

We make it **possible**

Improving the Vibration Dampening of an Existing Part

Problem:

A competitor's part did not sufficiently damp vibration in a leading vehicle manufacturer's electric school bus, causing the power steering pump to fail during durability testing.

Solution:

Leveraging our extensive knowledge of shock and vibration solutions as well as our vast selection of products, we upgraded a part in our catalog with a new material that was more successful in damping vibration while the power steering pump was in use.

Results:

Our enhanced part damped vibration and allowed the power steering pump to pass durability testing, increasing the service life of the pump and helping the customer avoid costly repairs down the road.

When parents wave goodbye as the school bus drives away, they trust that their children will be safe in a vehicle that is in top working condition. So, when a competitor's part did not damp enough vibration in a leading vehicle manufacturer's electric school bus and caused the power steering pump to fail during durability testing, we knew we had the expertise to help. More specifically, our customer needed a new isolator to damp vibration so that the power steering pump could survive rigorous durability testing. Ultimately, our team used their extensive materials knowledge to quickly improve one of our existing parts to meet our customers' unique needs.

Approaching the Problem

Although we have a vast catalog of shock and vibration solutions, we approach every project through a brand-new lens to see if a custom solution is the best answer to our customer's problems. After reviewing the loadings and application information, our team identified that the natural frequency of our competitor's isolator was near the operating speed of the power steering pump. The weight of the power steering pump was also severely skewed to one side, which meant that different mounts were needed for the front and rear of the pump. To successfully address the problem, our team quickly determined that we would need to modify our existing parts.

Finding a Solution

Our engineers knew from experience that if the new isolator's natural frequency was too close to the operating speed of the pump—as our competitor's parts were—it could, in fact, make the durability problem even worse. Our team also knew that neoprene rubber, the material our legacy rings and bushings were made from, wouldn't damp vibration to the extent needed. Leveraging this knowledge, the team swapped the neoprene rubber for customized

elastomer, as the latter's properties do a much better job of damping vibration and minimizing motion when the pump is in operation.

The Results

As our engineers expected, the rings and bushings made from the custom elastomer were much more effective at damping the vibration than neoprene rubber. As a result, our modified part allowed the power steering pump to pass durability testing.

Ultimately, our team was able to provide the customer with an effective solution on a short turnaround, which saved them time and money on development. Their satisfaction with the innovative success of this project has inspired the customer to return to us for assistance with additional applications.

If you are interested in learning more about our capabilities or want to speak with us about your project, we'd love to connect. Reach out today to learn more.

