



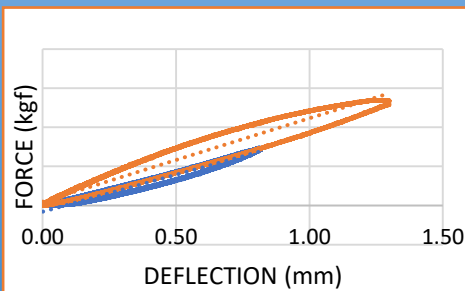
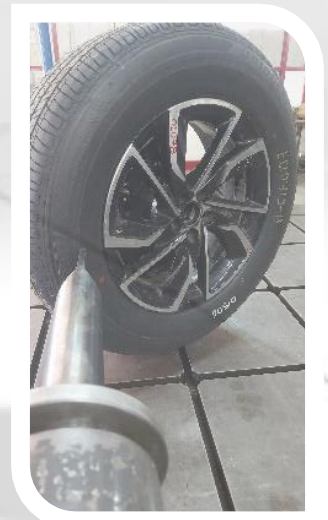
CIRT
Excellence in Transport

CENTRAL INSTITUTE OF ROAD TRANSPORT

सेन्ट्रल इन्स्टीट्यूट ऑफ रोड ट्रांसपोर्ट



STRUCTURAL DYNAMICS LAB



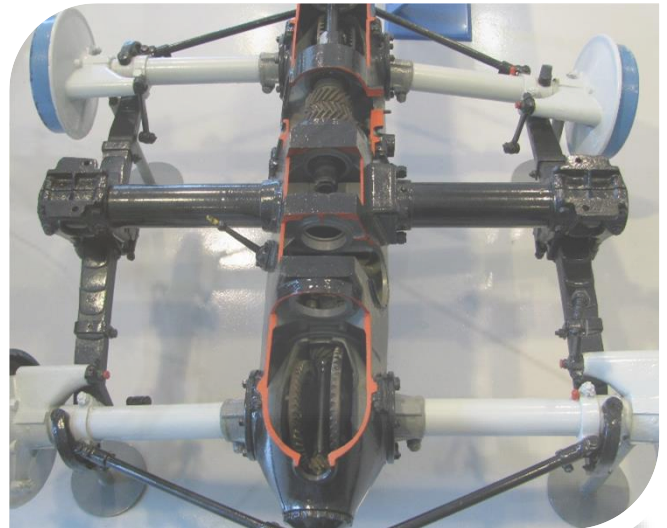
ABOUT

For over 5 decades, SDL is a leading laboratory among various laboratories of CIRT catering to the areas of automotive component, automotive system and sub-system testing, evaluation, and their certification, exercising State-Of-The-Art Technology & techniques for providing safe, reliable, economical & environment-friendly solutions across the fraternity.



Our Key Facilities

- State of the Art, Renowned, Modular, Reconfigurable, Programmable & rugged Test Systems.
- Multiple Linear Servo Hydraulic Actuators of capacities ranging from ± 6.5 kN to ± 150 kN and displacement capacities ranging from ± 75 mm to ± 500 mm.
- Servo Hydraulic Rotary Actuator of Torque capacity of ± 11.3 kNm & Angular Capacity of ± 45 deg.
- Multi-Channel Servo controller with Facility for data acquisition & closed loop feedback control system for multiple test parameters.



SUPPORT Facilities

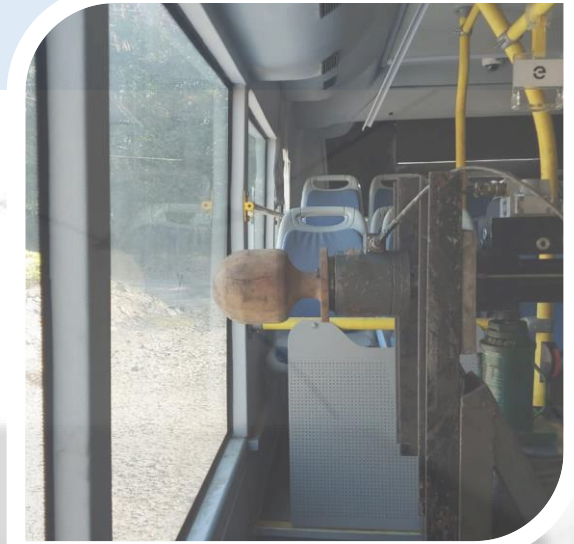
- Inhouse design team and well-equipped workshop for fixture designing, FEA validation and manufacturing.

TRACTOR SEAT BELT ANCHORAGE- FORWARD LOADING



COMPONENT PORTFOLIO

Window Retention & Release Systems as per
IS:13944:1999 (Reaffirmed 2019)



Bus Window Frames as per AIS:068

Mechanical Coupling Devices For
Agricultural Tractors & Towed Vehicles as
per AIS:091:Part II



Devices to restrict unauthorized use of a
Vehicle as per AIS:074

Front Mechanical Coupling Devices For
Agricultural Tractors & Towed Vehicles as
per AIS:109



Tractor Seat Belt Anchorage Test as per
IS:16952:Part II

Testing of Air Spring Bellows / Air
suspension



Devices to restrict unauthorized use of a
Vehicle as per AIS:075

KEY TEST FACILITIES UNDER THE ROOF OF STRUCTURAL DYNAMICS LAB

Sr. No	Test Item	Relevant Specification	Test Facility	Test Parameter and Range
1	WINDOW RETENTION TEST	IS:13944:1994 (REAFFIRMED 2019) & IS:13944:2021 (FIRST REVISION)	Servo hydraulic test system mountable on fully built bus / mock-up of window structure	LOAD RANGE : 550 kgf. & DISPLACMENT RANGE : 150 mm
2	WINDOW TEST FACILITY	AIS:068	1. Servo hydraulic test system for endurance & load test of windows 2. Vibration shaker for durability 3. Other test facilities also available	LOAD RANGE : 2500 kgf. & DISPLACMENT RANGE : 150 mm
3	Mechanical coupling Test Facility	AIS:091:Part II	Servo hydraulic test system for dynamic as well as static test conditions.	LOAD RANGE : upto 150 kN & DISPLACMENT RANGE : 450 mm
4	Devices to restrict Unauthorised Use	AIS:075	Servo hydraulic test system with multiple actuators in various configurations to take up any design of steering column.	LOAD RANGE : upto 6.5 kN & DISPLACMENT RANGE : 500 mm
5	Devices to restrict Unauthorised Use	AIS:074	Servo hydraulic test system with multiple actuators in various configurations to take up any design of steering column.	LOAD RANGE : upto 6.5 kN & DISPLACMENT RANGE : 500 mm
6	Leaf Spring Assemblies	IS:1135	Servo hydraulic test system for dynamic as well as static test conditions.	LOAD RANGE : upto 150 kN & DISPLACMENT RANGE : 450 mm
7	Fifth wheel coupling & Its mounting plate	AIS 091:Part 1	Servo hydraulic test system for dynamic as well as static test conditions.	LOAD RANGE : upto 150 kN & DISPLACMENT RANGE : 450 mm
8	Landing gear Testing for Mounting of semi-trailer	IS 10752	Servo hydraulic test system for dynamic as well as static test conditions.	LOAD RANGE : upto 150 kN & DISPLACMENT RANGE : 450 mm
9	King Pin testing	AIS-091 (Part I) and IS: 6763 Part 1	Servo hydraulic test system for dynamic as well as static test conditions.	LOAD RANGE : upto 150 kN & DISPLACMENT RANGE : 450 mm
10	Landing leg testing	IS 10752:1983	Servo hydraulic test system for dynamic as well as static test conditions.	LOAD RANGE : upto 150 kN & DISPLACMENT RANGE : 450 mm
11	2 Point Seat Belt Anchorage Strength Test for Earth Moving Machinery	IS/ISO:6683:2005	Servo hydraulic test system for dynamic as well as static test conditions.	LOAD RANGE : upto 150 kN & DISPLACMENT RANGE : 450 mm
12	Footrest of Two Wheelers	AIS:148	Servo hydraulic test system for dynamic as well as static test conditions.	LOAD RANGE : upto 150 kN & DISPLACMENT RANGE : 450 mm
13	Stands for Two Wheelers	AIS:146	Servo hydraulic test system for dynamic as well as static test conditions.	LOAD RANGE : upto 150 kN & DISPLACMENT RANGE : 450 mm

OTHER TEST FACILITIES

Static Stiffness and Strength Testing of Front and Rear Sub-frames



Seat Belt Anchorage (SBA) test on 3-wheeler as per Directive 3/2014/EEC

Testing of suspension components like Leaf springs, Shock absorbers, Control Arms & Coil springs for Static performance & durability as per actual duty cycle



100+ servo controlled Actuator Configurations available of capacity from 6.5 kN to 150 kN



Rotary Actuator up to 11.3 kN-m capacity

Simulation and Multiaxial Durability testing of AIR SUSPENSION TESTING



Strength evaluation of 2-wheeler Footrest as per AIS-148 through simulation

TESTING Draft links, Lift links, Centre/Top links & its assemblies

Durability & analysis OF AXLES / AXLE ASSEMBLIES for various loading condition like vertical, breaking,

Upcoming Test Facilities

250 kN Servo Hydraulic Test system

500 kN servo Hydraulic Test system.

Battery Crush Test Facility as per AIS:038

Dedicated Test facility to test All types of Automotive / Industrial Heat Exchangers as per IS:13687 & IS:13686

MOTORCYCLE CHAINS – CHARACTERISTICS & TEST METHODS AS PER IS:11740:2014 (REAFFIRMED 2020) & ISO:10190:2008

MAST (Multi Axis Simulation table) for Light duty as well as Heavy Duty Applications.

Servo Hydraulic Rotary Actuator of up to 82.5 kNm Torsional capacity.



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