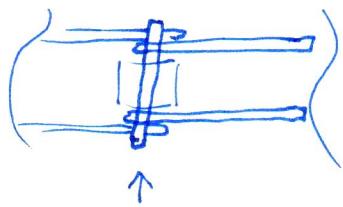


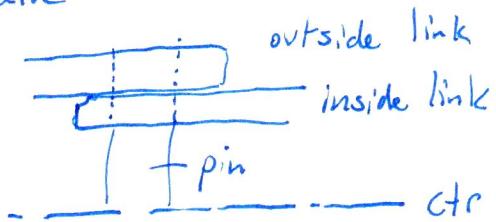
[12.18.2023] Designs

[helping hands]

1/2 in  $\times$  7/8 in bike chain



Compress plates onto pins



Link<sub>o</sub> = press fit

Link<sub>i</sub> = slip fit

[Robot base]

wheel hub ie 4UNN

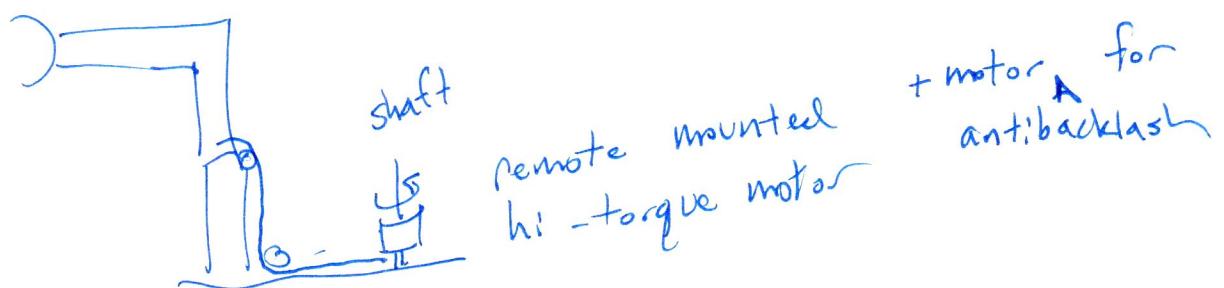
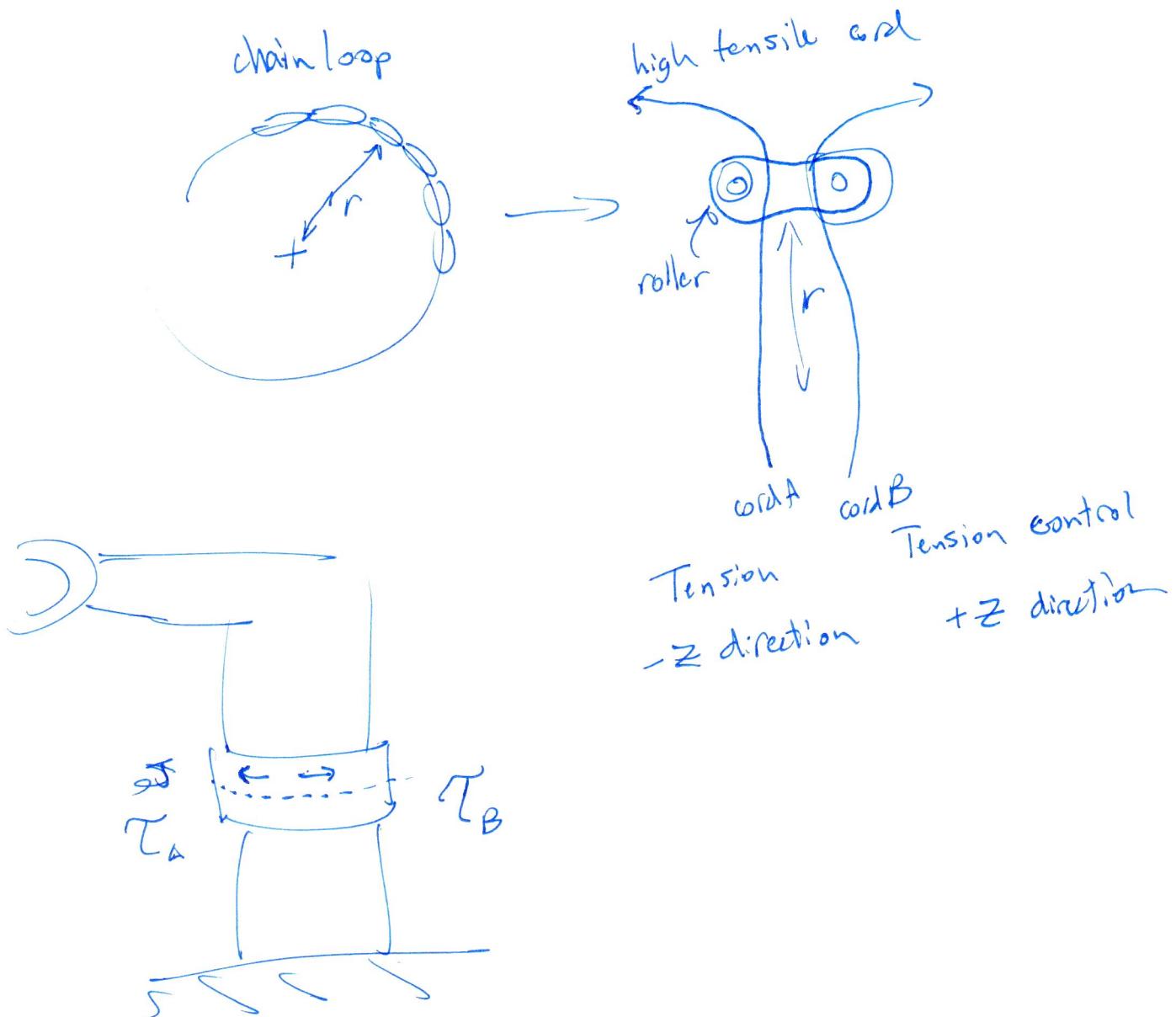
↳ has speed sensor

↳ has axial/radial loads, fine tolerance

↳ input/output shaft

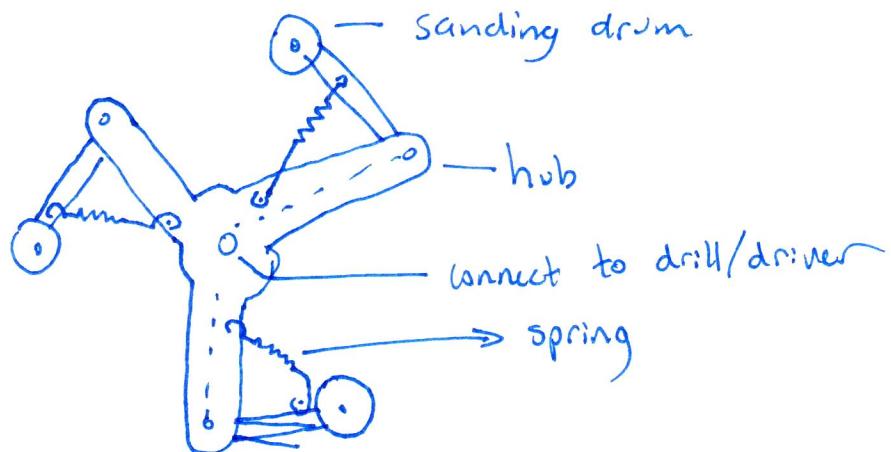
[2023.12.17] Designs

## Novel rotational joint



2023.12.08 [Designs]

Sand the Exterior of tube



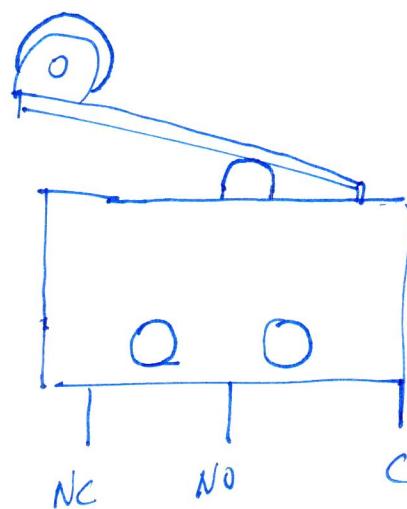
[switch Housing]

2023.12.09

[Designs]

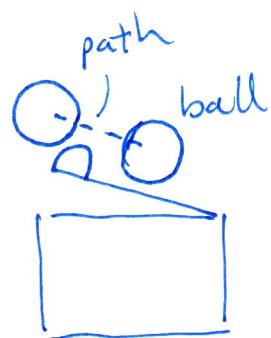
# micro switch

momentary, lever, roller,

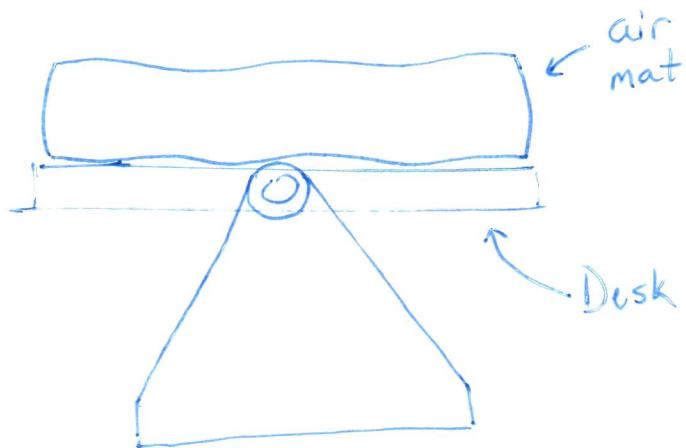


AC 250v 5A

McMaster

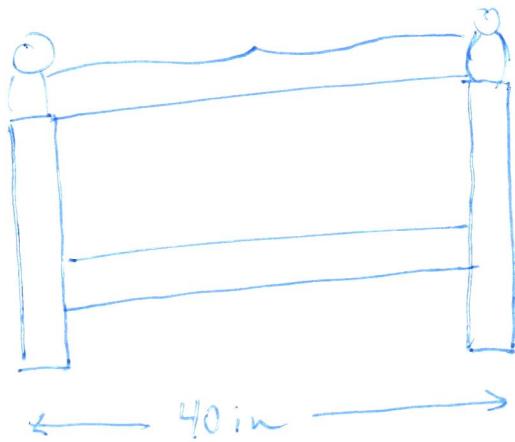


Designs, 2024.01



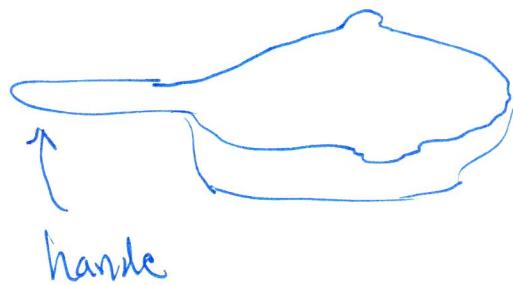
Mattress  $\frac{w}{39} \frac{l}{75}$  in  
99 191 cm

Wood ready!  $\frac{w}{22} \frac{l}{72} \frac{T}{2}$  in  
overhang 17 3 - in

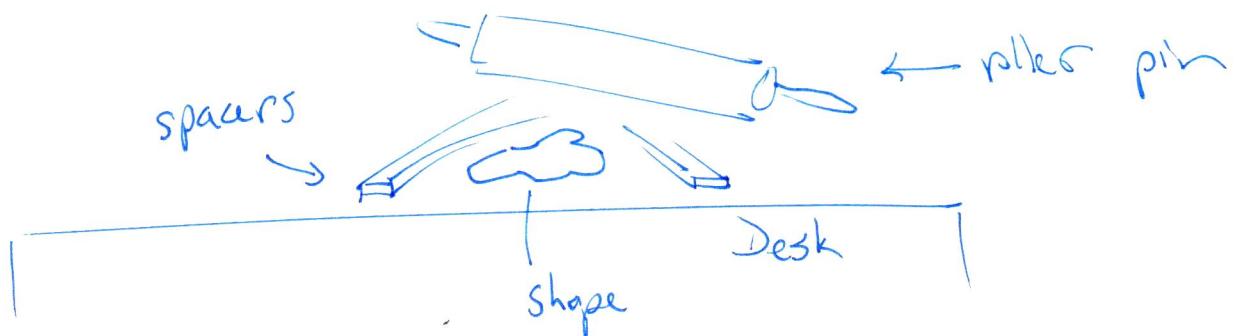


2023.12.17

## [Silicone parts method] Designs



- 1) 3D model → use sheet metal
- 2) unfold, digitally → generate 2D plan
- 3) apply layer of silicone to 3d printed shape (2D)  
↳ roll w/ flat pin

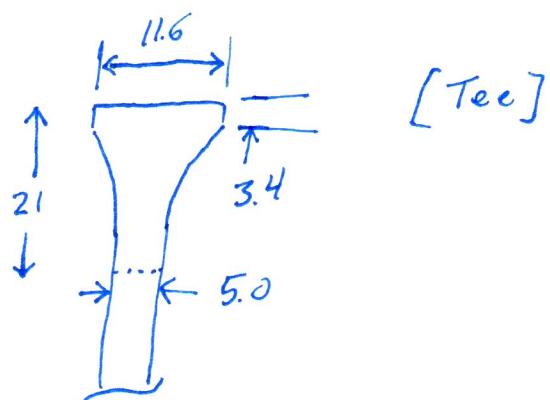
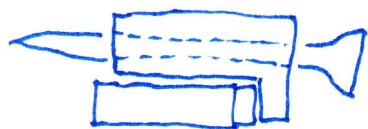
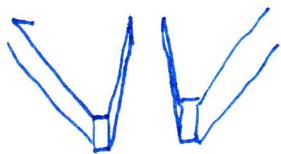


- 4) Achieve thickness desired w/ spacers
- 5) fold per 3D model & stitch w/ silicone seam  
↳ reinforce w/ fiberglass if desired

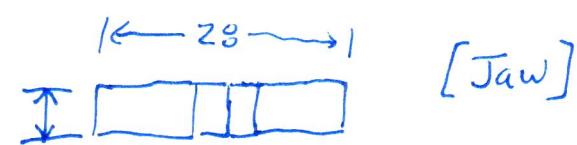
## [Design]

Calipers

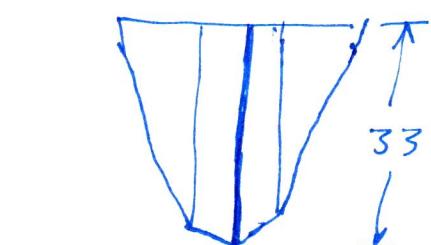
Attachment for Diam of Sphere



[Tee]



[Jaw]



## [Wisdom]

### [History of civilizations]

takes one  
man makes path  
path choice yields a destination  
society makes one road.

man takes one path

path yields nothing

society makes one wall

men take the paths

society builds a map

map educators teach the map

learners learn the map

maps lead nowhere new.

society goes nowhere new.

the wealthy own the map,

the middle workers walk the map,

society goes nowhere new.

the poor have no map,

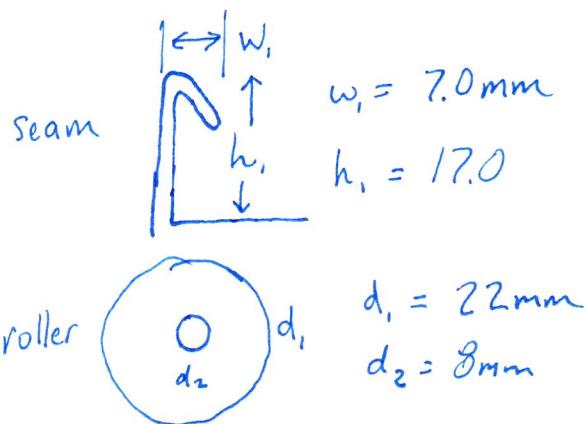
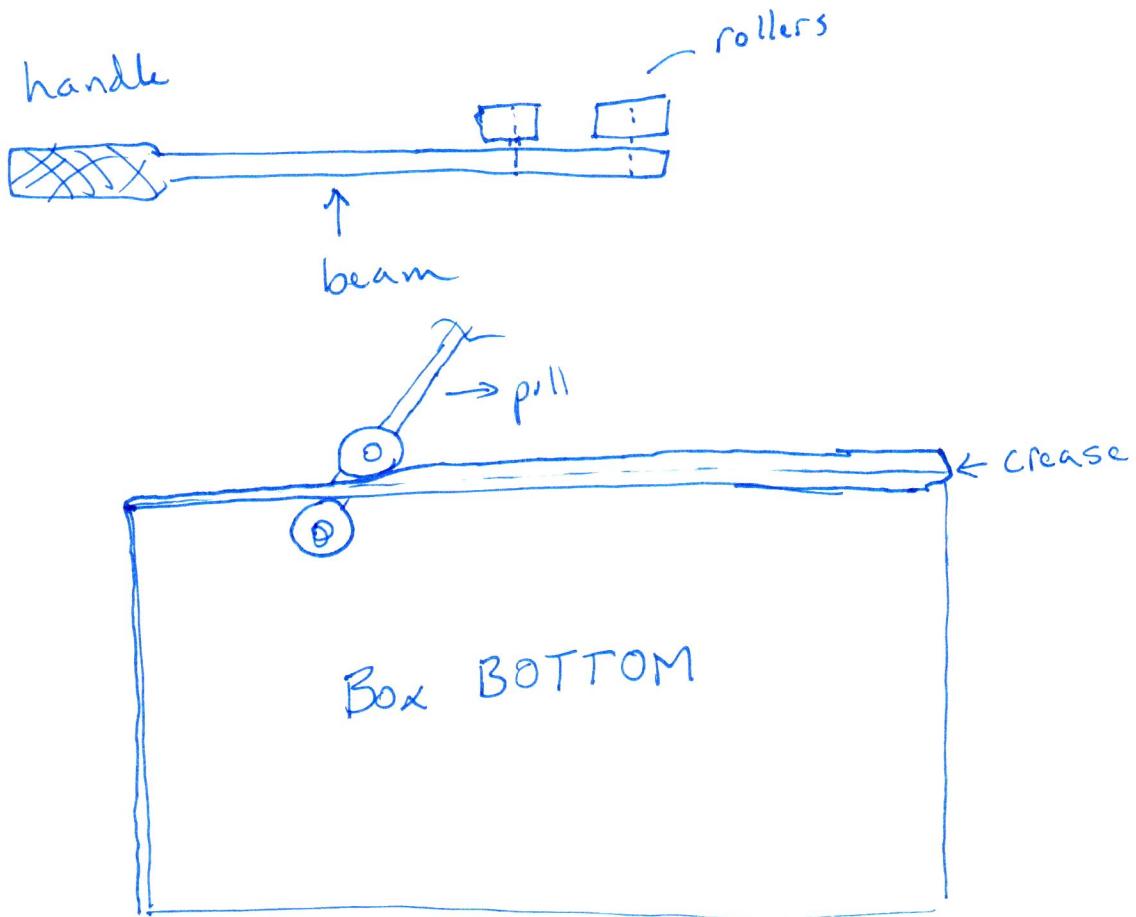
the poor go somewhere new,

but none follows.

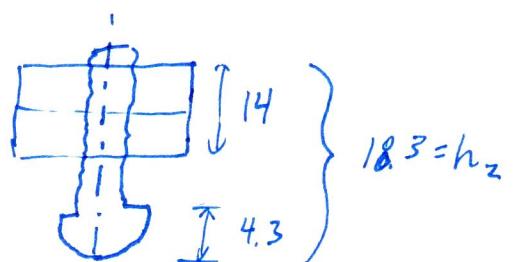
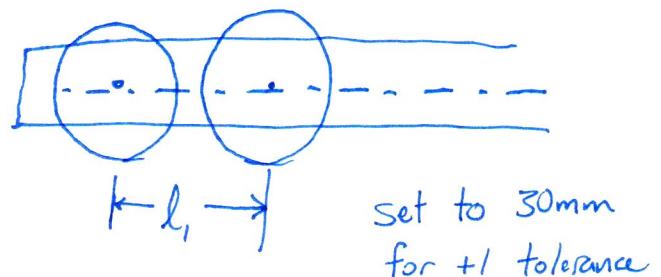
the poor own all destinations,  
that aren't on the map.

~~2023.12.07~~ [2023.12.08] Designs

### [Tool box Edge Crimp]

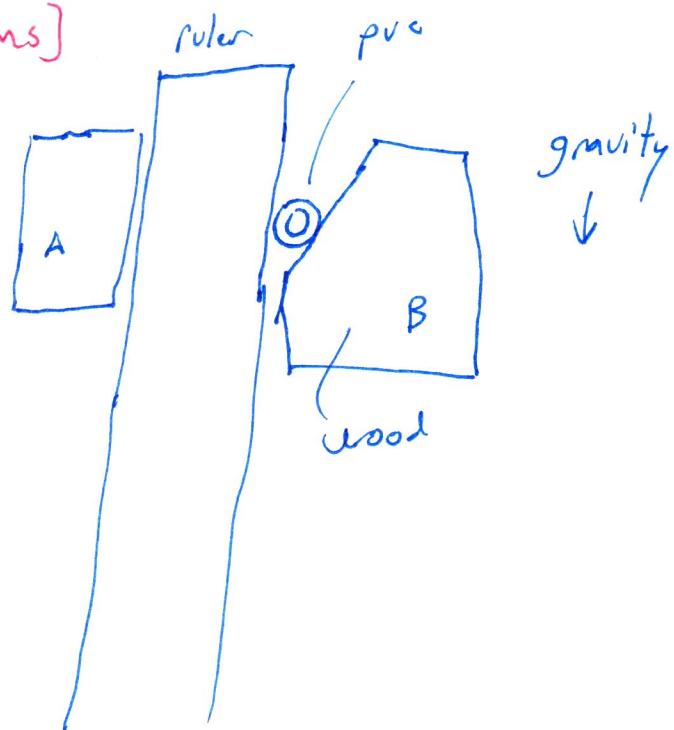


$$t_1 \uparrow \boxed{\text{--- --- ---}} \quad l_1 = d_1 + w_1 = 29\text{ mm}$$
$$t_1 = 7.0\text{mm}$$

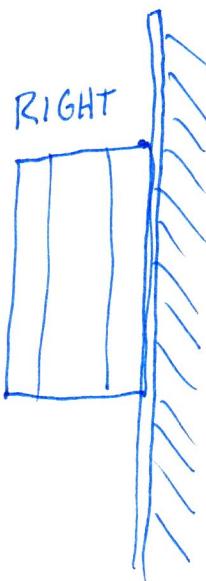
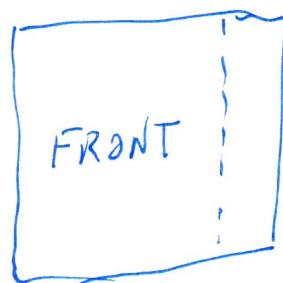


2023.12.08 [Designs]

[Hang a ruler]

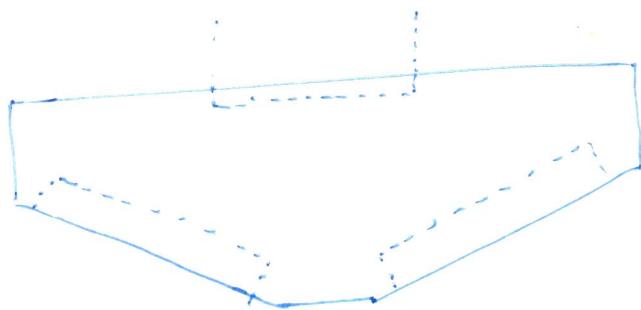
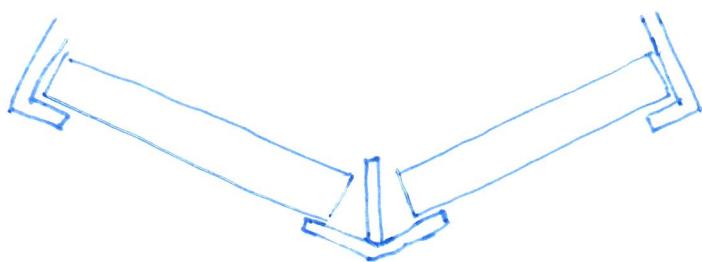
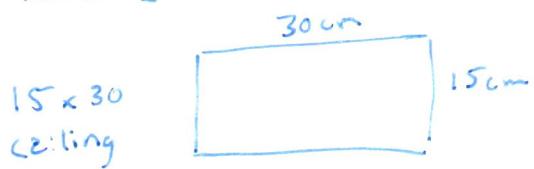


[Wood A]



[ Vent filter ]

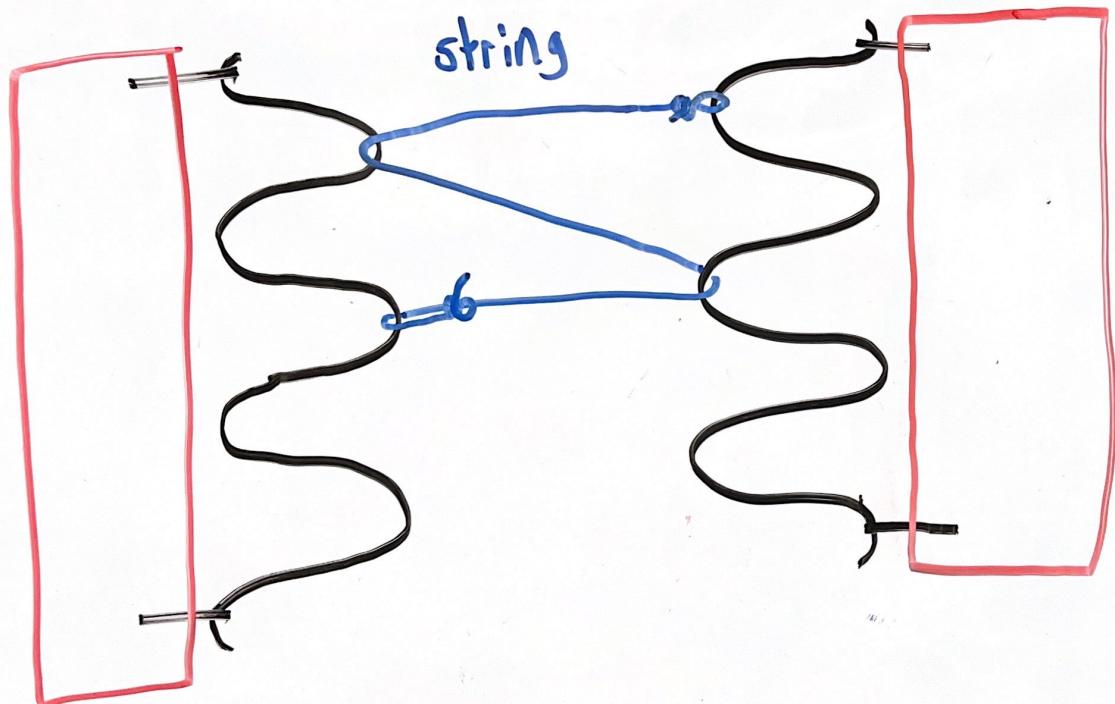
Designs. 2023.12



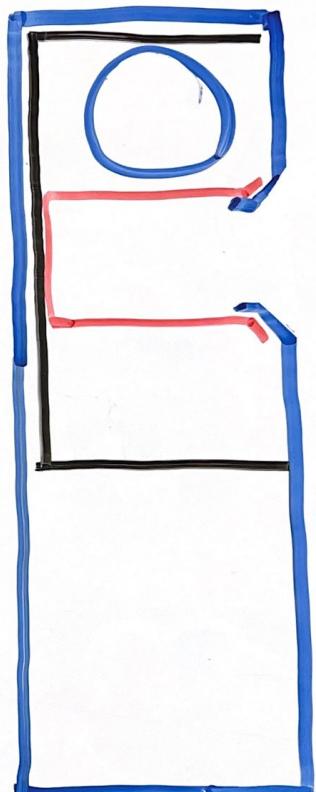
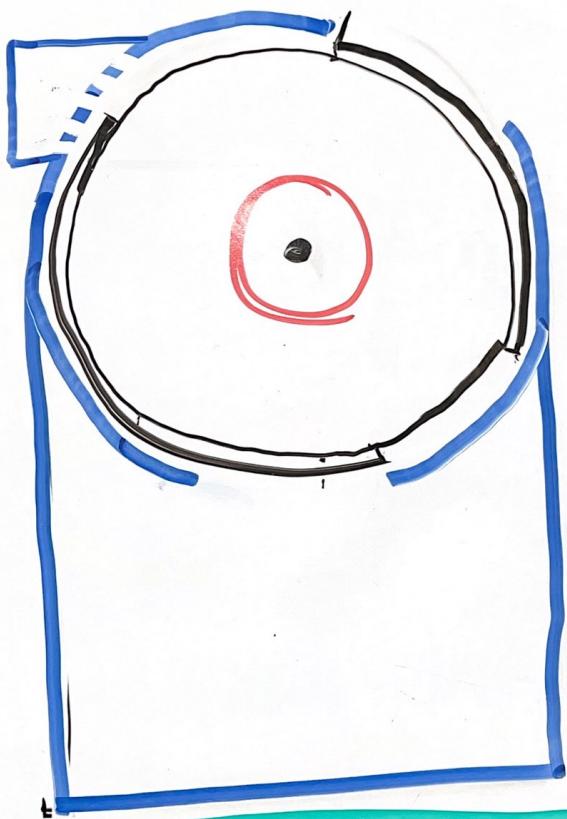
cord tensioner

steel

wood

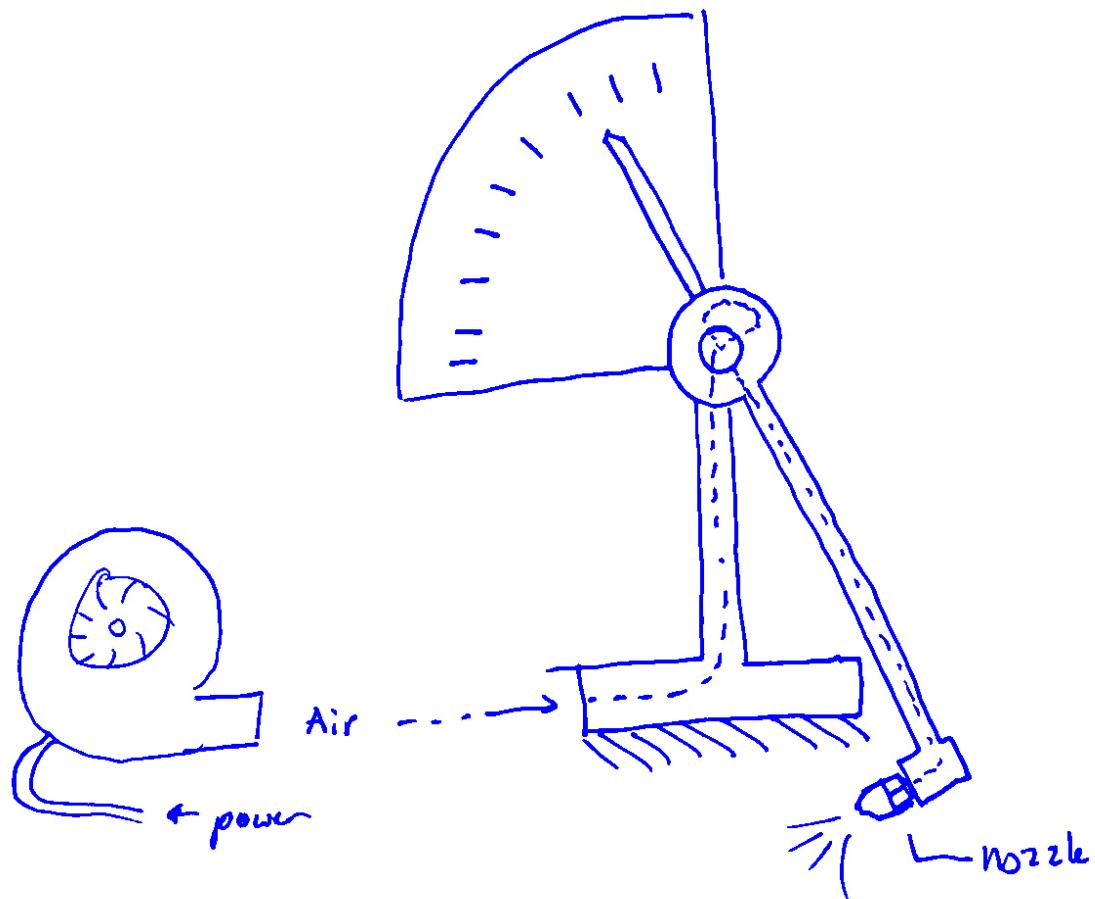


Trash bin



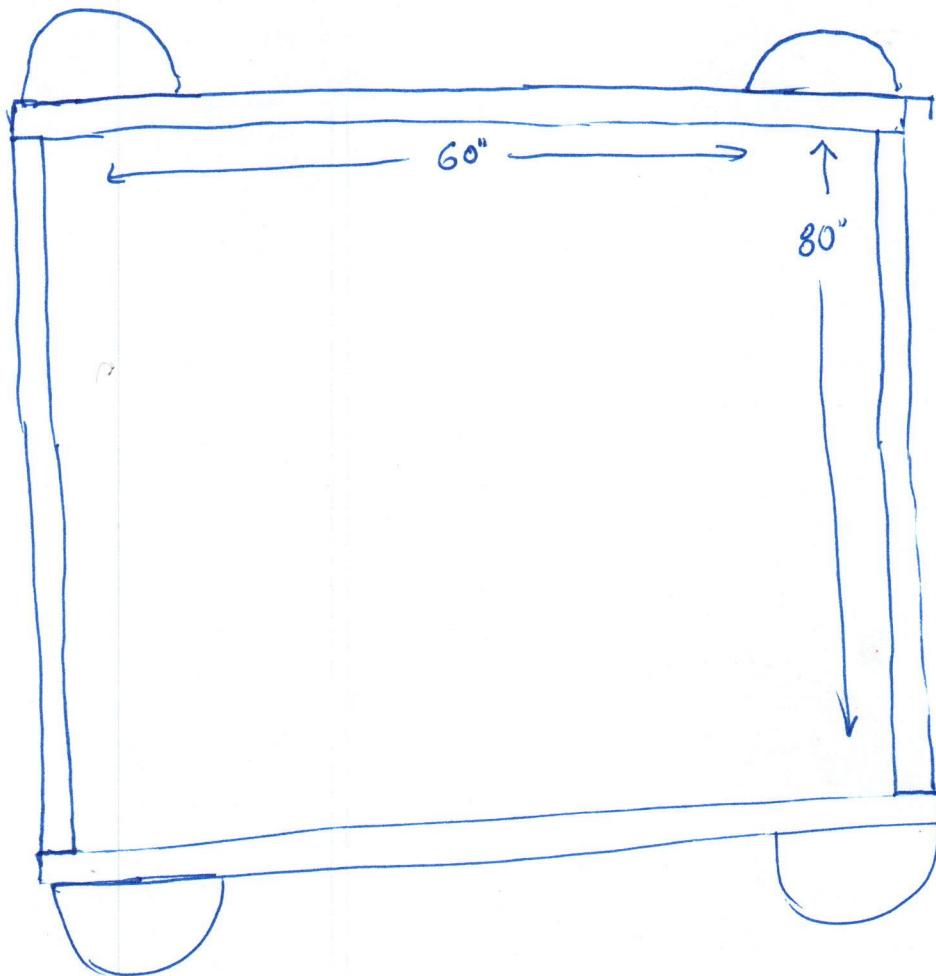
2024.04

[Work meter] responds statically to a constant power

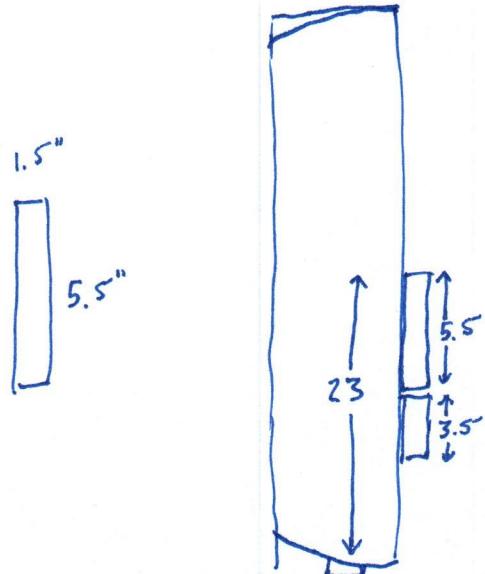


[Bed frame design] Feb 2024

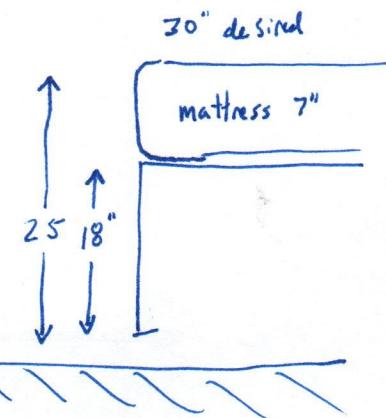
[bed frame design] Feb 2024



Base



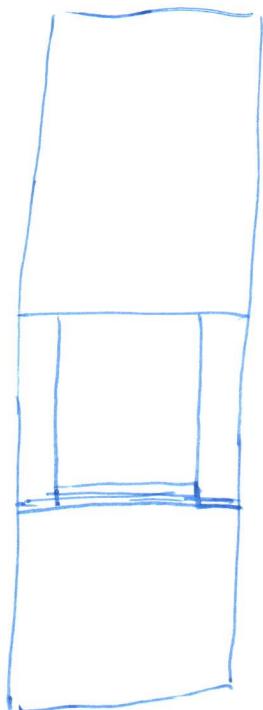
Metal Bed



## [Design needs - workshop]

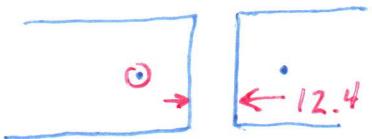
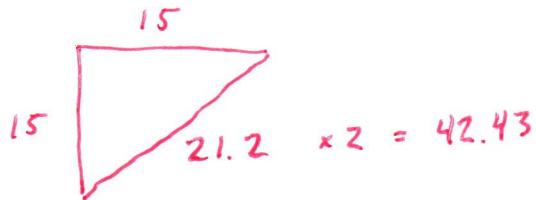
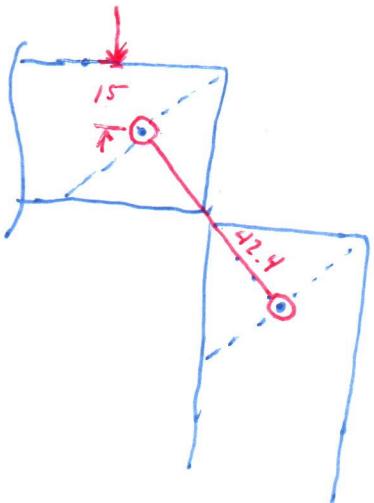
### [Create]

- straight cuts for panels, thin
- straight cuts for tubes,
- Parametric half-tube stand
- router table - straight grooves
- screw reference
- 



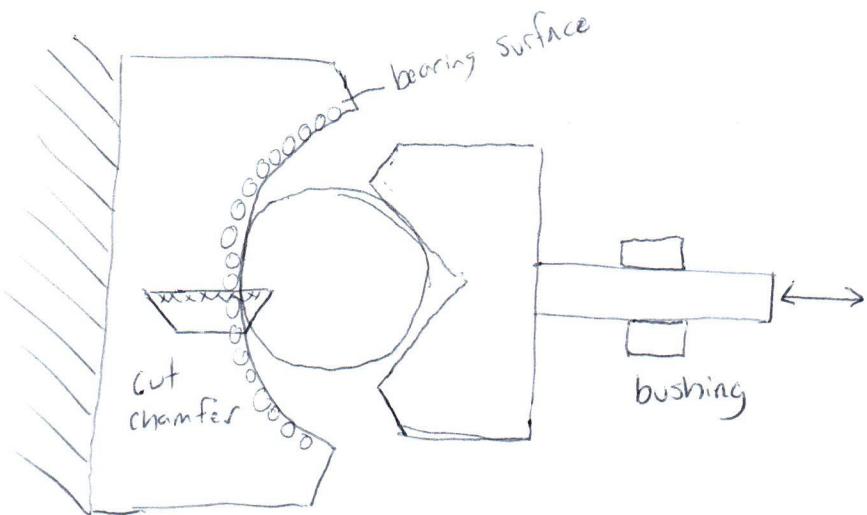
## Design of Pivot for 3030 Extrusions

2023.08



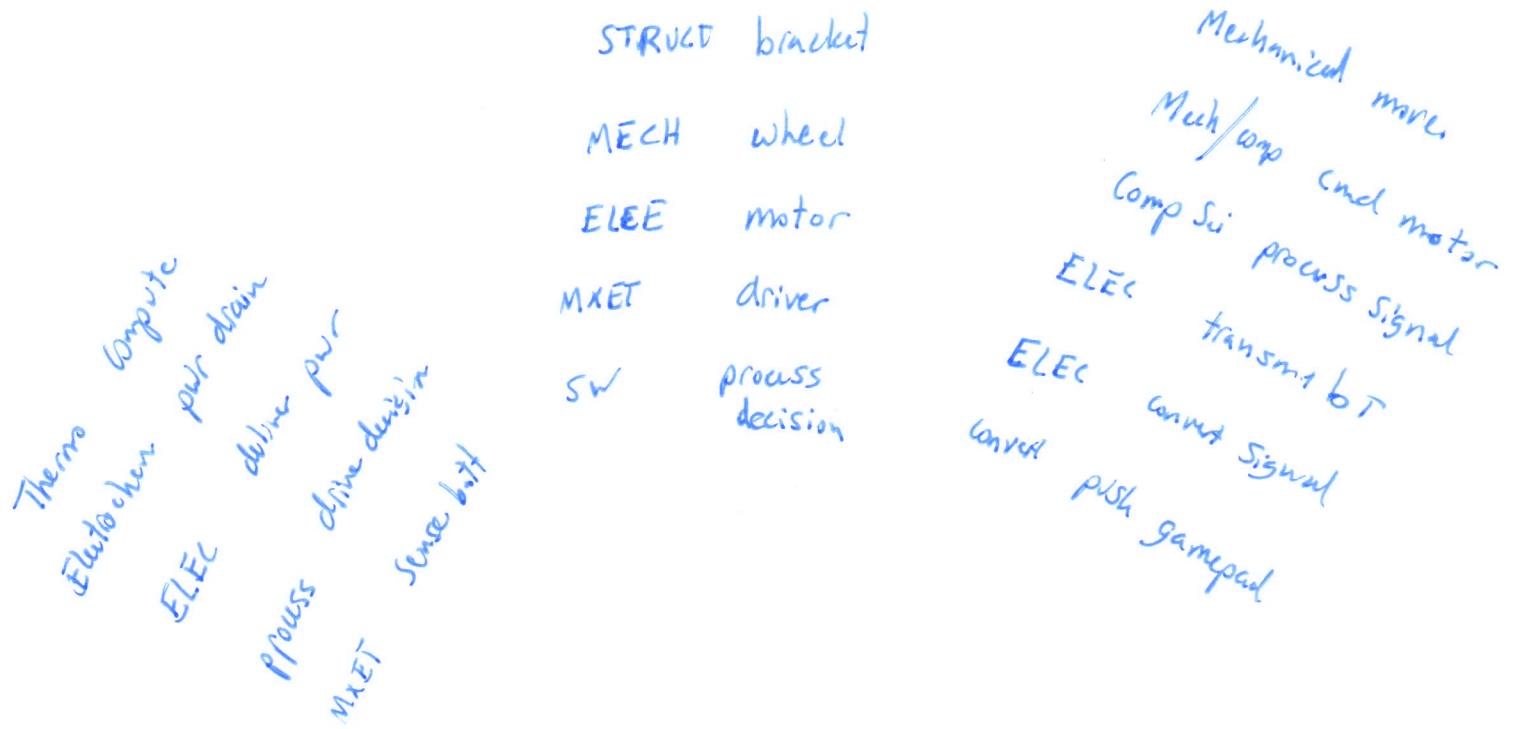
$$50\text{mm} - \frac{6}{2} = 47\text{mm}$$

# Design fixture for holding tubes



Picatinny rail

## Discipline-based



[process]

Sensor

electronic

actuator

mechanical

Convert

Send

Command

process

Sense

Signal

Pi

encoder

encoder

Motion

motor

motor driver

encoder

convert

convert

Com

receive

motion

mag

chip

detect

com

transmit

process

ADC

[ Profession - based  
Contributor-oriented ] {

Comp Eng      Softw/optimization

MXET      Sensor integration

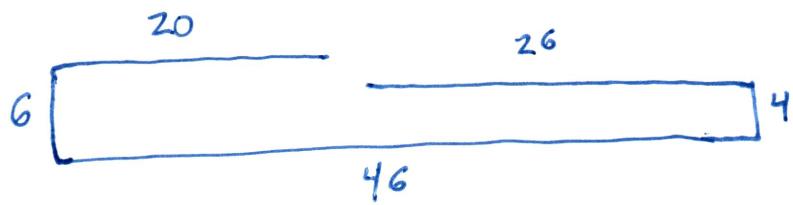
Comp Sci:      Closed-loop control

ME      Bracket Design

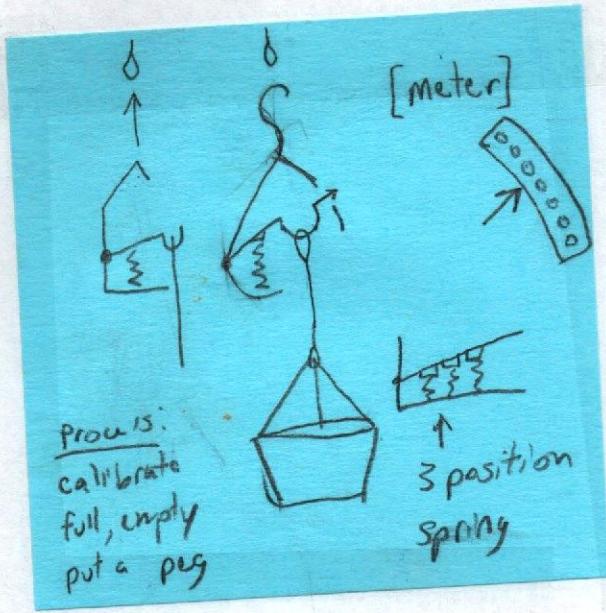
EE      motor design

# [Chair Cushion]

2023.05.15



2023.01 [Tech Notes]



[2023.01]

[How we leverage design efforts without paying] 2023.01.08

open tech

is it good  
quality?

→ no → has no value  
→ yes → will be revised  
by experts



license requires  
share - alike?

yes

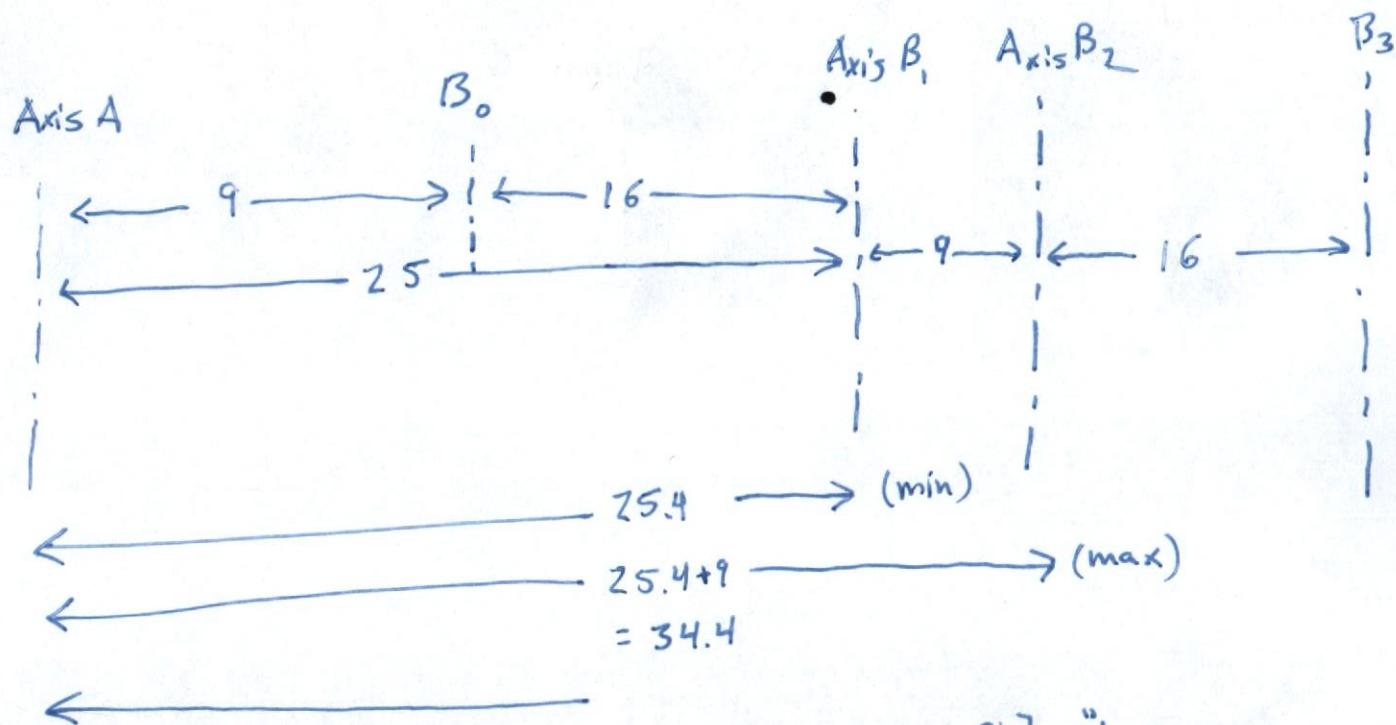
value is added  
to the ecosystem



[DIN Rail Fasteners]

At least	At most
$\frac{6}{25} \sim$	$\frac{9}{34}$

[OK spacing ranges]



16

$$16 \rightarrow 32 - 25 = 7$$

$$17 \rightarrow 34 - 25 = 9$$

$$17.5 \rightarrow 35 - 25 = 10$$

[For holes to fit]  $\circlearrowleft$

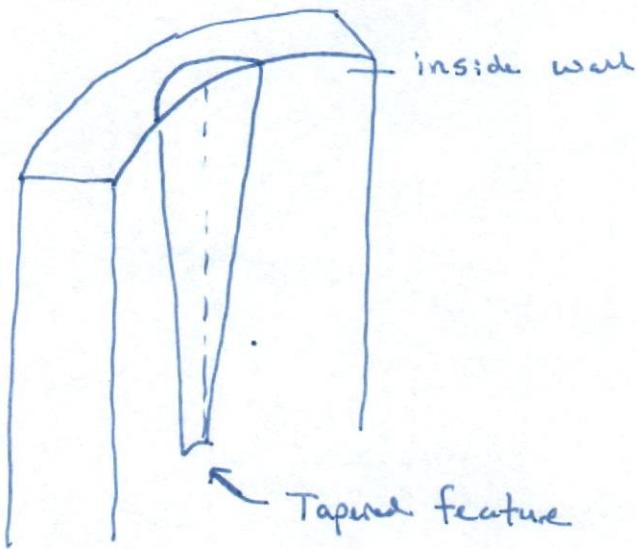
subtracting  $N \times 25$

must yield  $6 \sim 9$  or  $16 \sim 24$

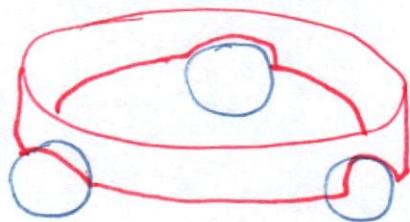
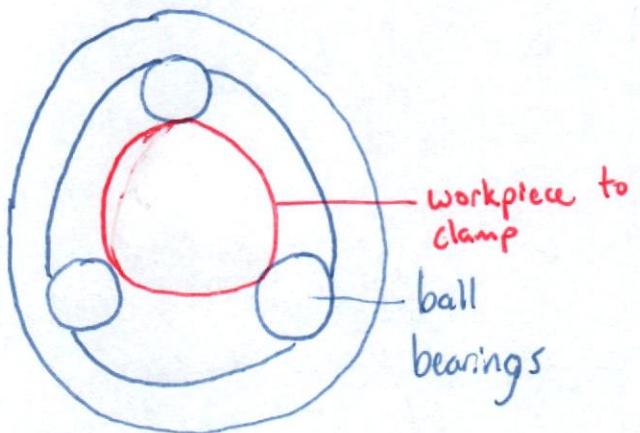
where  $N = \text{number of slots of separation}$

# [Design - Adjustable Tube collet]

Self-centering

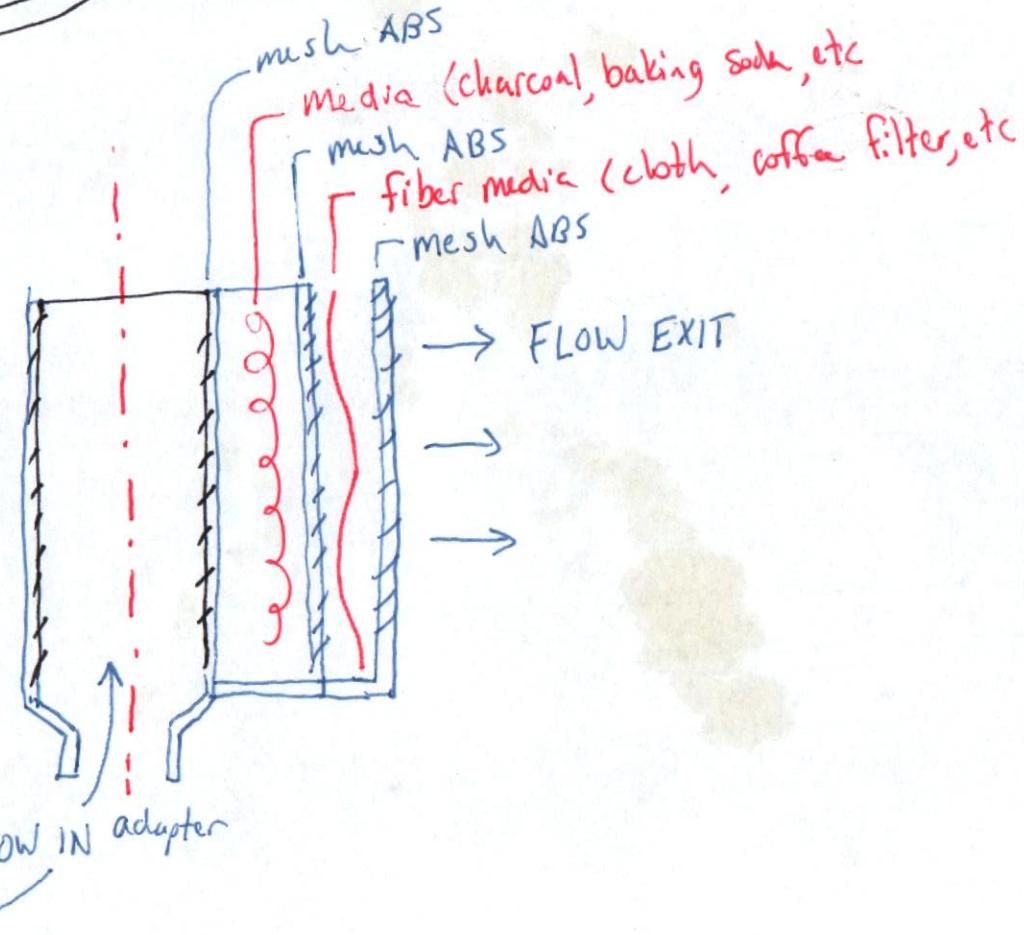
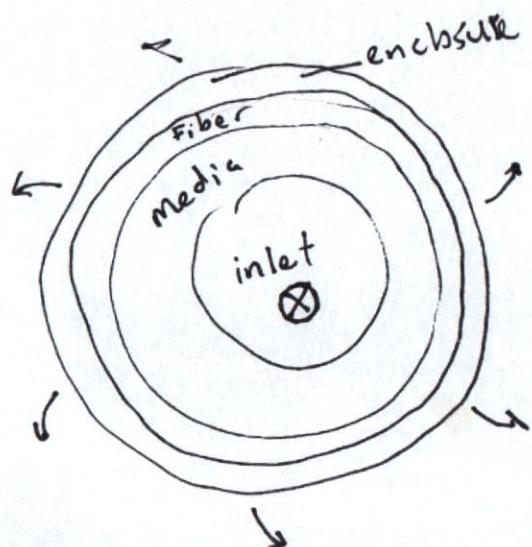


TOP

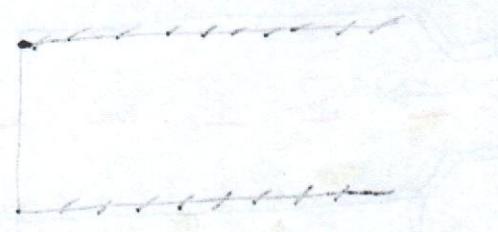
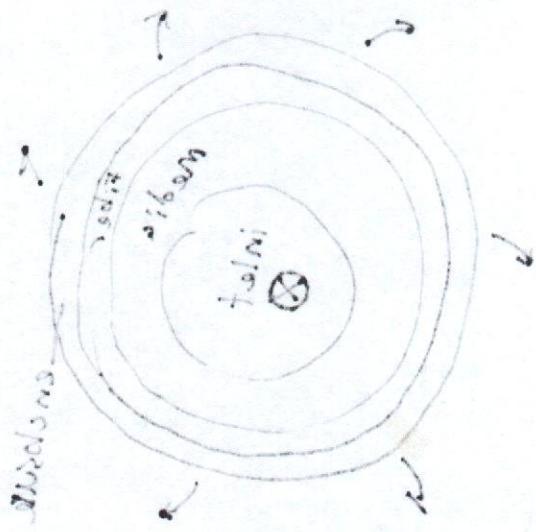


Top race constrains balls  
from lifting

[3D Printed filter Design] 2022.10



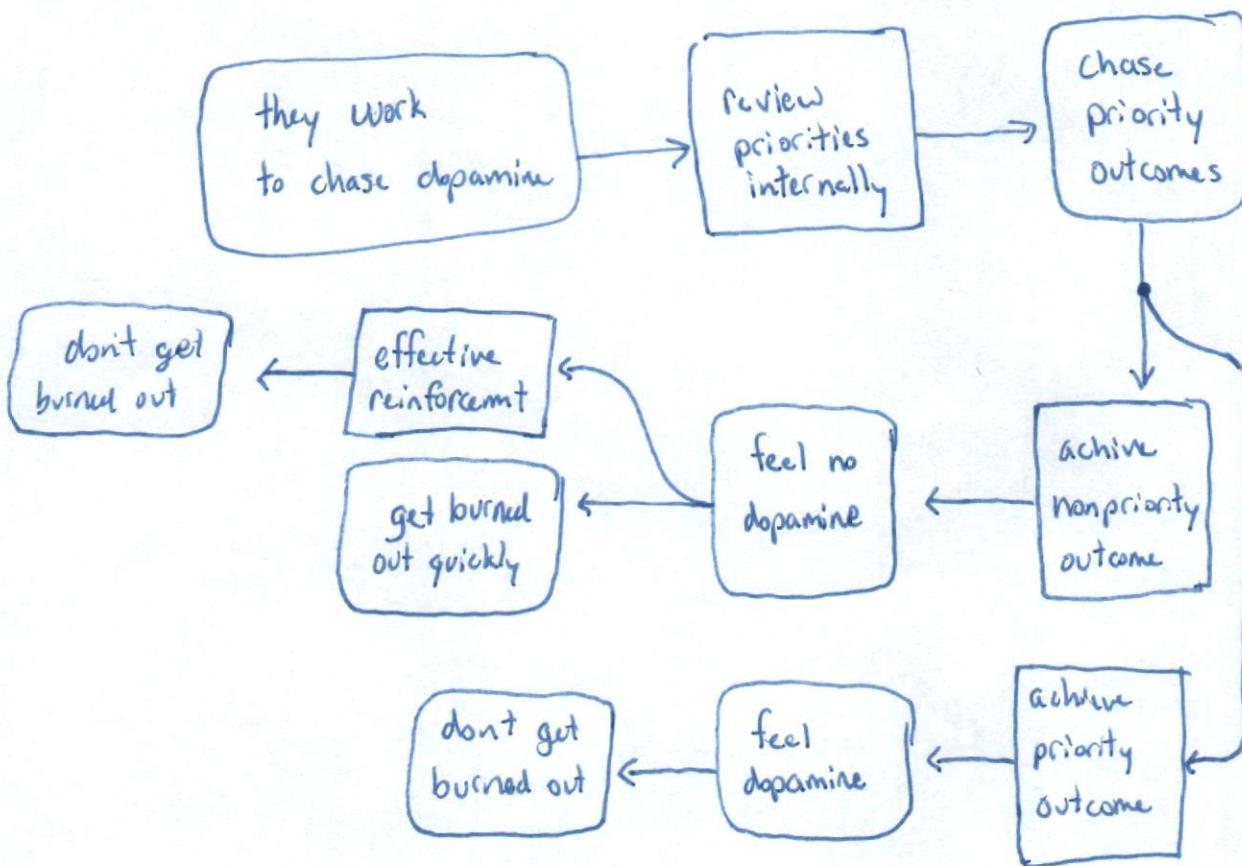
20 May 2019 Dated



[Success with average workers]  
2022.10

## How to get TM's aligned & work on priorities (young generation)

- Convince them  
deeply of priorities
- earn their respect



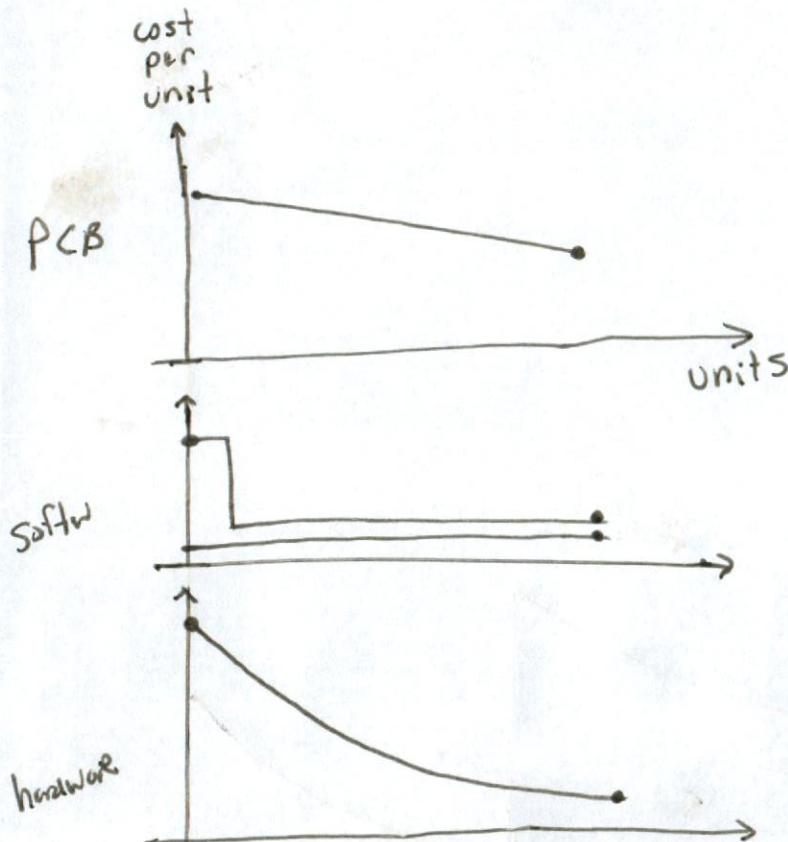
# Skills Linked to SCUTTLE experience, by Audience

2022.08

<u>Users</u>	<u>Docs</u>	<u>out come</u>
All	A Beginners Guide	Able to install software, run robot
MxET	B Lab manual	
SCUTTLE community developers, users	C <ul style="list-style-type: none"><li>• Linux applied</li><li>↳ tutorials</li><li>↳ cheat-sheets</li><li>• Tutorial Videos</li></ul>	Able to add/change libraries, Pi settings
SCUTTLE	Self-taught	Able to make refined software

multi disciplinary  
design: remote control

### Cost to build Rev2



Decision:  
Make new? example

✓ more efficient  
transciever

✓ add a new  
function

✗ remove a  
button