UNIVERSITY OF ALBERTA

Mec E 265
Engineering Graphics and CAD

Department of Mechanical Engineering

Assemblies and Assembly Drawings

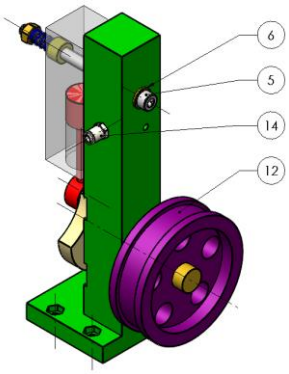
Details

1) Review the overview on the tutorial discussed in the lecture
    a. SW: SM's of assemblies
    b. Discussion of the assignment
2) Do the Google QUIZ for this week
3) Complete the SW tutorials
    a. Find the tutorial at:
    https://sites.ualberta.ca/~dnobes/MecE_265_NOBES.html
    Tutorials - "Assemblies"

    b. Document / review the steps, mates and software tools that are used in the tutorial
    c. Make an assembly drawing with a BOM and balloons (not for submission)
4) Create a plan for the assignment
    a. Develop a plan of how you will build the assembly and what MATES (need ×3) you will use
        i. What features to MATE (typically PLANES)
        ii. What type of MATE will be used
    b. Have the TA mark off that this is completed
5) Begin the assignment

Assignment

1) Complete the tutorial as necessary
2) Use the plan you generated to aid in construction of the assembly
3) Download the parts for the Air Engine from eClass:
(NOTE: have a single folder that contains both the parts, the assembly and the drawing. Always copy the entire folder to your storage)
4) Make the assembly model
5) Complete the following drawings and include a BOM, balloons and dimensions as appropriate:
    a. An isometric assembly
    b. An exploded isometric assembly
    c. An orthographic assembly
    d. An exploded and orthographic view of the Crank Shaft assembly on



6) Save your assembly using the name "*MecE265_Ass02_CCID*.sldasm". *CCID* is your personal user CCID
7) Save your single, multi-sheet drawing file using the name "*MecE265_Ass02_CCID*.slddrw"
8) Make a PDF of your drawing file using the name "*MecE265_Ass02_CCID*.pdf"
9) Compress all SOLIDWORKS files (including the assemble parts) into a single zip using "Pack and Go" for submission and use the file name "*MecE265_Ass02_CCID*.zip"
10) Submit the PDF and the ZIP

DUE: Midnight the day before your next lab

Drawings for the Assignment

1) Drawing #1 –Isometric of the assembly
    a. Use 'Shaded with edges' for the view display
    b. Use a sheet scale 1:2
2) Drawing #2 –Isometric of exploded view of the assembly
    a. Use 'Shaded with edges' for the view display
    b. Use a sheet scale 1:2
3) Drawing #3 – Orthogonal views with:
    a. Overall dimensions
    b. Dimension the position of the Crank Shaft axis to the bottom of the base plate
    c. Use a sheet scale of 1:3
4) Drawing # 4 – Drawing of the Crank Shaft assembly
    a. Have the exploded, isometric, and orthogonal views on the same sheet
    b. Use a sheet scale of 2:3

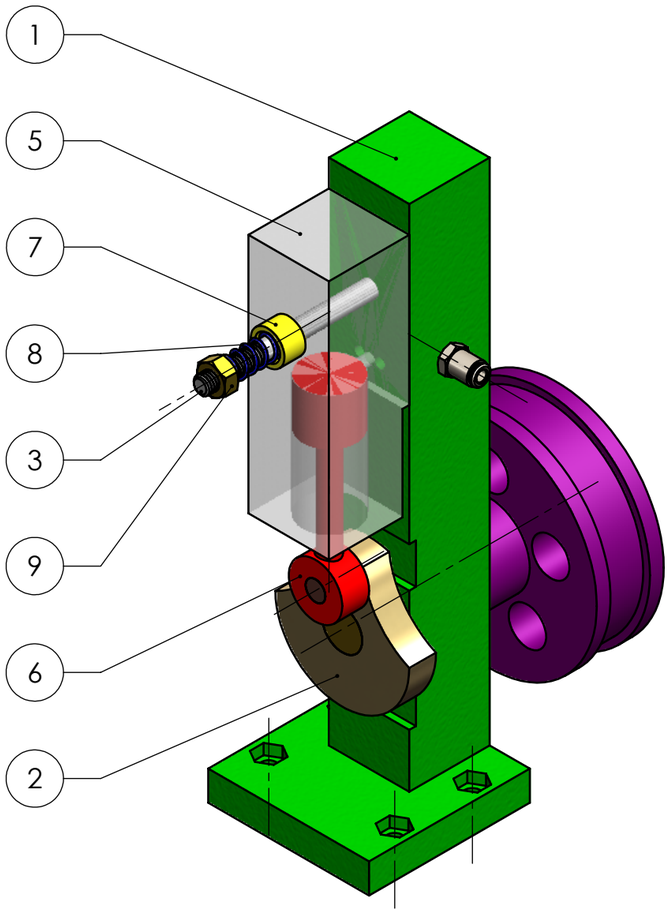
Notes on the Drawings

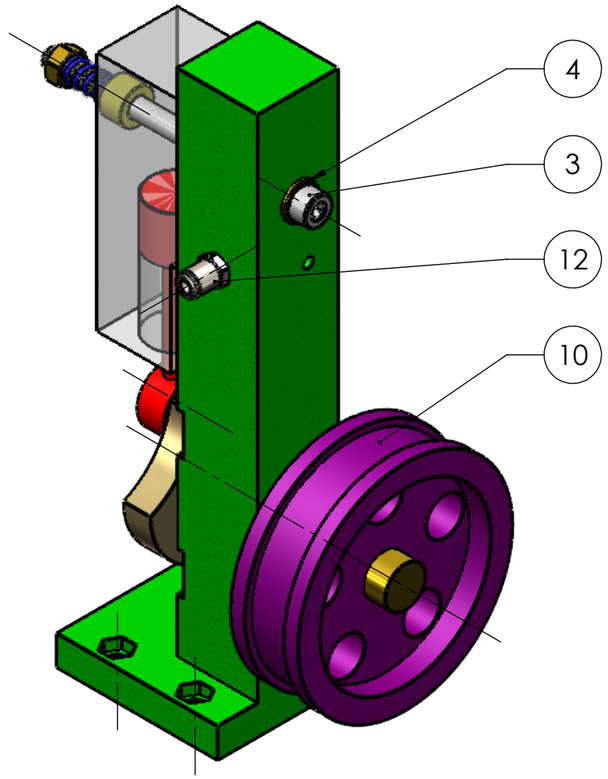
1) ALL will include balloons and a Bill of Materials (BOM)
    a. Have the same columns as per the drawing
    b. Format the column width tight to the text and have a row height of 5mm
    c. Format all BOM text to be 8 point Century Gothic
    d. NOTE: the text in the BOM may not be the same as in the solution, but this is OK
2) Only balloon part faces; avoid ballooning edges

Tips for the Assignment

- In SW, items that are already in an assembly can be copied by selecting, holding down the Ctrl key and dragging. A new instance of the part will appear in the Feature Manager
- When selecting mates, consider using Principle Plane Mates. You may also need to mate to an edge and point (i.e. for the SPRING)
- Exploded views
    - Select the Configurations Manager tab (next to the FeatureManager)
    - Right click on Default and select 'New Exploded View'
    - Each step in the exploded view can be edited (or deleted) after it has been made
- When making the drawing of the exploded view, if it does not appear
    - Right click on the view
    - Select properties
    - Check the box 'Show in exploded state'
- Details for the title block are loaded into the solid model (or part) by doing the following.
    - In the solid model select 'File→Properties' and adding:
        - Summary TAB
            - Your name for 'Author' (this will show as who made the SM)
            - Any comments you would like to make to the TA or myself in 'Comments'
            - The name of the drawing for 'Title'
        - Custom TAB
            - LabTA → As we are not in the MecE lab, put 'DSN'
            - LabDay → your lab day
    - In the Drawing select 'File→Properties' and add ONLY:
        - Summary TAB
            - Your name for 'Author' (this will show as who drew the SM)

ITEM NO.	PART NUMBER	Material	SW-Author(Author)	QTY.
1	Body	ABS	David Miller	1
2	ccid_Ass2_Crankshaft	Various	David Miller	1
3	91290A472	Alloy Steel	STD	1
4	90965A190	Brass	STD	1
5	Cylinder	Various	D.S. Nobes	1
6	Piston	PLA	D.S. Nobes	1
7	Guide	PLA	Andrew Archibald	1
8	9657K308	Galvanized Steel	McMaster-Carr Inc.	1
9	92497A400	Brass	STD	1
10	Fly Wheel	PLA	D.S. Nobes	1
11	Set Screw	Alloy Steel	STD	1
12	5779K245	Duranickel(R) 301	McMaster-Carr Inc.	1





MecE 265

Instructor:
Dr. D.S.Nobes
Win 2021

Comments:

UNLESS OTHERWISE SPECIFIED:

DIMENSIONS ARE IN MM
TOLERANCES:
ANGULAR: ± 0.5°
LINEAR
X = ± 0.5
X.X = ± 0.1
X.XX = ± 0.025

SURFACE FINISH µm 0.6

DO NOT SCALE DRAWING

DRAWN BY:
David S. Nobes

Lab Day	All
SM By	**D.S.Nobes**
TA Initials	DSN

dnobes
Friday, January 22, 2021 3:18:35 PM
Monday, January 22, 2018 1:20:24 PM

MATERIAL:
Various

FILE NAME:
ccid_Ass2_Engine

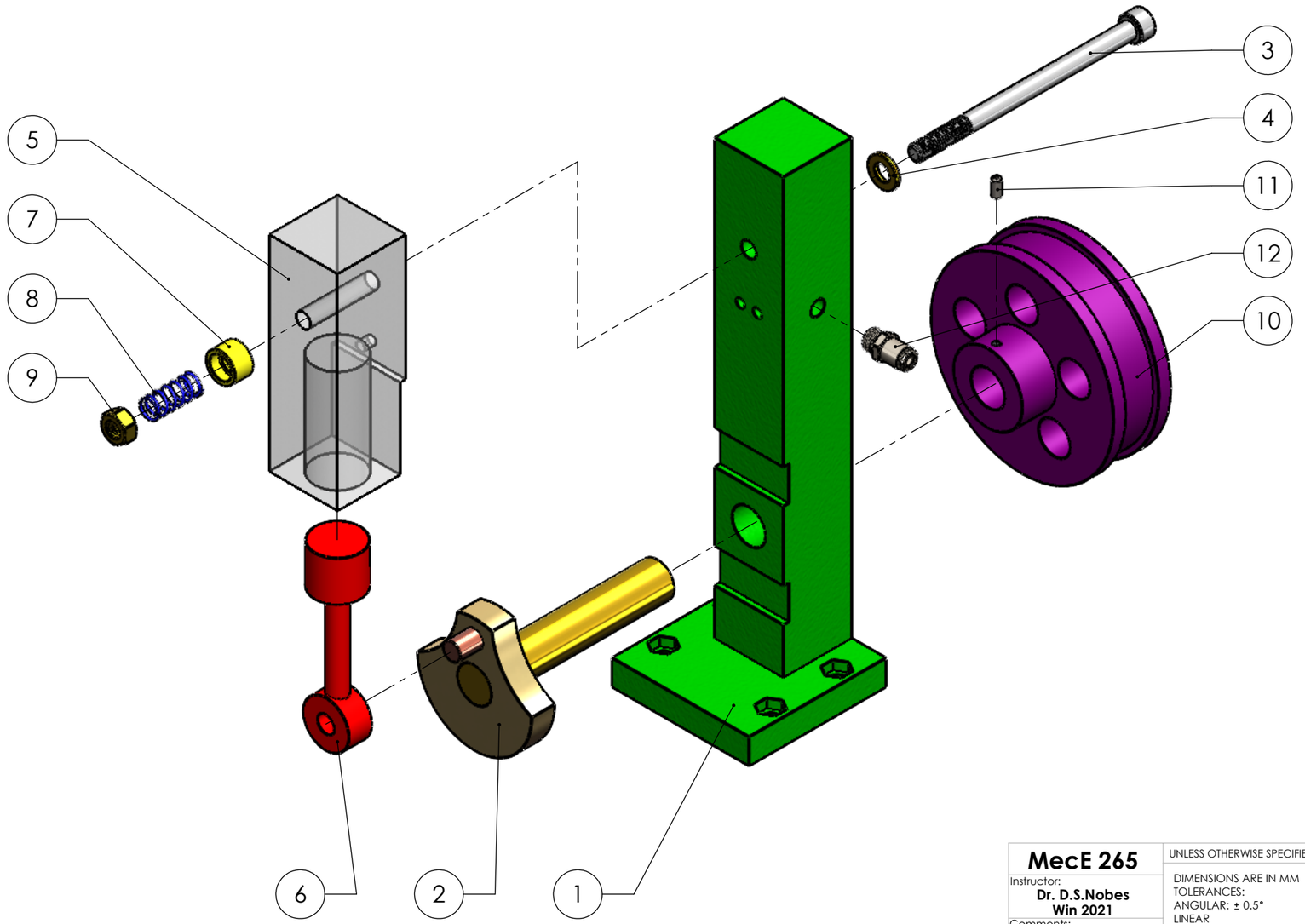
The Department of Mechanical Engineering
UNIVERSITY OF ALBERTA

TITLE:
Simple Air Engine

SIZE	Assignment Number	REV
B	Assignment 02	1

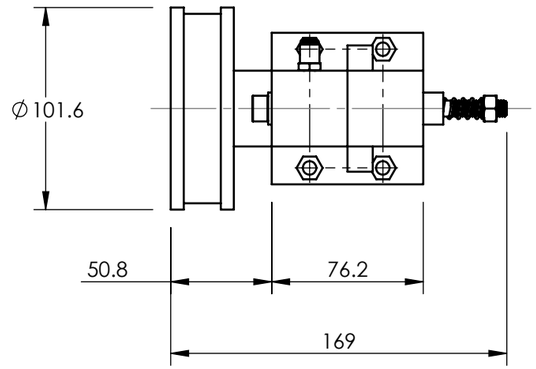
SCALE: 1:2 | Mass: 3462.77 | SHEET 1 OF 4

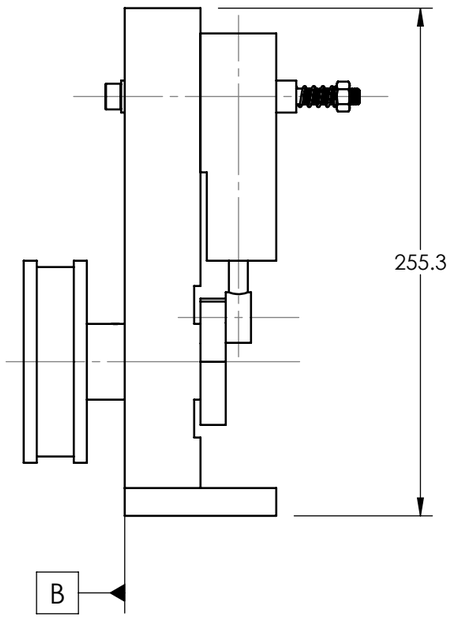
ITEM NO.	PART NUMBER	Material	SW-Author(Author)	QTY.
1	Body	ABS	David Miller	1
2	ccid_Ass2_Crankshaft	Various	David Miller	1
3	91290A472	Alloy Steel	STD	1
4	90965A190	Brass	STD	1
5	Cylinder	Various	D.S. Nobes	1
6	Piston	PLA	D.S. Nobes	1
7	Guide	PLA	Andrew Archibald	1
8	9657K308	Galvanized Steel	McMaster-Carr Inc.	1
9	92497A400	Brass	STD	1
10	Fly Wheel	PLA	D.S. Nobes	1
11	Set Screw	Alloy Steel	STD	1
12	5779K245	Duranickel(R) 301	McMaster-Carr Inc.	1

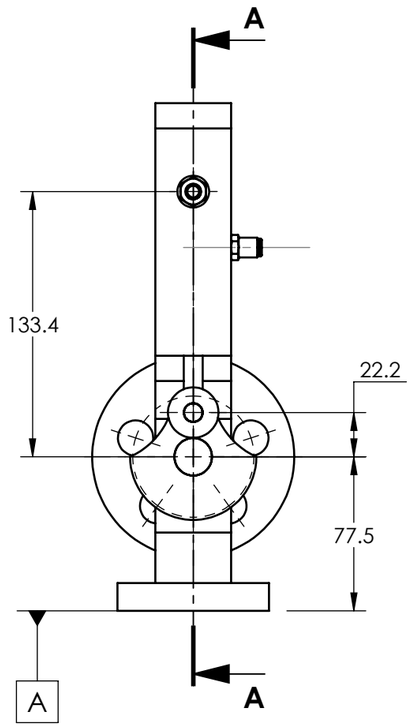


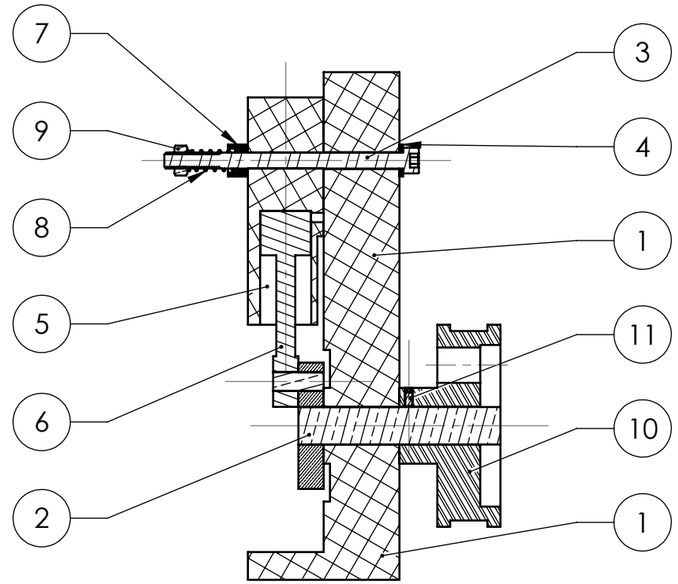
MecE 265 Instructor: **Dr. D.S.Nobes** **Win 2021** Comments:	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MM TOLERANCES: ANGULAR: ± 0.5° LINEAR X = ± 0.5 X.X = ± 0.1 X.XX = ± 0.025 SURFACE FINISH µm 0.6 DO NOT SCALE DRAWING	DRAWN BY: **David S. Nobes** Lab Day: All SM By: **D.S.Nobes** TA Initials: DSN dnobes Friday, January 22, 2021 3:18:35 PM Monday, January 22, 2018 1:20:24 PM	The Department of Mechanical Engineering UNIVERSITY OF ALBERTA TITLE: Simple Air Engine SIZE **B** / Assignment Number: Assignment 02 / REV: 1 SCALE: 1:2 / Mass: 3462.77 / SHEET 2 OF 4
MATERIAL: Various			
FILE NAME: ccid_Ass2_Engine			

ITEM NO.	PART NUMBER	Material	SW-Author(Author)	QTY.
1	Body	ABS	David Miller	1
2	ccid_Ass2_Crankshaft	Various	David Miller	1
3	91290A472	Alloy Steel	STD	1
4	90965A190	Brass	STD	1
5	Cylinder	Various	D.S. Nobes	1
6	Piston	PLA	D.S. Nobes	1
7	Guide	PLA	Andrew Archibald	1
8	9657K308	Galvanized Steel	McMaster-Carr Inc.	1
9	92497A400	Brass	STD	1
10	Fly Wheel	PLA	D.S. Nobes	1
11	Set Screw	Alloy Steel	STD	1
12	5779K245	Duranickel(R) 301	McMaster-Carr Inc.	1





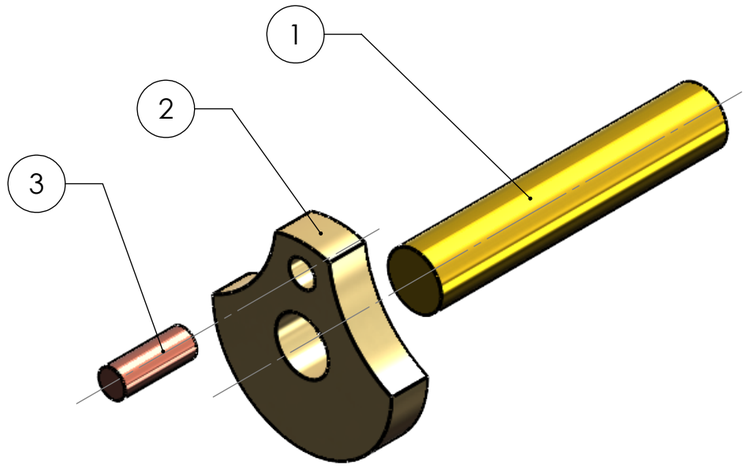


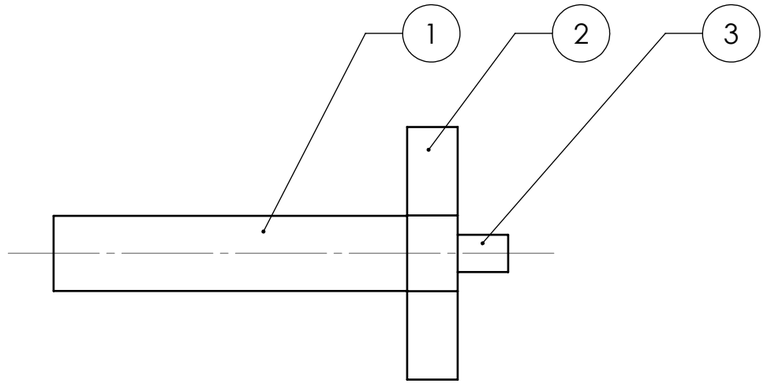


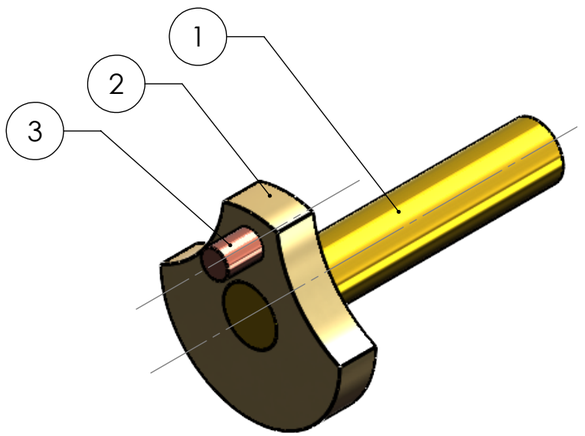
SECTION A-A

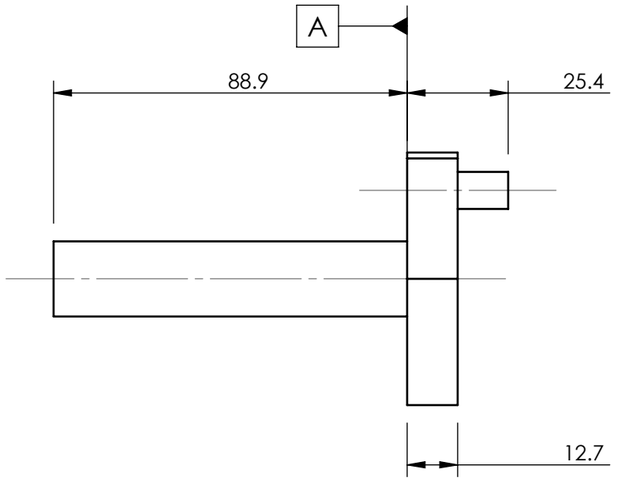
MecE 265	UNLESS OTHERWISE SPECIFIED:	DRAWN BY: **David S. Nobes**	The Department of Mechanical Engineering, UNIVERSITY OF ALBERTA
Instructor: **Dr. D.S.Nobes Win 2021**	DIMENSIONS ARE IN MM TOLERANCES: ANGULAR: ± 0.5° LINEAR X = ± 0.5 X.X = ± 0.1 X.XX = ± 0.025	Lab Day: All	TITLE: Simple Air Engine
Comments:	SURFACE FINISH µm 0.6	SM By: **D.S.Nobes**	
	DO NOT SCALE DRAWING	TA Initials: DSN	SIZE **B** · Assignment Number: Assignment 02 · REV: 1
MATERIAL: Various		dnobes Friday, January 22, 2021 3:18:35 PM Monday, January 22, 2018 1:20:24 PM	SCALE: 1:3 · Mass: 3462.77 · SHEET 3 OF 4
FILE NAME: ccid_Ass2_Engine			

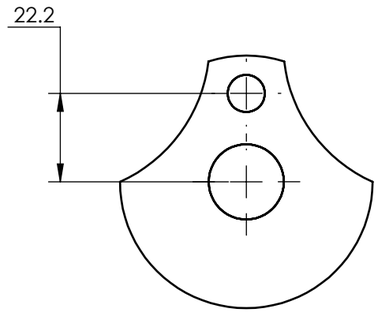
ITEM NO.	PART NUMBER	Material	SW-Author(Author)	QTY.
1	Simple Shaft	Brass	D.S. Nobes	1
2	Counterweight	Pure Gold	D.S. Nobes	1
3	Simple Journal Pin	Copper	D.S. Nobes	1











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Instructor: **Dr. D.S.Nobes Win 2021**	DIMENSIONS ARE IN MM TOLERANCES: ANGULAR: ± 0.5° LINEAR X = ± 0.5 X.X = ± 0.1 X.XX = ± 0.025	Lab Day: ALL	TITLE: Crankshaft Sub Assem
Comments: Comment: Edit in SM	SURFACE FINISH µm 0.6 DO NOT SCALE DRAWING	SM By: **David Miller**	
		TA Initials: DSN	SIZE **B** / Assignment Number: Assignment 02 / REV: 1
MATERIAL: Various		dnobes Friday, January 22, 2021 3:18:26 PM Monday, January 22, 2018 1:21:05 PM	SCALE: 2:3 / Mass: 801.07 / SHEET 4 OF 4
FILE NAME: ccid_Ass2_Crankshaft			