Engine Piston Assembly

Date: 07-04-2025

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AIM

To create a 3D model of an engine piston assembly using Autodesk Fusion 360.

REQUIREMENTS

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

STEP-1: Start a New Design

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

STEP-2: Model the Piston

1. Select **Sketch** > **Create Sketch** on the Front Plane.
2. Sketch the piston profile using the **Line** and **Arc** tools.
3. Close the profile carefully.
4. Use **Create** > **Revolve** to revolve the profile 360 degrees around the centerline.

STEP-3: Add Piston Details

1. Sketch and **Cut** grooves for piston rings on the outer surface.
2. Use the **Fillet** tool to round necessary edges.

STEP-4: Model the Connecting Rod

1. Start a new **Sketch** on the side plane.
2. Sketch the profile of the connecting rod with two circular ends (for piston pin and crankshaft).
3. Extrude the profile to create a solid rod.

4. Cut internal holes for the pins.

STEP-5: Model the Piston Pin

1. Create a new **Sketch** on the appropriate plane.
2. Sketch a simple **Circle** for the pin profile.
3. Extrude to the required length.

STEP-6: Assemble Components

1. Move to **Assemble** > **New Component** for each part (Piston, Connecting Rod, Piston Pin).
2. Use **Assemble** > **Joint** tool to align and connect:
    - Piston Pin with Piston.
    - Connecting Rod with Piston Pin.
3. Ensure correct movement freedom where necessary.

STEP-7: Apply Materials

1. Open **Modify** > **Appearance**.
2. Assign materials:
    - Metal (e.g., Steel or Aluminum) for the piston.
    - Strong alloy for the connecting rod.
    - Hardened steel for the piston pin.

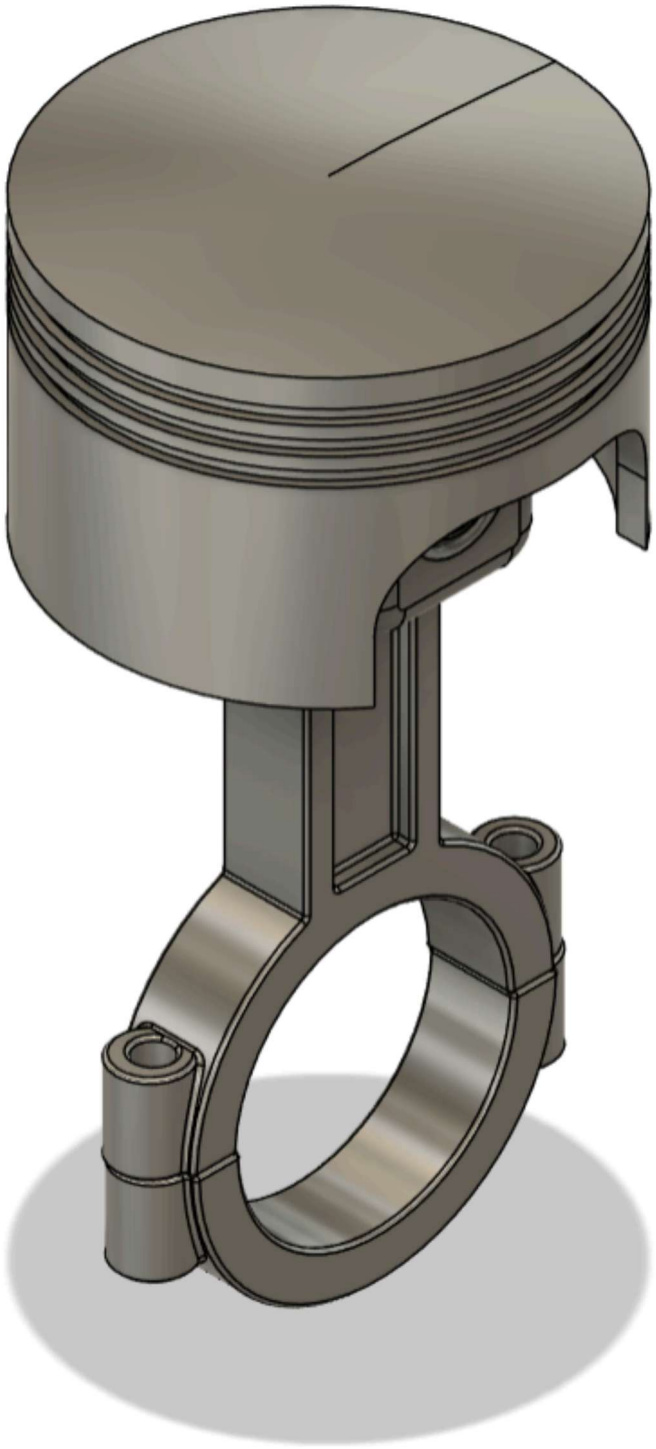
STEP-8: Save the Assembly

Save the completed piston assembly.

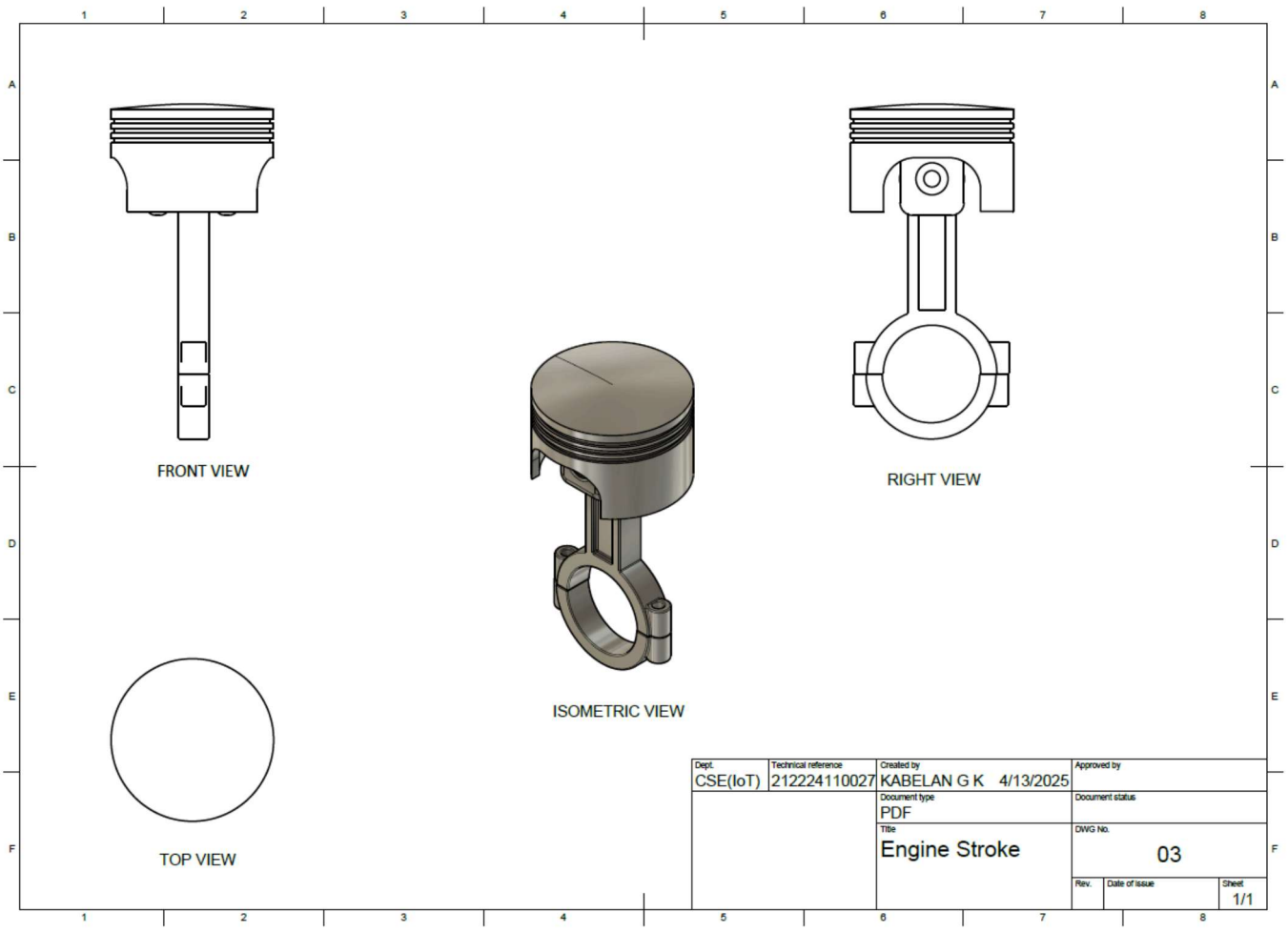
INPUT

OUTPUT

ISOMETRIC VIEW



ENGINE STROKE


FRONT VIEW
RIGHT VIEW
ISOMETRIC VIEW
TOP VIEW
Dept.
CSE(IoT)
Technical reference
212224110027
Created by
KABELAN G K 4/13/2025
Approved by
Document type
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Document status
Title
Engine Stroke
DWG No.
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Rev.
Date of issue
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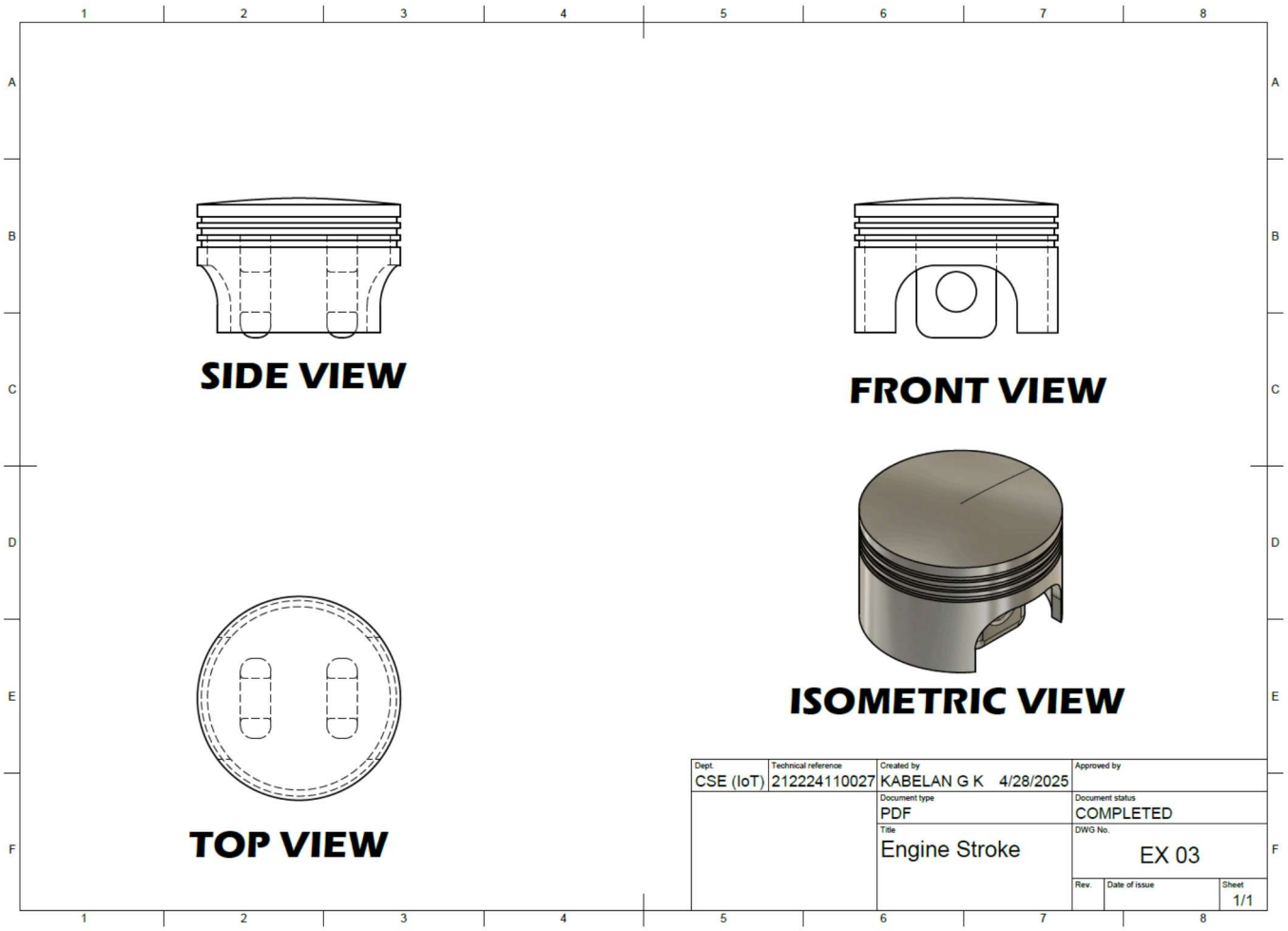
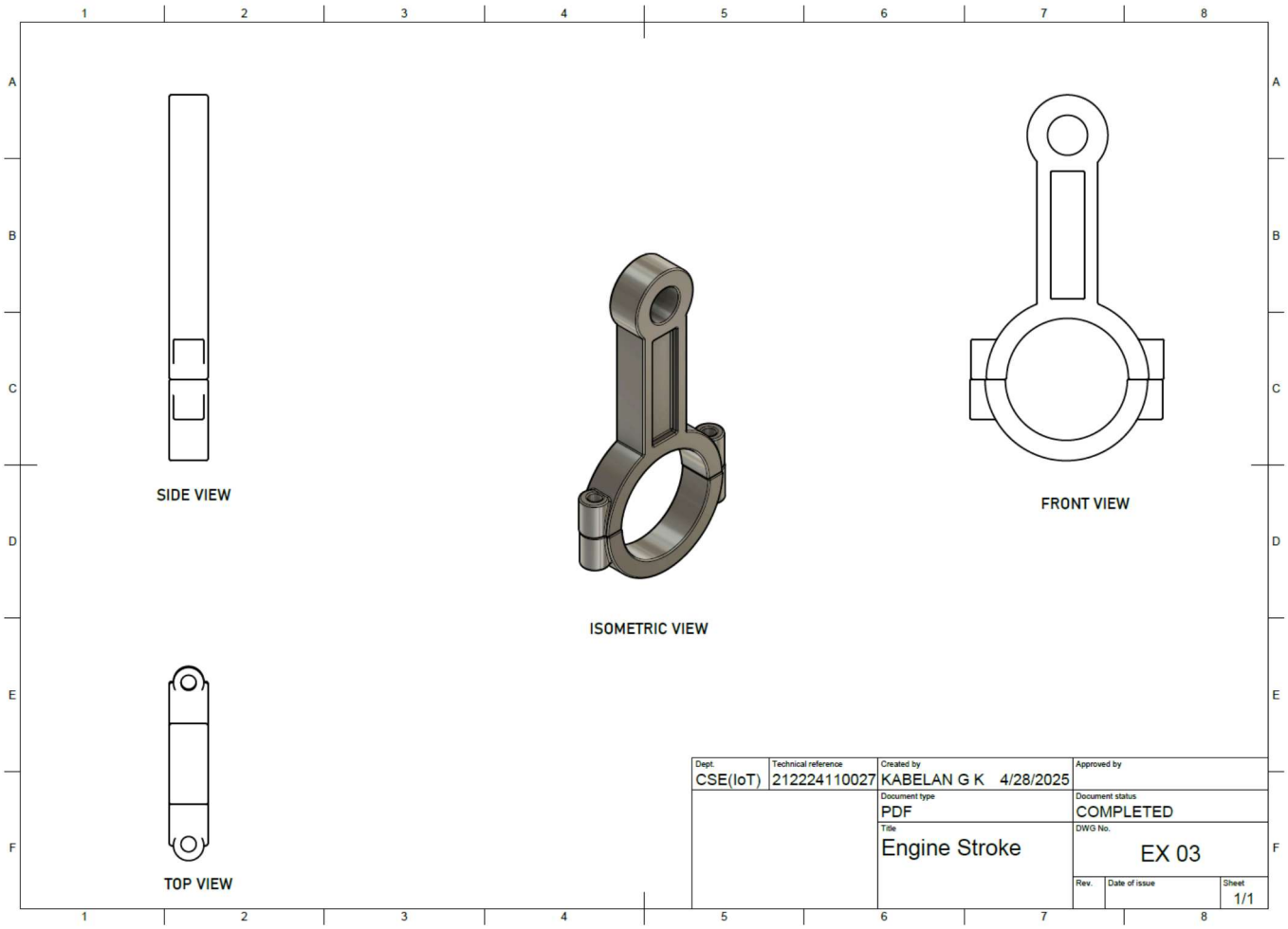
PISTON



CONNECTING ROD


SIDE VIEW
ISOMETRIC VIEW
FRONT VIEW
TOP VIEW
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DWG No.
EX 03
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Date of issue
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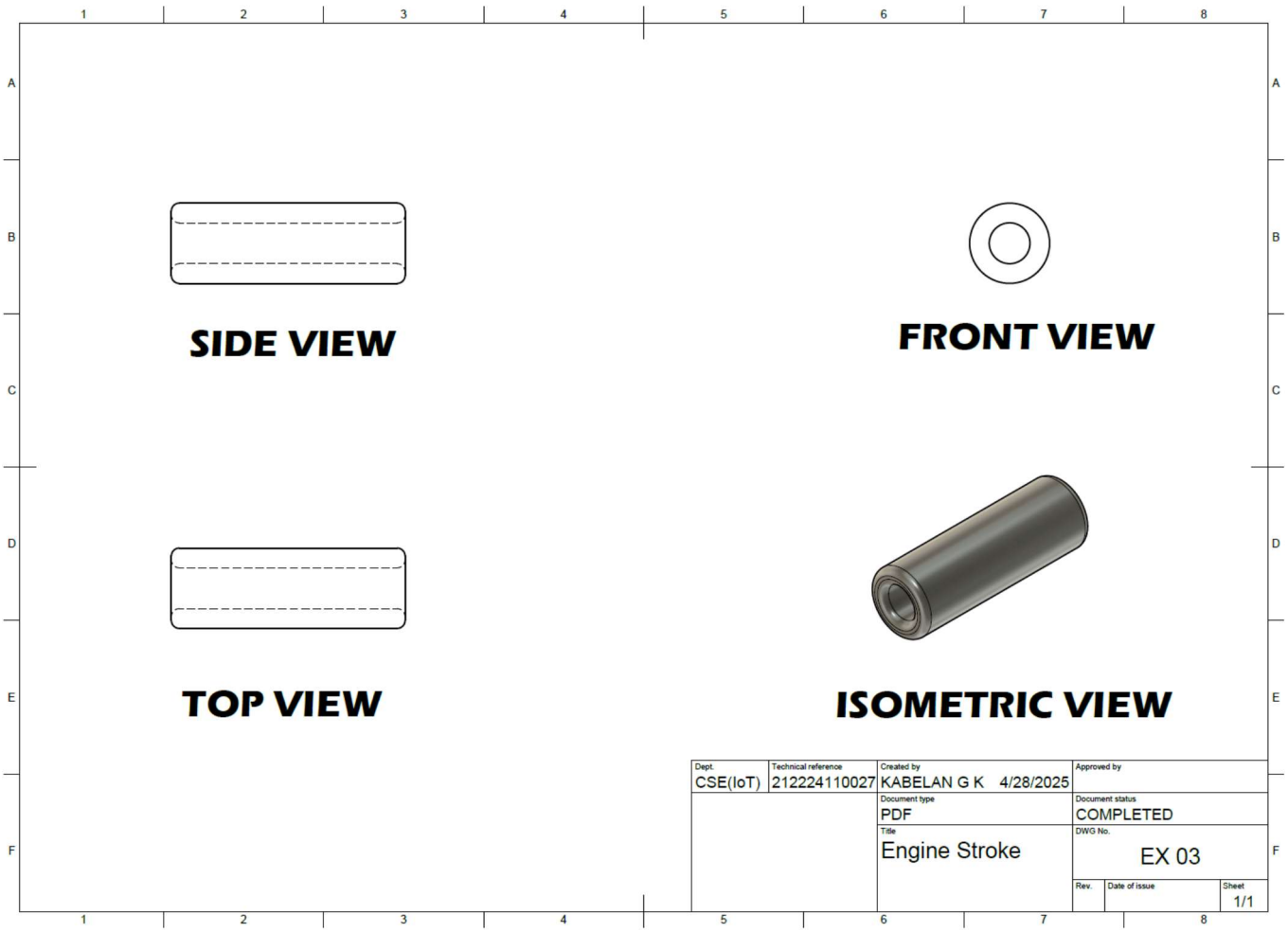
1/1

ASSEMBLER



RESULT

Thus, the 3D model of the Engine Piston Assembly is created successfully using Fusion 360(All files are atteched).