

DECADES OF EXPERIENCE
IN PRODUCING
QUALITY TESTING INSTRUMENTS
MADE IN GERMANY





PulpTester WITH INTEGRATED SAVINGS POTENTIAL

In the area of pulp test instruments, FRANK-PTI has also succeeded in establishing itself as a leading all-range supplier on the international market. The reasons for this outstanding position are as numerous as easily understandable:

- Excellent user-friendliness because of the ergonomic design
- Use of high-quality materials in all assembled components
- Extremely high reliability and longevity
- Resistance against huge strain is a big advantage, especially with wet tests

GREAT SAVINGS POTENTIAL THROUGH AUTOMATION

Again and again human influences in manual measurements have led to inaccuracies. Variance of the measuring results can be high in cases where a measurement is repeated frequently. The high level of automation of our PulpTesters avoids this undesired phenomenon. These are the resulting advantages:

- High level of standardisation
- High reproducibility
- Big savings potential because more accurate measurement values help you to avoid over-quality products and to reduce the scrap rate

FOR STANDARDS-COMPLIANT MEASUREMENTS OF



✓ **PULP**



✓ **PAPER**



✓ **BOARD**



✓ **TISSUE**

LONGEVITY
THROUGH TOP-QUALITY
MATERIAL AND
RUGGED DESIGN



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PFI-MILL

For laboratory beating of pulp under standardised conditions.



MOST IMPORTANT BENEFITS

- ✓ **The only real CE certified PFI mill!**
- ✓ **Full-automated controlled process**
by well layed-out display commands and automated sequences
- ✓ **High rotation precision**
by use of frequency controlled drives
- ✓ **Highest safety levels through two hand operation mode**
- ✓ **Protection against setting of wrong parameters**
because only numbers of rotation is on demand
- ✓ **No rotational components are accesible**

PRODUCT DESCRIPTION

The PFI mill is used for beating laboratory-scale pulp samples. Correct beating is the first important step in preparation of hand sheets of the required quality.

At the heart of the PFI mill are its two rolls, an inner toothed roll (the roll has 33 blades) and a smooth beater housing. The rolls rotate in the same direction at different peripheral speeds. A beating force of exactly 3.33 N/mm ensures that the pulp is beaten under standardised conditions.

TEST DESCRIPTION

A weighed pulp sample prepared with a standardised disintegrator (see page 12) is added to the pulp container and spread evenly over the entire inner wall, then the roll is lowered into the housing. The beating process then starts and the grinding gap can be set by a hand lever. Once the preset number of rotations is reached, the process ends and the roll returns automatically to a central position. After opening the mill, the beaten pulp is removed and the Schopper-Riegler value determined. The unit is ready for further beatings, so that a beating curve can be created.

TECHNICAL DATA

DEVICE/INSTRUMENT

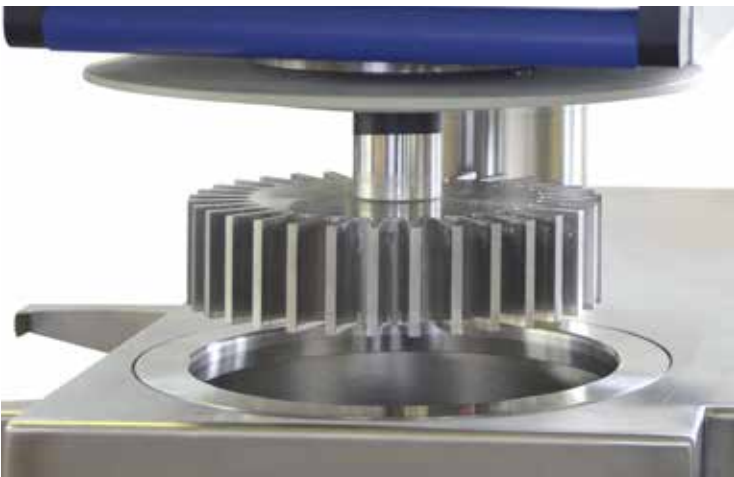
- Beater housing and roll made of stainless steel
- Timing belt driven
- Beating of 24 – 30 g pulp with a concentration of 10% (max 300 ml pulp-water mixture)
- Automated stop function, the roll returns automatically to a central position
- Adjustable grinding gap
- Cleaning opening at the bottom of the beater housing for easy emptying
- Always the same beating force because of weight load: no influence of air pressure fluctuation
- Digital display:
 - Operating hours
 - Energy output in Watts (continuous measurement)
 - Beating energy in kW/h during beating process
- Revolution speed of the beater roll: 1,458 ± 30 rpm
- Revolution speed of the beater housing: 700 rpm
- Beating force: 3.33 N/mm, cutting length adjustable
- Beating time: 2 to 10 min

INSTALLATION REQUIREMENTS

Electrical connection	400 V / 50 Hz
Water connection	No
Compressed air	4 – 6 bar

APPLICABLE STANDARDS

- DIN EN ISO 5264-2_2011
- TAPPI T248



Turnable beating



Control unit with display



JOKRO-MILL

For laboratory beating of pulp under standardised conditions.



MOST IMPORTANT BENEFITS

- ✓ For simultaneous beating of 6 samples of each 16 g
- ✓ Digital display indicates speed, revolutions and time
- ✓ Grinding vessel sets
are certificated by the University of Technology in Darmstadt, Germany



Digital control I unit

PRODUCT DESCRIPTION

The Jokro mill, based on technology developed by Jonas/Kross, enables laboratory scale, standards-compliant and reproducible beatings of pulp, using the principle of centrifugal force. Six rolls revolve around their own axes, like planets, within special beater housings. At the same time they orbit a central pivot point. The pulp is beaten between the inner wall of the housing and the cylindrical roll. This principle guarantees the most consistent possible beating load.

TEST DESCRIPTION

A weighed pulp sample prepared with a standard-compliant disintegrator (see page 12) is added to the individual containers. Each roll is placed within a beater housing, and each housing is closed with a cover. After inserting the containers (2, 3, 4 or 6 of them), the safety cover is closed and the beating process is started. The mill stops automatically when the preset time or number of rotations is reached. The current number of rotations is shown on the display.

The container is removed after the beating process has ended. The freeness of each sample can then be determined with the Schopper-Riegler Freeness Tester (see page 16).

TECHNICAL DATA

DEVICE/INSTRUMENT

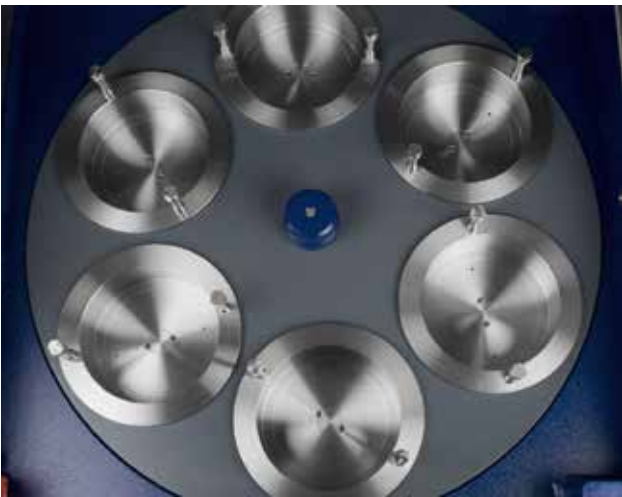
- Robust stainless steel casing and steel frame
- Very quiet in operation (max. 65 dBA)
- Horizontal running plate with 6 spaces for grinding vessel sets
- Revolutions infinitely variable (50 – 150 rpm)
- Safety interlock:
Device can be opened only after complete stop of the rotating plate
- Digital display: speed, revolutions and beating time
- 6 grinding vessel sets and one reference beating set with test certificate from the Technical University Darmstadt
- Sample weight: 96 g (6 x 16 g)
- Beater housing with inner side diagonal knurling of 55°
- Torque wrench included in delivery
- Weight of the Grinding Set: 2,000 ± 1 g
- Speed of rotation:
Grinding vessel sets: 171 rpm
Around the central pivot: 150 rpm
- Optional: Grinding vessel sets from stainless steel

INSTALLATION REQUIREMENTS

Electrical connection	230 V / 50 Hz
Water connection	No
Compressed air	No

APPLICABLE STANDARDS

- SN EN 25264-3_1995
- Zellcheming Merkblatt 105/5/60



Horizontal turning plate with 6 spaces for grinding vessel sets



Closing the grinding vessel sets with a torque wrench



LABORATORY BEATER “VALLEY”

For beating of pulp under standardised conditions for laboratory purposes.



MOST IMPORTANT BENEFITS

- ✓ Robust device made entirely of stainless steel
- ✓ Knife and knife holder made of non corrosive materials
- ✓ Beating pressure adjustable by means of weight, zeroing by sliding weight

PRODUCT DESCRIPTION

The laboratory beater type “Valley” is made entirely of stainless steel. With a volume of 23 litres, the container is capable of beating 360 g of pulp. The rolls, with blades, have a diameter of 190 – 194 mm and are 152 mm wide. The bed knife contains seven 3.2 mm thick cast lead blades. The bed knife and bed of the beater are sealed by a rubber plate. A tank cover makes this a very safe design.

TEST DESCRIPTION

The 360 grams of pulp is formed into 25 x 25 mm pieces by hand, soaked with water and disintegrated. The suspension is then put in the laboratory beater type “Valley”, and topped up to make 23 litres. The device is started and operates for three minutes without any weight. A sample is taken before the actual beating starts. Then a weight of 5.5 kg is fixed to the lever and the beating process is started. Samples are taken at regular intervals (for bleached pulp, 5, 10, 15 and 20 minutes, for unbleached 5, 15, 30, 60, and 90 minutes). The pulp can then be used to make test sheets.

TECHNICAL DATA

DEVICE/INSTRUMENT

- Robust device made entirely of stainless steel
- Knife and knife holder made from non corrosive materials
- Build-in motor (safety class IP 55)
- Built-on control unit
- Capacity: 23 l (at 1.57% consistency)
- Sample weight: 360 g (atro)
- Roller speed: 500 rpm
- Optional: grinder from Stainless steel

INSTALLATION REQUIREMENTS

Electrical connection	230 V / 50 Hz
Water connection	No
Compressed air	No

APPLICABLE STANDARDS

- TAPPI T 200, T 205



Built in motor with safety cover



Beating pressure adjustable by means of a weight



Unit running with safety cover



LABORATORY REFINER LR40

For beating of pulp under production conditions in laboratory scale.



MOST IMPORTANT BENEFITS

- ✓ **Completely automated laboratory refiner**
composed of pulper, mono pump, refiner and controlling unit
- ✓ **Automated sample station**
with integrated balance and 6 sample positions
- ✓ **Simple generating of grinding graphs and samples for further tests**
- ✓ **Measuring results directly applicable to the production process**
- ✓ **Disc or conical refiner garnitures can be used**

PRODUCT DESCRIPTION

The laboratory refiner consists of a robust frame made of stainless steel, the sampling station with integrated scales, and the control panel. Inside the noise damping table there is a pulper, a progressive cavity pump, and the beating apparatus. Discs and cones can both be used as refiner garnitures. The complex electronics are mounted in a separate cabinet to prevent exposure to water.

TEST DESCRIPTION

The pulp for beating (1,500 g oven-dry) is weighed on the integrated scales, and added to the pulper from above. From there it is automatically diluted with water to reach the preset consistency, and the pulping process begins. Before the actual beating process the sample is pumped without load through the refiner back to the pulper, to be warmed to the required operating temperature. As soon as this temperature is stable, idling capacity is measured immediately before commencing the beating process, and the reference sample is taken. Further samples are automatically taken when the preset edge loads or beating energies are reached. On completion of the beating, the device rinses automatically, and is then available for further beating processes.



Detached control cabinet

TECHNICAL DATA

DEVICE/INSTRUMENT

- Automatic sample station with integrated balance
- Grinding set exchangeable (disc or conical refiner garnitures)
- Presetting of up to 6 grinding points
- Easy generating of grinding graphs and samples
- Measuring result directly applicable to the production process
- Detached control cabinet
- Relatively quiet in operation
- CE certification

INSTALLATION REQUIREMENTS

Electrical connection	400 V / 50 Hz
Water connection	Yes
Compressed air	4 – 6 bar

APPLICABLE STANDARDS

No standards available

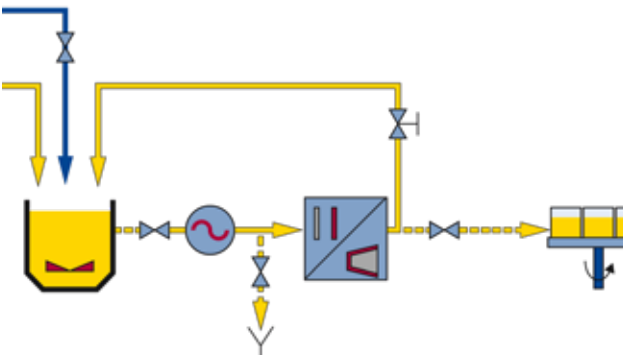


Illustration of the test sequence



Grinding sets



DISINTEGRATOR

For standardised disintegration of pulp suspensions.



MOST IMPORTANT BENEFITS

- ✓ Made of robust stainless steel and aluminium
- ✓ Waterproof electronics built into the head of the instrument
- ✓ Hinged head for easy take-out of the container
- ✓ Standardised pot made of light acrylic glass or stainless steel

PRODUCT DESCRIPTION

This robust, well-proven disintegrator is very simple to operate. The upper part of the unit is balanced, and can easily be opened with just one hand in order to place the disintegrator pot beneath. The disintegration process begins as soon as the start button is pushed. Two safety devices prevent agitation starting without the container. When the preset number of rotations is reached, the unit switches off automatically. The number of rotations is automatically reset to zero.

TEST DESCRIPTION

The disintegration container is filled with water and the pulp is added. The disintegrator pot is placed on the disintegrator and the upper part moved down until it engages. The standard number of rotations is preset (30,000 or 10,000 rpm). They can also be adjusted if required however. The disintegration process begins when the start button is pressed, and it ends automatically when the preset number of rotations is reached. After unlocking and opening the upper part, the disintegration container is removed. The disintegrated pulp suspension is then ready for further processing.



Display and control panel

TECHNICAL DATA

DEVICE/INSTRUMENT

- Made from robust stainless steel and aluminium
- Hinged head for easy take-out of the vessel
- Safety interlock
- Motor: 370 W
- Digital display of the revolutions
- Agitator speed according to standard: 2,980 ± 30 rpm applicable for TAPPI and ISO
- Measuring gauge for checking the propeller
- Disintegrator pot made of acrylic glass
- Optional: Disintegrator pot made of stainless steel for TMP-samples

INSTALLATION REQUIREMENTS

Electrical connection	100 – 240 VAC / 50 – 60 Hz / 5.0 A
Water connection	No
Compressed air	No

APPLICABLE STANDARDS

- DIN EN ISO 5263-1_2004
 - TAPPI T 205
- etc.



Hinged head for easy take-out of the vessel



Disintegrator pot made of light acrylic glass or stainless steel



EQUALIZER

For permanent stirring and homogenizing of disintegrated pulp samples.

MODELS

SINGLE UNIT WITH STAND

Container with 12 l capacity

SINGLE UNIT WALL MOUNTED

- Container with 12 l or 24 l capacity
- Container with 40 l capacity (special version "UPM")

MULTIPLE-UNIT

With up to 6 x 12 l equalizers and a sink



MOST IMPORTANT BENEFITS

- ✓ **Robust construction**
made of stainless steel and acrylic glass
- ✓ **Built-in ball valve and supply pipe**
for easy filling and cleaning
- ✓ **Tilt angle according to standard**
- ✓ **Low noise motor (30 dBA)**

PRODUCT DESCRIPTION

The distribution unit is made of robust stainless steel and light-weight acrylic glass. The smooth-operating motor (30 dBA) provides constant and consistent agitation. The standards-compliant angle of the agitator, as well as the dynamic rotor form ensure that pulp fibres' characteristics remain constant even after prolonged agitation. There is a water intake on the upper edge of the acrylic container to facilitate filling and cleaning of the distribution unit. Samples are taken via an opening in the base, operated by a ball valve.

TEST DESCRIPTION

The pulp, prepared with the standardised disintegrator (see page 12), is added to the distributor unit. Opening the water intake fills the container with water, to reach the desired density. The agitator rotates at a speed of 150 rpm, creating an even distribution in the suspension, without altering the characteristics of the pulp fibres. Opening the large ball valve allows samples for sheet forming (see pages 20–29) or freeness testing (see pages 16–19) to be taken.



Equalizer wall mounted – 12 l (left) and 40 l (right)

TECHNICAL DATA

DEVICE/INSTRUMENT

- Frame made of stainless steel
- Container made of acrylic glass
- Low noise motor
- Tilt angle according to standard
- Built-in ball valve and supply pipe for filling and cleaning

INSTALLATION REQUIREMENTS

Electrical connection	400 V / 50 Hz Optional: 230 VAC / 50 Hz / 1.1 A
Water connection	Yes
Compressed air	No

APPLICABLE STANDARDS

- Zellcheming Merkblatt V/6/61



Quad equalizer with sink



SCHOPPER-RIEGLER FREENESS TESTER

For determination of the degree of refining of
pulp-suspensions in °SR.



Digital model

MODELS

MANUAL MODEL

Sealing cone is lifted by an inbuilt weight

PNEUMATIC MODEL

Sealing cone is lifted pneumatically

DIGITAL MODEL

- Digital display of °SR-degree and 4 drainage times
- Sensor for measuring the freeness
- RS 232-port for readout of a drainage graph

Optional: system with a built-in balance instead of the sensor

MOST IMPORTANT BENEFITS

- ✓ Housing and drainage part made of stainless steel
- ✓ ISO-nozzle, according to standards
- ✓ Single button operation (fulfills the safety regulations)

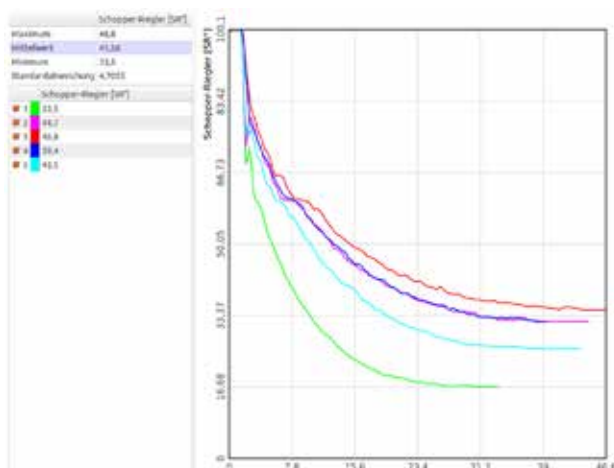
PRODUCT DESCRIPTION

The drainage chamber and the hydraulic cylinder are mounted on a robust stainless steel frame. The filling chamber is sealed below with a special screen, which leads to the spreader cone. The cone has two outlet openings. A sealing cone closes the filling chamber against the spreader cone and prevents the suspension from escaping before the test actually starts. Depending on the mechanism fitted, the sealing cone lifts either pneumatically or mechanically at the speed acc. standard.

The digital version is equipped with a sensor that shows the Schopper-Riegler freeness ($^{\circ}\text{SR}$) on a display module, to an accuracy of 0.1 $^{\circ}\text{SR}$.

TEST DESCRIPTION

The pulp sample (2 g pulp), prepared with the standardised disintegrator (see page 12), is poured into the closed filling chamber. The sealing cone lifts automatically once the start button is pressed (for the digital version) or when the handle is operated (manual and pneumatic version). The suspension is drained through the screen, leaving a fibre pad, and the filtrate drains into the separating chamber. The water volume fraction drained through the side discharge pipe is collected in a $^{\circ}\text{SR}$ measuring beaker. In the manual and pneumatic versions the freeness is readable from the Schopper-Riegler scale on the measuring beaker, and in the digital version the freeness is shown on the display module.



Drainage graph

TECHNICAL DATA

DEVICE/INSTRUMENT

- Housing and drainage part made of stainless steel
- Chamber with sieve, sealing cone and separating funnel mounted on the frame
- Single button operation (fulfills the safety regulations)
- ISO-nozzle according to standards
- Included into delivery:
 - 2 pcs $^{\circ}\text{SR}$ -measuring beakers
 - C-spanner for sieve changing
- Compatible with ProbeNet

INSTALLATION REQUIREMENTS

Electrical connection	100 – 230 V / 50 – 60 Hz (with digital model only)
Water connection	No
Compressed air	4 – 6 bar (with pneumatic model only)

APPLICABLE STANDARDS

- ISO 5267-1
- ect.



2 pieces $^{\circ}\text{SR}$ -measuring beakers included into delivery



Pneumatic and manual model



CANADIAN STANDARD FREENESS TESTER (CSF)

For measuring the rate of drainage of pulp suspensions and expressing it in terms of canadian freeness.

MODELS

MANUAL MODEL

- Opening a hand valve starts the sequence
- Visual read out directly on the measuring beakers

DIGITAL MODEL

- Touch of a button starts the test sequence
- Digital display of the measured data with an accuracy of 1 °CSF
- Digital display of 4 drainage times

Optional: Temperature compensation:

- Keyboard to enter consistency-correction values
- Temperature correction by temperature sensor

Digital model with temperature compensation



MOST IMPORTANT BENEFITS

- ✓ **Housing made of stainless steel**
- ✓ **Filling chamber and separating funnel made of special plastic**
- ✓ **Each sieveplate is calibrated by PAPRICAN**

PRODUCT DESCRIPTION

The drainage chamber and filling chamber are mounted on a robust stainless steel frame. The filling chamber has a calibrated perforated screen plate at its lower end, and drains into the spreader cone. It is closed from above and below by a cover. The upper cover is equipped with an air valve, and the measuring process begins through operation of this valve. The spreader cone drains into a calibrated nozzle and a drainage pipe mounted on the side.

TEST DESCRIPTION

The pulp sample (3 g pulp), prepared with the standardised disintegrator (see page 12), is poured into the filling chamber with the bottom closed. The cover and air valve are both closed and then the bottom cover is opened. Because no air can enter the filling chamber, the pulp suspension remains in the filling chamber until the air valve is opened. The suspension falls through the perforated screen, leaving a fibre mat behind while the filtrate drains through the spreader cone into a measuring beaker. Within the spreader cone there is a calibrated nozzle that allows only a small amount to flow through. The excess liquid runs through the side drain pipe into another measuring beaker.

TECHNICAL DATA

DEVICE/INSTRUMENT

- Housing made of stainless steel
- Filling chamber and separating funnel made of special plastic
- Calibrated perforated plate and nozzle
- Included into delivery:
Sieve plate, calibrated by PAPRICAN
2 pcs °CSF-measuring beakers

INSTALLATION REQUIREMENTS

Electrical connection	100 – 230 V / 50 – 60 Hz (with digital model only)
Water connection	No
Compressed air	No

APPLICABLE STANDARDS

- ISO 5267-2_2001
 - TAPPI T227
- etc.



Digital model



Manual model



SHEET FORMER RAPID-KÖTHEN KWT

For the production of standardised hand-sheets with a diameter of 200 mm and to enrich the white water with chemicals from the suspension.



Rapid-Köthen 2-KWT

MOST IMPORTANT BENEFITS

- ✓ Table frame made of sturdy stainless steel (powder-coated)
- ✓ Bench top made entirely of waterproofed polypropylene
- ✓ Lightweight dryers for easy usage
- ✓ Special place on the bench top for detaching the produced sheets
- ✓ Automatic sheet forming process, changeable to manual control anytime
- ✓ Start of the sheet forming and drying process by push of a button
- ✓ White water circulation system for chemical enrichment

PRODUCT DESCRIPTION

The warp resistant stainless steel frame is a robust base for the work table, in which two pumps, hot water baths, the control unit, a return water filter and the water container are installed. A former column, dryers, the water circulation system, and the controls are mounted in the waterproof table surface. The control panel contains easy to read instruments and a timer for each dryer as well as a vacuum display. Different programs can be stored in the program control system, and can be reloaded at any time. Between the former column and dryers there is a spacious work space for removing the manufactured hand sheets and preparing them for drying.

TEST DESCRIPTION

From the equalizer (see page 14), suspension is taken. Water is introduced to the former column automatically when the start button is pressed. When it has been filled to the 4 litre mark, the suspension is added. When the 7 litre mark is reached the flow of water is stopped automatically. After the agitation is completed, the suspension comes to rest and is drained through a screen. The hand sheet is left on the screen frame. To provide it with the desired stability it is briefly treated with vacuum. Then the former column is opened, the hand sheet covered with a carrier board and couched. After detaching it is given a cover sheet and put into the dryer. There the sheet is dried for the preset time (5 – 6 mins). After the drying is complete, carrier board and cover sheet are removed. The sample can then be made ready for further tests.

The water used in making the sheet is not drained away, instead it is collected in a separate acrylic glass tank. It can be operated at room temperature, or heated up to 65 °C. It can be removed for testing (e.g. chemical residue etc.) via the sample outlet on the side of the table.



Accessories: Carrier boards, cover sheet and couching roll

TECHNICAL DATA

DEVICE/INSTRUMENT

- Particularly suitable for research
- Two integrated tin-bronze pumps
- All parts made of corrosion-resistant materials
- Automatic control system: up to 24 storable programs
- Water circulation inside the dryers acc. to standard (3 – 6 l/min)
- Available with up to 5 dryers
- Dryer temperature: 93 – 97 °C
- White water heatable up to 65 °C
- Optional: Dryer temperature up to 145 °C

INSTALLATION REQUIREMENTS

Electrical connection	400 V / 3 Ph / 6 kW
Water connection	Yes
Compressed air	4 – 6 bar

APPLICABLE STANDARDS

- DIN EN ISO 5269-2_2005
- Zellcheming Merkblatt V/8/76



Opening the former column for taking out the hand-sheet



Opening the former column by lifting the handle



SHEET FORMER RAPID-KÖTHEN AUTOMATIC

For the production of standardised hand sheets with
a diameter of 200 mm.



Rapid-Köthen 5-Automatic

MOST IMPORTANT BENEFITS

- ✓ Table frame made of sturdy stainless steel (powder-coated)
- ✓ Bench top made entirely of waterproofed polypropylene
- ✓ Lightweight dryers for easy usage
- ✓ Special place on the bench top for detaching the produced sheets
- ✓ Automatic sheet forming process, changeable to manual control anytime
- ✓ Start of the sheet forming and drying process by push of a button
- ✓ With 1 – 3 dryers: one heating bath, 4 – 6 dryers: two heating baths

PRODUCT DESCRIPTION

The warp resistant stainless steel frame is a robust base for the work table, in which one pump, hot baths, the control unit, a return water filter and the water container are installed. A former column, dryers, the water circulation system, and the controls are mounted in the water-proof table surface. The control panel contains easy to read instruments and a timer for each dryer as well as a vacuum display. Different programs can be stored in the program control system, and can be reloaded at any time. Between the former column and dryers there is a spacious work space for removing the manufactured hand sheets and preparing them for drying.

TEST DESCRIPTION

From the equalizer (see page 14), suspension is taken. Water is introduced to the former column automatically when the start button is pressed. When it has been filled to the 4 litre mark, the suspension is added. When the 7 litre mark is reached the flow of water is stopped automatically. After the agitation is completed, the suspension comes to rest and is drained through a screen. The hand sheet is left on the screen frame. To provide it with the desired stability it is briefly treated with vacuum. Then the former column is opened, the hand sheet covered with a carrier board and couched. After removal it is given a cover sheet and put into the dryer. There the sheet is dried for the preset time (5 – 6 mins). After the drying is complete, carrier board and cover sheet are removed. The sample can then be made ready for further tests.

TECHNICAL DATA

DEVICE/INSTRUMENT	
<ul style="list-style-type: none">• Vacuum pump made of tin bronze• All parts made of corrosion-resistant materials• Automatic control system: up to 24 storable programs• Change to manual control anytime• Water circulation inside the dryers acc. to standard (3 – 6 l/min)• Available with up to 6 dryers• Dryer temperature: 93 – 97 °C• 1 – 3 dryers = 1 built-in waterheater,• 4 – 6 dryers = 2 built-in waterheaters• Optional: Dryer temperature up to 145 °C	

INSTALLATION REQUIREMENTS	
Electrical connection	400 V / 3 Ph / 6 kW
Water connection	Yes
Compressed air	4 – 6 bar

APPLICABLE STANDARDS	
<ul style="list-style-type: none">• DIN EN ISO 5269-2_2005• DIN 54358• Zellcheming Merkblatt V/8/76	



Program and control panel



Automatic or manual control



Light weight dryer for easy use



SHEET FORMER RAPID-KÖTHEN MANUAL

For the production of standardised hand sheets with
a diameter of 200 mm.



Rapid-Köthen 2-Manual

MOST IMPORTANT BENEFITS

- ✓ Table frame made of sturdy stainless steel (powder-coated)
- ✓ Bench top made entirely of waterproofed polypropylene
- ✓ Lightweight dryers for easy usage
- ✓ Special place on the bench top for detaching the produced sheets
- ✓ Start of the drying process by push of a button

PRODUCT DESCRIPTION

The warp resistant stainless steel frame is a robust base for the work table, in which a pump, hot water bath, the control unit, a return water filter and the water container are installed. A former column, dryer, the water circulation system, and the controls are mounted in the waterproof table surface. The control panel contains easy to read instruments and a timer for each dryer as well as a vacuum display. Between the former column and dryers there is a spacious work space for removing the manufactured hand sheets and preparing them for drying.

TEST DESCRIPTION

From the equalizer (see page 14), suspension is taken. The individual steps are carried out manually via the selector switch. First water is introduced to the former column. When it has been filled to the 4 litre mark, the suspension is added. When the 7 litre mark is reached the flow of water is stopped manually and agitation begins. After the agitation is completed, the suspension comes to rest and the draining process can start. The hand sheet forms on the screen frame. To provide it with the desired stability it is briefly treated with vacuum. Then the former column is opened, the hand sheet covered with a carrier board and couched. After removal it is given a cover sheet and put into the dryer. There the sheet is dried for the preset time (5 – 6 mins). After the drying is complete, carrier board and cover sheet are removed. The sample can then be made ready for further tests.



SEPERATE DRYER

The Rapid Köthen dryer is equipped with an external hot water bath (with temperatures of up to 97 °C) and a water circulation of 3 – 6 litres. The vacuum is created by a water jet pump.

TECHNICAL DATA

DEVICE/INSTRUMENT

- Vacuum pump made of tin bronze
- All parts made of corrosion-resistant materials
- Water circulation inside the dryers acc. standard (3 – 6 l/min)
- Available with up to 6 dryers
- Dryer temperature: 93 – 97 °C
- Optional: Dryer temperature up to 145 °C

INSTALLATION REQUIREMENTS

Electrical connection	400 V / 3 Ph / 6 kW
Water connection	Yes
Compressed air	4 – 6 bar

APPLICABLE STANDARDS

- DIN EN ISO 5269-2_2005
- Zellcheming Merkblatt V/8/76



Manual control panel



Timer watch and vacuum control for the dryers



SHEET FORMER ACC. TO TAPPI OR SCAN SEMIAUTOMATIC

For the semi-automatic production of standardised hand-sheets.



MOST IMPORTANT BENEFITS

- ✓ **Pneumatic couching device**
- ✓ **Gravitation drainage, no vacuum needed**
- ✓ **Bench top made entirely of waterproofed polypropylene**
- ✓ **Semi-automatic sheet forming process**
- ✓ **Automatic control system: 4 fix, 21 free defineable programs**

MODELS

ROUND FORMER COLUMN

- 159 mm diameter (TAPPI-standard)
- 215 mm diameter

SQUARE FORMER COLUMN

- 165 x 165 mm
- 250 x 250 mm up to 350 x 350 mm

PRODUCT DESCRIPTION

The warp resistant stainless steel frame creates a robust base for the work table. The forming column, the control panel, and the couching plate are mounted on the waterproof table surface. The sheet forming process is regulated by automatic sequence control. This includes four standard programmes and also 21 programs that can be defined as required. The inflow of water stops automatically as soon as the filling level is reached. Agitation and drainage is done automatically. Couching is done pneumatically with a rubber membrane.

TEST DESCRIPTION

The prepared suspension is taken from the equalizer (see page 14). When the start button is pressed the former column automatically fills with water. The suspension is then added. As soon as the unit is as full as required the water inflow stops automatically. The agitation starts and ends after the preset time has elapsed. The water is drained from the former column after the defined settling time, forming the hand sheet on the screen. The former column is opened, two blotters and the couching plate are laid on the hand sheet and then the couching unit is closed. The membrane is pressurised, causing the hand sheet to be pneumatically couched. The couching time is set via a timer. Once the time has elapsed, the sheet can be removed and is ready for pressing and drying.

TECHNICAL DATA

DEVICE/INSTRUMENT

- Former column available in different sizes
- Automatic control system:
 - 4 default programs
 - Up to 21 free definable programs
- Change to manual control anytime
- Air pressure agitation
- Gravitation drainage, no vacuum needed
- Pneumatic couching device
- Included into delivery:
 - 10 mirror-polished plates and drying rings
- Optional available:
 - Blotters

INSTALLATION REQUIREMENTS

Electrical connection	230 V / 50 Hz
Water connection	Yes
Compressed air	4 – 6 bar

APPLICABLE STANDARDS

- DIN EN ISO 5269-1_2005
- TAPPI T205



Former column available in various shapes and sizes



Pneumatic couching device



Control pannel, changeable to manual control anytime



SHEET FORMER ACC. TO TAPPI MANUAL

For the manual production of hand-sheets according to TAPPI.



MODELS

- 159 mm diameter (TAPPI-standard)

MOST IMPORTANT BENEFITS

- ✓ To incorporate into a laboratory bench
- ✓ Gravitation drainage, no vacuum needed

PRODUCT DESCRIPTION

The manual sheet forming system is intended for installation into a laboratory bench (not included). The individual stages of sheet formation are carried out manually. Water is added and drained via simple hand valves. Couching is done with a stainless steel roller, and swirling is done with an agitator with perforated panel. Additionally ten mirror polished plates and drying rings are included in the delivery for drying. All parts are constructed of corrosion resistant materials.

TEST DESCRIPTION

By opening the hand valve, the former column is half filled with water and the suspension, which has been prepared in the equalizer (see page 14) is added. Then the column is filled with more water, till the mark is reached. The agitator is used to swirl the contents of the column, which is then carefully removed. It is important while doing this to make sure that not too many fibres are adhering to the agitator. Once the settling phase is complete, the drain is opened via another hand lever. The water flows out and a sheet is left on the screen. After opening the upper part of the former, two blotters are laid on top and couched with the roller. This allows the hand sheet to be removed from the screen, along with the blotters, ready for pressing (sheet press see page 30) and drying (speed dryer see page 32).



Stirrer, dryingrings and mirror-poished plates

TECHNICAL DATA

DEVICE/INSTRUMENT

- According to TAPPI standard
- Designated for installation into a laboratory bench
- Easy handling due to big and smooth-running levers
- Delivery content:
 - Stirrer with perforated plate
 - Couch roll made of stainless steel
 - 10 mirror-polished plates and drying rings
- Optional available:
 - Sieve span frame
 - Blotting papers

INSTALLATION REQUIREMENTS

Electrical connection	No
Water connection	Yes
Compressed air	No

APPLICABLE STANDARDS

- DIN EN ISO 5269-1_2005
- TAPPI T205



Blotting papers optional available



Couching roll made of stainless steel



SHEET PRESS ACC. TO TAPPI AND SCAN

For de-watering and pressing of hand-sheets produced on sheet machines acc. to TAPPI or SCAN.



System FRANK-PTI with 100 mm deviation

MOST IMPORTANT BENEFITS

- ✓ Robust construction made of stainless steel
- ✓ Security cover made of acrylic glass
- ✓ Prepressing and main pressing time separately adjustable
- ✓ 4 big air cylinders for equal force distribution

PRODUCT DESCRIPTION

The sheet press consists of two parallel plates, which are pressed against each other by pneumatic cylinders. Two timers are located on the control module to set the first pressing and second pressing. A channel around the lower plate allows problem free drainage of the liquid pressed out to the rear of the device. Opening the acrylic glass cover activates a safety switch, which immediately stops the pressing process and secures against the unit starting again, to prevent injury.

TEST DESCRIPTION

The sheet press is used to press sheets that have been manufactured on a sheet machine according to TAPPI and SCAN (see pages 26–29). The sample (consisting of blotters and hand sheet) is covered with the mirror polished plates, stacked and laid in the sheet press. The first stage is a first pressing of five minutes. Then the mirror polished plates are removed, the hand sheets given new blotters and the second pressing is started. A pressure of 245 kPa is applied for two minutes. Then the paper stack is removed and the hand sheets are ready for drying (e.g. with a speed dryer, see page 32, or drying rings) and conditioning.

TECHNICAL DATA

DEVICE/INSTRUMENT

- Frame made of stainless steel
- Security cover made of acrylic glass
- Prepressing and main pressing time separately adjustable
- 4 big air cylinders for equal force distribution
- Channel around the pressure plates allows easy and smooth water outflow

INSTALLATION REQUIREMENTS

Electrical connection	230 V / 50 Hz
Water connection	No
Compressed air	4 – 6 kbar

APPLICABLE STANDARDS

- DIN EN ISO 5269-1_2005
- TAPPI T205

MODELS

MODEL 100

- Plate size: 350 x 350 mm
- Deviation: 100 mm
- 4 air pressure cylinders

MODEL 200

- Plate size: 350 x 350 mm
- Deviation: 200 mm
- 4 air pressure cylinders



System FRANK-PTI with 200 mm deviation



SPEED DRYER

For the rapid drying of pulp or hand-sheets.



MODELS

- 350 x 350 mm plate size
- 580 x 430 mm plate size

Model with a plate size of 580 x 430 mm

MOST IMPORTANT BENEFITS

- ✓ **Special heating plate with equal heat distribution**
- ✓ **Rapid drying of hand-sheets according to TAPPI or SCAN**
- ✓ **Temperature adjustable up to 180 °C**

PRODUCT DESCRIPTION

The speed dryer consists of a robust stainless steel lower part with fitted hotplate and a safety cover. The hot plate can be set to any temperature between 0 and 180 °C. The speed hot plate is heated from below and maintains its temperature with a maximum deviation of ± 1 °C. The inner side of the cover is covered with a special heat resistant and air permeable fabric, which guarantees exceptional steam discharge. The cover ensures good pressing of the dry material and prevents excessive heat radiation, which minimises power use.

TEST DESCRIPTION

Laboratory sheets (*sheet machine according to TAPPI and SCAN, see pages 26–29*) or other samples are placed on the preheated plate. The cover is closed and drying starts. The weight of the cover holds the sample flat during the drying process.

TECHNICAL DATA

DEVICE/INSTRUMENT

- with equal heat distribution
- Temperature adjustable (±1 °C max. deviation)
- Reguator with digital display
- Special air permeable fabric for perfect steam conduction
- Dryer temperature up to 180 °C

INSTALLATION REQUIREMENTS

Electrical connection	230 V / 50 Hz
Water connection	No
Compressed air	No

APPLICABLE STANDARDS

- TAPPI T205



Model with a plate size of 350 x 350 mm

Adjustable heating plate with special alloy



BAUER McNETT FIBRE CLASSIFIER

For the determination of fibre length of pulp by classification.



MOST IMPORTANT BENEFITS

- ✓ Completely made of stainless steel
- ✓ Fully automated test procedure
- ✓ Quick clamping allows easy insertion and removal of the screens
- ✓ Built-in suction pump for emptying each container
- ✓ The attachment of a shive content analyser is possible (Somerville, Haindl, Brecht-Holl)

MODELS

- Version with 3 Classifier chambers
- Version with 4 Classifier chambers
- Version with 5 Classifier chambers
- Version with 4 Classifier chambers and built-on Somerville Shive Content Analyzer (Somerville see page 36)

Available Sieves:

ASTM 16 / 30 / 50 / 100 / 200, others on request

PRODUCT DESCRIPTION

The fibre classifier is manufactured entirely from stainless steel. The classifier unit is equipped with quick fasteners for easy insertion and removal of the screens. Additionally, the individual units have an overflow into the next container. Each unit is fitted with a special agitator and an exchangeable screen. Control is fully automatic for ease of operation. An integrated timer allows setting individual classification times. The flow of water is regulated according to the standard being applied. The containers are drained via an integrated suction pump. The injection mechanism mounted on the housing allows to be quickly and easily rinsed after the classification process.

TEST DESCRIPTION

The screens are fitted in descending order of perforation size into the fibre classifier. The paper filters are placed in the suction housings under the container, which is then closed. When the start button is pressed, water flows into the units. As soon as the last container is full, the start button is pressed again. The flow of water through the classifier stops and the sample is added to the uppermost container. After the filling time, the agitators and water flow starts automatically, and the classification process begins. After this period has elapsed the agitators come to a standstill and the addition of water stops. Opening the fasteners and starting the vacuum pump extracts the suspension. During rinsing the rest of the fibres collect in the filter. It can then be removed, dried and weighed.



Classifier container with quick clamping device

TECHNICAL DATA

DEVICE/INSTRUMENT

- Fully automated test procedure
- Quick clamping allows easy insertion and removal of the screens
- Time switch for setting standardised running times
- Special agitator (580 UpM)
- Built-in suction pump for emptying each container
- Spraying device for quick rinse
- Included into delivery:
 - Standard sieve set
 - Sieve storage container

INSTALLATION REQUIREMENTS

Electrical connection	230 V / 50 Hz
Water connection	Yes
Compressed air	No

APPLICABLE STANDARDS

- TAPPI T233



Classifier screens with different mesh sizes



Bauer McNett Fibre classifier with built-on Somerville



SOMERVILLE SHIVE CONTENT ANALYSER

For determination of shive content in pulp.



MODELS

AVAILABLE SLOT PLATE

- 0.15 mm slot width (acc. to standard)
- 0.10 mm slot width
- 0.08 mm slot width

MOST IMPORTANT BENEFITS

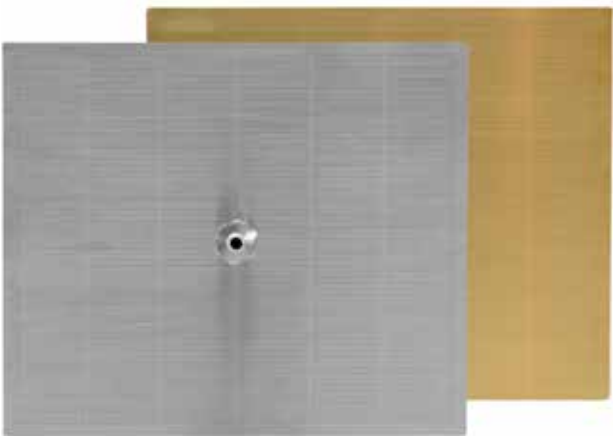
- ✓ **Sturdy construction made of corrosion-resistant materials only**
- ✓ **Control box can be wall mounted**
- ✓ **Installation onto a Bauer McNett fibre classifier possible**

PRODUCT DESCRIPTION

The Somerville shive content analyser consists of a robust stainless steel frame, a membrane chamber, and a container. The unit is operated by a control unit on the wall. A motor driven eccentric continuously moves the rubber membrane in a reciprocating motion in the membrane chamber. There is an exchangeable slot plate between the wash chamber and the container. A calibrated ring nozzle with 12 horizontal perforations is fixed in the centre of the slot plate. An overflow is attached to the container, which regulates the level of the water. The slot plate is held in the wash chamber by quick fasteners for easy removal.

TEST DESCRIPTION

The slot plate is placed between the wash chamber and the container. Pressing the 'fill' button sprays water through the ring nozzle onto the slot plate. The sample is added when the water reaches the 25 mm mark. As soon as water flows over the weir plate into the overflow, the motor starts. The vibrating motion of the membrane sucks fibres and pieces through the slits that are smaller than the slit width. The shives remain on the plate. On ending the wash cycle the water is drained. The shives remaining on the screen are rinsed off, collected, dried and weighed. The percentage of shive to pulp used is calculated.



Slot plate with ring nozzle

TECHNICAL DATA

DEVICE/INSTRUMENT

- All parts made of corrosion-resistant materials
- Driving motor safety class IP 55
- Vibration height of the membrane: 3.2 mm
- Calibrated ring nozzle (8.6 l/min at 123.6 kPa pressure)
- Control cabinet wall mounted:
 - Sequential control system
 - Time switch
 - Thermal overload protection
- Included into delivery: 1 slot plate (756 slots, 0.15 x 45 mm)
- Installation onto a Bauer McNett fiber classifier (see page 34) possible

INSTALLATION REQUIREMENTS

Electrical connection	400 V / 50 Hz / 0.78 kW / 0.84 A
Water connection	Yes
Compressed air	No

APPLICABLE STANDARDS

- TAPPI T275
- TAPPI UM 242



Standardised slot plate with a slot size of 0,15 x 45 mm



Standardised slot plate with a slot size of 0,15 x 45 mm



FIBRE CLASSIFIER ACC. TO BRECHT-HOLL



PRODUCT DESCRIPTION

The fibre classifier acc. to Brecht-Holl is manufactured from corrosion resistant materials. Below the slot plate is a rubber membrane which is in continual reciprocating movement, driven by an eccentric. Above the screen plate is a spray ring to inject the water at the centre. The eccentric moves the membrane at 200 strokes per minute. The standard version has a slot width of 0.2 mm.

TEST DESCRIPTION

A weighed pulp sample is added to the water in the water container. A spray ring sprays water on the slot plate. Fibres and pieces that are smaller than the slots are sucked through the plate by the vibrating motion of the membrane and washed away. The shives remain on the plate. Once the wash cycle is complete, the water is drained, the shives washed off the slot plate, collected, dried and weighed. The percentage of shive to pulp used can then be calculated.



Upper part designed as ring water tank

TECHNICAL DATA

DEVICE/INSTRUMENT

- All parts made of corrosion-resistant materials
- Driving motor safety class IP 55
- Mechanism to change the slot plate
- Tilt-back washing chamber
- Eccentric tappet speed: 200 strokes/min
- Quick adjustment of the stroke height
- Nozzle ring for water injection
- Adjusting and display of the water pressure by a manometer
- Included into delivery:
 - 1 slot plate with 0.20 mm slot width
 - 2 sieve plates with DIN 50 and DIN 16 wire cloth
- Optional available:
 - Slot plates with 0.25 mm, 0.15 mm or 0.10 mm slot width

INSTALLATION REQUIREMENTS

Electrical connection	400 V / 50 Hz
Water connection	Yes
Compressed air	No

APPLICABLE STANDARDS

- Zellcheming Merkblatt VI/1/66



FIBRE CLASSIFIER ACC. TO HAINDL



Slot plate

PRODUCT DESCRIPTION

The fibre classifier acc. to Haindl is manufactured from corrosion resistant materials. Below the slot plate is a rubber membrane which is in continual reciprocating movement, driven by an eccentric. Above the screen plate is a calibrated ring nozzle to inject water. The eccentric moves the membrane at 200 strokes per minute. The standard version has a slot width of 0.15 mm.

TEST DESCRIPTION

A weighed pulp sample is added to the water in the water container. A ring nozzle sprays water on the slot plate. Fibres and pieces that are smaller than the slots are sucked through the plate by the vibrating motion of the membrane and washed away. The shives remain on the plate. Once the wash cycle is complete, the water is drained, the shives washed off the slot plate, collected, dried and weighed. The percentage of shive to pulp used can then be calculated.

TECHNICAL DATA

DEVICE/INSTRUMENT

- All parts made of corrosion-resistant materials
- Driving motor safety class IP 55
- Mechanism to change the slot plate
- Further development of the Brecht-Holl Fibre Classifier
- Eccentric tappet speed: 1 – 200 strokes/min adjustable
- Calibrated ring nozzle for water injection
- Included into delivery:
1 Slotplate with 0.15 mm slot width
- Optional available:
Slot plates with 0.25 mm, 0.15 mm or 0.10 mm slot width

INSTALLATION REQUIREMENTS

Electrical connection	230 V / 50 Hz
Water connection	Yes
Compressed air	No

APPLICABLE STANDARDS

- Zellcheming Merkblatt VI/1/66



CHIP CLASSIFIER

For quick determination of the size distribution of wood chips.



MOST IMPORTANT BENEFITS

- ✓ Robust frame with built-in motor and control box
- ✓ Time switch for adjusting the sequence time
- ✓ Quick clamping device for easy mounting of the sieve sets
- ✓ Screen baskets made of lightweight stainless steel sheets
- ✓ Optional available: suitable balance

PRODUCT DESCRIPTION

The chip classifier has a robust structure, with motor and control panel built in. A timer allows adjustment of screen operation time. An eccentric cam continually moves the shaking table with a reciprocating motion. A quick clamping device allows quick mounting of the screen trays, which are constructed from lightweight stainless steel.

TEST DESCRIPTION

The empty screen trays are weighed and fixed securely to the chip classifier with a quick clamping device. The dry sample is added to the upper tray. When the start button is pressed, the device begins classification by shaking the screen assembly. The chips are sorted according to size, whereby the larger chips remain in the upper tray, and the dust collects in the lowest tray. Once the set time has elapsed, the chip classifier stops automatically. Then the trays with contents can be removed, reweighed, and the individual fractions are calculated.

MODELS

STANDARD SIEVE SET (5 PCS) ACC. TO SCAN 40:01

45 mm round hole	7 mm round hole
8 mm bar sieve	3 mm round hole
13 mm round hole	Dust tray

STANDARD SIEVE SET (5 PCS) ACC. TO SCAN 47:92

10 mm bar sieve	4 mm bar sieve
8 mm bar sieve	2 mm bar sieve
6 mm bar sieve	Dust tray

STANDARD SIEVE SET (5 PCS) ACC. TO TAPPI

1/8 In	3/16 In	1/4 In	3/8 In
1/2 In	5/8 In	3/4 In	7/8 In
1 In	1 1/8 In	1 1/4 In	Dust tray

- Standard sieve set acc. to GOST
- Other sieves available on request

TECHNICAL DATA

DEVICE/INSTRUMENT

- Robust Frame with built-in motor and control box
- Time switch for adjusting the sequence time
- Quick clamping device for easy mounting the sieve sets
- Default sieve set consists of 5 screens and a dust tray
- Screen trays made of lightweight stainless steel sheets
- Sieve trays and dust tray are numbered for easy handling
- Optional available: suitable balance

INSTALLATION REQUIREMENTS

Electrical connection	230 V / 50 Hz / 10 A
Water connection	No
Compressed air	No

APPLICABLE STANDARDS

- TAPPI UM41
- SCAN 40:01
- SCAN 47:92
- GOST (Round sieves)



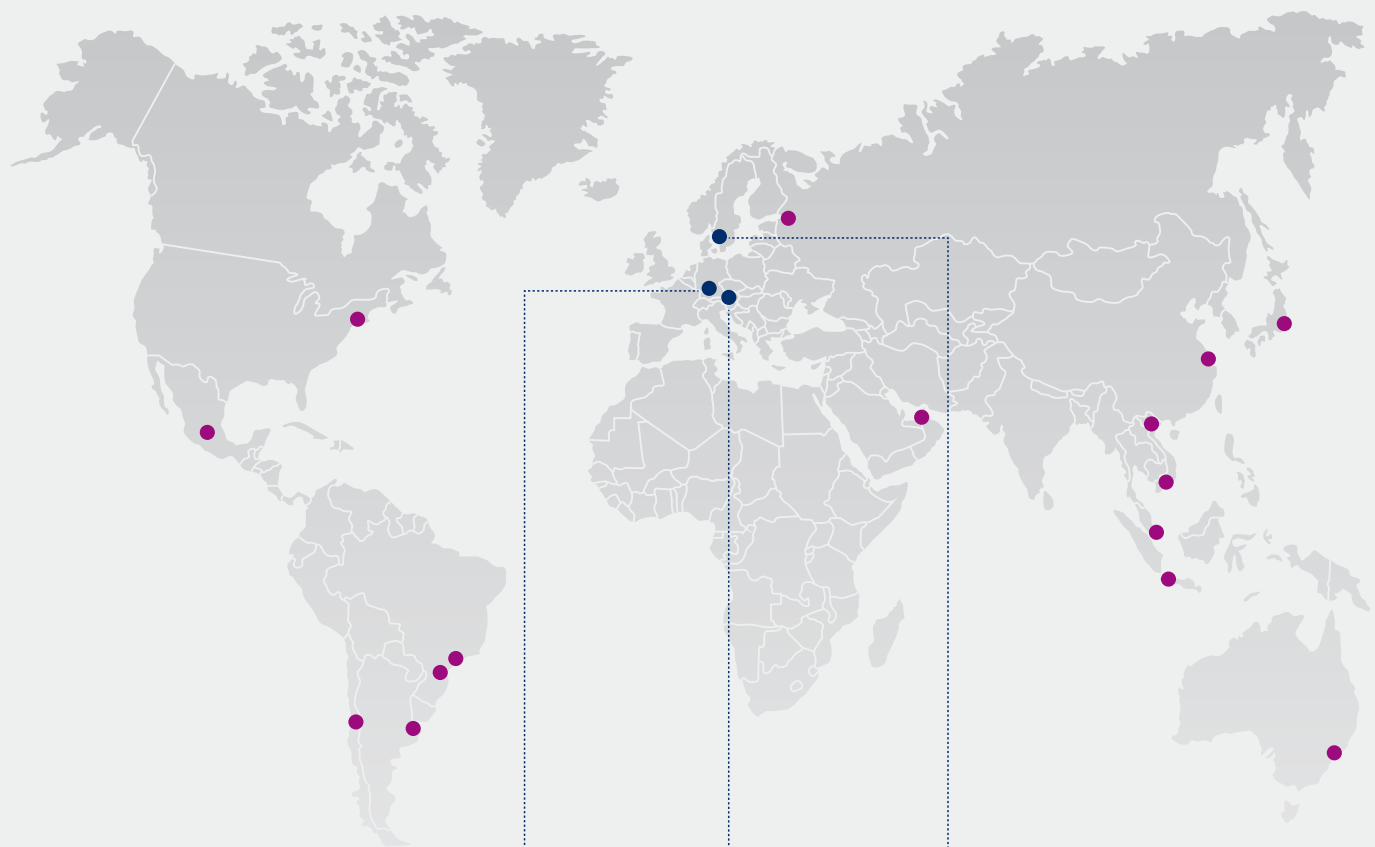
Dust tray and standard sieve set



A quick clamping device allows quick mounting of the screen trays

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