Our first robot model had a scissor lift for the “In the Zone” game. We quickly realized that bringing the scissor lift up and down evenly was a difficult task for drivers. We designed this shock to absorb some of the energy and balance the scissor lift.

Our shocks mount on the middle of the long bar of the base with the bracket straddling the bar. The ball on top of the shock fits at the first intersection of the scissor lift from the base. Once the scissor lift completely descends, it bumps into the shocks. The shocks even out the pressure thereby evening out the scissor lift.

For this online challenge, we designed our shock with Autodesk Fusion 360 Version 2.0.3257. This program allowed us to create a 3D model of our piece where we can observe it digitally at all angles. To create the shocks, we first created the base which had the top and bottom cylinder and the center bars. We used two thin, tall cylinders to create the center bars. Next, we created a coil which we made sure fit around the base. We then tried different base types including two different plates at different angles, a VEX Cylinder Mount, and a plate at a 45 degree angle. We eventually decided to use a VEX Gear Box so that the shock can fit over the bar securely. The sphere at the top of the shock was added to absorb the impact of the scissor lift. Lastly, we changed the coloring of the pieces to illustrate the separate pieces we used. We then rendered the design to make it look as good as possible.

Throughout the process of creating this piece, we have learned a lot about how physics play a big role in the design of a robot as well as operating the Autodesk Fusion 360 program. We, as a competitive robotics team, plan to use this program in the future as a way to model a robot design before it is built. We can check any parts we may need, how they fit on the robot, and if the design will work or not.