

Servohydraulic Testing Machines for Dynamic Testing - UFIB series

Universal Servo hydraulic Dynamic Testing Machines - UFIB series.

Designed for the configuration and performing of static and dynamic tests on a wide range of materials (specimens, subassemblies or finished parts) by incorporating the appropriate tools for each application.

Typical applications

- › Dynamic tests on all type of materials
- › Fatigue tests on finished parts or subassemblies.
- › Lifespan tests on elastic elements and lift.
- › Tests on springs and set of dampers.
- › Pre-cracking tests for mechanics fracture.

Testing frame

With high structural stiffness, 2 columns, a mobile crosshead and a lower steel plate, which function as a base and closure of the testing frame.

The baseplate is perforated to allow the hydraulic piston movement.

The upper mobile crosshead is steel manufactured, precision machining, which allows a linear movement along the columns with adequate thickness to guarantee the specified rigidity value.

Furthermore the crosshead can be positioned to the desired height: raised or lowered by the simultaneous action of two synchronized lateral hydraulic actuators. The position of the crosshead is adjustable via a screen of movements in WinTest testing software or via the remote control.

Load cell is mounted under the upper crosshead, specially designed for fatigue testing with a nominal capacity equal to the testing frame capacity. Over the load cell in series, is the assembly which allows the interchangeability of testing devices using clamping bolts.

These testing devices can be gripping heads, compression plates, bending device, etc.

The lower steel plate is mounted over a metallic frame composed by UPN steel profiles.

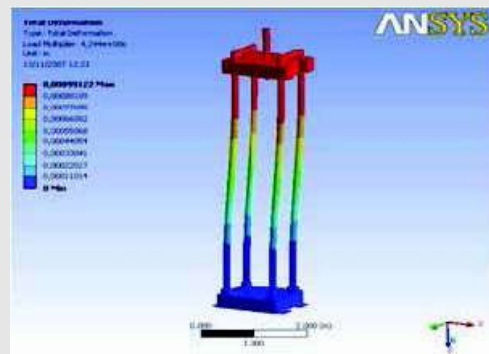
The double effect hydraulic servo cylinder and double piston rod with symmetric chambers is mounted under the plate.

The entire testing frame is resting over the metallic frame which contains the hydraulic piston and sleeves of lateral lifting jacks, making it possible to work at a comfortable height.

The testing frame has been designed to have less than 1 mm deformation when the machine operates at maximum load.



The mechanical design of testing frame is made with finite elements analysis using the design ANSYS software to determine, in addition to the analysis that guarantee the specified rigidity, those important parameters for the correct operation of the machine without resonance under dynamic conditions.



EXAMPLES OF APPLICATIONS IN UFIB MACHINES:

Tensile tests

- › For these tests gripping heads are used, with lateral clamping jaws and mechanical fastening, pneumatic and hydraulic, or wedge clamping jaws with hydraulic clamping.
- › Typically testing are performed on fastening elements such as bolts and screws, weldings, elastomers, adhesives, rebars, etc.

Compression tests

- › Compression plates are used for these tests. If the compression plates are jointed, the joint must be locked in a position in order to prevent that the specimen can leave the plate during the movement.
- › Typically tested elements are dampers, elastomers, rubber-metal elements, silent-blocks, etc.
- › If the purpose of the test is to verify the behavior of springs, the compression plates must have a restraint system.

Bending tests.

- › Bending tests consist in the application of force by one or two loading points while the specimen is resting on two supports.
- › Fracture mechanics tests on metals and fiber reinforced concrete, and tests for welding homologation are typical applications.

Fracture Mechanics.

- › To carrying out the crack propagation process (pre-cracking).
- › On specimens types: CT, SEB, etc.

Consult for specific technical information.

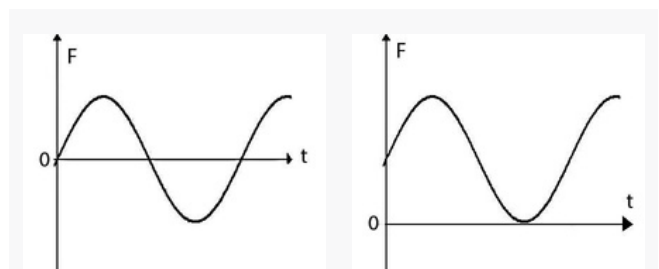


Rigidity test over elastic plates for a high speed rail

Fatigue tests under lateral loads for sleepers light fastening plates



Gripping heads, wedge type and hydraulic closure



A

B

A: Tensile-compression test with zero crossing. The dynamic solicitation consists in the application of a tensile load over a specimen with specific amplitude to immediately apply a compression force with same amplitude, starting a new cycle.

B: Tensile-compression test without zero crossing. The dynamic solicitation consists in the application of a tensile load with specific amplitude and a subsequent controlled release of the force until zero (or a particular preloaded value), starting a new cycle.

IBERTEST uses the following criteria:

- › Positive force: tensile load
- › Negative force: compression load.

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Technical specifications for testing frames UFIB

MODEL	UFIB-15	UFIB-25	UFIB-50	UFIB-100	UFIB-250	UFIB-500
Maximum load tensile-compression	± 15 kN	± 25 kN	± 50 kN	± 100 kN	± 250 kN	± 500 kN
Load measurement	Strain gauge high performance load cell HBM or INTERFACE for static and dynamic tests.					
Measuring calibrated range	1 % to 100 % of the load cell nominal capacity					
Class	0,5 according to EN-ISO 7500					
Resolución en fuerza	5 digits with floating coma					
Columns	2 chromed plated and grounded columns					
Mobile Crosshead	Can be freely positioned in height by means of side jacks. Guided by columns. With hydraulic stop.					
Free horizontal distance (distance between columns)	420 mm	420 mm	520 mm	520 mm	620 mm	720 mm
Free vertical distance between standard gripping heads ¹	0-540 mm	0-500 mm	0-800 mm	0-950 mm	0-950 mm	0-950 mm
Max. free vertical distance between load cell and piston stem.	800 mm	800 mm	1220 mm	1570 mm	1600 mm	1650 mm
Measurement of piston position.	Magnetostrictive displacement transducer Resolution: 0,5 micron					
Displacement resolution, shown in software WinTest	5 digits (3 integers and 2 decimals)					
Piston stroke	100 mm (± 50) ²			150 mm (± 75) ²		
Power supply	Three-phase 400 V + N + T, 50/60 Hz (Power to define according to hydraulic group) ³					
Dimensions testing frame ⁴ (Width x Depth x Height)	750 x 600 x 2100 mm	750 x 600 x 2100 mm	900 x 600 x 2500 mm	1100 x 800 x 2800 mm	1250 x 900 x 2900 mm	1350 x 900 x 3200 mm
Approx. weight without testing devices	680 kg	720 kg	980 kg	1300 kg	1600 kg	1950 kg

NOTES:

(1) .Free vertical distance between standard gripping heads model IB-HYDY. Greater distance is possible on demand.

(2) Other piston strokes available: 150 mm (± 75); 200 mm (± 100) y 250 mm (± 125).

(3) The characteristics of the hydraulic unit are specific to the application and the needs of each client.

(4) IINTEREST can design and manufacture larger testing frames, according to your testing needs.

Please contact our Sales Department.