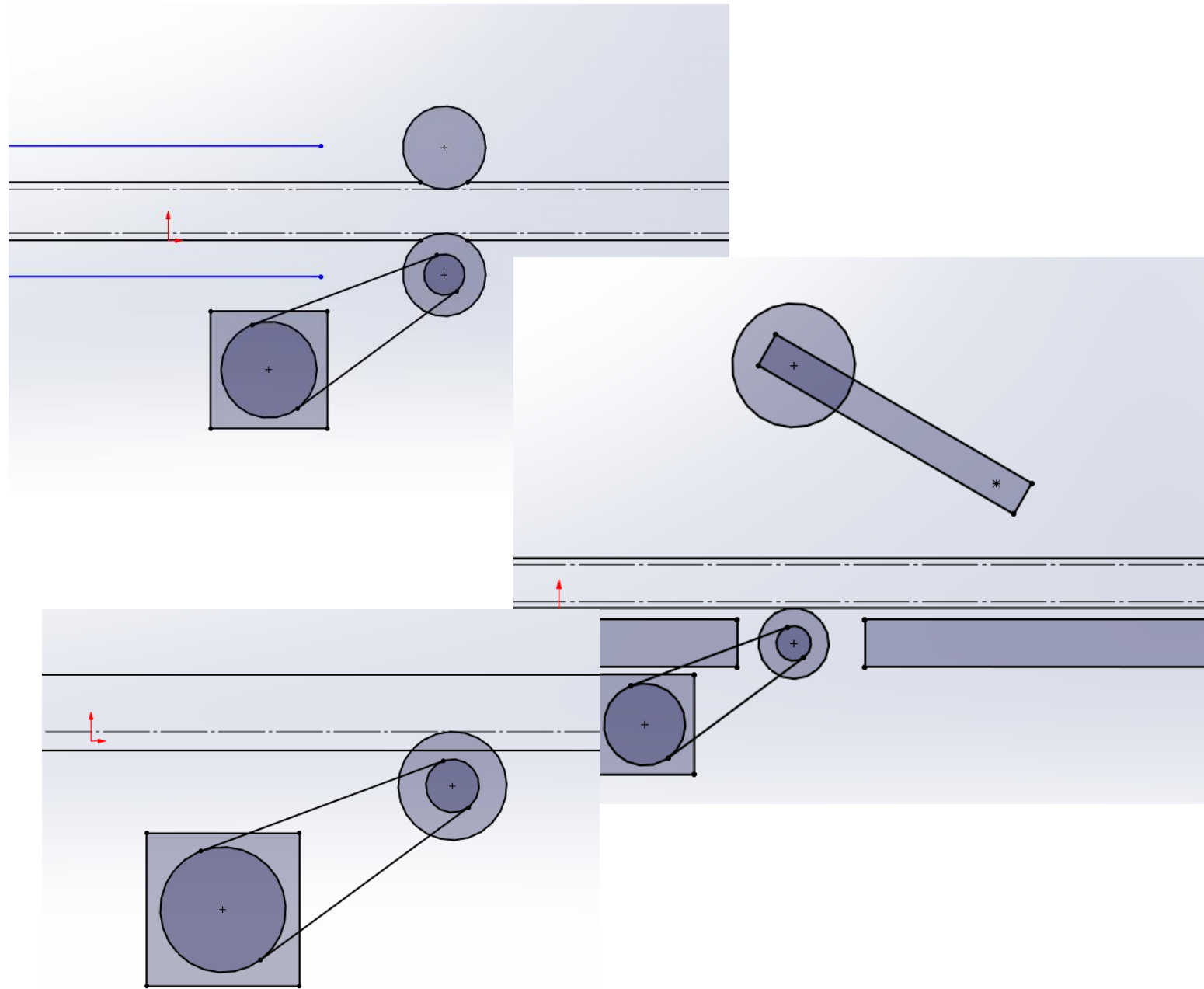


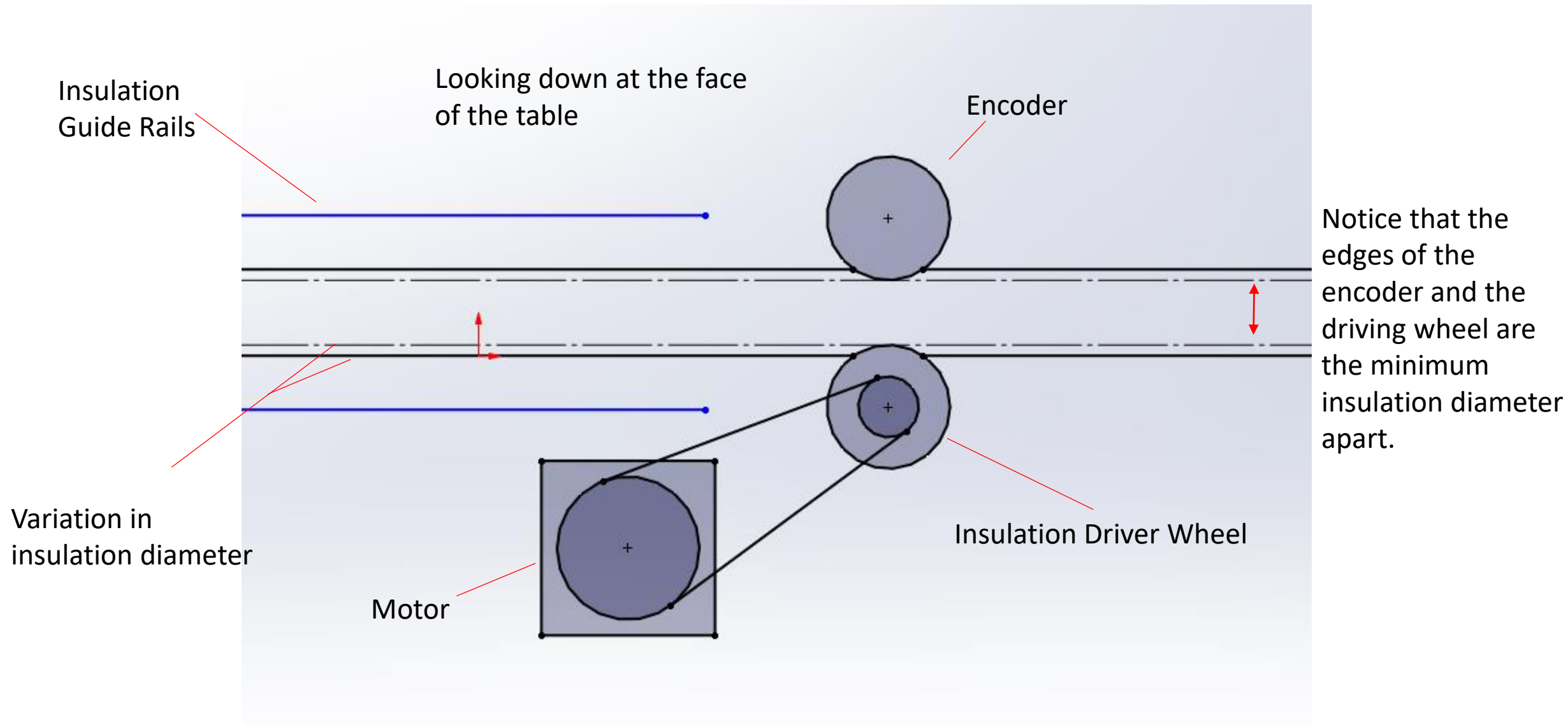
Intake System and Barcode Scanner Program

Ian Glasgow

Insulation Intake Ideas and Rapid Prototyping

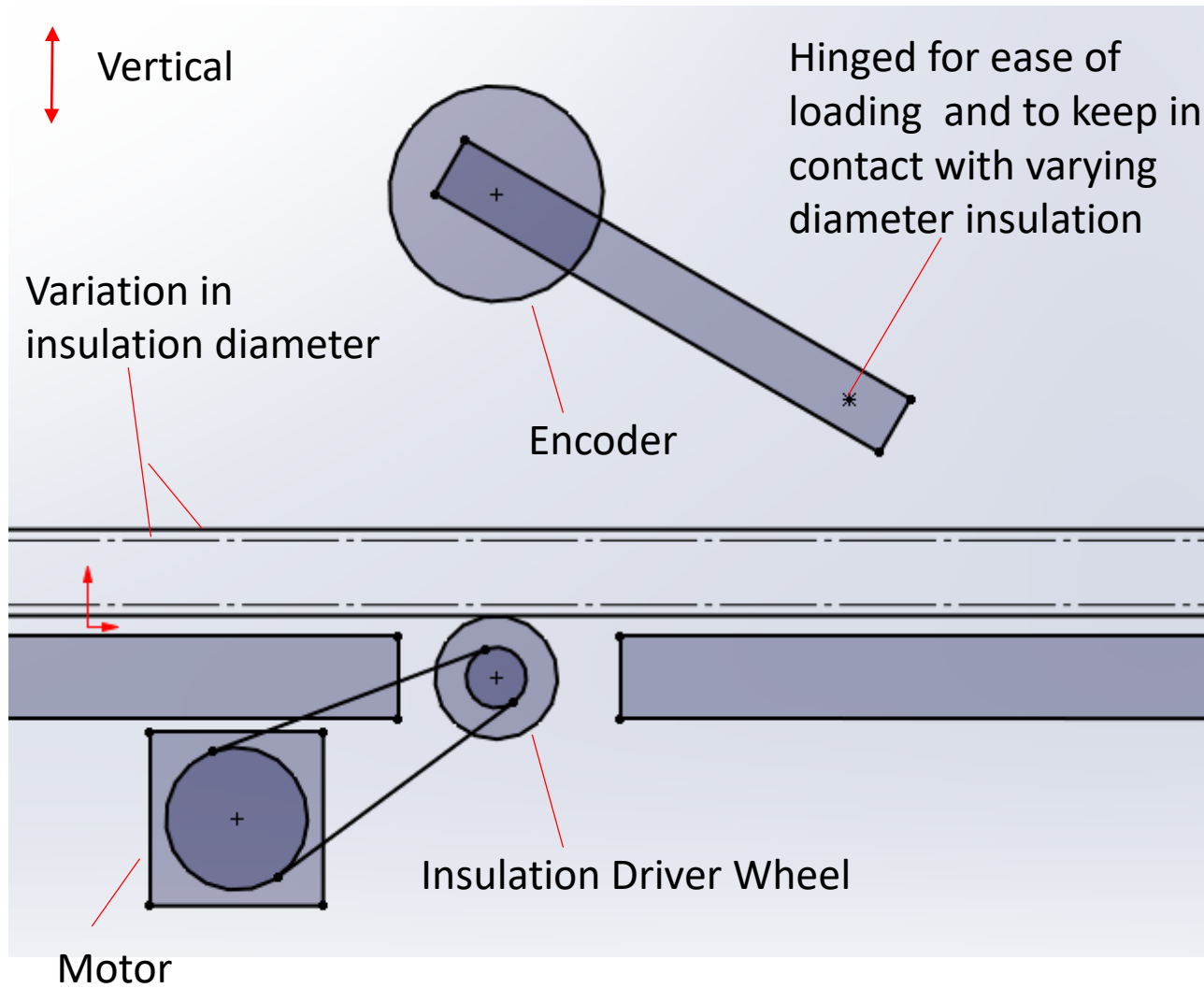


The Horizontal Two Wheel Squeeze Method

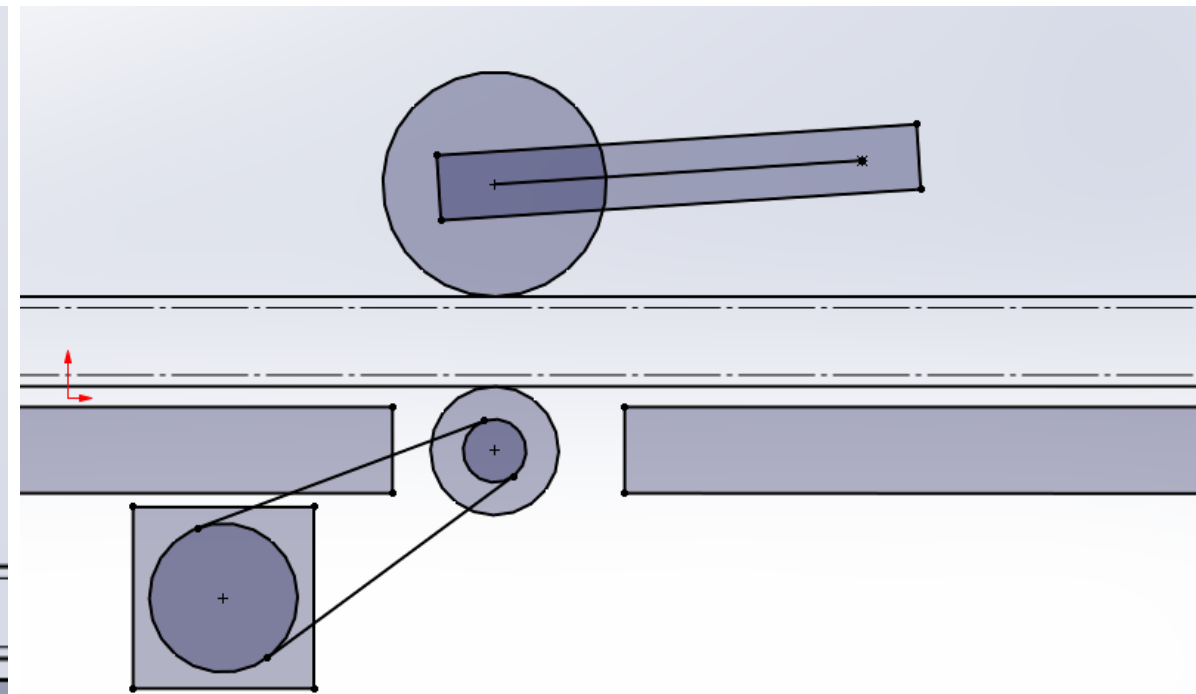


The Vertical Hinged Wheel Method

Loading Mode



Measuring Mode



Note: the guide rails illustrated on the last method are also in this one.

Measurement Device Ideas



Model TR1

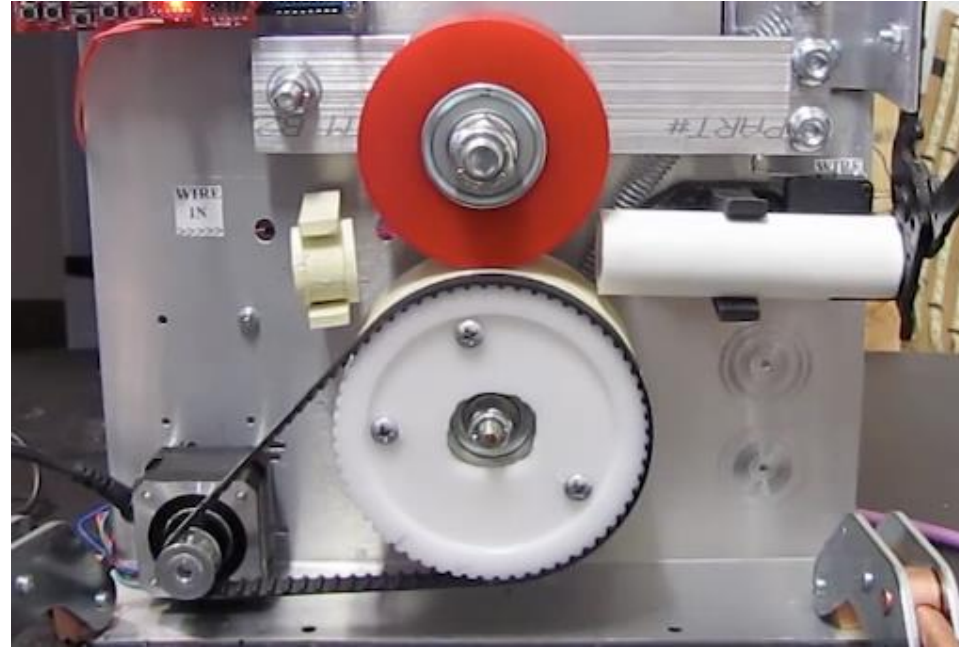
- Measures using a wheel
- Measures velocity, position, or distance
- Composite material, eliminates static build-up
- Can be mounted in any orientation



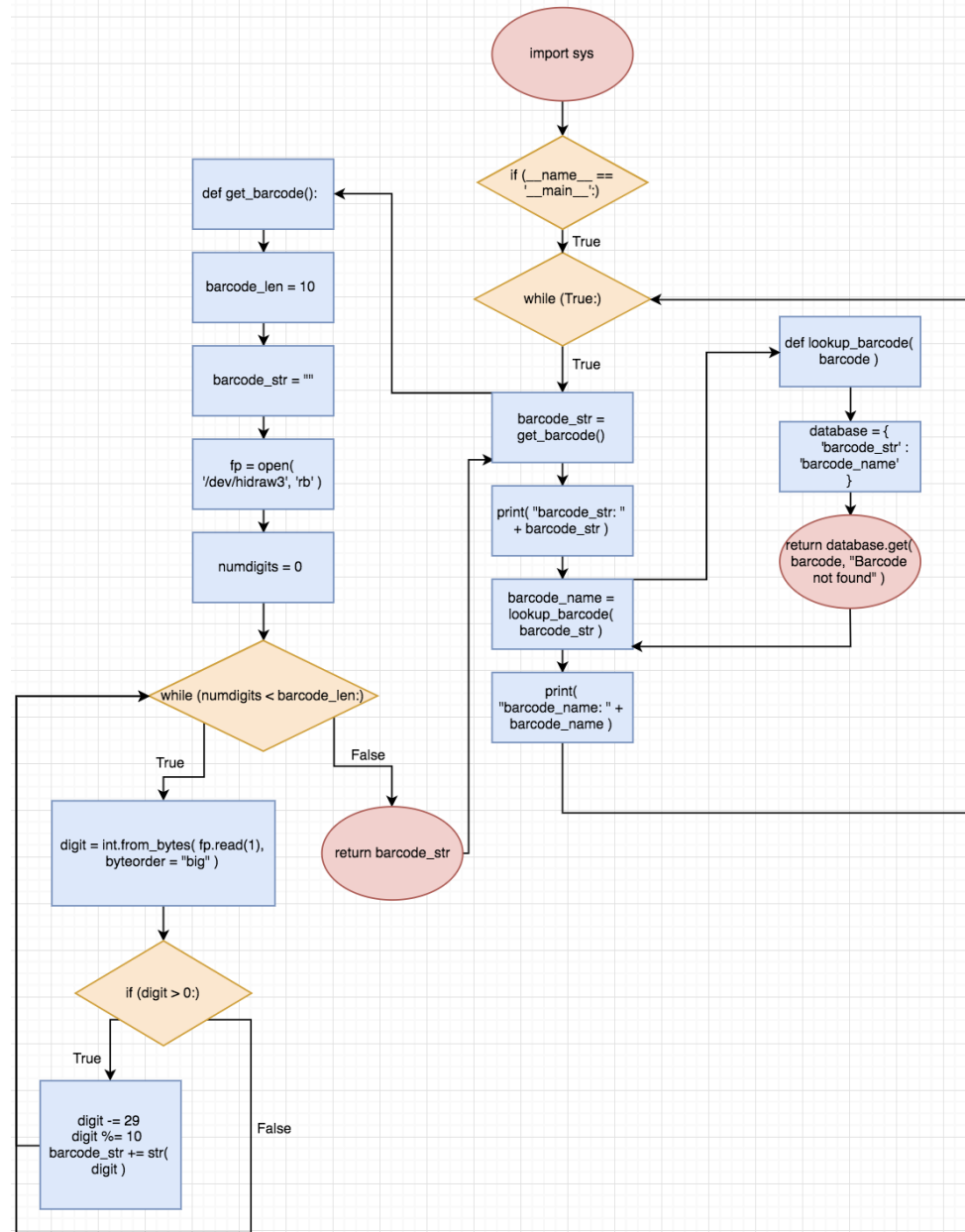
Model LCE

- Measures using retractable stainless steel cable
- Measures up to 50 inches

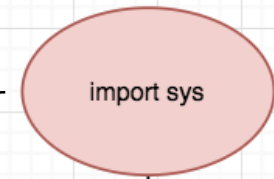
Example



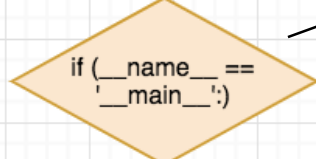
Prototype Barcode Scanner



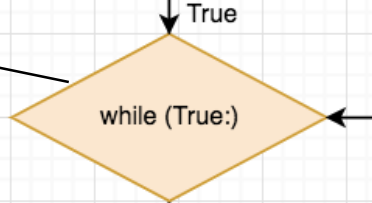
This command imports the sys module which provides information about constants and functions



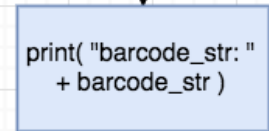
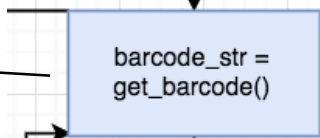
Starts here in the program if the program is not imported to the command line



This creates a non-terminating loop because true is true

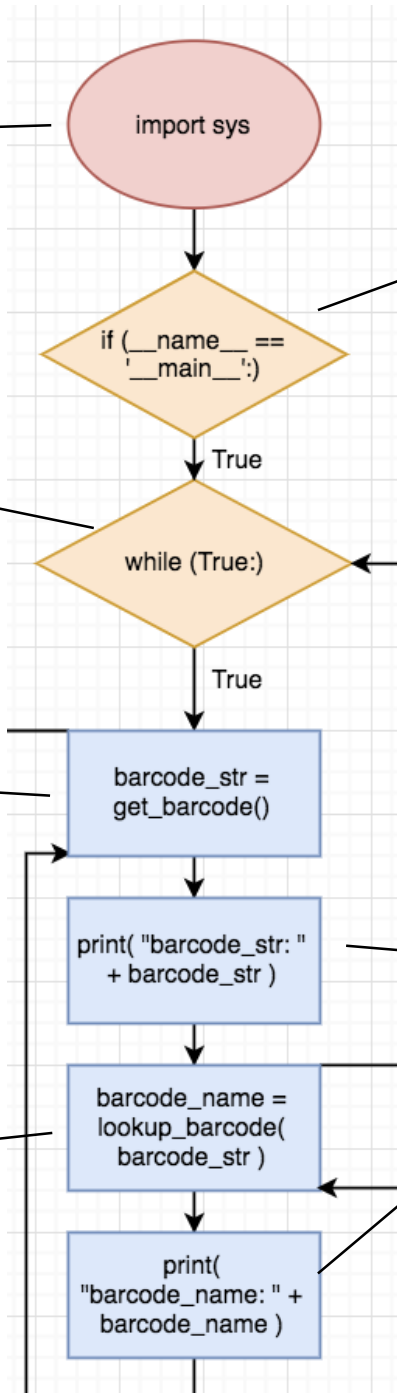
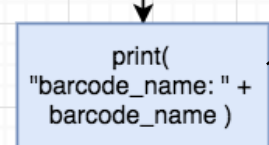
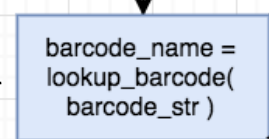


This references the get_barcode() function to determine the values of barcode_str



These print out the associated values

This uses the lookup_barcode() function and the previously found barcode_str to find the barcode_name



Creating a function named `get_barcode`

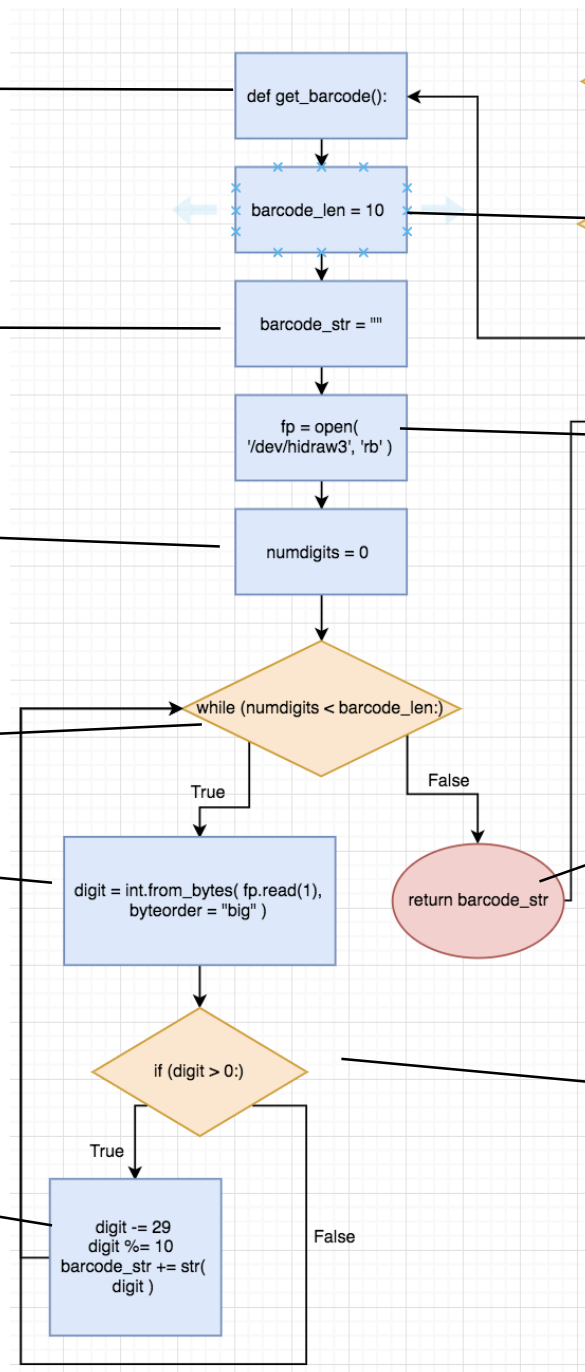
Creating a string that will hold the barcode

Number of digits that the program has found so far

Run until it reaches the end of the barcode

reads bites from the scanner and converts them to an int

Barcode scanner kept reading the digit + 29 except with zero, it was + 39. So here I correct for that and add the digit to the end of the string



Defining the number of digits in the barcode

fp = file pointer,
/dev/hidraw3 = The third
usb ports, rb = read binary

This exits the function and
returns to the previous
point in the code

This is here because kept
getting the null character

Creating a function named
lookup_barcode()

```
def lookup_barcode(  
    barcode )
```

```
    database = {  
        'barcode_str' :  
        'barcode_name'  
    }
```

```
    return database.get(  
        barcode, "Barcode  
        not found" )
```

This exits the function and
returns to the previous
point in the code

This is what will change the
most about this code.
The database used in this
program is hard coded and
completely made up.
In future iterations the we
will probably interact with
a Boeing online database.

Scanner Demo

Cutting System

Rennie

Guillotine

Continued from page

CUTTER IDEA SKETCHES.

21

Guillotine:

Things to think about:

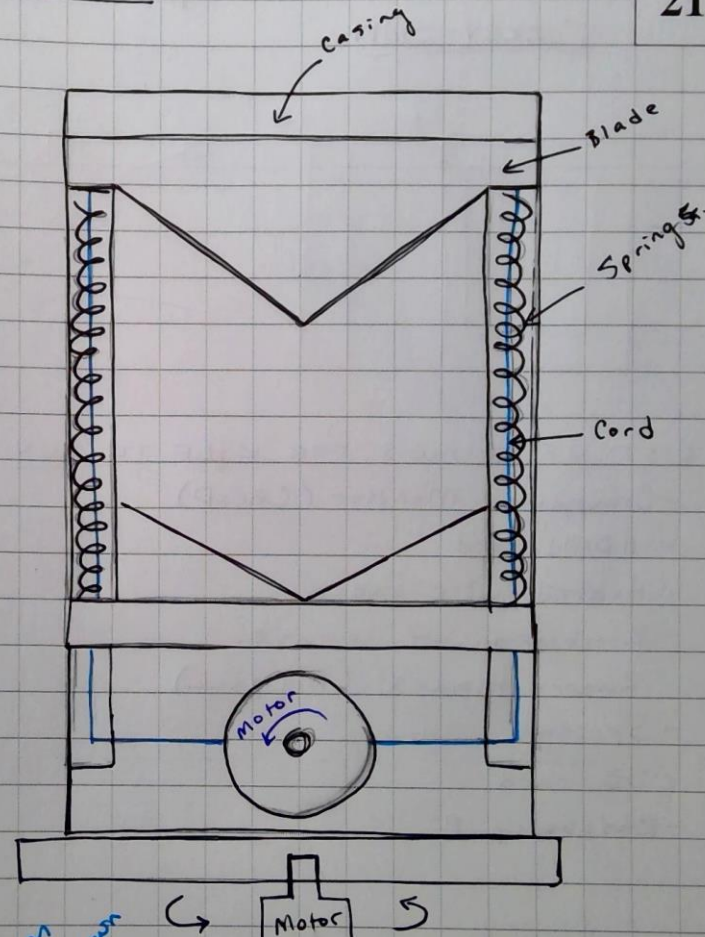
- How much closing force would be required?
- Would the blade get dull?
- Pneumatics vice string.

Rapid prototype ideas:

- Wood cut casing w/ laser cutter.
- 2 springs
- Just use a wheel for pulling blade.

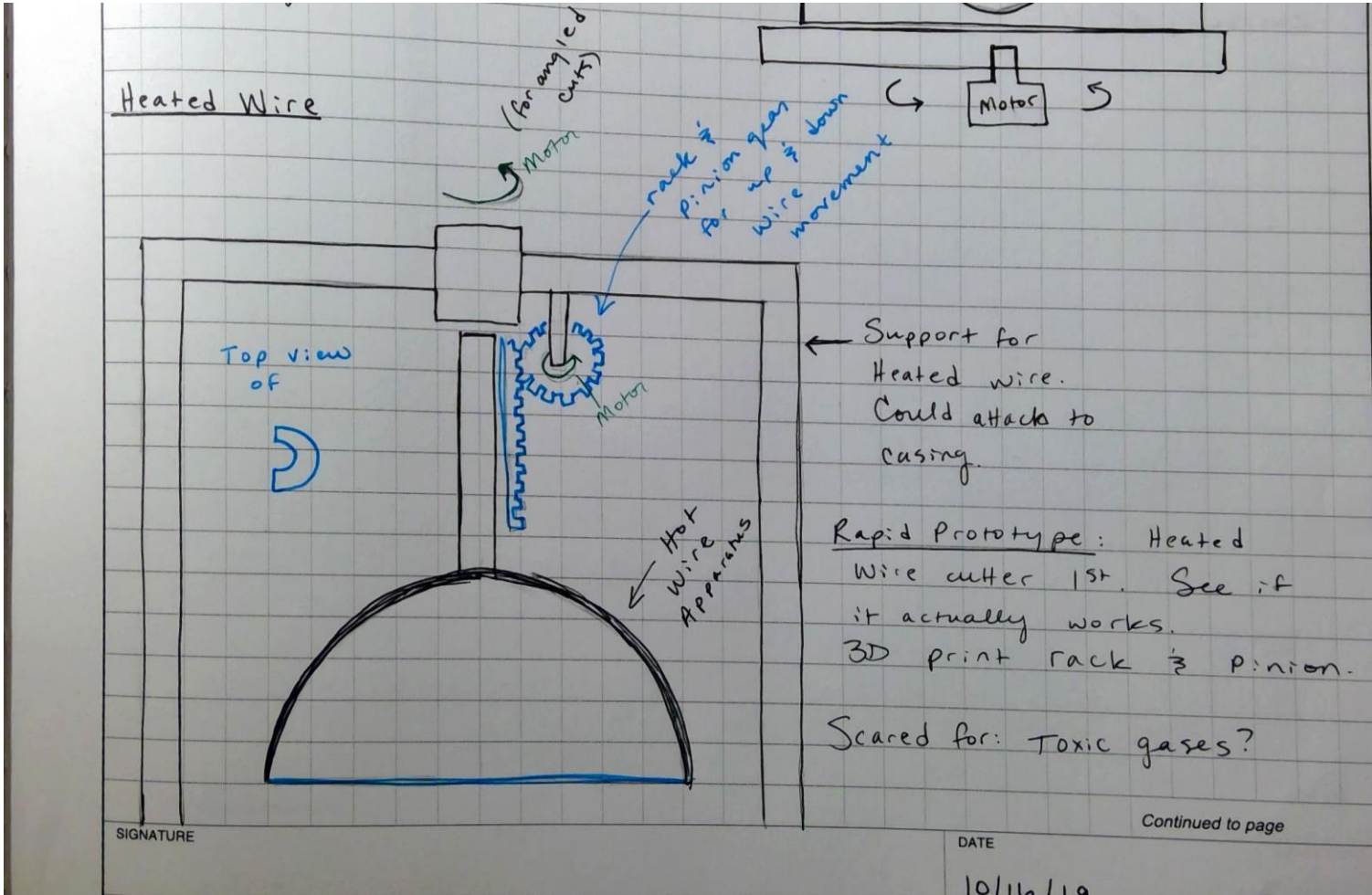
To do: laser cut wood casing for guillotine.
- Find Razor.

* Can measure required force w/ springs ($F = kx$)



(angled cuts)

Heated Wire



Casing + Programming

Alyssa K.

Design Thoughts: Casing

- Raspberry Pi Casing
- Placement of electronics in relation with other systems
- Cleanability
- Material of Casing
- Adhering agents

Raspberry Pi Casing

- Adding Casing around our raspberry pi to keep electronics integrity maintained

- Must have easy accessibility to SD card

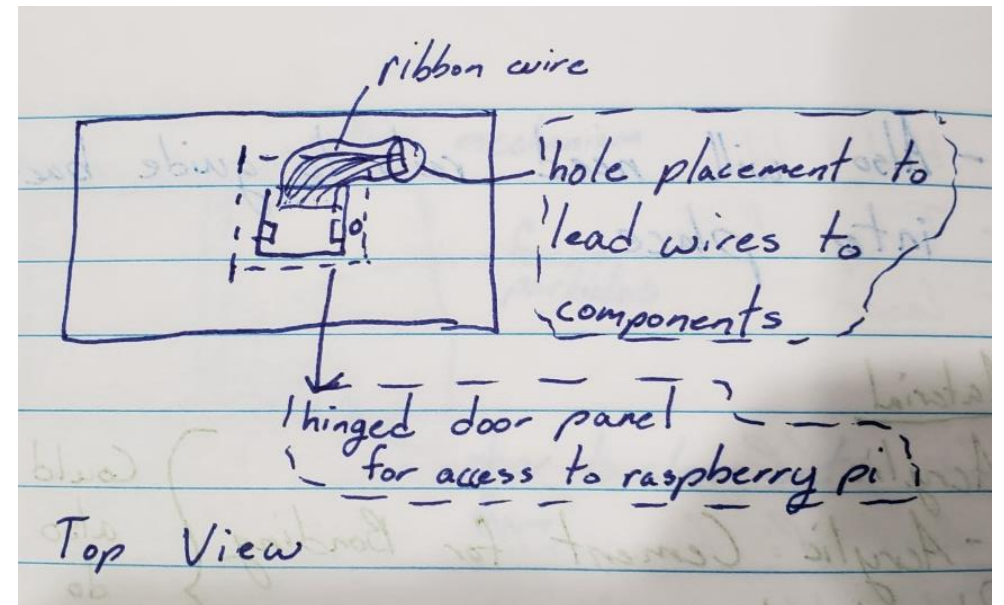
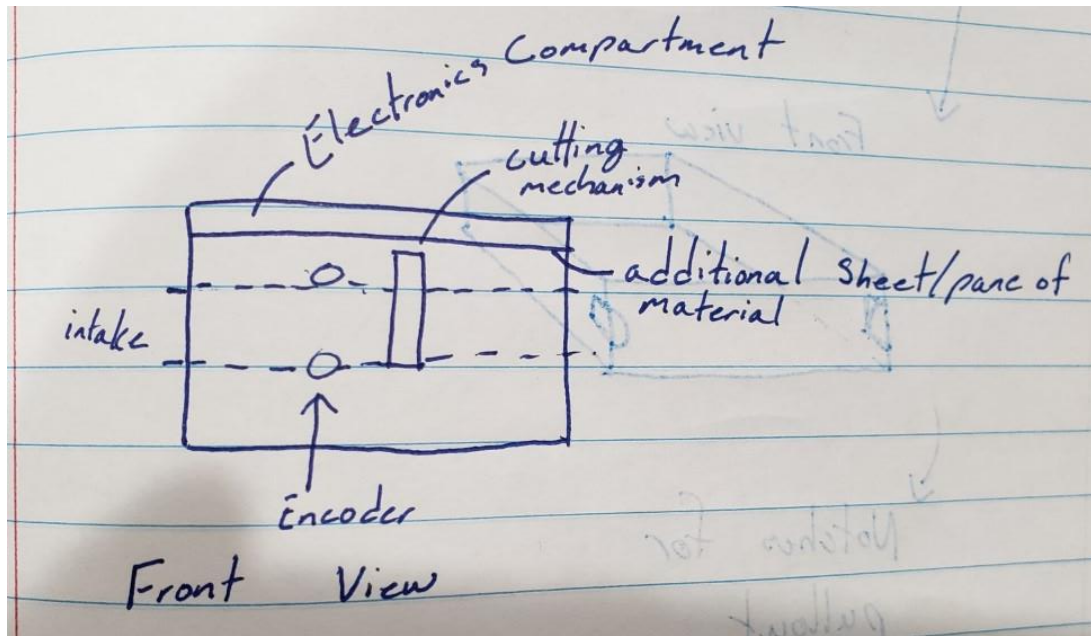
☆ Mizuzei Raspberry Pi 3 B+ Case with Fan Cooling and 3x Heat-Sinks, 5V 2.5 A Power Supply with On/Off Switch Cable for Rpi 3 B+, 3B, 2b on Amazon

☆ https://www.amazon.com/Miuzei-Raspberry-Heatsinks-Supply-Compatible/dp/B07BTHNW9W/ref=sr_1_1_sspa?hvadid=78340255009243&hvbmt=be&hvdev=c&hvqmt=e&keywords=raspberry+pi+3+case&qid=1571627166&sr=8-1-spons&psc=1&spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUExRElINEJXQkFTVThJJmVuY3J5cHRlZEFkSWQ9QTA4NDg1NDk0YyR1pZWTZTUkdNWkU0JndpZGdldE5hbWU9c3BfYXRmJmFjdGlvbj1jbGlja1JlZGl5ZW50JmRvTm90TG9nQ2xpY2s9dHJ1ZQ==

☆ Look at this before filling out the purchasing form because they have a power source with it that I think would work really well!

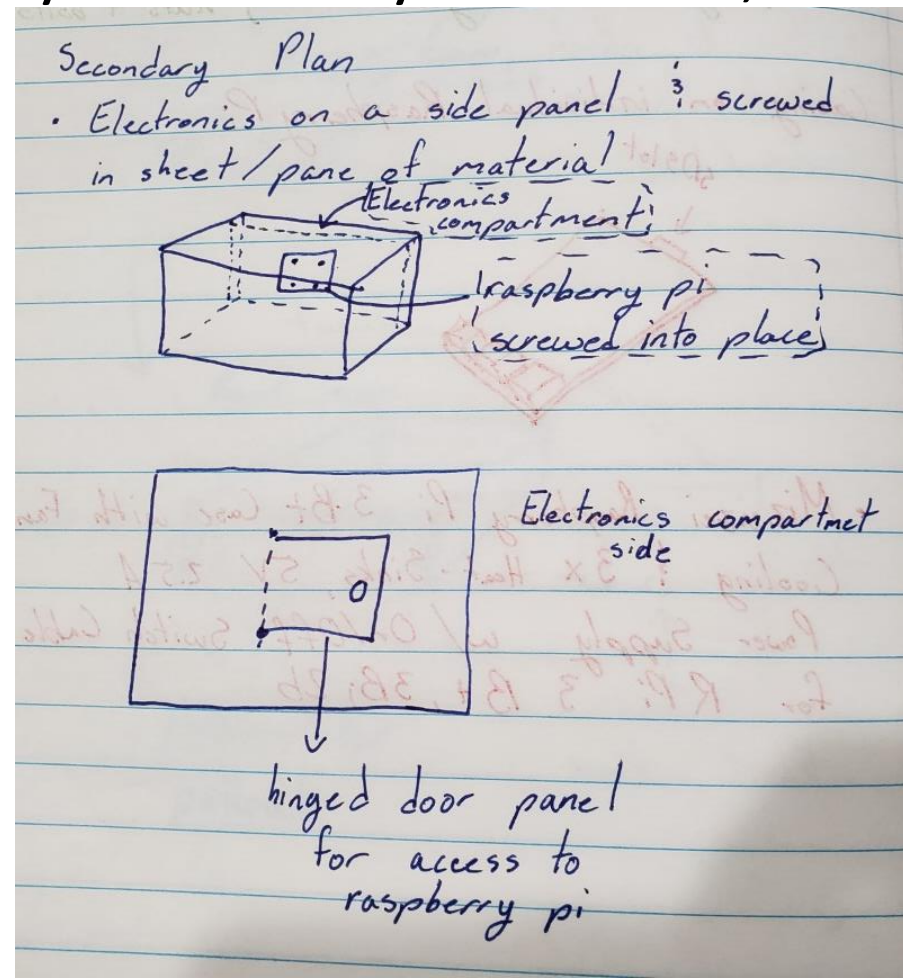
Placement of Electronics

- On top of the system: to avoid foam getting into the electronics, easy maintenance



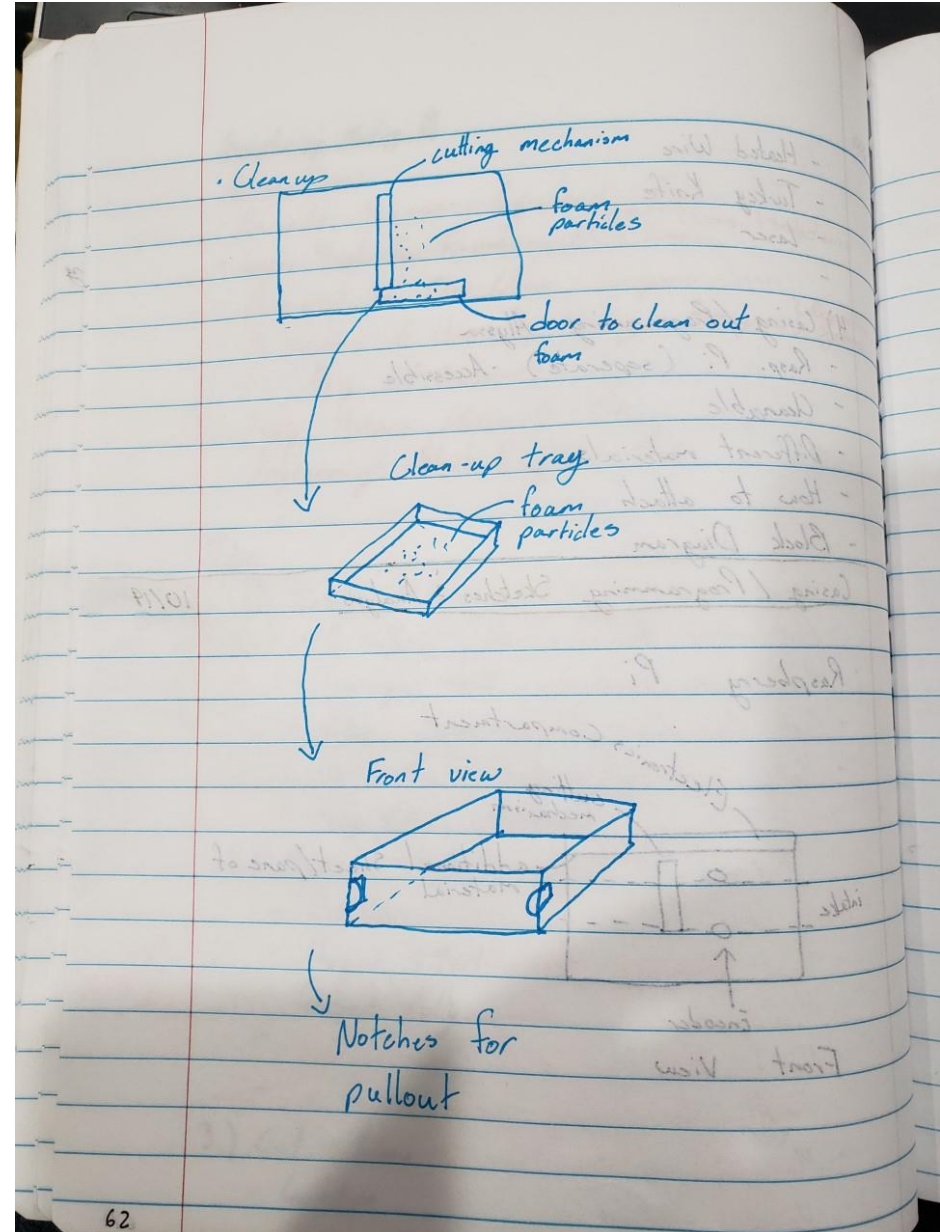
Placement of Electronics

- On one side of the system: Easily accessible, closer to individual systems



Cleanability

- Adding an area that is accessible and easy to clean out underneath the cutting portion to clean up foam shrapnel



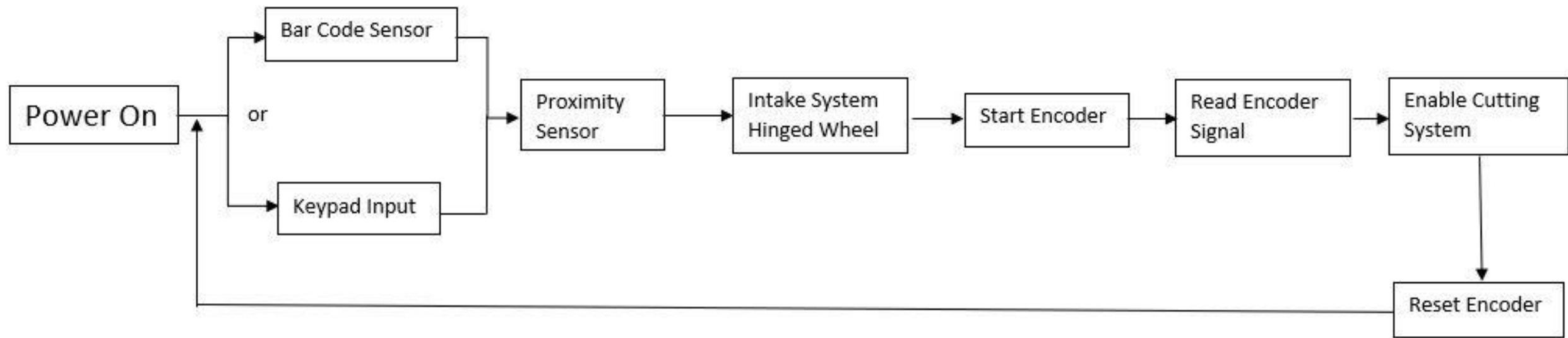
Casing Material

- Clear Casing: To allow for operators to easily identify problems
 - Acrylic
 - Cheaper
 - Durable
 - Easy to cut
 - Polycarbonate
 - Stronger than acrylic
 - Can be drilled and will not crack

Adhering Agents

- Classic Nuts and Bolts
 - Ensures stability of the system
- Acrylic Cement- For Acrylic Material
- Epoxy- For Polycarbonate Material
 - For Acrylic Cement and Epoxy it will give us a cleaner look overall and allows us not to have to drill into this material
 - I would like to do tests on these adhering materials to check for stability of the system

Program Block Diagram



Items to test

- Encoder: Run encoder along length of preset material to check accuracy.
- Potential Proximity sensor: Run sensor in series of tests in relation to differently space items to check
- Acrylic Cement/Epoxy: Take small pieces of acrylic and test the cements ability to handle force after cured

- https://www.lowes.com/pl/Plastic-bonder--Epoxy-adhesives-Glues-Glues-tapes/4294417387?refinement=2221300161&cm_mmc=src--c--prd--pnt--bing--paint--DSA_PNT_221_Buckets%20Adhesives%20Caulk%20&%20Repair--adhesives--0--0&msclkid=8b7d1104b7161f0412db4cad45d14767&gclid=CLz6vKqnpUcFdQLgQodfVwA0Q&gclsrc=ds
- https://www.grainger.com/category/lighting/lighting-fixtures/indoor-fixtures/acrylic-panels?attrs=Material+of+Construction%7CPolycarbonate&filters=attrs&cm_mmc=PPC:+MSN+PPC&s_kwcid=AL!2966!10!79302366338598!dat-2331102090008362:loc-4094&ef_id=XVwR4wAAAGhnK36l:20191018165159:s
- <https://www.amazon.com/Weld-Acrylic-Adhesive-Applicator-Bottle/dp/B0096TWKCW>
- https://www.acmeplastics.com/acrylic-sheets/acrylic-extruded-clear-sheet?v=23325&st-t=adwords&vt-k=&vt-mt=e&utm_source=bing&utm_medium=cpc&utm_campaign=Shopping&utm_term=4581252636922621&utm_content=Acrylic%20Sheets
- [https://www.made-in-china.com/products-search/hot-china-products/Plastic_Material.html?msclkid=08a329226e8814709d25748b830bc1a6&utm_source=bing&utm_medium=cpc&utm_campaign=QP-Chemicals\(Plastic%20%26%20Polymer\)&utm_term=clear%20plastic%20material&utm_content=Plastic%20Material](https://www.made-in-china.com/products-search/hot-china-products/Plastic_Material.html?msclkid=08a329226e8814709d25748b830bc1a6&utm_source=bing&utm_medium=cpc&utm_campaign=QP-Chemicals(Plastic%20%26%20Polymer)&utm_term=clear%20plastic%20material&utm_content=Plastic%20Material)
- <https://www.acplasticsinc.com/informationcenter/r/plastic-materials-that-are-replacing-glass>