

Operating Instructions

Horizontal cartoner

HK-IV-S-“k“-10“/R

Order Number: 2444
Customer: Wolf Tempo

DIENST.

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1. General information

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1 General information

1.1. Current issue of the documentation

This documentation is based on the state of knowledge available at the time these operating instructions were prepared. No guarantee is given for the correctness and completeness of the information. We reserve the right to make technical changes without prior notice.

These operating instructions do not extend the sales and delivery conditions of DIENST Packsysteme GmbH.

1.2. Guarantee

The machine is designed to maintain its performance, operational safety and working accuracy for many years. However, this is only guaranteed if the rules and regulations for the operation and maintenance of the machine are observed.

DIENST Verpackungstechnik GmbH shall not be held liable for any damage caused by the improper use of the machine, its unlawful operation and/or incorrect preventive maintenance or lack of services.

All consequences of unauthorised modifications and changes are the responsibility of the operating company. This applies in particular to modifications that affect the safety of the machine.

1.3. Repairs

These operating instructions neither contain nor are intended to provide instructions on how to proceed in case of major repairs. Only DIENST Packsystems GmbH shall be requested to carry out such tasks.

When requesting our services, please describe the damage to the machine as precisely as possible and state the order number of the machine.

2. Safety

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2 Safety

2.1. General information



Before the initial start-up of the machine, the operating personnel and the supervisor must have read carefully and completely understood these operating instructions. Both the operating personnel and supervisor must sign to confirm having read/understood the guide.

These operating instructions must be kept in a place that is accessible to the operating personnel at all times. A brief note where these operating instructions are kept must be attached to the machine.

2.2. Warnings and symbols in the user information

Warnings are shown in a box with a grey background and are indicated by a warning symbol (see chapter 2.1).

Compliance with these instructions is mandatory.

Failure to do so may result in injury to persons and/or damage to property.

2.3. Staff qualifications and training

In order to proceed with the operation and maintenance of the machine, the operating personnel must have been instructed by a DIENST Packsystems GmbH technician. At least two people must be trained. If a technician of DIENST Packsystems GmbH has trained a representative of the operating company on how to operate the machine, the latter shall be entitled to instruct other operating personnel on the operation of the machine.

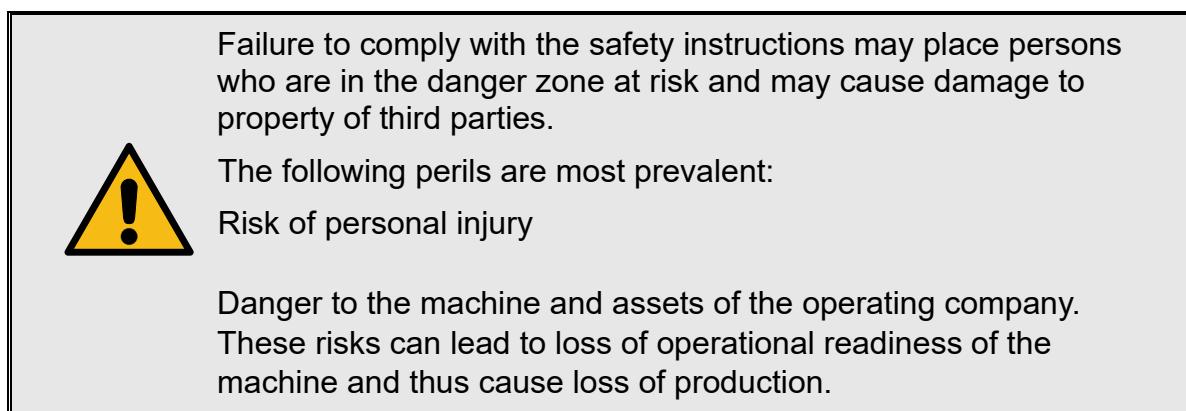
The representative's superior must sign and thus confirm the participation of the employee.

The technician shall record the training and the participating persons shall confirm their training by signing the document. A copy remains with the machine manufacturer.

Only a qualified electrician with a trade proficiency certificate of the respective country shall be permitted to proceed with any tasks on the electrical system.

Only qualified mechanical personnel with a trade proficiency certificate of the respective country shall be permitted to proceed with any tasks on the mechanical system.

2.4. Non-compliance with the safety instructions bear inherent risks



2.5. Working with safety in mind

Safety-conscious thinking and acting can lower the risk of damage and injuries. Safetyconscious working on the machine can only be guarantee if:

- the machine is operated, maintained and serviced only by trained and authorised personnel,
- the responsibilities are clearly defined as soon as several persons operate the machine. In order to prevent ambiguities, compliance with these requirements is mandatory.
- unauthorised persons stay clear of the machine's operating area.

The operating company undertakes to operate the machine only in a flawless condition.

This implies that the machine is operated and maintained in accordance with its intended use.

2.6. Safety instructions for the machine operator



- Tampering with the safety equipment is prohibited. Any infringement shall deem the machine manufacturer's liability null and void.
Emergency Stop buttons and safety devices must be easy to reach, and their accesses must always be kept unobstructed.
- Grease on the floor and on machine parts/components evidently creates a slipping hazard. These risks can lead to severe injuries. Therefore, when handling such fluids, cleanliness is indispensable!
- Never attempt to reach into the running machine!
For safety reasons, only the person actuating the jog mode button shall be permitted to work on the machine while the machine is in set-up mode.



Careful when refilling the glue granulate (risk of overflowing)!



Wearing protective gloves and safety goggles when refilling the glue tank is mandatory!

Keep protective gloves and safety goggles within easy reach and close to the machine!

2.7. Safety instructions for preventive maintenance, inspection and assembly/installation tasks

- Only persons who are qualified and authorised to work on control cabinets shall be permitted to proceed with such tasks. Never attempt to touch live parts/components.

- Proceeding with preventive maintenance, inspection, and assembly installation tasks is only permitted while the machine is at a standstill. Before starting any type of work on the machine, its main switch must be set to "0".
- Never place tools or other objects on the machine! They can fall in the machine and cause serious damage.
- Compliance with the safety instructions in this operation manual regarding preventive maintenance, inspection and installation is mandatory.

2 Safety

2.8. Unauthorised modifications and arbitrary production of spare parts

 Modifications and changes which adversely affect the safety of the machine are prohibited.

Only the manufacturer shall be permitted to proceed with modifications that may lead to functional changes. The operating company may only make changes after consultation with the manufacturer and written approval by the latter.

Only original spare parts must be used. Non-compliance will cause all warranties to become null and void.



2.9. Contrary to intended use

- The machine is **exclusively** suitable for packaging milk powder in bags in folding cartons. Any other application is considered contrary to the intended use. The operating company shall be solely liable for any resulting damage. Intended use also includes the safety, operating and maintenance instructions described in these operating instructions.
- Cleaning the machine while in operating mode is not permitted. Compliance with the instructions in the chapter 9.2 "Preventive maintenance and cleaning" is mandatory.

3. Transport, handling, installation and storage

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3.1. Safety precautions

When using a forklift truck (minimum lifting capacity of the hoists must be 3,500 kg), the machine can be transported safely and carefully. The machine must be transported separately from the infeed system.

3.2. Transport requirements



When transporting the machine, compliance with the instructions contained in this chapter is mandatory. This applies in particular to the attachment points and the hoisting equipment.

It is essential to ensure that the permissible load of the hoisting equipment is sufficient.



Remaining under a suspended load is prohibited.

Compliance with these safety instructions is mandatory. Failure to observe these warnings inevitably increases the risk of accidents and potential damage to the machine or the hoisting equipment.

3.2.1. Dimensions and weight

	Length	Width	Height	Weight
Cartoner	10900 mm	2190 mm	2350 mm	3000 kg

3.2.2. Manipulation



When lifting the machine, check and ensure that the centre of gravity of the machine is located in the centre of the hoist's attachment points. While the machine is suspended in mid air, its stability must be ensured and the machine not tip over when the hoist is moving.

An overhead forklift truck or pallet truck can be used to transport the machine. In order to prevent the machine from tipping over, it is essential that the centre of gravity of the machine is also in the centre of the attachment points. When using a forklift truck, the length of the forks must be at least 3 m. Stickers must be used to clearly indicate the position of the machine's centre of gravity. The hoisting equipment must only touch or be attached to the machine's frame.



Place forks of lift truck here

3.2.3. Installation

No special foundations are required for the installation of the machine. However, a floor loading capacity of at least 400 kg/m² must be ensured. A smooth, level and firm floor covering is sufficient. A clearance of 1 m must be maintained all around the machine.

The final installation and alignment of the machine is carried out by fitters from DIENST Packsystems GmbH.

3.3. Storage requirements

3.3.1. Intermediate storage

The machine must be stored in a clean and dry place.

3.3.2. Preservation

The machine does not require preservation while in storage. However, before storing machines that have already been in operation they must be cleaned.

4. Product data

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4.1. Machine description

The HK-IV-S-”k”-10”/R system consists of assemblies. An assembly overview and a list of recommended spare parts is supplied separately.

4.2. Function

- Infeeders provided by Wolf insert the incoming products into the cassette conveyor of the horizontal cartoner.
- Simultaneously, a rotary box erector is used to prepare a folding box blank and insert it into the carrier chain.
- The cassette conveyor transports the products into the insertion area of the horizontal cartoner.
- Subsequently, circulating product pushers push the products into the provided folding boxes.
- Then, hot glue is used to seal the filled folding boxes
- Finally, the packaging process is inspected to ensure that the goods have been packed correctly.
- If this is correct, the filled folding boxes leave the horizontal cartoner via vertical folding box exit conveyors. Defective products are ejected.

4.3. Design

The main design features of the system are:

- The welded frame is made of closed CrNi rectangular tube steel profile
- Carrier chains run inside plastic profile rails
- Mechanically controlled work function
- Electrical installation compliant with VDE
- Occupational safety/protection equipment

4.4. Master plan

The master plan can be found in the appendix of these operating instructions.

4.5. Accessories

The following accessories are part of the scope of delivery:

Qty.	Designation	Usage
2	Crank handle	Machine setting
1	Jog mode button with cable	Set-up mode
1	Key for "Enable jog mode"	Activates the jog mode
4 sets	Pusher plates per 12 units	Product insertion
2 sets	Pusher pressure plate per 8 units	Product leveller
1	Folding box support (optional)	Support folding box on folding box magazine conveyor
1	Safety goggles	Refilling glue applicator
1 pair	Protective gloves	Refilling glue applicator

4.6. Protective devices

There are movable and fixed separating safety doors and guards (see graphics chapter 6) on the long sides of the machine.

While in Automatic mode, the machine can only be operated with all safety doors closed.

4.7. Application range of the machine

The HK-IV-S-"k"-10"/R horizontal cartoner packs milk powder in bags into folding boxes. Hot glue is used to close the folding boxes.

The machine processes folding boxes made of uncoated or coated cartons and vacuum bag products.

4.8. Performance parameters

Capacity: max. 174 cycles/min

4.9. Consumption data

Compressed air: 120 Nl/min
 Capacity: 20 kVA
 SCCR 6 kA

4.10. Connections for operation and preventive maintenance

Mains voltage: 400 V ($\pm 5\%$), 3 phases, N, PE / 50Hz Rated
 current: 32 A
 Compressed air: 6 bar, condensate and oil-free

4.11. Sounds

The noise level of the machine is < 78 dB(A).

4.12. Information on pneumatic equipment

The pneumatic equipment consists of the following components:

No.:	Designation	Usage
1	Vacuum valve rotary feeder	Switching on vacuum for folding box extraction
2	Product leveller	Distributing the product in the bag
3	Pneumatic cylinder for product insertion deflector	Deflecting the product pusher
4	Pneumatic cylinder top guide way	Raising the top guide way
5	Glue applicator	Glueing of folding boxes
6	Pneumatic cylinder of folding box ejection	Ejection of folding boxes that are empty and not glued
7	Various switch valves	

4.13. Copyright and industrial property rights

These operating instructions as well as the technical documentation and the information contained therein are subject to copyright and may not be reproduced or made available to third parties, either in whole or in part, without the written permission of the publisher. The preventive maintenance schedule (Chapter 6 and Chapter 9) is excluded from this regulation.

DIENST Packsystems GmbH, Hofheim, Germany

4.14. Technical data sheet

Manufacturer:	DIENST Packsystems GmbH, Hofheim, Germany 			
Machine type:	Horizontal cartoner HK-IV-S-"k"-10"/R			
Order Number:	2444			
Customer:	Wolf / Tempo			
Capacity:	max. 174 cycles/min			
Product:	Milk powder in a bag			
Folding box dimensions: 35 mm	A	W	H	Product/ stacking height
	min.	120	30	160
	max.	200	112	250
	Format 1	125	35	160
	Format 2	155	45	207
	Format 3	175	55	230
	Format 4	175	55	230
	Format 5	175	111	230
	Format 6	192	55	240
Caution: Not all dimensions in this range can be combined with each other!				
Operating side:	left			
Chain pitch:	10" = 254.0 mm			

Machine frame:	Length: 6207 mm	Width: 2188 mm	Outlet height: 850 mm
Folding box set-down dimension A at the rotary feeder	45 mm		

Cassette conveyor	
Distance between axes:	6908.80 mm
Belt width:	350 mm
Number of cassettes:	58 units
Displacement:	109 mm
Flap clearance	115 mm

Folding box chains		
Outer carrier		
	Quantity:	35 units/chain
	Effective height:	115 mm
	Distance between axes:	4140.2 mm
Inner carrier		
	Quantity:	40 units/chain
	Effective height:	42 mm
	Distance between axes:	4140.2 mm
Continuous insertion		
Distance between axes:		
		1066.8 mm
Belt width:		
		740 mm
Number of pushers:		
		12
Pusher travel:		
		520 mm
Pusher angle:		
		38.10°
Drive motor HK:		
		Servo motor by SEW
Motor for folding box magazine:		
		Worm gear motor by SEW
Rotary feeder motor:		
		Servo motor by SEW
Motor for short flap folder:		
		Servo motor by SEW
Motors for folding box discharge:		
		Spur gear motor by SEW
Motor for insertion conveyor:		
		Servo motor by SEW
Removal conveyor motor:		
		Spur gear motor by SEW
Frequency converter		
		SEW
Vacuum generation		
		Rotary piston pump by Becker VT 4.25
Connection data:		
		230V/400V, 50 Hz
Compressed air:		
		6 bar, condensate and oil-free

5. Initial start-up

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Only a technician authorised by DIENST Packsystems GmbH shall be permitted to proceed with the initial start-up of the machine.

Non-compliance with this regulation and any resulting consequential damage shall render all warranties null and void.

5.1. Scope of delivery

1 horizontal cartoner HK-IV-S-”k”-10”/R with accessories (see chapter 4.5).

5.2. Staff qualifications

In order to proceed with the operation and maintenance of the machine, the operating personnel must have been instructed by a DIENST Packsystems GmbH technician. At least two people must be trained. If a technician of DIENST Packsystems GmbH has trained a representative of the operating company on how to operate the machine, the latter shall be entitled to instruct other operating personnel on the operation of the machine.

The representative's superior must sign and thus confirm the participation of the employee.

The technician shall record the training and the participating persons shall confirm their training by signing the document. A copy remains with the machine manufacturer.

Only a qualified electrician with a trade proficiency certificate of the respective country shall be permitted to proceed with any tasks on the electrical system.

Only qualified mechanical personnel with a trade proficiency certificate of the respective country shall be permitted to proceed with any tasks on the mechanical system.

5.3. Fixing, anchoring, vibration damping requirements

It is not necessary to fix the machine at the place of use.

5.4. Installation and assembly requirements

All essential supply lines, such as power and compressed air, are available, sufficiently dimensioned, and connected in a professional manner.

5.5. Structural conditions for operation and maintenance

A clearance of 1 m must be maintained all around the machine. Access to safety doors must remain unobstructed at all times. Structural objects or the placement of items must not restrict operating positions. Warning signs on the machine must be clearly visible at all times. The lighting system in the operating and maintenance areas must bright and illuminate the workspace in order to ensure safe working conditions.

5.6. Permissible operating conditions

Ambient temperature: 5 to 35° C
Relative humidity: 45 to 80 %, no condensation
Mains voltage: 400 V ($\pm 5\%$), 3 phases, N, PE / 50Hz
Storage temperature: -5 to 50 °C

5.7. Energy supply

- Electrical connection, 3 x 400 V / N / PE 50 Hz
- Compressed air connection, 1/4" quick release, plug connection to the machine

5.8. Technical documentation

The operating instructions contain technical documentation. This includes:

- Electrical circuit diagrams; one of them must be kept in the control cabinet
- Operating instructions from third-party manufacturers
- General arrangement of assemblies with spare parts list and pneumatic diagram

6. Quick guide HK-IV-S-”k”-10”/R

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6.1. Switching ON

No.	Action	Location
1.	Main switch on	Control cabinet
2.	Acknowledging faults (possibly several times)	Operation panel
3.	Selecting the Automatic mode	Touch panel
4.	Start the machine	Operation panel

6.2. Switching OFF

No.	Action	Location
1.	Empty the machine	Touch panel
2.	Stop the machine	Operation panel
3.	Main switch OFF	Control cabinet

6.3. Faults

A pending fault is indicated by the illuminated "Fault" lamp.

No.	Action	Location
1.	Fault occurs, machine stops, "Fault" lamp is lit,	Operation panel
2.	Reading the fault message on the display	Operation panel
3.	Eliminating faults	Place and cause of fault
4.	Acknowledging faults	Operation panel
5.	Turning the machine on	Operation panel

If the top guide way is automatically raised due to a malfunction, the guide way moves back automatically into its position after the fault has been eliminated. If the top guide way is not in position, a corresponding message is displayed on the touch panel.

6.4. Set-up mode

The set-up mode is used to set-up the machine during a format adjustment. In order to access the set-up mode, the system must be at standstill.

No.	Action	Location
1.	Selecting the manual mode	Touch panel
2.	Inserting the jog mode button	Operation panel
3.	Activating the “Enable jog mode” on the operation panel	Operation panel
4.	Setting-up the machine using the jog mode button	Jog button

6.5. Glue-pot

It is also important to ensure that there is always enough glue in the glue tank. This will ensure that production can proceed without delay.

No.	Action	Location
1.	Filling the glue tank/glue pot (optional) (see separate glue applicator operating instructions!)	Glue applicator/glue pot (optional)



Hot! Risk of burn injuries!

Use a scoop in order to fill hot-melt into

the glue tank.

Careful when refilling the glue granulate (risk of overflowing)!

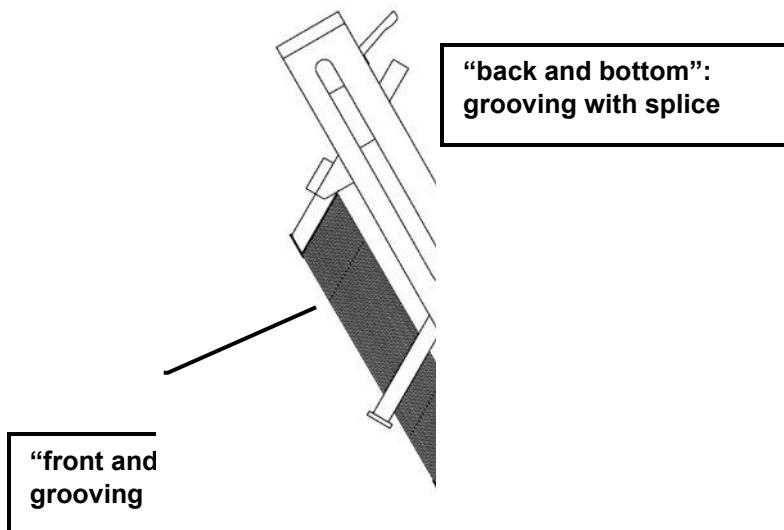
Wearing protective gloves and safety goggles when refilling the glue-pots is mandatory!

6.6. Filling the folding box magazine conveyor

In order to ensure an uninterrupted production run, having a sufficient number of cutouts in the magazine is of utmost importance.

No.	Action	Location

1.	Filling the magazine (The folding boxes must be inserted into the magazine while the “grooving with splice” is facing “back and bottom”)	Magazine
2	Switch ON the magazine (the folding box magazine conveyor transports forward the folding box until the sensor below the magazine belt is activated!)	Touch panel



Filling the folding box magazine conveyor

6.7. Format change of horizontal cartoner HK-IV-S-”k”-10”/R

Format change, left-hand side			
Assembly	Changeover point	Action	Chapter in operating instructions
Operation panel	-	Select the new format on the operation panel	
Adjustment tower	1	Adjust vertically (stopper)	7.3.1
Adjustment tower	2	Adjust horizontally (stopper)	7.3.1
Folding box feeding conveyor	3	Adjust the left side guide way (No. in display)	7.3.2
Folding box magazine	4	Insert the folding box, adjust the upper holder (No. in display)	7.3.3

Rotary feeder/suction cup	5	adjust the height (stopper) Reset the suction cup (marking)	7.3.4
Intake roller for top guide way	6 A 6B 6H	Adjust in running direction (use a measuring tape) adjust the height (use a measuring tape) Place in the middle between the top guide way tubes (measuring tape)	7.3.5
Bottom flap deflector	7	Adjust to size of flaps (measuring tape)	7.3.6
Folder	8	Install/remove the upper folding lever	7.3.7
Folder of top flap lifting device	9B 9H	Height (use a measuring tape) flap width (measuring tape)	7.3.8
Laser printer flap deflector	10	adjust the height (use a measuring tape)	7.3.9
Middle wall	11	Adjust dimension H of folding box (see numerical display)	7.3.10
Side flap guide	12	adjust to the height of folding box (use measuring tape)	7.3.11
Gluing	13	Adjust the glue height (see numerical display)	7.3.12
Closure	14	adjust the height (use a measuring tape)	7.3.13

Format change, right-hand side			
Assembly	Changeover point	Action	Chapter in operating instructions
Folding box feeding conveyor	15	Set the side guide way on the right-hand side (No. in display)	7.3.2
Bag presser	16	adjust the height (stopper) Replace the pusher plate (format part)	7.3.14
Bottom flap deflector	17	Adjust to size of flaps (measuring tape)	7.3.6
Folding box top guide way	18.1 18.2	adjust the height (stopper)	7.3.15
Top flap lifting device insertion	19B 19H	Adjust the height and Adjust the flap width (No. in display)	7.3.16

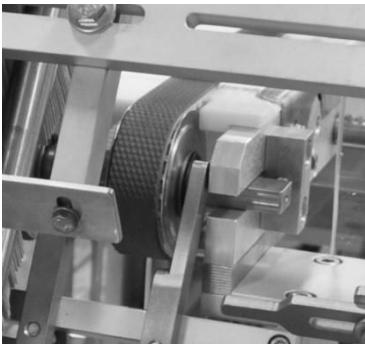
Insertion	20	Replacing all pusher plates Caution: Never attempt to operate the cartoner without pusher plates!	7.3.17
Folder	21	Install/remove the upper folding lever	7.3.7
Side flap guide	22	adjust to the height of folding box (use measuring tape)	7.3.11
Gluing	23	Adjust the glue height (see numerical display)	7.3.12
Closure	24	adjust the height (use a measuring tape)	7.3.13

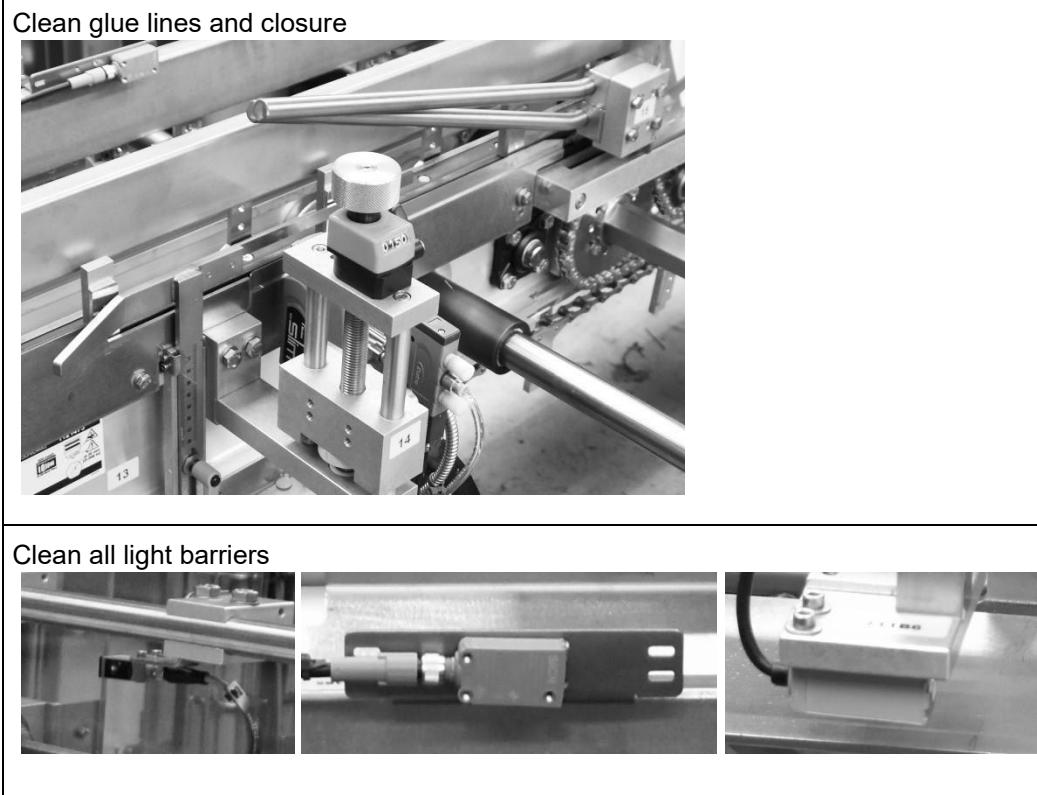
6.8. Preventive maintenance and cleaning Horizontal cartoner HK-IV-S- "k"10"/R

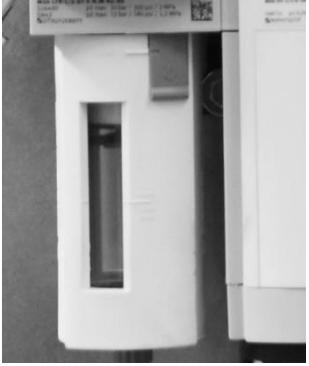


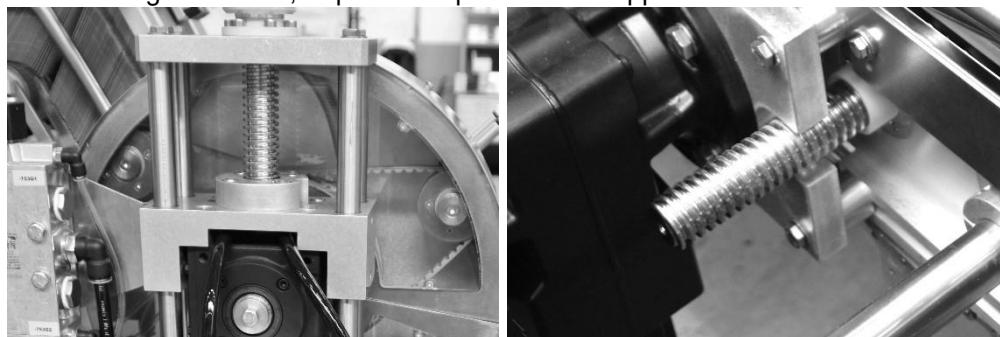
Never attempt to use inflammable, easily gasifying or corrosive liquids for cleaning purposes!

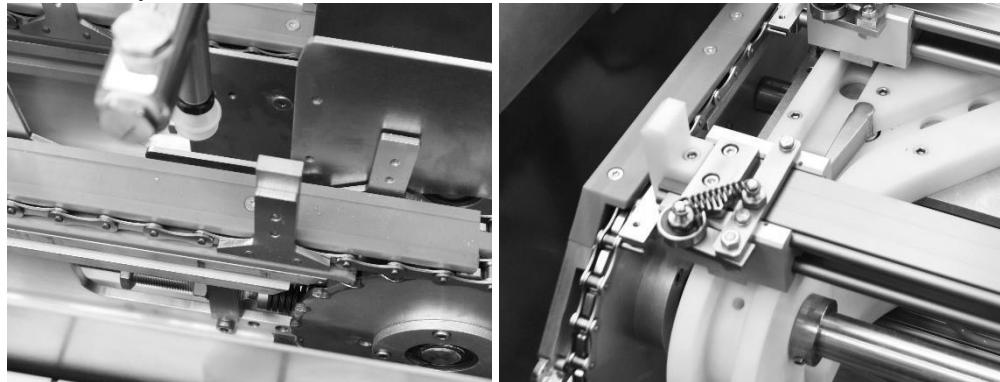
Do not spray with water!

Interval in hours of operation	Designation
8	Use a vacuum cleaner and cloth in order to clean the cartoner, removing all cardboard fibres, contamination caused by the product etc. Thorough cleaning of all moving parts is highly recommended.
40	Clean all toothed belts and toothed pulleys 



Interval in hours of operation	Designation
40	<p>Visual inspection of the water separator, drain water as required</p> 
	<p>Visual inspection of the entire system</p>

320	After the cleaning, lightly lubricate using the system using a multi-purpose grease as required: <ul style="list-style-type: none">• Gears of the top guide way• All hexagonal shafts, trapezoidal spindles and support axes 
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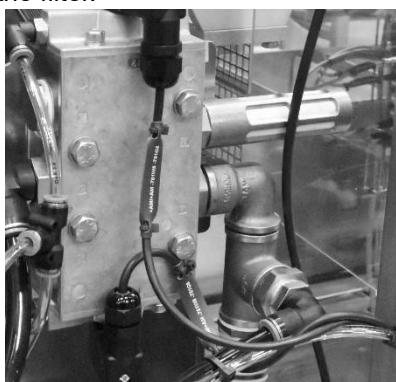
Interval in hours of operation	Designation
320	Vacuum the carrier chains, cassette conveyor chains, intermediate conveyor chains, and insertion conveyor chains. Subsequently, use a brush and clean them In order to maintain the smooth running of the machine, careful cleaning of the chains is mandatory. 

Clean the pushers along the insertion conveyor. The running surfaces require special attention. Never use metal objects for cleaning purposes. These objects will scratch the running surface.

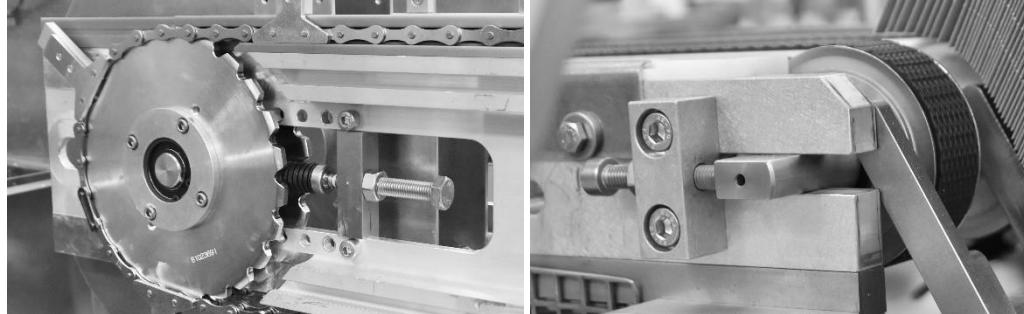
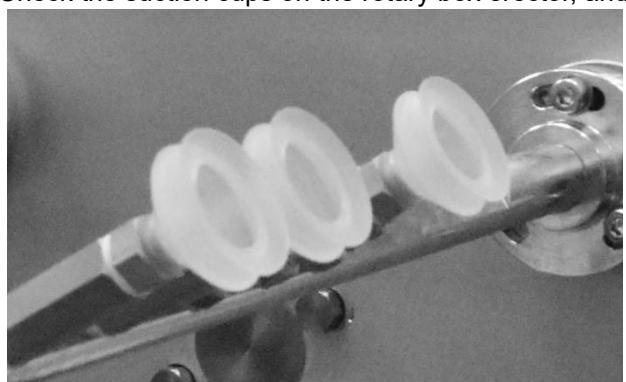


Clean the cassette conveyor including the cassette guide and the individual cassettes

Clean the pneumatic filter on the rotary feeder and service unit or, if clogged, replace the filter.

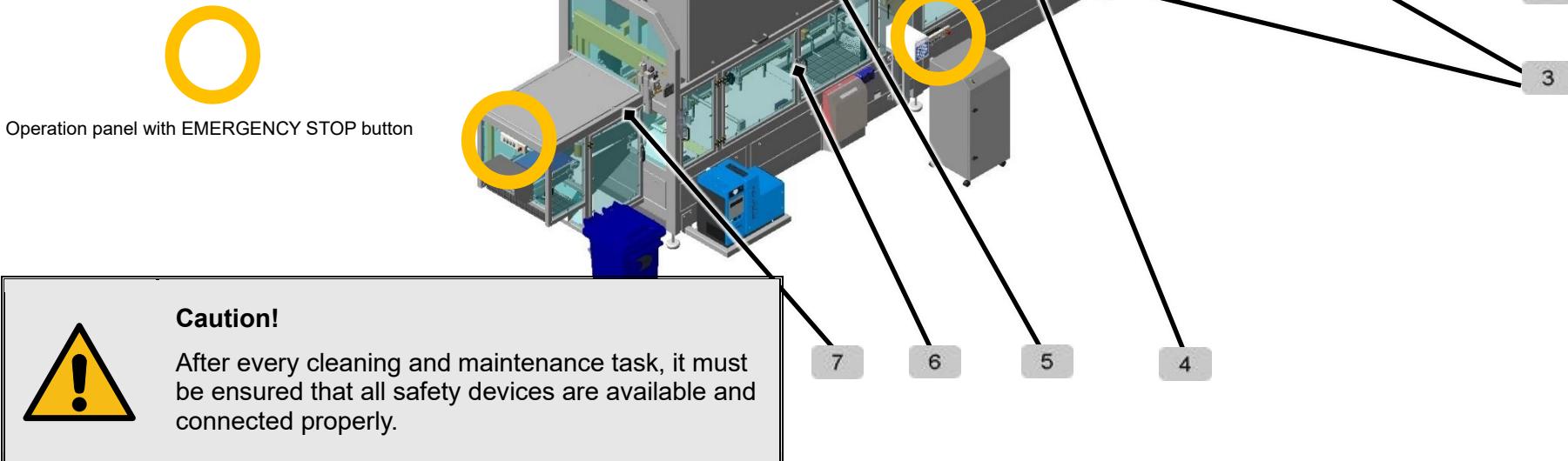


Interval in hours of operation	Designation
320	Clean the fans on the motors.  A black and white photograph of a motor fan assembly. The image shows a dark, ribbed metal housing with a circular grille on top through which the fan blades are visible. The housing appears to be part of a larger industrial motor unit.

500	<p>Check the tension of all toothed belt drives and conveyor belts/chains. Re-tension the components as required.</p> 
	<p>Check the parallelism of the carrier chains, set-down dimension A, position of cassette and insertion conveyor in relation to the carrier tape, re-adjust the components, as required.</p>
	<p>Check the suction cups on the rotary box erector, and replace if necessary</p> 
3000	<p>Change the oil of the bevel spur gear, the rotary feeder and the insertion conveyor Lubricant quantity 0.3 kg The gears are filled with Klüberoil 4 UH1 - 150 N at the factory.</p>

6.9. Safety devices Horizontal cartoner HK-IV-S-”k”-10”/R

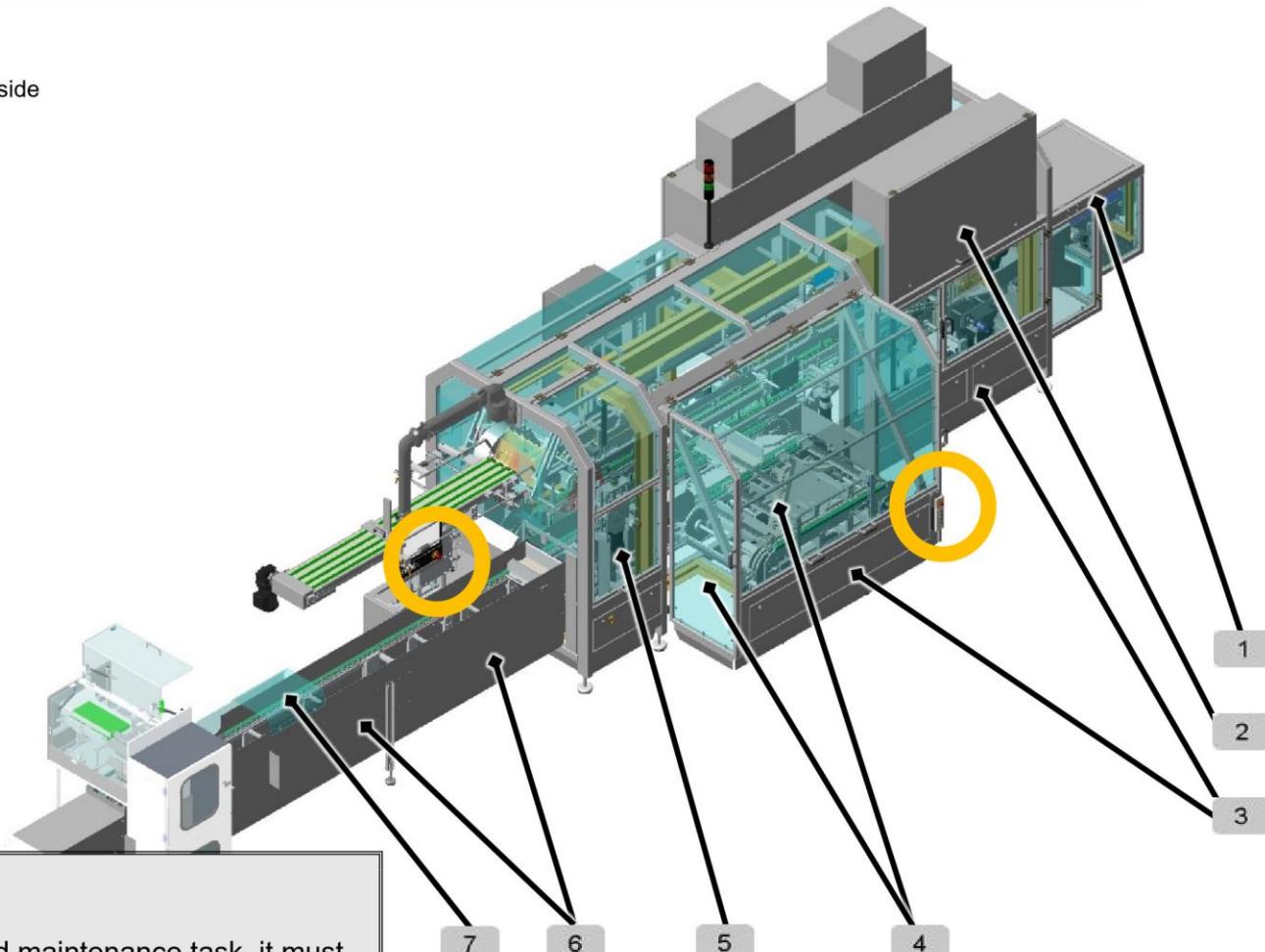
- 1 Cassette conveyor protective enclosure
- 2 Cassette conveyor protection sheets
- 3 Protection sheets, left-hand side
- 4 Rotary box erector safety door
- 5 Control cabinet safety doors, left-hand side
- 6 Laser and gluing safety doors
- 7 Safety tunnel outlet



-
- 1 Safety tunnel outlet
 - 2 Control cabinet safety doors, right-hand side
 - 3 Protective sheets, right-hand side
 - 4 Safety doors at insertion point
 - 5 Product leveller safety door
 - 6 Cassette conveyor protection sheets
 - 7 Cassette conveyor protective enclosure



Operation panel with EMERGENCY STOP button



Caution!

After every cleaning and maintenance task, it must be ensured that all safety devices are available and connected properly.

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7. Operation



Only a technician authorised by DIENST Packsystems GmbH shall be permitted to proceed with the initial start-up of the machine. The customer shall provide qualified personnel according to chapter 2.3 of these operating instructions for training on the machine.

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7.1. Components

7.1.1. Compressed air service unit

Set the pneumatic pressure to 6 bar by turning the set screw on the service unit.

7.1.2. Main switch & Repair switch

The main switch and the repair switch of the machine are located at the end of the machine on control cabinet S1.



Main switch

The entire machine is de-energized

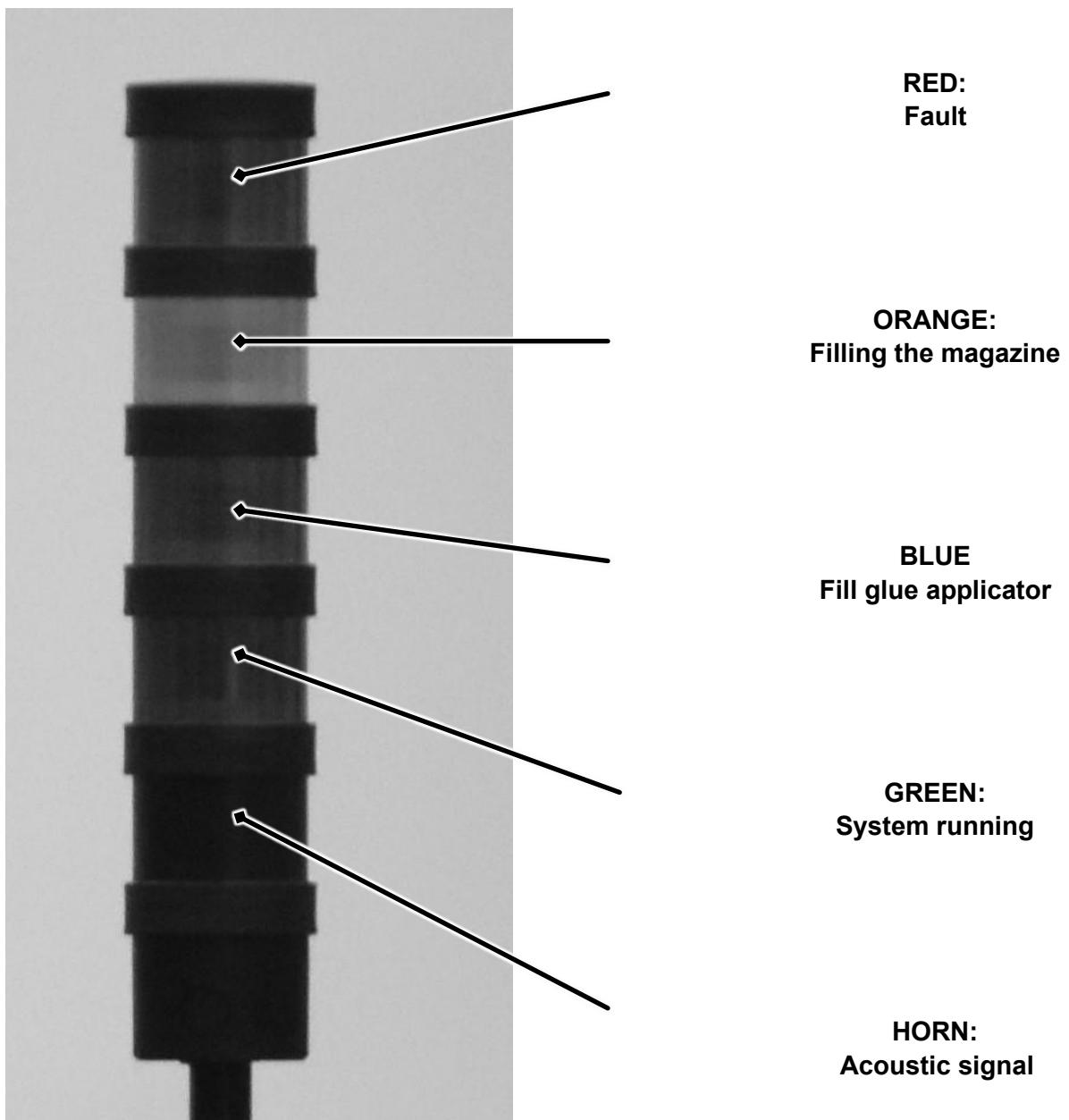


Repair switch

When the repair switches are disabled, all motors in the machine are disconnected from the power supply

7.1.3. Signal tower

The bright colours have the following meaning:

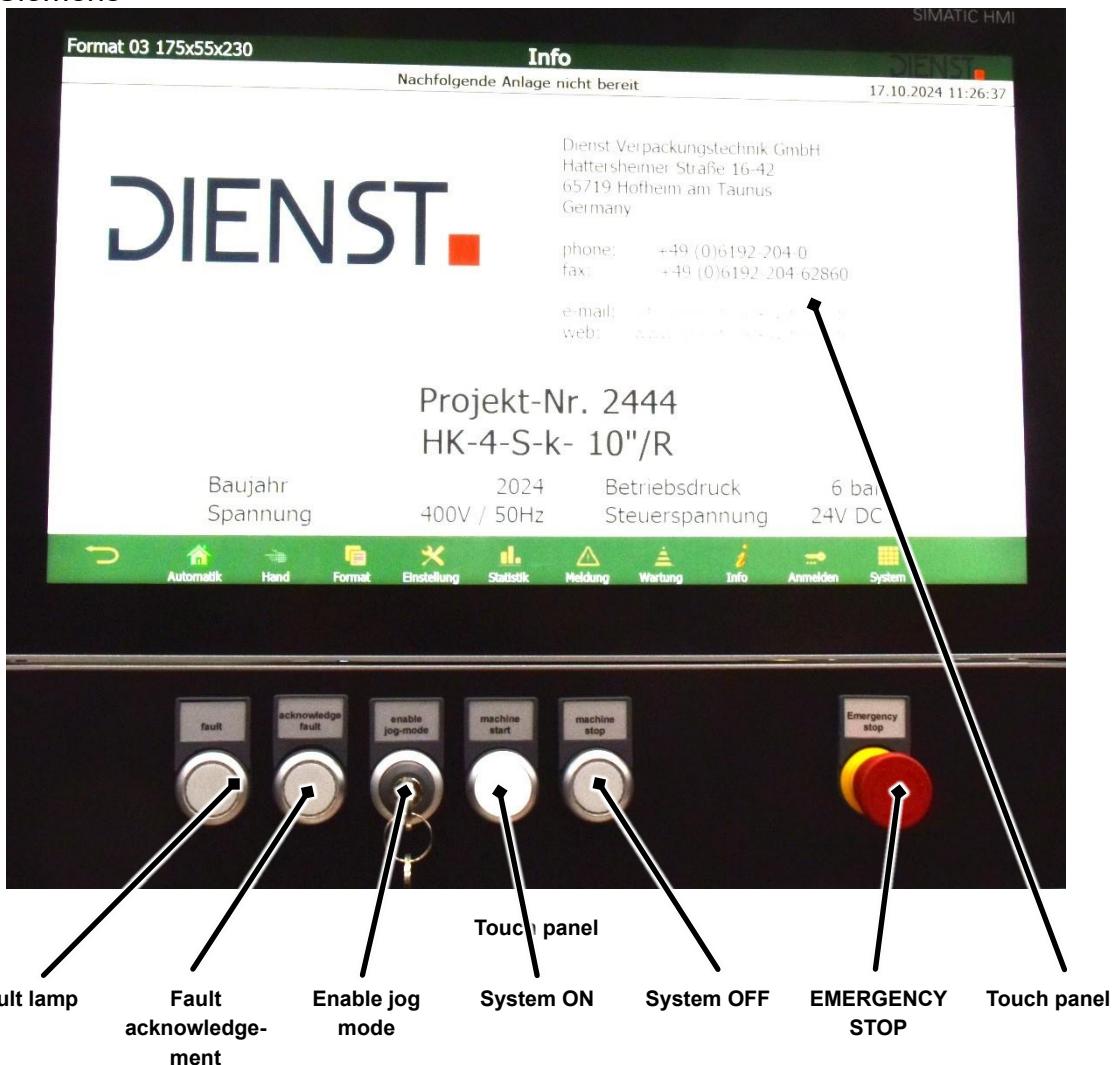


Signal tower

7.2. Operation panel

The operation panel consists of:

- Operating housing with fault lamp and buttons - TouchPanel TP 1200 by Siemens



"Fault" lamp	indicates one or more faults are pending
"Fault acknowledgement" button	Acknowledgement of faults after they have been eliminated
Key-operated switch "Enable jog mode"	Activates the jog mode
Button System ON	Starts the cartoner
Button System OFF	Stops the cartoner
EMERGENCY STOP button	Press in case of danger to trigger an emergency stop

7.2.1. Touch panel: Design

Main screen

Keys, left-hand side	<p>Refill carton magazine</p> <p>Imprint detector is deactivated</p> <p>Production data</p> <p>OK: 132Stck. NOK: 05Stck.</p> <p>Target velocity 140/min</p> <p>Automatic Manual Format Settings Statistics Message Maintenance Info Logout System</p>
	Keys, bottom of screen

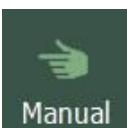
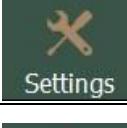
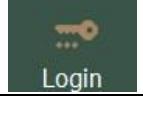
Main screen	Here, the current format is displayed
Left key pad	Visible in most windows
Bottom key pad	Here, the password level (dots in the key) are displayed

Touch panel: Keys, left-hand side

Keys, left-hand side (Auto menu)			
	Vacuum pump ON/OFF		Emptying the cartoner
	Folding box magazine ON/OFF		Solo or in-line operation of the cartoner
	Top guide way UP/DOWN		Move the system to its basic position
	Vacuum every second folding box		

Touch panel: Keys, bottom of screen

Keys, bottom of screen			
	go to the Automatic menu		go to the Fault messages

 Manual	go to the Manual menu	 Maintenance	go to the Service menu
 Format	go to the Format menu	 Info	go to the Info display
 Settings	go to the Parameter settings	 Login	User menu
 Statistics	go to the Statistics menu	 System	go to the System menu

7.2.2. Miscellaneous controls

Controls of flap layer, cartoner left-hand side, product infeed, machine outfeed



Cartoner controls

EMERGENCY STOP button

Press in case of danger to trigger an emergency stop

Fault

indicates one or more faults are pending

Acknowledge fault

Acknowledgement of faults after they have been eliminated

Start

Starts the cartoner

Stop

Stops the cartoner

7.2.3. Automatic mode



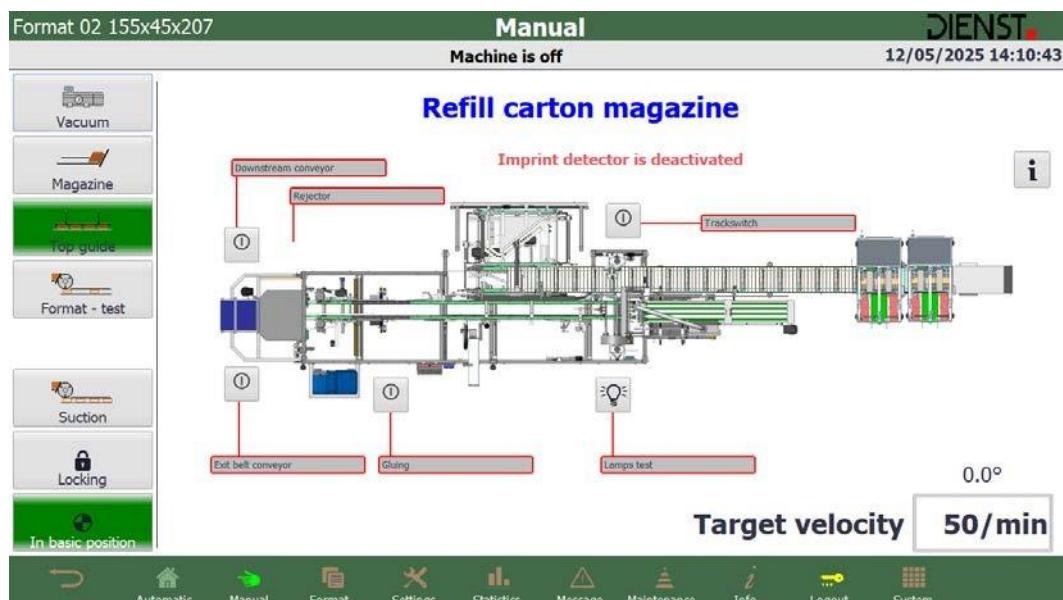
Production data

Production data display

Nominal speed

Input of target cycle rate

7.2.4. Manual mode



Display the individual function names, drives, axes, etc.



Activating the folding box extraction



Unlock the safety doors

Removal conveyor

Removal conveyor ON/OFF

Ejector

Ejector ON/OFF

Deflector

Product insertion deflector ON/OFF

Discharge conveyor

Discharge conveyor ON/OFF

Gluing

Gluing On/Off

Lamp test

Lights On/Off

Nominal speed

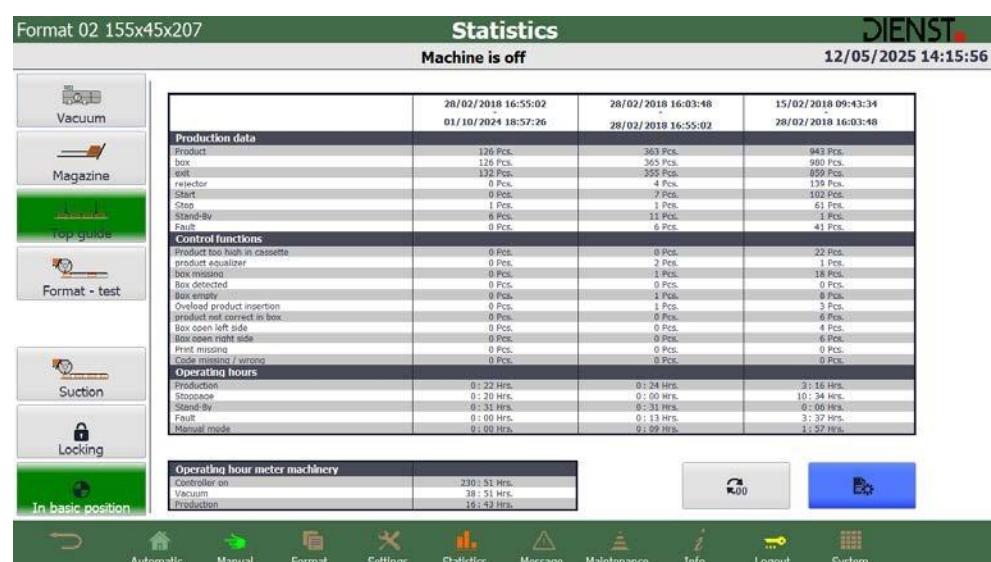
Input of target cycle rate

7.2.5. Statistics



Productions diagram

Display of production graphics



Production data

Production data display

Control functions

Control functions display

Operating times

Display of operating times

Machine's operating hours

Display of the machine's operating hours counter counter

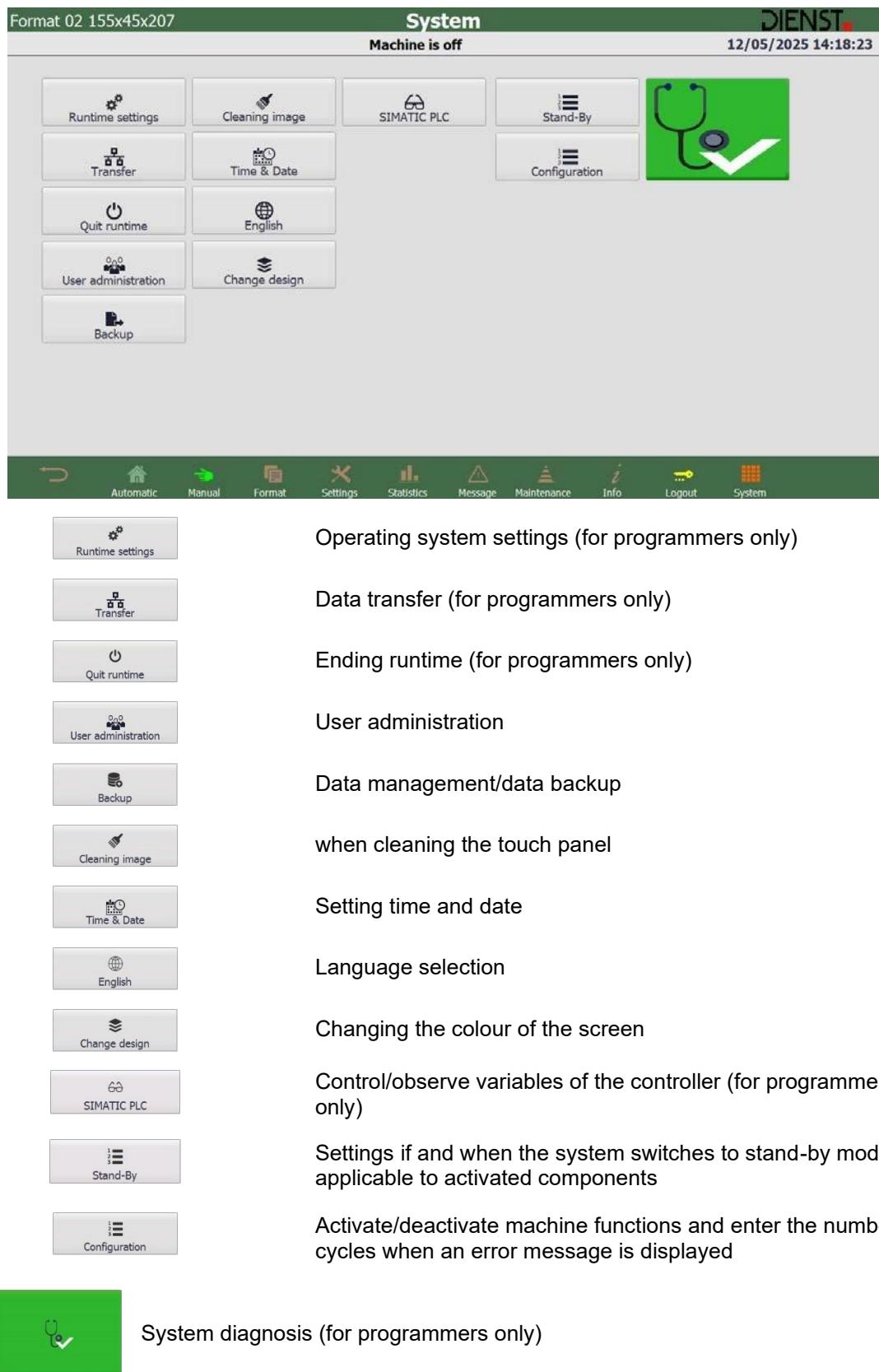


Resetting the current production counter to zero



Work shift counter settings

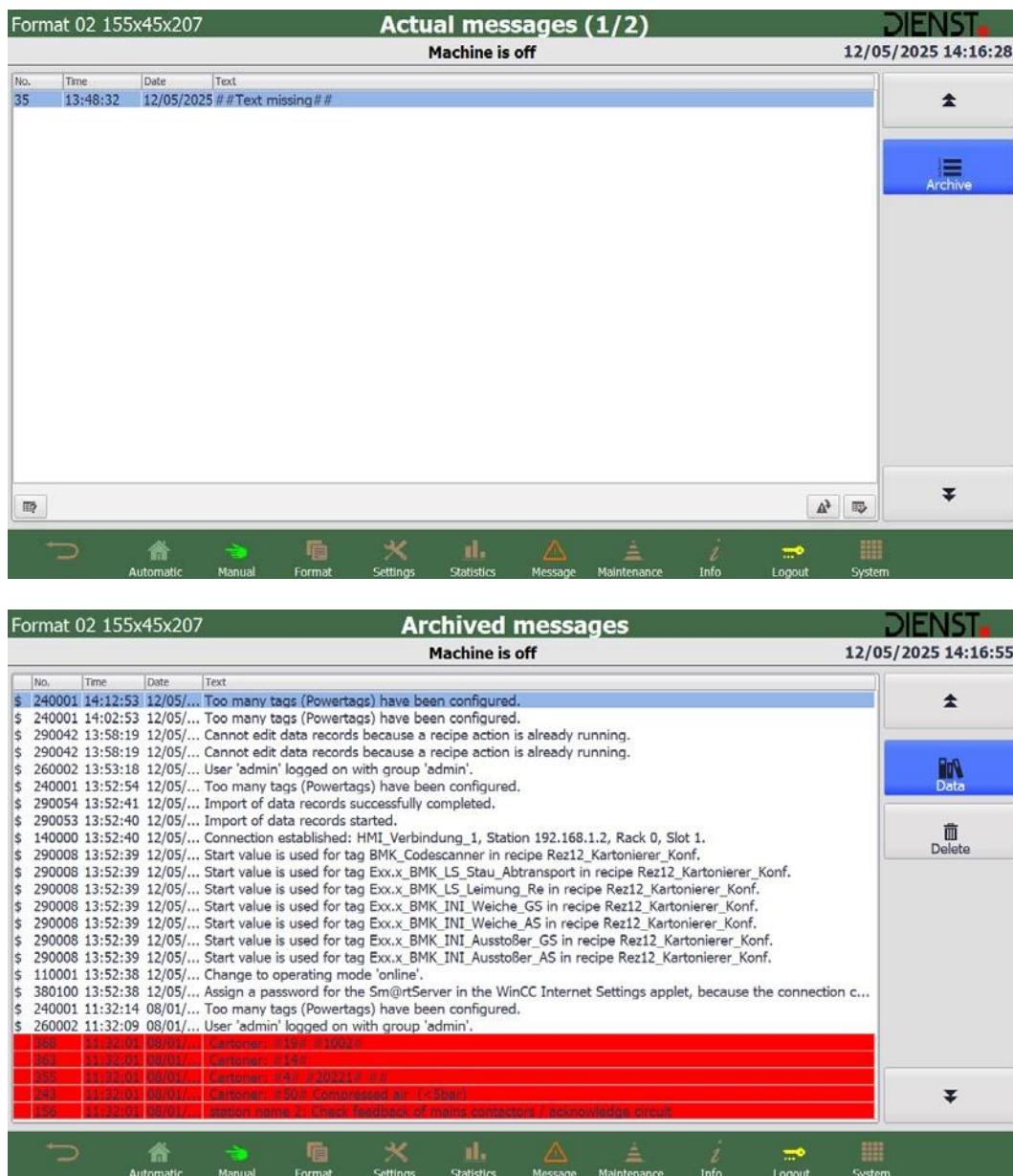
7.2.6. System



7.2.7. Faults

The FAULTS screen appears when:

- A fault is pending
- The FAULT button was pressed



When there are no more faults pending, this view is automatically faded out and the previously selected screen appears again.

7.2.8. Preventive maintenance

Format 02 155x45x207

Maintenance
Machine is off

DIENST 12/05/2025 14:17:24

Interval	Actual	Arrived	Acknowledged	Acknowledge	Help
8Hrs.	0	01/01/1999 12:00:00	01/01/1999 12:00:00	<input type="button" value="Ack"/>	<input type="button" value="Help"/>
40Hrs.	0	01/01/1999 12:00:00	01/01/1999 12:00:00	<input type="button" value="Ack"/>	<input type="button" value="Help"/>
320Hrs.	0	01/01/1999 12:00:00	01/01/1999 12:00:00	<input type="button" value="Ack"/>	<input type="button" value="Help"/>
500Hrs.	0	01/01/1999 12:00:00	01/01/1999 12:00:00	<input type="button" value="Ack"/>	<input type="button" value="Help"/>
3000Hrs.	0	01/01/1999 12:00:00	01/01/1999 12:00:00	<input type="button" value="Ack"/>	<input type="button" value="Help"/>

DO NOT USE FLAMMABLE, VOLATILE OR CAUSTIC FLUIDS TO CLEAN THE EQUIPMENT!
 DO NOT WASH DOWN WITH WATER!

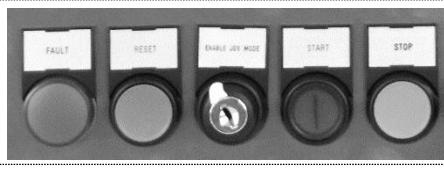
Automatic Manual Format Settings Statistics Message Maintenance Info Logout System

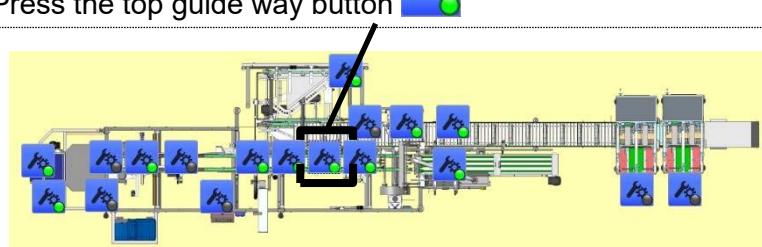
Display of the machine's maintenance intervals

7.2.9. Top guide way function test

The function test of the top guide way must be carried out every 24 days. Three days before the time expires, a warning message appears on the display that the function test must be performed. The machine is ready for operation despite the warning. After the time has expired, the machine becomes faulty and can only be restarted after a successful function test.

Functional test procedure:

- Activating the Automatic mode 
- Acknowledging faults 
- Activate manual mode 
- Activate the key-operated switch 
- Use the  button in order to move the top guide way downward.
- Press  key to switch to the Settings menu
- Press the top guide way button 
- Start the function test by pressing the  button (hold button approx. 6 seconds)



If the function test was successful, the green key is lit

If a test is not successful, a message is displayed stating that the function test could not be completed. In this case, check all mechanical functions of the machine and repeat the test. If the function test still cannot be carried out successfully, contact the Customer Service of the Dienst Verpackungstechnik GmbH:

Telephone: +49 (0)6192 9738-0 Fax:

49 (0) 6192 - 9738 990,

Email: service@dienst-packsystems.de

7.3. Format change

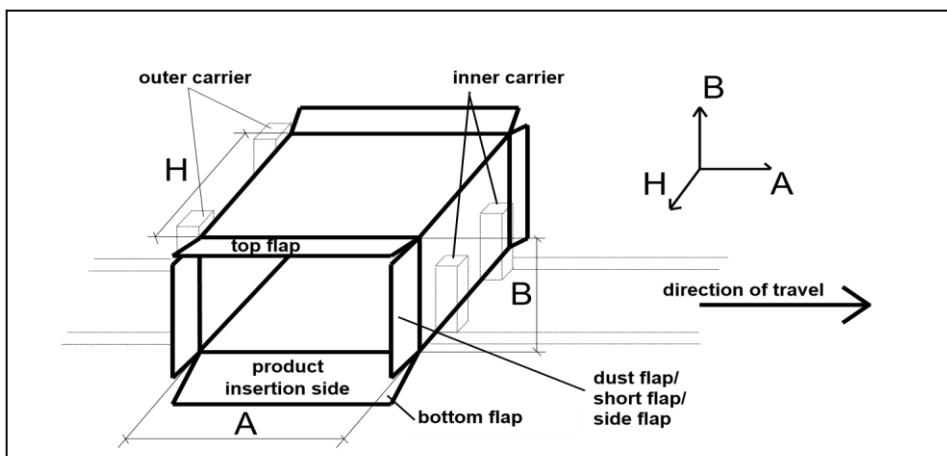
Select the new format at the operation panel when the machine is stopped. When changing the format, the machine must be operated in set-up mode. Before starting the format change, please read chapter 6 of these operating instructions carefully.



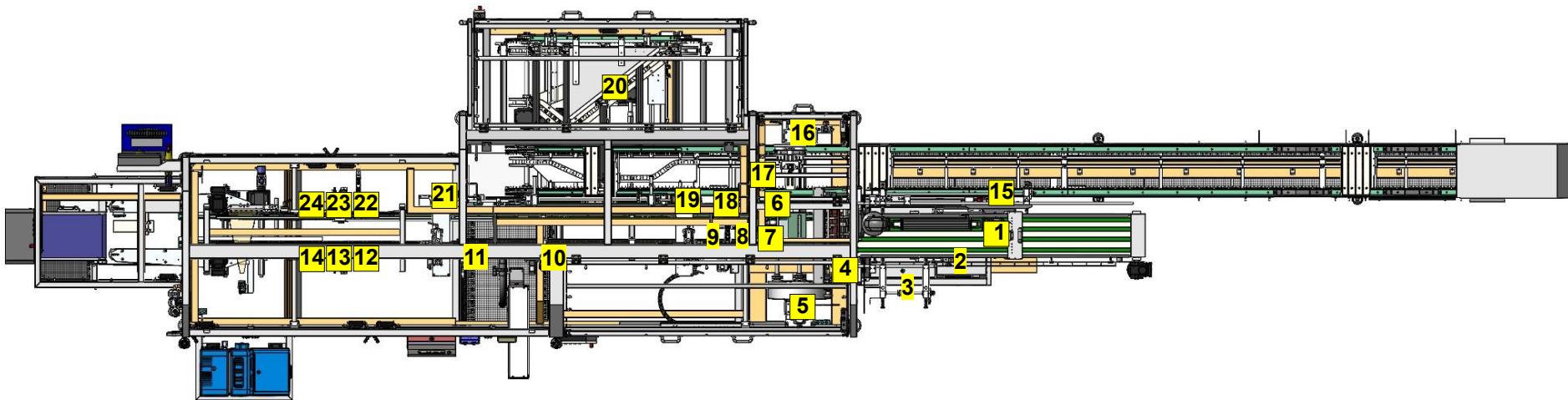
Once the adjustment procedure is completed, all clamping screws or clamping levers must be tightened again!

The format change must be carried out in the order described in chapter 6 of the Quick Guide.

First, the denominations of the folding box dimensions are illustrated here, as they are used in the following descriptions for format adjustment.



Denominations of the folding box dimensions

Format change points

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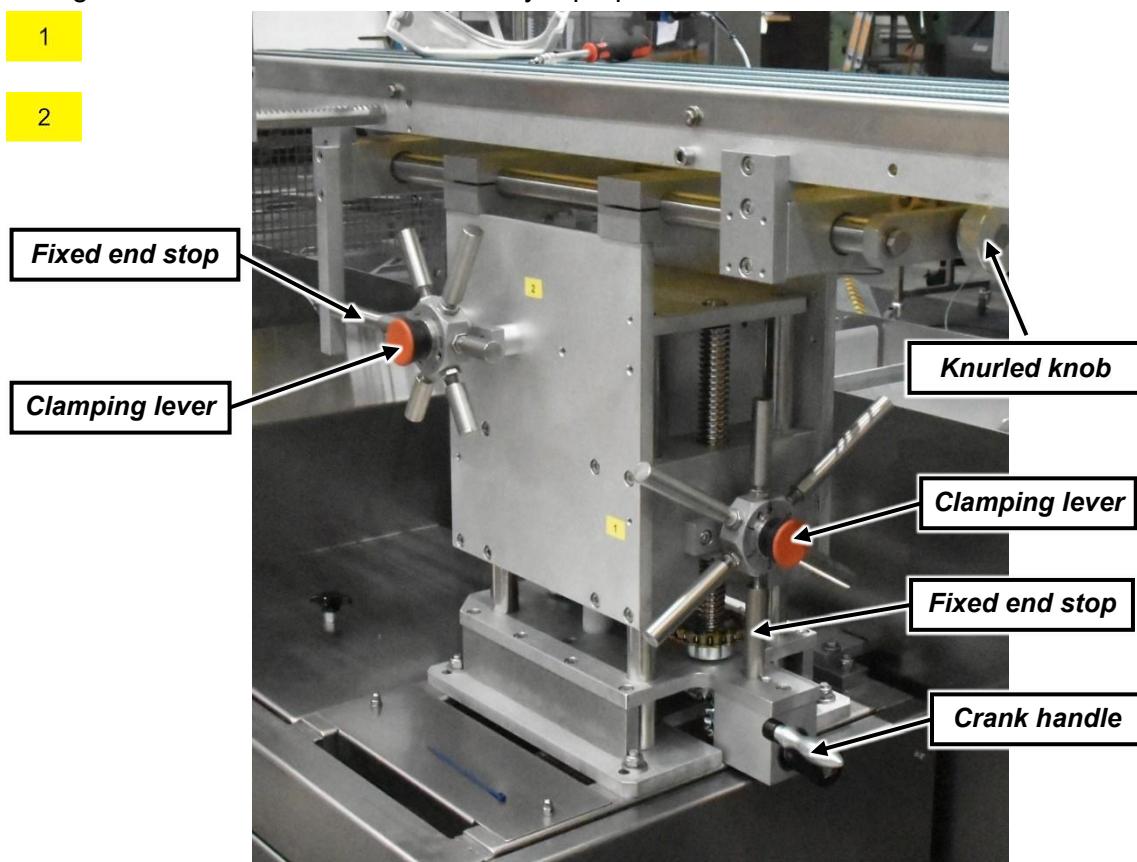
7.3.1. Adjustment tower

Function:

The adjustment tower positions the magazine for extraction purposes

Format change:

Adjust the height and distance to the folding box carrier conveyor purposes



Adjustment tower

- Release the clamping lever
- Insert the crank handle onto the square shaft
- Use the crank handle to set the “Height” of the adjustment tower (the allocation of the fixed end stop can be found in the format table of the Quick Guide)
- Use the knurled knob to set the “distance” to the carrier chain conveyor (horizontal)
(the setting value of the position indication can be found in the format table of the Quick Guide)
- Re-tighten clamping lever, pull off hand crank

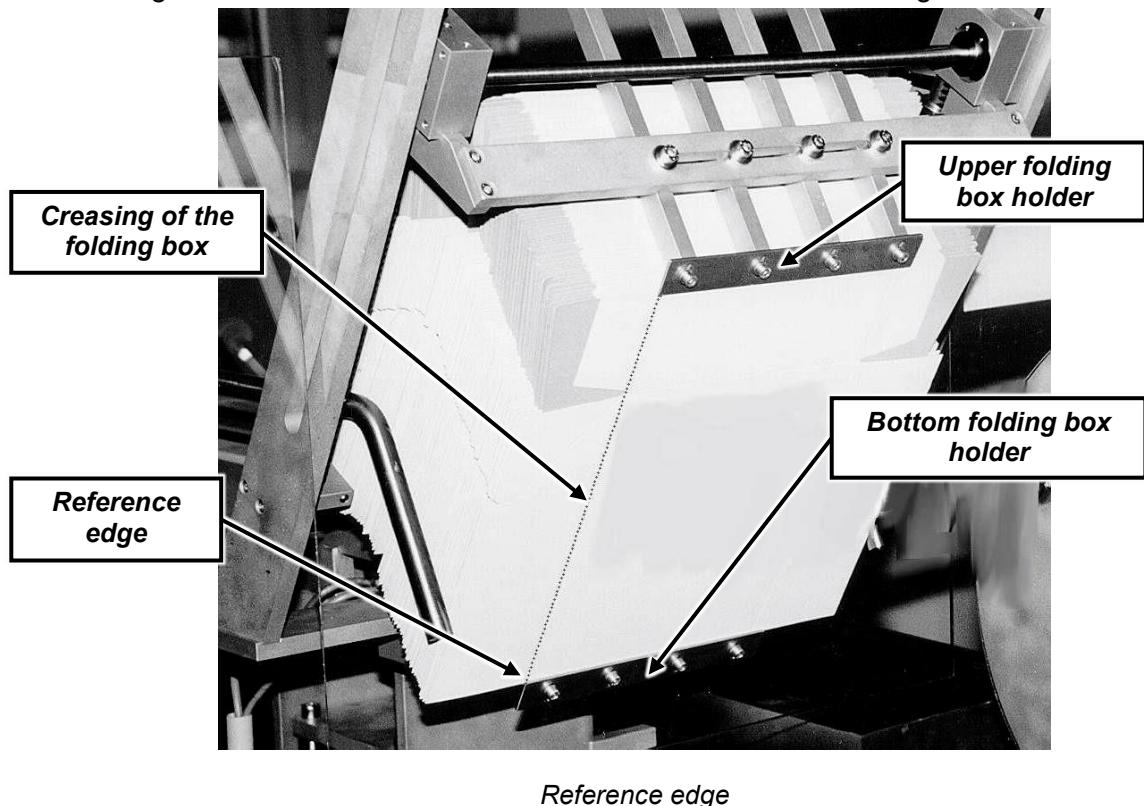


12 mm crank handle

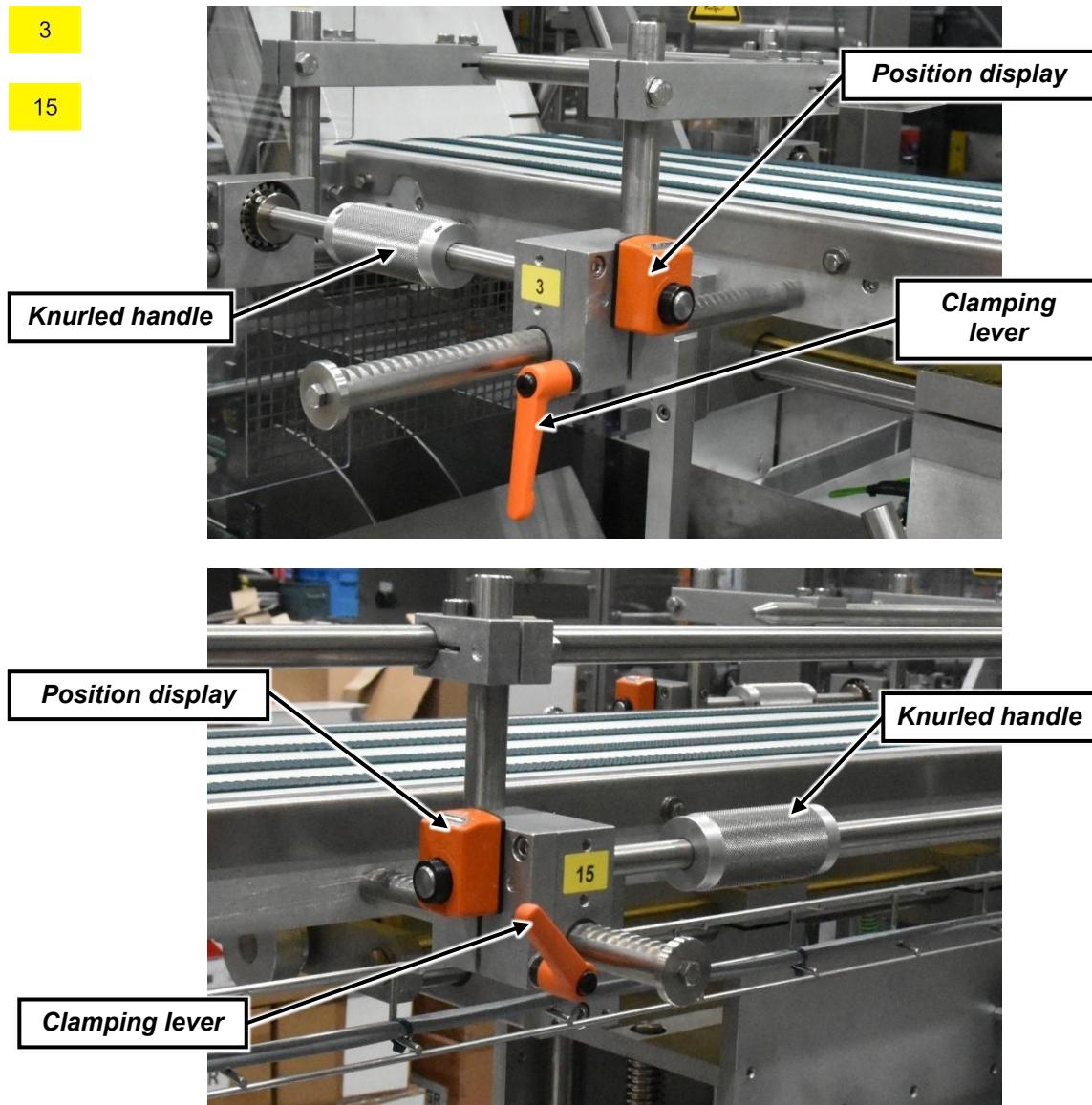
Format change:**7.3.2. Folding box feeding conveyor****Function:**

The feeding conveyor transports the folded boxes into the folding box magazine

Set side guide way to match folding box:
reference edge first
then the counter guidance



The right edge of the lower folding box holder in running direction of the magazine must be aligned with the grooving of the folding box, acting as reference edge



Side guide way of the folding box magazine

Adjust the reference edge first, then the counter guide!

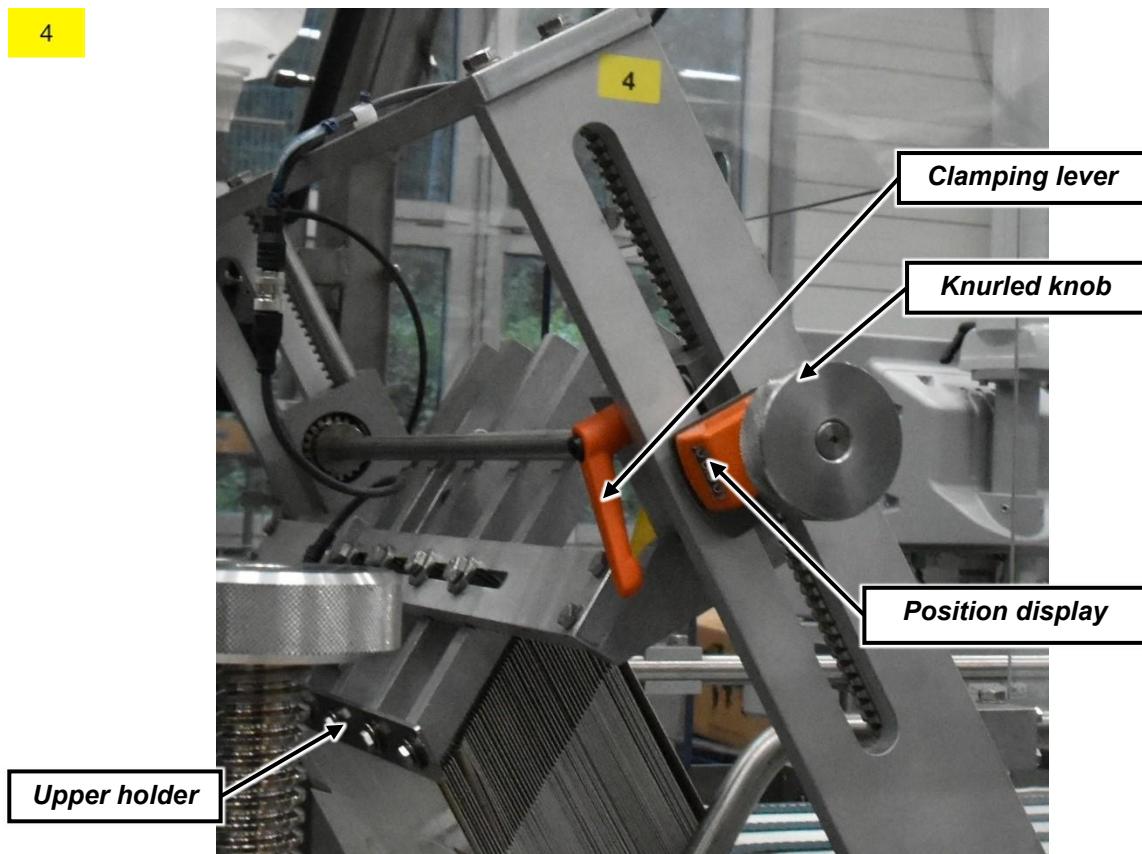
- Release the clamping lever
- Adjust the guides by turning the knurled handles, allowing for approx. 2 mm clearance between guides.
(the setting value of the position indication can be found in the format table of the Quick Guide)
- Re-tighten the clamping lever

7.3.3. Folding box magazine

Function:

Format change:

The folding box magazine provides the Adjust the height of the upper folding box folding box supply for extraction holder purposes.



Folding box magazine

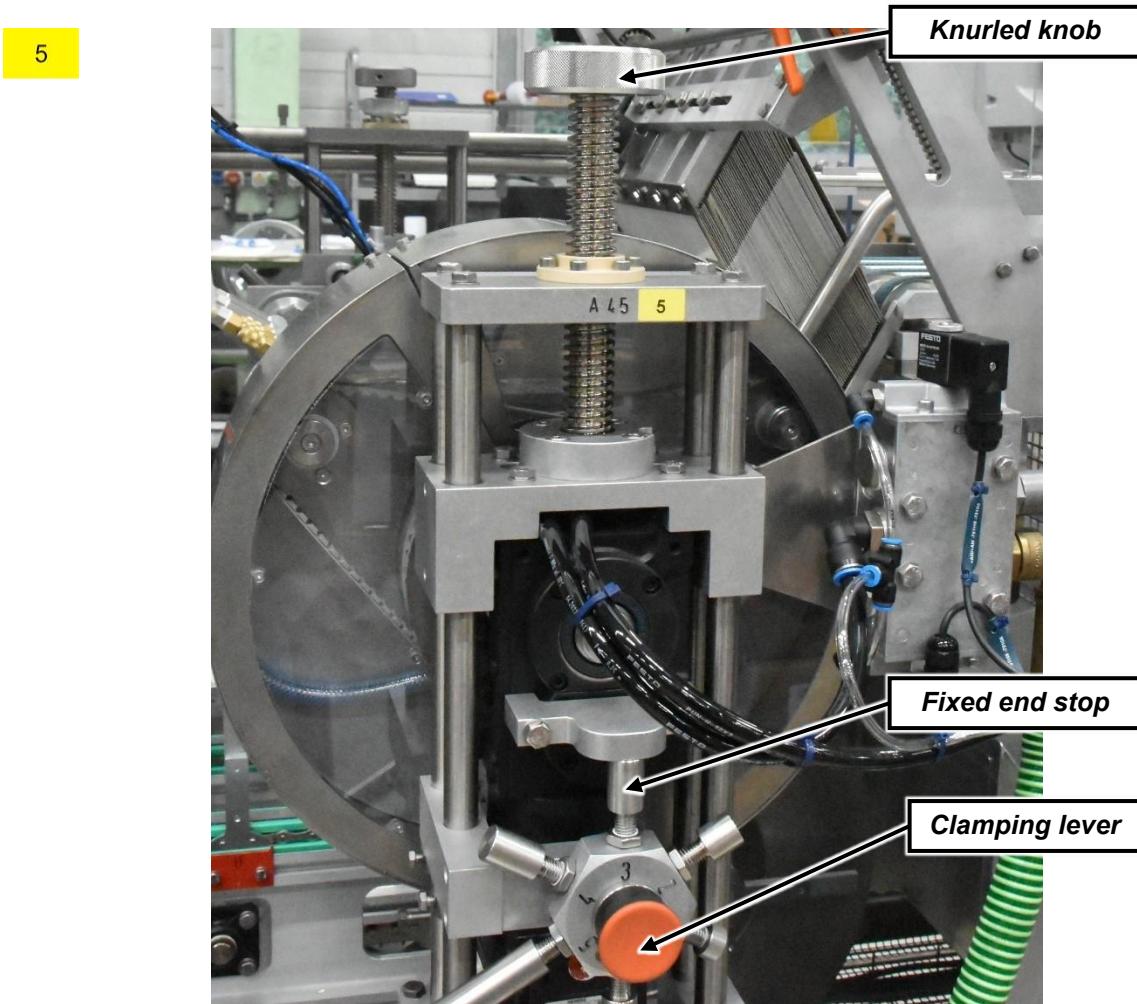
- Remove folding boxes from the magazine
- Release the clamping lever
- Use the knurled knob in order to adjust the upper holder to the folding box (the setting value of the position indication can be found in the format table of the Quick Guide)
- Insert folding boxes of the new format into the magazine
- Re-tighten the clamping lever

7.3.4. Rotary box erector

Function:

Format change:

The rotary feeder removes the folding box from the magazine, folds it up and dimension B inserts it into the carrier chain.



Adjusting the rotary feeder

- Release the clamping lever
- Raise the rotary feeder by turning the knurled knob
- Rotate the turret to raise the fixed end stop to the top
(The allocation of the fixed end stop can be found in the format table of the Quick Guide)
- Lower the rotary feeder by turning the knurled knob
- Re-tighten the clamping lever

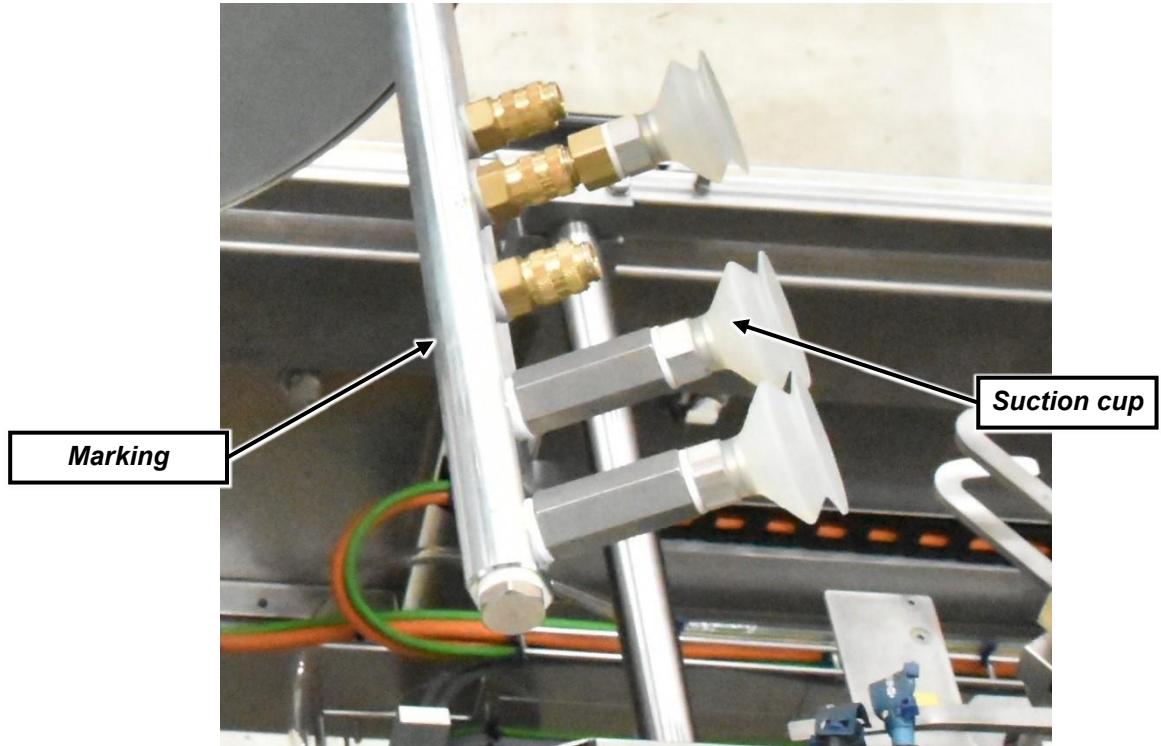
Function:

The entire surface of all suction cups must be in contact with the folding box. The folding box must be picked up as far out as possible. Therefore, if there

Extract the folding boxes

**Format
change:**

are major differences in folding box's dimension H, re-screw the suction cups



Suction cup of rotary box erector

- Unscrew the applicable suction cups and screw plugs
- Screw the applicable suction cups and screw plugs into new position

(The setting of the suction cup can be found in the format table of the Quick Guide)

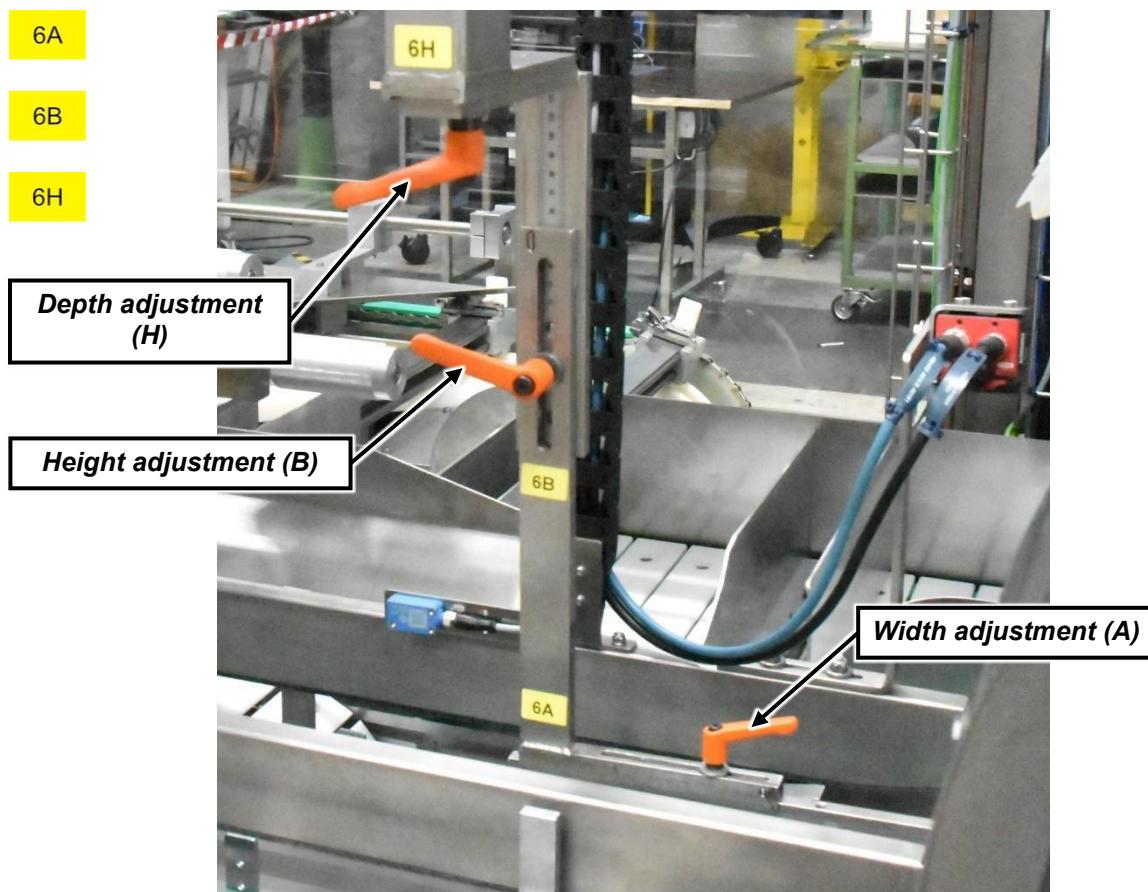
7.3.5. Intake roller for top guide way

Function:

The intake roller deflects the inserted folding box in the carrier conveyor below the top guide way.

Format change:

Adjust the intake roller of the top guide way so that the carrier chains take over the folding box



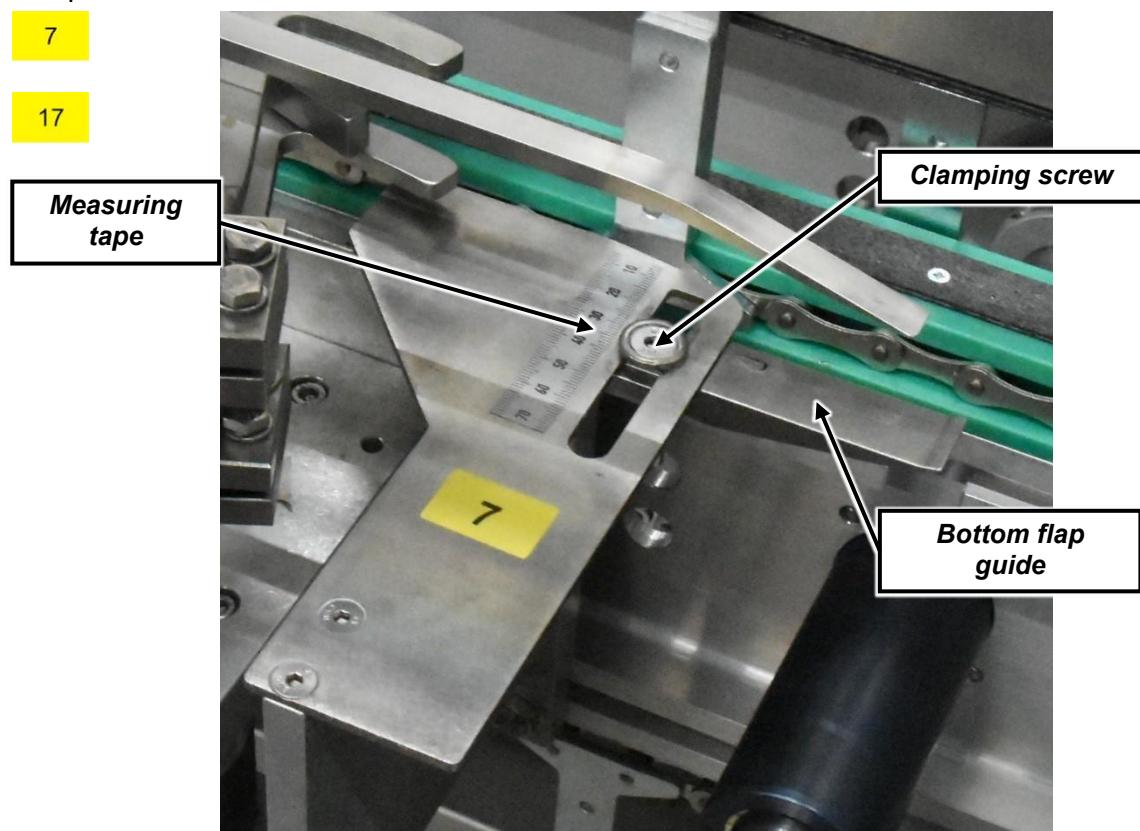
Intake roller for top guide way

- Release the applicable clamping lever
- Adjust the intake roller
- Adjust the height and width to match the folding box
- Depth: at the centre between top guide way tubes
(the setting value of the measuring tape can be found in the format table of the Quick Guide)
- Re-tighten the clamping lever

Format change:**7.3.6. Bottom flap guide****Function:**

After inserting the folding box into the chains, the flap guide moves the flap underneath a sheet.

Adjust the flap guide in order to ensure carrier that dust flaps can still pass unhindered. bottom



Bottom flap guide

- Loosen the clamping screw
- Adjust the bottom flap guide using the slotted hole
(the setting value of the measuring tape can be found in the format table of the Quick Guide)
- Tighten the clamping screw



4 mm Allen key

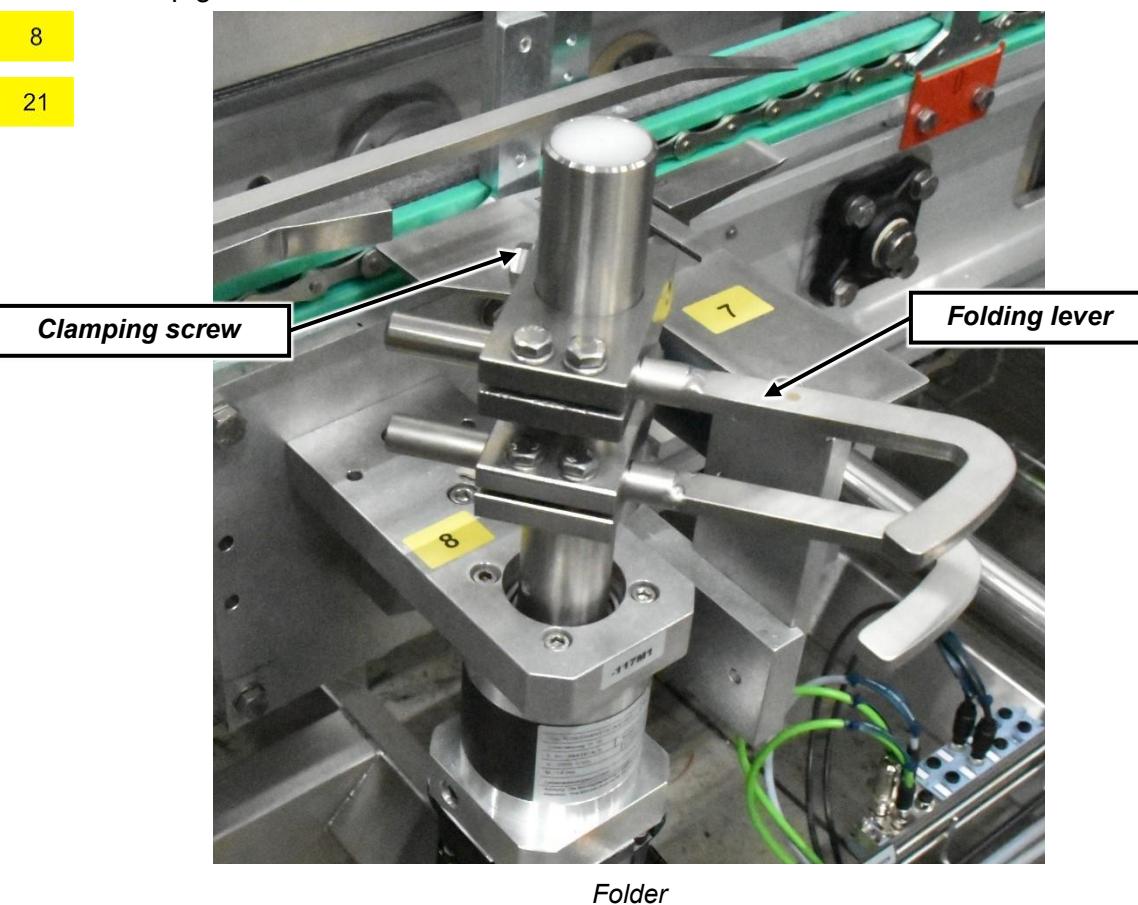
7.3.7. Folder

Function:

The folding levers ensure that the rear flaps—which are facing in the direction of the format running—
are pushed underneath the short flap guide.

Format change:

Install/remove the folding lever according to the format running direction—
are pushed underneath the short flap guide.



Folder

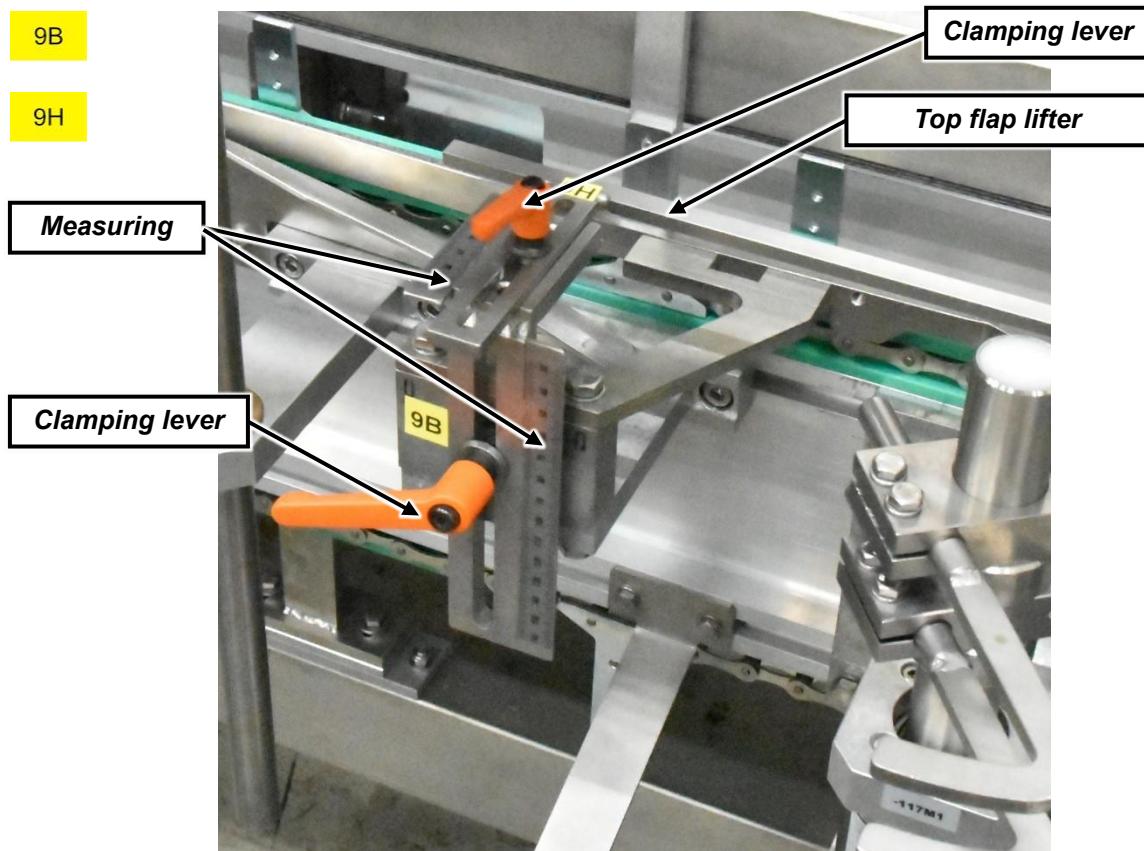
- Loosen the clamping screw
- Install/remove the folding lever according to the format
(the setting of the folding lever can be found in the format table of the Quick Guide)
- Tighten the clamping screw

7.3.8. Folder of top flap lifting device

Function:

Format change:

Lift the top flap in order to ensure that the product can be pushed unhindered. Adjust the folding box height and width the of the flap into the box.



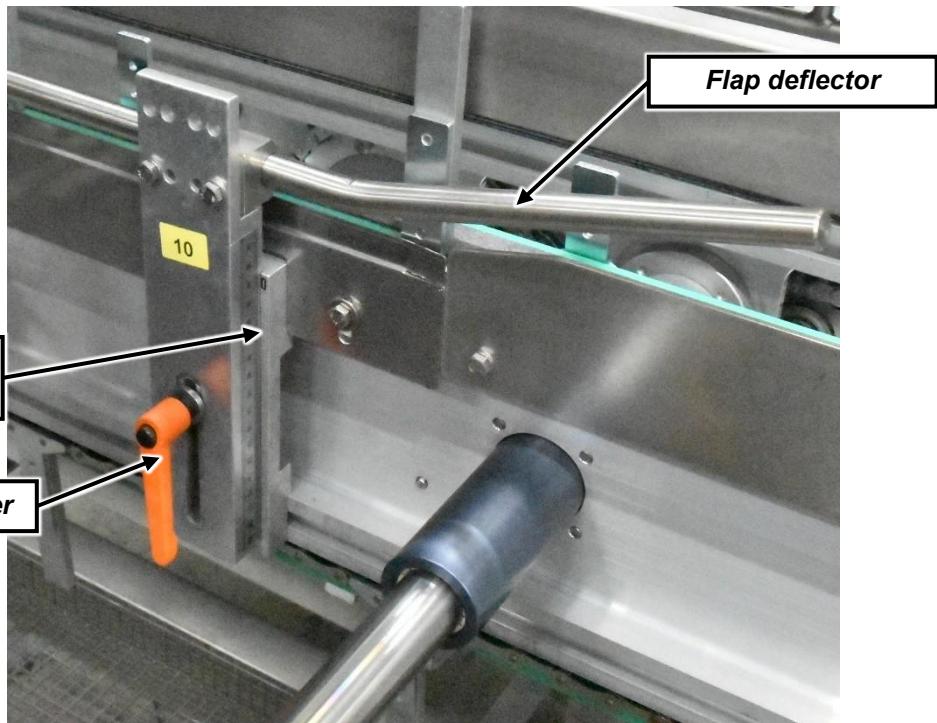
Folder of top flap lifting device

- Release the applicable clamping lever
- Adjust the top flap lifting device to the folding box height and width of the flap (the setting value of the measuring tape can be found in the format table of the Quick Guide)
- Tighten the clamping lever

Format change:**7.3.9. Flap deflector laser****Function:**

Fold over the top flap so that the laser can scan the folding box

10

*Flap deflector laser*

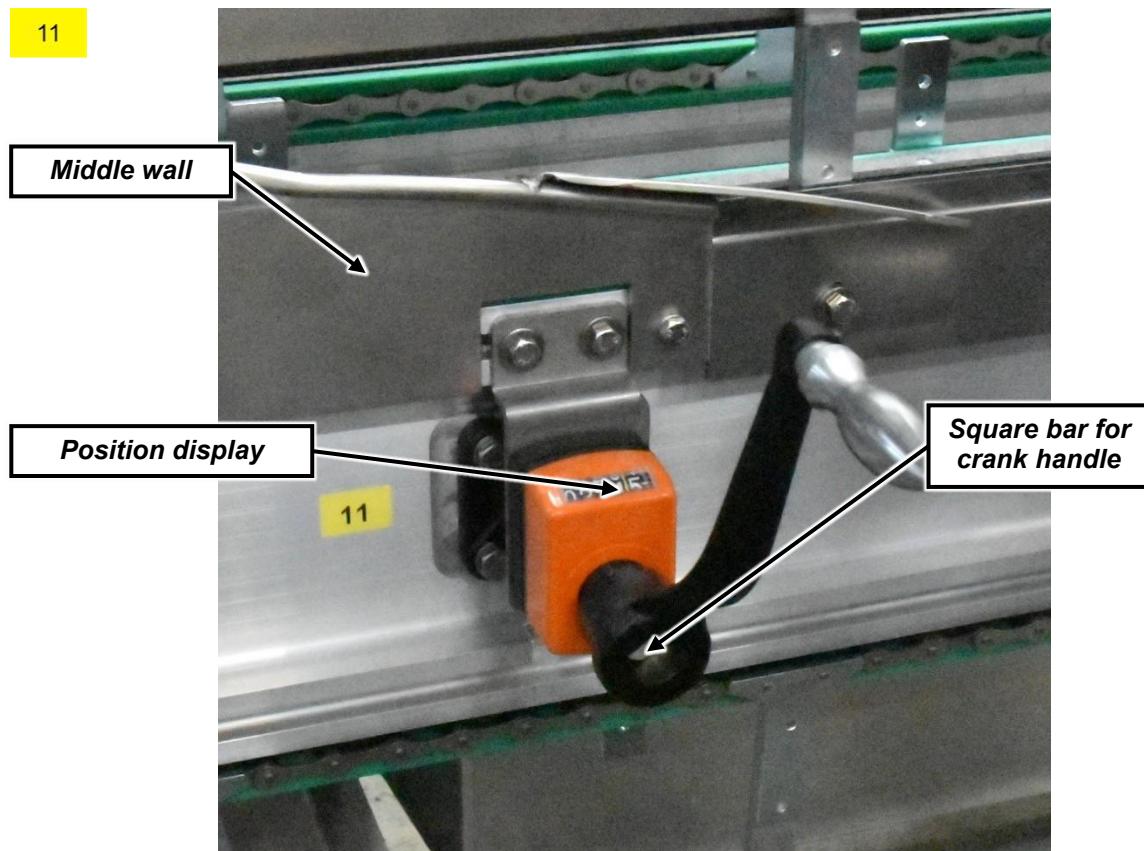
- Release the clamping lever
- Adjust the flap deflector to the height of the folding box
(the setting value of the measuring tape can be found in the format table of the Quick Guide)
- Tighten the clamping lever

7.3.10. Middle wall**Function:**

The carrier conveyor transports the folding box. Set to folding box dimension H box.
The chain guides of the middle walls support the folding boxes.

Format change:

They are fixed and transported between the carriers



Middle wall

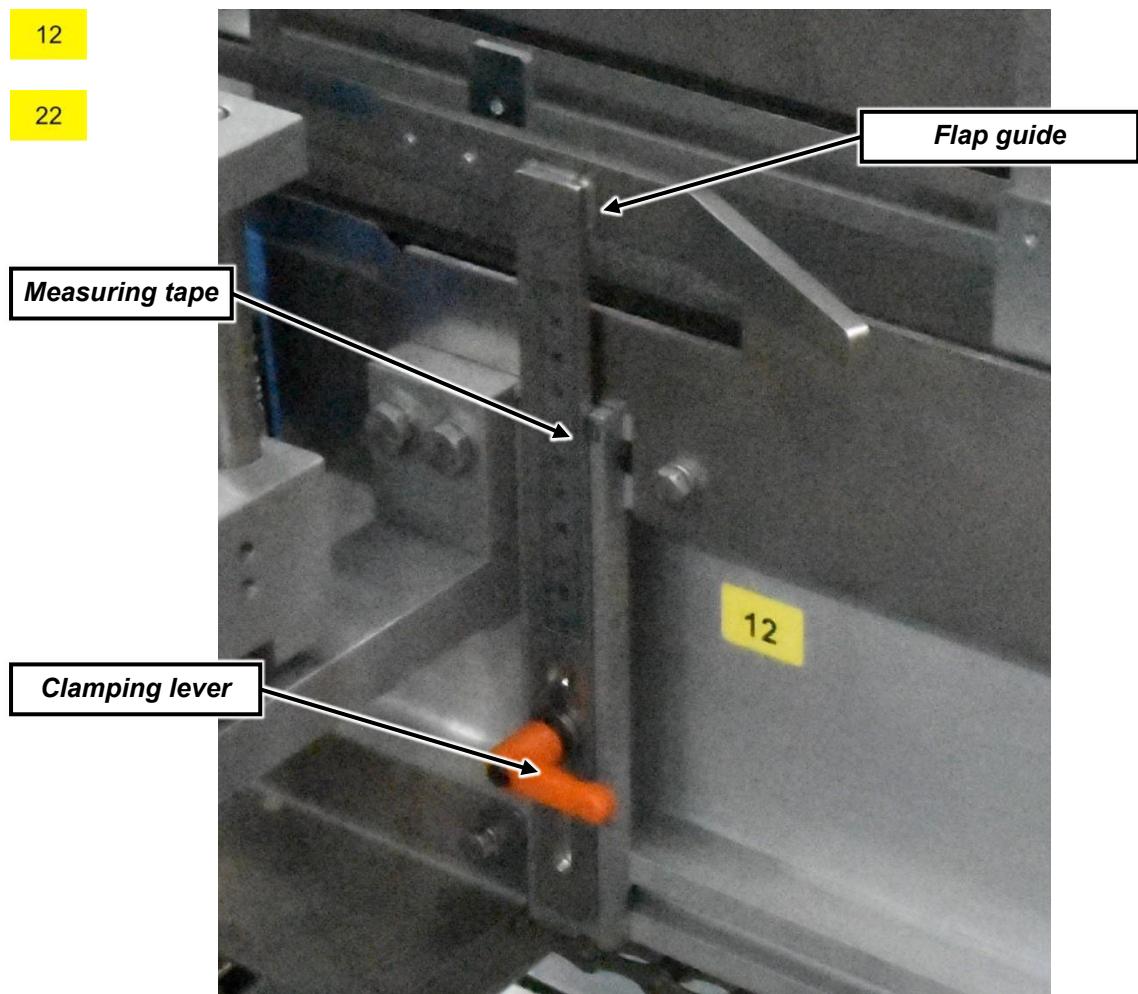
- Attach crank handle
- Use the crank handle to adjust the middle wall to folding box (the setting value of the position indication can be found in the format table of the Quick Guide)
- Remove the crank handle

7.3.11. Side flap guide Function:

Format change:

Side flap guide.

Adjust to new folding box height

*Side flap guide*

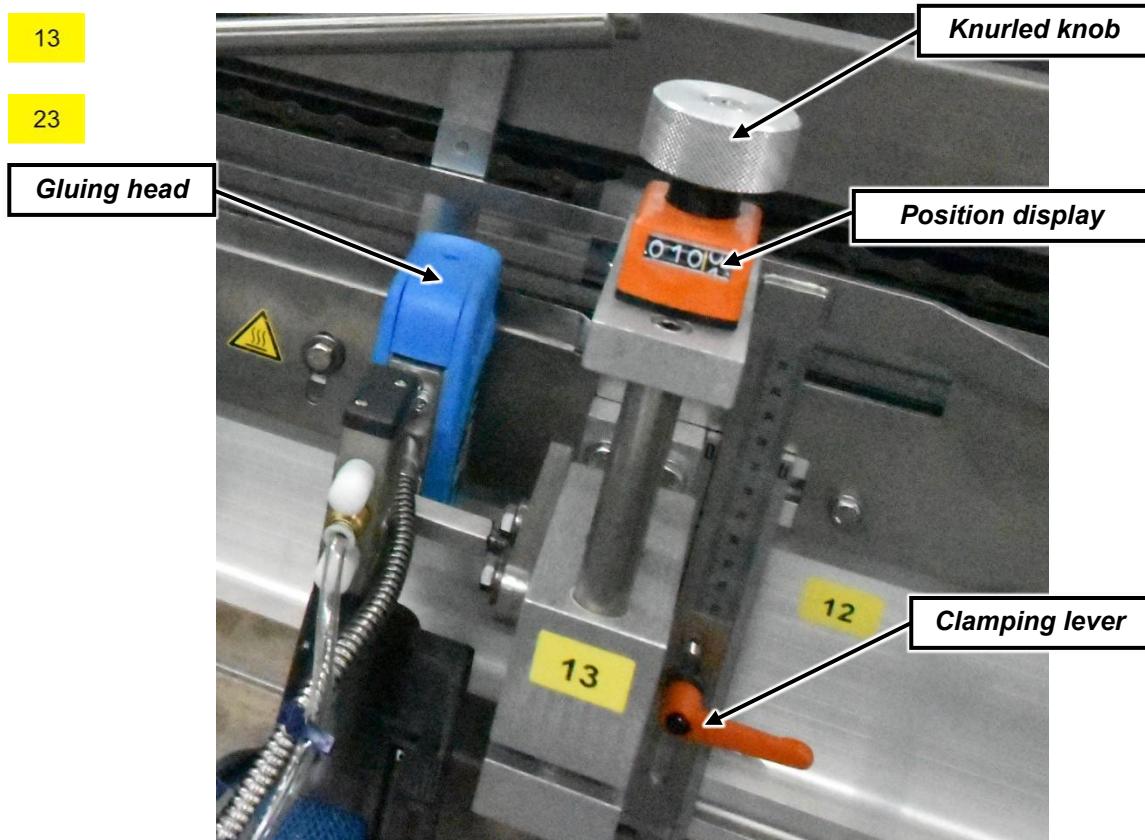
- Release the clamping lever
- Adjust the side flap guide to the height of the folding box
(the setting value of the measuring tape can be found in the format table of the Quick Guide)
- Re-tighten the clamping lever

7.3.12. Gluing Function:

Format change:

Apply the hot glue.

Adjust to the height of the glue line

***Gluing***

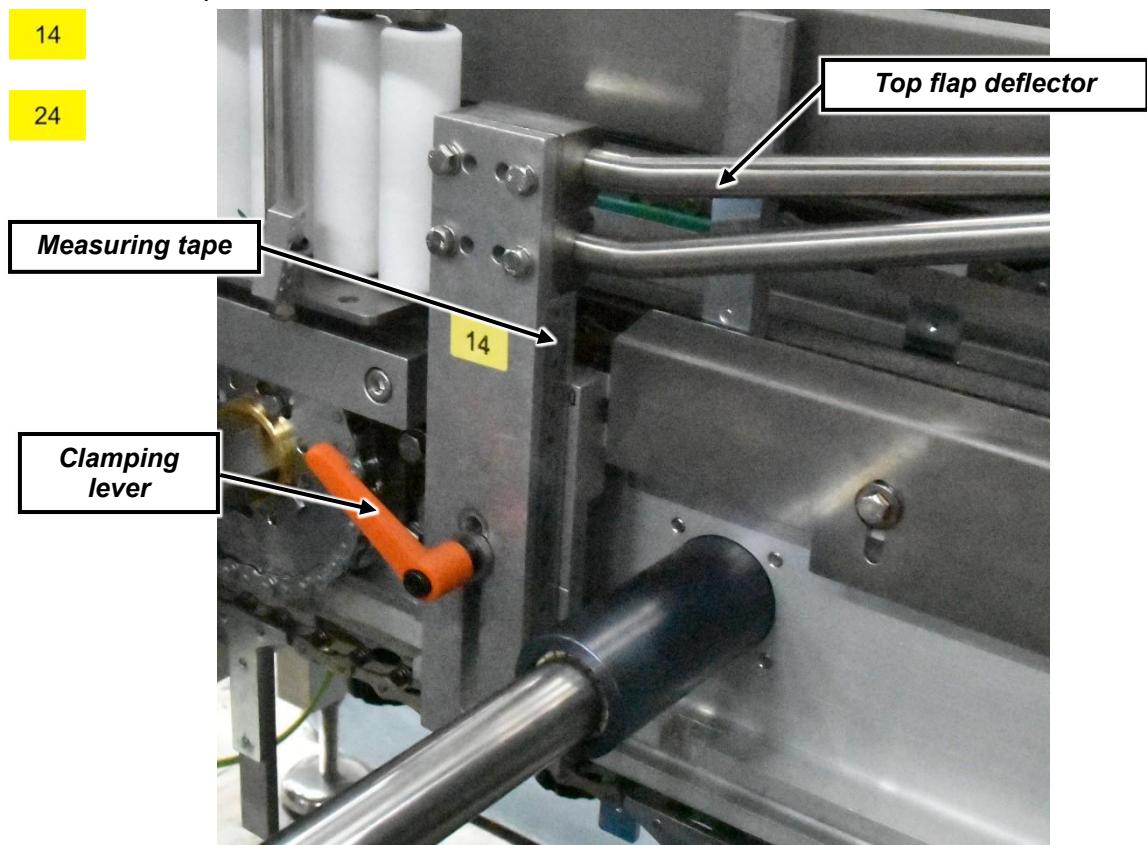
- Release the clamping lever
- Use the knurled knob to adjust the height
(the setting value of the position indication can be found in the format table of the Quick Guide)
- Re-tighten the clamping lever

**7.3.13. Closure****Function:**

Format change:

Close the cover flap and deflect the
between the pressure rollers

Adjust to new folding box height folding box

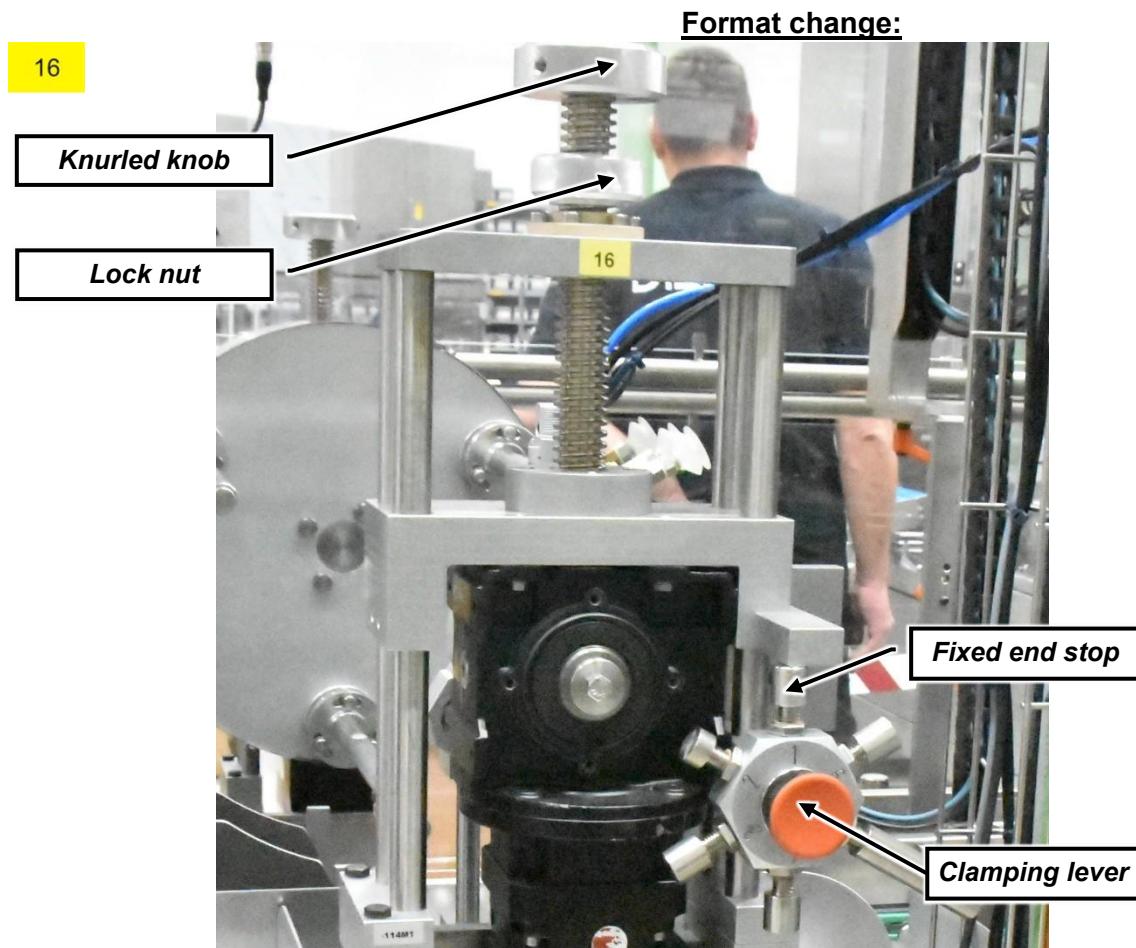
***Closure***

- Release the clamping lever
- Adjust the height of the top flap deflector to match the folding box (the setting value of the measuring tape can be found in the format table of the Quick Guide)
- Re-tighten the clamping lever

7.3.14. Product leveller**Function:**

The product leveller smoothes the bags in
the cassette belt before they are inserted

Set fixed stop acc. to format



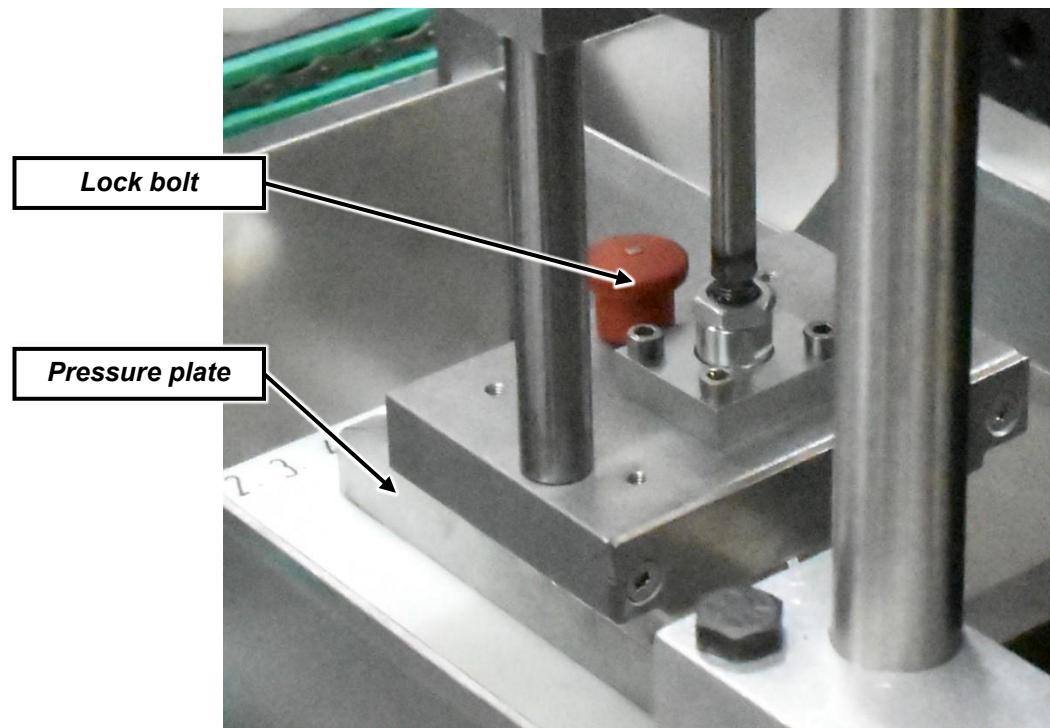
- Release the clamping lever
- Release the lock nut
- Raise the product leveller by turning the knurled knob
- Raise the fixed end stop
(The allocation of the fixed end stop to the format can be found in format table of the Quick Guide)
- Lower the product leveller to the stopper
- Re-tighten the lock nut
- Re-tighten the clamping lever

Function:

The product leveller smoothes the bags cassette belt before they are inserted

Format change:

Replace pressure plate acc. to format in the



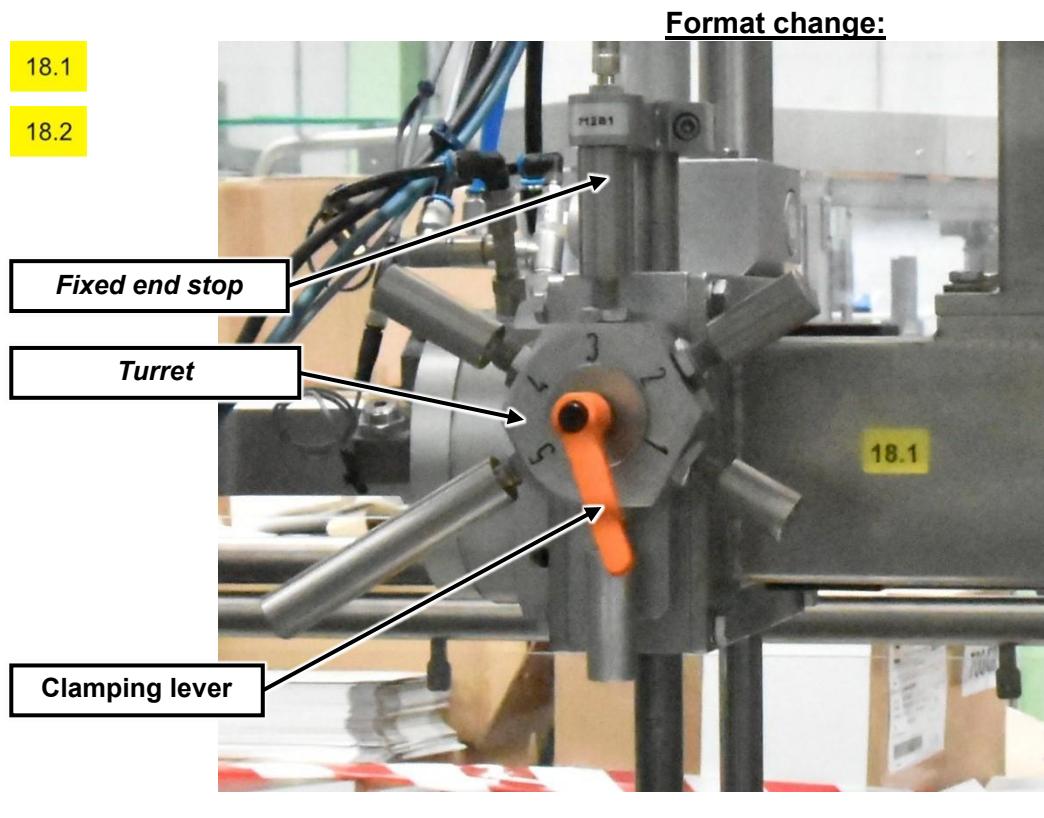
Product leveller pressure plate

- Pull the lock bolt up
- Replace pressure plate acc. to format
(A selection of pressure plate can be found in the format table of the Quick Guide)
- Push in the pressure plates in until the locking bolt engages again.

7.3.15. Folding box top guide way

Function:

The top guide way of the folding box Adjust to the height (B) of the folding box holds the folding box in the carrier conveyor.

*Top guide way*

- Rise the top guide way (button in operation panel)
- Release the clamping lever
- Adjust the fixed end stop on the turret
(The allocation of the fixed end stop can be found in the format table of the Quick Guide)
- Re-tighten the clamping lever
- Lower the top guide way
- Clear the fault indicated when the raising of the top guide way and press the "Acknowledge fault" key

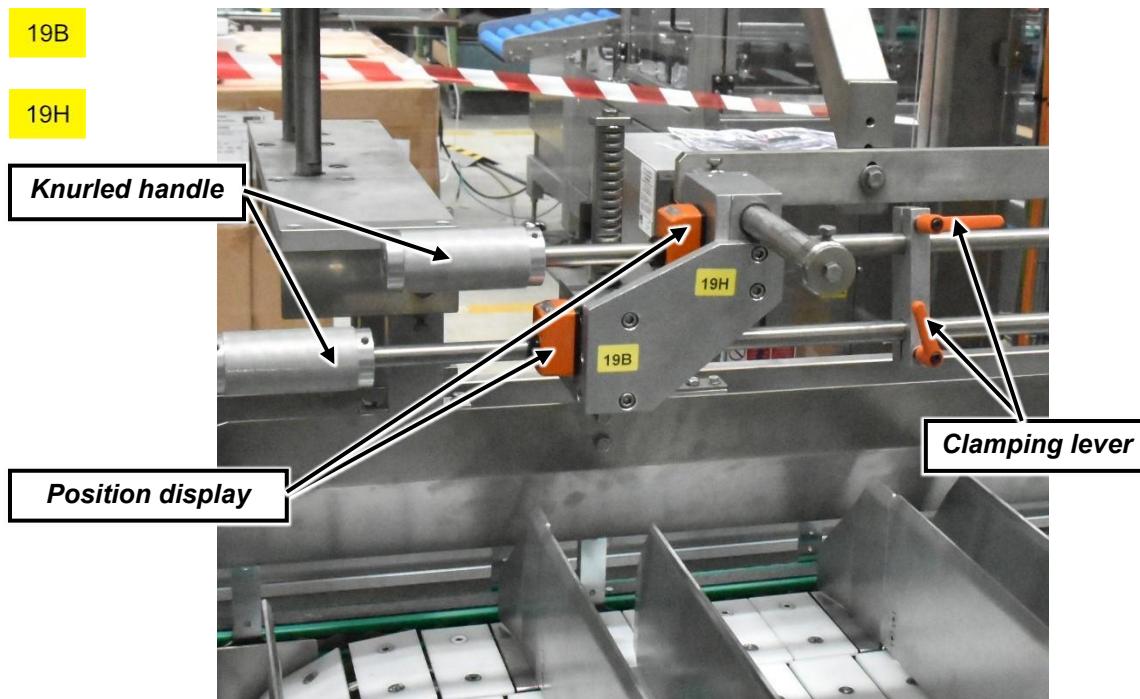
7.3.16. Top flap lifting device insertion

Function:

Lift the top flap in order to ensure that the product can be pushed unhindered

Format change:

Adjust to the new folding box height and the width of the flap into the box.



Top flap lifting device insertion

- Release the clamping lever
- Adjust the top flap lifting device to the folding box height and width of the flap (the setting value of the position indication can be found in the format table of the Quick Guide)
- Re-tighten the clamping lever

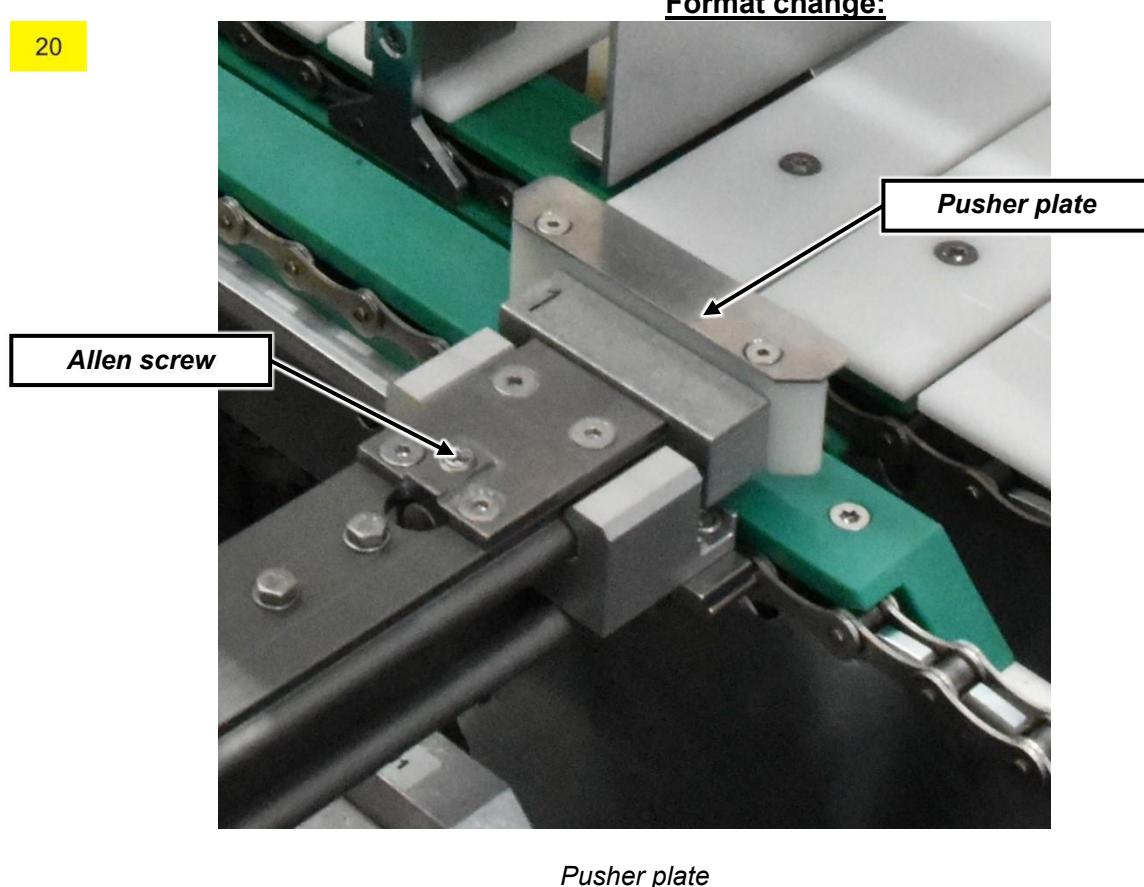
7.3.17. Insertion

Function:

The insertion conveyor pushes the

Replace **all** pusher plates product into the folding

box.



- Loosen the Allen screw
- Pull out pusher plate to the front
- Insert pusher plate for new format
(The allocation of the format parts can be found in the format table of the Quick Guide)
- Re-tighten the Allen screw
- Replace all pusher plates (continue jogging)



Ensure that the pusher plates are fully inserted.

Never attempt to operate the cartoner without pusher plates.

Failure to comply with this instruction damage the machine severely.

7.4. Switching off devices

There are many ways to cut the power to the machine.

- Controlled machine stop using Stop buttons on the operation panel
- Activate the locking EMERGENCY STOP button on the operating panel, the product placing unit, the product insertion, the laser scanner or at the end of the machine.
- If a fault occurs
- If the main switch is activated
- If a safety door is opened

NOTICE!

Switching off the machine by pressing the EMERGENCY STOP button, opening a safety door or activating the main switch are intended only for emergency situations. These actions shall never be considered an alternative to the on/off button on the operation panel!

7.5. Risks and consequences of improper use

Operating the machine for any other than the use intended by the manufacturer is not permitted. Failure to comply with this regulation shall render all warranties by the manufacturer null and void.

7.6. Residual risks



Never attempt to reach into the running machine!
Careful when refilling the glue granulate (risk of overflowing)!
Wearing protective gloves and safety goggles when refilling the glue-pots is mandatory!
Keep protective gloves and safety goggles within easy reach and close to the machine!

7.7. Troubleshooting/elimination of faults

Fault	Possible causes
Machine switches off when starting	<ul style="list-style-type: none"> The maximum torque of the servo drive has been exceeded
Despite overload, the machine does not switch off	<ul style="list-style-type: none"> The torque is set too high
The folding boxes are not extracted	<ul style="list-style-type: none"> Magazine setting is incorrect Suction cups are damaged No vacuum (check filters, hoses, channels, control unit), extreme cleanliness is mandatory Product is not available
Machine does not start	<ul style="list-style-type: none"> EMERGENCY STOP button is activated Protective devices are not closed Folding box magazine is not full Control voltage interrupted Product pusher is disengaged Temperature at the glue applicator has dropped
Folding box is poorly placed in the carrier chain or pops out	<ul style="list-style-type: none"> Basic settings on the carton erector are wrong The vacuum stalls, either too early or too late Basic setting of the outer carrier chain has shifted Suction cup distance to the grooves of the folding box has shifted (set-down dimension A)
Glue of the folding box is insufficient	<ul style="list-style-type: none"> Glue applicator is empty Glue nozzles are clogged Wrong glue temperature
Miscellaneous	<ul style="list-style-type: none"> Check all format change settings (chapter 7.3) Check all settings according to chapter 8

7.8. Personal protection equipment



Wearing protective gloves and safety goggles when refilling the glue-pots is mandatory!

Keep protective gloves and safety goggles within easy reach and close to the machine!

7.9. Required training, qualifications and familiarization of the user

In order to proceed with the operation and maintenance of the machine, the operating personnel must have been instructed by a DIENST Packsystems GmbH technician. At least two people must be trained. If a technician of DIENST Packsystems GmbH has trained a representative of the operating company on how to operate the machine, the latter shall be entitled to instruct other operating personnel on the operation of the machine.

The representative's superior must sign and thus confirm the participation of the employee.

The technician shall record the training and the participating persons shall confirm their training by signing the document. A copy remains with the machine manufacturer.

Only a qualified electrician with a trade proficiency certificate of the respective country shall be permitted to proceed with any tasks on the electrical system.

Only qualified mechanical personnel with a trade proficiency certificate of the respective country shall be permitted to proceed with any tasks on the mechanical system.

7.10. Information on workspaces along the machine

There are no permanent workspaces along the machine. Only if and when required, certain spaces along the machine must be occupied by a technician. This applies to the feeding conveyor of the magazine when trays must be added or the glue granulate must be added to the glue applicator.



Careful when refilling the glue granulate (risk of overflowing)!

Wearing protective gloves and safety goggles when refilling the glue-pots is mandatory!

Keep protective gloves and safety goggles within easy reach and close to the machine!

8. Parameter settings



Unauthorised changes to the parameterisation data by the company owner is not permitted. These changes may damage the machine or render it inoperable. The manufacturer accepts no liability in such cases. Only a technician authorised by DIENST

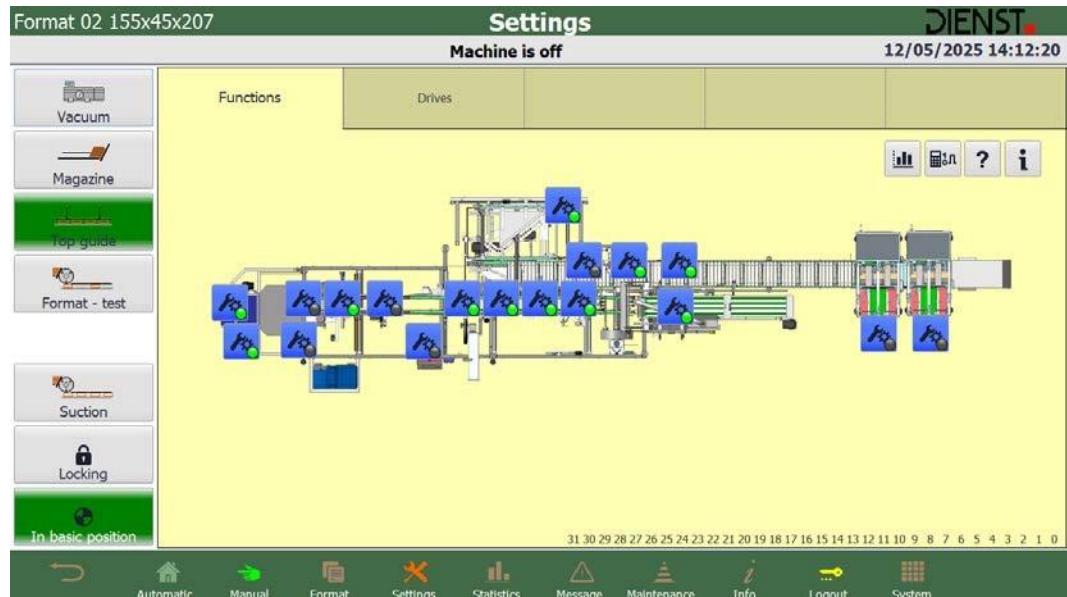
Packsystems GmbH shall be permitted to proceed with any modification to the machine.

All modifications must be entered in the Annex with date and signature.

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8.1. Parameters

Using the  key to make the selection



Functions Settings of the cartoner's functions

Drives Settings of the cartoner's main drive

 Display of various statistics

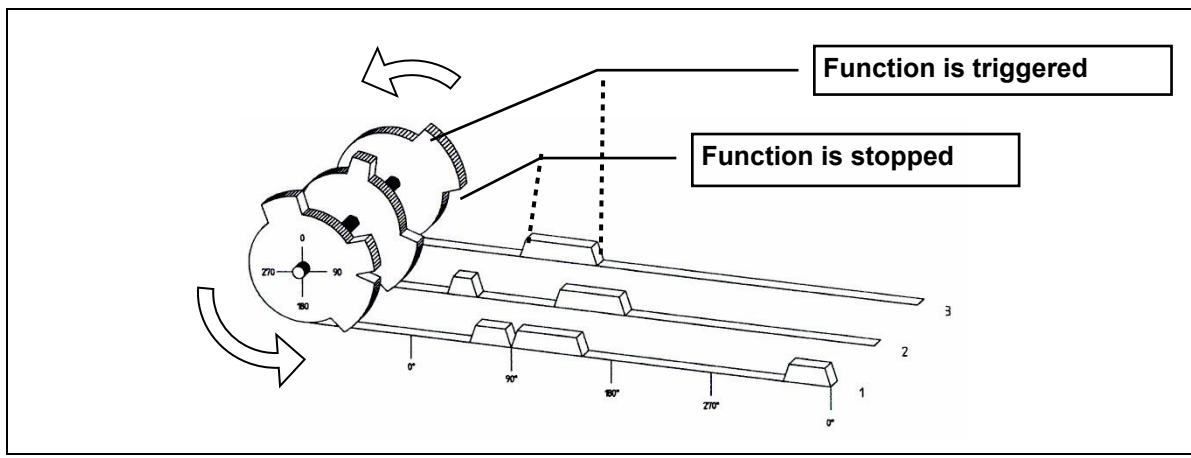
 Calculation of cam values

 Display of help texts

 Display the individual function names, drives, axes, etc.

8.1.1. Parameters: The basics

A shaft encoder divides a working step (cycle) of the cartoner into 360 increments. During parameterisation, the programmer enters which function is triggered at which position of the cartoner. Data can be entered as angle (zone/cam), counter (place) or time.



Parameters

A **shift register** assigns a slot number to each cassette/station. The cartoner “remembers” an empty cassette thus, a folding box is not extracted at the corresponding position and the pusher does not push in.

An **offset parameter** adjusts parameters to other speed/cycle counts. Thus, the parameter value and the entered offset remain the same, even if the number of cycles changes.

Adjusting the offset:

- set the cam parameter while at the minimum number of cycles:
e. g. minimum number of cycles 40 cycles
Determine the gluing cam: e.g. 40 to 100°

(at the minimum cycle rate, the offset value is meaningless) •

set the offset parameter while at the maximum number of cycles:

(Do not adjust gluing cam, it remains at e.g. 40 to 100°)

Increase the offset parameter until the same glue line is applied as at the minimum cycle speed

8.1.2. Changing the parameters

Go to the system menu to log in. To do this, press the System button.

Press the  key, the following window appears:

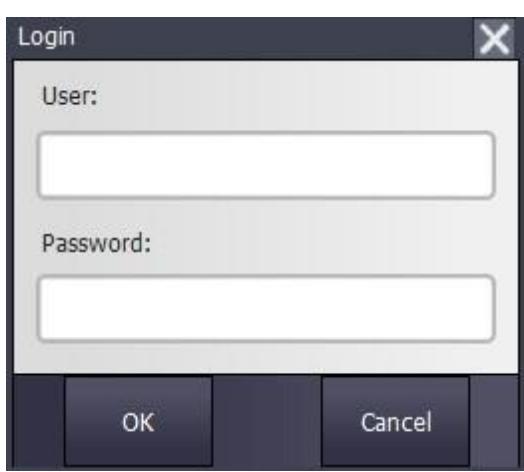
Select the User field and enter the name of the user who is using the on-screen keyboard.

User name: Dienst

Subsequently, select the Password field and enter the password of the user who is using the on-screen keyboard.

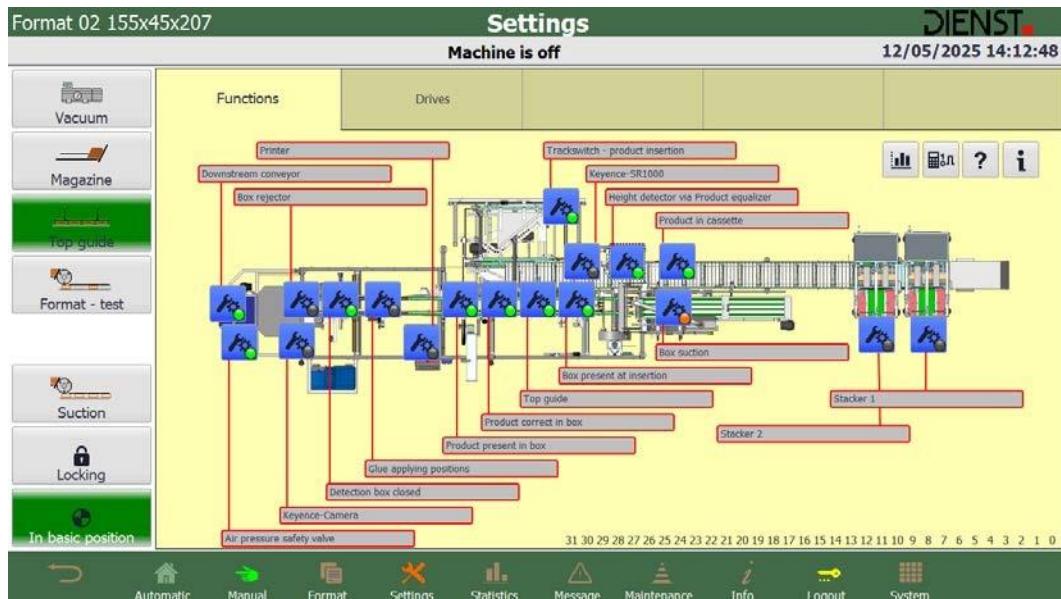
Password: 2444

Press OK to confirm the entry

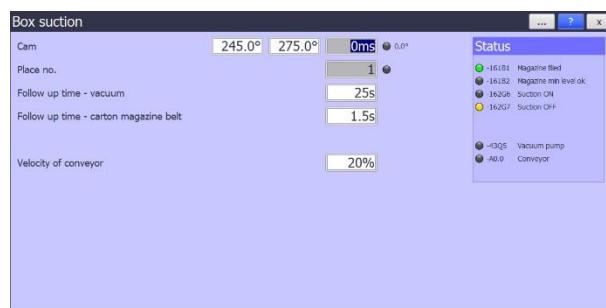


8.1.3. Parameters: Functions of the cartoner & infeed

This screen provides the options to set the cam values, times, the counter of the cartoner, and the synchronisation



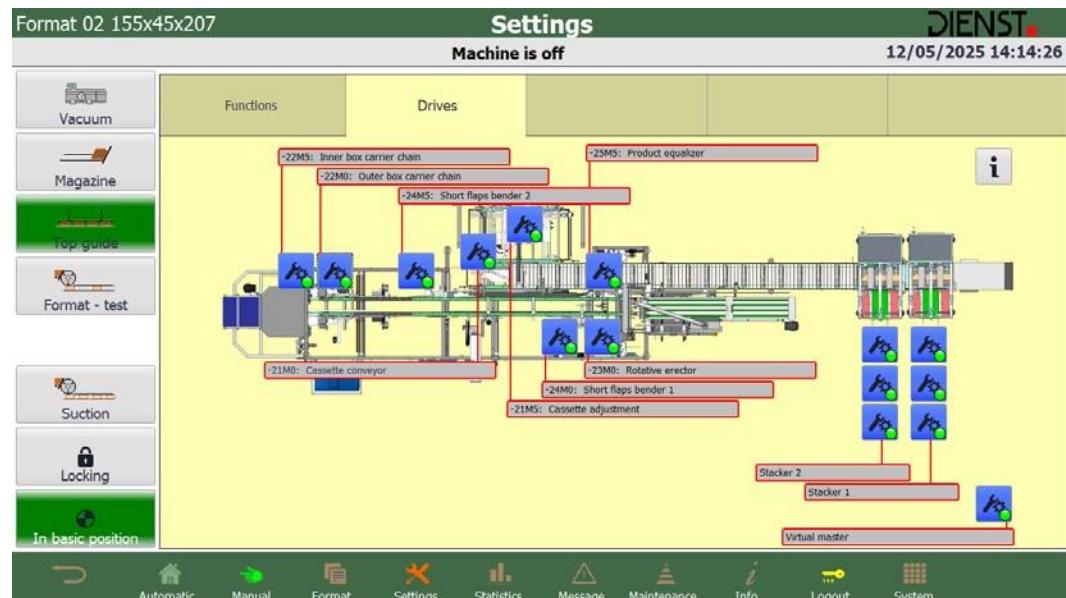
Press the applicable button. The window for entering the parameters appears. Use the on-screen keyboard to enter new values, then press Enter to confirm the selection.



While in these menus, it is possible to adjust/change the machine's lag times, the cam and counter values of the individual functions.

8.1.4. Parameters: Drives of the cartoner & infeed

This screen provides the options to set the drives of the cartoner and the infeed system.



Settings of the main drive/virtual master



DIENST

The torque is used in order to change and adjust the pulling force of the drives. If the values are too low, this leads to system faults. Values that are set too high can lead to damage or destruction of the system.

Only technical personnel authorised by

Verpackungstechnik GmbH shall be permitted to adjust torque values!

Parameters: Drives



Basic position

Entering the basic position

Torque limitation

The torque is used in order to change and adjust the maximum pulling force of the drives. If the values are too low, this leads to system faults. Values that are set too high can lead to damage or destruction of the system.



Selecting the zero point



Display of motor utilization %



When selecting "Apply position", the current value is utilised as the basic position



Curve segment calculation (only for programmers)



Moving the axle back and forth

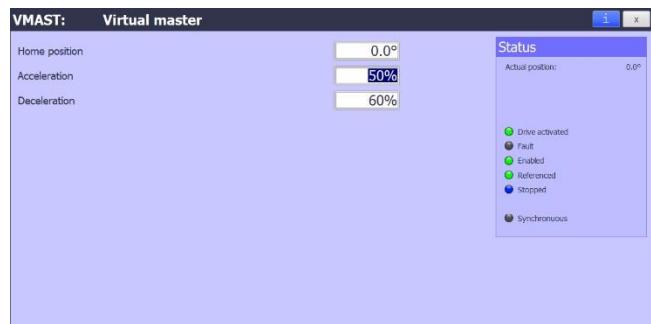
Status

Display of various status messages

Virtual Master

Press the  button

Adjusting the parameters of the Virtual Master



Basic position	Stopping point of the system when using a controlled machine stop
Starting acceleration	Acceleration in °/s
Start delay time	Delay time in °/s
Cartoner start delay	Start of the system within a certain pre-set time in ms

8.1.5. Format

In this menu, different formats can be selected, copied, deleted, saved and edited

8.2. Setting up new folding box formats

Only an authorised technician of DIENST Packsystems GmbH shall be permitted to set up new folding box formats. The shapes of the latter must comply with the minimum and maximum dimensions specified in the technical data sheet. Only operating companies who are sufficiently familiar with the machine shall be permitted to set up new folding box formats on the machine. The responsibility to proceed with the set up rests solely with the operating company.



DIENST Packsystems GmbH does not accept any liability for damage resulting from improper setting up of a new box format.



The set down dimension A on the rotary feeder when inserting the folding box into the carrier chains is set at the factory. This dimension must not be changed.

It is important to vacuum the folding boxes at the distance of the set-down dimension A as well.

The folding box magazine must be adjusted in order to ensure the suction cups extract the folding box at the distance of the set-down dimension A from the grooves of the folding box.

Adjust the height of the rotary feeder to match the folding carton dimension B. While the folding box is inserted and the suction cup is standing vertically, facing downwards, adjust the height on the rotary feeder.

In order to ensure a speedy format change in the future, make and mark the fixed stops of all adjustments accordingly!

9. Maintenance

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9.1. Repairs

9.1.1. Safety precautions



Before proceeding with any type of work on the machine, the main switch must be set to "0". In order to prevent an unintentional restart of the machine, use a padlock to secure the main switch.

9.1.2. Repairs that require special qualifications



Only qualified personnel according to chapter 2.3 of these operating instructions shall be permitted to proceed with any type of repair work.

Extensive repair work necessitates the assistance of Dienst Packsystems GmbH.

9.1.3. Drawings required for troubleshooting and maintenance purposes

- Electrical circuit diagrams
- General arrangement of assemblies with spare parts list and pneumatic diagram
- Operating instructions from third-party manufacturers are provided separately.

9.1.4. Spareparts



Only original spare parts must be used. Failure to do so shall render all claims and warranties null and void.

9.1.5. Lists and pneumatic diagram

A general arrangement including a spare part list and pneumatic diagram are provided separately.

9.1.6. Repair service provided by the manufacturer

Extensive repair work necessitates the assistance of DIENST Packsystems GmbH. Our customer service can be reached by calling:

Telephone: +49 (0)6192 9738-300

Fax: 49 (0) 6192 - 9738 990,

Email: service@dienst-packsystems.de

9.2. Preventive maintenance and cleaning



Before proceeding with any type of work on the machine, the main switch must be set to "0". In order to prevent an unintentional restart of the machine, use a padlock to secure the main switch.

Never attempt to use inflammable, easily gasifying or corrosive liquids when cleaning the machine!



Never place tools or other objects on the machine!
They can fall in the machine and cause serious damage.

Regular preventive maintenance of the horizontal cartoner ensures the best productivity of the machine. The maintenance intervals depend on the use of the machine and ambient conditions.

The necessary preventive maintenance and cleaning tasks are specified in chapter 6 of the Quick Guide.

The preventive maintenance shall be documented in the list provided in the Annex. Before completing the list, it is recommended to copy the list in order to provide sufficient space for entries.

The completed lists must be collected and kept attached to the operating instructions.



ETP locking bushes

Tighten the screws to the specified torque, turning the fastener one half turn at a time until the specified torque is reached.

ETP Classic	Dimension	T (Nm)
ETP 15	15 mm	6
ETP 19-42	19 - 42 mm	8

9.2.1. Preventive maintenance and cleaning the horizontal cartoner



Never attempt to use inflammable, easily gasifying or corrosive liquids for cleaning purposes!

Interval in hours of operation	Designation
8	Use a vacuum cleaner and cloth in order to clean the cartoner, removing all cardboard fibres, contamination caused by the product etc. Thorough cleaning of all moving parts is highly recommended.

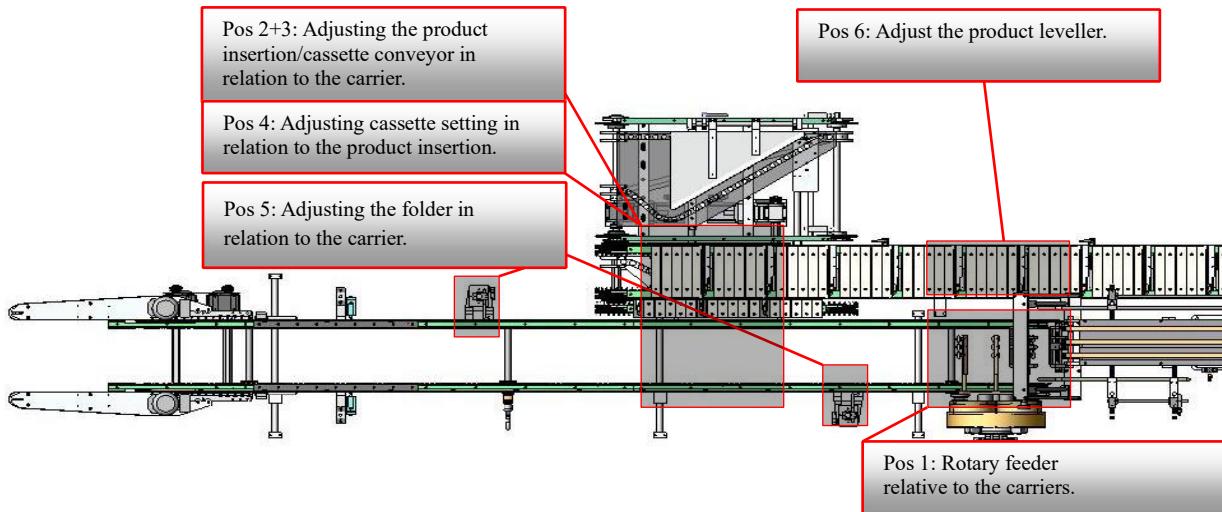
40	Clean all toothed belts and toothed pulleys
	Clean glue lines and closure
	Clean all light barriers and safety laser light guards
	Visual inspection of the water separator, drain water as required
	Visual inspection of the entire system
320	After the cleaning, lightly lubricate using the system using a multi-purpose grease as required: <ul style="list-style-type: none"> • Gears of the top guide way • All hexagonal shafts, trapezoidal spindles and support axes
	Vacuum the carrier chains, cassette conveyor chains, insertion conveyor chains. Subsequently, use a brush and clean them In order to maintain the smooth running of the machine, careful cleaning of the chains is mandatory.
	Clean the pushers along the insertion conveyor. The running surfaces require special attention. Never use metal objects for cleaning purposes. These objects will scratch the running surface.
	Clean the cassette conveyor including the cassette guide and the individual cassettes
	Clean the pneumatic filter on the rotary feeder and service unit or, if clogged, replace the filter.
	Clean the fans on the motors
500	Check the tension of all toothed belt drives and conveyor belts/chains. Re-tension the components as required.
	Check the parallelism of the carrier chains, set-down dimension A, position of cassette and insertion conveyor in relation to the carrier tape, re-adjust the components, as required.
	Check the suction cups on the rotary box erector, and replace if necessary
3000	Change the oil of the bevel spur gear, the rotary feeder and the insertion conveyor Lubricant quantity 0.3 kg The gears are filled with Klüberoil 4 UH1 - 150 N at the factory.

9.2.2. Reference / 0-point adjustment.

Reference

Each axis, including the virtual master, has a reference position. This mechanically defined position must be set once on each slave axis. If a drive is removed, referencing is required after re-installing the drive. The reference position has

nothing to do with different formats or settings, it merely defines the zero or start position for each axis. If all axes are in their applicable reference position, meaning at 0°, this implies that the virtual master is also in the 0° position.



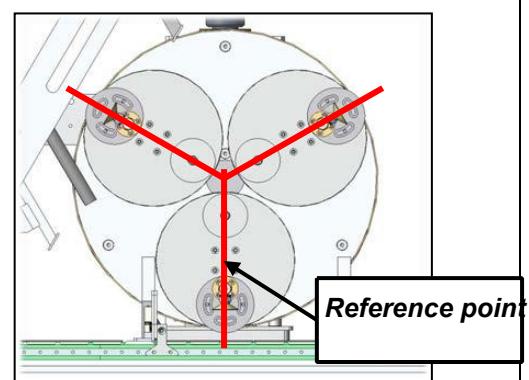
9.2.3. Moving the machine to its reference position

- Select the “Reference position” format on the touch panel
- Move the cartoner to its **basic position**
- Check the axes if their positions are correct.



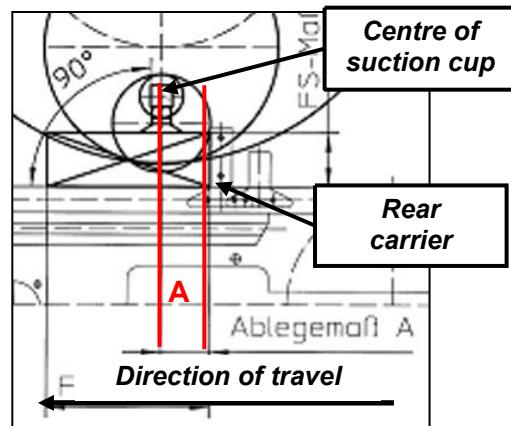
Reference point: Rotary box erector

When the rotary box erector is at zero, one of the three suction arms of the rotary box erector must be positioned exactly vertically and facing downwards. The screw on the opposite side of this suction cup must point exactly vertically and upward
(Use a spirit level to check the position of the two upper suction arms).



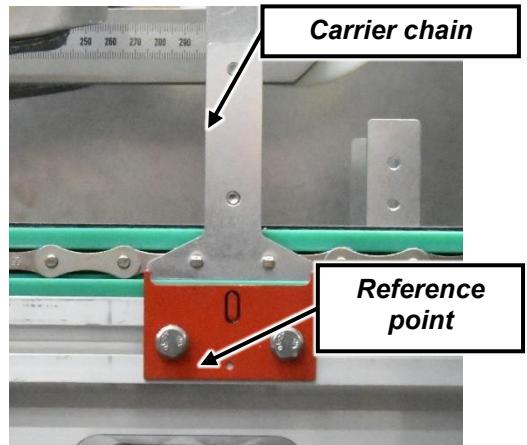
Reference point: Set-down dimension A

When the rotary box erector is at the zero point, the rear carrier must be positioned at dimension "A" measured from the centre of the suction cup!
 (The "A" dimension is tagged with punches on the rotary feeder bracket and recorded in the documentation)



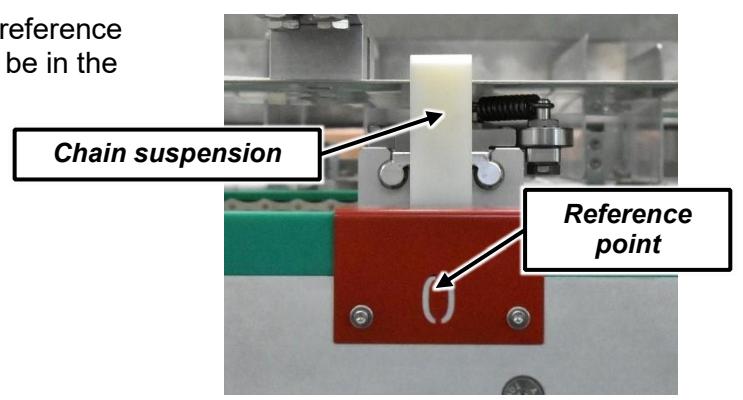
Reference point: Carrier

When the carrier chain is at the zero point, a carrier of the outer carrier chain must coincide exactly with the reference point.



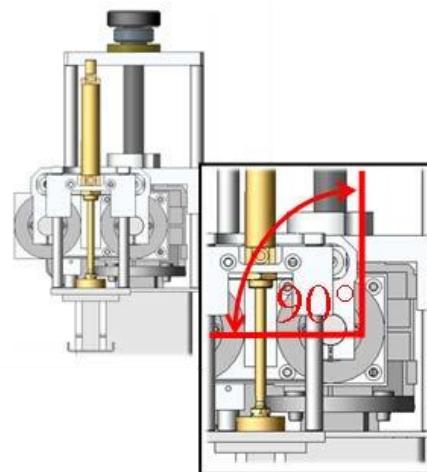
Reference point: Insertion

If the insertion conveyor is in the reference point, the chain suspension must be in the reference point as well

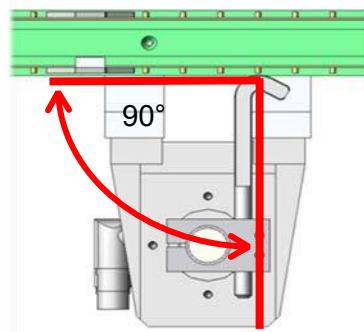


Reference point: Product leveller**Adjust bag presser.**

Position the bag presser at right angle on top

**Reference point: Folder**

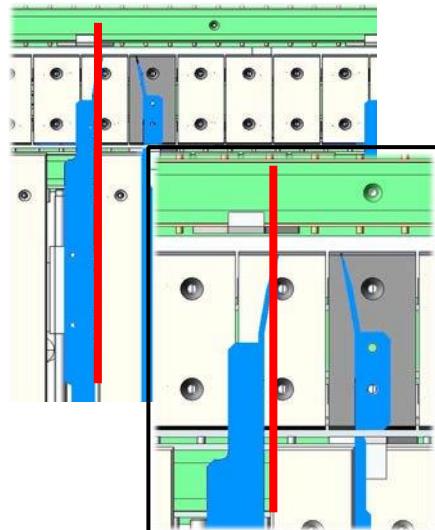
If the cassette conveyor with the central adjustment is in the reference point, the folder must be at right angles to the carriers.



Cassette conveyor reference point

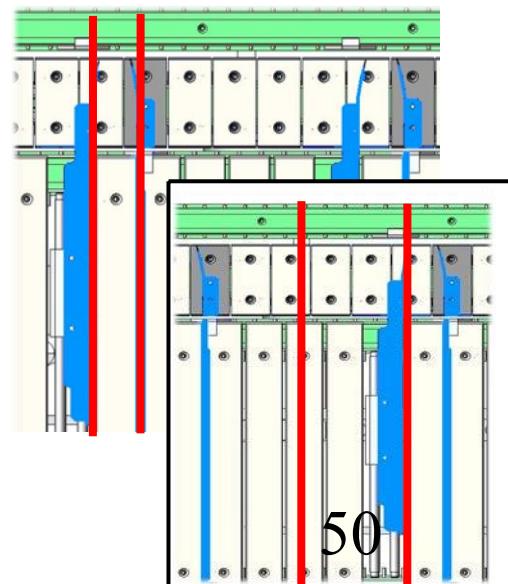
Move outer carrier to zero position!
Set inner side of rear cassette bracket to the same height as the inner side of the outer carrier.

Direction of travel

Setting the cassette adjustment.

Move cassette conveyor to the zero position!
Place cassette setting bracket at a distance of 50 mm, corresponding to one plate spacing.



9.2.4. Re-referencing the axis

Only qualified personnel shall be permitted to change parameters!

If the system is started before the positions of the drives are aligned with each other, there is an inherent risk of damaging the drives.



Unauthorised changes to the parameterisation data by the company owner is not permitted. These changes may damage the machine or render it inoperable. The manufacturer accepts no liability in such cases.

- Press the  button and select the “Drives” settings menu

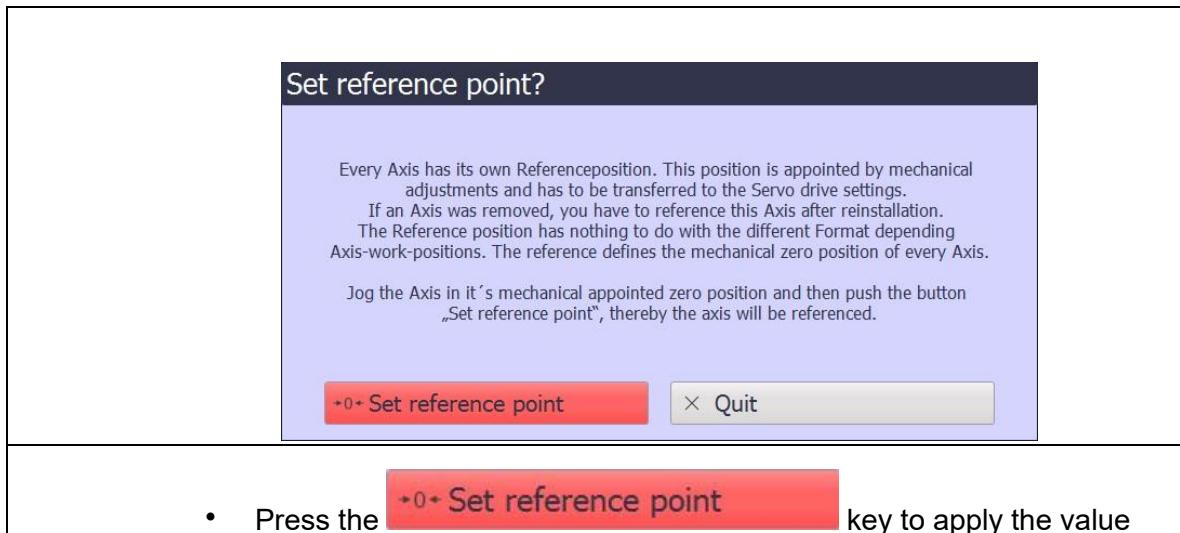


- Select the “axis” that must be referenced again 



- Use the  and  keys to jog the axle into position “0”

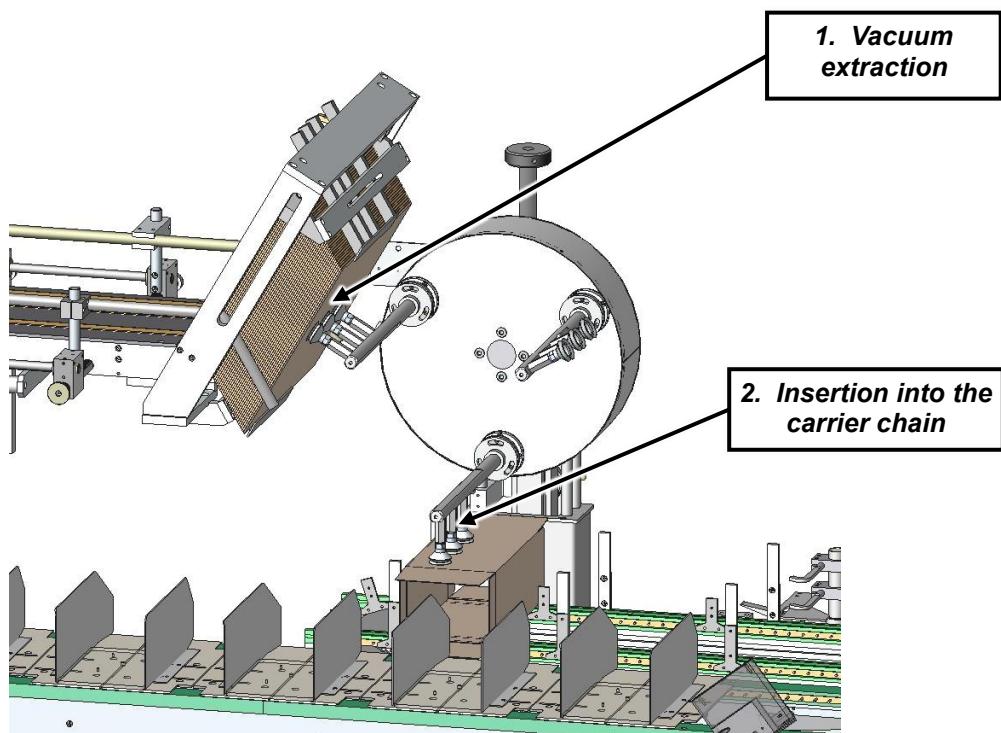
- Press the  key. A warning is displayed



9.2.5. Adjusting the rotary feeder

Function:

Vacuum is applied in order to extract the folding box from the magazine and inserted into the carrier chains.



Function of the rotary box erector

Slotted grooves in the respective vacuum adjustment flange control the vacuum. If the vacuum is not controlled correctly anymore, the vacuum setting must be readjusted. Procedure see "Setting the vacuum on the rotary feeder".

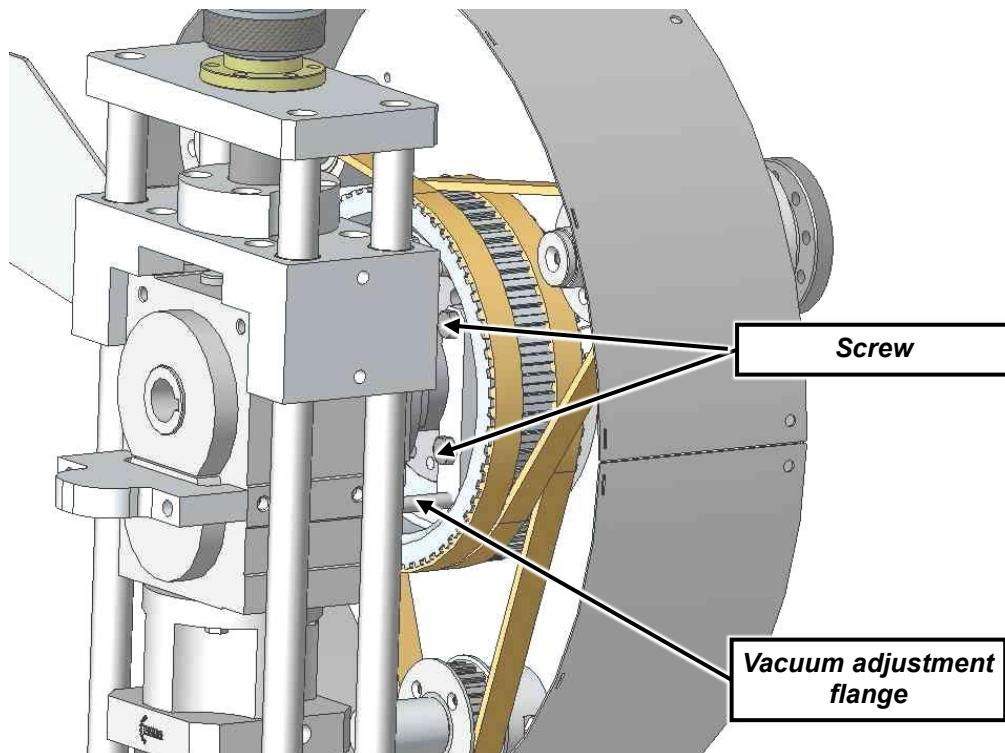
Basic setting:

If the suction arms are no longer exactly symmetrical to each other at the zero position, the basic setting must be renewed.

Adjusting the vacuum settings on the rotary feeder:

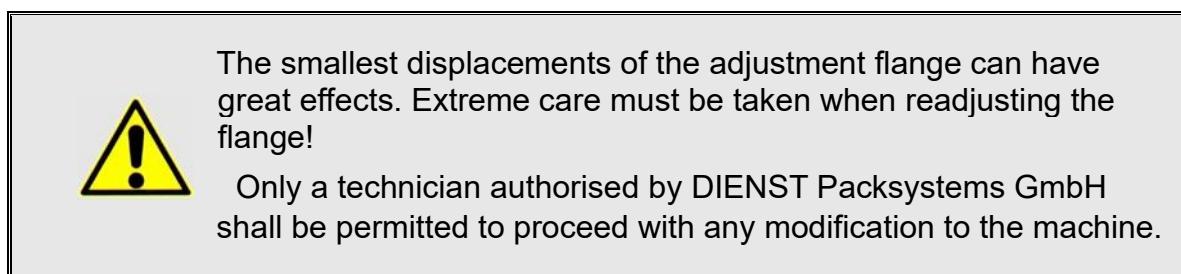
Slotted grooves in the respective vacuum adjustment flange control the vacuum. If the vacuum is not controlled correctly anymore, the vacuum setting must be readjusted.

The folding box should be released at the zero position. The vacuum and suction supply lines are fixed in place. The adjustment flange for the vacuum and the suction arms rotate simultaneously.



Adjusting the vacuum rotary feeder

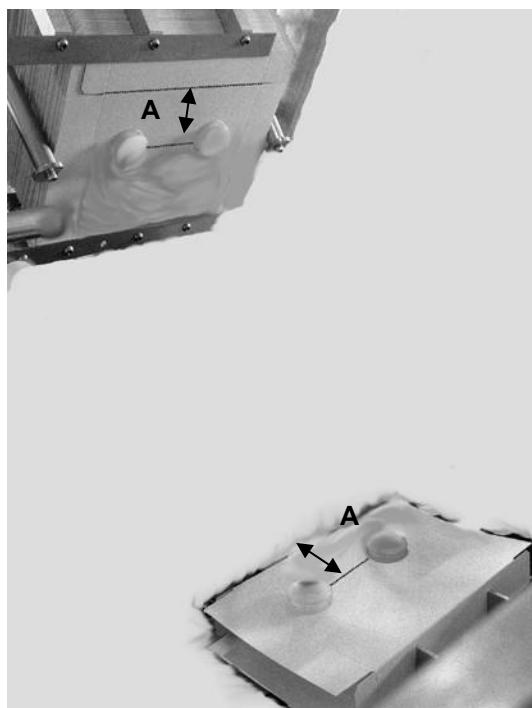
- Readjusting the adjustment flange:
- Loosen the screws
- Shift the adjustment flange
 - When shifting the adjustment flange in the direction of rotation ⇒ the vacuum stalls later
 - When rotating the adjustment flange against the running direction
⇒ the vacuum stalls earlier
- Tighten the screws again



9.2.6. Set-down dimension A

The **set-down dimension A** (see Data Sheet chapter 4.14) can change over time due to the elongation of the carrier chain. Readjust the dimension as required

Re-adjusting the set-down dimension A



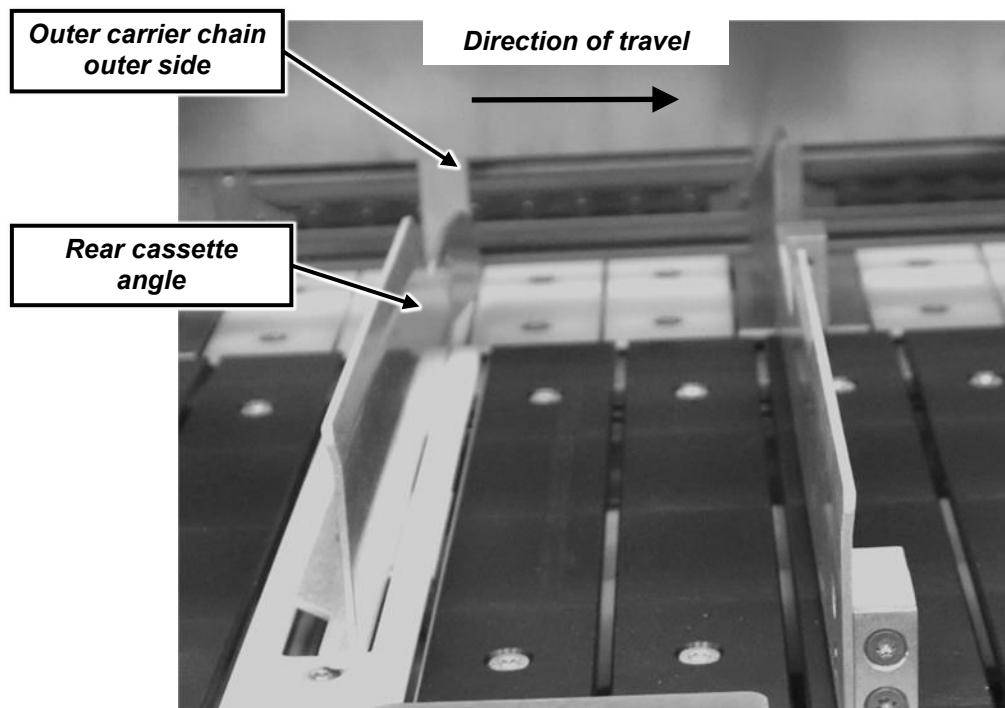
Set-down dimension A

- Move the rotary box erector in to its zero position
- Go to the “Setting” menu, press the Jog minus / Jog plus keys from the “Outside carrier chain” menu until the set-down dimension is reached
- Apply this position as the new reference position
- Insert folding box into the carrier conveyor
- Go to the “Setting” menu, press the Jog minus / Jog plus keys from the “Inner carrier chain” menu until the inner carrier is positioned at the folding box (folding box + 1 mm)
- Apply this position as the new reference position

9.2.7. Setting the cassette and insertion conveyor

Due to varying elongations of the chains, an offset can occur over time. This offset must be corrected as required.

Setting the cassette conveyor in order to match the cassette conveyor



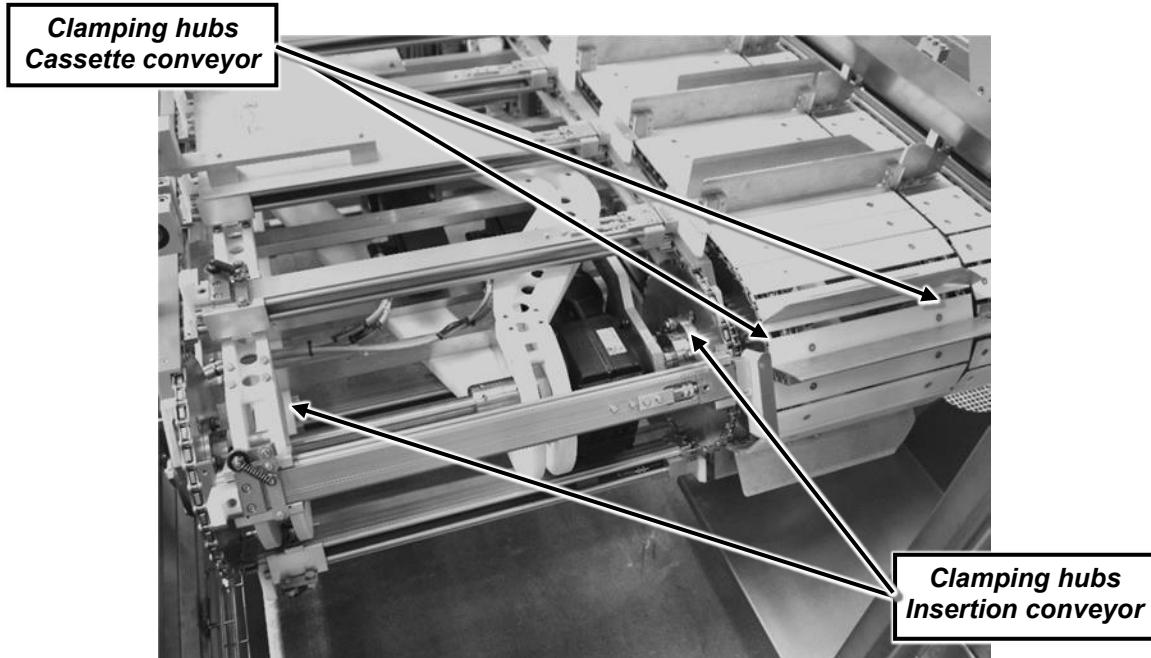
Setting the cassette conveyor in order to match the cassette conveyor

- Move the outside carrier chain to its zero position
- Go to the “Setting” menu, press the Jog minus / Jog plus keys from the “Cassette conveyor / Insertion” menu until the inside of the rear cassette angle is aligned with the inside of the outer carrier.
- Apply this position as the new reference position
- The pushers of the insertion conveyor are adjusted simultaneously



Do not adjust the sprockets on the cassette conveyor and on the insertion. They are subject to factory settings and can only become misaligned in extreme cases (excessive overload of the machine). In this case the cassette conveyor and insertion conveyor must be set parallel again (see following paragraph).

Aligning the pusher of the insertion conveyor with the cassette tray
Set the cassettes at right angles to the direction of travel



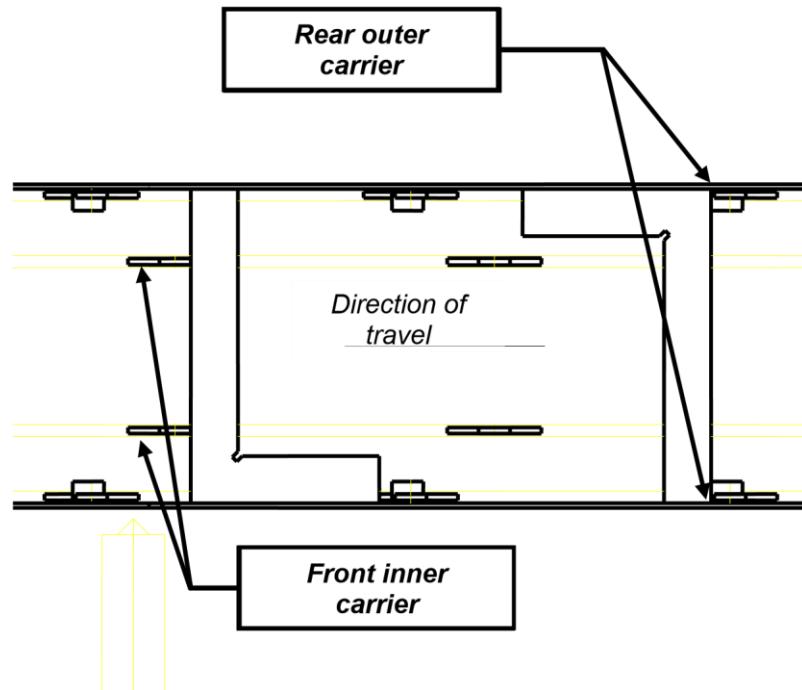
Setting the cassette and insertion conveyor

- Loosen the clamping hubs on the insertion conveyor
- Use the slotted holes to position the pushers in line with the cassette tray
- If it is not possible achieve an aligned setting, the chains of the insertion conveyor must be re-positioned
- Dismantle the cassettes
- Loosen the clamping hubs on the cassette conveyor
- Align the cassettes at right angles
- Re-tighten the clamping screws

9.2.8. Parallelism of the carrier chains

Check both the parallelism of the outer and inner carrier chains from time to time and correct as required

Check the parallelism of the carrier chains:

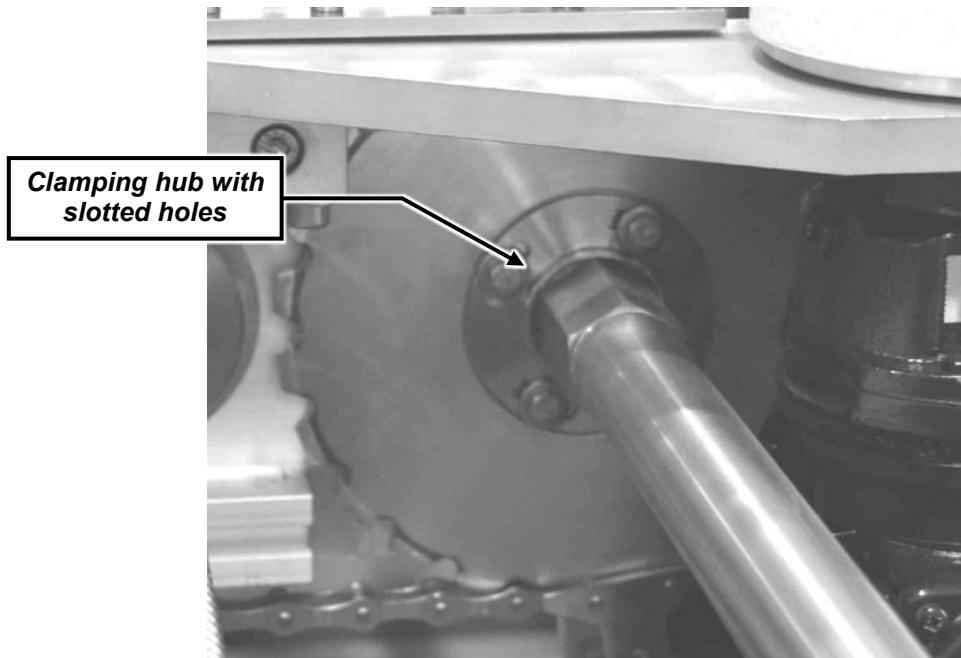


Use a flat square to verify the parallelism of the carrier chains

- Use a flat square and place one leg of the square against a side sheet
- Adjust chains and ensure they are parallel
- Tighten screws on clamping hub

Adjustment for both chains on one clamping Clamping hub of the inner carrier chain on hub in the *fixed* middle wall (insertion side) the other side of the fixed middle wall

Adjusting the parallelism:



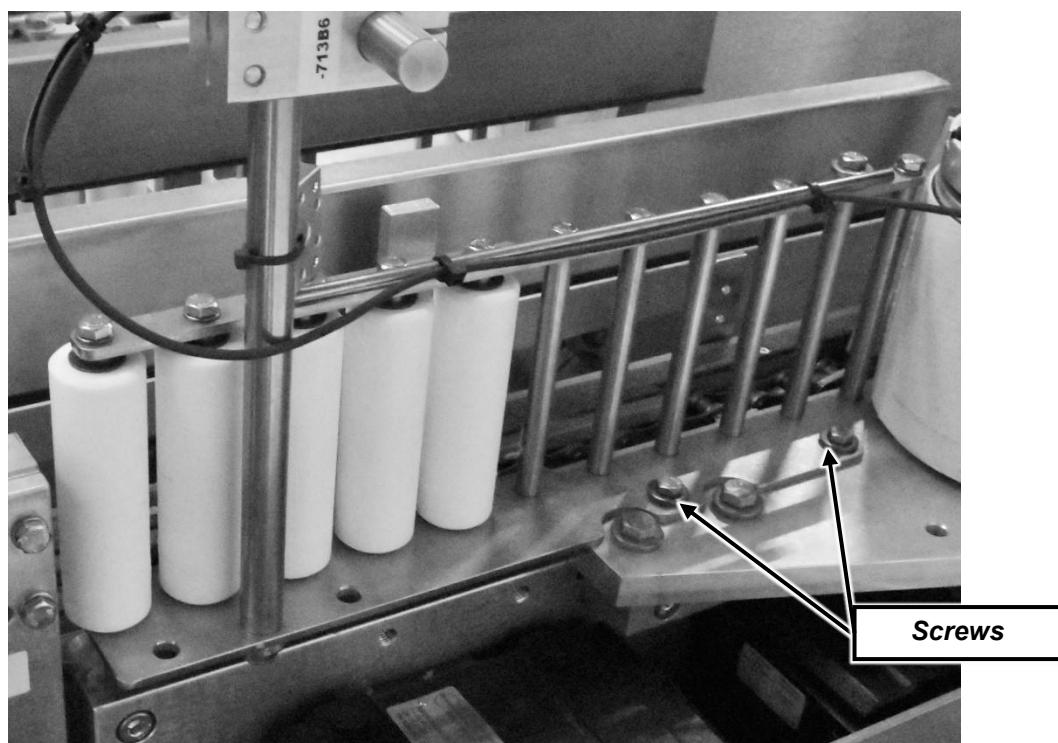
Adjusting the parallelism of the carrier chains

- Loosen the screws on clamping hub
- Adjust chains and ensure they are parallel
- Tighten screws on clamping hub

9.2.9. Pressure rolls

There should be about 1 mm clearance between the outer edge of the outer carrier and the pressure roll

Adjusting the pressure roll:



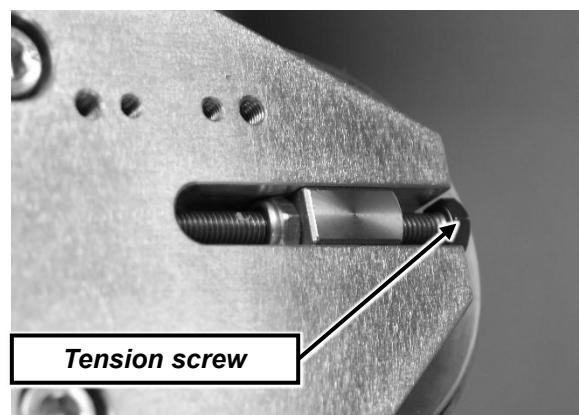
Adjusting the pressure rolls

- Loosen the screws
- Adjust the pressure roll
- Tighten the screws

9.2.10. Tightening the conveyor belts

Folding box discharge:

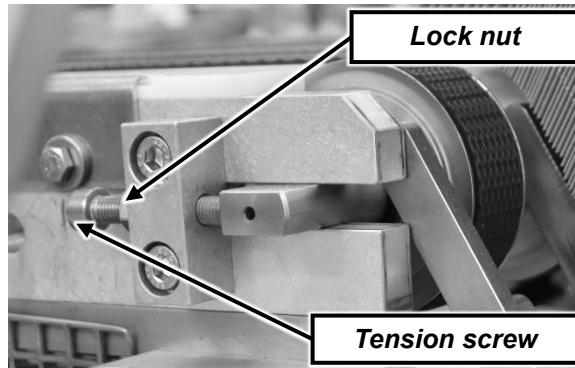
- Adjust the tension screw



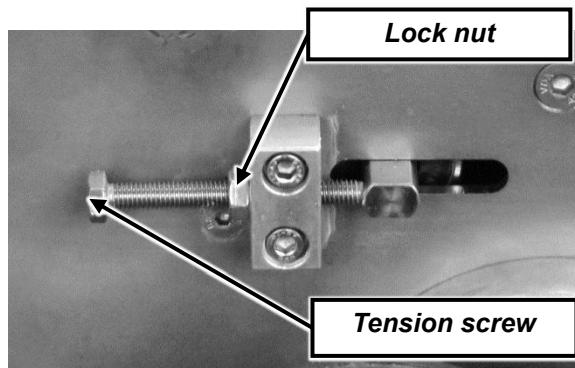
Tensioning the folding box discharge conveyors

Magazine conveyor:

- Release the lock nut
- Adjust the tension screw
- Tighten the lock nut

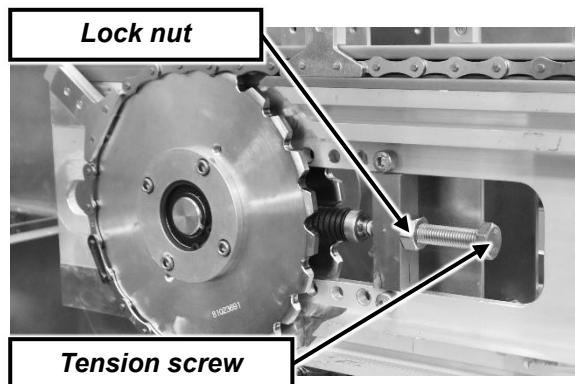
*Toothed belt tensioner of folding box magazine***Removal conveyor:**

- Release the lock nut
- Adjust the tension screw
- Tighten the lock nut

*Toothed belt tensioner of removal conveyor***9.2.12. Chain tensioner****Never tension just a single chain, always tension the complete belt in pairs!****Carrier chains:**

Tension the carrier conveyor at the fixed and adjustment middle wall

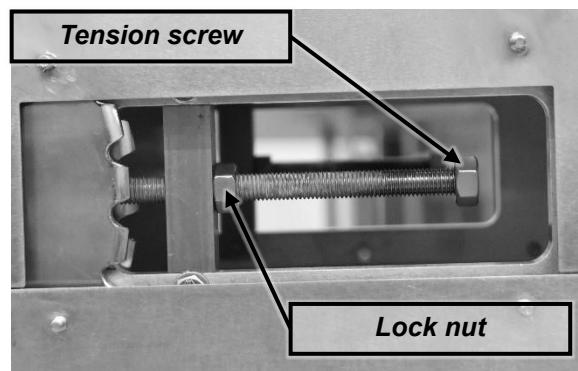
- Release the lock nut
- Set the chain tension
- Adjust the tension screw
- Tighten the lock nut

*Chain tensioner of carrier*

Cassette conveyor:

Chain tensioner on both sides outside on the side walls

- Release the lock nut
- Use the tension screw to adjust the chain tension
- Tighten the lock nut

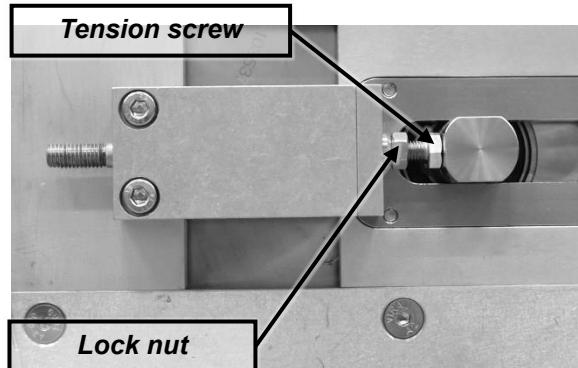


chain tensioner, cassette conveyor

Insertion conveyor:

Chain tensioner on both sides outside on the side walls

- Release the lock nut
- Use the tension screw to adjust the chain tension
- Tighten the lock nut

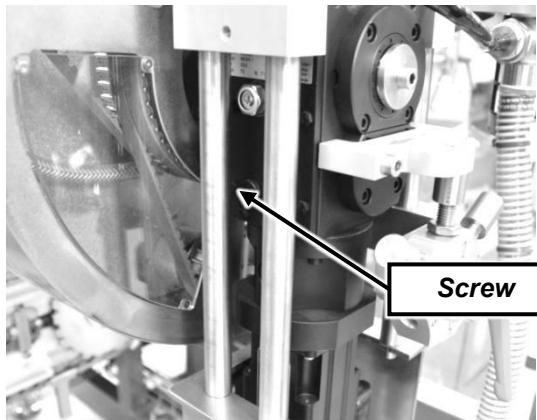


chain tensioner, insertion conveyor

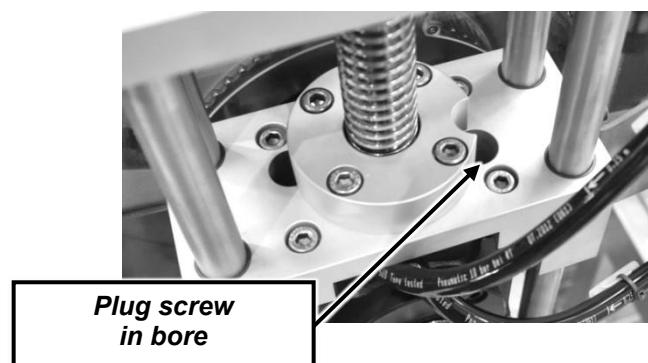
9.2.14. Oil change

Rotary feeder:

- Loosen the plug screw
- Drain old oil
- Insert the plug screw again

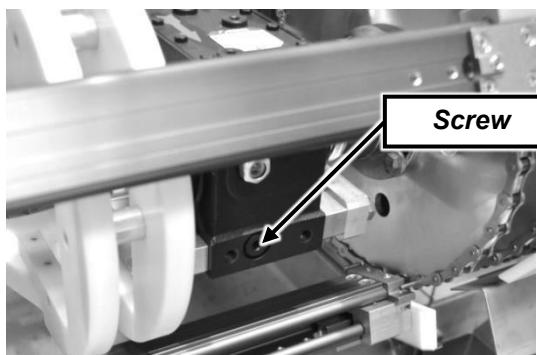


- Loosen the plug screw
- Fill with fresh oil
- **Lubricant quantity 0.3 kg**
- **Klüber oil 4 UH1 – 150N**
- Insert the plug screw again



Product insertion:

- Loosen the plug screw
- Drain old oil
- Insert the plug screw again

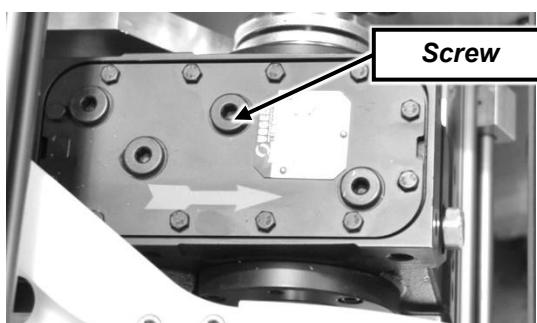


- Loosen the plug screw
- Fill with fresh oil
- **Lubricant quantity 0.3 kg**
- **Klüber oil 4 UH1 – 150N**
- Insert the plug screw again

9.3. Preventive maintenance schedule

Enter the date, type of preventive maintenance (weekly, monthly, quarterly) and the name of the operator in the relevant box.

Date of initial start-up: ____/2025



10. Decommissioning and dismantling

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10.1. Shutdown

- Using the Stop button to stop the machine
- Main switch OFF

10.2. Dismantling

- Disconnect the machine from the compressed air network
- Disconnect the machine from the power supply
- Transport section for cycled infeed separately

10.3. Storage

10.3.1. Intermediate storage

The machine must be stored in a clean and dry place.

10.3.2. Preservation

The machine does not require preservation while in storage. However, before storing the machines they must be cleaned.

10.4. Disposal

The machine must be dismantled before disposal. Wherever possible, the materials shall be separated and recycled. The electronic components must be disposed of as hazardous waste.

10.5. Environmental compatibility & energy saving measures

The machine is equipped with the following energy saving devices:

- **Cooling unit:** All Rittal TopTherm cooling units with an e-Comfort Controller from firmware 3.2 upwards feature the energy-saving Eco mode, which is activated on delivery. The Eco mode is used to save energy of the cooling unit with no or low heat load in the switch cabinet.
- **Machine stand-by:** If products are not available for processing, the cartoner goes into stand-by mode and waits for further products. When new products arrive, the cartoner starts automatically.
- **Conveyor belts:** If the machine goes into stand-by mode, the conveyor belts stop.
- **Vacuum pump:** When the machine is stopped, the vacuum pump switches off.
- **Glue applicator:** The glue applicator is only active when a product is present.

11. *Emergency information*

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11.1. EMERGENCY STOP button

In case of danger, press one of the EMERGENCY STOP buttons. The EMERGENCY STOP buttons are located at the operation panel, at the infeeder and at the machine outlet.

11.2. Fire-fighting equipment

All fire extinguishers approved for electrical equipment are suitable for fire fighting.

11.3. Dangerous substances and fighting their effects



When using the glue applicator, not inhale the harmful vapours.
Sufficient ventilation or fresh air supply must be provided in the operating room.

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14. Logbook/Operating manual

The stations of the machine's history must be entered here. Any modifications to the machine must also be entered in this operating manual. All modifications require the written approval of the manufacturer.