

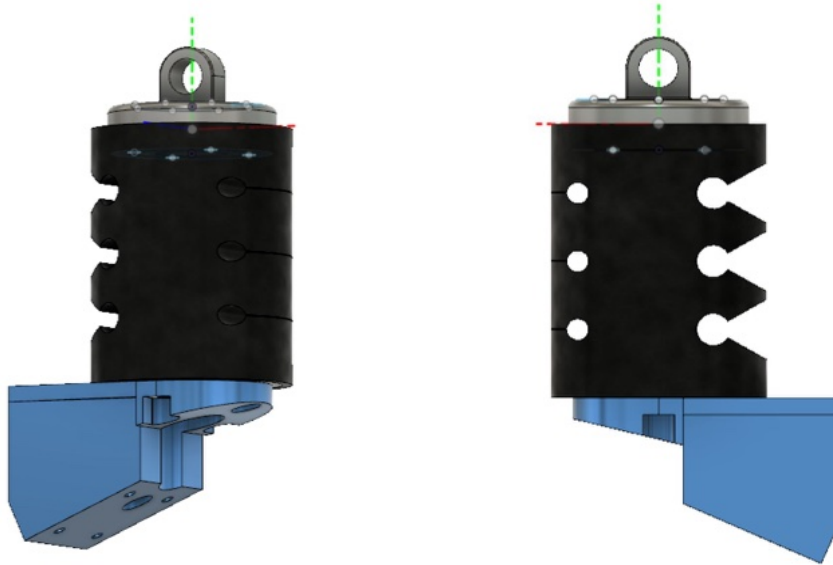
6 YO Dummy Neck

The Capybaras

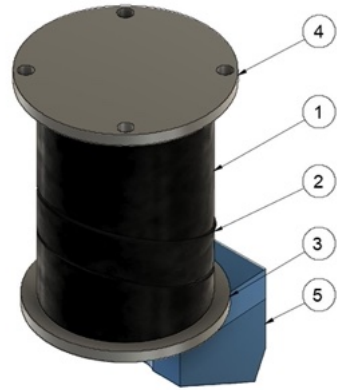


Problem Statement

Need Statement: Design a biologically accurate 6YO neck for applications in evaluation of vehicle safety and understanding injury modes under different loading conditions

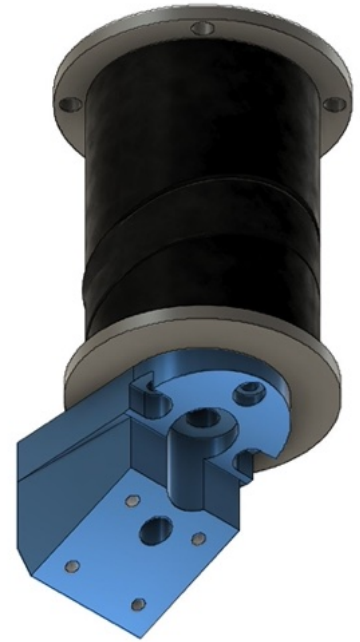
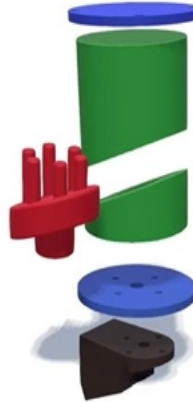


Final Design

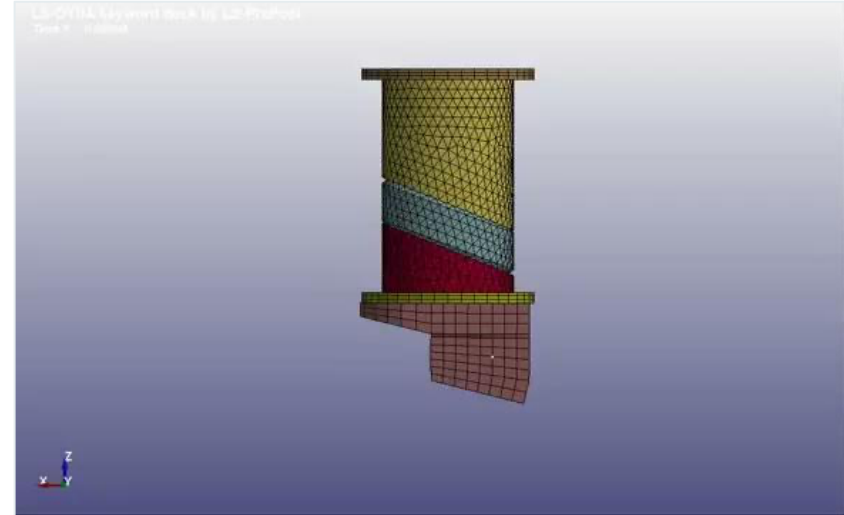
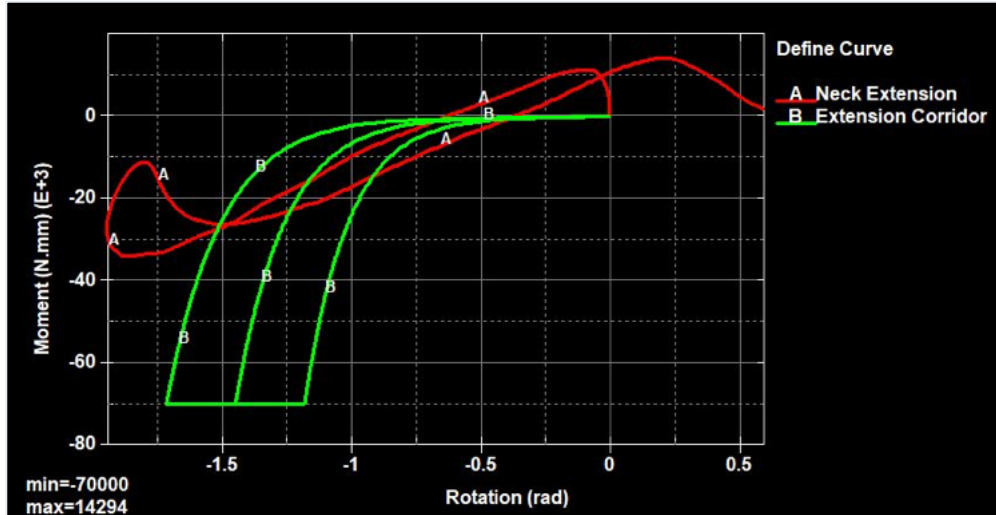


Parts List

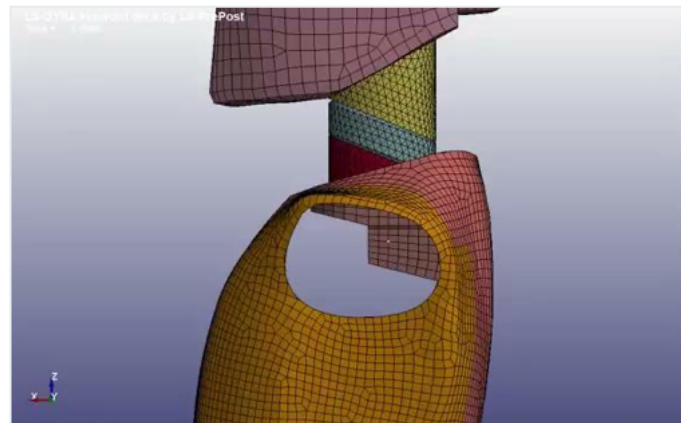
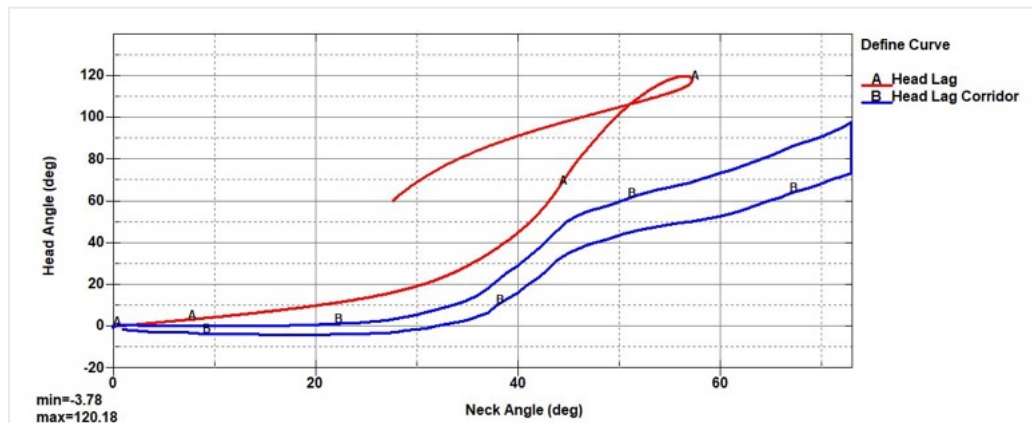
Item	Qty	Part Number	Material
1	1	Top and Bottom Butyl Rubber	Rubber, Butyl
2	1	Inner ABR	Rubber, Nitrile
3	1	Bottom Plate	Steel
4	1	Top Plate	Steel
5	1	Lower Neck Bracket	Aluminum, Anodized Blue



Strength - Extension



NBDL



Future Expansions

Fix Revolute Joint Iterations

- Achieve Head Rotation without Additional X Displacement
- Move Revolute Joint >20 mm Anteriorly

Add Titanium Inserts for Strain Stiffening under Flexion and Extension

Combine Revolute Joint with Translational Joint

- Tension Joint to Top to Prevent Initial Stiffness
- Compression Joint Requires Metal Plate for Stiffer Neck

Start Simpler

Investigate Viscoelastic Materials



Thank You

