

Test systems for the railway industry | MFIB series

INTRODUCTION

The MFIB series of testing machines allow automatic static and quasi-static bending tests to be performed on welded rail joints in accordance with the main international standards:

EN 13230-2, EN 13230-3, EN 13230-4, EN 14587-1, EN 14587-2, EN 14730-2, AREMA chapter 4, as well as other standards from entities such as GOST, UIC, AS, etc.

High-rigidity four-column pre-stressed test frame. Class 0.5 according to EN-ISO 7500-1. Available in capacities of 2000, 2500 and 3000kN.

CHARACTERISTICS AND ADVANTAGES

Test Frame

- Test frame including the standard bending device (3 points) and a perimetral protection system manufactured in steel with side doors for the introduction of the sample (rail) and front door to remove the sample after test. The doors are equipped with electric safety locks.
- As an option, additional testing devices can be incorporated such as: 4-point bending, compression, etc.

Hydraulic System and Actuator

- It incorporates the new *EcoHydraulic* system, which provides major improvements over traditional hydraulic control systems in terms of efficiency (up to 40% higher), adaptive flow and pressure control depending on the instantaneous test load, giving it a longer life, less maintenance and lower oil consumption.
- Closed-loop control of force and displacement by means of a high-pressure servo valve (Qn 20l/min)
- Thanks to its integration with the testing software, it is possible to automatically perform safe shutdown operations, check the operating time of the hydraulic plant for scheduled maintenance and digitalize all the alarms of the hydraulic system.
- Double acting hydraulic cylinder (single rod) with internal seals and low friction guides to absorb the lateral forces that may occur during the test.

Control Electronics

- The system incorporates the new *MD2i* control electronics with 24-bit resolution and 2.5 kHz closing loop frequency for fast and accurate control of test parameters. This means, among other advantages, that minimal variations in force or deformation can be observed during the test.



Force Transducer (Load Cell)

- High rigidity strain gauge force transducer for static and quasistatic (low frequency) tests.

Stroke Transducer

- Digital stroke transducer with a resolution of 0.001 mm (1 micron) mounted on the outside of the actuator.

Safety

- Electrical safety lock with self blocking system. As an option, the front and rear panels can be supplied with the possibility of opening by means of a sliding door with electric safety lock to protect users against projections.
- Soundproofed hydraulic unit in accordance with European directives.

Maintenance and Support

- Intelligent maintenance system, which evaluates the condition and warns the user of all necessary preventive and corrective maintenance actions.

Options:

- UCRD-6i remote control (optional) allows simple tests to be performed without the need for a computer. 15 Function keys: UP, DOWN STOP and soft keys (machine control).
- Magnetostrictive linear position sensor, absolute, non-contact, with synchronous serial interface output (SSI), for direct mounting inside the piston, resolution 0.5 µm.



MODELS AND FEATURES

MODEL	MFIB-2000	MFIB-2500	MFIB-3000
Maximum traction-compression force	± 2000 kN	± 2500 kN	± 3000 kN
Force measurement	High stiffness strain gauge force transducer for static tests.		
Calibrated measuring range	2% to 100% of the nominal capacity of the load cell		
Class	0.5 according to EN-ISO 7500 standard		
Resolution in force	5-digit floating point		
Frame	High rigidity four pre-stressed columns testing frame		
Vertical distance on the 3-point bending device ¹	0 -1000 mm	0 -1000 mm	0 -1000 mm
Displacement transducer.	0-200 mm	0-200 mm	0-200 mm
Position transducer	Digital displacement sensor. Resolution: 0.5 micron		
Piston stroke	200 mm	200 mm	200 mm
Power supply	3 ph 380 V + N + T, 50/60 Hz (Connection power to be defined according to the hydraulic unit installed) ³		
Test frame dimensions (Width x Depth x Height)	2025 x 1100 x 2200mm	2025 x 1100 x 2200mm	2025 x 1100 x 2200mm
Approx. weight without testing devices	4900 Kg	4940 Kg	4990 Kg

NOTES:

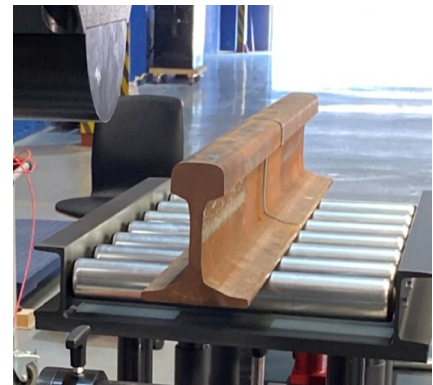
- (1) Greater distances are possible on request.
- (2) Other strokes available: 250 mm and 300 mm.
- (3) The characteristics of the hydraulic unit are specific to the application and the needs of each customer.
- (4) IBERTEST can design and manufacture other larger frames according to the customer's needs.

Please contact our Sales Department.

Other machine configurations on request.



Detail of rail-fracture weld test



Support with rollers for feeding and/or removing the rail coupons (optional)