

PENDULUM FOR BUMPER TEST SYSTEM

ARIES has developed a complete solution for bumper testing, complying with the applicable international regulations and insurance test protocols.

Our engineering team has created a pendulum that hits the bumper as part of the vehicle itself, or installed on ARIES test cart. The pendulum is equipped with an adjustable mass in order to make its mass equal to that of the vehicle to test.

Suspended by four rigid suspension rods (two on each side), the front surface of the pendulum impact plate is kept in a vertical position throughout the complete motion, from release to impact.

Before the test, the vehicle is placed against the impact plate at its lowest position. Once the vehicle is correctly positioned, the pendulum is attached to an integrated hoist system through a pneumatic release hook, which raises it to the appropriate release height to reach the required impact speed.



The raise and release of the pendulum is done from the control panel for a safe operation.

After impact, the system uses a pneumatic brake to stop the pendulum in its vertical position and avoid a second impact to the bumper.



Efficient:

Pendulum with adjustable ballast system and adjustable point of impact.
Adjustable mass and centre of gravity of the test cart.
Load cell instrumentation of the test cart and pendulum impact plate (optional).

Adjustable weight:

The pendulum weight can be adjusted in steps of 10 kg between 800-2500 kg using the same ballast system as the test cart.

Applicable Standards and regulations:

ECE R42, FMVSS part 581, CMVSS 215, IIHS Allianz and RCAR protocol for low speed insurance crash test.

Capacity:

2500 kg pendulum mass (others under request).

COMPLETE BUMPER TEST LABORATORY

Thanks to **ARIES'** experience in turn-key crash test laboratories and to our engineers' flexibility, we are able to offer a complete bumper test facility adapted to the requirement of each client.

This turn-key laboratory for dynamic bumper testing consist of two main components:

- The pendulum test system.
- The low-speed crash track including a fixed crash barrier.

The crash track is equipped with a propulsion system based on an electrical AC motos. The high precision in final impact velocity is ensured by **ARIES** experience and by the sophisticated technology used in the control of the propulsion system.

The test cart is connected to a tow-trolley that is guided along embedded in the floor. It is connected to a closed loop steel cable and releases the test cart just before impact.

The propulsion system for the barrier test, the release mechanism in case of pendulum test, and other subsystems are all managed by the control panel or a PC with customized software (optional).

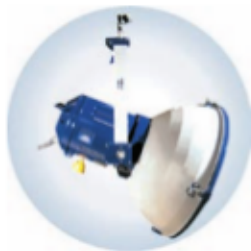


General Advantages

- Easily operated system for adjusting weight of the test cart and pendulum.
- Common design of the ballast system (test cart and pendulum).
- Precise speed control of a powerful AC motor to reach desired impact speeds over short distances even at the vehicle's maximum weight.
- Shared speed measurement system for a barrier and pendulum test.

Optional Supplies

In addition to these main systems, **ARIES** can provide the design of any civil work needed for the test laboratory, the instrumentation required to measure forces, accelerations, velocity and displacements, data acquisition systems, filming systems and the associated lighting elements (HMI or halogen).



ARIES HMI lighting system is specially designed and developed for high speed filming in crash, crash simulation and other dynamic passive safety test.

The electronical ballast will ensure flicker-free images even at high rates (up to 10.000 fps) and allows for boosting up to 200%.



ARIES' speed meter, based on Laser technology, is the versatile system you need for the test Speed measurement with a high accuracy and performance.



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ARIES designs and supplies automotive test systems for research, engineering and regulation compliance with FMVSS, ECE, EEC and others standards.