

PAROTESTER 2

Paper and film tester

Operating Instructions



proceq

Sales and service information: www.proceq.com

Proceq SA

Ringstrasse 2

Postfach 336

CH-8603 Schwerzenbach

Switzerland

Tel.: +41 (0)43 355 38 00

Fax: +41 (0)43 355 38 12

E-mail: info@proceq.com

Proceq USA, Inc.

117 Corporation Drive

Aliquippa PA 15001

Phone +1-724-512-0330

Toll free +1-800-839-7016

info-usa@proceq.com

Proceq Asia Pte Ltd

12 New Industrial Road

#02-02A Morningstar Centre

Singapore 536202

Phone +65-6382-3966

Fax +65-6382-3307

info-asia@proceq.com

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1 Safety

1.1 General Instructions

The PAROTESTER impact device and the corresponding display device are designed and constructed in keeping with the state of the art and signaled technical safety regulations .

Please read these operating instructions carefully before using the device for the first time. They contain important instructions for use and maintenance of the PAROTESTER impact device.

1.2 Use

The PAROTESTER impact device is a mechanical device and serves for fast and almost 100% non-destructive quality control of paper rolls and plastic rolls in accordance with customer specifications. The device should only be used for paper, plastic rolls and films. Use with harder materials can damage the respective impact bodies and result in faulty measurement results. The PAROTESTER2 display device serves for data acquisition, display and storage. It may only be used for these purposes and must be protected against external influences.

1.3 Liability

Our «General Terms and Conditions» always apply. Warranty and liability claims in the event of personal injury and damage to equipment are excluded if they are caused by one or more of the following:

- Incorrect functional check, operation and maintenance of the PAROTESTER2 device
- Unauthorized modifications to the PAROTESTER2 device
- Catastrophes caused by the effects of foreign bodies, accidents, vandalism and force.

1.4 Recommendations

- Carry out the specified maintenance work regularly.
- Observe the recommendations during cleaning or maintenance of device components.

2 Important information

2.1 Compatibility of the impact devices

The impact devices type P and PG also mentioned in these operating instructions refer to the previous PAROTESTER-model (1). These impact devices can also be used with the PAROTESTER2 if the impact device cable has a BNC connection.

2.2 Compatibility of data upload to a PC

Upload of the saved measurement data via RS232 is possible with the PAROLINK/PAROLINK3 software, version 1.X., for all PAROTESTER models.

The special corresponding cable is supplied with the PAROLINK3 software.

Upload of the measurement data to a PC without the PAROLINK3 software is also possible with the Windows «Hyperterminal» software.

The special cable is necessary and can be ordered as an accessory.

2.3 Compatibility with the barcode reader

A barcode reader can only be connected to the serial interface RS232 of the PAROTESTER2 display device from series no. SN. 511.XXXX, Eprom Vers. 5.1 onwards. The barcode reader is supplied with power from the PAROTESTER2 display device (battery supply).

2.4 Compatibility with printing of the measurement data

An RS232 cable, 9/9p, wired 1:1 is required from series SN 511.XXXX, Eprom Vers. 5.1 onwards due to the multi-purpose serial interface and for printing the data on a printer with RS232.

2.5 Preventing damage

PAROTESTER2 is designed for rolled paper, films and foils. Test impact on harder materials damages the impact body which can produce in incorrect results.

2.6 Correct measurement

- PAROTESTER2 is a precise measuring instrument and should also be used as a measuring instrument.
- If the measurement is carried out too quickly, the impact body is additionally accelerated. This can result in incorrect measurements. PAROTESTER2 recognizes the faulty measurement procedure.

This measured value is neither saved nor displayed. Instead of displaying the measured value, the message «Measure more slowly!» appears on the LCD display. During the next correctly executed measurement, the current hardness profile, the newly executed measurement and all previously set parameters appear once more. Also refer to section 10, «Error messages»

3 Measurements

3.1 Measuring process

The PAROTESTER measuring process is identical to the EQUOTIP process, which is based on the energy measurement principle; EQUO=energy quotient. During testing an impact body with a steel calotte is knocked against the test surface by spring force and then rebounds. The impact and rebounding velocity are measured by non-contacting instruments when the calotte of the impact body is approx. 1.5 mm away from the tested surface. This is achieved by a permanent magnet integrated into the impact body which moves through a coil during the test and induces electrical voltages when moving forwards and backwards which behave proportionately to the speeds. The measured values from the impact and rebound speeds are converted in the display device to the hardness value L.

3.2 The hardness value L

This term which has been used hardness testing since 1975 is the quotient of rebound and impact speed of the impact body multiplied by the factor 1,000.

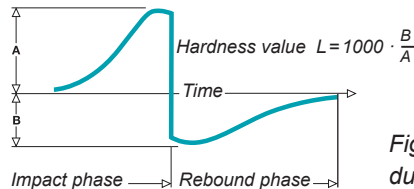


Fig. 1 Signal progression during test impact

This hardness value comprises a 3-digit value which increases with the hardness of the tested material. The L-value is additionally marked with the ID letter of the respective impact device. For example: LU = 671 for the L-value of the impact device type U.

3.3 Measurement accuracy

The measuring accuracy of the PAROTESTER (EQUO process) when using the L-value as a direct measurement gauge:

- Medium measurement spread of the L-value over the entire measuring range: $\pm 6L$ based on the L-value, L=600: $\pm 1\%$

3.4 Impact device functional check

- The functional check of the PAROTESTER impact devices and display devices is carried out electronically with each measurement (impact energy and encoder position). Corresponding messages are output on the display in the event of deviation from the programmed set value.
- An extended functional check of the impact devices and display devices is carried out on a calibrated test block. This serves for mechanical and electrical checks of impact devices P, PG and U and display device PAROTESTER2. These are carried out by measurements on this test block. The PAROTESTER impact devices and display device are working correctly when the mean value of 3 to 5 measurements is within the set value marked on the test block and the range R is $< 20 L$. Also refer to the section 12.3 «Test block U».

4 Technical data

4.1 Display device

Required batteries: 6 standard size AA cells:
1.5 V LR6

Operating time with a set of batteries at 20 °C approx.:
50 hours

Permissible ambient temperature range:
0 °C to + 50 °C

Connection sockets on the PAROTESTER for impact devices:
2-pin and BNC

Connection for external power supply:
9 V DC 0.2 A

Data output socket:
RS 232 / DB 9p

Display device dimensions:
75 x 180 x 80 mm

Weight:
750 g, incl. batteries

4.2 Impact devices

Impact device type U

Impact energy:	200 Nmm
Max. penetration:	4.0 mm
Contact force:	120 N
Impact device diameter:	46 mm
Impact device length:	300 mm
Weight without cable:	890 g

Impact body U

Mass of the impact body	26 g
Calotte radius	25 mm
Impact body tip, hardened	

Impact device type P

Impact energy:	160 Nmm
Max. penetration:	2.5 mm
Contact force:	100 N
Impact device diameter :	45/60 mm
Impact device length:	300 mm
Weight without cable:	920 g

Impact body P

Mass of the impact body	20 g
Calotte radius	25 mm
Impact body tip	not hardened

Impact device type PG

Impact energy:	90 Nmm
Max. penetration:	2.5 mm
Contact force:	100 N
Impact device diameter:	45/60 mm
Impact device length:	300 mm
Weight:	920 g

Impact body PG

Mass of the impact body	20 g
Calotte radius	25 mm
Impact body tip	not hardened

Impact device type D

Impact energy:	11 Nmm
Max. penetration:	1.0 mm
Contact force	~10 N (by hand)
Impact device diameter:	20 mm
Impact device length:	150 mm
Weight without cable:	50 g

5 Connections and controls

5.1 Display device

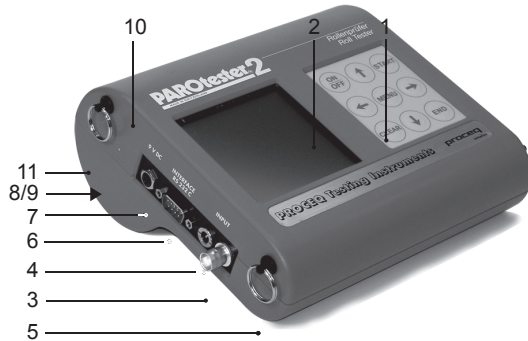


Fig. 2

1. Operating panel
2. Large LCD with display of the L-values and hardness curve
3. Signal input BNC
4. Signal input 2-pin
5. Carrying lugs
6. Signal output RS232C interface
7. Ext. battery connection 9 V DC 0.2 A
8. Battery compartment, housing bottom section
9. Battery compartment lid, housing bottom section
10. Housing top section
11. Housing bottom section

5.2 Impact device

Type U

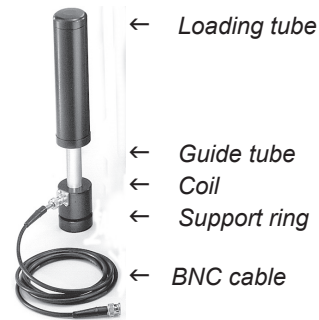


Fig. 3

Type P/PG



Fig. 4

Type D

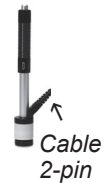


Fig. 5

6. Device operation

6.1 Electronic display device

The display device is a user-friendly μ P-controlled data acquisition system with the following main advantages:

- Digital display and graphic recording of the measured L-values
- Calculation of the mean value, standard deviation and range
- Viewing all measured values in the entire memory
- Conversion to the R-value of the Schmidt-Hammer type L/LR)
- Data memory with output option via RS232 (PC and printer)
- Data input with barcode reader via RS232
- Multi-language capability
- Mains independent

Operating keys field and display field

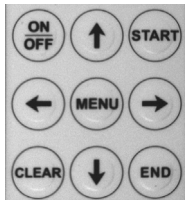


Fig. 6

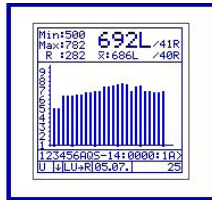


Fig. 7



Device on/off



Cursor upwards to menu level



Opens the menu item on the menu level



Cursor to left



Selection in menu level



Cursor to right



Deletes last measurement



Cursor down to menu level



Finishes menu input or concludes measurement series

6.2 Connections

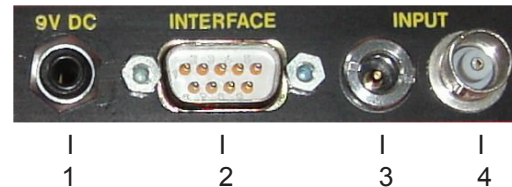


Fig. 8

1. Connection for external batteries or mains power supplies 9V DC 0.2 A
2. Connection RS232 9p, for external data output on PC, printer or data input, barcode
3. Connection socket 2-pin
4. Connection socket BNC

6.3 Starting the devices

After pressing the «ON» key, the serial number of the display device, the installed software version, date/time, test Ok (Fig. 9) and the battery status in hours (approximate measurement duration) appears briefly on the display. The "ready for measurement" screen then appears (Fig. 10).

After pressing the «ON» key ⇨ 4–5 s ready for measurement



Fig. 9



Fig. 10

6.3.1 Main necessary settings

The following 2 settings must always be checked and adjusted if necessary before recording the measured value. These are:

1. Impact device type
2. Impact direction

On the ready for measurement screen the necessary settings can be entered by pressing the «MENU» key. Move the cursor to the «impact device» menu item (Fig. 11). Select the respective impact device with the arrow keys and then confirm with the «MENU» key (Fig. 12).

Press the «START» key ⇨ Select the impact device



Fig. 11

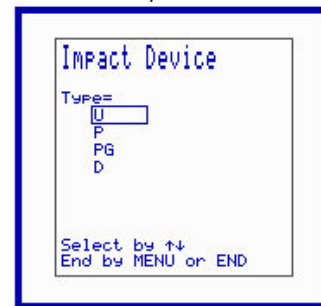


Fig. 12

After the «MENU» key is pressed for confirmation, the main menu opens where the «Impact direction» menu item can be selected with the cursor

(Fig. 13) and selection is analog.

Press the «START» key ⇨ Select the impact direction

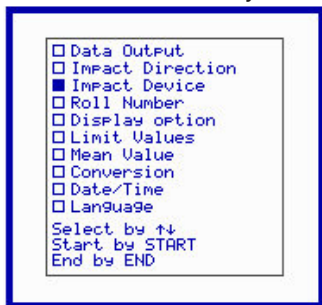


Fig.13



Fig.14

6.3.2 Other settings Roll number entry

On the PAROTESTER2 display device there are two input types for the identifying roll numbers

1. Manual entry of a roll number

The maximum length of a roll identification is 14 or 25 characters. Roll numbers with 25 characters are only possible from display device SN 511.XXXX onwards. Press the «MENU» key to return to the main menu (Fig.15). Select the «Roll number» menu item with the cursor and press the «START» key. The last set roll number is visible on this screen (Fig. 16).

The cursor [] is always located at the left-hand edge of the roll number if the «Roll number» menu item is selected.

Press the «START» key ⇨ Setting a number

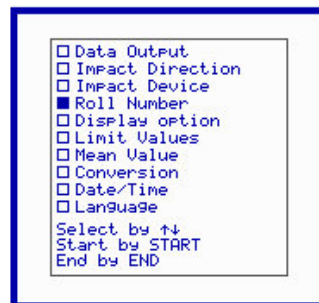


Fig. 15

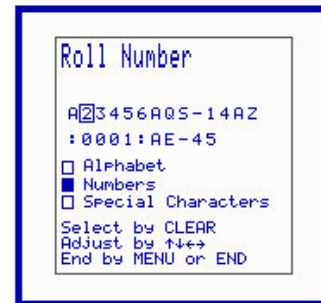


Fig. 16

The following characters are available for the roll identification:

- Alphabetic character: A to Z
- Numeric characters: 0 to 9
- Special characters: [:] , [-] ,
- Spaces []

PAROTESTER2 offers the option of setting works-related roll identifications with a consecutive roll number (incrementation).

Only left-justified input of a roll identification is possible.

Each character of the roll identification can be reached with the arrow keys (→/←). A black square below the roll identification [■] shows whether the set characters are alphabetic, numeric or special characters.

In addition the alphabetic, numeric and special characters can be pre-selected with the «**CLEAR**» key. The vertical arrow keys (↑/↓) are used to set the required characters at the current cursor position [□].

Setting a consecutive number (incrementation) within the roll identification

A consecutive number can be located anywhere in the roll identification. A consecutive number is defined as follows:

- The incremented number always starts with the character [:].
- The end of an incremented number always finishes with the character [:] or a space [].

Examples

- Roll identification; example 1: :**1423**: or :**1423**
- Roll identification; example 2: :**10113**:PAA-2-FR
- Roll identification; example 3: 123456AQS-14AZ:**009**:A123AB
- Roll identification; example 4: A-BETA:**0211**:
or A-BETA:**0211**

The bold consecutive numbers are automatically increased by 1 after each new measurement series/roll. Each roll identification only permits one single consecutive number!

Additional function of the space []

The space [] also has an additional **delete function**. All characters to the right of a space [] are deleted when the **END** or **MENU** keys are pressed.

2. Electronic input of the roll number with the aid of a barcode reader.

This electronic input is carried out with a barcode reader. This option is possible from version SN 511.XXXX and Eprom version 5.1. The barcode reader is an accessory and is described in the respective section.

Display option

Press the «**MENU**» key to return to the main menu where the «Display Option» menu item can be selected with the cursor (Fig. 17).

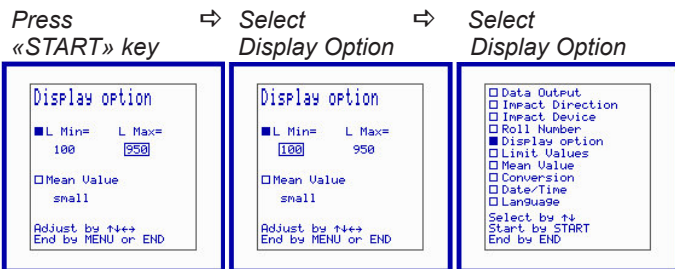


Fig. 17

Fig. 18

Fig. 19

Display Option permits various settings on the display (Fig.18 and Fig.19).

- The Y-axis can be displayed from the LMin = 100 to LMax = 950 with programmable steps of $\Delta L = 50$. The respective values can be set at the respective cursor position L Min and/or L Max with the arrow keys (\uparrow/\downarrow).

LMin and LMax are selected with the arrow keys (\rightarrow/\leftarrow).

- Display of the mean value and the current L-value is possible in both large and small characters. To select the large or small display of the mean value, press the right arrow key (\rightarrow). The cursor must be in the position shown in Fig.18.

When the arrow key (\leftarrow) is pressed, the cursor is on the «Mean value» menu item.

The display of the mean value x : is set to «small»

(Fig.20). The mean value x : «727» is displayed in small characters and the actual \bar{v} value «774» is in big characters (Fig.21)

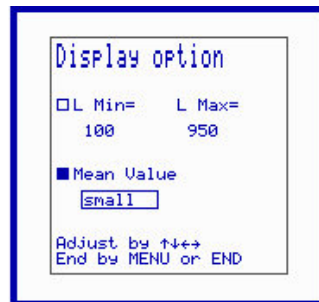


Fig. 20

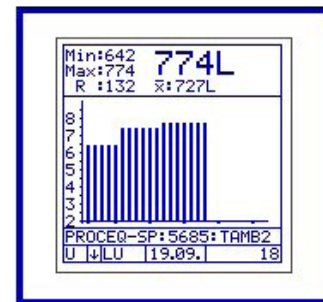


Fig. 21

From this position (Fig.20) it is possible to use the arrow keys (\uparrow/\downarrow) to switch the display of the mean value from big to small and vice versa (Fig.22/23). The mean value x : «727» is displayed in big characters.

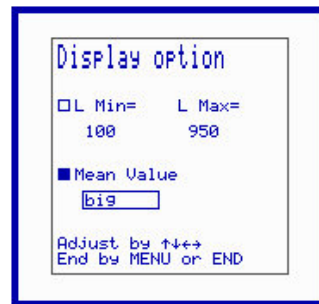


Fig. 22

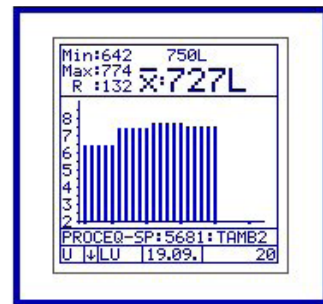


Fig. 23

Limit values

Press the
«START» key

⇒ Select the limit values

Example with
limit values

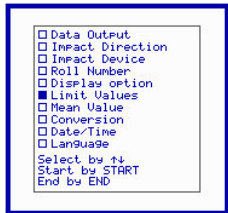


Fig.24

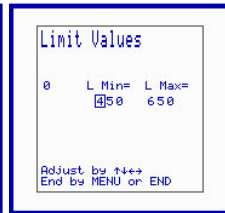


Fig.25

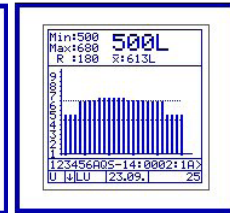


Fig.26

The limit values must be within the measurement range (L= 100 to L= 950). If the cursor position is «0», the limit values are not activated or not displayed.

Mean value

The maximum number of the measured values per roll is 200 measurements. All measured values per roll are saved. PAROTESTER2 can upload the measured values automatically online to a PC or a printer via interface RS232. To this purpose this automatic measured value output must be set.

Press the «MENU» key to return to the main menu where the «Mean value» menu item can be selected with the arrow keys (↑/↓) (Fig. 27).

Press the
«START» key

=> Automatic
output: «off»

Automatic
output: «on»

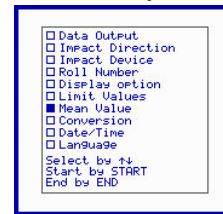


Fig. 27

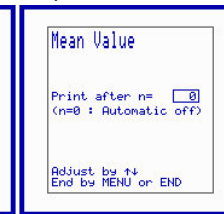


Fig. 28

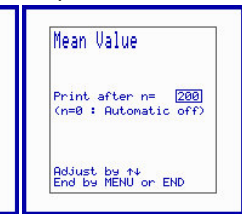


Fig. 29

Automatic output is switched off; n=0 (Fig.28).

The measured values are then output and the respective measurement series completed when the «END» key is pressed.

Automatic output is switched on; n=XXX (Fig.29).

The measured values are automatically output after XXX measurements and the measurement series is concluded.

Conversion

General information on conversion:

PAROTESTER2 now features the option of comparing the recorded PAROTESTER L-values with the R-values of our Schmidt-Hammer type L / LR.

This comparison or conversion is only possible for **paper rolls** and for the PAROTESTER impact devices type P and type U.

The hardness of a paper roll depends on a number of parameters which can influence the hardness. For example the quality of the cellulose, paper density, paper or sheet thickness, temperature, moisture and naturally the various parameters of the paper machines themselves (rolling and unrolling speed, web tension, web guide etc.) must be mentioned in this context.

All these parameters affect the measuring results of the measuring devices to varying degrees. For these reasons it is not possible to give any exact information on conversion and the conversion range.

The aim of these conversions is:

- To permit switchover from the Schmidt process to the improved PAROTESTER process.
- To provide direct comparison of the hardness values to permit transfer of experience and specified quality criteria from one system to the other.

Conversion settings:

Press the «MENU» key to return to the main menu where conversion can be selected with the cursor (Fig. 30).

Press the
«START» key

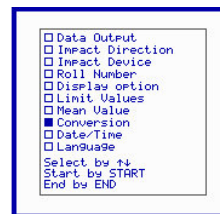


Fig.30

No conversion
selected



Fig.31

Conversion:
P→LR selected



Fig.32

The respective conversion is set by pressing the arrow keys (↑/↓) Fig. 31/32 .

The conversion of the L-values into R-values (Schmidt-Hammer) is only possible for the impact device type U and type P. The selected conversion to the R-value is shown on the display.

Date / time

Press the «MENU» key to return to the main menu where the «Date/time» menu item can be selected with the arrow keys (↑/↓) (Fig. 33).

Press the «START» key ⇒ Day month, day setting ⇒ year, month, year setting



Fig.33



Fig.34



Fig.35

The settings for the menu item «Date/time» can be easily made with the arrow keys (→/←). The parameters can be selected with the arrow keys (↑/↓) at the selected position.

Language

Press the «MENU» key to return to the main menu where the «Language» menu item can be selected with the arrow keys (↑/↓) (Fig. 36).

Press the «START» key ⇒ Language «English» selected



Fig.36



Fig.37

The required language can be selected with the arrow keys (↑/↓).

7. Data output

Important information on data storage or online data upload

Data upload via the RS232C interface of the PAROTESTER2 display device is only permitted with the original PAROLINK3 cable or with the PC cable and is also only possible when using such a cable.

If the PAROTESTER2 display device is connected to the computer with any other commercially available cable, faulty function, higher power consumption or permanent damage of the PAROTESTER2 and the serial interface of the computer can result.

7.1 Transferring the memory

The following items are required for uploading the memory contents to a personal computer:

- IBM-PC or compatible PC with a RS 232C connection
- PAROLINK3 cable with software protection (Proceq cable)
- PAROLINK3-Software Vers. 1.8X, Windows version
⇒ W98/Me/NT40/Window 2000/XP.

Memory capacity: approx. 150 rolls, each with 20 values.

Press the «MENU» key to return to the main menu where the «Data output» menu item can be selected with the arrow keys (↑/↓) (Fig. 38).

Press the «START» key to enter the data output menu (Fig.39).

Select the «Memory transfer» menu item with the arrow keys (↑/↓).



Fig.38

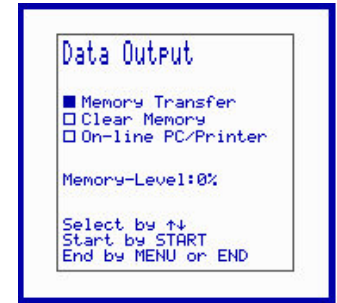


Fig.39

Before starting the memory transfer (Memory transfer), connect the PAROTESTER2 display device to the PC. The red cable connector must be connected to the side of the display device.

First start the PAROLINK3 and answer the necessary PAROLINK3 questions

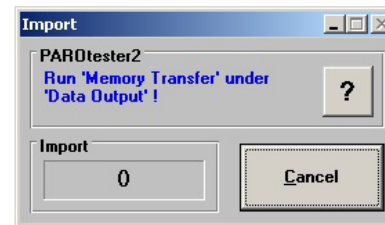


Fig. 40

When the PAROLINK3 (Fig. 40) is ready, press the «START» key.



Fig.41

The following appears on the display of the display device (Fig. 41) PAROTESTER2

Wait until data upload is finished and the data transferred from the PAROLINK3 are shown on the screen.

7.2 Clear memory

Press the «MENU» key to return to the main menu where the «Data output» menu item can be selected with the arrow keys (↑/↓) (Fig. 42) Press the «START» key to enter the data output menu (Fig.42). Select the «Clear memory» menu item (Fig.43) with the arrow keys (↑/↓). Press the «START» key.

The clear function must be confirmed again by pressing the «START» key (Fig 44). If you do not want to clear the memory, press the «END» key.



Fig.42

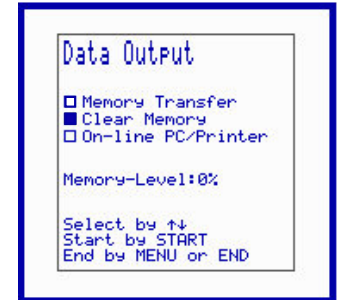


Fig. 43



Fig. 44

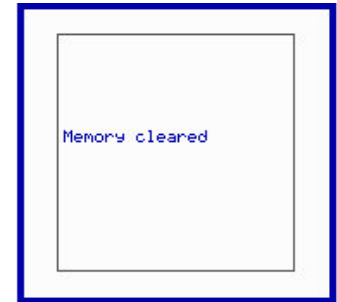


Fig. 45

After pressing the «START» key twice, all data in the memory are permanently deleted (Fig. 45).

7.3 Online data transfer to the printer (with serial interface RS232C)

Press the «MENU» key to return to the main menu where the «Data output» menu item can be selected with the arrow keys (↑/↓) (Fig. 45). Press the «START» key to enter the data output menu (Fig. 46). Select the «Online PC/Printer» menu item with the arrow keys (↑/↓). Press the «START» key. The online mode for PC or printer can be selected with the arrow keys (→/←). Online mode for the printer is selected by pressing the «END» key (Fig. 47).

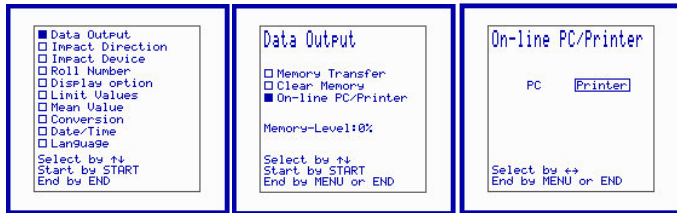


Fig. 45

Fig. 46

Fig. 47

In online mode the measured data are transferred to the printer after every roll or series of measurements. Online transfer to the printer is carried out manually when the «END» key is pressed or automatically.

Manual online transfer:

The data are always transferred **manually** when the «END» key is pressed.

Printing options:

Press the «END» key **1x** to print the hardness profile, mean value, standard deviation ($\pm s$) and range R (R=Max-Min) of the measurement series or roll.

Press the «END» key **2x** to print the individual measured values of the measurement series or roll.



The print options with the «END» key only apply when n = 0 in the «Mean value» menu.

Automatic online transfer

The data are transferred **automatically** if the number of measurements are pre-programmed. Entry of the number of measurements can be set in the «Mean value» menu (n=XXX).

During automatic printing n=XXX, output on the printer is identical to the output version A when the «END» key is pressed **1x**.

7.4 Online data upload to the PC (with own user program)

Press the «MENU» key to return to the main menu where the «Data output» menu item can be selected with the arrow keys (↑/↓) (Fig. 48). Press the «START» key to enter the data output menu (Fig. 49).

Select the «Online PC/Printer» menu item with the arrow keys (↑/↓). Press the «START» key. The online mode for PC or printer can be selected with the arrow keys (→/←). Online mode for the PC is selected by pressing the «END» key (Fig. 50).

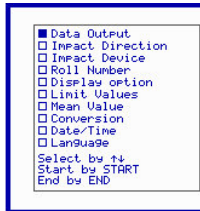


Fig. 48

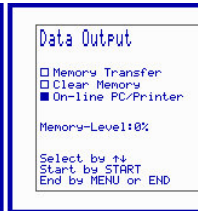


Fig. 49



Fig. 50

In online mode the measured data are uploaded to the PC after every roll or series of measurements. Online upload to the PC is carried out manually when the «END» key is pressed or automatically.

Manual online upload:

The data are always uploaded **manually** when the «END» key is pressed if $n=0$ in the «Mean value» menu.

Automatic online upload:

The data are uploaded **automatically** if the number of measurements are pre-programmed. Entry of the number of measurements can be set in the «Mean value» menu ($n=XXX$).

Data format (protocol) and sequence of data for on-line data upload to the PC

The data format is: Baudrate: 9600/Data bits : 8/Stop bits: 1/Parity: None /Protocol: None The data are uploaded to the PC in the following sequence:

Example:

Date/time ∪ roll number, ∪, impact device type, ∪, SR, ∪, U0, ∪, value, ∪, value, ∪, value, ∪, value, ∪, **CR,LF**

Character definition:

- CR = carriage return
ASCII number (dec.) = 13
- LF = line feed (new line)
ASCII number (dec.) = 10
- ∪ = space
ASCII number (dec.) = 32
- SR = impact direction number: 1 = down /
2 = 45° -down / 3 = horizontal
- U0 = no conversion

8. Operation

8.1 General

PAROTESTER impact devices and display device are measuring instruments and must be treated as such. PAROTESTER2 can be used in three impact directions. Refer to Fig. 51.

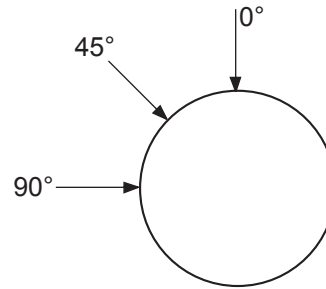


Fig. 51

The selected impact direction must be set according to the measuring situation on the PAROTESTER2 electronic system (section 6.3.1, Fig.14)

- Recommendation:** The rolls are measured from left to right at a distance of 5 cm
1. Position the impact device vertically to the test surface

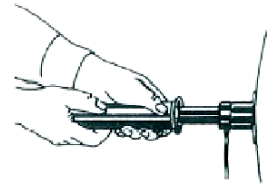


Fig. 52

2. Loading tube at medium speed until the impact body is released or until contact is made.
Measurement is confirmed with an acoustic beep.

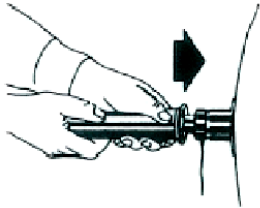


Fig. 53

3. Release the loading tube again until the end stop.

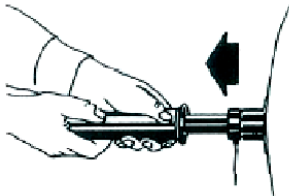


Fig. 54

The next measurement can then be carried out. Do not carry out the described procedure too quickly. The PAROTESTER2 electronic system signals errors if the loading movements are carried out too quickly (section 10.0).

8.2 Information on the LCD display

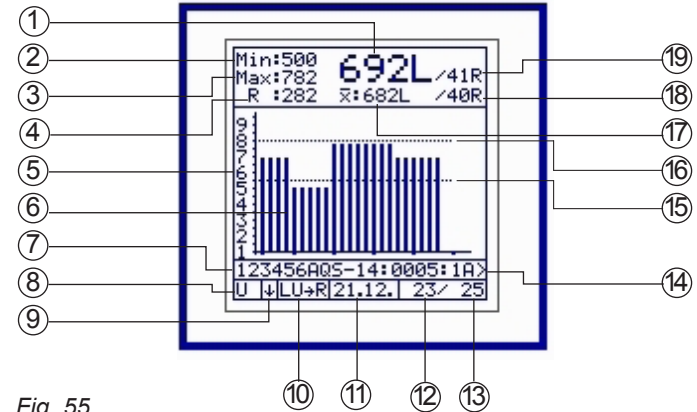


Fig. 55

Explanations of the item numbers on the display:

- 1 Current measured value
- 2 Minimum roll measurement
- 3 Maximum roll measurement
- 4 Roll range
- 5 Display area
- 6 Roll hardness profile
- 7 Roll number
- 8 Impact device type
- 9 Impact direction
- 10 Conversion LU -> R
- 11 Date: Day. Month. (Year = > internal)
- 12 Previous measurements

- 13 Number of measurements (setting)
- 14 Characters for a longer roll number (>20)
- 15 Limit value (Min.)
- 16 Limit value (Max.)
- 17 Continuous mean value L
- 18 Continuous mean R-value (Schmidt)
- 19 Current R-value (Schmidt)

8.3 Depiction and interpretation of the measurements

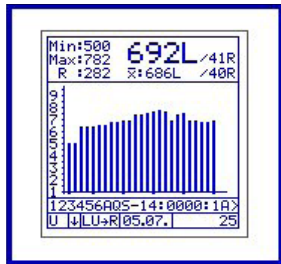


Fig. 56

At the beginning of the roll test the entire, pre-set display area is available. The scale for the first 25 measured values is displayed (Fig.56).

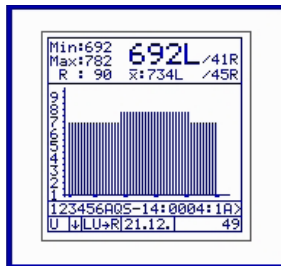


Fig. 57

The first summarized record of the roll hardness profile appears after 25 measurements. This recording density remains the same until the number of measured values has reached 50 (Fig.57).

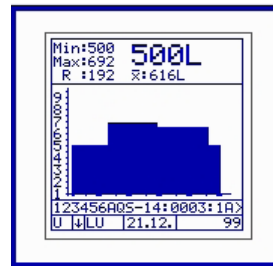


Fig. 58

The second summarized record of the roll hardness profile appears after 51 measurements. This recording density remains the same until the number of measured values has reached 100 (Fig.58).

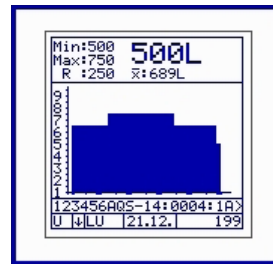


Fig. 59

The maximum number of measurements per measurement series or roll is 200 values (Fig.59).

9. Measurement limits

9.1 General

The measurement limits are automatically signaled to the tester with a «DOUBLE BEEP». The following message then appears on the LCD screen instead of the roll identification (Fig. 60):

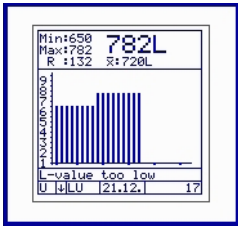
«L-value too low»

Fig. 60

The value is below the hardness range $L < 120$. Such values are neither displayed, recorded or stored (Fig.60). Stop measurement or the measurement series with the «END» key.

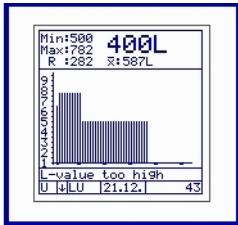
«L-value too high»

Fig. 61

The value is above the hardness range $L > 950$. Such values are neither displayed nor recorded or stored. Stop measurement or the measurement series with the «END» key. (Fig. 61).

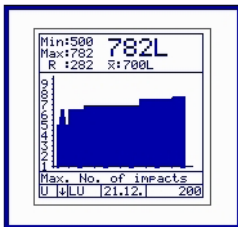
«Max. no. of impacts»

Fig. 62

This message means that the maximum number of measured values per roll is reached ($n = 200$) (Fig.62) No other measured values are displayed, recorded or stored.. Stop measurement or the measurement series with the «END» key.

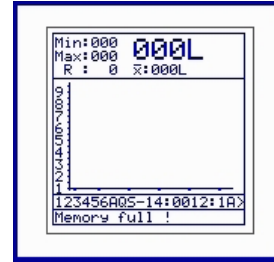
«Memory full»

Fig.63

When the display device is switched on, the message «Memory full» (Fig.63) can appear on the screen when the device is ready for measurement. The measured data should be uploaded to the PC at the latest when this message appears! Refer to section 7.

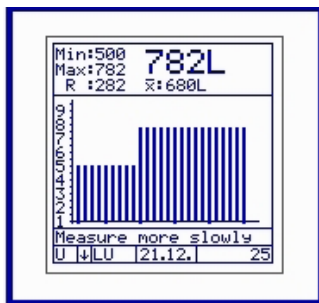
Warning

If measurement is continued, further measurements overwrite the saved measured values at the beginning of the memory. The old measured data are then deleted from the memory.

10. Error messages

The impact energy of the impact device is always monitored by the electronic system itself. The encoder geometry and correct fit of the support ring are also checked.

10.1 Do not test too quickly!

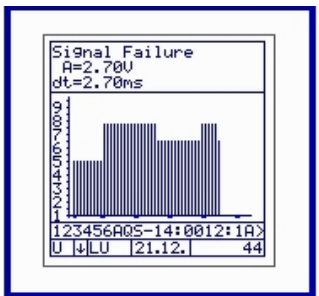


If the measurement is carried out too quickly, the impact body is additionally accelerated.

The message «Measure more slowly» appears on the LCD display. (Fig. 64). The message disappears when the next correctly executed measurement is made.

Fig.64

10.2 Measurement signal error



Measurement signal errors are displayed at the top of the display instead of the measurements and statistics. The message «Signal failure» appears on the LCD screen with 2 values (Fig. 65) A= X.X Volt and dt= X.X ms

Fig.65

During the next correctly executed measurement or when the device problem has been rectified, the values and current statistics appear again.

10.3 Description of the measurement signal errors

With the impact devices type P, PG and U with error A= X.XX V

If the A-value is **below 3.30 V**.

⇒ Clean the impact bodies and guide tube.
Refer to section 11 «Maintenance»

If the A-value is **higher than 4.00 V**.

⇒ Repeat the measurement with a slower loading movement (section 10.1).

With the impact devices type P, PG and U with error dt = X.XX ms

If the dt-value is **lower than 0.40 ms**

⇒ The support ring is worn; i.e. the impact body is in an incorrect position at the time of measurement. Replace the support ring.

On impact device type P with error dt = X.XX ms

If the dt-value is **higher than 1.25 ms**

⇒ The support ring is not correctly positioned. Fit the support ring correctly on the end stop.

On impact device type PG with error dt = X.XX ms

If the dt-value is higher than 1.40 ms

⇒ The support ring is not correctly positioned. Fit the support ring correctly on the end stop.

On impact device type U with error $dt = X.XX$ ms

If the dt -value is **higher** than **2.30 ms**

- ⇒ The support ring is not correctly positioned.
Fit the support ring correctly on the end stop.
When the faults have been rectified, recording of measurement values can be continued.
The measurement series can also be stopped by pressing the «END» key.

11 Maintenance

11.1 General

The impact device U does not require any special care except cleaning of the impact body and guide tube after approx. 5,000 impact measurements. Proceed as follows when cleaning:

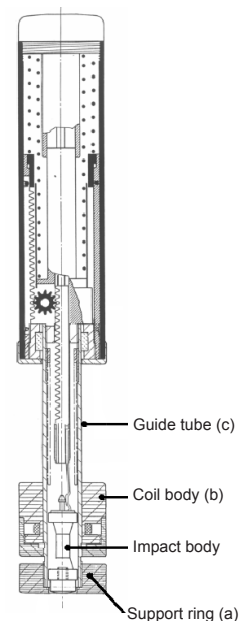


Fig. 66

Impact device U (Fig.66)
Unscrew the support ring U
from the guide tube.

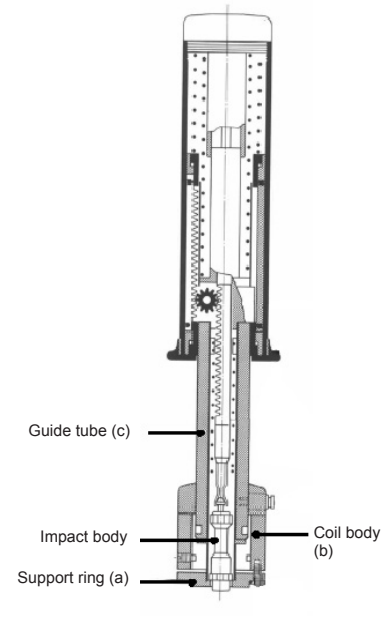


Fig. 67

Impact device P / PG
(Fig.67) Unscrew the secur-
ing screw A1 (Fig.68) of the
support ring until the sup-
port ring can be removed or
unscrewed from the impact
device.

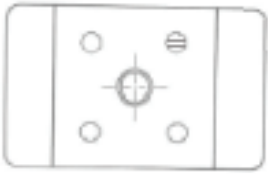


Fig. 68

Take the impact device in your hands. Place one hand under the coil body (b). With the other hand make a loading trigger movement; the impact body is then released. Place the loading tube in the end position.

Carry out the following tasks regularly.

1. Clean the impact body of the impact devices P, PG and U.

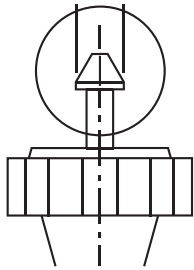


Fig. 69

- a) Only the peg of the impact body (marked with a circle, Fig. 69) may be lightly oiled or greased.
- b) Remove dirt from the impact body with a dry implement. Do not oil the running surfaces

2. Clean the guide tube (c) with the corresponding cleaning brush. Release or remove the support ring (a).

Move the loading tube against the coil until the impact body is freed. Clean the guide tube (c) and impact body with a dry brush (do not oil).

3. After cleaning, push the impact body back into the guide tube (c) until it is caught by the gripper.
4. Screw the support ring (a) onto the guide tube (c) up to the end stop. The support ring is then correctly fitted. The impact device is then once more ready for measurement.

After complete assembly of the impact device, carry out a functional check.

Connect the impact device to the display device.

Carry out 3 to 5 measurements on a paper roll. The impact device is in correct working order if the PAROTESTER2 does not display an error message.

12 Accessories

12.1 PAROLINK 3 data upload Software

PAROLINK3 is a program for uploading measured data from the PAROTESTER or PAROTESTER2 display devices to an IBM or IBM-compatible PC via the RS232 interface.

PAROLINK3 can be used on the operating systems WIN3X, WIN9.X, NT 4.0, WIN2000 and Windows XP.

The following components are necessary for uploading the 100% full memory contents of the display devices PAROTESTER/PAROTESTER2 onto a PC:

- Original PAROLINK3 software and
- Original PAROLINK3 «coded» cable for PAROTESTER2 (Art. no. 350 71 006)
- A USB-RS232 adapter is available (Art. no. 390 00 540). When using this adapter, COM port 4 must be set on the PAROLINK3.



Data may only be uploaded via the RS232 interface with the PAROLINK cable. The use of any other commercially available cable can result in faulty functions, higher power consumption and damage of the PAROTESTER display device and the serial interface of the computer.

PAROLINK3 properties

- The PAROLINK3 program is tri-lingual (German, English and French).
- The PAROLINK3 can upload the saved measured data from the PAROTESTER(1) and PAROTESTER2 to the PC.

- The interface port (COMX) can be selected with PAROLINK3. The other data formats for data transfer are pre-set.
- PAROLINK3 is simple and user-friendly. The most important functions can be carried out with function keys.
- The measured data are automatically loaded onto the screen in a table when they have been successfully uploaded. The measured data can be viewed and printed numerically and graphically in various ways.
- If the user has other data presentation preferences, PAROLINK3 has the option to export the data to a spreadsheet program such as Excel.
- PAROLINK3 can export ASCII files with three different separators and file endings.
 - 1) Tab separation; *.txt
 - 2) Semicolon separation; *.csv
 - 3) Comma separation; *.asc
- PAROLINK3 also features an on-line help which is opened with the F1 key.

12.2 Barcode reader

From series 511-XXXX / firmware vers. 5.1, a barcode reader is available as an accessory for the Parotester2. Paper and plastic rolls are frequently now marked with a barcode during manufacturing. The barcode reader must be connected to the RS232 interface. PAROTESTER2 then automatically recognizes the barcode reader and is immediately ready to read a roll number or roll identification.

Working with the barcode reader.

The barcode reader can be held in one hand or attached to the wrist with a Velcro-type fastener. The distance between the barcode and the barcode reader should be between 13mm and 200mm. This distance is determined by the size of the barcode.

A proximity sensor switches the barcode reader on at this distance and remains active for approx. 3 seconds. The roll identification is read in approx. 0.5 seconds.

- The barcode reader reads alphanumeric characters.
- The maximum number of alphanumeric characters is limited to 25.
- If a roll identification is larger than 20 characters, this is indicated by a «>», Fig. 70, in the status line. The read roll identification is fully visible in the roll number menu (Fig. 71) and also stored.



Fig. 70



Fig. 71

- Reading and editing a roll identification is only possible at the beginning of a measurement series, i.e. before the first measurement is triggered.
- The roll identification can be edited in the «Roll number» menu.
- The roll identification is automatically saved together with the measured data after a measurement series either when the «END» key is pressed or when the specified number of measurements has been reached.

Parotester2 – supply of the barcode reader

The barcode reader is supplied with an RS 232 cable, Velcro-type fastener and holders, already programmed and ready for use. To prevent incorrect parameter transfer during protocol transfer of the barcode reader, all transfer parameters are integrated in this sheet in the form of a barcode (items 1 to 14).

Procedure for a new barcode reader parameter setting.

The barcode reader must be connected to the Parotester2 display device. The display device is switched on.

Scan items 1 to 14 with the laser in turn continuously without removing the reader.

The programming mode must be concluded with item 14.

The barcode reader is once more correctly programmed and ready for use.



Technical data of the barcode reader

Type:	IS4225
Dimensions:	45.7 mm x 40.6 mm x 18.5 mm
Voltage:	5 VDC \pm 0.25 V
Current during scanning:	135 mA, typically @ 5 VDC
Laser class:	CDRH: Class II and IEC Class II component
Light source:	650 nm
Laser power :	0.75 mW (peak)
Interface:	RS 232
Minimum module width:	0.173 mm (6.8 mil)
Scanning speed:	52 scan lines per second
Scanning pattern:	One scanning line
Depth of the scanning field:	12.7 mm – 203 mm for 0.33 mm (13 mil) barcodes
Width of the scanning field:	28.6 mm @ direct contact; 101.6 mm @ 76.2 mm
Operating temperature:	-20 °C to 50 °C
Moisture:	5% to 95 % relative air humidity (non-condensing)

12.3 Test block U

The test blocks type U are valid for the impact devices type U, P and PG. Compliance with the engraved values guarantees the correct function of the impact devices and the electronic display device PAROTESTER2 over the entire measurement range.

The test blocks U are calibrated with the reference Parotester impact devices and marked as follows with the respective reference values (refer to the example).

Series no.:

U.217.9801A

Reference values with set value range for impact devices U, P, PG:

LU=588±12 LP=615±12 LPG=653±12



When the impact devices U, P, PG are checked, the test block must be placed on a flat, solid surface.

12.4 Printer

The PAROTESTER2 offers the option of printing measured data on a printer via the RS 232 interface, 9-pin connector. The portable thermal printer with rechargeable batteries **type DPU-201 GSE** (paper width: 57 mm) is recommended as an accessory.

This printer with mains power supply is available with 220/110 Volt from Proceq (www.proceq.com).

Taking into operation

The settings of the printers supplied with PAROTESTER2 are already set at the works. Printer settings must be made with the DIP switches. These are located next to the 9-pin connector. Open the DIP switch cover. The setting is made once when the printer is switched off.

The settings on the DIP switches are:

OFF				•	•	
ON	•	•	•			•
Switch	1	2	3	4	5	6

Connect the printer and the PAROTESTER2 electronic system with the printer cable. Switching the printer to the ON 1 setting means: Printer in operation

- Printer cable «Art. no. 360 04 535» for PAROTESTER2 from EPROM vers. 5.1
- Printer cable «Art. no. 350 74 994» for PAROTESTER2 up to EPROM vers. 5.0

Charging the rechargeable printer batteries

- The rechargeable batteries must be charged when the «BATT.LOW» lamp flashes.
- Connect the mains power supply and the printer.
- Switch the printer to the ON 2 position.

- Recommended charging time approx. 15 hours, up to 24 hours max.
- When the printer is not in use, always switch the switch to the OFF position.

13 Other important information

- PAROTESTER2 has an automatic deactivation feature. The electronic system switches off automatically after 60 minutes.
- PAROTESTER2 always monitors the status of the batteries and signals «Change batteries» on the display.
- The electronic system of the PAROTESTER2 constantly monitors error-free function of the impact device. Deviations are signaled by messages on the display (also refer to section 10.0 «Error messages»).
- If the ON/OFF button is actuated during a series of measurements, the data of the started measurement series are lost.
- Striped bars on the display or the printout mean that the measured values are above or below the selected display range.
- A calibrated test block type U is available as an accessory for periodical checks of the PAROTESTER2.

Approximately 100 measurements can be recorded for each test surface. The interval between individual measurements must be at least 10 mm.



During checks the test block must be placed on a solid, flat surface.

13.1 Viewing the data in the memory

Simple operation of the electronic system was extended by an important function; «View memory» by pressing a key. All measurements in the memory can be shown on the LCD display and scrolled through for viewing.

The data in the memory can only be viewed when a measurement series has been carried out. To finish a measurement series, press the «END» key.

Press the ↓ key in the last measurement series to access memory mode.

The measurement profile of the viewed measurement series and the corresponding statistics is shown on the display (Fig. 73). The arrow «↓» on the display shows the end of the memory. The designation «MEM» shows that memory viewing is active. No measurement is possible in this mode «memory = MEM».

To view additional measurement series, press the «↓» key again. Two arrows «↑↓» appear on the display (Fig. 74). It is possible to view all the data in the memory with the arrow keys. The beginning of the memory is reached in Fig. 75.

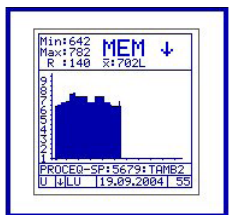


Fig. 73

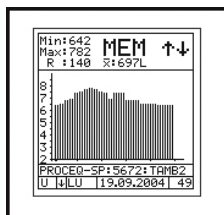


Fig. 74

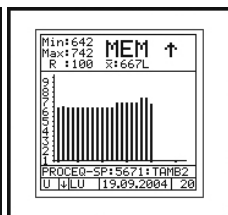


Fig. 75

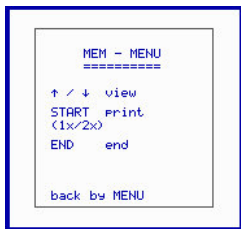


Fig. 76

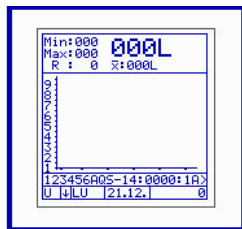


Fig. 77

Press the «START» key to upload the selected measurement series to a printer or PC (refer to section 7.3).

Press the «MENU» key to return to memory mode (Fig.76).

Press the «END» key to return to measurement mode where the PAROTESTER2 is once more ready to record a new measurement series (Fig.77).

14 Form of supply and part designation

PAROTESTER2 units

PAROTESTER2 unit U

- PAROTESTER2 display device
- Impact device type U
- Carrying strap
- Cleaning brush
- 6 batteries
- Carrying case (520x370x120mm)
- Total weight (5.8kg)

Article no. 360 04 400

Article no. 360 04 100 Accessory for PAROTESTER2

Test block type U:

PAROLINK3 software vers. 1.x (disk + cable):

External barcode reader:

DPUH-245 AS-A03a including mains power supply 100–240V,
printer cable. Firmware from version 5.1 and higher:

DPUH-245 AS-A03a including mains power supply 100–240V,
printer cable. Firmware version 5.0 and older:

RS232/USB adapter:

Article no.360 045 03

Article no. 360 045 21

Article no. 360 045 50

Article no. 360 04 570

Article no. 360 04 575

Article no. 390 00 540