Design and Development of a Digital Grip Gauge using a Wire Probe

By: Rachel Frank, Braden Frullo
Marissa Hayes, and Logan Smith

Advisor: Robert Bittle

Design Features

- Digital readout easily viewable to user
- Ability to send measurement to a computer
- Ergonomic design that is comfortable to use
- Repeatable measurements with no errors
- Minimal buttons to simplify procedure
- Ability to work on a variety of hole sizes
- Safe housing for included electronics
- Sturdy and will not break if dropped occasionally

Current design from the top

Design from the side

Let's Talk Science

Digital Grip Gauges are used to measure the depth of a hole, both accurately and efficiently. The wire probe was designed with simplicity in mind, to ensure that every measurement comes out correctly. This device is being designed for Lockheed and Martin, who wants to improve their current design.

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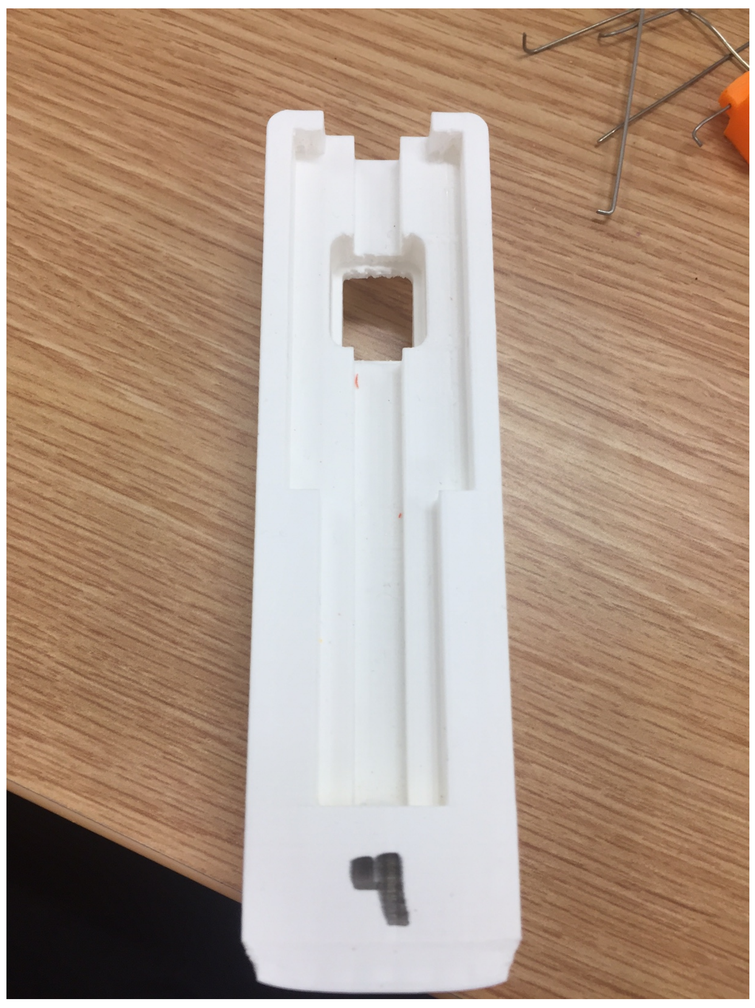
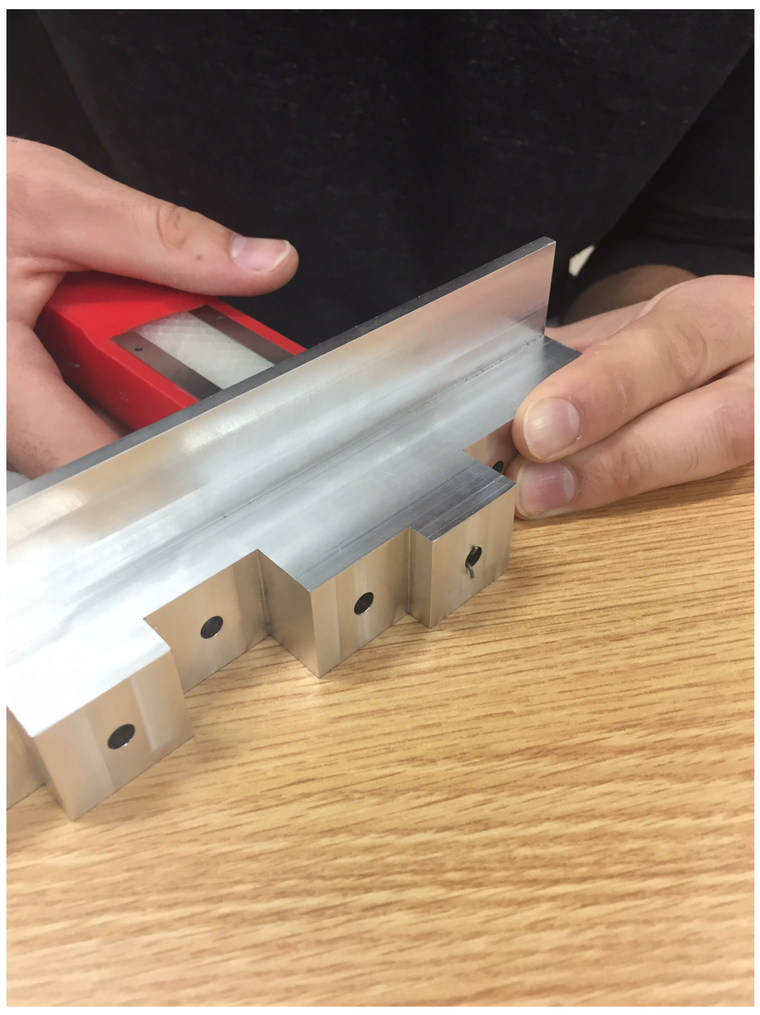


Early prototype of inner housing design

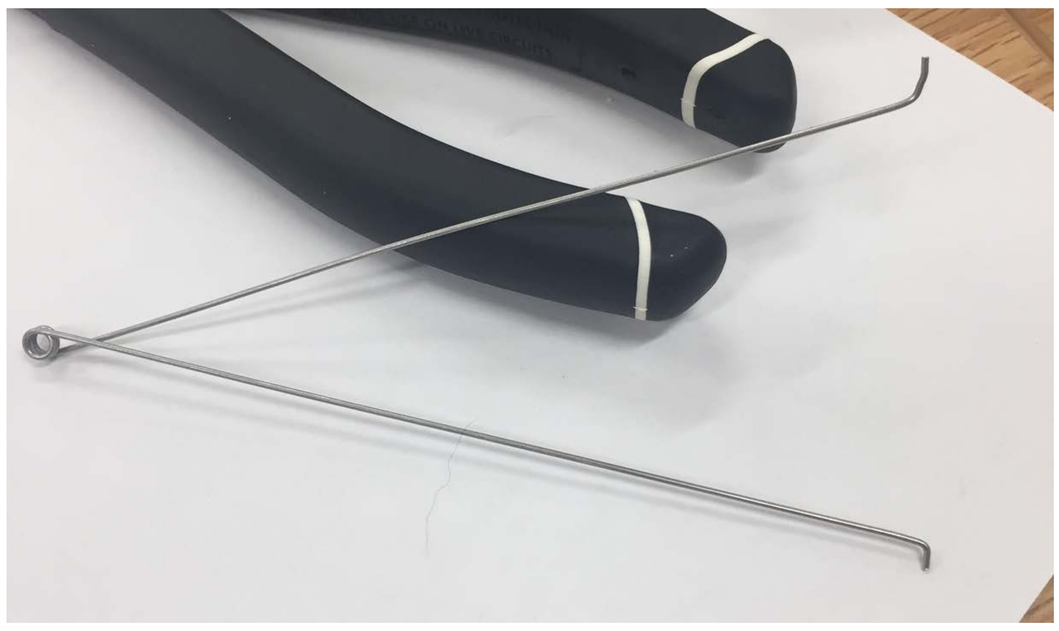
Abstract

The objective of our work is to design and build a Digital Grip Gauge that efficiently and accurately measures the depth of a narrow hole, and gives feedback via an electronic screen on the device. Speeding up the measuring process while retaining accuracy will cut down on production time significantly. Our design is small enough to be held in one hand and contains a wire probe that is plunged into the hole and latches onto the other side. The probe is “Tweezer-like” in design, with two wires that collapse and expand with the use of a button



Testing block with a variety of hole lengths

Close-up of the probe latched



Tweezer design for the probe