



824 OneTouch-3

# Haeger®

*Creating Hardware Insertion Profit Centers*



# *Fastener Insertion*

**HAEGER IS THE WORLD LEADER** IN THE DEVELOPMENT AND IMPLEMENTATION OF INNOVATIVE FASTENER INSERTION TECHNOLOGIES. HAEGER PROVIDES OUR CUSTOMERS WITH UNMATCHED FASTENER INSERTION EXPERTISE, A CONTINUING DRIVE TO PROVIDE NEW AND INVENTIVE TECHNOLOGY, AND A COMPREHENSIVE TOTAL SOLUTION APPROACH TO INSERTION CHALLENGES. HAEGER'S EXPERTISE WILL MAKE THE MAXIMUM IMPACT ON YOUR INSERTION PROCESS AND BOTTOM LINE.

FOR OVER 25 YEARS, HAEGER HAS PIONEERED AND MANUFACTURED MACHINES AND TOOLING SYSTEMS FOR INSERTING NEARLY EVERY TYPE AND SIZE OF SELF-CLINCHING FASTENER IMAGINABLE. AND, THE DEVELOPMENT CONTINUES — WE'RE CONSTANTLY CREATING NEW TECHNOLOGIES FOR INSERTING NEARLY EVERY TYPE AND SIZE OF SELF-CLINCHING FASTENERS INTO ALL VARIETIES OF MATERIALS. HAEGER'S ENGINEERS CAN SOLVE INSERTION CHALLENGES THAT NO ONE ELSE CAN, WHETHER IT'S ENGINEERING, PRODUCTION, TECHNICAL SERVICE, OR SALES AND MARKETING. OUR STAFF BRINGS EXPERIENCE, EXPERTISE, AND DIVERSITY OF TALENT SECOND TO NONE.



**Haeger**<sup>®</sup>

*Creating Hardware Insertion Profit Centers*

Visit us at [www.haeger.com](http://www.haeger.com)

# Specialists

## Technology Leadership

In today's fast-paced and ever changing manufacturing environment, you need an industry partner who will continually offer the competitive edge needed, and Haeger is that partner. From our original conductive/nonconductive safety system, to our Modular Autofeed System and revolutionary InsertionLogic® software with InsertionGraphics™, Haeger is and continues to be the leader of every major technological advancement in the fastener industry. Our continuing mission is to further revolutionize the industry by using new and cutting-edge technologies to provide world-class performance and ever-increasing value for our customers. We provide a quantum leap in productivity and quality through our advanced technological product offering. Haeger accomplishes this by:



- ▼ Fitting a technology solution to a particular customer
- ▼ Utilizing our revolutionary SingleTouch Part/Handling technology
- ▼ Utilizing our advanced Quality Assurance features
- ▼ Making our clients aware of the hardware insertion investment benefits
- ▼ Encouraging our clients to fully utilize process engineering to assure effective integration of our technology

## Total Solution Provider

From our standard product offering, to our build-to-order products and custom engineered insertion solutions, Haeger has the ability to provide a total, unified solution for virtually any insertion challenge. Whether your shop is new to hardware insertion, or inserts millions of fasteners each year, Haeger's solution oriented approach will ensure that you get the correct system for your needs.



## Phillips Corporation

HAEGER, INC. BECAME A PART OF THE PHILLIPS CORPORATION IN 1983. PHILLIPS CORPORATION IS A SUPPLIER OF MANUFACTURING TECHNOLOGY

PRODUCTS AND SERVICES AND SERVES A NETWORK OF OVER 100 PARTNERS WITH HEADQUARTERS IN COLUMBIA, MARYLAND. THROUGH ITS BUSINESS UNITS, PHILLIPS MANUFACTURES AND DISTRIBUTES MACHINE TOOLS AND REVOLUTIONIZES GLOBAL MANUFACTURING PRODUCTIVITY THROUGH THE APPLICATION OF SUPERIOR TECHNOLOGY. HAEGER'S GLOBAL LEADERSHIP IS REFLECTED IN THE DEVELOPMENT AND DEPLOYMENT OF INDUSTRY-LEADING HARDWARE INSERTION SYSTEMS AND TECHNOLOGY.

# 824 Window

## SingleTouch Part Handling Technology Exclusively From Haeger

- ▼ Maximize your quality insertion productivity with Haeger's exclusive performance enhancing features.
- ▼ The WindowTouch with the Turret Insertion System enables the insertion of up to four different fasteners in one handling, providing a productivity boost of 40% or more.
- ▼ InsertionLogic software plus InsertionGraphics helps to virtually eliminate costly quality issues.

- New Turret Insertion System with Multi-Shuttle Tooling for Nuts, Studs, & Standoffs exclusively for the WindowTouch-3.

## Features & Benefits

### A. InsertionLogic® Software + InsertionGraphics and Quality Control Pack

- ▼ All **NEW** Version 9 w/ Optional Quality Control Pack includes Networking Software Communication, Offline Programming and Digital Camera Package.
- ▼ The networking feature provides simple communication between the WindowTouch and a PC or network. Create and store programs offline and call them up on multiple machines.
- ▼ The Offline Programming software allows creation of programs on a PC, eliminating the need to stop the machine to create a program.
- ▼ InsertionGraphics provides a visual guide through the insertion process. Part images are displayed on the computer touch screen - each fastener position on the part is displayed with a color-coded flashing dot. This virtually eliminates the possibility of missing a fastener or inserting one in the incorrect location.
- ▼ The new and improved Quality Assurance feature checks fastener length and presence.
- ▼ Multiple types/sizes of fasteners are inserted in one part handling.
- ▼ Touch Screen Control PC based, 12-inch full color touch screen interface featuring the Microsoft® Windows XP operating system, solid state memory, 640 x 480 resolution, 128MB RAM working memory, 512MB flash memory (storage), Ethernet port and USB port.

### B. Turret Insertion System (TIS-2)

The Turret Insertion System (TIS) enables up to four different fasteners to be inserted in one Part Handling. The **NEW TIS-2** provides tool position feedback and positive locking station to ensure the operator is in the correct tool station, and the tool never moves during insertion. Tool position feedback helps eliminate missing fasteners by preventing the operator from moving to the next fastener until all the current fasteners are inserted.

The positive locking feature provides 100% alignment of the insertion tools ensuring consistent alignment for AutoFeeding.

### C. MAS

The nine-inch Modular AutoFeed System (MAS) comes complete with vacuum generator.

### D. Operator Safety System

Haeger's patented Safety System is effective at any point in the ram stroke irrespective of the tooling length, requiring no set up by the operator; thus not affecting initial machine set up time.

### E. New Multi-Shuttle Tooling Platform for Nuts, Studs, Standoffs

The **NEW** Multi-Shuttle Platform provides universal quick and easy tool change-over between nuts, studs, and standoffs - enabling 2 minute total tool changes without realignment. The Multi-Shuttle platform, available on the WindowTouch exclusively, shares tooling modules with the OneTouch providing higher consistency, less training, and broader use of tooling for both machines. Change over between Manual and Automatic Tooling set up is faster and easier. (see page 12)

### F. Fully Hydraulic System

The WindowTouch is extremely accurate and allows the operator to apply full tonnage at any point in the stroke. Faster ram speed increases productivity, reduces part cost and provides faster payback. The electronically controlled hydraulic system assures the most repeatable force in the industry.

### G. Low Energy Usage

The hydraulic system uses approximately 40% less energy than air or air over hydraulic methods making it less expensive to operate.

### H. Positive Stop

Ideal for insertions into thin gauge materials and other delicate insertion applications where absolute repeatability is critical. The Positive Stop is a standard feature and facilitates insertion in parts where pressures as low as 50lbs. may be needed.

### I. Custom Tooling and Special Applications

Haeger provides an unmatched selection of standard tooling in both inch and metric hardware, while Haeger's in-house capabilities provides solutions to engineer and manufacture manual and automatic tooling for virtually any fastener.

### J. Laser Part Locating Light

The **NEW** laser part locating light guides your insertion process with a "red cross hair" laser locator to show exactly where each fastener is inserted. The light provides fast location and identification.

### K. Digital Camera Interface

The Haeger supplied digital camera, which is part of the Quality Control Pack, provides the ability to take part pictures at the machine and immediately import them into a part program.

WindowTouch-3 available in 2, 3, or 4 bowl configurations



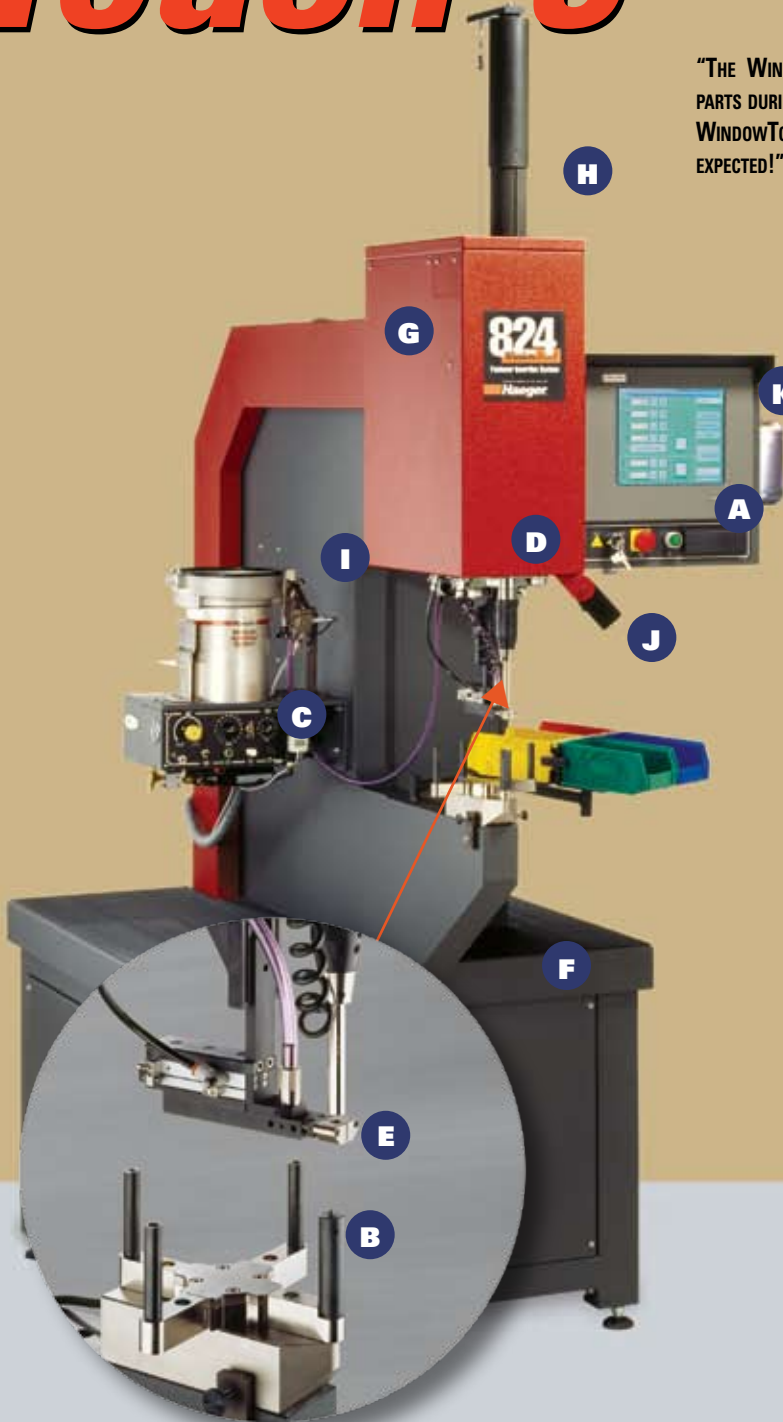
# Touch<sup>®</sup>-3

"THE WINDOWTOUCH HAS PROVED TO BE A PERFECT FIT FOR OUR FASTENER INSERTION DEPARTMENT AND IT HAS EXCEEDED EXPECTATIONS. OUR PRODUCTION HAS INCREASED AND NOW JOBS ARE BEING COMPLETED IN HALF THE TIME IT TOOK BEFORE."

*Jeff Reinhardt, Operations Manager, Will-Mann, Inc. Fullerton, CA*

"THE WINDOWTOUCH WORKS BEYOND OUR EXPECTATIONS; WE HAVE ELIMINATED DAMAGE TO PARTS DURING INSERTION AND WE HAVE HAD NO REJECTED PARTS DUE TO MISSING FASTENERS. THE WINDOWTOUCH HAS INCREASED SPEED AND PRODUCTIVITY—IT IS WORKING BEYOND WHAT WE HAD EXPECTED!"

*Martie Howell, Supervisor, J.E. Soares, Belgrade, MT*

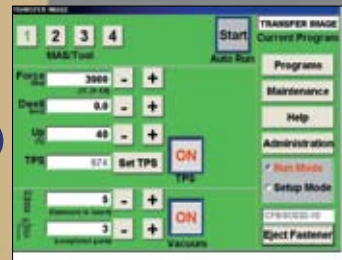


## Diagnostic and Maintenance Reminders

The diagnostic screens are for troubleshooting display inputs and outputs to and from the PLC. Also included are screens for program registers and current machine status. The maintenance screen includes reminders for changing filters, oil, and lubrication of the upper tool holder, plus the total number of machine hours run and number of cycles completed.

## Dwell Timer

The variable timer allows additional time for the fastener and material to form a strong clinch before the ram retracts which is ideal for hard materials such as stainless steel.



## InsertionLogic Software Operation

The main operation screen provides centralized display and control of program parameters.



## Program Set-Up

The secondary program screen tells the operator what tooling modules to use and stores job-specific information.



## Fastener Library

The fastener library allows new jobs to be set up quickly with the correct installation force.



## Quality Assurance Software

The Quality Assurance software on the WindowTouch is available for automatic insertion and includes fastener presence, fastener length detection, and part complete screen.



## Teach Screen

The teach screen is used for setting the sequence in which the different fasteners are inserted.

## Languages

InsertionLogic software can be configured to operate in fourteen languages, providing valuable customization for worldwide use and operation.

# 824 OneTouch-3<sup>®</sup>

## SingleTouch Part Handling Exclusively from Haeger

The newly designed Haeger OneTouch-3 is the most productive solution for inserting up to four different fasteners utilizing SingleTouch Part Handling, reducing material handling and work-in-progress while increasing short run JIT production capability. The New OneTouch-3 is easily programmed to automatically change tools, allowing the operator to quickly move between fastener types with virtually no operational down-time. Our standard model comes equipped with four Modular Autofeed Systems and a four-station tool changer allowing for the automatic insertion of four different types, sizes or lengths of fasteners in a one part handling.

Creating lean manufacturing cells and efficient hardware insertion profit centers is now a priority. The OneTouch-3 serves all the needs of today's fast-paced and efficient manufacturing environments. Additionally, the OneTouch-3 can be integrated into an automated robotic hardware insertion cell, or a custom machine can be designed to meet your particular needs.

### Features & Benefits:

The OneTouch offers many of the same features and benefits as the WindowTouch but with automatic fastener insertion at all four stations, providing a dramatic increase in productivity up to 100%!

### The new OneTouch-3 features include:

- ▼ New Servo-Driven Tool Changer offering a 3 Second Automatic Tool Change
- ▼ Increased Part Clearance to 5.5"
- ▼ New Shuttle Tooling Platform providing 2 Minute Tooling Set Up for any Fastener
- ▼ New Upper Vacuum Tip System w/ Positive Locking
- ▼ NEW LED Laser Part Locating Light
- ▼ Latest Release of InsertionLogic Version 9 Software which includes InsertionGraphics, Networking Software, Offline Programming and Expanded Fastener Library

### Completely Redesigned for 2006

"FOR OUR COMPANY, USING THE ONE TOUCH JUST ONE SHIFT PER DAY PROVIDED A FULL PAYBACK ON THE MACHINE IN LESS THAN ONE YEAR. QUALITY IMPROVEMENTS WERE MEASURED BY A SIX SIGMA TEAM AND CONTRIBUTED SUBSTANTIALLY TO ITS RETURN ON INVESTED CAPITAL."

*Mike Rosenthal, VP of Manufacturing  
Du Fresne Manufacturing Company, Vadnais Heights, MN*

"WE PURCHASED THE ONE TOUCH SYSTEM TO SAVE TIME AND MONEY IN OUR INSERTION AREA. THE ONE TOUCH ALLOWS HARDWARE INSERTION WITH AUTOMATIC FEEDING OF VARIOUS FASTENERS IN A SINGLE PART HANDLING. WE FIND HANDLING THE PART ONCE SAVES TIME AND MONEY IN THE INSERTION AREA."

*Peter Broll, Founder and Managing Owner  
Broll CNC-Metalltechnik, Regensburg, Germany.*

# Robotic Solutions

## Solutions for Customized Automation Needs

Both the WindowTouch and OneTouch models can be integrated into an automated robotic hardware insertion cell. The New OneTouch-3 with Robotic Solution now offers robot integration with offline robotic programming as a turn key solution. The OneTouch with Robot and Offline Programming provides 100% effective quality and productivity 24 hours a day, 7 days a week--experience 100% assurance that the right number and type of fasteners are inserted into the correct locations. Haeger provides a quick return on investment and the ideal solution for your robotic application. We are committed to offering you a totally seamless integrated solution including preventative maintenance programs, service support, spare parts support, programming support, and training to ensure customers receive maximum value and productivity from their equipment.

Shown here is a Motoman robot in combination with the Haeger 824 OneTouch-3. The robot offers the highest flexibility combined with unmatched performance, ease-of-use, and reliability. Motoman robots are available in handling weight capacities of 6.6lbs. (3kg) up to 1,102lbs. (500kg).



Motoman robot with Haeger's 824 OneTouch

"OUR ROBOT AUTOMATED INSERTION MACHINE CAN INSERT UP TO FOUR DIFFERENT SELF-CLINCHING FASTENERS FULLY AUTOMATICALLY, AND HAS PROVED TO BE A MILESTONE IN IMPLEMENTING THE ZERO ERROR STRATEGY. SINCE INSTALLATION, NO PARTS HAVE BEEN DELIVERED WITH MISSING FASTENERS OR FASTENERS INSERTED IN THE WRONG LOCATION."

*Bernd Reinkensmeier, Managing Director  
KMK—A subsidiary of Siemens. Karlsruhe,  
Germany*

"WITH OUR ROBOT INSERTION PRESS CELL OUR PRODUCTIVITY IN SOME INSTANCES HAS IMPROVED BY AS MUCH AS 100% AND WE ARE NOT WORKING THE CELL TO ITS MAXIMUM CAPABILITY."

*Douglas Guild, Engineering Manager  
Technical plc, Dundee, Scotland*

# CREATING HA INSERTION PR

**12 Parts / Hour**  
*Batch of 100 -  
HP6*  
**No Quality  
Control**

*Quality and Product  
Benefits of Old Mac  
New Technology M*

**26 Pa**  
*Batch of  
OneTo  
w/ Ro  
Productiv  
over the h  
**100%  
Contr***

**17 Parts / Hour**  
*Batch of 100 -  
WindowTouch-3*  
*Productivity increase  
over the HP6 + **40%***  
**Good Quality  
Control**



Go to [www.haeger.com](http://www.haeger.com) to download the latest presentation on Time Studies and Cost Justifications

# Haeger®

## HARDWARE PROFIT CENTERS

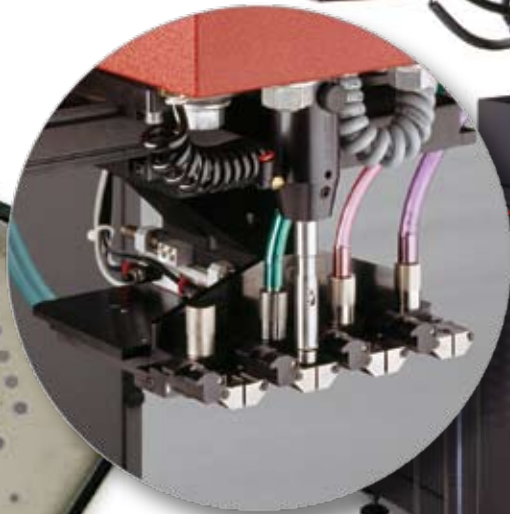
Productivity  
Machines vs  
Machines

Parts / Hour

Batch of 100 -  
OneTouch-3  
Robot

Productivity increase  
over the HP6 + **120%**

**95% Quality Control**



**26 Parts / Hour**

Batch of 100 -  
**OneTouch-3**

Productivity increase  
over the HP6 + **120%**

**Excellent  
Quality Control**

# Insertion Machines

## 412 Features:

- ▼ Compact bench-top model (also available with mobile cart)
- ▼ 4 tons (36kN) ram force and 12 inch (305mm) throat depth
- ▼ Reliability, performance and energy efficiency of a fully hydraulic machine
- ▼ Equipped with Haeger's patented Safety System
- ▼ Single phase power supply
- ▼ Upgradeable to accept J-frame tooling, and to accept the Haeger 412 MAS-9 and Haeger automatic tooling
- ▼ Adjustable ram retract position

## 618 Plus Features:

- ▼ 6 tons (54kN) ram force and 18 inch (457mm) throat depth
- ▼ Reliability and energy efficiency of a fully hydraulic machine
- ▼ Speed increases by 15% over the legacy Haeger 618
- ▼ Equipped with Haeger's patented Safety System
- ▼ Robust hydraulics with in-tank hydraulic filter system
- ▼ Variable dwell timer for use with hard materials
- ▼ Adjustable ram retract position

*Machine shown includes optional Modular Autofeed System (MAS-9) and Tooling Protection System*



*Compact Bench-Top and/or Portable Model*



*The Economical 618 Plus — For Capacity and Versatility*

# Haeger®

*Heavy-Duty  
Powerful and  
Productive  
Insertion  
Machine*



## **824 Plus Features:**

- ▼ 8 tons (72kN) of ram force; 24 inch (610mm) throat depth
- ▼ Fully hydraulic; PLC electrical controls
- ▼ Equipped with Haeger's patented Safety System
- ▼ Includes Positive Stop Cylinder and Dwell Timer

## **2015 Plus Features**

- ▼ Also available in the WindowTouch configuration
- ▼ Ability to insert hardware up to one inch diameter
- ▼ 20 tons (180kN) of ram force, 15 inch (380mm) throat depth
- ▼ 4 inch (102mm) Wide C-Frame virtually eliminates deflection
- ▼ Fully hydraulic PLC electrical controls
- ▼ Includes Haeger's patented Safety System
- ▼ Includes Positive Stop Cylinder
- ▼ Variable dwell timer for use with hard materials
- ▼ Adjustable ram retract positioning

*Our Most  
Powerful Model  
For Your Most  
Demanding  
Applications*



# 2006 SureFire® Automatic Tooling

## STANDARD AND MADE-TO-ORDER TOOLING



### 2006 Multi-Shuttle Platform for Nuts, Studs, & Standoffs

For the WindowTouch-3 & OneTouch-3:  
NEW Multi-Shuttle Nut, Stud, & Standoff Plates.

- ▼ Single Platform for all Standard & Made-To-Order Tooling
- ▼ 30 Second Change Over
- ▼ No Alignment Required



### Bottom Feed Tooling for Nuts

For the 618 Plus, 824 Plus, and WindowTouch-3: Automatically insert nuts into flat parts as well as into hard to reach holes such as those on the underside of a flange.

### Shuttle Nut Tooling

For the 618 Plus, and 824 Plus: Ideal for automatic insertion of nuts and short standoffs, especially in applications requiring small profile vacuum tooling.

### Shuttle Tooling for Studs and Standoffs

For the 618 Plus and 824 Plus: Install studs and standoffs into a variety of part configurations including fasteners close to vertical flanges. This tooling allows the operator to see the fastener and speeds insertion.

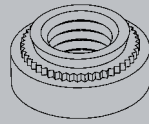


# Fastener Reference Guide & Auto Tooling

## Standard Tooling - Standard Self-Clinching Fasteners

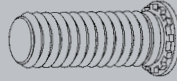
### Self-Clinching Nuts

Automatically Inserted with Bottom Feed or Shuttle Nut Tooling



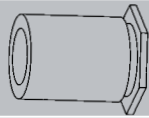
### Self-Clinching Studs

Automatically Inserted with Shuttle Tooling



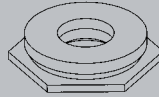
### Self-Clinching Thru-Hole and Blind Standoffs

Automatically Inserted with Shuttle Tooling



### Self-Clinching Flush Nuts

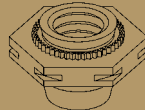
Automatically Inserted with Shuttle Nut Tooling



## Made-to-Order Tooling

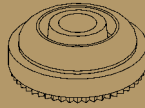
### Self-Locking Nuts

Automatically Inserted with Bottom Feed Tooling



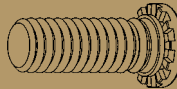
### Floating Nuts

Automatically Inserted with Bottom Feed Tooling



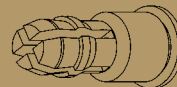
### High Torque Studs

Automatically Inserted with Shuttle Tooling



### Spring-Top Standoffs

Automatically Inserted with Shuttle Tooling



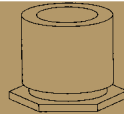
### Slide-Top Standoffs

Automatically Inserted with Shuttle Tooling



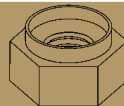
### Short Standoffs

Inserted with Shuttle Nut Style Tooling



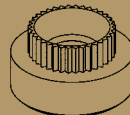
### Hank-Sert Nuts

Automatically Inserted with Bottom Feed Tooling



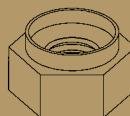
### Kerb Konus Anchor

Automatically Inserted with Bottom Feed or Shuttle Nut Tooling



### Kalei® Self-Clinching Nuts

Automatically Inserted with Bottom Feed or Shuttle Nut Tooling



## CUSTOM TOOLING

Haeger offers a team of tooling specialists that can create tooling for inserting virtually any fastener including:

- ▼ RIVETS (SEMI-TUBULAR AND SOLID)  
(Note: Rivet length must be 1.5 times the diameter of the rivet head)
- ▼ SELF-PIERCING RIVETS
- ▼ PANEL FASTENERS  
(SOUTHCO®, CAPTIVE®, & PEM®)
- ▼ STRUX® NUTS AND STUDS
- ▼ PC BOARD FASTENERS  
(Broaching nuts and studs)

If you are interested in automatically inserting hardware not listed above or not pictured here, please contact us at 1-800-878-4343, and ask for the Haeger Custom Tooling Department. The Haeger team will review your requirements and create a custom solution to fit your specific needs.

## HAEGER PROVIDES TOOLING FOR FASTENERS FROM THE FOLLOWING MANUFACTURERS:

CAPTIVE®	SOUTHCO®
PEM®	KALEI®
PSM®	STRUX®
KERB KONUS®	EUROTEC21®
TR/HANK®	

# Modular Autofeed Systems

Haeger's patented feeding system allows fasteners to be inserted up to three times quicker than with manual insertion. Modular tooling allows for a complete changeover in as little as two minutes.

## MAS-14

This larger Modular Autofeed System works for nuts, studs and standoff sizes 4-40 / M2 through 3/8 / M12 with stud / standoff lengths up to 38mm.



MAS-14

## MAS-9

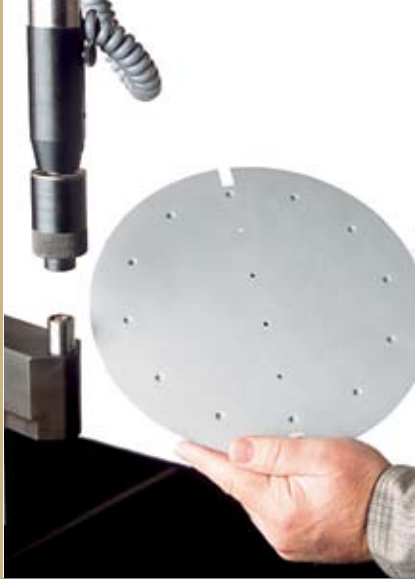


## MAS-9

This Modular Autofeed System works for nuts, studs and standoff sizes 4-40 / M2 through 1/4 / M6 with stud / standoff lengths up to 30mm.

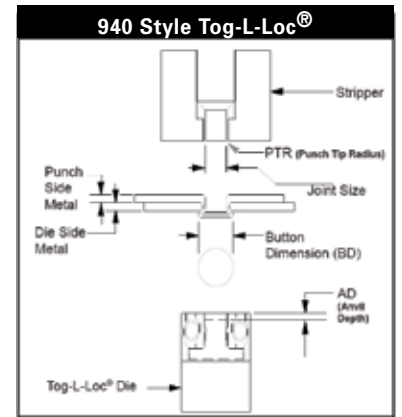
## Tooling Modules

All tooling is size-specific for the different types and sizes of hardware being inserted. The Orientation Module makes sure the hardware is correctly oriented, and the Singulation Module releases one fastener at a time from the bowl to the insertion tooling.



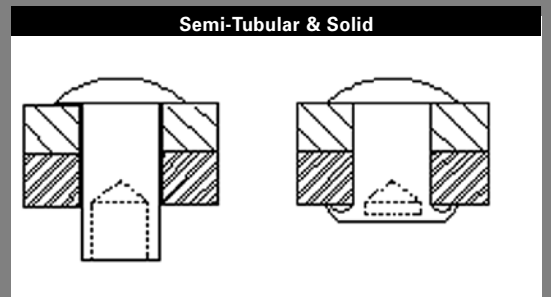
## Sheet Metal Joining Tooling

Joining produces an instant button headed joint in ductile metals with a single ram stroke, providing a clean, and efficient alternative to spot welding. Both similar and dissimilar materials can be joined in this process.



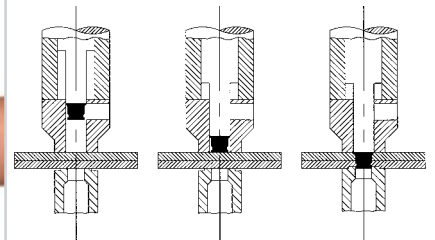
## Rivets (Semi-Tubular & Solid)

Haeger can supply a variety of automatic and manual tools for feeding and inserting a wide variety of semi-tubular and solid rivets. Rivets with a length of 1.5 times the head diameter can be fed automatically. Hole/Part alignment tools are also available for the customer.



## Self-Piercing Rivets

Rivets are installed in a matter of seconds using a standard Haeger insertion machine with our exclusive riveting tools and feed system. The rivet pierces its own retaining hole and holds the upper sheet with the rivet head while the sheet material is pressed into the short groove. Rivets are available in lengths from 2.1mm up to 7.5mm and can be inserted with the same tooling and feeding line. A simple upper tool adjustment allows for inserting all 19 different rivet length sizes.



## Haeger Machine Specifications & Feature Matrix

MACHINE MODELS	412	618-PLUS	824-PLUS	824-WINDOWTOUCH-3	824-ONETOUCH-3
Force Range	250 to 8,000lbs. ( 1 to 36 KN )	400 to 12,000 lbs. ( 2 to 53 KN )	800 to 16,000 lbs. ( 3.5 to 72 KN )	1,000 to 16,000 lbs. ( 4 to 72 KN )	1,000 to 16,000 lbs. ( 4 to 72 KN )
Throat Depth	12 in. ( 304mm )	18 in. ( 450mm )	24 in. ( 610mm )	24 in. ( 610mm )	24 in. ( 610mm )
Throat Height	13.75 in. ( 350mm )	15in. ( 381mm )	17 in. ( 432mm )	17 in. ( 432mm )	17 in. ( 432mm )
Force Repeatability	+/- 1%	+/- 1%	+/- 1%	+/- 0.5%	+/- 0.5%
Safety System	Patented System Standard	Patented System Standard	Patented System Standard	Patented System Standard	Patented System Standard
Turret Insertion System (TIS-2)	N/A	N/A	N/A	Standard	N/A
Automatic Tool Changer	N/A	N/A	N/A	N/A	Standard
Fastener Length Detection	NA	NA	NA	Standard	Standard
Fastener Detection	NA	NA	NA	Standard	Standard
Touch Screen Control	N/A	N/A	N/A	12 in. Celeron, Windows XP	12 in. Celeron, Windows XP
Operating Software	N/A	N/A	N/A	Insertion Logic & Insertion Graphics	Insertion Logic & Insertion Graphics
Digital Camera	N/A	N/A	N/A	Standard	Standard
Quality Assurance Package	N/A	N/A	N/A	Standard	Standard
Multi MAS Capability	N/A	N/A	N/A	Optional ( 9 in. ), up to 4 each	Standard 4 Bowl ( 9 in. )
Robot Ready Package	N/A	N/A	N/A	Optional	Optional
Network Connection	N/A	N/A	N/A	Standard	Standard
Multi-Shuttle Platform	NA	NA	NA	Standard	Standard
Dwell Timer	N/A	Standard	Standard	Standard	Standard
Tooling Protection	N/A	Optional	Optional	Standard	Standard
Positive Stop	N/A	Optional	Standard	Standard	Standard
Batch Counter	Optional	Optional	Optional	Standard	Standard
Hydraulic Pump Motor	1.5 HP	2 HP	5 HP	5 HP	5 HP
Voltage	110 or 220V Single phase 50 or 60HZ	208 to 575V 3 phase 50 or 60HZ	208 to 575V 3 phase 50 or 60HZ	208 to 575V 3 phase 50 or 60HZ	208 to 575V 3 phase 50 or 60HZ
Amperage	115V @ 15.4A 220V @ 9A	220V @ 7.4A 380/480V @ 3.7A 575V @ 2.7A	220V @ 16.4A 380/480V @ 9.3A 575V @ 5.9A	220V @ 17A 380/480 @ 9.6A 575V @ 6.1A	220V @ 18.72 380/480 @ 10.5A 575V @ 6.7A



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