



Test the Hardness of tablets, oblongs, cores, capsule shaped samples, sweets, electronic components etc. using the **PTB 302** Hardness Testing Instrument which is in full compliance with the valid monographs of the European EP <2.9.8> and USP <1217> Pharmacopoeia.

Place manually the sample onto the sample support. Start the test and get the result shown at the digital LED display and immediately printed by the built-in printer or the optional available serial matrix printer. No change of tools required, the design of the jaws does handle all kind of tablet shapes.

The PTB 302 offers the following features to the user...

- Do up to 250 tests
- Use automatic re-start facility to speed up the testing sequence
- Delete invalid results, for example because of incorrect positioning
- Get direct printout of each result and a full statistical calculation including mean value, standard and absolute deviation, maximum and minimum test result
- Built-in thermo printer
- Easy instrument validation and calibration procedure
- Print calibration report
- Use standard RS 232 COM port to transmit or print the test results

PHARMA TEST AG
Siemensstrasse 5
D-63512 Hainburg (GER)



+49 6182 9532-600
+49 6182 9532-650
email@pharma-test.de
www.pharma-test.com



Manual Tablet Hardness Test Instrument - Type PTB 302

- Select force mode: adjust linear force increase rate within 5 - 40 N/Sec. - standard setting: 20 N/sec.
- Set sample touching force level (useful to test very soft samples)
- Set sample breaking level (useful to test "soft" tablets)
- No change of hardness test tools, system set up and jaw design to be used with all shapes of tablets
- Select PTB 302 for 300N or PTB 502 for 500N maximum testing force

Depending on the sample hardness you can manually test between 6 to 10 samples per minute. The broken samples are collected in a removable shoot having. The testing station has a Plexiglas user protection screen.

Principle of Operation

The user places the sample onto the support and starts the test. The driven force jaw moves towards the sample. As soon as it did touch the sample it will start to increase the force as per selected force rate until the sample is broken. The maximum force is shown at the display as hardness in either Newton (N), Kilopond (Kp) or StrongCobb (Sc). The instrument is ready to test the next sample. Whenever the number of samples used to be tested is finished, stop the test series and call for statistical calculation of the total series. Each result is immediately printed at the built-in printer, so is the statistical calculation at the end of a test series.

The instruments operation and design is in full compliance to the valid Monograph for Hardness Testing of the EP <2.9.8> and USP <1217> Pharmacopoeia. The used Load Cell offers 10 time more accurate results as requested.

Linear force mode....

Linear force increase certainly offers the most accurate control, as the rate of increase is directly controlled by the electronically load cell used to read the force and break-point. Also its quite simple to validate the correct and linear operation as for example a Tablet of 100 Newton hardness will be broken within 5 seconds if 20N/s had been adjusted.

Linear speed increase cannot be also used with the PTB302.

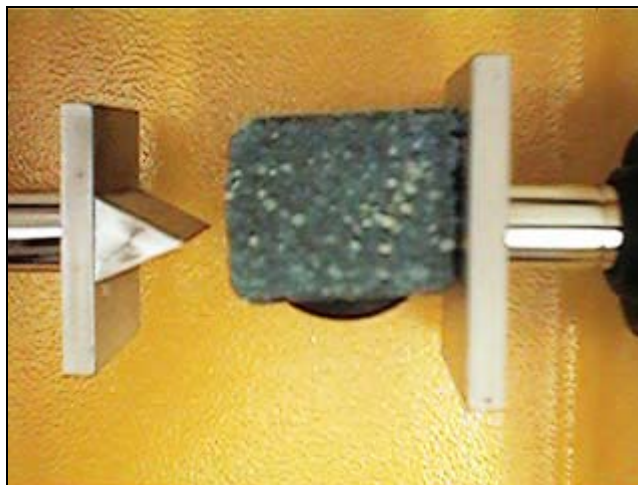
Calibration and Validation

Built-in calibration and validation program. To validate the correct break-point detection of the hardness test station the PT-MT magnetic tablet is used. Select for example a force of 50, 85 or 130 N and run a test series, the resolution of the results should be within 1.0N. The PT-MT instrument works like a tablet, it withstands force and than "breaks". The PT-MT3 can be used to test also the correctness of the selected force increase and the linearity of the load cell readings.

For the 2 point calibration of the hardness station a certified reference weight of 10 kg is used. All calibration and validation results can be printed and need to be countersigned.

Special Design

To test square samples we developed a special force jaw



Technical Data

Display:	LED Display for No. of samples and hardness results
Keyboard:	Numerical and function keys
Hardness PTB 302:	5.0 - approx. 300 N (Newton)
Hardness PTB 502:	10 - approx. 500N (Newton)
Accuracy:	Better 1N
Resolution:	0.3N = 1 Digit
Measuring units:	Hardness selectable in either Newton (N), kilopond (kp) or Strong Cobb (Sc)
Force rate:	Adjustable for linear force increase
Range:	5 - 50 N/sec.
Number of tests for statistics:	1p to 250
Calibration Procedure:	Dual point calibration - Zero and 10 kg reference weight (certified)
Validation Breaking detection:	PT-MT magnetic tablet
Validation Force setting:	PT-MT3 magnetic tablet
Interface:	RS-232 serial port
Instrument Housing :	Stainless steel to meet GLP requirements

Weights and Dimensions

Net weight:	12 kg
Gross weight:	18 kg
Packaging:	590 mm x 590 mm x 590 mm

Options

- Extra large sample dish to hold max. 70 mm diameter sampler

We reserve the right to make technical changes without any prior notice

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✉ email@pharma-test.de
🌐 www.pharma-test.com



Report Print Results

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00000000000000000000000000000000
NR      10
XM      79.34 N
SREL    4.26 %
SD      3.38 N
RANGE   10.00 N
XMIN    74.30 N
XMAX    84.30 N

STOP
 10    79.3 N
   9    82.3 N
   8    76.0 N
   7    78.0 N
   6    76.6 N
   5    84.3 N
   4    82.0 N
   3    74.3 N
   2    83.0 N
   1    77.6 N

END EXTENDED CAL
      19.9 N /S
      15.096 SEC
      300.6 N
    >MAX
CORR   =    3
CORR-ALT =    4
      19.3 N /S
      15.580 SEC
      300.3 N
    >MAX
CORR   =    4
CORR-ALT =   -4
CORR   =   -4
CORR-ALT =    5
      18.9 N /S
      15.912 SEC
      301.0 N
    >MAX
CORR   =    5
CORR-ALT =    6
      18.1 N /S
      16.600 SEC
      300.3 N
    >MAX
CORR-ALT =    6

-----
CAL10KP=   307 D
CAL 0KP=   17 D
VALUE   =   19 D
VALIDAT=  0.676 N
CAL10KP=  98.066 N
CAL 0KP=  0.000 N
CORR-ALT =    6
CONT =COR-RISE-20N/S
START=TST-RISE-20N/S
SIGMA=VALIDATION
DATA =10-KP-VALUE
CLEAR=00-KP-VALUE
EXTENDED CALIBRATION
-----
PTB 301 97.06/02
00000000000000000000000000000000

END CALIBRATION
VALIDAT=   0.0 N
VALIDAT=  98.1 N
VALUE   =   19 D
-----
CAL10KP=   307 D
CAL 0KP=   19 D
-----
CAL10KP=   98.1 N
CAL 0KP=   0.0 N
CONT =VALUE IN DIGIT
START=VALIDATION
SIGMA=CAL DATA
DATA =10-KP-VALUE
CLEAR=00-KP-VALUE
CALIBRATION
-----
NEWTON
VALIDAT=   0 D
OFFSET   17 D
      PTB 301 97.06/02
-----
TABLET   =    5 D
BROKEN   =   68 D
BROKEN   =   68 D
MAX-VALUE= 300.0 N
ZERO     =   50 D
SPEED-FOWARD= 20
TABLET   =    5 D
CLEAR =BROKEN
DATA   =TABLET
X     =MAX-VALUE
CONT  =ZERO
START =SPEED-FORWARD
INDIKATORS
-----
PTB 301 97.06/02
-----
BECAUSE DATA CHANGED
NEW CALIBRATION
PLEASE MAKE
-----
EEPROM-INITIAL.

```