



FOUNDRAx

Fast, accurate Brinell hardness testing
Production Brinell hardness testing machines
Helios and BRINscan ranges

*Introducing
the new range
of Helios
Brinell
hardness
testers!*





0231

Welcome to Foundrax

Foundrax offer the highest performance Brinell hardness measurement equipment in the industry; built to thrive in the toughest of industrial production environments. As Brinell test innovators and specialists, we have been meeting our customers' requirements for over 65 years.

The Foundrax Brinell hardness testing range extends from the smallest accessories to very large, custom-designed machines incorporating the latest version of our revolutionary, automatic, optical Brinell measurement technology – the Foundrax BRINtronic system.

For many years we have worked with both national and international bodies, including several primary national laboratories, the British Standards Institution and the International Standards Organisation.

The BRINscan and all-new Helios ranges are designed by people who understand your working environment, whether it's a foundry, forge, steelworks, heat treatment plant or laboratory. All machines in this range are available with either a Type D, closed loop, optical test head (with integral BRINtronic Brinell microscope) or Type B, closed loop, non-optical test head. The machines feature heavy-duty construction for optimum reliability and safety and the BRINscan range can apply an independent clamp force of up to 3500 Kgf to eliminate the risk of movement under load.

The internal components of the Type B and D test heads are rated at over 4x factor of safety and most of the body of the BRINscan range is fabricated from plate 25mm thick. The load cell is custom-designed for Brinell hardness testing and is rated for over 10 million cycles.

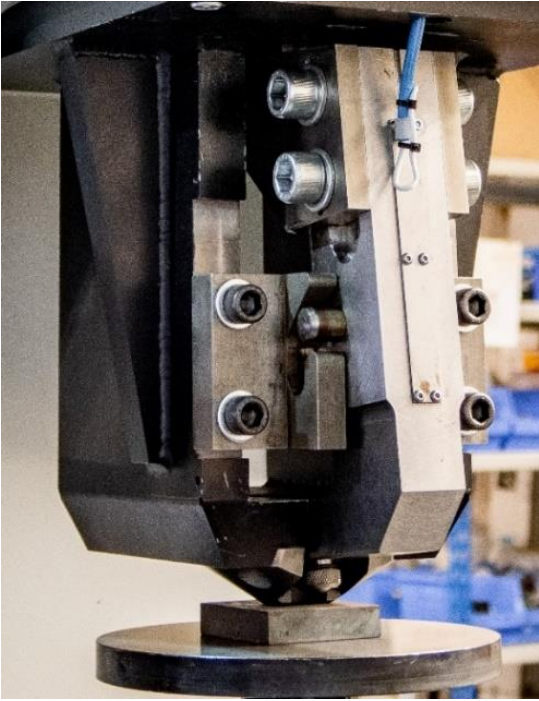
We regularly custom-design complex, multi-functional machines around specific components and requirements.

The New Helios Range of Production Brinell Hardness Testers

The new Helios range has been designed and engineered to perform reliably in tough industrial environments, enhancing productivity for both in-line and off-line testing of materials. Encompassing the durability, accuracy and repeatability of Foundrax's classic 400 series, with updated components and software in a re-engineered body, the Helios machines are the obvious choice for most industrial applications. There is a choice of test heads of available, either a single phase 100-240V stepper-motor driven test head (as standard) or, by special arrangement, our 3 phase 380-415V servo-motor driven test head.

There are two models in the range – the Helios B and the Helios D. Both machines are fabricated from 12mm steel plate for rigidity and strength. The Helios D features all the above plus an integral, automatic BRINtronic microscope for instant, reliable, repeatable measurement and recording of the results. This ensures that Brinell hardness testing can be achieved quickly and accurately with no operator influence on either the test process or the recording of the results. Both models are available with a powered lead screw for applications where the testing of heavier components or higher rates of testing are required. The lead screw is anchored to the throat of the machine by a slideway to protect it from accidental damage that could occur due to poor jiggling or incorrect loading of the component.





Helios test head during bench trials, with covers removed to show heavy-duty construction and machine strength. This test head has been continuously refined and remains the industry benchmark for heavy-duty applications.

Specifications

Helios B

Test height 460mm

Throat depth 250mm

Nominal overall dimensions 1690(H) x 900(D) x 400(W)

Net weight 560kg (approx.)

Helios D

Test height 460mm

Throat depth 250mm

Nominal overall dimensions 1690(H) x 900 (D) x 400 (W)

Net weight 650kg (approx.)

Electrical supply

400V AC 3 phase or 240V AC single phase or your plant supply by arrangement (dependent upon test head options)

Available Hardness Scales

10/3000
10/1500
10/1000
5/750
10/500
10/250
5/250
2.5/187.5
2.5/62.5

The BRINscan Range of Heavy-Duty Inline / Offline Production Brinell Hardness Testers

The latest BRINscan model, the MkV, features either the Type B or Type D closed-loop test head and offers heavy duty, rugged reliability with the option of multiple test forces.

The test forces are transferred vertically through the frame of the machine and – unlike most other machines which feature a moving test head and fixed test table – are not subject to a moment due to an offset load acting on a slideway or similar.

The BRINscan range is used in steelworks all over the world and is proven to offer incomparable levels of reliability. Most of the machine body is fabricated from heavy-duty steel plate 25mm thick and will withstand the type of accident that could only happen in a steelworks: One example of the BRINscan was hit by a fork-lift truck and shunted over three metres and through a brick wall but was still in calibration when examined by our engineers.



The latest generation of the BRINscan range, the MKV Brinell hardness tester, offers fully automatic indentation measurement and recording of test results and is built for the toughest of heavy-duty industrial applications.

The machines are designed to clamp the test component with a force greater than the test force, to ensure there is no possibility of movement during the indentation cycle. When working in HBW 10/3000 the clamp force is approximately 3500 Kgf. The test table itself can easily withstand well over 10 tonnes. The machines exceed the requirements of ISO-6506 and ASTM E10 with the Type B and Type D test heads offering near National Standard levels of accuracy and repeatability of force application.

Applications

- In-line testing
- Fully automatic testing without operator intervention
- High-volume, high-speed testing

Features

- Integral automatic BRINtronic microscope for instant, reliable, repeatable results (Type D test head only) that exceeds all international Standards.
- Fixed test table that can support components weighing up to 10 tonnes.
- Independent systems for clamping and indenting so the test force is not influenced by the clamping force.
- 3500kg clamping force through an overhead actuation system ensures no movement of the test component (the clamping system has been field-proven over more than 30 million test cycles).
- ISO 6506 and ASTM E-10 compliant indentation and measurement.
- Unrivalled build-quality; fabricated from 25mm steel plate for rigidity and strength.
- Test forces from HBW 2.5/187.5 to 10/3000.
- Optional Type B or Type D test head.

Benefits

- Fully automatic system gives total operator independence.
- Ultra-rugged; designed for the most arduous production environments.
- Automation enables high-throughput testing.
- Easy to integrate into an automatic line.
- Designed with over seven decades of Foundrax experience and expertise.

Electrical supply

- 400V AC 50Hz 3 phase + Neutral + Earth 16A max (we can match your plant supply by agreement)



One example of the BRINscan Mk III tested every link in every tank track used by the British Army over a 35-year period, with only one breakdown, ever. The machine was still working flawlessly when 'retired' as a precaution.

The BRINtronic System

Foundrax invented automatic Brinell indentation measurement in the early 1980s. The system, which revolutionised the Brinell test—with benefits across multiple industrial sectors—has been enhanced repeatedly since its launch and continues to exceed the requirements of the International Standards.

The BRINtronic gives a level of accuracy, reliability and repeatability of results that is the industry benchmark and requires only annual reverification. Removing any need for the operator to change the type of illumination (for example switching between ring light illumination and overhead lighting) eliminates the risk of incorrect measurements due to set-up error and thus the requirement for frequent reverification to meet the Standards.



When using the BRINtronic system just a few seconds of preparation with a hand grinder is all that is required to prepare surfaces for testing.

The software features numerous traps and self-checks, to ensure that the indentation measurements are validated in a number of independent ways. The principle behind the design is that the system gives you the right answer or no answer and that, in the very rare event of doubt, the answer is either withheld or the operator is clearly warned (for example if the measurement is attempted on an unprepared surface) and, even then, the result should only vary by one or two points from the optimum. The BRINtronic optically measures the indentation under the toughest industrial conditions and the user-friendly software gives the operator warnings if any parameters are in doubt.



The BRINtronic system is also available in a range of separate microscopes offering the same functionality in a portable unit. Pictured is the BRINtronic NEO. Launched in 2021, the NEO is already proving its worth in steelworks around the World.

On the shop floor or in the laboratory, the measurement of the indentation is the key to reliable results. Almost 40 years of experience of automatic measurement has refined an algorithm that makes hundreds of accurate indentation diameter measurements every time on surfaces with only minimal preparation. Quicker surface preparation means lower costs and higher productivity.

The BRINtronic system features a simple, intuitive, icon-driven interface and is quick to move between test screens, batches and alternative test parameters. It will automatically evaluate the quality of the surface preparation and warn the user if it is not good enough (although this is very unusual). It can summarise the batch reports with or without individual test results, including displaying the batch size, batch mean, standard deviation and the number of high and low rejects. The system is fully networkable and can communicate with a remote computer and upload / download batch data.

The BRINtronic demonstrably finds the indentation more effectively and the edge more reliably than any other automatic Brinell microscope. It recognises and ignores noise from grinding marks across all normal industrial test surfaces, so you don't need to worry about alignment of the grinding marks for reliable results. As it can measure on all normal surfaces, standard reference blocks are all that is needed and the surface preparation required on test materials takes five seconds of work with a hand grinder.

The Advantages of the BRINtronic System

- Very low uncertainty of measurement gives reliable, accurate, repeatable results
- Works as well on rough surfaces as on mirror finishes
- Operator-independent results, whoever is operating, and no operator adjustments required
- Quick changeover between batches and parameters
- Surface preparation evaluation and warning (if required)
- Ovality detection in accordance with user-defined parameters
- Displays results in HBW and mm instantly
- Provides results to 2 decimal places (HBW) and two or four decimal places (mm) as well as batch mean, standard deviation
- Offers batch summary reports (batch size, batch mean, standard deviation, number of high and low rejects) with or without individual test results
- Multi-language user interface
- Single tests or batch testing
- Uses up to 600 diameters to calculate the mean — even in the worst cases it will still use approximately 50.
- Will refuse to give an answer if insufficient diameters can be measured
- Detects and highlights ovality as required by ASTM E10-18
- Measures indentations from 0.6mm to 6mm
- Software traps prevent incorrect results—an accurate result or no result
- Allows results to be uploaded live to network and batch set up for remote selection

- Offers customised batch parameters and reports
- Easily integrated into production quality control systems
- Measures indentations made on all materials to which the standards are relevant
- Simple icon-driven software
- Tailored support—special requirements are easily catered for
- UKAS certified to ISO 6506-2: 2018 and ASTM E10-18

Brinell Test Heads

All test heads in the Foundrax range are subjected to rigorous bench-testing and the design has been field-proven in the most arduous operating environments around the Globe. The Helios machines are offered with two different types of test head, one is a three phase, servo motor-based test head and the other is our new single phase, stepper motor-driven test head. The servo system has been in use for many years and field-proven in high intensity applications. The stepper motor version has performed well over 350,000 test cycles in trials and is very robust and reliable. The BRINscan heads are exclusively servo motor driven.

The servo system requires 380-415V 50Hz 3ph electricity supply (5 wire-3 phases, neutral and earth). The stepper motor system requires a 100-240V 50/60Hz single phase supply.

Many closed loop Brinell hardness testers on the market use an 'off the shelf' load cell run at significantly over capacity to monitor the test force, meaning extra vulnerability and giving reduced reliability in the long run. Foundrax's load cells are designed specifically for the forces created during Brinell testing and are rated for accuracy, repeatability and reliability at tens of millions of normal test cycles.

Both test heads feature a heavy duty ballscrew, for totally smooth force application and ease of force control, which is rated at approximately 12 tonnes static load for ultra-long life. The servo motor and servo drive are manufactured by Emerson to allow worldwide support. The test cycle is fully automatic and authentic with no operator influence over the indentation or (in the case of the Type D) the measurement process.

Problem Recognition and Fault Detection:

The Type B and D test heads both offer problem recognition / fault diagnosis as standard including:

- Load cell communications failure (for example if a cover is removed and a cable is accidentally damaged).
- Motor failure. / motor torque overload.
- Load application profile error: indication that the test force application process has failed (for example if there is movement in the component or frame under test).
- Problem Recognition & Fault Detection.
- Both the servo motor drive and PC offer Ethernet ports for easy networking and system integration.
- Electricity supply 380-415v 3ph 50Hz (3 phases, neutral and earth) or customer supply by specific agreement.
- The Type B and D test heads are supplied calibrated according to ISO 6506 & ASTM E10 in any two suitable Brinell scales, unless otherwise agreed, although extra scales are available at extra charge.

The Type D Test Head

The Type D test head includes an integral BRINtronic automatic Brinell microscope and offers reliable and repeatable operator-independent optical indentation measurement. In the Type D, the optical components and indenter are housed in a heavy-duty steel fabrication to give excellent protection, the top plate and side plates of the fabrication are 25mm thick and given further robustness by webs on each side. The base plate of the fabrication is 30mm thick. A hardened clamp face is fitted to the base of the fabrication base plate. When not in use, the indenter withdraws behind the clamp face for added protection.

On the Type D the indenter arm moves into place to make the indentation and is held securely by two further cam plates which act as both guides and added protection, although the indenter arm itself is over 40mm thick and almost 60 mm deep over most of its length.

The load cell is built directly into the indenter arm and located close to the indenter ball to ensure no interference whatsoever in the force monitoring process. The force monitoring process uses a specially developed algorithm to give enhanced reliability and failsafe protection and can monitor the force application approximately 125 times per second.

The automatic authentic optical measurement of the indentation in the Type D is performed using an integral Foundrax BRINtronic, fully automatic Brinell microscope which is fully networkable to allow for automatic downloading of batch parameters and uploading of results to the customer network if required.



The Type B Test Head

The Type B test head is for indentation only and can be manufactured with an extra-long narrow clamp to allow access to recess in components over 300mm deep.

The Type B is a simpler design than the Type D but again the load cell is custom designed and sits directly above the indenter. As with the Type D, the test head is protected by a heavy-duty housing suitable for the toughest industrial environment.

FOUNDRAX

- **The World leader in Brinell hardness testing equipment**
- **Pioneers in Brinell hardness testing for over 60 years**
- **Inventors of the World's first, fully-automatic, optical Brinell microscope, a revolutionary development in the history of Brinell testing**
- **The only company manufacturing everything from UKAS-certified reference blocks to National Standard-level calibration machines**
- **Influential in the development of hardness testing standards in ISO and BSI as well as ECISS, Foundrax remains at the forefront of Brinell test machine development through continuous research**

© Foundrax Engineering Products Ltd 2022

sales@foundrax.co.uk

+44 (0)1458 274888