



# WALL MOUNTED STAND/ SIT DESK

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21/11/2017

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Apartments are getting smaller

Bachelor apartments are becoming more common

Students tend to spend most of their time in their bedroom

There is a need for more usable space in smaller bedrooms

Desks take up a lot of space in a bedroom/living room, especially when they're not in use



# Design Focus



## Safety

- Soft close
- Locking elevation
- Secure mount
- Assisted open/close



Desk must be as thin as possible



4-8 Year lifespan



Keep manufacturing costs low



Easy Set-up



Price: \$300-350

## CPD

**Project Description: A new innovative space saving seated desk that can be folded away when its not in use, and can slide up and down the wall to be used as a standing desk. The desk must be cheap enough to compete with the other standing desks on the market.**

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### Must Have:

1. **Safety:** light weight, easy open and close with out falling too fast on someone's hand, small child or pet. Must lock at 90 degrees with manual close to prevent failure
2. **Timing:** housewares competition online entry deadline of December 18<sup>th</sup> 2017  
6h studio + 6h outside of studio
3. **Innovation:** this would be the first foldable standing desk allowing the user to keep most of their regular supplies/stationaries on or in the desk even when stowed away.
4. **Costs:** MSRP \$300-350
5. **Manufacturing cost:** \$50-60
6. **Robustness:** Must be sturdy enough to support the average person leaning on it with most of their weight. Support laptop, lamp and other
7. **Competition:** There are a few companies with cheap versions of this product but most are DIY projects that are very simple and the designs are based on utility.
8. **Materials:** plastic laminate wood/ particle board, metal hinges, possible hydraulic piston, aluminum
9. **Lifespan/Maintenance:** 4-8 years, at least a 4 year program and a few years after
10. **Anthropometrics/Ergonomics:** minimal force to lift and lower with one hand, proper heights for both standing and sitting, adjustable
11. **Functional Features:** soft closing, optional stationary self, gas springs to reduce weight
12. **IP:** First foldable standing desk
13. **Product volume:** 100,000+

### Should Have:

1. Flat Pack
2. Small drawers
3. "Chargeable desk" desk is equipped outlets to charge small electronic devices
4. The desk can be removed from the wall and stowed away in a closet or under a bed if needed

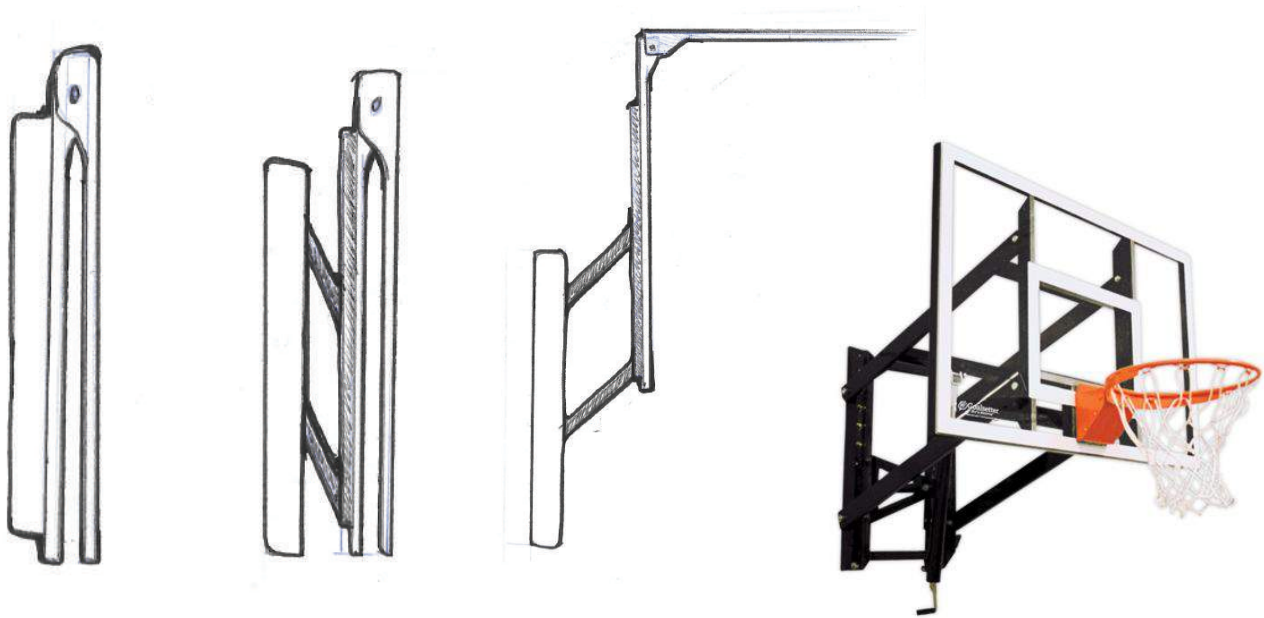
### Nice to Have:

1. Auto Open
2. Multi use (can be used to complete other tasks)
3. Can be removed from the wall to be stored away in a closet or under a bed

# Concept 1

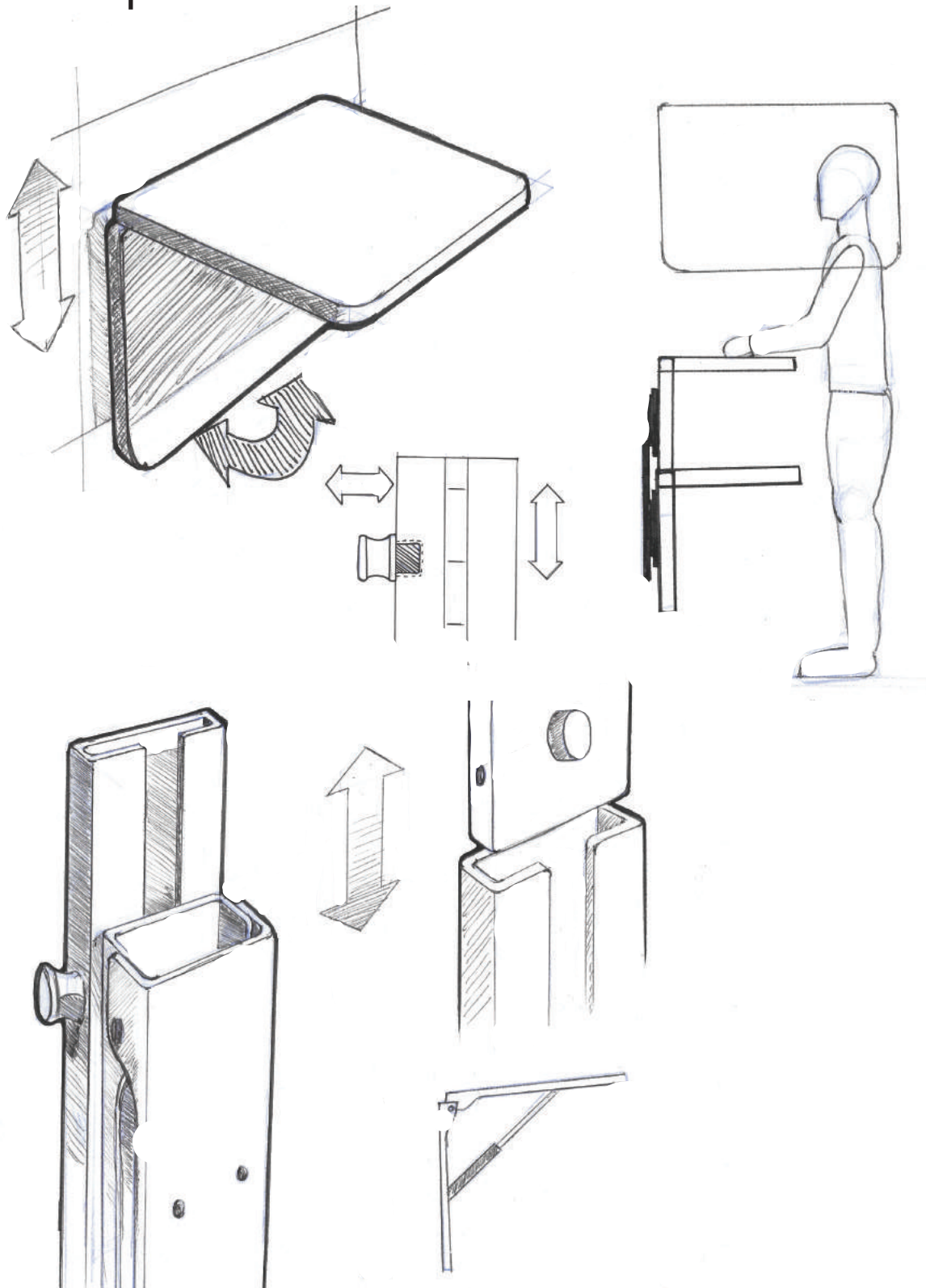


# Concept 2





# Concept 3



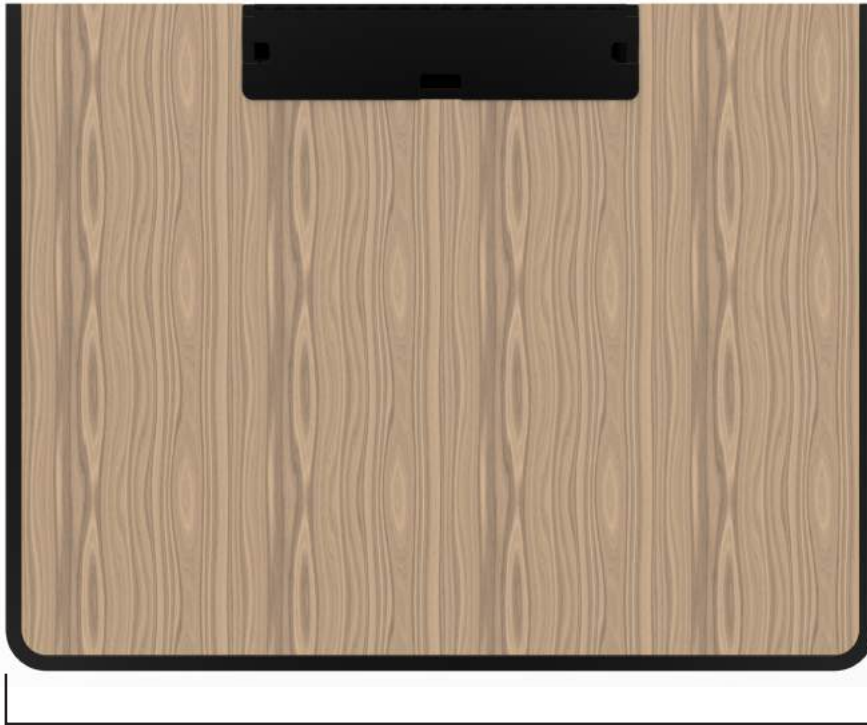
Final Design







17" of Travel  
(Overall Height: min. 32" / max. 49")



42"



32"

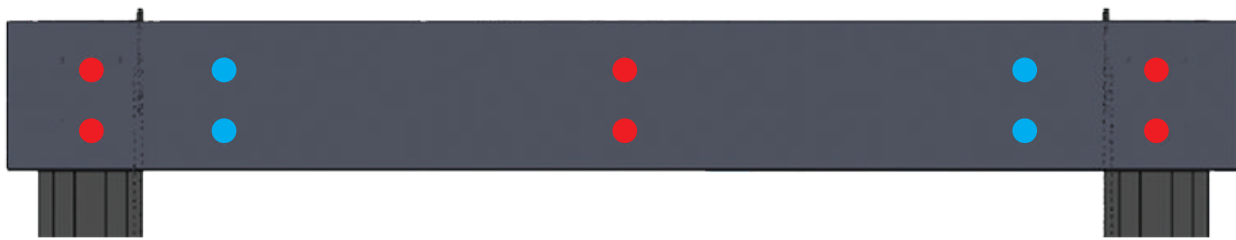


2.6"

Maintains a 10" Overlap  
(Between the slide and carriage when extended)



Flat packs into a box 33" x 43" x 3" with manuals, parts and protective packaging



(Back of Desk Mount)

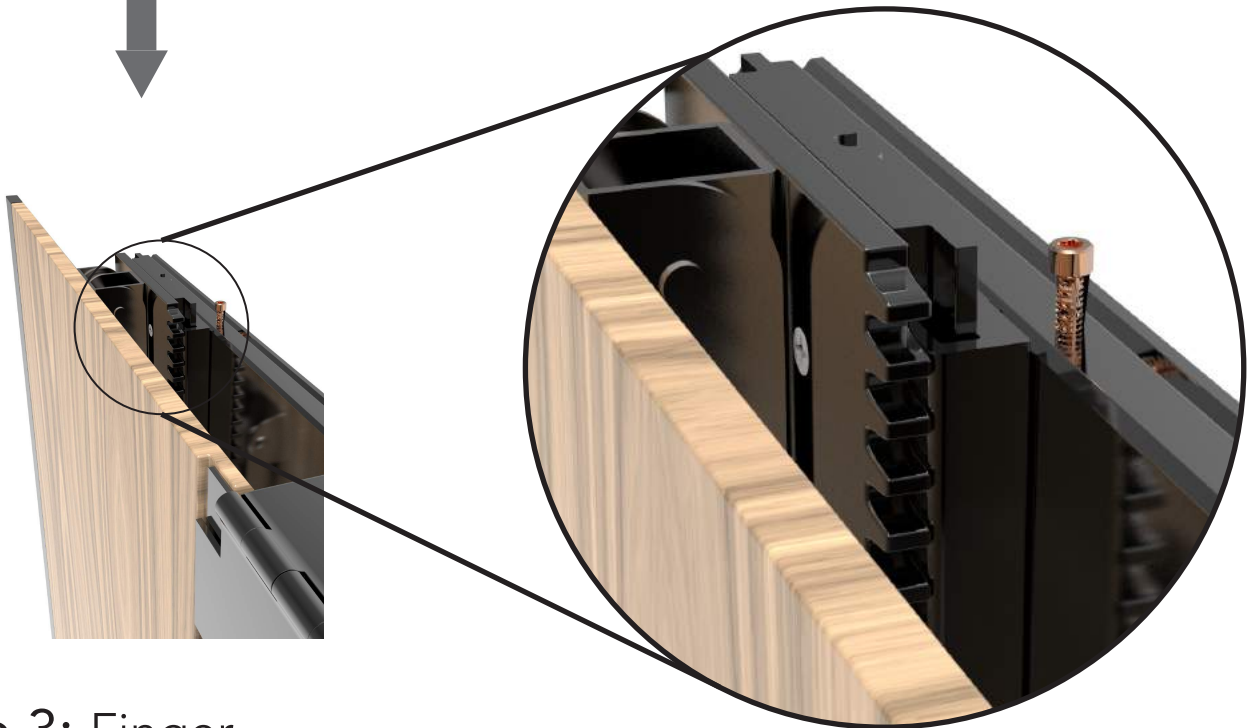
- 36" Long to span across 2-3 studs
- Mounting holes for 16" OC studs (red) and 24" OC studs (blue)
- To transfer the weight in the most efficient way, the rails are placed right on the studs or as close as possible



**Step 1:** Mount bracket on wall



**Step 2:** Lift and place desk onto bracket



**Step 3:** Finger tighten the two screws on either side of the mount



Two drawers on either side of the desk are big enough to hold small objects such as pens, pencils, and erasers

The drawers are weighted on the outside bottom corner, so they close automatically if the desk is folded down without closing the drawers





The box at the back of the desk is designed to hold a medium sized power bar, which is provided but can be switched out for another

The multiple holes on the lid are for both opening/close and cable management



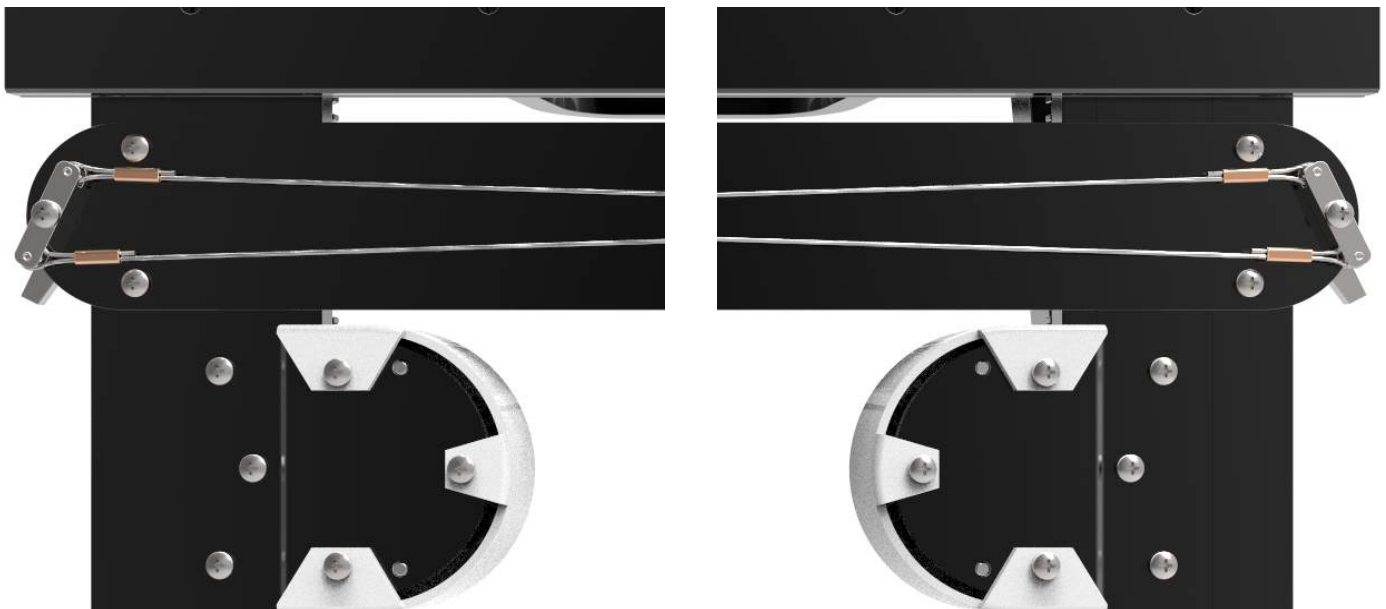




Four rubber feet (two on each slide) disperse the weight of the desk down the wall as well as space the desk evenly from top to bottom ensuring the desk is parallel to the wall when flat



The desk can be adjusted up and down in 1" increments so the user can find the optimal position to work at

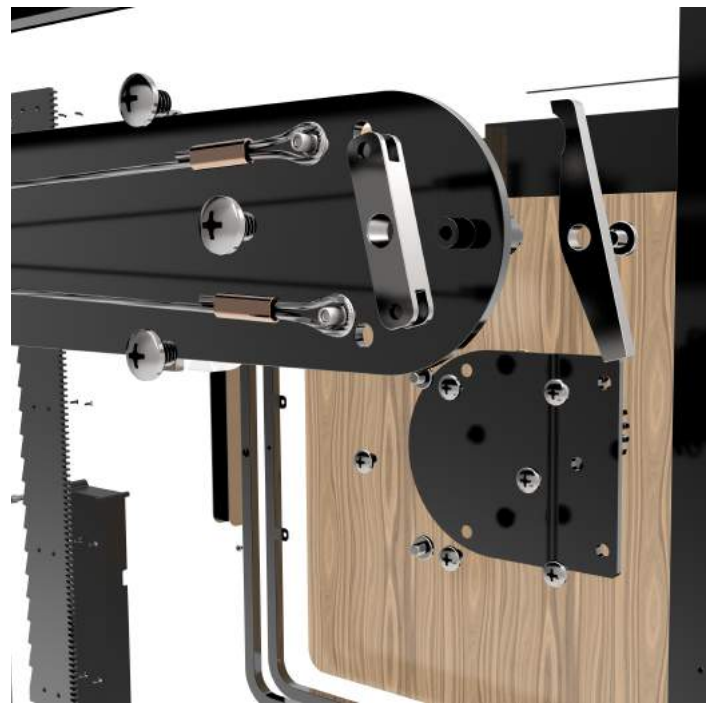




There are two levers on either side of desk allowing users to lower the desk using whichever side is more accessible. The cables connecting the levers together synchronize their motion so the desk can be lowered with a one finger.

The desk is free to move up without releasing the lever, but can't fall.

To move the desk up, just grab onto the desk wherever comfortable and lift to desired height.



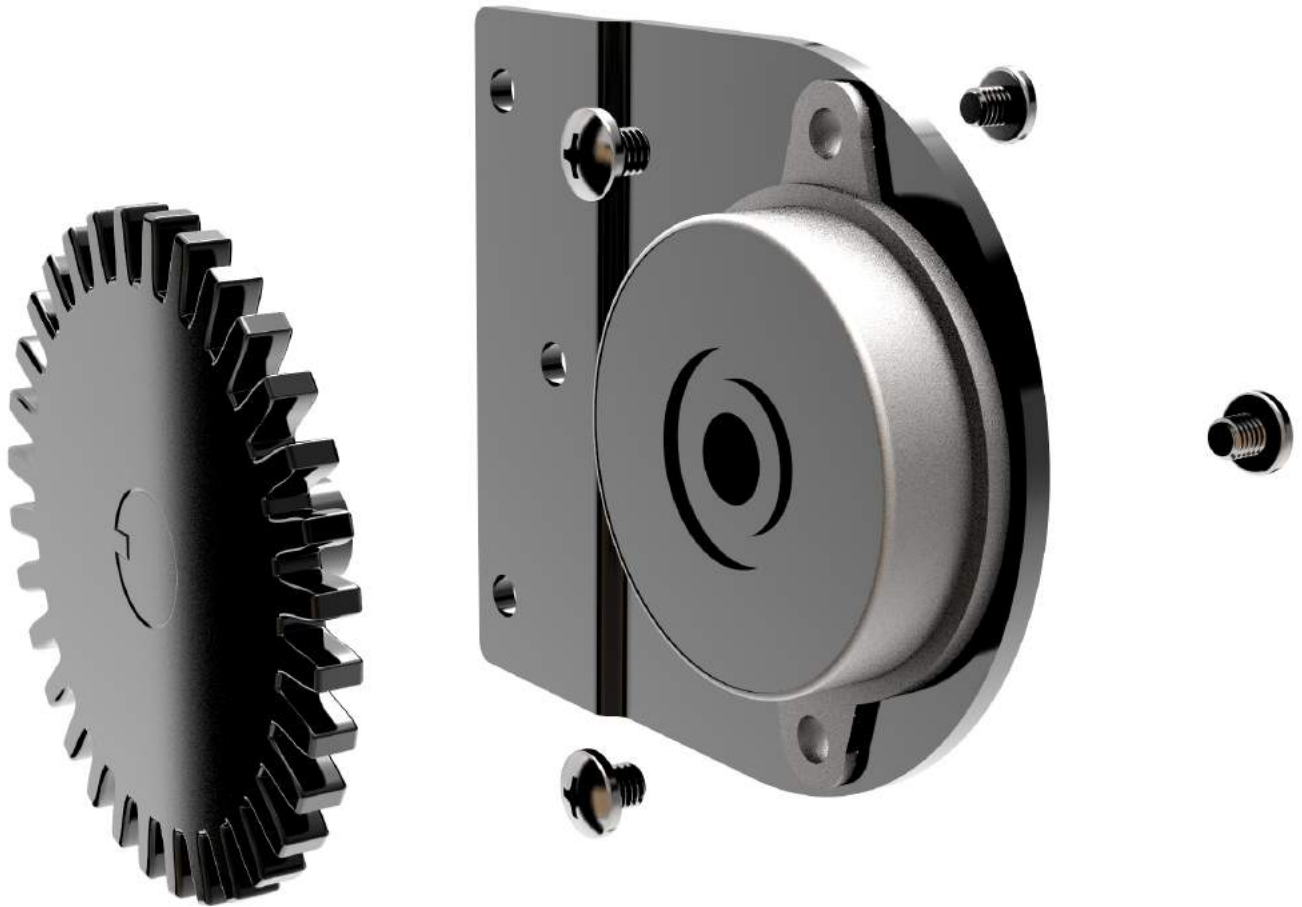


The inside of both top plates is a rack and pinion

Its first responsibility is limiting the travel of the slide

A flat area at the bottom of the rack stops it from extending too far

The plastic cap at the bottom stops it from falling out

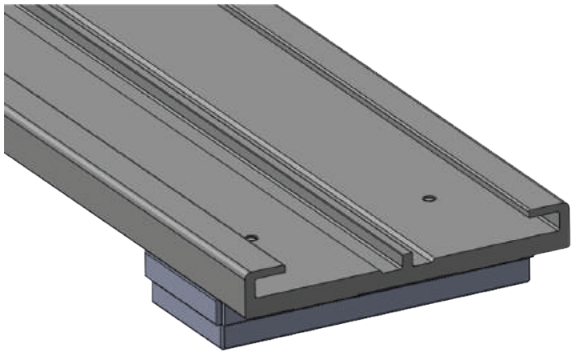


The second responsibility is slowing the decent of the desk using a rotary damper attached behind the pinion

These dampers are mounted on both sides of the desk. The dampers only resist on the down-stroke and are rated to lbs each, slowing the desks decent to a crawl

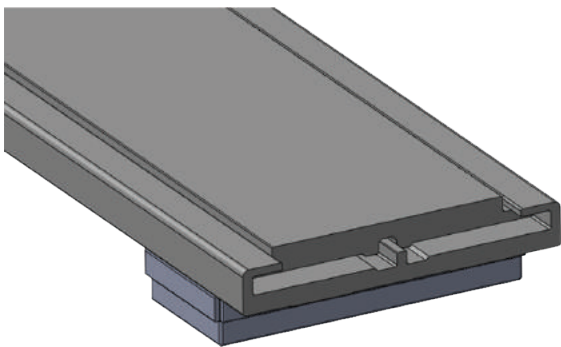
These help the user operate the desk adjustment with a single hand

These Rotary Dampers will be covered to prevent lose clother or other objects from getting caught in the teeth



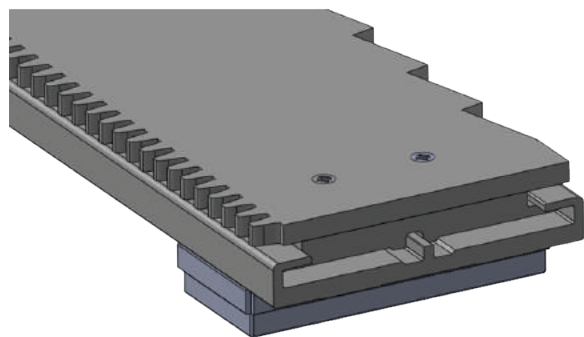
## Rail/ Slide

- Mounted to the wall
- Carries all the main attachments
- Centre rail helps prevent binding between the carriage and slide



## Carriage

- Slides up and down the rail
- Nylon spacers between the rail and carriage allow for smooth movement

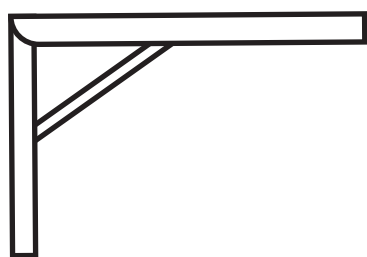


## Top Plate

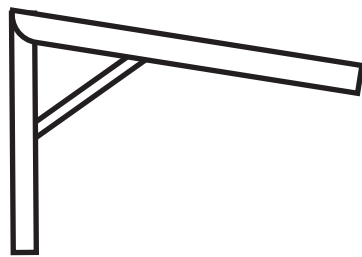
- Both sides serve a different purpose for different attachments
- The hinges and lift assist are attached to this component



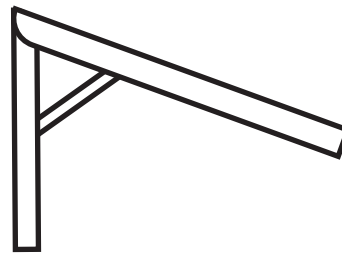
# Adjustable Positions:



90°



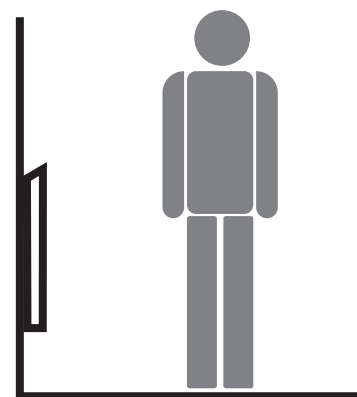
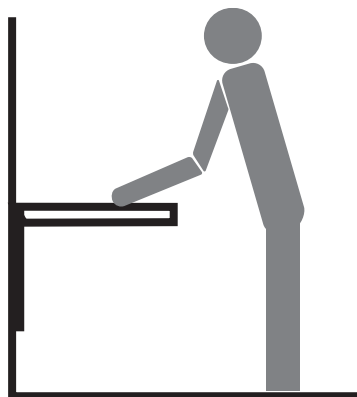
80°



70°



0°



To Raise: Lift desk top to and allow to engage at required position

To Lower: Lift desk slightly and release locking mechanism



Hinges: 200lb max  
(each)

Gas Springs: 30lb max  
(each)



The simplicity of the frame design and the way the power box and frame are mounted to the desk top means it can be easily customized. These custom desktops can be made by the manufacturing company or even by the user if needed. The tops can be made out of solid wood, particle board with a veneer finish on one side, glass (with different screws), MDF, plastic etc.

Oak



Glass (black tint)



Maple



Clear Glass



Particle Board with plastic wood veneer



Particle Board with white plastic veneer

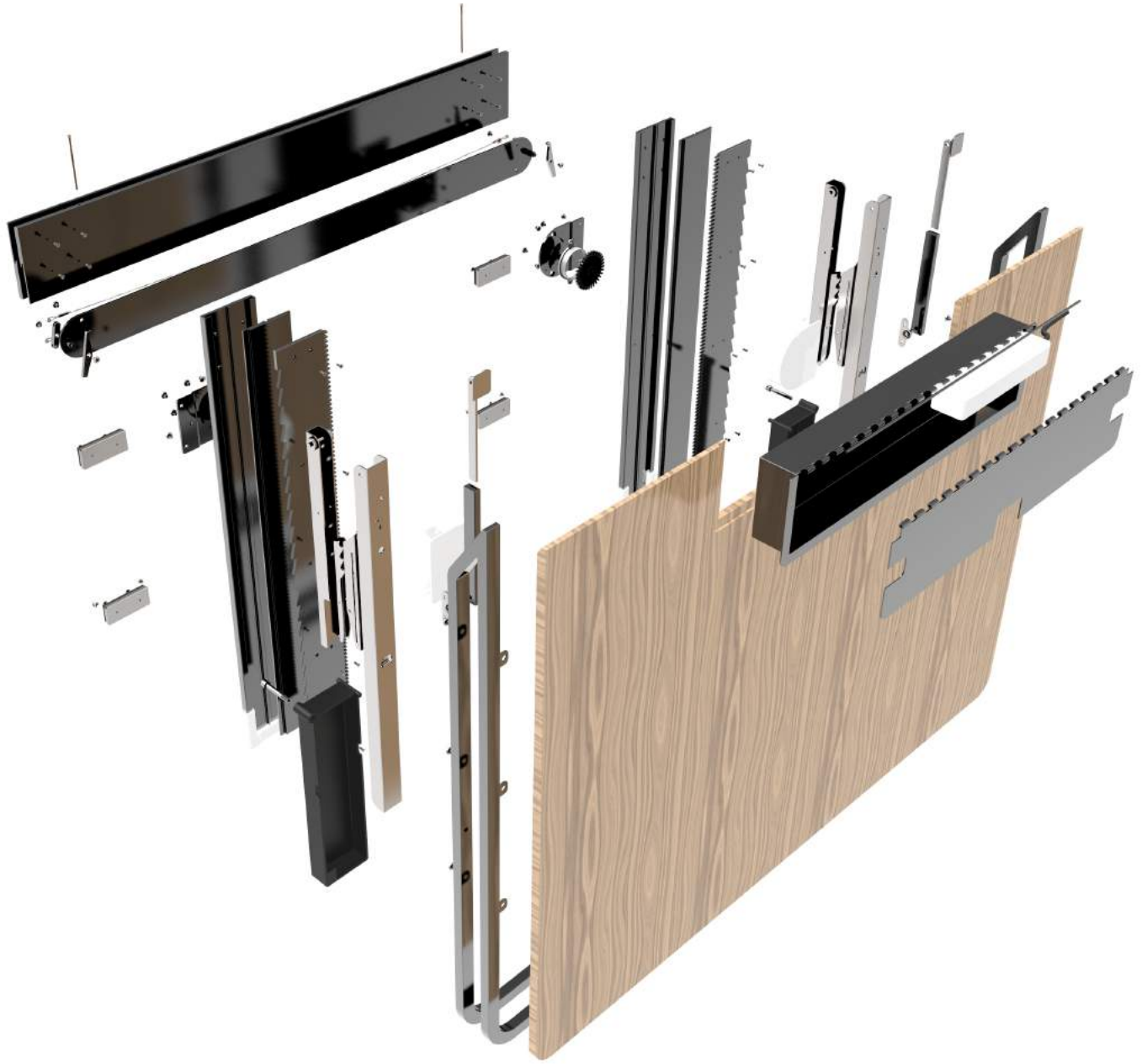


Blue Plastic



Grey Plastic





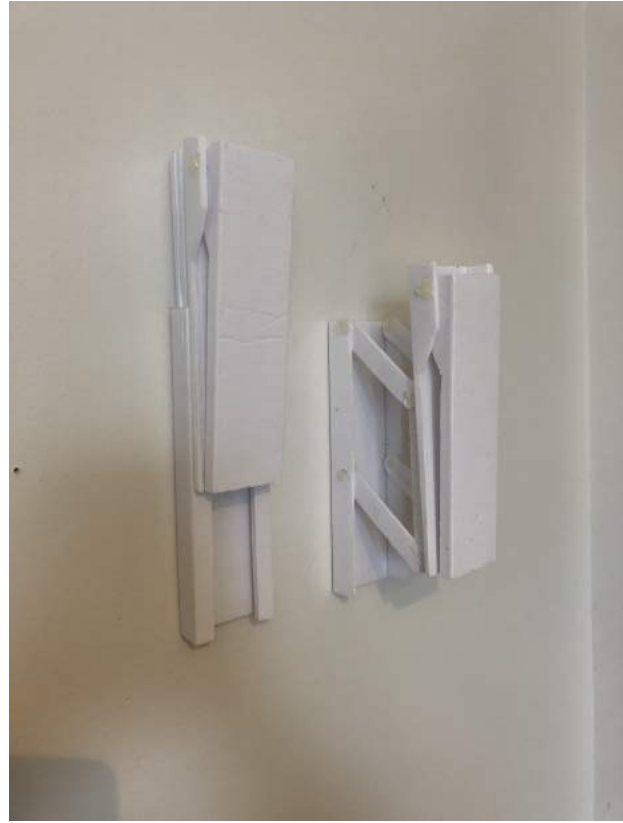
Part	Material	Processes
Rail	Aluminum	Extruded
Carriage	Aluminum	Extruded
Top Plate	Aluminum	Extruded/ CNC
Desk Top Frame	Steel/ Aluminum Square-tubing	Cut and weld
Drawers	PP	Injection Molding
Slide Bushings	Nylon	Processes
Ratchet arm/ wire Attachment	Steel	CNC/ Stamped
Wires	Steel Cable	
Feet	Steel/ Rubber	Stamped and Glued
Outlet Box	Aluminum	Stamped and welded
Hinges	Steel	Stamped
Desk Top	Particle/ real wood	
Mounting Plates	Steel/ Aluminum	Stamped
Ratchet plate	Steel/ Aluminum	Stamped
Mounting Bracket	Aluminum	Extruded

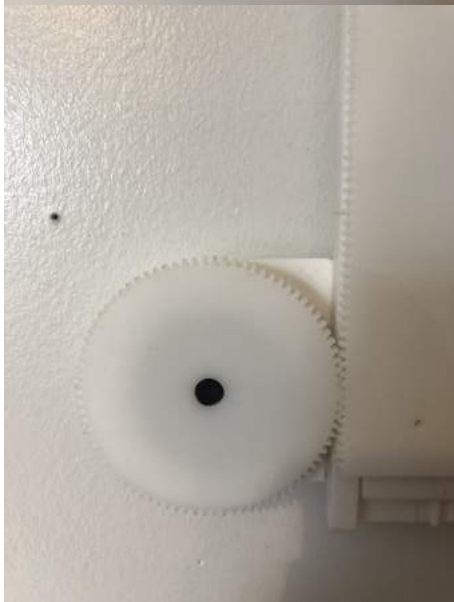
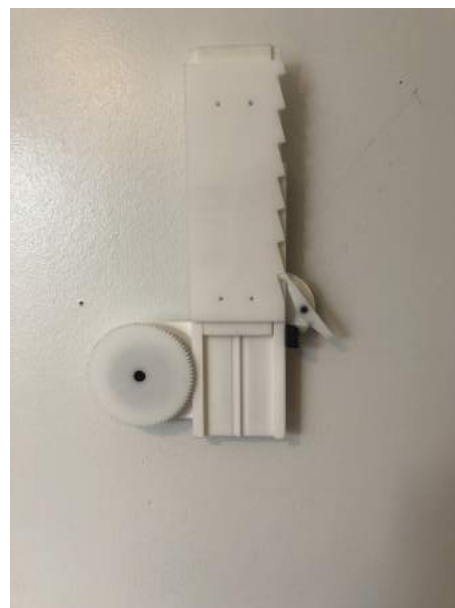
## Sourced Materials:

Line	Quantity	Unit of Measure	Product	Description
1	1	Pack of 100 each	91772A824	18-8 Stainless Steel Phillips Rounded Head Screw 10-32 Thread Size, 3/16" Long
2	1	Pack of 500 each	98017A609	18-8 Stainless Steel Mil. Spec. Washer Passivated, Number 4 Screw Size, NAS 1149-Cn416R
3	1	Pack of 100 each	91771A126	18-8 Stainless Steel Phillips Flat Head Screws 5-40 Thread Size, 3/8" Long
4	1	Pack of 100 each	91772A741	18-8 Stainless Steel Phillips Rounded Head Screw 4-48 Thread Size, 1/4" Long
5	1	Pack of 100 each	91771A112	18-8 Stainless Steel Phillips Flat Head Screws 4-40 Thread Size, 5/8" Long
6	2	Each	6723K4	Guide Rail 80mm Wide x 1000mm Long for Low-Profile Sleeve Bearing Carriage, Length: 1,000
7	2	Each	11615A12	Open-Up Lid Support 1.81" Mounting Depth, 11.3" Mounting Clearance
8	2	Each	19085A37	Fold-Away Shelf Bracket Heavy Duty, Stainless Steel, 12" Deep x 6-1/2" High x 1-1/4" Wide
9	1	Each	6295K12	Metal Gear Rack - 14-1/2 Degree Pressure Angle without Mounting Holes, 2 Feet Length, 24 Pitch
10	1	Each	6325K31	Metal Gear - 14-1/2 Degree Pressure Angle Press-Fit Mount, 24 Pitch, 12 Teeth











# THANK YOU!

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21/11/2017

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