



Haeger® and PEMSERTER®

Insertion presses and feeding equipment



“Reliable processing of threaded studs and collars, self-clinching nuts and fasteners. Special solutions can be created too.”



HAEGER® AND PEMSERTER® INSERTION PRESSES AND FEEDING MACHINES

Flexible, powerful and safe for reliable processing

Haeger® and PEMSERTER® are registered trademarks of PennEngineering®, the world's leading innovator in the field of clinching technology.

The latest generation of Haeger® insertion presses has a hydraulic drive and can be modularly equipped depending on the requirements and task at hand. SingleTouch technology enables precise and process-reliable joining of PEM® self-clinching fasteners such as threaded studs and collars, self-clinching nuts, and fasteners. Even special solutions can be created with the extensive tool set. With the new Haeger® 5 operating system, the insertion presses are also ideally equipped for connection to robots and automated environments.

For existing industrial insertion installations, the NextGen Universal in-die feed cart is the perfect complement to fully automatically feed various types of PEM® fasteners directly to a punch press. This eliminates secondary operations, directly cutting costs and enhancing efficiency.

The following pages provide an overview of the different models from the Haeger® and PEMSERTER® range.

WHAT WE OFFER YOU

- An analysis of your machine needs on site
- Development of the perfect technical solution to suit your individual requirements
- A virtual machine demonstration
- Preparation of a non-binding quotation
- Individual and transparent calculation of the benefits
- On-site servicing and machine maintenance by your Bossard subsidiary

GENUINE ADDED VALUE



SAVE TIME



QUALITY



CUT COSTS



CUSTOMIZATION



ON-SITE SERVICE

 **Haeger**
a PennEngineering® Company



PEMSERTER® INSERTION PRESS

PEMSERTER® 4

BN 26661 – Manual pneumatic press for processing PEM® self-clinching fasteners.

The force-limited system processes all PEM® self-clinching fasteners in the range up to 53.4 kN. It is used for small to medium quantities. An air connection of max. 6 bar is all that is needed to operate the press. A time delay valve (timer) enables optimized pressing of self-clinching parts, especially for stainless steel metal sheets. The use of multiple tools (turret tools) enables changeover to other thread sizes within the space of a few short seconds. These multiple tools are available for studs, collars, and nuts. Of course, the user can also create a corresponding multiple tool for using different parts that is precisely adapted to the customer component requirements.



1. **Occupational safety** for the operator is guaranteed due to the PEMSERTER®4's mechanics. The press plunger drops down, driven only by its dead weight and dampened by means of an air valve. The thickness of the metal sheet part and the height of the self-clinching fastener are set during the setup phase. During continuous operation, the power stroke can only be activated when the lateral control lug on the upper punch shaft actuates the ball valve during lowering. The working stroke, performed using a toggle lever, is only a maximum of 4 mm.
2. **Infinitely variable force adjustment** from 1.8 – 53.4 kN by means of a pressure reducer with quick exhaust and kN indicator. Selector switch for setup and working mode. The integrated pneumatic counter counts the good strokes performed and thus the fasteners.
3. The **dwell time** – i.e. how long pressurization lasts during insertion – can be set using the timer. This dwell time is especially important for high metal sheet hardness (as is the case with stainless steel, for example). The material must be able to flow into the self-clinching fastener's undercut. A good joint is only guaranteed if the time for the initiated cold forming has been sufficiently preselected.
4. The **laser dot** is a search tool used to find the insertion position. Aim the laser dot at the center of the die. When the metal sheets are being positioned, the laser dot shows where exactly to move the metal sheet to so you can find the die. **This saves both time and money!**

E-SHOP



PEMSERTER® INSERTION PRESS

PEMSERTER® 4 accessories

Unleash the full potential of the PEMSERTER® 4 with these accessories.

Multiple tool (turret tool)

Used for processing self-clinching fasteners with various thread sizes.

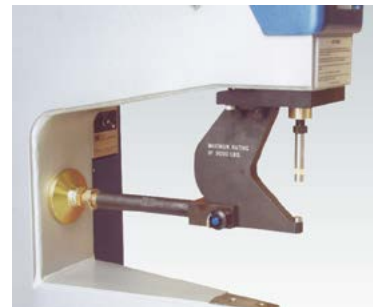
Turning the die completes the conversion in seconds.



Reverse die holder from above

This special tool can also be used to process tightly folded metal sheets.

Maximum load: 40 kN.



Reverse die holder from below

This special tool can also be used to process tightly folded metal sheets.

Maximum load: 27 kN.



HAEGER®-INSERTION PRESSES

618™ MSP 5He

BN 26714 – The 618™ MSP 5He is ideally suited to medium to large quantities of PEM® self-clinching fasteners.

A 618™ MSP 5HE

Maximum compression force of 53 kN and 18" (457 mm) design. With the reliability and energy efficiency of a fully hydraulic machine system. Also equipped with the patented Haeger safety system. Infinitely variable dwell time for challenging materials such as stainless steel.

B POSITIVE STOP SYSTEM (BN 26716)

The optional Positive Stop System makes it possible to adjust the self-clinching cylinder's travel limitation quickly and easily, so the insertion process is no longer completed using the pressure range, but rather by means of the hydraulic self-clinching cylinder's fixed travel range. This solution has proven its worth many times over for thin-walled workpieces or workpieces with a hard edge layer and a soft core (such as Eloxal).

C MODULAR AUTOMATIC FEEDING SYSTEM MAS350

The optional Modular Automatic Feeding System feeds nuts, studs, and collars in sizes ranging from M2 to M10. The maximum length of the studs and collars to be processed is 30 mm.

D TPS CONTROL

The Tool Protection System (TPS) protects the tools and the workpieces from any kind of damage.

E TOOL SHELF

Quick and easy access to tools.

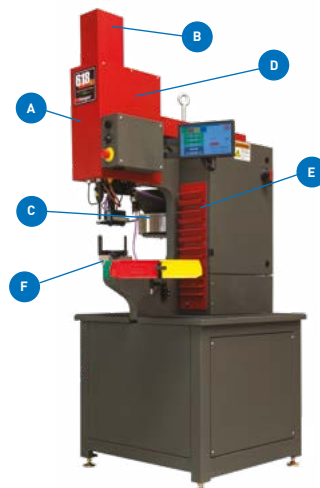
F TIS (TURRET INSERTION SYSTEM)

Install up to four different fasteners with the manual Turret Insertion System without any need for retooling. This option includes software.

ROBOT INTERFACE

The "Robot Interface" extension module contains the following components:

- Robot die with positioning query.
- The die is fitted with a sensor that sends a signal to the robot when the metal sheet is in the correct position.
- This allows for quick and easy setup, not to mention continuous process optimization
- Optional Fastener Removal System
- Rejection of incorrect fasteners
- Incorrect fastener lengths are removed from the system



E-SHOP





SHUTTLE MACHINING FOR STUDS AND SPACER COLLARS

Can be used for all machine systems (special version for OT and OT Lite): Process studs and spacer collars in various part configurations and near bending edges. Studs and collars are generally processed from above only.



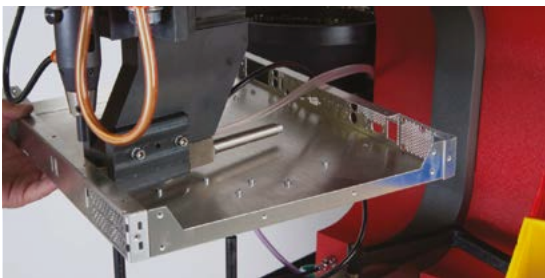
SHUTTLE NUT TOOL

Can be used for all machine systems (special version for OT and OT Lite): Especially suitable for automatically feeding nuts and short collars.



NUT FEEDER FROM BELOW (ABFT)

Can be used for all machine systems (except OT): Particularly suitable for automatically feeding nuts that are processed in hard-to-reach places.



ABFT J FRAME

Automatic feeding of self-clinching elements for hard-to-reach insertion areas.

Maximum force limitation: 40 kN.



MANUAL J FRAME

Manual feeding of self-clinching elements for hard-to-reach insertion areas.

Maximum force limitation: 40 kN.

HAEGER®-INSERTION PRESSES

824™ MSP 5He

BN 26706 – The 824™ MSP 5He is particularly suitable for processing PEM® self-clinching fasteners that require higher insertion forces and a greater throat depth.

A 824™ MSP 5HE

Maximum compression force of 72 kN and 610 mm throat depth with infinitely variable return stroke limitation. Reliability and energy efficiency. Patented safety system.

B POSITIVE STOP SYSTEM

With the optional quick adjustment, the Positive Stop System offers quick and easy adjustment of the working stroke. This solution has proven its worth many times over for thin-walled workpieces with a hard edge layer and a soft core.

C MODULAR AUTOMATIC FEEDING SYSTEM MAS350

Available in sizes ranging from M2 to M10. The maximum length of the studs and collars to be processed is 30 mm.

D TPS CONTROL

The Tool Protection System protects the tools and the workpieces from any kind of damage.

E TOOL SHELF

Quick and easy access to tools.

F TIS (TURRET INSERTION SYSTEM)

An optional four-way die changer

ROBOT INTERFACE

The “Robot Interface” extension module contains the following components:

- Robot die with positioning query.
- The die is fitted with a sensor that sends a signal to the robot when the metal sheet is in the correct position.
- This allows for quick and easy setup, not to mention continuous process optimization
- Optional Fastener Removal System
- Rejection of incorrect fasteners
- Incorrect fastener lengths are removed from the system



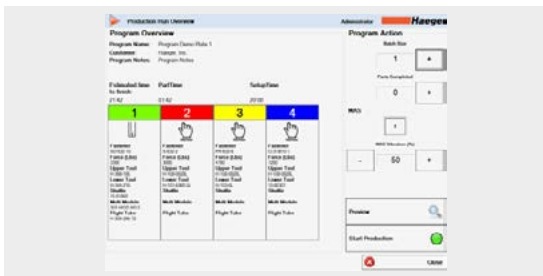
E-SHOP





Single station:

The operator can continuously adjust the force, dwell time, and return stroke limitation.



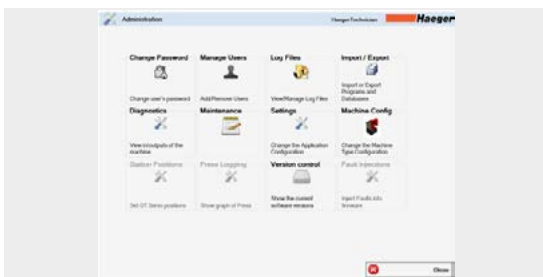
Multiple stations:

This option allows the operator to record several fasteners in a single program. Here, each station can be individually adjusted to the different parameters (force, dwell time, and return stroke limitation).



Programs:

Up to 10,000 programs can be stored.



MAS Control Monitor:

The operator can switch the feeder bowl on and off using the control panel. The vibration strength and ejection time can be controlled using the monitor too.

HAEGER®-INSERTION PRESSES

824™ WindowTouch® 5He

BN 26702 – The Haeger model including TIS (Turret Insertion System) with position monitoring generates a maximum compression force of 72 kN at 610 mm throat depth.

OPTIONS THAT THE 824™ WINDOWTOUCH® 5He OPENS UP

- Quicker and easier tool setup with reliable fastener feeding
- Optimum accessibility for positioning the workpiece
- Quick and easy programming
- Best possible operator ergonomics due to rotatable and tiltable screen

A MODULAR AUTOMATIC FEEDING SYSTEM MAS350

- New feeding system with larger and quieter Autofeed System
- One-piece multi-module shortens baffle plate changeover from 3 minutes to 3 seconds
- Digital vibrator settings
- Reliable feeding, quick changeover, minimal training required
- Fasteners ranging from M2 to M10 in size can be fed in the same vibrator
- Fasteners measuring up to 30 mm long can be fed
- Less fastener coating abrasion due to the plastic Autofeed System
- Easier filling and emptying due to lower installation position

E-SHOP

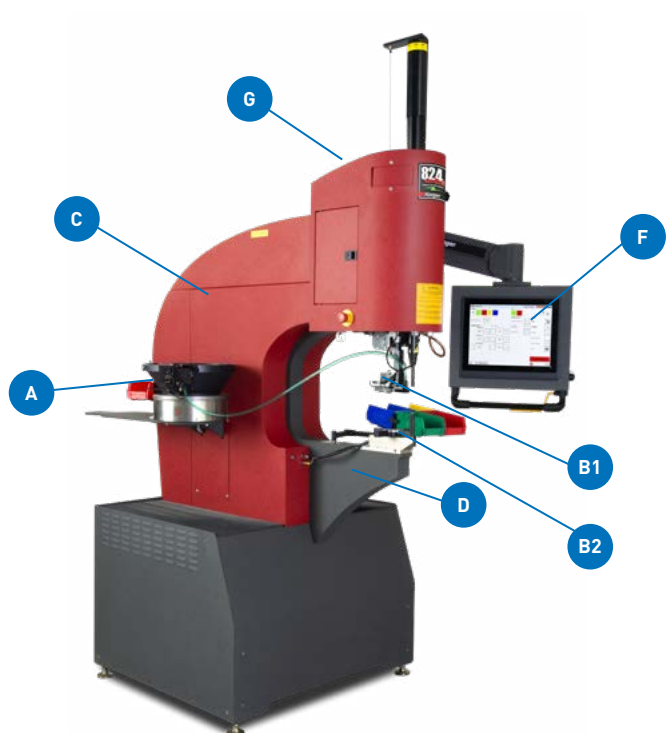


B1 NEW T-BRACKET AND SHUTTLE WITH INTEGRATED CONNECTORS

- Quickest and easiest installation in just 10 seconds instead of 2 minutes

B2 PRE-ALIGNED BASE PLATE

- Pre-arranged base plate facilitates conversion of the tool holder
- Previously, you needed up to 5 min to realign the tool after changing the tool holder. This step is now completely eliminated



D OUTSTANDING ACCESSIBILITY

- The 824™ WindowTouch 5He's lower support arm measuring 200 mm offers improved accessibility to the workpiece
- The TIS arms can be removed individually for improved accessibility
- Manual J frame combined with a 24" (610 mm) design

F BEST POSSIBLE OPERATOR ERGONOMICS

- On-screen instructions while standing or sitting
- Control unit adjustable in six directions
- Maximum productivity and increased ergonomics

F QUICK AND EASY PROGRAMMING

- Improved functionality with shorter programming times



HAEGER®-INSERTION PRESSES

824™ OneTouch™ 5He Lite

BN 26703 – The 824™ OneTouch™ 5He Lite is fitted with a second Autofeed System and two-station upper tool changer.



ALL THE ADVANTAGES OF THE 824™ WINDOWTOUCH® 5He

- Second Autofeed System with automatic upper tool and insertion station changeover and detection of the length of threaded studs and collars at two stations
- Changeover to other tool stations possible in 10 seconds

E-SHOP





FROM STATION 1 TO STATION 2 –
DEPOSITING THE UPPER TOOL



CLAMPING IN A NEW UPPER TOOL



TOOL READY FOR PROCESSING

HAEGER®-INSERTION PRESSES

824™ OneTouch™ 5He

BN 26705 – The 824™ OneTouch™ 5He offers all the advantages of the 824™ WindowTouch™ 5He, plus a four-way feeding system including an automatic upper and lower tool changer.



A AUTOMATIC FOUR-STATION LOWER TOOL CHANGER

- Integrated magazine with four placement stations changes the dies fully automatically

B AUTOMATIC FOUR-STATION UPPER TOOL CHANGER

- Complete process control at every station

E-SHOP





ROBOT INTERFACE

The "Robot Interface" extension module contains the following components:

- Robot die with positioning query
- The die is fitted with a sensor that sends a signal to the robot when the metal sheet is in the correct position
- This allows for quick and easy setup, not to mention continuous process optimization
- Optional Fastener Removal System
- Rejection of incorrect fasteners
- Incorrect fastener lengths are removed from the system



HAEGER® AND PEMSERTER® INSERTION PRESSES AND FEEDING MACHINES

Technical overview



Press-in force	1.8 – 53.4 kN	2.67 – 53.88 kN
Pressure tolerance	N/S	+/- 2%
C-frame depth	457 mm	457 mm
Stroke	approx. 74 mm	0 – 200 mm
Electrical connection	230 V (NF laser)	208 – 575 V (three-phase)/50/60 Hz
Engine power	6 bar (air)	1.5 kW (2.0 hp)
Oil reservoir	Not required	39 liters
Height	1,676 mm	2,388 mm
Width	690 mm	864 mm
Depth	940 mm	1,143 mm
Weight	372 kg (incl. bench)	585 kg
Dimensions of the self-clinching elements	M2 – M10*	M2 – M10*
Processing speed	approx. 1,200 strokes/hour	1,400 strokes/hour
Number of Autofeed Systems (MAS 350)	Not available	1 (optional)
Die holder	Single/turret/QX	Single (opt. TIS w/o position query)
Positive Stop System	Adjustable using stroke end	Optional
Tool monitoring (TPS)	No/no control	Yes
Fastener length monitoring	No	No
Vacuum monitoring	No	No
Program memory locations	None	10,000
Saving workpiece images	No	No
Network connection	No	Yes
Robot-ready	No	Yes

*in the corresponding base material



824™ MSP 5He



824™ WindowTouch® 5He



824™ OneTouch™ 5He Lite



824™ OneTouch™ 5He

3.56 - 71.17 kN	3.56 - 71.17 kN	3.56 - 71.17 kN	3.56 - 71.17 kN
+/- 2%	+/- 2%	+/- 2%	+/- 2%
610 mm	610 mm	610 mm	610 mm
0 - 220 mm	0 - 220 mm	0 - 220 mm	0 - 220 mm
208 - 575 V (three-phase)/50/60 Hz	208 - 575 V (three-phase)/50/60 Hz	208 - 575 V (three-phase)/50/60 Hz	208 - 575 V (three-phase)/50/60 Hz
3.7 kW (5.0 hp)	3.7 kW (5.0 hp)	3.7 kW (5.0 hp)	3.7 kW (5.0 hp)
83 liters	83 liters	83 liters	83 liters
2,388 mm	2,388 mm	2,388 mm	2,388 mm
966 mm	966 mm	966 mm	966 mm
1,499 mm	1,499 mm	1,499 mm	1,499 mm
1,270 kg	1,361 kg	1,406 kg	1,452 kg
M2 - M12*	M2 - M12*	M2 - M12*	M2 - M12*
1,400 strokes/hour	1,400 strokes/hour	1,400 strokes/hour	1,400 strokes/hour
1 (optional)	1	2	4
Single (opt. TIS w/o position query)	TIS incl. position query	TIS incl. position query	Magazine changer
Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes
No	Yes	Yes	Yes
No	Yes	Yes	Yes
10,000	Unlimited	Unlimited	Unlimited
No	Yes	Yes	Yes
Yes	Yes	Yes	Yes
Yes	No	No	Yes

COST COMPARISON – PEMSERTER® 4 VS. HAEGER® 824™ ONETOUCH-5He

Save time and money with automatic mode

This cost comparison is based on actual values obtained during a trial with the Haeger® 824™ OneTouch 5He in automatic and manual mode. It is apparent that operation in automatic mode is 65% more efficient than manual fastener insertion. During the trial, 1,500 components (per month) were installed with four different types of PEM® fasteners (31 fasteners per component). In automatic mode, 189% more components can be produced. The time and cost savings amounted to 92 hours and 24 minutes, and EUR 3,152*.

*The European average labor cost of EUR 20.00 per hour was used as a basis.

We would be delighted to conduct an individual time study for you based on your own data to realistically assess your potential.

Quick and easy tool setup on the MAS350 and new design, including:

1. Time needed for baffle plate changeover reduced from 3 minutes to 3 seconds
2. Software automatically sets the preset vibration rate
3. Reliable feeding, faster changeover with little training required
4. Larger and deeper Autofeed Systems allow feeding of fasteners ranging from M2 to M10 in size and fasteners measuring up to 30 mm long in the same vibrator (longer fastener sizes on request)
5. The upper tool redesign makes it possible to use a one-piece quick-change tool module
6. Change of Autofeed System material, reducing fastener contamination



EUR 3,152 savings

in automatic mode with 1,500 components

65% time saving

versus a manual process

70% energy savings

compared to conventional hydraulic systems thanks to the new variable-speed hydraulics.

Outstanding operator ergonomics

The control panel can be adjusted in six directions for easy access and the best view of the on-screen instructions while standing or sitting.

Four placement stations and four tool positions

A total of four pre-programmed positions allow the user to automatically feed up to four different sizes and types of fasteners in a single operation.

Automatic lower tool changer with four stations

An integrated modular unit with four tool stations automatically retracts, indexes and positions up to four different tools in the lower tool holder.

Fastener detection

Stud/collar length detection provides complete process control.

FIXED	PEMSERTER®4	TIME (sec.)	HAEGER® 824™ ONETOUCH-5He	TIME (sec.)
FH-M5-20 14x per component 21,000 installed	Set up manual tool	60	Set up MAS 1/feed	180
	Set force (manual)	60	Press in automatically	63,000
	Pick up component	11,250		
	Press in manually	189,000		
	Stack component	11,250		
BS0-3.5M3-10 7x per component 10,500 installed	Set up manual tool	60	Set up MAS 2/feed	180
	Set force (manual)	60	Auto. tool change	4,500
	Pick up component	11,250	Press in automatically	31,500
	Press in manually	94,500		
	Stack component	11,250		
S-M4-1 6x per component 9,000 installed	Set up manual tool	60	Set up MAS 3/feed	180
	Set force (manual)	60	Auto. tool change	4,500
	Pick up component	11,250	Press in automatically	27,000
	Press in manually	81,000		
	Stack component	11,250		
FH-M3-15 4x per component 6,000 installed	Set up manual tool	60	Set up MAS 4/feed	180
	Set force (manual)	60	Auto. tool change	4,500
	Pick up component	11,250	Press in automatically	18,000
	Press in manually	54,000		
	Stack component	11,250		
			Call up program	10
			Pick up component	11,250
			Stack component	11,250
	Total order in seconds	508,980	Total order in seconds	189,730
	Total order in minutes	8,483.00	Total order in minutes	3,162.17
	Minutes for one component	5.66	Minutes for one component	2.11
	Components per hour	10.61	Components per hour	28.46
			More components per hour	168%
			Wage cost savings	63%
	Wage costs for total order	EUR 2,827.67	Wage costs for total order	EUR 1,054.06
			Wage cost savings	EUR 1,773.61
			Savings per component	EUR 1.18
	Wage costs per component	EUR 1.89	Wage costs per component	EUR 0.70

* EUR 20.00 = average labor costs per hour in the Eurozone (Euro states in the EU). Last updated: March 31, 2020

PEMSERTER® IN-DIE FEEDING SYSTEM

NEXTGEN UNIVERSAL IN-DIE FEED CART

BN 26670 – studs, BN 26675 – nuts

Efficiently and accurately feed self-clinching nut, stud, or standoff fasteners to a stamping press for single or multiple insertions.

With the PEMSERTER® IN-DIE, the installation process can be integrated into a customer's existing machine. The self-clinching fasteners are fed directly into the die of the existing press:

- No additional work step
- No additional processing time
- No additional handling
- Minimal additional space requirement

Regardless of the processing requirements, the PEMSERTER® machine program guarantees optimum insertion of PEM® self-clinching fasteners.

- System concept – fasteners and feeding technology from a single source
- Fasteners can be inserted in any angular position
- Self-clinching tools are virtually wear- and maintenance-free
- Integrated process monitoring of the insertion process
- Quick and easy feeding equipment conversion to different thread sizes or from nuts to studs possible
- The installation process is individually monitored by sensors
- Status display by means of three-color LED light



E-SHOP
BN 26670



E-SHOP
BN 26675





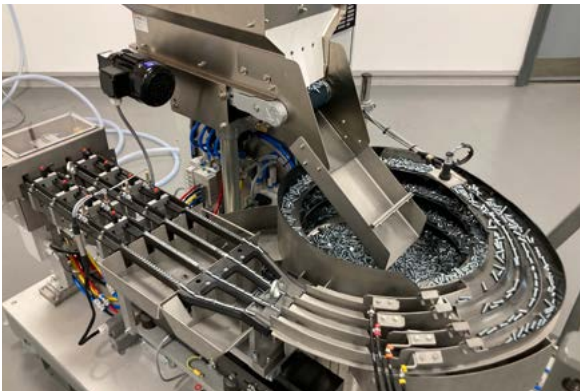
AUTOFEED SYSTEM



CONTROL PANEL



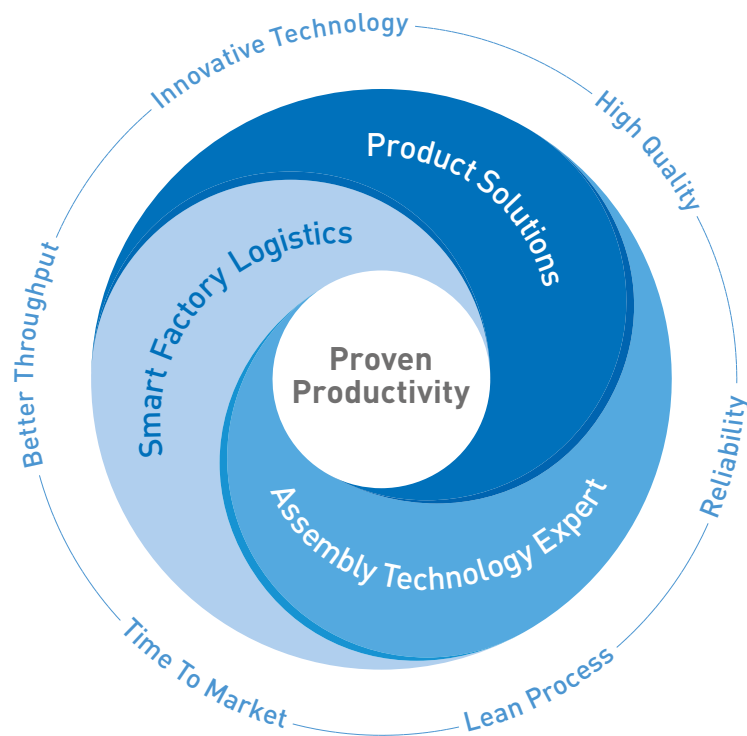
FOUR-LANE FEEDING SYSTEM



HOPPER, AUTOFEED SYSTEM AND FEEDER TRACKS

PROVEN PRODUCTIVITY – A PROMISE TO OUR CUSTOMERS

The strategy for success



From years of cooperation with our customers we know what achieves proven and sustainable impact. We have identified what it takes to strengthen the competitiveness of our customers. Therefore we support our customers in three strategic core areas.

Firstly, when finding optimal **Product Solutions**, that is in the evaluation and use of the best fastening part for the particular function intended in our customers' products.

Second, our **Assembly Technology Expert** services deliver the smartest solutions for all possible fastening challenges. Our services cover from the moment our customers developing a new product, to

assembly process optimization as well as fastening technology education for our customers' employees.

And thirdly, optimising our clients' productions in a smart and lean way with **Smart Factory Logistics**, our methodology, with intelligent logistics systems and tailor-made solutions.

Understood as a promise to our customers, "Proven Productivity" contains two elements: Firstly, that it demonstrably works. And secondly, that it sustainably and measurably improves the productivity and competitiveness of our customers.

And this for us is a philosophy which motivates us every day to always be one step ahead.

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