MultiTool Engineering Report

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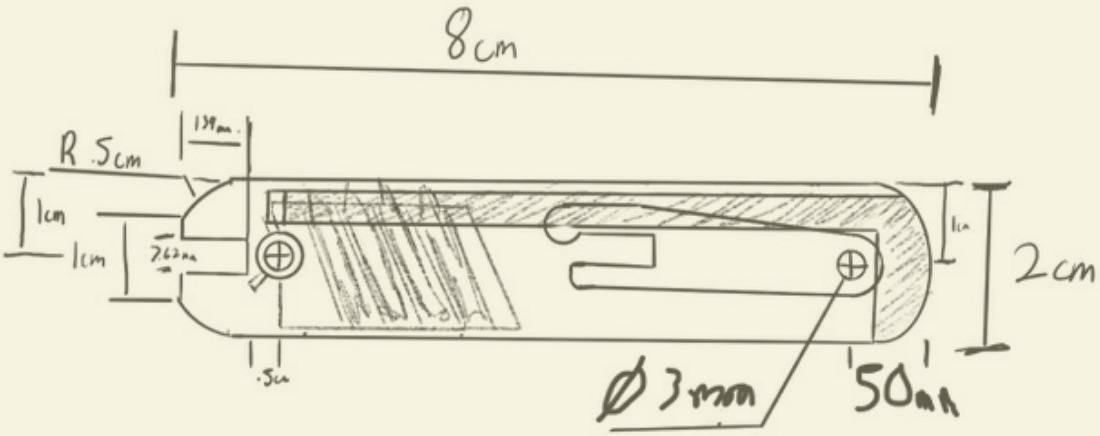
5th Period

INTRODUCTION

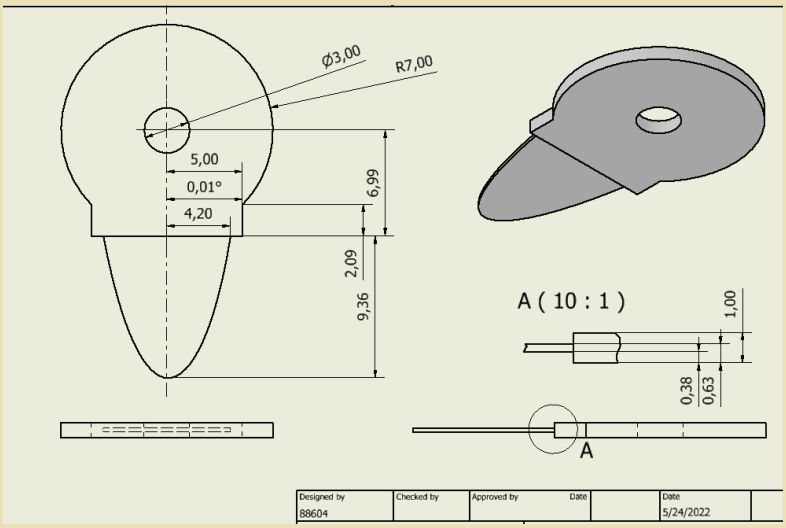
Whether it be a caliper to measure objects, or a pencil to take notes, mechanical engineers have a lot to carry around. What if all of it could be condensed into one, convenient tool? Our product does exactly that! We present to you: MultiTool, an all-in-one, pocket-sized tool that tends to the needs of a traditional mechanical engineer. With 8 distinct functions, and a compact assembly, our product is the perfect solution!

Dimensioned Designs

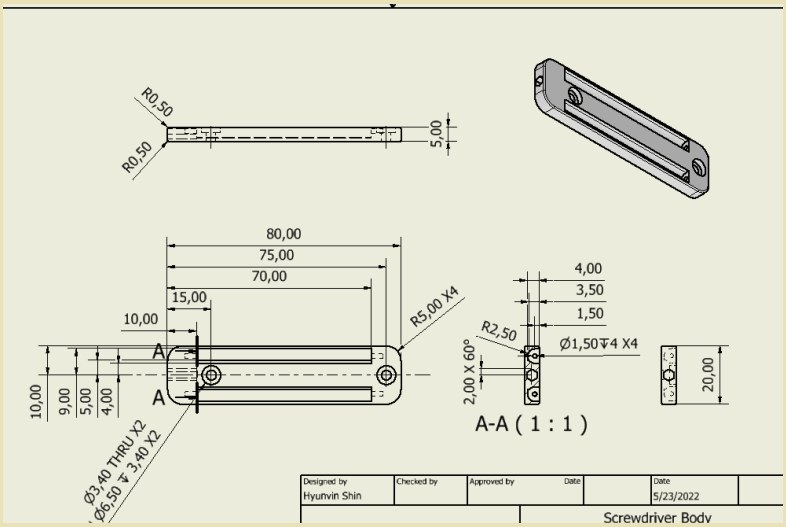
Brainstorming



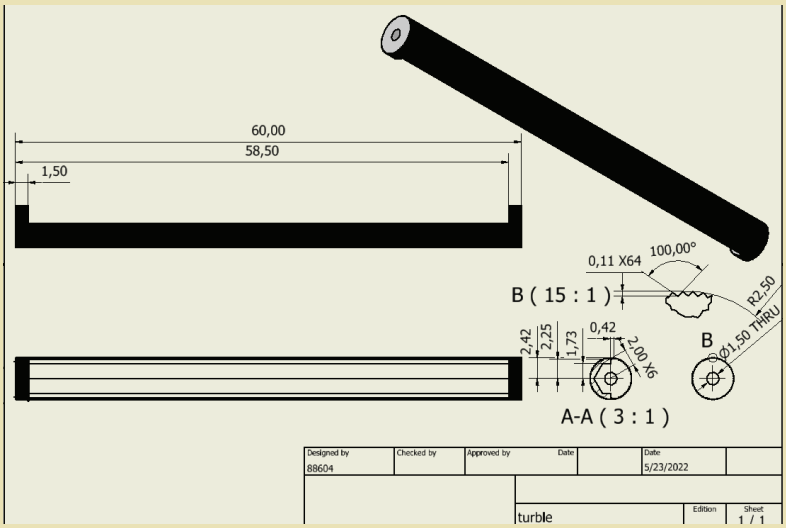
Given our constraints, along with time, we decided to redesign the standard Swiss Army knife following the idea that form follows function, and where function doesn't change, form doesn't change. We designed the MultiTool specifically for an engineering student and the tools we chose for the MultiTool reflect this. Originally, we brainstormed ideas for Shimming tools, a File, a pen and paper, a flip out screwdriver with bits, a bottle opener, calipers, keys, ratchet, wire stripper, and a clip. After applying our constraints to this list, we lowered the number of tools, and changed some tools ending up with Calipers, a Clip, a Bottle Opener, Shimming tools, a built in screwdriver and bit kit, a file, a pencil, and a wirestripper.



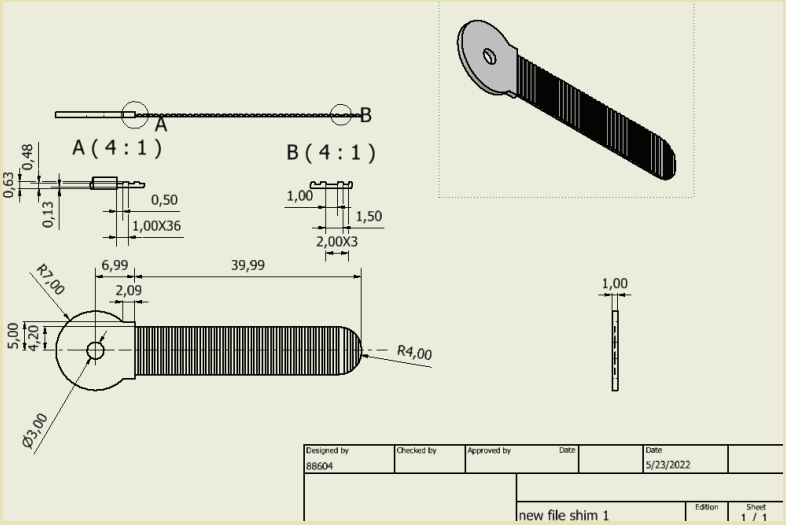
This is Shimming Tool #1. It is shaped like a Jimming tool and is stored within the multitool, which can be pulled out. The tip part of the tool is made with high grade stainless steel.



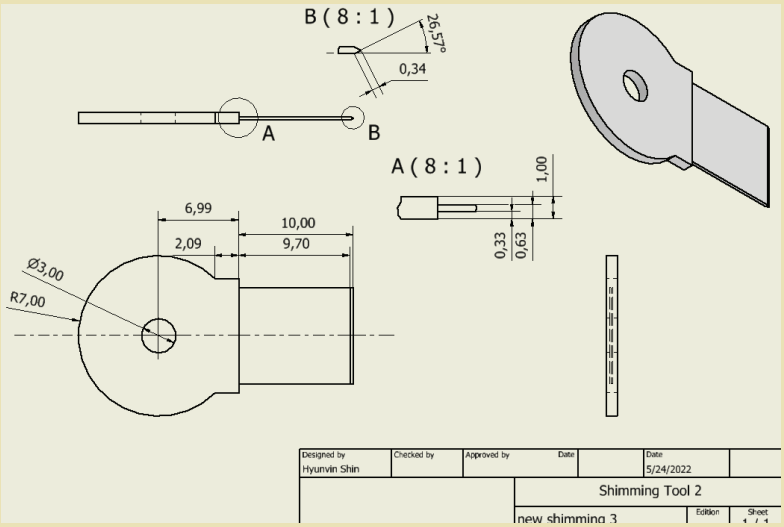
This is the bottom plate of the multitool, which has a screwdriver bit tool built in the front. There is also a casing for the Turbles, the spinning revolver-style bit holder.



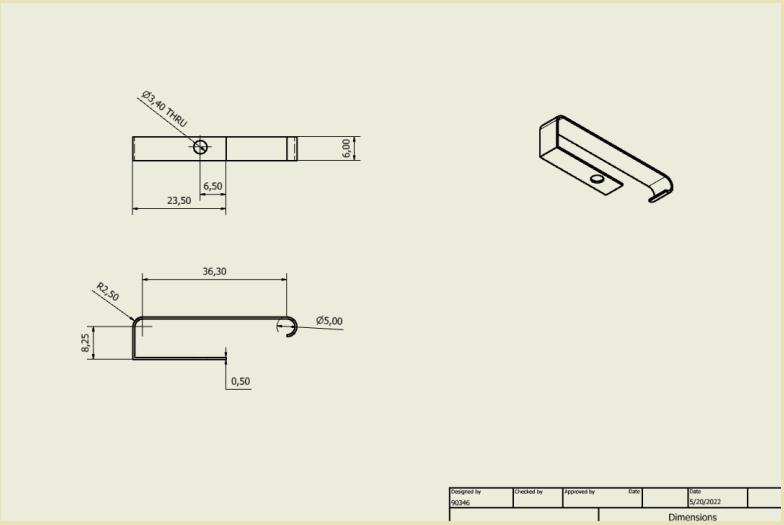
The Turble contains pin holes that allow the bit holder to spin, hiding and revealing the bits in an easy fashion. The bit holder is designed for 4mm hexagonal bits.



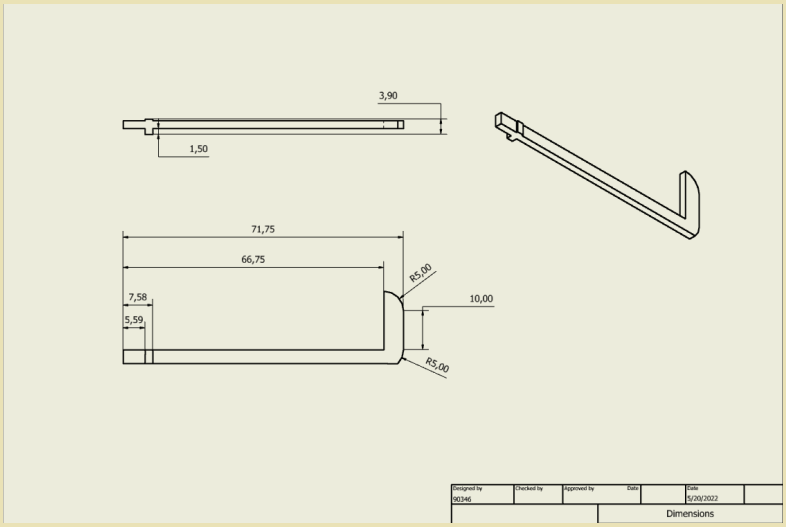
This is a Filing Tool, best used for filing non-toleranced parts so they fit together!



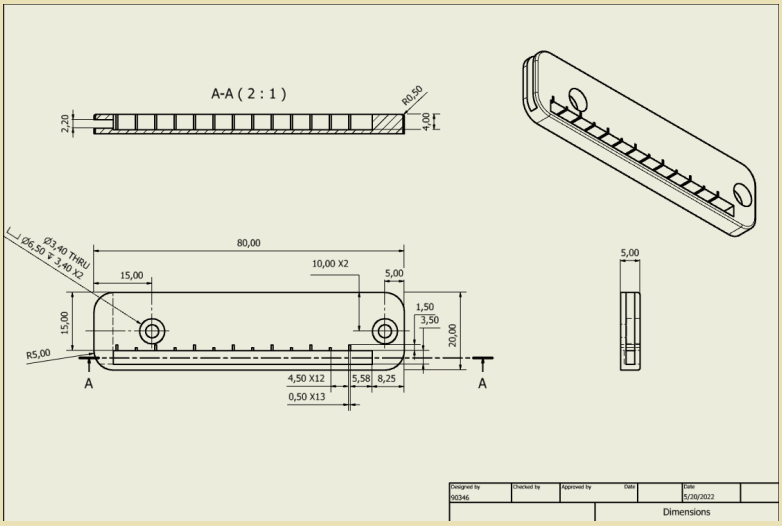
This is Shimming Tool #2. Flat edged and tapered at the end, this tool is optimized for prying and carefully opening parts. This is made with high strength polycarbonate.



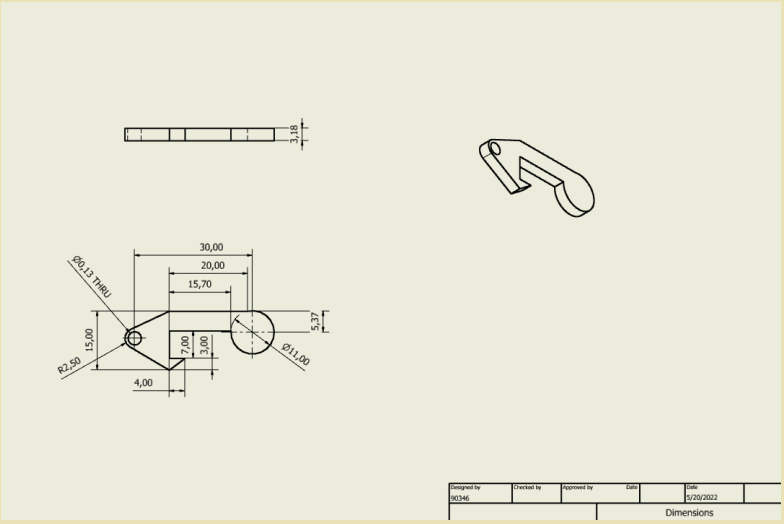
The clip is used to clip the multi tool to your shirt, pants and wherever you can clip things. It is a deep carry clip so the multi tool is hidden when it is clipped in your pocket. The clip helps keep the caliper thing in place.



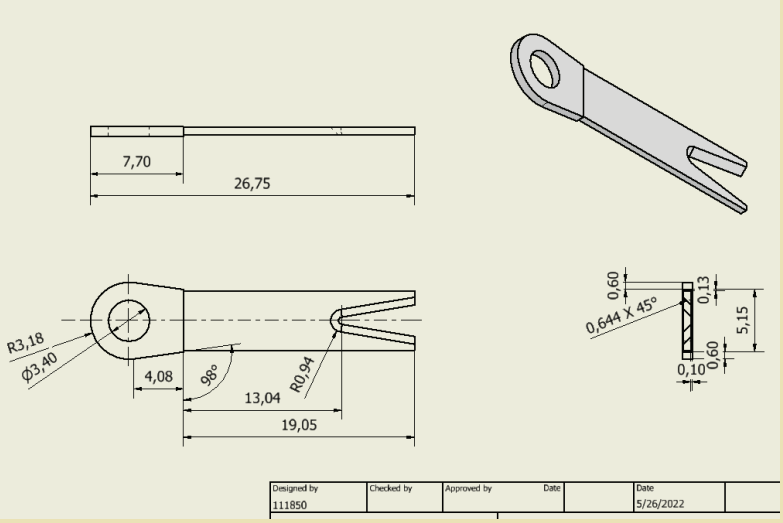
The caliper thing is used alongside the caliper body and are used to measure.



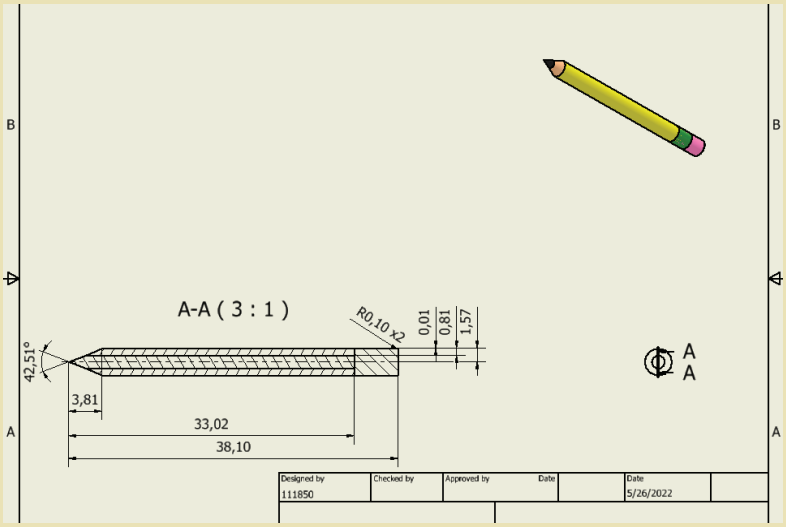
These are the calipers, the caliper thing slides out of the body and the extrusions are used to measure



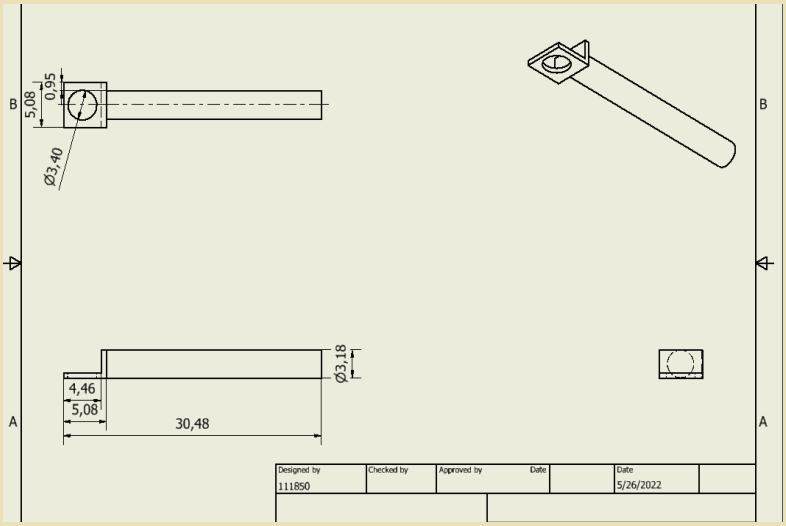
Everyone needs a bottle opener. It swings out of the multi tool.



Wire stripper: A mini wire stripper that can tend to all of your wire-stripping needs, with the ability to strip wires from a wide assortment of sizes (0.6 - 2.6 mm).

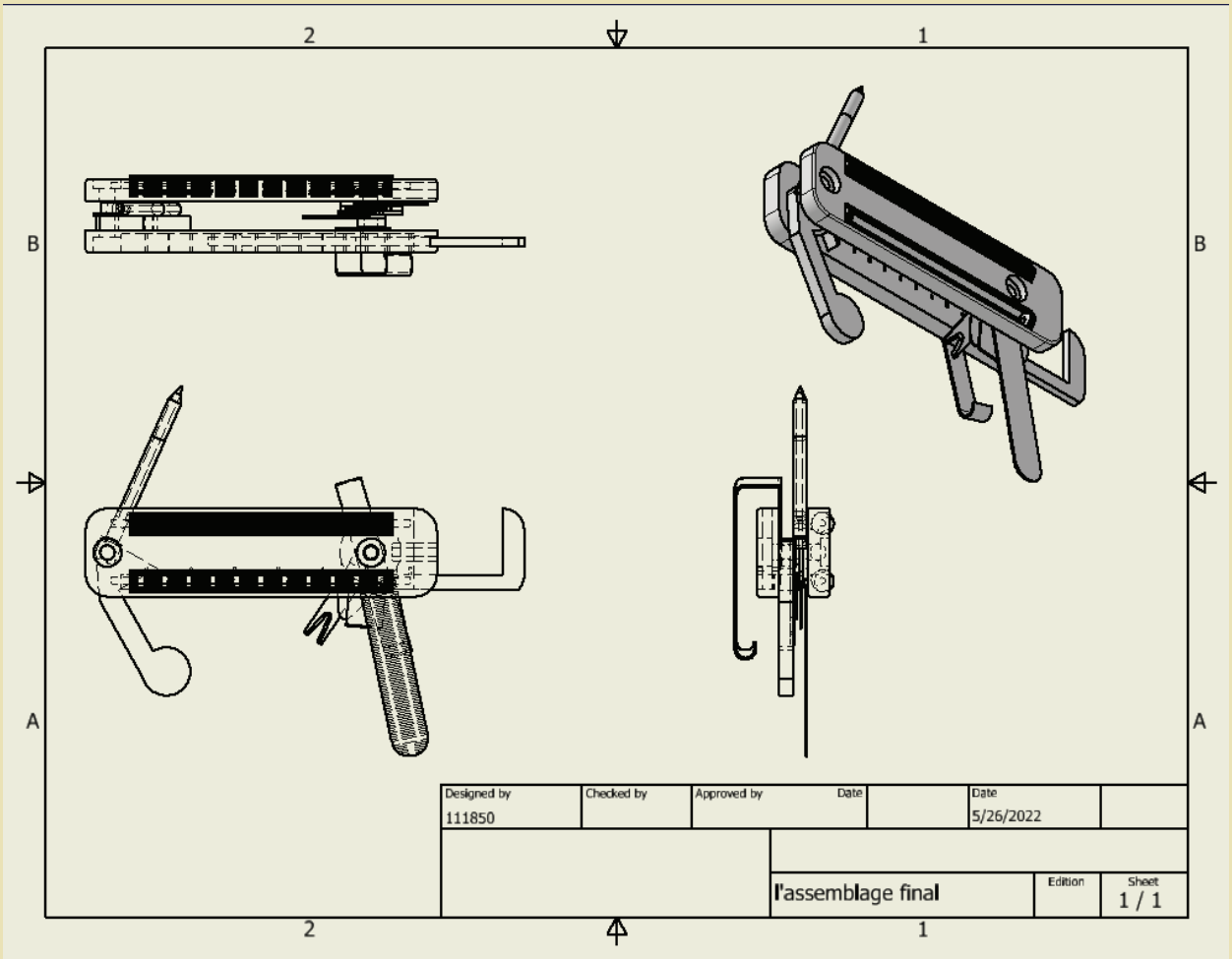


Pencil: A pencil, a simple writing tool that is a necessity for all workers, especially engineers. This pencil is far smaller than usual, to ensure its proper fitting into your pocket tool!



Pencil Case: The pencil is held by a case that flips out of the tool. We made this case since with a pencil as small as ours, it would run out quite fast. Therefore, the user can pull the pencil out of the case when using, and replace it with the provided extras when it runs out.

Assembly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SHIMMING TOOLS | FILE | PENCIL | SCREWDRIVER | BITS |

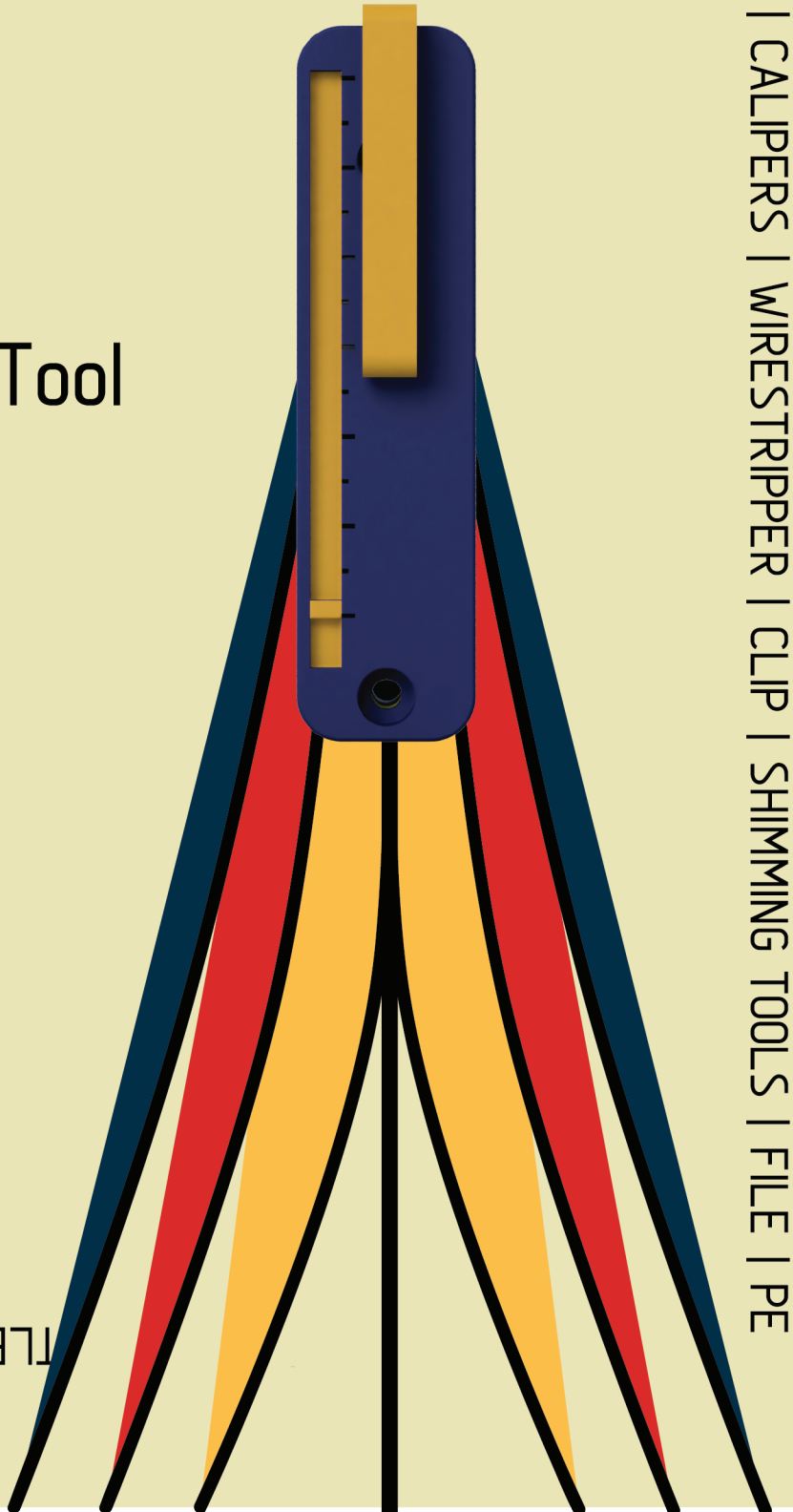
BOTTLE OPENER | CALIPERS | WIRESTRIPPER | CLIP | SHIMMING TOOLS | FILE | PE

| WIRESTRIPPER | CLIP | SHIMMING TOOLS | FILE | PENCIL | SCREWDRIVER | BITS

TLE OPENER | CALIPERS

A Multi Tool

For the Ages



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CONCLUSION

The MultiTool is heavily designed for the run of the mill engineer. The engineer who needs a tool cart in his pocket, the engineer who needs a tool right in arms reach, the engineer who needs the fast paced workflow that the multitool offers. Although the tool promises a possible alternative to the toolbox, there were a multitude of issues that could be fixed in a later generation. The calipers function, however it doesn't provide the precision necessary for the user. The tool's space utilization proves inefficient if more tools were to be added that the users need. However, the tool promises a possible workflow that allows the user to quickly jump to measuring, wire stripping, and tightening without walking to their tool chest.