CAD/CAM Homework 1

Top-Down Modeling with SolidWorks

Due Date : 2009.09.30. 23:59:59

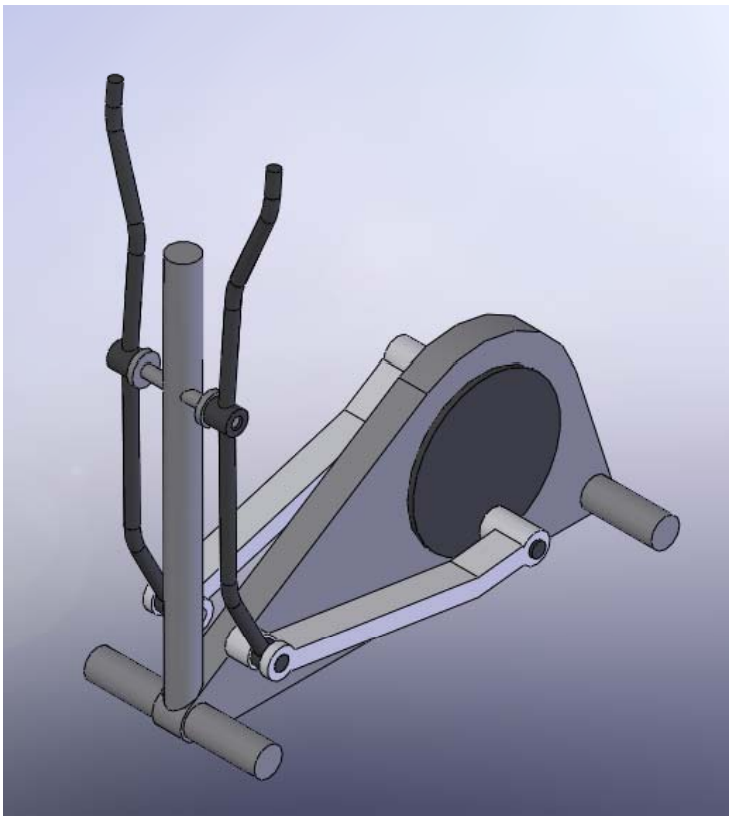
Elliptical Machine

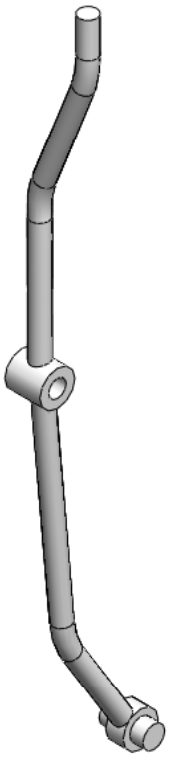
- ASSIGNMENT:

  Using SolidWorks (of any version), model the elliptical machine as illustrated in following pages.

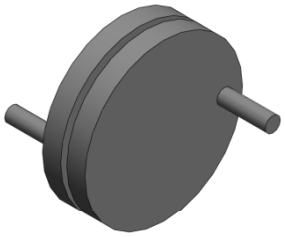
Overview

Elliptical Machine (ASSY')

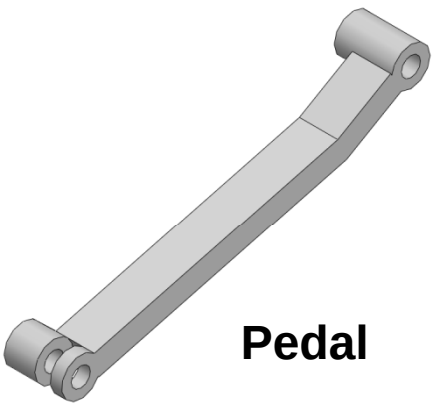




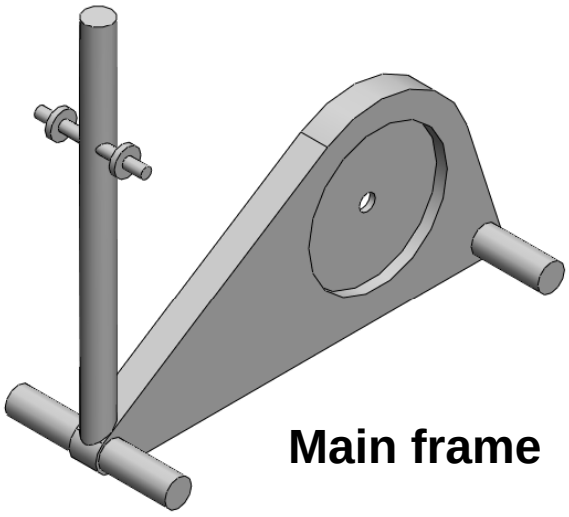
Handle bar



Hub

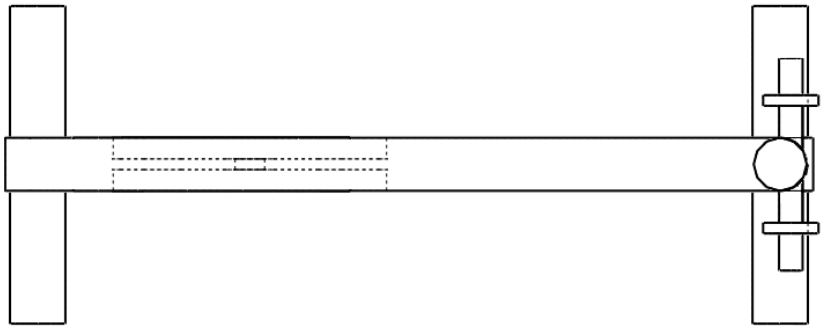


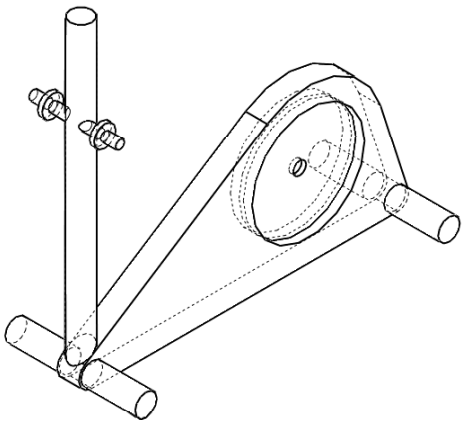
Pedal

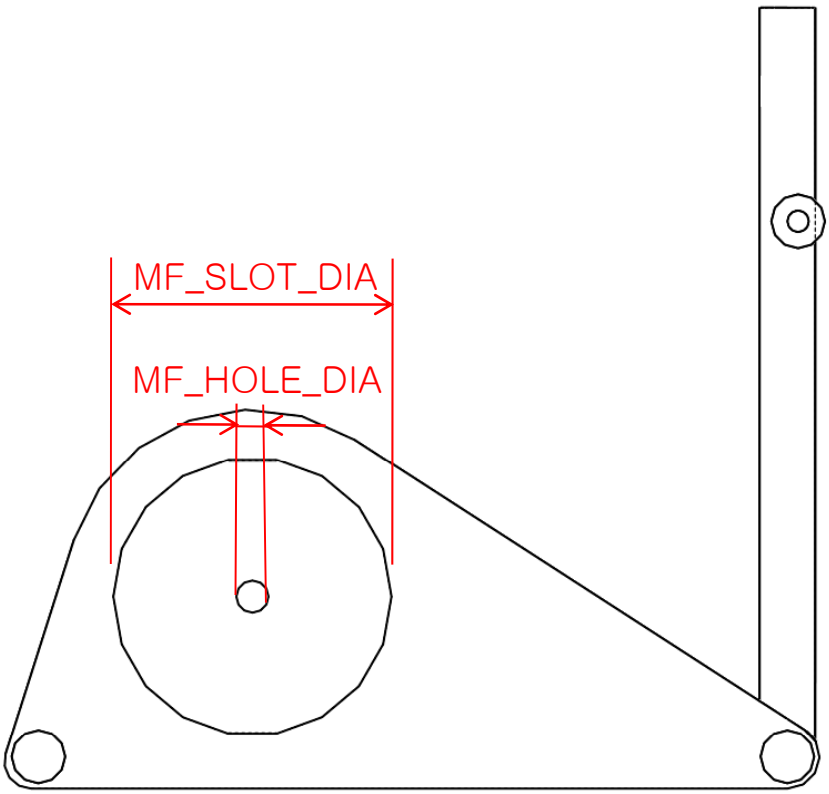


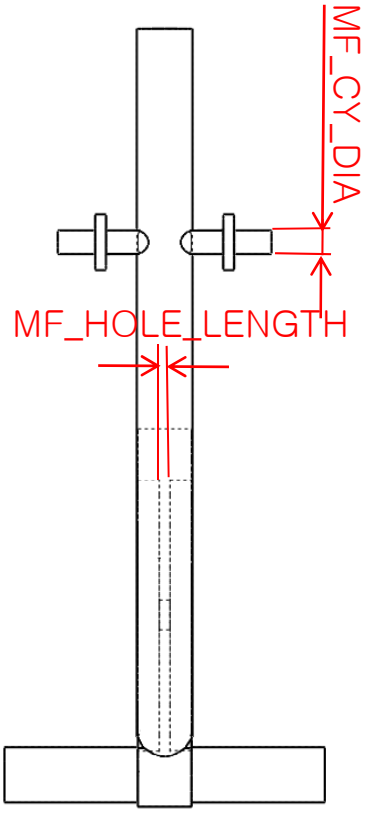
Main frame

Part details: MAIN FRAME



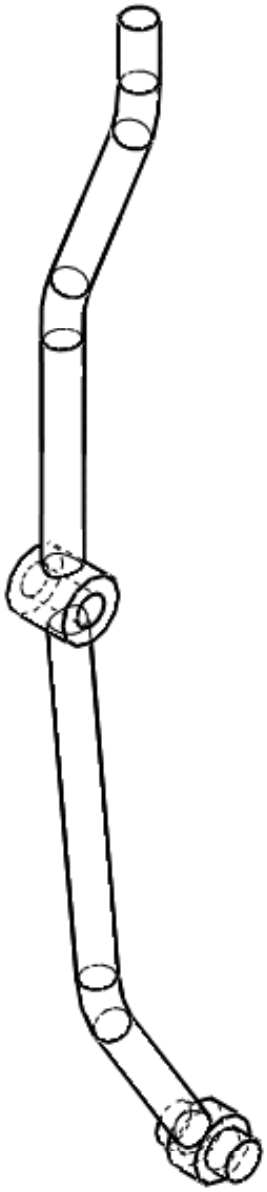




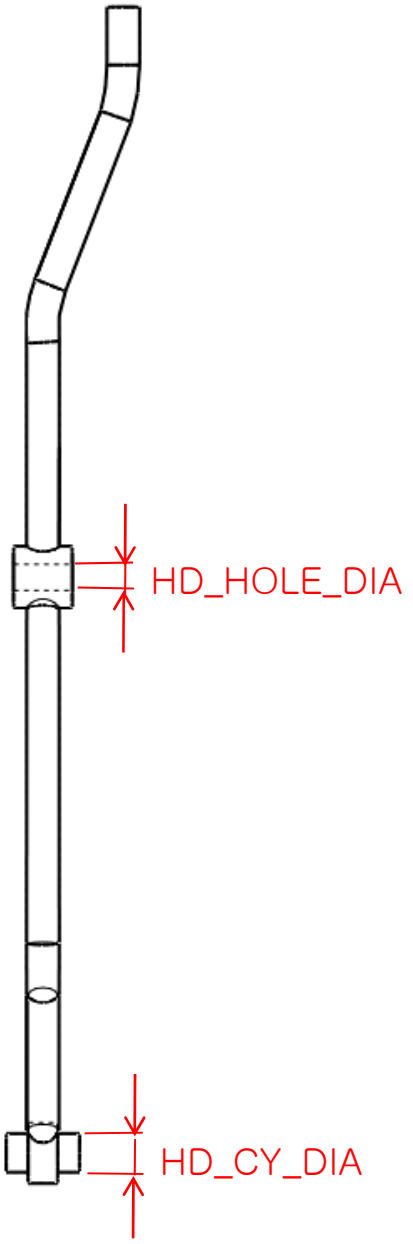


Part details: Handle bar

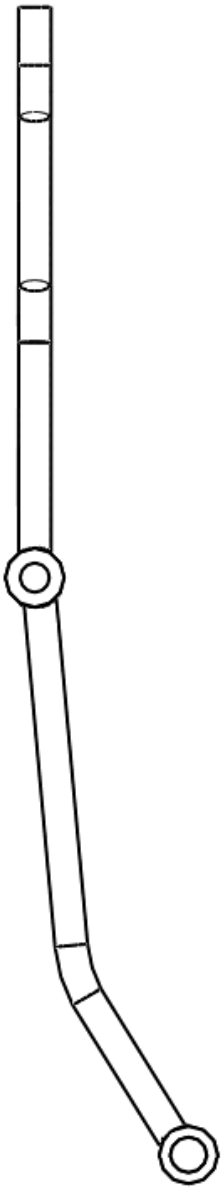
Isometric



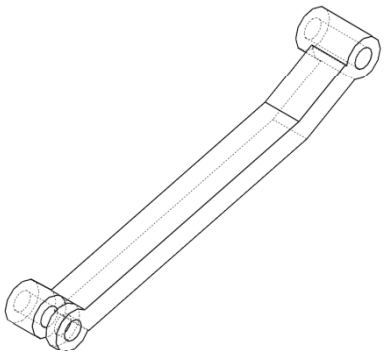
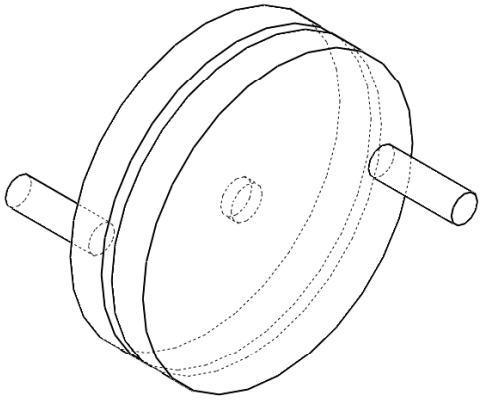
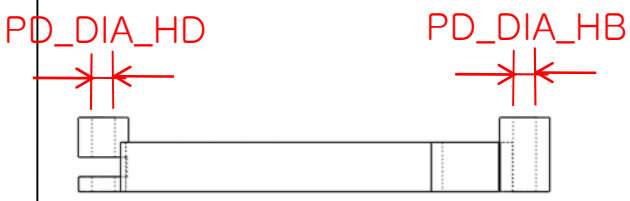
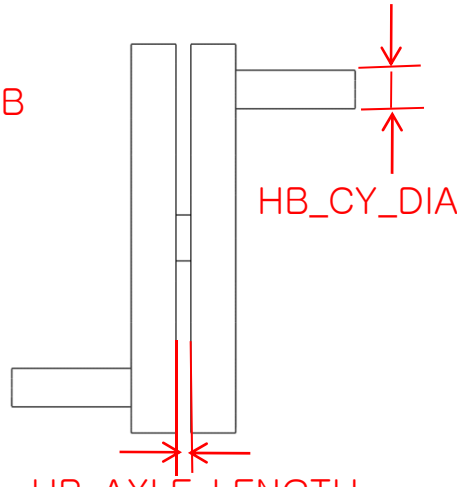
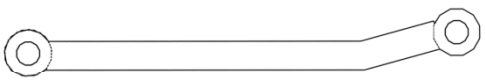
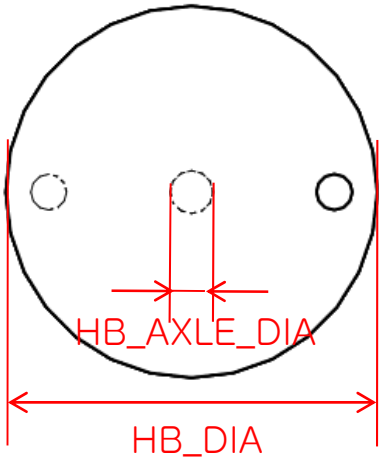
Posterior



Lateral



Part details: Pedal / Hub

View directions	Pedal	Hub
Isometric		
Upper		
Lateral		

Requirements

- Draw a top layout sketch in the assembly.
- Model the parts from the top layout.
- Name each of the parts/assembly as shown in the above figures.
- Use proper dimensions at your discretion.
- Make all sketches fully defined (No blue lines).
- Define mating conditions so that each part can move sequentially.
- Requirements for equations:
  - All mating parts should be related by equations.
  - The equations must include all relations between dimension indications shown in the figures (red lines & texts). (See *Appendix* for the details)
  - Determine proper equations so that your fellow designers can modify your design without impairing the original design concept. (Further constraints/equations : +α)

Submission Details

- Due : 2009.09.30. 23:59:59
  - Credit : 10 points + α
  - Delay penalty : 2 point per a day.
- Objects on demand :
  - SolidWorks Assembly/Part files
  - Write a short REPORT.TXT document that describes your procedure of implementation.
- Submission : http://etl.snu.ac.kr/
  - Please create a Zip file that contains all of your works, and name it “HW1_(student ID).zip”
  - Ex) HW1_99446123.zip
    or HW1_200012345.zip
- Question :
  - TA : Baek, Seung-Yeob (백승엽)
  - Room : 301-209
  - E-mail : bsy86@snu.ac.kr
  - Tel : 02 - 880 - 7447

Grading Policy

- Nothing but the submission 1
- A solid model without any equation/constraints 3
- A solid model derived from the top-layout 4
- All the essential equations (as listed in Appendix) are included 10

(1 pt per a equation)

- Additional equations : extra points (max. 5 pts)

- No report file : -2 pt off.
- Delay : -2 pt off per a day.
- Copy : 5 pt lower than the lowest.

Appendix

- Essential equations
  - MF_HOLE_DIA = HB_AXLE_DIA
  - MF_HOLE_LENGTH = HB_AXLE_LENGTH
  - MF_SLOT_DIA = HB_DIA
  - HB_CY_DIA = PD_DIA_HB
  - HD_CY_DIA = PD_DIA_HD
  - HD_HOLE_DIA = MF_CY_DIA

- NOTE
  - Above equations are not sufficient to fully relate each of the parts; determine further equations in order to improve completeness of your solid model. It will bring you some EXTRA POINTS.
  - If you are not sure about your new equations, feel free to ask TA ☺.