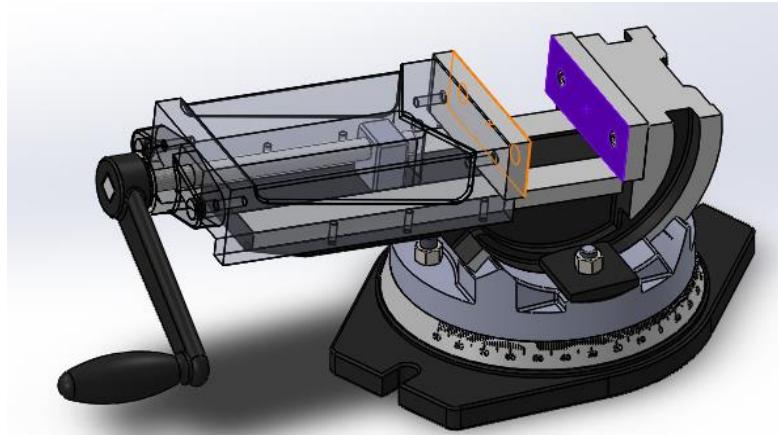


- 21) Use Advanced mate to limit the distance between "Square threaded nut" and the "Moving jaw"
- Analyse the drawings to configure limiting distances using
 - Use Move components and Collision detection options if necessary

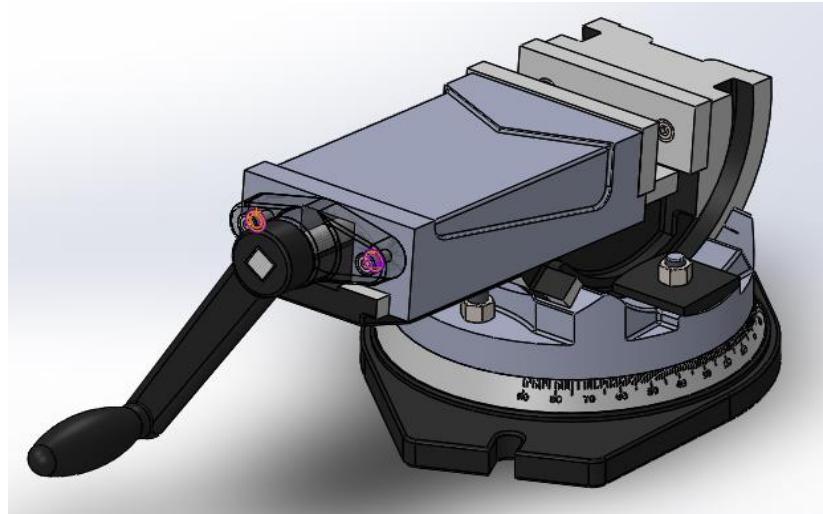
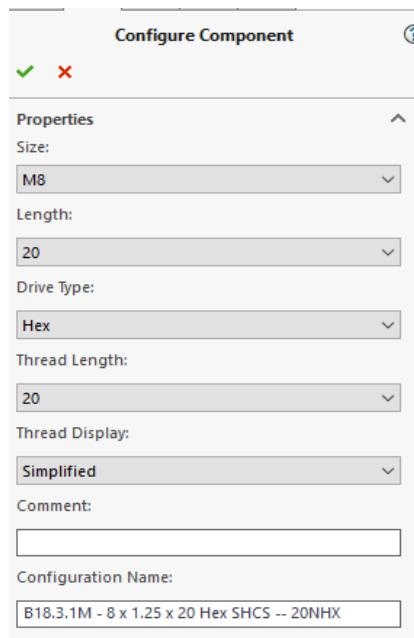




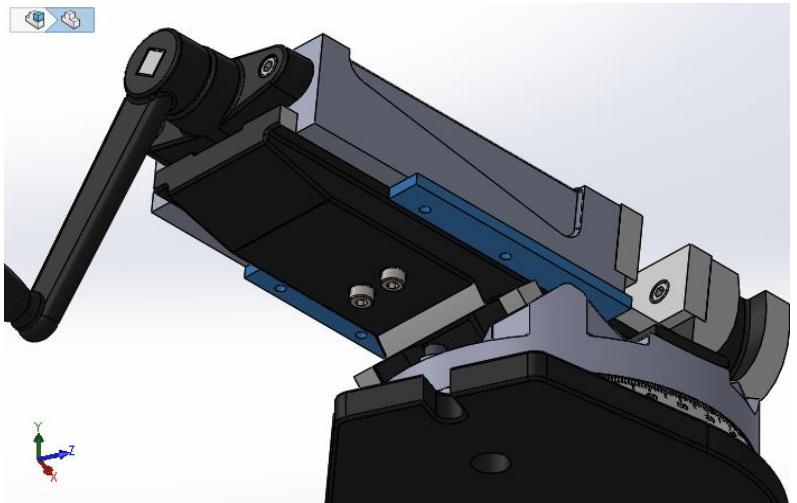
- 22) Use **Advanced mate** to limit distance between the two “jaws”. Configure the distances by analysing the drawings



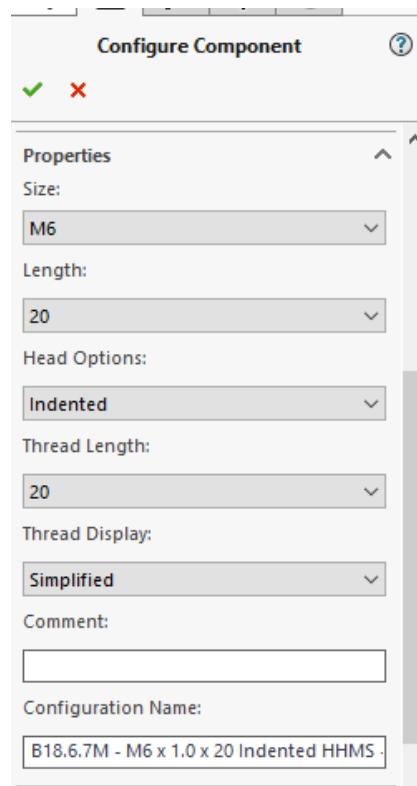
- 23) Insert 2 screws with the given configuration from design Library and assemble them in the relevant places using standard mates



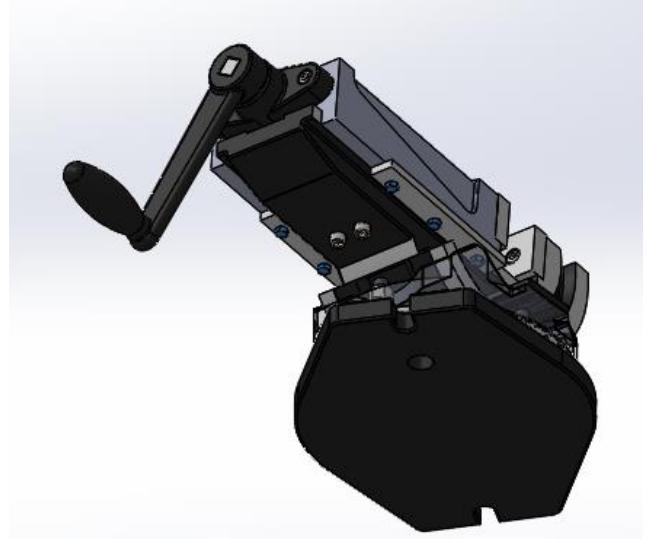
- 23) Insert 2 “Holders” and assemble them using **Standard mates** in relevant places.



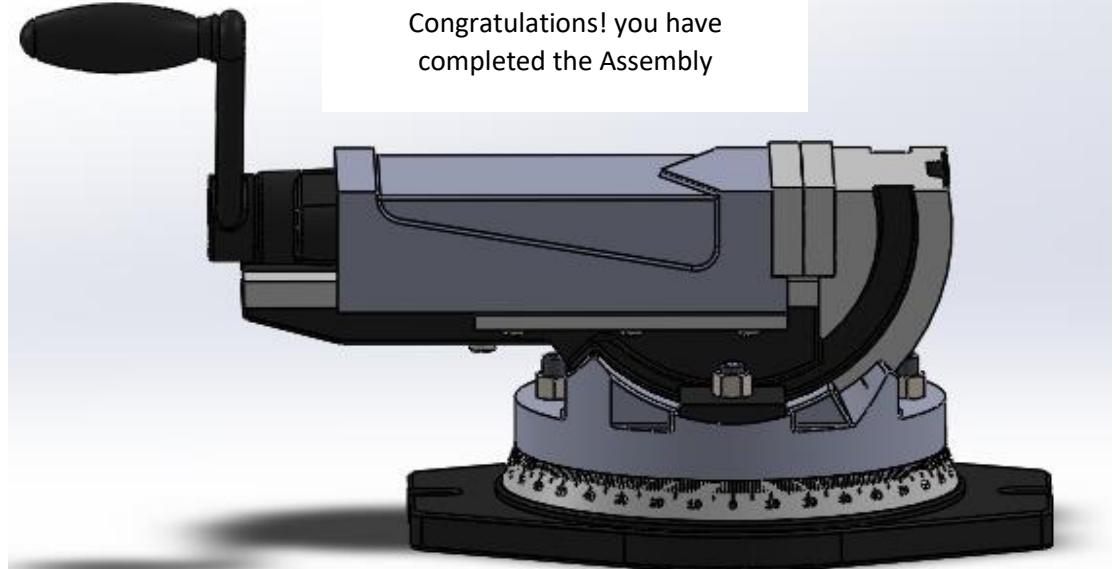
24) Insert 6 screws with the following configuration from the design Library



25) Assemble them in relevant places to fasten the holder on to the “Moving jaw”



Congratulations! you have completed the Assembly





Sri Lanka Institute of Information and Technology

Department of Mechanical Engineering

Engineering Drawing – ME2031

SolidWorks Assignment - 7

Mr. Thilina Weerakkody
Mr. Kulunu Samarakrama

Due date : 17/04/2019 @ 6.00 pm
Submission Method : Online

1. This assignment tests your knowledge and skills on following topics

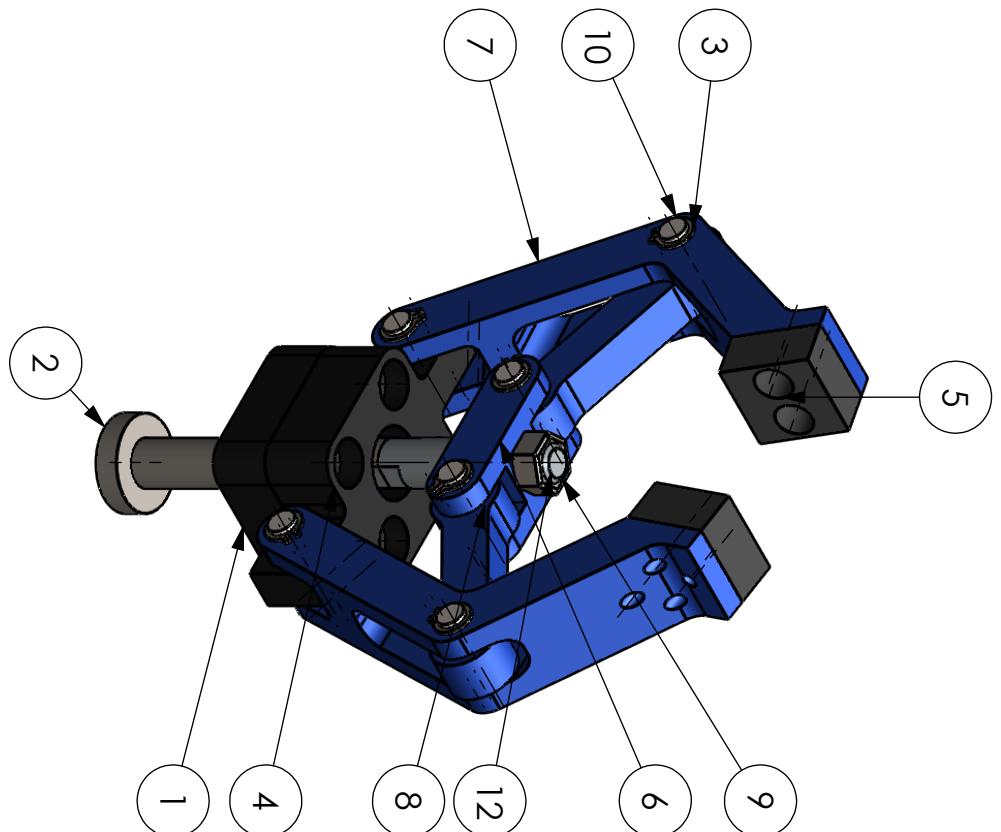
- Sketching in SolidWorks
- Analyzing SolidWorks Drawings
- Implementation of Basic features
 - Extrude Boss/Base, Linear patterns etc
- Understanding Auxiliary Views
- SolidWorks Assembling and Mate features

2. Instructions:

- Construct the 3D part models of the given drawings as by analyzing the Drawings
- Construct the Assembly using most appropriate mate features
- Apply colors to part files to improve the clarity of assembly.
- Zip.SLDprt files and with the Assembly files
- Zip file name as: Surename_Index.No_Assignment7 (e.g:
Smith_EN14XXXXXX_Assignment7)
- Submission should be done on **Take Home Assignment 7_Due 17 April** submission on courseweb

Wishing you all a Happy and Prosperous Sinhala and Tamil New year!!





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UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MM TOLERANCES: FRACTIONAL N/A ANGULAR: MACH $\pm 0.1^\circ$ BEND $\pm 1^\circ$ ONE PLACE DECIMAL TWO PLACE DECIMAL	DRAWN CHECKED ENG APPR. MFG APPR.	NAME TITLE:	Assignment 7
INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL	COMMENTS:	SIZE DWG. NO. A	REV SCALE: 1:2 WEIGHT: A
APPLICATION	USED ON	FINISH	DO NOT SCALE DRAWING
5	4	3	2
1			

Robot Gripper

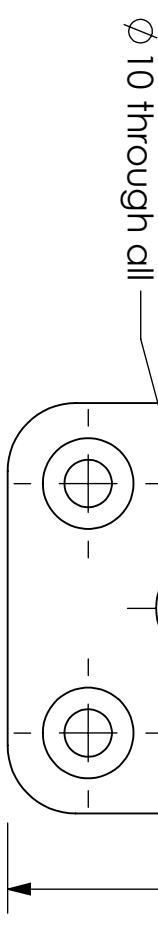
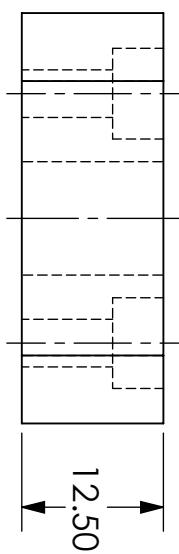
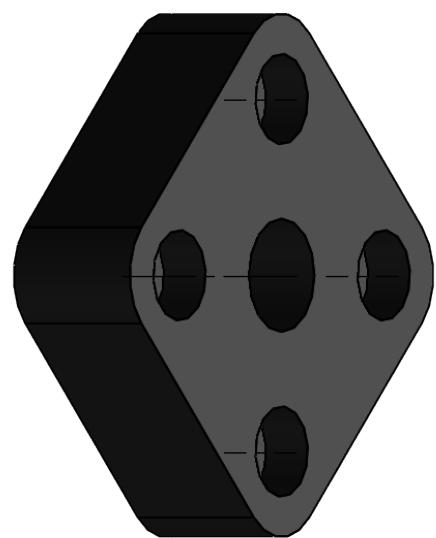
ITEM NO.	PART NUMBER	QTY.
1	Base	1
2	Bolt	1
3	Circclip	12
4	Gripper Base	1
5	Gripper End	2
6	Gripper Middle	1
7	Gripper Side Arm1	2
8	Gripper Side Arm2	2
9	Nut	1
10	Pin	6
11	Seal	6
12	Shaft Extender	1

4X ϕ 8 Hole 4.5mm deep

ϕ 10 through all

22

R6



Assignment 7

TITLE:

Base

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Assignment 7									
Base									
INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL							COMMENTS:		
FINISH					THIRD ANGLE PROJECTION	SIZE A	DWG. NO. 1	REV A	SCALE: 2:1 WEIGHT: SHEET 1 OF 1
APPLICATION	USED ON	MATERIAL	DO NOT SCALE DRAWING						



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DIMENSIONS ARE IN MM
TOLERANCES:

FRACTIONAL N/A
ANGULAR: MACH $\pm 0.1^\circ$ BEND $\pm 1^\circ$

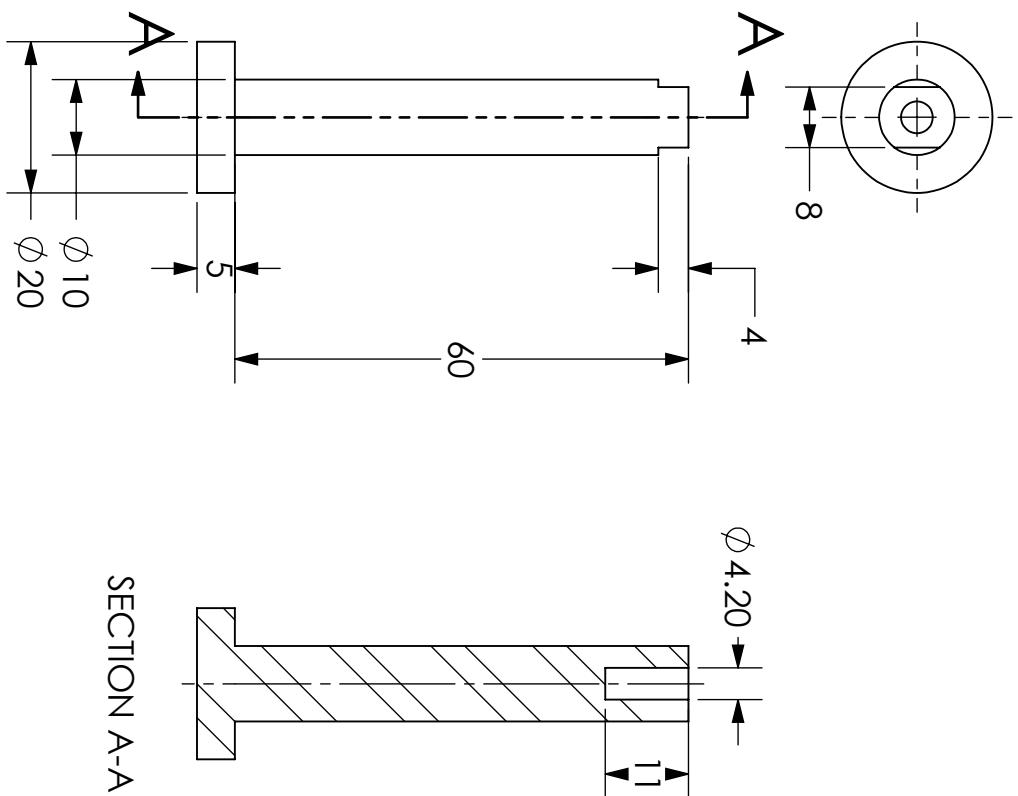
ONE PLACE DECIMAL
TWO PLACE DECIMAL

± 0.1
 ± 0.01

ENG APPR.
MFG APPR.

Q.A.

SECTION A-A



Assignment 7

TITLE:

Bolt

REV
A

SIZE

A

DWG. NO.

2

PROJECTION

THIRD ANGLE

SCALE: 1:1

WEIGHT:

SHEET 1 OF 1





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DIMENSIONS ARE IN MM

TOLERANCES:

FRACTIONAL N/A

ANGULAR: MACH $\pm 0.1^\circ$

BEND $\pm 1^\circ$

ONE PLACE DECIMAL

± 0.1

TWO PLACE DECIMAL

± 0.01

ENG APPR.

MFG APPR.

Q.A.

CHECKED

DRAWN

NAME

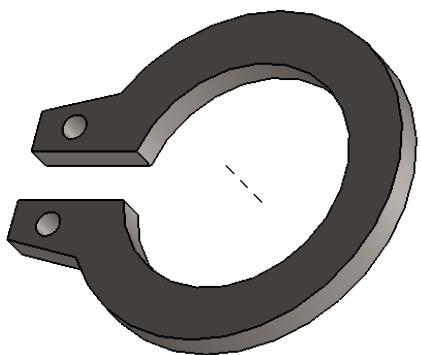
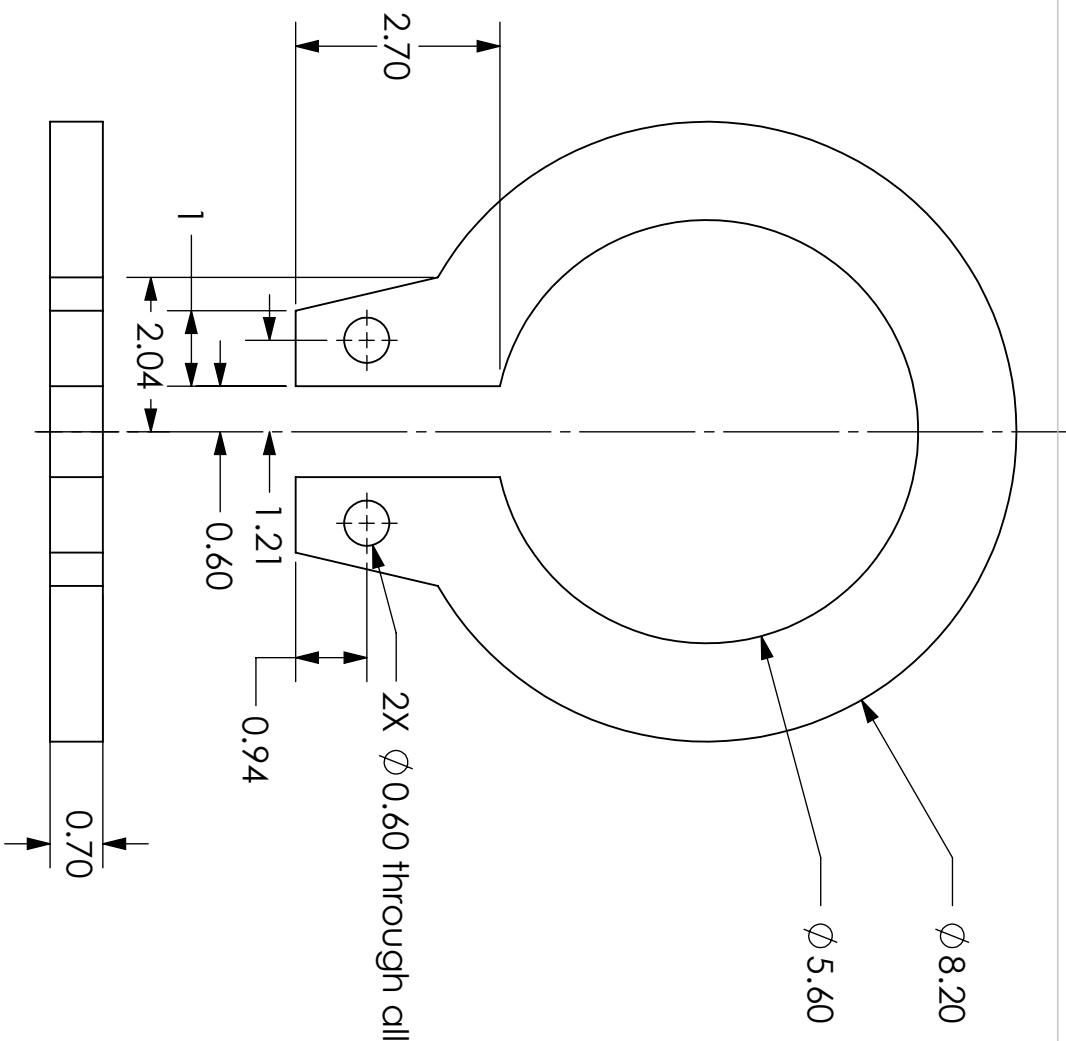
DATE

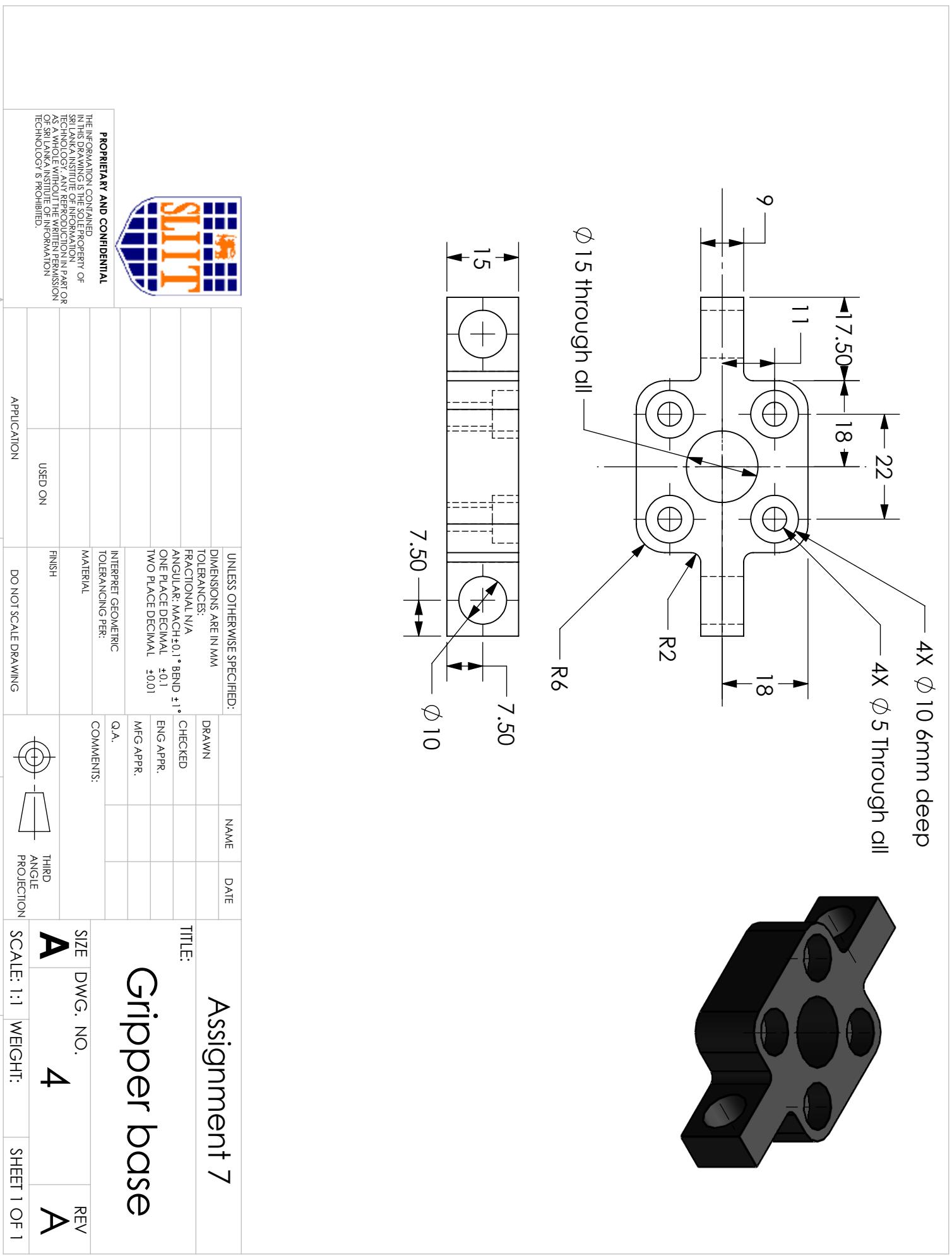
TITLE:

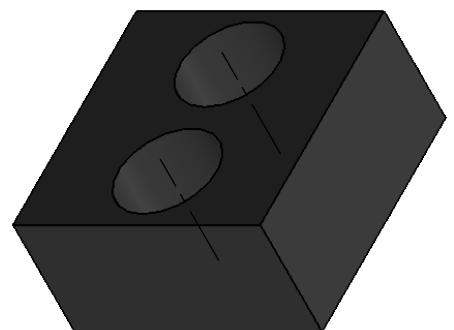
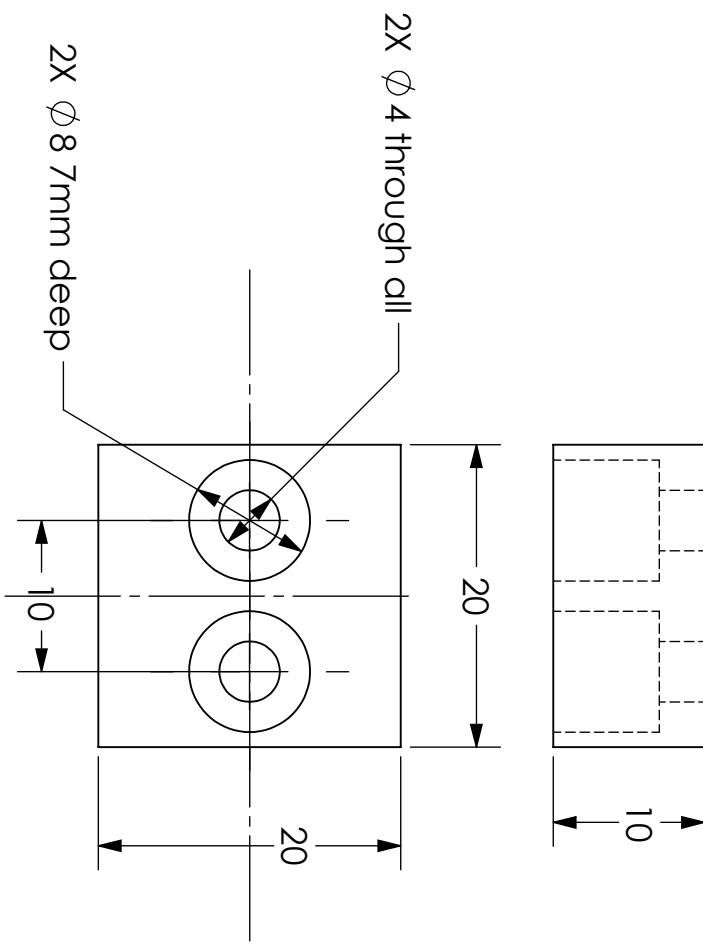
Assignment 7

Circlip

APPLICATION	USED ON	FINISH	DO NOT SCALE DRAWING
INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL		 THIRD ANGLE PROJECTION	A SIZE A REV DWG. NO. 3 SCALE: 10:1 WEIGHT: A SHEET 1 OF 1



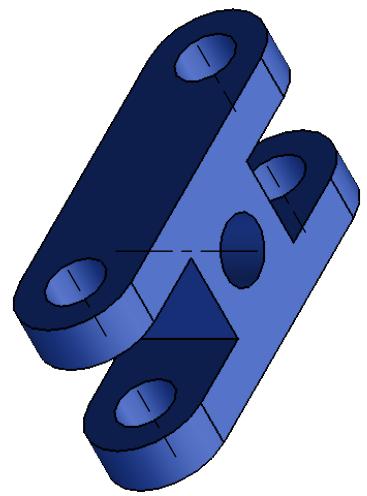
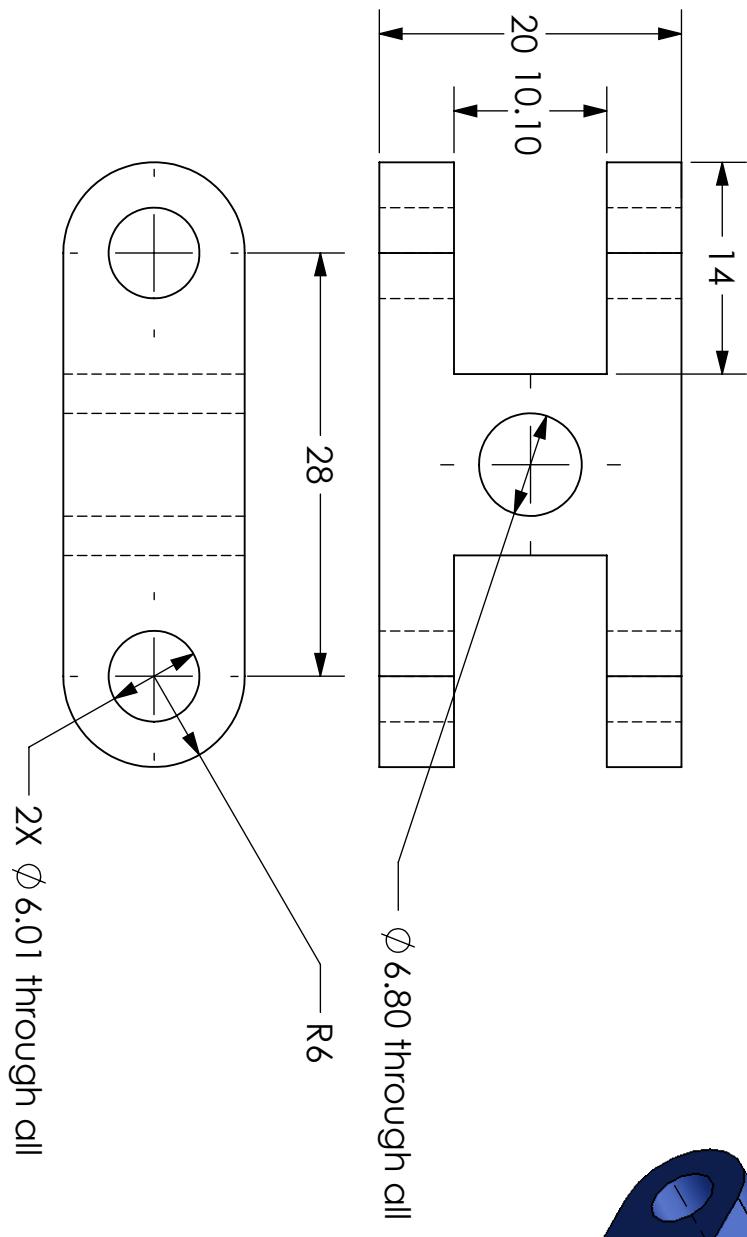




Assignment 7

Gripper end

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MM TOLERANCES: FRACTIONAL N/A ANGULAR: MACH $\pm 0.1^\circ$ BEND $\pm 1^\circ$ ONE PLACE DECIMAL TWO PLACE DECIMAL				DRAWN	NAME	DATE	TITLE:				
				CHECKED							
				ENG APPR.							
				MFG APPR.							
INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL				Q.A.							
COMMENTS:											
APPLICATION	USED ON	FINISH	 THIRD ANGLE PROJECTION			SIZE A	DWG. NO. 5	REV A	SCALE: 2:1	WEIGHT:	SHEET 1 OF 1
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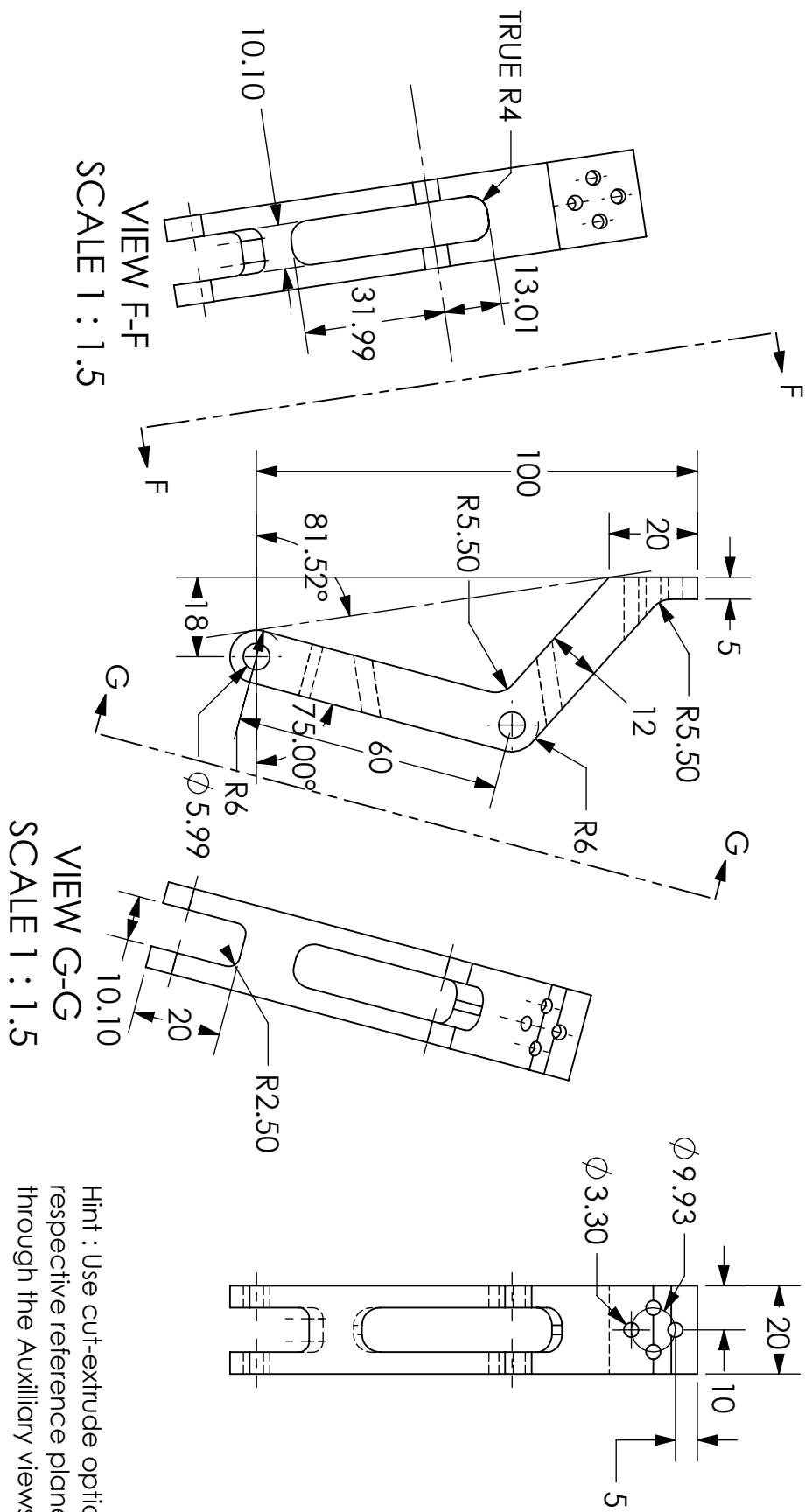
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MACH	$\pm 0.1^\circ$	BEND	$\pm 1^\circ$	CHECKED			
ENG APPR.		MFG APPR.					
Q.A.							
INTERPRET GEOMETRIC TOLERANCING PER:		COMMENTS:					
MATERIAL							
USED ON							
FINISH							
APPLICATION		DO NOT SCALE DRAWING					

Gripper Middle

SIZE **A** DWG. NO. **6** REV **A**
SCALE: 2:1 WEIGHT: SHEET 1 OF 1



UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MM
TOLERANCES:
FRACTIONAL N/A
ANGULAR: MACH $\pm 1^\circ$ BEND $\pm 1^\circ$
ONE PLACE DECIMAL ± 0.1
TWO PLACE DECIMAL ± 0.01

INTERPRET GEOMETRIC
TOLERANCING PER:

COMMENTS:

Assesment 7

TITLE:

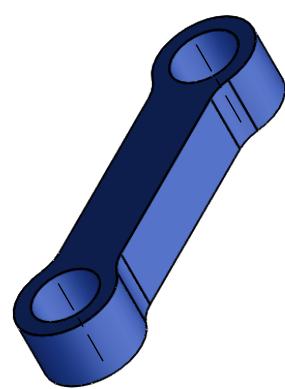
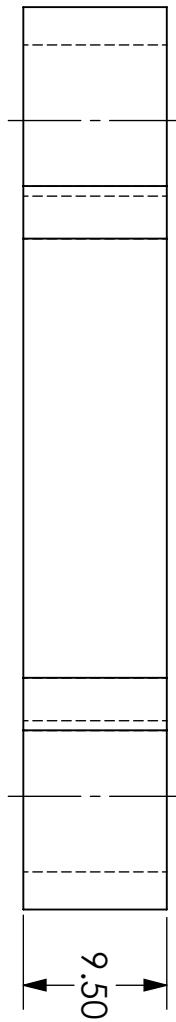
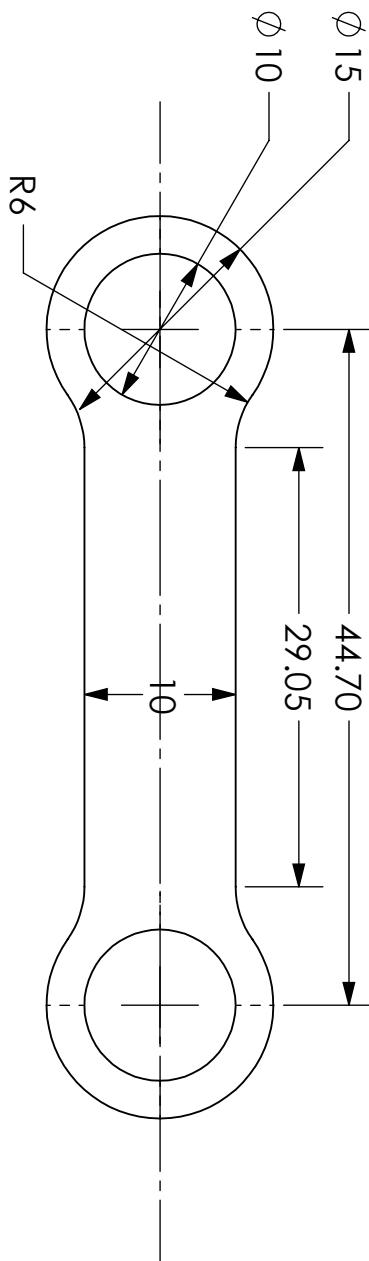


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APPLICATION	USED ON	FINISH MATERIAL	DO NOT SCALE DRAWING

SIZE **A** DWG. NO. **7** REV **A**
SCALE: 1:2 WEIGHT: SHEET 1 OF 1



Assignment 7



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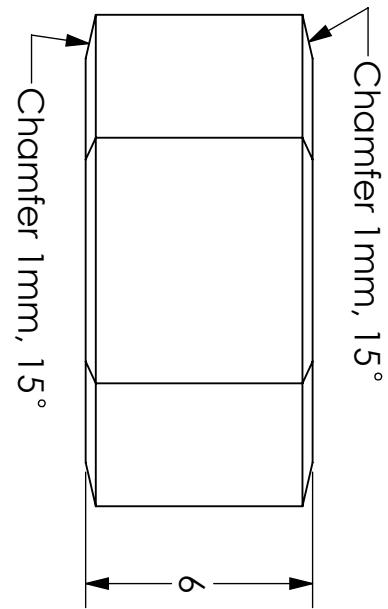
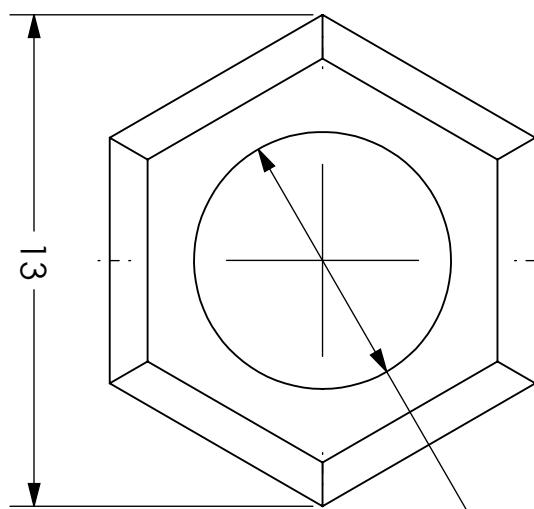
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± 0.1				CHECKED					
± 0.01				ENG APPR.					
± 0.01				MFG APPR.					
Q.A.									
INTERPRET GEOMETRIC TOLERANCING PER:				COMMENTS:					
MATERIAL	FINISH	USED ON	APPLICATION				THIRD ANGLE PROJECTION	SIZE A	DWG. NO. 8
								SCALE: 2:1	REV A
								WEIGHT:	SHEET 1 OF 1

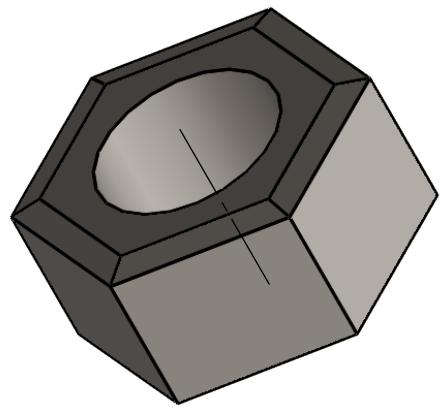
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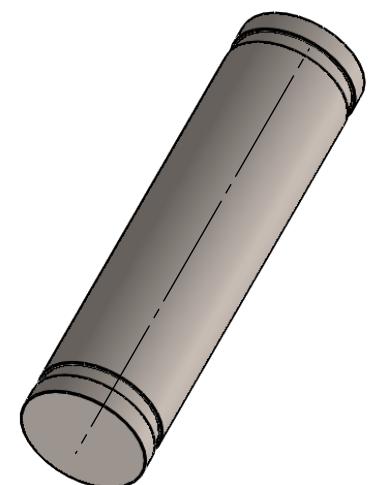
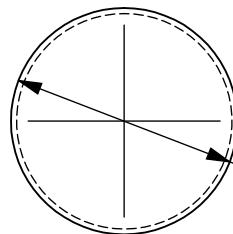
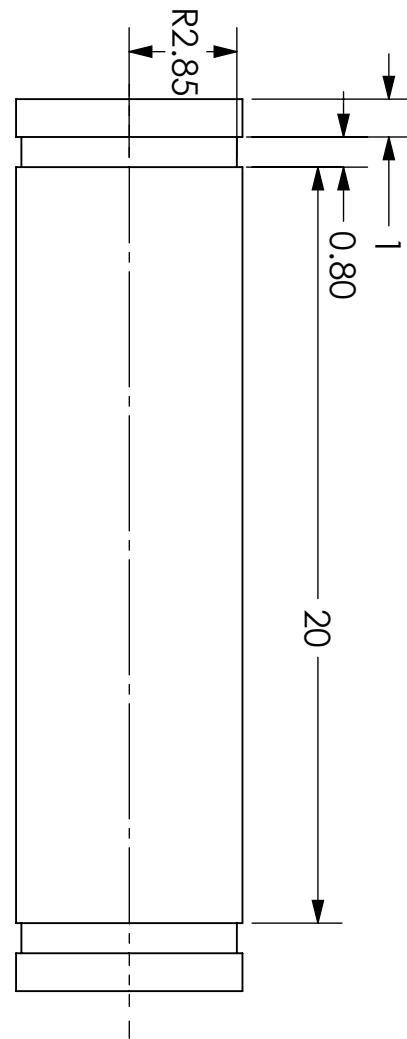


UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MM	DRAWN	NAME	DATE	TITLE: Assignment 7
TOLERANCES: FRACTIONAL N/A ANGULAR: MACH $\pm 0.1^\circ$ BEND $\pm 1^\circ$ ONE PLACE DECIMAL TWO PLACE DECIMAL	CHECKED ± 0.1 ± 0.01	ENG APPR.	MFG APPR.	
INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			
MATERIAL	COMMENTS:			
USED ON	FINISH		THIRD ANGLE PROJECTION	SIZE A DWG. NO. 9 REV A
APPLICATION	DO NOT SCALE DRAWING		SCALE: 5:1	WEIGHT: SHEET 1 OF 1



$\phi 6.80$ Through all





Assignment 7

TITLE:

Pin

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MM TOLERANCES: FRACTIONAL N/A ANGULAR: MACH $\pm 0.1^\circ$ BEND $\pm 1^\circ$ ONE PLACE DECIMAL TWO PLACE DECIMAL				DRAWN	NAME	DATE	Assignment 7		
CHECKED				ENG APPR.					
Q.A.	MFG APPR.								
INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL	COMMENTS:								
USED ON	FINISH	THIRD ANGLE PROJECTION	SIZE A	DWG. NO. 10	SCALE: 5:1	REV A	WEIGHT:	SHEET 1 OF 1	
APPLICATION	DO NOT SCALE DRAWING								

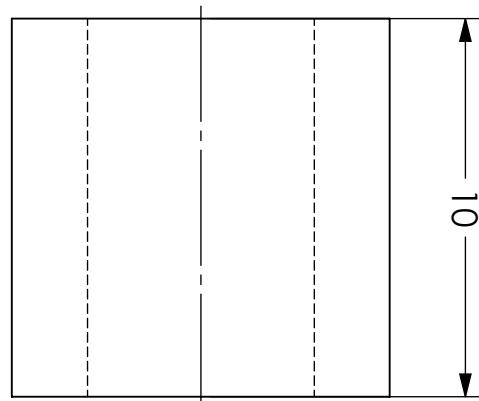
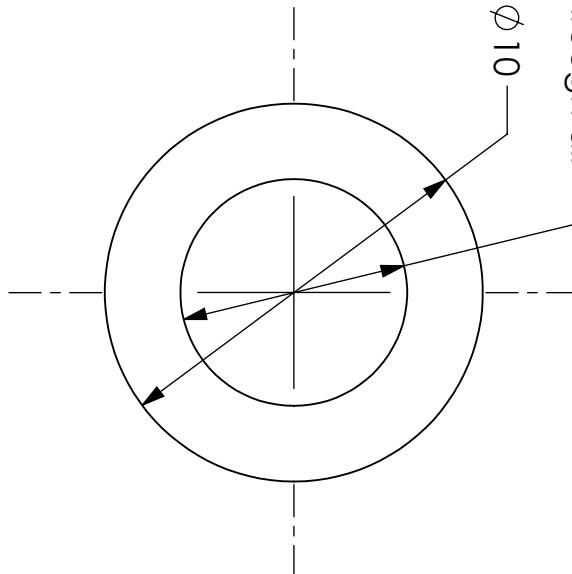
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$\phi 6$ Through all

$\phi 10$

10



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TOLERANCES:
FRACTIONAL N/A
ANGULAR: MACH $\pm 0.1^\circ$ BEND $\pm 1^\circ$
ONE PLACE DECIMAL
TWO PLACE DECIMAL
INTERPRET GEOMETRIC
TOOLING PER:

DRAWN
CHECKED
 ± 0.1
 ± 0.01
ENG APPR.
MFG APPR.
Q.A.

MATERIAL
FINISH

COMMENTS:

Assignment 7
Title:
Seal

SIZE
A

DWG. NO.
11

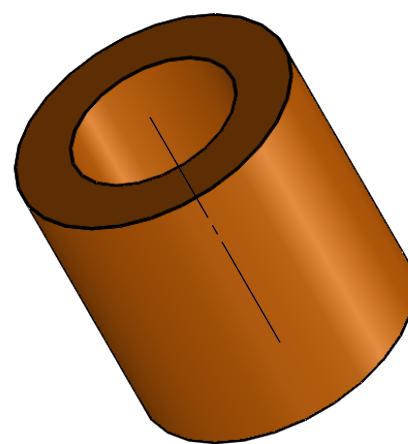
REV
A

THIRD
ANGLE
PROJECTION

SCALE: 5:1

WEIGHT:

SHEET 1 OF 1





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Assignment 7

Shaft Extender

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MM
TOLERANCES:

FRACTIONAL INIA
ANGULAR: MACH $\pm 0.1^\circ$ BEND $\pm 1^\circ$
ONE PLACE DECIMAL
TWO PLACE DECIMAL

± 0.1

± 0.01

NAME

DATE

TITLE:

Shaft Extender

DRAWN

CHECKED

ENG APPR.

MFG APPR.

Q.A.

COMMENTS:

INTERPRET GEOMETRIC
TOLERANCING PER:

MATERIAL

FINISH

USED ON

APPLICATION

DO NOT SCALE DRAWING

THIRD
ANGLE
PROJECTION

SCALE: 1:1

REV

A

SIZE

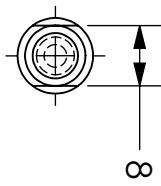
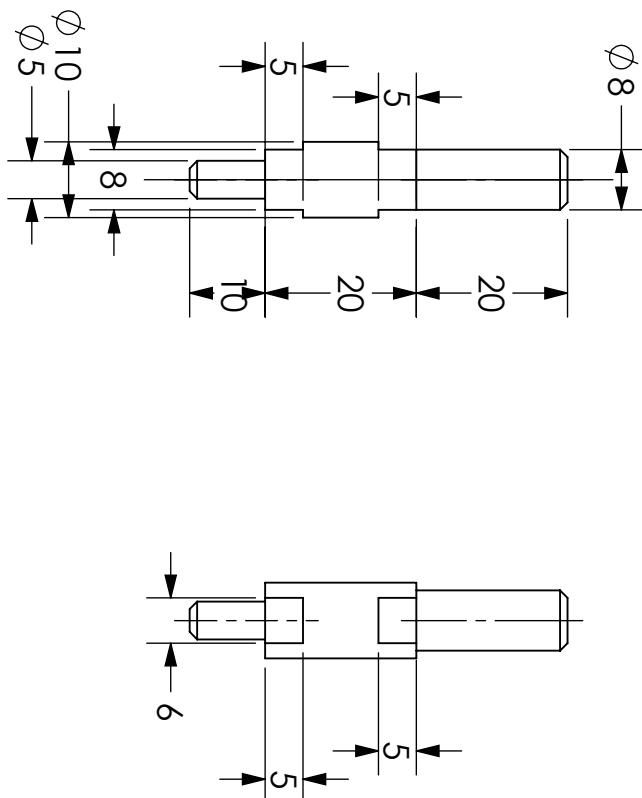
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DWG. NO.

12

WEIGHT:

SHEET 1 OF 1





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Department of Mechanical Engineering

Engineering Drawing – ME2031

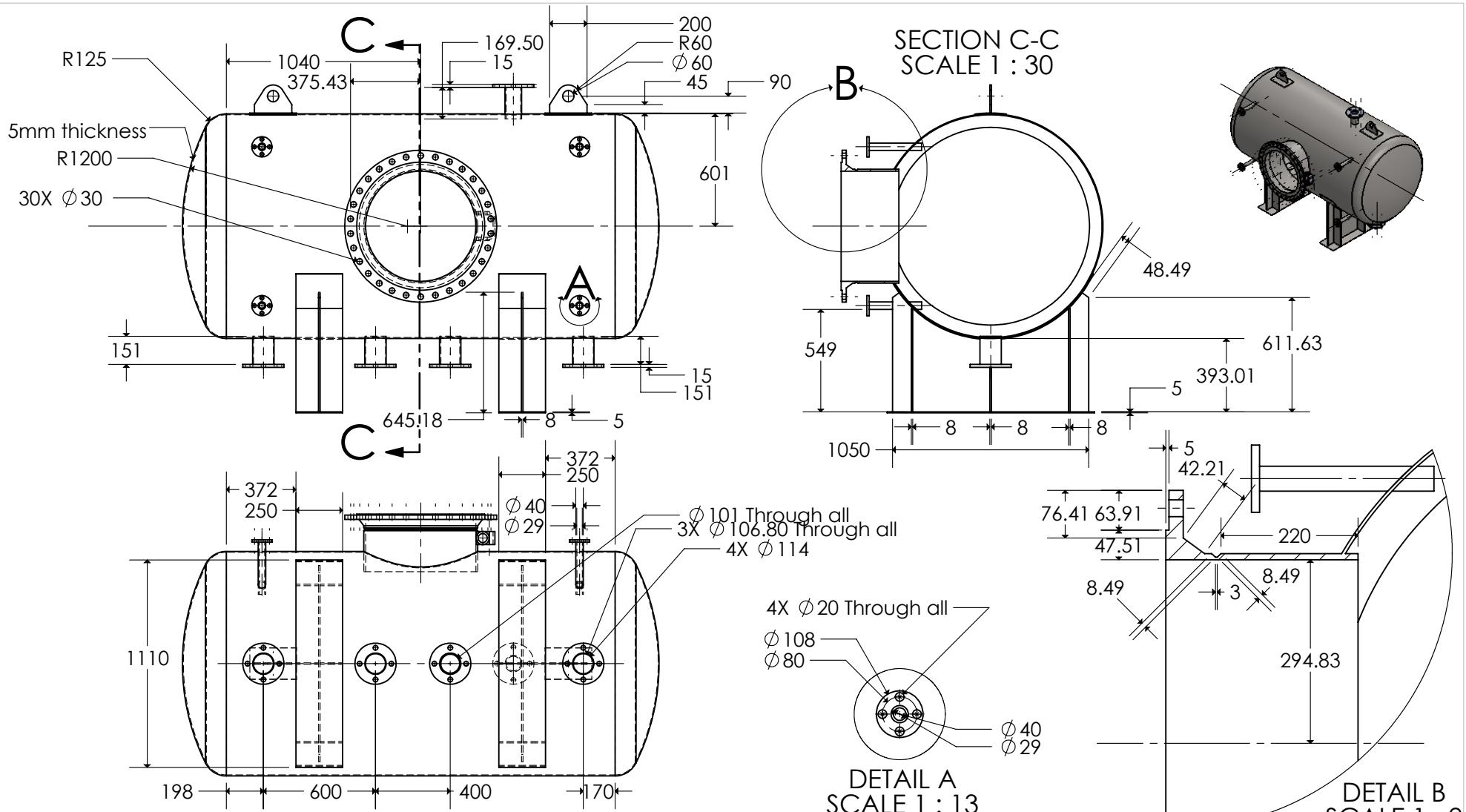
SolidWorks Assignment - 8

Mr. Thilina Weerakkody
Mr. Kulunu Samarakrama

Due date : 02/05/2019 @ 12.00 pm
Submission Method : Online

1. Instructions:

- Analyze the drawings of the part files and the assembly
- Follow the Exact same steps and Dimensions of the **Video Tutorial** accessible through following link.
 - <https://www.youtube.com/watch?v=XkP8xTNrsDw&t=2599s>
- Construct the 3D models of the given drawings as separate SolidWorks part files
- Save the part files with their respective names
- Create the SolidWorks Assembly as described in the Drawing – Assembly
- Use the most appropriate mate features to assemble
- Save the Assembly as Pressure Vessel Assembly
- Zip .SLDPRT files and the .SLDASM file
- Zip the submission files with the name: Surename_Index.No_Assignment8 (e.g: Smith_EN14XXXXXX_Assignment8)
- Submission should be done on **Take Home Assignment 7 Due 30 April** submission on courseweb



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	UNLESS OTHERWISE SPECIFIED:		NAME	DATE	ASSIGNMENT 8 TITLE: VESSEL
	DIMENSIONS ARE IN MM	DRAWN			
	TOLERANCES:	CHECKED			
	FRACTIONAL N/A	ENG APPR.			
	ANGULAR: MACH $\pm 0.1^\circ$ BEND $\pm 1^\circ$	MFG APPR.			
	ONE PLACE DECIMAL ± 0.1	Q.A.			
	TWO PLACE DECIMAL ± 0.01	COMMENTS:			
	INTERPRET GEOMETRIC TOLERANCING PER:				
	MATERIAL				
USED ON	FINISH		THIRD ANGLE PROJECTION		
APPLICATION	DO NOT SCALE DRAWING	SCALE: 1:33	WEIGHT:	SHEET 1 OF 1	
SIZE	DWG. NO.		REV		
A	1.b		A		

ASSIGNMENT 8

TITLE:

VESSEL

REV
A

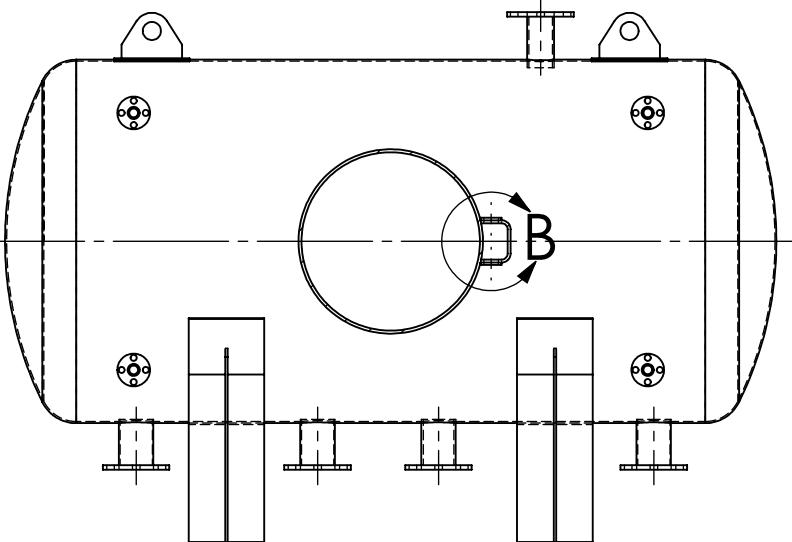
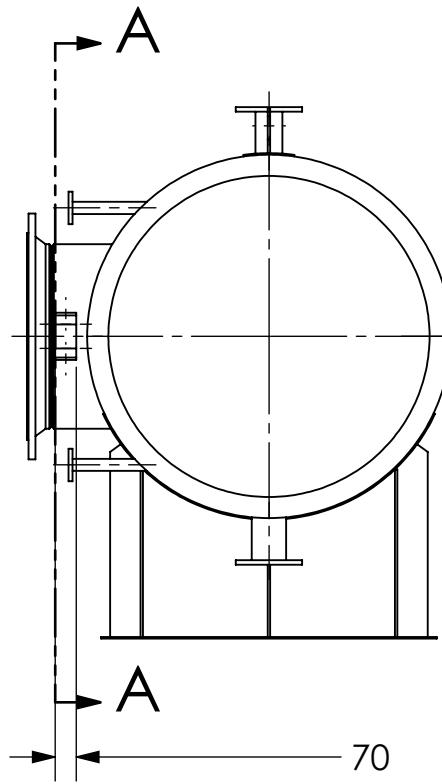
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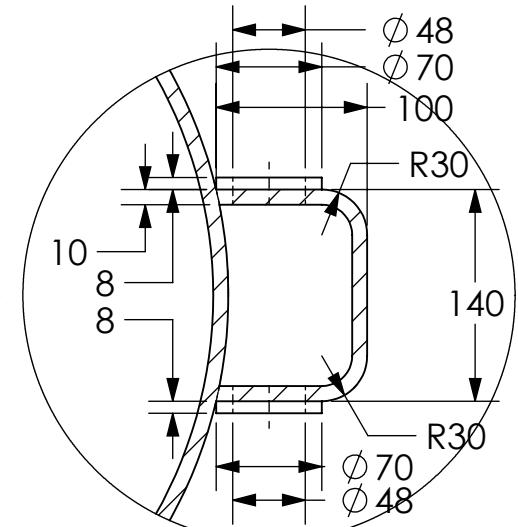
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2

1



SECTION A-A
SCALE 1 : 25

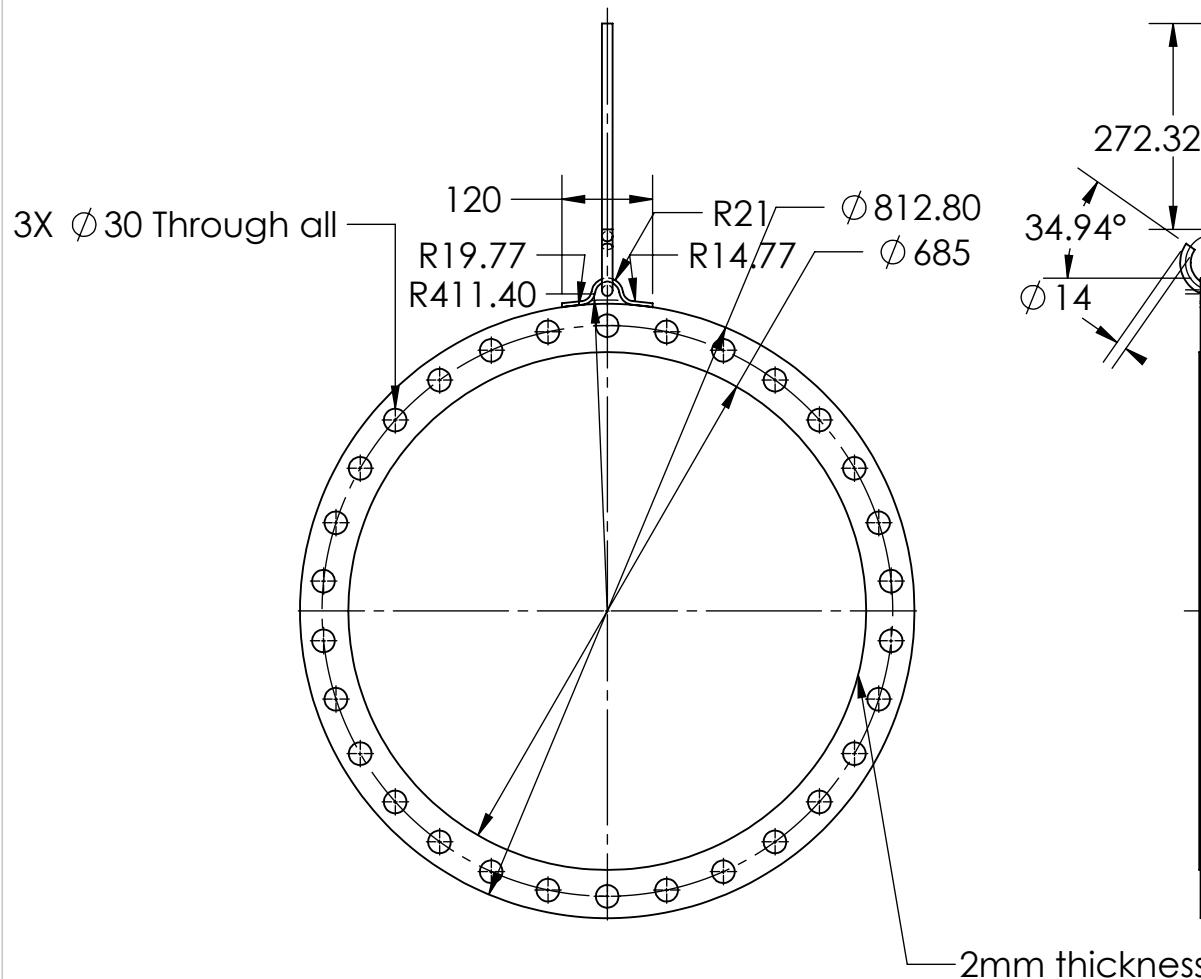


DETAIL B
SCALE 1 : 5



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		INTERPRET GEOMETRIC TOLERANCING PER:	CHECKED	ENG APPR.	MFG APPR.	
		MATERIAL	Q.A.	COMMENTS:		
5	4	USED ON	FINISH			
		APPLICATION	DO NOT SCALE DRAWING			
				THIRD ANGLE PROJECTION		
5	4	3	2	1		
SIZE	DWG. NO.	REV				
A	1.b	A				
SCALE: 1:33	WEIGHT:	SHEET 1 OF 1				



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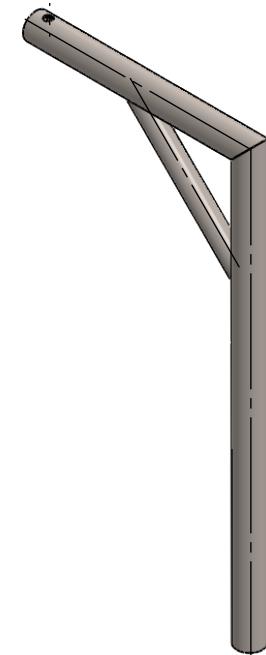
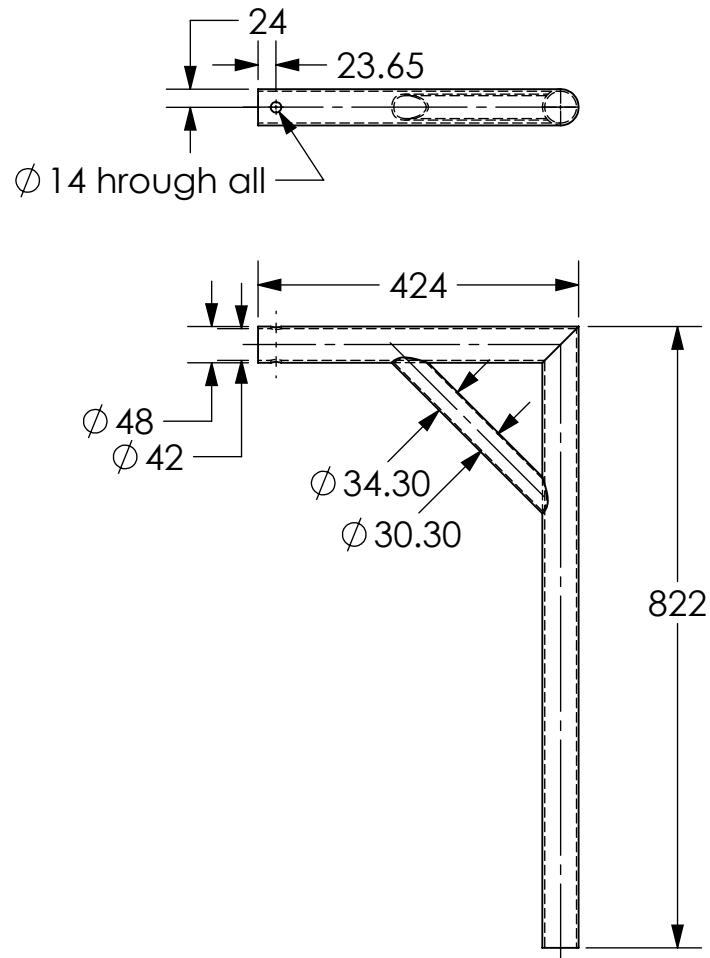
		UNLESS OTHERWISE SPECIFIED:		NAME	DATE
		DIMENSIONS ARE IN MM TOLERANCES: FRACTIONAL N/A ANGULAR: MACH $\pm 0.1^\circ$ BEND $\pm 1^\circ$ ONE PLACE DECIMAL ± 0.1 TWO PLACE DECIMAL ± 0.01	DRAWN		
			CHECKED		
			ENG APPR.		
			MFG APPR.		
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.		
		MATERIAL	COMMENTS:		
	USED ON	FINISH			
APPLICATION		DO NOT SCALE DRAWING	  THIRD ANGLE PROJECTION		

Assignment 8

TITLE:

Manhole Cover

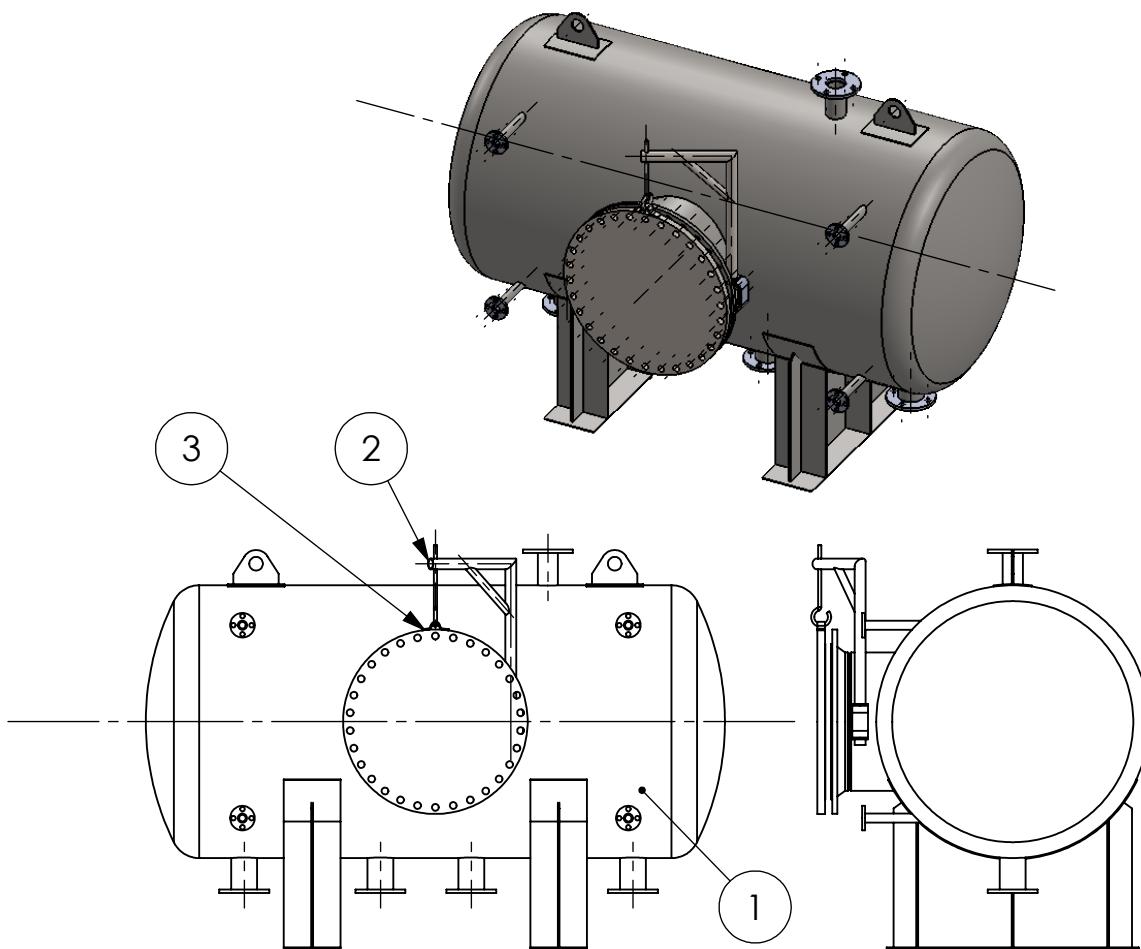
SIZE	DWG. NO.	REV
A	2	A
SCALE: 1:20	WEIGHT:	SHEET 1 OF 1



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		INTERPRET GEOMETRIC TOLERANCING PER:	DRAWN	CHECKED	ENG APPR.	
		MATERIAL	MFG APPR.	Q.A.	COMMENTS:	
	USED ON	FINISH				
APPLICATION	DO NOT SCALE DRAWING		THIRD ANGLE PROJECTION			
SIZE	DWG. NO.	REV				
A	3	A				
SCALE: 1:10	WEIGHT:	SHEET 1 OF 1				

ITEM NO.	PART NUMBER	QTY.
1	Vessel	1
2	Lifting Support	1
3	Manhole Cover	1



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5	4	3	2	1
USED ON		FINISH	THIRD ANGLE PROJECTION	
APPLICATION		DO NOT SCALE DRAWING	SCALE: 1:33.0 WEIGHT:	
			SHEET 1 OF 1	
			REV A	
			DWG. NO. 4	SIZE A
			TITLE: Assignment 8	
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MM TOLERANCES: FRACTIONAL N/A ANGULAR: MACH $\pm 0.1^\circ$ BEND $\pm 1^\circ$ ONE PLACE DECIMAL ± 0.1 TWO PLACE DECIMAL ± 0.01				
DRAWN CHECKED ENG APPR. MFG APPR. Q.A.				
INTERPRET GEOMETRIC TOLERANCING PER: MATERIAL				
COMMENTS:				



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Department of Mechanical Engineering

Engineering Drawing – ME2031

SolidWorks Assignment 9

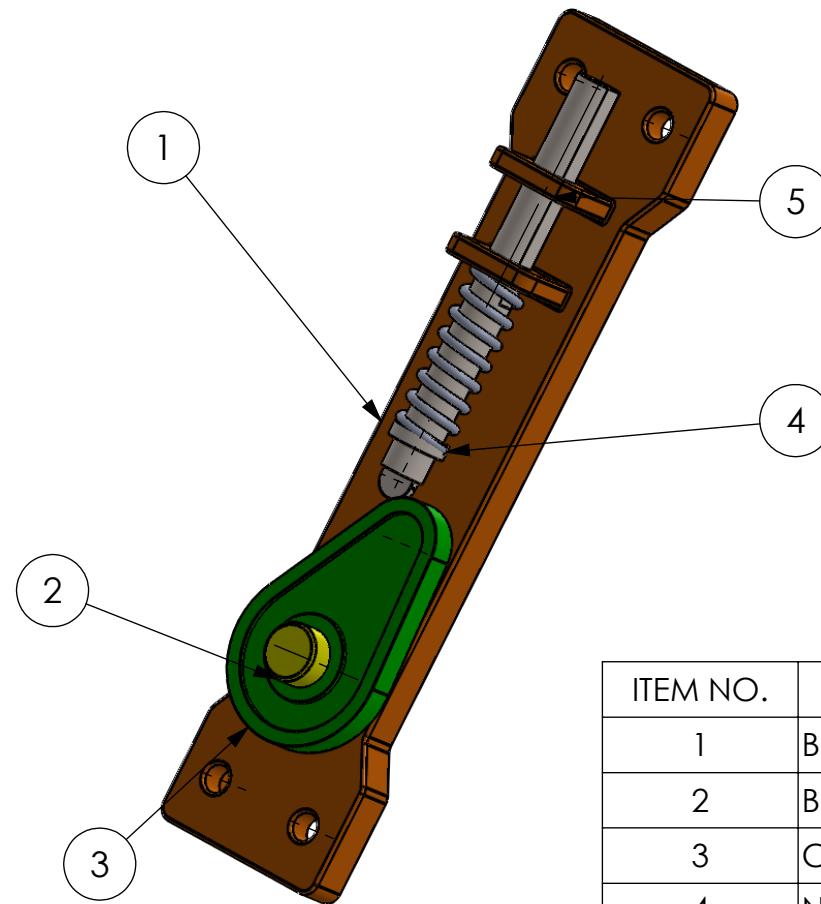
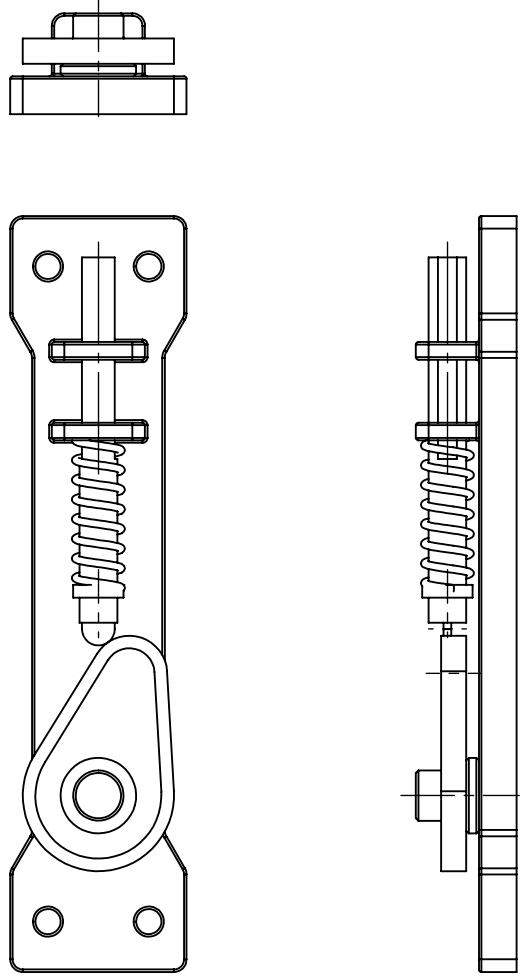
Mr. Thilina Weerakkody

Mr. Kulunu Samarakrama

Date : 06/05/2019

1. Instructions:

- Analyze the drawings of the part files and the assembly
- Construct the 3D models of the given drawings as separate SolidWorks part files
- Follow the guide to construct the Non Standard spring
- Save the part files with their respective names
- Create the SolidWorks Assembly as described in the Drawing – Assembly
- Use the most appropriate mate features to assemble
- Save the Assembly as Pressure Vessel Assembly
- Zip .SLDPRT files and the .SLDASM file
- Zip the submission files with the name: Surename_Index.No_Assignment9 (e.g: Smith_EN14XXXXXX_Assignment9)
- Submission should be done on **Take Home Assignment 9_Due 06 May** submission on courseweb

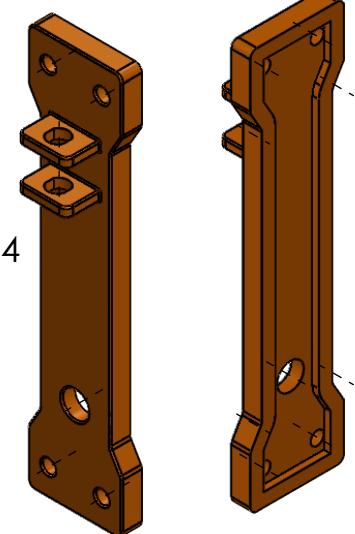
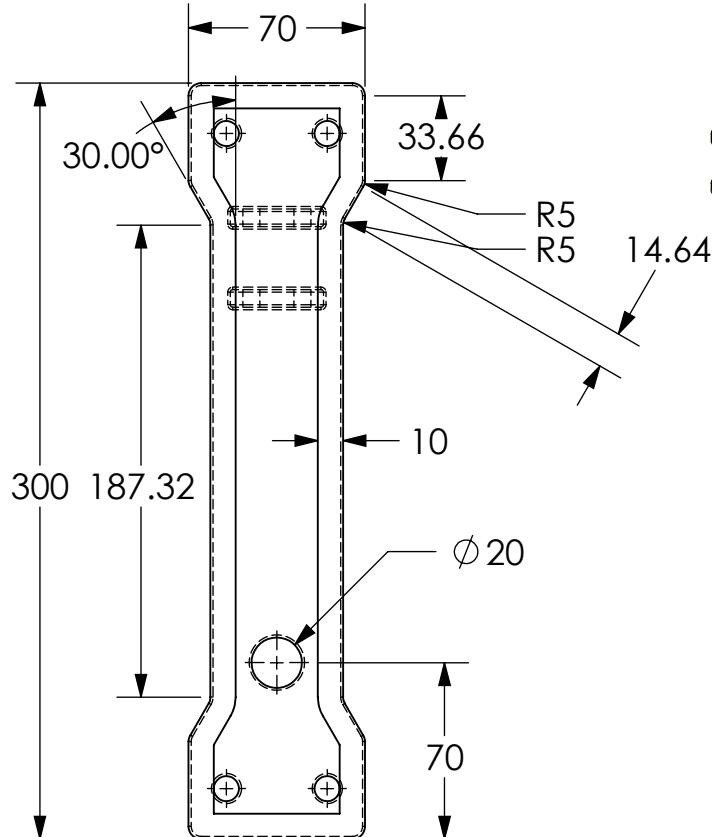
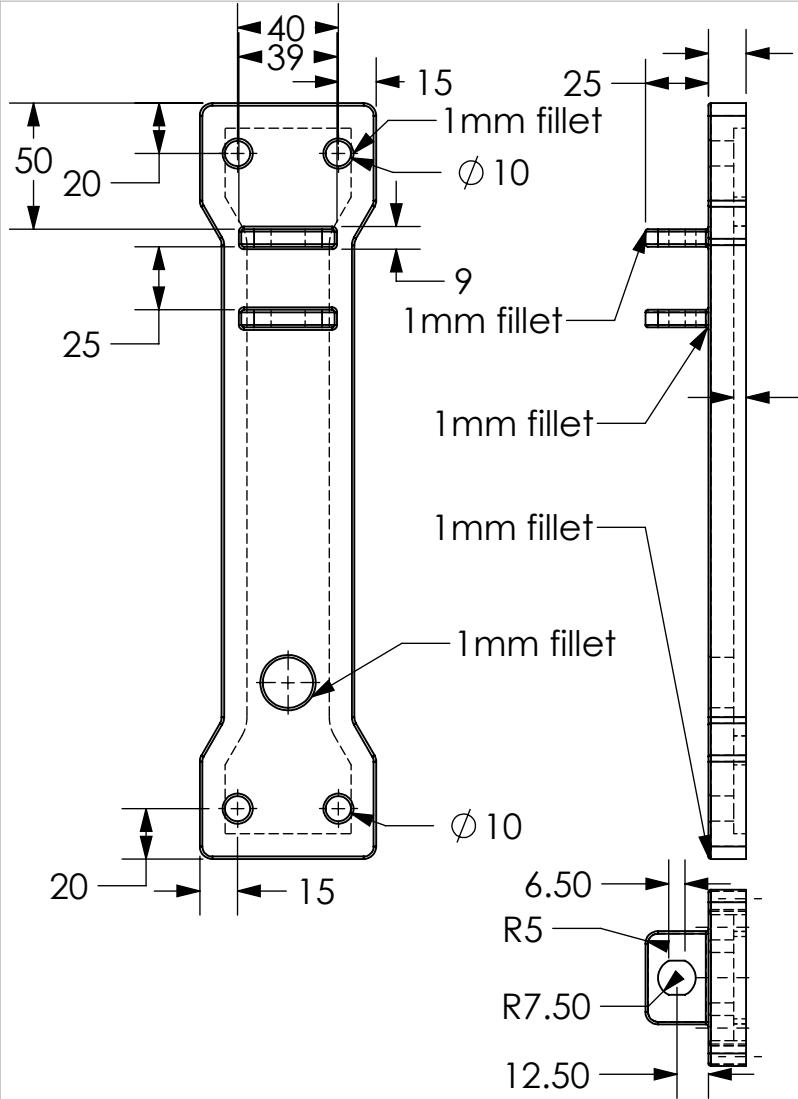


ITEM NO.	PART NUMBER	QTY.
1	Base	1
2	Bolt	1
3	Cam	1
4	Non Standard Spring	1
5	Rotating bar	1
6	Washer	1



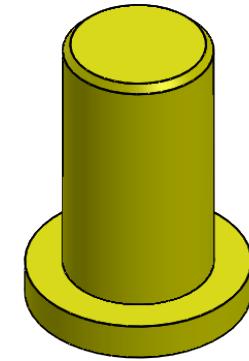
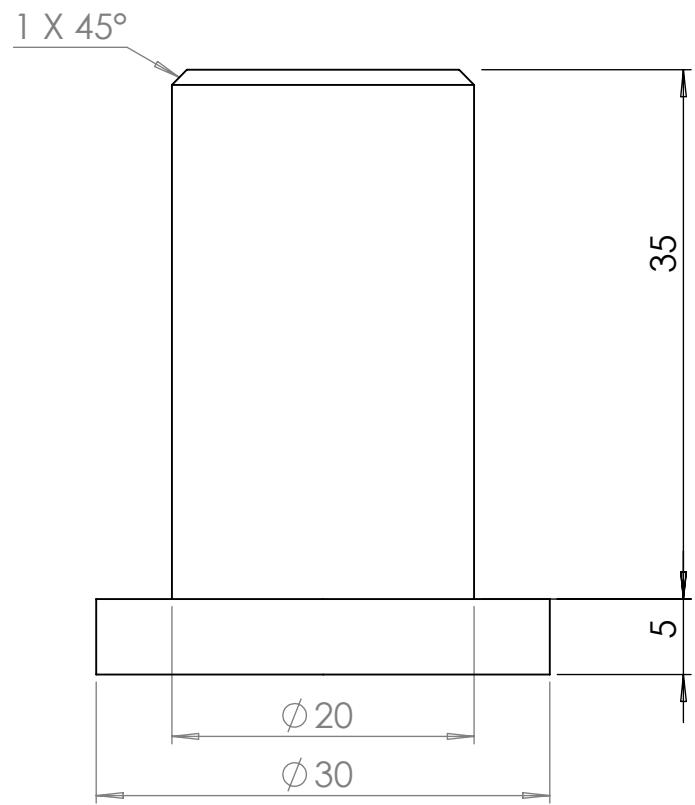
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		DRAWN		CHECKED			
		ENG APPR.		MFG APPR.		Assembly	
		Q.A.		COMMENTS:			
		INTERPRET GEOMETRIC TOLERANCING PER:		MATERIAL		SIZE DWG. NO. REV A 1.a A	
		DRAWN		CHECKED			
		ENG APPR.		MFG APPR.			
		Q.A.		COMMENTS:			
	USED ON	FINISH		THIRD ANGLE PROJECTION		SCALE: 1:5 WEIGHT: SHEET 1 OF 1	
APPLICATION	DO NOT SCALE DRAWING		THIRD ANGLE PROJECTION				



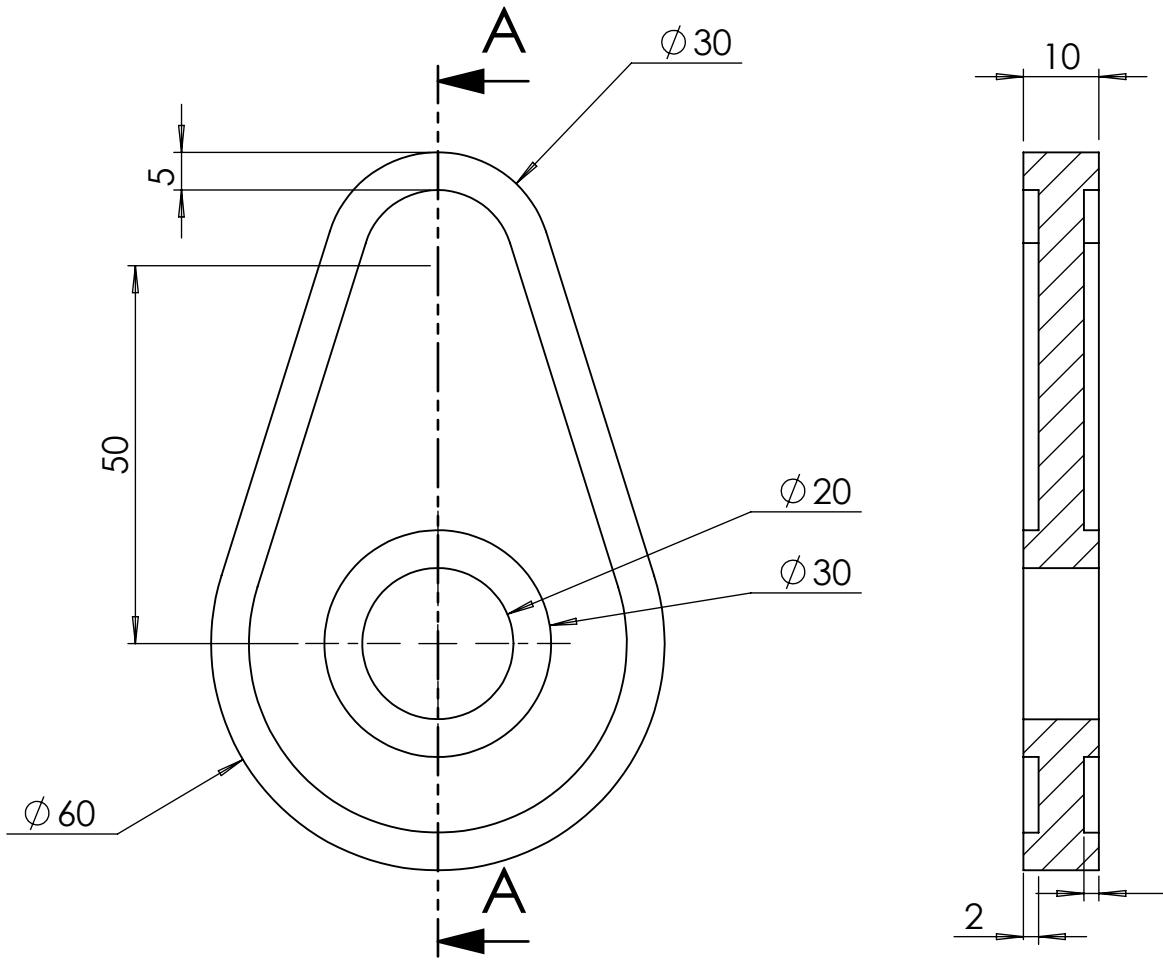
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		INTERPRET GEOMETRIC TOLERANCING PER:	DRAWN		
		MATERIAL	CHECKED		
		FINISH	ENG APPR.		
		APPLICATION	MFG APPR.		
		DO NOT SCALE DRAWING	Q.A.		
			COMMENTS:		
5	4	3	2	1	Assignment 9 TITLE: Base SIZE A DWG. NO. 1 REV A SCALE: 1:5 WEIGHT: SHEET 1 OF 1



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		INTERPRET GEOMETRIC TOLERANCING PER:	DRAWN	CHECKED	ENG APPR.	
		MATERIAL	ENG APPR.	MFG APPR.	Q.A.	
	USED ON	FINISH	MFG APPR.	Q.A.	COMMENTS:	
	APPLICATION	DO NOT SCALE DRAWING	Q.A.	COMMENTS:		
			THIRD ANGLE PROJECTION			
5	4	3	2	1		
SIZE A	DWG. NO. 2	REV A				
SCALE: 1:1	WEIGHT:	SHEET 1 OF 1				

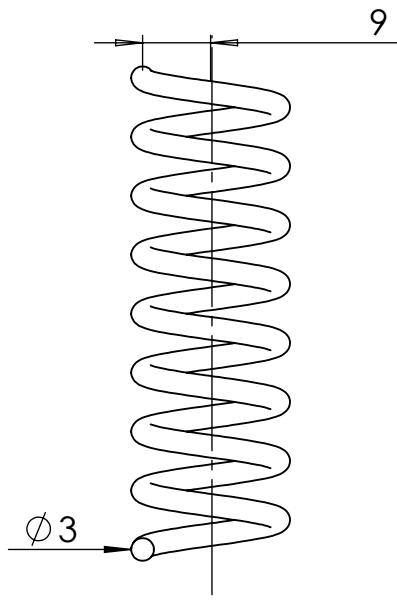
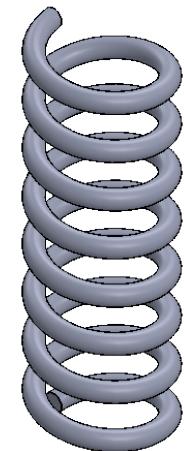


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		DRAWN				
		CHECKED				
		ENG APPR.				
		MFG APPR.				
		Q.A.				
		COMMENTS:				
R I	USED ON	MATERIAL				SIZE DWG. NO. A 3 A
		FINISH		THIRD ANGLE PROJECTION		
APPLICATION		DO NOT SCALE DRAWING				SCALE: 1:1 WEIGHT: SHEET 1 OF 1



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			DRAWN			
			CHECKED			
			ENG APPR.			
			MFG APPR.			
			Q.A.			
			COMMENTS:			
	USED ON	MATERIAL				SIZE DWG. NO. REV A 4 A
	APPLICATION	FINISH	 - 	THIRD ANGLE PROJECTION		
	DO NOT SCALE DRAWING		SCALE: 1:1	WEIGHT:	SHEET 1 OF 1	

Assignment 9

TITLE:

Non-Standard Spring

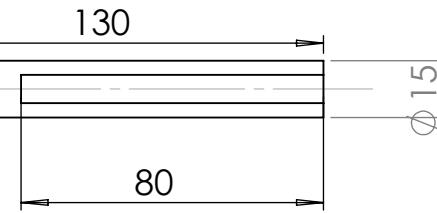
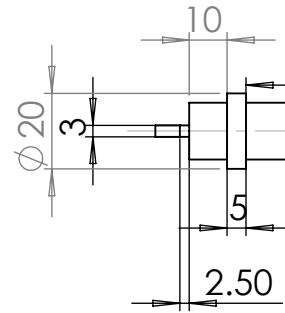
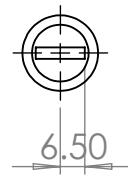
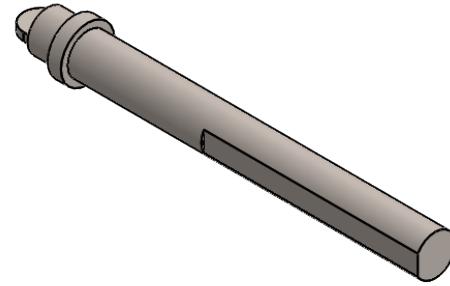
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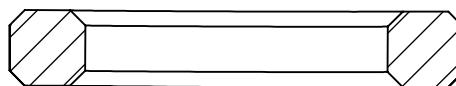
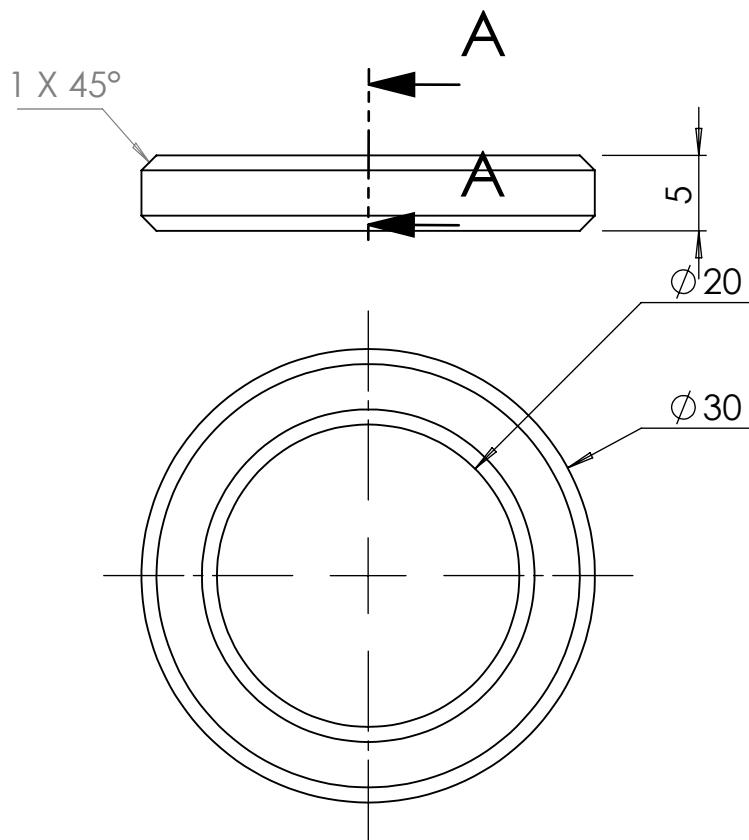
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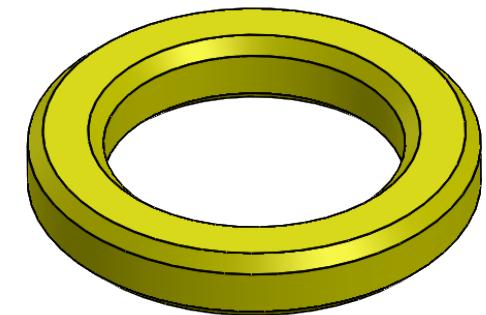


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		DRAWN CHECKED ENG APPR. MFG APPR.				
		INTERPRET GEOMETRIC TOLERANCING PER:	Q.A.			
		MATERIAL	COMMENTS:			
	USED ON	FINISH				
	APPLICATION	DO NOT SCALE DRAWING	THIRD ANGLE PROJECTION			
5	4	3	2	1		
SIZE A	DWG. NO. 5	REV A				
SCALE: 1:2	WEIGHT:	SHEET 1 OF 1				

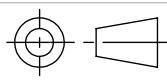


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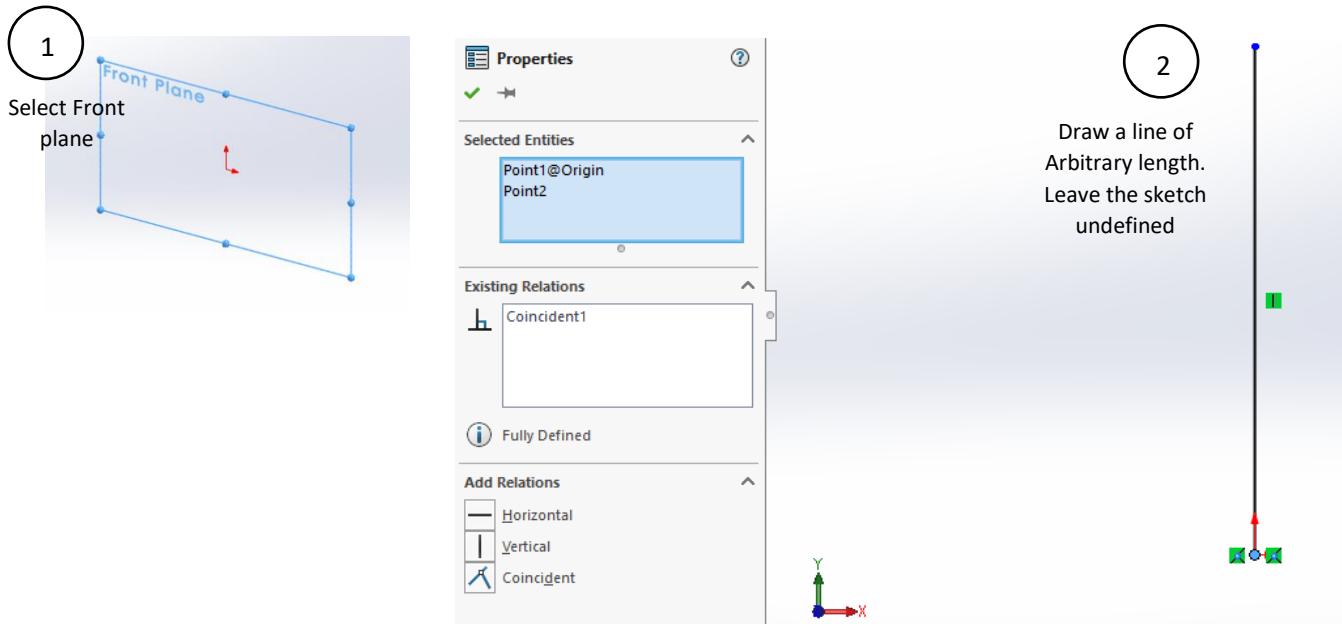
		UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MM TOLERANCES: FRACTIONAL N/A ANGULAR: MACH $\pm 0.1^\circ$ BEND $\pm 1^\circ$ ONE PLACE DECIMAL ± 0.1 TWO PLACE DECIMAL ± 0.01		NAME	DATE	Assignment 9 TITLE: Washer
		INTERPRET GEOMETRIC TOLERANCING PER:	DRAWN	CHECKED	ENG APPR.	
		MATERIAL	ENG APPR.	MFG APPR.	Q.A.	
	USED ON	FINISH	MFG APPR.	Q.A.	COMMENTS:	
	APPLICATION	DO NOT SCALE DRAWING	Q.A.	COMMENTS:		
5	4	3	2	1		
SIZE A	DWG. NO. 6	REV A				
SCALE: 2:1	WEIGHT:	SHEET 1 OF 1				



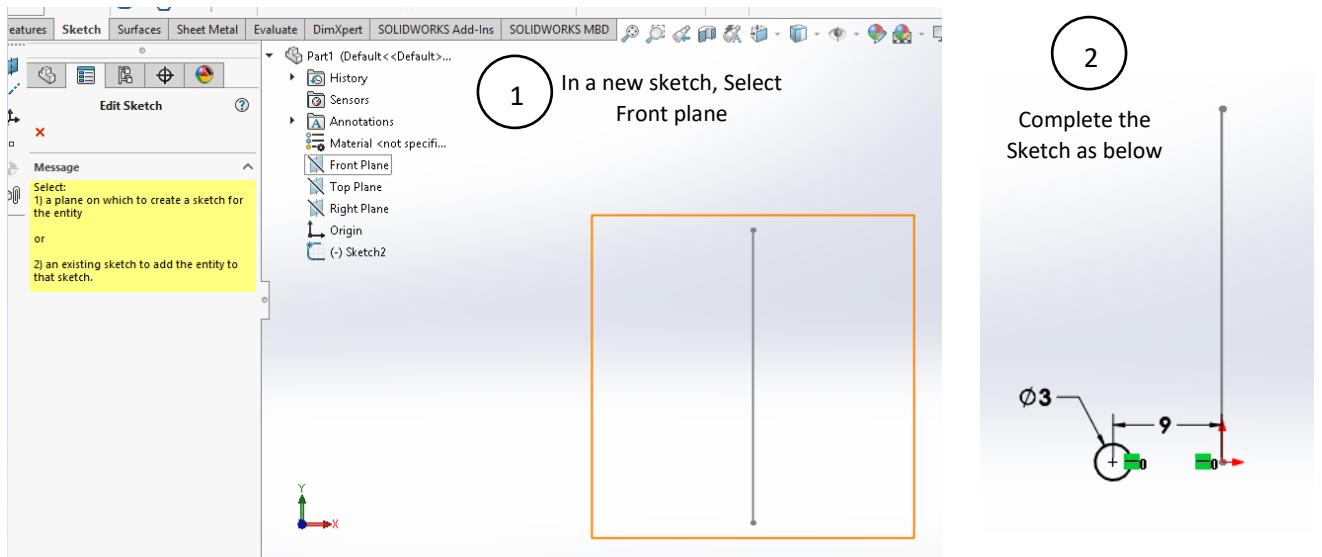
THIRD
ANGLE
PROJECTION

Guide to Model Non-Standard Spring

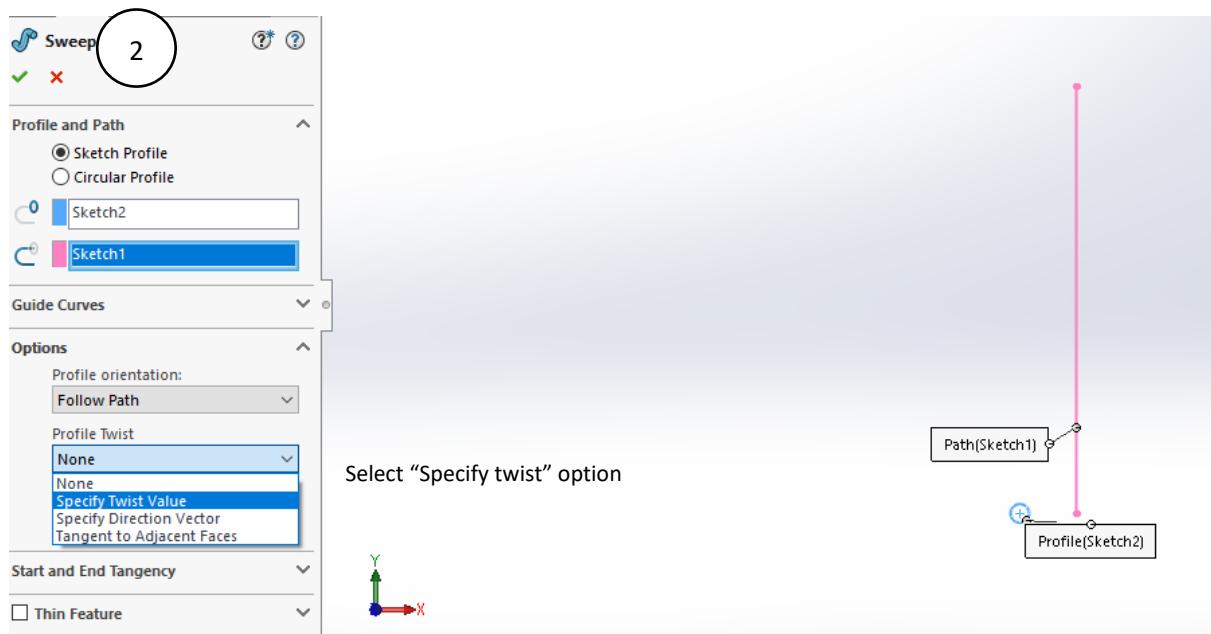
1. Open New part file and create a sketch [**Sketch 1**] as below. The sketch is not needed to be fully defined in this case as length of the line is not defined



2. Create another sketch [**Sketch 2**]



3. Select Swept boss/base feature



Select "Specify twist" option

