



Controlled Sled System

Overview

For the development of vehicle occupant protection systems for vehicles and similar applications, Continental has a servo-hydraulic, controlled sled system that is also used to perform tests as part of services.

Typical uses of the sled system include development and testing of frontal, side, and head airbags, vehicle, child- and aerospace seats, belt systems, and other interior parts.

The system is also used to test components such as high-voltage batteries, locks, hinges, and fastenings to secure loads under real-life conditions.



Technical description

Deceleration curves based on full-scale vehicle tests are simulated under real-life conditions with reinforced vehicle bodies. The sled base with the test body is accelerated from a standstill by a pneumatic cylinder. A closed-loop servo-hydraulic piston brake unit then functions to set the desired acceleration curve.

The acceleration specifications are imported as a data set and the system uses this information to calculate the input voltage for the piston brake. The sled's acceleration is measured continuously during the test. This signal is used as a control variable for the system to yield optimum compliance with specifications.

Simulation of dynamic intrusions (such as in a side impact or in the foot well) or active pitching is performed using special equipment developed by Continental, specifically for sled use.

Features

- › Thrust force: 2500 kN
with 1700 mm of usable acceleration distance
- › Performance:
 - $a_{\max} = 65 - 100 \text{ g}$ (frontal impact)
 - $a_{\max} = 100 - 150 \text{ g}$ (side impact)
 - $v_{\max} = 90 \text{ km/h}$ (for vehicle-specific test pulses)
- › Test weight (net): 250-3000 kg
- › Usable frequency range: 0-120 Hz
- › Pulse reproducibility typically better than + 1 g or + 0.1 m/s
- › Velocity deviations in pulse settings less than 0.2 m/s at any time
- › 15 ignition channels
- › 8 high-speed colour video cameras on sled, up to 2,000 frames / sec.
- › Lighting: 200,000 lux in an area of 2.5 m x 6 m
- › Dummy measurement by 3D Measurement System (Aicon)

