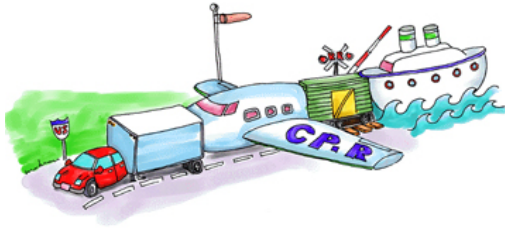


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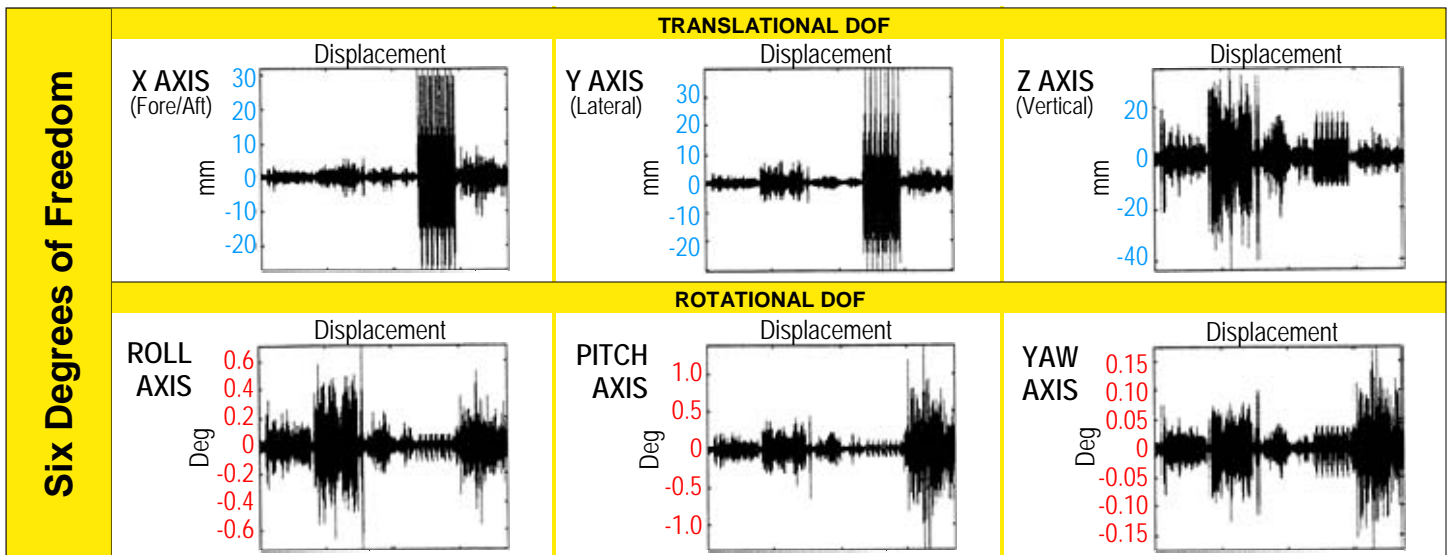


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SIX DOF TRANSPORTATION SIMULATION TESTING

- ◆ Six degrees of freedom (DOF): X, Y, Z, roll, pitch, yaw
- ◆ 15,000 lbs. payload @ 3 *g*s and 1 Hz to 50 Hz
- ◆ 6,000 HP supplied to the test table
- ◆ 10' x 10' test table
- ◆ Available rail, ship and truck-trailer drive files; or, Control Power-Reliance, LLC can develop custom drive files to replicate exact field transportation conditions, including in-plant or between manufacturing/warehousing locations



ABOUT 6 DOF SIMULATION TESTING

Historically, when premature failures in product and shipping container designs occurred, engineers were brought to task for producing inadequately designed products. Their designs were typically based on one-axis (usually Z) vibration testing data, and did not consider the effects of multi-axial stresses that occur in the real world: X, Y, Z, pitch, roll and yaw axes simultaneously exert significant forces/torque which can cause unpredictable container and product failures.

With the 1996 installation of the Control Power-Reliance 6 DOF simulator, which replicates field transportation conditions in real world six degrees of freedom, container and product integrity during shipping and warehouse transit could now be analyzed prior to final design approval. Failures attributed to design deficiencies or field conditions are negligible with adequate transportation simulation testing, resulting in significant cost savings by minimizing product and container damage caused during shipping.

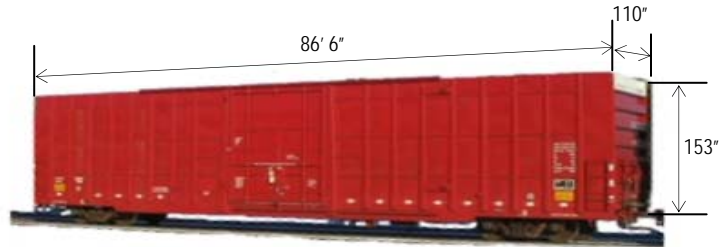
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CONTROL POWER-RELIANCE, LLC

Hi-Speed Photography
B/W and Color



COMPUTER-CONTROLLED REAL WORLD SIMULATED RAIL IMPACT TESTING (Patented)



- ◆ Computer controlled rail car speed and impact deceleration simulating actual rail car "humping"
- ◆ Payloads up to 12,000 lb.
- ◆ Speeds up to 15 MPH (actual impact speed), with over 100' of track
- ◆ Rail car can rebound after impact, or be connected
- ◆ Deceleration can be computer-controlled from 50 MS to 300 MS
- ◆ Rail car test floor is 15' long x 9' wide x 12' 9" high
- ◆ Acceleration to test speed is controlled to 0.2 *gs*
- ◆ 1,000 fps hi-speed cameras available in black/white and color

In just a few hours Control Power-Reliance can validate your new container, rack, dunnage and product designs to ensure a safe rail journey.

Contact our test engineering staff to arrange a meeting and visit our transportation simulation testing facilities.

Learn how properly designed shipping containers can prevent product damage and...*save your company time and money!*

For information on other services and products Control Power-Reliance, LLC provides, contact our main office at (248) 583-1020.



ABOUT RAIL IMPACT TESTING

Several years ago Control Power-Reliance engineers began analyzing damages caused to shipping containers during rail transportation when rail cars coupled, known in the industry as "humping". Through consultation with senior corporate packaging engineers, the nature, extent and cost of such damages were identified. Control Power-Reliance then used this information to develop a state-of-the-art testing machine that realistically duplicates the forces to which packaging can be subjected when transported by rail.

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