Lab Assignment #4: Intro to Hand Sketching ME 170

Instructor: Professor William Bullock (email: wbullock@illinois.edu)
Date Due: One week from this Lab (i.e. hand in sketches to grader or TA at the beginning of Lab #5)

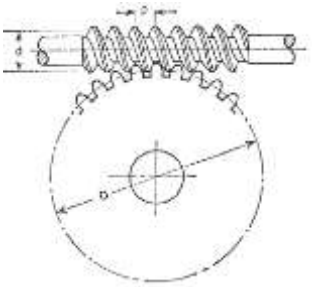
In this lab you will practice the sketching skills learned in lecture with Professor Bullock.

Trailer Winch

In this exercise, you will need to combine what you have practiced and sketched in orthographic and isometric, including an isometric exploded view illustrating how all the parts go together - excluding the handle.

Part 1. Orthographic Assembled View

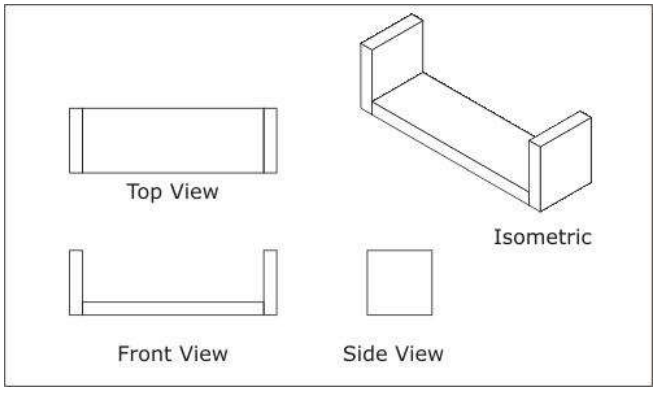
On 11" x 17" graph paper sketch an orthographic front, top and side view of the winch (excluding the handle). The side of the winch "U" shaped bracket facing you in the picture is to be the front orthographic view. Each view should appear full size. Use light sketch lines to delineate the basic rectangles and circular shapes (ends of the hex nut, cable wheel and handle shaft). Squares can be used to locate and guide sketching of circles. As you begin to visualize the form, use dark lines to represent changes in planes. Dotted or dashed lines can be used to communicate parts that are hidden from view by other material (example: a portion of the cable wheel is hidden behind the U bracket housing).



a) Only a few detailed repeated features such as gear teeth should be drawn with the remainder indicated by construction lines. 3-4 teeth per gear sketched is adequate.

b) The front, top and side views should all be aligned. Refer to the image below for an example of how to lay them out. Use the grid to your advantage.

c) The sketches do not have to be 1:1 scale, but they should all be the same scale.



Part 2. Isometric Assembled View

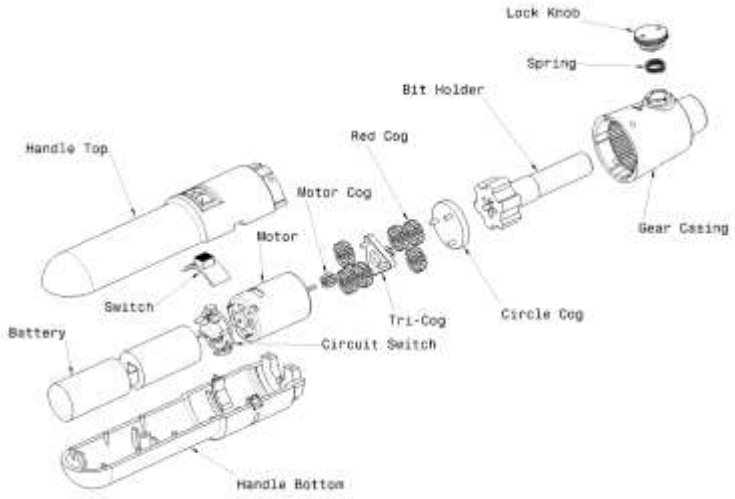
On 11" x 17" isometric graph paper, sketch the winch housing, wheels and gears in isometric. Use light sketch lines to visualize the housing and cable wheel unit. Darken lines to represent changes in planes to finish the

drawing. Do not show hidden line as this is not customary in isometric drawing. Your finished sketch should appear full size.

Part 3. Isometric Exploded View

On 11" x 17" isometric graph paper sketch the "U" bracket housing. Using center lines for the center cylindrical shafts, bolts, cable winder wheel, gear components and other parts, explode these individual parts to communicate how the cable winch components are logically assembled. Parts may overlap as long is the assembly is clear. You may want to consider sketching a rough exploded view on typing paper first if it helps (not required) visualize what your final sketch will look like.

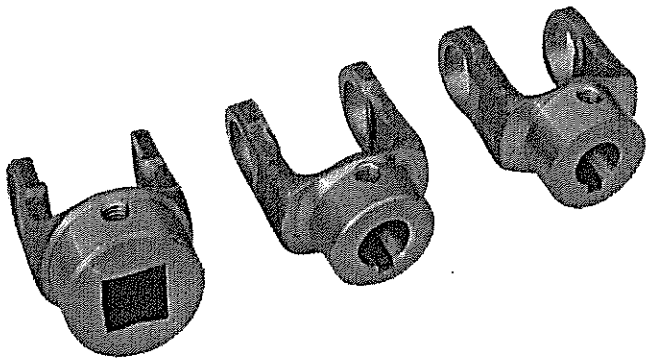
a) The exploded sketch should follow the isometric lines "diagonally" to fill up the page. Avoid exploding the assembly vertically and horizontally. There should be a nice progression across the page. Refer to the picture below for help. The parts should be clearly identifiable. Parts that are welded together may be considered a single part and drawn as such.

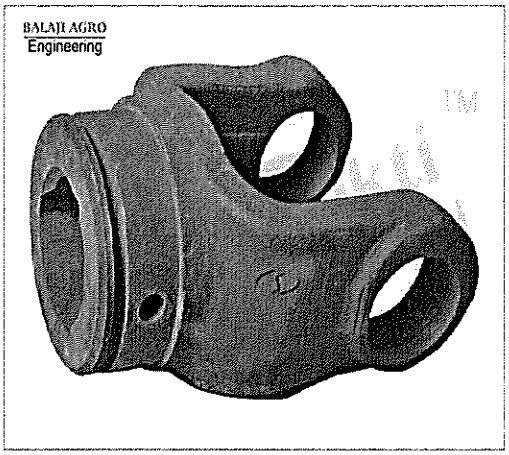


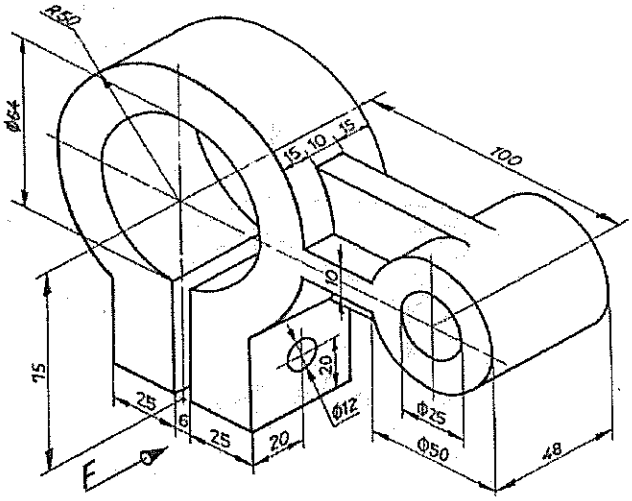
Part 4. Submission Requirements

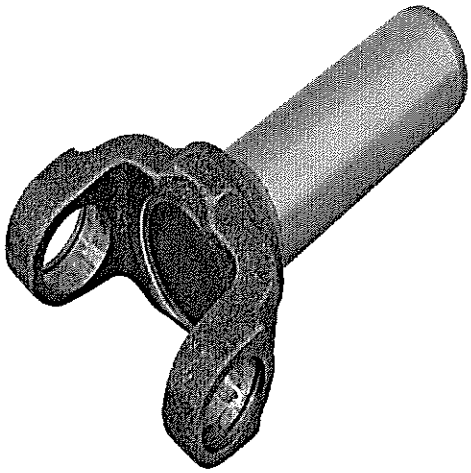
1) Sign your name and lab section (eg. AB3) on the bottom right hand corner of each of the three sketches 1-3.

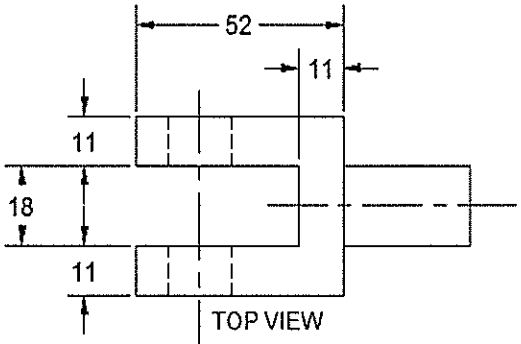
2) Hand in all three sketches to your TA or grader at the beginning of next week's lab.



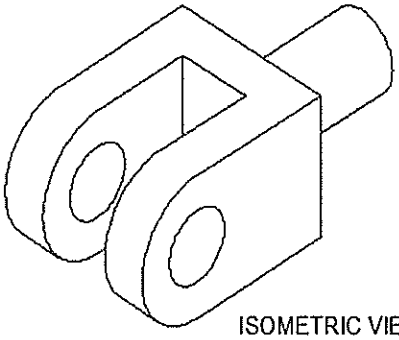




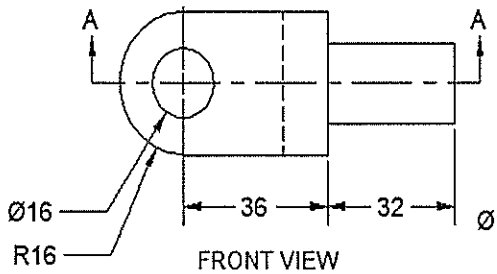




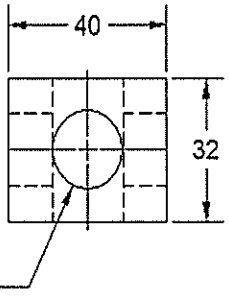
TOP VIEW



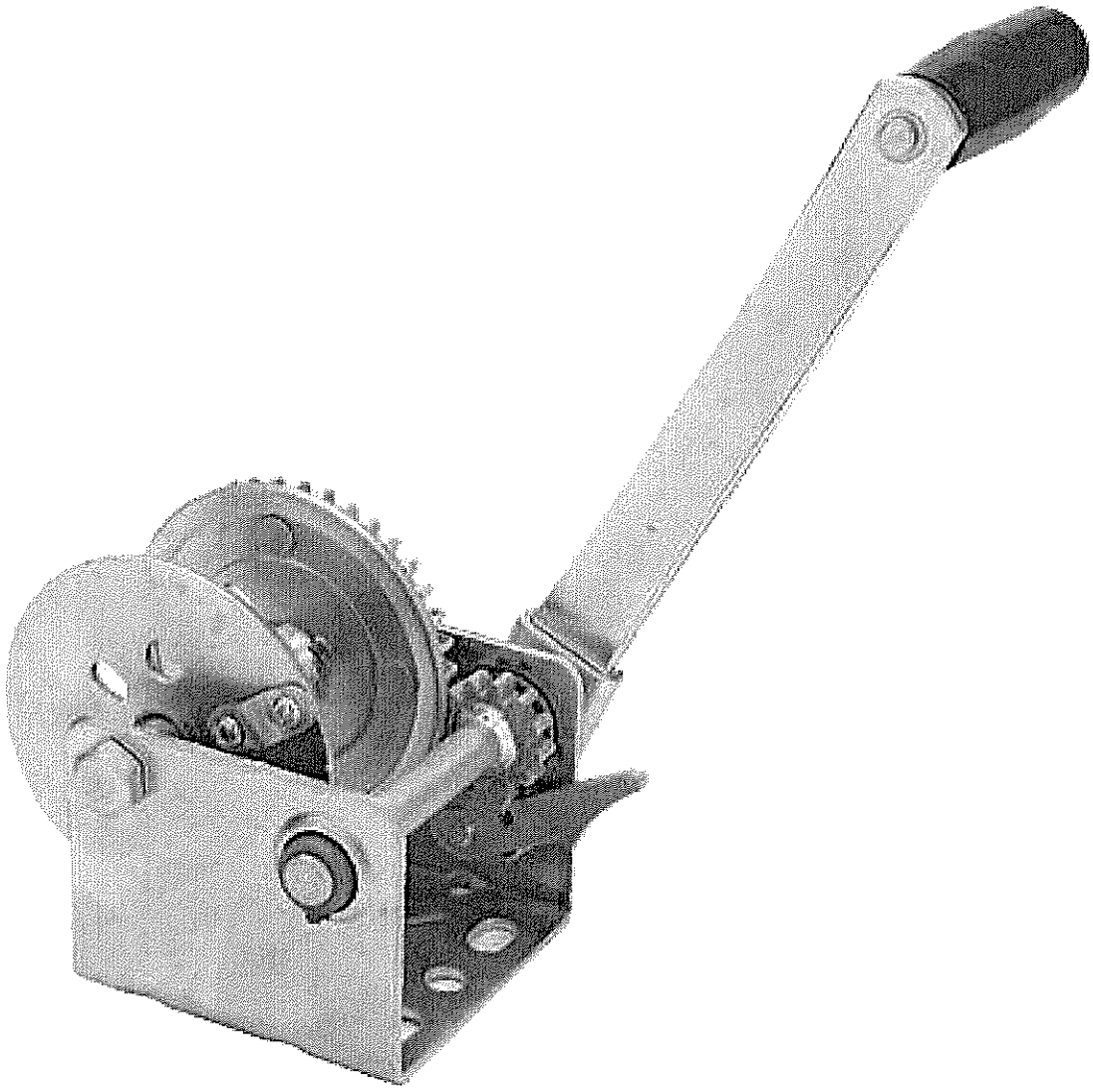
ISOMETRIC VIEW



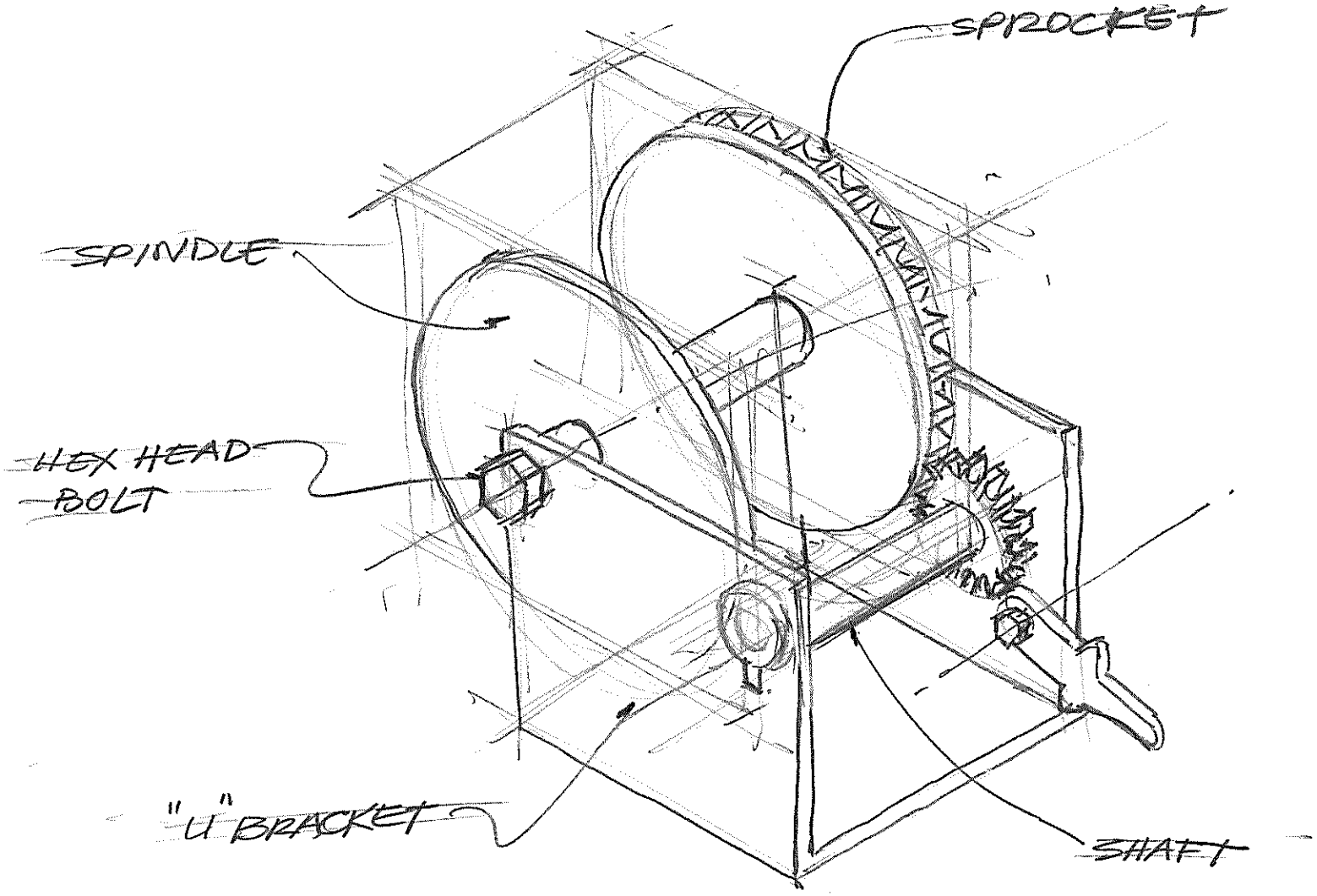
FRONT VIEW



RIGHT VIEW



1. ISOMETRIC VIEW OF WENCH



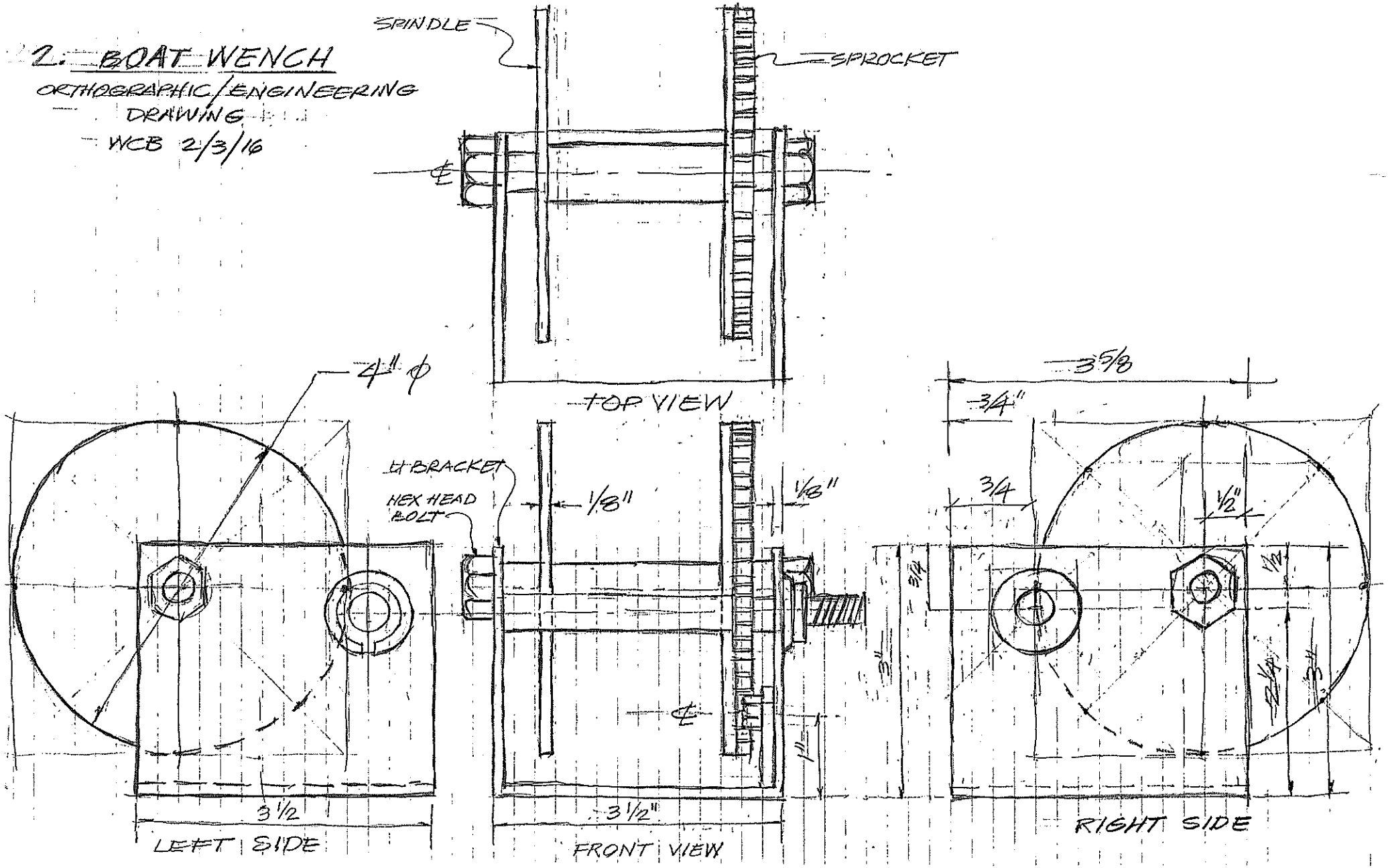
ISOMETRIC DRAWING OF WENCH

WCB 9/9/16
p1 of 4

2. BOAT WENCH

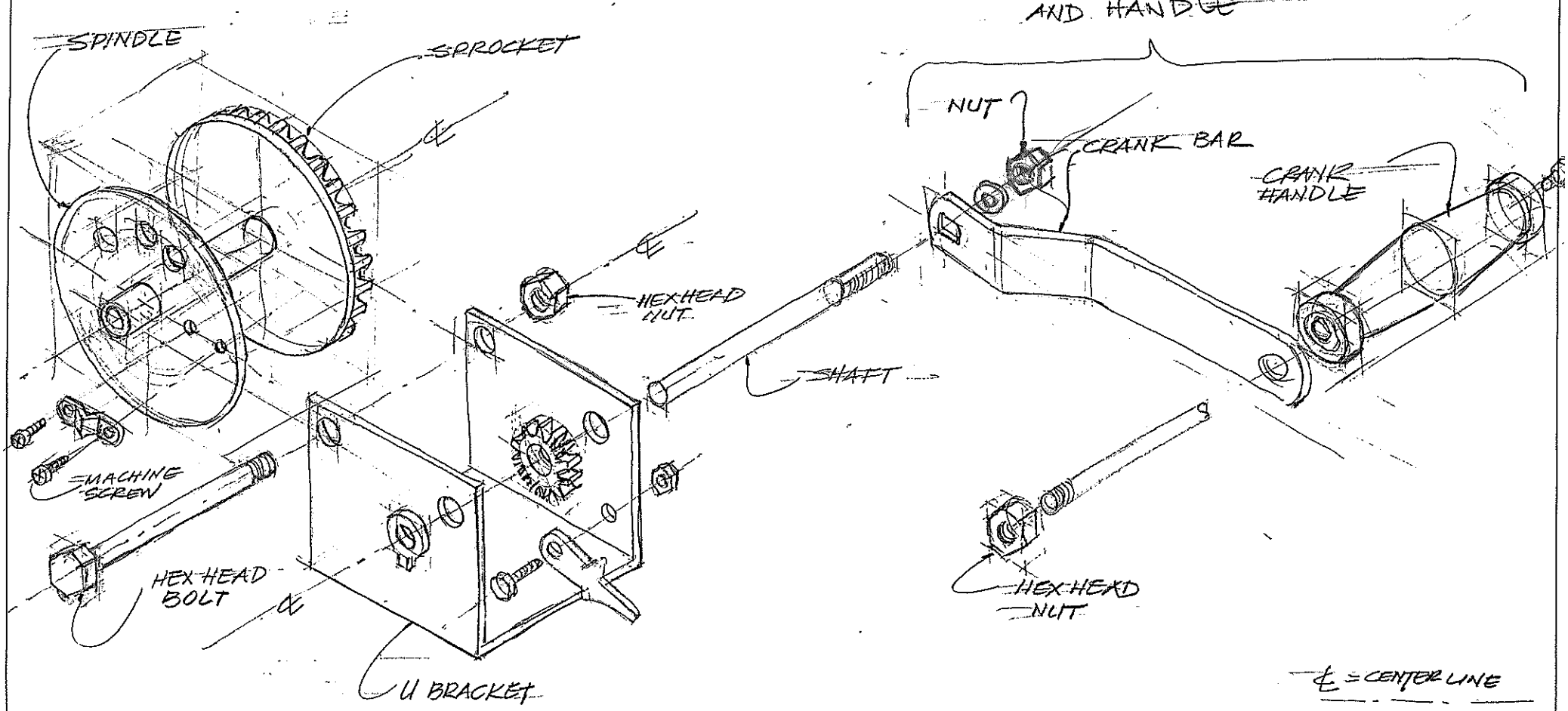
ORTHOGRAPHIC/ENGINEERING DRAWING

WCB 2/3/16



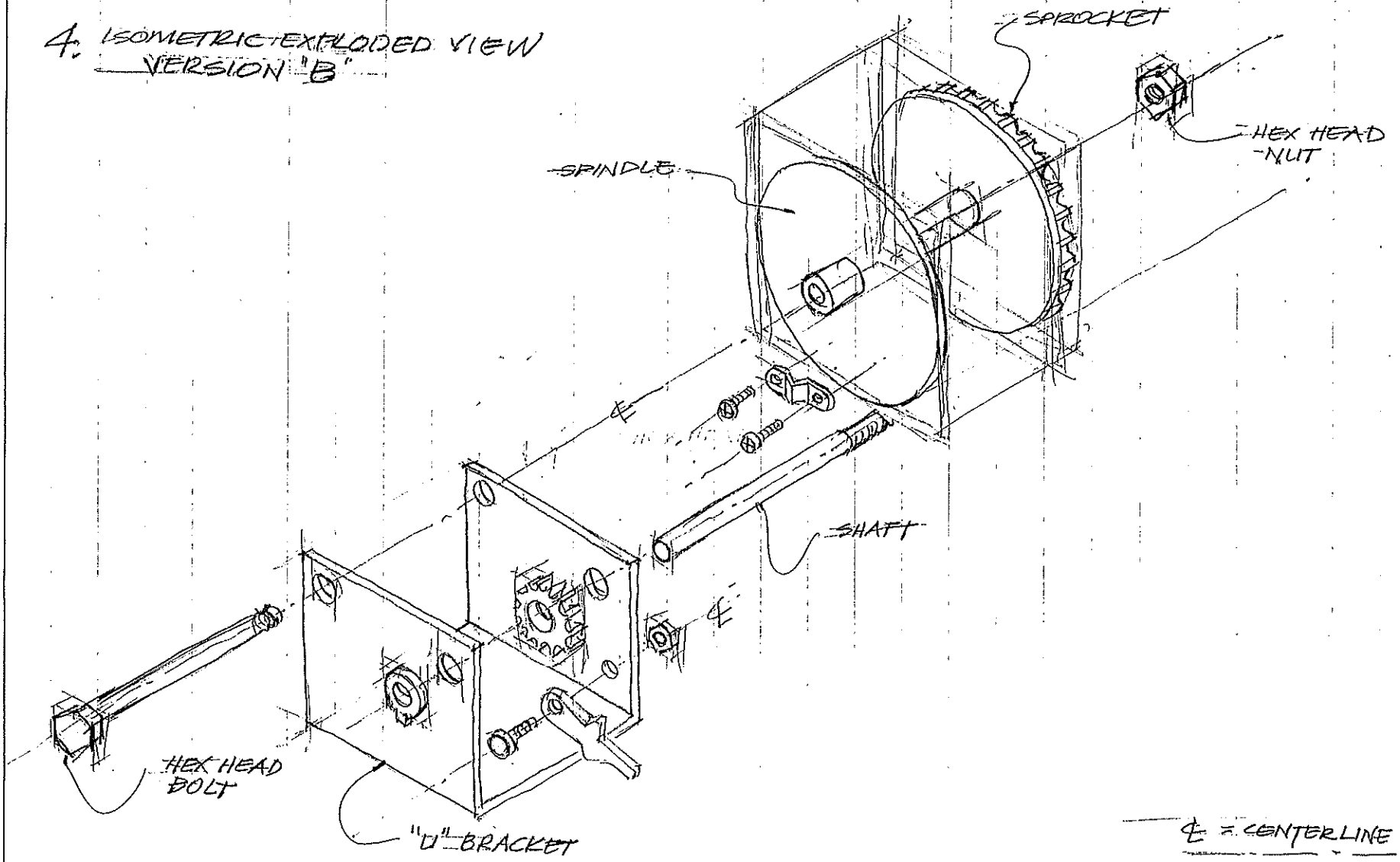
3. ISOMETRIC EXPLODED VIEW
VERSION "A"

NOTICE: YOU DO NOT HAVE TO DRAW CRANK BAR AND HANDLE



RubyPaulina www.RubyPaulina.com	Title: ISOMETRIC SKETCH OF WENCH 1/2 SIZE	Name: W. BULLOCK	Date: 9/9/16

4. ISOMETRIC EXPLODED VIEW
VERSION "B"



RUBY PAULINA www.RubyPaulina.com	Title: ISOMETRIC SKETCH OF WENCH EXPLODED VIEW	Name: W. BULLOCK	Date: 9/9/16