



Superior Clamping and Gripping

SCHUNK ®

Depaneling Technology

The Fastest Depaneling Technology
in Electronic Production



Superior Clamping and Gripping

Jens Lehmann stands for safe, precise gripping and holding. As a brand ambassador of the SCHUNK team, the No. 1 goalkeeper represents our global competence leadership for clamping technology and gripping systems. The top performance of SCHUNK and Jens Lehmann are characterized by dynamics, precision, and reliability.

For more information visit our website:
www.de.schunk.com/Lehmann



J. Lehmann
Jens Lehmann





Henrik A. Schunk, Kristina I. Schunk, brand ambassador Jens Lehmann, and Heinz-Dieter Schunk

Top Performance in the Team

SCHUNK is the world's No. 1 for clamping technology and gripping systems – from the smallest parallel gripper to the largest chuck jaw program.

In order to boost efficiency, SCHUNK customers have bought more than 2,000,000 precision toolholders, 1,000,000 SCHUNK grippers, and 100,000 lathe chucks and stationary workholding systems so far.

This makes us proud and motivates us to attain new top performances.

As a competence leader, we recognize and develop standards with a large potential for the future, which will drive the rapid progress in many industries.

Our customers profit from the expert knowledge, the experience, and the team spirit of more than 2,700 employees in our innovative family-owned company.

The Schunk family wishes you improved end results with our quality products.

A handwritten signature in black ink, appearing to read "Heinz-Dieter Schunk".

Heinz-Dieter Schunk

A handwritten signature in black ink, appearing to read "Henrik A. Schunk".

Henrik A. Schunk

A handwritten signature in black ink, appearing to read "Kristina I. Schunk".

Kristina I. Schunk

Depaneling Technology

Overview

Two concepts for the complete spectrum of depaneling technology

Increasing speed, maximum accuracy – ongoing advancements in PCB technology mean manufacturers of electronic modules continually face new challenges, which in turn place more demands on depaneling technology. Its performance at the end of each modern production process is decisive for efficiency and productivity.

The flexible universal depaneling machines from SCHUNK set new standards with precision, speed and process stability for the entire spectrum of customer requirements. The cutting is performed by using either a sawing disc or a milling bit – with low stress impact, efficiently, and without damaging the components unlike conventional cutting processes.

Universal

All-purpose machine for low and high batches and medium to high product variety. Multi-panels and individual PCBs are loaded and unloaded manually.



SAR-1300-BD 2-Uni

Fully automatic

Inline machines for high batches and low product variety: short cycle times, high positioning accuracy and an option for palletizing.



ILR-2000-B with palletizing system PAL-1400



Gripping of several individual PCBs in the panel with a modular multi-gripper, consisting of several PGN-plus grippers, followed by detaching or placing it in the following process in a programmed angular position. Transfer of pneumatic and the sensor signals for rotation of the ERD torque module is performed by a rotary feed-through.

Our Performance Promise. Your Benefit.

- The input power of a two shuttle machine with manual loading and unloading is only **800 W**.
- **Very precise milling contours** by means of high positioning accuracy (± 0.02 mm) of the axes and the precise workpiece holder.
- Due to the highly dynamic linear motors, SCHUNK depaneling machines achieve an approximately **50% higher throughput** than comparable machines of the competitors.
- High technical availability and process stability: SCHUNK inline depaneling machines are proven to reach an **availability of $\geq 98\%$** .
- Further increase of availability through **low-maintenance axes**.
- Both cutting principles (milling/sawing) can be retrofitted for the SAR-1300 model with **low effort** at any time. That means the machine grows with the changing needs.

Universal Depaneling System

SAR-1300-Uni

Universal depaneling machine SAR-1300-Uni

The universal one is growing with the requirements due to its modular design.

The SAR-1300-Uni depaneling system is ideal for small to large batch sizes with medium to high product variety. Ongoing advancements in PCB technology mean manufacturers of electronic modules continually face new challenges, which in turn place more demands on depaneling technology. The design of the SAR-1300-Uni includes a variety of customers suggestions and requirements.

Outstanding feature of the SAR-1300-Uni is its modularity, and the involved fast and modular option of fitting the router. Due to the vast modular design, the machine can be fitted with milling bit and milling disc modules or from a single shuttle system to a double shuttle system. Numerous accessories and options, such as camera system, data base connection or magnetic workpiece holder allow the cost-optimized future adaption of the machine at any time.

35 % lower cycle time

The fastest depaneling machine on the market, with axes speed up to 2,000 mm/s.



SAR-1300-BD 2-Uni

Flexible and efficient:

- Shortest cycle times thanks to the high speed linear motors from SCHUNK's own product line and minimal down times.
- Highest milling accuracy due to very precise linear motors from SCHUNK's own product line and latest control technology.
- Maximum availability due to use of high-quality components and simple system structure.

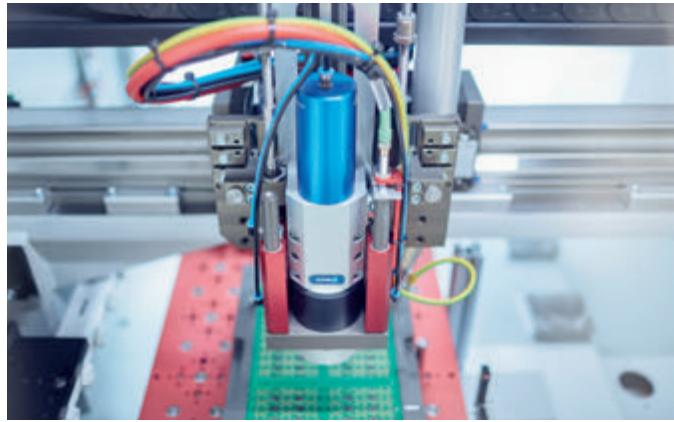
- Cost-effective due to simple structure and targeted initial investment with wide range of expansion options.
- Possible to feed in panels with one or two shuttle axes depending on the required output. The second shuttle can be retrofitted at any time.



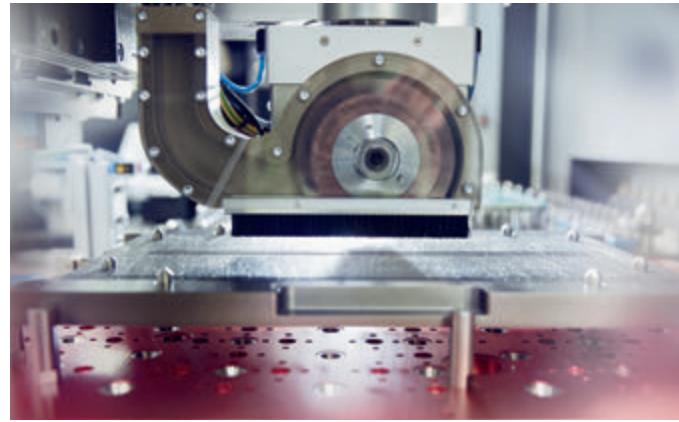
The standard version of the SAR-1300-Uni has a high-performance single shuttle system.



When equipped with a dual shuttle system, the machine offers maximum output by increasing efficiency



The basic configuration consists of a milling bit module. As optional expansion of the base system, the milling bit module is available with a vision system, as well as a scanner.



The machine can be optionally fitted with an additional sawing disc module. The second module can be retrofitted at any time. The sawing disc can be rotated in steps of 0.1° until 360°. With the full equipment (milling bit module + sawing disc module) it is possible to switch instantly during one cycle, without retooling time, between both heads.

Inline Depaneling System

ILR-1500-B and ILR-2000-B

Inline depaneling machine ILR-1500-B and ILR-2000-B

The Fully Automatic for large batch sizes and minimal product variety.

The Inline depaneling systems ILR-1500-B and ILR-2000-B with optional palletizing system PAL-1400 were designed specifically for almost stressfree depaneling. The main focus was for high flexibility and throughput.

With the specially designed fast-acting PCB feeder for the ILR-2000-B and the use of highly dynamic actuators with continuous path control for detachment and handling of PCBs, the highest possible throughput is achieved. The simple and light-weight design of the PCB grippers minimizes tool costs and together with a gripper change system guarantees highest flexibility and minimum set-up time.



150 % faster loading times

Thanks to the specially designed fast acting panel feeder
unbeatable in the throughput.

ILR-2000-B with palletizing system PAL-1400

Automatically efficient:

- Decreased loading time due to the linear motor driven panel infeed conveyor
- Shortest possible detachment time guaranteed by highly dynamic milling gantry system with linear motor actuators with special milling brush hold-down

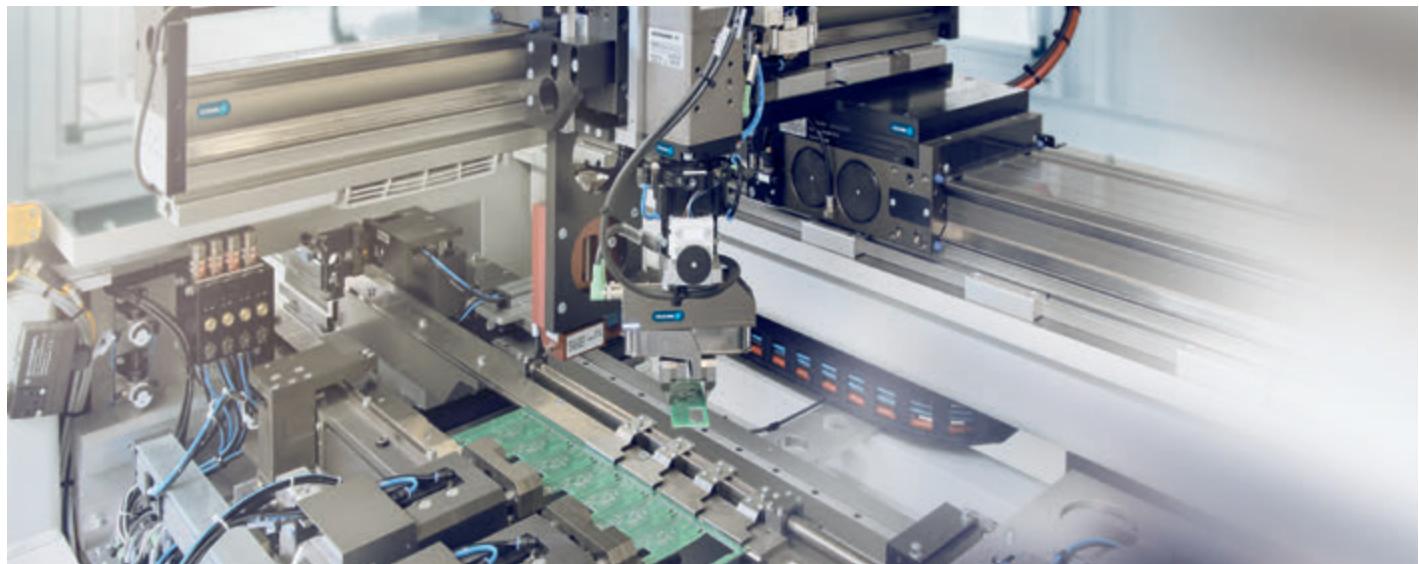
- Short handling time for detached components achieved by linear motor based handling system with continuous path control
- High flexibility and minimum set-up time with simple and automatic quick change multi-panel grippers
- Optional expansion by integrated palletizing system



Simple and light-weight grippers for PCB handling are cost effective and guarantee the shortest cycle times with the most flexibility.



The linear motor handling system detects the status of the tray with a light barrier and guarantees trouble free operation with various types of trays.



With the specially designed fast acting panel feeder, loading times of less than 2 seconds are achieved at the panel infeed section.

MAGNOPLATE

An optional accessory for the depaneling machine. In cases of high product variety, substantial savings of fixture costs can be achieved.

Customized pin geometries and pin diameters can be offered depending on the application and multi-panel design. The options of using hold down devices and pin fixing can be solved by integrating a fixation plate into the system.



		SAR-800-B1-CL	SAR-1300-Uni	ILR-1500/2000	ILR-1000-CL	ILR-2800
Machine dimensions						
Length	[mm]	800	1325	1550/2050	1000	2800
Width	[mm]	1810	1300	1960	1500	1880
Height	[mm]		1850	2020	2150	2020
Operator height	[mm]	985	950		940	
Weight	[kg]	700	1500	1700/2000	1600	3500
Speed of axes (mm/s)						
X- and Y-linear motor actuators	[mm/s]			2000		
Z-linear motor actuator	[mm/s]			1000		
Accuracy						
Repeat accuracy	[mm]			±0.02		
Positioning accuracy	[mm]			±0.02		
Milling accuracy without vision system	[mm]			±0.13		
Milling accuracy with vision system	[mm]			±0.08		
Work space						
Max. panel size X- and Y-direction	[mm]	430 x 350		400 x 300	380 x 250	430 x 350
PCB-characteristics						
PCB thickness	[mm]		0.5 – 3.2 (further PCB data on request)			
Max. component height on top side with standard spindle	[mm]	10		10		
Max. component height on top side with strong spindle	[mm]			15 – 20		
Max. component height on non milling side	[mm]	60	30		60	
PCB materials			CEM1, FR2, FR3, FR4, FR5 (further PCB materials on request)			
Availability						
Technical availability				≥98%		
Noise level						
Measured at a distance of 1.2 m around the machine				≤72 db (A)		
System control						
IPC control with DIN 66025 programming				✓		
Windows operating system				standard		
Power supply						
Voltage			400 V/50 Hz/16 A			
Compressed air			0,6 mPa (6 bar)			
Ambient temperature			+18 °C bis +35 °C			
Relative air humidity			15% bis 80%			
RCD > 100 mA: Connection over RCD not possible (please contact SCHUNK)				✓		
Options (most common ones)						
Strong spindle		●	●	standard	●	standard
MAGNOPLATE		●	●			●
Automatic tool break control and broken tool control		●	●	standard	standard	standard
Diameter control		●	●	●	●	●
Milling brush holding-down device				standard		
Milling bit head		standard	●	standard	standard	●
Sawing disc head			●			●
Two shuttle system			●			●
One shuttle system		standard	●			●
Fast acting panel feeder				●		
Palettizing system				●	●	●
Combination between milling bit head and sawing disc head			●			●
Detection of good and bad parts		●	●	●	●	●
Traceability		●	●	●	●	●
Vision system for program teaching		●	●			
Vision system for recognition of PCB position		●	●	●	●	●
CAD/CAM software for generating of milling program		●	●	●	●	●

● available as optional accessory



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SCHUNK Service



Competent and skilled personnel ensure optimal availability of your SCHUNK products, and make sure that their value will be maintained.

Your Advantage:

- Fast supply of original spare parts
- Reduction of down-times
- The complete spectrum of components from one source
- Quality and availability that can only be guaranteed by the original manufacturer
- 12-month warranty



Initial Operation

- Professional assembly
- Fast and trouble-free



Inspection

- Inspection is carried out by skilled service engineers
- Avoiding unplanned failures of workholding and toolholding equipment



Maintenance

- Regular maintenance carried out by skilled service engineers
- Increasing and ensuring the availability of your workholding and toolholding equipment



Repairs

- Short down-times due to fast intervention of the SCHUNK service engineers
- Spare parts and accessories

Training

- Fast and practical training
- Efficient use of your SCHUNK products by training of the operating personnel
- The basis for proper machining of workpieces
- Ensures longevity of your SCHUNK products

Individual Service – for better results

- Hotline to our inside technical consultants weekdays from 8 a.m. to 5 p.m.
- Project-oriented and on-site technical advice at your location
- Training on innovations and SCHUNK products – across the world in our local subsidiaries

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No. 1

for safe, precise
gripping and holding.



Jens Lehmann, German goalkeeper legend,
SCHUNK brand ambassador since 2012
for safe, precise gripping and holding.
www.schunk.com/Lehmann

- 852** Minutes without a goal against him in the Champions League
- 681** Minutes without a goal against him in the national team
- 2** Intercepted penalties in the 2006 World Cup
- 1** Headed goal as a goalie
- 0** Defeats English Soccer Champion and
- More than 10 years** World's fastest depaneling machine
- More than 2,000,000** Sold precision toolholders
- About 1,000,000** Delivered SCHUNK grippers
- More than 100,000** Lathe chucks and stationary workholding systems are in use worldwide
- More than 16,000,000** Sold standard chuck jaws
- More than 75.000** implemented hydraulic expansion customer-specific solutions

SCHUNK Electronic Solutions GmbH

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