

# Instruments: SAFE<sup>®</sup> READ

## 2D / 1D Code Reader

LVL tube readers are designed for the fast scanning and decoding of 2D tubes in SBS and Cryo racks as well as single tubes. In doing so - depending on application - CCD scanners and camera-based readers are used. Optional cryo-protective designs are available. The main advantages of our devices are not just the easy handling, but also the compatible interface for easy data export. This means that codes can be exported in current data formats and readers can be integrated into existing sample management solutions.

Barcode (1D)



Data Matrix Code (2D)

Data Matrix Rack Scanner with Software



# SAFE® READ Single Express

## 2D Barcode Rack Reader for SBS Racks – A Camera Based Reader for the Price of a Flat Bed Scanner

- Fast camera based reader
- Capable of scanning SAFE® and other SBS as well as CRYO formats
- Available with either USB or RJ45 connector
- Patented technology allows imaging under difficult lighting conditions
- Decoding Software with free lifetime upgrades
- Export data to Excel, text, JSON, XML and image files
- Operating system on host PC = Windows 7, 8, 10
- Cryoprotection and 1D rack code reading as options
- Dimensions: 152mm x 174mm x 146mm
- 2 years warranty

The SAFE® Read Single Express 2D reader offers easy, out-of-the-box set up and is delivered pre-calibrated and ready to read. This instrument can read all racks in the SBS format, regardless of the configuration or number of tubes, and by a quick and easy change of mask (included as standard) it can also scan all Cryobox formats. Our new automatic rack type detection feature means that you no longer have to configure the reader for all rack types. Simply place your rack on the scanning window and the software will work out what type of rack it is and run the scan.

Item Number

DMTR-MI-SR-CP

Order Information



SAFE® READ Single Express

# SAFE<sup>®</sup> READ Multi Express

## 2D Barcode Rack Reader for SBS and CRYO Racks

- Fast camera based reader
- Capable of scanning SAFE<sup>®</sup> and other SBS as well as CRYO formats
- Available with either USB or RJ45 connector
- Patented technology allows imaging under difficult lighting conditions
- Decoding Software with free lifetime upgrades
- Export data to Excel, text, JSON, XML and image files
- Operating system on host PC = Windows 7, 8, 10
- Cryoprotection and 1D rack code reading as options
- Dimensions: 152mm x 174mm x 146mm
- 2 years warranty

The SAFE<sup>®</sup> Read Standard Express 2D reader offers easy, out-of-the-box set up and is delivered pre-calibrated and ready to read. This instrument can read all racks in the SBS format, regardless of the configuration or number of tubes, and by a quick and easy change of mask (included as standard) it can also scan all Cryobox formats. Our new automatic rack type detection feature means that you no longer have to configure the reader for all rack types. Simply place your rack on the scanning window and the software will work out what type of rack it is and run the scan.

Item Number

DMTR-EX-MR-CP

Order Information



SAFE<sup>®</sup> READ Multi Express

# SAFE® READ Single Express Integration

## Smallest Footprint and Automation Friendly 2D Barcode Rack Reader

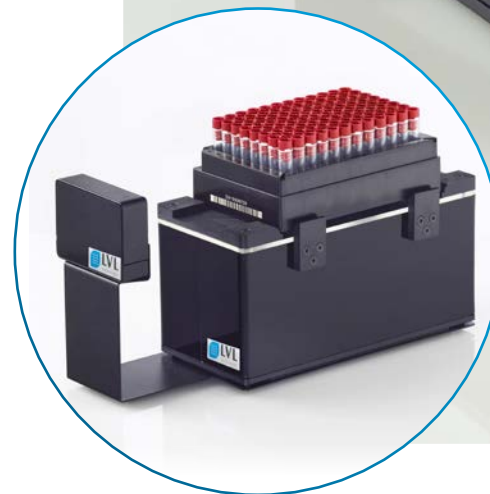
- Fast camera based reader
- Ideal for integration into automated systems
- Available with either USB or RJ45 connector
- Capable of scanning SAFE® and other SBS Rack formats
- Patented technology allows imaging under difficult lighting conditions
- Decoding software with free lifetime upgrades
- Export data to Excel, text, JSON, XML and image files
- Operating system on host PC = Windows 7, 8, 10
- Cryoprotection and 1D rack code reading as options
- Dimensions: 85mm x 185mm x 95mm
- 2 years warranty

The SAFE® Read Standard Express 2D reader offers easy, out-of-the-box set up and is delivered pre-calibrated and ready to read. This instrument can read all racks in the SBS format, regardless of the configuration or number of tubes, and is supplied with all the features needed for robotic integration. Our new automatic rack type detection feature means that you no longer have to configure the reader for all rack types. Simply place your rack on the scanning window and the software will work out what type of rack it is and run the scan.

Item Number

DMTR-EX-SR-CP

Order Information



SAFE® READ Single Express Integration

# SAFE<sup>®</sup> READ Multi Standard

## 2D Barcode Multi Rack Reader

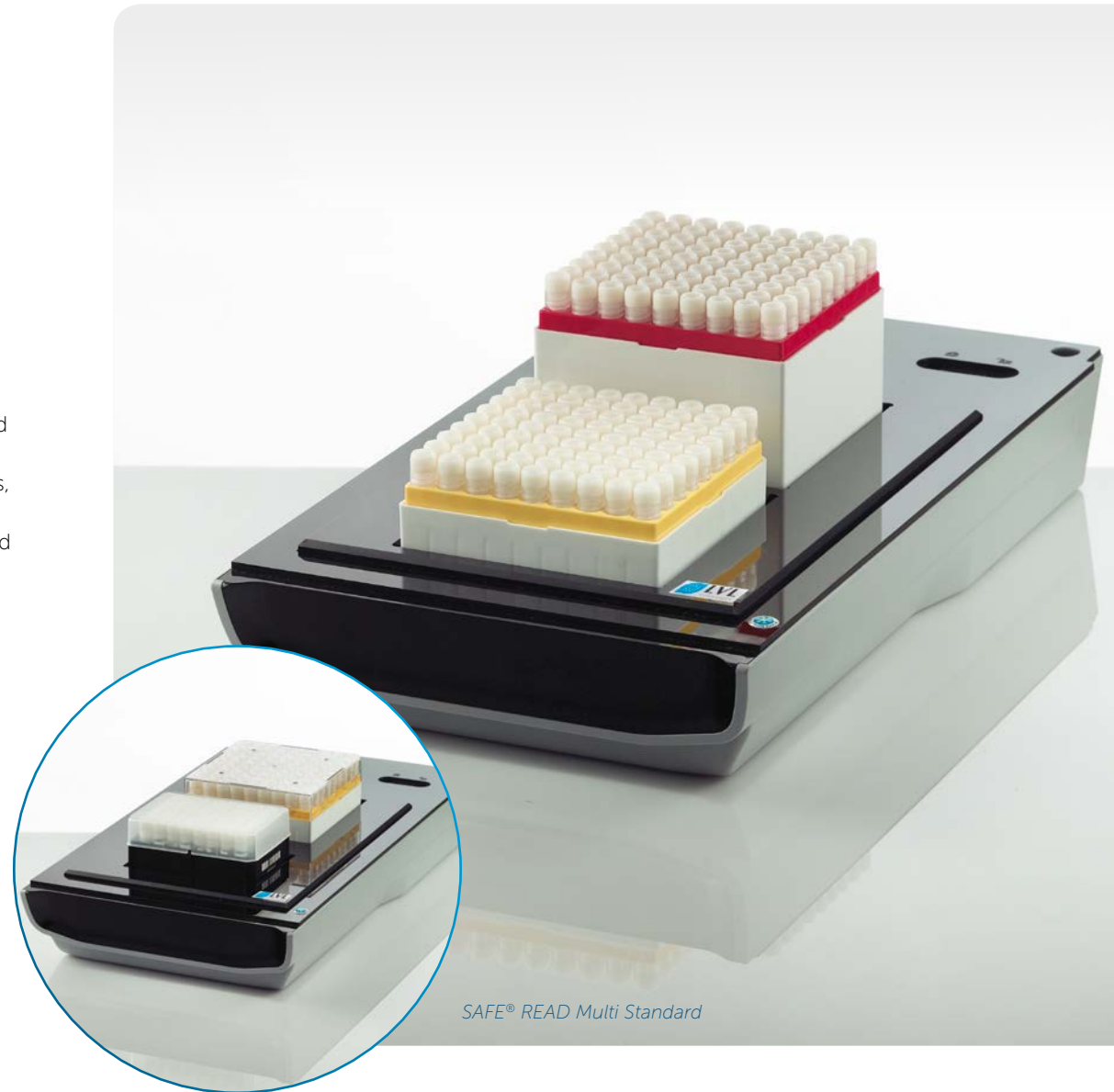
- CCD Scanner based reader
- Available with either USB or RJ45 connector
- Capable of scanning SAFE<sup>®</sup> and other SBS as well as CRYO formats
- Decoding Software with free lifetime upgrades
- Export data to Excel, text, JSON, XML and image files
- Operating system on host PC = Windows 7, 8, 10
- Cryoprotection as option
- Dimensions: 270mm x 475mm x 75mm
- 2 years warranty

The SAFE<sup>®</sup> Single Standard 2D reader offers easy, out-of-the-box set up and is delivered pre-calibrated and ready to scan. This instrument can read all racks in the SBS format, regardless of the configuration or number of tubes, and by a quick and easy change of mask (1 mask included as standard) it can also scan all Cryobox formats. It is supplied with all the features needed for robotic integration.

Item Number

DMTR-DF-MR-CP

Order Information



SAFE<sup>®</sup> READ Multi Standard

# SAFE® READ Single Tube

## 2D Code Single Tube Reader

- Fast scanning of 2D tubes
- Compatible with SAFE® and other 2D tubes
- Keyboard Wedge setting allows data entry directly into your application
- Strong mineral glass window
- Decoding software with free lifetime upgrades
- Operating system on host PC = Windows 7, 8, 10
- Cryoprotection option
- Dimensions: 60mm x 90mm x 60mm
- 2 years warranty

Item Number

DMST

Order Information



SAFE® READ Single Tube

# SAFE<sup>®</sup> READ Single Tube Mobile

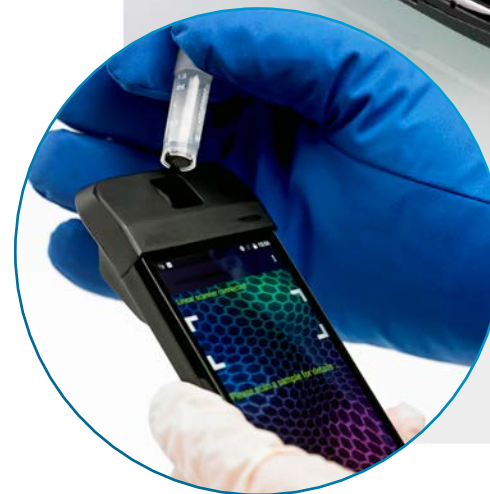
## Mobile 2D Barcode Single Tube Reader

- Intelligent and fully portable 2D barcode reader for single tubes
- Wired or wireless communications
- Up- or down-load data from host computer
- Operating modes selected from main screen icons
- Full day operation without the need to re-charge the battery
- Cryoprotection provided as standard
- Can be customised for applications in your laboratory
- Client software to provide wired interface between computer and instrument
- With Battery charger and USB lead to connect instrument to host computer
- Dimensions: 155mm x 65mm x 38mm
- Battery life: Typically, 8 hours between charges
- Data storage on instrument: Typically, up to 60,000 samples
- Small 1D linear code scanner linked to the Handheld by Bluetooth Protective Case
- Protective cover
- Optional for Wireless Applications: Handheld Server, Keyboard Wedge, Link to Excel, Link to Database

Item Number

DMST-H

Order Information



SAFE<sup>®</sup> READ Single Tube Mobile

# SAFE® READ Single Code

## Mobile Scanning for 1D and 2D Codes

- Using area-imaging technology and a greyscale sensor with a 838 x 640 resolution
- Reliable scanning for 1D and 2D
- Wide viewing area due to a field of view of 41.4° horizontally and 32.2° vertically
- USB, keyboard wedge, RS232 and RS485 connectivity options

Item Number

DMST-SC

Order Information



SAFE® READ Single Tube



# Instruments: SAFE<sup>®</sup> CAP

## Manual, Semi-automatic and Fully-automatic Cappers / Decappers

Whether for the automatic processability of hundreds of racks per day or for the manual handling of relatively few samples – the use of cappers/decappers is indispensable or at least a real time and hassle saver depending on the sample volume. In our range you will find the suitable tool for all requirements – from manual 1 channel cappers through to a fully-automatic, integrable 96 channel device.



*Manual 1 Channel Capper /  
Decapper / Picker*



*Semi-automatic 8 Channel  
Capper / Decapper*



*Fully-automatic 12 Channel  
Capper / Decapper*

# SAFE® CAP 1 CHANNEL

## Manual 1-Channel Capper/Decapper/Picker

- Can also be used as a picker
- Enables end-to-end handling (picking / rejection / decapping / capping) without direct contact with hands and thus, minimises the risk of contamination and heat transfer

### Item Number

SAFE® 96 XT: CDC-1CH-XT-96  
SAFE® 96 IT: CDC-1CH-IT-96  
SAFE® 48 XT: CDC-1CH-XT-48  
SAFE® 24 XT: CDC-1CH-XT-24

### Order Information



# SAFE® CAP 8 CHANNEL HH

## Semi-Automated 8-Channel Capper/Decapper

- Semi-automated hand-held capper/decapper with ergonomic design
- Reliably decaps and caps eight tubes in parallel
- Stable stand for storage of device and contamination-free parking of screw caps
- Eight individual motors for precise application of 7 Ncm torque for tube closure
- Power-saving mode for longer operating time in wireless mode

### Item Number

SAFE® 96 XT:

CDC-8CH-XT-2

SAFE® 96 IT:

CDC-8CH-IT-2

### Order Information



SAFE® CAP 8 CHANNEL HH

# SAFE<sup>®</sup> CAP 8 CHANNEL DD

## Automated 8-Channel Capper/Decapper

- Fully-automated capper/decapper as desktop device
- Reliably decaps and caps eight tubes in parallel
- Stable stand for storage of device and contamination-free parking of screw caps
- Eight individual motors for precise application of 7 Ncm torque for tube closure
- Also integrable in automated pipetting solutions

### Item Number

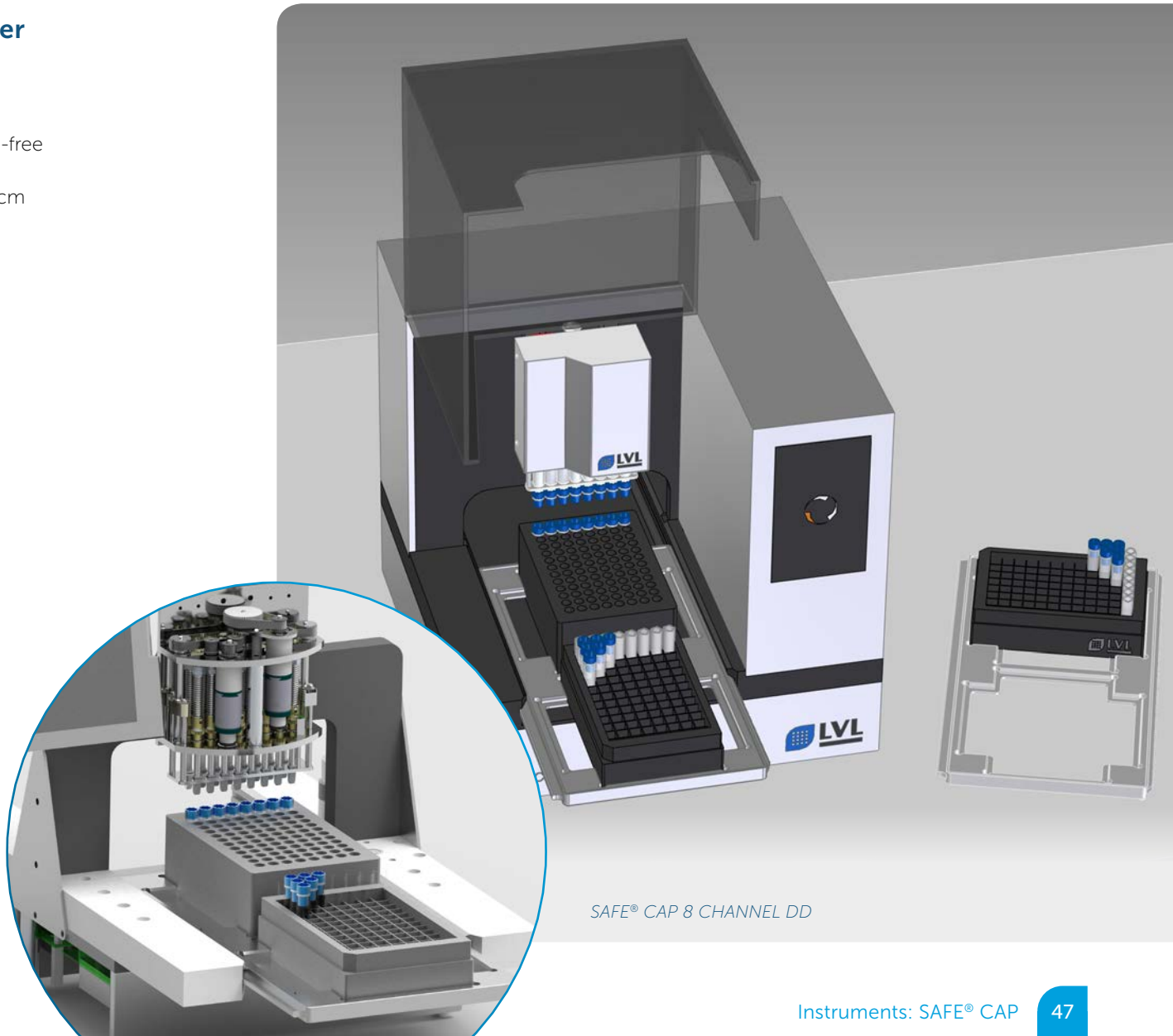
SAFE<sup>®</sup> 96 XT:

SAFE<sup>®</sup> 96 IT:

CDC-8CH-XT-DD

CDC-8CH-IT-DD

### Order Information



SAFE<sup>®</sup> CAP 8 CHANNEL DD

# SAFE® CAP MULTI CAP DD

## Automated Single Column/Row Capper/Decapper for SBS 96/48/24

- Fully-automated premium capper/decapper
- Easily swapped decapping heads to decap tubes in 24-, 48- and 96-format tube racks on a single device
- Process a full rack of tubes or row of tubes in portrait or landscape format within one device
- Decap only tubes needed — all rows, selected rows or columns, or partial racks
- Can be operated as an integrated and standalone device simultaneously
- Eliminates risk of cross contamination by not moving over opened tubes
- Minimize the time a tube is open using the optional Row Loop Mode — only one row is processed at a time by holding caps after decapping and immediately recapping
- Built-in Secure Mode ensures an optimal seal during capping to eliminate cross threading
- Touchscreen panel provides easy navigation through the system
- Turntable allows rack to be turned after decapping for better positioning in pipetting workflows
- Dimensions: 600 mm x 380 mm x 440 mm

### Item Number

SAFE® 96 XT:	CDC-MC-12CH-XT-DD
SAFE® 96 IT:	CDC-MC-12CH-IT-DD
SAFE® 48 XT:	CDC-MC-8CH-XT-DD
SAFE® 24 XT:	CDC-MC-6CH-XT-DD

### Order Information



SAFE® CAP MULTI CAP DD

# SAFE® CAP 96 CHANNEL DD

## Automated 96-Channel Capper/Decapper

- Fully-automated 96 channel premium capper/decapper
- Process a full rack of tubes
- Caps can be hold or placed on a cap rack
- Can be operated as an integrated and standalone device
- Touchscreen panel provides easy navigation through the system
- Capping/Decapping time respectively approx. 50 seconds
- Latest cap driver technology: Cap drivers with spring-loaded metal balls optimally adapt to the caps and permit 100% leak-tight and material-saving sealing of the tubes without tilting
- Innovative and low-maintenance rack-to-head technology: It is not the complex driver head moves to the rack, but the rack is lifted to the head
- Automated height detection
- Automated rack barcode recognition
- Very small footprint 408 x 234 mm
- Height 388 mm

### Item Number

SAFE® 96 XT:

SAFE® 96 IT:

CDC-96CH-XT-DD

CDC-96CH-IT-DD

### Order Information



SAFE® CAP 96 CHANNEL DD

# SAFE<sup>®</sup> CAP SEAL AUTOMATIC

## Semi-automated Push Cap Sealer

- Semi-automated 96 channel sealer for push caps (only for internal threaded tubes)
- One process seals a complete SBS rack with push caps
- Variable rack heights available

Item Number

C-96CH-IT

Order Information



SAFE<sup>®</sup> CAP SEAL AUTOMATIC

# SAFE® CAP SEAL MANUAL

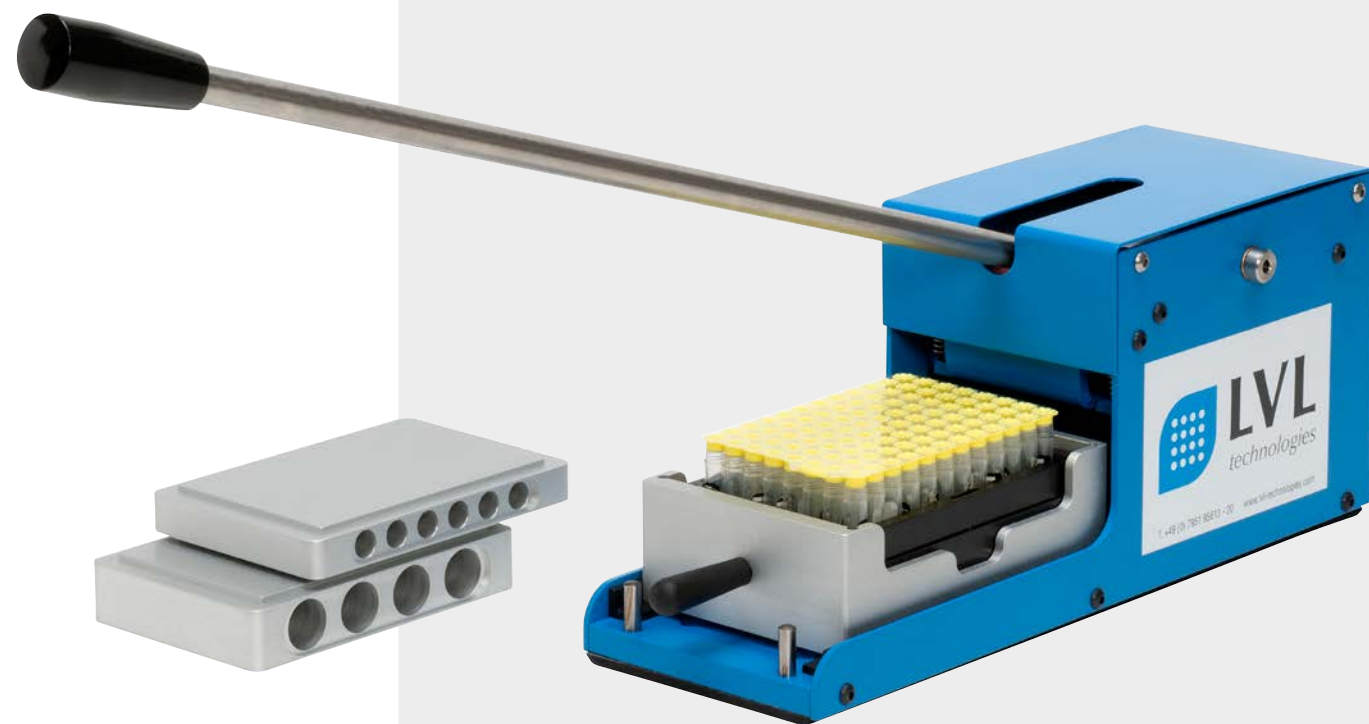
## Manual Push Cap Sealer

- Manual 96 channel sealer for push caps (for internal and external threaded tubes)
- One process seals a complete SBS rack with push caps
- Variable rack heights available

Item Number

CM-96CH-XT

Order Information



SAFE® CAP SEAL MANUAL



# SAFE® CAP DESEAL MANUAL

## Manual Push Cap Desealer

- Manual 1/8 channel desealer for push caps

Item Number DC-8CH-M

Order Information



SAFE® CAP DESEAL MANUAL

# SAFE® CAP FOIL SEAL

## Automated Heat Sealer with Integrated Laser Cutting

- Fully-automated heat sealing and laser tube cutting system
- Designed for SAFE® tube racks
- Aluminium foil allows storage at temperatures down to at least  $-80^{\circ}\text{C}$
- Laser cutting for 96 tubes, in single rows or columns only
- Customisation of applications and cut profiles upon request (circular or square)
- Tube racks can be pre-scored, leaving minimal seal thickness to reduce tip/probe piercing pressures
- Tubes can be individualised to allow random access in any format. This also allows seal or cut-only processing
- Non-adjustable tube rack heights ranging from 7 to 48 mm
- Inbuilt touch panel, PC-based, GUI-controlled
- Also available as integrated version
- Plates can be re-sealed and re-pierced multiple times
- Minimal heat transfer from laser
- Uses latest fibre laser technology for long process life
- Runs with compressed air control system (5.5 bar at 70 LPM)
- Dimensions: 468 mm x 655 mm x 722 mm

Item Number

CHS-96CH-DD

Order Information

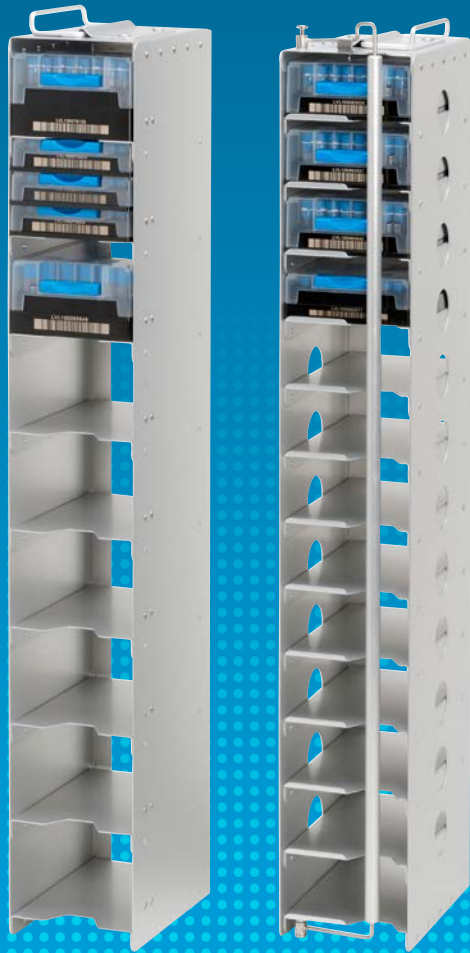


SAFE® CAP FOIL SEAL

9

# Instruments: SAFE<sup>®</sup> ACCESS

Simple Accessories that Make Life Easier



# SAFE® ACCESS TUBE PRESENTER

## Manual Tube Presenter

It is not unknown, under the busy everyday conditions in the lab, for the wrong tube to be inadvertently removed from the tightly packed SBS / CRYO rack. D5 quickly turns into E6. Even if the error is detected during the scan, the process flow is interrupted. However, even the careful selection of the tube to be removed can become strenuous in the long run.

The LVL tube presenter is a simple tool for the processing and checking of individual samples. Simply insert the single pin into the appropriate position, place the rack on it and the protruding tube can be safely and easily removed. The column pin can be used for entire columns.

### Item Number

SAFE® 96:

SAFE® 48:

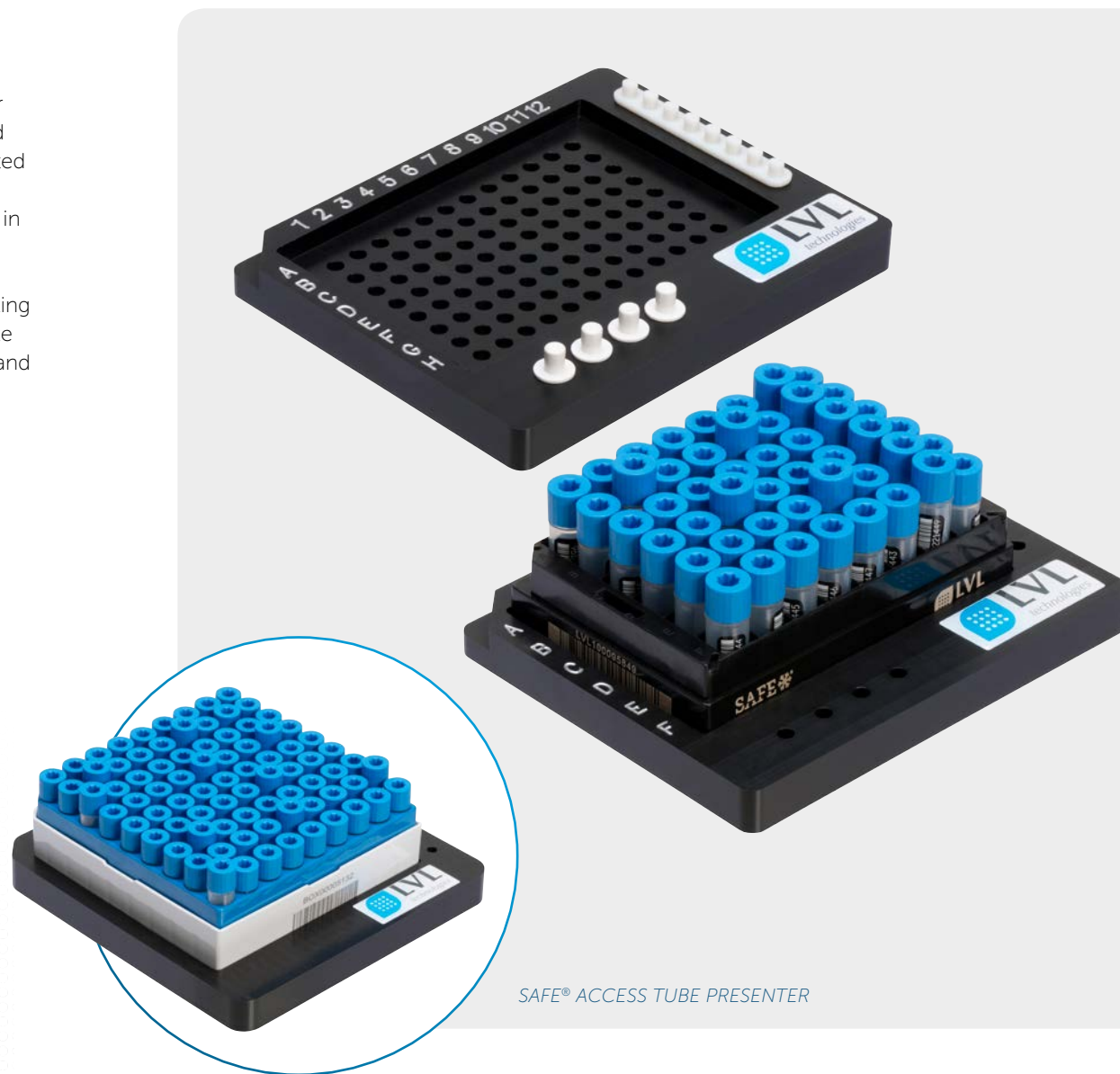
SAFE® CRYO:

TP96

TP48

TP81

### Order Information



SAFE® ACCESS TUBE PRESENTER

# SAFE<sup>®</sup> ACCESS TUBE PICKER

## Semi-automated Tube Picker

- Fast and reliable tube picking from 96 SBS racks
- Works with frozen and thawed tubes
- Generate picklists externally in other software applications, or create a template using the own software
- Can be connected to a 2D barcode scanner for tube confirmation and for generating picklists directly from the tube barcodes
- 1D scanner for rack barcode included as standard
- Tubes can be picked from a single rack or a picklist can be set up to select tubes across multiple racks
- Picklist import file formats are Excel, Text, JSON and XML
- Operating system on host PC = Windows 7, 8, 10
- Dimensions: 300 mm x 300 mm x 450 mm

Item Number

TPI96

Order Information



SAFE<sup>®</sup> ACCESS TUBE PICKER

# SAFE® ACCESS DEFROST ROLLER SBS

## Manual Defrost Roller

The formation of ice on the bottom of the tubes can make the reading process difficult. This is especially true, if the samples are stored in the nitrogen gas phase. So that the 2D codes can be read quickly in such cases, it not only requires a good reader but also the rapid removal of ice from the bottom of the tube.

The defrost roller is the perfect accessory for this purpose. Two rollers are required for optimal application. The reservoir of the first roller is filled with an ice dissolving liquid, preferably isopropanol or ethanol. Contact with this roller dissolves the ice, while the second roller is used for drying. This approach will facilitate the checking of samples.

Item Number

DFR2-SBS

Order Information



SAFE® ACCESS DEFROST ROLLER SBS

# SAFE<sup>®</sup> ACCESS TUBE REFORMAT 96

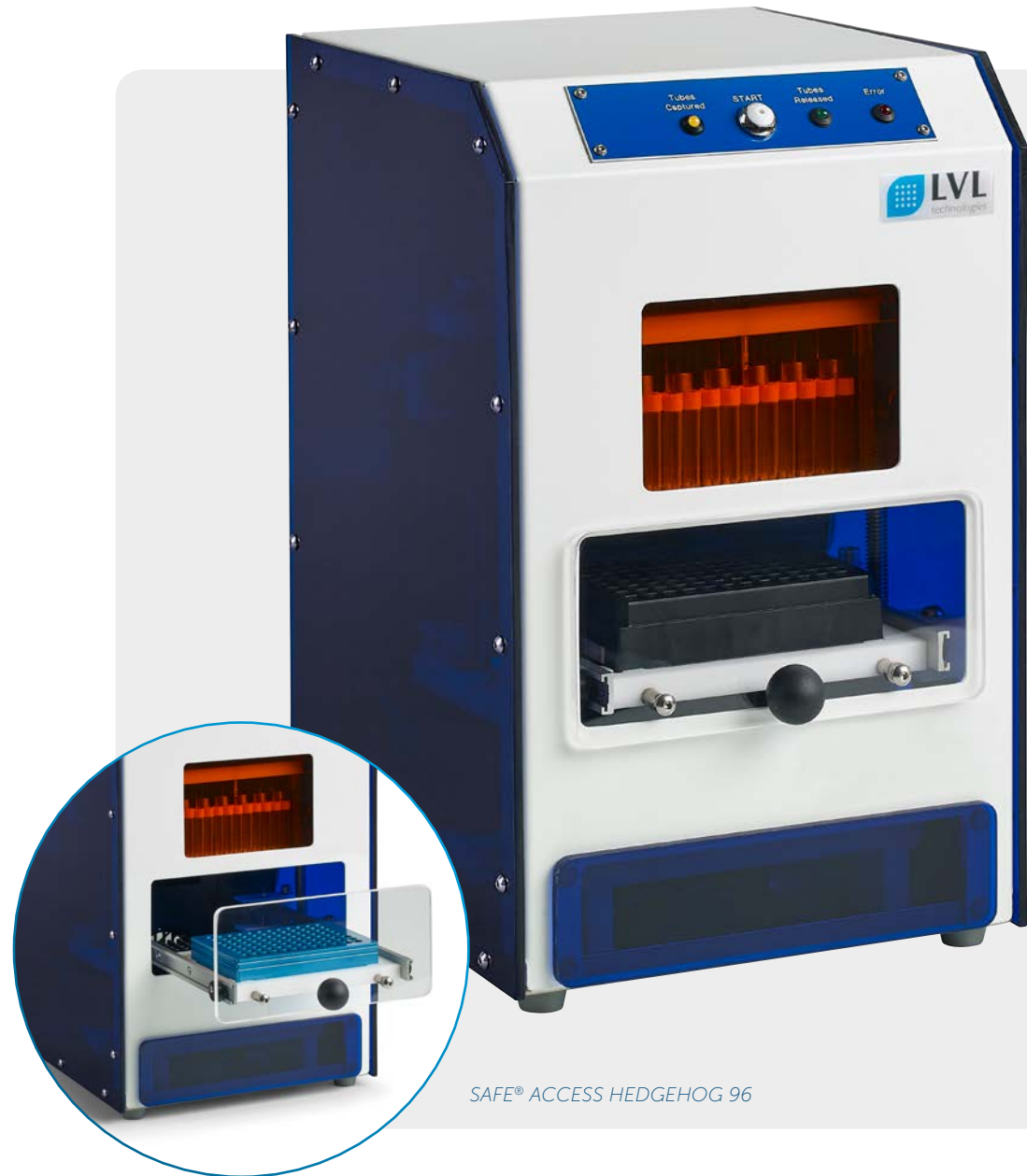
## Automated Tube Carrier

- Fully automated tube carrier
- Designed for the bulk transfer of sample tubes from a filled SBS/ANSI 96 tube rack to an empty rack
- TUBE REFORMAT 96 works with most tube racks
- The contents of the rack (containing 1 to 96 tubes) can be transferred to the same locations in the receiving rack at a rate of approximately 1 transfer per minute
- Easy to operate
- Small footprint
- Dimensions: 245 mm x 295 mm x 388 mm

Item Number

RF96

Order Information



SAFE<sup>®</sup> ACCESS HEDGEHOG 96

# SAFE<sup>®</sup> ACCESS METAL FRAMES

## Metal Frames for SBS and CRYO Racks

LVL offers individually manufactured metal frames for sample storage in freezers and LN2 tanks for the optimum storage of tube racks whether in the SBS or CRYO format. These customer-specific solutions guarantee the optimum use of available space, taking the existing infrastructure into account. We can, of course, also take charge of configuration for new devices. Get in touch - we will create a customised product for you.

Order Information



SAFE<sup>®</sup> ACCESS METAL FRAMES



# SAFE® STARTER PACKS

Your Low Bud Start into the World of 2D Sample Storage

Our SAFE® starter packs are an excellent, cost-efficient entry level product for automated sample archiving.

From the scanner to a capper/decapper through to a selection of 2D coded tube racks, our starter packs contain everything that is required for getting started with automated sample archiving.

The starter packs are available as standard in the following three designs and packaging sizes:



# SAFE® STARTER PACK S

- 10 SBS Racks (960 Pre-capped Tubes)
- Single Tube Scanner  
SAFE® READ Single Tube
- 1 Channel Single Tube Capper / Decapper / Picker

Item Number

STP-S

Order Information



# SAFE® STARTER PACK M

- 50 SBS Racks  
(4.800 Pre-capped Tubes)
- Single Tube Scanner  
SAFE® READ Single Tube
- SBS Rack Scanner  
SAFE® READ Single Express
- 1 Channel Single Tube Capper /  
Decapper / Picker

Item Number

STP-M

Order Information



# SAFE® STARTER PACK L

- 50 SBS Racks  
(4.800 Pre-capped Tubes)
- Single Tube Scanner  
SAFE® READ Single Tube
- SBS Rack Scanner  
SAFE® READ Single Express
- Semi-automated 8 Channel Capper /  
Decapper SAFE® CAP 8 Channel HH
- 1 Channel Single Tube Capper /  
Decapper / Picker

Item Number

STP-L

Order Information



# 11 SAFE<sup>®</sup> PRODUCTION

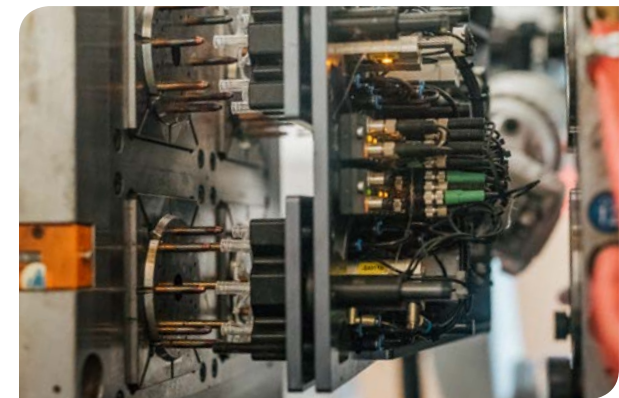
Clean, Quality Controlled and Highly Automated

The entire SAFE<sup>®</sup> product line is manufactured under cleanroom conditions and in an ISO 9001 certified manufacturing facility in the European Union. Only the most modern and high-precision injection moulding machines (made in Germany), tools and high-power lasers are used in production. The further processing is mostly fully automated. Highest

quality standards in the selection of the required raw materials (Medical Grade USP VI) and the assurance of unique coding as well as various test procedures for checking the leak-tightness of the tubes, but also with regard to leachables and extractables guarantee our customers a premium product for the secure long-term storage of their samples.



*Production Room with Injection Moulding Machines*



*32 Cavity Mould for Injection Moulding of LI 1000 Tubes*



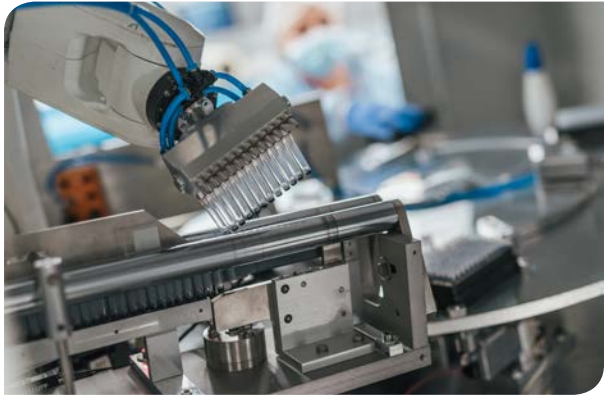
*2-Component Moulding for XT Screw Caps*



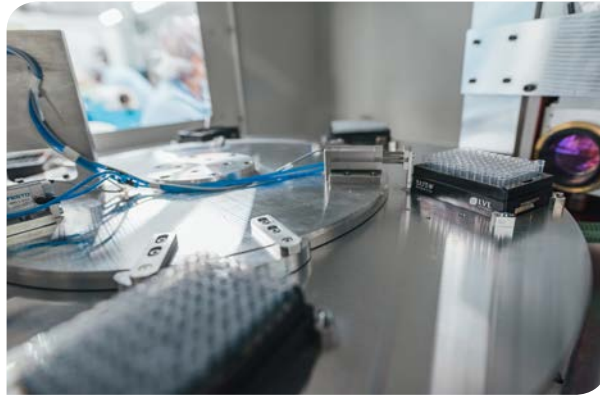
*Transfer of Tubes from Injection Moulding Machine to Clean Room – Single Cavity Quality Control by an Automated Gripper Arm*



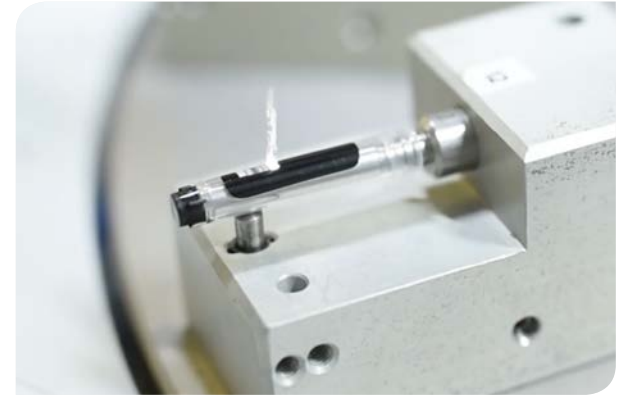
*Clean Room ISO 8 Standard*



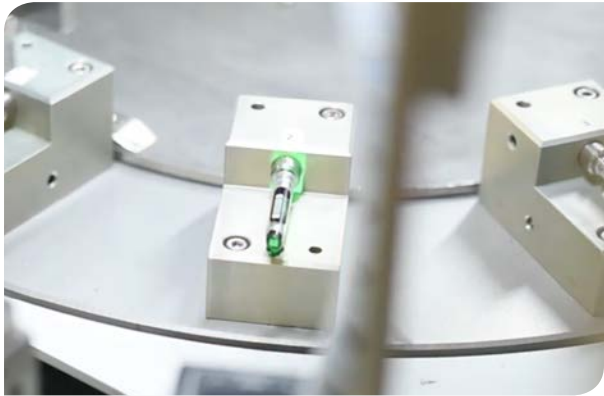
*Automated Pick & Place for Tube Racking*



*Triple Lasering of Filled Tube Racks*



*Single Tube Side Code Laser Etching*



*Single Tube Side Code Quality Control*



*Automated Pick & Place for Cap Racking*



*Automated Capping*



*Manual Quality Control*



*Final Rack Scanning, Code Recording and Quality Control*



*Sterile Packaging and Transfer for Delivery*

# SAFE® AREAS OF APPLICATION



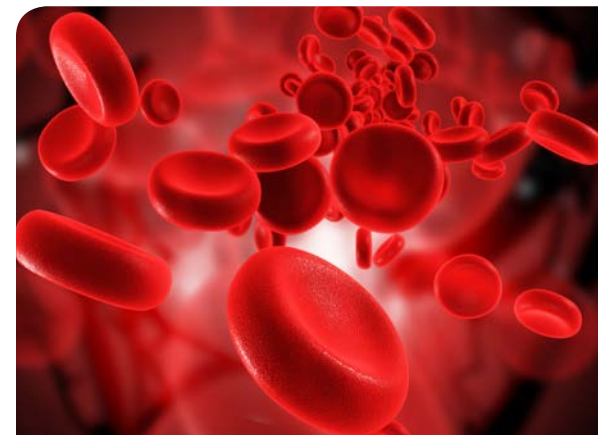
## Biobanking

The long-term storage of human as well as animal and plant-based biomaterials probably comes closest to what is generally understood as biobanking. In contrast to epidemiological and clinical studies, this type of storage is normally used in research projects, in which the research objectives are still largely undetermined at the time of sampling. This context often means that biobanks are often tied to institutes and centres for clinical chemistry and laboratory medicine of large hospitals and university hospitals. Biomaterial samples such as blood and urine, which were collected for routine diagnostic examinations, are transferred to long-term storage for research purposes.



## Epidemiological Studies

Epidemiological studies are performed to determine the frequency, distribution and causes of diseases. This means that the relevant influencing factors are examined in addition to the diseases. For example, the goal of the largest local health study of the world is intended to help understand the complex network of interactions between the environment, biology, genetics and lifestyle that underlie diseases. For this purpose, the risk factors for the most frequent illnesses such as heart attack, atrial fibrillation, stroke or dementia are identified, by investigating the influences of genetics, pre-existing conditions, lifestyle and environment on human health. Many epidemiological studies in Europe, Asia, Africa and North America use SAFE® for their samples.



## Transfusion Medicine

Blood products are classed as medical products in many countries, which is why their manufacture is subject to strict guidelines. This means that a small portion of the blood from donors must be stored for several years after the required serological tests and infection marker screening so that the blood donation can be excluded as a cause in the case of an infection of the blood recipient. 2D coded tubes are the method of choice for these retention samples due to their storage safety, clear identification and space-saving size.

However, the tubes from the SAFE® product line are also suitable for the creation of a research-based biobank on the basis of donor blood.



## Compound Management

Compound management and compound libraries collect and store chemical substances that are used for high-throughput screening, for example in the areas of small molecule drug discovery and agriculture. These valuable samples, which, depending on the company, can number in the millions, must not only be stored in a controlled environment but must also be rapidly retrievable. Furthermore, the containers and their coding to be used must be resistant against organic substances. Pharmaceutical companies all over the world trust SAFE®.



## Sequencing Kits, Oligos and more

Whether for genomic sequencing kits, oligonucleotides or other synthetic chemicals – more and more providers are choosing 2D coded tubes as the solution for small samples logistics. Due to the possibility of isolating samples, the sealability and traceability of the tubes, 2D coded tubes such as SAFE® are a far superior alternative to conventional deep well plates. Furthermore, if automation is being considered, the 96 SBS format stands out from all other micro-tubes.



## Forensics

In certain countries, ensuring that DNA samples are properly archived is also becoming an increasingly important issue in the field of forensics. More than in any other field, forensic work requires samples to be identified with complete confidence. Low volume SBS format tubes are ideal for forensic applications due to the small sample volumes involved and the high level of automation. The XSX 200 and SX 300 are therefore ideal tubes for storing DNA for forensic purposes.



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