

PART MINI-PROJECT ASSESSMENT
(submit as cover page)

Name: _____

Section: 01

Date: 03/09/10

1. How many hours did you spend on each component of the part mini-project, including class time? These are (a) pre-CAD sketching/measuring/planning, (b) solid model development/detailing, and (c) project documentation?

Component	appx time spent
a	5 1/2 hours
b	15 hours
c	3 1/2 hours
<i>total</i>	<i>24 hours</i>

2. What are your two most important lessons learned about solid modeling in this project? *The two things I learned while doing this project that I found to be most valuable were:*

- ① *complete, careful, and correct preparation can make all the difference; it reduces the time you spend with the program open because you know what you're doing. I learned this from the difference btw. my "section 2" drawing and "Irrigation Hole" drawing*
- ② *you can select any face and use it as a plane to draw on - previously, I thought you'd select the face then create a reference plane*

3. Using the ME 301 grading rubric (1-4), analyze your performance in the following:

- | | |
|-----------------------------------|-------------------------------------|
| 1- incomplete, major deficiencies | 3 - complete, meets expectations |
| 2- complete, some deficiencies | 4 - exemplary, exceeds expectations |

Project Component	Self-Rating	Rationale
3.5 Pre-CAD Planning Design Layout Sketch Origin/Axes Measurements/Datums Assumptions	4	This is the first project I've done where my planning cut the actual modeling time significantly. I gathered very useful information the first day and created a detailed construction plan with the knowledge I had at the time. Any issues I had (irrigation holes) were due to not knowing how to approach it.
3.5 Solid Model Development SW Sketches Features/Design Tree Visualization of Final Part Engineering Drawing (w/ major dimensions and completed title block)	3	I think my model is very average - it has all of the necessary pieces of the part and is very complete, but isn't exceedingly "amazing". In my opinion, it is an acceptable completion of the assignment and I'm not sure how else the assignment could be "exemplary".
4 Project Documentation Illustration of Steps Explanation of Steps Lessons/Discoveries	4	I took a lot of care in documenting the process by which I created the part; I took screen shots of everything significant I did and explained thoroughly how I did it, as well as took notes while creating the part on various things I'd noticed, questions I needed to ask, and important lessons learned.

SolidWorks Search

File Edit View Insert Tools Toolbox Prologos Window Help

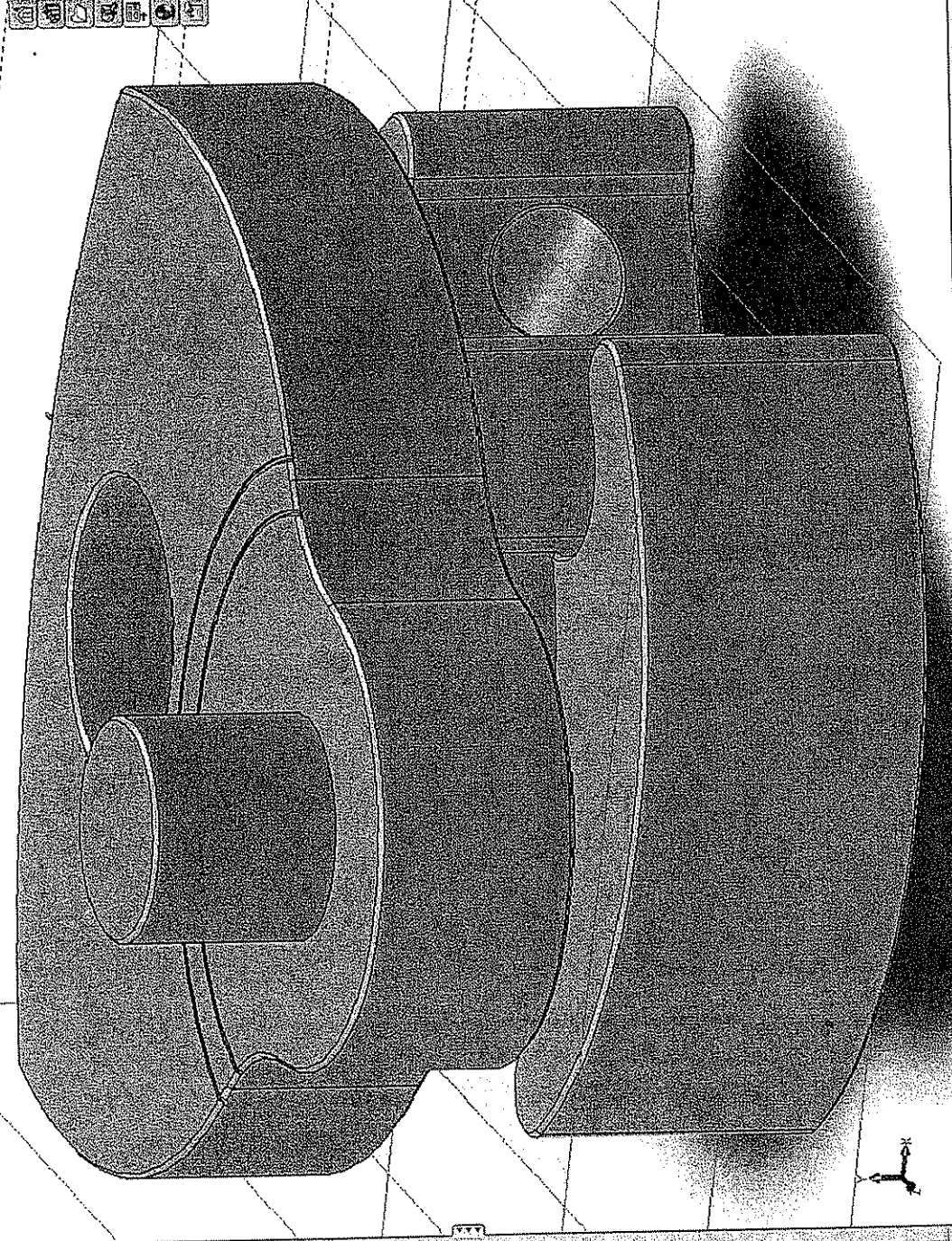
Extruded Boss/Base
 Revolved Boss/Base
 Swept Boss/Base
 Lofted Boss/Base

Fillet
 Linear Pattern
 Rib
 Draft
 Shell
 Wrap
 Dome
 Mirror

Reference Geometry
 Curves
 Instant3D

Revolved Cut
 Swept Cut
 Lofted Cut

Wizard
 Hole
 Wizard
 DimXPert
 Office Products



- Right Plane
- Origin
- Plane1
- Plane2
- Plane3
- "Section 3"
- Sketch3
- "Section 1"
- Sketch1
- "Section 2"
- Sketch4
- "Section 4"
- Sketch5
- Through "Sections 1 & 2"
- Sketch1
- Plane4
- Inset Cut on "Section 3"
- Sketch8
- Mirrored Inset Cut on "Section 3"
- Fillet7
- Plane5
- Custom Diameter Hole (.174 in)
- 3D Sketch2
- Sketch12
- Smaller Irrigation Hole
- Sketch14
- Sketch6
- Mirrored Smaller Irrigation Hole
- Larger Irrigation Hole
- Sketch16
- Sketch18
- Mirrored Larger Irrigation Hole
- On Irrigation Hole 1
- On Irrigation Hole 2
- Top Groove 1
- Sketch20
- Making Top Groove 1 Circular
- Top Groove 2
- Sketch22
- Making Top Groove 2 Circular
- Breaking Edges 1
- Breaking Edges 2
- Breaking Edges 3

Model Motion Study1

SolidWorks Education Edition - Instructional Use Only

SolidWorks Education Edition
 SolidWorks Training
 SolidWorks
 Microsoft

Editing Part

105 All

Completed Construction plan:

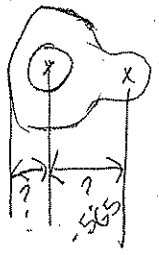
- X ① begin by creating 3 extra planes parallel to top plane, offset by widths of sections 2-4, respectively
- X ② open sketch in front plane + draw shape of section 1
- X ③ open sketch in plane 1 + draw circular section 2
- X ④ open sketch in plane 2 + draw section 3
- X ⑤ open sketch in plane 3 + draw circular section 4
- X ⑥ extrude sections accordingly
- X ⑦ extruded cut hole in center of part
- X ⑧ create extra plane in between front plane + plane 1 (plane 4)
- X ⑨ create extra planes (2) offset by angle necessary to create two holes on left side of part (planes 5+6)
- X ⑩ draw hole profiles in 2 extra angle-offset planes
- X ⑪ draw path for holes in plane 4
- X ⑫ use sweep to create holes + cut it out of part.

attached

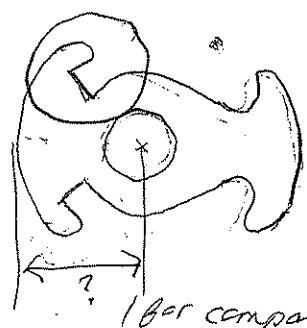
I expect steps 2, 4, 9, and 12 to be most difficult.

So far, I need extra information the following

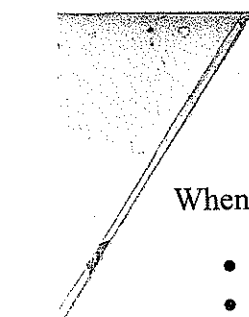
section 3



section 1



And I've had some issues on the circled area of section 1. Everytime I combine the measurement (5) we got for it, I end up overdefining it, so I guessed and went with making it look similar to the original part. My guess is that we misused the micrometer, (forgetting to add the hundredth's digits together) or other measurements.



When creating this part, I made the following assumptions:

- lines that appear straight may be modeled as such
- the dimensions I took and/or were given are vaguely correct and may be used either to construct or check correctness of constructions
- the part is symmetrical about the axis on which all centers of the major circles lie
- edges which appear round can be approximated with only one radius of curvature
- the irrigation holes in Section 1 are perfect circles when they intersect the straight edges.
- the irrigation holes are based off of one singular hole which can be modeled as a drilled hole, and exact interior spacing and orientation are less important than exterior spacing and orientation (I assumed this for two reasons; the first is that measurements of the irrigation holes were nearly impossible to acquire, and the second is that a part's primary purpose is to interact correctly with other parts on its exterior)

After the peer review, I changed the shape of Section 1 pretty significantly, making it thinner. This was a direct result of getting better measurements and talking to my classmates who had already completed that section of the part. Also as a result of the peer review, I changed my approach to the irrigation holes, adding the Hole Wizard for the largest hole and changing the dimensions to use.

All-in-all, I feel that the creation of this part went relatively smoothly. The majority of the time I wasted was due to incorrect or incomplete measurements, and I learned several new things about operating SolidWorks, including the ability to create a drawing on a face without creating a reference plane. I definitely could have improved by taking more careful measurements and documenting shape more completely. I feel that my design plan was very detailed and complete, thereby aiding in creating this part immensely, and this project made me realize the true value of careful planning and preparation.