Systematic workflow
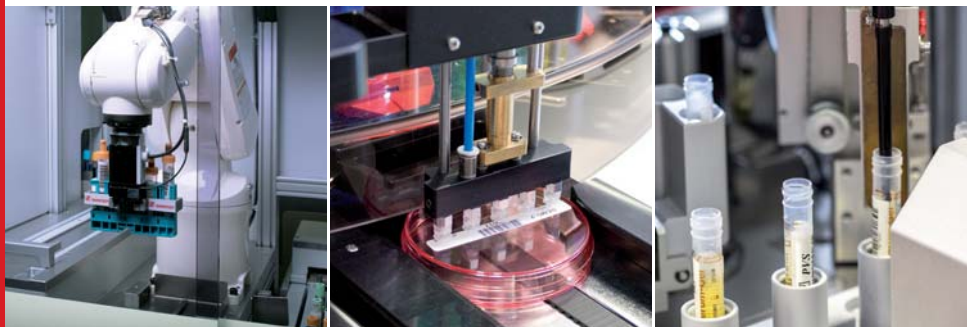
Laboratory automation for pre- and post-analytics

System solutions

for Clinical Laboratories and Microbiology

SARSTEDT

SARSTEDT International

Your partner in medicine and science worldwide

The Company — Foundation and History

Ever since the company was established in 1961, progress has been a top priority. Today, the SARSTEDT Group is a global company with 15 production sites in Europe, North America, South America, and Australia and 3,000 employees.

For decades, research and purpose-oriented product development using innovative technologies, along with constant dialogue with users, have been decisive factors in making us a leading supplier in the field of laboratory and medical technology today.

Quality under one roof – from product idea to the delivery

From development through to production and sales – all our services are from a single source.

PRODUCT DEVELOPMENT at our R&D center is based on close dialogue with users and state-of-the-art technologies – from the initial idea through to the finished product!

PRODUCTION is carried out at our company-owned production sites around the world using the latest equipment. More than 90% of the products in our portfolio are produced by SARSTEDT.

The use of our products directly on patients as well as in research and development laboratories requires a high QUALITY STANDARD.
We meet this requirement through our modern integrated quality management system in accordance with EN ISO 13485.

Global MARKETING & SALES of SARSTEDT products is primarily carried out via our 34 sales organizations. In addition, our customers have access to an extensive dealership network.

Our team of skilled product specialists provides our customers with reliable advice and SERVICE.

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"Optimally compatible modular system components and tailor-made service for the whole system: that's what we expect from high quality laboratory technology! And that is what we get with SARSTEDT!"

Clinical Laboratories

RC 1200

DC/RC 900 Flex

BL 1200 SORT CONNECT

PVS 1625

Microbiology

PTS

SARSTEDT

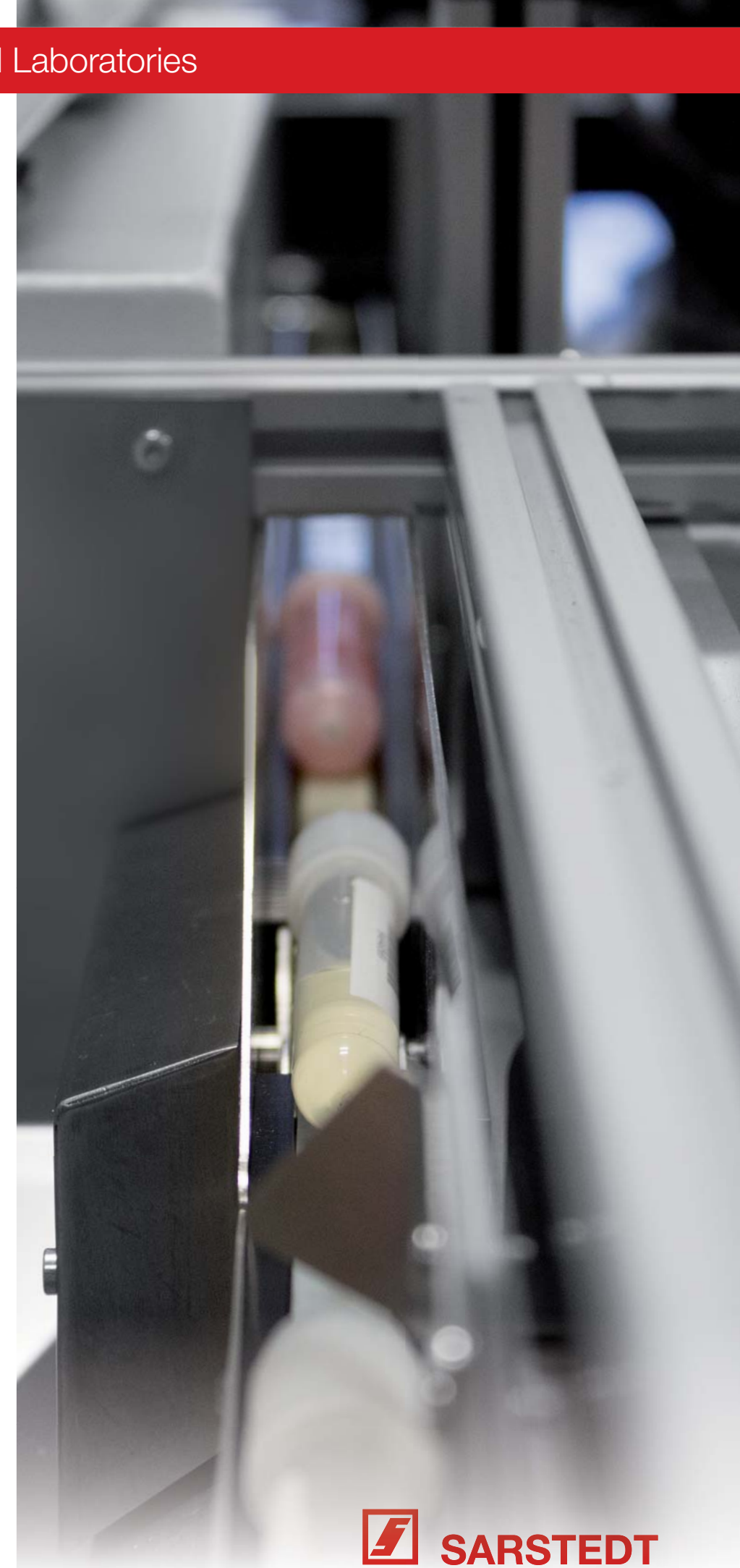SARSTEDT

Clinical Laboratories

The importance of laboratory automation has grown considerably in recent years. Intense competition and high cost pressures inevitably require the organization, optimization, and automation of laboratory processes.

With more than **25 years of experience** in the development, manufacturing and distribution of laboratory automation systems, we are competent consultants for our customers in this area. Our customer-specific automation solutions guarantee maximum flexibility and help you make your processes safer, more effective and more economical.

As a provider of system solutions, we have a broad product portfolio of compact devices and modular automation solutions for pre- and post-analytical processes in clinical and microbiological laboratories. Our many years of experience and specialization in pre- and post-analytics mean that we are able to respond to individual, complex laboratory requirements and offer customer-specific automation solutions for the laboratory processes in question. We have expertise in the following areas:

- Sample loading
- Sample identification
- Decapping of samples
- Aliquoting
- Recapping
- Sorting, distribution and archiving

We would be happy to discuss the options with you. You can find contact details on the back of the brochure.

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DC 1200
RC 1200
RC 1200 S

DECAPPING

Throughput of up to 1,200 tubes per hour

Linear rack

Decapper

DC 1200
Automated **decapping** for
tube diameters of 11-16 mm

- Tubes from various manufacturers with screw caps or push caps are opened in a mixed operation
- Decapping is carried out in the analysis rack - no reloading required
- Throughput of up to 1,200 tubes per hour
- Available for many common linear racks
- Prevents chronic repetitive strain injury (RSI)

RECAPPING

Evaporation protection

Throughput of up to 1,200 tubes per hour

Linear rack

Recapper

RC 1200
Automated **recapping** for
tube diameters of 13-16 mm

- Minimizes evaporation
- Prevents contamination
- Archiving push cap fits all standard tubes with a diameter of 13, 15 and 16 mm
- Automated re-processing (decapping/recapping)
- Throughput of up to 1,200 tubes per hour
- Available for many common linear racks
- Prevents chronic repetitive strain injury (RSI)

Transport

Throughput of up to 1,200 tubes per hour

Linear rack
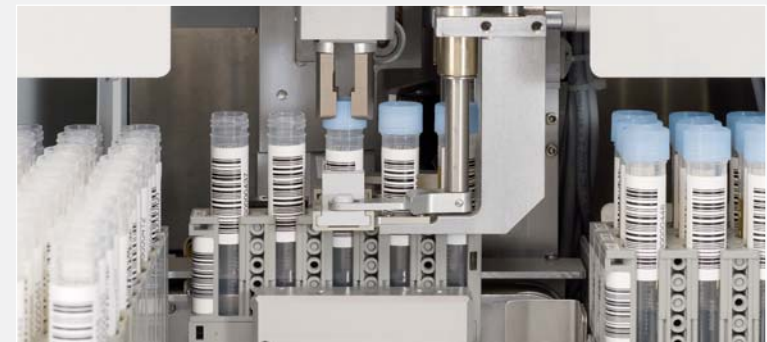
Recapper

RC 1200 S
Automated **recapping with a screw cap** for
SARSTEDT tubes with a diameter of 13 or 15 mm

- Perfect reccapping of tubes to preserve sample quality
  - Eliminates cross-contamination from previously used caps
  - Prevents evaporation
  - Fulfills all requirements for sample transport
  - Ideally suited for sample archiving
- Automated re-processing (decapping/recapping)
- Throughput of up to 1,200 tubes per hour
- Available for many common linear racks
- Prevents chronic repetitive strain injury (RSI)

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900 Flex ID

DC 900 Flex

RC 900 Flex

DC/RC 900 Flex

The compact, combined solution for decapping, recapping and sorting

XY unit

ID module

Decapper

Recapper

Sorting/
archiving

DC/RC 900 Flex

- Pre- and post-analytics in the one compact device
- High throughput of up to 900 tubes per hour
- For tubes 11-16 mm in diameter
- Compatible with all common rack or carrier systems
- Online or offline operation
- Opens tubes with stoppers or screw caps
- Sorts by order, barcode, material, etc.
- Recapping of tubes with archiving push cap
- Closes 13 or 15 mm diameter SARSTEDT tubes with screw caps, e.g. S-Monovette®
- Can be retrofitted individually with decapping or recapping modules

DC/RC 900 Flex combines pre- and post-analytics in a single compact stand-alone system. This ensures optimal utilization of materials along with superior economic efficiency. Repetitive manual work, such as the strain of recapping and decapping sample tubes, is eliminated, thereby protecting human resources.

All tubes 65–100 mm in length and 11–16 mm in diameter are processed in a mixed operation without pre-sorting (other tube types can be accommodated on request). Whether push caps or screw caps, all caps are safely removed and disposed of hygienically.

The customizable working platform can be configured for any rack and carrier systems, both for analyzers and archiving. The control software can specify the desired criteria for processing containers and can be operated online or offline. Tubes with a diameter of 13, 15 or 16 mm are closed with an archiving cap. The modular concept makes it possible to start with only the decapper or recapper module and retrofit the other function later.

Decapping

Recapping: Archiving cap

Recapping: Screw cap

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For subdistribution into secondary tubes

AL-Flex

XY unit

ID module

Sorting/archiving

Aliquoter

- Intelligent volume management
- Contamination-free pipetting
- Integrated barcode labeling of aliquot tubes immediately before filling
- Compatible with aliquot tubes in 3 sizes
- All commonly used source and target carriers are freely configurable

To keep the analysis time as short as possible, tests must be conducted on several analysis devices at the same time. For this purpose, sample material from a primary tube is distributed into one or several secondary tubes.

Compared with other pre-analytical work steps, the subdistribution of samples into secondary tubes is a slow process. It is therefore beneficial for the throughput times of patient samples to separate this processing step from other sample preparation steps. The AL-Flex provides the technical solution for this.

Open primary tubes intended for subdistribution are loaded into the system in predefined source carriers. In the laboratory information system (LIS), a query for every primary tube retrieves the information for the required secondary tubes. The AL-Flex labels each secondary vessel with a copy of the primary barcode and pipettes the required volume into it. Conductive disposable tips facilitate precise fill level measuring and contamination-free pipetting. Secondary and primary vessels are both transferred onto previously defined target carriers and manually brought to the analysis unit for further processing.

Sampling from a primary tube

Conductive disposable tips for precise fill-level measurement and contamination-free pipetting

Aliquot tubes in three sizes
92 x 15 mm (5 ml)
75 x 13 mm (2.5 ml)
75 x 13 mm (5 ml)

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Loading of unracked sample tubes

**BL 1200
SORT CONNECT
BL 1200
HCTS2000 MK2**

- Ideal in combination with all analysis lines
- Sample tubes can be fed in bulk, without pre-sorting
- For all closed tubes 75-120 mm in length and 11-19 mm in diameter (each with cap), including those with false bottoms
- For all sample types (serum/plasma, serum gel/plasma gel, EDTA, citrate, blood glucose, urine)
- Integral ID module
- Automated sample entry accessioning
- Task-orientated sorting into bins, racks, or onto the laboratory line
- Safe, rapid and error-free continuous operation

System range:

BL 1200 SORT CONNECT – from bulk loader to track (bulk to track)

- Pre-sort sample tubes and transfer selectively to the laboratory line
- Modular configuration possible
- Throughput of up to 1,200 tubes per hour

BL 1200 – from bulk loader to rack (bulk to rack)

- Throughput of up to 1,200 tubes per hour
- The capacity is up to 600 tubes per platform sorting surface
- Up to 1,200 tubes with two platforms

HCTS2000 MK2 – from bulk loader to bin

- Throughput of up to 2,000 tubes per hour
- Up to 22 distribution targets, plus 1 error sample compartment
- Up to 200 tubes per target bin

Request our individual brochures.

Video at www.sarstedt.com

www.sarstedt.com

Bulk loader

ID module

Sorting/archiving

Target bins

Loading of unracked sample tubes

Sorting into BL 1200 target rack

Distribution to HCTS2000 MK2 target bins

Transfer to laboratory line

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Multifunctional with high throughput

XY unit

ID module

Decapper

Recapper

Sorting/archiving

HSS 1625

FlexPlate

...you can't be more flexible!

- Modular configuration for pre- and post-analytics possible
- Specimen entry via bulk loader or rack loader module
- ID module with camera (barcode, tube type)
- Decapper module for screw caps and push caps
- Recapper module for universal archiving caps or screw cap (SARSTEDT 13 and 15 mm diameter tubes)
- Sorter module for many common analyzer racks or archiving racks
- High throughput of up to 1,200 tubes per hour
- FlexPlates for adapting the platform layout (rack loader and sorter)

With a throughput of up to **1,200 tubes per hour**, the HSS is ideally suited for rapid and flexible sorting of sample tubes before and after analysis tasks.

Sample tubes are fed in via bulk loader or in the rack loader module.

The HSS registers the barcode and tube type, opens the sample tubes according to the workstation and then transfers them into any common rack types (e.g. Abbott, Beckmann, Roche, Siemens, etc.) for analysis.

After routine analysis, the sample tubes can be sorted again or taken directly from the analyzer racks, recapped and transferred to archiving racks.

The customer-specific configuration of the layout for various carriers can be easily and completely modified with a **FlexPlate**. This enables a variety of source and target carriers to be used for routine and archival throughputs.
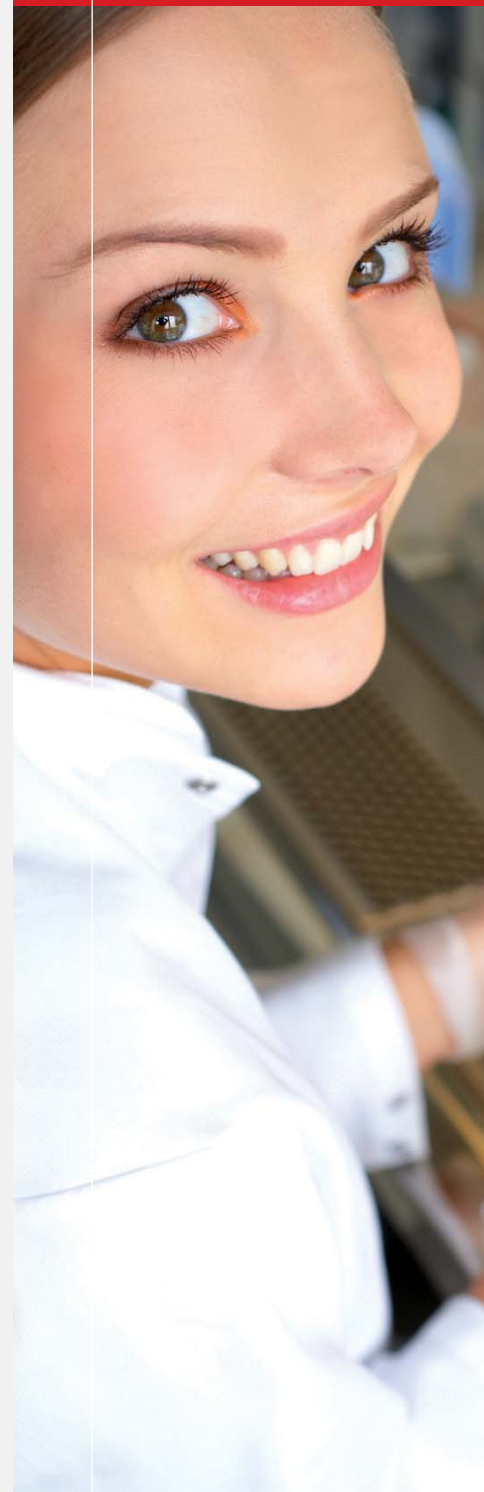

Short cycle time of just 3 seconds

Flexible platform

Pre- and post-analytical applications

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PVS 1625
PVS 2125
PVS 2625

Ideal for aliquoting

XY unit

ID module

Decapper

Aliquoter

Recapper

Sorting/archiving

PVS 1625

- All-in-one system for pre- and post-analytics
- Scalable from 1625 to 2625 track
- Ideal in combination with any analysis line
- Customer-specific configuration with modules:
  - Sample loading in racks or in bulk
  - ID module
  - Decapper
  - Recapper
  - Aliquoter
  - Sorter
- For all common tube types: 13-16 mm in diameter and 65-100 mm in length
- Compatible with all common rack and carrier systems

The PVS 1625 is a customer-specific configured automation system for **pre- and post-analytic processing of samples.** It is not bound to specific rack or holder systems, but can process any source and target carriers. As an open system, it is complementary to any analysis line or can be used independently.

Unracked sample tubes are loaded via the **Bulk Loader** (see p. 14) or in racks via the loading platform. This makes it equally capable of processing closed and open tubes.

The **ID module** with camera reads the barcode and identifies features such as cap color and tube type.

Barcoded secondary tubes are produced and the requested volumes pipetted into them at the **aliquoter**. Sample mix-ups are eliminated and the available sample amount will be used in the most efficient way.

Two types of **recapper modules** are available for archiving or for send-out samples. Tubes are either closed with an archiving push cap (all diameters from 13-16 mm) or with a screw cap (SARSTEDT tubes with a diameter of 13 or 15 mm, e.g. S-Monovette®).

For aliquot tubes and caps, see page 30.
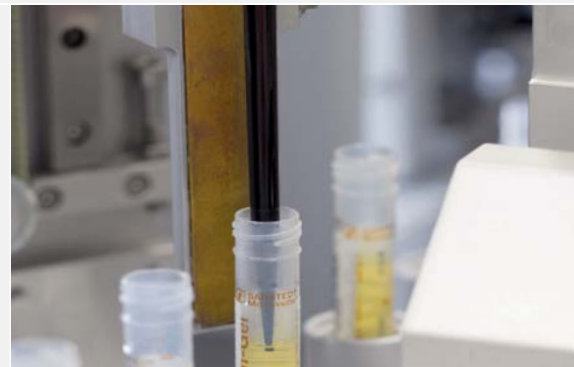
Sampling from a primary tube

Dispensing into a secondary tube

Aliquot unit

SARSTEDT

SARSTEDT

18

19

BL 1200 SORT CONNECT

Sample loading

Identification

Decapping

Aliquoting

Recapping

Sorting/archiving

Bulk loader

Linear rack

XY unit

ID module

Decapper

Assemble a system tailored to your individual needs!

Aliquoter

AMC

Recapper

XY unit

Sorting/archiving

Sample loading

Bulk loader

Linear rack

XY unit

With the **bulk loader** module, closed sample tubes are loaded by pouring them into the loading chute without handling each tube.
Alternatively, open or closed sample tubes in any rack or tray are placed onto the loading platform and fed from there into the system. Use of the FlexPlate provides the maximum number of options for sample carriers (see p. 17).

Identifying

ID module

- Barcode
- **Tube type:** Cap color, length, diameter
- Plausibility check

For precise sample processing, each tube must be identified by the barcode, which can also include information about the sample material. The tube type is also identified to ensure trouble-free processing. The **ID module** with camera detects features such as the barcode, cap color and shape of the tube.

Opening (decapper)

Decapper

- Push cap
- Screw cap

The **decapper** module opens screw cap and push cap tubes. All tubes 11-19 mm in diameter and 75-120 mm in length (each with cap) are processed in a mixed operation and without prior sorting (additional sizes upon request).

The push caps and screw caps are safely removed and disposed of hygienically.

Aliquoting

Aliquoter

AMC

The **aliquoter** produces barcoded secondary tubes and fills these with the required volumes. Sample mix-ups are avoided and the available sample volume is used in the most efficient way. Refer to p. 30 for information on available secondary tubes.

The **AMC** module pipettes small volumes into multiwell plates or cluster tubes for space-saving long-term archiving or for bio-banking. Archiving is thus integrated into the routine process, eliminating the need for a separate work step.

Closing (recapper)

Recapper

- Universal push caps
- Screw caps for SARSTEDT tubes (e.g. S-Monovette®)

Two types of **recapper** modules are available. Tubes are either closed with a universal stopper suitable for all diameters from 13-16 mm or with a screw cap for SARSTEDT tubes (e.g. S-Monovette®) with a diameter of 13 or 15 mm.

Sorting/archiving

Sorting/ archiving

Target bins

The sample tubes are **sorted** according to analysis requests from the LIS (laboratory information system) or according to strict distribution rules, e.g. cap color. All common rack and carrier systems can be used (see FlexPlate, p. 17).

For the Bulk Loader HCTS2000 MK2, unracked tubes are sorted into **target bins** for individual working areas.

Tubes destined for archiving are logged with sample ID, carrier ID, position and time stamp. Seamless sample tracking enables immediate access to all samples.

In times of increasing quality requirements coupled with scarcer human resources, the field of microbiology too must make increasing use of automation. New developments in collection materials and increasing standardization are helping to take this process forward. SARSTEDT has more than 25 years of experience in this area.

Our **Petri Dish Organization System** makes the working steps required to prepare culture medium dishes more transparent, safe, and efficient. Mix-ups are avoided while maintaining a consistently high throughput.

With the SARSTEDT **Petri Dish Transfer System**, laboratory processes can be shortened considerably by automatically delivering sets of Petri dishes to the workstations.

Microbiology

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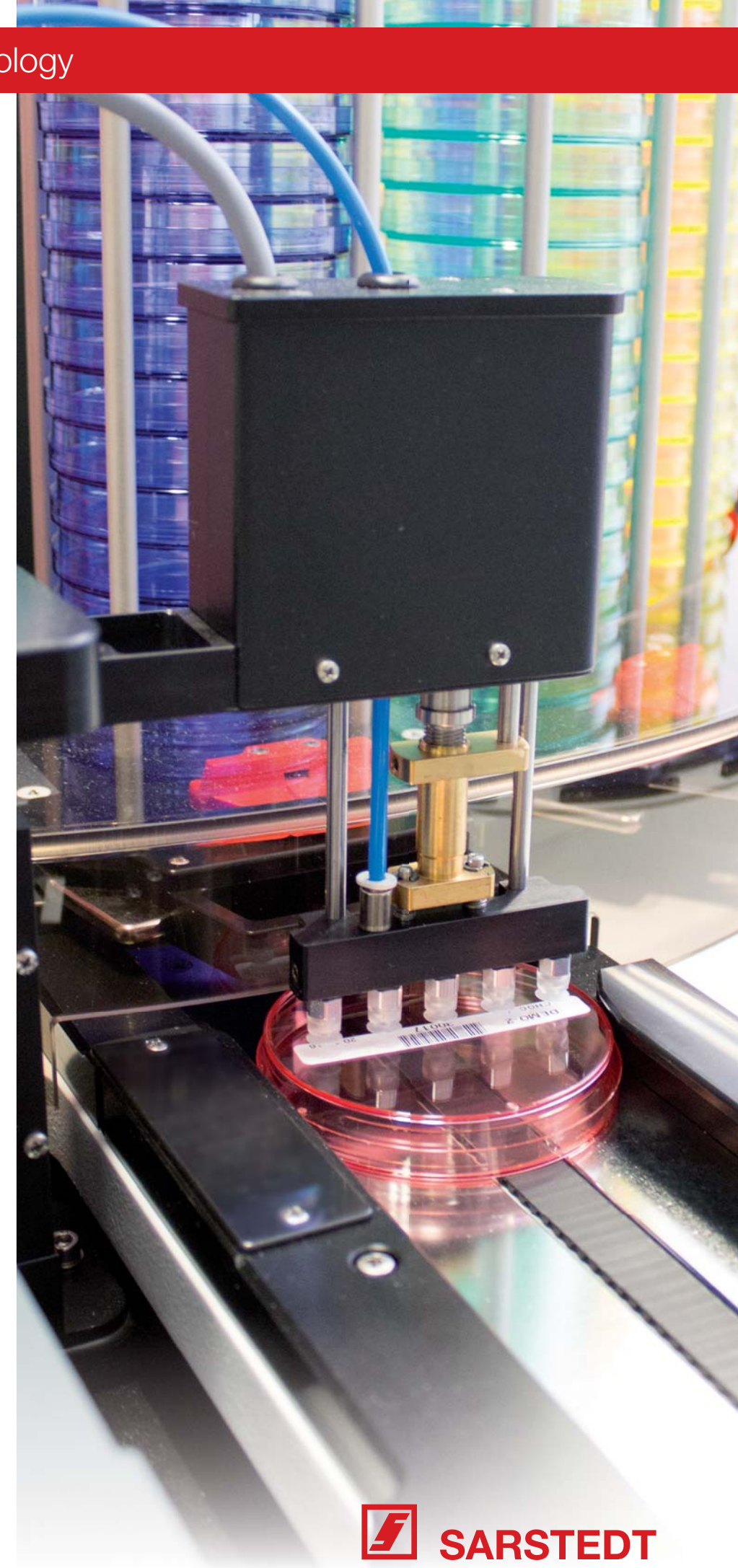
Petri Dish Organization System

POS 720/2

- Low personnel requirement and easy to operate
- Reliable provision of all required Petri dishes
- Accurate machine-readable labeling of dishes with barcode and plain text
- Reliable identification of dishes throughout processing
- Additional labels for special media and bouillons available at the workstations.

With **POS 720/2, up to 650 Petri dishes per hour** are labeled and stacked in sets in a fully automatic process.

With a capacity of 600 plates (15 magazines of 40 dishes each), the system offers high capacity and flexibility.

Labeling and reading errors are reduced and workflow transparency is increased, improving quality and competitiveness in microbiology laboratories.
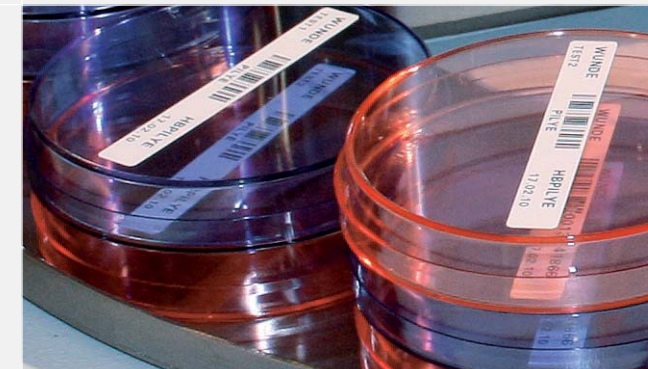
Space for up to 8 stacks, each with 18 dishes

Dish magazine for up to 15 dish stacks
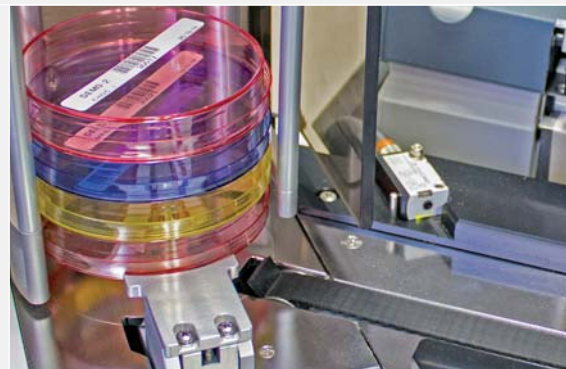
Stacker for dish sets

Label on the side...

...or on the base

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Petri Dish Transfer System

PTS

- Transport system for stacks of dishes to the workstations
- Customized configuration of the track length and route
- Low personnel requirement and easy to operate
- Reliable provision of all required Petri dishes
- Reliable identification of dishes throughout processing
- Additional labels for special media and bouillons available at the workstations.

The Petri Dish Transfer System **PTS** transports the dish stacks prepared by the POS 720/2 to the streaking stations. It is configured for the specific customer and is free-standing and height-adjustable within a defined range. Laboratory tables and benches can be positioned close to the **PTS**.

The design is based on the individual requirement of the culture medium at the respective workstations. Samples are identified by scanning and the dishes required thus specified. These are sorted and labeled by the POS 720/2 and transported by the PTS to the requesting workstation.
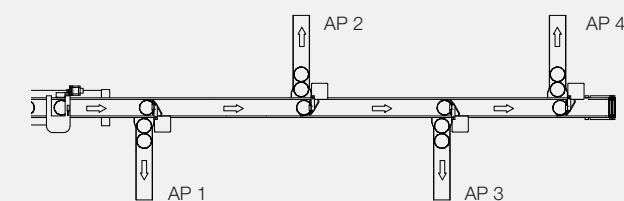
91426409 MC
WUNDE 21.08.21

Dish labeled with required information

Dish transport

Transfer to workstations

Layout example for PTS with four workstations (AP1-AP4)

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Intelligent distribution, transparent configuration and intuitive handling
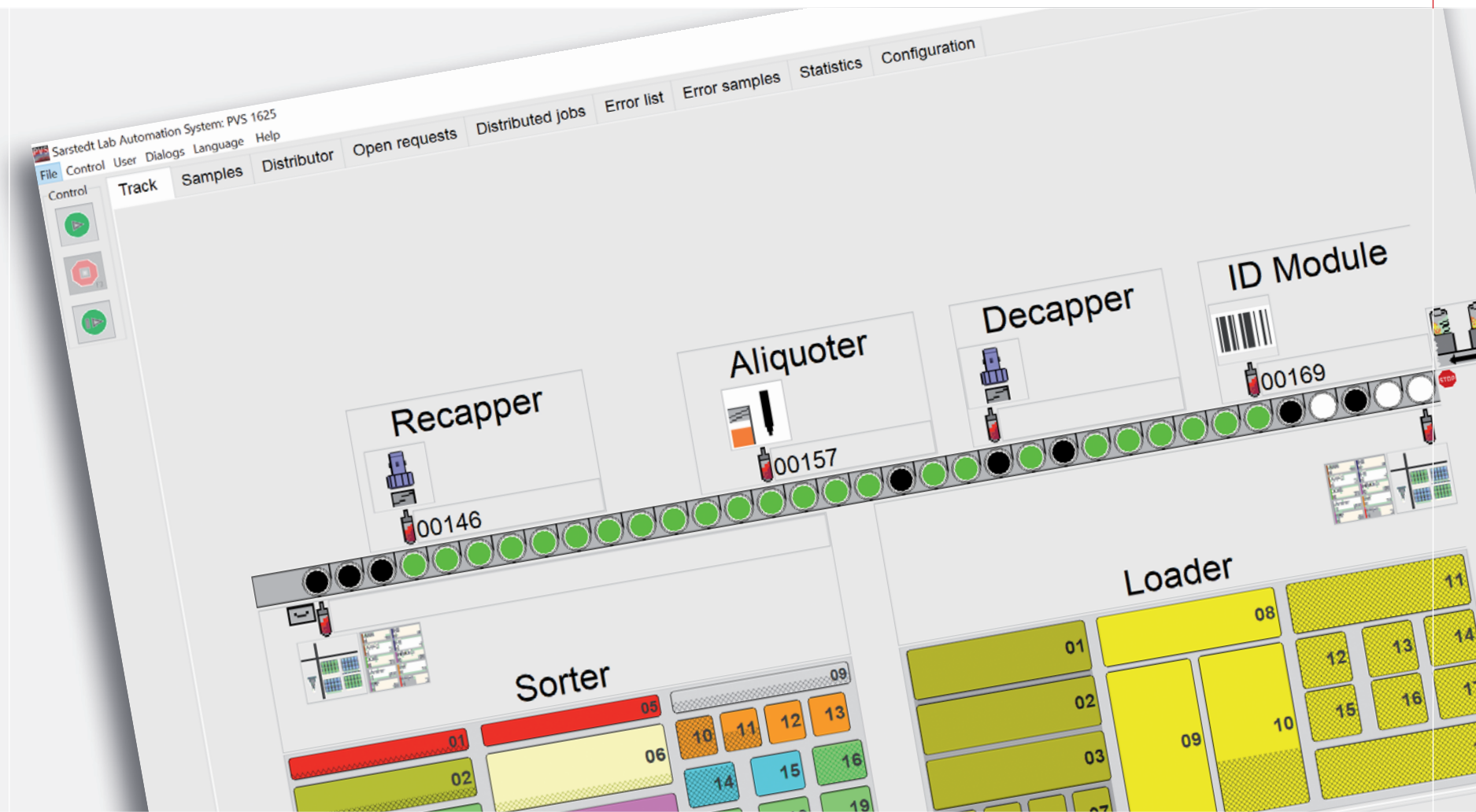

The control and operating software is so versatile, just like the laboratory automation systems themselves.

Software development, maintenance and system know-how are among SARSTEDT's areas of expertise.

Special features:

- Easy-to-learn system operation
- Swift and simple configuration
- Transparent system status layout
- Effortless sample tracking
- Optimal archiving sample administration
- Plausibility check
- Completeness check
- Quick access to information on faulty samples
- Comprehensive statistical functions

The program is available on a Windows-based touch panel PC which is an integral system component.

As the graphical user interface (GUI), it links both the user to the automation system and the automation system to the laboratory information system (LIS) or to any middleware installed. It enables clear visualization of system components. It displays internal sample transport paths, logistical transfer, the orientation and filling status of the carriers on the feeding and release platforms, as well as the current status of the functional modules.

There are almost no limits to the configuration of workstations, carriers, tests, and the processing of special distribution rules and priority criteria.

Information on the sample processing status and orders can be easily retrieved. Statistical data can also be prepared and provided. The information storage period on the database can be defined according to customized requirements.

Communication between the automation system and LIS proceeds in query mode or batch mode.
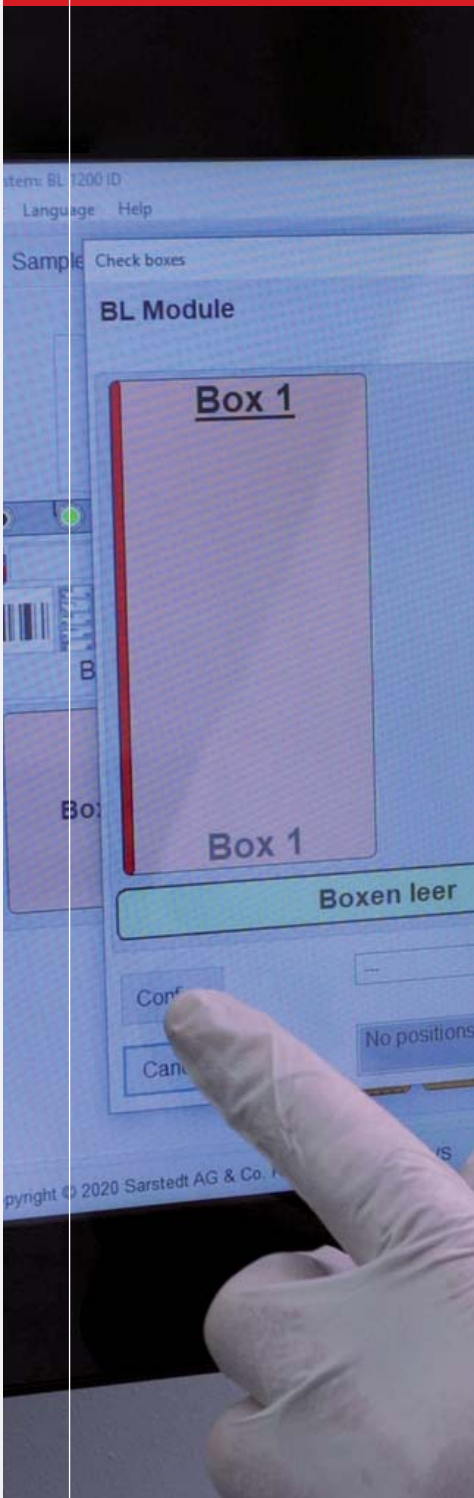
Tube type identification
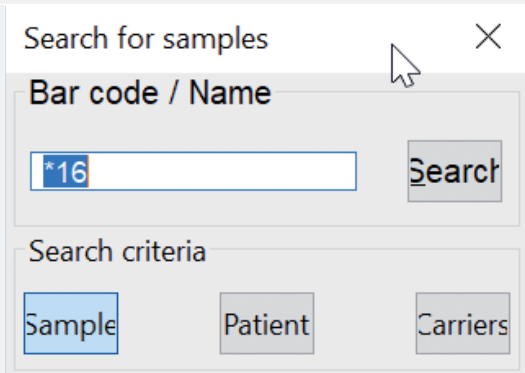
Sample traceability
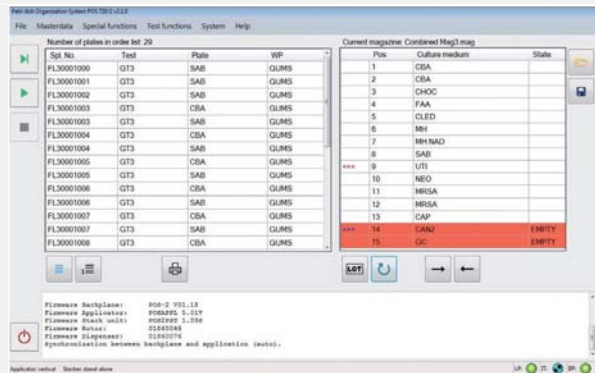
Definition of the culture media for POS 720/PTS

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Further information at www.sarstedt.com

Clinical Laboratories

S-Monovette®

With increasing automation in the clinical laboratory, the requirements for blood collection tubes have changed. These blood collection tubes must comply with defined preconditions for specimen identification using barcode readers, centrifugation, decapping, recapping, sub-distribution, and the transportation of samples in pucks in analysis lines. The S-Monovette® 75 x 13 mm is ideally suited to meet these requirements and is available with any preparation.

Aliquot tubes

Depending on the application, aliquot tubes are available in a diameter of 13 or 15 mm, with or without false bottom, and with a push or screw cap. If required, the tubes are automatically recapped. Screw cap tubes are ideal for long-term archiving and transport.

Archiving push caps and screw caps

Achiving push caps for any tube 13–16 mm in diameter are ideal to minimize the evaporation of sample material during storage. The push cap can be automatically inserted and removed. Screw caps are recommended for long-term archiving and transport.

Pipette tips

A conductive black tip is used for sub-distributing into aliquot tubes. The fluid level is determined conductively. During pipetting, the tip descends as the fluid level drops. The slim shape enables pipetting from narrow tubes.

Racks
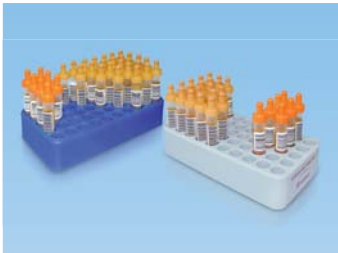
The universal block rack made from polypropylene is highly resilient, stackable and autoclavable. It makes an ideal target carrier for various workstations on specimen distribution systems as well as for archiving. The double or quadruple blocks, in particular, provide a space-saving solution for the storage of samples. Racks are available in a range of colors for easy identification and organization.

Microbiology

Petri dishes

Made of crystal-clear polystyrene, our Petri dishes for use with hot agar are heat-resistant to 80°C. Due to their high dimensional stability, they are particularly suited for all automated processing steps from labeling, stacking, streaking and incubation through to automated analysis.

Diagnostics
- Venous blood collection
- Capillary blood collection
- Blood gas collection
- Urine and feces collection
- Saliva/sputum vessels
- Miscellaneous devices
- Specimen transportation
- Blood sedimentation

Laboratory
- Reagent and centrifuge tubes
- Push and screw cap micro tubes
- Cell and tissue culture
- General laboratory products
- Forensics
- Racks and storage boxes
- Environmental technology
- Centrifuges
- Mixing equipment

Clinical products
- Urine drainage systems
- Infusion and transfusion
- Regional anesthesia
- Thawing and warming devices
- Syringe labels
- Miscellaneous medical products

Transfusion
- Blood mixing and weighing equipment
- Tube sealing and segmenting
- Transport and storage
- Incubators and agitators
- Special products for blood donation

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If you have any questions, we'd be happy to help!

Visit our website: www.sarstedt.com

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