

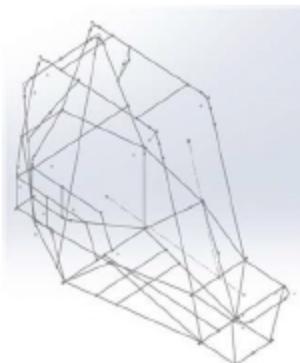


Team BAJA Rear Suspension Capstone Project

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Introduction

The suspension for the SAE Baja off-road vehicle is important so that vehicle can operate smoothly and keep the driver safe. Essentially, an H-arm will be dimensioned to mate to the frame of the vehicle and the rear wheels. This will require two types of knuckles and two methods for attaching the shock absorbers.



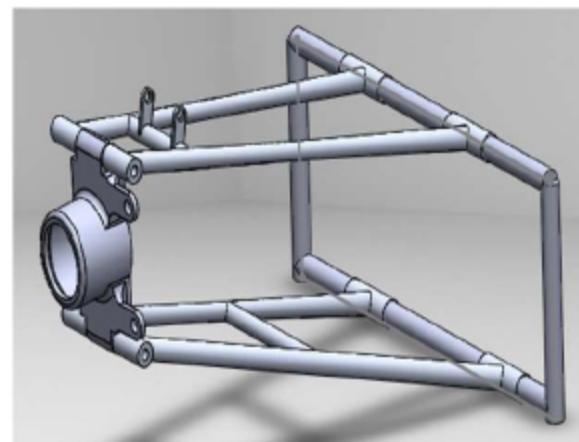
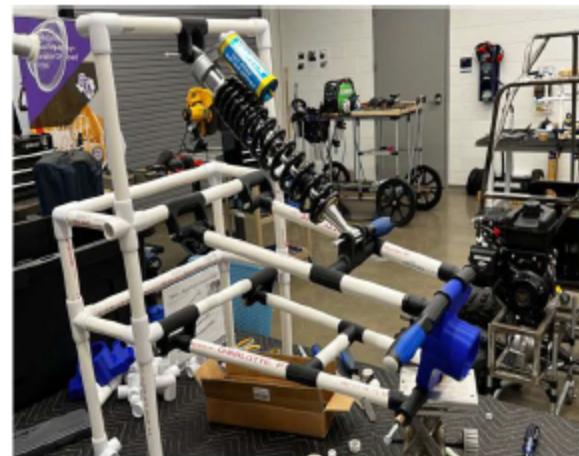
Achievements

A final prototype model for the rear suspension H-arm system was completed with 3D-printing. Virtual testing using SOLIDWORKS helped evaluate the functionality of the system before final manufacturing of the system.



CAD Drawings

Final Model



SOLIDWORKS: A model for the top and bottom H-arms for rear suspension of the BAJA off-road vehicle

Challenges

The process of getting a manufactured metal model for the H-arms were tainted due to the price of getting them manufactured this semester. Another challenge was making the decision on how we would model the H-arm system for a final prototype.

Problem Identification

A problem the group identified was the dimensions of the H-arm, which were off for fitting between the roll cage and the wheel knuckle. This caused the H-arm to not fit to align with the BAJA vehicle. The side and diameter of the shock holder were too big for the diameter of the end of each shock.

Proposed Solutions

Our team approved the solution of adjusting each of the dimensions using calipers and measuring tapes. The dimensions were updated in SOLIDWORKS before we re-printed our parts for the prototype.



Evaluation

The expectation of the Baja rear suspension system is to send off the final CAD files for the top and bottom H-arms to be manufactured or made in-shop. The finalized prototype can then be used to officially test them for reliability in the future BAJA competition.

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References

Collegiate Design Series Baja SAE
Rules