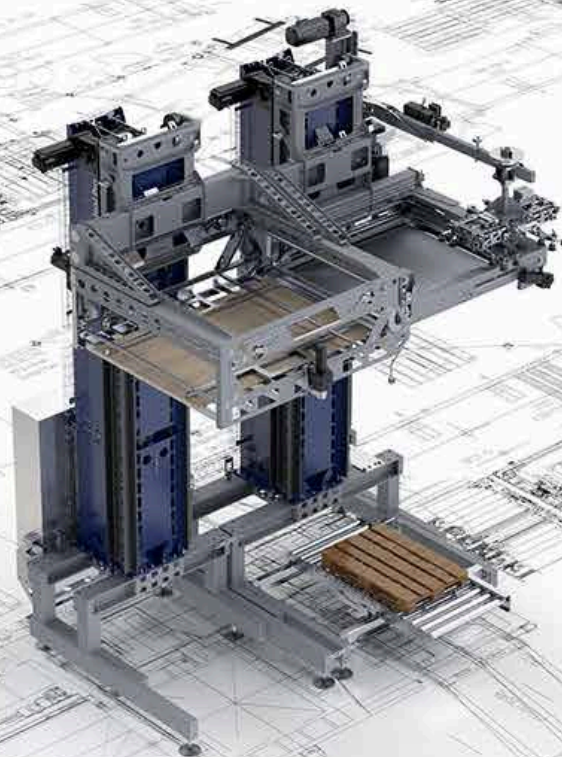


Modulpal Pro

Palletising robots for every application



 **KRONES**

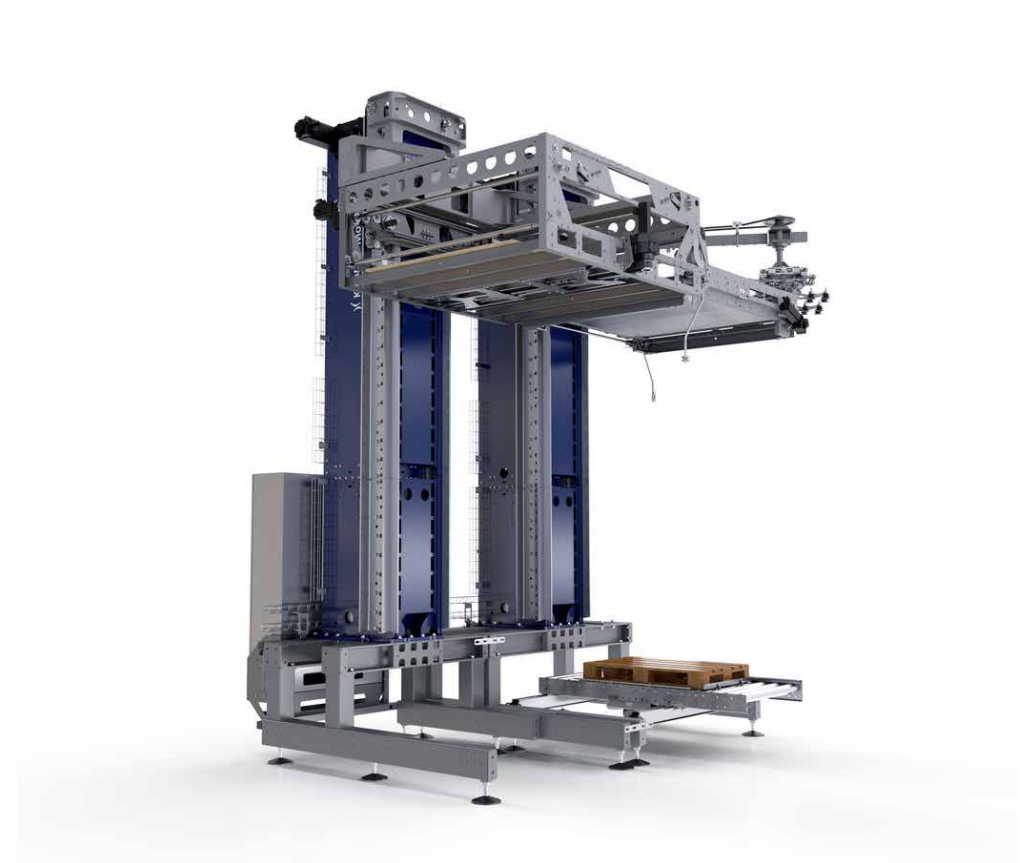
Extra fast and highly flexible palletising



The robots from the Modulpal Pro series provide wealth of options for loading and unloading pallets. You can individually combine each of the modules to suit your requirements. For example, you can create palletising specialists which are extremely quick and gentle on the product or highly flexible or also specialists which meet all these properties at the same time.

At a glance





- Application:
 - Palletisation and depalletisation of returnable crates
 - Palletisation of cartons, packs with film and multipacks
- Maximum output: 650 layers per hour
- Maximum layer dimensions: 1,300 x 1,300 millimetres
- Maximum layer weight: 300 kg
- enviro-certified for reduced energy and media consumption



Overview of the models





The palletisers pick up the pre-grouped pack layer with their gripper heads or palletising units and position them on the pallet. Depending on the module, this step is either carried out with a performance-optimised cam or simply with vertical movement.

Model		Method of operation	Load capacity	Output*	
Modulpal Pro 1A 1A = 1 axis		With this system version, the packs are moved vertically. The pre-grouped packs are fed to the palletiser at a high infeed level and guided from four sides until they are positioned on the pallet. The open-top design of the loading station with shutter allows for the optimal insertion of the layer pads.	300 kg (max. layer weight)	Non-returnable packs: Up to 460 layers per hour	
Modulpal Pro 2AC 2A = 2 axes C = Compact		A layer pusher moves the pre-grouped packs onto the transfer plate. The palletiser is then moved along two axes and sets the layer down on the pallet.	300 kg (max. layer weight)	Non-returnable packs: Up to 340 layers per hour	

* Performance data without layer pad handling

Overview of the models







Model	Method of operation	Load capacity	Output*
<p>Modulpal Pro 2A 2A = 2 axes</p> 	<p>This version, which moves along two axes, picks up the packs at the grouping station and places them down again on the pallet position. Depending on the gripper system, this variant is suitable for palletising non-returnable and returnable packs, and depalletising returnable packs. A rotating gripper head axis is optionally available.</p>	<p>700 kg incl. gripper system</p>	<p>Non-returnable packs: Up to 360 layers per hour Returnable packs: Up to 500 layers per hour depending on the gripper system</p>
<p>Modulpal Pro 3A 3A = 3 axes</p> 	<p>The model 3A can master flexible tasks, both during palletising and depalletising. In addition to the linear lifting axis and a pivoting unit, this Modulpal Pro is also equipped with a rotating gripper head axis.</p>	<p>700 kg incl. gripper system</p>	<p>Non-returnable packs: Up to 360 layers per hour Returnable packs: Up to 500 layers per hour depending on the gripper system</p>



* Performance data without layer pad handling

Overview of the models




Model	Method of operation	Load capacity	Output*
<p>Modulpal Pro 2AP 2A = 2 axes P = performance</p> 	<p>This version, which moves along two axes, picks up the packs at the grouping station and places them down again on the pallet position. Optimisations in the axis area and in layer handling have made it possible to increase the output compared to the Modulpal Pro 2A. Packing materials can also be handled as an option. The palletiser can also be equipped with a motorised gripper head turning unit.</p>	<p>300 kg (max. layer weight)</p>	<p>Non-returnable packs: Up to 450 layers per hour</p> 
<p>Modulpal Pro 3AP 3A = 3 axes P = performance</p> 	<p>The 3AP model is very flexible during loading. In addition to the linear lifting axis and a pivoting unit, this Modulpal Pro is also equipped with a rotating gripper head axis. Optimisations in the axis area and in layer handling have made it possible to increase the output compared to the Modulpal Pro 3A.</p>	<p>300 kg (max. layer weight)</p>	<p>Non-returnable packs: Up to 450 layers per hour</p> 

Overview of the models



Quicker palletising performance thanks to multitasking: The Modulpal Pro 1AD consists of two synchronously operating modules. While one module positions the layers on the pallet, the other module supplies more layers. A clever distribution of roles which leads to a considerably higher output than conventional systems.

Model	Method of operation	Load capacity	Output*
Modulpal Pro 1AD 1A = 1 axis D = double column	 <p>The Modulpal Pro 1AD consists of two synchronously operating modules: a transfer and a loading module. The pre-grouped pack layer firstly enters the transfer module and is moved to the correct transfer height. The palletising module picks it up and positions it on the pallet. During this entire process, the layer is guided from four sides.</p> <p>Special features of the Modulpal Pro 1AD</p> <ul style="list-style-type: none">– No pneumatic components required at all– Mounted on a stable base frame for quick assembly and more independence from the floor quality– For high outputs at low pack feed	300 kg (max. layer weight)	Non-returnable packs: Up to 650 layers per hour



* Performance data without layer pad handling

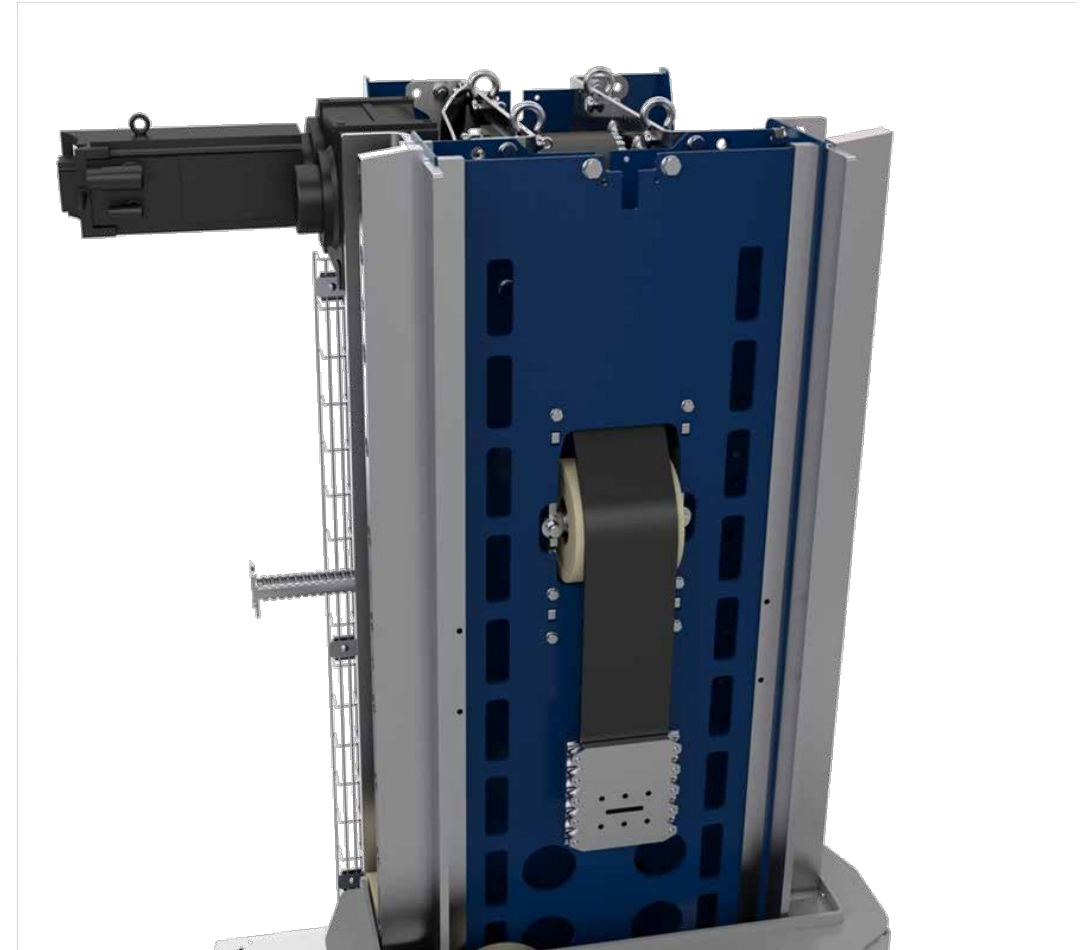
The Modulpal Pro family

Technical features



General features

- The newly designed column with lifting unit with strong and low-wear guidance of the lifting unit masters all tasks such as loading and unloading pallets.
- One of the counterweights running inside the column allows for an optimised energy design of the lifting unit drive.
- The drive is positioned in such a way that the palletiser has a low construction height.
- The widened belt means there is no need for a second drive belt. The high level of safety remains the same.
- The structure of the palletiser consists of the base frame and the divided column which makes it easier to transport and reduces the installation time.
- Since the control cabinet is installed on the base frame, no wiring is required.



The Modulpal Pro family

Technical features

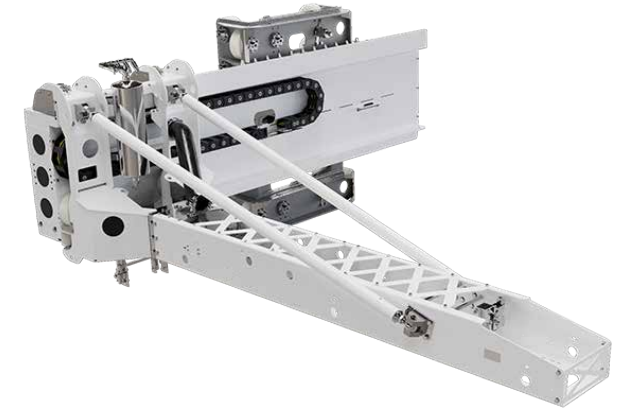


Linear and pivoting units with gripper head carriers

- All components are designed for processing high loads.
- The Modulpal Pro palletising system is composed of the individual basic modules in accordance with the individual requirements and the case in question.

Options

- Carbon rollers instead of steel rollers in the shutter gripper head for processing higher layer weights
- Inserter for base layers, layer pads and top layers



Modulpal Pro 2A linear unit and gripper head carrier



Modulpal Pro 3A pivoting unit and gripper head carrier

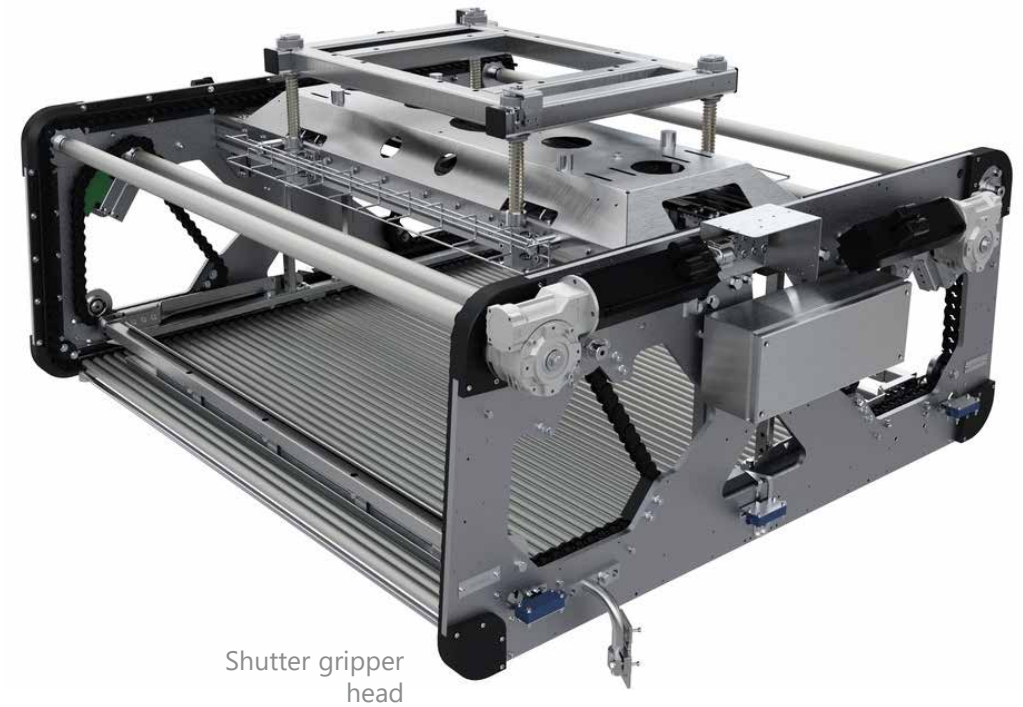
The Modulpal Pro family

Technical features



Gripper head and palletising unit for non-returnable packs

- The shutter gripper head used as standard for non-returnable packs offers high processing safety.
- The palletiser version with transfer plate is an inexpensive solution.
- In addition, a palletising station is combined with a transfer station for best-possible performances.
- Optionally, a four-sided adjustment system for the guides can be installed for even more flexibility.



The Modulpal Pro family

Special gripper heads



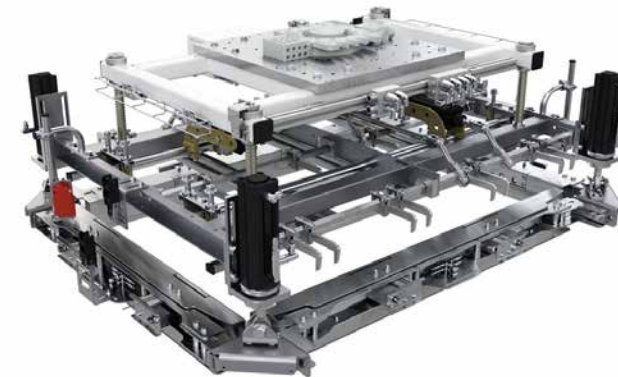
Jaw gripper unit for returnable packs

- Complete layers with returnable packs can be gripped from all four sides.
- The clamping bars are available as continuous bars or as single spring-supported clamping elements.
- Optionally, moving of the full crates can also be supported by hooking them in through the opening.
- Application: Unloading pallets



Hook gripper head for returnable packs

- The hook system grips the full crates.
- When palletising, an embracing centring unit ensures that the crates are gripped securely.
- A multiple hook system is optionally available for handling a range of layer patterns.
- Application: Loading pallets



Grouping system for non-returnable packs



All Modulpal Pro versions can be combined with the following grouping systems:

Robobox T-GS

- Creates different layer patterns for non-returnable packs
- Processes single-lane or double-lane packs
- Turns and distributes the packs exactly according to the specifications for the pre-programmed layer pattern
- Depending on the required output, one or two modules are employed for layer grouping
- Equipment with parallel kinematic robot (tripod)



Grouping with flush-grid belt infeed

- Servomotor-driven flush-grid belt without spacing device
- Infeed conveyor in flush-grid belt design without spacing device
- Motor-driven pre-grouping station with motor-driven centring unit on both sides
- Internal motor-driven turning unit

Grouping with a roller infeed

- Grouping station with infeed roller conveyor in single-lane or double-lane design for non-returnable packs
- Use of spacing devices possible
- Pre-grouping station with plastic flat-top or roller version
- Internal or external turning device

Grouping and row-separation systems for returnable packs



Grouping table and separating systems

- Tables with rollers or flat-top chains for grouping returnable packs
- **Different systems for layer separation:**
 - Straight discharge tables with stopper bridge for separating crates in a linear formation
 - 90° row separation station with separation roller for separating interlocked layer patterns with linear formation
 - 90° row separation with drawing mechanism for handling layer patterns during palletising with interlocked stacking for complex formations



Grouping station for returnable containers



Crate row separation table

Benefits to you



Freedom of combination and high performance

Depending on the task, all components can be combined with each other flexibly. This results in an optimal machine configuration from low to high output ranges – even with a low pack infeed.

Quick start-up

Due to the set-up on a stable base frame, the palletiser can be installed very quickly. Therefore it also does not depend on the quality of the subsurface.

Maintenance-friendly and noise-protected

The integrated belt drive simplifies maintenance and reduces noise. The system was deliberately constructed with no lubrication systems so that the extent of maintenance could be kept low.

Flexibility and versatility

A large selection of gripper heads enables optimal processing of different pack types and sizes as well as different pallet dimensions.

Benefits to you



Sustainability – reduced energy and media consumption

The use of servo motors and energy recovery systems, the extensive omission of compressed air consumers and the use of encapsulated, lifetime-lubricated bearings results in low energy and media consumption.

Economic efficiency

Thanks to the uniform modular component system, handling of several Modulpal Pro versions at a time is especially economical.

High dynamics and accuracy

The servo motor drive system for the shafts allows highly dynamic movements and maximum accuracy for repetition.

Ease of operation

Depending on the version, the system can change to other sizes semi-automatically or fully automatically. And if jobs arise which require operator intervention, situation-related indicators with graphical instructions allow the machine to be directed intuitively.

Requesting a new machine

You can easily send a request for a non-binding quotation in our Krones.shop.



Certified ecological efficiency

Machines with enviro seal



At Krones, the enviro label stands for excellent ecological efficiency. Products that bear the enviro label have proven in an objective test procedure that they efficiently use energy and media, and that they produce in an environmentally-friendly way. The requirements are defined by the EME standard that has been developed by the TÜV SÜD (technical inspection authority) for assessing production plants. The enviro test procedure has also been certified by TÜV SÜD as an independent expert. Therefore, you can be sure that: an enviro label stands for ecological efficiency.

This is why the Modulpal Pro is enviro-classified

- Servo-driven main drive of the energy efficiency class IE4
- Energy recovery via the modular B&R ACOPOSmulti drive system
- Omission of pneumatic drives to a large extent
- Use of enclosed lifetime-lubricated bearings
- Employment of enviro-compliant H1 lubrication grease and oil
- enviro option: Energy measuring package
- enviro option: Leakage detection



Everything from a single source



Training sessions at the Krones Academy – trained personnel for an increased efficiency of your line

The multifaceted offer by the Krones Academy ranges from operation, servicing and maintenance courses through to management training. We will gladly also create your individual training programme.

KIC Krones cleaning agents make your machine shine

Only if the production environment is immaculate, can your product be brilliant. KIC Krones provides you with the optimum cleaning agents and disinfectants for each individual production step.

KIC Krones lubricants for each production step

Whether for gears, chains or central lubrication systems – our greases and oils are true all-round talents. They can reach every lubrication point, protect your line and ensure gentle treatment for your products thanks to their food-grade quality.

Krones Lifecycle Service – Partner for Performance

It goes without saying that also after the purchase of new machines, Krones takes care of your lines: The Krones LCS experts are always there to help you reaching your goals and turn your wishes into optimal LCS solutions.



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