

# Pulley System with Wire Rope

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## AIM

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To create a 3D model of a pulley system with wire rope using Autodesk Fusion 360.

## REQUIREMENTS

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1. Autodesk Fusion 360
2. Windows 10
3. 16 GB of RAM (Integrated graphics recommend 1 GB or more)
4. 2.5 Mbps or faster download; 500 Kbps or faster upload

## PROCEDURE

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### STEP-1: Start a New Design

1. Open Autodesk Fusion 360.
2. Create a New Design file.

### STEP-2: Start Sketch for Pulley

1. Select **Sketch** > **Create Sketch**.
2. Select the **Front Plane (XZ Plane)**.

### STEP-3: Draw the Pulley Profile

1. Draw a **vertical centerline** from the origin.
2. Using **Line tool**, sketch half of the pulley profile based on the required shape (groove and outer surface).
3. Ensure the profile is **closed** for revolve operation.

### STEP-4: Revolve the Pulley

1. Select **Create** > **Revolve**.
2. Choose the pulley profile as the shape.
3. Select the **vertical centerline** as the axis.
4. Set the revolve angle to **360 degrees**.

5. Confirm to create the 3D pulley body.

## STEP-5: Create the Central Hole

1. Start a new **Sketch** on the front face.
2. Draw a **Circle** centered on the pulley.
3. Dimension the circle for the central shaft hole size.
4. Finish the sketch.
5. Use **Extrude** > **Cut** through the body to create the hole.

## STEP-6: Apply Fillets

1. Select **Modify** > **Fillet**.
2. Apply fillets to the edges where needed (to smoothen the groove and side transitions).

## STEP-7: Sketch the Wire Rope Path

1. Start a **new Sketch** on the Front Plane.
2. Draw the path of the wire rope passing over the pulley using **Arc** and **Line** tools.

## STEP-8: Create the Wire Rope

1. Draw a **small circle** representing the cross-section of the rope.
2. Use **Sweep Tool**:
  - Select the rope circle as the profile.
  - Select the path sketched earlier as the path.
3. Complete the Sweep to form the 3D wire rope.

## STEP-9: Appearance and Material Application

1. Open **Modify** > **Appearance**.
2. Apply a **metallic material** to the pulley (e.g., Steel).
3. Apply a **wire or rubber-like material** to the rope.
4. Adjust color/texture if needed.

## STEP-10: Save the File

Save the completed design.

## INPUT

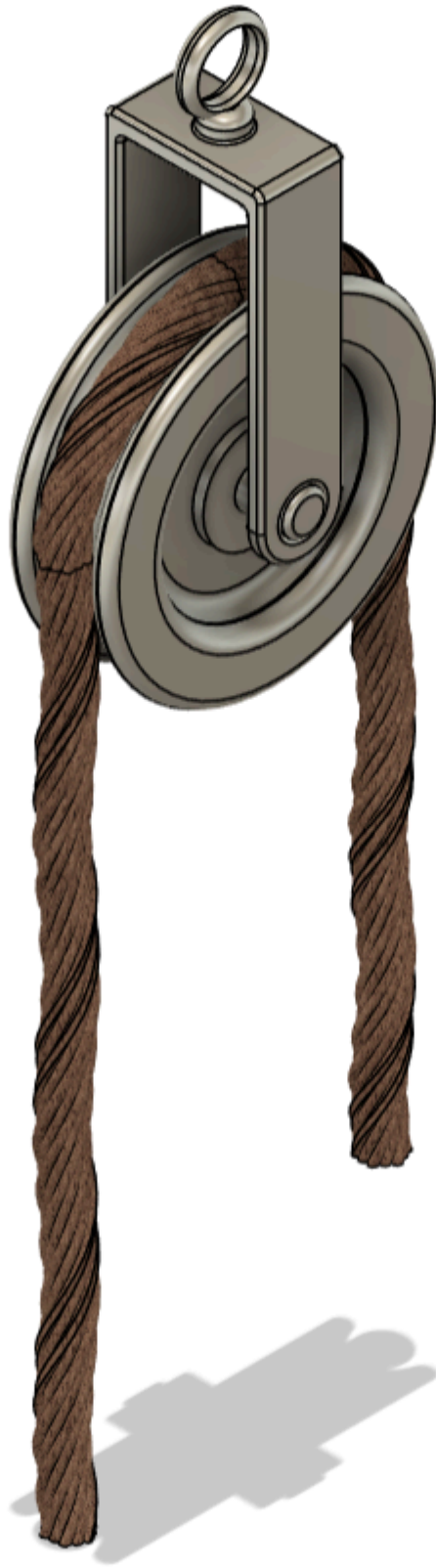
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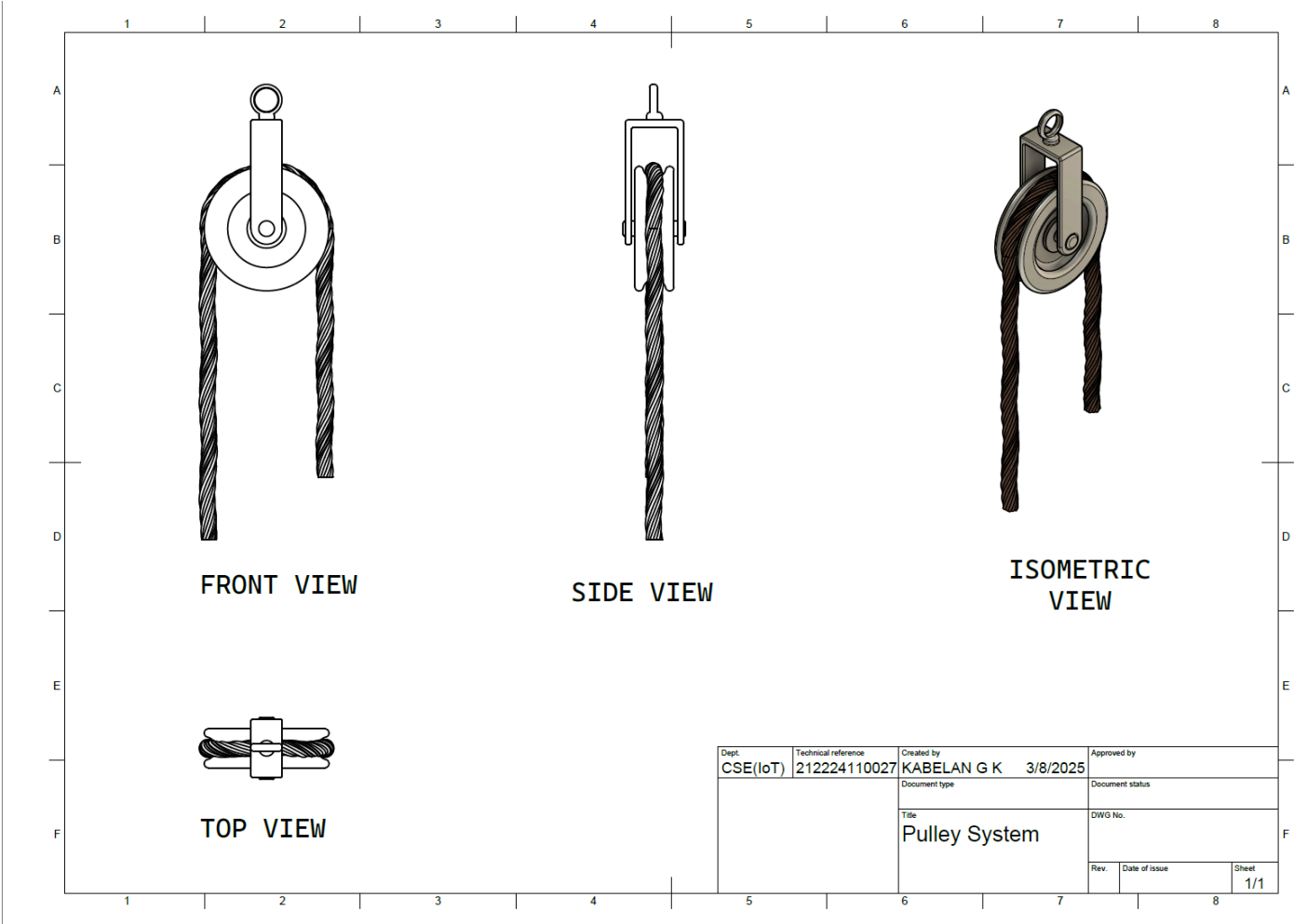
**OUTPUT**

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Isometric view :



Drawing



RESULT

Thus, the 3D model of the Pulley System with Wire Rope is created successfully using Fusion 360.  
(All files attached to the repo)