Duramin-3000

Instruction Manual

Manual No.: 16677025
Revision B

Date of Release: 2019.03.20

Original instructions.

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Intended use

Macro hardness tester for Macro hardness testing of solid materials. The machine is designed to be used with indenters specifically designed for this purpose and fixed in the test head. Samples are secured on a fixed anvil or optional manual XY-stage.
For load ranges 62.5 – 3,000 kgf.
The hardness tester meets the applicable DIN, ISO-EN, ASTM and JIS standards.

The machine is for use in a professional working environment (e.g. a materialography laboratory).

Model: Duramin-3000

NOTE:
READ the instruction manual carefully before use.
Keep a copy of the manual in an easy-to-access place for future reference.

Always state *Serial No* and *Voltage/frequency* if you have technical questions or when ordering spare parts. You will find the Serial No. and Voltage on the type plate of the machine itself. We may also need the *Date* and *Article No* of the manual. This information is found on the front cover.

The following restrictions should be observed, as violation of the restrictions may cause cancellation of Struers legal obligations:
Instruction Manuals: Struers Instruction Manual may only be used in connection with Struers equipment covered by the Instruction Manual.

Struers assumes no responsibility for errors in the manual text/illustrations. The information in this manual is subject to changes without notice. The manual may mention accessories or parts not included in the present version of the equipment.

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Duramin-3000
Safety Precautions[1]

Read carefully before use

1. Ignoring this information and mishandling of the equipment can lead to severe bodily injuries and material damage.
2. The operator(s) must read the Safety and User's Guide sections of this manual and the relevant sections of the manuals for any connected equipment and accessories.
3. The machine must be installed in compliance with local safety regulations.
4. The machine must be placed on a safe and stable support. Failure to do so can affect the proper working and cause the equipment to fall down and/or cause accidents and injuries. All safety functions and guards of the machine must be in working order.
5. Service and repairs can only be carried out by Struers or trained technicians, authorised by Struers.
6. Do not modify this equipment. Doing so can cause fire and/or electric shock.
7. Do not twist or damage the power cords. Damaged power cords can cause fire and/or electric shock.
8. Do not disassemble this equipment. Doing so can cause electric shock.
9. Do not operate the equipment at a voltage other than the power voltage that is indicated. Doing so can cause fires.
10. Do not allow the machine to become wet. Fires can occur if water gets inside the equipment.
    If water or other liquid does get inside the equipment, turn off the power to the equipment's main unit, disconnect the power supply, and call technical service.
11. In case of fire, cut power and alert bystanders/fire brigade. Use a powder fire extinguisher. Do not use water.
12. If malfunctions, smoke or unusual noises are observed - turn off the power, disconnect the power supply and call technical service.
13. Do not connect / disconnect power with wet hands. Doing so can result in electric shock.
14. Disconnect the power supply prior to any cleaning, maintenance or service.
    Failure to do so can result in electric shock.

[1] From Safety Precaution Sheet, Revision A

15. Do not open any panel on the machine while it is powered on. High voltages exist inside the machine and may cause electrical shocks to personnel.
16. If two persons work together, make sure to communicate clearly to avoid injuries.

The equipment should only be used for its intended use and as detailed in the Instruction Manual.
The equipment is designed for use with accessories supplied by Struers. If subjected to misuse, improper installation, alteration, neglect, accident or improper repair, Struers will accept no responsibility for damage(s) to the user or the equipment.

Dismantling of any part of the equipment, during, service or repair, should always be performed by a qualified technician (electromechanical, electronic, mechanical, pneumatic, etc.).

Icons and typography

Struers uses the following icons and typographical conventions.
A list of the Safety Messages used in this manual can be found in the chapter on Cautionary Statements.

Always consult the Instruction Manual for information on the potential hazards marked by the icons fixed to the machine.

Icons and Safety Messages

ELECTRICAL HAZARD
indicates an electrical hazard which, if not avoided, will result in death or serious injury.

DANGER
indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

WARNING
indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

CAUTION
indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

CRUSHING HAZARD
indicates a crushing hazard which, if not avoided, could result in minor, moderate or serious injury.

EMERGENCY STOP

General Messages

NOTE:
indicates a risk of damage to property, or the need to proceed with special care.

HINT:
indicates additional information and tips.

Colour Inside Logo

The 'colour inside' logo on the cover page of this Instruction Manual indicates that it contains colours which are considered to be useful for the correct understanding of its contents.
Users should therefore print this document using a colour printer.

Typographic conventions

Bold type	indicates button labels or menu options in software programs
Italic type	indicates product names, items in software programs or figure titles
Blue text	indicates a link to another section or webpage
■ Bullets	indicates a necessary work step

User's Guide

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1. Getting Started

Device Description

Duramin-3000 is a single task hardness tester, specifically developed for Brinell testing for all types of stable and non-explosive metals.

The test operator starts the procedure by positioning – and possibly securing - the sample/specimen to the anvil or stage. A wide range of clamping tools and vices are available to fit your needs.

Via the included software, the operator selects the test type on the touch-screen. When the operator tightens up the sample against the indenter, the test starts.

Via the handheld camera, the software calculates the value and stores it on the internal hard drive. Afterwards, the data can be moved to a memory stick or to a network drive.

In the unlikely situation of an accident or unforeseen incident, the operator can activate the Emergency stop to power off the machine.

Unpacking Duramin

Refer to the **DURAMIN-3000: HOW TO UNPACK** instructions delivered with Duramin.

HINT:
Take care when unpacking and handling Duramin.
Do not expose to external impact.
Do not tilt over 30 degrees.
Do not touch the turret.

- Carefully open and remove the top of the packing crate.
- Remove the sides of the packing crate.
- Remove the accessories case(s).

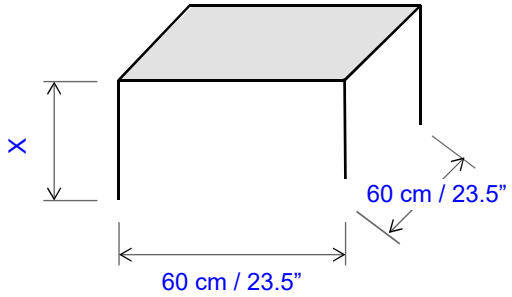
HINT:
Store the packing crate, foam packaging and fittings for future use. Failure to use the original packaging and fittings could cause severe damage to the tester and will void the warranty.

Location

- Place the machine close to the power supply.
- Place the machine on a rigid, stable workbench with a horizontal surface.
  The workbench must be able to carry at least 140 Kg / 308 lbs.

Recommended workbench dimensions

To facilitate easy access for service technicians, allow sufficient space around the machine.



Recommended workbench dimensions. Height of table (X) follows local preferences.

Vibration-free Location

- Install Duramin in a vibration-free location.

NOTE:
Vibrations cause inaccurate measurements and must be avoided..

Sources of vibration can include:

- Passers-by (persons walking past), a road with heavy traffic, cranes, equipment generating vibrations, equipment generating sound (acoustic vibration), exposure to wind or air conditioning fans.

If possible, install the hardness tester on the ground floor of a building and away from exits or doorways.

Lifting Duramin

A crane and lifting straps[2] are required to lift the machine from the packing crate.
The crane should have a minimum lifting capacity of 200 kg / 440 lbs.

NOTE:
Take care whilst unpacking and handling Duramin.
Do not expose to external impact.
Do not tilt over 30 degrees.
Do not touch the turret.

- Check that the crane has a free pathway from the lifting point to the final location.
- Place the lifting straps securely around the neck of the machine.
- Remove the bolts securing Duramin to the pallet.
- Carefully lift Duramin out of the packing crate.
- While hanging, install the 4 adjustable vibration dampers.
- Adjust the height of the dampers until they are of equal height.
- Lift Duramin into its final location.

[2] Straps must be approved to at least twice the weight of the machine.

Placing Duramin
Levelling

To eliminate possible wear and tear of the tester's mechanical structure, the tester should be levelled once it is in its final location.

- Check that the anvil / stage is level.

If not:

- Turn the vibration damper in the rear right hand corner to level the tester.

- Remove the top of the tester and cut the plastic strip that disables the actuator to move (refer to **DURAMIN-3000: HOW TO UNPACK** document – attached to the transport crate).
- Mount the top again.
-

NOTE*:*
Remember to secure the actuator with a plastic strip before moving or transporting the machine.
Failure to do so can cause damage to the Duramin.

Checking the Contents

In the packing crate you should find the following parts:

1 Duramin-3000 (Hardness Tester)
1 Accessories Case

Accessories Case

Indenter(s) (as ordered)
2 mm Allen key
Certificate of calibration (one per indenter)
1 Anvil
2 Fuse 3A slow
2 Power cables
4 Vibration dampers (feet)
1 Instruction Manual set

Optional Accessories

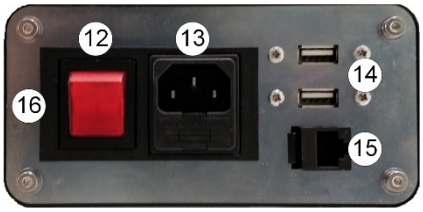
Please consult your order confirmation to check that all the accessories ordered are included in the delivery.

HINT:
Some components or parts may be packaged separately and may not be included in the accessory case or may have been installed on the hardness tester.
The actual packaging and accessories may appear different to those shown in the picture.

Getting Acquainted with Duramin-3000

Take a moment to familiarise yourself with the location and names of the Duramin-3000 components.

① Touch screen
② Indenter holder
③ Anvil
④ Spindle
⑤ Spindle hand-wheel
⑥ Emergency stop
⑦ Adjustable foot
⑧ Handheld camera connection
⑨ Maintenance
⑩ USB connection
⑪ QR code
⑫ Main power switch
⑬ Main power connection
⑭ PC connection. USB type B
⑮ Network connection
⑯ 3A slow fuse (behind hatch)



Handheld Camera

① Connection cable
② Measurement button
③ Foot

Camera Models

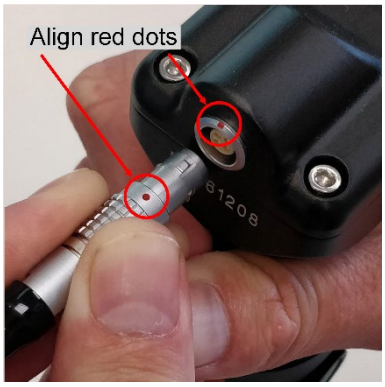
Low magnification camera.

High magnification camera

The feet for the low magnification camera have a large opening, whereas the feet for the high magnification camera have small opening.

Connecting the Camera

The camera connects to the machine via a cable.
It is important that the cable is aligned correctly – otherwise, the camera will not work.
A USB plug connects the camera to the machine via the port (8) on the right-hand side of the machine.



USB Drive and WiFi Adapter

The USB drive contains direct and indirect calibration documents.

Rear plate

Information on the model number, serial number, weight, date of manufacture, and power requirements can be found on the type plate on the back of the machine.

Noise Level

See Technical Data in the rear of the Instruction Manual for information on the sound pressure level value.

Supplying Power
Connecting the Tester

ELECTRICAL HAZARD

Switch the power off when installing electrical equipment.

The machine must be earthed (grounded).

Check that the mains voltage corresponds to the voltage stated on the type plate on the side of the machine.
Incorrect voltage may result in damage to the electrical circuit.

Power Socket

The mains power socket must be easily accessible and located between 0.6 m - 1.9 m (2½" – 6') above floor level. (An upper limit of 1.7 m (5' 6") is recommended).

Machine is shipped with 2 types of Mains cables:

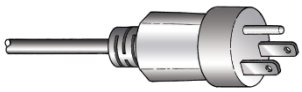
Single-phase Supply

The 2-pin (European Schuko) plug is for use on single-phase connections.

If the plug supplied on this cable is not approved in your country, then the plug must be replaced with an approved plug. The leads must be connected as follows:

Yellow/green:	earth (ground)
Brown:	line (live)
Blue:	neutral

3-phase Supply

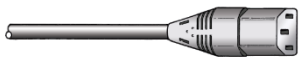


The 3-pin (North American NEMA 5-15P) plug is for use on 3-phase power connections.

If the plug supplied on this cable is not approved in your country, then the plug must be replaced with an approved plug. The leads must be connected as follows:

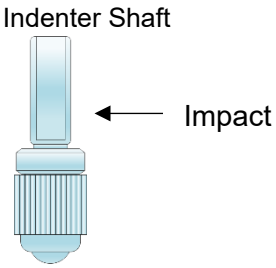
Green:	earth (ground)
Black:	line (live)
White:	line (live)

Connection to the Machine



- Connect the power cable to the Machine. (IEC 320 connector).
- Connect to the mains power supply.

Installing an indenter



Duramin-3000 is delivered with a pre-installed indenter as ordered.
To replace the indenter, follow these steps:

- Loosen the fixation screw and let the indenter slide out.
- Wipe the old indenter clean with a soft cloth and store it in its plastic container.
- Mount the new indenter. Make sure that the impact sits firmly against the head. Fasten the fixation screw.
- Perform a few hardness tests on a dummy sample to securely seat the indenter.

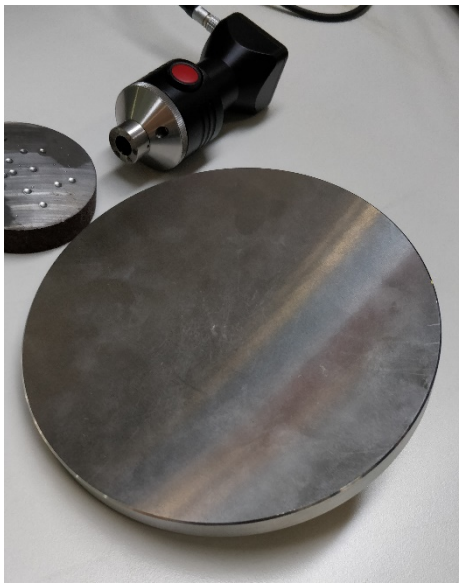
NOTE:
Use Struers accessories to ensure proper function.

Installing an Anvil

Use the appropriate anvil for the application.

Large Anvils

The large anvil has an inner thread that matches the spindle thread.
The large anvils come in several sizes.



- Check that there is enough room between the indenter and the spindle to install the anvil.

Loosen the tiny hex-bolt that keep the spindle cover in place.

Expose the threaded spindle.

- Use a soft cloth to wipe any dirt from the surfaces of the anvil and spindle.
- Gently, place the threaded shaft in the spindle and screw the anvil in.
- Pull the spindle cover to the top of the spindle and fasten it.
- Perform a few hardness tests on a test block to securely seat the anvil.

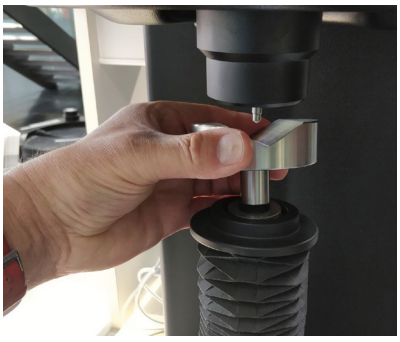
NOTE:
After heavy use, the anvil will seat itself thoroughly.

Small Anvils

V-type anvil for cylindrical samples (option).

Flat anvil for even samples. Several sizes available.

- Check that there is enough room between the indenter and the spindle to install the anvil.
- Use a soft cloth to wipe any dirt from the surfaces of the anvil and spindle.
- Carefully place the anvil into the spindle.
- Perform a few hardness tests on a test block to securely seat the anvil.



To (re)place the anvil, move the spindle sufficiently down and carefully place / lift the anvil from the spindle.

2. Basic Operations

Controls

MAIN SWITCH
The main switch is located on the rear of the machine.
The main switch will be illuminated when power is turned on.

Stop the test before it is completed (on the touch screen).

The **EMERGENCY STOP** is located on the front of the machine.
Emergency Stop
- Push the red button to Activate.
- Turn the red button clockwise to Release.

NOTE:
Do not use the Emergency stop for operational stop of the machine during normal operation.
BEFORE releasing (disengaging) the Emergency stop, investigate the reason for activating the Emergency stop and take any necessary corrective action.

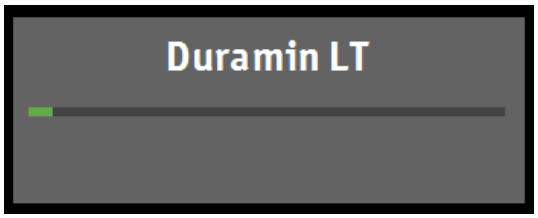
Software

Duramin-3000 is operated through the Duramin software.
A short description of the software is included in this manual.
Please refer to the Duramin software manual for a detailed description of the software functions.

HINT:
The software version number is displayed during start-up.

Start-up

- Switch Duramin-3000 on using the main switch at the rear. The Duramin software will initialize and the following progress bar will appear on the monitor:

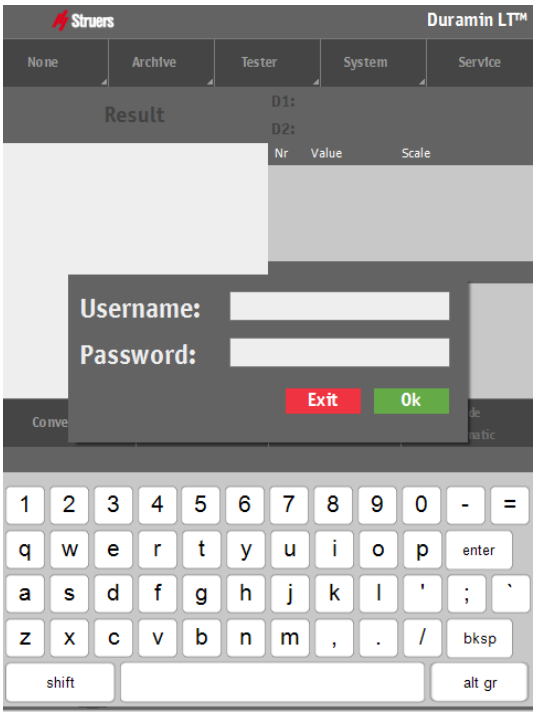


HINT:
Make sure that the emergency stop is not activated during start-up.

If the emergency stop is activated during start-up, a failure message will appear.

- Release the emergency stop.
- Press **System**, then **Exit**.
- Switch Duramin Off using the Main switch, then switch on again to start initialization.

The following screen will appear on the monitor.



HINT:
The actual screen may appear different depending on the configuration and model of the Duramin-40.

- Push gently in the middle of the designated buttons for tester operation. Do not use force. Do not use sharp objects.

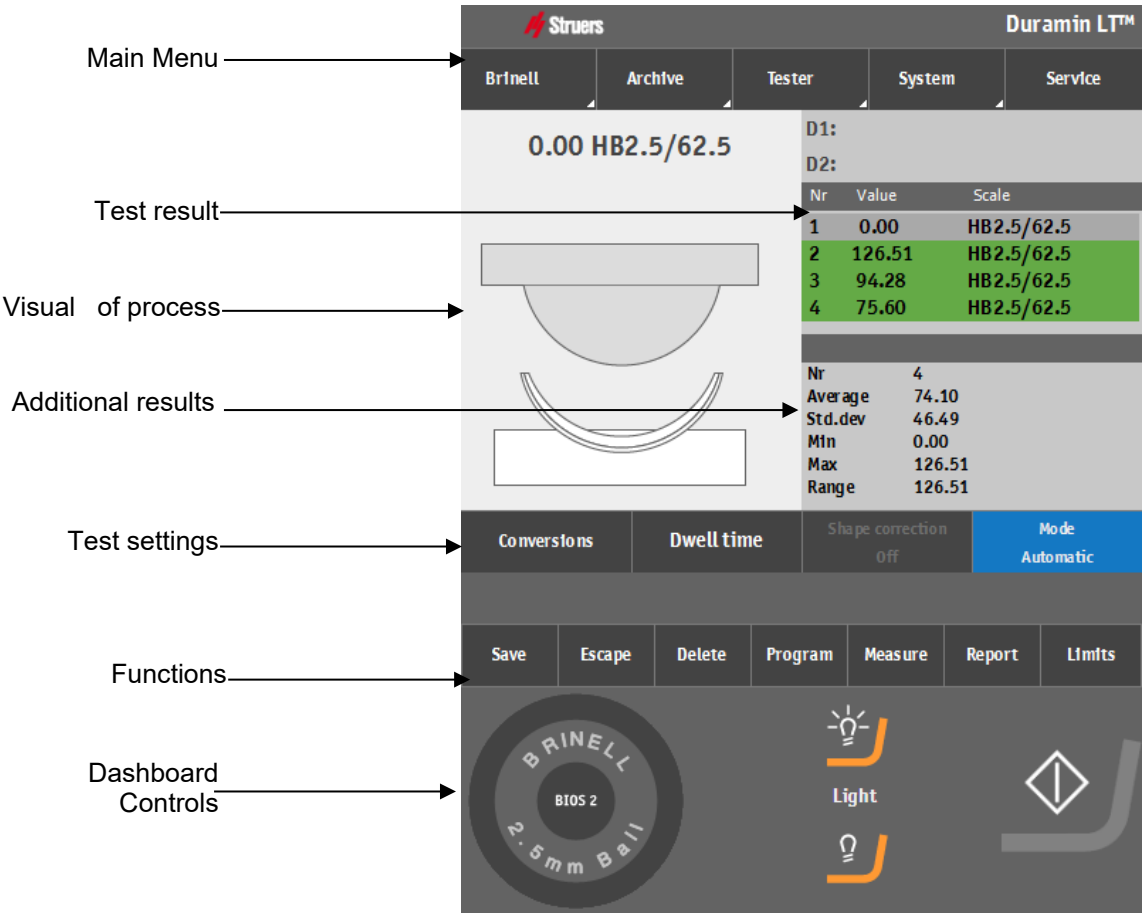
- Enter the *Username* and *Password*.
  When Duramin is used for the first time, the default will be:
  Username: Admin
  Password: none
- Press **Ok**.

HINT:
The default username is not case sensitive.

Overview Screen

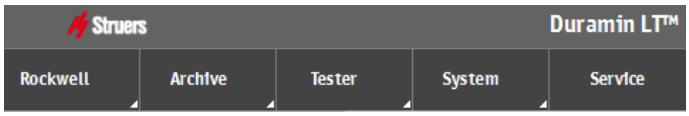
The overview screen consists of 4 main areas.

Main menu
Test result
Test settings
Dashboard Controls



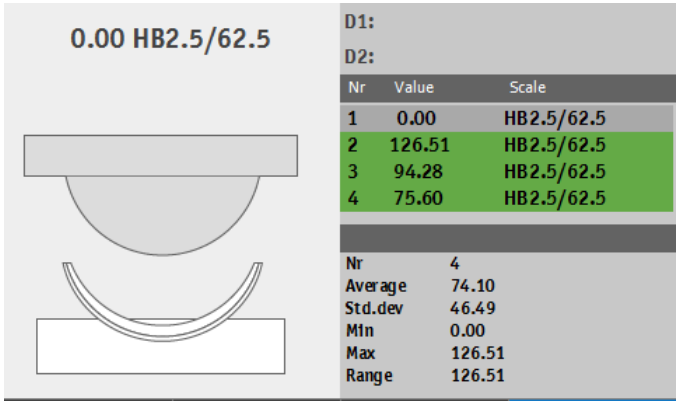
Main menu

The *Main Menu* is used to select the test method and scale required as well as adjusting settings and other functions.



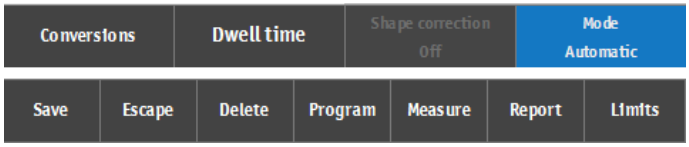
Test result and settings

The *Test Result and settings* shows an image of the indent (or the indent pattern) and a list of the indents performed.



Test settings

The *Test Settings* menus are used to select test settings such as dwell time and to perform additional functions.



Dashboard Controls

The Dashboard *Controls* are used to view the indenter selected,light controls and to start the indentation process.

HINT:
Please refer to the Duramin Software manual for a detailed description of the software and its functions.

Performing a Brinell test

To make a Brinell test, follow these steps:

Checking the Sample

- Check that the sample surface is smooth and even.
- Check that the sample surface is free from oxide scale, foreign matter, and completely free from lubricants.

Scale selection

- Setup the tester with the required Brinell scale and indenter.

Placing the Sample

- Place the sample on the Anvil.

Positioning

- Turn the spindle hand-wheel clockwise until the sample firmly touches the indenter.

Starting the test

- Duramin-3000 starts automatically when the applied force reaches the pre-defined threshold.
- The Stop button appears. Push it to stop/cancel the test. Do not use Emergency stop as stop button.

NOTE:
If too much manual force is applied while performing a Brinell test, the user interface will give a clear warning.

CRUSHING HAZARD

Do not place your hand between the sample and the indenter.

Applying Main load
Dwell Time

The tester will automatically apply the main load.
After the main load has been applied the tester will maintain the load for the selected dwell time. When the dwell time has passed, the tester will automatically release the main load.

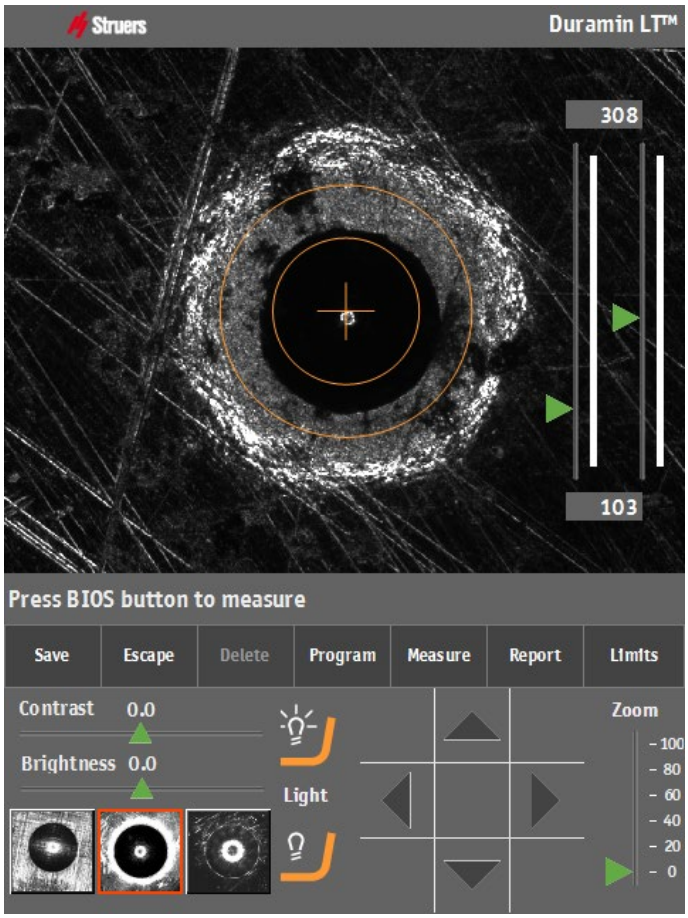
Indent Measurement

- Turn the spindle hand-wheel counter clockwise to release the specimen.
- Take hold of the camera like shown.
  Because the image on the screen may be considered as a co-ordinate system, make sure, that the cable points away from you: this will make it easier to find the indent, you wish to measure.

- Remove the specimen from the anvil.
- Place the camera on the specimen. Cover the indent with the foot.
- Push the button to activate the measurement programme.
- Look at the screen to centre the indent.
- Push the button to make the measurement.

Measuring the Indent

- The image of the indent appears on the screen.



- Use the resizing sliders to find the inner and outer edges.
- Use Contrast and Brightness to help you determine the edges.
- Use Zoom to fit the indent on the screen.
- Tap Save to save to accept and save the measurement. If automatic mode is on the result will automatically be saved.
- The hardness value measured will be displayed and the result is stored.
- The camera and the measurement programme stop, and you are ready to make the next indent.

NOTE:
The first Brinell reading on the sample should not be considered in the statistics.
NOTE:
If you accidentally test twice in the same spot, your reading will be way off. Reposition the sample and test again.
NOTE:
Clamping tools may cause problems if the applied force is too strong. Instead, consider making better samples.

3. Maintenance

General Cleaning

- Keep Duramin-40 as clean as possible.
  To ensure a longer lifetime for your equipment Struers strongly recommends regular cleaning.

Daily Maintenance

Machine

- Clean all accessible surfaces with a soft, damp cloth.

HINT:
Do not use a dry cloth as the surfaces are not scratch resistant.
Do not use aggressive or abrasive products.
Grease and oil can be removed with ethanol or isopropanol.

NOTE:
Never use acetone, benzol or similar solvents.

Weekly Maintenance

Cleaning Surfaces

- Clean painted surfaces and the control panel with a soft damp cloth and common household detergents.

Weekly Inspection

- Inspect the following parts before every hardness test or at least weekly.

Part	Attention	Action	Precaution
Indenter	Tip dirty	Wipe indenter	Do not bend the indenter shaft
Anvil	Rust	Remove rust	Do not bring the stage into contact with the turret.
Test block	Rusted	Replace test block	Do not use rusted test blocks
Spindle cover	Dislocated	Fasten	Without spindle cover there is free access to the spindle.

Yearly Maintenance

- Clean the elevator spindle and oil lightly with e.g. a universal household oil (do NOT lubricate the spindle with motor oil).
  - Carefully lift the spindle cover.
  - Wipe the spindle THOROUGHLY after lubrication so that as little as possible oil is left on the spindle.
  - Wipe the spindle again after a few days to ensure no oil residue is left on the spindle surface.

Yearly Safety Test

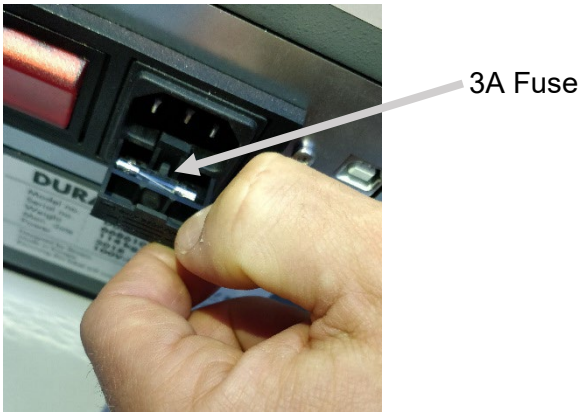
To test the emergency stop is functioning correctly:

- Start the machine.
- Activate the Emergency stop.
  If the machine does not stop, call Struers Service.

Replacing the Fuse

The fuse holder is located directly under the power connection on the rear of the machine.

- Turn the machine off.
- Disconnect the power cable.
- Pull out the fuse holder.
- Take out the blown fuse and replace with the reserve fuse.



- Re-install the fuse holder.
- Re-connect the electric power cable.

HINT:
Remember to order a new reserve 3A fuse.

Calibration

The highly sensitive and accurate load cell and objectives of the Duramin-3000 are calibrated prior to shipping.

Please contact Struers Service should the load cell or objectives require recalibration.

4. Cautionary Statements

List of Safety Messages in the Manual

ELECTRICAL HAZARD

Switch the power off when installing electrical equipment.

The machine must be earthed (grounded).

Check that the mains voltage corresponds to the voltage stated on the type plate on the side of the machine.
Incorrect voltage may result in damage to the electrical circuit.

CRUSHING HAZARD

Do not place your hand between the sample and the indenter.

5. Transport and Storage

NOTE:
Package the machine securely before transportation.
Insufficient packaging could cause damage to the machine and will void the warranty. Contact Struers Service for advice.
Struers recommends that all original packaging and fittings are kept for future use.

Follow these steps:
- Familiarize yourself with the DURAMIN-3000: HOW TO UNPACK document
- Disconnect Duramin from power.
- Position a foam block between the indenter and the anvil to prevent it from moving.
- Place the lifting straps3 securely around the lifting bar.
- Lift the machine and (while lifted) remove the feet.
- Move the machine to its new position.

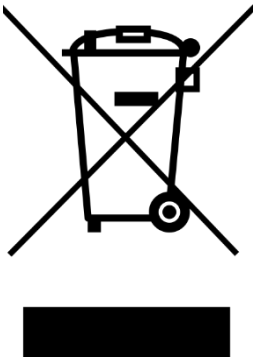
If the machine is bound for long-time storage or shipping:
- Place the machine on the pallet. Remember to line up the holes on the pallet with the holes in the machine.
- Mount the transport bolts.
- Secure the actuator with a plastic strip.
- Mount the sides of the crate.
- Place the accessories box, and other loose items in the crate. To keep the machine dry, place a desiccant (silica gel) in the box, too.
- Mount the lid of the crate.

NOTE:
Always use the lifting bar when moving the machine.
Failure to use the lifting bar could cause severe damage to the machine and will void the warranty.
Always transport the hardness testing machine in an upright position.
NOTE:
DO NOT ship or transport the tester without the correct packing materials.

At the new location:
- Check the Pre-Installation Checklist.

[3] Straps must be approved to at least twice the weight of the machine.

6. Disposal



Equipment marked with a WEEE symbol contain electrical and electronic components and must not be disposed of as general waste.
Please contact your local authorities for information on the correct method of disposal in accordance with national legislation.

Reference Guide

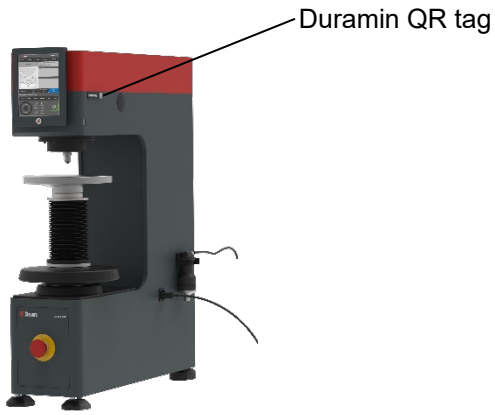
Table of Contents **Page**

1. Struers Knowledge

The need for fast, robust and well proven test methods for materials verification is inevitable. Vickers, Knoop, Rockwell and Brinell methods, with a countless number of loads and indenter geometries, gives an almost countless number of procedures, suitable for simple characterization of a large fraction of existing materials.

HINT:
Visit the Struers Hardness testing website for a comprehensive introduction to the principles of hardness testing, useful troubleshooting tips and the latest application knowledge in the field.

Click on the link: Struers - Ensuring Certainty / Knowledge / Hardness testing.
OR
Scan the QR code on the Duramin tag on your machine.



2. Trouble Shooting

Some of the minor malfunctions can be resolved by restarting the tester:

- Press **System**, then **Exit**.
- Click on the stop icon on the taskbar to shut down the embedded PC.

- Switch Duramin Off, then switch on again to start initialization.

Error	Explanation	Action
Indenter not present!	No Indenter selected.	Select the Indenter installed using the turret configuration menu.
Start-up failure	The emergency stop is activated	Release the emergency stop. Restart the tester.
Motor failure!	Failure of force application motor.	Restart the tester. If the error remains, contact Struers Service.

3. Service

Struers recommends that a regular service check be carried out on a yearly basis.
Servicing must be carried out by Struers Field Engineers, or skilled personnel specifically trained by Struers.

Struers offers a range of comprehensive maintenance plans to suit the requirements of our customers. This range of services is called **ServiceGuard**.
The maintenance plans include equipment inspection, replacement of wear parts, adjustments/calibration for optimal operation, and a final functional test.

4. Legal and Regulatory

FCC Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the Instruction Manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
Pursuant to Part 15.21 of the FCC Rules, any changes or modifications to this product not expressly approved by Struers ApS could cause harmful radio interference and void the user's authority to operate the equipment.

5. Technical Data

Subject		Specifications
Electrical Data	Power supply	100 V AC – 240 V AC, 50/60Hz, single phase
	Power consumption (idle)	28 W
	Power consumption (load)	45 W
	Power consumption (max)	105 W
Residual Current Circuit Breaker	Type A, 30 mA is required.	
Weight	Duramin-3000	132 kg / 291 lbs
Operating Environment	Noise level[4]	Less than 70 dB (A) measured at idle running, at a distance of 1.0 m/39.4” from the machine.
	Surrounding temperature	10-35 °C / 40-105 °F Recommended**:** 21 ±3 °C / 70 ± 5 °F
	Humidity	10%-90% RH (Non-condensing) **NOTE:** No condensation may form on the machine.
Storage	Surrounding temperature	10-35 °C / 40-105 °F
	Humidity	10%-90% RH (Non-condensing)
Safety standards		Please refer to the Declaration of Conformity

HINT:
Please refer to the Duramin Product Overview brochure for further details.

[4] Noise level: The figures quoted are emission levels and are not necessarily safe working levels. While there is a correlation between the emission and exposure levels, this cannot be used reliably to determine whether or not further precautions are required. Factors that influence the actual level of exposure of the workforce include characteristics of the work room, the other sources of noise, etc., i.e. the number of machines and other adjacent processes. Also, the permissible exposure level can vary from country to country. This information, however, will enable the user of the machine to make a better evaluation of the hazard and risk.

Contents of the Declaration of Conformity

Manufacturer

Struers ApS
Pederstrupvej 84
DK-2750 Ballerup, Denmark
Telephone +45 44 600 800

Machine

Name:	Duramin-3000
Model:	Duramin-3000
Function:	Hardness Tester
Type:	06676101

Herewith declares that the machine identified above fulfils all the relevant provisions of the:

Machinery Directive 2006/42/EC according to the following standard(s):
EN ISO 12100:2010, EN ISO 13849-1:2015, EN ISO 13850:2015, EN 60204-1:2006/AC:2010.

Furthermore, that the machine is in conformity with the:

EMC Directive 2014/30/EU according to the following standard(s):
EN 55011:2009/A1:2010, EN61326-1:2013, EN 61000-3-2:2014, EN 61000-3-3:2013.

RoHS Directive 2011/65/EU according to the following standard(s):
EN 50581:2012.

The above has been declared according to the global approach, module A.

Supplementary Information The equipment complies with the following standards:

Authorized to compile the Technical File and to draw up the declaration:

Christian Skjold Heyde
Vice President, Operations
Struers ApS
Pederstrupvej 84
DK-2750 Ballerup, Denmark

Date of Issue: 2019.03.12
Revision: B

Struers
Pederstrupvej 84
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