

**ERWEKA<sup>®</sup>**

[www.erweka.com](http://www.erweka.com)

Product Catalogue 2012

# Dissolution Testing

## Dissolution Testing

A wide range of products are available for dissolution testing including basic stand alone Dissolution Testers (USP methods 1, 2, 3, 4, 5, 6 and 7) as well as Offline, Online, Off-/Online or UV-VIS / HPLC-Online systems.

A separate dissolution catalogue shows the capabilities made possible by the range of ERWEKA dissolution products which, in addition to all USP methods, also includes Dissolution Testers for chewing gums, chewable tablets and even detergents.

## Dissolution Testers (Stirrer Type)

ERWEKA offers baths with 6 to 14 test stations (250, 1000, 2000, 4000 ml vessel volumes). The basic 6 station DT 626 with fixed drive head and the advanced DT 720 with Smooth Move® lifter for the drive head have been developed for easy handling by symbol keys and bright LEDs. The DT 820 was designed for advanced stand alone use as well as Offline System control with an alphanumeric keypad and large LC display as well as test-run parameter memory for up to 50 different products (transferable by USB memory stick).

## Automation

ERWEKA DT 720 and DT 820 dissolution testers are available with a patented sample withdrawal system which complies with the current USP/Pharm. Eur./JP (8 vessel temperature probes are available as an option). This unique system eliminates the need of cross-validation with ERWEKA dissolution systems.

## Offline Systems (Stirrer Type)

A wide range of offline systems are offered in combination with the DT 820 Dissolution Tester which controls all system components such as pump, fraction collector and (if required) modules for automated media change and automated membrane filter change (down to 0.22 µm). The systems collect at up to 25 sampling intervals, offer media replacement, dilution and HPLC vial membrane piercing. Sample racks (HPLC Vials of 1.5 or 4.0 ml or glass tubes of 10 or 25 ml capacity) can be easily exchanged.



DT 820 with alpha-numeric keypad, large LC display and product memory to store test-run parameters of up to 50 products.

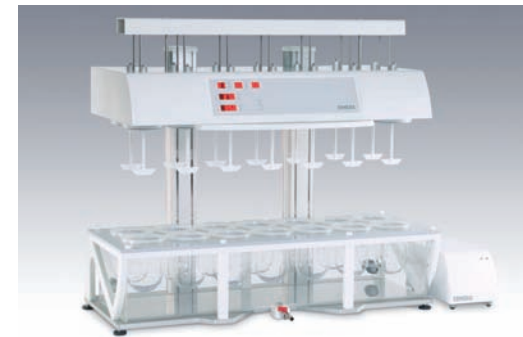


The DT 720 has been designed for those users who require an easy-to-use dissolution tester and for Online Systems where the unit is controlled remotely by a software package.



The DT 626 budget basic unit with fixed drive head (High-Head) and 6 test-stations.

ERWEKA® DT 1420



ERWEKA® Dissolution Dual Offline System



ERWEKA® Dissolution Offline System



**ERWEKA®** Dissolution UV-VIS Online System



**ERWEKA®** Dissolution UV-VIS Dual Online System



**ERWEKA®** Dissolution UV-VIS On-/Offline System



**ERWEKA®** Dissolution HADs HPLC-Online System



**ERWEKA®** USP 4 Flow-Through-Cell Offline System with automated media change system



**CALEVA®** USP 3 and 7, type RRT 10



**Dual Offline Kit**

Up to two Dissolution Testers can be connected to just one fraction collector via a single SP 840 Syringe Pump.

**Online Systems (Stirrer Type)**

The ERWEKA dissolution software controls DT 720/820 dissolution baths as well as the before mentioned USP compliant sample withdrawal system, various sample transfer pumps and UV-VIS Spectrophotometers, to create an Online Dissolution System. The software can also control modules for automated media change and/or automated membrane filter exchange.

**Dual Online Systems**

Online systems are available where two dissolution baths are connected to one UV-VIS.

**HADs**

The highest degree of automation and flexibility is offered by the new Half-Automated-Dissolution System. It is prepared for UV-VIS, HPLC analysis, fraction collection as well a combination of all with up to two Dissolution Testers.

**BioDis (USP 3 and 7)**

The CALEVA BioDis fulfils the requirements of USP 3 and 7 (switchable without the need of tools, within approx. 1 minute).

The Unit is operated by a removable touch screen. Media loss by evaporation is prevented by an automated covering system.

**Flow-Through-Cell (USP 4)**

The ERWEKA USP 4 compliant Piston Pump (type HKP 720) and 7 station, small footprint Flow-Through-Cell dissolution tester with individual cell control provides the basis for the ERWEKA "Open-Loop" and "Closed-Loop" USP 4 systems.

**Offline Systems (USP 4)**

ERWEKA USP 4 systems, both "Open-Loop" and "Closed-Loop", can be connected to fraction collectors to prevent the need for user supervision during the test-run. If required the systems including modules for automated media change (max. 4 changes) and temperature documentation of the media at the entrance of each cell, are controlled by the type SE system control unit.

## Hardness Testers

Decades of experience in design and production of Hardness Testers have led to a wide range of precision hardness and combinations testers, for round and odd shaped samples.

### TBH 125

The TBH 125 is a basic dual-mode ("Constant Speed" and "Constant Force") tablet hardness- and combination tester (hardness; hardness/diameter; hardness/diameter/thickness) tester for those customers requiring accuracy and robust design and easy operations.

The TBH 125 is operated via a symbol keypad which allows entering the number of samples required for testing.

Results of sample hardness as well as diameter and thickness optional are shown at the two bright LED displays and can be printed (incl. date/time) via the standard USB printer interface or an integrated printer.

The 2-point-adjustment is menu-guided and includes a calibration print-out (3-point calibration) with date and time of performance as well as unit serial number.

The TBH 125 can either be calibrated statically (by weight stones) or dynamically (by AutoCal 2.0.). Even at the TBH 125 the integrated menu allows to set the measurement mode incl. breaking speed-/force increase rate, time/date, sensitivity of the hardness measurement and a break between the tests to remove dust and debris.

### TBH 325 series

The popular hardness and semi-automated combination tester measures sample hardness (3 – 500 N, optionally up to 1000 N), diameter (0.10 – 26.00; optionally up to 70.00 mm), thickness (0.10 – 12.00 mm) and weight (20.0 mg – 50.0000 g). The samples are manually transferred between the test-stations but data is transmitted automatically to allow a full sample report print-out (USB direct printer interface or via central LAN network printer). Operation is easy via the numeric keypad and the bright LC display.

TBH 325 units offer in addition memory for nominal product data incl.  $\pm$  T1/T2 tolerances of up to 20 (optionally 50) products. Product data can be transferred between TBH 325 units using a standard SD card.

If required, a roller-alignment system for centering oblong shaped samples is available as well as static calibration tools using weights and a dynamic calibration tool using an external load-cell.

# Hardness Testing – Manual and Semi-Automated



The TBH 125 is a basic dual-mode ("Constant Speed" and "Constant Force") tablet hardness tester for those customers requiring accuracy and robust design but very basic functions only.



TBH 125P with space saving integrated report/statistical printer.



TBH 325 WTD comes with a connected balance for measurement and documentation of the four essential parameters weight, thickness, diameter and hardness.

The ERWEKA TBH 325 is the ERWEKA hardness and combination tester series for measuring up to 4 parameters (weight/thickness/diameter/hardness). It has been developed for those customers who require robust design, easy handling and fast validation.

The unit comes with USB and LAN interfaces for hard-copy documentation either by a directly connected printer or by any network printer.

The TBH 325 offers storage of the nominal values and  $\pm$  T1/T2 tolerances for up to 20 (optional 50) products.





The TBH 425 series comes with an integrated star-shaped magazine for fully automated testing of tablet thickness, diameter and hardness of round and odd shaped samples.

Special versions (i.e. for fertilizers) are available.



TBH 425TD, controlled by the CFR 21/11 compliant MC.net software and Notebook/PC.



The TBH 525 series is an automatic tablet testing device (max. 20 samples) capable of handling "all shapes" and measurements of up to 5 parameters including oblong width of odd shaped samples. The oblong shaped samples are automatically aligned by means of 4 rotating rollers.

#### TBH 425

This unit is based on the TBH 325 operational concepts, but adds automated operation for the measurement of hardness, diameter/length and thickness (0.10 – 8.00 mm).

For testing of odd-shaped samples, such as oblongs, an optional groove in the transport way and an alignment routine are available.

A balance can be connected to the unit (manual transfer from balance to combination tester) for 4 parameter documentation.

#### Special Versions

Special versions of these hardness and combination testers are available (i.e. for larger samples, detergent tablets, fertilizers etc).

#### TBH 525

The TBH 525 series was invented to measure up to 5 parameters (weight, thickness, width, diameter/length and hardness) of round and odd (oblong) shaped samples. Up to 20 samples can be inserted into the round feeding magazine that transports them to the test stations.

The weighing station comes with an integrated Sartorius load cell (20 mg – 50.0000 g; accuracy +/- 0.1 mg). At the thickness test station, special care was taken to introduce the least force possible to ensure that a precise measurement is guaranteed even for soft or elastic samples. The multi-test station for oblong width, diameter/length and hardness is featured with four rotating rollers which guarantee perfect alignment of oblong shaped samples.

This unit can be handled by either the integrated keypad (numeric with alpha-numeric sub-function), graphic LC display and integrated storage capacity for the nominal values and two plus/minus tolerances of up to 20 (optional 50) products or by an external PC with validated, CFR compliant MC.net software package.

#### MC.net software package

TBH 325/425/525 can be controlled externally by a Notebook/PC via the validated MC.net software. This configuration significantly increases memory capability for storage of numerous products. The MC.net software itself allows CFR 21/11 compliant operation (user entry, user levels, product data, storage of results, CFR Audit Trail) as well as advanced statistical features, batch comparison, trend analysis, etc.

# Hardness Testing – Automated

## MultiCheck 5.1

The MultiCheck 5.1 automatically measures weight, thickness, diameter/length, width and hardness of round and odd shaped samples (max. 40 measurements/min).

The unit operated by the 21 CFR 11 compliant software MC.net is available with a magazine for up to 12 batches/products with 100 samples each. The samples are separated by an oscillating funnel prior to entering the unique balance boat. Once the weight (20.0 mg – 50.0000 g; accuracy  $\pm 0.1$  mg) is determined, the sample is fed into a patented linear transporter which aligns the sample securely in the 90° position to the hardness test jaw. For samples which tend to lay on their side, a patented electronically adjustable step is available in the transport way to flip the sample into the correct position. After the thickness is measured the sample is transferred to the hardness test station where it is prevented from turning (oblong) or flipping (sugar coated samples) by a down-holder device. Optionally, before breaking, the width of the sample can be measured optically.

For measurement of hard gelatine capsules the MultiCheck 5.1 can be equipped with a laser length measurement system.

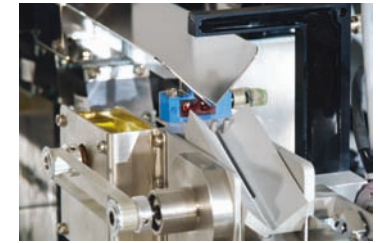
All parameters are displayed on the PC and can be stored and printed via the network-ready MC.net software package. Where two or more MultiCheck units are used, all data can be stored on a central database (SQL server) located on a network computer. Custom made LIMS integration is available upon request.



The MultiCheck 5.1 offers fully automated measurement of weight, thickness, diameter, hardness and width (optional) of max. 1200 samples, such as round tablets, odd shaped tablets, hard and soft gelatine capsules.

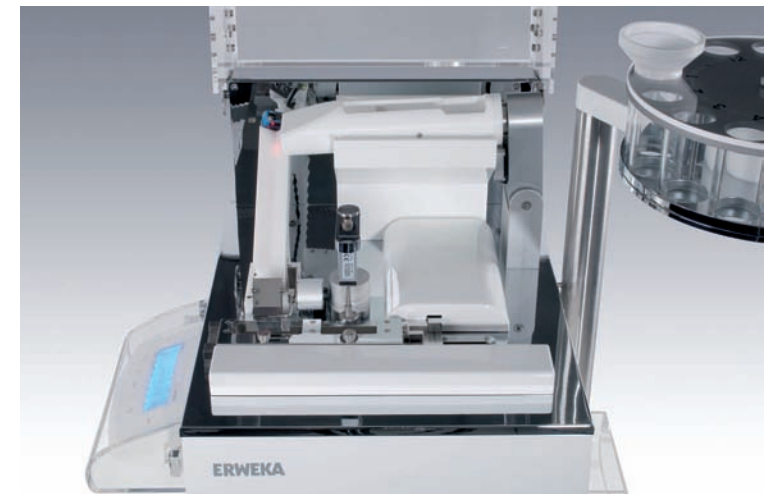


Special device for the optical measurement of the length of hard gelatine capsules.



The advanced sample segregation system included in the MultiCheck 5.1 offers

- easy adjustment independent of sample kind and shape
- fast individualization
- secure operation
- easy cleaning
- quick emptying function





The MultiCheck 5.1 (available in stainless steel industrial version) in combination with the ERWEKA TabSelect flap/switch and the Venturi air transport system can be connected to any single- or double sided tablet press.

#### Tablet Press Connection

With the ERWEKA TabSelect flap/switch and the TabTrans Transport system (both controlled by the upgraded MC.net software on which intervals for tablet withdrawal can be programmed), the MultiCheck 5.1 (available in stainless steel version) can be connected to virtually any brand and type of tablet press (i.e. single or double sided). At the pre-set time point a switch in the flap will open and the withdrawn tablets are transferred smoothly to the MultiCheck by the Venturi air-transport system where they are inserted through a cyclone. Once inserted, operation of the MultiCheck is initiated automatically to give automated online documentation of the production quality.

#### Static Calibration

Unlike most of our competitors, ERWEKA units have only one fixed adjustment value with a second value to be selected. This routine allows the user to set the 2nd value in the middle of the measurement range thus assuring correct results over their complete test range.

After adjustment, the precision of the unit can be calibrated by actual/nominal checking at 3 points within the measurement range.

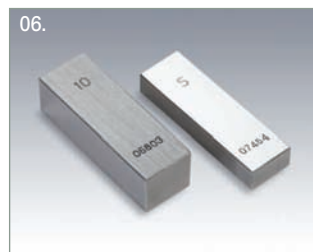
#### Dynamic Calibration

The Dynamic Calibration device "AutoCal 2.0" can be used for all types of ERWEKA hardness tester. AutoCal 2.0 is a stand-alone device, doesn't need any additional software or PC.

Via an external, calibrated load-cell the internal load-cell of the hardness tester can be precisely adjusted over the complete measurement range. After adjustment the unit is calibrated at 3 points within the measuring range (video see [www.youtube.com](http://www.youtube.com)). In addition to precision, AutoCal 2.0 brings down adjustment and calibration time to approx. 2 minutes.



- 01. AutoCal 2.0
- 02. Validation tablets (stainless steel)
- 03. ERWEKA PQ tablets
- 04. Weight Stones for calibration
- 05. Oblong test jaws
- 06. Blocks for calibration of diameter and thickness measurement station



# Disintegration Testing

## Disintegration Testers

To meet the needs and the budget of every individual user, ERWEKA offers a range of two manual and one automated disintegration testers, each available with 1, 2, 3 or 4 test stations.

### ZT 220 series

ZT 220 comes with an integrated high-quality flow-through heating system, moulded one-piece PET water bath, water bath cover to prevent from evaporation and 100% USP/Pharm. Eur./JP Basket Rack Assembly.

Operation is kept simple but provides all functions needed. Actual test-run conditions, including water bath temperature and run-time, are shown by big and bright LE displays.

The unit is available with one to four simultaneously operated test-stations. Additionally the counting of the run-time is automatically started/-stopped when the Basket Rack Assembly is moved out/in of the upper holding position.

### ZT 320 series

The user friendly ZT 320 series comes with one to four individually operated test-stations, each connected to an individual keypad for easy setting of the required run-time parameters as well as to start and stop the operation.

Optionally the basket rack assembly is moved into the media when the start button is pressed and raised automatically on completion of the pre-set run-time or when the stop button is pressed.

The unit comes with external water bath/media temperature probe. All recorded test-run parameters can be hard copied via the optional USB printer interface, the actual disintegration time is manually added.

### Accessories

Fully USP compliant "Quick-Clean" Basket Racks and Baskets, type "B" with 3 larger test tubes are offered. Of course all required validation handbooks and tools are available as well as ERWEKA PQ tablets with specified disintegration time.



Disintegration testers of the ZT 220 series are available with 1, 2, 3 or 4 simultaneously driven USP/Pharm.Eur./JP compliant basket rack assemblies.

The units come with a quality integrated flow-through heating system, moulded one-piece PET water bath (can't leak, can't break, easy to clean) and water bath cover as standard.

Control of the unit is easy: by a membrane keypad with symbol keys the test-run parameters, such as run-time and temperature, are set and the actual values (run-time, water bath temperature) shown by big and bright LE displays.

On the ZT 220 series the run-time counter is automatically started when the Basket Rack Assembly is lifted into the test media.

On the ZT 320 series disintegration testers the test-stations (one to four) are driven individually. Each test test-station is controlled by its own keypad to guarantee ease of use.

After programming the required test-run time the basket rack assembly with its loaded samples is automatically lowered into the media. On completion of the pre-set run-time or when the stop button is pressed the basket rack is raised from the media to avoid the samples continuing to disintegrate (optional).

The temperature displayed on the LE display is the one measured by the standard external temperature sensor either located inside the water bath or the test media.

The optional type "B" basket rack assembly with larger test-tubes can be fitted to all ZT 220/320 disintegration testers.





ZTi/m 320 Series for automated determination of disintegration time by either mBasket or iBasket.

While the mBasket uses a magnetic guided disc (weight and shape USP/EP compliant) and sensors under the USP/EP compliant sieves, the iBasket comes with a patented optical detection system which works with or without a guided disc. While the mBasket uses a magnetic guided disc (weight and shape USP/EP compliant) and sensors under the USP/EP compliant sieves, the iBasket comes with a patented optical detection system which works without a guided disc.

The automated ZTi/m 320 is based on the manual ZT 320 series which can be upgraded (at time of purchase or afterwards) by adding basket(s) with automatic detection (mBasket or iBasket), then operated via PC and the ZT.net CFR 21/11 compliant software package. It's completely modular and allows use of both manual and automated test baskets. Both the mBasket and iBasket allow test of fully disintegrating and non-fully disintegrating samples without exchange of any part.



The ZTm 320 series Disintegration Tester can operate either with standard basket racks, type "A" (6 tubes) or with basket racks type "B" (3 tubes) with larger test-tubes.

A validation kit and ERWEKA PQ tablets for measurement system verification are available.

### Automated Disintegration Testers

The automated ZTi/m 320 disintegration tester series is based on the manual ZT 320 series with basket lift out feature.

For automation purpose it is equipped by one or more basket rack assemblies with automated detection, controlled then via PC and the CFR 21/11 compliant ZT.net software package.

The ZTi/m allows any configuration of manual and automated test stations.

Two different systems of automated Basket Rack Assemblies are available:

- a) mBasket with magnetic guided disc and sieves – both USP/EP compliant – and sensors underneath the sieves, in type "A" (6 test-stations) or type "B" (3 larger test stations) configuration, or
- b) patented iBasket with optical detection operating without guided discs and media temperature documentation)

Neither the mBasket or iBasket need any modification for measuring fully disintegrating and non-fully disintegrating products such as film coated tablets, gelatin capsules etc.

All generated results, no matter mBasket or iBasket was in use, are stored via the ZT.net software package (SQL server data base) and can be statistically processed and printed at any time.

## Friability-/Abrasion Testers

ERWEKA Friability-/Abrasion testers are of highest quality to ensure extremely low drum wobble and accurate and homogeneous drum rotation.

### TAR series

The TAR series is a USP/Pharm.Eur./JP compliant ERWEKA unit for testing friability and/or abrasion.

Programming is easily performed by the symbol style keypad. The rotation speed can be programmed between 20 and 100 rpm and test run duration can be set in either time or total number of revolutions. During the test run the actual rotation speed and the test run duration is shown on bright LE displays.

For larger samples the complete unit can be set to the USP/Pharm.Eur. required 10° position by a standard switching leg.

To increase the ease of handling on the TAR series, the friability drums don't have to be removed and opened for loading and emptying. Instead the friability drums are loaded through an opening. On completion of the test run the samples are automatically removed into a container located under the drum.

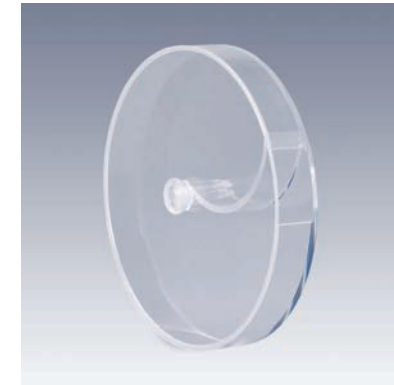
### GTA 120

The GTA 120 offers excellent reproducibility due to the precise constancy of the input energy and due to the irrelevance of the tackiness of the test material inside the glass bottle (test-station).

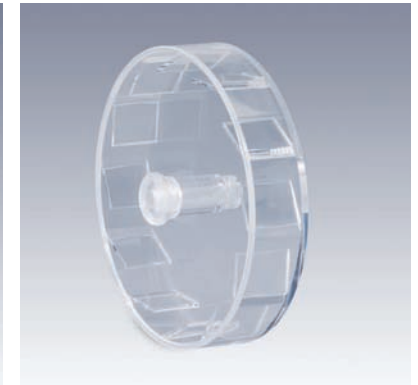
The shaking intensity and duration are individually programmed:

- 0 – 400 strokes/min.
- Run time: 0 – 9999 sec.
- Shaking angle: 42°

# Friability-/Abrasion Testing



Friability Drum for TAR



Abrasion Drum for TAR

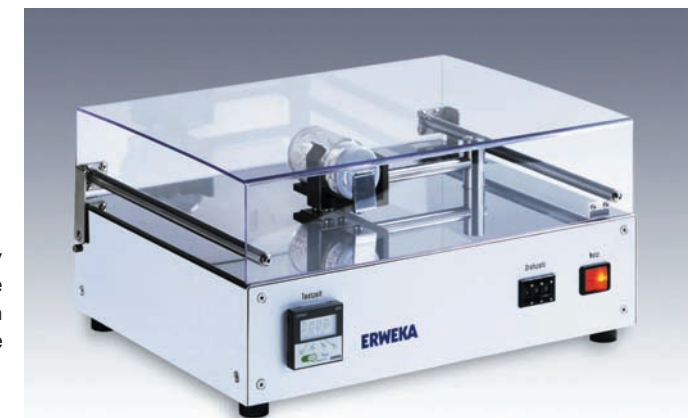
The ERWEKA TAR is available for holding 1 or 2 drums. The rotation speed can be set between 20 and 100 rpm.

The unit in addition offers the "easy loading and automatic emptying function" where the friability drum doesn't have to be removed and opened for loading and emptying.

Optionally the TAR is available with USB printer interface for hard-copy documentation of the test-run parameters.

The ERWEKA GTA 120 friability tester has been designed for any form of tablets, granules and pellets according to Pharm. Eur. The single glass bottle is fixed to a holder which is connected to an arm performing the shaking (oscillation) procedure as described in the Pharm.Eur.

An acrylic glass lid covers the testing area.





On the GT and GTL flow ability testers a special dynamic balance is integrated which allows the user to measure stable weight while the sample is falling on it.

The GTB shown here, in addition to the standard flow properties, measures the angle of repose according to Pfrengle: the powder or granulate falls onto a plate with a specified surface and creates a cone. An integrated driven laser measures the side wall of the built-up cone and the actual angle is calculated and displayed and/or printed.



The manual ERWEKA SMG is the unit for the reproducible determination of apparent (bulk) density which can be used with all free falling powders or granules.



On the basic GTL flow ability tester the pre-weighed sample is filled into the hopper and a light sensor located under the outlet of the hopper measures the flow time.

For determination of the flow-time of a pre-defined sample volume, hoppers with different volumes are available (standard 100 ml; 200 and 480 ml optional). Due to a special exchange system hoppers and outlet nozzles (standard 10.0, 15.0 and 25.0 mm Ø; others optional) can be exchanged within seconds.



## Granulate Flow Testers

### GTL

The GTL is the basic ERWEKA unit for testing the flow characteristics of powders and granulates.

### GT

On the GT a special balance, which can measure stable weight while the sample is falling onto it, is integrated into the unit to determine the flow time of a sample weight or pre-specified sample volume, as well as sample weight, which falls within a specified flow time. For easy comparison a graph according to List and Müller (mass/time) is calculated and displayed and/or printed.

Controlled via the alpha-numeric keypad and the large graphic display, the GT is the ideal unit when documentation of the flow characteristics is required. Via the standard parallel printer interface hard-copies of the test-run results can be issued.

For powders and granulates with poor flow properties the GT can be equipped with a stirrer for the stainless steel sample hopper (480 ml standard, 100 and 200 ml optional).

### GTB

The GTB, compared to the before described GT, offers an additional measurement principle according to Pfrengle, the "angle of repose".

### SMG

According to DIN ISO 697 and DIN 53 466, the apparent density is determined by measuring the mass of powder in a receiver of known dimension after filling from a funnel of a specified shape under specified conditions. Included in the delivery are the apparatus SMG 697 or SMG 53466, operating instructions and a calibration certificate.

# Tapped Density & Packaging Integrity Testing

## Tapped Density Testing

The ERWEKA SVM series is available for holding one or two glass cylinders and works according USP method 1 (300 strokes/min; stroke height 15 mm) or USP method 2 (250 strokes/min; stroke height 3 mm) which is equal to Pharm.Eur. and DIN ISO EN 787/11 requirements.

As a special version the SVM 223 operates the first test-station acc. to USP method 1 and the second station acc. to USP method 2.

Compliant glass cylinders are available in 100 ml, 250 ml and 500 ml versions for the test stations.



The SVM series is available acc. to USP method 1 (SVM 121/221) USP 2/Pharm.Eur./DIN ISO EN 787/11 (SVM 122/222) or as a combination of both (SVM 223).

The SVM is controlled by symbol keys and LE displays. The duration of the test-run can be set by either number of total strokes or time.

## Leak Testing

With the ERWEKA VDT/S, the blister pack is entered into a vacuum container (150, 200, 250 or 300 mm diameter), which is filled with a methylene blue solution. The vacuum pump is integrated into the control unit of the VDT/S and creates a vacuum in the container (adjustable from -100 to -800 mbar). As the vacuum pump is switched off, air is sucked into the container and the methylene blue water is sucked into any imperfectly sealed packaging.

Test-run parameters, such as actual/nominal vacuum, hold time etc. can be hard-copied by the optional printer interface-/printer package.

The integrated vacuum pump can be re-calibrated using the optional validation kit which includes a Vacuummeter, type DVR.



The VDT/S is a vacuum leak tester for blisters and other packaging forms. The max. vacuum (up to -800 mbar) and the vacuum hold time before release can be set by the symbol keypad. The actual vacuum is continuously displayed.

Test-run parameters can be printed via an optional printer interface/printer package.



ST 32 suppository disintegration tester with 3 automatically turning test stations in a 12 liters acrylic glass water bath.



ST 35 suppository disintegration tester with 3 turning test stations, each in a 4 litres becker glass with optional magnetic stirrers.

**Suppository Testing**

ERWEKA quality control equipment for suppositories is available to test hardness, melting point, penetration (according to method "A" or "B") disintegration time and dissolution rates (by the Langenbucher type Flow-Through-Cell dissolution tester; please see separate dissolution catalogue).

All units comply with the latest EP specification.

ST 32/35 suppository disintegration testers come with 3 test-stations (suppository holders), at ST 35 each in a separate 4 litre flat-bottom vessel wherein the media may be stirred by a magnetic stirrer, at ST 32 in a 12 litre acrylic glass water bath. At both every 10 minutes the suppository holders are automatically turned by 180°.



Suppository Hardness Tester, type SBT 2.



The Suppository Penetration Tester is available according to method "A" or "B".



The Suppository Melting Point Tester, type SSP, requires an external circulation heater, type EST 2.

## R&D Equipment

### Tablet Press EP-1

The ERWEKA eccentric single-punch Tablet Press operates fully automatically.

All components are either hard chrome plated, made from stainless steel AISI 316 or acrylic glass (front door).

The max. throughput is approx. 4000 strokes/hour.

### Tablet Presses TRB 16 and TRD 8

The high-tech rotary Tablet Press in table top design fully conforms with GMP and the safety regulations of BG Chemical.

The drive is provided by an inbuilt three-phase motor with frequency regulation (inverter). The compression force can be adjusted up to 4.0 tons (pre-compression up to 0.5 tons).

- for round and shaped tablets
- TRB 16 max. diameter 18 mm
- TRD 8 max. diameter 25 mm
- Max. filling depth 17 mm
- Up to 38000 tablets/h (TRB 16), up to 19000 tablets/h (TRD 8); max. capacity at 70% of max. output.

### Roller Compactor RCC 100 x 20

Roller Compactor for dry granulation, which turns powder into granules within seconds. This machine is especially designed for frequent product changes and to work with small quantities of product (10 – 20 g) batches. With a maximum throughput capacity of up to 10 kg/h, this machine can also be used for small scale production. Results can be scaled up to larger production size machines.

### Fluid Bed System FB-05

The mini fluid bed machine processes minimum quantities with maximum quality and is therefore ideal for drying or granulation trials on a very small scale.

The small and yet technically refined mini fluid bed machine offers convincing features: Small footprint, integrated and turnkey technology.



The economical single punch eccentric Tablet Press EP-1 is compliant to GMP and safety regulations and can manufacture round and odd shaped tablets with a diameter of max. 20 mm.

It operates fully automatically with an adjustable filling depth (up to 15 mm) and compression force (up to 3.0 tons; force display available).

The max. throughput is approx. 4000 strokes/hour.



Modern table-top Rotary Tablet Press with either 16 station tooling "B", 8 station tooling "D" or 8 station combination tooling "B" (4) and "D" (4).

All machine settings can be performed by hand-wheels with position indicators at the front of the unit.

The compression force can be adjusted up to 4.0 tons.

Rotary force feeder and pre-compression standard instrumentation is available as an option for measuring, upper and lower compression, pre-compression and eject force. Special software for analysis is also available.



The Roller Compactor forces dry powders between two counterrotating rolls and presses the raw material into a solid compact sheet or flakes.

Finally these flakes are then reduced in size to the desired grain size.

This process is quite economical because dry granulation omits the intermediate processes such as wetting, mixing and drying as compared to wet granulation systems.

The Roller Compactor is mobile and features a new component exchange system for easy cleaning and maximum flexibility.

It has an integrated control system and is operated by a user friendly touch panel.



The very compact „Mini-FB-05“ has been designed for drying and granulation of quantities from 50 – 750 ml (optional from 5 ml).

Special care has been taken to offer easy handling and fast cleaning to make this unit the ideal partner for R&D departments of pharmaceutical companies.

This advanced fluid bed offers perfect flow properties to be able to work even with difficult products in very small batch size.

The unique spray nozzle has been developed to work with very small quantity of product. Outlet air is filtered by metal filter cartridges.



**All-Purpose-Equipment**

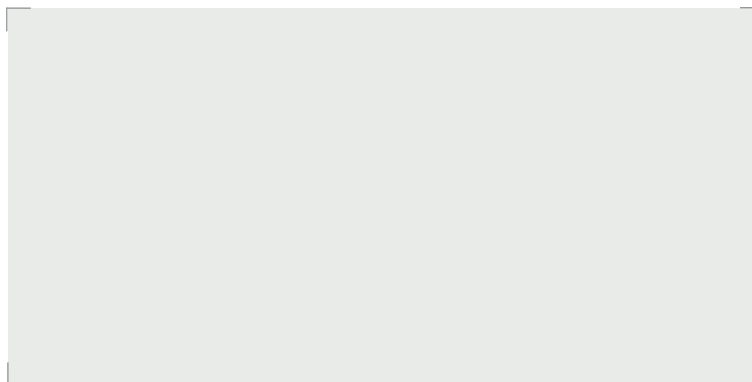
The well known ERWEKA All-Purpose-Equipment is the ideal tool for the development and small batch production in the pharmaceutical, chemical and cosmetic industry.

The modular design saves lab space and makes the unit affordable.

The AR 403 and the heavy duty AMD version motor drives can be connected to many attachments for stirring, kneading, mixing, granulating, coating, polishing, grinding, homogenising, filling and dosing as well as sieve analysis.

- 01. Motor Drive, AR 403
- 02. Universal Gear, UG
- 03. Polishing Drum, PT
- 04. Planetary Stirrer, PRS
- 05. Laboratory Kneader, LK 5
- 06. Sieve Analysis, VT/PS/S
- 07. Double Cone Mixer, DKM
- 08. Cube Mixers, KB/-S
- 09. Laboratory Mixer, SW/1S
- 10. Hoop Drum Mixers, RM
- 11. Pelletizer, GTE
- 12. Three Roller Mill, SM/S
- 13. Ball Mill, KM
- 14. Coating Pan, DKE/DKS
- 15. Wet Granulator, FGS
- 16. Dry Granulator, TG 2000
- 17. Homogenisers, HO/HHO
- 18. Liquid Filling Unit, FDF
- 19. Ointment Filling Unit, FDS
- 20. Suppository Unit, SG 4/W
- 21. Y-Blender, YB 5
- 22. Conical Mill, CM 60/UD

presented by



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More than 50 years – Quality through experience

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