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Mecmesin

Head Load Tester HP4000-B/HP8000-B

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Head Load Tester HP4000-B - force-measuring instrument

With the **Head Load Tester HP4000-B** force-measuring instrument peak-forces and force-curves can be measured in a simple way. The instrument is especially designed for the measurement of Head Loads in capping machines. It simply replaces a bottle running at full speed through the process. The curve-data-storage includes 4000 measurements, so that up to 8 seconds can be recorded. The measured data can be transferred via the serial interface to a PC and further processed with the Windows™-Software **HP-Graph**.

The built-in rechargable battery in connection with most modern, power-saving technology enables working over a long period without charging. A minimum of at least 10 hours is achieved in continuous operation. If no operation occurs within three minutes, the device shuts down automatically. Operation of several days can be reached in practice. End of operation is signalled by the text „bAt" in the display. Furthermore a protective function prevents the Accumulator from beeing completely discharged by automatic shut down.

While carrying out the measurement, the **maximum**-value of the applied force is latched and displayed. Simultaneously the data of the force-curve can be stored by a single keystroke.

The device is operated via two press buttons resulting, a user-friendly handling in laboratory and production.

Technical data

Head Load Tester HP4000-B Force-measuring instrument

Sensor rating:	10000 N
Measuring range:	
HP 4000	100.. 4000 N [1N resolution, accuracy 2% of end of range].
HP 8000	200.. 8000 N [2N resolution, accuracy 2% of end of range].
Trigger level:	
HP 4000	100N (optional 50N)
HP 8000	200N (optional 100N)
Supply:	built-in NiMH-Accumulator
Shipment:	with plug-in power supply over integrated loading socket (in scope of delivery)
Charging time:	approx. 6 hrs.
Operating time:	continuous operation > 20 hrs with loaded battery
Power unit:	primary 230 V, 50 Hz, 2 VA; secondary: 9 VDC,

	150mA, Isolation-class T40/E; IP20
Current consumption:	charging: approx. 50 mA
Device protection class:	III (SELV) according to IEC 536 / DIN VDE 0106
Environmental conditions:	- indoor use only - height up to 2000 m mean sea level - temperature range 15 .. 40° C - max. relative humidity: up to 31°C: 80%, linear decreasing to 50% at 40° C. - mains voltage 230 V AC, +/- 10%
Measuring frequency:	500 Hz
Measured data storage:	16000 curve-values, 12 bit-resolutions (approximately 32 sec.) 80 peak-values, 12 bit-resolutions, triggerlevel: 100N (optional 50N)
Interface:	RS 232-C (19200 bauds, 8 bits, 1 stop, no parity) Binary-data-transfer
Housing:	Stainless steel (1.4305), aluminum anodized
Dimensions:	Diameters 59 mm, height 185 mm with standard adapter; weight: approximately 1050 grams

Variant I

Cap adapter: connection:	latching, with stainless steel notch

Variant II

Cap adapter	**borehole inside**
connection:	customized
Variant III	**Basic pinned**

connection:	screwed
Scope of delivery:	Device, manual, power supply unit, data-cable, (Software HP-Graf)

General user directions

Startup

Please check your **HP-Tester** for transportation-damages, as well as the delivery on completeness, on receipt. Please inform your **HP-Tester** distributor of the determined lacks instantaneously.
Before putting the device into operation, the corresponding latching pressure-piece is to be put on. If necessary, a distance-adapter is to be put underneath the device in order to match the height of the simulated bottle.
Before the initial startup, the internal accumulator is to be charged with the mains adapter contained in scope of delivery for approximately 4 hours.

Charging, Battery management

Charging is done by first plugging the mains adapter into the device. Then the adapter is connected with mains. Now „chrg" appears on the display, alternating with the actual charging percentage. Charging ends when 100 is reached, the is no over-charging. Before a bigger measuring campaign is carried out, a value of 70 should be reached. Partial chargings are possible.

In order to reach a very long operating time, the **HP-Tester** is equipped with most modern power-saving-technology. If the device is not operated within of 3 minutes, the instrument turns off automatically. If you would like to perform new measurements, simply press the ON-button; the **HP-Tester** is immediately ready. With the manual as well as automatic shut down, the stored data are kept in memory.
The end of the operating time is indicated by the text 'bAt' shown in the display. If the instrument is operated yet without beeing charged, the automatic shut down takes place after a short time in order to protect the accumulator from beeing completely discharged.

Interfaces

A combined charging/data transmission jack is found at the bottom of the instrument. Here you can connect the RS-232 cable (within scope of delivery). Turn off the instrument before connecting of the cables please.
For the transfer of the data and further processing, the Windows™-Software HP-Graph is required.

RS-232 settings: 19200 bauds, 8 bits, 1 Stopbits, no parity. Data-format: binary.

Overload

The **HP-Tester** may only be operated in the specified force-range (see front). The sensor of the instrument is rated in a way that a damage of the system can be excluded with proper use. An overload of the sensor is to be avoided.

Charging, cleaning, repair

The **HP-Tester** is built largely maintenance-free. The instrument should be kept clean however. Cleaning of the housing parts should be carried out with a tender, moistened fabric. Please, do not employ any sharp agents or solvents.

Repair work is carried out directly by the manufacturer. If this should be necessary, the instrument is to be send to your **HP-Tester**-distribution stating the noticeable damages or malfunctions.

Calibration

The **HP-Tester** is adjusted carefully so that the specified gauging accuracy can be guaranteed for 1 year. I it is recommended to have the device checked annually by the manufacturer against a service charge.

In addition, the possibility exists to guarantee the compliance to international standards through a calibrating certificate.
The calibration is done by a recognized calibrating laboratory. If you wish such a certificate, please contact your **Head Load Tester HP4000-B**-dealer.

Notes on safety

The **Head Load Tester HP4000-B** works with secure low voltages. In normal and faulty operation, no electric endangering submits through the instrument. By the splash-water proof housing, a penetration of liquids is prevented in the normal case. The contact with jet-water, as well as an immersion of the instrument in liquids, should however be avoided. This can lead to the destruction of the electronics. If the suspicion exists, that liquid has penetrated, please send the instrument to your **Head Load Tester HP4000-B-dealer**.

Care should be taken if the mains-adapter is connected. The mains-adapter is not splash-water proofed. If liquid should penetrate into it, the danger of the electric shock exists with the known dangers for health and live. Always first plug the adapter into the HPT, then to the wall outlet.

Waste disposal

Your **Head Load Tester HP4000-B** contains NiMH-accumulators. These must not be disposed in domestic waste but must be provided to battery recycling via suitable collecting points.

Manufacturer

Michael Kreiensen
Erwinstrasse 79
D-79102 Freiburg

Distribution / Technical support

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Declaration of conformity

A declaration of conformity (CE-marking) is found on one of the following pages.

Operating instructions

- **Switching on**
- **Single- (peak value) measurement**
- **Delete peak reading**
- **Store peak reading**
- **Continuous measurement**
- **Activating continuous measurement mode**
- **Starting a continuous measurement**
- **Menufunctions**
- **Outputting the data**
- **Clearing data storage**
- **Switching off**
- **Displaying the battery state**

Switching on:

Display : blank
Action : **Press ON- button**

On power-up the device a internal test is done. First the battery state is displayed [%]:

Display : bat

After ca. 0.5 seconds

Display : 50

If the initial test has happened successfully:

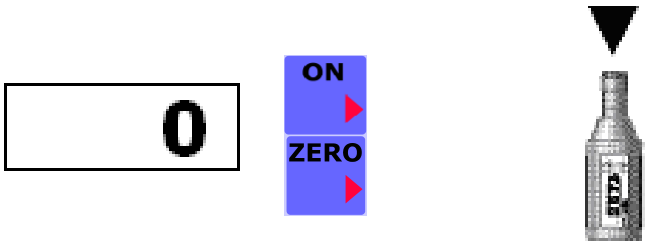
Display : 0

if not, i.e. the sensor is defective:

Display : Err1 (see also: Error messages)

Single- (peak value) measurement:

Display/Function Aktion

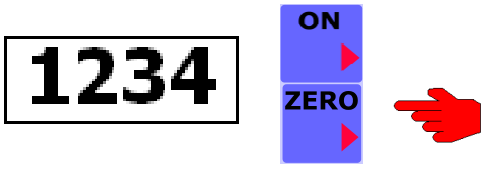


Display : 0
Action : apply Head Load

Above 40 N a peak value is displayed. If -after removing this load- another higher load is applied, the new value is displayed.
Pressing ZERO, the display returns to 0:

Delete peak reading:

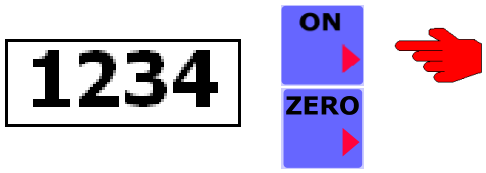
Display/Function Button



Display (i.E.) : 123
Action : **Press ZERO - button**
Display : 0

Store peak reading:

Display/Function Button



Display (i.E.) : 123
Action : **Press ON- button**
Display : 0

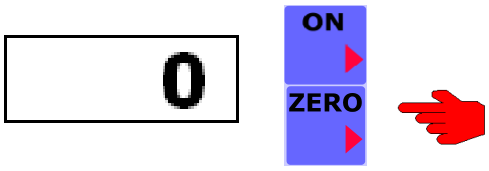
Recorded peak values can be output via the display and also via PC- Software.

Continuous measurement mode:

With continuous measurement readings are recorded with high rate. The recording is startet if the load exceeds a predefined (trigger-) value. This recording can be visualized on a PC as a measurement curve and are not displayed on the instrument. Continuous measurement mode must be activated first. You must make sure that, after activation, the loading process takes place. If the recording has been triggered unintentionally, the device must be cleared and re-activated prior to another recording.

Activating continuous measurement mode:

Display/Function Button

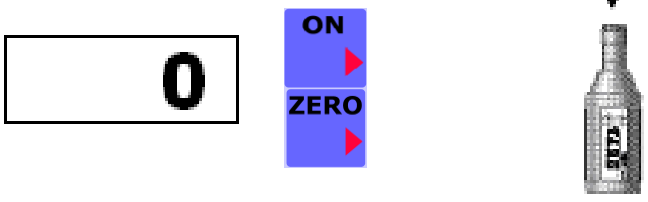


Display : 0
Action : **Press ZERO - button**
Display : rdy

If rdy is displayed, the device is ready for recording data.

Carry out a continuous measurement:

Display/Function Aktion

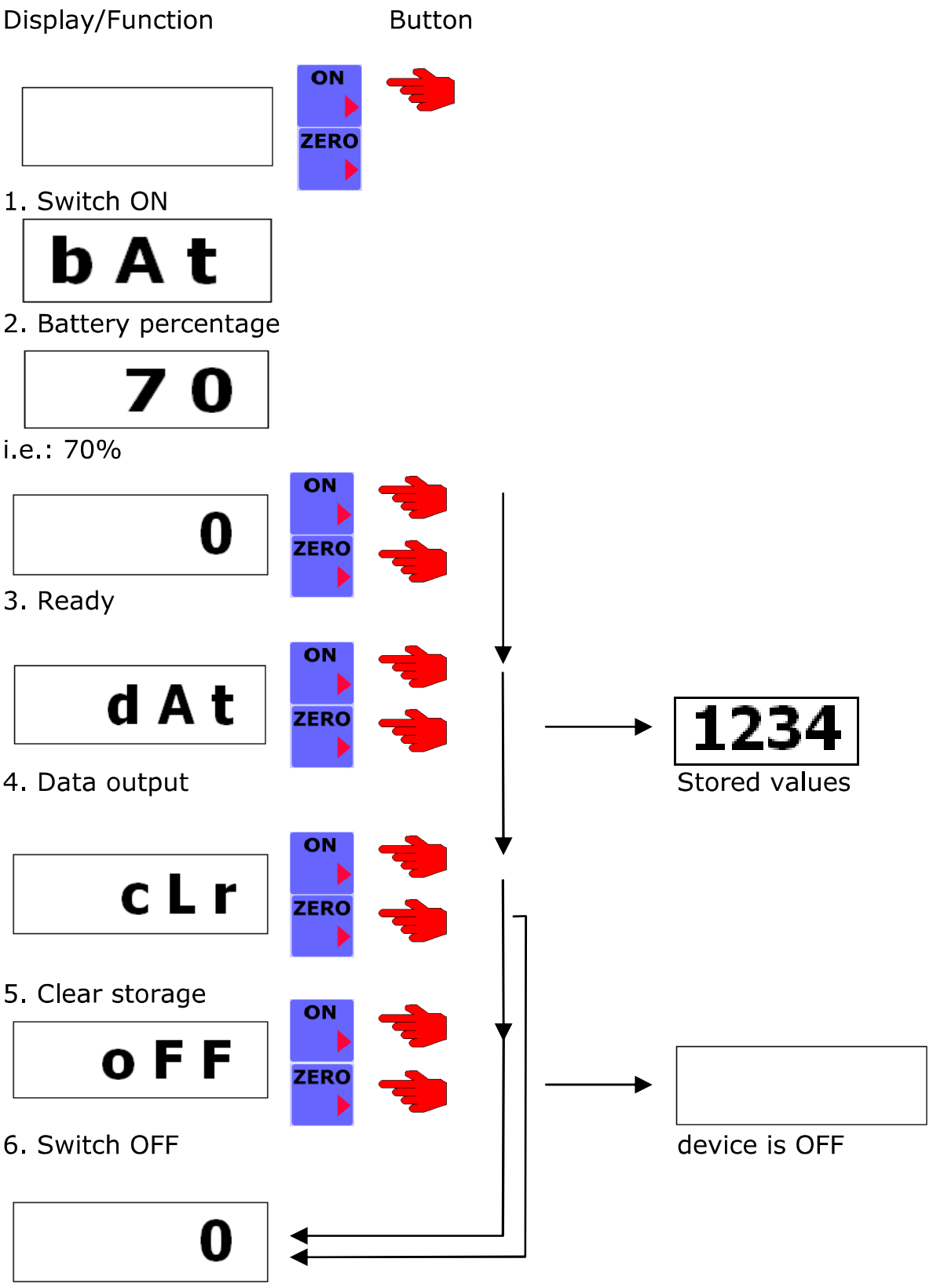


Display : 0
Action : apply a load value > 100N (trigger)
Display : rEc

The recording ends if the applied load falls below half of the trigger value, i.E.: 100N /2 = 50N, or when 16000 values have been recorded. The display then shows the peak value. Several measurements of this type can be carried out.

Menufunctions:

Outputting of measured data, clearing the data storage and shutting down the device are done via menu points, that can be run through by repeatedly pressing **ON**-button. Precondition for calling the menu is: the display shows „ 0“:



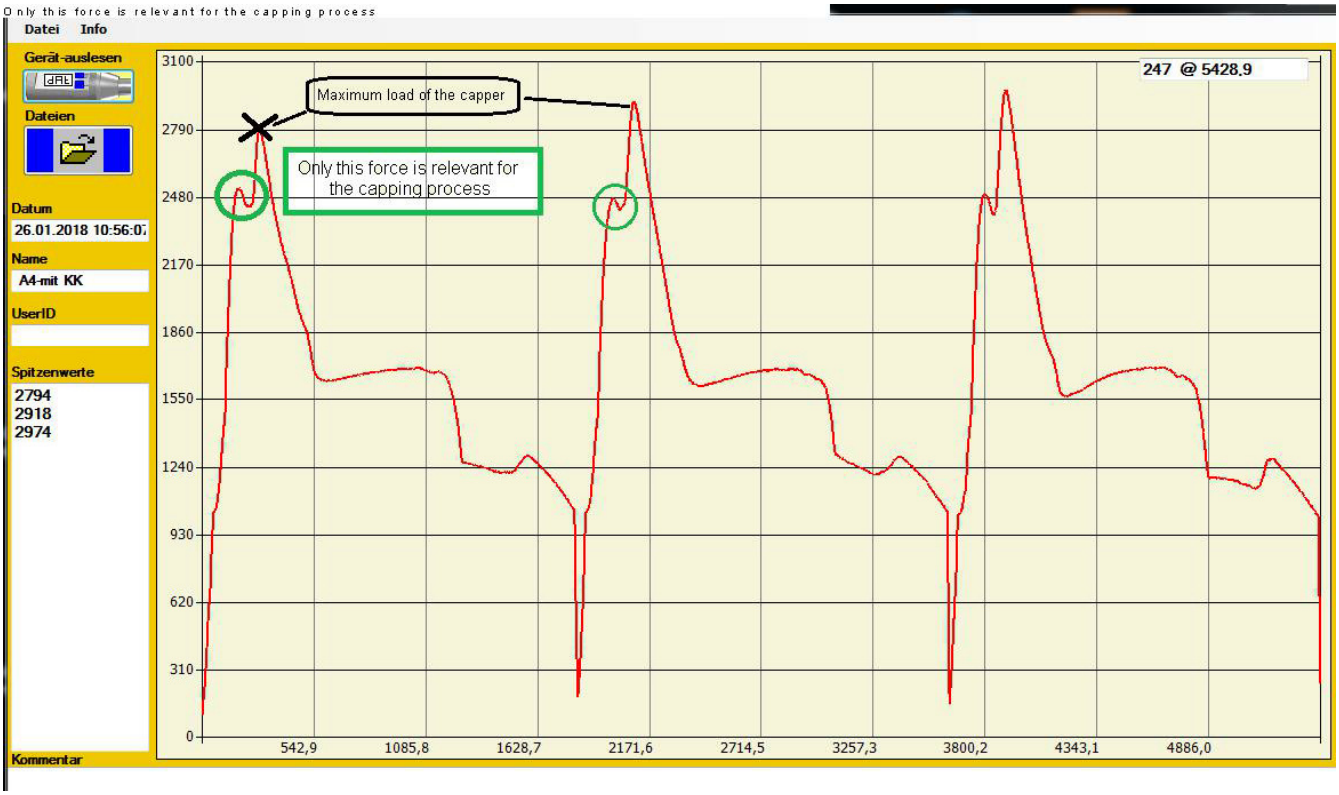
Software HP-Graf:

Installation of the software

1: Click „Setup" on the installation-CD
2: Start the software via Start-Menu

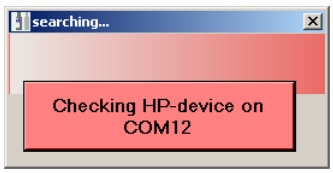
Transfer of data to PC:

1: When starting the software, the last file is shown

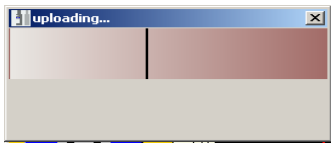


2: Connect device to PC via data cable, device is OFF
3: Click to HP- symbol (below „Device readout")

The software tries to establish a connection:



Now all available Com-ports at the PC are testet. Please ensure at least 1 COM- Port or USB-RS232 adapter is present on the PC.When the com-port in use is found, HP-Tester is automatically turned on (from Software) and you get:



The moving bar indicates the proceeding of the data transfer.
After this various data can be entered into the resp. positions:

- User‘s name
- User‘s ID
- Comments

With the button „files“ the data can be stored to a file. Also already stored data can be retrieved.
The storing path defaults to „Documents\HP-Data“
The data is stored in *.csv- format. Further processing can be done with i.e. MS-EXCEL.
If measuring grafs shall be stored as a picture, an appropiate pdf-converter has to be installed on the PC and the printing should be redirected to this.

For crown caps – closures

The graph shows a typical force curve of the closing system which arises during applying a force through the capper to a bottle with crown corks closure.

It can be clearly seen at which head force the closing cone of the closing station deforms the jagged edge of the crown cap.

Only this force is significant for the closing process.

The following maximum values result from the spring mechanism of the main compression spring in the capper and by internal friction.

These values do not affect the closing process. The graphic recording makes the closing process transparent and gives the actual closing value.

CE - declaration of conformity

For the subsequently designated product

force-measuring instrument Head Load Tester HP4000-B

it is confirmed hereby, that it corresponds to the essential protection requirements, that are determined in the following guidelines of the council for the adjustment of legal-rules of the member sates of the european union:

1. Electromagnetic compatibility (889/336/EEC)
2. Low voltage directive (73/23/EEC)

This declaration applies to all specimens which are set up after the appending workshop drawings - which are components of this declaration.

The following standards were used for the classification of the product with regard to the electromagnetic compatibility:

EN 50081-2, EN 50082-2

The following standard was used for the classification of the product with regard to the low voltage directive:

EN 61010-1

This explanation is given in responsibility for the distribution

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Freiburg, January 2000

Error messages

Various self-tests are carried out while power-on. Failing these tests is signalled by an error indication:

Err1:

Sensor error: The offset test was not passed. Defective sensor e.g. due to an overload condition. Replacement of the sensor through manufacturer is necessary.

Err2:

Sensor error: Device could not be adjusted. Defective sensor e.g. due to an overload condition. Replacement of the sensor through manufacturer is necessary.

Err4:

Memory error: The adjustment value is erroneous .New adjustment through calibrating lab is necessary.

Errors #1 and #4 can also occur combined, z.B.: Err5.

Mecmesin
testing to perfection

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