

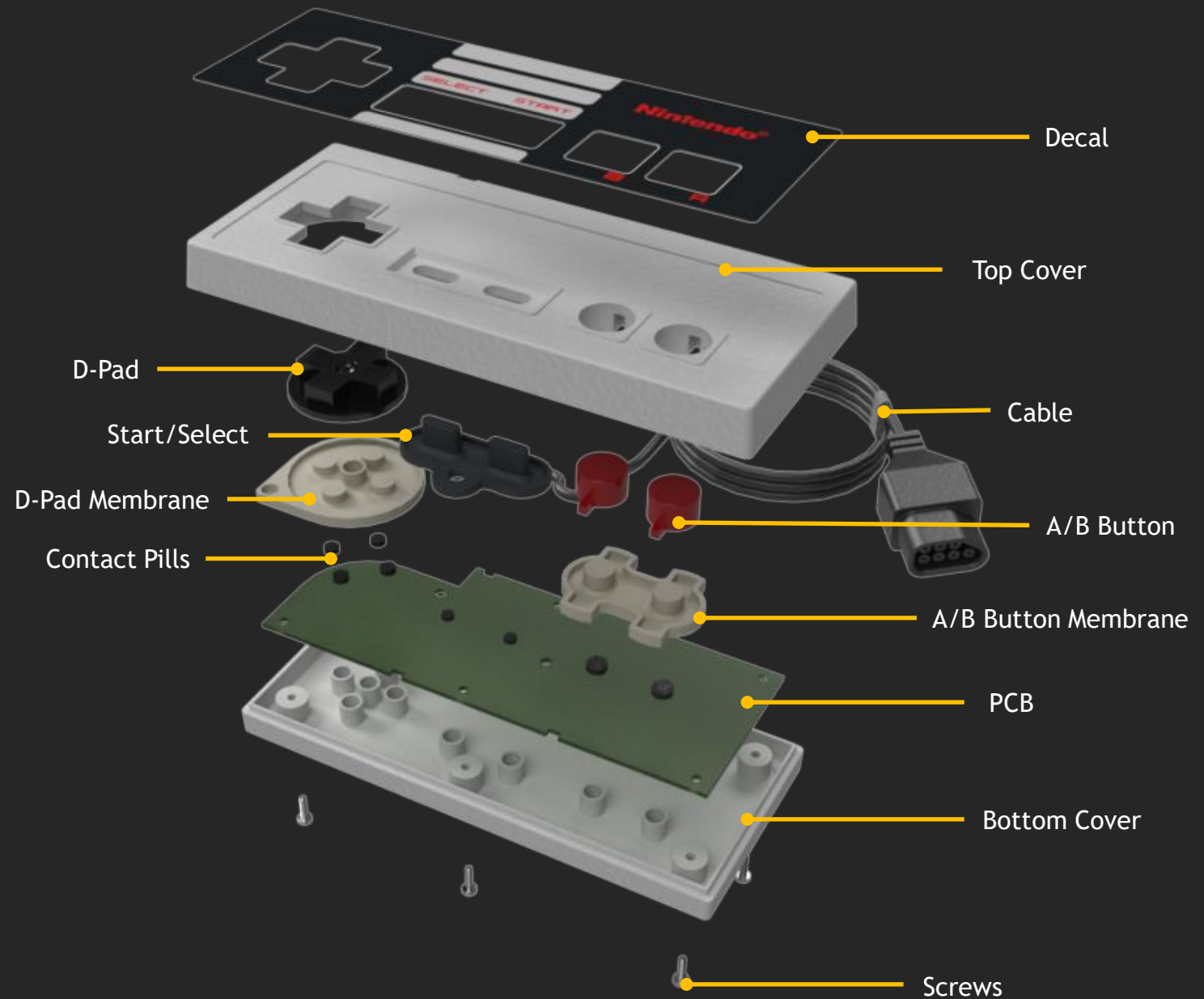
CAD Design Portfolio

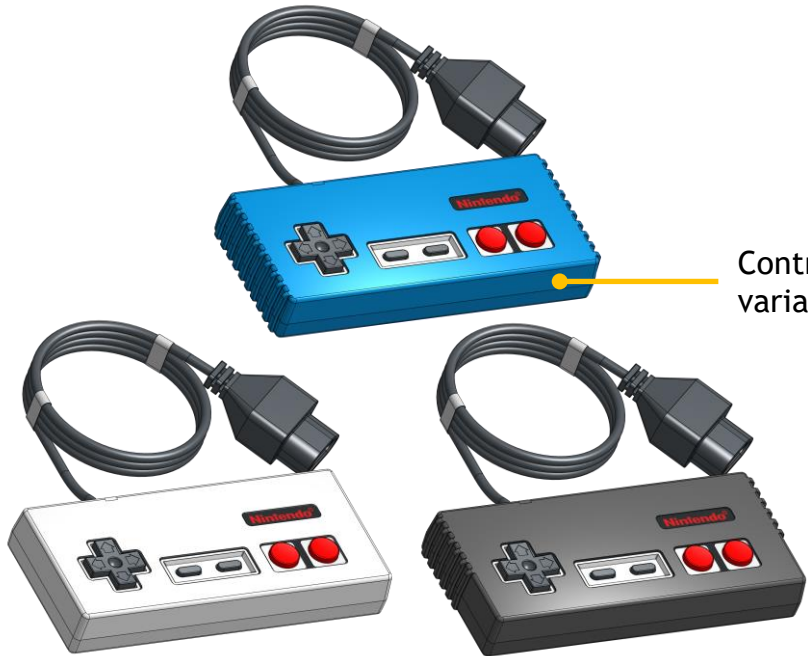
Austin G. McGlashan | Winter 2025



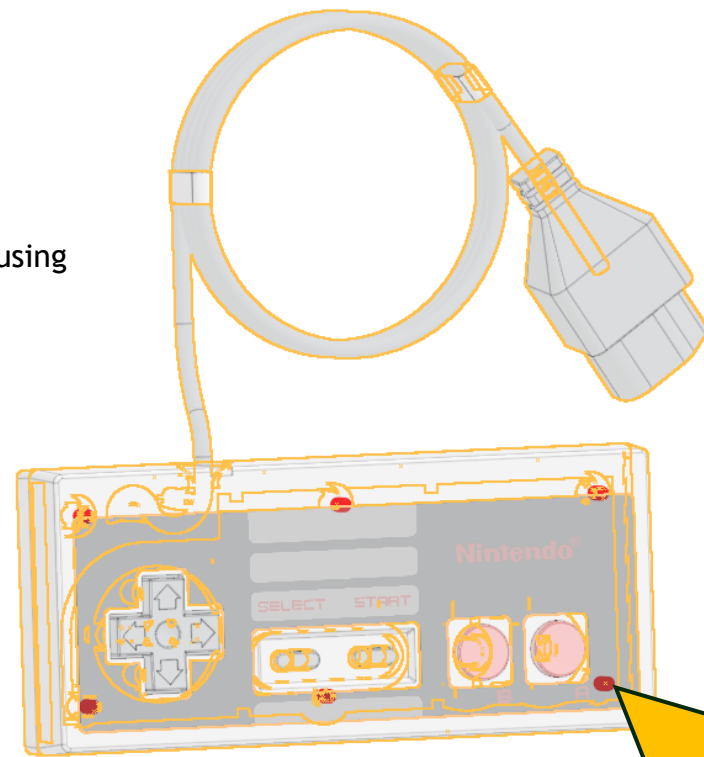
NES Controller

CAD Modeling Project [20 Hours]

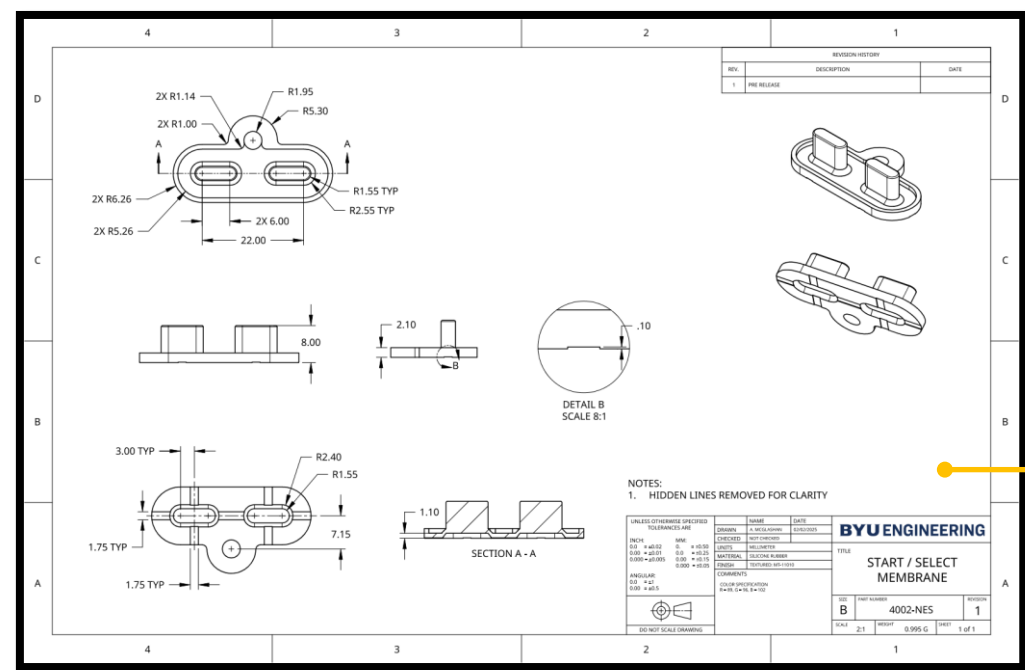




Controller cover with grip created using variables and a configuration table

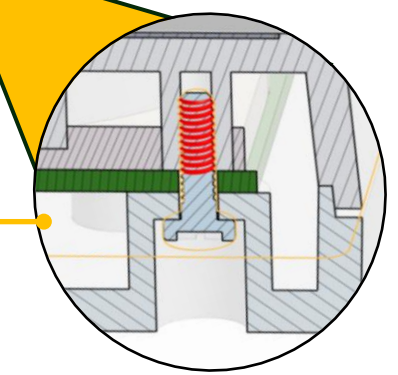


Interference detection	
D-Pad Contact Pill <4>	x
D-Pad Contact Pill <1>	x
A/B Contact Pill <2>	x
A/B Contact Pill <1>	x
<input type="checkbox"/> Include standard content	
Interferences	
Part 1 <7> and Top Cover <1>	
Part 1 <4> and Top Cover <1>	
Top Cover <1> and Part 1 <5>	
Top Cover <1> and Part 1 <8>	
Part 1 <9> and Top Cover <1>	
Cable <1> and Cable Tie Band...	



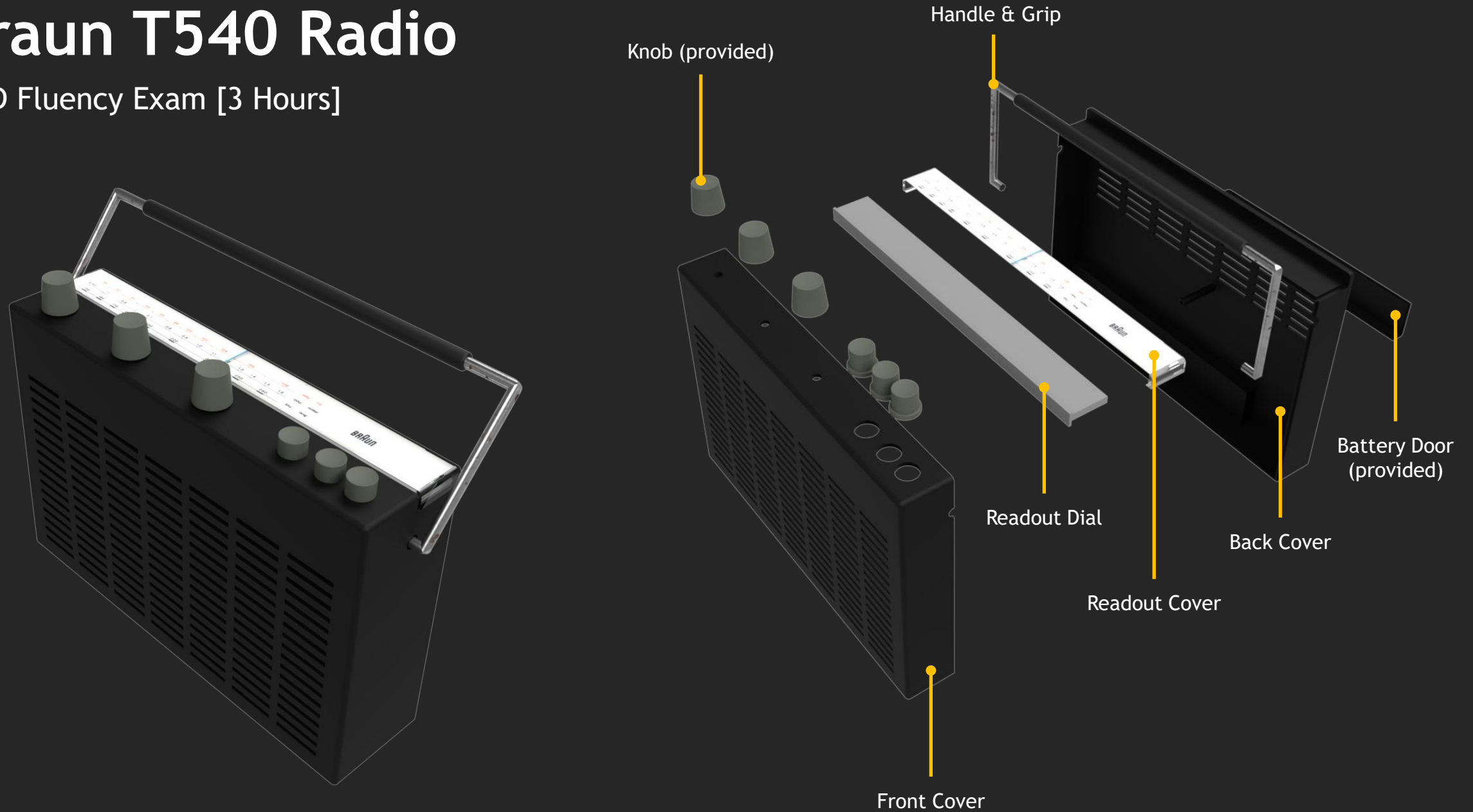
Engineering drawings created using ANSI/ASME standards

Interference detection analysis performed to ensure accurate models and proper screw fits



Braun T540 Radio

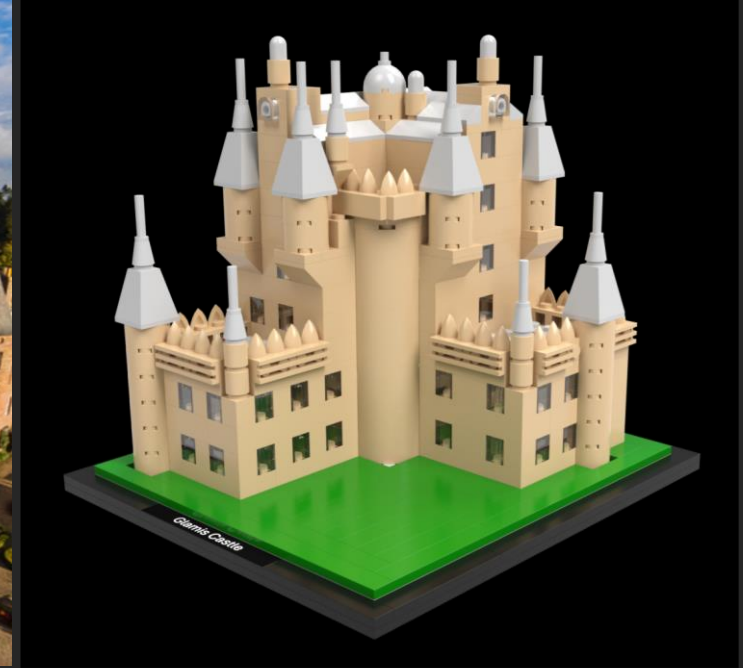
CAD Fluency Exam [3 Hours]



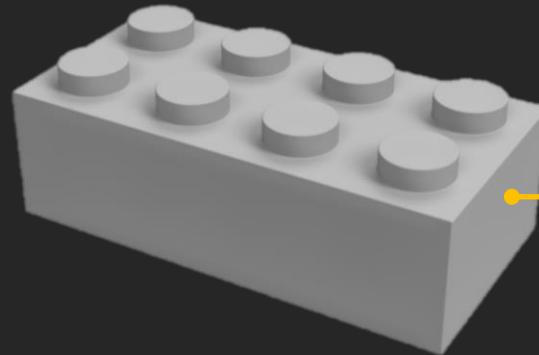
Glamis Castle

LEGO Design Project [35 Hours]

485 pieces
70 unique pieces



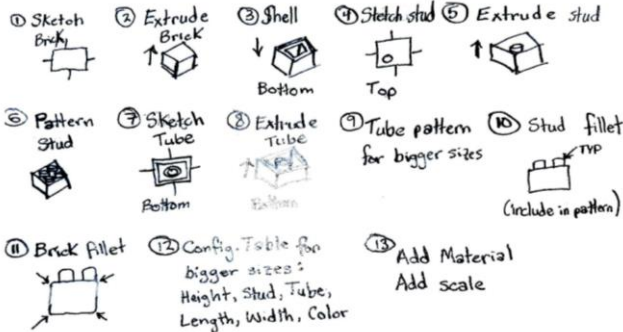
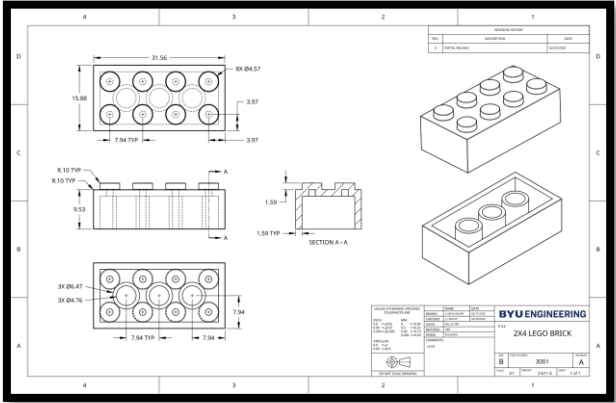
Structure designed after Glamis Castle located in Forfar, Scotland.



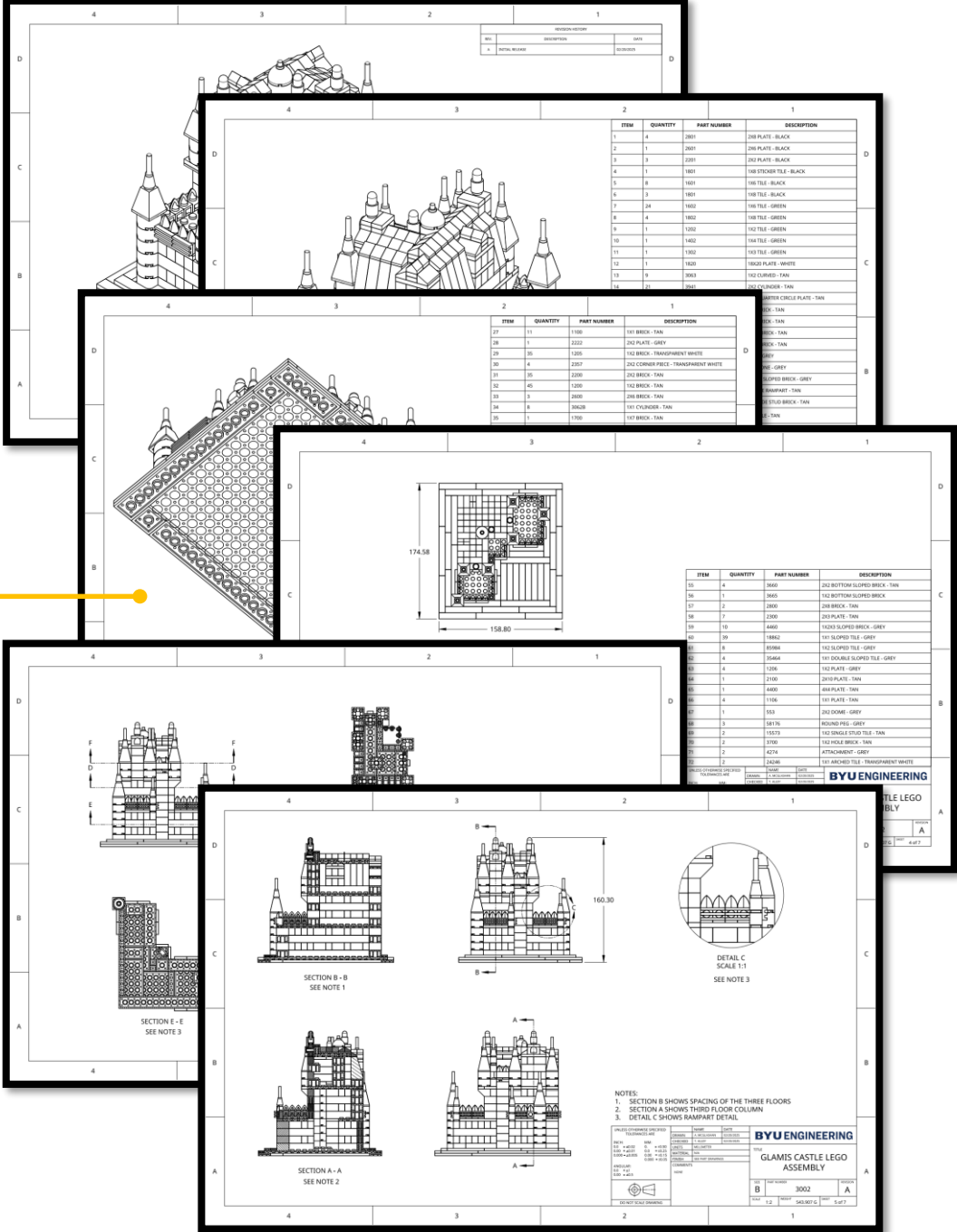
Configuration table created to generate LEGO bricks and plates of any length and width, as well as specific heights, colors, and tubes.



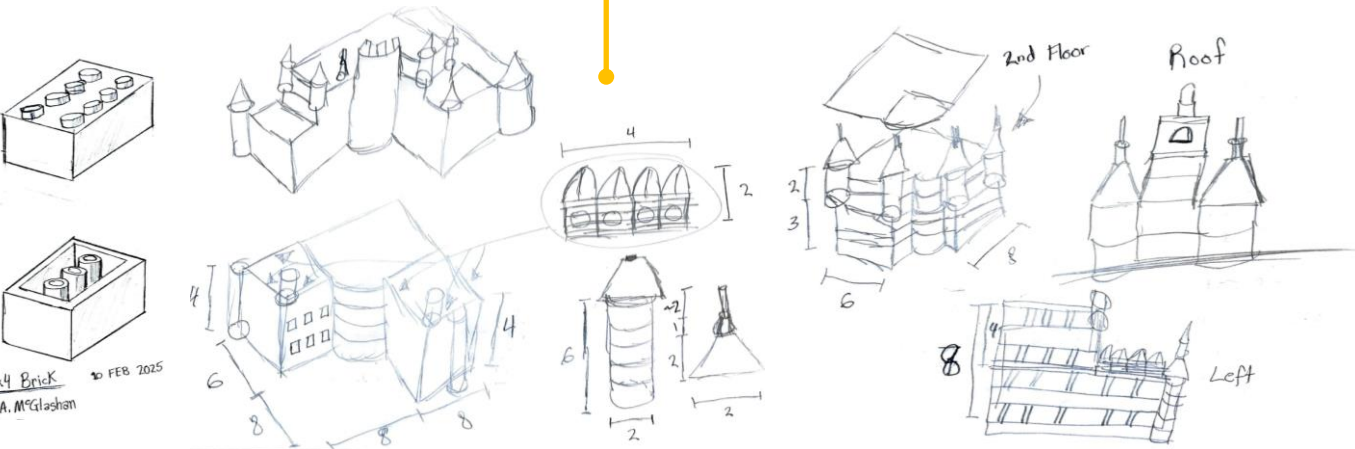
CAD strategy and drawing for a variable LEGO brick or plate of any size



Detailed engineering drawings of the assembly contain required information to reproduce the model



Hand sketches enabled quick processing of ideas and rapid design



Foldable Drone

Collaborative Team Project [20 Hours]

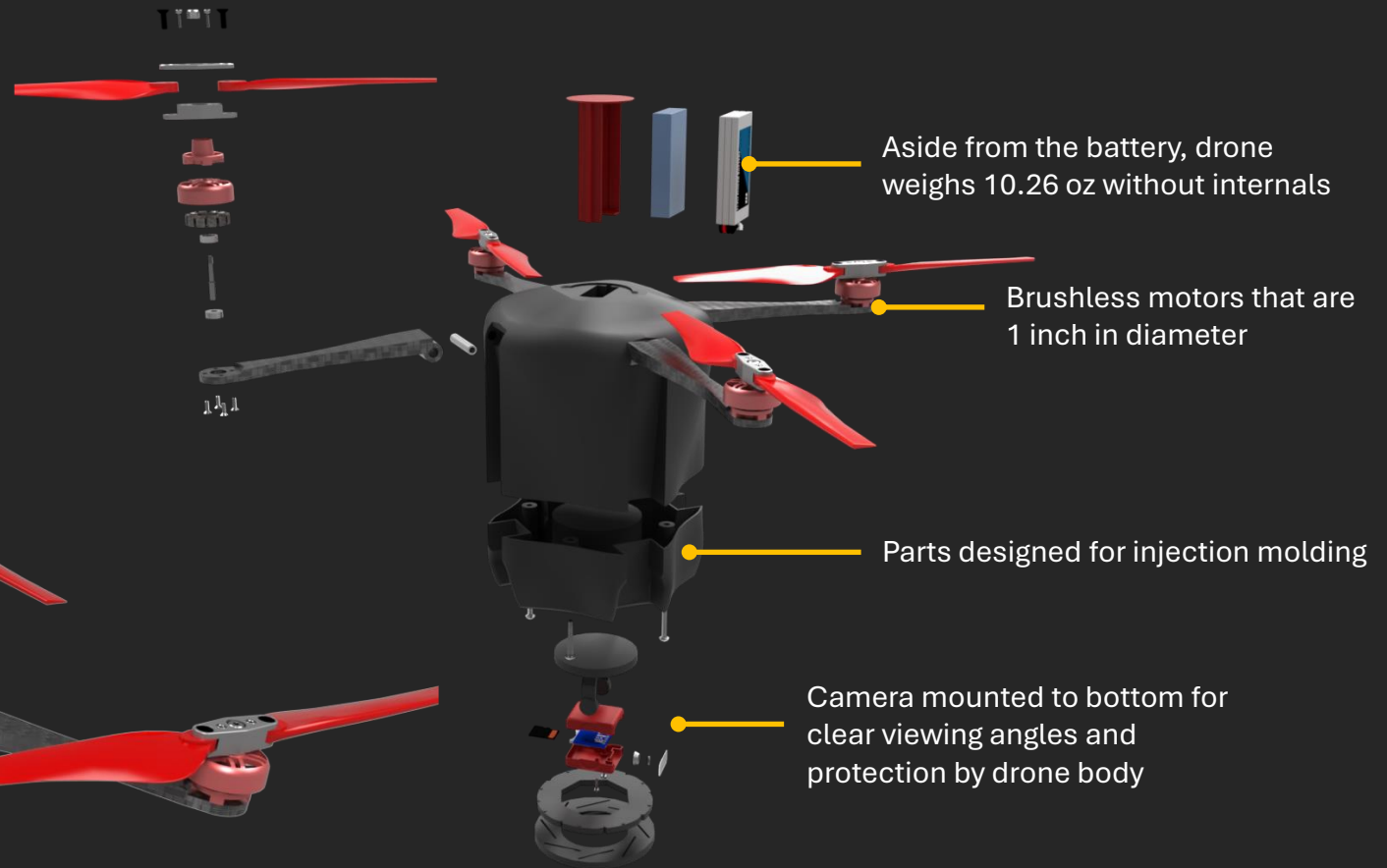
Camera: Austin McGlashan

Arms & propellers: Alex Willis

Body: Miles Reidhead



Unique, lightweight, small-folding drone was designed collaboratively using master modeling techniques to accelerate iteration and compatibility



Aside from the battery, drone weighs 10.26 oz without internals

Brushless motors that are 1 inch in diameter

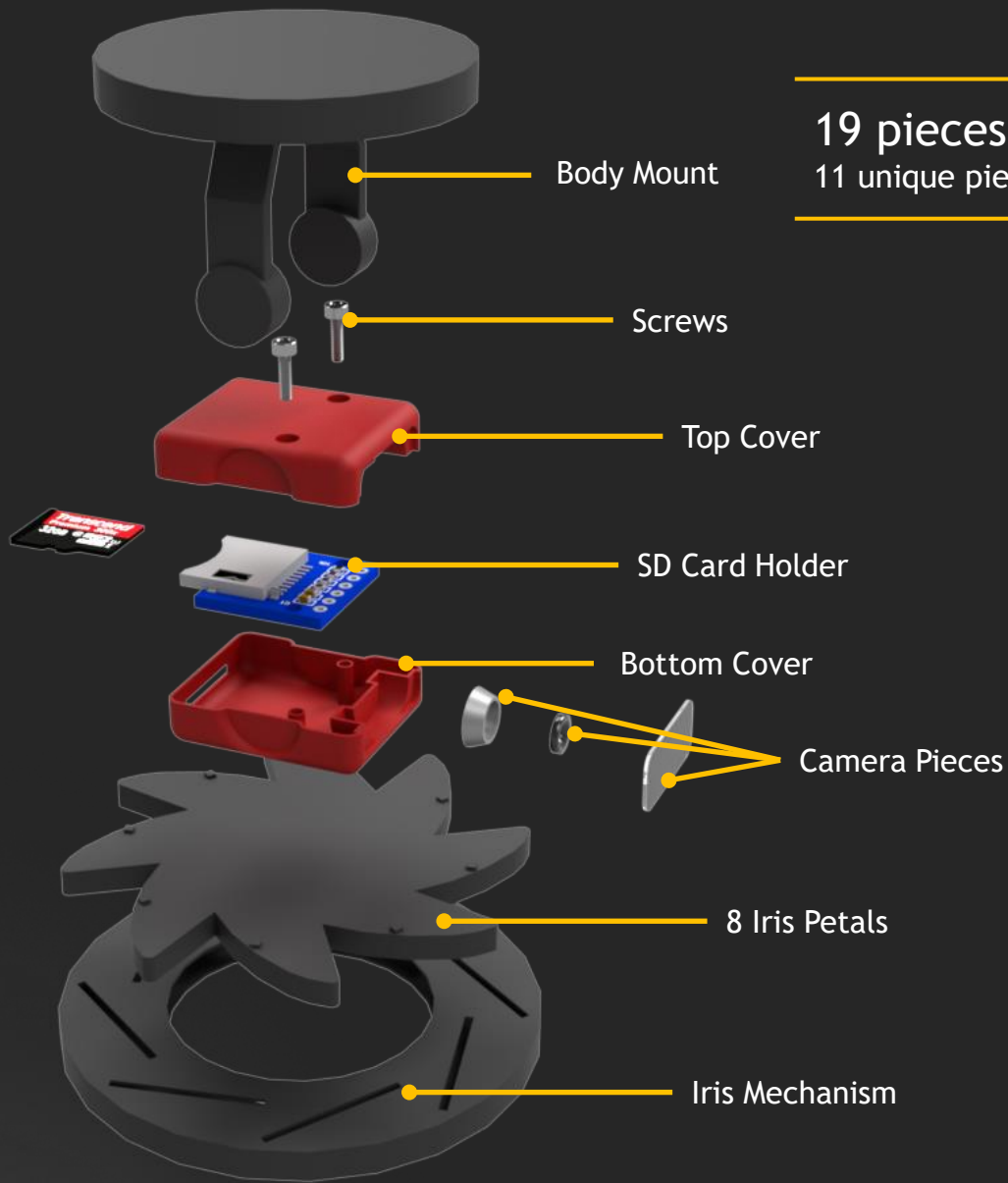
Parts designed for injection molding

Camera mounted to bottom for clear viewing angles and protection by drone body

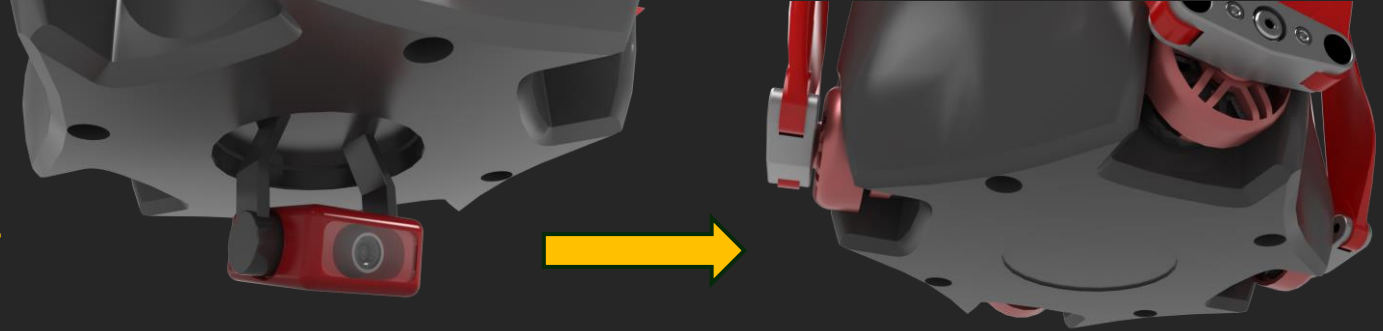
Foldable design is compact, occupying a volume of $\sim 80 \text{ in}^2$



Camera assembly designed for motion around X, Y, and Z axes.



19 pieces
11 unique pieces

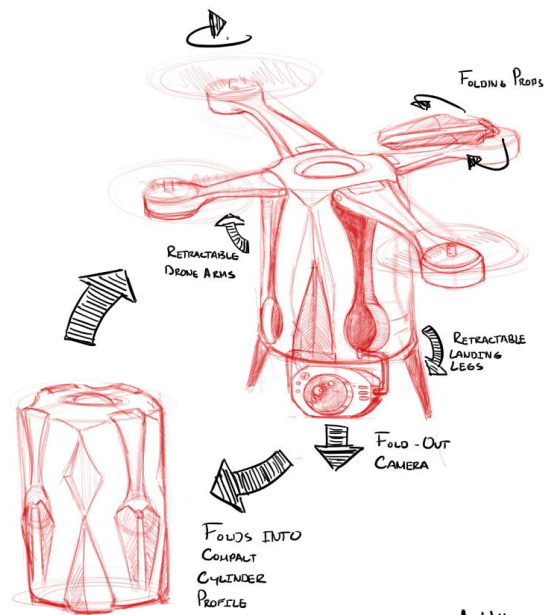


Foldable camera design provides protection during landing and contributes to compact design



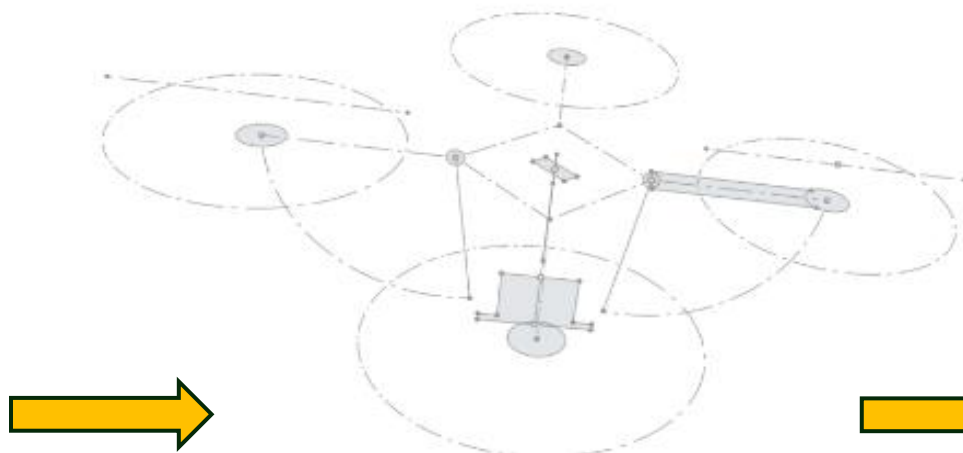
Final camera is a result of multiple iterations, beginning with hand sketching before using CAD software.

FOLDABLE DRONE DESIGN SKETCH

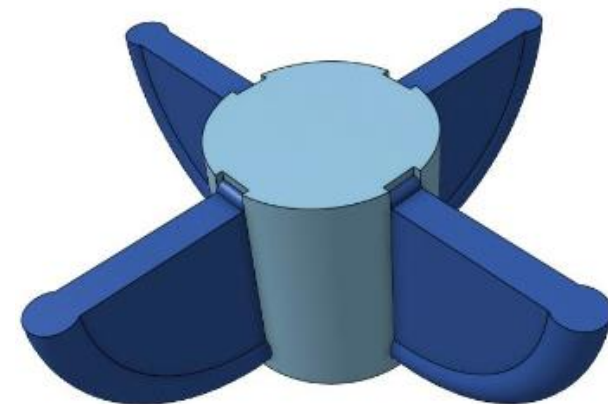


1. Preliminary Drone Sketch

A. Willis
3. March 2018



2. Master Layout Sketch



3. Master Space Allocations



4. Functional Assembly



5. Final Assembly Render

We used an intentional design process and strategy to allow for successful creation and integration of all three subassemblies

Nerf Jolt Blaster

Next Generation Design Project [45 Hours]



Reverse-engineered Jolt Blaster modeled as a next generation product using a configuration table, sweeps, extrudes, and other techniques



The Next Generation Nerf Jolt design in side-by-side comparison to the original Nerf N-Strike Elite Jolt Blaster. Overall dimensions were preserved.

The standard Stryfe size Nerf tactical rail is a next-gen feature allowing for various attachments



Single Dart Holder



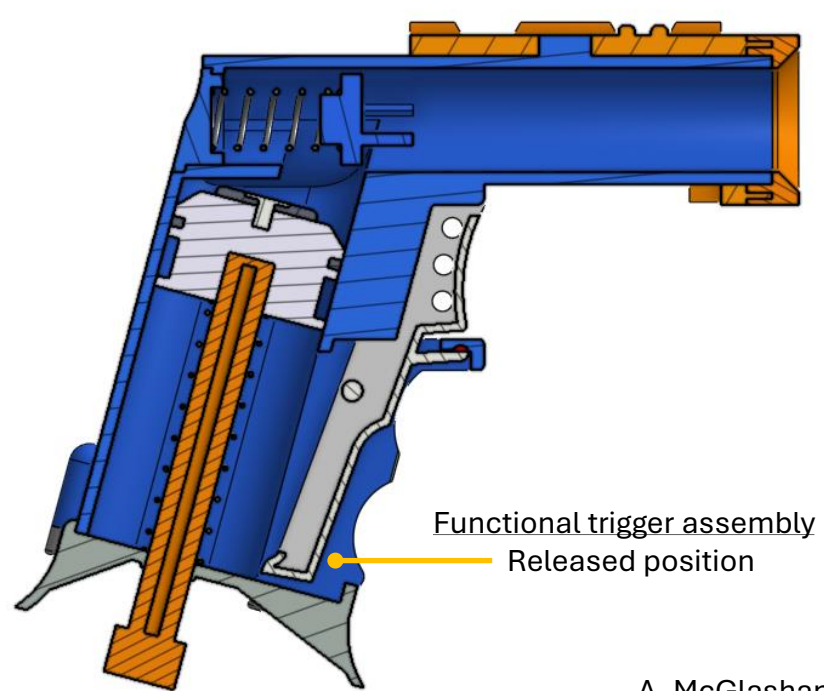
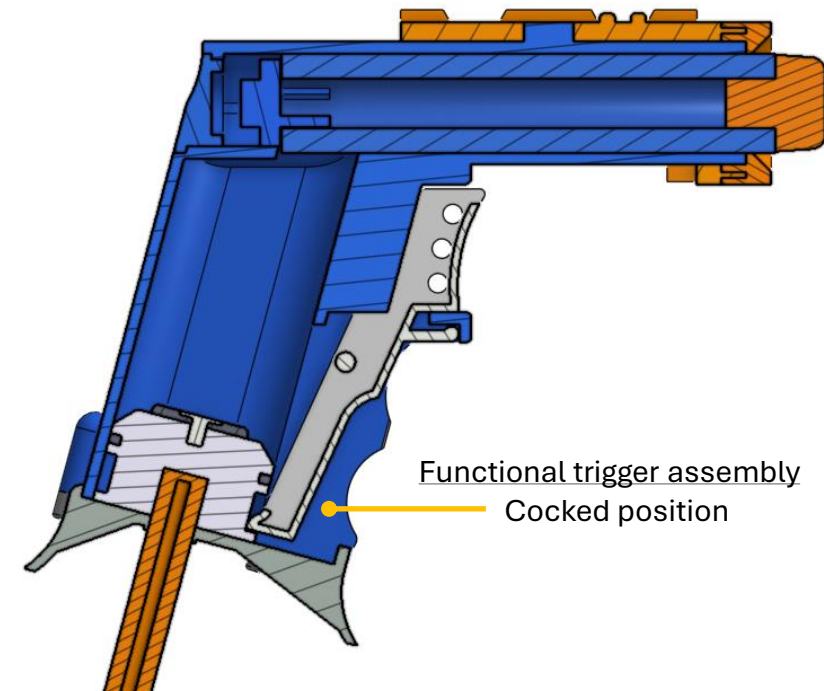
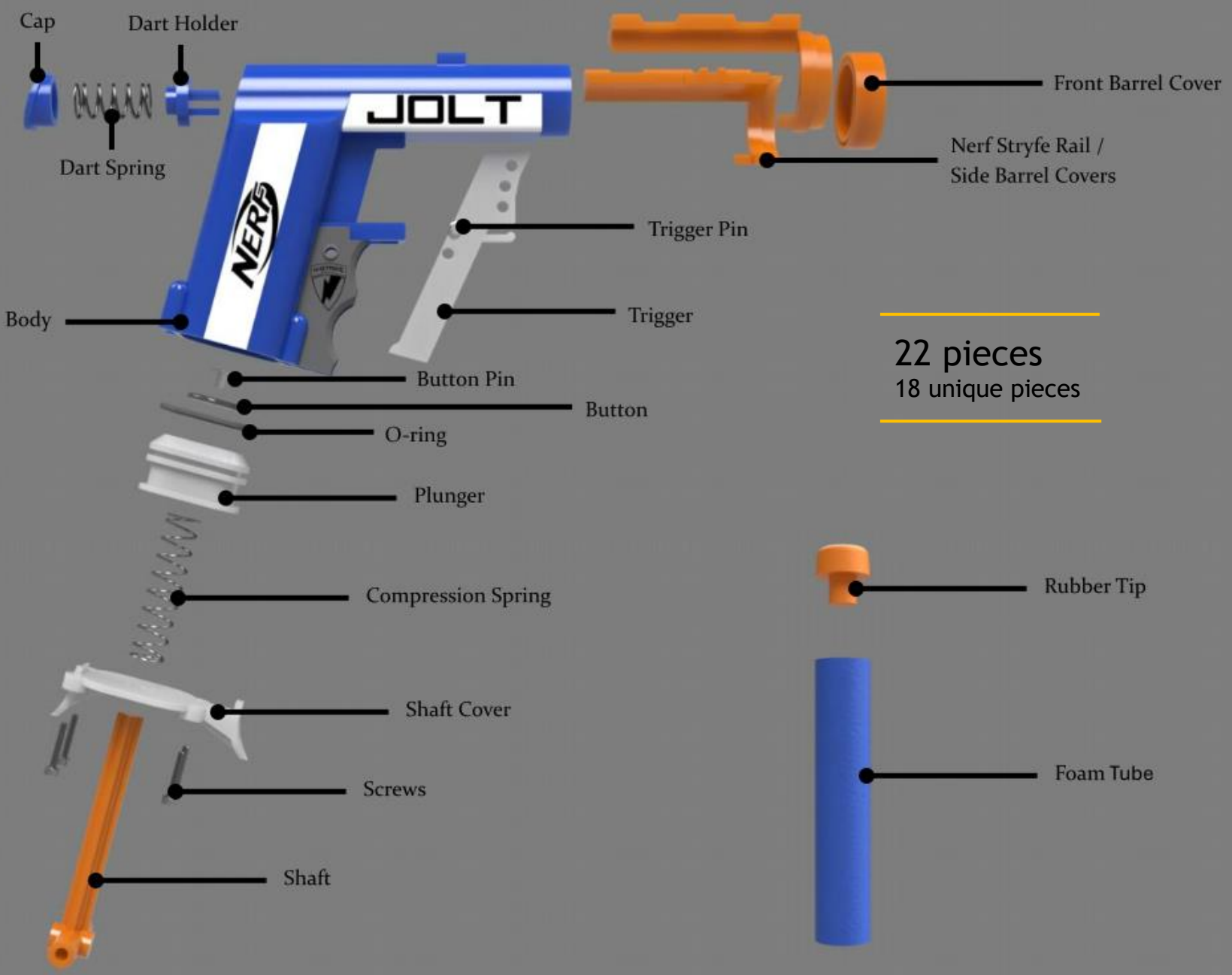
Double Dart Holder



Dart Rack

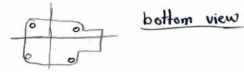


Tactical Scope



Bottom cover CAD strategy

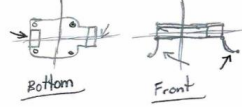
- ① Use body geometry to create sketch of bottom



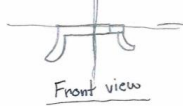
- ② Extrude



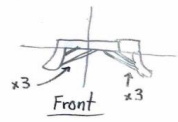
- ③ Sketch rectangles on bottom face and curves on front plane.



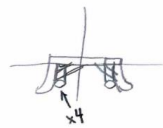
- ④ Sweep rectangles through the curves



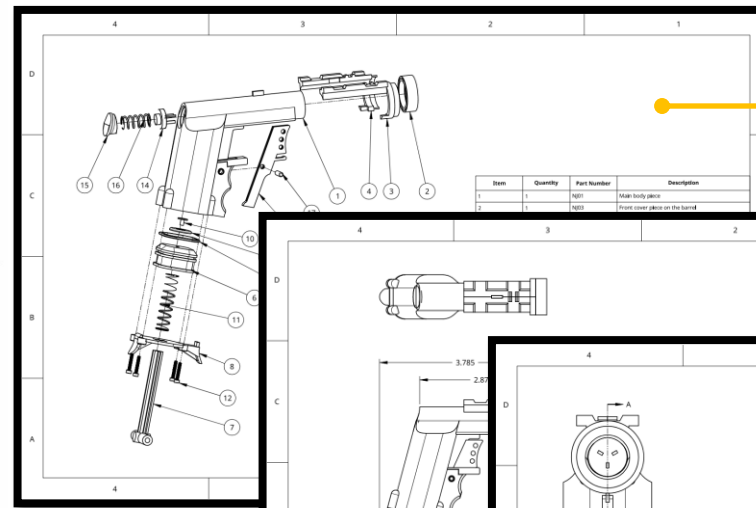
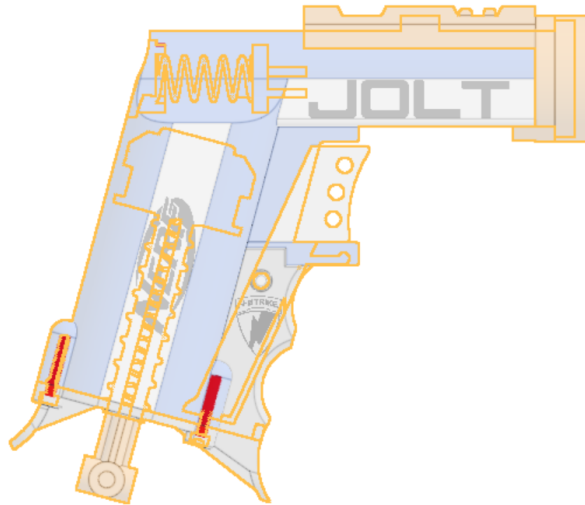
- ⑤ Use rib feature on grip part



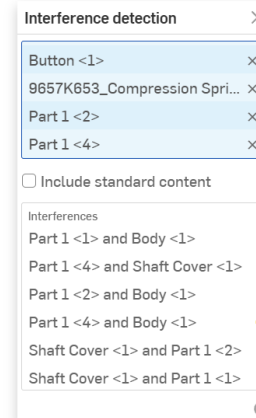
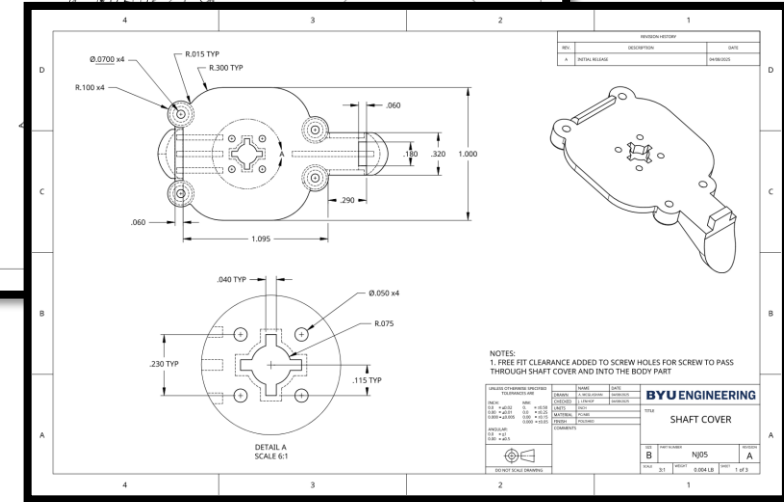
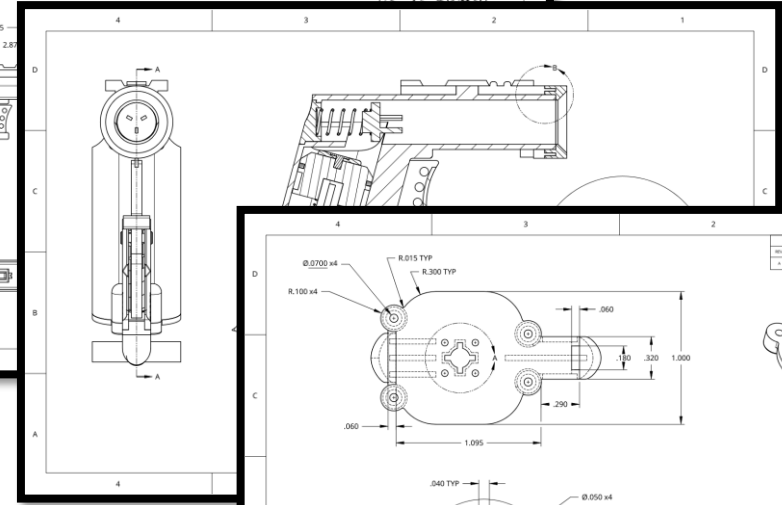
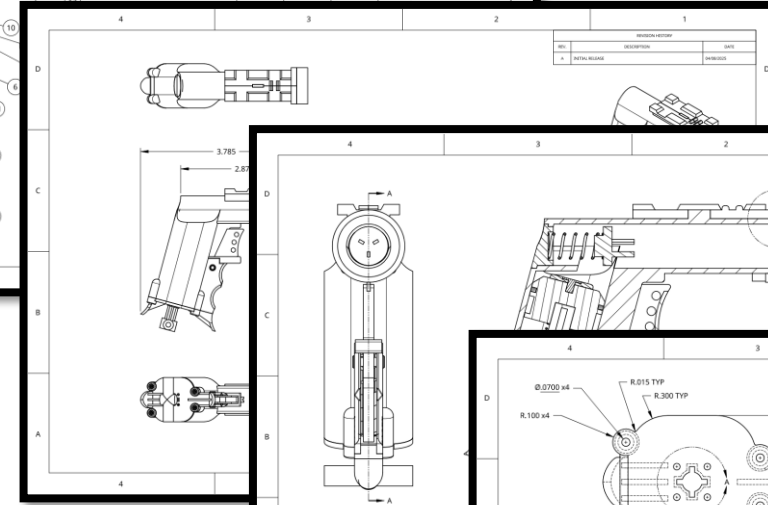
- ⑥ Add screw guides with sketch and extrude



Preliminary planning and design done with hand sketches



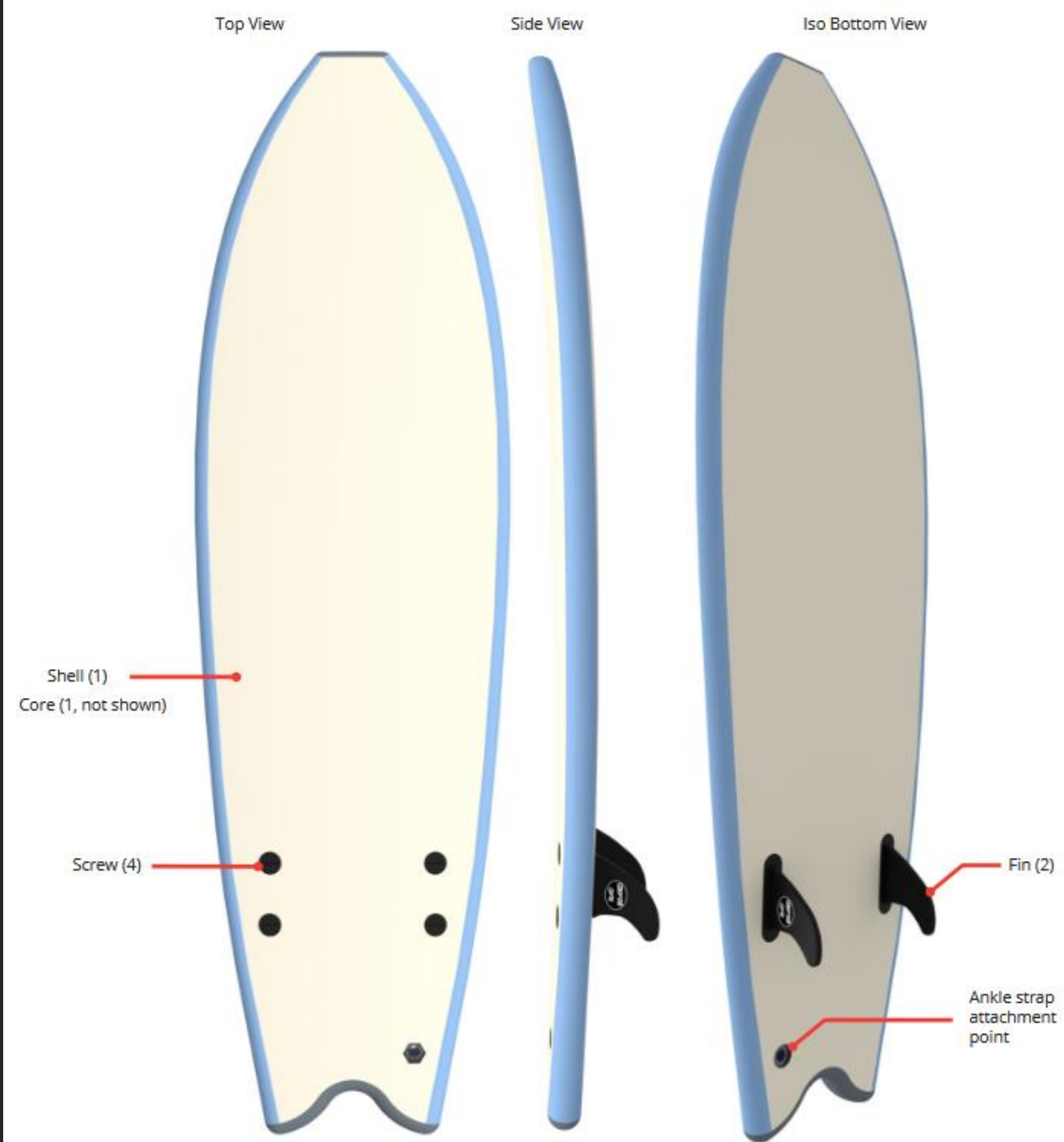
Engineering drawings created using ANSI/ASME standards



Interference detection analysis performed to evaluate the models and ensure parts were modeled correctly

Surfboard

CAD Practice Fluency Exam [3 Hours]



Turbine Blade

CAD Fluency Exam [3 Hours]



Turbine hub supplied

