

Test systems for the railway industry | PFIB series

INTRODUCTION

The PFIB series of testing machines enables static tests to be performed supports and concrete sleepers (ties).

TEST STANDARDS

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

- 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).
- Hydraulic system and actuator as an option, additional test devices can be incorporated such as: tensile, 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 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 *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 stiffness force transducer for static testing.

Stroke Transducer

- Digital linear position sensor, digital output, resolution 1 μ m.



Safety

- Complete system alarms (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-8i remote control (optional) allows testing without a computer. 16 Function keys: Up, Down, Stop, open and close jaws, configurable keys (machine control), DigiPoti for precise movement control and a 400x200 pixel colour touch screen.



Flexural static tests

- Rail set section positive load test
- Centre section negative load test
- Centre section positive load test

Load is applied perpendicularly to the base of the sleeper.

The sleeper must pass a test routine with incremental load steps without permanently cracking.

MODELS AND FEATURES

MODEL	PFIB-500	PFIB-750
Maximum traction-compression force	± 500 kN	± 750 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 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 ²	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)	2000 x 900 x 2890 mm 6560 x 900 x 2890 mm ⁵	2000x 900 x 3050 mm 6560 x 900 x 3050 mm ⁵
Approx. weight without testing devices	2750 Kg 3225 kg ⁶	3100 Kg 3575 kg ⁶

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) Dimensions including specimens feeding system.

(6) Weight including: Testing machine frame, feeding system, trolley for sleeper and supports.

Machine **PFIB-500**, with frame and specimens feeding system

