



Squeeze and tension frame facility

In addition to ensuring that rail vehicles can withstand the impacts and rigorous vibration experienced in a rail environment, rail vehicle manufacturers must also certify that their cars can handle the massive tension and compression strains that are exerted from other cars in the consist during rail travel.

NRC's Squeeze and Tension Frame Facility is capable of exerting up to 1.3 million pounds of longitudinal compression force, and 500,000 lbs of tension force. Force is exerted onto the vehicle until structural failure.

Controlled tests can be performed for full scale rail vehicles or sub-component structures such as draft gear.

Structural response data is captured with strain gauges, load cells and displacement sensors, which allows facility engineers to tabulate detailed stress and fatigue analyses reports and to combine this data with finite element and other structural modeling analyses.

Features

- › AAR accredited facility for testing and certification requirements;
- › Up to 1.3 million lbs compression;
- › Tension capability up to 500,000 lbs;
- › Unique in Canada;

- › Controlled, accurate and repeatable testing conditions;
- › Over 25 years experience in structural dynamics testing.

Applications and benefits

- › Tests car body structural strength and integrity;
- › Verifies compliance with AAR standards;
- › Tests drawbar and coupling devices for strength and longitudinal / lateral stability;
- › Tests product life and wear limits to identify structural defects, facilitate problem diagnosis;
- › Obtain critical data input to vehicle dynamics models.

Instrumentation and data acquisition

- › Up to 512-channel data logging system, simultaneously sampled data;
- › In-house expertise in strain gauge application;

- › Transducers available include strain gauges, load cells, displacement and pressure sensors;
- › HD and high speed video recording plus real-time webcam transmission available for out of town clients/stakeholders.

The structural integrity testing provided by the Squeeze and Tension Frame Facility complements the strain and impact testing provided by NRC's Rail Vehicle Impact Ramp, offering a complete solution to rail vehicle testing requirements.

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