

Railway Vehicle Assemblies Testing



What Is Railway Assemblies Testing?

Railway assemblies testing is vital for ensuring that carriage bodies and substructures conform to international standards and are an important part of our [railway testing](#). Assemblies testing involves evaluating the **structural aspects** and **manufacturing techniques** for **single** and **trams**, as well as **middle carriages**.

What Railway Assemblies Areas Do We Test?

At Applus+ Laboratories, we test a **range of different railway assembly areas**, from varying [carriage structures and to production techniques](#). Here's an overview of the areas that we test on:

What Carriage Types Do We Test?

We offer **structural integrity testing** for a wide variety of carriage types, ensuring safety, durability, and compliance with industry standards.

- **Streetcar Carriages**
Our testing processes for streetcar carriages focus on their **resilience in urban environments**, including stress tests related to **frequent stops, starts, and tight cornering**.
- **Head-End Carriages**
We assess the **strength and durability of head-end carriages**, which are critical for the safety and control of trains, ensuring they meet the necessary safety standards.
- **Centre Carriages**
Centre carriages are subjected to rigorous testing to evaluate their ability to withstand dynamic forces and **ensure passenger safety during transit**.

- **Lock Frames**

Lock frames, essential for the secure connection between carriages, are tested for their **reliability and durability** under various operational stresses.

Simulation and Calculation Verification

We conduct full simulation and calculation verification using advanced computational tools to replicate how carriage body structures will react under stress tests, load distribution, and material behavior. These tests are crucial for ensuring that the final product meets safety and performance standards.

Design Validation for Vehicle Development

Design validation plays a critical role in vehicle development, making sure that **all design specifications** for carriages and lock frames translate into **robust and operational vehicles**. Design validation involves **rigorous testing** of prototypes and pre-production models under real world conditions.

What Railway Assemblies Testing Options Do We Offer?

We perform a number of tests on railway assembly bodies to ensure that they conform **against several international standards**. These tests include:

- **Static Tests Against EN 12663-1**

We conduct **static tests against the standard EN 12663-1** ensuring that railway carriage bodies meet the necessary safety and performance criteria for the structural integrity of the car body **under real-life static load conditions**.

- **Structural Load Testing**

We apply structural load testing **utilising servo-hydraulics** and defined weights to evaluate whether railway assemblies are **capable of maintaining their structure** under various loading scenarios.

- **Longitudinal Pressure Testing**

We provide longitudinal pressure testing by **applying force** either with **servo-hydraulics or high-pressure hydraulic elements** (capable of forces up to 3,000 kN). This test ensures that carriages are able to withstand significant longitudinal pressures in the event of **collisions** or **sudden stops**. These are tests conducted against the standard EN 12663-1.

- **Dynamic Testing**

Our dynamic loading testing **multi-servo-hydraulic load components** in order to simulate the real-world dynamic forces that a railway carriage would undergo. Our testing involves testing for [dynamic stresses such as vibrations, impacts](#), and other forces occurring in **high-speed travel**.

Why Choose Applus+ Laboratories for Railway Assemblies Testing?

Choosing [Applus+ Laboratories](#) for your railway assemblies testing **aligns you with a distinguished leader** in the railway testing industry. Our services are geared towards **ensuring carriage bodies are structurally sound** and in accordance with global regulations and standards.

At Applus+ Laboratories, we offer railway testing services **combined with exceptional client service**, making us ideal for your railway assembly needs. We support the full spectrum of your project, **from development to market entry** across multiple countries.

Choose Applus+ Laboratories as your trusted advisor and partner in **providing high-quality services** and **expert guidance** is designed to streamline your path to market while navigating the complexities of railway product certification with confidence and precision.