Contents

Boom Boom (The Boombox)

Karl Kreuze

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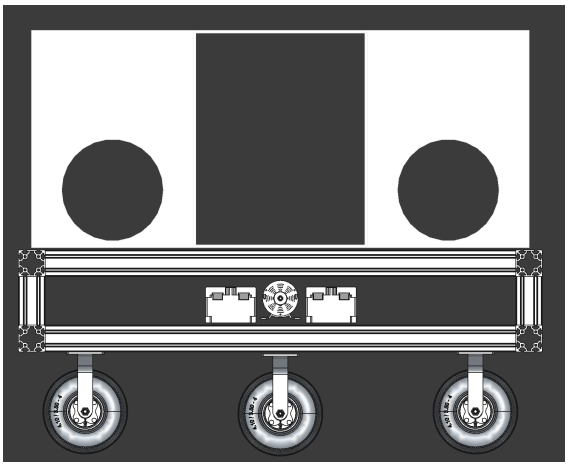
1 Abstract

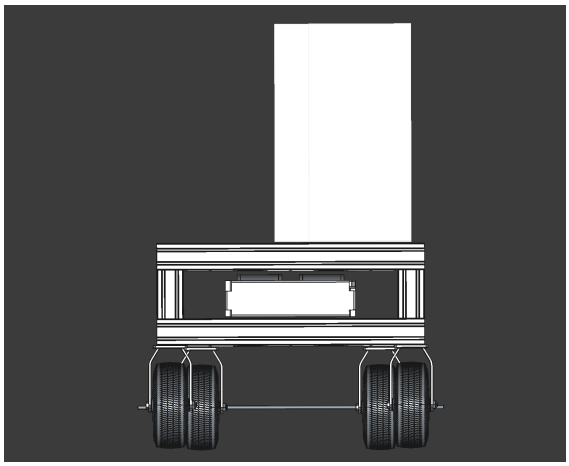
Boom boom, the boombox, is a driveable boombox that plays music through two large JBL speakers that have audio input fed by a nineteen inch rack. The boombox is propelled by a tank drive system powered by two VEVOR motors and stores energy in a Porsche Taycan battery pack. The intent is to drive this boombox through campus, or in town and blast music for fun.

2 Fabrication

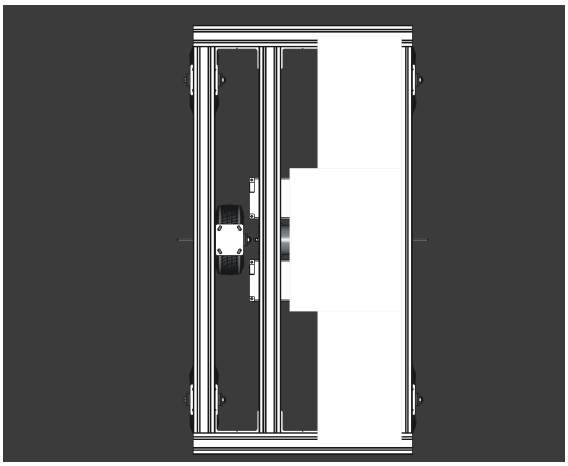
2.1 Schematic



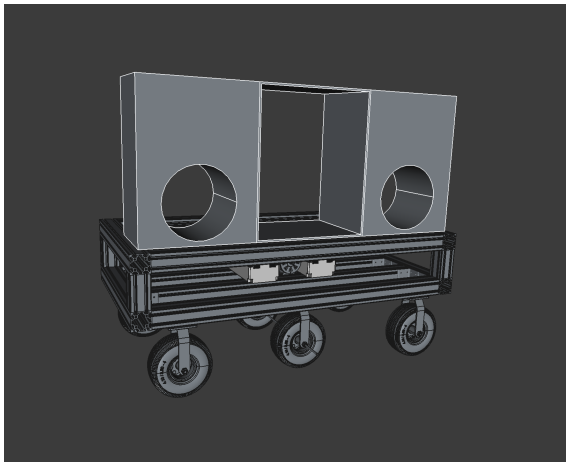
(a) Front View of the Boombox CAD Model



(b) Side View of the Boombox CAD Model



(c) Top View of the Boombox CAD Model



(d) Quarter View of the Boombox CAD Model

Figure 1: CAD Model of the Boombox

2.2 Notes about parts not modeled in CAD

The CAD model includes the aluminum chassis, the mounts for the aluminum framing, the castors, the speakers, nineteen inch rack, speakers, axle, drive motors and batteries. It does not include wiring, the motor controllers, the motor mounts, the oddities of the castor mounts, or the motor sprockets and chain.

2.2.1 Sheet metal fabrication

The mounting solution for the drive components and batteries will involve cutting and drilling sheet aluminum, so that the components can be bolted directly to the chassis. Specifically, mounts for the motors, batteries, motor controllers, drive wheels, as well as brackets for the speakers and nineteen inch rack will be fabricated from sheet aluminum. The aluminum mount for the drive wheels will be bolted to the underside of the chassis, to lower the drive wheels to ensure they contact the ground.

2.2.2 Castor modification

The castors from McMaster-Carr have mounts that are 66 mm, but the aluminum framing only supports mounts that are 40 mm, so holes will need to be drilled out. Additionally, for the drive wheels, the inner axle mounts will need to be removed to allow for the solid rotary shaft to be shared between the two drive wheels, and support the sprocket for the motor chain. There are four 54 mm bolts on the castor wheels to mount the sprocket directly to the wheel, but these will need some studs to ensure alignment with the motor sprocket.