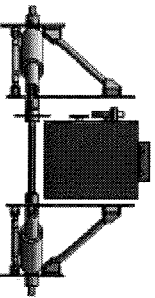
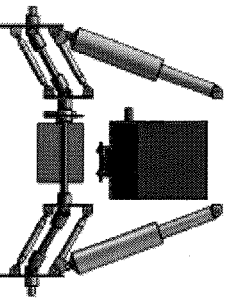


Goals and Requirements



Our main objectives are to design and construct an all terrain vehicle that:

- is safe to drive as outlined by SAE regulations
- is capable of traversing all types of terrain including water
- can excel in performance testing including braking, acceleration, towing, maneuverability, endurance, traction, top speed

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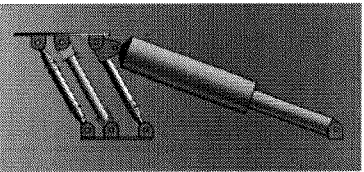
Mechanical Engineering

Mini-Baja Competition



All Aspects of the Drivetrain and Rear Suspension

Components



View of left side rear suspension as seen from the rear.

Rear Suspension

Many different design concepts were considered for the rear suspension, but we ended up choosing a multilink, independent rear suspension system. It consists of three linkages attached to the frame and wheel hub. This setup allows for complete control of the wheel camber and tow without adding a lot of components. We are using a two stage shock to further improve ride quality. This setup enables us to achieve our goal of having a safe, comfortable ride capable of high performance in the competition.

Engine Mounting and Placement

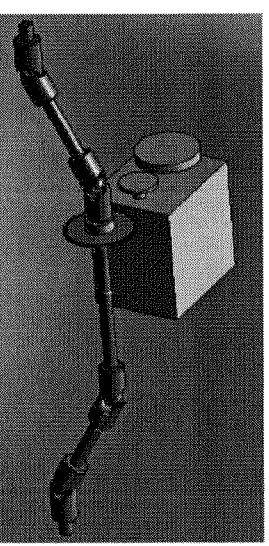
The engine will be mounted behind the firewall to the rear of the vehicle. It will be positioned so that it will remain dry for the water competition but not raise our center of gravity by more than necessary. This positioning will enable us to perform well in all events.

Rear Axle and Transmission

The axle is three separate pieces of solid round steel pipe that is connected by four universal joints. This setup is necessary for our rear suspension setup and will allow for proper torque transmission.

Our general setup consists of a Continual Variable Transmission (CVT) coming off of the engine and going to the driveshaft of a stripped 4 speed, manual, 125cc motorcycle engine. The output shaft from the motorcycle engine has a sprocket and chain going to a sprocket on the rear axle.

The motorcycle engine has been modified such that it is essentially only a gear box. This combination of CVT and manual transmission provides for a large range of gear ratios allowing us to achieve our goal of both a very high low end torque and very high top end speed.



View of transmission and axle layout as seen from the left rear.