

30 Years

SCHUNK

Grippers
1983 – 2013



Superior Clamping and Gripping



Depanelling Technology

fast and precise



Superior Clamping and Gripping

Jens Lehmann stands for precise gripping, and concentrated safe holding. As a brand ambassador of the SCHUNK team, the No. 1 goalkeeper communiates 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.gb.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 gripping modules, 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.

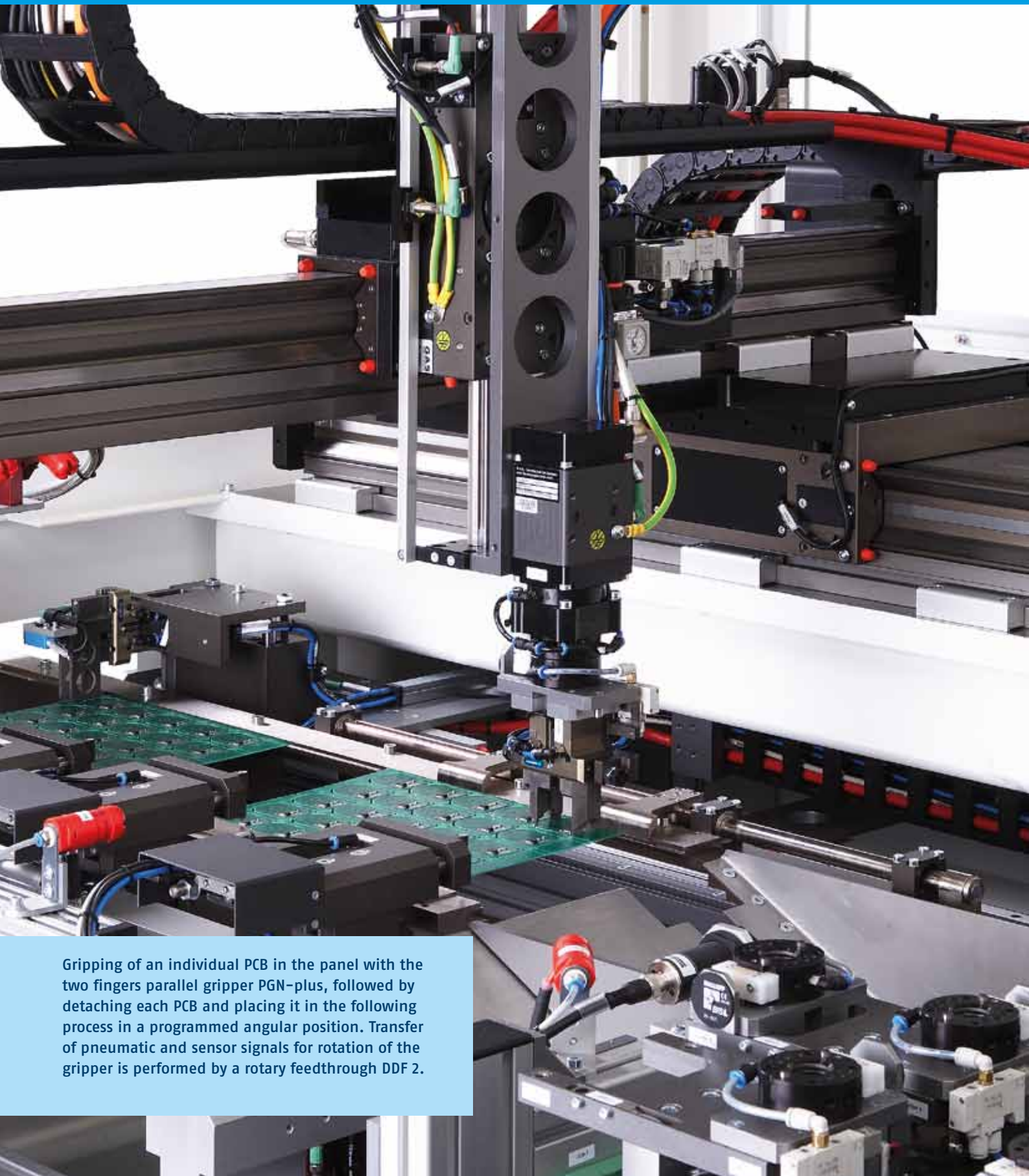
Our customers profit from the expert knowledge, the experience and the team spirit of 2,000 employees on our innovative family-owned company.

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

Heinz-Dieter Schunk

Henrik A. Schunk

Kristina I. Schunk



Gripping of an individual PCB in the panel with the two fingers parallel gripper PGN-plus, followed by detaching each PCB and placing it in the following process in a programmed angular position. Transfer of pneumatic and sensor signals for rotation of the gripper is performed by a rotary feedthrough DDF 2.

Three concepts for the complete spectrum of depanelling technology

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

The flexible universal depanelling 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 cutter – with low stress impact, efficiently, and without damaging the components unlike conventional cutting processes, such as using a wheel cutter.

Fully automatic

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

Universal

Depanelling machines for universal use with manual loading and unloading, developed for small and large batches with middle to high product variance.

Cost efficient

The cost efficient routers with manual loading and unloading, developed for smaller batches and high product variance.



ILR-2000-B with palletizing system PAL-1400



SAR-1300-BD 2-Uni



SAR-800-B 1-CL

Universal depanelling machine SAR-1300-Uni

The Universal for small to large batch sizes with medium to high product variety

The SAR-1300-Uni depanelling system from Schunk has evolved from the proven SAR-1000 stand-alone depanelling system. Ongoing advancements in PCB technology mean manufacturers of electronic modules continually face new challenges, which in turn place more demands on depanelling technology. The design of the SAR-1300-Uni incorporates a variety of suggestions and requirements put forward by GAS customers. Outstanding features on the SAR-1300-Uni include the option of fitting the machine with both a milling bit and milling disc module, and a modular configuration that allows the machine to be adapted to future requirements cost-effectively at any time.



SAR-1300-BD 2-Uni

35% lower cycle time

The **fastest** depanelling machine on the market, speed of axes up to 2000 mm/s



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

Flexible and efficient:

- Shortest cycle times thanks to the High speed linear motors from the own production and minimal dead times
- Highest milling accuracy due to very precise linear motors from the own production
- 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



When equipped with a dual shuttle system, the machine offers maximum output by avoiding time lags.

Options	SAR-1300-B	SAR-1300-D	SAR-1300-BD
Milling bit head	standard		standard
Sawing disc head		standard	standard
Spindle with 1.1 KW	standard	standard	standard
One shuttle system	•	•	•
Two shuttle system	•	•	•
MAGNOPLATE	•	•	•
Vision system	•		•

Depanelling systems of the Cost Leader-Series

The Cost Efficient for smaller batch sizes and high product variety

The new routing machines of the SAR-CL-series offer the user a largely automated, nearly stress-free and cost effective detachment process to replace traditional detachment methods, such as circular plate, side cutter or punch unit. These routers can be used as a cutting cell in a one-piece-flow production as well as a central system for small and medium lot sizes. The machine is characterized by its excellent price performance relation: Low invest and at the same time highest milling accuracy and high speed movements due to the linear motor actuators from the own SCHUNK production – Made in Germany. Schunk offers a special service for this machine: One specific workpiece holder and one corresponding milling programme.



800 mm machine width

The **smallest** of its kind with a bit working area of 450 mm x 400 mm

SAR-800-B 1-CL



The flexible milling brush holder presses the printed circuit board against the supports of the workpiece holder during milling action. Therefore further holding-down devices can often be avoided – depending on the panel size.

High performance for small money:

- Shortest cycle times thanks to the High speed linear motors from the own production and minimal dead times
- Cutting with low stress impact by means of milling bit or sawing disc cutter
- Tool kit with automatic tool exchange, broken tool control and continuous bit control for different levels
- State of the-art IPC technology ensuring user-friendly operation and highest ease of use
- NC-programmes can be established "offline" with CAD/CAM system.
- One shuttle system or two shuttle system for loading and unloading optionally



Depanelling machine SAR-1300-B 2-CL with double shuttle system and one milling bit module



Depanelling machine SAR-1000-D 1-CL with single shuttle system and one sawing disc module

Options	SAR-800-B 1-CL	SAR-1000-D 1-CL	SAR-1300-B 2-CL
Milling bit head	standard		standard
Sawing disc head		standard	
Spindle with 0.6 KW	•		•
Spindle with 1.1 KW	•	standard	•
One shuttle system	standard	standard	
Double shuttle system			standard
MAGNOPLATE	•		•
Vision system	•		•

Inline Depanelling System

ILR-1500-B and ILR-2000-B

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

The Full Automatic for large batch sizes and small product variety

The Inline depanelling system ILR-2000 with optional palletizing system PAL-1400 was designed specially for almost stressfree depanelling. The main focus was put on high flexibility and throughput. With the specially designed fast-acting PCB feeder 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.



ILR-2000-B with palletizing system PAL-1400

150% faster loading times

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



Simple and light-weight grippers for PCB handling are cost-saving and guarantee shortest cycle time with highest flexibility.



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

Automatically efficient:

- Linear motor driven fast acting panel infeed for minimal loading time
- 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 automatically exchangeable multi panel grippers
- Optional expansion by integrated palletizing system



With the specially designed fast acting panel feeder, loading times of < 2 s at the panel infeed section are achieved.

Options	ILR-1500	ILR-2000
Milling bit head	standard	standard
Spindle with 1.1 KW	standard	standard
Vision system	•	•
Fast acting panel feeder		•
Simple panel feeder	•	
Palletizing system		•

Technical Specifications

Technical Specifications & Options

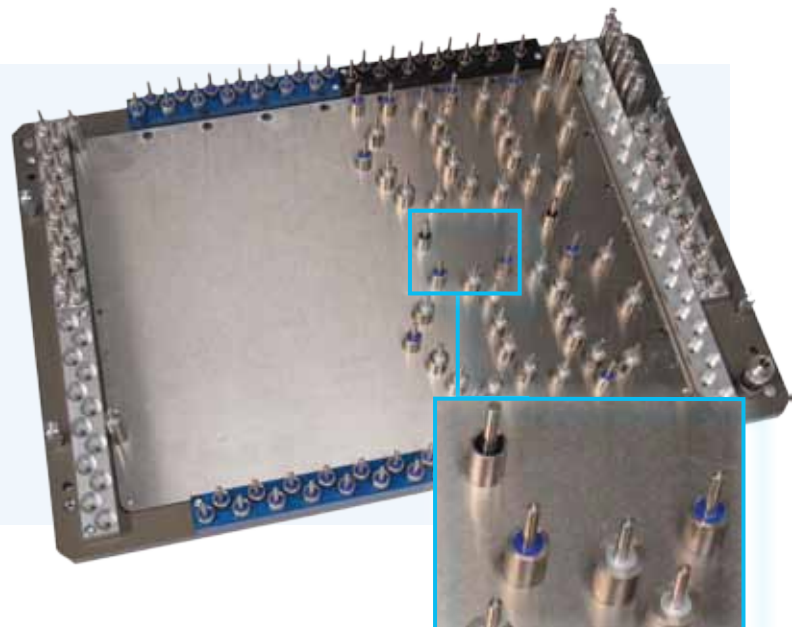
	SAR-800- B1-CL	SAR-1000- D1-CL	SAR-1300- B2-CL	SAR-1300- B-Uni	ILR-1500-B	ILR-2000-B
Machine dimensions						
Length (mm)	800	1100	1325		1550	2050
Width (mm)	1810	2230	1300		1960	
Height (mm)	1850			2020		
Operator height (mm)	985	900	950		940	
Weight (kg)	700	750	1500		1700	2000
Speed of axes (mm/s)						
X- and Y-linear motor actuators	1000				2000	
Z-linear motor actuator			1000			
Accuracy						
Repeat accuracy			± 0.02			
Positioning accuracy			± 0.02			
Milling accuracy without vision system			± 0.13			
Milling accuracy with vision system			± 0.08			
Work space (mm)						
Max. panel size X- and Y-direction	430x400	430x350		400x300		
PCB-characteristics						
PCB thickness	0.5 - 3.2 (further PCB data on request)					
Max. component height on top side with 0.6 KW milling spindle (mm)	10		10			
Max. component height on top side with 1.1 KW milling spindle (mm)	15	10	15	20		
Max. component height on bottom side (mm)	70					
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	≤ 72 db (A)					
System control						
IPC control with DIN 66025	✓					
Windows operating system	standard					
Power supply						
Voltage	400 V / 50 Hz / 16 A					
Compressed air	0,6 mPa (6 bar)					
Ambient temperature	+18° C to +35° C					
Relative air humidity	15% to 80%					
ELCB > 100mA: Connection over ELCB not possible	✓					
Options						
Spindle with 1.1 KW	●	standard	●	standard	standard	standard
MAGNOPLATE	●		●	●		
Automatic tool exchange and broken tool control	●		●	●	standard	standard
Diameter control	●			●	●	●
Milling brush holding-down device	standard	●	standard	standard	standard	standard
Milling bit head	standard		standard	●	standard	standard
Sawing disc head		standard		●		
Two shuttle system			standard	●		
One shuttle system	standard	standard		●		
Fast acting panel feeder						standard
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	●	●	●	●	●	●

Our Performance Promise. Your Benefit.

Cycle time	Due to the high dynamic linear motors, SCHUNK depaneling machines achieve an approximately 50% higher throughput than comparable machines of the competitors.
Precision	Very precise milling contours by means of high positioning accuracy ($\pm 0.02\text{mm}$) of the axes and the precise workpiece holder.
Availability	High technical availability and process stability: SCHUNK inline depaneling machines are proven to reach an availability of $\geq 99\%$.
Maintenance	Further increase of availability through low-maintenance axes .
Tooling cost	Huge cost saving due to flexible workpiece holder, especially in case of high product variety.
Modularity	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.
Modern tooling technology	Milling bits and sawing blades from SCHUNK achieve maximum life and repeatability of the cutting process.
Variety of materials	Milling of a wide range of PCB materials , starting with FR4 up to aluminium substrate, can be covered with one machine.
Energy efficiency	The input power of a two shuttle machine with manual loading and unloading is only 800 W .

MAGNOPLATE

The flexible magnet workpiece holder MAGNOPLATE is available as optional accessory for the depaneling machine. Especially in case of high product variety, substantial savings of workpiece holder costs can be achieved by using it.



SCHUNK Service

Competent and skilled personnel ensure optimal availability of your machinery and make sure that its 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 setup and initial operation
- Fast and trouble-free production flow

Maintenance

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

Inspection

- Inspection is carried out by skilled service engineers
- Avoiding unplanned failures

Repairs

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

Training

- Fast and practical training
- Efficient operating of your machinery by training of the operating personnel
- Ensures a long life for your machinery

Individual service – for better results

- Hotline to our inside technical consultants weekdays from 7 a.m. to 6 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

Online service – for a fast overview

All information in digital form, clearly structured and up-to-date on our website at www.schunk.com

- List of contact persons
- Online product search based on product numbers
- Product news and trends
- Data sheets
- Order forms for easy and convenient ordering
- Free download area for pages from our product catalogs and technical data, for software and calculation programs for your gripping and rotary modules
- Free 2-D/3-D CAD design models, provided in a wide range of different CAD formats – for easy integration into your design!



No. 1

Concentrated, safe holding.
A goalkeeper legend.



J. Lehmann

Jens Lehmann, German goalkeeper legend,
brand ambassador of SCHUNK,
the family-owned company since 2012
www.gb.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

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