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Mxmoonfree Digital Leeb Metal Hardness Tester Kit User Manual

Model: Digital Leeb Metal Hardness Tester Kit

1. INTRODUCTION

This manual provides detailed instructions for the proper use, maintenance, and calibration of your Mxmoonfree Digital Leeb Metal Hardness Tester Kit. Please read this manual thoroughly before operating the device to ensure accurate measurements and safe operation.

2. PACKAGE CONTENTS

Your Mxmoonfree Digital Leeb Metal Hardness Tester Kit includes the following components:

- Digital Hardness Tester Host Unit
- Type D Sensor (Impact Device)
- Standard Hardness Block for Calibration
- USB Cable
- Small Support Ring
- User Manual
- Rugged Carrying Case



Image 2.1: The complete Mxmoonfree Digital Leeb Metal Hardness Tester Kit, including the main unit, sensor, calibration block, USB cable, and carrying case.

3. SETUP

Follow these steps to set up your hardness tester for initial use:

1. **Unpack the Kit:** Carefully remove all components from the rugged carrying case.
2. **Connect the Sensor:** Insert the sensor cable into the designated 3-pin interface on the top of the main tester unit. Ensure a secure connection.
3. **Power On:** Press the **POWER** button to turn on the device. The LCD display will illuminate.



Image 3.1: The Mxmoonfree Digital Leeb Metal Hardness Tester with the sensor (impact device) connected to the main unit.

4. OPERATING INSTRUCTIONS

4.1 Basic Hardness Measurement

The Mxmoonfree hardness tester utilizes the Leeb rebound principle for non-destructive testing. A small impact body is propelled onto the test surface, and the rebound velocity is measured to determine hardness.

REBOUND HARDNESS

Metal rod that drops down in the wand to get the hardness measurement.

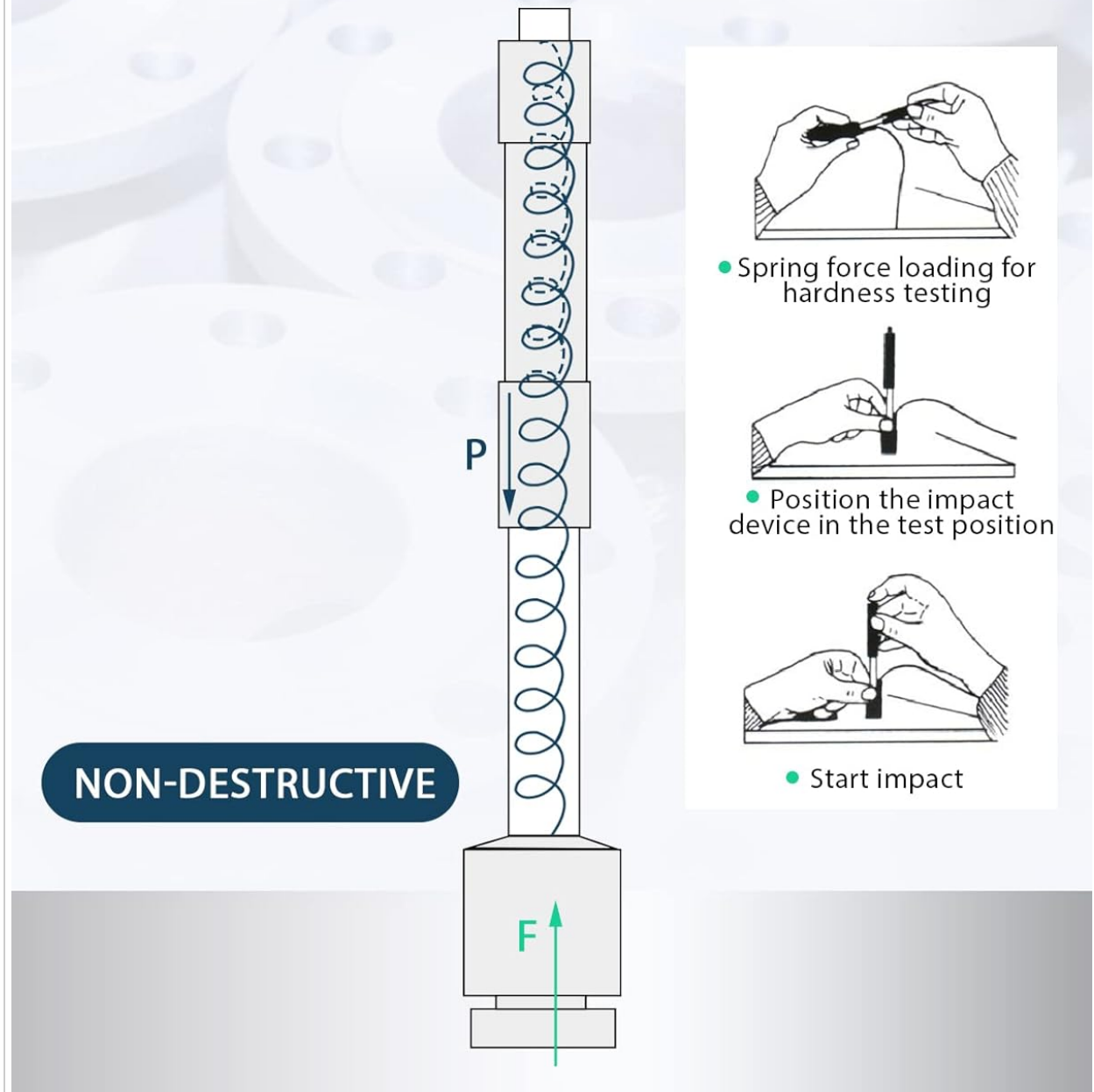


Image 4.1: Diagram illustrating the Leeb rebound hardness testing principle, showing the impact body and rebound. To perform a measurement:

1. **Prepare the Sample:** Ensure the test surface is clean, smooth, and free from scale, oil, or other contaminants. The sample should be stable and have sufficient mass to prevent movement during impact. For small objects, use the included support ring to stabilize the tester.
2. **Select Material and Scale:** Use the **MAT** button to select the material type (e.g., Steel and Cast Steel). Use the **SCALE** button to choose the desired hardness scale (e.g., HL, HB, HRC, HV, HS, HRB, HRA).
3. **Position the Sensor:** Place the sensor firmly and perpendicularly on the test surface.
4. **Initiate Measurement:** Press the button on the sensor to release the impact body. The hardness value will be displayed on the screen. Repeat measurements as needed for accuracy.

OUT-OF-THE-BOX PERFORMANCE

Press, Release, and Get Results



Image 4.2: A user demonstrating the ease of use by performing a hardness test on a metal workpiece.

4.2 Multi-Hardness Unit Conversion

The device supports instant conversion between up to 7 different hardness scales. After a measurement, press the **SCALE** button to cycle through the available units (HL, HB, HRC, HV, HS, HRB, HRA).

MULTI HARDNESS UNIT

Up to 7 kinds of hardness for instant display and conversion:



Image 4.3: The tester's display showing the ability to convert between multiple hardness units.

4.3 Data Output to PC Software

The Mxmoonfree hardness tester can connect to a PC for data analysis using the provided free software. Connect the device to your computer using the USB cable. The software allows for detailed analysis, storage, and reporting of your measurement data.

OUTPUT TO PC SOFTWARE

Provide free data analysis software



Image 4.4: The Mxmoonfree Hardness Tester connected via USB to a computer running the data analysis software.

5. CALIBRATION

Regular calibration ensures the accuracy of your hardness tester. The kit includes a standard hardness block for this purpose. The device features a built-in software calibration function.

1. **Enter Calibration Mode:** To access calibration mode, press and hold both the **POWER** button and the **ENTER** button simultaneously.
2. **Perform Measurements:** Follow the on-screen prompts to perform a series of measurements (typically five) on the standard hardness block.

3. **Confirm Calibration:** The device will display the average and nominal values. Confirm the calibration to save the settings.



Image 5.1: The standard hardness block used for calibrating the Mxmoonfree Digital Leeb Metal Hardness Tester.

Video 5.1: This video demonstrates the process of performing measurements and calibrating the Mxmoonfree Digital Leeb Metal Hardness Tester using the standard hardness block.

6. MAINTENANCE

Proper maintenance ensures the longevity and accuracy of your device.

- **Cleaning:** Regularly wipe the device and sensor with a soft, dry cloth. Avoid using abrasive cleaners or solvents.
- **Storage:** Store the hardness tester and its accessories in the provided rugged carrying case when not in use. Keep it in a dry environment, away from extreme temperatures and direct sunlight.
- **Impact Device Care:** Ensure the impact device is clean and free of debris. Do not lubricate the impact device unless specifically instructed by Mxmoonfree support.

7. TROUBLESHOOTING

If you encounter issues with your Mxmoonfree Digital Leeb Metal Hardness Tester, consider the following:

- **Inaccurate Readings:** If you suspect inaccurate readings, perform a calibration using the standard hardness block as described in Section 5. Ensure the test surface is properly prepared and the sensor is positioned correctly.
- **Device Not Powering On:** Check the battery level. If the device uses replaceable batteries, ensure they are inserted correctly and are not depleted.
- **Connectivity Issues (PC Software):** Ensure the USB cable is securely connected to both the tester and the PC. Verify that the PC software is installed correctly. If you experience issues with USB connectivity, contact customer support, as some units may have had manufacturing variations.
- **Sensor Malfunction:** If the sensor does not impact or rebound correctly, ensure it is clean and properly connected. Avoid dropping or subjecting the sensor to harsh impacts.

For persistent issues or technical support, please refer to Section 9: Warranty and Support.

8. SPECIFICATIONS

Key specifications for the Mxmoonfree Digital Leeb Metal Hardness Tester Kit:

- **Package Dimensions:** 11.73 x 10.12 x 6.26 inches
- **Weight:** 5.95 Pounds
- **Hardness Scales:** HL, HB, HRC, HV, HS, HRB, HRA
- **Impact Device Type:** D-type (standard)
- **Connectivity:** 3-pin interface for sensor, USB for PC data output

8.1 Measurement Range

The device supports hardness measurements across various materials as detailed in the table below:

Materials	HRC	HRB	HRA	HB	HV	HS
Steel and Cast Steel	17.9-68.5	59.6-99.6	59.1-85.8	80-651	83-976	33.1-110.1
Stainless Steel	46.5-101.7			85-655	85-802	
Cold Work Tool Steel	20.4-67.1				80-898	
Hammered Steel				143-650		
Cast Aluminum Alloys		23.8-84.6		19-164		
Grey Cast Iron				93-334		
Nodular Cast Iron				131-387		
Brass		13.5-95.3		40-173		
Bronze				60-290		
Wrought Copper Alloys				45-315		

Image 8.1: Table detailing the measurement ranges for different materials and hardness scales.

Hardness Measurement Range

Materials	HRC	HRB	HRA	HB	HV	HS
Steel and Cast Steel	17.9-68.5	59.6-99.6	59.1-85.8	80-651	83-976	33.1-110.1
Stainless Steel	46.5-101.7			85-655	85-802	
Cold Work Tool Steel	20.4-67.1				80-898	
Hammered Steel				143-650		
Cast Aluminum Alloys		23.8-84.6		19-164		
Grey Cast Iron				93-334		
Nodular Cast Iron				131-387		
Brass		13.5-95.3		40-173		
Bronze				60-290		
Wrought Copper Alloys				45-315		

9. WARRANTY AND SUPPORT

Mxmoonfree is committed to providing high-quality products and excellent customer service.

- **Warranty:** Your Mxmoonfree Digital Leeb Metal Hardness Tester Kit comes with a two-year warranty, covering free parts and ongoing maintenance.
- **Technical Support:** Our dedicated support team is available to assist you with any questions, concerns, or issues you may encounter. We also provide free PC analysis software and guides to support your testing process.
- **Contact:** For assistance, please refer to the contact information provided in your product packaging or visit the official Mxmoonfree website.