

# **EE-100 Engineering Laboratory Module2: CAD**

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Office Hours: Room 9-245A

Tuesday (1000-1100)

Thursday (1000-1100)

# CAD Module

**Learning Objective 1:** Create and interpret mechanical drawings

**Learning Objective 2:** Recall and demonstrate workshop/industrial safety practices.

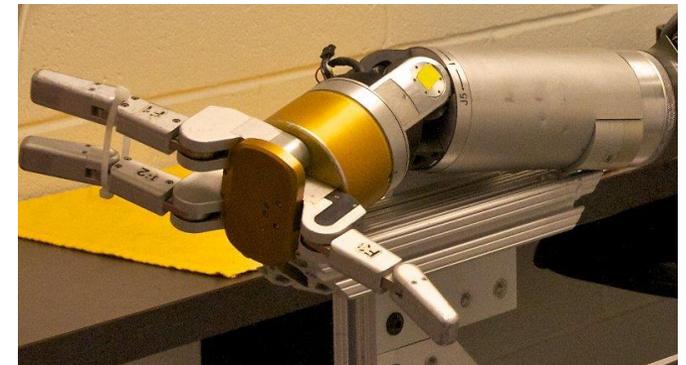
- Week 1
  - Introduction to the course and its contents
  - Design methodology for scientists and engineers
  - Introduction to Engineering Drawing
  - Engineering Drawings
    - Standards, Types, Projections
  - Workshop / Industrial Safety Practices
  - **Lab Tasks:** Sketch orthographic projections of solid objects
  - **Lab Visit:** Overview of workshop facilities
- Week 2
  - Computer Aided Modeling
    - Intro to PTC Creo and its features
    - 2D sketching
    - Basics of 3D object modeling
  - **Lab Tasks:** 3D part modeling.
- Week 3
  - Advanced features of PTC Creo Parametric 2.0:
  - Lab Tasks: 3D part modeling
- Week 4
  - Assembly
  - **Lab Task:** Assembly task
- **Week 5**
  - **Lab Task 9:** Create parts and assembly drawings for a robotic hand (gripper)

# Problem Statement

In Engineering, **a robotic arm gripper is required** for effectively handling work in laboratory and home applications and industrial setups.

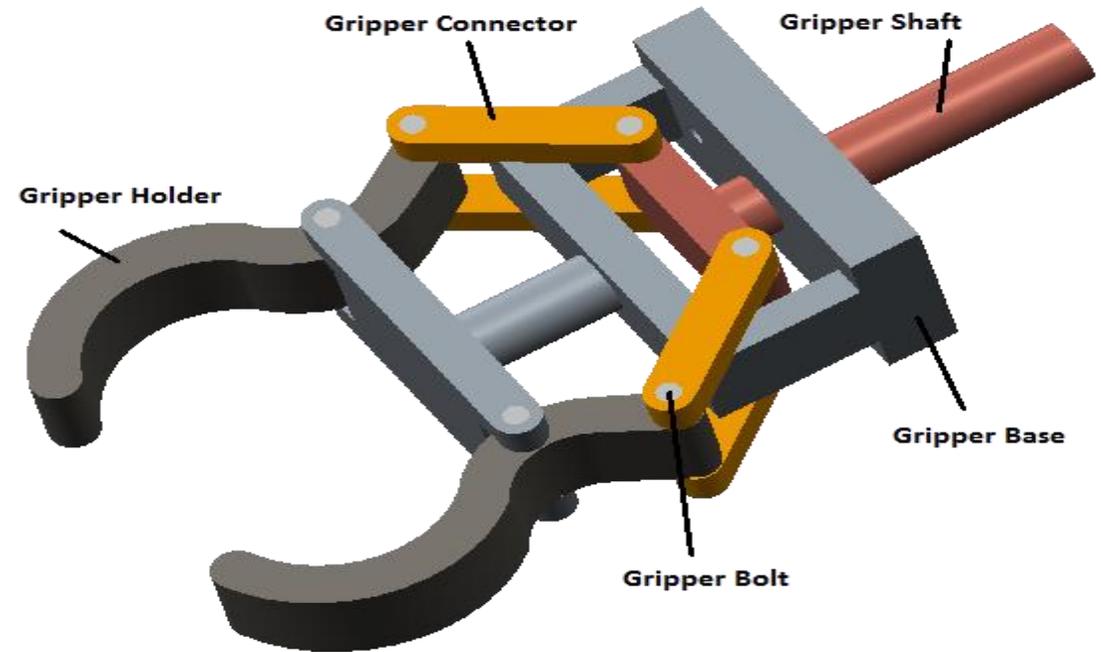
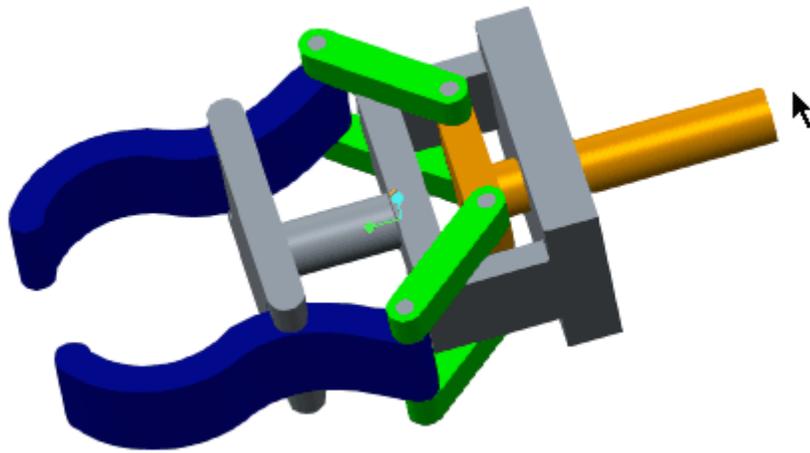
## Usages:

- Pick and place
- Welding metals
- Grasping Objects
- Serving food in restaurants

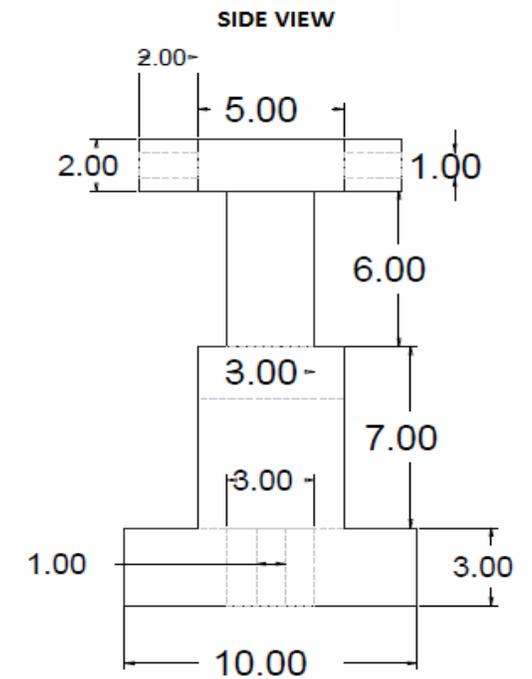
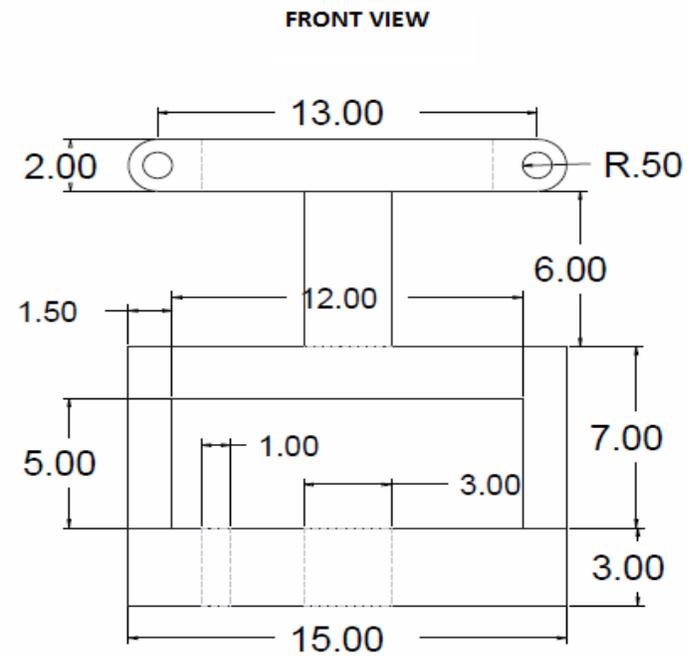
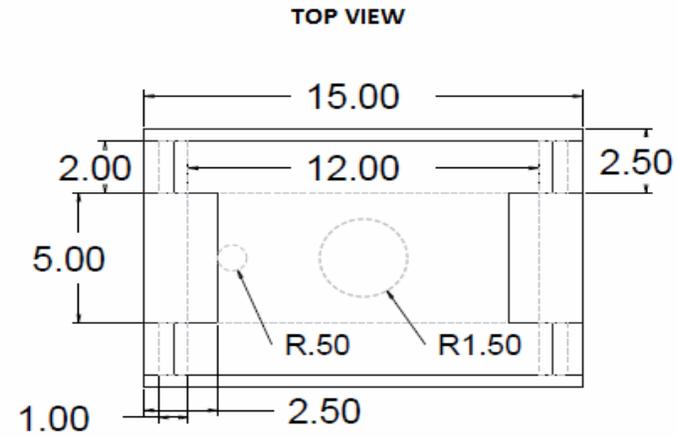
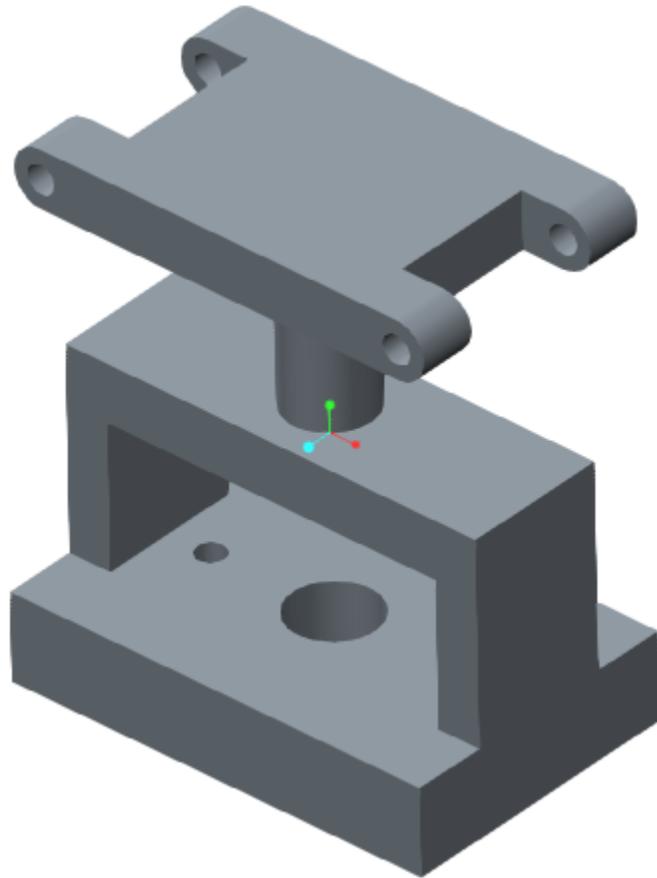


# Simplest Solution

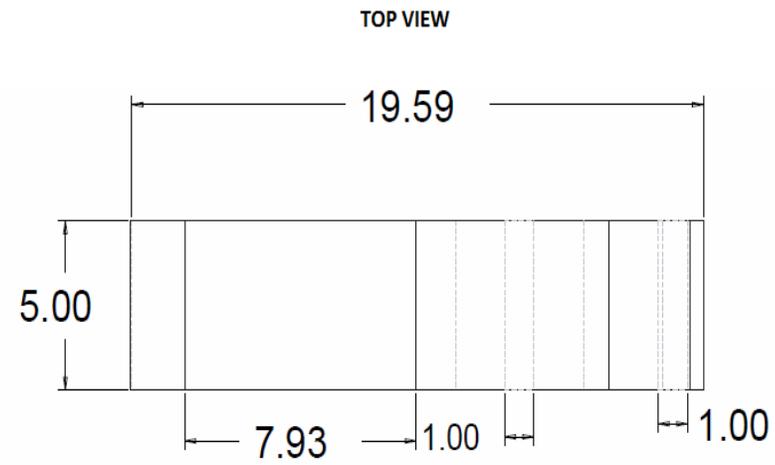
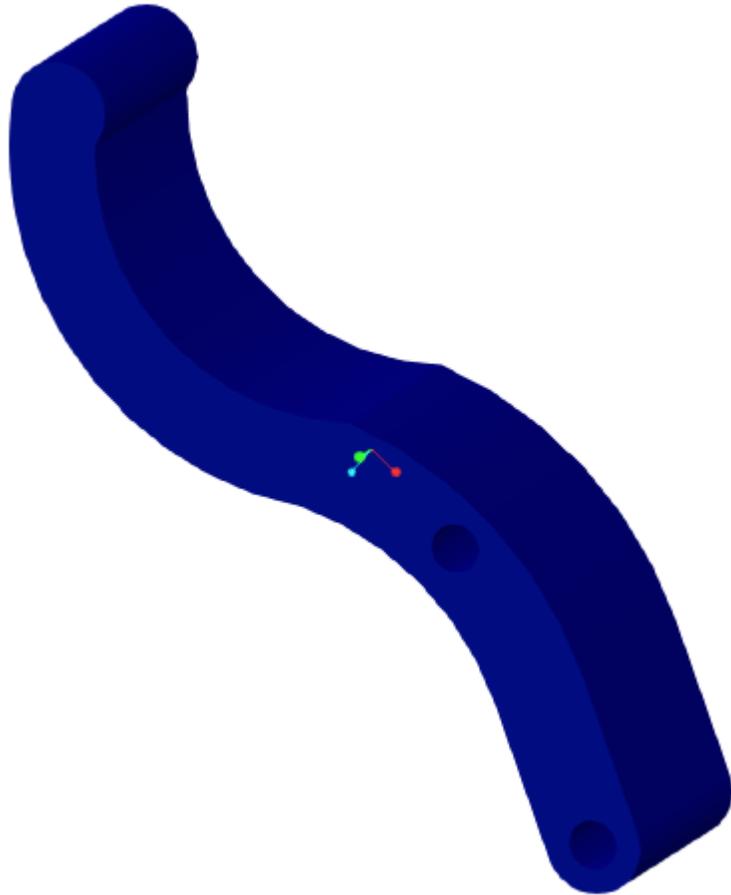
A 2-finger gripper is a perfect fit as it can easily hold the tools and work pieces. Following figure shows the 3D views of the proposed gripper design



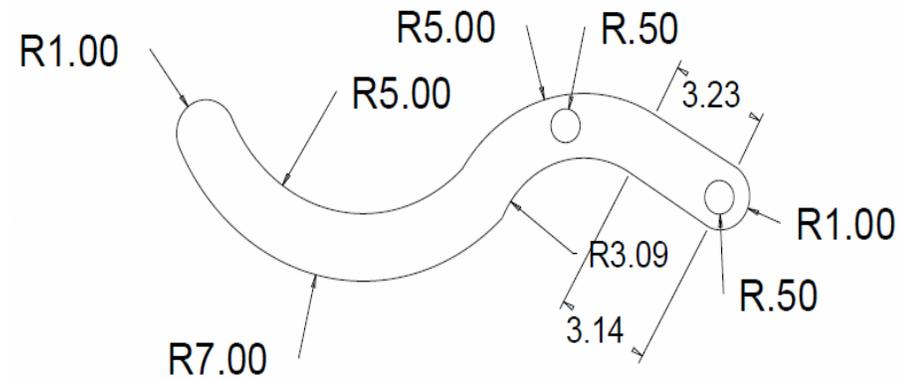
# Gripper Base



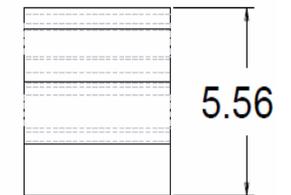
# Gripper Holder



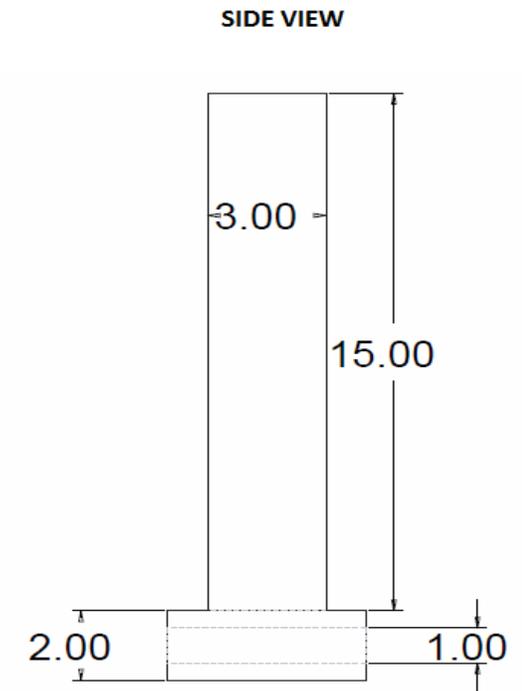
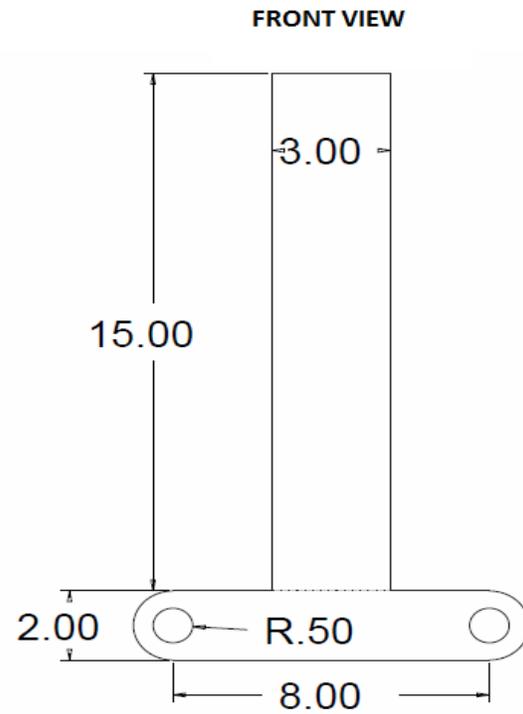
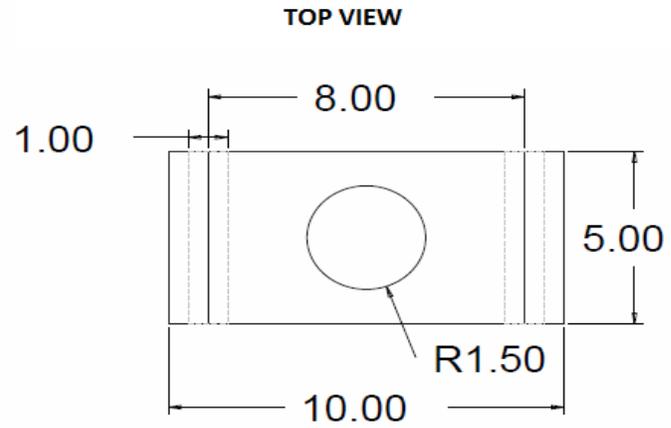
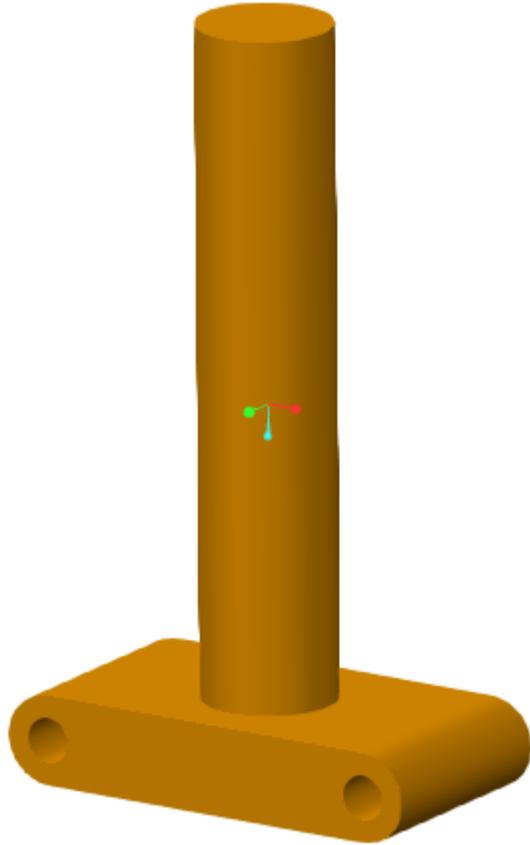
FRONT VIEW



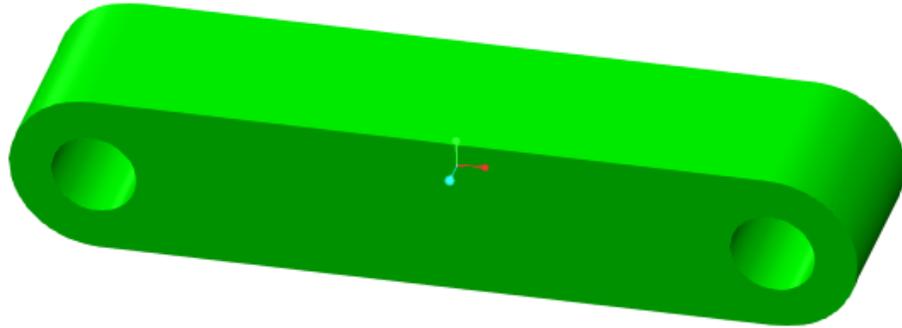
SIDE VIEW



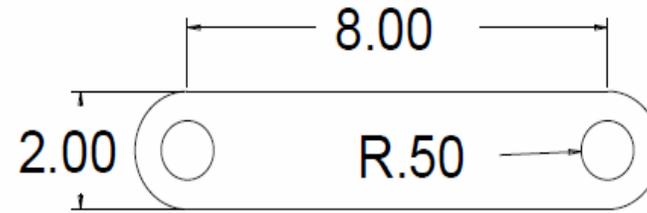
# Gripper Shaft



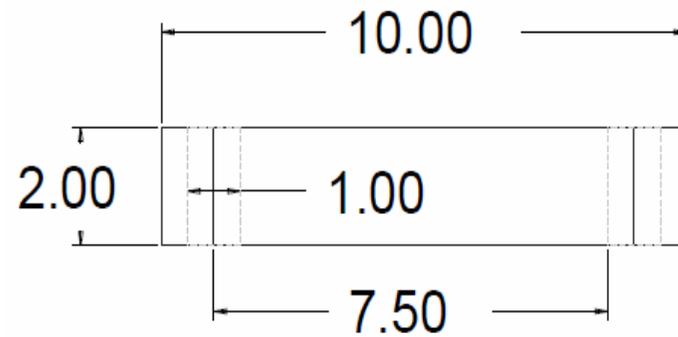
# Gripper Connector



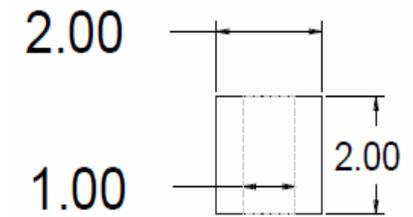
TOP VIEW



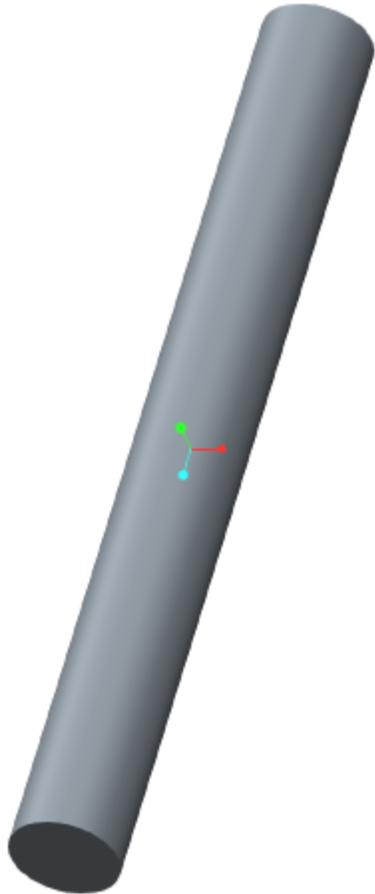
FRONT VIEW



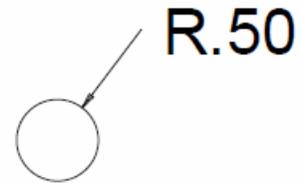
SIDE VIEW



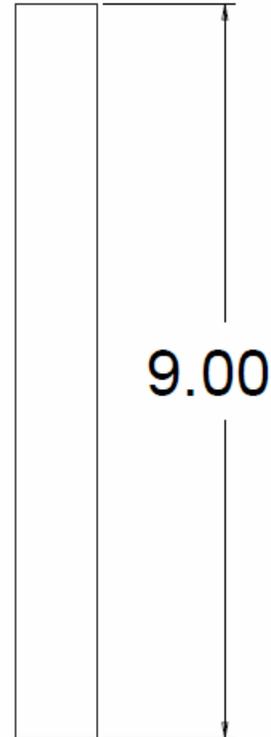
# Gripper Bolt



TOP VIEW



FRONT VIEW



SIDE VIEW

