MultiTest 50 – Tablet Hardness Tester
Operating Manual

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Reference documents

The following documents have been used as a reference / guideline:
[1] #918129, MultiTest 50 Options & Spares Manual, Revision 002

Purpose and scope

- General introduction to the MultiTest 50 tablet hardness tester
- Installation instructions for correct setup
- Main settings that need to be configured according to connected external devices
- Introduction to the touch screen user interface
- Detailed operating instructions for each menu item
- How to perform calibration and verification
- How to use the MultiTest 50 with security settings enabled

NOTE: Some descriptions may not apply to your MultiTest 50 model

This manual has been written for a MultiTest 50 that has been configured to measure:
- Weight
- Thickness
- Width
- Diameter
- Hardness

It also covers operation in "FastTest™" configuration.

If your MultiTest 50 is configured for a subset of these parameters, ignore the references to parameters which are not available on your machine.

WARNING:
Using the MultiTest 50 tablet hardness tester differently / in a method other than described in this operating manual may impair the safety precautions!
1. INTRODUCTION

Welcome to the Dr. Schleuniger® Pharmatron family!
Your MultiTest 50 is a state-of-the-art tablet hardness tester that combines precision measuring technology with user-friendly touch screen operation. Like all Dr. Schleuniger® Pharmatron products, the MultiTest 50 has been designed to provide you with years of faithful service.

Read this manual carefully.
It provides you with all the information you need to operate your MultiTest 50.

Swiss quality
High quality components paired with Swiss precision engineering provide for a long product life and minimize costly machine downtime. In order to ensure maximum reliability of your MultiTest 50, all instruments are tested according to strict internal quality standards before they leave our factory.

Hardness testing
With more than 35 years of experience and more than 15’000 testers in the market, Dr. Schleuniger® hardness measuring technology is a safe investment. Like all our hardness testers, the MultiTest 50 offers consistently accurate test results and fully complies with current USP (chapter <1217, tablet breaking force) and EP (2.9.8, resistance to crushing of tablets) requirements.

Quality matters.
1.1 Main features

From simple hardness tests to executing a whole series of tests – intelligent touch screen operation paired with precision mechanics make the MultiTest 50 extremely versatile and very easy to operate.

- **Up to 5 parameters**
  (weight, thickness, width, diameter/length, hardness)

- **Fast and intuitive programming with touch screen**
  Very easy, almost language-independent icon-based navigation

- **Languages**
  Additional language possible

- **FastTest™ configuration**
  Very fast and efficient measuring of larger sample sizes

- **3 test modes: FullTest, EasyTest, SingleTest**
  Pre-program up to 100 products or quickly set up tests without programming

- **View the data that you need during test**
  Currently measured results, list view or hardness curve

- **Easy upgrade at later stage possible**
  (e.g. upgrade from “hardness only” to “5 parameters” → no hardware change required!)

- **Proven precision with S-beam load cell, state-of-the-art electronics, solid mechanics**
  High accuracy and reliability

- **Quick-change tongues for reliable tablet orientation**
  (e.g. with / without groove; machine comes with standard flat tongue)

- **Simple and fast cleaning**
  Remove broken tablet debris with quick-change tongue

- **Integrated collection bin**
  To collect broken tablet debris

- **Comprehensive reporting**
  All statistics, individual test results – with or without graphs

- **Print reports with standard printer**
  USB or network printer with Post-Script

- **Backup / restore data**
  Simple with standard USB stick
1.2 General information

1.2.1 Measurements

With all parameters enabled, the MultiTest 50 accumulates the following measurements in one single report including statistics:

- Weight
- Thickness
- Width
- Diameter / Length
- Hardness

All MultiTest 50 models allow you to measure tablet hardness (breaking force) in:

- Newton (N)
- Kilopond (Kp)
- Strong Cobb (Sc)
- User-defined unit of measurement (= factor based on Newton measurement)

The MultiTest 50 can also measure tablet diameter and thickness (internal) in mm or inches. If an external thickness gauge (micrometer) and balance are connected, the MultiTest 50 accumulates thickness (external) in mm or inches and weight data in either g or mg. Up to 100 measurements of each parameter can be taken and / or collected for statistical analysis.
1.2.2 Programming / Testing

The graphical touch screen user interface of the MultiTest 50 makes programming very fast and easy to understand. The operator can choose whether to pre-program products including T1/T2 limits and plausibility limits, or simply define the sample size to be tested.

- **FullTest**
  Use pre-programmed products and sample sizes (= method) to start a test

- **EasyTest**
  Simply set the sample size and nominal value for each parameter and start testing

- **SingleTest**
  Select the parameter(s) you would like to test and push start

Results are displayed immediately and the operator can choose whether to only display current results, a list of measured results, or the hardness curve. If product limits have been programmed, the MultiTest 50 will automatically display whether the current measurement is within specifications or a T1/T2/PL violation has occurred.

**Data entry**

Intuitive icon-based navigation and logical context-based menu structures guarantee fast data entry and short training times. All data is entered via the MultiTest 50 touch screen interface.

> Intuitive icon-based touch screen navigation
1.2.3 Tablet orientation

Test samples are placed in the test area on the right side of the machine. The open design of the tester provides a high visibility and easy accessibility throughout the testing process. Quick-change tongues with or without groove guarantee simple and reliable tablet orientation.

When a test is started, the left jaw moves to break the tablet. Broken tablet debris can be quickly discarded with one simple movement of the quick-change tongue.

For unconventional tablet shapes, customized quick-change tongues can be manufactures to your specifications. Special jaws for 3-point bending strength tests or for testing objects larger than 35mm are optionally available.
1.2.4 Statistics & Reports

When a test has been completed, the MultiTest 50 automatically calculates test statistics and prints a report (if a USB or network printer is connected). Statistical data can also be printed in graphical format. A complete set of statistics and graphs for up to 100 tablet readings for each parameter includes:

- Primary header (for statistics)
- Product setup information
- Hardness measuring method
- Statistics
- Nominal value
- Plausibility
- T1, T2 limits
- Mean value
- Minimum value
- Range
- Absolute standard deviation
- T1, T2 violations

For every measured value:

- Test stamp number
- Time (starting and ending)
- MultiTest 50 serial number

If a plausibility range has been defined, individual measurements outside that range are marked as implausible and test data from that sequence is automatically not used for statistical calculations.

For sample test reports, refer to the Appendix of this manual.
1.3 System overview

This section gives a short introduction to the main system components of the MultiTest 50.

1.3.1 Standard MultiTest 50

- Applies to all MultiTest 50 models, including MultiTest 50 “FastTest™”.

- For back of machine / interfaces see section “Interfaces / Connection ports”.

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
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<tr>
<td>1 Housing</td>
<td>single-piece housing to protect the mechanics &amp; electronics</td>
</tr>
<tr>
<td>2 Test area</td>
<td>tablets are placed between 2 jaws (moveable / fixed)</td>
</tr>
<tr>
<td>3 Front panel</td>
<td>with integrated touch screen</td>
</tr>
<tr>
<td>A Quick-change tongue</td>
<td>with ergonomic holder to exchange tongue within seconds</td>
</tr>
</tbody>
</table>
1.3.2 MultiTest 50 “FastTest™”

Only applies to the MultiTest 50 “FastTest™” models (WTDH and TDH). (in addition to previous section)

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<thead>
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<th>Description</th>
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<tbody>
<tr>
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<td>FastTest™ carousel</td>
</tr>
<tr>
<td>2</td>
<td>Actuator button</td>
</tr>
<tr>
<td>3</td>
<td>Thickness gauge</td>
</tr>
<tr>
<td>4</td>
<td>Mounting set</td>
</tr>
<tr>
<td>A</td>
<td>Quick-change tongue</td>
</tr>
</tbody>
</table>
1.3.3 Front panel / Touch screen

Applies to all MultiTest 50 models, including MultiTest 50 “FastTest™”.

The front panel can be swivelled out for high readability of the integrated touch screen. Because the touch screen is capacitive, it is also perfectly suited for operation with gloves.
### 1.4 Interfaces / Connection ports

All MultiTest 50 models have seven (7) interfaces on the back of the machine.

<table>
<thead>
<tr>
<th>Interface</th>
<th>Purpose</th>
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<tbody>
<tr>
<td>1 USB 1</td>
<td>To connect USB printer</td>
</tr>
<tr>
<td>2 USB 2</td>
<td>To connect USB flash memory stick (for backup / restore)</td>
</tr>
<tr>
<td>3 Balance (RS232)</td>
<td>To connect external balance</td>
</tr>
<tr>
<td>4 RS232</td>
<td>To connect serial 40col. printer</td>
</tr>
<tr>
<td>5 Host (RS232)</td>
<td>To perform service tasks (e.g. firmware update)</td>
</tr>
<tr>
<td>6 Thickness (RS232)</td>
<td>To connect external thickness gauge (indicator)</td>
</tr>
<tr>
<td>7 Ethernet</td>
<td>To connect PC and/or network printer via Ethernet LAN (TCP/IP)</td>
</tr>
<tr>
<td>A Power switch</td>
<td>To turn the tester ON / OFF</td>
</tr>
<tr>
<td>B Power supply</td>
<td>To connect power cable (electrical connection)</td>
</tr>
<tr>
<td>C Debris collection bin</td>
<td>To collect tested (broken) samples and debris</td>
</tr>
<tr>
<td>D Debris collection bin</td>
<td></td>
</tr>
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**Valid for:** Firmware 1.11 and higher  
**Revision:** 009  
**Order number:** 918127  
**Valid since:** 20. February 2012  
**Copyright:** © Pharmatron AG, 2012
1.5 Models & Enabled parameters

The MultiTest 50 is a multi-purpose instrument to reliably measure hardness, diameter/length and width of virtually all tablet shapes. Additionally, it accumulates measurements from an external balance and thickness gauge in a single report.

Parameter upgrade

It is possible to upgrade your existing MultiTest 50 with additional parameters. Contact your local sales & service partner for more information.

<table>
<thead>
<tr>
<th>MultiTest 50 model</th>
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<th>T</th>
<th>WD</th>
<th>D</th>
<th>H</th>
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<tr>
<td>WTDH</td>
<td>●</td>
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<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>TDH “FastTest™”</td>
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<td>H</td>
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● enabled parameter

W Weight
T Thickness (external / internal)
WD Width
D Diameter / Length
H Hardness

1.6 Technical Specifications

1.6.1 Measuring range

<table>
<thead>
<tr>
<th>Measurement</th>
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<tbody>
<tr>
<td>Hardness</td>
<td>• 4 – 400 Newton (standard)</td>
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<tr>
<td></td>
<td>• 0.5 – 50 Newton (optional)</td>
</tr>
<tr>
<td></td>
<td>• 5 – 500 Newton (optional)</td>
</tr>
<tr>
<td></td>
<td>• 8 – 800 Newton (optional)</td>
</tr>
<tr>
<td>Weight</td>
<td>• Mettler AB54: 0.1mg – 50g</td>
</tr>
<tr>
<td></td>
<td>• Sartorius: varies depending upon model used</td>
</tr>
<tr>
<td>Thickness (external)</td>
<td>• 1.0 – 13 mm (typical)</td>
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<tr>
<td></td>
<td>• 0.040 – 0.512 inch (typical)</td>
</tr>
<tr>
<td>Thickness (internal)</td>
<td>See Diameter</td>
</tr>
<tr>
<td>Diameter / Length / Width</td>
<td>0 – 30+ mm (1.2+ inch) standard</td>
</tr>
<tr>
<td></td>
<td>0 – 62+ mm (2.4+ inch) optional</td>
</tr>
</tbody>
</table>
1.6.2 Accuracy

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardness</td>
<td>Better than +/- 1N</td>
</tr>
<tr>
<td>Weight</td>
<td>Refer to manual of connected balance</td>
</tr>
<tr>
<td>Thickness (external)</td>
<td>Refer to manual of connected thickness gauge (indicator)</td>
</tr>
<tr>
<td>Thickness (internal)</td>
<td>See Diameter</td>
</tr>
<tr>
<td>Diameter / Length / Width</td>
<td>Over the whole measurement range ± 0.04 mm</td>
</tr>
</tbody>
</table>

1.6.3 Units of measure

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Units of measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardness</td>
<td>N, Kp, Sc or User Defined</td>
</tr>
<tr>
<td>Weight</td>
<td>milligrams or grams (mg/g)</td>
</tr>
<tr>
<td>Thickness</td>
<td>millimeter or inches (mm/inch)</td>
</tr>
<tr>
<td>Diameter / Length / Width</td>
<td>millimeter or inches (mm/inch)</td>
</tr>
</tbody>
</table>

For conversion factors, refer to the Appendix of this manual.

1.6.4 Other specifications

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental</td>
<td>4-35˚ Celsius</td>
</tr>
<tr>
<td></td>
<td>70% RH (non-condensing)</td>
</tr>
<tr>
<td>Power supply</td>
<td>100-230V, 50/60 Hz</td>
</tr>
<tr>
<td>Dimensions (W x H x D)</td>
<td>420 x 150 x 185 mm</td>
</tr>
<tr>
<td>Interfaces</td>
<td>Ethernet, USB, RS-232</td>
</tr>
<tr>
<td>Test reports</td>
<td>• Header</td>
</tr>
<tr>
<td></td>
<td>• Setup</td>
</tr>
<tr>
<td></td>
<td>• Statistics</td>
</tr>
<tr>
<td></td>
<td>• Nominal</td>
</tr>
<tr>
<td></td>
<td>• PL limits</td>
</tr>
<tr>
<td></td>
<td>• T limits</td>
</tr>
<tr>
<td></td>
<td>• T violations</td>
</tr>
<tr>
<td></td>
<td>• Values</td>
</tr>
<tr>
<td></td>
<td>• Line Graph</td>
</tr>
<tr>
<td></td>
<td>• Histogram</td>
</tr>
<tr>
<td></td>
<td>• Plot Break</td>
</tr>
</tbody>
</table>

1.6.5 Materials of build

The following materials are used in the mechanical construction of the MultiTest 50:
1.7 Options & Accessories

The functionality of the MultiTest 50 can be further extended with a wide range of options and accessories. Ask your local sales & service partner for more information.

For a complete list of all available options & accessories refer to the MultiTest 50 Options & Spares Manual

1.8 Documentation

The following documentation is available for your MultiTest 50:

<table>
<thead>
<tr>
<th>Order #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>918127</td>
<td>Operating manual</td>
</tr>
<tr>
<td>918128</td>
<td>Service manual</td>
</tr>
<tr>
<td>918129</td>
<td>Options &amp; Spares manual</td>
</tr>
<tr>
<td>918126</td>
<td>Installation &amp; Operational Qualification (IQ/OQ)</td>
</tr>
<tr>
<td></td>
<td>documentation</td>
</tr>
<tr>
<td>918130</td>
<td>USP &amp; EP Compliance documentation</td>
</tr>
</tbody>
</table>
1.9 Service & Support

Our global network of factory-trained and certified Dr. Schleuniger® Pharmatron sales & service partners provide you with competent and uncomplicated local support. Refer to our website to find your local partner.

IT’S FREE AND EASY – Register online as a customer now!

By registering you will get your personal customer login, which allows you to access to additional information about Dr. Schleuniger® Pharmatron products and services.

www.pharmatron.com
2. SYSTEM INSTALLATION

CAUTION:
Using or handling the MultiTest 50 differently / in a method other than described in this operating manual may impair the safety precautions!

Carefully read this chapter before unpacking the MultiTest 50

2.1 Checklist for unpacking

2.1.1 All MultiTest 50 models

All MultiTest 50 models include the items listed below.

NOTE:
This checklist does not include any options / accessories / calibration tools.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Comment / Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HARDWARE</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>MultiTest 50 tester unit</td>
<td>included</td>
</tr>
<tr>
<td>1</td>
<td>Quick-change tongue (flat)</td>
<td>(in tester) included</td>
</tr>
<tr>
<td>2</td>
<td>Debris collection bins</td>
<td>(in tester) included</td>
</tr>
<tr>
<td>1</td>
<td>Power cable</td>
<td>included</td>
</tr>
<tr>
<td></td>
<td>DOCUMENTATION</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Operating manual for MultiTest 50</td>
<td>included</td>
</tr>
<tr>
<td>1</td>
<td>Internal release documentation</td>
<td>incl. calibration certificates</td>
</tr>
<tr>
<td>1</td>
<td>Declaration of CE Conformity</td>
<td>included</td>
</tr>
</tbody>
</table>
### 2.1.2 MultiTest 50 “FastTest™”

Only applies to the MultiTest 50 “FastTest™” models (WTDH and TDH). (in addition to standard scope of delivery)

For MultiTest 50 “FastTest™” the following additional items are included:

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Comment / Remark</th>
<th>Included</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HARDWARE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Carousel base plate with integrated actuator button</td>
<td>fully assembled on MultiTest 50</td>
<td>included</td>
</tr>
<tr>
<td>1</td>
<td>FastTest™ carousel</td>
<td>incl. washer (disk)</td>
<td>included</td>
</tr>
<tr>
<td>1</td>
<td>Mitutoyo digimatic indicator</td>
<td>(= thickness gauge)</td>
<td>included</td>
</tr>
<tr>
<td>1</td>
<td>Mounting set, complete</td>
<td>assembled, incl. screw-in post</td>
<td>included</td>
</tr>
<tr>
<td>1</td>
<td>Connection cable</td>
<td>to connect thickness gauge</td>
<td>included</td>
</tr>
<tr>
<td></td>
<td>DOCUMENTATION</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Operating manual</td>
<td>Mitutoyo digimatic indicator</td>
<td>included</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>--------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Thickness gauge assembly</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>digimatic indicator with mounting set, incl. lever</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Screw-in post</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>to mount thickness gauge assembly on tester</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>FastTest™ carousel</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>incl. washer (on bottom of carousel)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Connection cable</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>to connect thickness gauge with tester</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

File name: 918127_MT50_MO_E_A4_V009  
Valid for: Firmware 1.11 and higher  
Revision: 009  
Order number: 918127  
Valid since: 20. February 2012  
Copyright: © Pharmatron AG, 2012
2.2 Removal of shipping material

NOTE:
The MultiTest 50 is shipped inside a cardboard box with special rubber foam protection pieces. Keep all packaging material in case the machine needs to be shipped again.

ATTENTION – NO DEEP INCISIONS!
Sharp objects / deep incisions into cardboard box may scratch the housing of the MultiTest 50 and/or damage other items contained inside.

- Open the cardboard shipping box
- Remove all loose items located on top of the MultiTest 50 after having opened the cardboard box

WARNING – LOOSE ITEMS!
When removing the MultiTest 50 from the cardboard box, make sure the two (2) debris collection bins on the back of the machine don’t fall out.

- Carefully take the MultiTest 50 out of the cardboard box (including all rubber foam protection pieces).
- Place the tester on a flat workbench and remove all shipping material
2.3 Debris collection bins

The MultiTest 50 has two (2) debris collection bins next to each other on the back of the machine. Make sure that both bins are in their locking position and no parts are inside the bins. A mechanical stop prevents the bins from falling out when the machine is moved.

To remove a bin, first lift and then pull out.

2.4 Special jaw installation

- **OPTIONAL EQUIPMENT**
  Only applies when option has been ordered separately.

Special jaws are usually mounted on the standard jaw of the MultiTest 50. Depending on the type of jaw, different methods of assembly may apply.

For installation instructions, see respective Application Note (AN).
2.5 Installation of FastTest™ configuration

Only applies to the MultiTest 50 “FastTest™” models (WTDH and TDH).

Starting reference:
Top of tester before installation

1. Install screw-in post
   - Insert post
   - Turn the post by hand multiple times all the way to the stop (post will lower itself while being turned)

2. Tighten post using a wrench
3. Loosen the hex screw [A] on the base of the thickness gauge assembly.

4. Mount thickness gauge:
   - Mount thickness gauge assembly by gently moving its base over the post until the gauge foot touches the carousel base plate.
   - Push lever and simultaneously move the gauge assembly 1-2mm further down.

5. Level thickness gauge:
   - Make sure that the gauge foot is level with the carousel base plate (the foot is in parallel to the post).
   - Adjust gauge assembly if required (loosen hex screw [B] to adjust).

6. Tighten all screws.
7. Push lever and check distance between carousel base plate and gauge foot (must be at least 13mm)
   Adjust if required

8. Install carousel
   - Push lever so that gauge foot comes up
   - Mount carousel
   - Turn carousel so that gauge foot rests in one of the carousel sample positions (not on the carousel itself)
   - Release lever so that the gauge foot lowers itself

9. Check that carousel can be easily turned when lever is pushed (gauge foot is in upper position)

10. Install communication cable
    - Connect communication cable with thickness gauge [C]
    - Route cable through wire guide [D] on side of gauge assembly
Installation of the FastTest™ configuration is now complete.

For installation instructions of thickness gauge, also see manufacturer's manual.
2.6 Connect external balance

Only applies to MultiTest 50 models that have “Weight” parameter enabled.

OPTIONAL EQUIPMENT
Balance not included in standard scope of delivery.

The MultiTest 50 can be connected to an external balance [W] to accumulate weight measurements. Different laboratory balance types using standard Mettler Toledo® and standard Sartorius® communication protocol can be connected.

ATTENTION
Next to physically connecting the balance, your tester must be configured for the type of balance you are using.

See chapter “SYSTEM CONFIGURATION”.

---

<table>
<thead>
<tr>
<th>File name:</th>
<th>918127_MT50_MO_E_A4_V009</th>
<th>Valid for:</th>
<th>Firmware 1.11 and higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision:</td>
<td>009</td>
<td>Order number:</td>
<td>918127</td>
</tr>
<tr>
<td>Valid since:</td>
<td>20. February 2012</td>
<td>Copyright:</td>
<td>© Pharmatron AG, 2012</td>
</tr>
</tbody>
</table>
2.6.1 Mettler Toledo® balance

For installation instructions of balance, see manufacturer’s manual.

Make sure you have the correct RS232 communication cable for your balance type:

RS232 connection cable

(1:1, m/f, D-Sub, 9pol)

To connect a Mettler Toledo® balance with the MultiTest 50

Info: Included with balance when ordered from Dr. Schleuniger® Pharmatron

The balance port is used to transfer data from the external balance to the MultiTest 50.

1

MultiTest 50

- Connect the RS232 cable to the balance port of the MultiTest 50
  
  (female, D-Sub, 9pol)

2

Balance

- Connect the other end of the RS232 cable to the balance
  
  (male, D-Sub, 9pol)
2.6.2 Sartorius® balance

For installation instructions of balance, see manufacturer's manual.

Make sure you have the correct RS232 communication cable for your balance type:

**RS232 connection cable**

(Null-modem cable, m: D-Sub, 25pol / f: D-Sub, 9pol)

To connect a Sartorius® balance with the MultiTest 50

The balance port is used to transfer data from the external balance to the MultiTest 50.

1. **MultiTest 50**
   - Connect the RS232 cable to the balance port of the MultiTest 50
     *(female, D-Sub, 9pol)*

2. **Balance**
   - Connect the other end of the RS232 cable to the balance
     *(male, D-Sub, 25pol)*
2.7 Connect external thickness gauge

Only applies to MultiTest 50 models that have “Thickness” parameter enabled.

Does not apply to MultiTest 50 “FastTest™” models.
(see chapter “Installation of FastTest™ configuration” for installation instructions)

OPTIONAL EQUIPMENT
External thickness gauge not included in standard scope of delivery.

The MultiTest 50 can be connected to an external thickness gauge [T] to accumulate thickness measurements. A special “Y” cable is required to connect both thickness gauge and actuator button (on foot of gauge assembly).
Make sure you have the correct “Y” connection cable:

**Connection cable “Y”, for Thickness Gauge**

(m: D-Sub, 9pol / jack 3.5mm / special Mitutoyo)

Special cable to connect the Mitutoyo Digimatic Indicator and actuator button of the Thickness Gauge hardware assembly with the MultiTest 50.

*Info: Included with Thickness Gauge when ordered from Dr. Schleuniger® Pharmatron*

For installation instructions of thickness gauge, see manufacturer’s manual.

The thickness port is used to transfer data from the external thickness gauge to the MultiTest 50.

1. **MultiTest 50**
   - Connect the RS232 cable end to the thickness port of the MultiTest 50
     *(male, D-Sub, 9pol)*

2. **Digimatic indicator (thickness gauge)**
   - Connect the special Mitutoyo cable end to the thickness gauge
     *(special Mitutoyo)*

3. **Thickness gauge hardware assembly**
   - Connect the jack cable end to the actuator button of the thickness gauge
     *(jack 3.5mm)*
2.8 Connect local printer

**OPTIONAL EQUIPMENT**
Only applies when the MultiTest 50 is operated with a local printer.

For connecting a network printer, see chapter “Physical network connection”.

When connected to a printer [P], a report is automatically printed on completion of a test. A standard USB cable or RS232 cable is required to connect the printer.

**ATTENTION**
Next to physically connecting the printer, your tester must be configured for the type of printer you are using.

See chapter “SYSTEM CONFIGURATION”.
2.8.1 USB PostScript printer

The MultiTest 50 can be connected to any USB PostScript printer.

*Why PostScript®?*
In simple terms, PostScript is a standardized communication protocol for printers. This protocol has been implemented on various printer models from different manufacturers / brands. Any of these printers can be connected to the MultiTest 50 without having to install a special driver.

Dr. Schleuniger® Pharmatron recommends the EPSON EPL-6200 parallel USB laser printer, because of its printing speed and compact dimensions.

![EPSON EPL-6200](image)

Printer is pre-configured by Dr. Schleuniger® Pharmatron.

Make sure you have the correct USB connection cable:

**USB connection cable**
(type A / type B)
Standard USB cable to connect the printer.

*Info:* Included with printer when ordered from
Dr. Schleuniger® Pharmatron
For installation instructions of printer, see manufacturer’s manual.

1 MultiTest 50
- Connect the type A cable end to the USB1 port of the MultiTest 50

2 Printer
- Connect the type B cable end to the USB port of the printer

ATTENTION
Next to physically connecting the printer, your tester must be configured for the type of printer you are using.

See chapter “SYSTEM CONFIGURATION”. 
2.8.2 40col serial printer

The MultiTest 50 can be connected to the EPSON TM-U220D serial 9-dot matrix printer. Compact dimensions and fast printing make this printer type an all-time favourite.

Printer is pre-configured by Dr. Schleuniger® Pharmatron.

Make sure you have the correct RS232 connection cable:

RS232 connection cable

(Null-modem cable, m: D-Sub, 25pol / f: D-Sub, 9pol)

Info: Included with EPSON TM-U220D, serial printer when ordered from Dr. Schleuniger® Pharmatron

For installation instructions of printer, see manufacturer’s manual.

For correct printer configuration (dip switch settings) see Appendix of this manual
1

MultiTest 50
- Connect the male 9-pol cable end to the RS232 port of the MultiTest 50

2

Printer
- Connect the female 25-pol cable end to the printer

ATTENTION
Next to physically connecting the printer, your tester must be configured for the type of printer you are using.

See chapter “SYSTEM CONFIGURATION”.
2.9 Connect power cord

The MultiTest 50 requires A/C power from an 115V or 230V source. The appropriate cable for your type of power supply is included with your tester.

WARNING – RISK OF ELECTRIC SHOCK
Make sure the power switch on the back of the MultiTest 50 is OFF.

- Plug the power cord [A] into the power supply socket of the MultiTest 50.
- Plug the other end into an A/C power source.
3. NETWORK SETUP

**IMPORTANT**
Networking functions are only available for firmware versions 1.10 and higher.

**OPTIONAL EQUIPMENT**
Only required when the MultiTest 50 is operated with a network printer and/or TabStat™ DataCenter software.

The MultiTest 50 can be networked to a central PC and/or a network printer (P) via your company LAN. Networking allows connection of several MultiTest 50 units to one central PC with TabStat™ DataCenter software. It is also possible for several testers to print reports on a shared network printer if required.

**IMPORTANT**
To establish a network connection, the assistance of your IT department is required to ensure that all security settings / firewall settings etc. are configured to accept the MultiTest 50 in the network.

**RECOMMENDED STEPS**
Because setting up a network connection requires the MultiTest 50 to be fully operational, please complete all other steps of the system installation and return to this section afterwards.
3.1 Physical network connection

The Ethernet port is be used to transfer data to a network printer or to send / receive data from the TabStat™ DataCenter software. Only one standard Ethernet LAN cable is needed.

1. MultiTest 50
   - Connect a network LAN cable to the Ethernet port of the MultiTest 50
   (standard)

2. Physical network connection
   - Connect the other end of the LAN cable to your company network
   (standard)

3.2 Assign IP address to tester

Function not yet available.

NOTE:
For network printing it is not required to assign an IP address to the tester.

CHECK WITH YOUR IT DEPARTMENT
Check with your company's IT department what IP address is still free / from which IP range you should assign the specific IP address for the MultiTest 50.

3.3 Setup for network printer

CHECK WITH YOUR IT DEPARTMENT
Get the IP address of the printer you would like to connect to.
3.4 Setup for TabStat™ DataCenter

Function not yet available.

CHECK WITH YOUR IT DEPARTMENT

Get the IP address of the network PC (= host computer) where the TabStat™ DataCenter is installed.
4. SYSTEM CONFIGURATION / SETTINGS

Before running tests on the MultiTest 50, you should configure the tester to your individual system setup and test requirements. It is particularly important to configure:

- External devices (e.g. balance type, printer)
- Global settings (only if you don’t want to use the factory default settings)

NOTE:
If you are not familiar with operating the MultiTest 50, read the chapter “Operating Instructions” first and then return to this chapter.

4.1 Checklist: Most important global settings

IMPORTANT – CHECK GLOBAL SETTINGS
It is recommended to check all global settings, because they are used as default settings for all tests (print a “Global Settings Report” to check).

Every time a new product is programmed, the current global settings are also automatically used as default settings for product-specific parameters.

Refer to the chapter “Global Settings” for a complete overview and description.

The following list provides you with an overview of the most important global settings. Carefully check whether parameters are set to your requirements.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Comment / Remark</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GENERAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Device name</td>
<td>e.g. “Tester Room 1”</td>
<td>Checked</td>
</tr>
<tr>
<td></td>
<td>Date format</td>
<td>e.g. DD.MM.YYYY</td>
<td>Checked</td>
</tr>
<tr>
<td></td>
<td>Date</td>
<td>set to current date</td>
<td>Checked</td>
</tr>
<tr>
<td></td>
<td>Time</td>
<td>set to current time</td>
<td>Checked</td>
</tr>
<tr>
<td></td>
<td>Company name</td>
<td>set to your company name</td>
<td>Checked</td>
</tr>
</tbody>
</table>

Valid for: Firmware 1.11 and higher
Order number: 918127
Copyright: © Pharmatron AG, 2012
### PRINTER

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printer type</td>
<td>Set to either USB PostScript printer, Network PostScript printer or COM ser.</td>
<td>Checked</td>
</tr>
</tbody>
</table>

### PARAMETERS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode</td>
<td>e.g. “Auto”</td>
<td>Checked</td>
</tr>
<tr>
<td>Delay</td>
<td>(only applies when “Auto” is selected) e.g. “2.0s”</td>
<td>Checked</td>
</tr>
<tr>
<td>Measurement speed</td>
<td>for diameter measurement</td>
<td>Checked</td>
</tr>
<tr>
<td>Test order</td>
<td>e.g. “in order”</td>
<td>Checked</td>
</tr>
<tr>
<td>Backoff</td>
<td>usually at least 2-3mm</td>
<td>Checked</td>
</tr>
<tr>
<td>Diameter offset</td>
<td>must be 0.00 if no special jaw is used</td>
<td>Checked</td>
</tr>
</tbody>
</table>

### MODE

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardness method</td>
<td>e.g. “constant speed”</td>
<td>Checked</td>
</tr>
<tr>
<td>Depending on selected hardness method</td>
<td>Set hardness speed (mm/s) or linear force increase (N/s)</td>
<td>Checked</td>
</tr>
<tr>
<td>Thickness internal</td>
<td>Checked for internal thickness only</td>
<td>Checked</td>
</tr>
</tbody>
</table>

### UNITS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit hardness</td>
<td>e.g. “N”</td>
<td>Checked</td>
</tr>
<tr>
<td>No. decimal places (hardness unit)</td>
<td>Set for all hardness units</td>
<td>Checked</td>
</tr>
<tr>
<td>Unit length</td>
<td>e.g. “mm”</td>
<td>Checked</td>
</tr>
<tr>
<td>No. decimal places (length unit)</td>
<td>Set for both “mm” and “inch”</td>
<td>Checked</td>
</tr>
<tr>
<td>Unit weight</td>
<td>e.g. “mg”</td>
<td>Checked</td>
</tr>
<tr>
<td>No. decimal places (weight unit)</td>
<td>Set for both “mg” and “g”</td>
<td>Checked</td>
</tr>
</tbody>
</table>

### BALANCE

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Balance type</td>
<td>e.g. “Mettler”</td>
<td>Checked</td>
</tr>
<tr>
<td>Balance threshold</td>
<td>depending on balance (in mg)</td>
<td>Checked</td>
</tr>
<tr>
<td>Balance delta</td>
<td>depending on balance (in %)</td>
<td>Checked</td>
</tr>
<tr>
<td>Balance resolution</td>
<td>3 or 4 digits (0.1mg or 1mg)</td>
<td>Checked</td>
</tr>
</tbody>
</table>
4.2 Select printer type

**OPTIONAL EQUIPMENT**
Only applies when the MultiTest 50 is operated with printer.

**NOTE:**
If you are using a network printer and have successfully executed all steps to connect to the printer (see previous chapter), you may skip this section.

- Toggle to select from the following options:
  - USB PS (local PostScript printer)
  - Net. PS (network PostScript printer)
  - COM ser. (40 col. serial printer)

- If applicable enter the IP address of the network printer

- Confirm data change
Check printer communication:

Print a report

1. Select “Report / Global”
2. Push “Global Settings” button
   
   [the “Global Settings Report” is automatically printed]

4.3 Select balance type

Only applies to MultiTest 50 models that have “Weight” parameter enabled.

The MultiTest 50 allows connection of different balance types. Select the balance type you are using.

[Screen with no balance selected]

Select balance type

1. Use toggle button to select balance type
   
   1] none (= no balance selected)
   2] Mettler
   3] Mettler_PM
   4] Sartorius

   [When selecting a balance, detail setting fields will show]
Check balance detail settings
(change if required)

- Balance threshold
- Balance delta
- Balance resolution (3 or 4 digits → 0.1mg or 1mg resolution)

- Confirm data change

Check communication with balance:

Test setup

- Select “Test / SingleTest”
- Select “Weight”
- Push “Start” button
  → “Start” button will become inactive
  → other menu tabs will become inactive

If this error message appears, no communication can be established between MultiTest 50 and balance

- Check communication cable
- Check selected balance type
- Check configuration of balance
2

- Place a sample on the balance plate
- Wait for balance to settle
  (depending on balance type, you may need to manually confirm the weight measurement before it is sent to the MultiTest 50)

3

- The measured value shows on display of MultiTest 50

[balance communication check successfully completed]
## 4.4 Special jaw: Program diameter offset

### OPTIONAL EQUIPMENT
Only applies if a special jaw is installed that requires offset programming.

- The diameter offset is a compensation distance that is automatically added to the measured diameter.
- Depending on the type of jaw used, the offset can be a negative or positive value.

**Example: Jaw with recessed design**

Diameter calibration has been performed without the special jaw installed.

1. Total offset caused by special jaw: 10mm
2. Recession in jaw: 3mm*

**Programmed offset: 7mm**
\[(10mm - 3mm) = 7mm\]

*depends on tablet

**Example: Jaw with recessed and protruding design**

Diameter calibration has been performed without the special jaw installed.

1. Total offset caused by recessed part: 15mm
2. Recession in jaw: 5mm*
3. Total offset caused by protruding part: 10mm

**Programmed offset: 20mm**
\[(15mm - 5mm + 10mm) = 20mm\]

*depends on tablet

**IMPORTANT:**
If no special jaw is used, the diameter offset must be 0.00mm / 0.00inch.
IMPORTANT:
Programmed diameter offset is a global setting and applies to all width and diameter/length measurements taken (also to internal thickness, if applicable).

Go to:
Settings → Param

[Screen with no balance selected]

Program diameter offset
- Click on “Diameter Offset” button

[a new screen with numeric keypad opens]

- Clear currently set value
- For entering a negative value, push +/-
- Enter offset distance
- Confirm data entry

- Confirm data change
4.5 Activate internal thickness measuring

Only applies to MultiTest 50 models that have “Thickness” parameter enabled.

Skip this chapter if you are using an external thickness gauge or a MultiTest 50 in “FastTest™” configuration!

It is possible to measure thickness internally (≠ without having an external thickness gauge or integrated FastTest™ thickness gauge). If this mode is activated, tablets need to be turned manually for thickness measuring prior to measuring width / diameter / hardness.

Example: tablet orientation for measuring thickness internally

Go to:
Settings Mode

[Screen with no internal thickness selected]

Select internal thickness
• Click on checkbox

Example: oblong tablet laying on side
Check whether internal thickness has been activated:

1. Test setup
   - Select “Test / SingleTest”
   - Select “Thickness”

2. Place a sample in the test area
   - Push “Start”
     - the “Start” button becomes inactive
     - all menu tabs and buttons become inactive
     - moveable jaw moves to take the thickness measuring
3

- The measured value shows on display of MultiTest 50

[internal thickness check successfully completed]

4.6 Set date and time

Check the date and time displayed in the status bar of the MultiTest 50. If required, change date and/or time according to your local time / date. You can also change the format in which they are displayed.
5. OPERATING INSTRUCTIONS

NOTE: Some descriptions may not apply to your MultiTest 50 model
This manual has been written for a MultiTest 50 that has been configured to measure:

- Weight
- Thickness
- Width
- Diameter
- Hardness

It also covers operation in “FastTest™” configuration.

If your MultiTest 50 is configured for a subset of these parameters, ignore the references to functions which are not available on your machine.

5.1 Power up / Initialization

EXTERNAL DEVICES
If you use your MultiTest 50 with external devices (e.g. printer, balance, thickness gauge), switch on all external devices before switching on the tester.

- Put the power switch in ON position

- Wait until the MultiTest 50 has calibrated the home position and loaded all program parameters
  - message in display “loading, please wait…”
  - a status bar shows you the progress of the initialization

- When initialization / loading is complete, the start screen is displayed
5.2 Start screen / Main elements

The start screen displays all main menus that are enabled on your MultiTest 50 and additional information.

5.2.1 Main menu

The main menu (tabs) is always located in the top section of the screen.

SECURITY SETTINGS / LOGIN BUTTON
The login button will only display if security is switched ON.

MultiTest 50
Device name:  Tester room 1

www.pharmatron.com

<table>
<thead>
<tr>
<th>MAIN MENU</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Test</td>
<td>to setup &amp; start tests and view results</td>
</tr>
<tr>
<td>B Product</td>
<td>to program products</td>
</tr>
<tr>
<td>C Method</td>
<td>to program methods</td>
</tr>
<tr>
<td>D Report</td>
<td>to print reports</td>
</tr>
<tr>
<td>E Settings</td>
<td>to program global (default) parameters / settings</td>
</tr>
<tr>
<td>F Service</td>
<td>to perform service tasks incl. calibration &amp; verification</td>
</tr>
<tr>
<td>G Login</td>
<td>to login (operator) and access user administration (supervisor)</td>
</tr>
</tbody>
</table>
5.2.2 Status bar

The status bar is always displayed in all menus.

<table>
<thead>
<tr>
<th>STATUS BAR</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Menu path</td>
</tr>
<tr>
<td></td>
<td>displays the context / path where you currently are</td>
</tr>
<tr>
<td>2</td>
<td>User</td>
</tr>
<tr>
<td></td>
<td>user that is currently logged in</td>
</tr>
<tr>
<td>3</td>
<td>Date</td>
</tr>
<tr>
<td></td>
<td>current date</td>
</tr>
<tr>
<td>4</td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td>current time</td>
</tr>
</tbody>
</table>
5.2.3 QuickInfo (Start screen)

On the start screen, basic information about the tester and next calibration / verification date is displayed.

*Note: only (I) available for firmware 1.x*

<table>
<thead>
<tr>
<th>MAIN MENU</th>
<th>Description</th>
</tr>
</thead>
</table>
| I         | Device name
            name of MultiTest 50 (can be set individually) |
| II        | Next calibration
            next calibration date |
| III       | Next verification
            next verification date |
| IV        | Firmware version
            version of currently installed firmware |
5.3 Introduction to the touch screen interface

Operating the MultiTest 50 is intuitive and simple. This introduction explains the basic logic of the touch screen user interface to better understand how to navigate through the menu and how the MultiTest 50 will respond to your user inputs.

5.3.1 Menu levels

The MultiTest 50 has 2-3 vertical and up to 7 horizontal menu levels. Users can see the context of their current operation at all times.

5.3.2 Menu navigation

- To navigate to a menu, simply click on the respective menu tab.
• The currently selected menu tab [A] is displayed in dark grey color.

• To navigate back, click on the “context / back button” in the top left corner [B].

• This “context / back button” also shows you in which main menu you currently are. (→ in addition to the menu path displayed in the status bar)
5.3.3 Active / inactive items

The MultiTest 50 will always display all available menu items, but will set those buttons or menus to an “inactive” state when they can’t be chosen in the context you are currently in.

All menu tabs (and some buttons) can have three (3) different states:

- **Active**
  - can be selected
  - currently not selected

- **Selected**

- **Inactive**
  - can not be selected
  - currently not selected
Example: Test setup & views

**FullTest – Test setup**
- Menu tabs to select a test are active
- Context / back button is active
- Views are inactive

**FullTest – Running**
- Menu tabs to select a test are inactive
  (➔ still possible to view FullTest setup)
- Context / back button is inactive
- Views are active

---

**EXAMPLE – NOTE “INTELLIGENT OPERATOR SUPPORT”**
- Note that the start button has changed color to yellow (➔ when pushed, the next measurement in the test sequence is taken)
- Note that “Pause” and “Abort” buttons are displayed
- Note that “Internal Thickness” is active (➔ otherwise “Start” button would still be green)
5.3.4 Confirm / Discard data change

Whenever you make a permanent data change, you are required to confirm this data change before it is saved. If “Discard” is clicked, no data change is made.

NOTE:

Every time you make a permanent data change, the MultiTest 50 will automatically set the “context / back button” to an inactive state. This means you cannot exit the menu without either confirming or aborting your data change.

Example: Behavior when a setting is changed (→ “Thickness internal” selected)

No changes made
- Context / back button is active
- All menu tabs are active

Data change made
- Confirm / Discard data change buttons are displayed
- Context / back button is inactive
- All menu tabs are active

5.3.5 Selection buttons

Buttons that allow you to choose from a selection. This may include searching an existing list, but will not allow you to create new data entries.
**Example: Selection button in “FullTest” setup**

**Selection button**

- Selection buttons always have a small magenta arrow in the bottom right

[Select product]

- When selection button is clicked, a selection menu appears
- Search / choose from programmed or predefined data

**EXAMPLE – NOTE “INTELLIGENT OPERATOR SUPPORT”**

- The currently loaded product is pre-selected
- In the preview (below selection dropdown), nominal values of the selected product are shown
5.3.6 Data entry buttons / Alpha-numeric keypad

Buttons that allow you to enter any text (= both numeric values and characters). A alpha-numeric keypad will display for data entry. You can switch between 3 layers:

- Capital letters
- Small letters
- Numbers and special characters

Example: Data entry button in “FullTest” setup

- Data entry buttons never have a magenta arrow

[Enter container]

- When the data entry button is clicked, an alpha-numeric keypad appears for free text / data entry
- To clear all text use “sweeper”
- To delete last character use “backspace”

Switch between keypad layers

- Use “layer toggle” to switch between capital letters / small letters / numbers & special characters
- The “layer toggle” always displays the next possible layer
5.3.7 Data entry buttons / Numeric keypad

Buttons that only allow you to enter numeric values. A numeric keypad will display for data entry. You can only confirm values that are within the possible range of data entries.

Example: Data entry button in “Product / Hardness”:

Data entry button

- Data entry buttons never have a magenta arrow

[Enter nominal value]
• When the data entry button is clicked, a numeric keypad appears to enter a numeric value
• To edit existing numeric value, use “sweeper” or “backspace”

Possible range checked
• Note: error message shows when value is not within possible range
• Note: it is not possible to confirm incorrect data entries (= no button)

EXAMPLE – NOTE “INTELLIGENT OPERATOR SUPPORT”
• Only values within possible range can be selected / saved
• It is possible at any point to discard the changes / cancel operation
5.3.8 Toggle buttons

Toggle buttons are a type of selection button where only a limited number of choices are available. Each time you push the button, a different value is selected.

Example: Toggle button in “Settings / Parameter” ➔ “Mode”:

- Push toggle button to set to next choice

- Push toggle button again to set to next choice

Note: because a change has been made to the settings, you need to click “confirm” or “discard” before you can exit the settings menu

EXAMPLE – NOTE “INTELLIGENT OPERATOR SUPPORT”

It is possible to make several data changes and confirm all of them simultaneously.
5.3.9 Checkboxes

The most simple form of a selection button (= on / off).

Example: Checkbox in “Settings / Mode” → “Thickness internal”

<table>
<thead>
<tr>
<th>Toggle button</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Not selected (→ no checkmark)</td>
</tr>
<tr>
<td>[OFF - no selection]</td>
</tr>
</tbody>
</table>

| • Selected (→ with checkmark) |
| [ON – selected] |

• Note: because a change has been made to the settings, you need to click “confirm” or “discard” before you can exit the settings menu

[change discarded in example]
5.4 Product

NOTE:
If you are using the MultiTest 50 in combination with the TabStat™ DataCenter, all product specifications are managed on a central PC.

5.4.1 What is a product?

The MultiTest 50 allows you to program up to 100 products, which can be retrieved for fast test setup in the “FullTest”. The product includes all specifications for each parameter and additional product information.

Product specifications:

- General information
  (e.g. product name, product description)

- How the product should be measured
  (e.g. in “Auto mode”, using “Constant speed”)

- Which reporting template should be used
  (e.g. including graphics)

- T1/T2/PL limits for each parameter
  - Weight
  - Thickness
  - Width
  - Diameter / Length
  - Hardness
5.4.2 Why program nominal value and limits?

**Nominal value**
You can set a nominal value for each parameter. The nominal value is the “target” value that should be achieved during testing.

**T1 limits**
You can set +T1 / -T1 limits for each parameter. All measurements within that range are usually considered good quality / represent the “normal” variation of tablets produced.

**T2 limits**
You can set +T2 / -T2 limits for each parameter. Measurements within that range are usually still considered acceptable quality, but corrective action of the production parameters may be required. Measurements outside the T2 limit range are usually considered defective tablets (= the test fails).

**PL limits**
You can set +PL / -PL limits for each parameter. Measurements above / below the respective plausibility limit indicate that the measurement has been taken incorrectly (e.g. a tablet has been positioned the wrong way). The measured result is still recorded, but the entire test sequence for the respective test sample is not included in the statistical calculation (and an additional sample must be tested).

---

**NOTE:**
Without setting plausibility limits, an incorrect measurement is automatically considered a T2 violation (if T2 limits have been programmed).
5.4.3 Program a new product

NOTE: The number of displayed menu tabs depends on the respective number of parameters enabled on your MultiTest 50.

You may leave fields blank if you don’t have detailed specifications. Minimum requirement is to enter a product name.

Go to: Product

Example:

Create new product
- Click on button “Add new product”

[you can create a new product at any point when clicking through the product menu tabs as long as you have made no changes to the currently selected product]
Enter product name

You are immediately required to enter a name for the new product

- The software will not allow you to leave the field blank (message “value is below minimum”)
- The software will not allow you to enter a name that has already been used (message “Name already used”)

Enter additional product information

- Enter product description
- Select tablet shape [round / oblong / capsule / other]
- Select the template that should be used to automatically print a report upon completion of a test for the new product [standard / graphic]

Change units of measurement

The units of measurement set in the global settings are used as a default

- Change the units of measurement for the new product if required (will not change the global settings)
Change measurement parameters
The measurement parameters set in the global settings are used as a default
- Change the measurement parameters for the new product if required (e.g. “Auto mode”)

Change hardness settings
The hardness settings set in the global settings are used as a default
- Change the hardness settings for the new product if required (e.g. change measuring principle)

Hardness: Enter specifications
- Enter nominal value first
- Choose whether to enter the limits in absolute values (N) or in percentage (%) of nominal value
  - [Toggle button]
  - Enter limits
You can change between absolute (ABS) values and percentage (%) at any point

- the MultiTest 50 automatically calculates % into absolute values (or the other way around)

### Diameter: Enter specifications
- Enter nominal value first
- Enter limits (in % or absolute values)

Only applies if parameter is enabled on your MultiTest 50

### Width: Enter specifications
- Enter nominal value first
- Enter limits (in % or absolute values)

Only applies if parameter is enabled on your MultiTest 50

### Thickness: Enter specifications
- Enter nominal value first
- Enter limits (in % or absolute values)

Only applies if parameter is enabled on your MultiTest 50
Weight: Enter specifications

- Enter nominal value first
- Enter limits (in % or absolute values)

Only applies if parameter is enabled on your MultiTest 50

- Confirm data entries (or cancel)

NOTE “INTELLIGENT OPERATOR SUPPORT”

- It is not possible to enter a T2 limit, that is inside the T1 limit range
- It is not possible to enter a PL limit, that is inside the T2 limit range
- It is not possible to enter a limit that is outside the tester range

NOTE:
You may save the product any time during programming by confirming the data entry. As soon as you continue to add or change data, you cannot exit the product menu without confirming or discarding that data change.
5.4.4 Edit an existing product

You can edit existing products by simply selecting the product and making the required changes. As soon as you have made the first change, the MultiTest 50 requires you to confirm the changes made before you can exit the menu.

**Example:**

**Select product**
- If you have a lot of programmed products, narrow down the selection displayed in the dropdown by entering the first 1-3 characters of the product you are looking for into the search field.
- Select product from dropdown list.

- All product specifications are now loaded and can be viewed by clicking through the menu tabs.

[you can exit the product menu at any point with the “context / back button” in the product menu bar]
Edit product

- As soon as you make a change to any of the fields (in any menu tab), you cannot exit the product menu without confirming or discarding your data change

[confirm / discard buttons display]

- You can change all product specifications if required

- Confirm your data changes (or discard all changes)

NOTE "INTELLIGENT OPERATOR SUPPORT"

When changing the product name, the MultiTest 50 will automatically check whether that name is already in use and notify the operator immediately while making the change.
5.4.5 Delete an existing product

**Go to:**
Product

**Example:**

**Select product**
- If you have a lot of programmed products, narrow down the selection displayed in the dropdown by entering the first 1-3 characters of the product you are looking for into the search field
- Select product from dropdown list

- All product specifications are now loaded and can be viewed by clicking through the menu tabs (if required)

[you can exit the product menu at any point with the “context / back button” in the product menu bar]

**Delete product**
- Click the “Delete” button to delete the currently loaded product

[you can delete the product at any point when clicking through the menu tabs]
Do you really want to delete Pharm 02?

- Confirm the message that you want to delete the product (or cancel)

Yes ✓ ✗

No ✗ ✓
5.5 Method

NOTE:
If you are using the MultiTest 50 in combination with the TabStat™ DataCenter, all methods are managed on a central PC.

5.5.1 What is a method?

In case of the MultiTest 50, the method specifies the sample size for each parameter. Because the method is product-independent, the same method can be used for testing several products.

Example 1: “Hardness only” method

<table>
<thead>
<tr>
<th>WEIGHT (W)</th>
<th>THICKNESS (T)</th>
<th>WIDTH (WD)</th>
<th>DIAMETER (D)</th>
<th>HARDNESS (H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Example 2: “All parameters / Equal sample sizes” method

<table>
<thead>
<tr>
<th>WEIGHT (W)</th>
<th>THICKNESS (T)</th>
<th>WIDTH (WD)</th>
<th>DIAMETER (D)</th>
<th>HARDNESS (H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

Example 3: “All parameters / Unequal sample sizes” method

<table>
<thead>
<tr>
<th>WEIGHT (W)</th>
<th>THICKNESS (T)</th>
<th>WIDTH (WD)</th>
<th>DIAMETER (D)</th>
<th>HARDNESS (H)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>20</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

5.5.2 Recommended naming of methods

To easily identify programmed methods, it is recommended to use the following naming convention when programming methods:

Example 1: 0/0/0/0/10

Example 2: 10/10/10/10/10

Example 3: 20/20/10/10/10

Use the total number of available parameters and specify the sample size for each parameter in the order the parameters are normally tested (weight / thickness / width / diameter / hardness).
5.5.3 Program a new method

**Go to:** Method

**Example:**

Create new method

- Click on button “Add new method”

[you can create a new method at any point when clicking through the method menu tabs as long as you have made no changes to the currently selected method]

Enter method name

You are immediately required to enter a name for the new method

- The software will not allow you to leave the field blank (message “value below minimum”)
- The software will not allow you to enter a name that has already been used (message “Name already used”)

---

<table>
<thead>
<tr>
<th>File name:</th>
<th>918127_MT50_MG_E_A4_V009</th>
<th>Valid for:</th>
<th>Firmware 1.11 and higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision:</td>
<td>009</td>
<td>Order number:</td>
<td>918127</td>
</tr>
<tr>
<td>Valid since:</td>
<td>20. February 2012</td>
<td>Copyright:</td>
<td>© Pharmaton AG, 2012</td>
</tr>
</tbody>
</table>
Enter sample sizes

- Enter a sample size for those parameters you would like to test
- If your method name describes the sample sizes, make sure the sample sizes you enter correspond to the name
- Make sure parameters you don’t want to test are set to zero (0)

• Confirm data entry (or cancel)

NOTE:
You may save the method any time during programming by confirming the data entry. As soon as you continue to add or change data, you cannot exit the method menu without confirming or discarding that data change.
5.5.4 Edit an existing method

You can edit existing methods by simply selecting the method and making the required changes. As soon as you have made the first change, the MultiTest 50 requires you to confirm the changes made before you can exit the menu.

**NOTE:**

If you are using the recommended method naming convention, make sure to change the method name accordingly when a sample size is changed.

**Go to:**

- **Method**

**Example:**

**Select method**

- If you have a lot of programmed methods, narrow down the selection displayed in the dropdown by entering the first 1-3 characters of the method you are looking for into the search field
- Select product from dropdown list

- All method specifications are now loaded and can be viewed by clicking on the “info” menu tab

(you can exit the method menu at any point with the “context / back button” in the method menu bar)
Edit method

- As soon as you make a change to any of the fields, you cannot exit the method menu without confirming or discarding your data change

[confirm / discard buttons display]

- Confirm your data changes (or discard all changes)

NOTE "INTELLIGENT OPERATOR SUPPORT"

When changing the method name, the MultiTest 50 will automatically check whether that name is already in use and notify the operator immediately while making the change.
5.5.5 Delete an existing method

**Select method**

- If you have a lot of programmed methods, narrow down the selection displayed in the dropdown by entering the first 1-3 characters of the method you are looking for into the search field
- Select method from dropdown list

**Delete method**

- Click the “Delete” button to delete the currently loaded method
• Confirm the message that you want to delete the method (or cancel)

Do you really want to delete 10/10/10/10/10?

Yes ☑

No ☒
5.6 Introduction to testing

5.6.1 Introduction: FullTest / EasyTest / SingleTest

The MultiTest 50 has three (3) different test modes to execute tests:

**FullTest**
Combine pre-programmed products and methods and press start. The “FullTest” is ideally suited for frequently reoccurring tests and allows testing including all T1/T2/PL limits.

**EasyTest**
Set the sample size for each parameter you need to test and press start. If needed, you can also enter the nominal value for each parameter. The “EasyTest” is ideally suited for quickly testing multiple samples without having to pre-program a product and method.

**SingleTest**
Simply select the parameters you want to test and press start. As the name indicates, ideally suited for quickly testing one single sample without having to set or program anything.
5.6.2 Introduction: Views

While a test is running, the operator can view measured results in three (3) different ways:

Current view
The currently measured results are displayed for all parameters (= the last measurement taken per parameter). For each parameter, the total sample size and the number of samples that have already been measured are shown. If limits have been defined, the MultiTest 50 will immediately display whether the measured value is a T1/T2/PL violation.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>No. of samples measured</td>
</tr>
<tr>
<td>B</td>
<td>Total sample size</td>
</tr>
<tr>
<td>C</td>
<td>Measurement evaluation</td>
</tr>
</tbody>
</table>

C: Limit violations are immediately displayed (as icon)

- No violation
- +T1 violation
- -T1 violation
- +T2 violation
- -T2 violation
- +PL violation
- -PL violation
- PL violation occurred in previous measurement of same sample
List view
Always displays the all measurements taken for all parameters in list view (sets of 5). Particularly useful when larger sample sizes and/or unequal sample sizes are tested.

Hardness view
Displays the current hardness measurement in form of a curve and the last 5 results in a list. Particularly useful when analyzing break-force characteristics of tested samples.
5.6.3 Checklist: Important global settings / product settings

The following checklist indicates the most important global settings / local product settings to ensure tests are executed as expected.

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Comment / Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PARAMETERS</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Mode</td>
<td>e.g. “Auto”</td>
</tr>
<tr>
<td></td>
<td>Delay (only applies when “Auto” is selected)</td>
<td>e.g. “2.0s”</td>
</tr>
<tr>
<td></td>
<td>Test order</td>
<td>e.g. “any order”</td>
</tr>
<tr>
<td></td>
<td>Backoff</td>
<td>usually at least 2-3mm</td>
</tr>
<tr>
<td></td>
<td>MODE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hardness method</td>
<td>e.g. “constant speed”</td>
</tr>
<tr>
<td></td>
<td>Depending on selected hardness method</td>
<td>Set hardness speed (mm/s) or linear force increase (N/s)</td>
</tr>
</tbody>
</table>

The global settings of these parameters are always used for the the EasyTest and the SingleTest. In FullTest, the settings of the product are used (can be different than global settings).

5.6.4 Start button

A test is always started by pushing the “Start” button. The start button can have three (3) different states:

- **Green**
  - no test running
  - new test can be started by pushing the button

- **Yellow**
  - no test running
  - in test sequence; no new test can be started
  - next measurement can be taken by pushing the button

- **Inactive**
  - test running / measurement is currently being taken
  - in test sequence; no new test can be started
  - button cannot be pushed
5.6.5 Pause button

When a test is started, the “Pause” button is displayed throughout the test sequence. Especially in “Auto” mode, where measurements are taken automatically (without the operator pushing the start button between individual measurements), it can be useful to pause a test. To resume testing, push the (yellow) “Start” button again.

**Active**
- test running / measurement being taken
- push to pause test sequence

**Inactive**
- test sequence paused
- button cannot be pushed (push “Start” button to resume testing)

**NOTE:**
Whenever the MultiTest 50 is waiting for the operator to push the “Start” button within a test sequence (e.g. in “Manual” mode), the “Pause” button is inactive.

5.6.6 Stop / Abort button

When a test is started, the “Abort” button is displayed throughout the test sequence. You can abort a test anytime. The MultiTest 50 will ask the user whether to print a report or not.

**Active**
Can be pushed anytime when a test is running / paused

**Do you really want to ABORT this test?**
- Yes
- No

**Print aborted test?**
- Yes
- No
5.7 Test

5.7.1 FullTest

Combine pre-programmed products and methods and press start. The “FullTest” is ideally suited for frequently reoccurring tests and allows testing including all T1/T2/PL limits.

Go to:

Test FullTest

Example:

Test setup
- Select product
- Select method
- Enter additional information if required
- Push “Start” to start testing

Current view

[Views become active and “Current” view is automatically selected]
- Tester is waiting for first measurement
[if measuring “Weight” and “External Thickness” is required, these two parameters must be measured first per sample before width/diameter/hardness can be measured]
[The “Start” button becomes active when the first measurement sequence inside the test area can be taken]

- Place a test sample inside the test area and push start
- Ensure that the test sample is correctly oriented for the measurement

Example: with internal thickness measuring

ListView
[If you are testing multiple samples, use the ListView to maintain an overview of your complete test]

HardnessView
[Change to hardness view to check the break force curve if required]

Print test report
- A test report is automatically printed once you have completed the test
  (= you have taken all measurements according to the selected method)
- Return to test setup (→ click confirm)
5.7.2 Behavior with plausibility violation

If a plausibility violation occurs during testing:

• all measurements for that sample will not be included in the statistics
• an additional sample must be tested

Example: thickness measurement not plausible

Explanation

• First, weight measurements have been taken for five (5) samples (= “any order”)
• Thickness measurement for sample number 3 has been implausible
• No further measurements required for that sample

• All measurements where the plausibility violation occurred are still displayed and will show in report (not included in statistical calculation)
• An additional sample must be measured

Note:

• Current view: Implausible measurement is marked with “!”
• Current view: Total sample size is marked with “*”
• List view: Already taken measurements in sequence are crossed out
• List view: Sequence where plausibility violation occurred is marked with “!”
5.7.3 EasyTest

Set the sample size for each parameter you need to test and press start. If needed, you can also enter the nominal value for each parameter. The “EasyTest” is ideally suited for quickly testing multiple samples without having to pre-program a product and method.

Example:

Test setup
- If you need to enter additional information (e.g. product name) that will show in the test report click

[Extended test setup]

- Use “sweeper” to clear all old info (if required)
- Enter information
- Confirm all entries
Enter sample size & nominal value

- Click on respective parameter button

- Use “sweeper” to clear all (old) info

- Click on “sample size”, enter number and confirm

- Click on “nominal value”, enter value and confirm
• Confirm programming for both settings

• Repeat for other parameters if required
• Push “Start” button to start testing

• Use views to display currently measured results

Print test report
• A test report is automatically printed once you have completed the test
  (= you have taken all measurements according to the selected method)
• Return to test setup (→ click confirm)
5.7.4 SingleTest

Simply select the parameters you want to test and press start. As the name indicates, ideally suited for quickly testing one single sample without having to set or program anything.

**Example:**

- Activate the parameter(s) you want to test
- Push “Start” button to start testing

- Measured results are displayed in same window (no different views required)

- When test is completed, no test report is printed
6. **(GLOBAL) SETTINGS**

Global Settings are the settings that you want to set for all Test and Product Setups that are programmed in the MultiTest 50. The Global Settings are system, rather than product, specific. Examples of Global Settings are the Date, the Date Format and the type of balance that is used with the MultiTest 50.

**Go to:**

- **General**

### 6.1 General

- **Language** (English)
- **External beep** (Audible signal for external collected data, e.g., balance and thickness)
- **Key beep** (Audible signal for touch input)
- **Device name** (Enter device name of your choice, information will be shown on test reports)
- **Date format**
  - Toggle to switch between
    - [1] DD.MM.YYYY
    - [2] MM.DD:YYYY
    - [3] YYYY.MM.DD
- **Date** (Enter current date)
- **Time** (Enter current time)
- **Company name** (Enter your company name)

**Confirm data change**
6.2 Printer
- Toggle to switch between
  [1] USB PS (connect any USB printer with post script language)
  [2] COM serial (40col serial printer)

- Confirm data change

6.3 Report
- Configuration of templates for printout.
- Select template “Standard”.

- Confirm data change
Report “Standard” page 1/2/3

- Customize the report to your needs. Information’s can be switched ON / OFF.

6.4 Parameter

- Test Mode: The MultiTest 50 may be operated in either Automatic or Manual mode.

  [1] In Manual mode, the tester stops after each hardness sample is tested. After a tablet is tested, the slide returns to the resting position. It will wait there indefinitely. The user must initiate the test for each sample by pressing Run.

  [2] In Automatic Mode, the slide returns to the resting position. It waits there for “Delay” seconds then the machine automatically begins another test. The operator can pause the test by pressing Stop and resume the test by pressing Run. If the slide is moving, the test will be interrupted the next time the slide returns to the resting position.

- Delay: When the MultiTest 50 is in Auto mode, it is waiting a fixed time between consecutive hardness test measurements. The Delay is the amount of time that the MultiTest 50 slide stops moving backwards (left) and starts moving forward (right). Users may wish to experiment with the setting to obtain an acceptable Delay.

  This parameter, along with the Backoff parameter, will allow the operator to set up a comfortable test cycle. If the operator can replace tablets quickly and accurately during testing in Auto mode, you may want to set the Delay to a small value. On the other hand, you may want to have more time to work.

- Test order: Test sequence allows either multi-tasking or samples have to be collected in...
• Backoff: When the MultiTest 50 begins a test the slide moves forward until it contacts the tablet. At this point, the MultiTest 50 stores the tablet diameter. The Backoff is added to the tablet diameter to determine the resting position to use between each test sample.

• Diameter offset: The Diameter Offset is a compensation distance that is added to the diameter that is measured by the MultiTest 50. The Diameter Offset may be a positive or a negative value depending upon the accessory jaw which is used at the time of the measurement. The Diameter Offset value is automatically added to the measured diameter in order to determine the actual diameter of the sample.

[1] Example “In order”

<table>
<thead>
<tr>
<th>Weight (mg)</th>
<th>Thickness (mm)</th>
<th>Width (mm)</th>
<th>Diameter</th>
<th>Hardness (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>29.9</td>
<td>5.21</td>
<td>10.71</td>
<td>21.64</td>
<td>90</td>
</tr>
<tr>
<td>38.0</td>
<td>5.25</td>
<td>10.70</td>
<td>21.78</td>
<td>88</td>
</tr>
<tr>
<td>38.5</td>
<td>5.35</td>
<td>10.65</td>
<td>21.72</td>
<td>90</td>
</tr>
</tbody>
</table>

[2] Example “Any order”

<table>
<thead>
<tr>
<th>Weight (mg)</th>
<th>Thickness (mm)</th>
<th>Width (mm)</th>
<th>Diameter</th>
<th>Hardness (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.3</td>
<td>5.35</td>
<td>10.34</td>
<td>21.67</td>
<td>90</td>
</tr>
<tr>
<td>29.9</td>
<td>5.21</td>
<td>10.71</td>
<td>21.64</td>
<td>90</td>
</tr>
<tr>
<td>10.0</td>
<td>5.31</td>
<td>10.30</td>
<td>21.78</td>
<td>88</td>
</tr>
<tr>
<td>10.5</td>
<td>5.35</td>
<td>10.45</td>
<td>21.72</td>
<td>90</td>
</tr>
</tbody>
</table>

• Confirm data change

6.5 Mode

• Hardness method: The MultiTest 50 can measure the breaking force either in constant speed, constant force increase or using the so-called 6D mode.

[1] Constant speed: Range 0.05mm/s – 5mm/s.

Fixed setting to achieve comparable results to the model 6D.

• Thickness internal: The MultiTest 50 can measure the thickness either internally or with an external Mitutoyo gauge (Fast Test configuration).
6.6 Units

- Unit hardness: The MultiTest 50 can measure the breaking force in 4 different units of measure. Optionally the decimal places can be changed.
  - [1] Newton, with 0 or 1 decimal place
  - [2] Kilopond, with 0,1 or 2 decimal places
  - [3] Strong Cobb, with 0,1 or 2 decimal places
  - [4] User defined, with 0,1,2 or 3 decimal places

- Unit length: The MultiTest 50 can measure the length either in mm or inch. Optionally the decimal places can be changed.
  - [1] mm, with 0,1 or 2 decimal places
  - [2] inch, with 0,1,2,3 or 4 decimal places

- Unit weight: The MultiTest 50 can measure the weight either in Milligram (mg) or in Gram (g). Optionally the decimal places can be changed.
  - [1] grams, with 0 or 1 decimal place
  - [2] milligrams, with 0,1,2,3 or 4 decimal places

6.7 Balance

- Balance: Currently 3 types of balances can be connected to your MultiTest 50. All Mettler balances with MT-SICS protocol, Mettler PM and most Sartorius are supported.
  - [1] None: Activate this option if no balance is connected.
  - [3] Mettler: Balances with PM
  - [4] Sartorius

- Balance threshold: The threshold is the lowest data value that will be accepted by the MultiTest 50.
- Balance delta: After a valid weight value is accepted and the unstable weight data changes from the previous stable value by more than the delta weight, the next stable value will be accepted as valid by the MultiTest.
- Balance resolution: Toggle to switch between:
[1] 3 Digits (1mg resolution)
[2] 4 Digits (0.1mg resolution)

- Confirm data change
7. CALIBRATION & VERIFICATION

Your MultiTest 50 has been calibrated and verified by the manufacturer. Dr. Schleuniger® Pharmatron recommends to calibrate the MultiTest 50 at least once per year and execute verification in regular intervals to ensure proper functioning.

7.1 Function checking device (FCD)

“Mechanical tablet” (= tablet simulator) to quickly check the hardness measuring performance of your MultiTest 50 before starting a test. Each function checking device has a serial number and comes with a calibration certificate.

Function checking devices are available for the following forces:
- 5kp
- 10kp
- 15kp
- 20kp

NOTE:
When using a function checking device (FCD), it is recommended to perform 3 tests with 10 hardness measurements per test. Only the last test (= last 10 measurements) are to be considered.

To efficiently execute a routine check of 10 hardness measurements, it is recommended to:
- Program a product for each FCD
- Program a method (can be used for all FCDs)
7.1.1 Recommended setup for regular checking routine (example)

**Go to:** Product

**SETUP A PRODUCT FOR THE “FCD”**
- Program a product “FCD – 10kp”
- Set “tablet shape” to “other”
- Add a product description if required (e.g. “function check”)

- Go to “Units”
  → set “Unit hardness” to “KP”

- Go to “Product measurement parameters”
  → set “Mode” to “Auto”
  → set “Delay” to “0.0s”
  → set “Backoff” to “0.1mm”
• Select menu tab “Hardness”
  → set nominal value to “10 Kp”
  → set +T1 to 1% and –T1 to 1%
  → set +T2 to 3% and –T2 to 3%
• Leave all other fields blank and save product

Go to:
Method

SETUP A METHOD FOR THE “FCD”
• Program a method “FCD check”
• Set sample size for “Hardness” to “10”
  (or 20 if desired)

• Leave all other fields blank and save method

You can now use the programmed product and method anytime to quickly check the hardness measuring performance (see next chapter).
7.1.2 Perform checking routine using a FCD (example)

Load pre-programmed product “FCD – 10kp” and method “FCD check”. Perform a series of hardness tests. The mean of measured results should be 10kp (+/- 1%).

Go to:

Test FullTest

INSERT FCD

- Place the FCD in the test area (on side of fixed jaw)

- Load product “FCD – 10kp”
- Load method “FCD check”
- Push “Start” button

Complete a series of 10 hardness tests
- Check measured values / check printed report → mean should be 10kp (+/- 1%)

Note: you should perform 3 tests with 10 measurements each and only consider the last test (an average of 20 measurements is required to stabilize the FCD)
7.2 Calibration

**WARNING:**
Calibration should only be performed by certified Dr. Schleuniger® Pharmatron service engineers.

**PERFORMING CALIBRATION INCORRECTLY WILL RESULT IN FALSE MEASUREMENTS AND MAY ALSO DAMAGE YOUR TESTER PERMANENTLY.**

**RECOMMENDATION:**
Dr. Schleuniger® Pharmatron recommends performing a full calibration of the MultiTest 50 at least every 6 months.

7.2.1 Required calibration tools

To perform a full calibration of the MultiTest 50 (WTDH), the following tools are required:

<table>
<thead>
<tr>
<th>MEASURING</th>
<th>REQUIRED FOR CALIBRATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Weight</td>
<td>Reference weight depends on balance → see manufacturer’s manual</td>
</tr>
<tr>
<td>C External thickness</td>
<td>Usually 10mm gauge block → see manufacturer’s manual</td>
</tr>
<tr>
<td>C Internal thickness</td>
<td>10mm gauge block</td>
</tr>
<tr>
<td>C Width</td>
<td></td>
</tr>
<tr>
<td>C Diameter / length</td>
<td></td>
</tr>
<tr>
<td>D Hardness</td>
<td>5kg reference weight [D]</td>
</tr>
<tr>
<td></td>
<td>Calibration kit (calibration plate [E] and calibration cube [F])</td>
</tr>
</tbody>
</table>
7.2.2 Weight

The MultiTest 50 does not monitor the status of the balance’s calibration information in real time. It is, however, possible to create a time stamp when the balance has been calibrated and to determine the next calibration date based on the time stamp.

NOTE:
The MultiTest 50 guides the user step-by-step through the calibration procedure.
To print a calibration report, go to: Main menu / Reports / Cal & Ver.

Tolerance / Acceptance range

A pre-calibration verification section is available on the calibration report. These fields can be used to compare the measured result of the standard against the measured result for the standard at the last calibration. The difference between the 2 readings is compared to the Acceptance Range. If the difference is less than the Acceptance Range, the calibration is considered acceptable. If the difference is greater than the acceptance range, the calibration is considered unacceptable.

The difference between the standard for the current calibration and the last calibration is Correction and this value appears on the Calibration Reports.

<table>
<thead>
<tr>
<th>Tolerance setting / Acceptance range</th>
<th>0.0 – 5'000.0 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory default tolerance setting</td>
<td>2.0 mg</td>
</tr>
</tbody>
</table>

Procedure

Go to:

Service  Calibration
• Select “Settings calibration weight”

[Note in example: “Thickness ext.” is not displayed, because “internal thickness” is activated]

• Check “Tolerance” settings
• Check “Interval” settings (= days until next calibration)

• Select “Weight”
• Calibrate the balance according to the operating manual of the balance

• Confirm that calibration has been performed
• The next calibration date is displayed
  ➔ automatically calculated based on current
date and number of days
  (= programmed calibration interval)
• Confirm next calibration date

• Calibration is now completed
  ➔ date will show in calibration report
7.2.3 Thickness (external)

The MultiTest 50 does not monitor the status of the thickness gauge’s calibration information in real time. It is, however, possible to create a time stamp when the thickness gauge has been calibrated and to determine the next calibration date based on the time stamp.

NOTE:

The MultiTest 50 guides the user step-by-step through the calibration procedure. To print a calibration report, go to: Main menu / Reports / Cal & Ver.

Tolerance / Acceptance range

A pre-calibration verification section is available on the calibration report. These fields can be used to compare the measured result of the standard against the measured result for the standard at the last calibration. The difference between the 2 readings is compared to the Acceptance Range. If the difference is less than the Acceptance Range, the calibration is considered acceptable. If the difference is greater than the acceptance range, the calibration is considered unacceptable.

The difference between the standard for the current calibration and the last calibration is Correction and this value appears on the Calibration Reports.

<table>
<thead>
<tr>
<th>Tolerance setting / Acceptance range</th>
<th>0.00 – 1.00 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory default tolerance setting</td>
<td>0.20 mm</td>
</tr>
</tbody>
</table>

Procedure

- Select “Settings calibration thickness”
- Check “Tolerance” settings
- Check “Interval” settings (= days until next calibration)
- Select “Thickness (ext.)”
- Calibrate the thickness gauge according to the manufacturer’s manual
• Confirm that calibration has been performed

- The next calibration date is displayed
  → automatically calculated based on current date and number of days
  (≡ programmed calibration interval)

• Confirm next calibration date

• Calibration is now completed
  → date will show in calibration report

7.2.4 Thickness (internal)

NOTE:
There is no dedicated calibration procedure for internal thickness. Refer to “Diameter” calibration, because the measuring station is the same (≡ moveable jaw).

7.2.5 Width

NOTE:
There is no dedicated calibration procedure for width measuring. Refer to “Diameter” calibration, because the measuring station is the same (≡ moveable jaw).
7.2.6 Diameter

The MultiTest 50 monitors the status of the diameter calibration.

**WARNING:**
Do not attempt to calibrate the MultiTest 50 unless you have the proper calibration equipment and have been trained to perform calibration.

Executing the calibration routine without proper calibration tools will cause the MultiTest 50 to lose its calibration reference!

**NOTE:**
The MultiTest 50 guides the user step-by-step through the calibration procedure.
To print a calibration report, go to: **Main menu / Reports / Cal.& Ver.**

Required tools to perform calibration:
- 10mm gauge block

Tolerance / Acceptance range

A pre-calibration verification section is available on the calibration report. These fields can be used to compare the measured result of the standard against the measured result for the standard at the last calibration. The difference between the 2 readings is compared to the Acceptance Range. If the difference is less than the Acceptance Range, the calibration is considered acceptable. If the difference is greater than the acceptance range, the calibration is considered unacceptable.

The difference between the standard for the current calibration and the last calibration is Correction and this value appears on the Calibration Reports.

<table>
<thead>
<tr>
<th>Tolerance setting / Acceptance range</th>
<th>0.00 – 35.00 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory default tolerance setting</td>
<td>0.20 mm</td>
</tr>
</tbody>
</table>
Procedure

Go to:

Service
Calibration

- Select “Settings calibration diameter”

[Note in example: “Thickness ext.” is not displayed, because “internal thickness” is activated]

- Check “Tolerance” settings
- Check “Interval” settings (= days until next calibration)

- Select “Diameter”
- Make sure that the test area and jaws are cleaned / free of tablet debris
- Press “Run” button

[the jaw moves and calibrates the zero point ➔ message “Please wait…”]

- Insert 10mm gauge block in test area ➔ directly at fixed jaw
- Press “Run” button

[the jaw moves and calibrates the 10mm point ➔ message “Please wait…”]
• Next calibration date is displayed
   confirm with “OK” button

• Calibration is now completed
   date will show in calibration report

• Press “OK” to return to calibration menu
7.2.7 Hardness

The MultiTest 50 monitors the status of the hardness calibration.

WARNING:
Do not attempt to calibrate the MultiTest 50 unless you have the proper calibration equipment and have been trained to perform calibration.

Executing the calibration routine without proper calibration tools will cause the MultiTest 50 to lose its calibration reference and may cause permanent damage!

NOTE:
The MultiTest 50 guides the user step-by-step through the calibration procedure. To print a calibration report, go to: Main menu / Reports / Cal.& Ver.

Required tools to perform calibration:
- Calibration kit (calibration plate + calibration cube)
- 5kg reference weight

Tolerance / Acceptance range
A pre-calibration verification section is available on the calibration report. These fields can be used to compare the measured result of the standard against the measured result for the standard at the last calibration. The difference between the 2 readings is compared to the Acceptance Range. If the difference is less than the Acceptance Range, the calibration is considered acceptable. If the difference is greater than the acceptance range, the calibration is considered unacceptable.

The difference between the standard for the current calibration and the last calibration is Correction and this value appears on the Calibration Reports.

<table>
<thead>
<tr>
<th>Tolerance setting / Acceptance range</th>
<th>0.00 – 1.00 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory default tolerance setting</td>
<td>0.40 kg</td>
</tr>
</tbody>
</table>
WARNING:
Make sure the MultiTest 50 is switched on BEFORE placing the machine in the vertical position!

MECHANICAL PREPARATIONS

• Make sure machine and all connected devices are switched ON
• Carefully place machine in vertical position
• Make sure the machine is steady and leveled

• Remove quick-change tongue
- Remove fixed jaw
  - loosen 2 screws
- Make sure not to drop the fixed jaw once both screws are lose
• Insert calibration cube [A] first
• Insert calibration plate [B] afterwards

• Make sure that the shaft of the calibration plate is correctly / fully inserted into the calibration cube

NOTE:
When calibration / verification has been completed, execute the steps described in reverse order to prepare the MultiTest 50 for testing again.
CALIBRATION & VERIFICATION

CALIBRATION PROCEDURE

WARNING:
Avoid touching or bumping the machine or table during the calibration procedure.
Vibrations will lead to incorrect calibration values!

Go to:
Service Calibration

- Select “Settings calibration hardness”

[note in example: “Thickness ext.” is not displayed, because “internal thickness” is activated]

- Check “Tolerance” settings
- Check “Interval” settings
 (= days until next calibration)
• Select “Hardness”

• Make sure that the calibration plate and calibration cube are correctly installed

• Press “Run” button

• Place the 5kg reference weight on the calibration plate
  → center of gravity must be exactly in the middle!

WARNING:
Do not drop the 5kg reference weight onto the calibration plate. This may permanently damage the load cell!
CALIBRATION & VERIFICATION

- Press “Run” button
  - hardness is calibrated → message “Please wait…”

- Next calibration date is displayed
  - confirm with “OK” button

- Calibration is now completed
  - date will show in calibration report

- Press “OK” to return to calibration menu

If no further validation of the hardness measuring is performed:

- Remove the reference weight
- Remove calibration kit
- Insert the fixed jaw and tighten both screws
- Insert quick-change tongue
- Return the MultiTest 50 into the normal horizontal position
7.2.8 Print calibration report

A calibration report can be printed anytime showing all details of the last calibration performed.

- Press “Calibration”
  → a report is printed immediately
7.3 Verification

**WARNING:**
Verification should only be performed by certified Dr. Schleuniger® Pharmatron service engineers.

PERFORMING VERIFICATION INCORRECTLY DOES NOT ALLOW TO VERIFY CALIBRATION AND MAY DAMAGE YOUR TESTER PERMANENTLY.

**RECOMMENDATION:**
Dr. Schleuniger® Pharmatron recommends performing a full verification of the MultiTest 50 at least every 6 months.

7.3.1 Required verification tools
You can use the same tools used for calibration. It is, however, recommended to use additional reference weights / gauge blocks to verify the complete measuring range.

<table>
<thead>
<tr>
<th>MEASURING</th>
<th>MINIMUM REQUIREMENTS FOR VERIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Weight</td>
<td>Reference weight depends on balance</td>
</tr>
<tr>
<td></td>
<td>➔ see manufacturer’s manual</td>
</tr>
<tr>
<td>C External thickness</td>
<td>Usually 10mm gauge block ➔ see manufacturer’s manual</td>
</tr>
<tr>
<td>C Internal thickness</td>
<td>10mm gauge block</td>
</tr>
<tr>
<td>C Width</td>
<td></td>
</tr>
<tr>
<td>C Diameter / length</td>
<td></td>
</tr>
<tr>
<td>D Hardness</td>
<td>5kg reference weight [D]</td>
</tr>
<tr>
<td></td>
<td>Calibration kit (calibration plate [E] and calibration cube [F])</td>
</tr>
</tbody>
</table>
7.3.2 Weight

NOTE:
The MultiTest 50 guides the user step-by-step through the verification procedure.
To print a verification report, go to: Main menu / Reports / Cal. & Ver.

Required verification tools:
- Reference weight(s)

Tolerance / Acceptance range
The acceptance range is the tolerance for what is considered acceptable “as found” calibration data. You can adjust the tolerance if required.

<table>
<thead>
<tr>
<th>Tolerance setting / Acceptance range</th>
<th>0.0 – 5'000.0 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory default tolerance setting</td>
<td>2.0 mg</td>
</tr>
</tbody>
</table>

Procedure

Go to:
Service Verification

<table>
<thead>
<tr>
<th>File name:</th>
<th>918127_MT50_MG_E_A4_V009</th>
<th>Valid for:</th>
<th>Firmware 1.11 and higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision:</td>
<td>009</td>
<td>Order number:</td>
<td>918127</td>
</tr>
<tr>
<td>Valid since:</td>
<td>20. February 2012</td>
<td>Copyright:</td>
<td>© Pharmatron AG, 2012</td>
</tr>
</tbody>
</table>
• Select “Settings verification weight”

[Note in example: “Thickness ext.” is not displayed, because “internal thickness” is activated]

• Check “Tolerance” settings
• Check “Interval” settings (= days until next verification)

• Select “Weight”

• Enter a value for the reference weight you are using for verification
  → you can use any reference weight within the weight range of the connected balance
• Place the reference weight on the balance
• Press “Start”

[the measured value from the balance is taken]

• The measured result is displayed and evaluated whether acceptable or not
• To continue with verification using other reference weights, press “RUN”
• To complete verification procedure, press “OK”

• The next verification date is displayed
  → automatically calculated based on current date and number of days
  (= programmed verification interval)
• Confirm next verification date

• Verification is now completed
  → press “OK” to return to verification menu
7.3.3 Thickness (external)

**NOTE:**
The MultiTest 50 guides the user step-by-step through the verification procedure.
To print a verification report, go to: Main menu / Reports / Cal.& Ver.

**Tolerance / Acceptance range**
The acceptance range is the tolerance for what is considered acceptable “as found” calibration data. You can adjust the tolerance if required.

<table>
<thead>
<tr>
<th>Tolerance setting / Acceptance range</th>
<th>0.0 – 1.0 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory default tolerance setting</td>
<td>0.20 mm</td>
</tr>
</tbody>
</table>

**Procedure**

- Select “Settings calibration thickness”
- Check “Tolerance” settings
- Check “Interval” settings (= days until next verification)
- Select “Thickness (ext.)”
- Enter a value for the reference gauge you are using for verification
  → you can use any reference gauge within the range of the connected thickness gauge
- Place the reference gauge block under the thickness gauge
- Press “Start”

[the measured value from the thickness gauge is taken]

- The measured result is displayed and evaluated whether acceptable or not
- To continue with verification using other reference gauges, press “RUN”
- To complete verification procedure, press “OK”

- The next verification date is displayed → automatically calculated based on current date and number of days (= programmed calibration interval)
- Confirm next verification date

- Verification is now completed → press “OK” to return to verification menu
7.3.4 Thickness (internal)

NOTE:
There is no dedicated verification procedure for internal thickness. Refer to “Diameter” verification, because the measuring station is the same (= moveable jaw).

7.3.5 Width

NOTE:
There is no dedicated verification procedure for width measuring. Refer to “Diameter” verification, because the measuring station is the same (= moveable jaw).
7.3.6 Diameter

The MultiTest 50 monitors the status of the diameter verification.

**WARNING:**
Do not attempt to verify the MultiTest 50 unless you have the proper verification equipment and have been trained to perform verification services.

**NOTE:**
The MultiTest 50 guides the user step-by-step through the verification procedure. To print a verification report, go to: Main menu / Reports / Cal.& Ver.

Required tools to perform verification:
- 10mm gauge block
- Other reference gauge blocks if required

![Reference gauge blocks](image)

→ use different reference gauges to verify measuring range

**Tolerance / Acceptance range**
The acceptance range is the tolerance for what is considered acceptable “as found” calibration data. You can adjust the tolerance if required.

<table>
<thead>
<tr>
<th>Tolerance setting / Acceptance range</th>
<th>0.00 – 35.00 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory default tolerance setting</td>
<td>0.20 mm</td>
</tr>
</tbody>
</table>
Procedure

Go to:

- Service
  - Verification

Select “Settings verification diameter”

[note in example: “Thickness ext.” is not displayed, because “internal thickness” is activated]

- Check “Tolerance” settings
- Check “Interval” settings (= days until next verification)

Select “Diameter”
• Make sure that the test area and jaws are cleaned / free of tablet debris

• Enter value for verification reference (= reference gauge)

Insert 10mm gauge block in test area ➔ directly at fixed jaw

Press “Run” button

[the jaw moves and verifies the reference distance ➔ message “Please wait…”]

The measured result is displayed and evaluated whether acceptable or not

To continue with verification using other reference gauges, press “RUN”

To complete verification procedure, press “OK”
The next verification date is displayed automatically calculated based on current date and number of days (= programmed calibration interval).

Confirm next verification date.

Verification is now completed press “OK” to return to verification menu.
7.3.7 Hardness

The MultiTest 50 monitors the status of the hardness verification.

**WARNING:**
Do not attempt to verify the MultiTest 50 unless you have the proper verification equipment and have been trained to perform verification.

Executing the verification routine without proper verification tools may cause permanent damage!

**NOTE:**
The MultiTest 50 guides the user step-by-step through the verification procedure. To print a verification report, go to: Main menu / Reports / Cal.& Ver.

Required tools to perform verification:
- Calibration kit (calibration plate + calibration cube)
- 5kg reference weight or other weights to verify measuring range

Tolerance / Acceptance range
The acceptance range is the tolerance for what is considered acceptable “as found” calibration data. You can adjust the tolerance if required.

<table>
<thead>
<tr>
<th>Tolerance setting / Acceptance range</th>
<th>0.00 – 1.00 kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory default tolerance setting</td>
<td>0.40 kg</td>
</tr>
</tbody>
</table>
WARNING:
Make sure the MultiTest 50 is switched on BEFORE placing the machine in the vertical position!

MECHANICAL PREPARATIONS

• Make sure machine and all connected devices are switched ON
- Carefully place machine in vertical position
- Make sure the machine is steady and leveled
- Remove quick-change tongue
- Remove fixed jaw
  \(\Rightarrow\) loosen 2 screws
- Make sure not to drop the fixed jaw once both screws are lose
- Insert calibration cube [A] first
- Insert calibration plate [B] afterwards

- Make sure that the shaft of the calibration plate is correctly / fully inserted into the calibration cube

NOTE:
When verification has been completed, execute the steps described in reverse order to prepare the MultiTest 50 for testing again.
VERIFICATION PROCEDURE

WARNING:
Avoid touching or bumping the machine or table during the verification procedure. Vibrations will lead to incorrect values!

Go to:
Service ⇒ Verification

- Select “Settings verification hardness”

[note in example: “Thickness ext.” is not displayed, because “internal thickness” is activated]

- Check “Tolerance” settings
- Check “Interval” settings (= days until next calibration)
- Select “Hardness”

- Make sure that the calibration plate and calibration cube are correctly installed

- Press “Run” button

- Place the reference weight on the calibration plate

  → center of gravity must be exactly in the middle!

**WARNING:**

Do not drop the reference weight onto the calibration plate. This may permanently damage the load cell!
Enter the weight of the reference you are using
• Press “Run” button

The measured result is displayed and evaluated whether acceptable or not
• To continue with verification using other reference weights, press “RUN”
• To complete verification procedure, press “OK”

The next verification date is displayed
➔ automatically calculated based on current date and number of days
(= programmed calibration interval)
• Confirm next verification date

Verification is now completed
➔ press “OK” to return to verification menu

After completion of hardness verification:

<table>
<thead>
<tr>
<th>File name:</th>
<th>918127_MT50_MO_E_A4_V009</th>
<th>Valid for:</th>
<th>Firmware 1.11 and higher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision:</td>
<td>009</td>
<td>Order number:</td>
<td>918127</td>
</tr>
<tr>
<td>Valid since:</td>
<td>20. February 2012</td>
<td>Copyright:</td>
<td>© Pharmatron AG, 2012</td>
</tr>
</tbody>
</table>
• Remove the reference weight
• Remove calibration kit
• Insert the fixed jaw and tighten both screws
• Insert quick-change tongue
• Return the MultiTest 50 into the normal horizontal position

7.3.8 Print verification report

A verification report can be printed anytime showing all details of the last verification performed.

- Press “Verification”
  → a report is printed immediately
8. PRINT REPORTS

The Multitest50 features several printouts which can be generated at every time if a printer is attached. Any USB Postscript printer is compatible, EPSON 40col serial printer is as well supported.

8.1 Standard report

The data from the last test is always stored and can be printed out later on if needed. Following printout is generated with all options ON. For customizing your report refer global settings chapter 6.3 report.

- Press “Standard report”
  → a report is printed immediately
Example report “Standard report”

Pharmatron AG

MultiTest Version: v01.05

---

**TestInfo**

<table>
<thead>
<tr>
<th>Product</th>
<th>White Oblong</th>
<th>Method</th>
<th>SWTDW/WH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device</td>
<td>MultiTest 50</td>
<td>Serial Number</td>
<td>0000</td>
</tr>
<tr>
<td>Hardness Method</td>
<td>const. speed</td>
<td>Constant Speed</td>
<td>0.35 mm/s</td>
</tr>
<tr>
<td>Batch</td>
<td>T9 001</td>
<td>Press</td>
<td>Press 1</td>
</tr>
<tr>
<td>Container</td>
<td>6</td>
<td>Operator</td>
<td>DRS</td>
</tr>
<tr>
<td>Comment</td>
<td>RTFM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Method**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Hardness</th>
<th>Diameter</th>
<th>Width</th>
<th>Thickness</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Size</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

**Calibration / Verification**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Hardness</th>
<th>Diameter</th>
<th>Thick. Ext.</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Calibration</td>
<td>25.08.2011</td>
<td>25.08.2011</td>
<td>25.08.2011</td>
<td>25.08.2011</td>
</tr>
<tr>
<td>Last Verification</td>
<td>25.08.2011</td>
<td>25.08.2011</td>
<td>25.08.2011</td>
<td>25.08.2011</td>
</tr>
</tbody>
</table>

**Product Limits**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Hardness</th>
<th>Diameter</th>
<th>Width</th>
<th>Thickness</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
<td>[N]</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[mg]</td>
</tr>
<tr>
<td>Nominal</td>
<td>45.0</td>
<td>18.30</td>
<td>7.10</td>
<td>5.75</td>
<td>600.0</td>
</tr>
<tr>
<td>PL +</td>
<td>89.6</td>
<td>18.60</td>
<td>7.40</td>
<td>6.05</td>
<td>660.0</td>
</tr>
<tr>
<td>T2 +</td>
<td>85.5</td>
<td>18.50</td>
<td>7.30</td>
<td>5.95</td>
<td>640.0</td>
</tr>
<tr>
<td>T1 +</td>
<td>81.0</td>
<td>18.40</td>
<td>7.20</td>
<td>5.85</td>
<td>620.0</td>
</tr>
<tr>
<td>T1 –</td>
<td>9.0</td>
<td>18.20</td>
<td>7.00</td>
<td>5.65</td>
<td>580.0</td>
</tr>
<tr>
<td>T2 –</td>
<td>4.5</td>
<td>18.10</td>
<td>6.90</td>
<td>5.55</td>
<td>560.0</td>
</tr>
<tr>
<td>PL –</td>
<td>0.4</td>
<td>18.00</td>
<td>6.80</td>
<td>5.45</td>
<td>540.0</td>
</tr>
</tbody>
</table>

**Measurement Values**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Hardness</th>
<th>Diameter</th>
<th>Width</th>
<th>Thickness</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>30.8</td>
<td>18.31</td>
<td>7.13</td>
<td>5.82</td>
<td>588.6</td>
</tr>
<tr>
<td>2</td>
<td>41.3</td>
<td>18.30</td>
<td>7.14</td>
<td>5.84</td>
<td>588.7</td>
</tr>
<tr>
<td>3</td>
<td>29.5</td>
<td>18.31</td>
<td>7.13</td>
<td>5.85</td>
<td>588.4</td>
</tr>
<tr>
<td>4</td>
<td>43.3</td>
<td>18.30</td>
<td>7.13</td>
<td>&gt; 5.88</td>
<td>588.1</td>
</tr>
<tr>
<td>5</td>
<td>46.3</td>
<td>18.29</td>
<td>7.13</td>
<td>5.81</td>
<td>588.1</td>
</tr>
</tbody>
</table>
## Statistics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Hardness</th>
<th>Diameter</th>
<th>Width</th>
<th>Thickness</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
<td>[N]</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[mg]</td>
</tr>
<tr>
<td>#Values</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Nominal</td>
<td>45.0</td>
<td>18.30</td>
<td>7.10</td>
<td>5.75</td>
<td>600.0</td>
</tr>
<tr>
<td>Mean</td>
<td>38.2</td>
<td>18.30</td>
<td>7.13</td>
<td>5.84</td>
<td>588.4</td>
</tr>
<tr>
<td>Xmax</td>
<td>46.3</td>
<td>18.31</td>
<td>7.14</td>
<td>5.88</td>
<td>588.7</td>
</tr>
<tr>
<td>Xmin</td>
<td>29.5</td>
<td>18.29</td>
<td>7.13</td>
<td>5.81</td>
<td>588.1</td>
</tr>
<tr>
<td>Xmax–Xmin</td>
<td>16.8</td>
<td>0.02</td>
<td>0.01</td>
<td>0.07</td>
<td>0.6</td>
</tr>
<tr>
<td>Sabs.</td>
<td>6.81</td>
<td>0.008</td>
<td>0.004</td>
<td>0.024</td>
<td>0.25</td>
</tr>
<tr>
<td>Srel.</td>
<td>17.83%</td>
<td>0.045%</td>
<td>0.055%</td>
<td>0.411%</td>
<td>0.043%</td>
</tr>
<tr>
<td>T1 Viol.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>T2 Viol.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pt. Viol.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Date: ___________________________  Signature: ___________________________
8.2 Graphic report

The data from the last test is always stored and can be printed out later on if needed. Following printout is generated with all options ON. For customizing your report refer global settings chapter 6.3 report.

- Press “Graphic report”
  → a report is printed immediately
Example report “Graphic report”

Pharmatron AG

MultiTest Version: v01.06

Test Info

<table>
<thead>
<tr>
<th>Product</th>
<th>White Oblong</th>
<th>Method</th>
<th>SWTDWDH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device</td>
<td>MultiTest 50</td>
<td>Serial Number</td>
<td>0000</td>
</tr>
<tr>
<td>Hardness Method</td>
<td>const. speed</td>
<td>Constant Speed</td>
<td>0.35mm/s</td>
</tr>
<tr>
<td>Batch</td>
<td>TB 001</td>
<td>Press</td>
<td>Press 1</td>
</tr>
<tr>
<td>Container</td>
<td>6</td>
<td>Operator</td>
<td>DRS</td>
</tr>
<tr>
<td>Comment</td>
<td>RTFM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Method

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Hardness</th>
<th>Diameter</th>
<th>Width</th>
<th>Thickness</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Size</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

Calibration / Verification

<table>
<thead>
<tr>
<th>Last Calibration</th>
<th>Hardness</th>
<th>Diameter</th>
<th>Thickness Ext</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.08.2011</td>
<td>25.08.2011</td>
<td>25.08.2011</td>
<td>25.08.2011</td>
<td>25.08.2011</td>
</tr>
</tbody>
</table>

Next Calib. Date

<table>
<thead>
<tr>
<th>Next Calib. Date</th>
<th>Hardness</th>
<th>Diameter</th>
<th>Thickness Ext</th>
<th>Weight</th>
</tr>
</thead>
</table>

Last Verification

<table>
<thead>
<tr>
<th>Last Verification</th>
<th>Hardness</th>
<th>Diameter</th>
<th>Thickness Ext</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>25.08.2011</td>
<td>25.08.2011</td>
<td>25.08.2011</td>
<td>25.08.2011</td>
<td>25.08.2011</td>
</tr>
</tbody>
</table>

Next Verif. Date

<table>
<thead>
<tr>
<th>Next Verif. Date</th>
<th>Hardness</th>
<th>Diameter</th>
<th>Thickness Ext</th>
<th>Weight</th>
</tr>
</thead>
</table>

Product Limits

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Hardness</th>
<th>Diameter</th>
<th>Width</th>
<th>Thickness</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
<td>[N]</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[mg]</td>
</tr>
<tr>
<td>Nominal</td>
<td>45.0</td>
<td>18.30</td>
<td>7.10</td>
<td>5.75</td>
<td>600.0</td>
</tr>
<tr>
<td>PL +</td>
<td>89.6</td>
<td>18.60</td>
<td>7.40</td>
<td>6.05</td>
<td>660.0</td>
</tr>
<tr>
<td>T2 +</td>
<td>85.5</td>
<td>18.50</td>
<td>7.30</td>
<td>5.95</td>
<td>640.0</td>
</tr>
<tr>
<td>T1 +</td>
<td>81.0</td>
<td>18.40</td>
<td>7.20</td>
<td>5.85</td>
<td>620.0</td>
</tr>
<tr>
<td>T1 –</td>
<td>9.0</td>
<td>18.20</td>
<td>7.00</td>
<td>5.65</td>
<td>580.0</td>
</tr>
<tr>
<td>T2 –</td>
<td>4.5</td>
<td>18.10</td>
<td>6.90</td>
<td>5.55</td>
<td>560.0</td>
</tr>
<tr>
<td>PL –</td>
<td>0.4</td>
<td>18.00</td>
<td>6.80</td>
<td>5.45</td>
<td>540.0</td>
</tr>
</tbody>
</table>

Measurement Values

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Hardness</th>
<th>Diameter</th>
<th>Width</th>
<th>Thickness</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>30.8</td>
<td>18.31</td>
<td>7.13</td>
<td>5.82</td>
<td>588.6</td>
</tr>
<tr>
<td>2</td>
<td>41.3</td>
<td>18.30</td>
<td>7.14</td>
<td>5.84</td>
<td>588.7</td>
</tr>
<tr>
<td>3</td>
<td>29.5</td>
<td>18.31</td>
<td>7.13</td>
<td>5.85</td>
<td>588.4</td>
</tr>
<tr>
<td>4</td>
<td>43.3</td>
<td>18.30</td>
<td>7.13</td>
<td>&gt; 5.88</td>
<td>588.3</td>
</tr>
<tr>
<td>5</td>
<td>46.3</td>
<td>18.29</td>
<td>7.13</td>
<td>5.81</td>
<td>588.1</td>
</tr>
</tbody>
</table>
## Statistics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Hardness</th>
<th>Diameter</th>
<th>Width</th>
<th>Thickness</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit</td>
<td>[N]</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[mm]</td>
<td>[mg]</td>
</tr>
<tr>
<td>#Values</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Nominal</td>
<td>45.0</td>
<td>18.30</td>
<td>7.10</td>
<td>5.75</td>
<td>600.0</td>
</tr>
<tr>
<td>Mean</td>
<td>38.2</td>
<td>18.30</td>
<td>7.13</td>
<td>5.84</td>
<td>588.4</td>
</tr>
<tr>
<td>Xmax</td>
<td>46.3</td>
<td>18.31</td>
<td>7.14</td>
<td>5.88</td>
<td>588.7</td>
</tr>
<tr>
<td>Xmin</td>
<td>29.5</td>
<td>18.29</td>
<td>7.13</td>
<td>5.81</td>
<td>588.1</td>
</tr>
<tr>
<td>Xmax–Xmin</td>
<td>16.8</td>
<td>0.02</td>
<td>0.01</td>
<td>0.07</td>
<td>0.5</td>
</tr>
<tr>
<td>Sabs.</td>
<td>6.81</td>
<td>0.008</td>
<td>0.004</td>
<td>0.024</td>
<td>0.25</td>
</tr>
<tr>
<td>Srel.</td>
<td>17.83%</td>
<td>0.043%</td>
<td>0.055%</td>
<td>0.411%</td>
<td>0.04%</td>
</tr>
<tr>
<td>T1 Viol.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>T2 Viol.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pl. Viol.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Graphs

- **Weight (mg)**
  - Samples: 1 to 5
  - Values: 652.8, 626.4, 600.0, 573.6, 547.2

- **Thickness (mm)**
  - Samples: 1 to 5
  - Values: 6.01, 5.88, 5.75, 5.62, 5.49

- **Width (mm)**
  - Samples: 1 to 5
  - Values: 7.36, 7.23, 7.10, 6.97, 6.84

- **Diameter (mm)**
  - Samples: 1 to 5
  - Values: 18.56, 18.43, 18.30, 18.17, 18.04
Pharmatron AG

MultiTest Version: v01.06

File name: 918127_MT50_MQ_E_A4_V009
Valid for: Firmware 1.11 and higher
Revision: 009
Order number: 918127
Valid since: 20. February 2012
Copyright: © Pharmatron AG, 2012

Date: ____________________  Signature: ____________________
8.3 Test setup report

The test setup report shows the information of the last performed or selected test, e.g. product, method and used report options.

- Press “Test setup”
  ➔ a report is printed immediately

Example report “Test setup”

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Pharmatron AG</th>
<th>Firmware Version</th>
<th>v01.06</th>
<th>Page</th>
<th>1/1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Number</td>
<td>MultiTest 50</td>
<td>Date</td>
<td>25.08.2011</td>
<td>Time</td>
<td>12:29:05</td>
</tr>
</tbody>
</table>

**Test Setup**

<table>
<thead>
<tr>
<th>Product Name</th>
<th>White Oblong</th>
<th>Product Description</th>
<th>600mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method Name</td>
<td>SWTWDWH</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Report Options**

<table>
<thead>
<tr>
<th>Hardness Method</th>
<th>const.speed</th>
<th>Constant Speed</th>
<th>0.35mm/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Batch</td>
<td>TB 001</td>
<td>Press</td>
<td>Press 1</td>
</tr>
<tr>
<td>Container</td>
<td>6</td>
<td>Operator</td>
<td>DRS</td>
</tr>
<tr>
<td>Comment</td>
<td>RTFM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

File name: 918127_MT50_MO_E_A4_V009
Valid for: Firmware 1.11 and higher
Revision: 009
Order number: 918127
Valid since: 20. February 2012
Copyright: © Pharmatron AG, 2012
8.4 Product setup report

The Product setup report shows the information of the selected product, e.g. product name, units and used limits in absolute and relative values.

- Press “Product setup”
  → a report is printed immediately
Example report “Product setup”

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Pharmatron AG</th>
<th>Firmware Version</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Number</td>
<td>MultiTest 50</td>
<td>0000</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>25.08.2011</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>12:30:06</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Product Info

<table>
<thead>
<tr>
<th>Name</th>
<th>White Oblong</th>
<th>Description</th>
<th>600mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tablet Shape</td>
<td>Oblong</td>
<td>Template</td>
<td>standard</td>
</tr>
<tr>
<td>Coated</td>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Units

<table>
<thead>
<tr>
<th>Hardness</th>
<th>N</th>
<th>Length</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Defined Factor</td>
<td>1.00000</td>
<td>Weight</td>
<td>mg</td>
</tr>
</tbody>
</table>

Measurement Parameters

<table>
<thead>
<tr>
<th>Mode</th>
<th>Manual</th>
<th>Test Order</th>
<th>any</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay</td>
<td>2.0s</td>
<td>Backoff</td>
<td>3.00mm</td>
</tr>
<tr>
<td>Diameter Offset</td>
<td>0.00mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Hardness Settings

<table>
<thead>
<tr>
<th>Hardness Method Used in Test</th>
<th>Constant Speed</th>
<th>Linear Force Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>const. speed</td>
<td>0.35mm/s</td>
<td>100N/s</td>
</tr>
</tbody>
</table>

Limits Absolute

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>mg</td>
<td>600.0</td>
<td>540.0</td>
<td>560.0</td>
<td>580.0</td>
<td>620.0</td>
<td>640.0</td>
<td>660.0</td>
</tr>
<tr>
<td>Thickness</td>
<td>mm</td>
<td>5.75</td>
<td>5.45</td>
<td>5.55</td>
<td>5.65</td>
<td>5.85</td>
<td>5.95</td>
<td>6.05</td>
</tr>
<tr>
<td>Width</td>
<td>mm</td>
<td>7.10</td>
<td>6.80</td>
<td>6.90</td>
<td>7.00</td>
<td>7.20</td>
<td>7.30</td>
<td>7.40</td>
</tr>
<tr>
<td>Diameter</td>
<td>mm</td>
<td>18.30</td>
<td>18.00</td>
<td>18.10</td>
<td>18.20</td>
<td>18.40</td>
<td>18.50</td>
<td>18.60</td>
</tr>
<tr>
<td>Hardness</td>
<td>N</td>
<td>45.0</td>
<td>4.4</td>
<td>4.5</td>
<td>9.0</td>
<td>81.0</td>
<td>85.5</td>
<td>89.6</td>
</tr>
</tbody>
</table>

Limits Relative

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>mg</td>
<td>600.0mg</td>
<td>10.0%</td>
<td>6.7%</td>
<td>3.3%</td>
<td>3.3%</td>
<td>6.7%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Thickness</td>
<td>mm</td>
<td>5.75mm</td>
<td>5.2%</td>
<td>3.5%</td>
<td>1.7%</td>
<td>1.7%</td>
<td>3.5%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Width</td>
<td>mm</td>
<td>7.10mm</td>
<td>4.2%</td>
<td>2.8%</td>
<td>1.4%</td>
<td>1.4%</td>
<td>2.8%</td>
<td>4.2%</td>
</tr>
<tr>
<td>Diameter</td>
<td>mm</td>
<td>18.30mm</td>
<td>1.6%</td>
<td>1.1%</td>
<td>0.5%</td>
<td>0.5%</td>
<td>1.1%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Hardness</td>
<td>N</td>
<td>45.0N</td>
<td>99.0%</td>
<td>90.0%</td>
<td>80.0%</td>
<td>80.0%</td>
<td>90.0%</td>
<td>99.0%</td>
</tr>
</tbody>
</table>
8.5 Method setup report

The Method setup report shows the information of the selected method, e.g. method name, selected parameter and amount of samples.

Go to:

- Press “Method setup”
- a report is printed immediately

Example report “Method setup”

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Pharmatron AG</th>
<th>Firmware Version</th>
<th>Page</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Number</td>
<td>MultiTest 50 0000</td>
<td>25.08.2011</td>
<td>1/1</td>
<td>12:30:41</td>
<td></td>
</tr>
</tbody>
</table>

Method Info

Name: 5WTDWDH

Method

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>5</td>
</tr>
<tr>
<td>Thickness</td>
<td>5</td>
</tr>
<tr>
<td>Width</td>
<td>5</td>
</tr>
<tr>
<td>Diameter</td>
<td>5</td>
</tr>
<tr>
<td>Hardness</td>
<td>5</td>
</tr>
</tbody>
</table>
8.6 Calibration verification report

8.6.1 Calibration report

The calibration report shows the calibration information, e.g. last calibration data and current calibration data.

- Press “Calibration”
  → a report is printed immediately
Example report “calibration”

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Hardness</th>
<th>Diameter</th>
<th>Thickness Ext.</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Calibration</td>
<td>25.08.2011</td>
<td>25.08.2011</td>
<td>25.08.2011</td>
<td>25.08.2011</td>
</tr>
<tr>
<td>Current Calib.</td>
<td>0.0kg</td>
<td>0.00mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last Calib.</td>
<td>0.0kg</td>
<td>0.00mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre Last Calib.</td>
<td>0.0kg</td>
<td>0.00mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tolerance</td>
<td>±/-0.4kg</td>
<td>±/-0.05mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Calib.</td>
<td>5.0kg</td>
<td>10.00mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Last Calib.</td>
<td>5.0kg</td>
<td>9.98mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre Last Calib.</td>
<td>5.0kg</td>
<td>10.00mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tolerance</td>
<td>±/-0.4kg</td>
<td>±/-0.05mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


Accepted: ______________
Date: ______________
Signature: ______________
8.6.2 Verification report

The verification report shows the calibration information, e.g. last calibration data and current calibration data.

- Press “Verification”
  → a report is printed immediately
Example report “Verification”

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Hardness</th>
<th>Diameter</th>
<th>Thickness Ext.</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Calibration</td>
<td>25.08.2011</td>
<td>25.08.2011</td>
<td>25.08.2011</td>
<td>25.08.2011</td>
</tr>
<tr>
<td>Reference</td>
<td>0.0kg</td>
<td>0.00mm</td>
<td>0.00mm</td>
<td>0.0mg</td>
</tr>
<tr>
<td>Current Result</td>
<td>0.0kg</td>
<td>0.00mm</td>
<td>0.00mm</td>
<td>0.0mg</td>
</tr>
<tr>
<td>Tolerance</td>
<td>+/-0.0kg</td>
<td>+/-0.05mm</td>
<td>+/-0.05mm</td>
<td>+/-2.0mg</td>
</tr>
<tr>
<td>Accepted ?</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

Company Name: Pharmatron AG
Serial Number: MultiTest 50 0000
Firmware Version: v01.06
Date: 25.08.2011
Time: 12:17:30

Accepted: ______________________
Date: ______________________
Signature: ____________________
8.7 Global report

8.7.1 Global settings report

The global settings report shows the calibration information, e.g. last calibration data and current calibration data.

Go to:

- Reports → Global

• Press "Global settings"
  → a report is printed immediately
Example report “Global settings”

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Pharmatron AG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Number</td>
<td>MultiTest 50</td>
</tr>
<tr>
<td>0000</td>
<td></td>
</tr>
<tr>
<td>Date</td>
<td>25.08.2011</td>
</tr>
<tr>
<td>Time</td>
<td>12:55:35</td>
</tr>
<tr>
<td>Firmware Version</td>
<td>v01.06</td>
</tr>
<tr>
<td>Page</td>
<td>1/2</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### General

<table>
<thead>
<tr>
<th>Language</th>
<th>english</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date Format</td>
<td>DD.MM.YYYY</td>
</tr>
<tr>
<td>External Beep</td>
<td>on</td>
</tr>
<tr>
<td>Device Name</td>
<td>0000</td>
</tr>
<tr>
<td>Key Beep</td>
<td>off</td>
</tr>
<tr>
<td>Company Name</td>
<td>Pharmatron AG</td>
</tr>
</tbody>
</table>

### Printer Setup

<table>
<thead>
<tr>
<th>Printer Type</th>
<th>USB PS</th>
</tr>
</thead>
</table>

### Reports

<table>
<thead>
<tr>
<th>Standard</th>
<th>Graphic</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>TestInfo</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>HrdnMethod</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Method</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Cal/Ver</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Prodlim</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Values</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Plausibility</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Statistics</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>#Values</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Nominal</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Average</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Xmax</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Xmin</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Xmax−Xmin</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Sabs</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Srel</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>T1-violation</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>T2-violation</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>PL-violation</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Graphic</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Distribution</td>
<td>yes</td>
<td></td>
</tr>
<tr>
<td>Distribution Hardn</td>
<td>yes</td>
<td></td>
</tr>
</tbody>
</table>

### Meas. Parameters

<table>
<thead>
<tr>
<th>Mode</th>
<th>manual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delay</td>
<td>2.0s</td>
</tr>
<tr>
<td>Test Order</td>
<td>Backoff</td>
</tr>
<tr>
<td>any</td>
<td>3.00mm</td>
</tr>
<tr>
<td>Diam. Offset</td>
<td>0.00mm</td>
</tr>
</tbody>
</table>

### Measurement Mode

<table>
<thead>
<tr>
<th>Hardness Mode</th>
<th>const. speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant Speed</td>
<td>0.35mm/s</td>
</tr>
<tr>
<td>Load Cell Max. Load</td>
<td>400N</td>
</tr>
<tr>
<td>Linear Force Increase</td>
<td>100N/s</td>
</tr>
</tbody>
</table>

File name: 918127_MT50_MO_E_A4_V009
Valid for: Firmware 1.11 and higher
Revision: 009
Order number: 918127
Valid since: 20. February 2012
Copyright: © Pharmatron AG, 2012
### Units

<table>
<thead>
<tr>
<th>Hardness</th>
<th>N</th>
<th>Length</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Defined Factor</td>
<td>1.00000</td>
<td>Weight</td>
<td>mg</td>
</tr>
</tbody>
</table>

### Company Name
Pharmatron AG

| Serial Number | MultiTest 50 | 0000 | Date | 25.08.2011 | Time | 12:55:35 |

### Decimal Places

<table>
<thead>
<tr>
<th>Newton</th>
<th>1</th>
<th>Millimeter</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kilo Pond</td>
<td>1</td>
<td>Inch</td>
<td>3</td>
</tr>
<tr>
<td>Strong Cobb</td>
<td>1</td>
<td>Milligram</td>
<td>1</td>
</tr>
<tr>
<td>User Defined Factor</td>
<td>0</td>
<td>Gram</td>
<td>4</td>
</tr>
</tbody>
</table>

### Balance

<table>
<thead>
<tr>
<th>Type</th>
<th>Sartorius</th>
<th>Delta Weight</th>
<th>12%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshold</td>
<td>1.0mg</td>
<td>Resolution</td>
<td>4</td>
</tr>
</tbody>
</table>

### Calibration / Verification

<table>
<thead>
<tr>
<th>Calibration Settings</th>
<th>Verification Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interval</td>
<td>Tolerance</td>
</tr>
<tr>
<td>Hardness</td>
<td>180</td>
</tr>
<tr>
<td>Diameter</td>
<td>180</td>
</tr>
<tr>
<td>Weight</td>
<td>180</td>
</tr>
<tr>
<td>Thickness Ext.</td>
<td>180</td>
</tr>
</tbody>
</table>

### License

<table>
<thead>
<tr>
<th>Firmware</th>
<th>v01.06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameter</td>
<td>WTWdIDH</td>
</tr>
<tr>
<td>HW Number</td>
<td>0AF-5E53-11E7-ECED</td>
</tr>
<tr>
<td>Serial Number</td>
<td>0000</td>
</tr>
</tbody>
</table>

### Security

<table>
<thead>
<tr>
<th>Operator</th>
<th>DRS</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Security</td>
<td>off</td>
<td></td>
</tr>
</tbody>
</table>
8.7.2 Error messages report

The error messages report shows error messages generated by the system, e.g. external devices errors, load cell overload and more. For detailed information about the messages refer service manual.

- Press “Error messages”
  a report is printed immediately

Example report “Error messages”

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Pharmatron AG</th>
<th>Firmware Version</th>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Number</td>
<td>MultiTest 50</td>
<td>0000</td>
<td>25.08.2011</td>
<td>12:23:26</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date</th>
<th>Code/Descr.</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>26.07.2011</td>
<td>8</td>
<td>No answer from thickness gauge.</td>
</tr>
<tr>
<td>26.07.2011</td>
<td>8</td>
<td>No answer from thickness gauge.</td>
</tr>
<tr>
<td>26.07.2011</td>
<td>8</td>
<td>No answer from thickness gauge.</td>
</tr>
<tr>
<td>26.07.2011</td>
<td>8</td>
<td>No answer from thickness gauge.</td>
</tr>
<tr>
<td>28.01.2011</td>
<td>8</td>
<td>No answer from thickness gauge.</td>
</tr>
</tbody>
</table>
9. SERVICE

Under service are calibration and verification, interval, backup and restore, upgrade of your Multitest. Further the security access control can be activated.

9.1 Verification

- Verification Hardness, Diameter, ext. Thickness and Weight. Refer chapter 7.3 for verification instructions.
- Settings verification: Set the acceptable verification tolerance and interval.

9.2 Calibration

- Calibration Hardness, Diameter, ext. Thickness and Weight. Refer chapter 7.2 for calibration instructions.
- Settings calibration: Set the acceptable calibration tolerance and interval.
9.3 Special

- Load factory settings: When the MultiTest 50 leaves the factory, a set of values has been programmed into the user configuration. Select Load factory settings to restore the factory settings. However, any user parameters (except passwords and user names) you have previously set will be lost.

- Security definition: The Security Default function is used to turn security access restrictions either on or off. If Security Default is turned on, a password is required in order to use the functions that require supervisor level access. If Security is turned off, a password is not required in order to use the functions that may otherwise require supervisor level access. The factory default for the Security Default is off. When this function is entered, you will be prompted with a message that indicates the state (on or off) that Security Defaults will be in after you complete the function.

- Screen shot enabled: Service function to make a screenshot of the current screen, file will be saved to USB port 1. Default is off.

9.4 Backup

- Save to USB: The MultiTest features a backup function for user data. Following data will be saved to USB: Products, methods, global settings, calibration and verification data, error history and users.

- Load from USB: Allows you to retrieve at any time backups.
9.5 Interface
- Not functional at the moment. Will be activated with future firmware update.

9.6 License
- Firmware version: The actual installed version.
- Parameter: MultiTest configuration with enabled parameters. (W)weight, (T)thickness, (Wd)width, (D)diameter and (H)hardness.
- HW number: Each printed circuit board got his unique serial number.
- Serial number: Machine serial number.
10. SECURITY

There are 4 user levels available for the MultiTest 50:

<table>
<thead>
<tr>
<th>Level</th>
<th>User type</th>
<th>Short description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Operator</td>
<td>Can perform tests and verification; no modification of existing setup</td>
</tr>
<tr>
<td>2</td>
<td>Operator+</td>
<td>Can perform tests, calibration &amp; verification; no modification of existing setup</td>
</tr>
<tr>
<td>3</td>
<td>Supervisor</td>
<td>Full access to all functions incl. modification / add / delete data</td>
</tr>
<tr>
<td>4</td>
<td>Super-User</td>
<td>For certified Dr. Schleuniger® Pharmatron partners only</td>
</tr>
</tbody>
</table>

- Users for level 1-3 can be added / deleted / modified any time
- Supervisors (level 3) can add / delete / modify user levels 1-3
- All users can change their respective password
- The level 4 user cannot be changed.

For a description on how to enable the security control in the menu “Service / Special / Security definition” refer to chapter 9.3 Special.

10.1 Change user

The “change user” function will log off the current user and prompt with the log in window.

- Press “Change user”
10.2 Change password

The “change password” function allows changing the current used password. Remind that user can change only their password while supervisor can change all users’ passwords.

- Select from the drop down box one of the available users. (The drop down box is only visible for supervisors; operators do not have access rights to select another user).
- Enter the new password and confirm.
10.3 Add new user

This function is only accessible for supervisors.
Operators do not have access rights to add new users.

- Login as supervisor
- Press “Add user”

10.4 Remove user

This function is only accessible for supervisors.
Operators do not have access rights to remove users.

- Press “Remove user”
10.5 Default passwords

The following is the list of default passwords that are downloaded into the MultiTest 50 when either the configuration or the version is changed.

<table>
<thead>
<tr>
<th>Level</th>
<th>Username</th>
<th>Password</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>DRS</td>
<td>Secret password for certified Dr. Schleuniger® Pharmatron partners only</td>
</tr>
<tr>
<td>3</td>
<td>Super1</td>
<td>SUPERVISOR1</td>
</tr>
<tr>
<td>3</td>
<td>Super2</td>
<td>SUPERVISOR2</td>
</tr>
<tr>
<td>1</td>
<td>OL1</td>
<td>OPER1</td>
</tr>
<tr>
<td>1</td>
<td>OL2</td>
<td>OPER2</td>
</tr>
<tr>
<td>1</td>
<td>OL3</td>
<td>OPER3</td>
</tr>
</tbody>
</table>
11. APPENDICES

11.1 Appendix A: Conversion factors & Force calculations

The MultiTest 50 uses the following conversion factors:

<table>
<thead>
<tr>
<th>Unit of Measure</th>
<th>Calculation / Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newton (N)</td>
<td>1 kg = 9.81 N</td>
</tr>
<tr>
<td>Kilopond (Kp)</td>
<td>1 Kp = Force of 1 kg</td>
</tr>
<tr>
<td>Strong Cobb (Sc)</td>
<td>1.4 Sc = 1 kg</td>
</tr>
<tr>
<td>Pound Apothecary</td>
<td>1 Lb = 0.373 kg</td>
</tr>
<tr>
<td>Inch</td>
<td>1 inch = 25.4 mm</td>
</tr>
<tr>
<td>UD (User Defined)</td>
<td>1 UD = 1 N x UD factor (e.g. 75 UD = 100 N x 0.75; if UD factor = 0.75)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>For 50N load cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>50.5</td>
<td>Newton (N)</td>
</tr>
<tr>
<td>0.05</td>
<td>5.05</td>
<td>Kilopond (Kp)</td>
</tr>
<tr>
<td>0.07</td>
<td>7.07</td>
<td>Strong Cobb (Sc)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>For 400N load cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>400</td>
<td>Newton (N)</td>
</tr>
<tr>
<td>0.4</td>
<td>40.0</td>
<td>Kilopond (Kp)</td>
</tr>
<tr>
<td>0.6</td>
<td>56.7</td>
<td>Strong Cobb (Sc)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>For 500N load cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>505</td>
<td>Newton (N)</td>
</tr>
<tr>
<td>0.5</td>
<td>50.5</td>
<td>Kilopond (Kp)</td>
</tr>
<tr>
<td>0.7</td>
<td>70.7</td>
<td>Strong Cobb (Sc)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Min</th>
<th>Max</th>
<th>For 800N load cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>810</td>
<td>Newton (N)</td>
</tr>
<tr>
<td>0.8</td>
<td>81.0</td>
<td>Kilopond (Kp)</td>
</tr>
<tr>
<td>1.12</td>
<td>113.4</td>
<td>Strong Cobb (Sc)</td>
</tr>
</tbody>
</table>
11.2 Appendix B: Sample test reports

Chapter will be added.

11.3 Appendix C: Balance settings

11.3.1 Mettler AB54-OEM

The standard Mettler Balance (AB 54-OEM) communication protocol should be Host Mode, 9600 baud, 8 bits, 1 stop bit, No parity and software handshaking. (Hint: Reset the factory defaults, on the scale, then change the mode from Printer to Host.)

The Mettler PM (Printer Mode) Balance communication protocol should be Send Cont., 9600 baud, 8 bits, No parity and software handshaking.

The Mettler Balance communication protocol for AB-S and PB-S series scales is as follows:

- rESEt
- CAL int
- F nonE
- Std
- Unit 1 g
- Unit 2 g
- A 2Ero
- Host
- S Cont
- 10.S. SICS
- 11.bd 9600
- 12.8b-no
- 13.HS Soft
11.3.2 Mettler AG Series

The AG Series of Mettler Toledo balances do have an LC communication port. This port is pre-set to 2400 baud and requires a converter (LC-RS9) from Mettler Toledo to communicate with the 8M successfully.

The communication parameters have to be set as follows:

- rESET
- FACr
- F count
- 2
- 2
- Good
- mg
- mg
- A2.on
- AoFF
- quStArt
- on
- List

The dip switch settings on the LC-RS9 converter have to be set as follows:

<table>
<thead>
<tr>
<th>Switch Position</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Host</td>
</tr>
<tr>
<td>5</td>
<td>9600 Baud</td>
</tr>
<tr>
<td>7</td>
<td>8 Bit / NParity / xOFF</td>
</tr>
</tbody>
</table>
### 11.3.3 Sartorius

The Sartorius balance communication settings are as follows:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Settings</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit of Measure</td>
<td>grams</td>
<td>1</td>
</tr>
<tr>
<td>Unit of Measure</td>
<td>milligrams</td>
<td>13</td>
</tr>
<tr>
<td>Baud Rate</td>
<td>9600</td>
<td>7</td>
</tr>
<tr>
<td>Parity</td>
<td>odd</td>
<td>2</td>
</tr>
<tr>
<td>Stop Bits</td>
<td>1 Stop Bit</td>
<td>3</td>
</tr>
<tr>
<td>Handshake</td>
<td>Hardware</td>
<td>4</td>
</tr>
<tr>
<td>Data Output Mode</td>
<td>Single print after balance has settled</td>
<td>6</td>
</tr>
<tr>
<td>Data Identification</td>
<td>None</td>
<td>7</td>
</tr>
</tbody>
</table>

### 11.4 Appendix D: EPSON TM-U220D settings

The printer and MultiTest 50 communication settings must be compatible. The DIP (= dual in-line package) switches on the bottom of the printer allow it to be set to different modes.

The dip switch (DSW1) settings for the TM-U220D printer should be as follows:

<table>
<thead>
<tr>
<th>Switch #</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>DSW1</td>
<td>OFF</td>
<td>OFF</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
</tbody>
</table>

Baud rate: 9600 bps

**DO NOT USE PENCIL!**

When changing the DIP switch settings, use a ball point or other pointed object. Do not use a pencil, because carbon powder may get into the switch mechanism and cause problems!
11.5 Appendix E: Copyright

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USA

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### 11.7 Appendix G: Revision details of this Manual

<table>
<thead>
<tr>
<th>Prepared by</th>
<th>Date</th>
<th>Description</th>
<th>Rev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>HH</td>
<td>09.05.2011</td>
<td>New manual</td>
<td>001</td>
</tr>
<tr>
<td>HH</td>
<td>28.05.2011</td>
<td>Updated printer info</td>
<td>002</td>
</tr>
<tr>
<td>HH</td>
<td>09.06.2011</td>
<td></td>
<td>003</td>
</tr>
<tr>
<td>HH</td>
<td>08.08.2011</td>
<td>Updated global settings, service</td>
<td>004</td>
</tr>
<tr>
<td>HH</td>
<td>26.08.2011</td>
<td>Updated report section.</td>
<td>005</td>
</tr>
<tr>
<td>HH</td>
<td>08.09.2011</td>
<td>Updated security section</td>
<td>006</td>
</tr>
<tr>
<td>HH</td>
<td>06.02.2012</td>
<td>Updated security section</td>
<td>007</td>
</tr>
<tr>
<td>RR</td>
<td>08.02.2012</td>
<td>Network printing</td>
<td>008</td>
</tr>
<tr>
<td>RR</td>
<td>20.02.2012</td>
<td>6D mode, updated printer selection</td>
<td>009</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Checked by</th>
<th>Date</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>THB</td>
<td>20.02.2012</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approved by</th>
<th>Date</th>
<th>Signature</th>
</tr>
</thead>
<tbody>
<tr>
<td>HH</td>
<td>20.02.2012</td>
<td></td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>QM References</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEM#</td>
</tr>
</tbody>
</table>

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