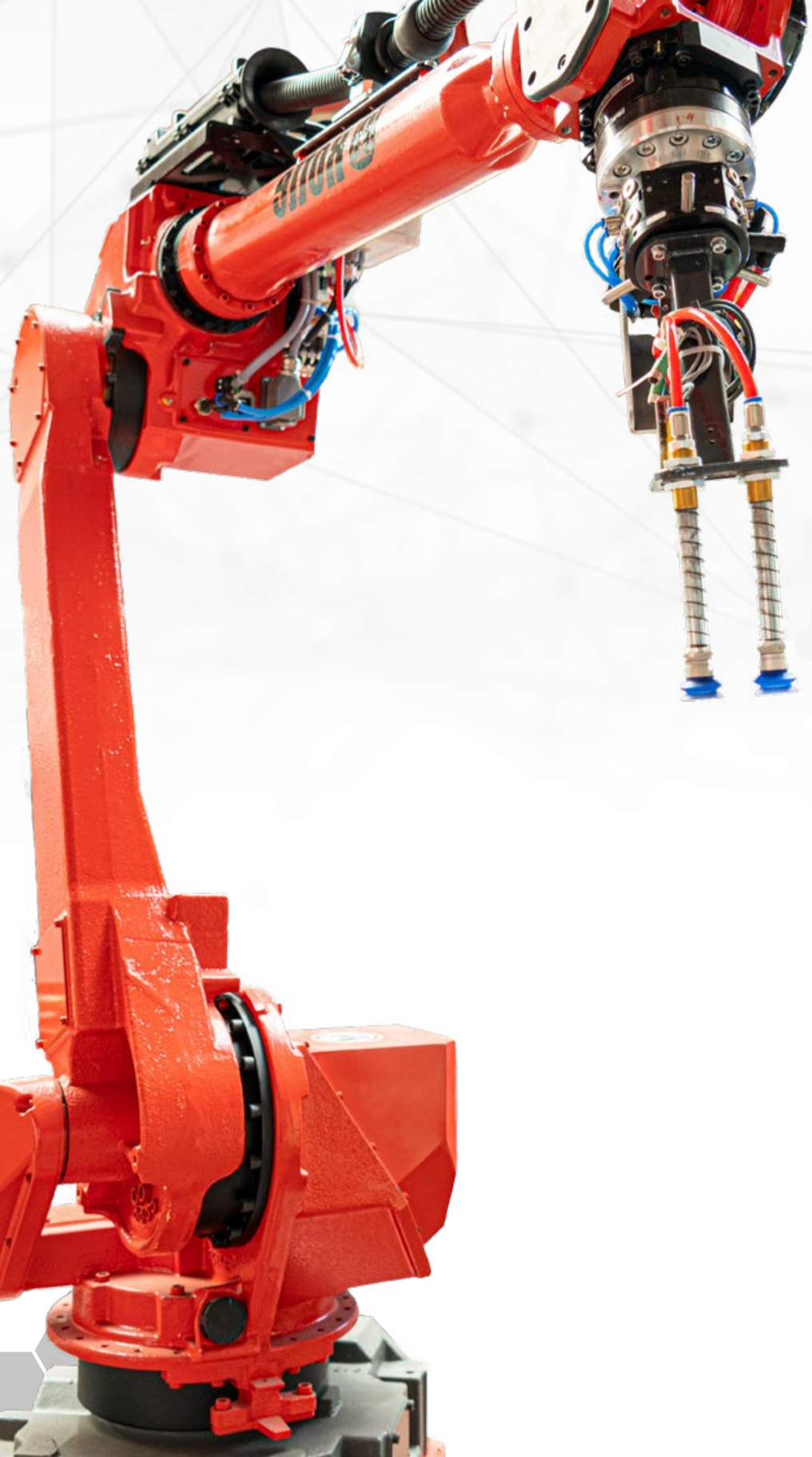
Rotte
Anlagenbau & Fördertechnik GmbH

Laminating Technology

System solutions for the production of multilayers

EU



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General Information

The prices for the listed products are based on the standard tool size of 800 x 660 mm and are subject to the following price surcharge:

For tool size + 10%.....= 1.5% extra charge

Example:	WT 800 x 660	= 52,8 dm²	= + 0,0 %
	WT 750 x 720	= 54,0 dm²	= + 0,4 %
	WT 800 x 690	= 55,2 dm²	= + 0,7 %
	WT 910 x 710	= 64,6 dm²	= + 3,4 %

Surcharge for UL or CSA standard + 3%

Technical equipment

For all systems:
Execution including wiring on terminal box provided.

Costs incurred

- Shipping and delivery costs
- Installation and commissioning at cost

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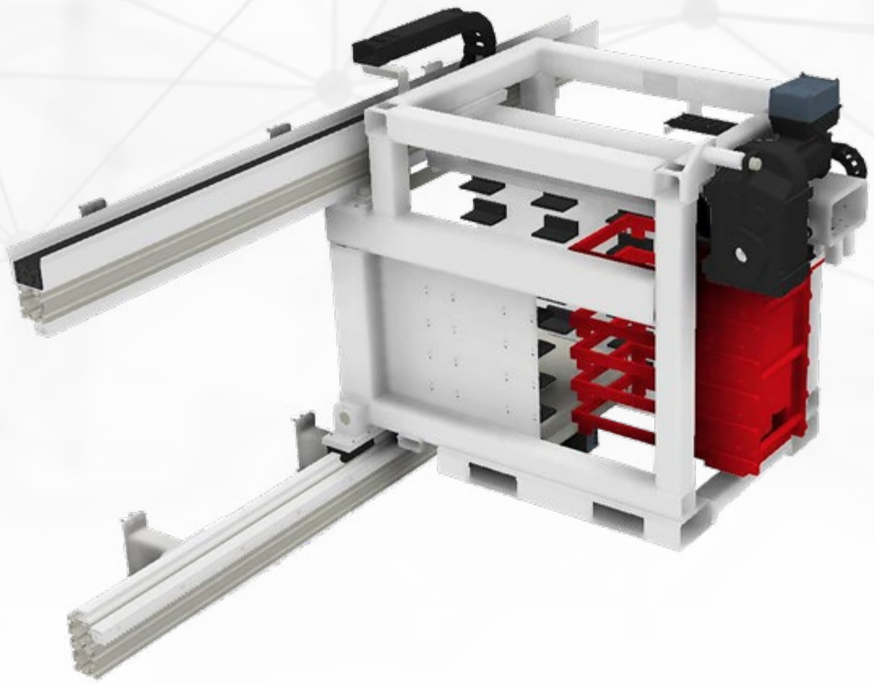

example illustration

Loading/unloading trolley

Rotte LUT 6ET WT800x660

The trolley is designed for automatic loading and unloading of presses and accumulators. The trolley is motorized and can be moved along the rails attached to the presses and accumulators.
A horizontal pushing device pushes all the parcels simultaneously from the loading trolley into one of the presses or into the emptying bin. The parcels are pulled out of the infeed store or the press in reverse order.

Technical details

Number of levels	6 pcs
Level spacing	120 mm
Max. package height	65 mm
Max. package weight	150 kg
Tool length	800 mm
Tool width	660 mm
Maximum tool temperature	200 °C
First press level from the ground	1400 mm
Overall height from the ground	approx. 2750 mm
Clearance height	approx. 1300 mm
Overall width	approx. 1000 mm
Overall length	approx. 1800 mm
Operating voltage	400 V, 50 Hz
Drive speed	130 mm/sec

Options

Each additional level	Optional for the slide bracket: Slide rollers with increased tool weights from approx. 300 kg, extra cost per level
Each 1 m travel rail consisting of a lower and upper aluminum construction profile with guide rails and toothed rack completely pre-assembled and aligned, energy chain with guide trough and connecting pieces	For a set of connection bases for attaching the rails to the presses or storage units
For a complete connection set to extend the two guide rails	Side-mounted platform with railing, folding ladder with back support up to the height of the top press level

– **PRICE REDUCTION:** For each missing level

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example illustration

Charging/discharging storage

Rotte CDS 16ET WT800x660

Empty tool storage

Rotte ETS 16ET WT800x660

The storage station is used for intermediate storage and provision of the press packages. The electrically driven lifting table is used for loading and emptying the storage station. The lifting table is equipped with a driven chain conveyor and a motor-driven insertion and extraction device.

Technical details

Feed panel size	800 mm x 660 mm
Transport width	660 mm
Overall length	approx. 2000 mm
Overall width	approx. 1300 mm
Overall height	approx. 2700 mm
Number of levels	16 pcs
Level spacing	8 x 120 mm and 8 x 100 mm
First press level at	1400 mm
Max. package height	75 mm
Max. package weight	150 kg
Operating voltage	400 V, 50 Hz
Lifting speed	35-210 mm/sec
Chain conveyor speed	130 mm/sec
Press-in speed	130 mm/sec

Options

Each additional level
Heat-resistant slide bracket, up to 200 °C per level
Optional for the slide bracket: Slide rollers with increased tool weights from approx. 300 kg, extra cost per level
Touchless per press floor
Pneumatic touchless centering per floor
Two-piece version for easier introduction into the hall
Built-in roller conveyor for conveying the press packages through

– **PRICE REDUCTION**: For each missing level

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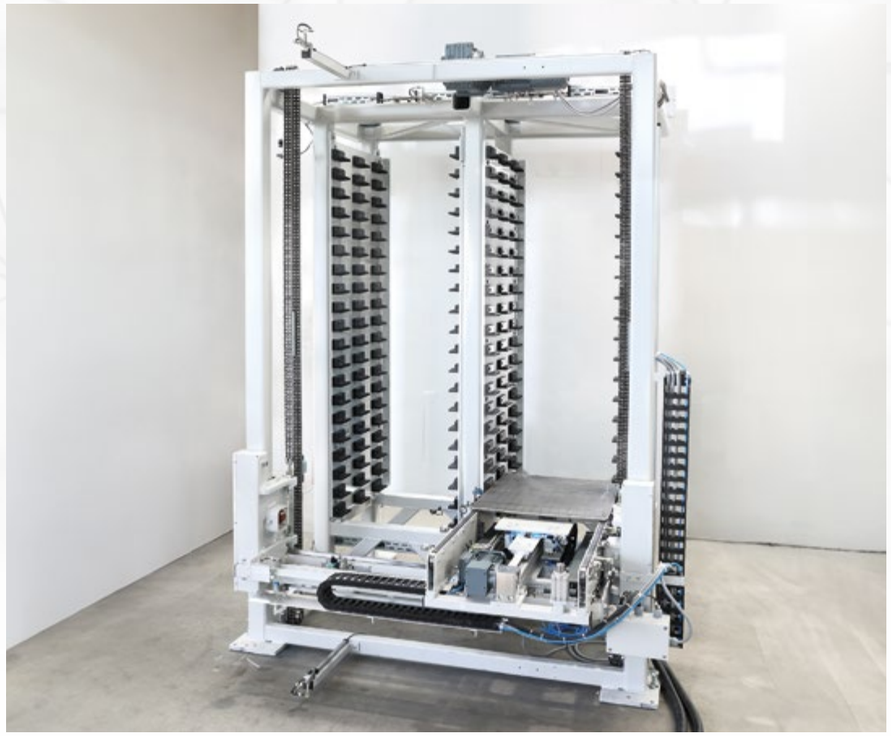

example illustration

Tandem charging/discharging storage

Rotte T-CDS 2x16ET WT800x660

Tandem empty tool storage

Rotte T-ETS 2x16ET WT800x660

The tandem storage station is used for intermediate storage and provision of the press packages. The electrically driven lifting table is used for loading and emptying the storage stations. The lifting table is pneumatically transversely movable, and is equipped with a driven chain conveyor and a motor-driven insertion and extraction device. The side guide rollers are adjustable.

Technical details

Feed panel size	10 mm x 800 mm x 660 mm
Transport width	660 mm
Overall length	approx. 2069 mm
Overall width	approx. 2000 mm
Overall height	approx. 3260 mm
Number of levels	2 x 16 pcs
Level spacing, each	8 x 120 mm and 8 x 100 mm
First press level at	1400 mm
Max. package height	75 mm
Max. package weight	150 kg
Operating voltage	400 V, 50 Hz
Lifting speed	35-210 mm/sec
Chain conveyor speed	130 mm/sec
Press-in speed	130 mm/sec

Options

Each additional double level
Heat-resistant slide bracket, up to 200 °C per individual level
Touchless per press floor
Pneumatic touchless centering per floor
Slide rollers for increased tool weights from approx. 300 kg surcharge per double shelf
Two-piece version for easier introduction into the hall
Built-in roller conveyor for conveying the press packages through

–	**PRICE REDUCTION**: for each missing double level

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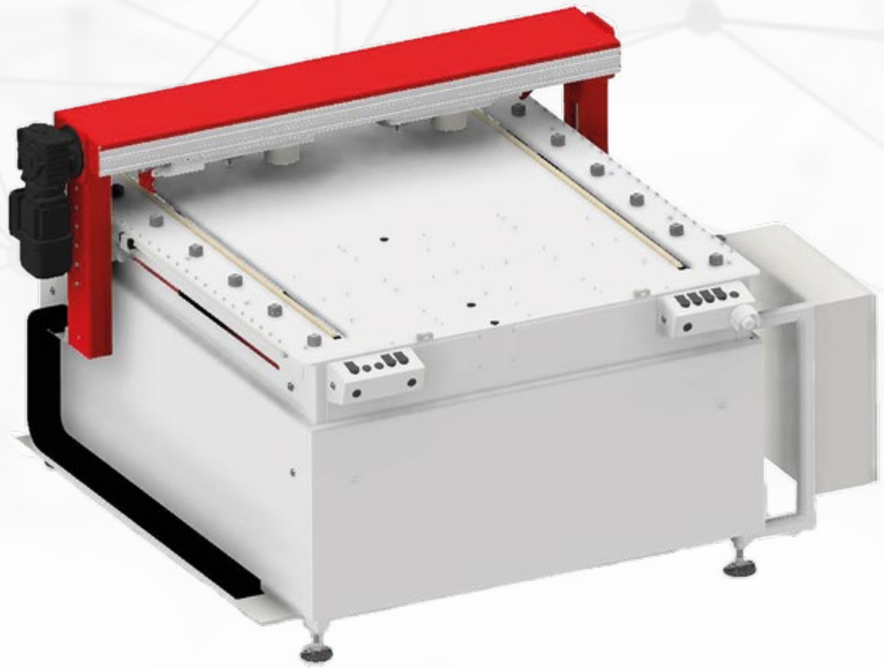

Lay-up station

Rotte LUS WT800x660

Tool support with manually movable and motorised lifting and lowering permanent electromagnet for handling the cover plate. Working table with lifting and lowering chain conveyor.
With manually movable and motorised lifting permanent electromagnet for lifting the upper tool plate. The magnet is operated via a manual pushbutton. The side guide rollers are adjustable.

Technical details

Feed panel size	800 mm x 660 mm
Transport width	800 mm
Overall length	approx. 1650 mm
Overall width	approx. 1350 mm
Working height	950 mm max.
Package height	75 mm max.
Package weight	150 kg
Erste Pressenetage bei	1400 mm
Operating voltage	400 V, 50 Hz
Chain conveyor speed	130 mm/sec

Options

- Motorised moving cover plate
- Ergonomic working height adjustment of +/- 100 mm
- Motor-driven pin lifter
- PC holder

- **PRICE REDUCTION:** Without cover plate handling

example illustration

Lay-up station with tool storage

Rotte LUS-S WT800x660

In the rear lower area there is a roller conveyor for feeding in empty tools. Up to 5 tool carriers, including the cover plate, are lifted via an empty plate storage unit using the first in last out principle. When the operator requests a tool, the front roller conveyor in the laying table lowers to the height of the lower rear roller conveyor, picks up a tool carrier from there and raises it again. A magnet is used to lift the cover plate from the tool carrier and move it backwards out of the laying area. After the manual laying process, the cover plate automatically moves forward again and is deposited. Then the operator sends the press pack down the two upper roller conveyors and requests the next tool. The side guide rollers are adjustable.

Technical details

Feed panel size	800 mm x 660 mm
Transport width	800 mm
Overall length	approx. 1100 mm
Overall width	approx. 1350 mm
Working height	950 mm
Max. package height	75 mm
Max. package weight	150 kg
Operating voltage	400 V, 50 Hz
Chain conveyor speed	130 mm/sec

Options

Motorised moving cover plate
Ergonomic working height adjustment of +/- 50 mm
Motor-driven pin lifter
Work table with chain conveyor that can be raised and lowered to prevent the pins from being pushed through
PC holder

–	**PRICE REDUCTION:** Without cover plate handling

example illustration

Positioning aids

Optical positioning aid

A cross laser is mounted on a precision adjustment device on a sturdy column structure that is anchored to the floor beside the laying table. The laser is controlled via a manual pushbutton in the control panel of the laying table.

Technical details

Number of cross lasers	1 pcs
Control voltage	24 V

Options

Each additional cross laser

Breakdown Station

Rotte BDS WT800x660

Version with motorised lifting and swivelling cover plate, swivel angle 100°. Working table with lifting and lowering chain conveyor. The side guide rollers are adjustable.

Technical details

Feed panel size	800 mm x 660 mm
Transport width	800 mm
Overall length	approx. 1100 mm
Overall width	approx. 1350 mm
Working height	950 mm
Max. package height	75 mm
Max. package weight	150 kg
Operating voltage	400 V, 50 Hz
Chain conveyor speed	130 mm/sec

Options

- Ergonomic working height adjustment +/- 100 mm
- Manual de-pinning function with collecting tray
- HMI control panel 7"
- PC holder

- **PRICE REDUCTION:** For missing cover plate swivel unit
- **PRICE REDUCTION:** Optional for chain conveyor: Lifting and lowering roller rails

example illustration

Semiautomatic De-Pinner

Rotte DP-SA WT660x800

The tool is fed in via pneumatically lifting and lowering ball rollers. The ejector mandrel is moved manually in X and Y direction over the pin hole via two moving guide units. The pneumatic guide unit in the Z-direction allows the ejector mandrel to be placed and fixed in the ejecting position without force. With the two-hand operation, the preset pressing pressure is now built up and the compressed air chisel is switched on (pecking). The pin is pressed out. The ejector mandrel moves to the home position. The expelled pins are collected in a collecting container.

Technical details

Feed panel size	800 mm x 660 mm
Width to the operator	800 mm
Max. package height	75 mm
Tool weight	150 kg

Frame

Usable width	660 mm
Overall length	1100 mm
Overall width	1300 mm
Overall height	1350 mm
Working height	950 mm adjustable +/- 50 mm

Push-out unit

Push-out force	2000 N
Press chisel with impact force	approx. 40 N
Number of strokes	1700 strokes/min

Options

For lifting and lowering chain conveyor instead of roller rails

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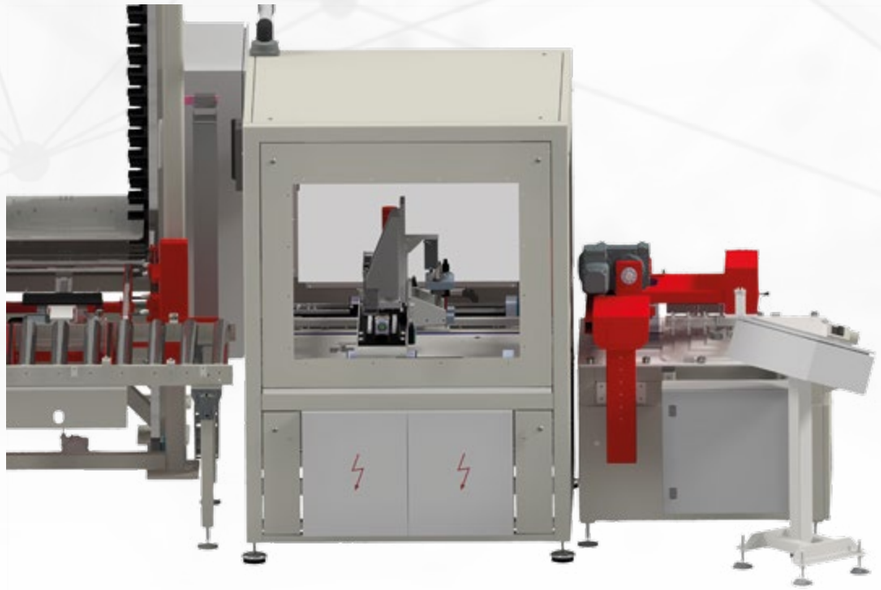

example illustration

Automatic De-Pinner

Rotte DP-A WT660x800

The tools are conveyed in via a timing chain conveyor. The chain conveyor is lowered. The ejector mandrel moves precisely over the pin via two servomotor-controlled guide units. The ejector mandrel lowers onto the pin with a preset force. The pneumatic chisel is switched on and drives out the pin.

Technical details

Feed panel size	800 mm x 660 mm
Tool weight	150 kg

Frame

Usable width	660 mm
Overall length	1540 mm
Overall width	1600 mm
Overall height	2175 mm
Working height	950 mm adjustable +/- 50 mm

Chain conveyor

Operating voltage	400 V, 50 Hz
Travel speed	130 mm/sec
Drive power	0,37 KW

Push-out unit

Push-out force	2000 N
Press chisel with impact force	approx. 40 N
Number of strokes	1700 strokes/min

Control system

SPS: SIMATIC CPU 1512SP F-1 PN Panel: SIMATIC HMI TP700 COMFORT

The emergency stop at the control panel is evaluated and integrated into the emergency stop chain of the existing system. System malfunctions are indicated by a signal lamp on the panel. The individual drives can be moved via the SIMATIC HMI TP700 COMFORT panel to be installed. A PN/PN PROFINET coupler is also provided to enable target position specifications or program pre-selections from other controllers. The control of the individual drives at the control panel is as jog mode. Remote maintenance is realised via a Phönix contact MGuard in the control cabinet. The entire unit is enclosed for personnel and noise protection and fitted with visual contact panels in the upper area.

example illustration

Flipping Station

Rotte Flipping station

Flipping station for manual turn around by rotation 180 degrees. Open flipping station to lay up inlays between seperator plates. Flipping station will be closed and opened by two hand pneumatic control. Manually setting of the pneumatic pressure. Flip the whole package by loosen the adjustment gets fixed. The opened level height is as high as the working height of the lay-up station. Movable station with rolls and pneumatic power. Electricity and PLC are not necessary.

Technical details

Feed panel size	approx. 457 mm x 610 mm
Transport width	610 mm
Overall length	approx. 1100 mm
Overall width	approx. 1350 mm
Working height	950 mm
Max. package height	75 mm
Max. package weight	150 kg
Chain conveyor speed	130 mm/sec

Roller conveyor

Rotte RO-TAN 800x660

Roller conveyors are the ideal solution for transporting and buffering medium-heavy goods with a uniform contact surface. The side guide rollers are adjustable.

Technical details

Tool weight	up to 300 kg
Feed panel size	800 mm x 660 mm
Overall length	1000 mm
Usable width	660 mm
Working height	950 mm adjustable +/- 50 mm
Roller pitch	approx. 150 mm
Roller diameter (galvanised)	80 mm
Operating voltage	400 V, 50 Hz
Travel speed	130 mm/sec
Drive power	0,25 KW

Options

Roller conveyor extension 100 mm each
Built-in lifting and lowering angled transfer with toothed chain
Built-in lift-out rake as parking position for empty tools pneumatically driven
Built-in lift-out rake as parking position for empty tools motor-driven
Additional drive station for dividing the roller conveyor into individual sections
Manually operated folding mechanism for swivelling of the roller conveyor up as a pass-through
90° turning device for tools
Tool centring device

+ **PRICE SURCHARGE:** Per 100 mm extra usable width

− **PRICE REDUCTION:** Per 100 mm less usable width

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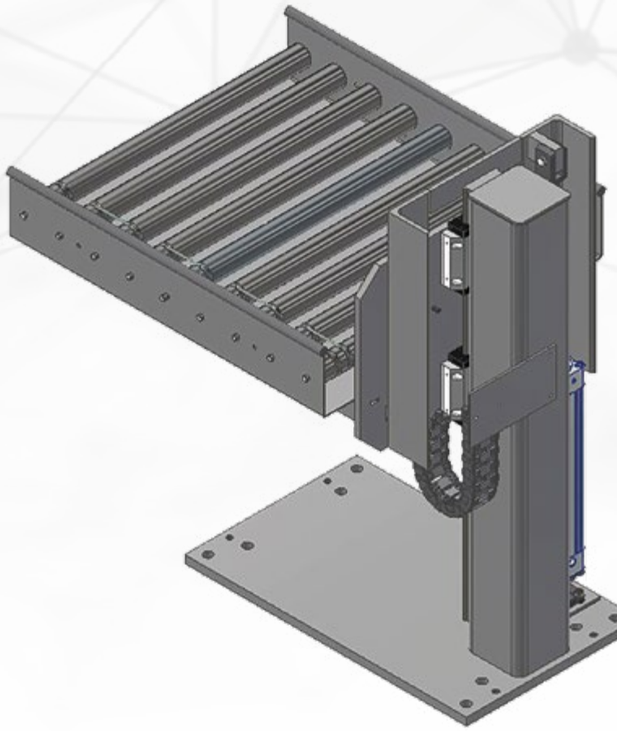

example illustration

Lifting column with attached roller conveyor

Rotte HUB-TAN

The lifting column is used to move the workpiece to another roller conveyor level. The lift is implemented pneumatically via the cylinder at the side. The lateral guide is adjustable on both sides.

Technical details

Load per tool	150 kg
Overall length	1000 mm
Usable width	660 mm
Height	from 950 mm to 530 mm adjustable +/- 50 mm
Roller pitch	150 mm
Roller diameter (galvanised)	80 mm
Operating voltage	400 V, 50 Hz
Travel speed	35-210 mm/sec
Chain conveyor speed	130 mm/sec drive tangential
Drive power	0,25 KW

Options

Built-in lifting and lowering angled transfer with toothed chain

90° turning device for tools

Motorised lift

\+ **PRICE SURCHARGE:** Per 100 mm extra usable width

– **PRICE REDUCTION:** Per 100 mm less usable width

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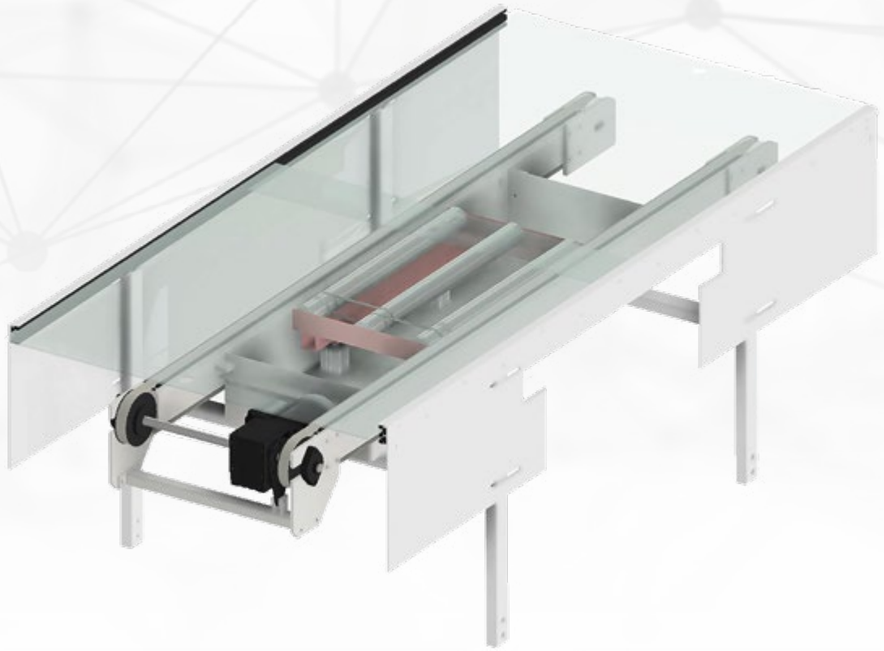

example illustration

Timing belt conveyor

Rotte TBC 2St 1000/500

We build our belt conveyors individually for our customers, tailored to the spatial conditions and technical requirements.
Our conveyor technology consists of a solid, durable base frame. The modular design creates flexibility and long-term expansion options. Elevators, various lifters, lifts or lifting stations can be integrated into the conveyor line to bridge travel distances. The integration of turning stations, corner transfer units and centering stations is possible.

Technical details

Load	10 kg
Overall length	1000 mm
Belt width	25 mm
Belt distance	500 mm
Height adjustable	1150 mm +/- 50 mm
Travel speed	130 mm/sec
Operating voltage	24 V (230 V)

Options

- Extension 100 mm each
- Built-in angle transfer 24 V
- Centering device
- Additional drive station for dividing the conveyor into individual sections 24 V (230 V)
- 70° set-up mechanism in the area of the laying and extraction tables
- 70° set-up mechanism can be moved forwards
- Manually operated folding mechanism for swiveling up the conveyor conveyor as a passageway
- Plexiglass cover 1 m each

example illustration

Separator plate storage

Rotte SPS 30ET SP610x700

Separator plate storage before and after the washing machine with lifting device storage capacity 30 separator plates:
The storage rack is used for the intermediate storage of separator plates. It works on the first in - last out principle. Loading and unloading takes place via the timing belt conveyor.

Technical details

Transport width	610 mm
Overall length	approx. 800 mm
Overall width	approx. 800 mm
Overall height	approx. 1600 mm
Transport height	1000 mm
Feed panel thickness	1,6 mm
First press level at	6 kg
Operating voltage	400 V, 50 Hz
Travel speed	130 mm/sec
Drive power	24 V

Options

Each additional level

– **PRICE REDUCTION**: Each missing level

Insight into the open Rotte MLS

Transport shuttle with box and inner layer

Automated storage and retrieval for PCB production

Rotte MLS inner layer storage

The material is fed into the horizontal storage boxes either manually via a weighing machine or automatically via robotic and stored fully automatically in the material warehouse via an RFID box ID system.

The core of the **Rotte MLS internal storage system** is the **intelligent warehouse management system,** which monitors all material and storage data, including batch number tracking, and provides an overview of the storage contents.

After entering the orders with material code and quantity at the dispensing stations, the corresponding boxes are made available to the dispensing stations. There, they are fed manually or automatically via a corresponding vacuum gripper system to the subsequent processes inline, via manual trolleys or driverless transport systems (AGVs).

Technical details

Panel dimensions	min. 300 x 400 mm max. 622 x 622 mm other formats on request
Panel thickness	0,05 – 4,5 mm
Number of storage spaces	according to customer request and space availability
Load carrier	customer-specific
Payload	max. 150 kg

Options

- Cleanroom compatible with HEPA filter
- Fully automatic material input control
- Automatic and manual output positions with inline connection to PCB production
- Output capacity up to 5 panels/min
- Integrated material master data management
- Panel thickness measurement
- Cu thickness measurement
- Residual paper detection inbetween the base material
- DMC reading systems for material code recognition
- Laser, inkjet and dot matrix systems for order marking and order tracking
- OPC-UA interface to customer-side MES or ERP system

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beispielhafte Abbildung

Automatic handling of separator plates

Rotte AutoHandling PCB

Rotte AutoHandling PCB handels cleaned separator plates ergonomically and efficiently after washing. The 6-axis robot with vacuum suction cups places the plates on conveyor technology in the laying area for loading and unloading.

Transport trolleys or additional stacking racks can also be integrated at the customer‘s request.

Technical details

Separator sheet weight	6 kg
Separator sheet size	700 x 610 x 1,6 mm
Transport trolley	up to 60 separator sheets
Stacking rack	approx. 300 separator sheets
Total storage capacity	1320 sheets
Cycle time for one sheet from the washing machine to the storage unit	6 Sek
Cycle time for one sheet from storage to feed	6 Sek

Options

Separator sheet thickness measurement
Transport trolley for loading and unloading
Stacking racks
PinLam detection
Double sheet detection

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