# Problem Statement

- Design and create a fixture capable of supporting the machining process of handlebar clamps for 125cc-1100cc motocross bikes.

- The problem at hand is designing a fixture that is expandable to meet the dimensions of varying distributor requirements.

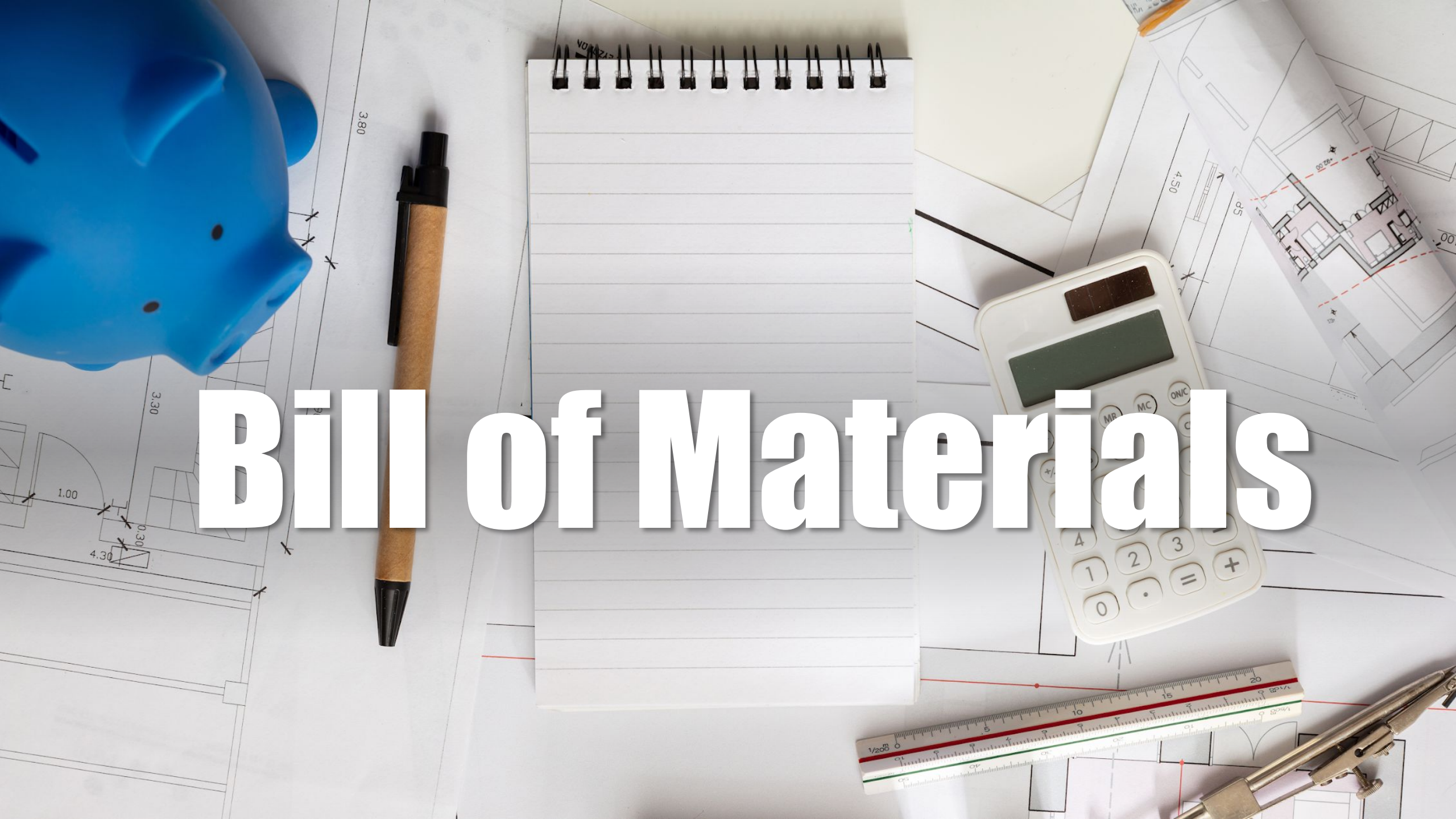
- Solving this problem decreases production time, lowers production costs and increases safety

# Constraints

- < 5 pounds
- $6,000 budget
- Space constraints of the machine
- No movement of the fixture and/or the part during machining
- No larger than

7 ⅛” x 3 ¾” with a thickness of 0.850”

# Drill Station
# Post- Production


Bill of Materials

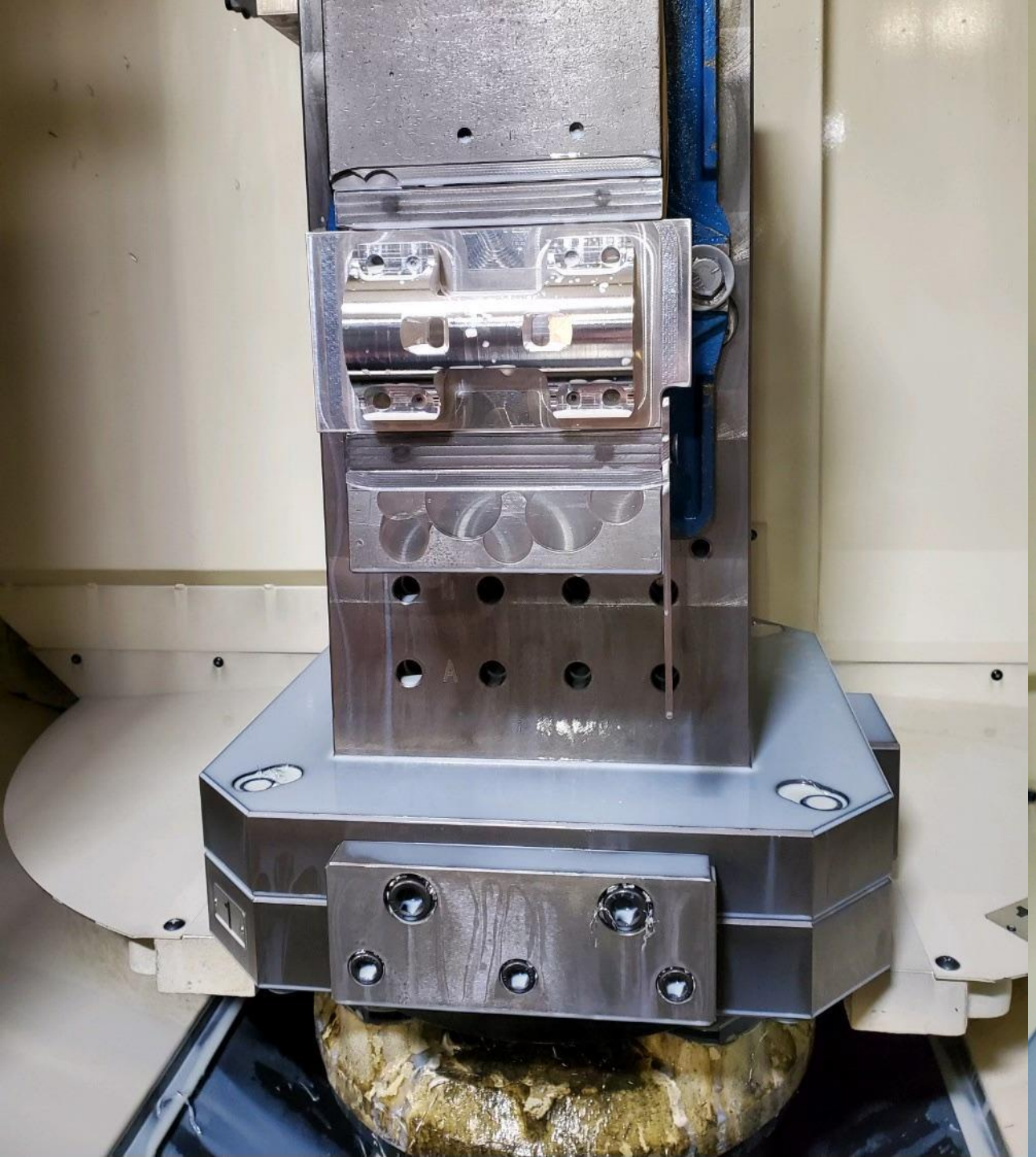
| Part | Unit Cost | Quantity |
| --- | --- | --- |
| Screw<br>**M8 x 1.25 x 150 MM (PT) Coarse Thread ISO 4762 / DIN 912 Class 12.9 Socket Head Cap Screw Aluminum 6061** | **$2.44** | **1** |
| Fixture Plate<br>**145 MM x 83.31 MM x 21.59 MM** | **$83**<br>**Block (203.2MMx203.2 MMx25.4 MM)** | **1** |
| Moving Fixture Part<br>**38.1 MM x 83.31 MM x 42.7 MM** | **$177**<br>**Block (203.2MMx203.2MMx44.45MM)** | **1** |
| Dowel Pins<br>**M8 x 1.25MM x 10MM** | **$0.75** | **8** |

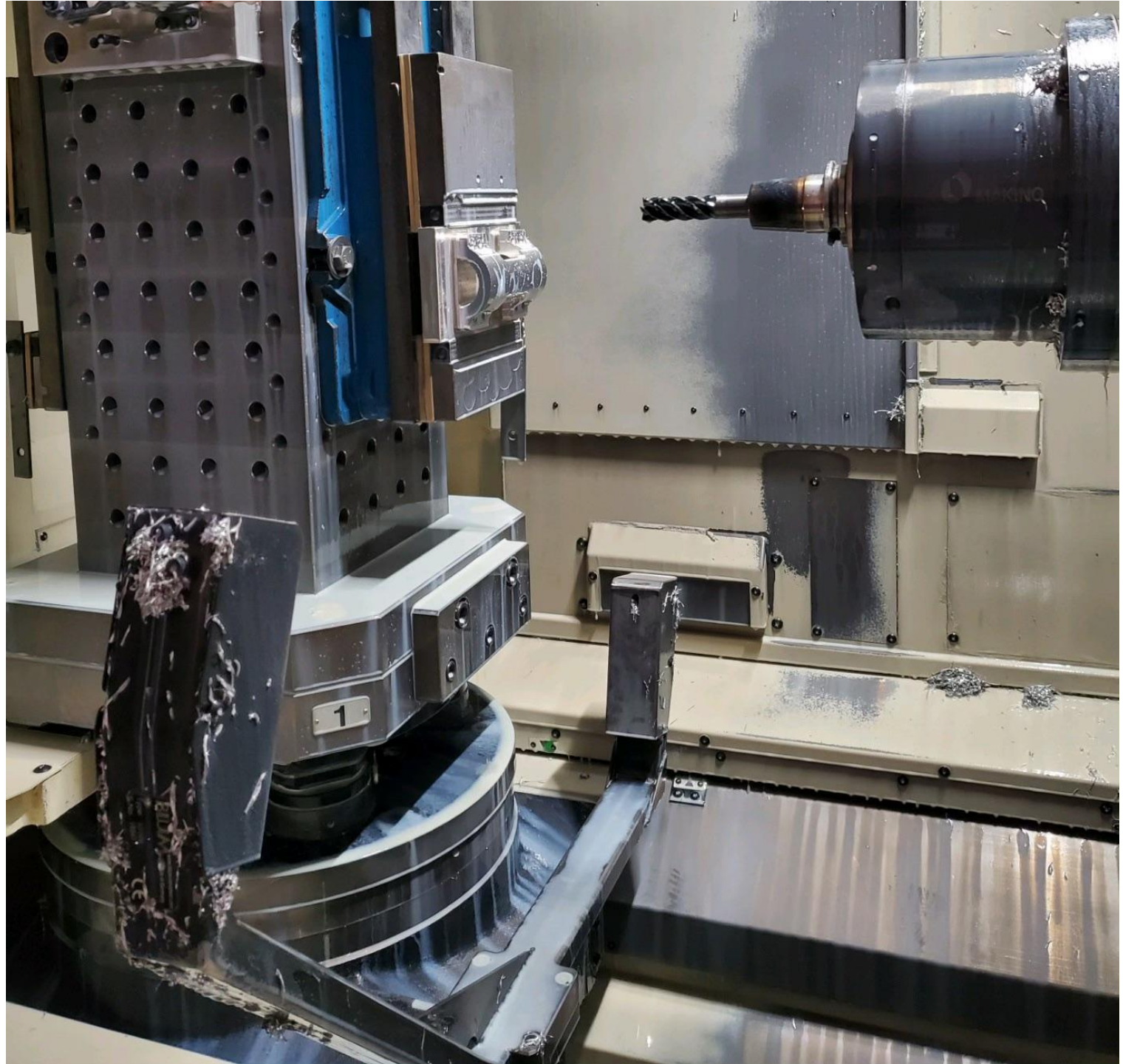
| Total | | |
| --- | --- | --- |
| $2.44 | | |
| $83 | | |
| $177 | | |
| $6.00 | | |

# Current Fixture

HONDA

# Current Fixture Mounted

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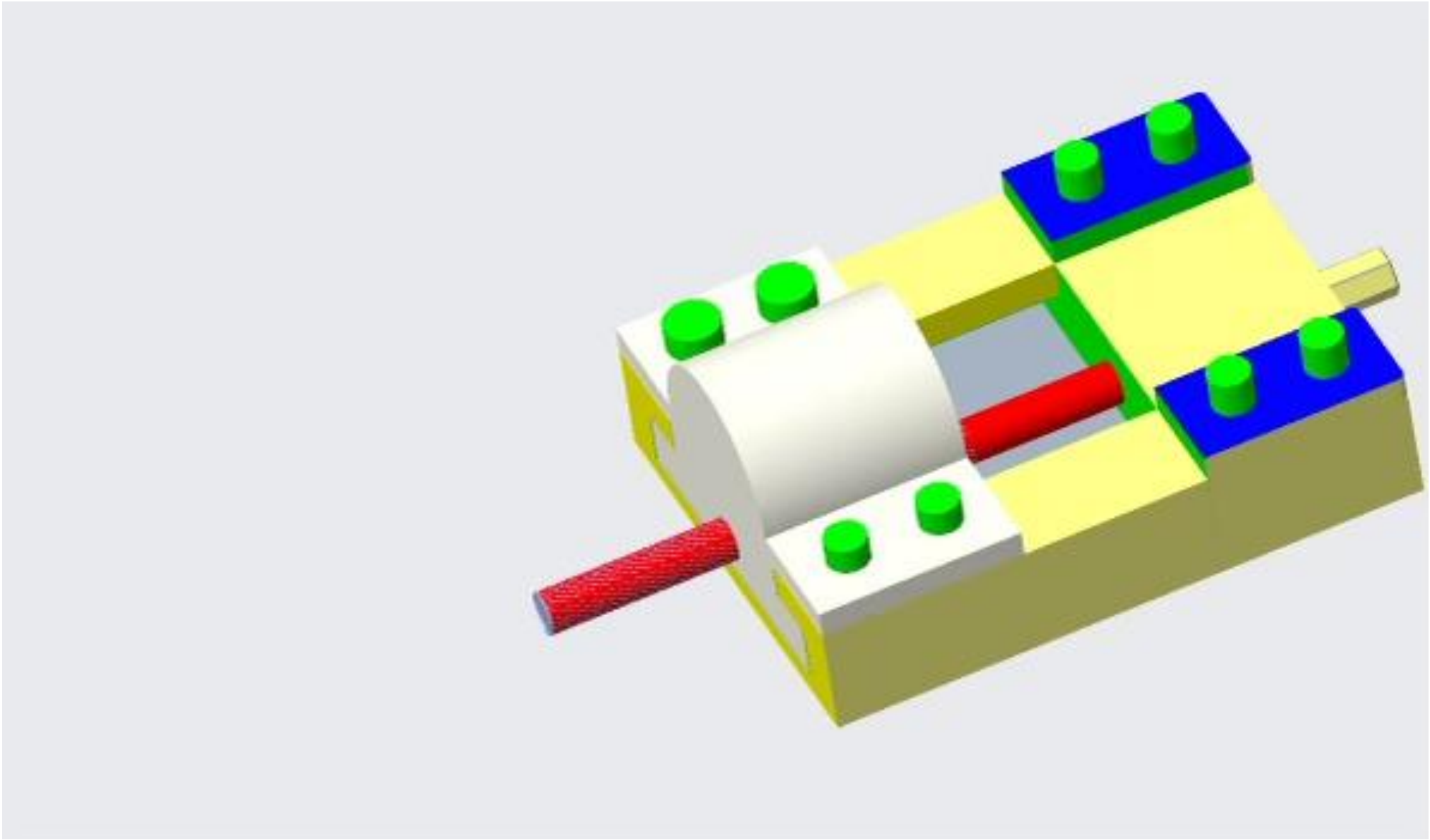
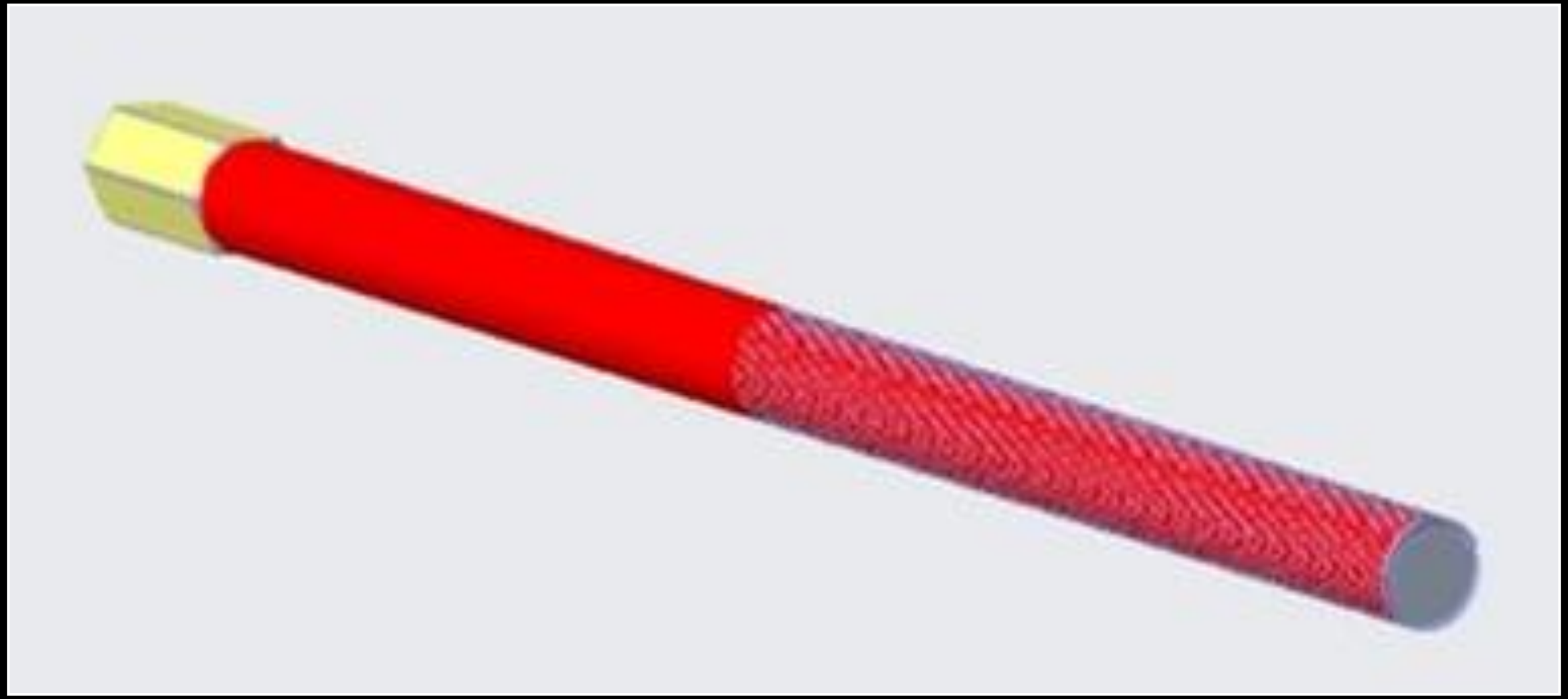
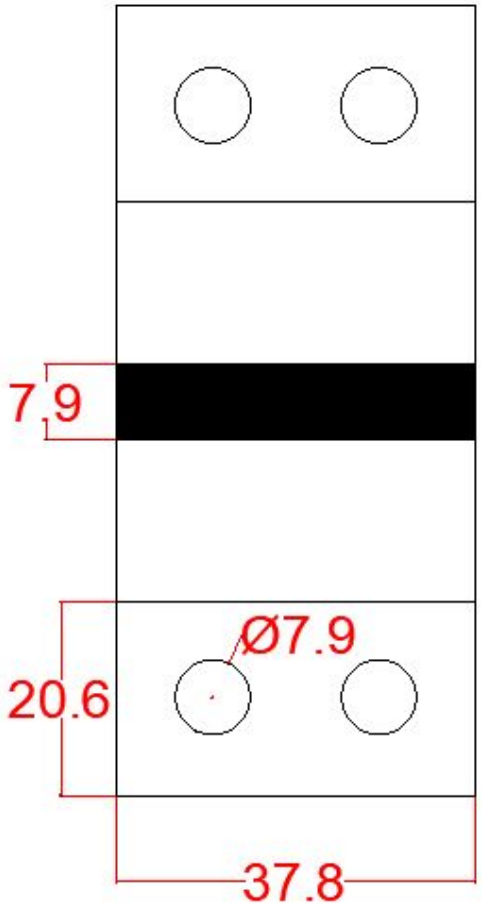


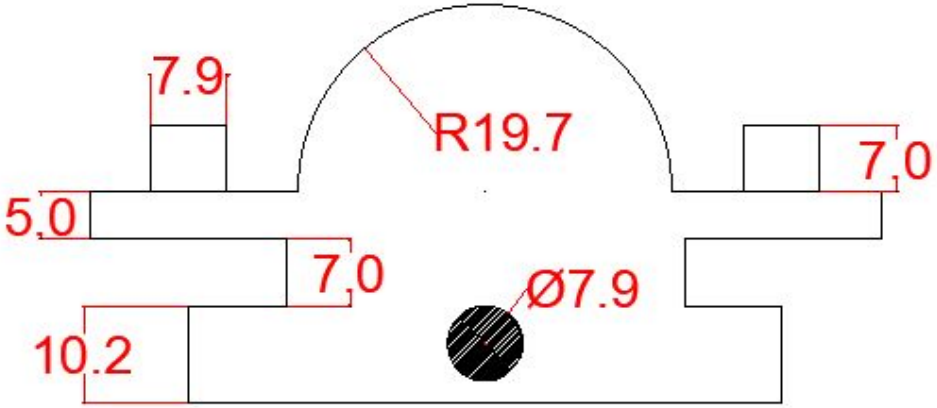


M8 x 1.25x 150 MM Socket Head Cap Screw

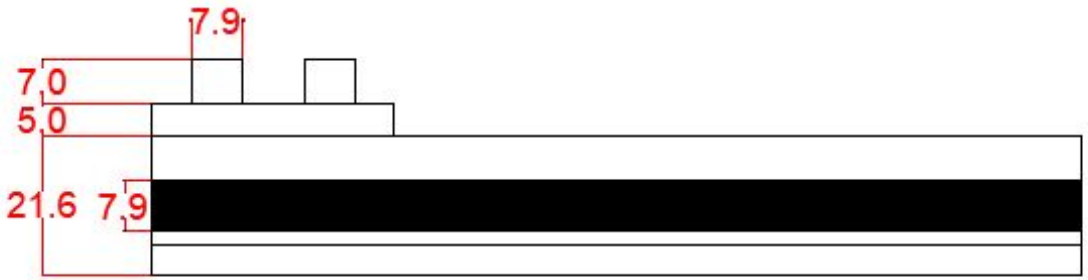
Sliding Part Top View



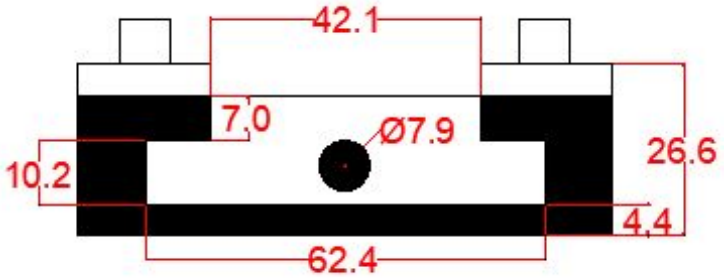

Sliding Part Front View



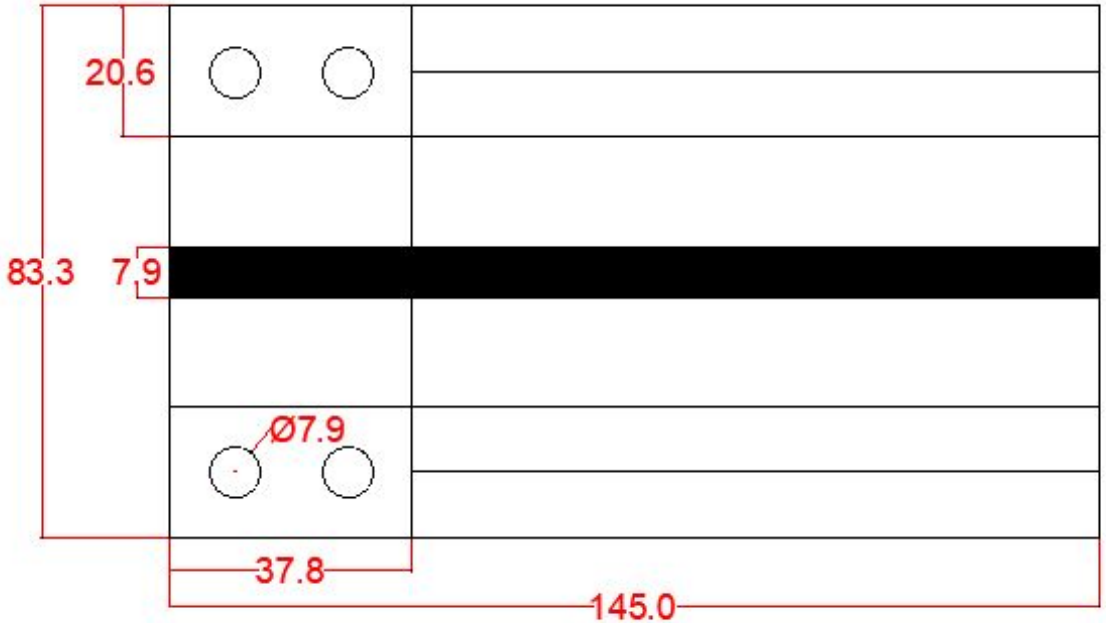
Main Part Side View

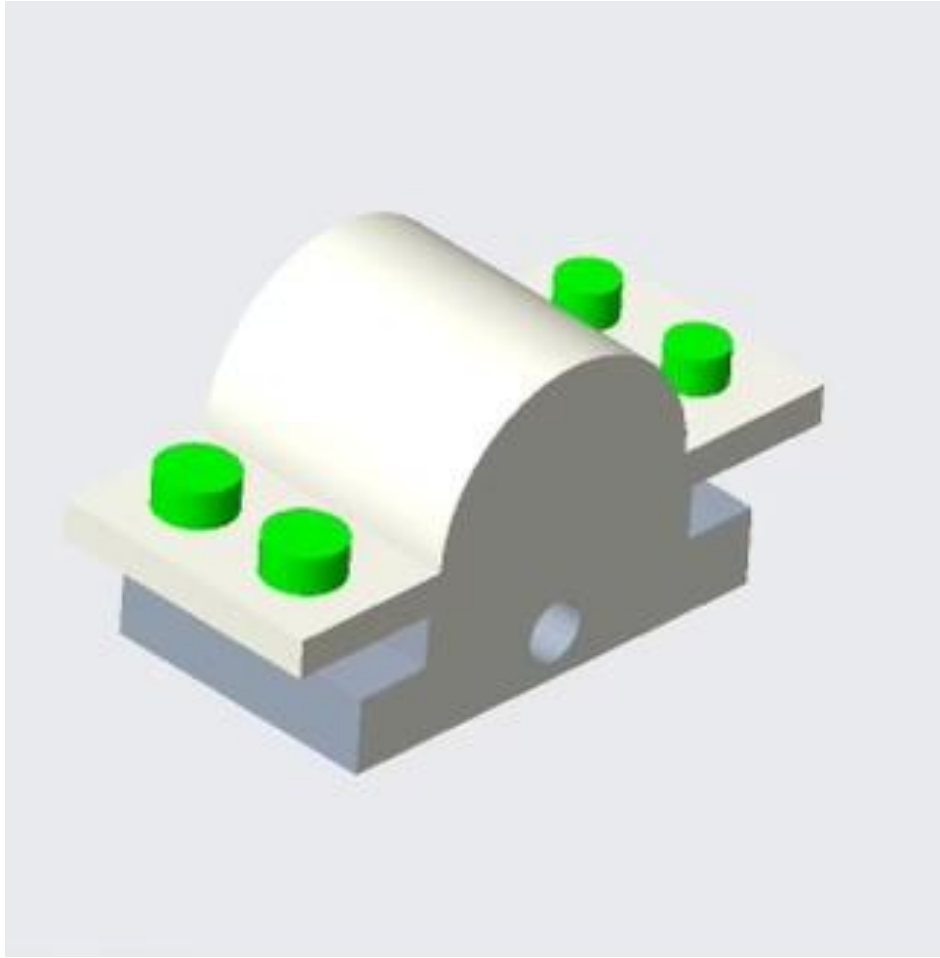



Main Part Front View




Main Part Top View





# Handlebar clamp


XC


J1401 1/8" 3.2mm
360
XC
GEAR
2 FT LBS

# Solution

- Propose and develop a fixture mechanism that can facilitate the machining for different sized handlebar clamps
- Optimize production
- Increase machining accuracy
- Reduce human error
- User friendly

# Conclusion

- The design successfully meet the desired goals for our client within the constraints.
- The fixture is used to mount multiple clamps of various sizes  through the machining process.
- It also reduces human error and increases safety by eliminating the need to manually thread holes.