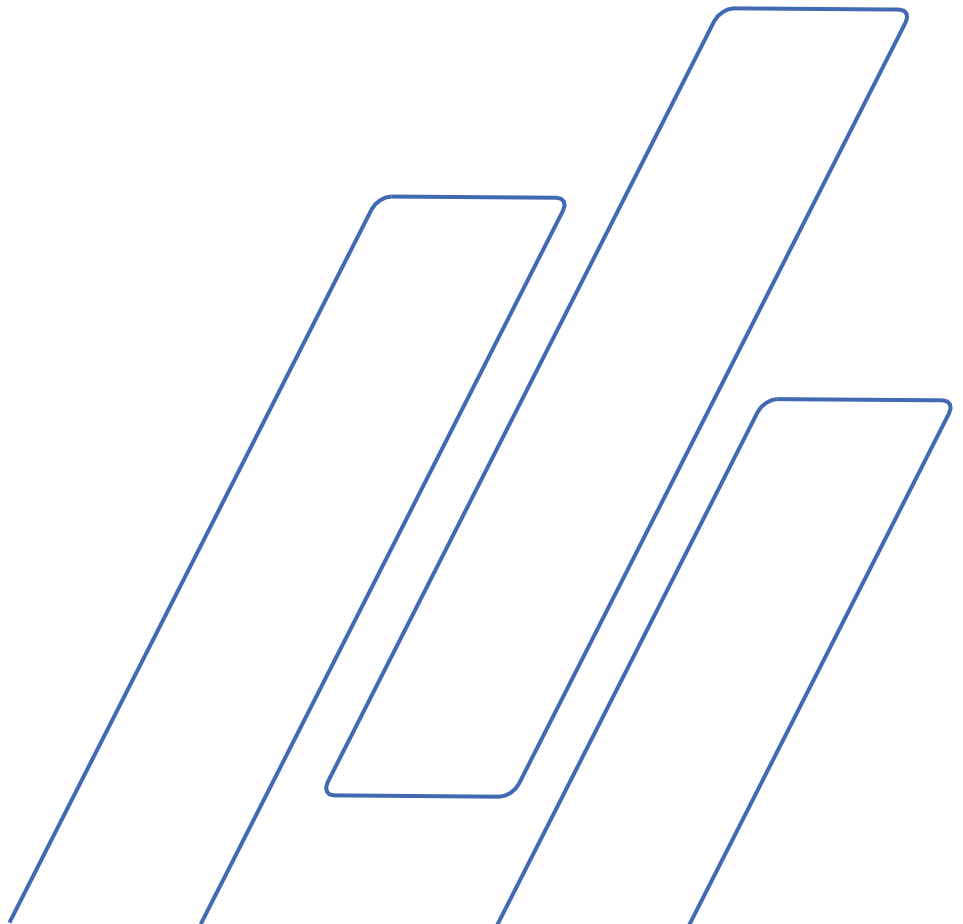


Duramin-150

Instruction Manual

Original instructions.



Duramin-150
Instruction Manual

Duramin-150
Instruction Manual

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Intended use

Automatic Macro hardness tester for Automatic Macro hardness testing of solid materials.

The machine is designed to be used with indenters specially 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 3 – 150 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-150

IMPORTANT

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.

The contents of this manual is the property of Struers. Reproduction of any part of this manual without the written permission of Struers is not allowed.

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Duramin-150 Safety Precaution Sheet

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.

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Instruction Manual

- 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 maintenance, service or repair, should always be performed by a qualified technician (electromechanical, electronic, mechanical, pneumatic, etc.)

Icons and typography

Struers uses the following icon and typographical conventions.

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.

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
<i>Italic type</i>	indicates product names, items in software programs or figure titles
■ Bullets	indicates a necessary work step

User's Guide

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1. Getting Started

Device Description

Duramin-150 is an entry-level hardness tester, specifically developed for Rockwell 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.

The software calculates the values instantly and stores them on the internal hard drive. Afterwards, the data can be moved to a memory stick.

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

Unpacking Duramin

Refer to the **DURAMIN-150: HOW TO UNPACK** instructions delivered with Duramin.



HINT: Take care whilst 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).
- Carefully lift the foam pieces to access Duramin.

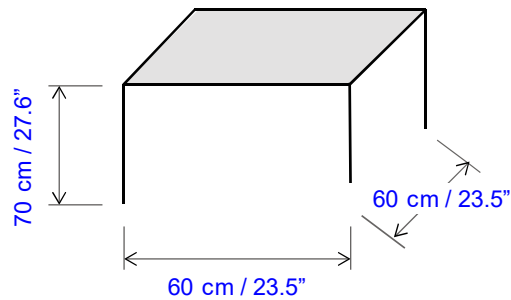


HINT: Store the packing crate, foam packaging and fittings for use whenever Duramin is transported/re-located.

Failure to use the original packaging and fittings could cause severe damage to the tester and will void the warranty.

Location

- Duramin must be placed close to the power supply.
- Duramin is designed to be placed on a rigid, stable workbench with a horizontal surface.
- Minimum workbench dimensions:



Vibration-free Location

- Install Duramin in a vibration-free location.



NOTE: Vibrations can lead to inaccurate measurements and must be avoided.

A simple way of detecting vibrations is to set up a tray of water and watch for ripples on the surface.

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 straps¹ are required to lift the machine from the packing crate.



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 and adjust the height of the dampers until they are of equal height.
- Lift Duramin into its final location.

¹ 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 **Unpacking Duramin-150** 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.

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Checking the Contents

In the packing crate you should find the following parts:

- 1 Duramin-150 (Hardness Tester)
- 1 Accessories Case

Accessories Case

The actual packaging and accessories may appear different to those shown in the picture.

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



NOTE: 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.



- 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

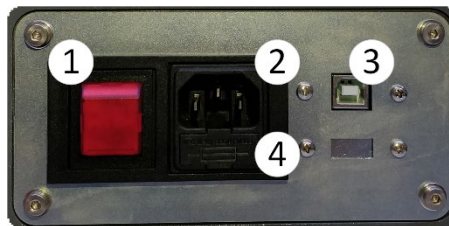
Getting Acquainted with Duramin-150

Take a moment to familiarise yourself with the location and names of the Duramin-150 components.



- ① Touch screen
- ② Nose cone
- ③ Anvil
- ④ Spindle
- ⑤ Spindle hand-wheel
- ⑥ Emergency stop
- ⑦ Adjustable foot
- ⑧ LED light
- ⑨ USB connection
- ⑩ QR code

Power Connections



- ① Main Power
- ② Main power connection
- ③ PC connection – USB type B
- ④ 3A slow fuse (behind hatch)

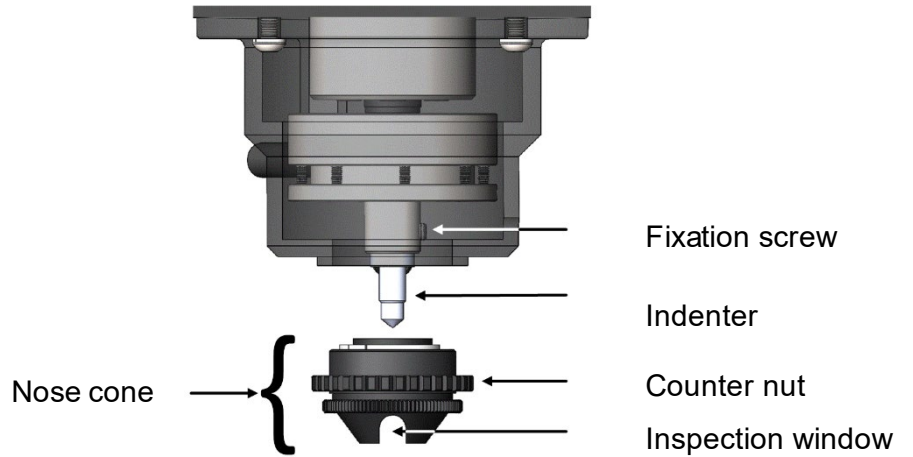
USB Drive and WiFi Adapter



The USB drive contains direct and indirect calibration documents.

Head

The head holds the indenter.



An x-ray drawing of the head.

The fixation screw holds the indenter in place.
The nose cone act as a tightening that fixates the sample against the anvil.

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.

Power Supply
Connecting the Tester

Always remember to switch the power off when installing electrical equipment!



ELECTRICAL HAZARD

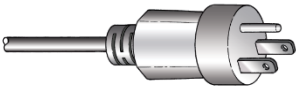
The machine must be earthed.
Check that the mains voltage corresponds to the voltage stated on the type plate on the side of the machine.
Incorrect voltage may result in damage to the electrical circuit.



Duramin-150 is shipped with 2 types of Mains cables:
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



The 3-pin (North American NEMA 5-15P) 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:

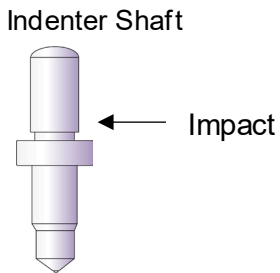
Green: earth (ground)
Black: line (live)
White: line (live)

Connection to the Machine



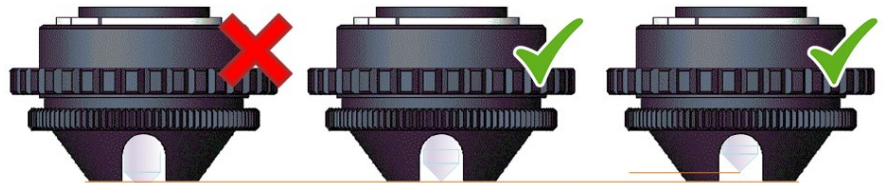
- Connect the power cable to the machine. (IEC 320 connector).
- Connect to the mains power supply.

Installing an indenter



Duramin-150 is delivered with a pre-installed indenter as ordered. To replace the indenter, follow these steps:

- Remove the nose cone
- 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.
- Mount the nose cone. The inspection window does not always point forwards.
- The distance from the bottom of the nose cone up to the pinnacle of the indenter must be approximately 1 mm. Adjust the distance with the counter nut.



Adjusting the Nose Cone in relation to the Indenter. The indenter point must not protrude.

- Perform a few hardness tests on a test block to securely seat the indenter.



NOTE: Use Struers accessories to ensure proper function.

Installing an Anvil

Use the appropriate anvil for the application:



V-type anvil for cylindrical samples (option).



Flat anvil for even samples.

To install an anvil:

- 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 mat 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

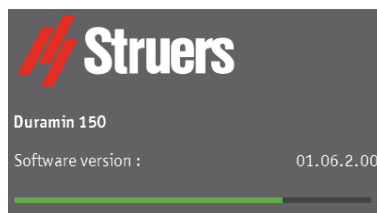
Duramin-150 is operated through the Duramin software.
A short description of the software is included in this manual.
Please refer to the Duramin software manual for a detailed description of the software functions.



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

Start-up

- Switch Duramin-150 on using the main switch at the rear.
The Duramin software will initialize and the following progress bar will appear on the display:



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

HINT: If the emergency stop is activated during start-up, a failure message appears. *T*

Restart after Emergency Stop

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

The following screen will appear on the monitor.



Do not use force or pointed / sharp objects on the touch screen.



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

Overview Screen

The overview screen is primarily divided into 5 main areas.



- | | |
|-------------------------------|--|
| ① Depth of indentation | ⑨ Delete highlighted test result |
| ② Upper / lower limit | ⑩ Settings menu |
| ③ Result | ⑪ Save programme |
| ④ Conversion | ⑫ Save results to USB key |
| ⑤ Test results. Green are OK. | ⑬ Test animation. Long press allows shape correction |
| ⑥ Date and time | ⑭ Auto-start indication |
| ⑦ Adjust light | ⑮ Tester status |
| ⑧ Load program | |

Please refer to the [Duramin Software manual](#) for a detailed description of the software and its functions.

Performing a Rockwell test

Checking the Sample

Scale selection
Placing the Sample
Positioning

To make a Rockwell test, follow these steps:

- 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.
- Setup the tester with the required Rockwell scale and indenter.
- Place the sample on the Anvil.
- Turn the spindle hand-wheel clockwise until the sample firmly touches the clamping attachment as indicated.



Place sample and turn spindle up.



Contact between sample and cone head – continue.



Turn spindle down and repeat. Too slow, too firm, too fast ...



Test commences.

Starting the test

- Duramin-150 starts automatically when the applied force reaches the pre-defined threshold.
- The Stop button appears. Push it to stop the test. Do not use Emergency stop as stop button.



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



CRUSHING HAZARD

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

Applying Preload

After correct tightening up, the indenter automatically moves downwards until it reaches the pre-load position. First, the tester applies the pre-load (3kgf for Superficial scales and 10kgf for regular Rockwell scales). This process is represented visually on the display (see Overview Screen, number 13).

Applying Main load

After the pre-load has been applied the tester will automatically apply the main load.

Dwell Time

After the main load has been applied the tester will pause for the selected dwell time. When the dwell time has passed, the tester will automatically release the main load and return to the pre-load position. The hardness value measured will be displayed.

- Turn the spindle hand-wheel counter clockwise to release the sample and move it into a new position to perform another test.
- If a clamping attachment is used, release the clamps before moving the sample to its new position.



NOTE: The first Rockwell 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.

3. Maintenance

General Cleaning

Keep Duramin-150 as clean as possible.
To ensure a longer lifetime for your equipment Struers strongly recommends regular cleaning.

Daily Maintenance Machine

- Clean all surfaces with a damp, soft 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

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).
 - Power off the machine.
 - 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

The emergency stop is the only safety device on a Duramin.
Follow these steps to test it:

- Start the machine.
- Activate the emergency stop.

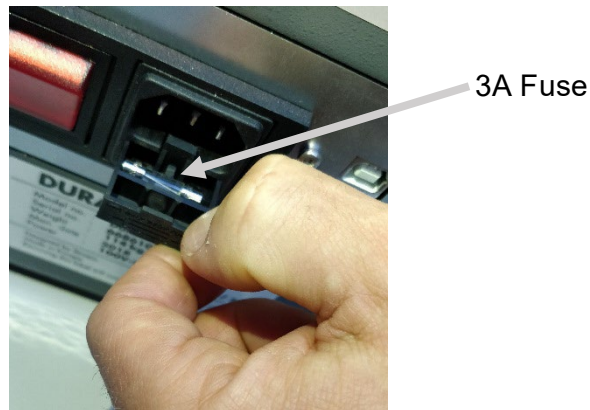
If the machine powers off, all is OK.

If the machine does not stop, call Struers.

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-150 are calibrated prior to shipping. Please contact Struers Service should the load cell or objectives require recalibration.

Service and Repair

Service and repairs can only be carried out by Struers or trained technicians, authorised by Struers.

4. 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.

5. Trouble Shooting

- Most of the minor malfunctions can be resolved by restarting the tester:
- Press the stop button on the touch screen.
- 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.

6. Service

Stuers recommends that a regular service check be carried out on a yearly basis.

Servicing must be carried out by Stuers Field Engineers, or skilled personnel specifically trained by Stuers.



NOTE: Safety critical components must be replaced at least after a lifetime of 20 years². Contact Stuers Service for information.

Stuers 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.

² According to EN ISO 13849-1

7. Transport and Storage



NOTE: Store the packing crate, foam packaging, bolts and fittings for use whenever Duramin is transported/re-located. Failure to use the original packaging and fittings could cause severe damage to the tester and will void the warranty.

Follow these steps:

1. Familiarize yourself with points 1 – 14 in the **DURAMIN-150: HOW TO UNPACK** document
2. Disconnect Duramin from power.
3. Position a foam block between the indenter and the anvil to prevent it from moving.
4. Place the lifting straps³ securely around the lifting bar (see point 9 and 10).
5. Lift the machine and (while lifted) remove the feet.
6. Move the machine to its new position.

If the machine is bound for long-time storage or shipping, follow these steps:

7. Place the machine on the pallet. Remember to line up the holes on the pallet with the holes in the machine.
8. Mount the transport bolts.
9. Secure the actuator with a plastic strip (see point 13)
10. Mount the sides of the crate.
11. 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.
12. Mount the lid of the crate.



NOTE: Always transport the hardness testing machine in an upright position.
NOTE: DO NOT ship or transport the tester without the correct packing materials.

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

8. Cautionary Statements



ELECTRICAL HAZARD

The machine must be earthed.
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.

9. 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.

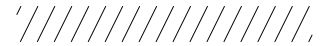
10. Technical Data

Please refer to the [Duramin Product Overview brochure](#) for further details.

		Duramin-150
Hardness methods	Vickers	N.A.
	Knopp	N.A.
	Brinell	N.A.
	Rockwell - optional	ISO 6508 ASTM E18 JIS Z 2245
Force range	29.4-1471 N (3-150 kgf)	
Test force	Force application	Fully automatic, closed loop, force feedback, loading, dwell, unloading
	Test force tolerance	< 0.5 %
	Dwell time settings	Adjustable 1 to 99 s
Turret	1 Position	1
Electrical data	Power supply	100 V AC-240 V AC, 50/60Hz, single phase
	Power consumption max. work load	100 W
	Power consumption idle Power consumption Idle Power consumption idle	13 W
	Power consumption max. load Power consumption Max. load Power consumption max. load	100 W
	Power inlet	1-phase (N+L1+PE) or 2-phase (L1+L2+PE) The electrical installation must comply with Installation Category II
Residual Current Circuit Breaker (RCCB)	Type A, 30 mA is required depending on local regulations.	
Dimensions	Width	230 mm (9.1")
	Depth	550 mm (21.7")
	Height	855 mm (33.7")
Weight	115 kg (252 lbs)	
Read method	Automated	
Overview camera resolution	N.A.	
Overview camera field of view	N.A.	
Measurement camera resolution	N.A.	
Positions in nosepiece	1	
Position in nosepiece for overview camera		



		Duramin-150
Max no. of Indenters	Max no. of indenters	1
Max No. of Objectives	Max no. of objectives	N.A.
Indenter Shaft	Diameter	6.35
Standard objectives included		N.A.
Z-Axis		Manual
Anti-collision protection		
XY Stage / Anvil		Anvil
Stage Size		Ø60 mm (2.4")
Stage Stroke (travel range)		N.A.
Auto Illumination		No
Stage Illumination		Yes
Laser/LED Guide		No
Software	Operating software	Embedded
	Integrated PC	No
	Monitor	6.5" portrait mode capacitive touch screen
	Dual view	No
	Possibility to connect Printer	No
	Ethernet Connection	No
	Data Export	USB
System	Data output	TXT
Software modules		Total test, max, min, average, range, standard deviation, all in real time after each test
Sample height		240 mm (9.4")
Throat depth		150 mm (5.9")
Safety standards		CE labelled according to EU directives
REACH		For information about REACH. contact your local Struers office
Operating environment	Surrounding temperature	10-35°C (50-95°F)
	Humidity	10%-90% RH non-condensing



TECHNICAL DATA

Duramin-150

Duramin-150		
Safety Circuit Categories/Performance Level	Emergency stop	EN ISO 13849-1 PL c, Category 1 Stop category 0
Noise level	A-weighted sound emission pressure level at workstations	< 70 dB(A)
Vibration level	During operation	Total vibration exposure to upper parts of the body does not exceed 2.5 m/s ² .

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Date of release: 30-06-2023

Duramin-150
Instruction Manual

Declaration of Conformity

Manufacturer	Struers ApS • Pederstrupvej 84 • DK-2750 Ballerup • Denmark
Name	Duramin-150
Model	N/A
Function	Hardness tester
Type	668
Cat. no.	06686101
Serial no.	



Module H, according to global approach



We declare that the product mentioned is in conformity with the following legislation, directives and standards:

2006/42/EC	EN ISO 12100:2010, EN ISO 13850:2015, EN ISO 13849-1:2015, EN ISO 13849-2:2012, EN 60204-1:2018
2011/65/EU	EN 63000:2018
2014/30/EU	EN 61000-3-2:2014, EN 61000-3-3:2013, EN 55011:2016/A1:2017/A11:2020, EN 61326-1:2021

Authorized to compile technical file/
Authorized signatory

Date: [Release date]



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