



Máy đo độ hòa tan 08 vị trí mẫu, Model: DIS 8000



Quality Solutions for the Testing of Pharmaceuticals

2016 EDITION

TABLETS AND CAPSULES • SUPPOSITORIES • TRANSDERMALS
DETERGENTS • POWDERS AND GRANULES • CREAMS AND OINTMENTS

TABLET HARDNESS TESTER TBF 1000

The Tablet Hardness Tester Model TBF 1000 combines the economy of a simple, easy to use tester with the performance and accuracy of microprocessor controlled data collection.

It was designed in accordance with the specifications as laid down in **Ph.Eur. Chapter 2.9.8 Resistance to crushing of tablets** and **USP Chapter <1217> Tablet Breaking Force**.

Foremost in the design specification were those features that you, the user, identified as being essential to the **"ideal"** hardness tester.

You told us, for example, that the unit must be as **compact** as possible such that it could be used in the confines of the tablet press booth.

Measuring only 283 mm x 235 mm x 160 mm (w x d x h) (including **in-built printer** and **optional keyboard**) and weighing 8.5 kg, the TBF 1000 has the smallest footprint of any hardness tester of its type on the market, making it ideal for this purpose.

You told us that the unit should be **simple to operate** - the TBF 1000 employs just three touch sensitive keys located on the front panel to set up, perform a test and provide a printout of the results, namely <New Size>, <Test> and <Stats>.

At the same time, you asked for a number of **advanced and sophisticated features** - so, we provided them plus a small QWERTY keyboard located in the base of the instrument to access them.

The 4-line on-screen menu leads you through the measuring process. If **diameter** measurements are required, ensure that this option is selected prior to operation.

Attach a balance and/or thickness gauge and the TBF 1000 will collect **weight and thickness data** as well.

On completion of the test, the TBF 1000 automatically prints out the results and **statistical analysis** including time, date, min, max, mean and standard deviation together with the batch number and size.

Finally, you asked us whether it would be possible to **output data** to an external PC or printer - so, on the back of the unit, in addition to the interfaces for balance and thickness gauge, we have provided two further ports, one RS232 and one USB, to satisfy this request.

PRINCIPLES OF OPERATION

The principle of measurement is based on proven electronic load cell technology used in conjunction with a mechanical drive and electronic signal processing.

In practice, the tablet is placed on a platform between two precision ground platens (jaws), one of which is attached to the load cell and the other to a motor which provides the mechanical drive.

During testing, the motorised jaw drives forward pressing the tablet against the fixed jaw until such time as the tablet fractures, whereupon the motorised jaw retracts and the change in the resistance of the strain gauge employed on the load cell (the breaking force) is measured.

The pressure to the tablet can be applied in two ways. Most modern testers including the TBF 1000 work on the principle of **constant speed** (that is to say, the rate of jaw movement). Other units, mainly earlier models, monitor the rate at which the compressive force is applied i.e. **constant loading**.

Irrespective of which method is employed, it is essential that the uniformity and rate of loading be constant in order to assure comparability of results.

Tab No.	Weight (mg)	Thick (mm)	Hard (kg)
1	379	3.25	5.19
2	379	3.25	5.31
3	380	3.24	5.54
4	380	3.24	5.47
5	379	3.26	5.02
6	378	3.25	4.98
7	381	3.25	5.28
8	380	3.26	5.05
9	379	3.23	4.92
10	380	3.25	5.30

BATCH STATISTICS	
Batch No.	1
Batch Size:	10
Min:	4.92 kg
Max:	5.54 kg
Mean:	5.21 kg
Std. Dev:	0.21
Time:	HHMM DAY DD/MM/YY
Calibration No:	00004

Typical Printout ▲

Tablet Debris
Collection Tray ▶





Tablet Hardness Tester TBF 1000 ▲

TBF 1000 (with Keyboard Option) ►

TABLET HARDNESS TESTER TBF 1000

In general, the lower the speed or load, the more consistent the results. The **US Pharmacopeia**, for example, suggests a constant platen movement of less than 3 mm per second.

The TBF 1000 offers a choice of speeds between 0.06 and 0.5 mm per second with a default setting at 0.1 mm per second, all of which exceed the pharmacopoeial requirement by a considerable margin.

The standard TBF 1000 has a measuring range of **0 - 520 Newtons (+/- 0.1N)**. Other ranges, for example 50 N and 1000 N are available on request - please consult our technical staff for further details.

The unit will accept tablets up to **36 mm in diameter**.

Results can be expressed in either **kilograms-force (kgf), kiloponds (kp), newtons (N) or pounds (lbs)**. Diameter, if selected, is reported in **mm**.

The TBF 1000 has a **throughput** of approx. 5-8 tablets per minute dependent on the hardness and diameter of the tablets under test.

The TBF 1000 is also available with a **polished stainless steel case**, as an option, for use in a tablet production environment. Please see ordering information for details.

OPERATION

1. Setting up for a new tablet

Press the <New Size>* key - the motorised jaw will retract allowing the operator to insert the new tablet between the jaws before advancing once again to press the tablet lightly against the fixed jaw.

This contact is detected by the load cell electronics, which in turn instruct the motorised jaw to retract to the test position, approx. 5 mm wider than that of the diameter of the tablet.

The **diameter** of the new tablet is printed out on the in-built printer.

The unit is now ready to carry out a test.

2. Carrying out a test

Place a tablet on the test platform, lower the guard and press <Test> twice. The moving jaw will fast forward (2 mm per second) until it reaches a position approx. 0.2 mm from the tablet and then change to the test speed (default 0.1 mm per second).

The increase in load once the moving jaw reaches the tablet is displayed on the LCD display together with the tablet count, the time and date.

* If **diameter** measurements are required, ensure that the diameter measurement option is set to "On every test" at this point.

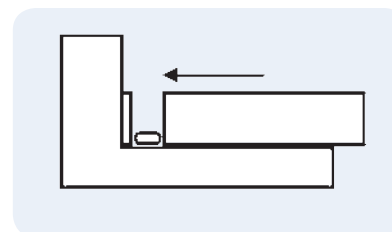
Tablet fracture is detected automatically - once detected, the result is printed out and the moving jaw retracts back to the test position ready for the next sample.

Testing of the next sample can be initiated in two ways depending on the set-up mode: (a) by pressing the <Test> key or (b) by lowering the guard.

The tablet testing position is arranged for horizontal loading and incorporates a removable tray in order to dispose of any **tablet debris**.

3. End of Batch - Statistical Analysis
Ph.Eur. and **USP** recommend that 10 and at least six samples are tested respectively.

At the end of the test, to initiate the printout and re-zero the tablet count, press <Stats>. A further batch of tablets can now be tested.





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