LVL
technologies

SAFE®
Store Aliquots For Ever

2D Long-term Sample Storage

for Biobanking, Compound Management and more

LVL123456789

LVL123 456789

SAFE ❄ ®
Store Aliquots For Ever

Contents

1 What Really Matters

Biobanking, compound management, cryopreservation, population studies, transfusion medicine – the possible applications for high-quality, long-term storage of bio-materials in the microlitre scale are growing continually.

But if you store large quantities of small samples in the medium to long term for purposes of research and diagnosis, you generally have to deal with various requirements regarding the sample container to be used – from handling to storage through to the follow-up of the respective sample. The overriding priority is the best possible conservation of sample quality and quantity.

This means that three things need to be guaranteed for the samples to be stored: security, identifiability and space-saving storage. In addition, if automated processability is used in the laboratory, there is no better alternative for modern sample storage.


Handling

- Easy removal from sample container
- Problem-free aliquoting, even when using automated laboratory systems
- Minimum risk of cross-contamination
- Rapid opening and closing of containers
- Samples reliably assigned without need for labelling
- Quick and error-free identification of the specified coding
- Optional identification possibility with the human eye

Storage

- Thermostability of the containers and receptacles
- Space-saving storage
- Problem-free transfer to stores, even with automated storage systems
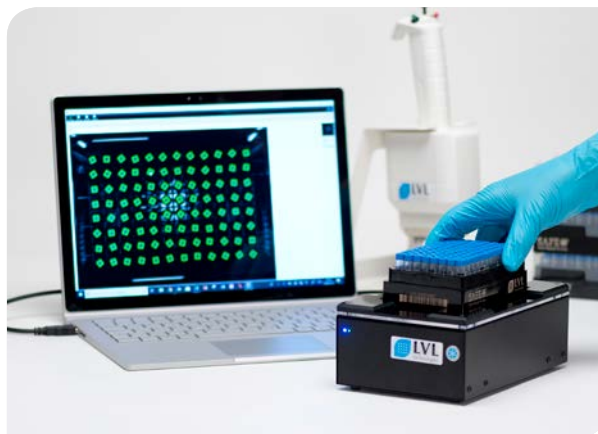
Traceability

- Maximum code security
- Unique coding
- Optimal legibility even at cryo-temperatures
- Optional code redundancy

Sample Quality and Quantity

- Best possible sealing of the selected closure option at cryo-temperatures and room temperature
- Best possible sealing during transport under negative pressure ratios
- High purity of the sample container
- Lowest possible concentration of bioactive compounds in the plastic used

Once these criteria have been verified, the potential user is faced with the following questions:

- Is the price of the containers in proportion to the value of the sample and the other costs associated with storage?
- What delivery times must be allowed for?

- Are customer-specific wishes taken into account?
- Are there any additional costs?

This brochure aims to provide you with a preliminary overview of the solutions that LVL technologies offers with the SAFE® product line for modern sample storage. Since this may not answer all of your questions, please give us a call. We are always here for you!

SAFE® - Store Aliquots For Ever

SAFE® 2D tubes from LVL technologies offer the greatest possible safety, automation capacity, flexibility and efficiency. In combination with attractive pricing, we have already convinced many customers all around the world, including in the following areas, to rely on SAFE® in the long-term:

- Biobanking
- Epidemiological studies
- Clinical trials
- Cohort studies
- Transfusion medicine
- Compound management
- Forensics
- Kit manufacturing
- Food industry

What are the technical features of SAFE® that lead to it being used in so many applications?


Leak-tightness

When launched, even the IT 96 internal screw tubes were extremely innovative: As a manufacturer, LVL dispenses with the traditional O-rings to seal the tubes and screw caps. The insecure positioning of the movable O-rings in the cap is not compatible with our understanding of sample safety. Instead, LVL uses a TPE compression, which forms an indissoluble unit with the polypropylene of the screw cap in the two-component process. The result is that the leak-tightness of the tubes was tested multiple times with very good results, inter alia, in the international standardised IATA test. What's more, the construction of the closely interlocking threads prevents the frequently observed overwinding of the screw connections in combination with the TPE sealing, particularly in manual caps without a firmly defined torque.
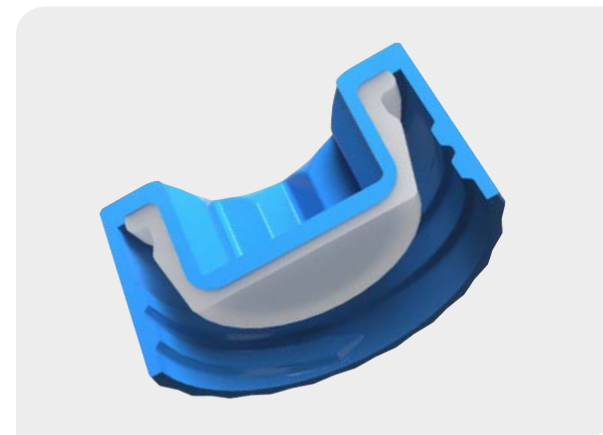
This philosophy was also rigorously pursued with the XT 96 tubes with external threads. Here too, LVL was the first and still is the only manufacturer not satisfied with a single-component sealing. The patented 2-phase TPE compression enables a leak-tightness that is considered unmatched for microtubes even to this day. The double phase-sealing is a particularly innovative feature. While closing, the first contact between the lateral edge of the tube and screw cap guarantees the seal against liquids (liquid sealing), the contact of the screw connection with the upper end of the tube edge minimises the ingress and leakage of gases (vapour sealing).
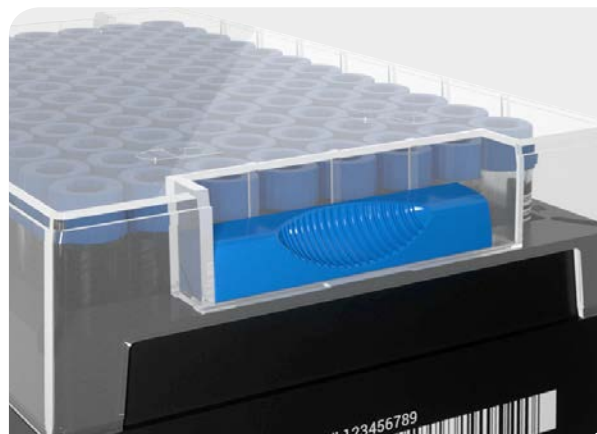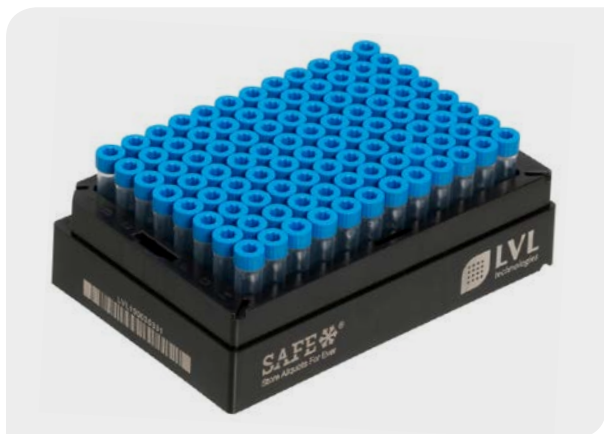
Stability

The stability of the tubes and racks appears to be an obvious prerequisite; however in practice there are often deviations that can affect the storage process or even result in the loss of samples. SAFE® 2D tubes have an enlarged wall thickness for greater stability during the freezing process or in case of repeated freezing cycles. They are dimensionally stable, which is particularly important for picking in the automated storage systems. The SBS and CRYO racks for the storage of tubes are not just made of robust polypropylene or polycarbonate, they are also less malleable, and therefore very stable, due to their geometric form. SAFE® 2D tubes and racks are suitable for storage at temperatures ranging from -196°C (Vapour Phase Liquid Nitrogen) to +40° C.

SAFE® offers two different rack lid options with different fastening options (slide lock and push lock).

Barcode and Human Readable

Data Matrix Code

Barcode and Human Readable

Orientation Code as Data Matrix

Identifiability

If you switch to 2D coded tubes for the storage of samples, you must be able to rely on the fact that the samples are not just faster to identify, but also that identification is much more reliable. SAFE® 2D tubes offer impressive special features. Firstly, all tubes are produced in the SBS 96 format using a patented wet-on-wet process. This means that the black components, which carry the 2D code (data matrix), cannot be separated from the tubes either through mechanical, chemical or thermal influences. The 12-digit 2D code on the base of the tube is engraved using a high performance laser (laser etching) and thus, is highly resistant to chemical and thermal influences.

Safety also means that each code must be unique. Several automated and manual mechanisms in production ensure the required uniqueness. The final quality control in particular immediately triggers an alarm: After coding, each rack and each tube are scanned for legibility (if a tube cannot be read, the entire rack is rejected). Immediately after scanning an automated duplicate check with all previously assigned codes is started in the background. A duplicate coding is registered at this point at the latest.

LVL offers a unique, individual range of numbers without additional costs for a minimum order of 500 racks (e.g. 3 letters and 9 digits). If desired, this service can also be combined with the sending of an Excel file containing the codes of all delivered racks and tubes.

By default for all XT 48 tubes, optional for all others – a code on the side of the tube (legible to the human eye and/or as a 1D code) offers additional security and the opportunity to identify which work places have no 1D scanner or only one. Similarly, on the base of the tubes there is space for an additional code that is legible to the human eye.

All tube racks are lasered with an 1D code on the narrow side of the rack and a 2D orientated code on the bottom of the rack.

Finally, LVL offers screw caps in more than 12 different colours so that it is possible to roughly differentiate between different types of samples.
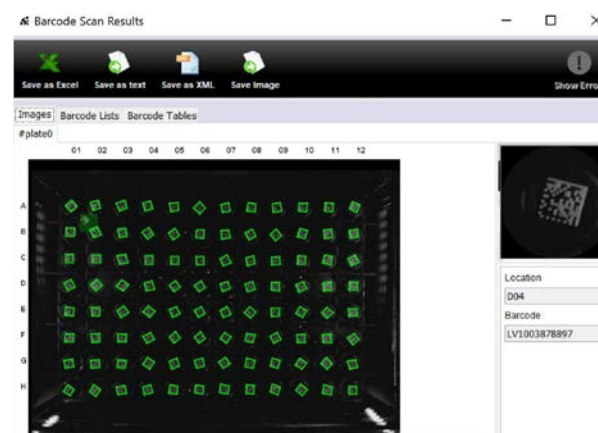
Efficiency

It goes without saying that SAFE® 2D tubes are – particularly in the XT/IT 96 version – innately efficient because it is possible to store significantly more samples in less space compared to classic primary or warehouse tubes. However, the XT 96 tubes are particularly efficient because of the closure with external thread, which makes them up to 30 percent shorter than tubes with an internal thread. The SAFE® SX 300 in particular – with an effective working volume of 300 µl and its minimal height of 19.1 mm (incl. screw cap) – is a real miracle of compactness. And the XSX 200 is even more compact with a height of only 15.5 mm.

Compatibility and Automation Capacity

An increasing proportion of used 2D tubes are processed partly or wholly automatically. This relates to pipetting and aliquoting, decoding, screwing and unscrewing and storage. SAFE® 2D tubes are constructed and prepared for this exact purpose. The following features ensure compatibility and automation capacity:

- SBS format of the tube racks
- Racks can be stacked
- 1D bar code on different rack sides, optional
- 2D orientation code on the base of the rack
- 2D codes of the tubes in the ECC200 standard and decodable using current scanners
- Tubes can be locked in the rack ready for screwing
- Screw caps constructed for the bit receptacle with semi-automated and fully automated cappers/decappers
- Screw caps can also be delivered in the SBS cap rack, optional
- Compatibility (e.g. picking) guaranteed with all current automated storage systems (certificates can be requested)

Customized Code

Flexibility and Customisation

SAFE® 2D tubes are an innovative high-tech product. This is also reflected in our efforts to take the individual wishes and requirements of our customers into consideration. In a nutshell, this means for 500 or more racks, for example, we will provide the following customisation requirements without additional costs:

- Unique range of numbers for racks and tubes (maximum 12 digits)
- Laser engraving of the SBS racks on all four sides according to customer specifications (e.g. logo, name, label fields)
- Free colour selection of the screw caps (pre-screwed or in the cap rack) also mixed column by column

Do you have special requirements? Get in touch!

Purity

SAFE® 2D tubes are manufactured under clean room conditions ISO 8. SAFE® 2D tubes are certified and free of DNA, DNase, RNase and endotoxins. Furthermore, we offer the added option of sterilisation and recommend this in forensics and for the storage of cells. Due to the use of pure, medical grade homopolymers, it was possible to achieve very good test results even when examining extractable, organic substances and metal ions.

Work Volume

Users are actually interested in the usable work volume rather than a theoretically available overall volume. We took this factor into account with the introduction of the tubes with external threads. The work volume, based on tubes with screw thread connectors, is quickly identified by the product designation. For the SX 300, for example, this means that it is possible to fill 300 µl into the tube and store it in consideration of the expansion that occurs when stored at very low temperatures.

*SX 300*
= Real Working Volume 300 µl

SAFE® 96 XT

2D Coded Tubes with External Thread in 96 SBS/ANSI Rack

Especially when it comes to sample storage in automated storage systems, for reasons of costs, it is essential that the largest possible quantity of samples can be stored in a smallest possible space.

This is where tubes with external threads have the edge over tubes with internal threads due to their lower height. The SAFE® SX 300 in particular – with an effective working volume of 300 μl and its minimal height of 19.1 mm (incl. screw cap) – is a real miracle of compactness. And the XSX 200 is even more compact with a height of only 15.5 mm.

With patented two-phase TPE compression

Another advantage of the external thread tubes: Depending on the application, the risks of cross-contamination can be minimised. Furthermore, there is no need to accept the disadvantages in terms of leak-tightness compared to the conventional solutions with internal threads due to the special, patented two-phase TPE compression. On the contrary, due to the two contact phases for the sealing of the liquid phase and a potential gas phase, this screw cap results in the very best sealing characteristics for safe, long-term sample storage.

Vapour Sealing

Liquid Sealing
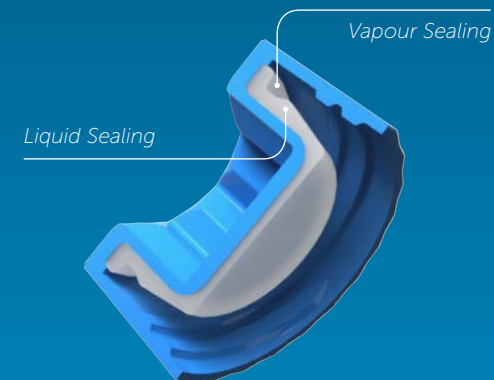
Tri-Coded Tubes with External Thread

External Thread with Double Start Thread for Maximum Rotation of 180°

Manual Capper / Decapper / Picker with MX 500 Tube

XSX 200

Working Volume	With Screw Caps	220 µl
	With Push Caps	220 µl
	With Heat Seal	250 µl
Type of Rack	Polycarbonat	
Type of Rack Lid	Slide Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Push Caps	-80°C
	With Heat Seal	-80°C
Standard Side Code Tube	N.A.	
Screw Caps	Pre-Capped	
	Stacked on SBS 96 Cap Rack	
	Bulk Ware	
Purity	Production Sterile (ISO 8)	
	Pre-Sterilized (Beta Radiation)	
Outer Diameter	8.65 mm	
Tube Height	Without Cap	14.6 mm
	With Screw Cap	16.0 mm
	With Push Cap	16.0 mm
Rack Height	Without Cap	15.1 mm
	Screw Capped Tubes	16.5 mm
	With Lid	22.3 mm

Rack   *Tube*

Technical Drawing

Standard Item Number   2DNC-X02-BL-NS-SLC-L

Order Information

SX 300 Mini

Working Volume	With Screw Caps	280 µl
	With Push Caps	280 µl
	With Heat Seal	310 µl
Type of Rack	Polycarbonate	
Type of Rack Lid	Slide Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Push Caps	-80°C
	With Heat Seal	-80°C
Standard Side Code Tube	(optional)	Human Readable
Screw Caps	Pre-Capped	
	Stacked on SBS 96 Cap Rack	
	Bulk Ware	
Purity	Production Sterile (ISO 8)	
	Pre-Sterilized (Beta Radiation)	
Outer Diameter	8.65 mm	
Tube Height	Without Cap	17.0 mm
	With Screw Cap	18.4 mm
	With Push Cap	18.4 mm
Rack Height	Without Cap	17.5 mm
	Screw Capped Tubes	18.9 mm
	With Lid	22.3 mm

Rack

Tube

Technical Drawing

Standard Item Number   2DNC-X028BL-NS-SLC-L

Order Information

SX 300

Working Volume	With Screw Caps	300 µl
	With Push Caps	300 µl
	With Heat Seal	330 µl
Type of Rack	Polycarbonate	
	Polypropylene	
Type of Rack Lid	Slide Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Push Caps	-80°C
	With Heat Seal	-80°C
Standard Side Code Tube	(optional)	Human Readable
Screw Caps	Pre-Capped	
	Stacked on SBS 96 Cap Rack	
	Bulk Ware	
Purity	Production Sterile (ISO 8)	
	Pre-Sterilized (Beta Radiation)	
Outer Diameter	8.65 mm	
Tube Height	Without Cap	18.2 mm
	With Screw Cap	19.5 mm
	With Push Cap	19.5 mm
Rack Height	Without Cap	18.7 mm
	Screw Capped Tubes	20.2 mm
	With Lid	22.3 mm

Rack

Tube

Technical Drawing

18.7   20.2   22.3
18.2   19.5   13.5   9.7
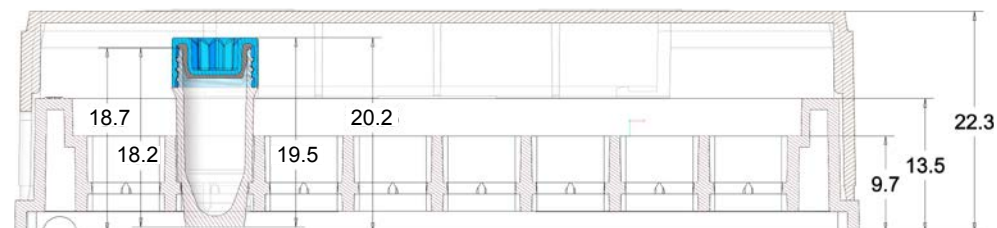
Standard Item Number   2DNC-X03-BL-NS-SLC-L

Order Information

MX 500

Working Volume	With Screw Caps	500 µl
	With Push Caps	500 µl
	With Heat Seal	530 µl
Type of Rack	Polycarbonate	
	Polypropylene	
Type of Rack Lid	Slide Lock	
	Push Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Push Caps	-80°C
	With Heat Seal	-80°C
Standard Side Code Tube	(optional)	1D and Human Readable
Screw Caps	Pre-Capped	
	Stacked on SBS 96 Cap Rack	
	Bulk Ware	
Purity	Production Sterile (ISO 8)	
	Pre-Sterilized (Beta Radiation)	
Outer Diameter	8.65 mm	
Tube Height	Without Cap	26.2 mm
	With Screw Cap	27.5 mm
	With Push Cap	27.5 mm
Rack Height	Without Cap	26.7 mm
	Screw Capped Tubes	28.0 mm
	With Lid	30.3 mm

Rack *Tube*

Technical Drawing

26.7 28.0
26.2 27.5
30.3
15
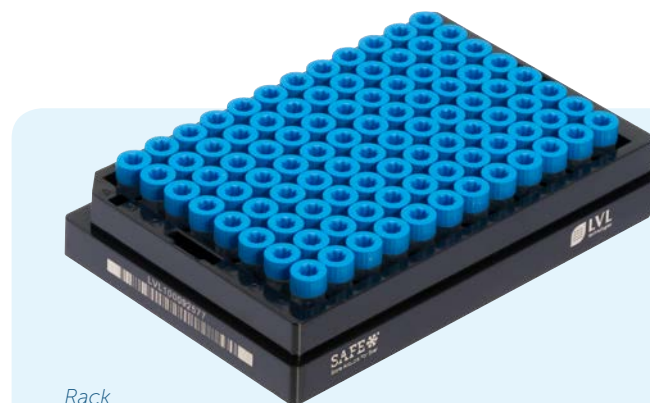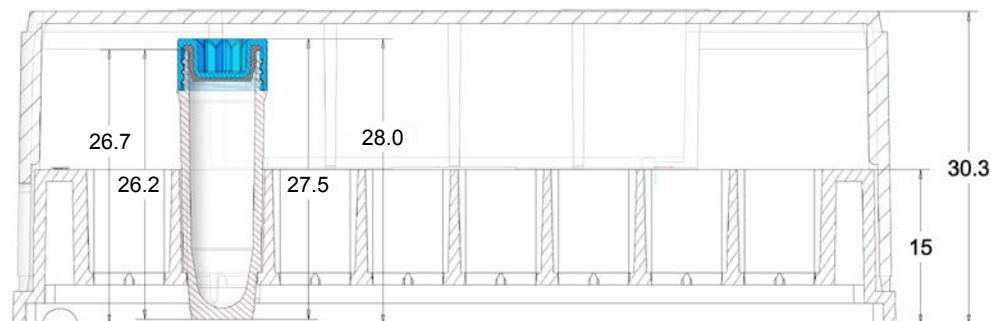
Standard Item Number 2DNC-X05-BL-NS-SLC-L

Order Information

LX 1000

Working Volume	With Screw Caps	1,000 µl
	With Push Caps	1,000 µl
	With Heat Seal	1,030 µl
Type of Rack	Polycarbonate	
	Polypropylene	
Type of Rack Lid	Slide Lock	
	Push Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Push Caps	-80°C
	With Heat Seal	-80°C
Standard Side Code Tube	(optional)	1D and Human Readable
Screw Caps	Pre-Capped	
	Stacked on SBS 96 Cap Rack	
	Bulk Ware	
Purity	Production Sterile (ISO 8)	
	Pre-Sterilized (Beta Radiation)	
Outer Diameter	8.65 mm	
Tube Height	Without Cap	44.3 mm
	With Screw Cap	45.6 mm
	With Push Cap	45.6 mm
Rack Height	Without Cap	44.8 mm
	Screw Capped Tubes	46.1 mm
	With Lid	48.3 mm

Rack

Tube

Technical Drawing

44.8
44.3
46.1
45.6
48.3
33
24
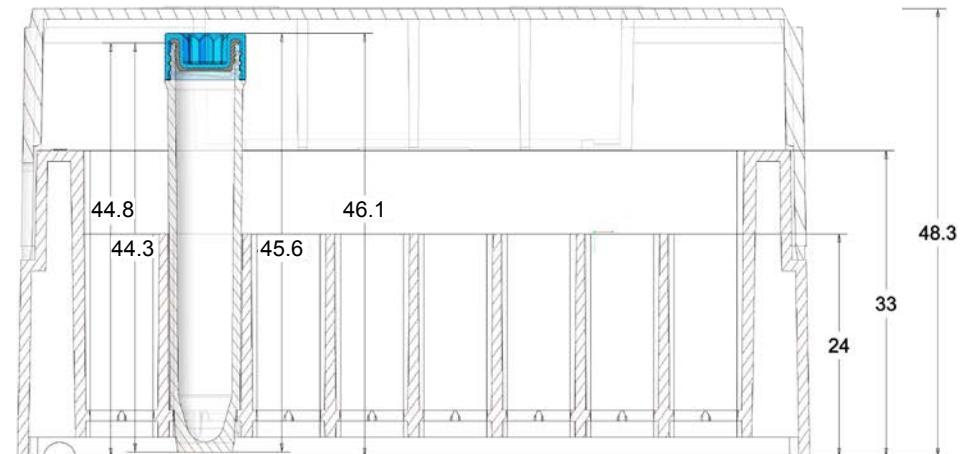
Standard Item Number   2DNC-X10-BL-NS-SLC-L

Order Information

Screw Caps XT (96/48/24)

Screw Cap for External Thread
Vapour Sealing
Liquid Sealing

Cap Rack 96 Sorted Colours

Cap Rack 48
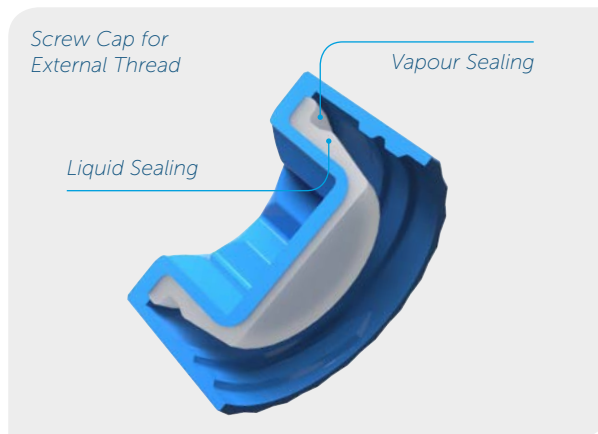
The patented 2-phase TPE compression enables an optimal leak-tightness. The double phase-sealing is a particularly innovative feature. While closing, the first contact between the lateral edge of the tube and screw cap guarantees the seal against liquids (liquid sealing), the contact of the screw connection with the upper end of the tube edge minimises the ingress and leakage of gases (vapour sealing).

In principle, screw caps are delivered in three different forms: pre-screwed, in a cap rack (SBS 96/48) or loosely in a bag.
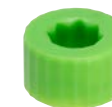
By default, LVL offers more than 12 different cap colours, which can also be mixed column by column for larger quantities.
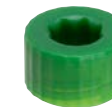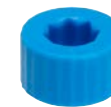
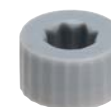GR Green
RAL 6001

BL Blue
RAL 5015

LI Lime
RAL 6018

BC Black
RAL 9004

YE Yellow
RAL 1021

GY Grey
RAL 7046

OR Orange
RAL 1028

WH White
RAL 9003

RE Red
RAL 2002

BR Brown
RAL 8004

PI Pink
RAL 4003

RS Signal Red
RAL 3024

VI Violet
RAL 4001

Push Caps 96

Push or septum caps are the cheaper alternative to screw caps. They are usually used if storage is limited to a few years, the storage temperature does not fall below -80°C and the samples only have to be stored and not shipped.

Through the - also automated - pressing of the caps and the subsequent removal of the foil, the 96 tubes are closed individually at the same time.

Also available as single row and column stripes.

*Rack LI 1000
with Push Caps*

*Rack MI 500
with Push Caps*

Push Caps Available in 9 Different Colours

SAFE® 96 IT

2D Coded Tubes with Internal Thread in 96 SBS/ANSI Rack

The injected TPE compression ring in the screw cap combined with the widened mouth of the tube and significantly improved sealing compared to the conventional screw caps with an O-ring. The screw cap cannot be overtightened, the permanently injected sealing ring cannot detach itself from the thread. The high screw cap is a big plus for manual handling.

SBS 96 Rack with Pre-Capped Tubes MI 500
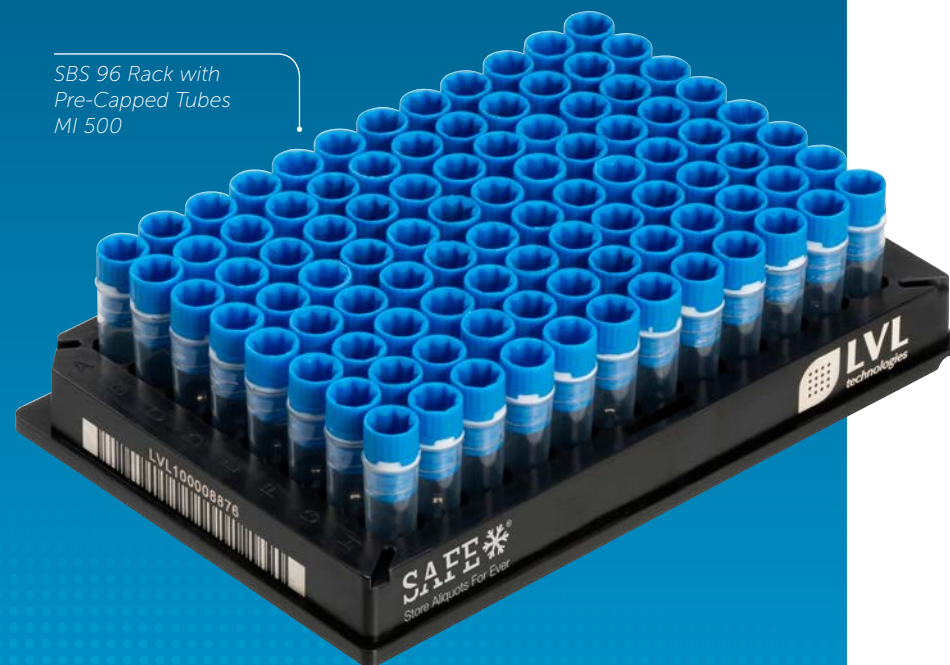
Tri-Coded Tubes with Internal Thread

Internal Thread with TPE-Sealing

MI 500

|		
Working Volume	With Screw Caps	480 µl
	With Push Caps	550 µl
	With Heat Seal	600 µl
Type of Rack	Polypropylene	
	Polycarbonate (for Push Caps only)	
Type of Rack Lid	Slide Lock	
	Push Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Push Caps	-80°C
	With Heat Seal	-80°C
Standard Side Code Tube	(optional)	1D and Human Readable
Screw Caps	Pre-Capped	
	Stacked on SBS 96 Cap Rack	
	Bulk Ware	
Purity	Production Sterile (ISO 8)	
	Pre-Sterilized (Beta Radiation)	
Outer Diameter	8.65 mm	
Tube Height	Without Cap	26.9 mm
	With Screw Cap	33.1 mm
	With Push Cap	28.0 mm
Rack Height	Without Cap	27.4 mm
	Screw Capped Tubes	33.6 mm
	With Lid	36.3 mm

Rack

Tube

Technical Drawing

27.4 26.9 33.1 33.6 36.3 15
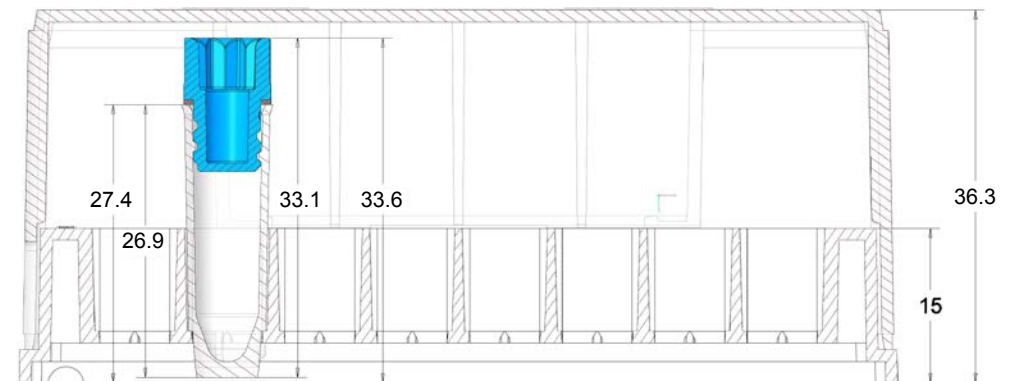
Standard Item Number   2DNC-I05-BL-NS-SLP-L

Order Information

LI 1000

Working Volume	With Screw Caps	1,000 µl
	With Push Caps	1,070 µl
	With Heat Seal	1,120 µl
Type of Rack	Polycarbonate	
	Polypropylene	
Type of Rack Lid	Slide Lock	
	Push Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Push Caps	-80°C
	With Heat Seal	-80°C
Standard Side Code Tube	(optional)	1D and Human Readable
Screw Caps	Pre-Capped	
	Stacked on SBS 96 Cap Rack	
	Bulk Ware	
Purity	Production Sterile (ISO 8)	
	Pre-Sterilized (Beta Radiation)	
Outer Diameter	8.65 mm	
Tube Height	Without Cap	44.8 mm
	With Screw Cap	51.2 mm
	With Push Cap	45.9 mm
Rack Height	Without Cap	45.3 mm
	Screw Capped Tubes	51.7 mm
	With Lid	54.3 mm

Rack   *Tube*

Technical Drawing

45.3   51.2   51.7   54.3
44.8   33   24
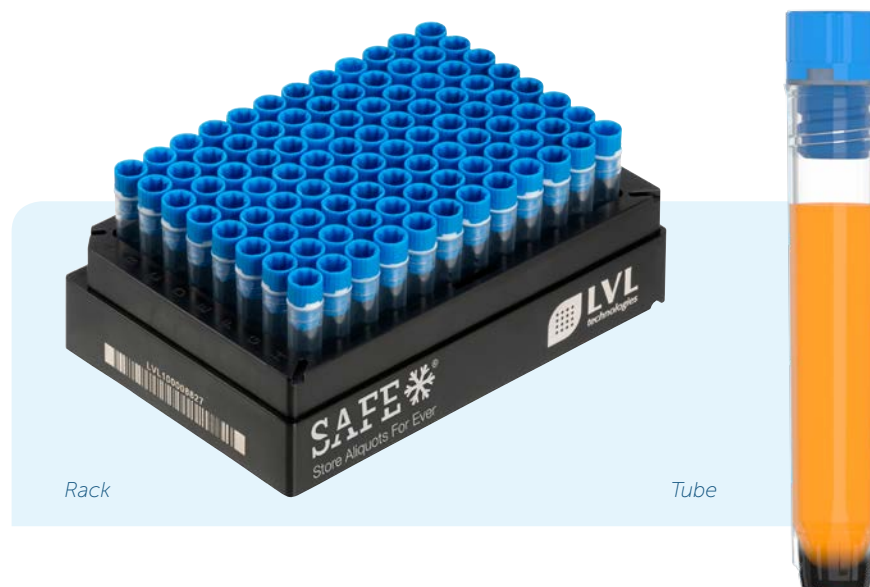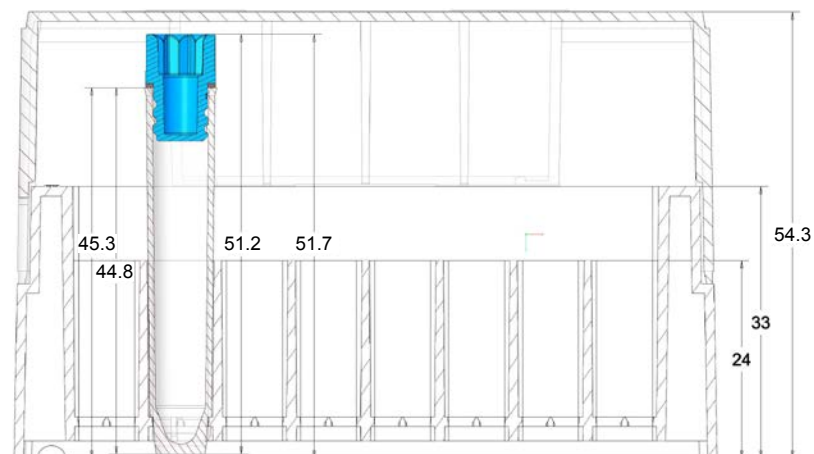
Standard Item Number   2DNC-I10-BL-NS-SLP-L

Order Information

Screw Caps IT

Screw Cap for Internal Thread

LI 1000 Tube with Screw Cap

In the case of screws caps for internal threaded tubes LVL uses a TPE compression, which forms an indissoluble unit with the polypropylene of the screw cap in the two-component process. The result: the leak-tightness of the tubes was tested multiple times with very good results, inter alia, in the international standardised IATA test. What's more, the construction of the closely interlocking threads prevents the frequently observed over winding of the screw connections in combination with the TPE sealing, particularly in manual caps without a firmly defined torque.

In principle, screw caps are delivered in three different forms: pre-screwed, in a cap rack (SBS 96) or loosely in a bag.

As standard, LVL offers more than 12 different cap colours, which can also be mixed column by column in the event of larger quantities.

GR Green
RAL 6001

BL Blue
RAL 5015

LI Lime
RAL 6018

BC Black
RAL 9004

YE Yellow
RAL 1021

GY Grey
RAL 7046

OR Orange
RAL 1028

WH White
RAL 9003

RE Red
RAL 2002

BR Brown
RAL 8004

PI Pink
RAL 4003

RS Signal Red
RAL 3024

VI Violet
RAL 4001

SAFE® 48 XT

2D Coded Tubes with External Thread in 48 SBS/ANSI Rack

The advantage of the SBS format compared with conventional cryo tubes in the cryo rack, is the inbuilt compatibility with automated processes. The SBS rack makes a changeover to an automatic sample distributor easy. An advantage of the external thread: Depending on the application, the risks of cross-contamination can be minimised. Furthermore, there is no need to ac-cept the disadvantages in terms of leak-tightness compared to the conventional solutions with internal threads due to the special, patented two-phase TPE compression. On the contrary, due to the two contact phases for the sealing of the liquid phase and a potential gas phase, this screw cap results in the very best sealing characteristics for safe, longterm sample storage.
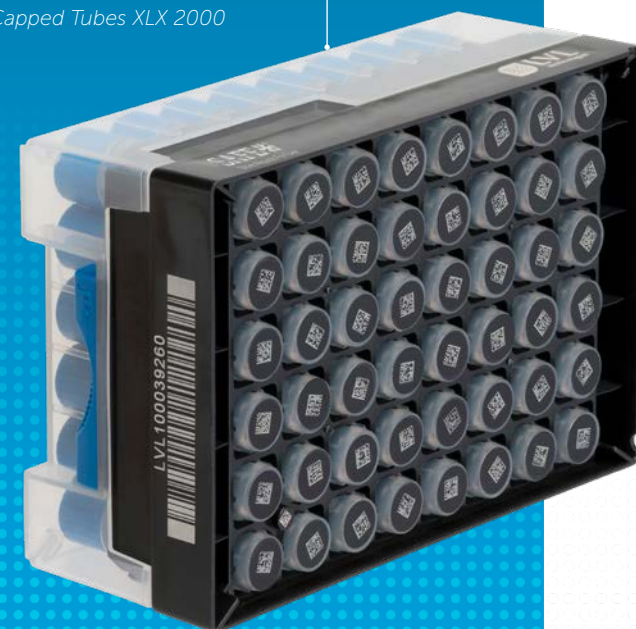
SBS 48 Rack with Pre-Capped Tubes XLX 2000

SBS 48 Rack with XLX 4000 Tubes

Tube Presenter SBS 48 with XLX 2000 Tubes

XLX 2000

Working Volume	With Screw Caps	2,000 μl
	With Heat Seal	2,000 μl
Type of Rack	Polypropylene	
Type of Rack Lid	Slide Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Heat Seal	-80°C
Standard Side Code Tube	1D and Human Readable	
Screw Caps	Pre-Capped	
	Stacked on SBS 96 Cap Rack	
	Bulk Ware	
Purity	Production Sterile (ISO 8)	
	Pre-Sterilized (Beta Radiation)	
Outer Diameter	12.80 mm	
Tube Height	Without Cap	44.2 mm
	With Screw Cap	45.5 mm
Rack Height	Without Cap	44.7 mm
	Screw Capped Tubes	46.0 mm
	With Lid	48.4 mm

Rack   *Tube*

Technical Drawing

44.7   46.0
44.2   45.5
48.4
27
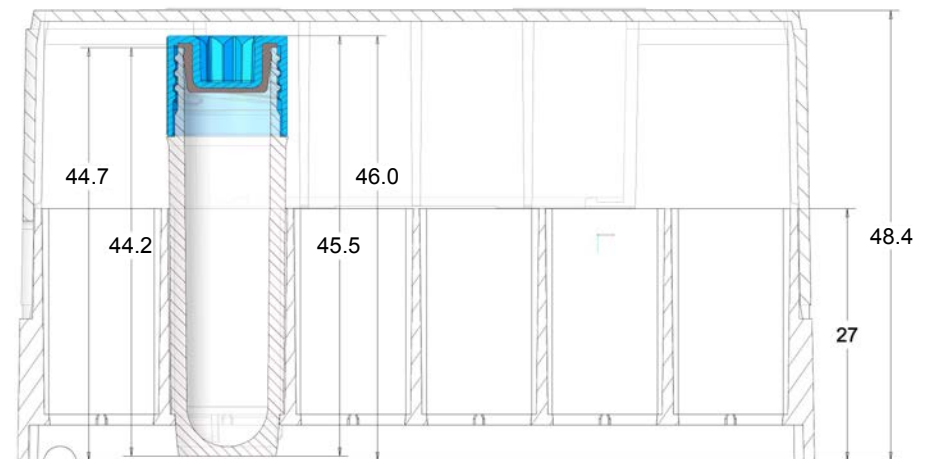
Standard Item Number   2DSC-X20-BL-NS-SLP-L

Order Information

XLX 4000

Rack

Tube

Working Volume	With Screw Caps	4,000 µl
	With Heat Seal	4,000 µl
Type of Rack	Polypropylene	
Type of Rack Lid	Slide Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Heat Seal	-80°C
Standard Side Code Tube	1D and Human Readable	
Screw Caps	Pre-Capped	
	Stacked on SBS 96 Cap Rack	
	Bulk Ware	
Purity	Production Sterile (ISO 8)	
	Pre-Sterilized (Beta Radiation)	
Outer Diameter	13.00 mm	
Tube Height	Without Cap	82.5 mm
	With Screw Cap	83.8 mm
Rack Height	Without Cap	83.0 mm
	Screw Capped Tubes	84.3 mm
	With Lid	87.0 mm

Technical Drawing

83.8
82.5
84.3
83.0
71.8
87.0
65.8
27.0
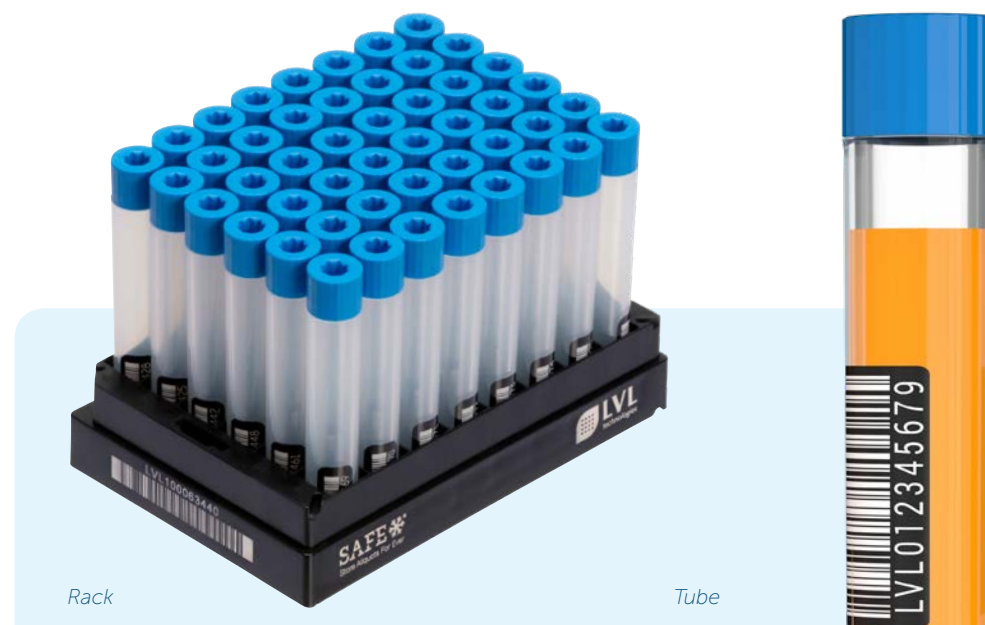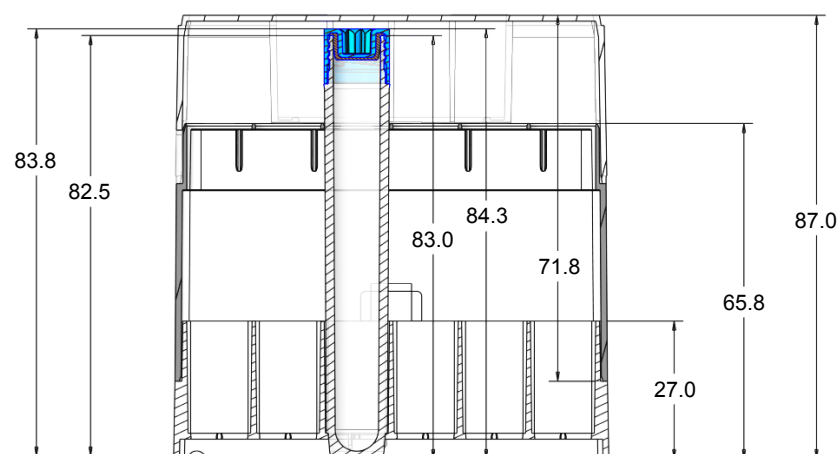
Standard Item Number 2DSC-X40-BL-NS-SLP-L

Order Information

SAFE® 24 XT

## 2D Coded Tubes with External Thread in 24 SBS/ANSI Rack

The 24 SBS format rounds off the lower end of the LVL technologies SBS product range. In addition to the well-established advantages of the SAFE® XT technology, which offers the lowest possible risk of contamination, the most efficient use of space and a patented two-phase compression seal, each tube is perfectly suited for the specific requirements of modern biobanking.

- XXLX 2000 — traditionally used as a tissue vial due to the low height and large diameter, but can also be used for fluids
- XXLX 4000 / XXLX 6000 — suitable for storing larger tissue samples and larger volumes with a reduced height & as reformatting storage tubes for frozen Legacy Samples (Cryo Tubes, EppiTM, SarstedtTM Micro Tube, Nunc® CryoTubes®, WHEATON® CryoEliteTM, and much more)
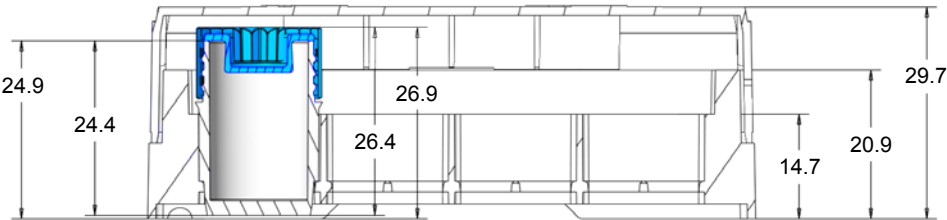- XXLX 8000 — for high volume storage requirements

XXLX 2000

Working Volume	With Screw Caps	2,000 µl
	With Heat Seal	2,000 µl
Type of Rack	Polycarbonate	
Type of Rack Lid	Slide Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Heat Seal	-80°C
Standard Side Code Tube	(optional)	1D and Human Readable
Screw Caps	Pre-Capped	
	Stacked on SBS 24 Cap Rack	
	Bulk Ware	
Purity	Production Sterile (ISO 8)	
	Pre-Sterilized (Beta Radiation)	
Outer Diameter	17.80 mm	
Tube Height	Without Cap	24.4 mm
	With Screw Cap	26.4 mm
Rack Height	Without Cap	24.9 mm
	Screw Capped Tubes	26.9 mm
	With Lid	29.7 mm

Rack *Tube*

Technical Drawing

24.9 24.4 26.9 26.4 29.7 20.9 14.7
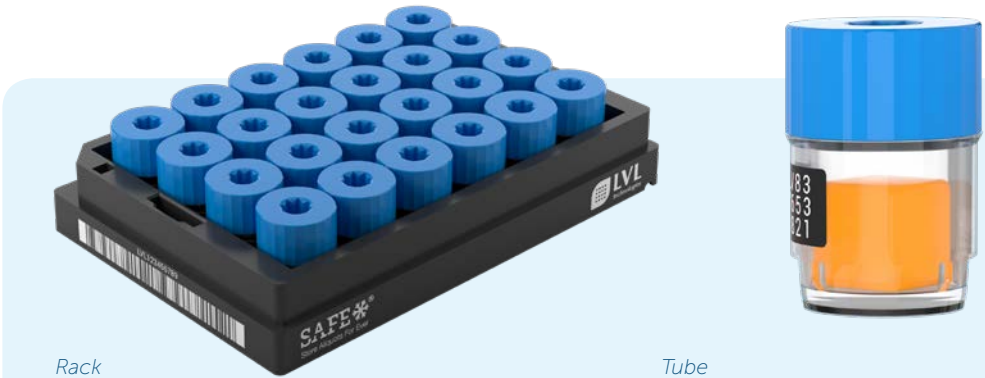
Standard Item Number 2DNC-XL2-BL-NS-SLC-L

Order Information

XXLX 4000

Working Volume	With Screw Caps	4,000 µl
	With Heat Seal	4,000 µl
Type of Rack	Polycarbonate	
Type of Rack Lid	Slide Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Heat Seal	-80°C
Standard Side Code Tube	(optional)	1D and Human Readable
Screw Caps	Pre-Capped	
	Stacked on SBS 24 Cap Rack	
	Bulk Ware	
Purity	Production Sterile (ISO 8)	
	Pre-Sterilized (Beta Radiation)	
Outer Diameter	17.80 mm	
Tube Height	Without Cap	39.0 mm
	With Screw Cap	40.9 mm
Rack Height	Without Cap	39.5 mm
	Screw Capped Tubes	41.4 mm
	With Lid	43.6 mm

Rack

Tube

Technical Drawing

43.6 · 41.4 · 40.9 · 39.5 · 39.0 · 20.9 · 14.7

Standard Item Number   2DNC-XL4-BL-NS-SLC-L

Order Information

XXLX 6000

Working Volume	With Screw Caps	6,000 µl
	With Heat Seal	6,000 µl
Type of Rack	Polycarbonate	
Type of Rack Lid	Slide Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Heat Seal	-80°C
Standard Side Code Tube	(optional)	1D and Human Readable
Screw Caps	Pre-Capped	
	Stacked on SBS 24 Cap Rack	
	Bulk Ware	
Purity	Production Sterile (ISO 8)	
	Pre-Sterilized (Beta Radiation)	
Outer Diameter	17.80 mm	
Tube Height	Without Cap	55.5 mm
	With Screw Cap	57.4 mm
Rack Height	Without Cap	56.0 mm
	Screw Capped Tubes	57.9 mm
	With Lid	60.4 mm

Rack

Tube

Technical Drawing

56.0
55.5
57.9
57.4
60.4
51.6
14.7
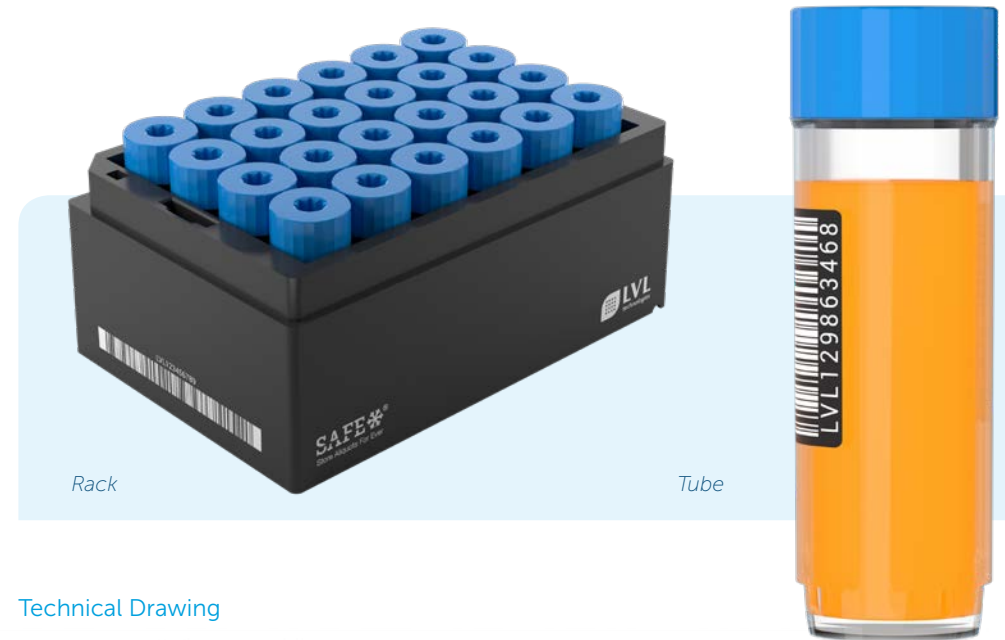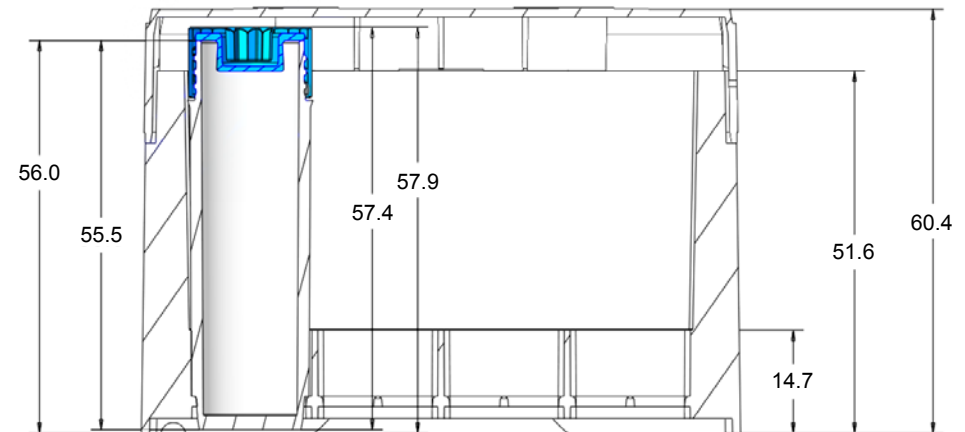
Standard Item Number 2DNC-XL6-BL-NS-SLC-L

Order Information

XXLX 8000

Working Volume	With Screw Caps	8,000 µl
	With Heat Seal	8,000 µl
Type of Rack	Polycarbonate	
Type of Rack Lid	Slide Lock	
Rack Identifier	Narrow Side	1D and Human Readable
	Bottom	2D
Storage Temperature	With Screw Caps	-196°C
	With Heat Seal	-80°C
Standard Side Code Tube	(optional)	1D and Human Readable
Screw Caps	Pre-Capped	
	Stacked on SBS 24 Cap Rack	
	Bulk Ware	
Purity	Production Sterile (ISO 8)	
	Pre-Sterilized (Beta Radiation)	
Outer Diameter	17.80 mm	
Tube Height	Without Cap	69.7 mm
	With Screw Cap	71.6 mm
Rack Height	Without Cap	70.2 mm
	Screw Capped Tubes	72.1 mm
	With Lid	74.3 mm

Rack

Tube

Technical Drawing

70.2
69.7
71.6
72.1
74.3
51.6
14.7
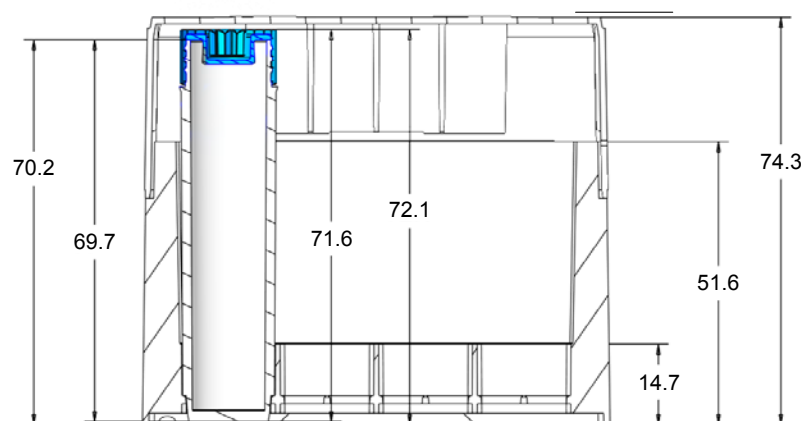
Standard Item Number 2DNC-XL8-BL-NS-SLC-L

Order Information

Order Number Structure

Cap / Cap Colour
- NC Non Capped
- BL Blue
- WH White
- BC Black
- RE Red
- GR Green
- YE Yellow
- OR Orange
- LI Lime
- PI Pink
- VI Violet
- BR Brown
- RS Signal Red
- GY Grey

Thread Type
- X External
- I Internal

Lid
- SL Slide Lock
- LL Slide Lock Low
- PL Push Lock

Packaging Size
- L Large (50 Rack units)
- S Small (10 Rack units)

2D Code Bottom

2D SC – X 10 – BL – NS – SL C – L

Side Code
- SC Side Coded
- NC Non Coded

Working Volume
- 02 200 µl SBS 96
- 03 300 µl SBS 96
- 05 500 µl SBS 96
- 10 1.000 µl SBS 96
- 20 2.000 µl SBS 48
- 40 4.000 µl SBS 48
- L2 2.000 µl SBS 24
- L4 4.000 µl SBS 24
- L6 6.000 µl SBS 24
- L8 8.000 µl SBS 24

Purity
- NS Non-Sterile (Production Sterile)
- PS Pre-Sterilized

Rack Material
- C Polycarbonate
- P Polypropylene

SAFE® CRYO

2D Sample Archiving in the Classic, Square Cryo Format

Particularly when samples are to be stored in existing and pre-configured storage systems, it is sometimes not possible to switch to the modern SBS format – especially, if the future introduction automated handling and automated sample storage can be excluded.

2 ml Tube with Internal Thread

5 ml Tube with Internal Thread

Cryo Rack with Orientation Code

Tubes

- Tube Material: Polypropylene
- 2D barcode laser etched on the base of the tube
- Extra 1D barcode on side, as well as a white text description field for labelling
- Polished tubes for excellent transparency
- Outer F-bottom for good legibility, internal U-bottom for low dead volume
- Tubes stand alone or are screwed into a stable, fixed position in a rack
- Available with internal thread (100 tubes per rack), and external thread (81 tubes per rack) and for 2 ml and 5 ml
- Graduation for an exact dosing
- Closable with screw caps (delivered capped)
- Caps are produced in 2K procedure
- Seal is injected into the screw cap
- Storage of tubes over liquid nitrogen at temperatures down to −196° C
- Autoclavable at 121° C for 20 minutes
- Beta sterilised (certified as free of DNA, PCR inhibitor, RNA, DNase, RNase, endotoxins/ pyrogenies, ATP)

Rack

- Rack Material: Polycarbonate
- Rack is labelled with linear barcode (1D) on narrow side and with data matrix code on bottom
- Lid with raster insert for rapid identification of tubes
- Storage of rack and tubes over liquid nitrogen at temperature down to −196° C
- 81 racks available in 5 different colours

Instruments: SAFE® 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 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® READ Multi Express

2D Barcode Rack Reader for SBS and CRYO Racks

- 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 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® 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
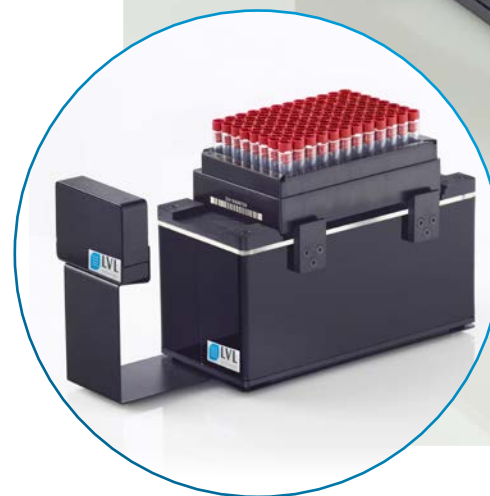
SAFE® READ Single Express Integration

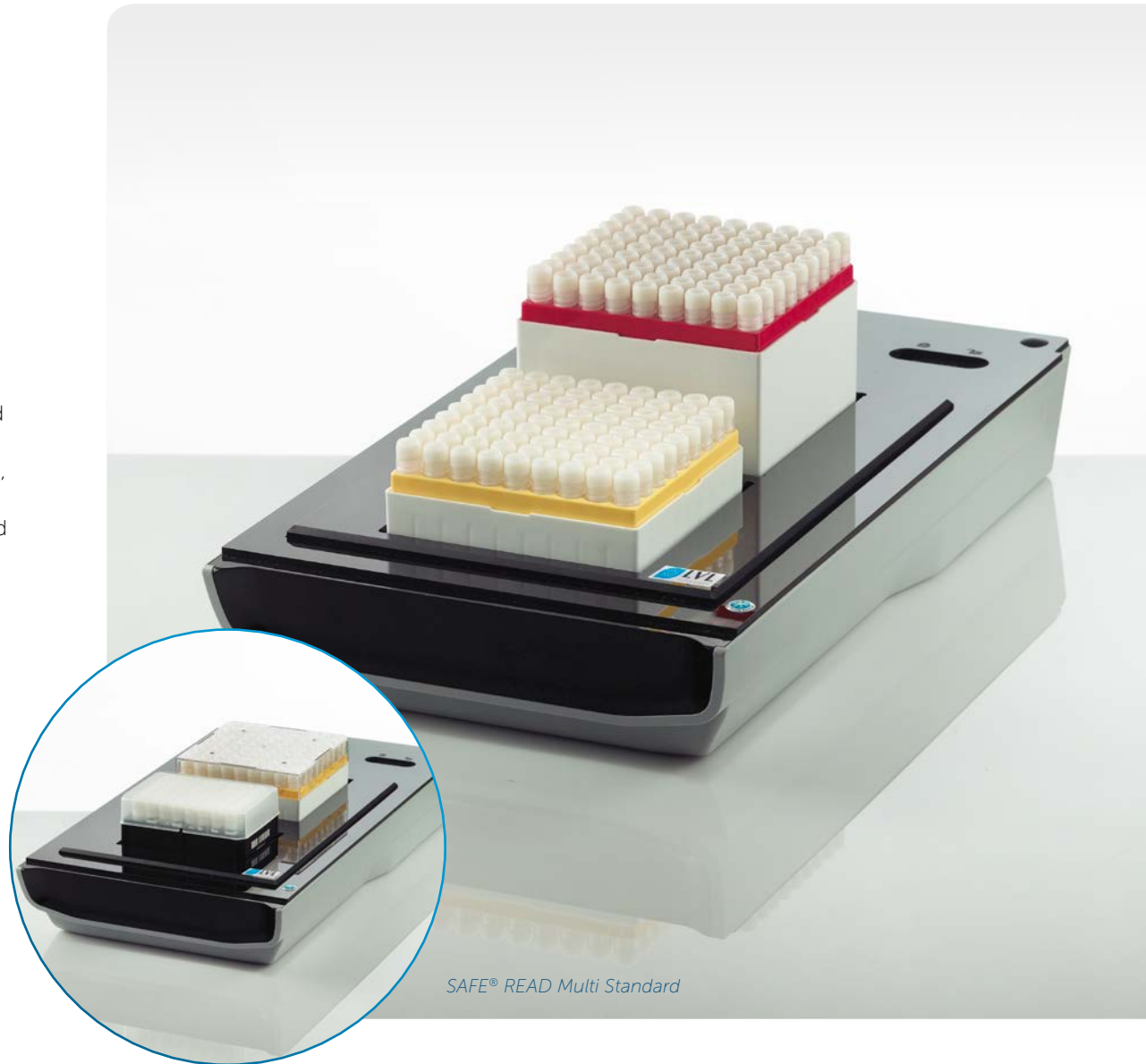# SAFE® READ Multi Standard

2D Barcode Multi Rack Reader

- CCD Scanner based reader
- Available with either USB or RJ45 connector
- Capable of scanning SAFE® 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® 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® 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® 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® 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® CAP

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

Whether for the automatic process-ability 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 require-ments – 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 1 CHANNEL

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® 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
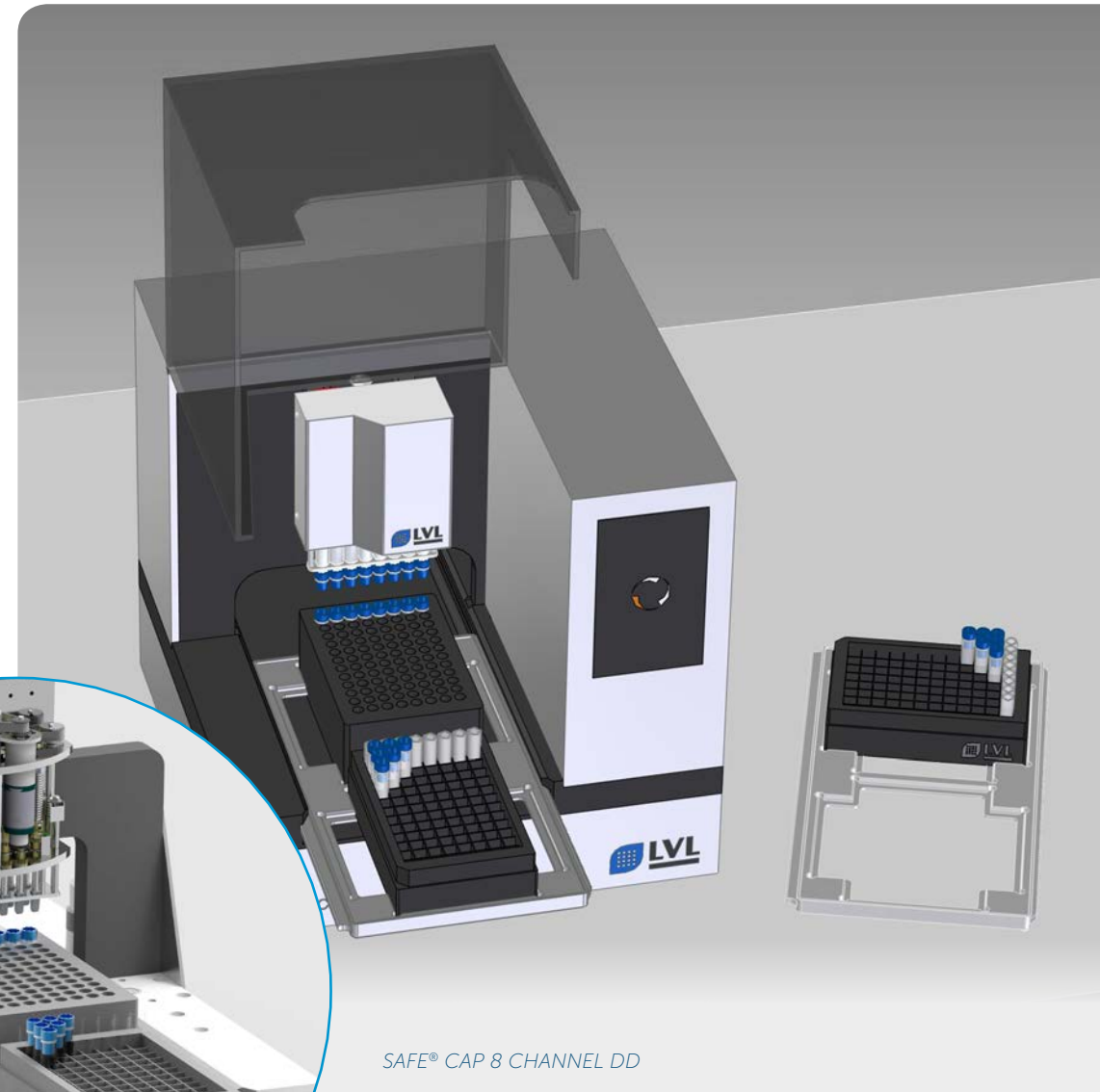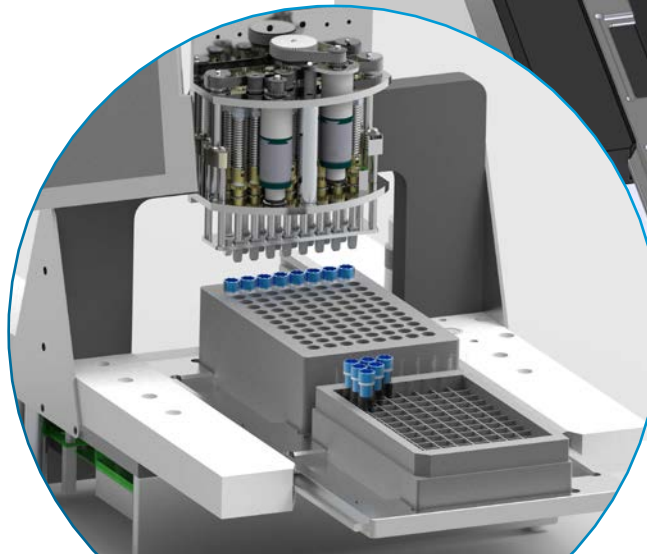- Also integrable in automated pipetting solutions

Item Number
SAFE® 96 XT: CDC-8CH-XT-DD
SAFE® 96 IT: CDC-8CH-IT-DD

Order Information

SAFE® 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: CDC-96CH-XT-DD
SAFE® 96 IT: CDC-96CH-IT-DD

Order Information

SAFE® CAP 96 CHANNEL DD

SAFE® 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
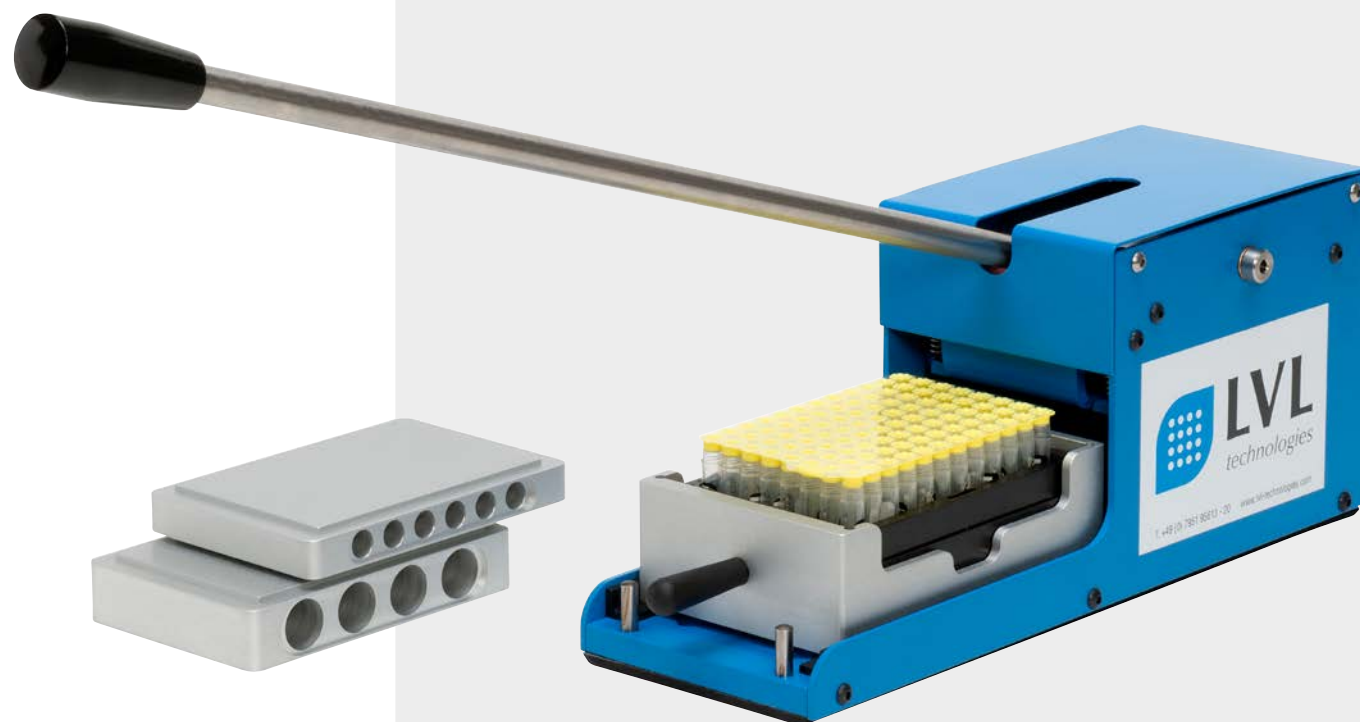

SAFE® CAP SEAL AUTOMATIC

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°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
- 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
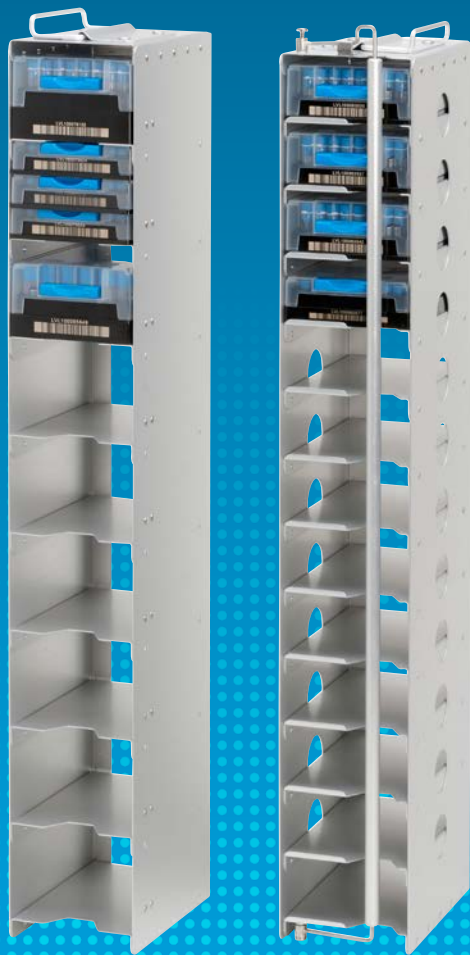
Item Number　　　CHS-96CH-DD

Order Information

SAFE® CAP FOIL SEAL

Instruments: SAFE® 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.
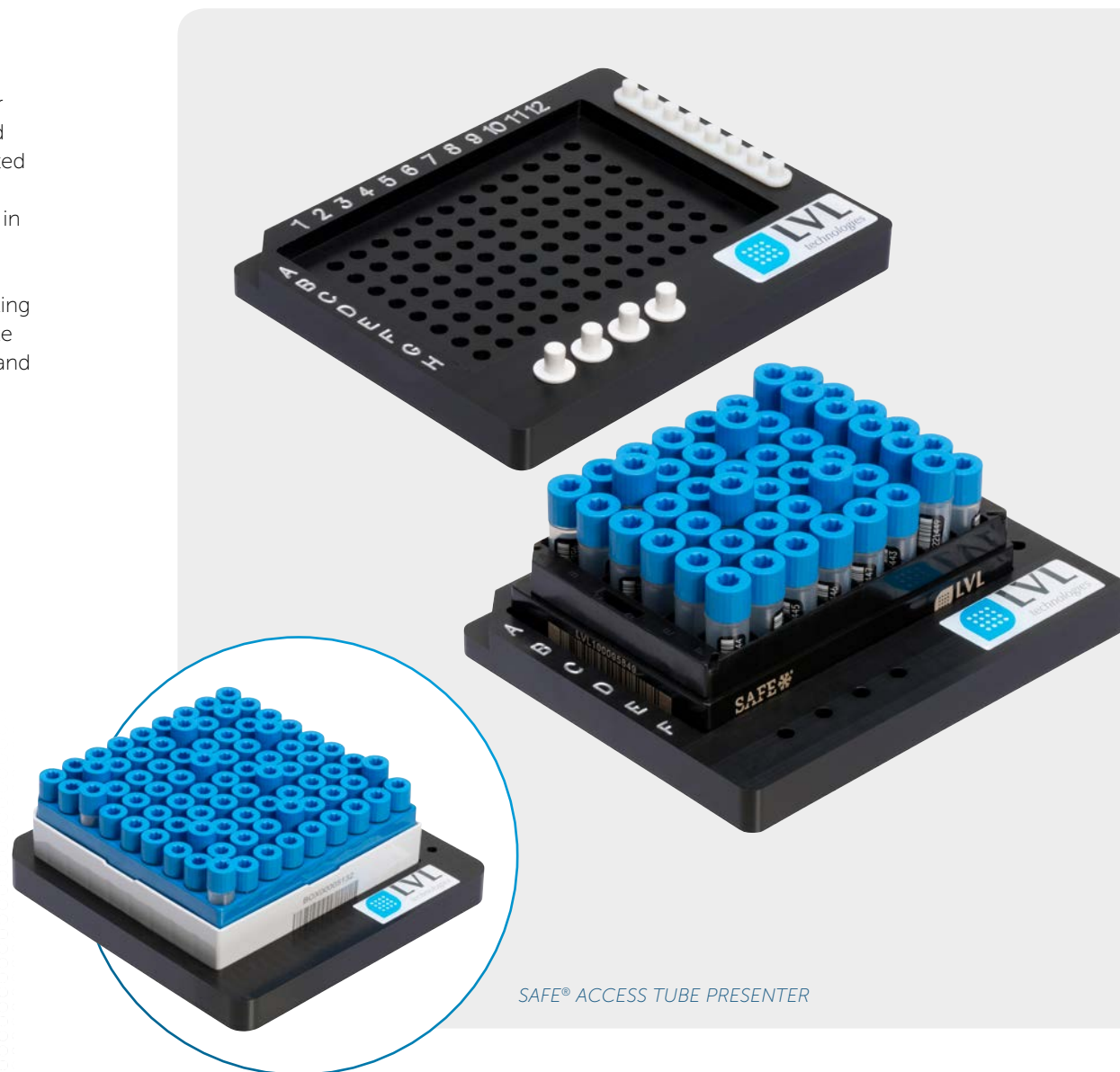
Item Number
SAFE® 96:   TP96
SAFE® 48:   TP48
SAFE® CRYO: TP81

Order Information

SAFE® ACCESS TUBE PRESENTER

SAFE® 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® 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® 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
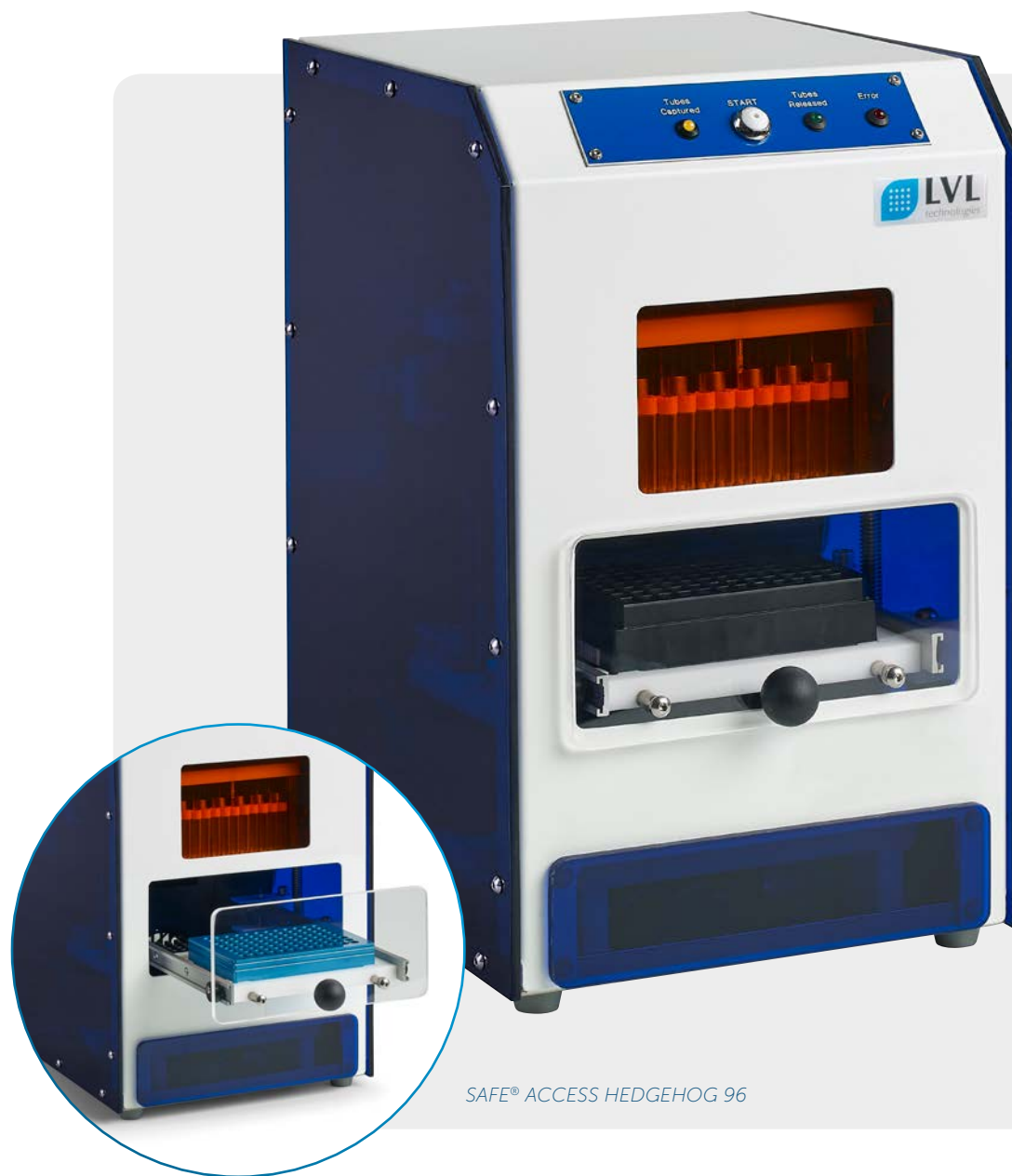
SAFE® ACCESS HEDGEHOG 96

SAFE® 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® 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
- Single Tube Reader
  SAFE® READ Single Tube
- 1 Channel Single Tube Capper /
  Decapper / Picker

Item Number   STP-S

Order Information

SAFE® STARTER PACK M

- 50 SBS Racks
- Single Tube Reader
  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

- 100 SBS Racks
- Single Tube Reader
  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

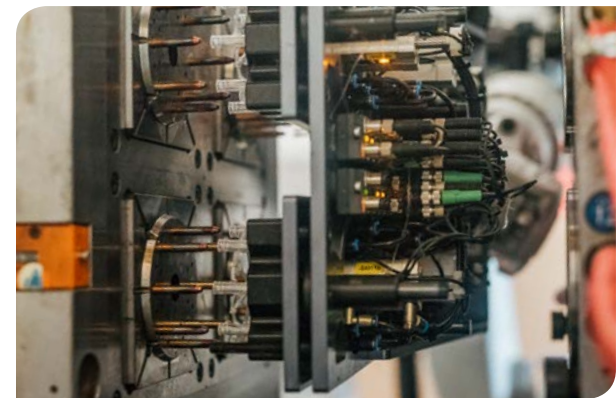Item Number   STP-L

Order Information

SAFE® PRODUCTION

Clean, Quality Controlled and Highly Automated

Production Room with Injection Moulding Machines

The entire SAFE® 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.

32 Cavity Mould for Injection Moulding of LI 1000 Tubes

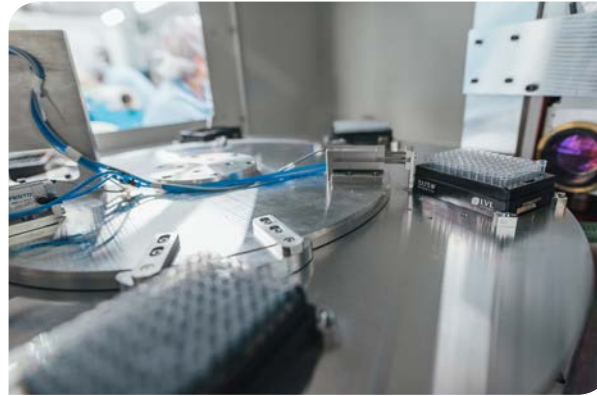*2-Component Moulding for XT Screw Caps*

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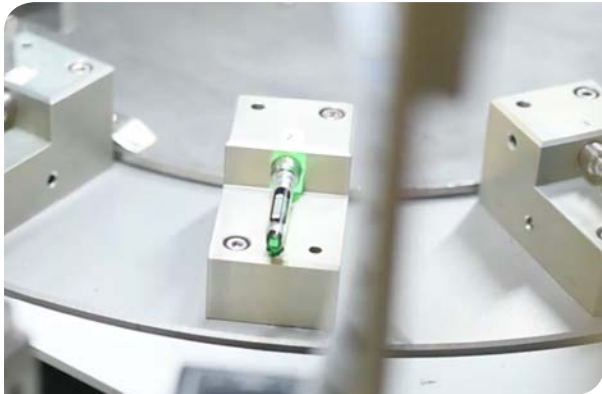

Clean Room ISO 8 Standard

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 and Clinical Studies

Epidemiological and clinical 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 and clinical studies in Europe, Asia, Africa and North America use SAFE® for their samples.
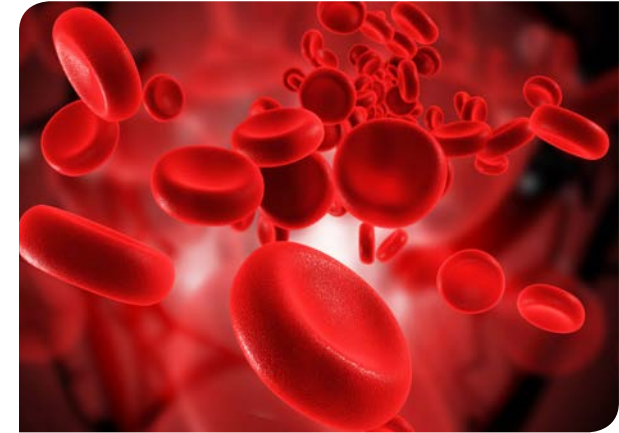
Transfusion Medicine

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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