ibertest
ADVANCED TESTING SOLUTIONS

Since 1970

Test systems for the railway industry | MFDIB series

INTRODUCTION

The **MFDIB** series of testing machines enables fatigue and dynamic tests to be performed on rail joints, supports and concrete sleepers (ties).

TEST STANDARDS

The MFDIB series allows testing in accordance with the main international standards, including:

- RAIL JOINTS: **EN 13230-2, EN 13230-3, EN 13230-4, EN 14587-1, EN 14587-2, EN 14730-2, AREMA capítulo 4**, etc.
- SUPPORTS AND SLEEPERS: **EN 13230-2, EN 13230-3, EN 13230-4, AREMA chapter 30, AS 1085.14**, etc.

FEATURES AND ADVANTAGES

TESTING FRAME

- High stiffness design including the standard bending device (3 points) and an integral protection system, with side doors for the introduction of the sample (rail). The doors are equipped with electric safety locks.
- As Sistema hidraulico y actuador an option, additional test devices can be incorporated such as: extended lower plate for sleepers test, 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 20% 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 travel by a high-response servo valve.
- 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, double-rod hydraulic cylinder (with symmetrical chambers). The piston is coated with an anti-friction material and it is driven by the hydrodynamic cushion. A contactless sealing bushing allows very low friction and minimum stick slip.
- Low friction 2nd stage sealing and scraper are designed to allow high speed any high motion frequencies.

CONTROL ESLECTRONICS

- The system incorporates the new ***MD5i*** control electronics with 24-bit resolution and 10 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 stiffness force transducer for static and dynamic testing.

Stroke Transducer

- Magnetostrictive linear position sensor, absolute, non-contact, digital output, with direct mounting inside the piston, resolution 0.5 µm.

Safety

- Protection including side doors with electric safety locks that allow the introduction of the specimens in an easy way and a total security during the test.
- Complete system alarmas (Temperature, Oil level, Dirty filter detection, pressure filter, maximum pressure, etc) integrated with control software for safety stops and test protection.
- Hydraulic piston safety lock system that immediately stops the piston in case of electrical failure to protect system and the test sample.

Maintenance and Support

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

Options:

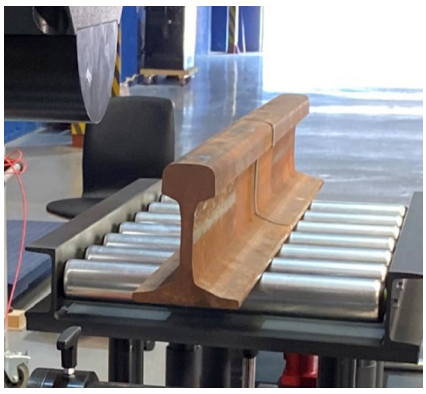
- The UCRD-6i remote control (optional) allows simple testing without a computer. 15 Function keys: Up, Down, Stop, open and close jaws, configurable keys (machine control) and DigiPoti for precise movement control.
- Special extended frame version "E", to perform bending tests on sleepers and concrete supports.

MODELS AND FEATURES

MODEL	MFDIB-500	MFDIB-1000
Maximum traction-compression force	± 500 kN	± 1000 kN
Force measurement	High stiffness strain gauge force transducer for static and dynamic 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 stiffness by means of 4 columns	
Vertical distance on the 3-point bending device [1]	0 -1000 mm	0 -1000 mm
Measurement of the piston position.	0-250 mm	0-250 mm
Position transducer	Magnetostrictive transducer. Inside piston mounting. Resolution: 0.5 micron	
Piston stroke	250 mm (±125 mm)	250 mm (±125 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[4] (Width x Depth x Height)	2030 x 1300 x 2747 mm 3000 x 1300 x 2747 mm[5]	2030x 1300 x 3115 mm 3000 x 1300 x 3115 mm[5]
Approx. weight without testing devices	6950 Kg 8600 kg[5]	7500 Kg 9400 kg[5]

NOTES:
(1) Greater distances are possible on request.
(2) Other strokes available
(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.
(5) "E" version for rails and sleepers (with extended load frame).

Other machine configurations on request.



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

View of a sleeper during the under-rail section fatigue test