

Electromechanical Creep Testing Machines IB-CREEP Series

▶ Capacity: 10 - 200 kN



S.A.E. IBERTEST

Made in Europe (Spain)
Since 1970

www.ibertest.com

Introduction

Electromechanical machine especially designed for creep testing, relaxation, low fatigue, etc. According to: ISO 204, ASTM E139

New optimised design of our IB-CREEP series which leads our machines a big step beyond, placing them as one of the most advanced Creep testing machines in the world.

- › **Always forward.** Fully renovated Furnace.
- › **Powerful and intuitive.** New advanced furnace control system.
- › **Higher efficiency.** Improved energy efficiency of the machine.
- › **Robust and reliable.** Increased stiffness of the entire system.
- › **Save space and intelligent design.** Integration of electronics into the machine frame.
- › **Easy adjustment of Setpoints.**

Application

New IB-CREEP series provide you a wide range of testing possibilities into the branch of Creep tests.

- › Creep tests.
- › Relaxation tests.
- › Creep rupture tests.
- › Creep crack tests.
- › Long-term tests.
- › Low cycle fatigue tests (LCF).
- › Ask for other specific test.

NEW: ALL in One touch PC interface

New user interface, with embedded touch screen PC, modern, user-friendly and with improved performances.

An alternative to conventional table top PC's, placing together a compact design with touch screen, with all the performances of other systems.

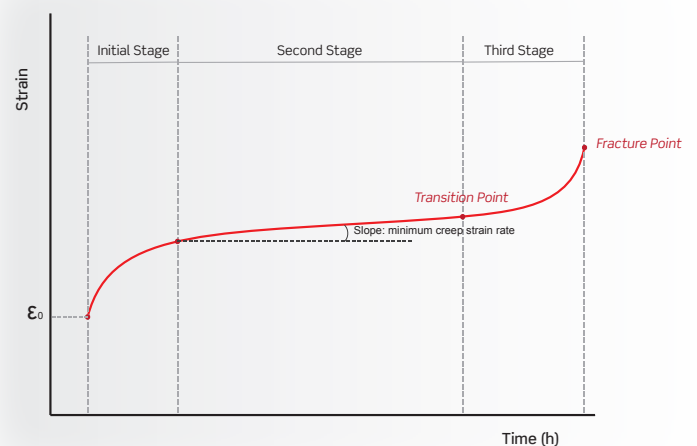
This system is directly fitted to testing frame with an orientable support, reducing space requirements and offers an ergonomic working position for machine operation as well as for testing devices management.



IB-CREEP 30. Maximum Capacity 30 kN.

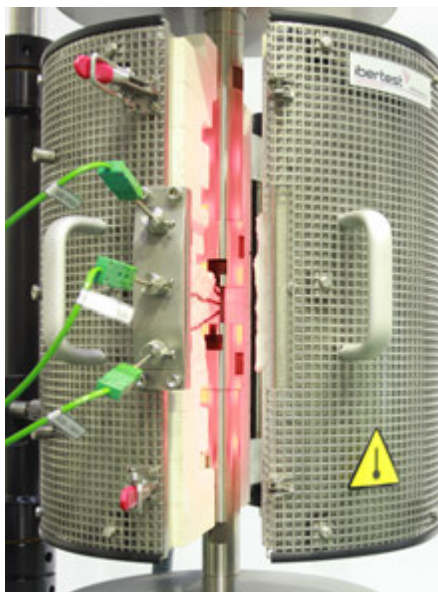
Creep Testing.

The “Creep Test” is performed on a specimen. In simple terms, the specimen is heated up to a temperature between 300°C and 1200°C depending on material. Once the temperature set-point is reached, a constant load is applied to exert a longitudinal force on the grain structure of the material. The load is maintained for the period of the test or until the specimen ruptures. During the test, data is continuously monitored and recorded to qualify the stability of the temperatures, load and specimen elongation.



Technical specifications for IB-CREEP 10 - 200

SERIE	IB-CREEP					
Maximum load	10 kN	20 kN	30 kN	50 kN	100 kN	200 kN
Load measurement	Universal strain-gage load cell (tension-compression).					
Load cell Repeatability	Better or equal to $\pm 0.05\%$					
Measuring Range	1 % to 100 % of the load cell nominal capacity (autoescale)					
Class	0.5 according to ISO 7500 - Meets ASTM E-4					
Strength Resolution	5 dígits with floating coma					
Number of Guiding columns	2					
Screw drivers	1 high precision ball screw drivers with scrapers					
Displacement speed range	Between 0,001 and 100,00 mm/min (Other speed are possible request)					
Displacement measurement	Encoder					
Displacement resolution	5 dígits (3 integers and 2 decimals) : $\pm 0,001$ mm					
Power supply	Three-phase 380 V plus neutral and earth, 50/60 Hz (to specify)					
Power consumption without furnace	≤ 500 W	≤ 500 W	≤ 500 W	≤ 500 W	≤ 1000 W	≤ 1000 W
Emergency stop	" Mushroom " type, placed on the testing frame					



Performing the creep test



Typical steel specimen for creep test



Specimen before and after test

New Furnace

The fully renovated furnace for CREEP testing machines together with its control system setting up one of the most advanced furnace for high temperature tests worldwide.

Temperature control and regulation system that assure an homogeneous and steady temperature applied on the sample with temperature variation control $< 0,5^{\circ}\text{C}$.

- High temperature furnace.
- Working temperature: 300 to 1200 $^{\circ}\text{C}$.
- High Stability during long-term tests.
- Length of controlled temperature zone: 300 mm.
- Temperature Gradient $< 3^{\circ}\text{C}$.
- External temperature of the furnace $< 50^{\circ}\text{C}$.
- Internal dimensions: 70 mm diameter x 340 mm length.
- External dimensions: 320 mm diameter x 410 mm length.
- Temperature measurement: through 3 Thermocouples directly over the sample.
- 1 thermocouple for safety system.
- Isolated thermocouples inputs.
- Intelligent temperature control and recording system.
- Temperature limits with visual and sound alarms.
- Allows autonomous temperature control.

New control system for IB-CREEP developed by IBERTEST

- Based in ramp programmers for temperature scales.
- Control over: temperature/time
- Adjustable PID
- Control unit based on PLC with integrated touchscreen
- 10.4", 16 bit 65,000-Color Touchscreen, Resolution 800 x 600 (SVGA) TFT display
- White LED illuminated screen
- I/O Expansion Module Adapter, Isolated
- I/O Expansion Module 8 Analog/Thermocouple Inputs
- I/O Expansion Modules 8 Inputs, 8 Outputs



IB-CREEP High temperature furnace



IB-CREEP-50 upper crosshead with spherical bearing and new furnace.



Furnace articulated support

Furnace, New Control Features

New control Features of furnace including a powerful PLC with a built-in HMI Operator Panel comprising a 10.4" color touch-screen for visualizes and control furnace temperature. Independent graphics of each heating zone and thermocouple. Easy and quick configuration of setting points temperatures.

Other features:

- › Possibilities of Cellular Communication- SMS, GPRS (on request)
- › Possibility of Web Server, to visualize and control via web or intranet. (on request)
- › Upgradeable firmware, Alarms, & Multilanguage Support.



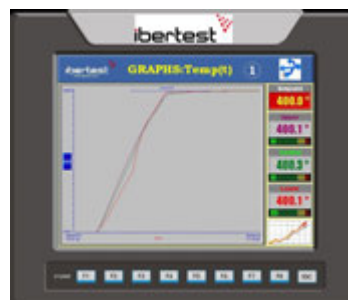
Testing Screen, rest state



Testing Screen, 3 zones heating



Easy and fast PID configuration



Full on-screen Temperature curve



Zoom function on temperature curve for more details



Possibility to enable and disable heating zones or thermocouples during test

Pull Rods and Adapter

The fixing of specimens is very important in order to have an accurate determination of material properties. During CREEP tests, very high temperatures are reached, therefore it is necessary that elements that hold the specimen are thermally stable and enough resistance.

For this reason SAE IBERTEST made its poll rods and adapters of superalloys such as INCONEL, Hastelloy, SERATHERM, etc.

Shoulder-headed specimens*



Spherical bearing

The upper pull rod is joined to a spherical bearing in order to assure the application of perfectly axial loads.



Threaded head specimens*



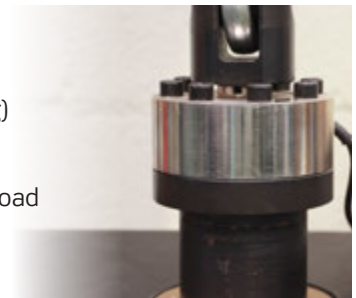
Clevis couplings - Flat specimen*



* SAE IBERTEST manufactures pull rods and adapters for specimens according to main standards from EN, ASTM, ISO, GOST, etc.

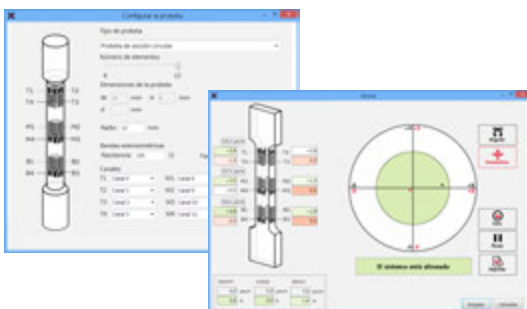
Load Cell

- › Symmetrical Design
- › Electronic, Plug and Play™-Type (Calibration and technical data are saved in sensor plug)
- › High accuracy (Linearity, Repeatability, Resolution) acc. to ASTM E 4 and ISO 7500-1
- › High measurement range in class 1 acc. to ISO 7500-1 from 0.5 %100% of nominal load



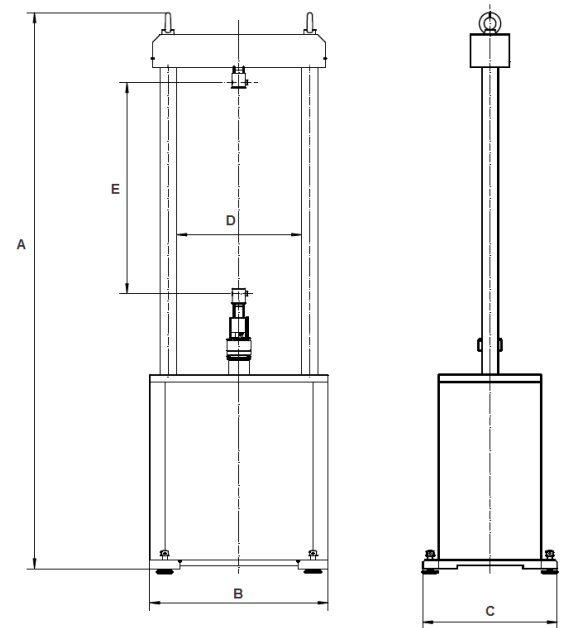
AlignTest (optional)

- › Optional alignment device
- › Precise axial alignment.
- › Optional axial alignment calibration according to ASTM E 292 and NADCAP requirements.



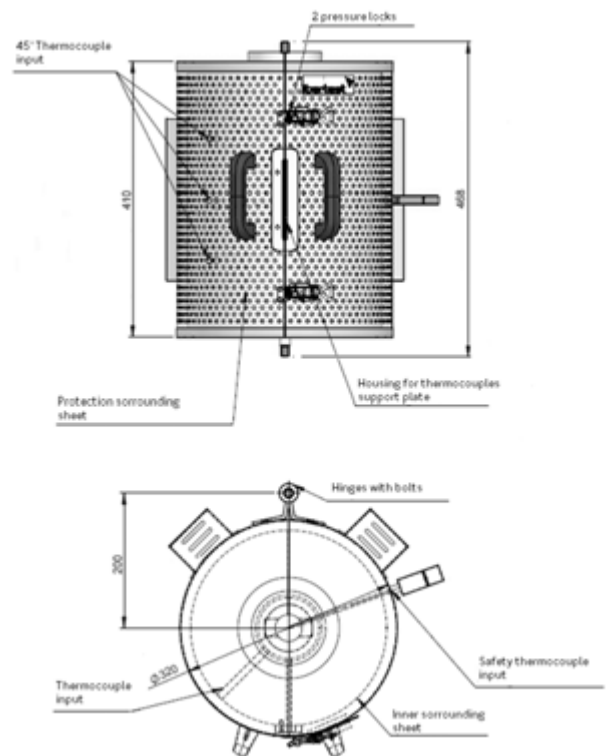
Machine

SERIE	IB-CREEP					
Version	10 kN	20 kN	30 kN	50 kN	100 kN	200 kN
Height (A)		2350 mm			3172 mm	3525 mm
Width (B)		710 mm			958 mm	1065 mm
Depth (C)		635 mm			857 mm	952 mm
Dist. between columns (D)		500 mm			675 mm	750 mm
Maximum travel (E)		mm			mm	mm
Approx Weight (without furnace)		750 kg			1000 kg	1125 kg



Furnace

SERIE	IB-TRX3-13
Maximum working temperature:	1300 °C
Maximum working temperature for continuous works:	1200 °C
Accuracy:	±1°C
Fluctuation of temperature control:	±2°C
Homogeneity in 100 mm:	±5°C
Independent heating zones	3 (100 - 100 - 100 mm)
Internal dimension (height):	300 mm
Exterior dimensions:	410 mm (height) x 320 mm (diameter)
Junction box dimensions:	240 mm (height) x 80 mm (width) x 50 mm (depth)
Upper hole diameter:	70 mm
Lower hole diameter:	40 mm
Inner hole diameter:	90 mm
Power:	1.95 kW
Power supply:	Three Phase 400 V + N+ G. 50/60 Hz



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c/ Ramón y Cajal, 18-20
28814 Daganzo de Arriba
Madrid - Spain

Tel. +34 918 845 385
Fax. +34 918 845 002
E-mail: info@ibertest.es

www.ibertest.com

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