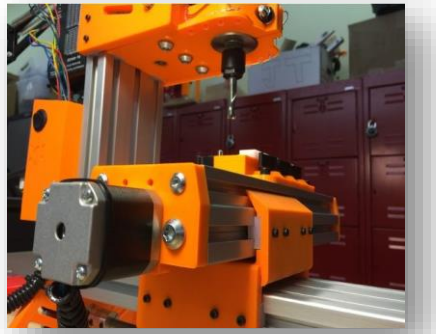
VIDYA PRATISHTHAN'S KAMALNAYAN BAJAJ INSTITUTE OF ENGINEERING AND TECHNOLOGY ,BARAMATI , DIST-PUNE

3D Printed Manual Shearing Machine

An Internship Presentation

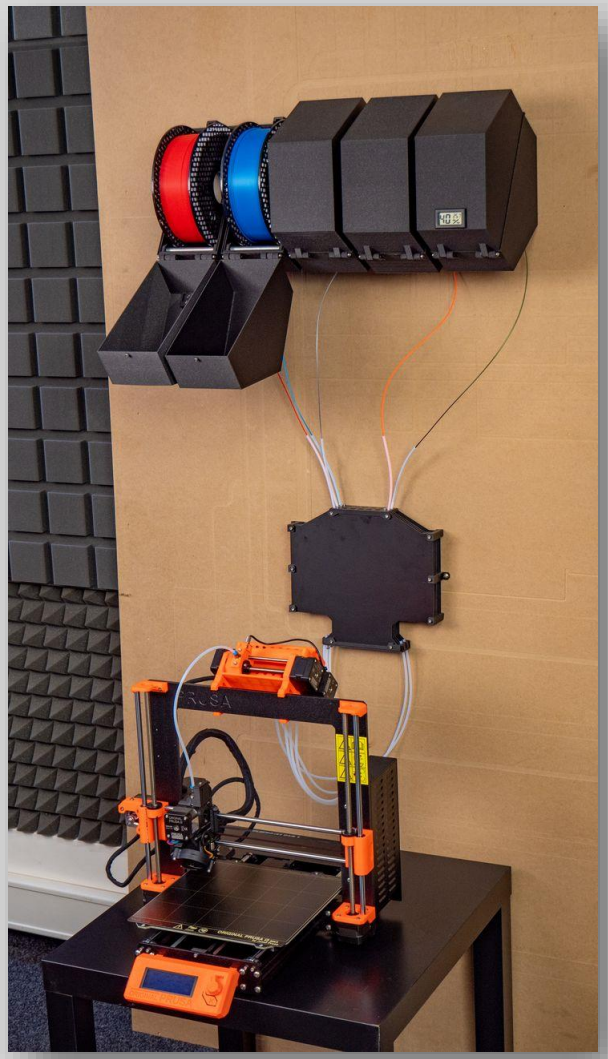


Group member

SR NO	NAME	ROLL NO	GUIDE	CO-GUIDE
1)	YASH PRAFULLA DHOTRE	2334010	DR. M.S LANDE	DR. V.C TODKARI
2)	SAGAR SOPAN LODADE	2334026	MR. S.V SHELGE	DR. S.M BHOSLE
3)	GIRISH ASHOK PATIL	2334027	MR. H.P BORATE	MR. V.B BHAGWAT
4)	UTKARSH SANTOSH JADHAV	2334028	MR. H.P BORATE	MR. V.B BHAGWAT

3D Printing

- **Definition**: 3D printing is a manufacturing process that builds objects layer by layer from digital designs.
- **Process Explanation**: In 3D printing, a digital model is sliced into thin layers. The printer then deposits material layer by layer according to building up the object



Why Use 3D Printing for Manual Shearing Machines?

1. Flexibility:
2. Waste Reduction:
3. Cost-Effective:
4. Accessibility:
5. Experimentation:

3D Printed vs Traditional Shearing Machine

Aspect	3D Printed Shearing Machine	Traditional Shearing Machine
Speed & Flexibility	✓ Rapid prototyping	-
Customization	✓ Tailored to needs	-
Complexity	✓ Handles intricate designs	-
Waste Reduction	✓ Minimized material waste	-
Cost	✓ Affordable for small-scale	-
Innovation	✓ Encourages new ideas	-
Durability & Precision	-	✓ Built for long-term use
Volume Production	-	✓ Suitable for large-scale
Standardization	-	✓ Meets industry standards
Familiarity	-	✓ Widely used and understood

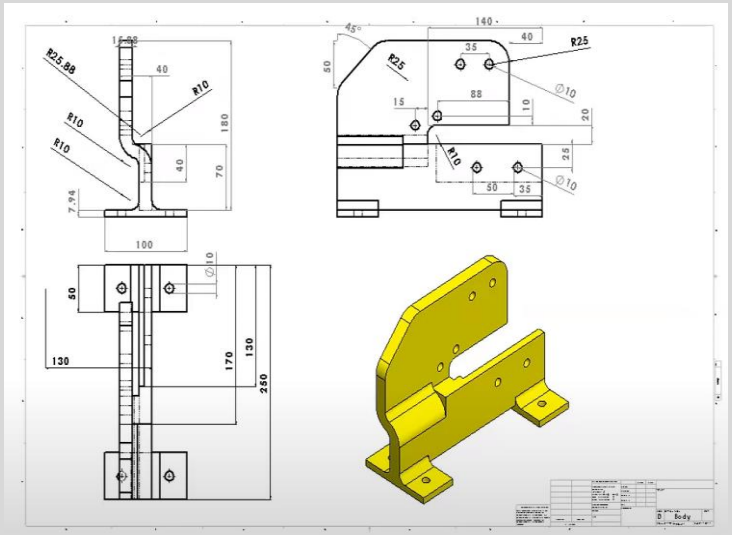
3D Printing of Manual Shearing Machine

- Description: For industrial applications.
- Process: Utilized modeling and detailing.
- 3D Printing: Using a 3D printer.
- Benefits: Reduced time and cost.
- Conclusion: Efficient production.

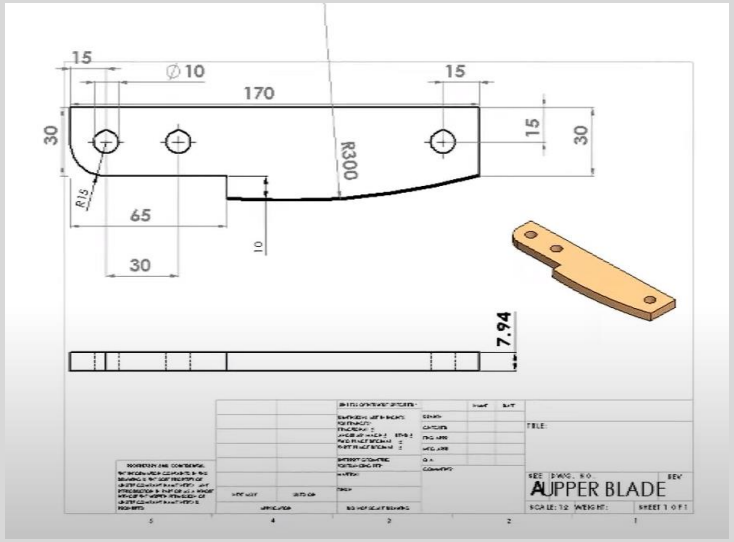
Steps for printing Manual Shearing Machine

1 : Conceptualization:-

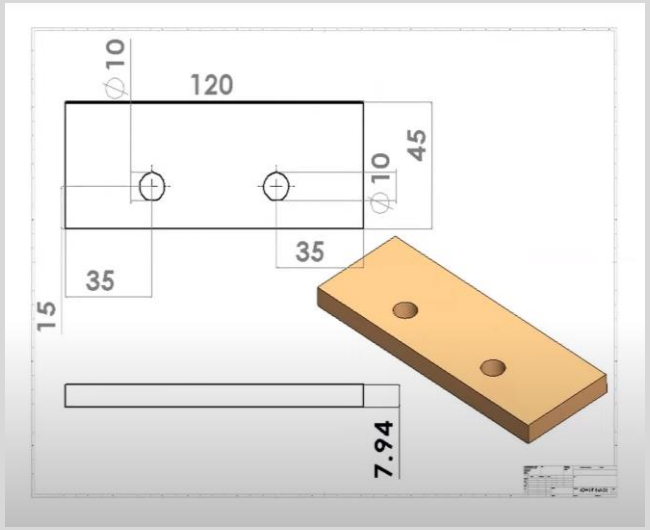
- Define requirements and sketch basic layout.
- Identify key components like base, blade, lever.



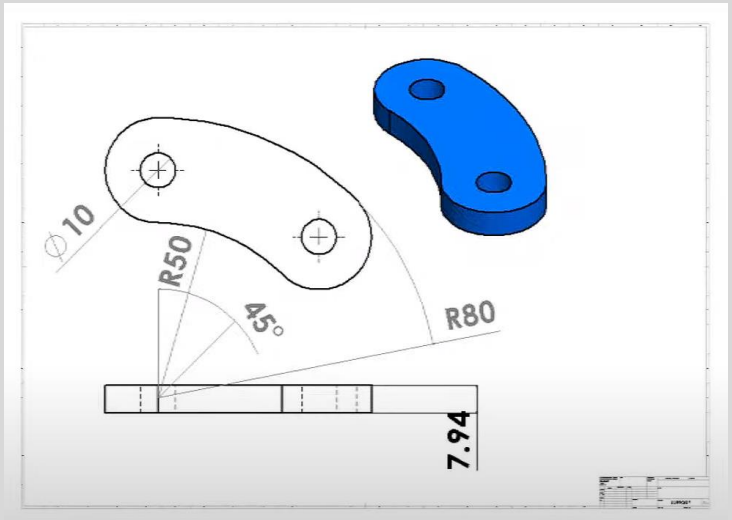
BODY



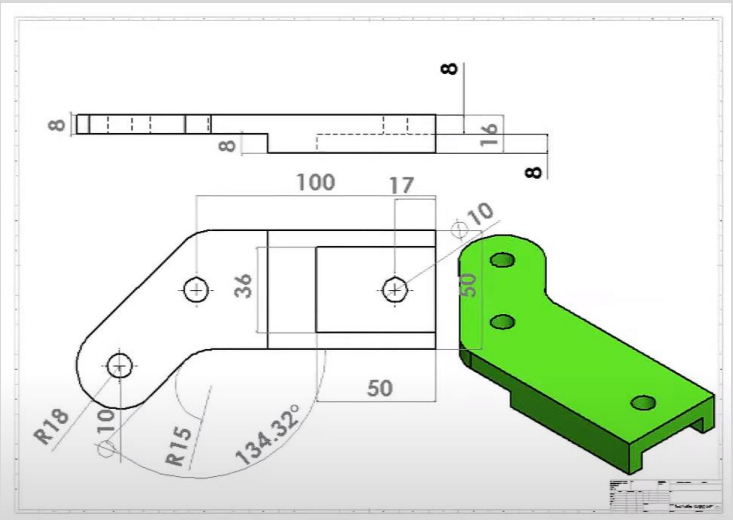
UPPER BLADE



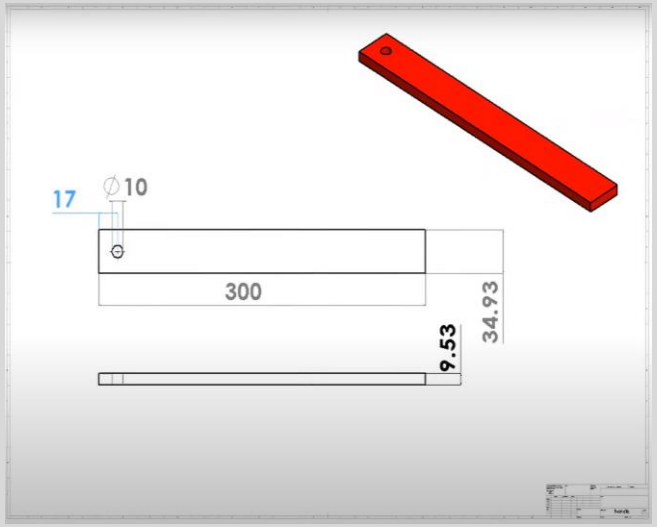
LOWER BLADE



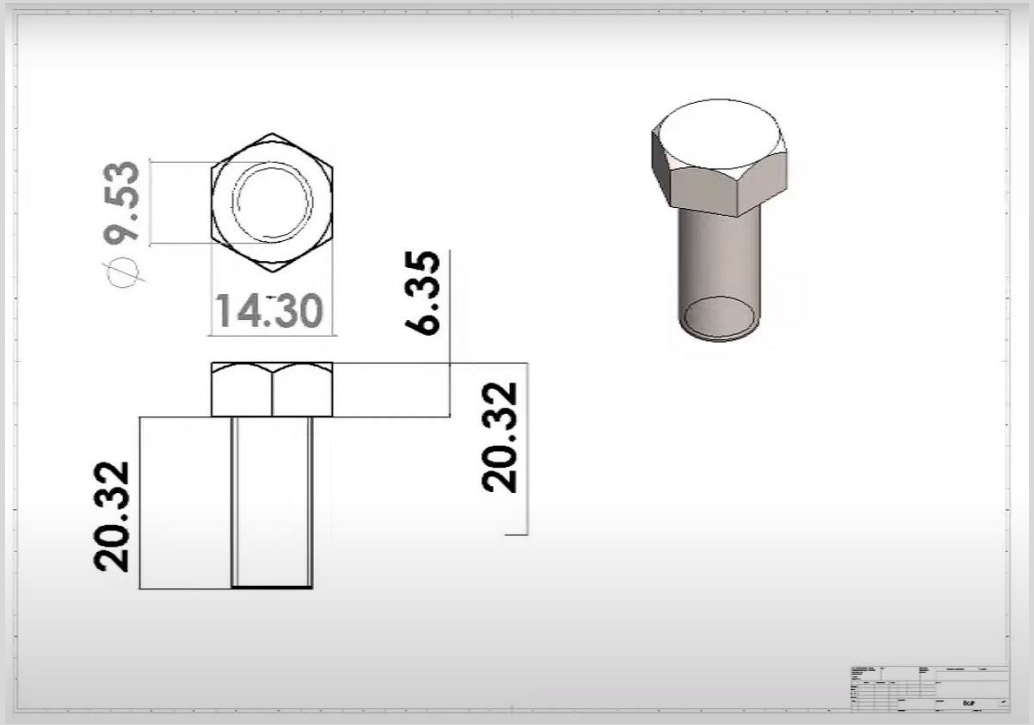
SUPPORT



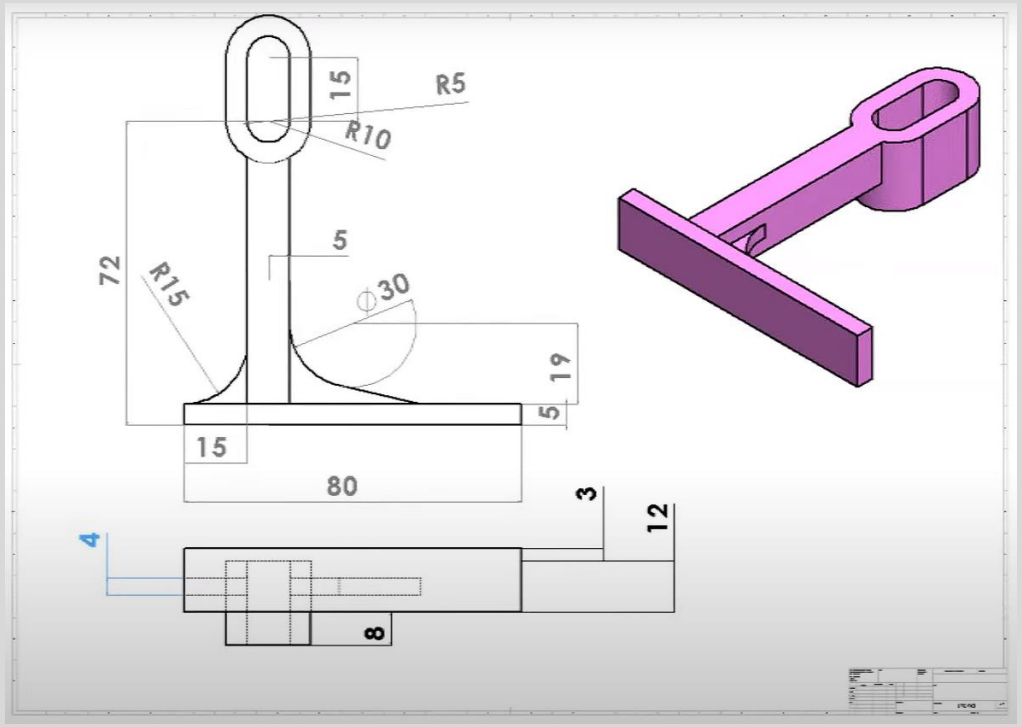
HANDLE SUPPORT



HANDLE



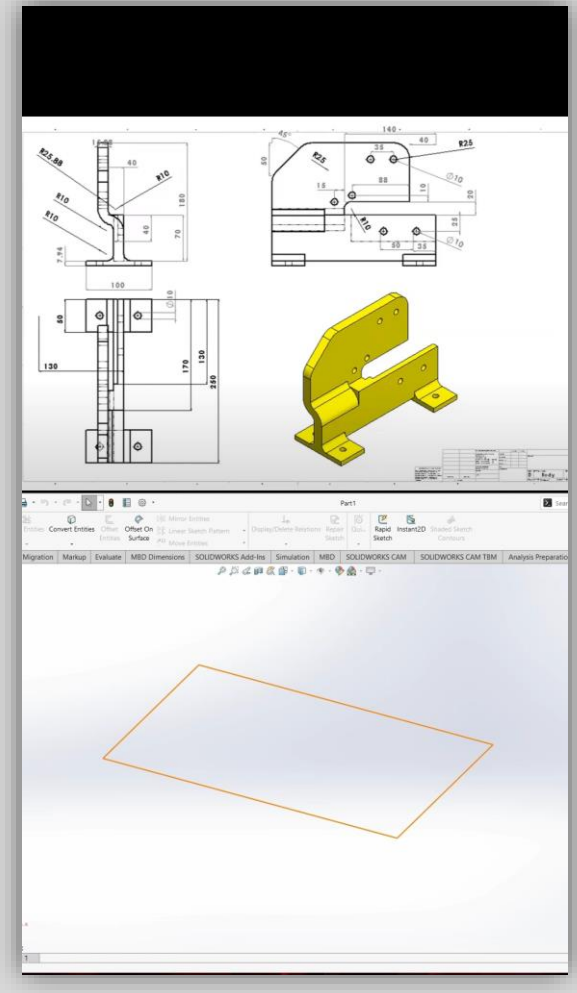
BOLT

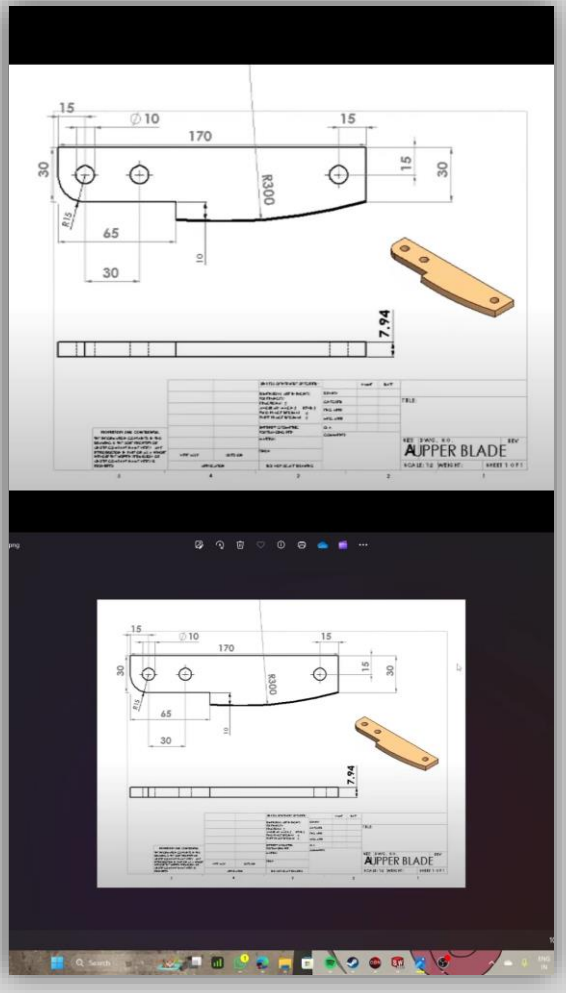


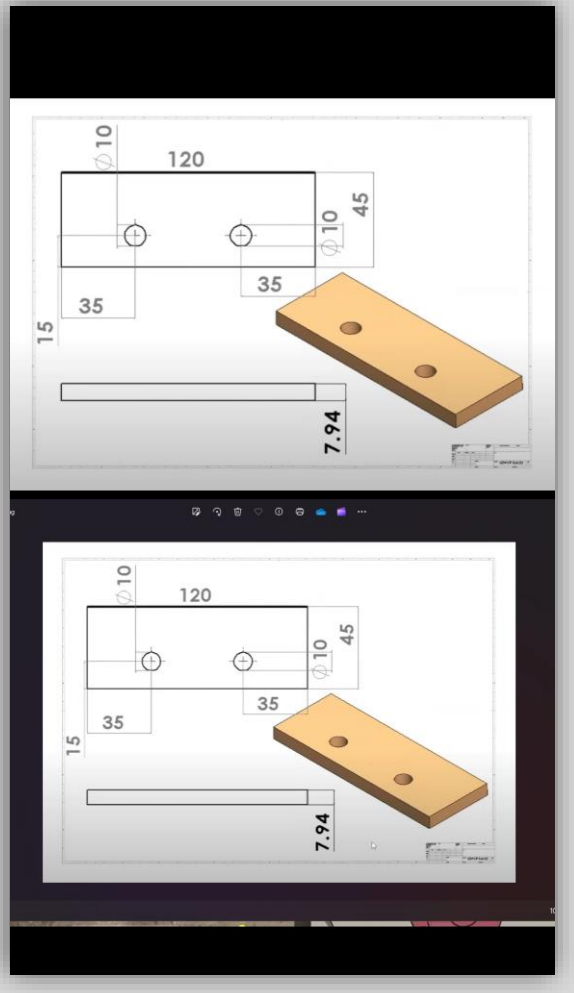
STAND

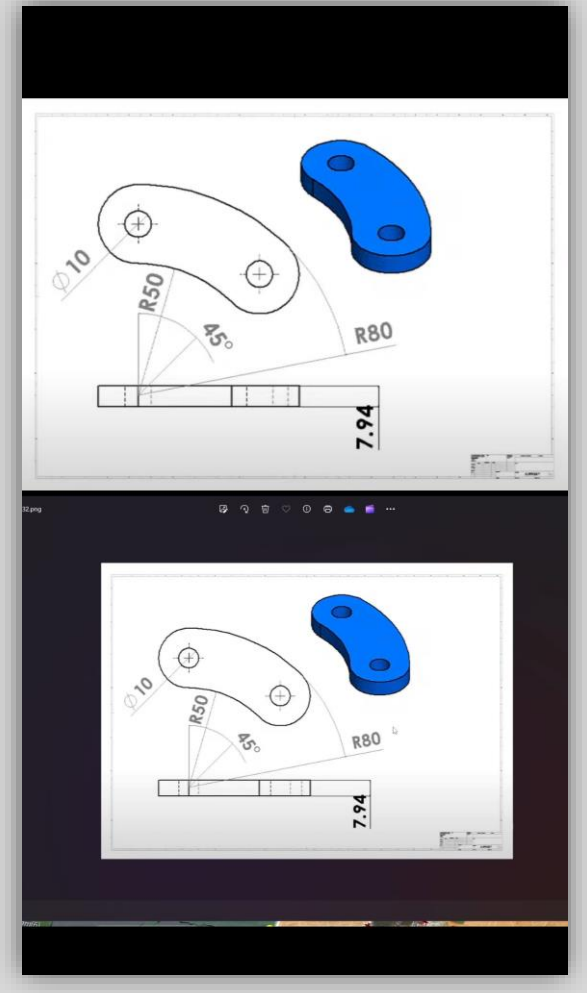
2 : Solid Modeling:-

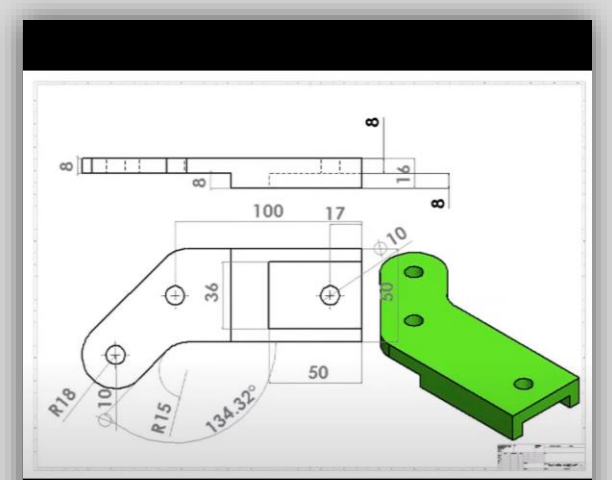
Create parts using SolidWorks features,Ensure accurate dimensions and alignments.

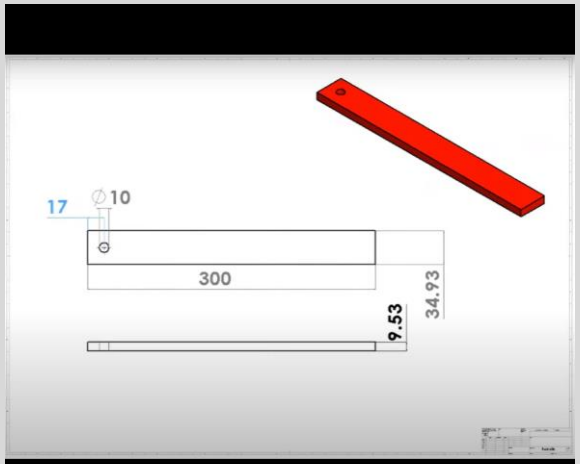


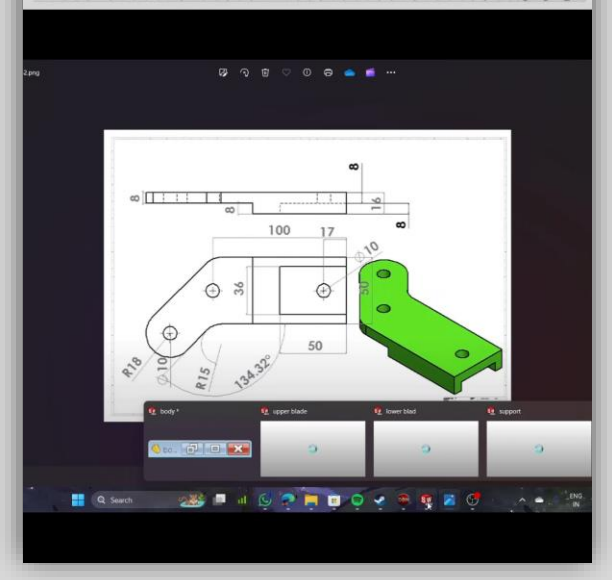


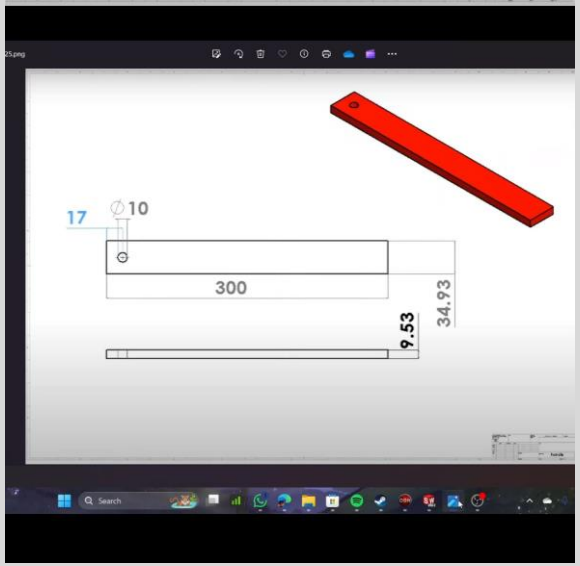





8
8
8
16
100
17
Ø10
36
30
50
R18
Ø10
R15
134.32°

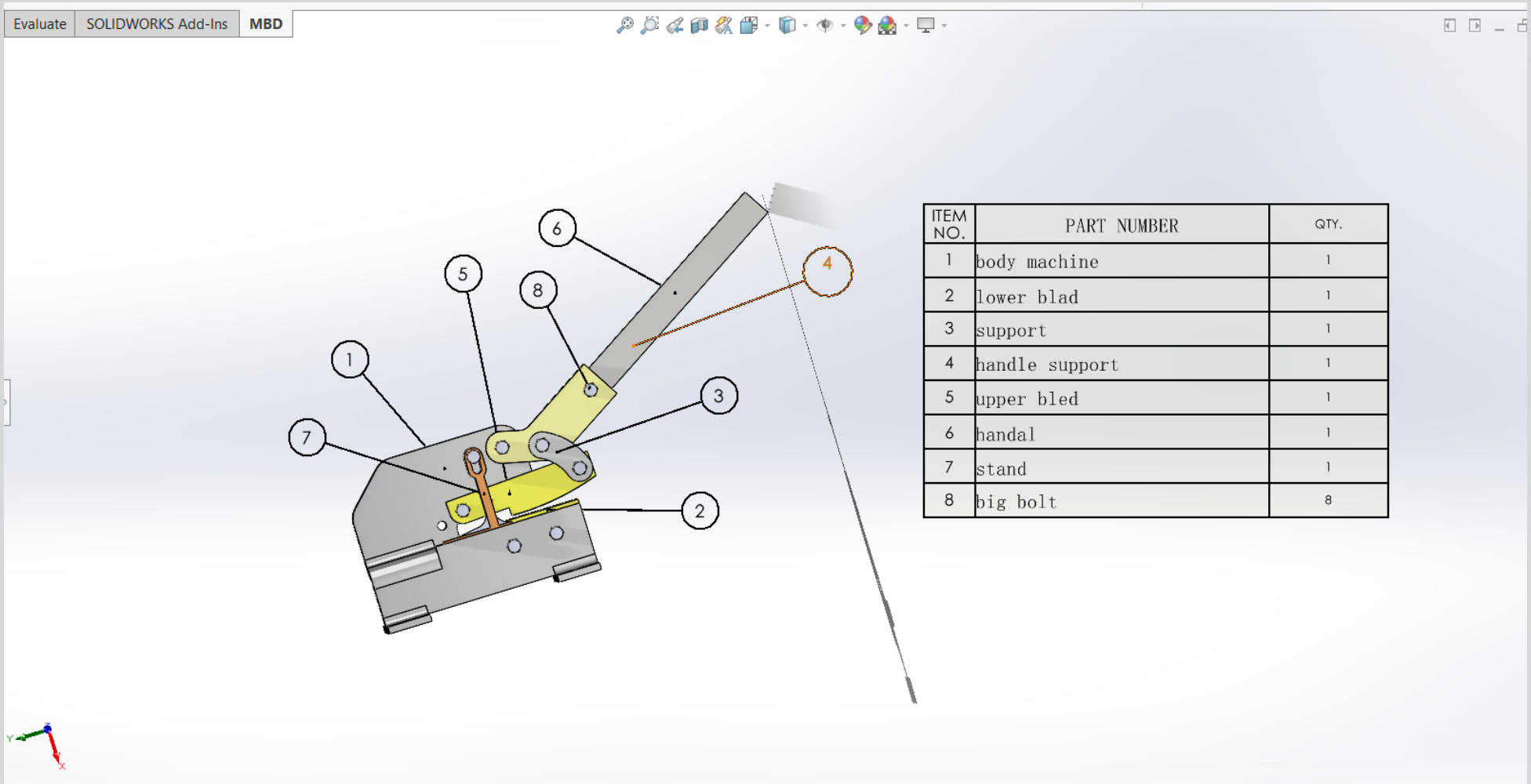

17
Ø10
300
34.93
9.53


8
8
8
16
100
17
Ø10
36
30
50
R18
Ø10
R15
134.32°
body 1
upper blade
lower blad
support

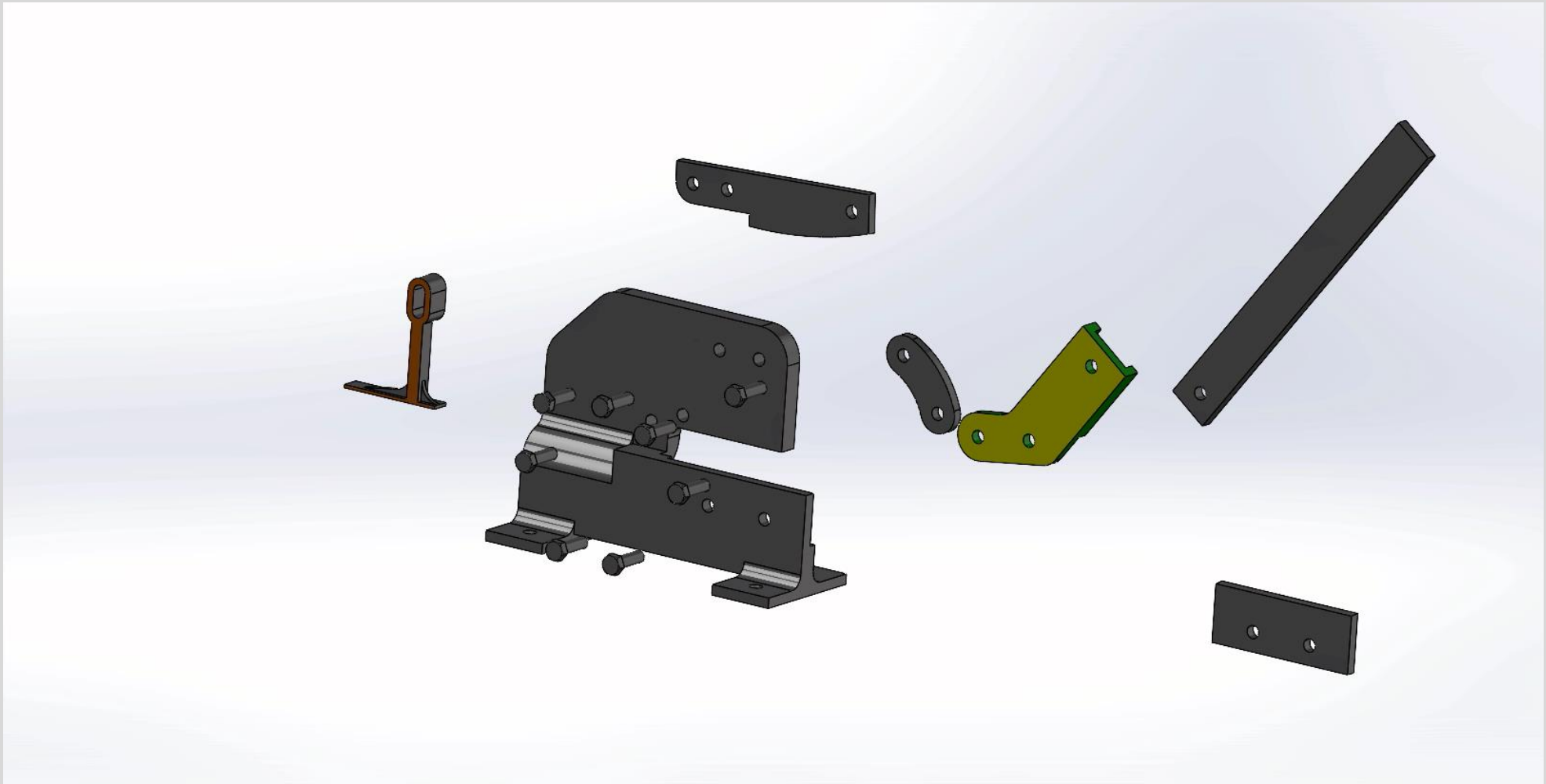

17
Ø10
300
34.93
9.53

3 : Assembly:-

Combine parts, using mates for alignment, Test assembly for functionality

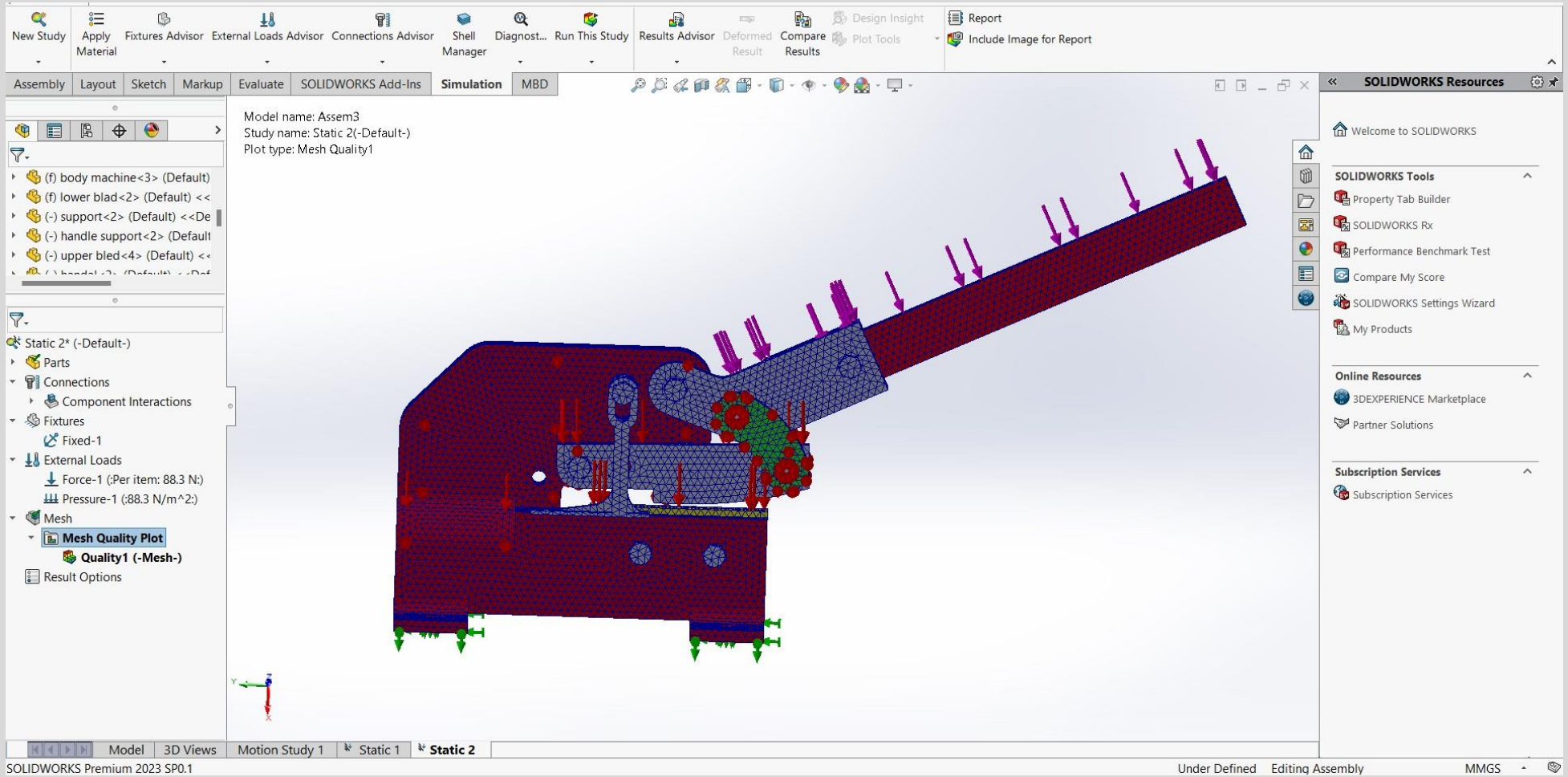


ITEM NO.	PART NUMBER	QTY.
1	body machine	1
2	lower blad	1
3	support	1
4	handle support	1
5	upper bled	1
6	handal	1
7	stand	1
8	big bolt	8

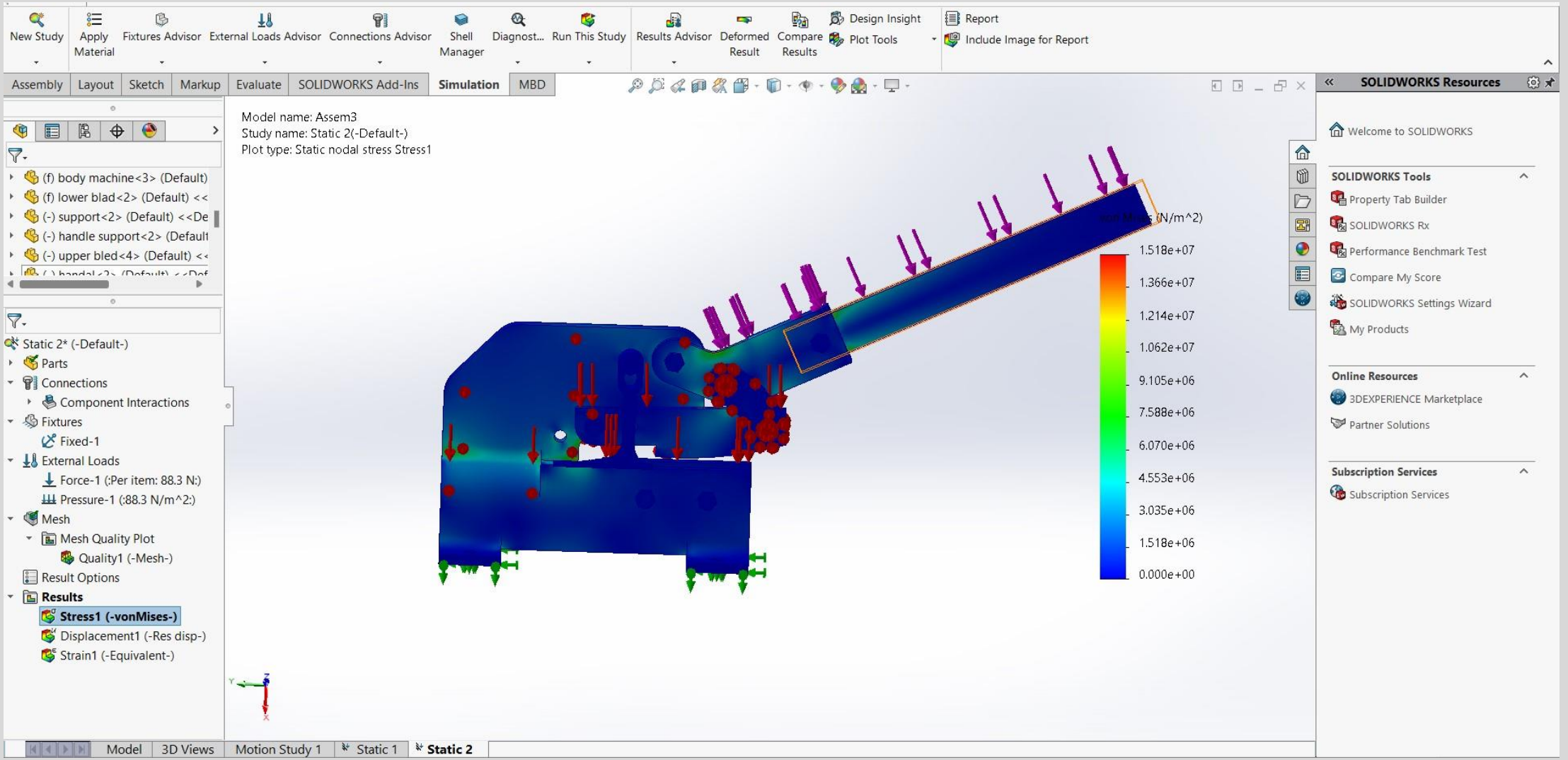


4 : Simulation :-

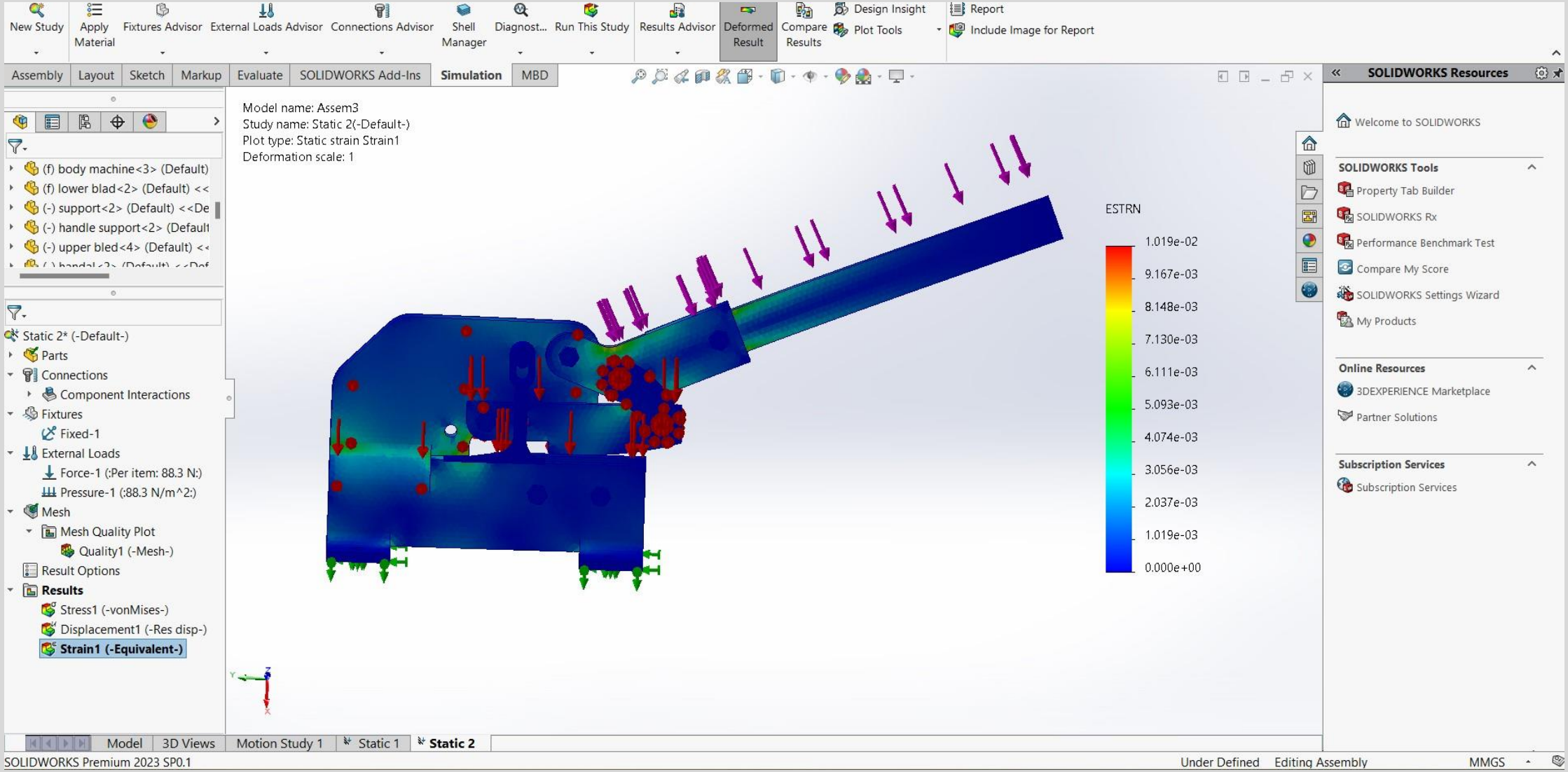
Perform stress analysis



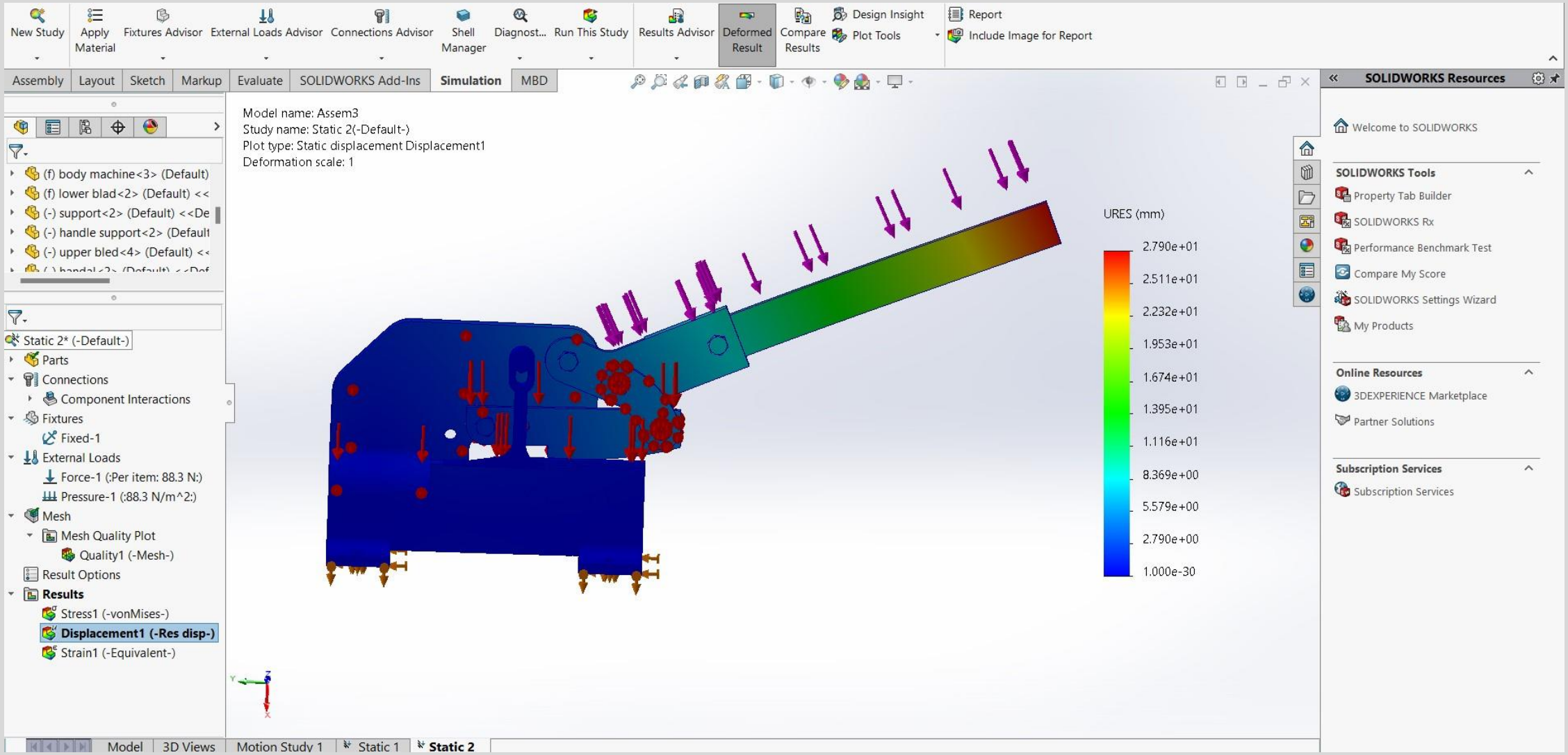
Meshing


New Study
Apply Material
Fixtures Advisor
External Loads Advisor
Connections Advisor
Shell Manager
Diagnost...
Run This Study
Results Advisor
Deformed Result
Compare Results
Design Insight
Plot Tools
Report
Include Image for Report
Assembly
Layout
Sketch
Markup
Evaluate
SOLIDWORKS Add-Ins
Simulation
MBD
Model name: Assem3
Study name: Static 2(-Default-)
Plot type: Static nodal stress Stress1
(f) body machine<3> (Default)
(f) lower blad<2> (Default) <<
(-) support<2> (Default) <<De
(-) handle support<2> (Default
(-) upper bled<4> (Default) <<
Static 2* (-Default-)
Parts
Connections
Component Interactions
Fixtures
Fixed-1
External Loads
Force-1 (:Per item: 88.3 N:)
Pressure-1 (:88.3 N/m^2:)
Mesh
Mesh Quality Plot
Quality1 (-Mesh-)
Result Options
Results
Stress1 (-vonMises-)
Displacement1 (-Res disp-)
Strain1 (-Equivalent-)
(N/m^2)
1.518e+07
1.366e+07
1.214e+07
1.062e+07
9.105e+06
7.588e+06
6.070e+06
4.553e+06
3.035e+06
1.518e+06
0.000e+00
SOLIDWORKS Resources
Welcome to SOLIDWORKS
SOLIDWORKS Tools
Property Tab Builder
SOLIDWORKS Rx
Performance Benchmark Test
Compare My Score
SOLIDWORKS Settings Wizard
My Products
Online Resources
3DEXPERIENCE Marketplace
Partner Solutions
Subscription Services
Subscription Services
Model
3D Views
Motion Study 1
Static 1
Static 2

Stress


New Study
Apply Material
Fixtures Advisor
External Loads Advisor
Connections Advisor
Shell Manager
Diagnost...
Run This Study
Results Advisor
Deformed Result
Compare Results
Design Insight
Plot Tools
Report
Include Image for Report
Assembly
Layout
Sketch
Markup
Evaluate
SOLIDWORKS Add-Ins
Simulation
MBD
Model name: Assem3
Study name: Static 2(-Default-)
Plot type: Static strain Strain1
Deformation scale: 1
ESTRN
1.019e-02
9.167e-03
8.148e-03
7.130e-03
6.111e-03
5.093e-03
4.074e-03
3.056e-03
2.037e-03
1.019e-03
0.000e+00
(f) body machine<3> (Default)
(f) lower blad<2> (Default) <<
(-) support<2> (Default) <<De
(-) handle support<2> (Default
(-) upper bled<4> (Default) <<
Static 2* (-Default-)
Parts
Connections
Component Interactions
Fixtures
Fixed-1
External Loads
Force-1 (:Per item: 88.3 N:)
Pressure-1 (:88.3 N/m^2:)
Mesh
Mesh Quality Plot
Quality1 (-Mesh-)
Result Options
Results
Stress1 (-vonMises-)
Displacement1 (-Res disp-)
Strain1 (-Equivalent-)
SOLIDWORKS Resources
Welcome to SOLIDWORKS
SOLIDWORKS Tools
Property Tab Builder
SOLIDWORKS Rx
Performance Benchmark Test
Compare My Score
SOLIDWORKS Settings Wizard
My Products
Online Resources
3DEXPERIENCE Marketplace
Partner Solutions
Subscription Services
Subscription Services
Model
3D Views
Motion Study 1
Static 1
Static 2
SOLIDWORKS Premium 2023 SP0.1
Under Defined
Editing Assembly
MMGS

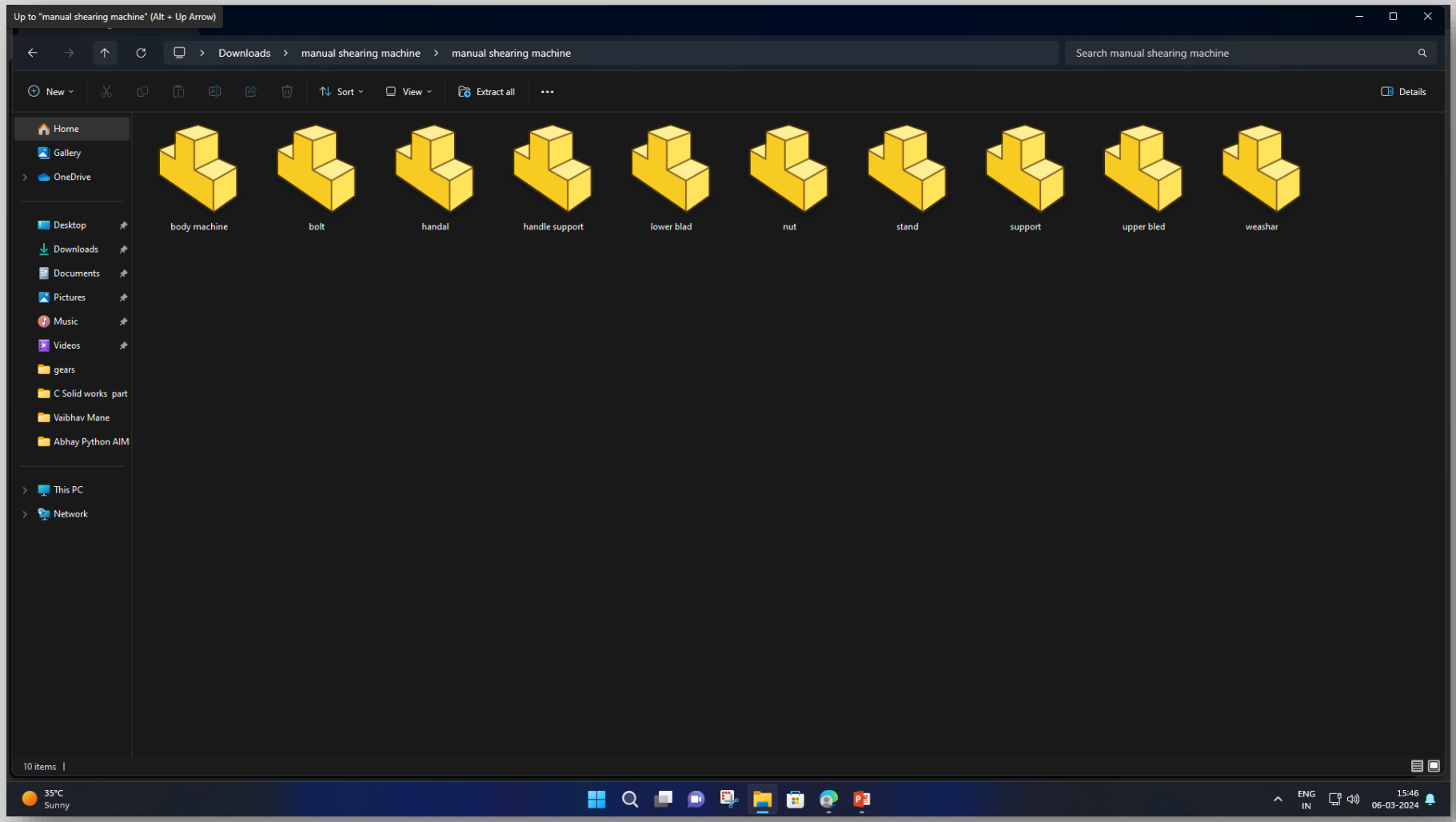
Strain

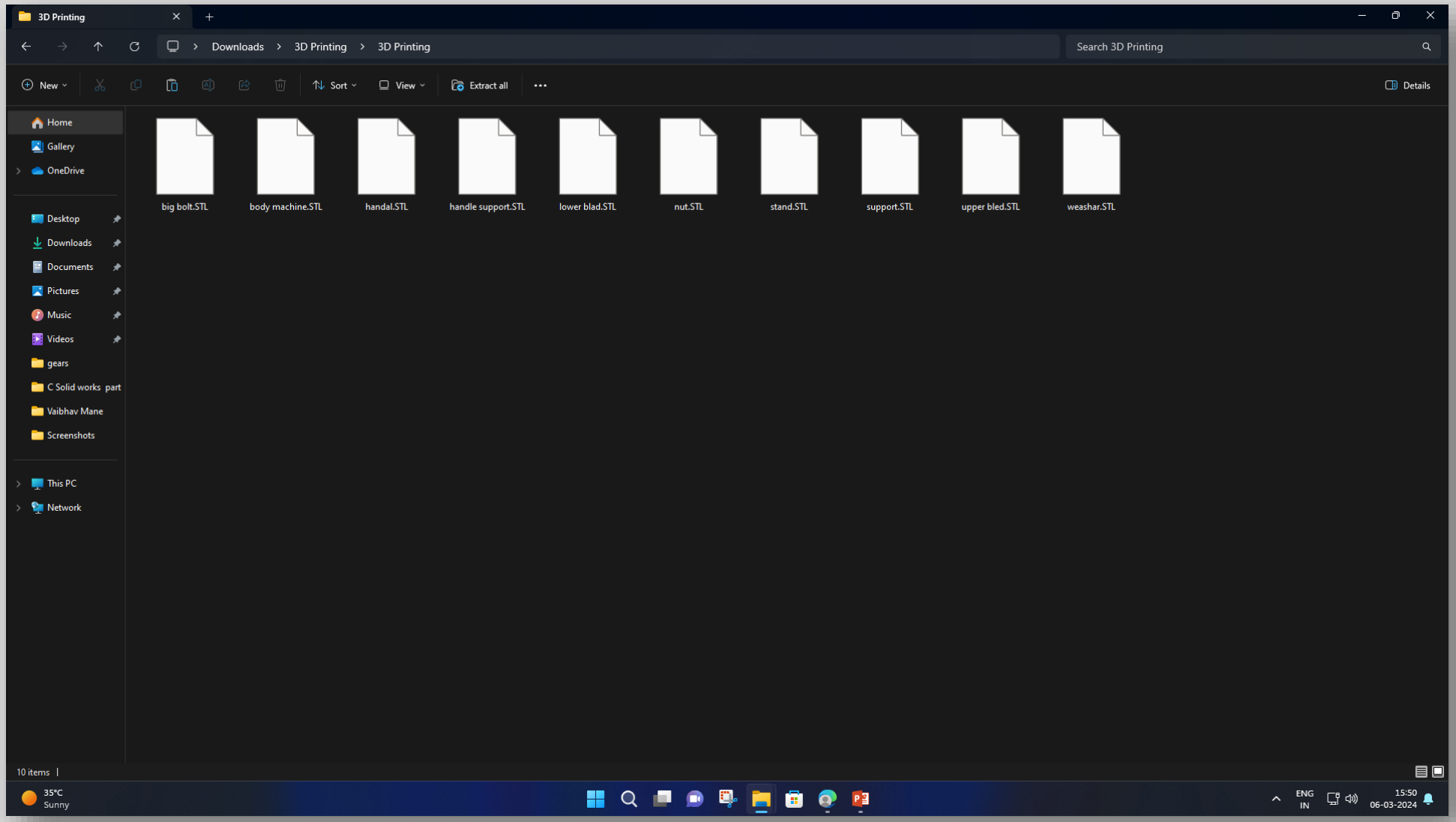


Displacement

4 : Finalization:-

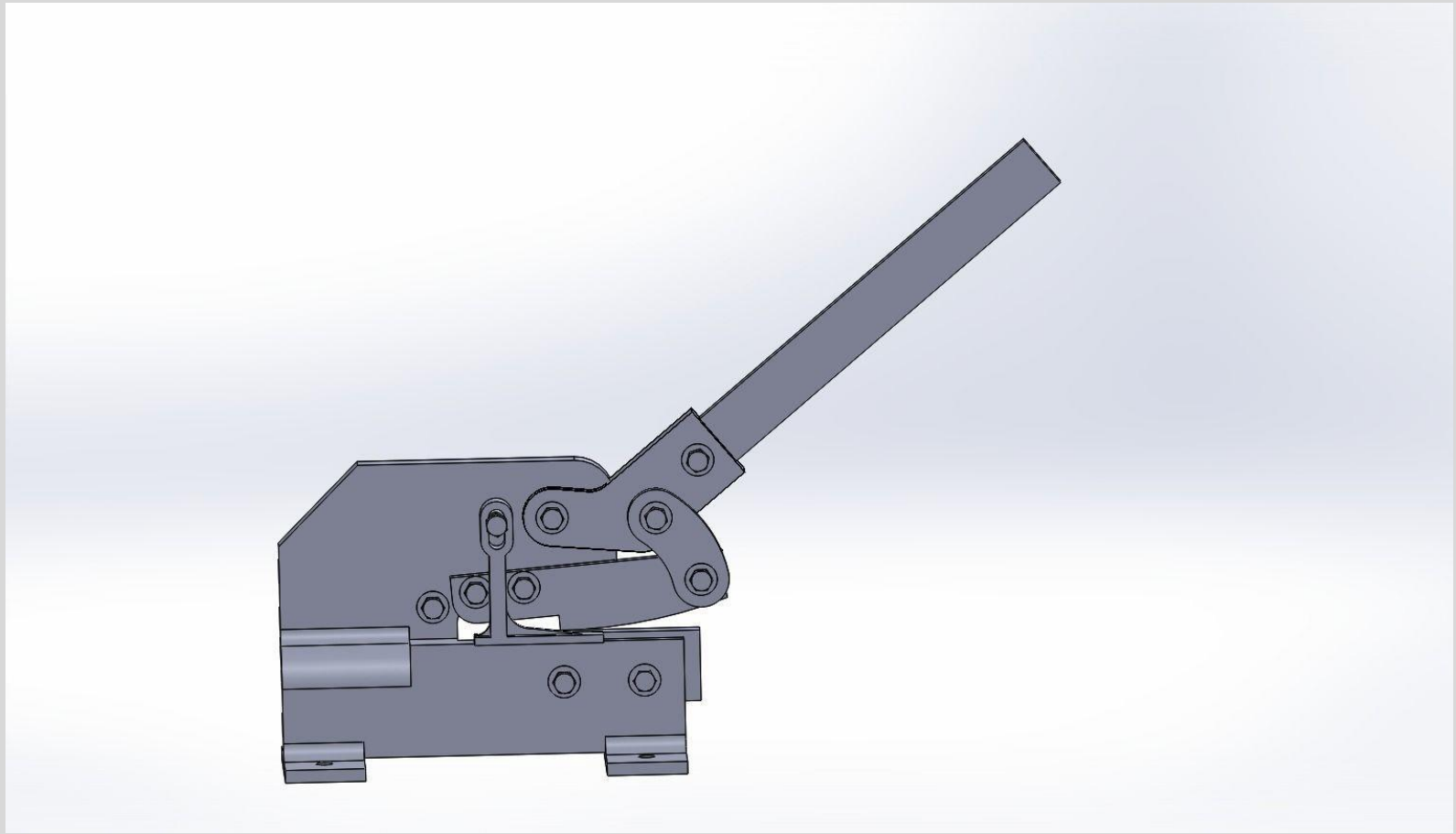
Prepare files for printing.




3D Printing
Downloads
3D Printing
3D Printing
Search 3D Printing
New
Sort
View
Extract all
Details
Home
Gallery
OneDrive
Desktop
Downloads
Documents
Pictures
Music
Videos
gears
C Solid works part
Vaibhav Mane
Screenshots
This PC
Network
big bolt.STL
body machine.STL
handal.STL
handle support.STL
lower blad.STL
nut.STL
stand.STL
support.STL
upper bled.STL
weashar.STL
10 items
35°C
Sunny
ENG
IN
15:50
06-03-2024

5 : Implementation:-

- Start to print model.



Cutting Capabilities of 3D Printed Manual Shearing Machine

- Materials: Can cut thin materials like paper, cardboard, thin plastics.
- Possible: May cut thin metal sheets based on 3D printed part strength.
- Limitations: 3D printed parts may lack durability of metal components.
- Precision: Cutting capabilities may vary compared to industrial-grade machines.
- Considerations: Strength and precision of 3D printed parts affect cutting performance.

Applications of 3D Printed Manual Shearing Machine

- Prototyping for testing and validation.
- Small-Scale Production for low-volume runs.
- Customization to meet specific needs.
- Education and Training tool.
- Research and Development exploration.
- On-Demand Manufacturing for reduced inventory.
- Rapid Repair of replacement parts.
- Art and Design for unique metalwork pieces.

Thank you