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Описание

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Vials

Maximize your productivity

Loading and unloading systems for optimum process performance in vial drying

Optimize the transport of your vials efficiently and safely with our loading and unloading solutions. Our customized systems integrate seamlessly into your filling line.

We offer a large selection of push systems and loading systems with frames.

Thanks to the expertise of our subsidiary and the loading system manufacturer **Motus**, we can offer individual models for different applications.

Discover the ideal charging system for your project

LyoShuttle

- Battery-powered wireless robot
- No moving components above the vials
- Compact Shelves

Pusher systems

- Maximum output of up to 600 vials/min
- Precise counting and exact batch formation
- Flexible single-row and multi-row unloading

Frame loading

- Flexible and customizable designs
- Cost-effective solutions
- Seamless integration into existing infrastructures

LyoShuttle loading and unloading system

Loading and unloading system LyoShuttle

The product range of the Martin Christ Company has been expanded to include the new, patent-pending LyoShuttle automated loading and unloading system. The freeze-dryer is loaded by a loading robot that uses timing belts to move horizontally.

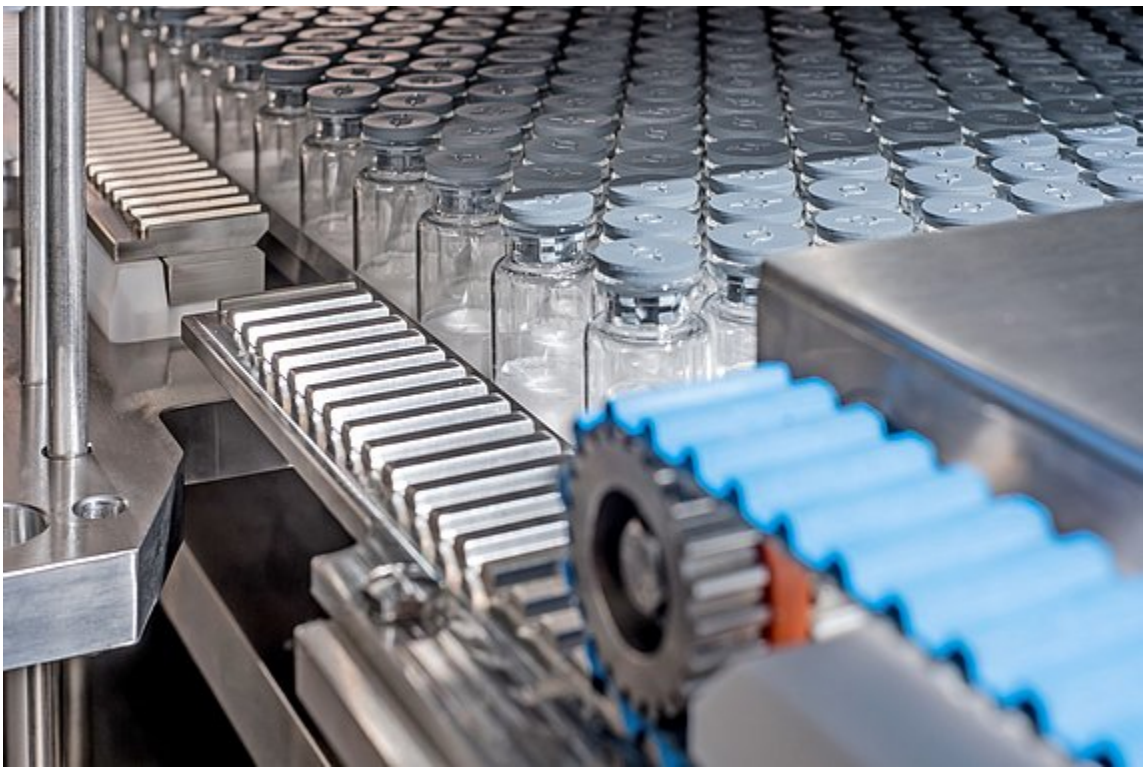
The loading robot moves on a set of rails mounted at the constant loading level alongside the shelf set. Motive force is provided by battery-powered stepper motors. The batteries are charged wirelessly when the robot is in the parked position in front of the freeze-dryer. The loading robot communicates wirelessly with the controller.

Thanks to its flexible and space-saving construction, the LyoShuttle option is particularly suitable for production freeze dryers in the pharmaceutical field, including under insulated conditions, and requires significantly less space.

LyoShuttle loading

The LyoShuttle system from Martin Christ has outstanding advantages to ensure product quality and production reliability:

- **No moving parts above the vials**
  Many common systems have an unloading bar that moves above the vials filled with the product. With the LyoShuttle system from Martin Christ, the shelf package is raised a few centimeters to allow unloading of the vials. The integrated unloading beam of the LyoShuttle moves beneath the loaded shelves to a parked position behind the shelf package. The shelf to be unloaded can then be moved to the unloading height (constant loading level). With LyoShuttle, there is never any moving part above the vials filled with the product, even after capping. Conclusion: In summary, with the LyoShuttle, we only move in front, behind and beneath the vials.
- **No additional space needed above the vials**
  With most of the usual push-pull systems, up to 50 mm of additional space above the capped vials – for each shelf – is necessary for unloading freeze dryers with an unloading bar. This makes the freeze dryer 50 to 100 cm higher than usual, significantly increasing production costs. The unloading bar of the LyoShuttle system moves below the shelves loaded with vials. No additional space is necessary above the vials, so the freeze dryer can be made lower.



The loading robot moves on a set of rails mounted at the constant loading level alongside the shelf set.

- **Compact, easy-to-clean construction with proper insulation**
  All GMP aspects have been consistently taken into account in the design of the LyoShuttle system. Particular attention has been given to compact construction for use in isolators or LAF units, along with good accessibility and excellent cleaning capability. Service-friendliness was also given special attention as the design was developed.
- **Integrated automation LPCplus**
  With LPCplus, we offer a comprehensive automation solution for process visualization and documentation, which we have further adapted for LyoShuttle. All processes can be visualized, operated, and documented continuously from loading and unloading to freeze drying. Of course, integrated solutions for insulation technology and filling lines are no trouble at all with our open and flexible solution approaches, and have already been proven in practice many times over.
- **Optional redundant technology**
  For the first time in a fully automated loading and unloading system, we offer redundant system components in order to ensure system availability with cGMP compliance, even in critical situations. For example, electrical, rechargeable batteries, and charging stations are designed to be redundant. All systems are sized to be able to support full cycles. The redundancy thus significantly improves the availability of the system.

LyoShuttle unloading

Push systems

Maximize your efficiency and quality

Innovative push systems for production freeze dryers

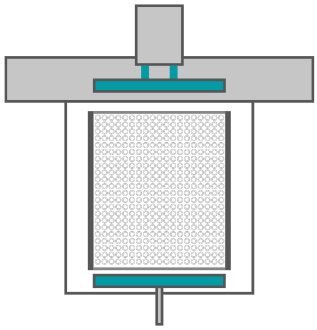
Product description

Our advanced pusher systems for production freeze dryers offer a variety of innovative features that significantly increase the efficiency and quality of your production processes.

Batch loading enables precise positioning of vials in the freeze dryer, which not only makes optimum use of the available space, but also significantly increases the overall efficiency of your processes.

Models

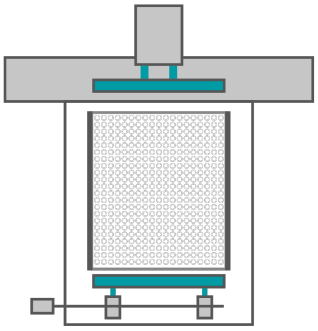
We offer three different designs depending on requirements, capacity and surface area.



Push-BackPusher (PBP) System

The loading principle is forming one structured row via conveyor and counting star. The vial row is pushed over via the shelf of the freeze dryer.

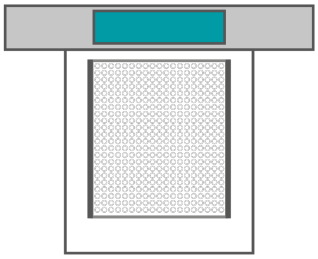
For unloading a backpusher with a stainless steel covered rod is used to push out a single or a multi row onto the conveyor.



Push-BackChain (PBC) System

Beim Beladen werden die Vials mittels Förderband und Abzähleinheit strukturiert in eine Reihe positioniert. Die Vial-Reihe wird über die Stellfläche des Gefriertrockners geschoben.

Zum Entladen wird ein Kettenabschieber verwendet, um eine einzelne oder mehrere Reihen auf das Förderband zu schieben.



Push-InsidePush (PIP) System (LyoShuttle)

The loading principle is forming one structured row via conveyor and counting star. The vial row is pushed over via the shelf of the freeze dryer by the lyoshuttle robot.

For unloading the lyoshuttle robot travels underneath the shelf into the lyo, the shelf is lifted to the unloading level and the lyoshuttle robot pushes out a single or a multi row onto the conveyor.

Advantages at a glance

Speed and precision

Our loading and unloading systems move vials at impressive speed: up to 450 vials per minute when loading and up to 600 vials per minute when unloading.

The systems ensure precise counting and placement of the containers, reducing errors to an absolute minimum.

Customized solutions

We offer various designs such as unloading pushers (PBP), chain pusher systems (PBC) and LyoShuttle (PIP), which are carefully selected and adapted to your production requirements.

Our overall concepts are based on a large number of standard assemblies that are perfectly tailored to your specific requirements.

Integration and high performance

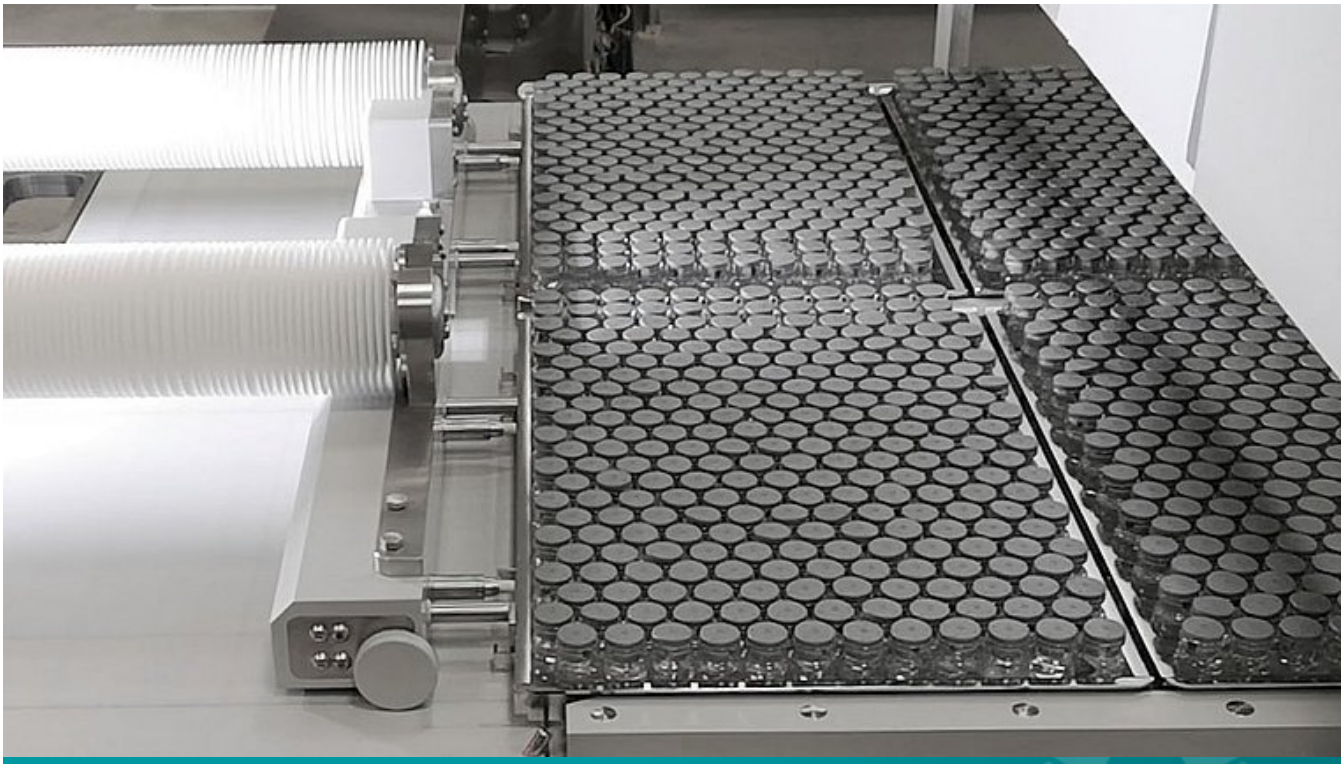
The correct integration of loading and unloading systems ensures reliable buffering of the vials and enables a smooth production process. Our systems allow the simultaneous and fast unloading of several vial series, which makes a decisive contribution to increasing your production output. We offer flexible solutions for connection to a filling line, both after filling and to the capping machine.

Efficiency and safety

Our distribution systems can be used efficiently to precisely route vials to the appropriate freeze dryers when multiple freeze dryers need to be supplied.

Integration with containment solutions such as RABS or isolators ensures that products are handled safely in controlled environments. Format parts with antistatic properties minimize the risk of electrostatic unloading.

Frame loading



Customized solutions for efficient processes

Loading systems with frame

Product description

Our frame loading systems combine efficiency and flexibility. They are ideal for medium-sized batches and retrofits. They can be seamlessly integrated into existing infrastructures and are versatile - both for smaller freeze dryers and for production lines with multiple freeze dryers. With an adjustable working height and the option of integrating storage units after the filling machine, they offer a customized solution for various applications.

Our solutions guarantee the highest hygiene standards and maximum safety. Frames can be picked up by an autoclave, and designs with cRABS and washdown meet the strictest safety and hygiene standards. Both semi-automatic and fully automatic frame loading systems offer a perfect balance between automation and manual interaction, allowing them to remain flexible and adaptable without losing efficiency or precision.

Semi-automatic loading system


Automatic loading system

Advantages at a glance

Customized solutions

We offer various designs that are carefully selected and adapted to your production requirements.

Semi-automatic or automatic

We offer a balance between automation and manual interaction or a fully automated system without manual intervention.

Optimum loading and integration

Perfect integration into existing infrastructures, suitable for smaller freeze dryers and production lines with several freeze dryers. For swing and slot doors, easy integration of magazines.

Highest hygiene standards

Frames can be accommodated by an autoclave, versions with cRABS and washdown comply with the strictest safety and hygiene standards.

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