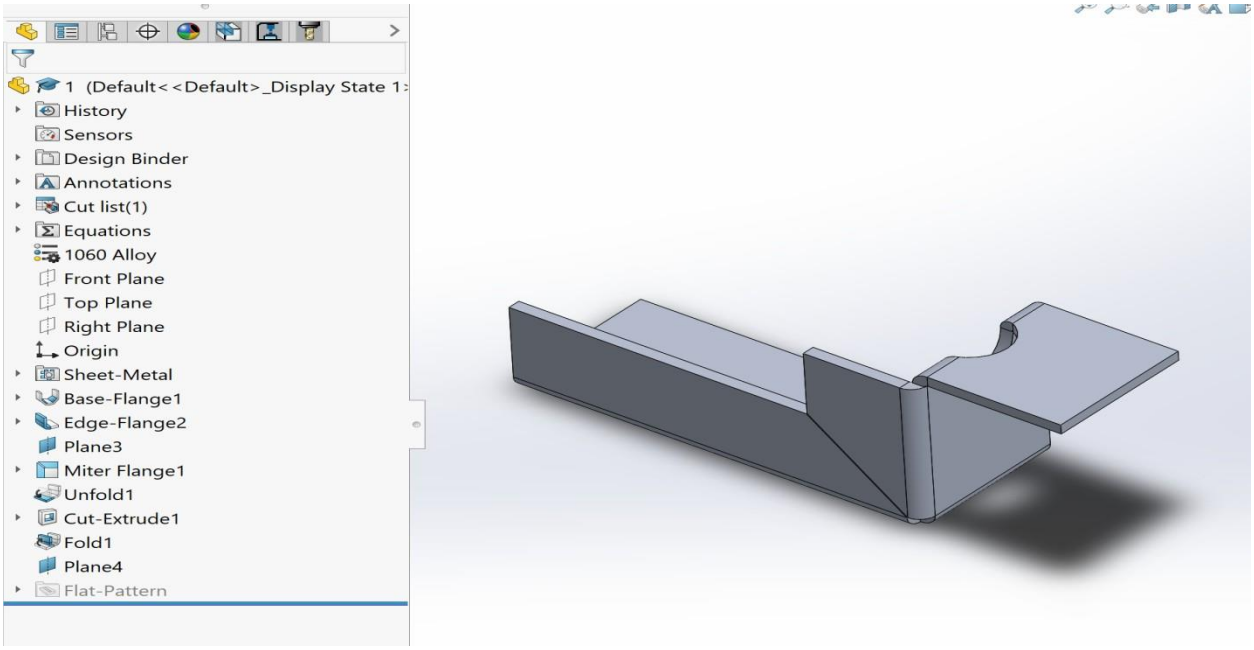
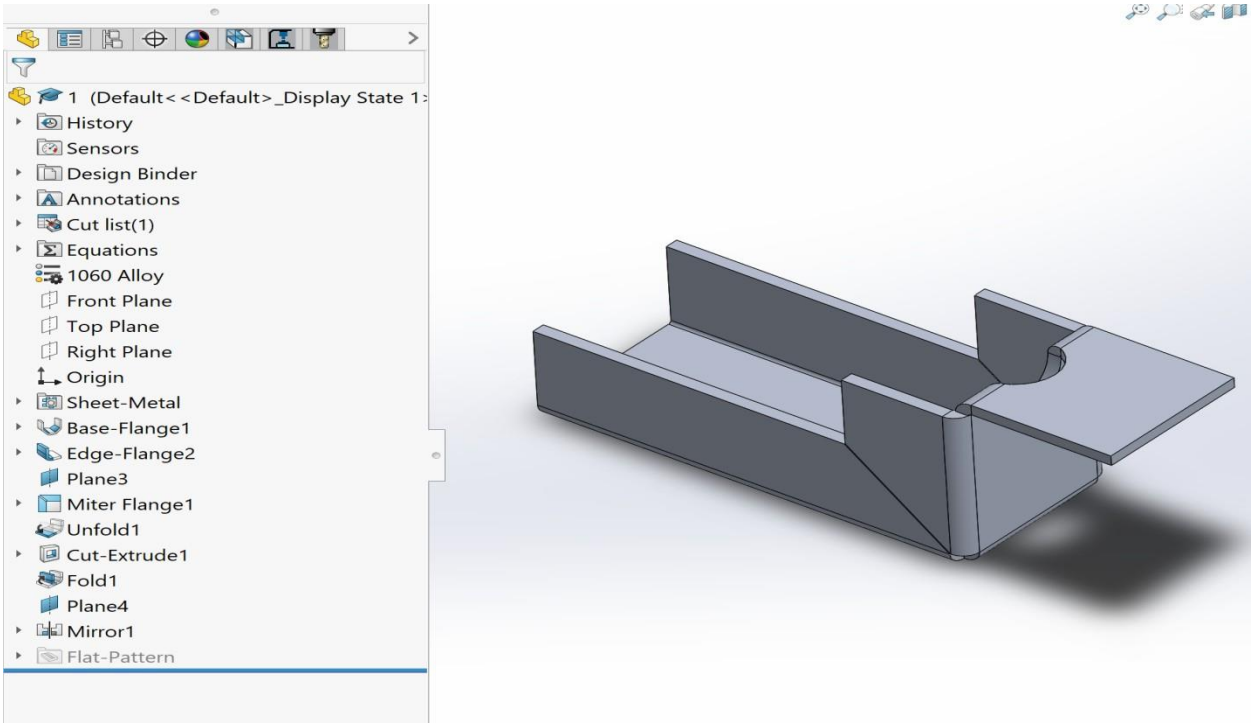
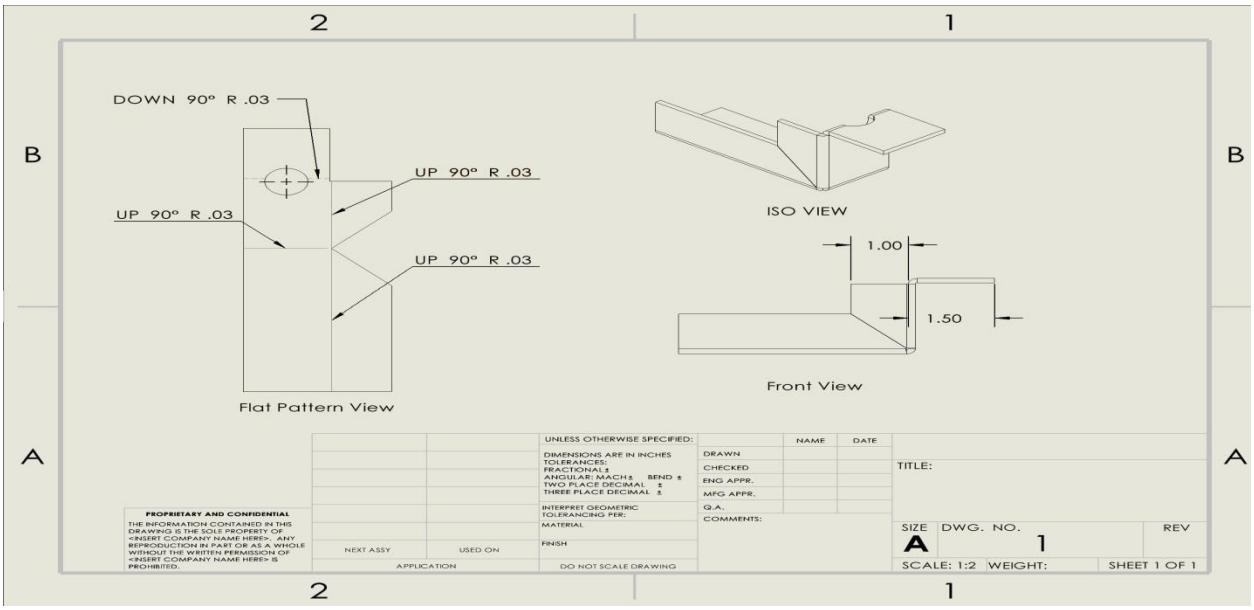
**PART DESIGN PROJECT**




Hands-on




2
1
B
A
DOWN 90° R .03
UP 90° R .03
UP 90° R .03
UP 90° R .03
Flat Pattern View
ISO VIEW
1.00
1.50
Front View
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL
FINISH
NEXT ASSY
USED ON
APPLICATION
DO NOT SCALE DRAWING
NAME
DATE
DRAWN
CHECKED
ENG APPR.
MFG APPR.
Q.A.
COMMENTS:
TITLE:
SIZE
A
DWG. NO.
1
REV
SCALE: 1:2
WEIGHT:
SHEET 1 OF 1
PROPRIETARY AND CONFIDENTIAL
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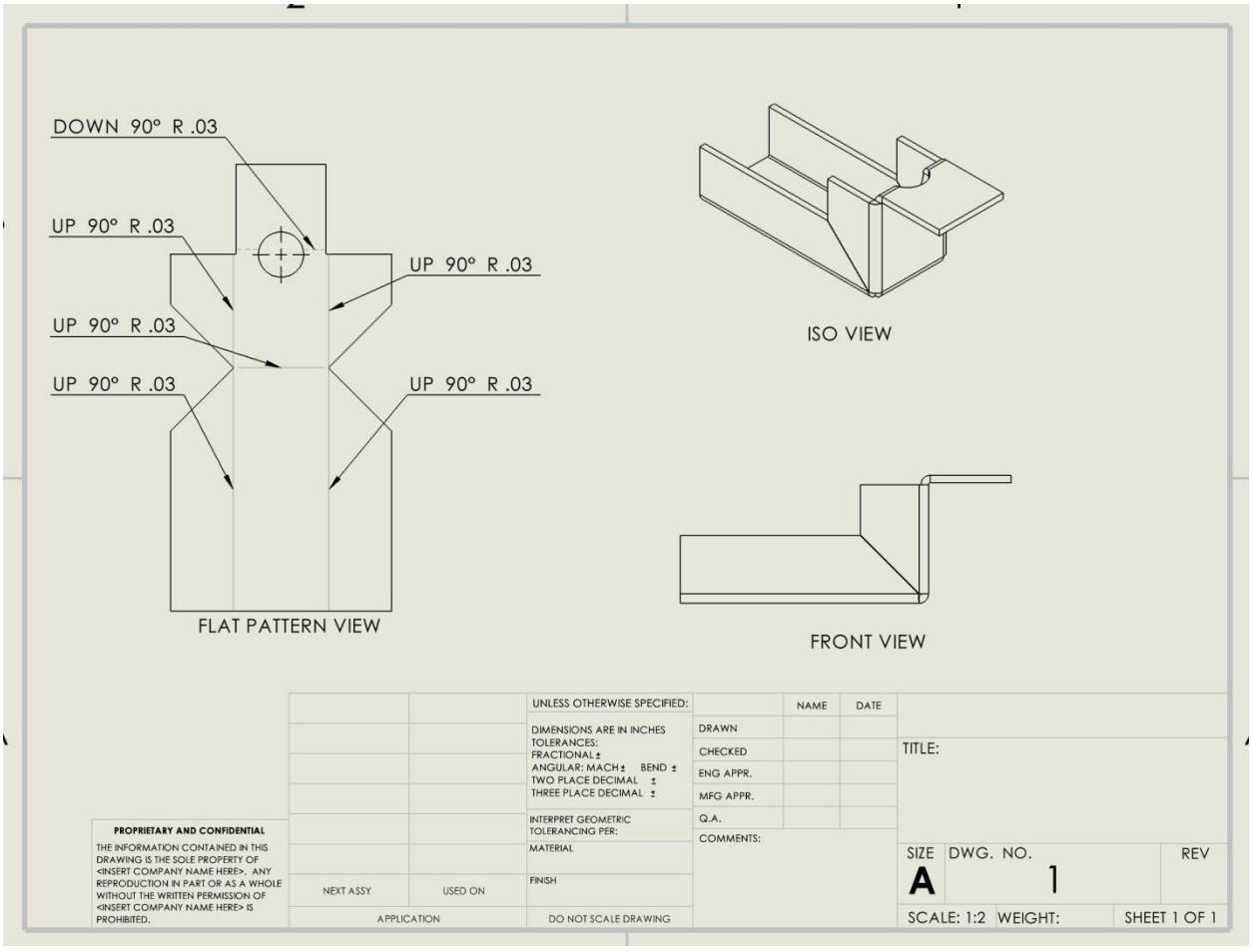
Hands-on


DOWN 90° R .03
UP 90° R .03
UP 90° R .03
UP 90° R .03
UP 90° R .03
FLAT PATTERN VIEW
ISO VIEW
FRONT VIEW
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL
FINISH
NEXT ASSY
USED ON
APPLICATION
DO NOT SCALE DRAWING
NAME
DATE
DRAWN
CHECKED
ENG APPR.
MFG APPR.
Q.A.
COMMENTS:
TITLE:
SIZE
A
DWG. NO.
1
REV
SCALE: 1:2
WEIGHT:
SHEET 1 OF 1
PROPRIETARY AND CONFIDENTIAL
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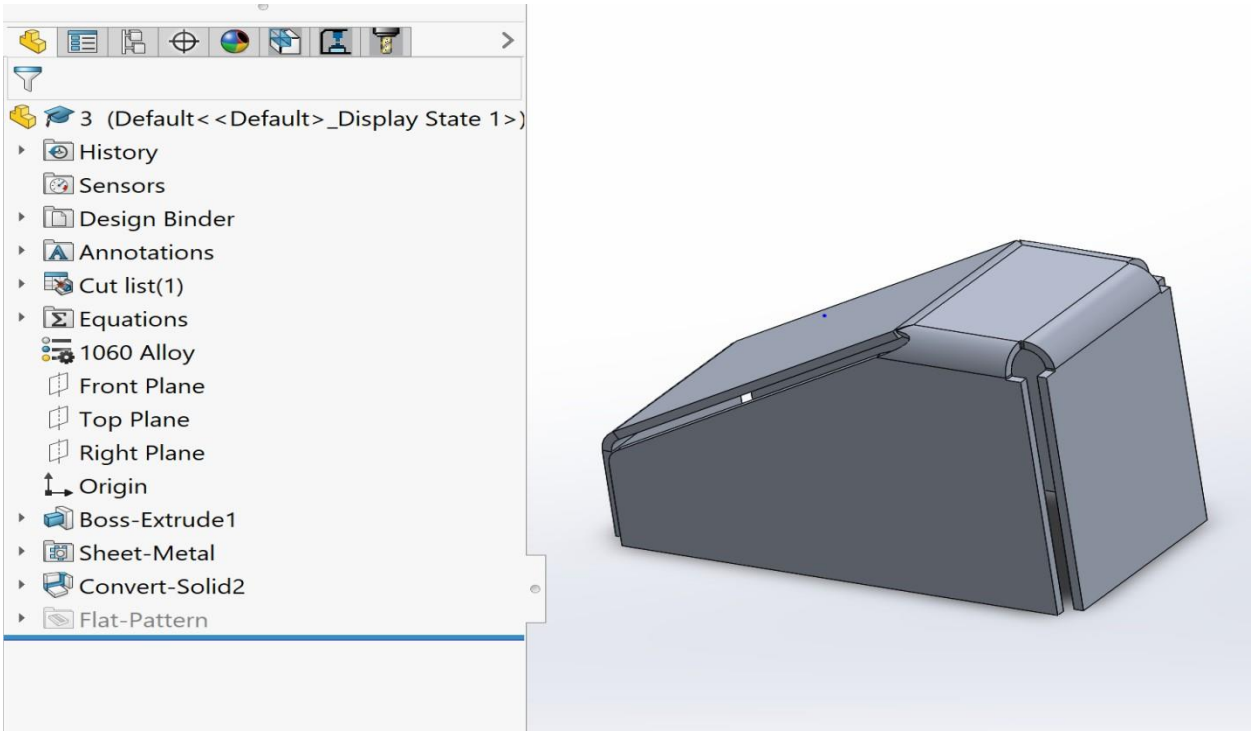
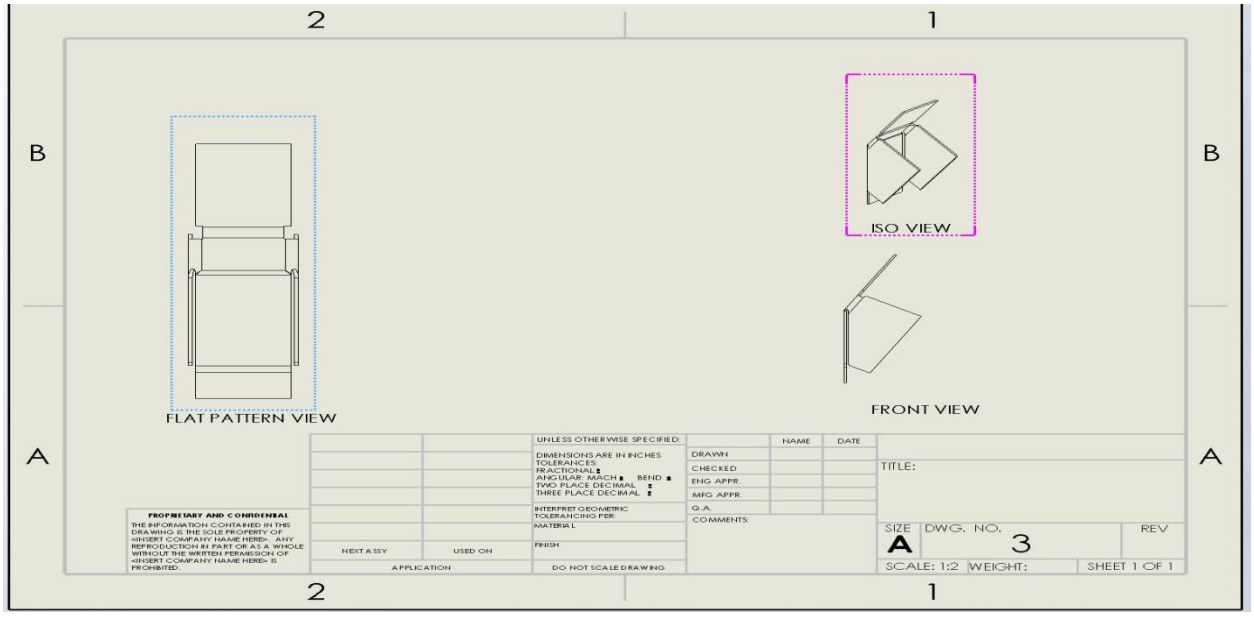
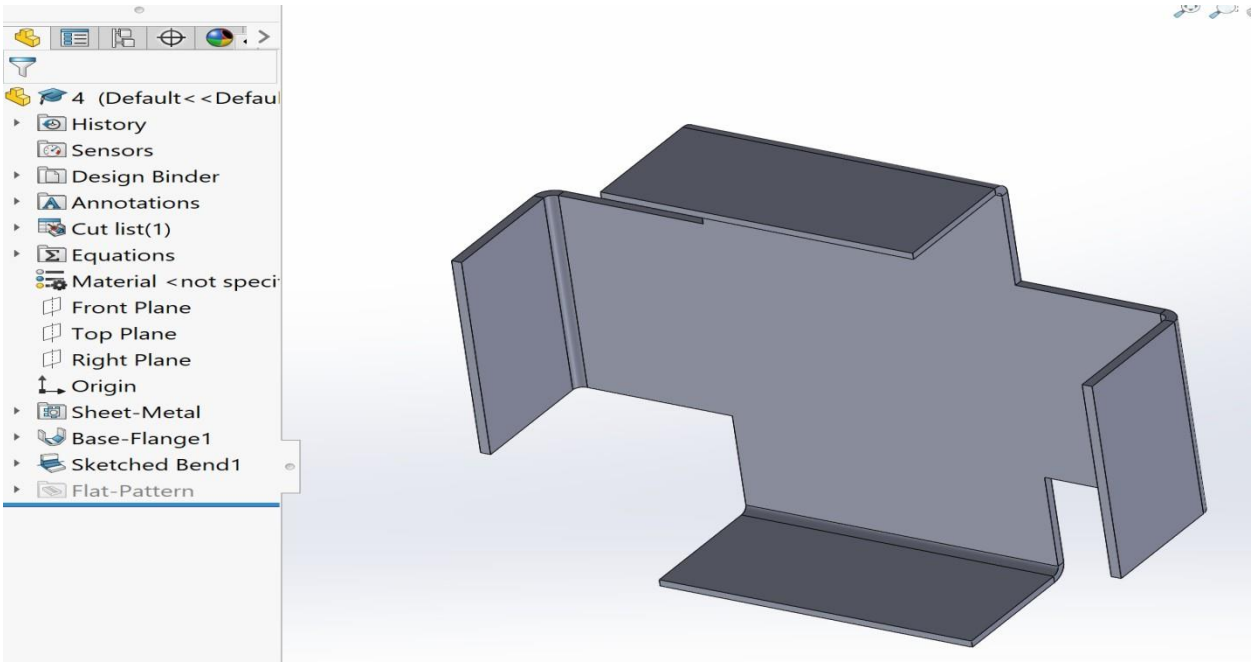
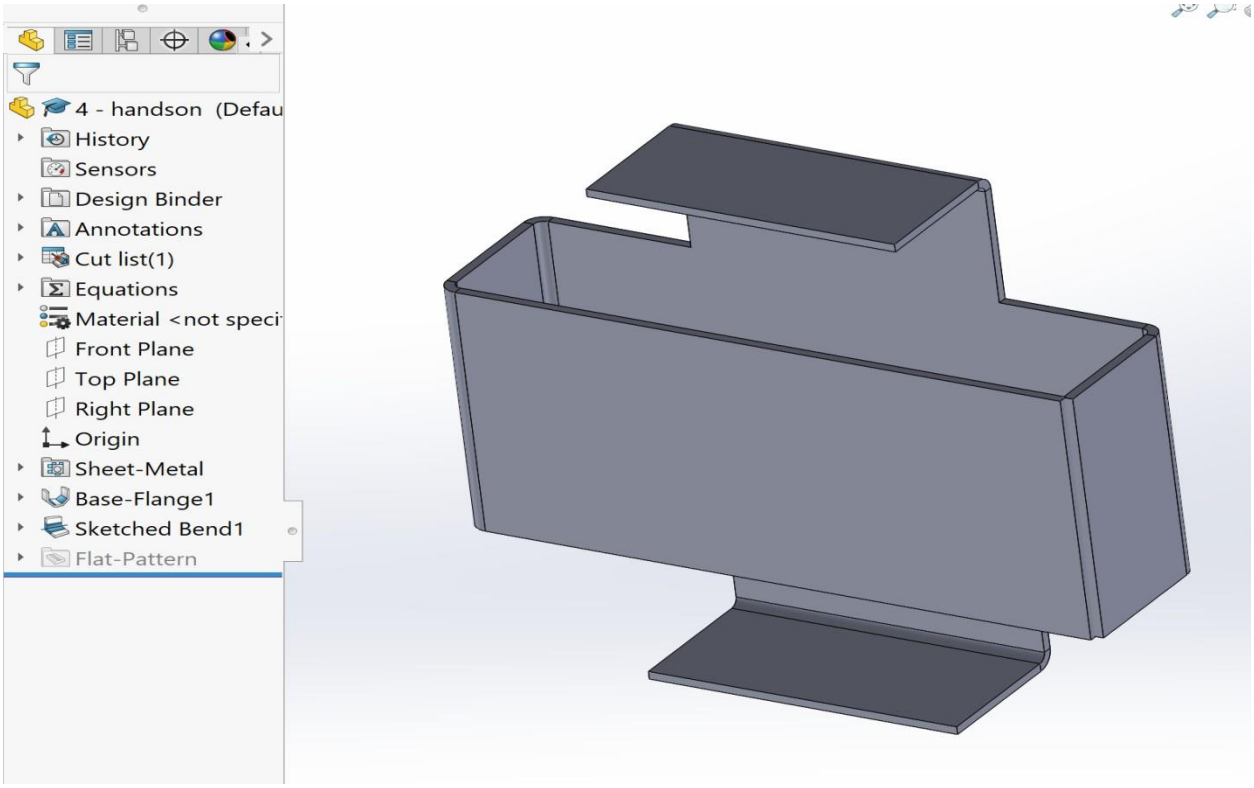

3 (Default<<Default>_Display State 1>)
History
Sensors
Design Binder
Annotations
Cut list(1)
Equations
1060 Alloy
Front Plane
Top Plane
Right Plane
Origin
Boss-Extrude1
Sheet-Metal
Convert-Solid2
Flat-Pattern

Hands-on

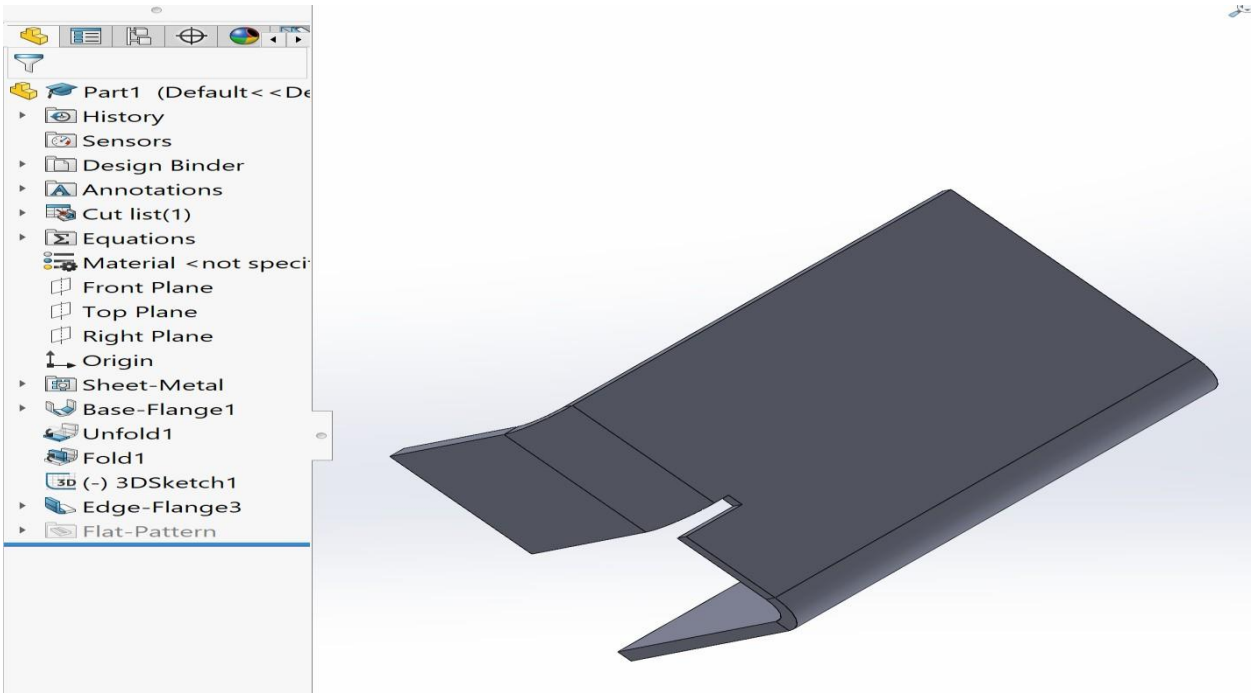

2
1
B
A
FLAT PATTERN VIEW
ISO VIEW
FRONT VIEW
UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL
ANGULAR: MACH BEND
TWO PLACE DECIMAL
THREE PLACE DECIMAL
INTERPRET GEOMETRIC TOLERANCING PER:
MATERIAL
FINISH
DO NOT SCALE DRAWING
NAME
DATE
DRAWN
CHECKED
ENG APPR.
MFG APPR.
Q.A.
COMMENTS:
TITLE:
SIZE
A
DWG. NO.
3
REV
SCALE: 1:2
WEIGHT:
SHEET 1 OF 1
PROPRIETARY AND CONFIDENTIAL
NEXT ASSY
USED ON
APPLICATION


4 (Default< <Defau
History
Sensors
Design Binder
Annotations
Cut list(1)
Equations
Material <not speci
Front Plane
Top Plane
Right Plane
Origin
Sheet-Metal
Base-Flange1
Sketched Bend1
Flat-Pattern

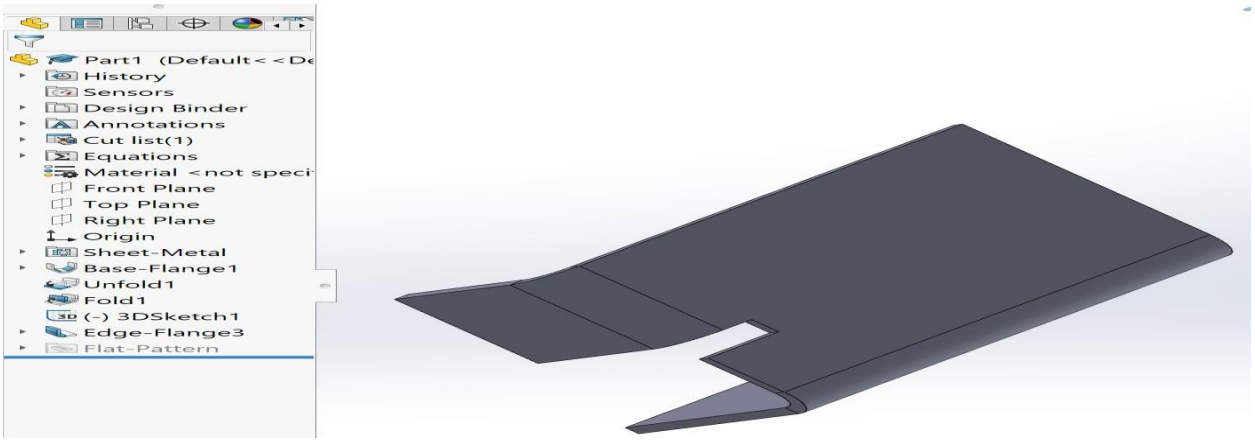
Hands-on


4 - handson (Defau
History
Sensors
Design Binder
Annotations
Cut list(1)
Equations
Material <not speci
Front Plane
Top Plane
Right Plane
Origin
Sheet-Metal
Base-Flange1
Sketched Bend1
Flat-Pattern

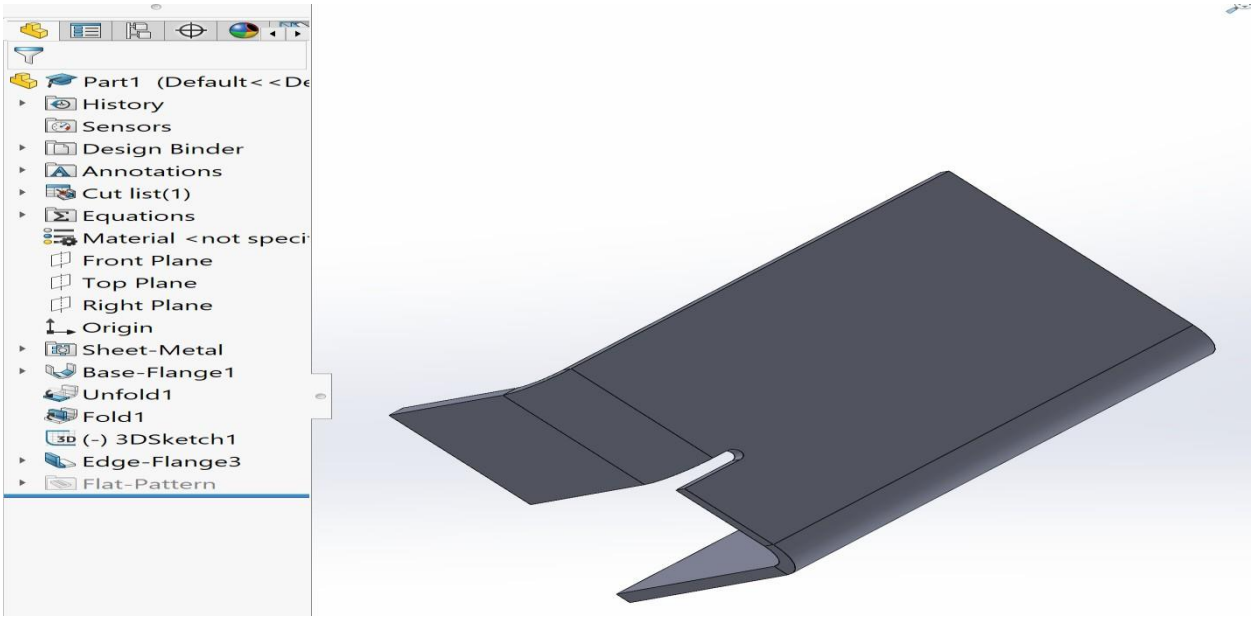
Rectangular – Auto relief = 1



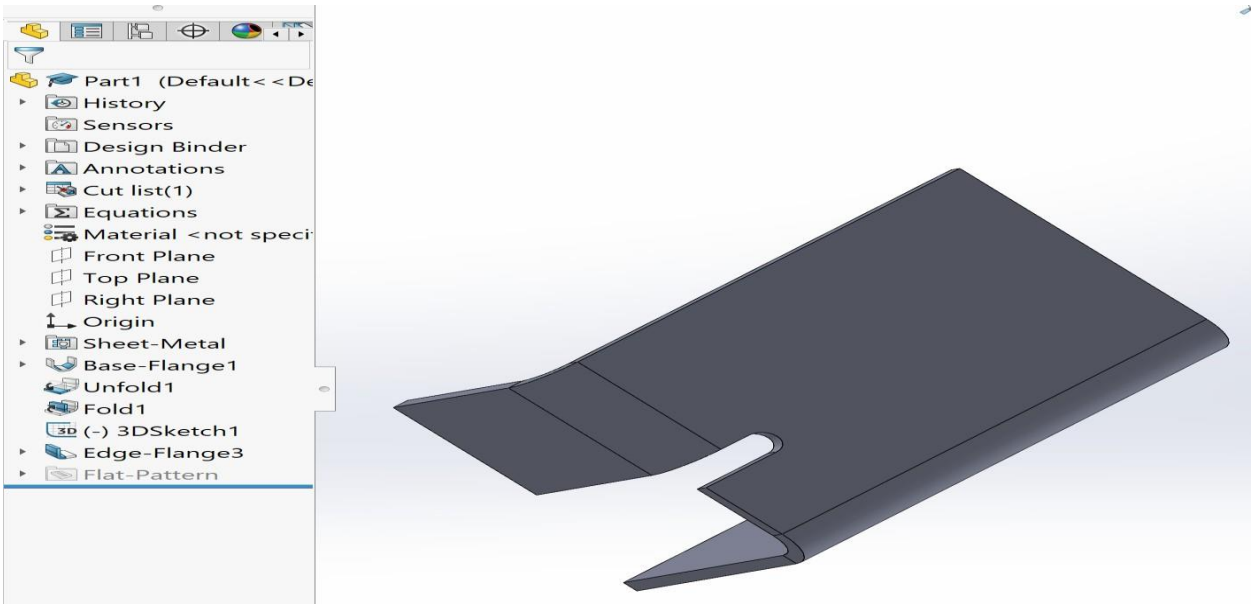

Auto relief = 2



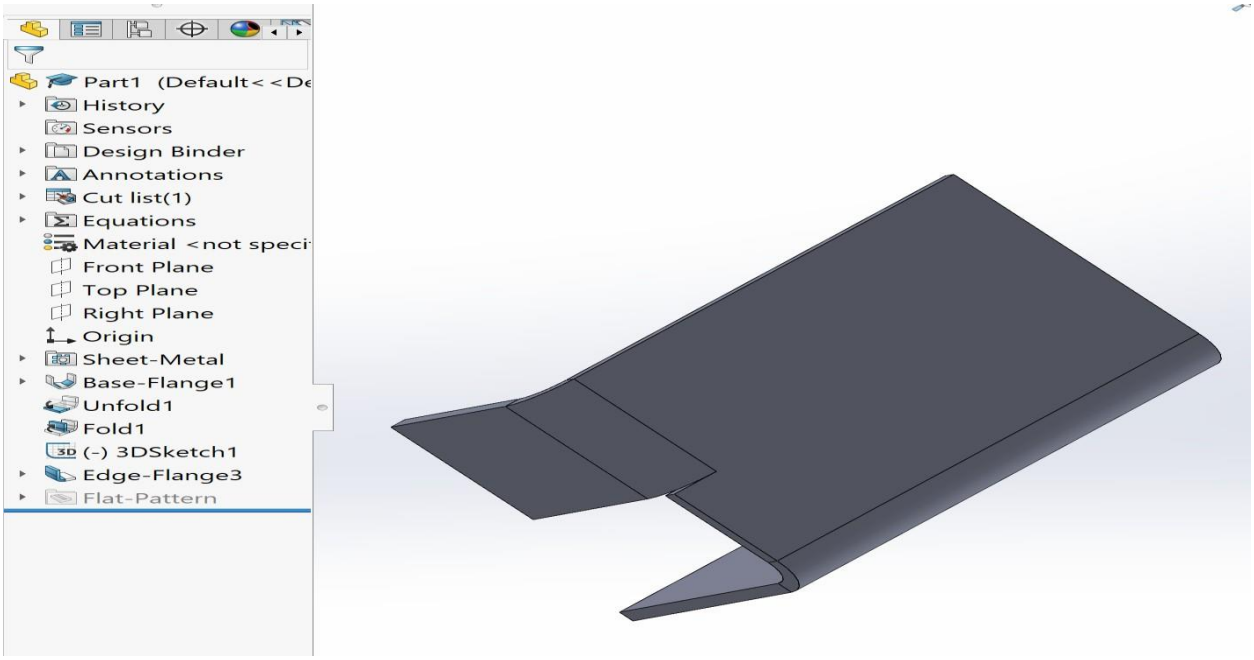
Obround – Auto relief = 1



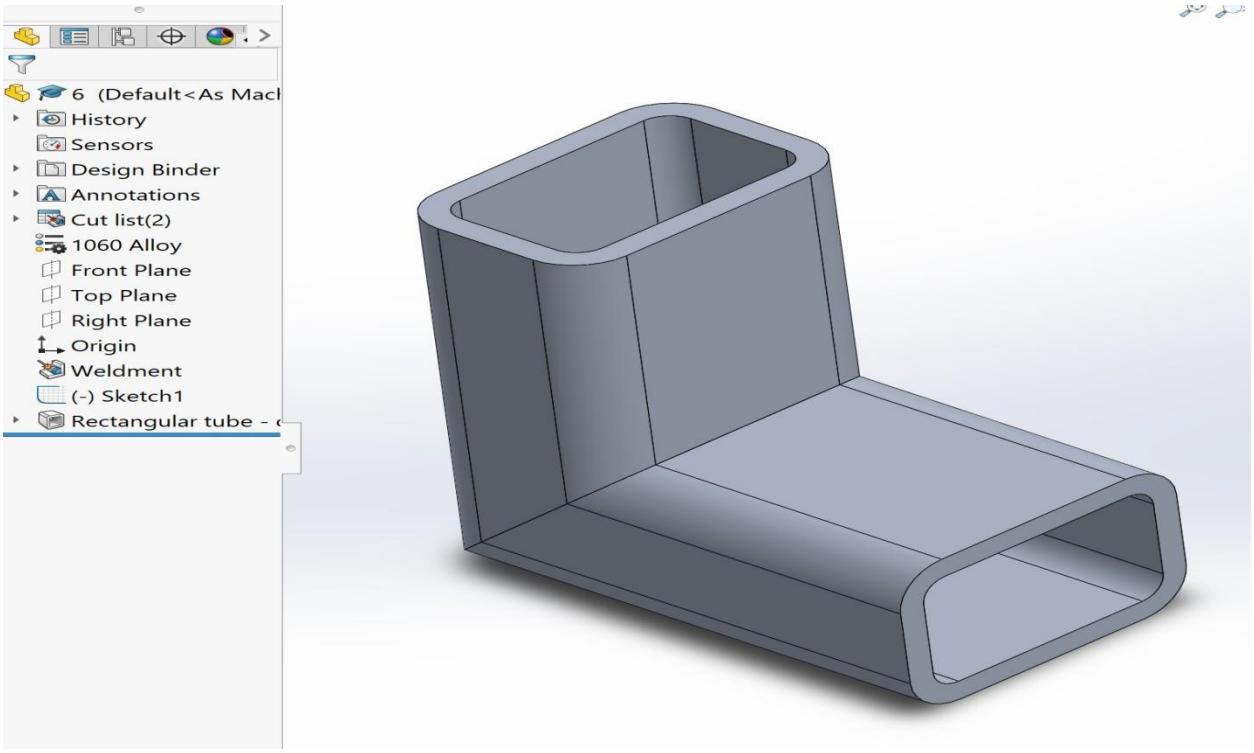

Auto relief = 2



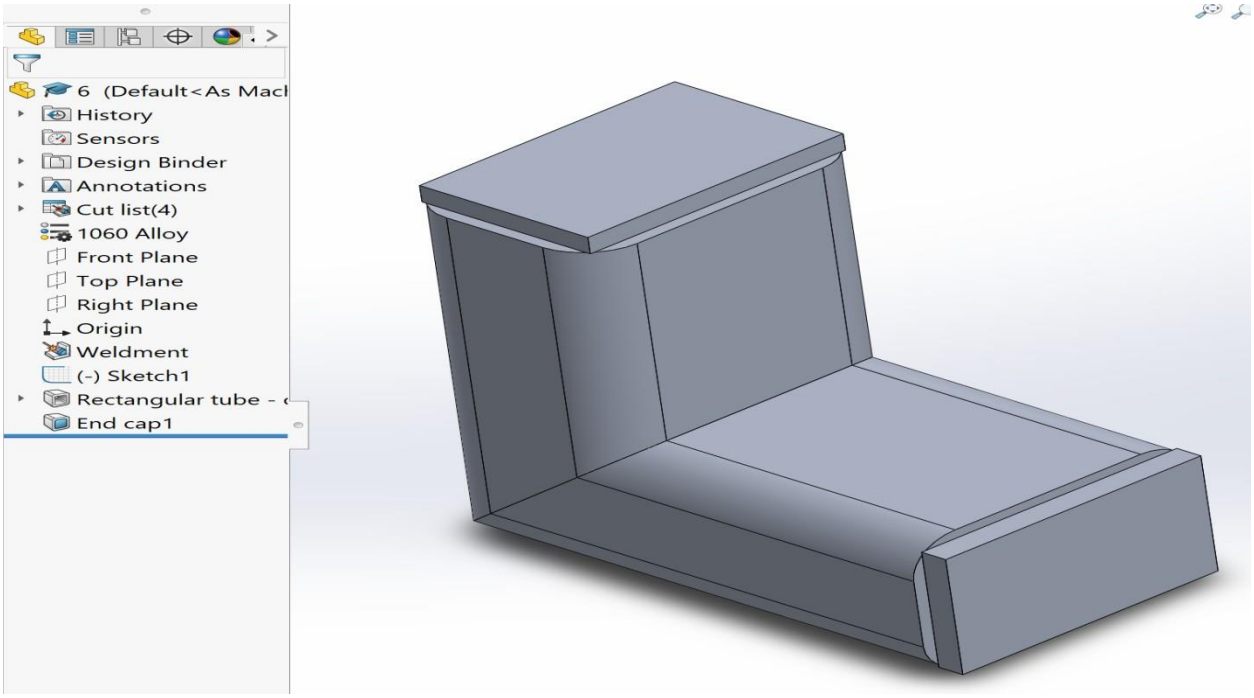
Tear – Auto relief parameter

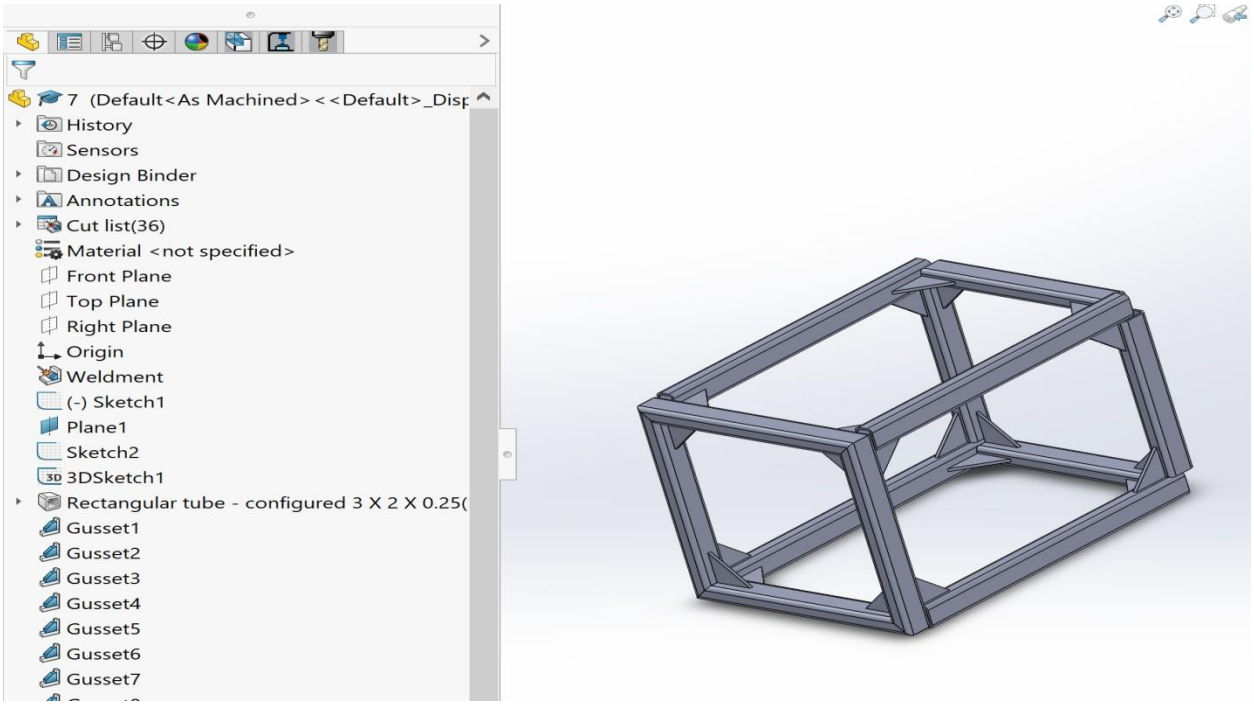



Before end cap



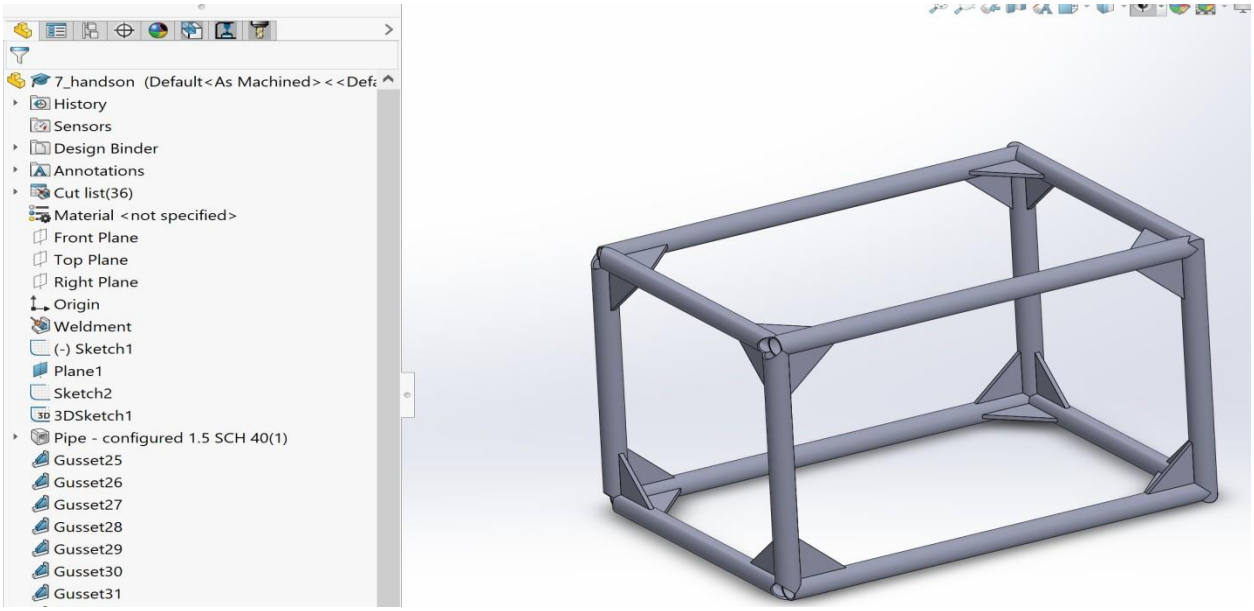
After End cap



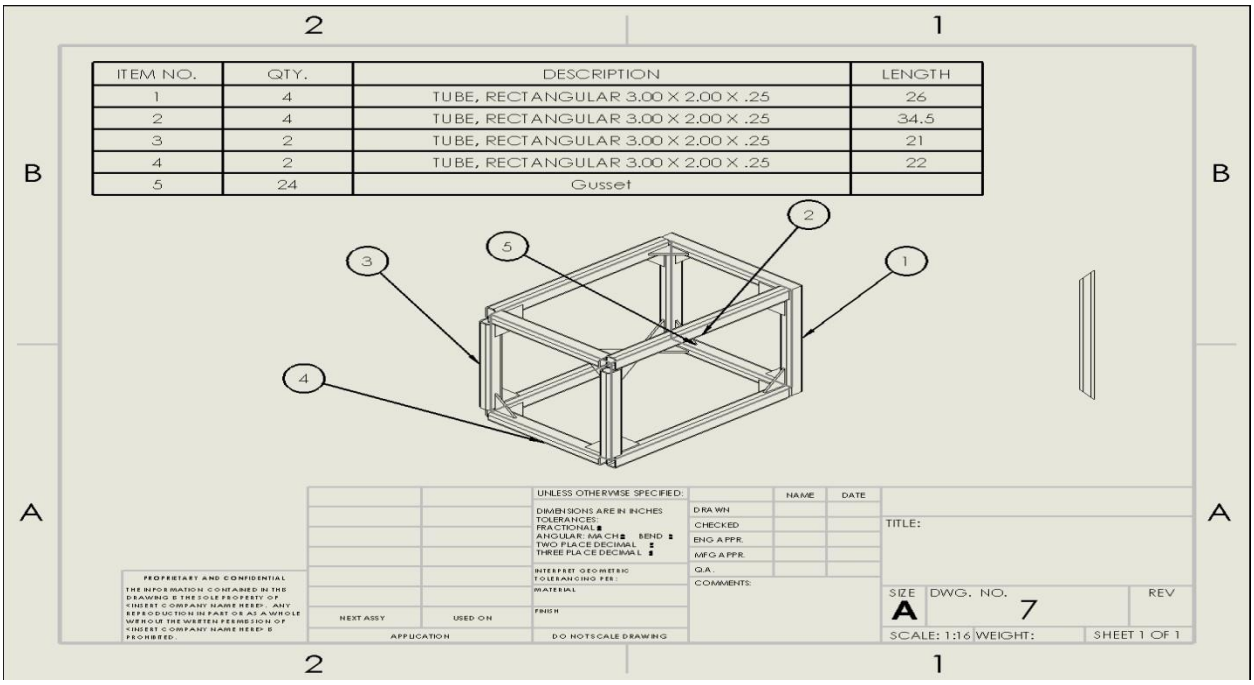



Hands-on

The reason for the failure is the position of the gussets changed and ended up failing in building the gussets with respect to each beam, so had to rebuild the reference to make the gussets in the circular tube.



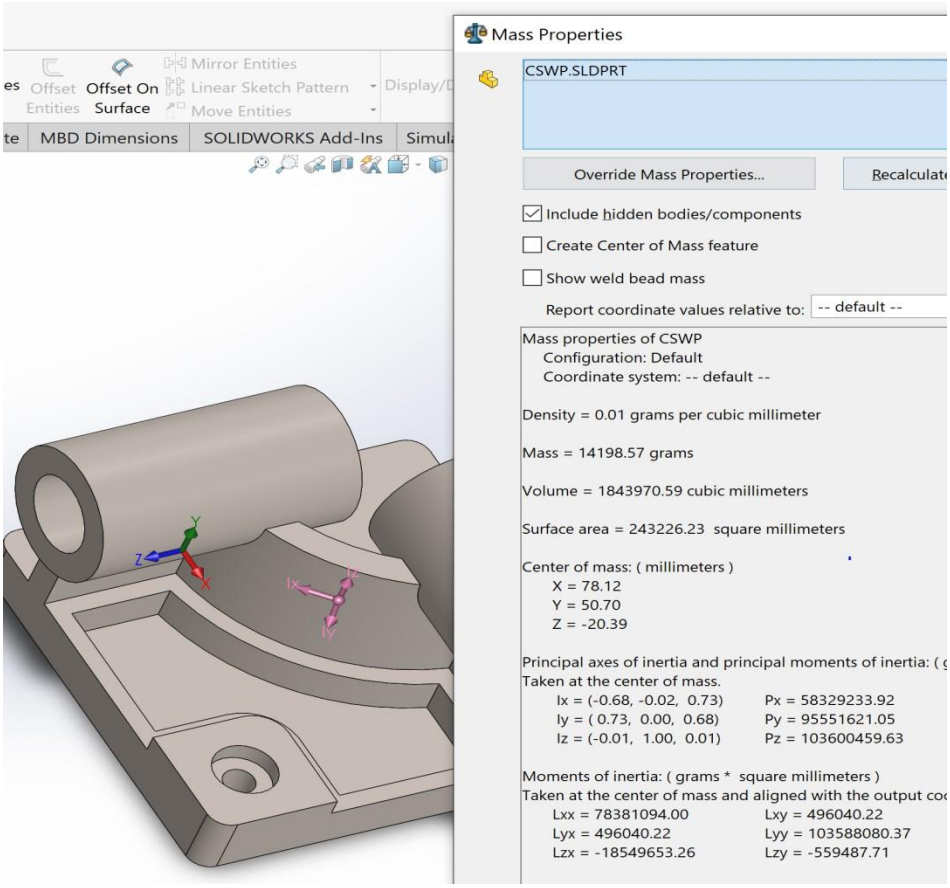

Tutorial 10.6 (no Hands-on). Submit screenshot shown in Figure 10.13.

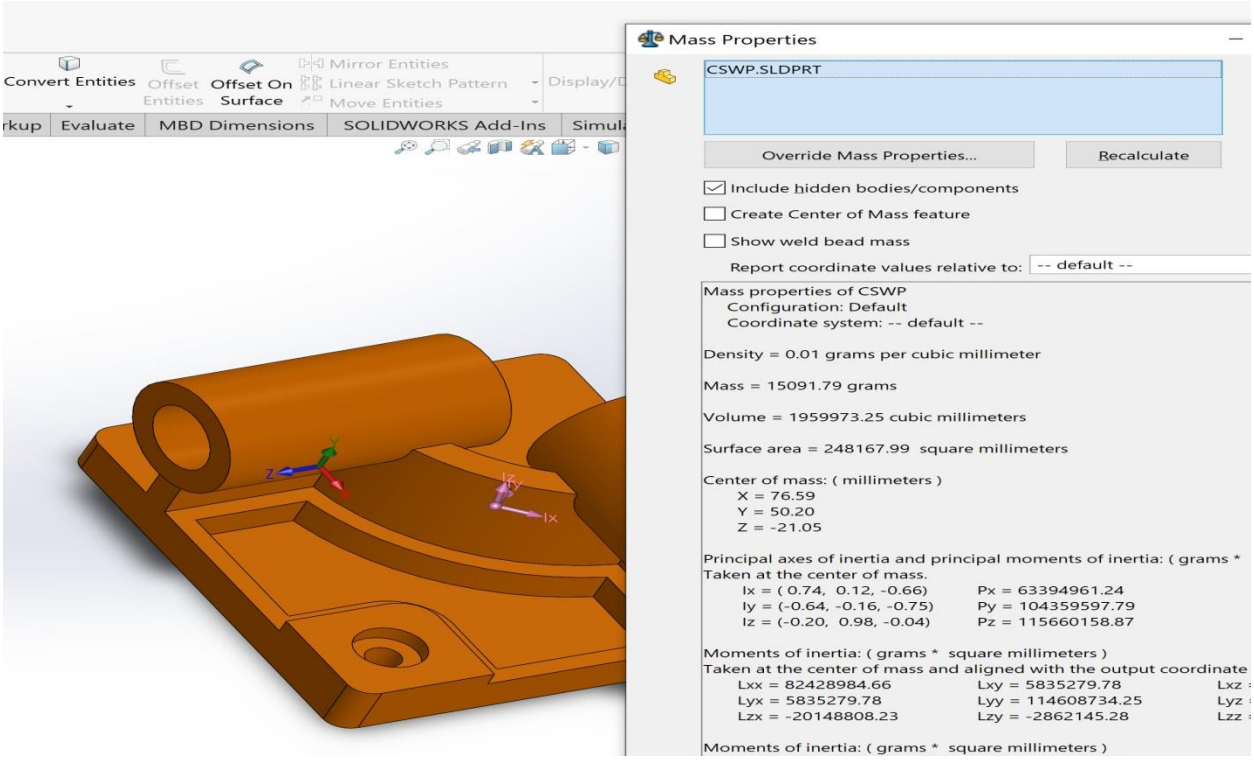


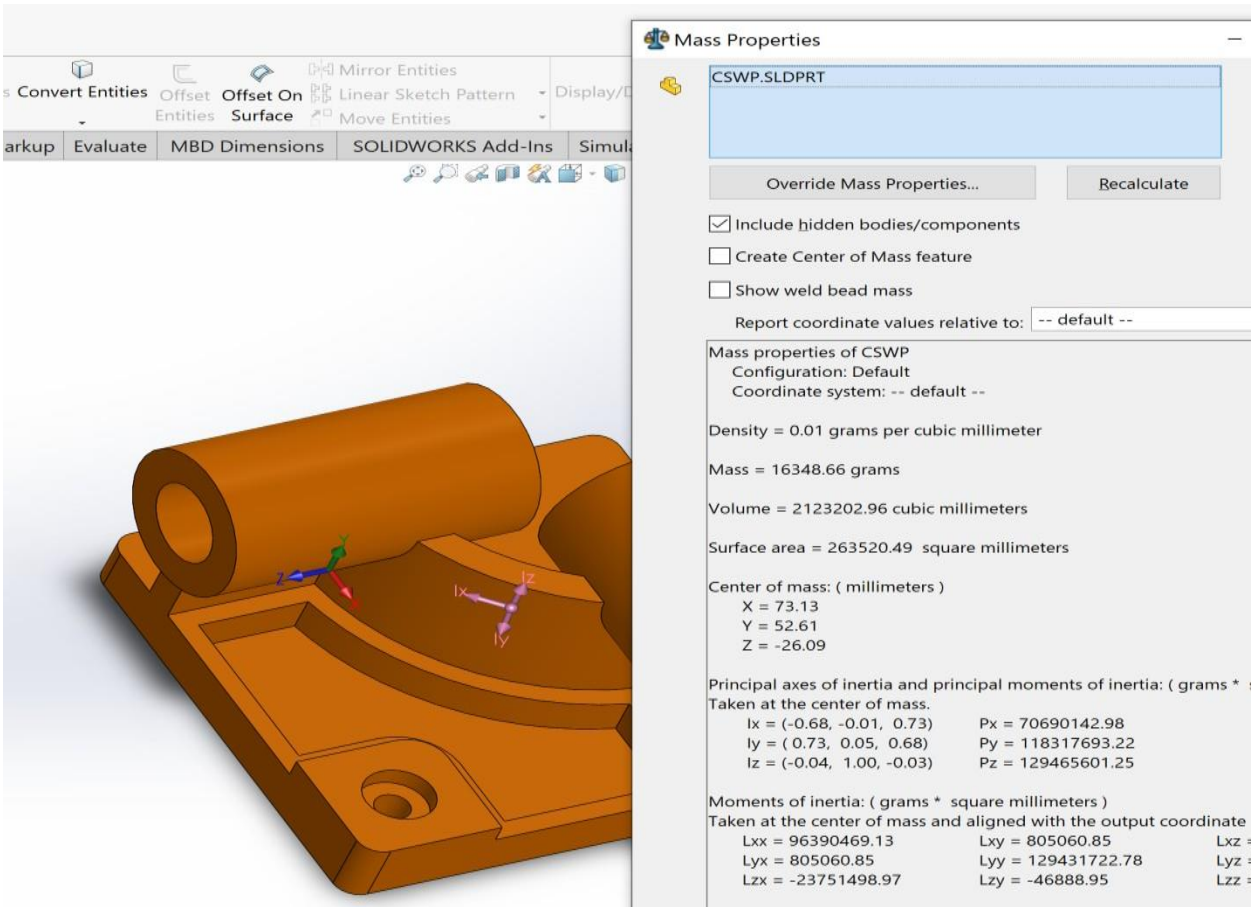
## Problem 7 in Chapter 10.

Calculate the flat length of the sheet metal shown in Figure 10.1 . Use the following parameters: material is aluminum, $L_1 = L_2 = 100$ mm, $T = 5$ mm, $R = 10$ mm, $A = 90°$, and the K-Factor for aluminum = 0.485.

The length is = 199.52 mm


Convert Entities
Offset Entities
Offset On Surface
Mirror Entities
Linear Sketch Pattern
Move Entities
Evaluate
MBD Dimensions
SOLIDWORKS Add-Ins
Mass Properties
CSWP.SLDPRT
Override Mass Properties...
Recalculate
Include hidden bodies/components
Create Center of Mass feature
Show weld bead mass
Report coordinate values relative to: -- default --
Mass properties of CSWP
Configuration: Default
Coordinate system: -- default --
Density = 0.01 grams per cubic millimeter
Mass = 15091.79 grams
Volume = 1959973.25 cubic millimeters
Surface area = 248167.99 square millimeters
Center of mass: ( millimeters )
X = 76.59
Y = 50.20
Z = -21.05
Principal axes of inertia and principal moments of inertia: ( grams *
Taken at the center of mass.
Ix = ( 0.74, 0.12, -0.66) Px = 63394961.24
Iy = (-0.64, -0.16, -0.75) Py = 104359597.79
Iz = (-0.20, 0.98, -0.04) Pz = 115660158.87
Moments of inertia: ( grams * square millimeters )
Taken at the center of mass and aligned with the output coordinate
Lxx = 82428984.66 Lxy = 5835279.78
Lyx = 5835279.78 Lyy = 114608734.25
Lzx = -20148808.23 Lzy = -2862145.28
Moments of inertia: ( grams * square millimeters )


Convert Entities
Offset Entities
Offset On Surface
Mirror Entities
Linear Sketch Pattern
Move Entities
Evaluate
MBD Dimensions
SOLIDWORKS Add-Ins
Mass Properties
CSWP.SLDPRT
Override Mass Properties...
Recalculate
Include hidden bodies/components
Create Center of Mass feature
Show weld bead mass
Report coordinate values relative to: -- default --
Mass properties of CSWP
Configuration: Default
Coordinate system: -- default --
Density = 0.01 grams per cubic millimeter
Mass = 16348.66 grams
Volume = 2123202.96 cubic millimeters
Surface area = 263520.49 square millimeters
Center of mass: ( millimeters )
X = 73.13
Y = 52.61
Z = -26.09
Principal axes of inertia and principal moments of inertia: ( grams *
Taken at the center of mass.
Ix = (-0.68, -0.01, 0.73) Px = 70690142.98
Iy = ( 0.73, 0.05, 0.68) Py = 118317693.22
Iz = (-0.04, 1.00, -0.03) Pz = 129465601.25
Moments of inertia: ( grams * square millimeters )
Taken at the center of mass and aligned with the output coordinate
Lxx = 96390469.13 Lxy = 805060.85
Lyx = 805060.85 Lyy = 129431722.78
Lzx = -23751498.97 Lzy = -46888.95