

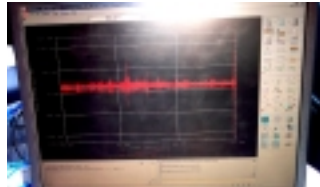
Product Test Results

Before you spend money on products that make claims like "80% smoother ride" or "75% less vibration", ask for the NVH testing to back up those claims. You might be very surprised what you find.

Trailair utilizes NVH (noise, vibration and harshness) testing to measure the reductions in force felt by the use of our air ride pin box products. We contract with firms like Sachs automotive that specialize in this type of testing to conduct independent studies. Sachs use highly sensitive computerized equipment, in a real time environment, to show differences in the amount of G-force (or amplitude) in a trailer with standard equipment versus the same trailer when equipped with the Trailair product. G-force data is collected across a range of frequencies. Within those ranges we can indicate what you would feel as a rider, the vibration and harshness that items like a computer or dishes might receive inside the coach and the vibration and harshness the



NVH Computer

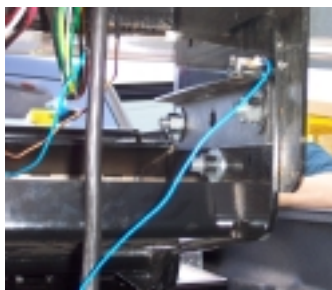


G-Force data being collected



Sachs shock with string pot collector

actual components of the trailer, like the fiberglass skin or the frame might receive. By comparing and contrasting the same truck and trailer, traveling on the same portion of road at identical speeds, with and without the Trailair product, we can then get an indication of the reductions in those forces, what the improvements in dampening are, and also how the tow vehicle might handle better.



Accelerometers on pin box



Accelerometers on 5th wheel



Accelerometers on rear window

The air ride pin box ride tests were conducted north of Troy, Michigan by the NVH department at Sachs Automotive. Thomas Frank, senior engineer and Brian Saylor, NVH specialists, conducted and oversaw the testing. Sachs Automotive is one of the largest shock and damper manufacturers in the world. Headquartered in Germany with 40 locations in 18 different countries, Sachs has been a leader in the international automobile industry since 1895. In the US, Sachs Automotive of America produces a wide range of dampening products for Toyota, Ford and Freightliner among others. Sachs worked very closely with Trailair to develop a shock absorber specifically for the air



Test Track - Traveled at 55 MPH

ride pin box. Trailair considered several design criteria improvements at the same time the shock absorbers were being tested so that all improvements could be tested. A major part of the development project was to do ride testing to measure the forces under

the worst of conditions. The truck, trailer and road conditions used in the testing were chosen specifically by Trailair as the combinations that were found to give the consumer the greatest ride quality challenges.

We started with a 2002 Chevy Duramax 2500 HD with Quad-Cab and long bed pulling a 2002 36' Carriage Carri-Lite. Both the truck and the trailer were brand new. The truck was equipped with a Reese 20K fifth wheel with 4-way head. We began our testing on some of the roughest roads in the Detroit metro area as you can see from the



Chevy 2500 HD Duramax, 2003 Carriage 36' Carri-Lite

photos with the standard pin box that came on the Carriage trailer to give us some baseline data to compare to. We accumulated data on 6 different portions of road traveling 55 MPH on each section. We then took another set of trips with a 2002 Ford F550 with a Reese 20K fifth wheel with 4-way head and a 2002 36' Holiday Rambler Presidential.

After nearly 40 testing runs and 10 data collection tests, in a frequency range where human beings are most sensitive (0-8 hertz), the coach with a standard pin box had significantly more G-force in the verticle axis than did those tests with the Trailair air ride pin box. The results; 162% more at the suspension of the trailer, 225% at the pin box mounts and 260% in the cab of the truck. The fore and aft (push-pull) oscillations indicated as much as 160% more G-force with the standard pin box in some test runs while in others, there was little or no reduction because there was very little fore and aft oscillations in the baseline conditions.

These kinds of improvements are considered significant in the transportation industry. This kind of testing not only helps Trailair to develop and refine our product to make it better and better but it demonstrates to the customer just how well the product can work!!

