

SOLUTIONENGINEERING™

NEWSLETTER

Fastening Products, Systems, and Applications from the Industry Pioneer

www.pennfast.com

Drawings Directly Inserted into CAD Systems

All drawings for products in our online CAD library can now be directly inserted into market-leading CAD systems.

This new capability extends to our entire product line of PEM®, Atlas™, and SI® brand fasteners.

Compatible CAD systems include Inventor 5®, Pro-ENGINEER®, SolidWorks®, Mechanical Desktop®, Catia®, Solid Edge®, AutoCAD®, and others.

It's easy to do: Simply select the part, press the button, and the geometry (2D or 3D) is immediately inserted into your design.

No download or manual importing is necessary.

Check it out at www.pennfast.com/cad_library/



Example:
Panel Fastener Model

Animations Online

Visual demonstrations of fastener installations are now available for viewing at our Web site. These animations (with sound) illustrate installation of an Atlas™ fastener utilizing spin/spin and spin/pull methods. Simply click on the "Technical Help & Learning Center" link at our Home Page and then choose "Fastener Installation Demo."

All our product bulletins are available for downloading free from our Web site



Take a New Look

You may know our brand of self-clinching fasteners, but they're just part of the story.

We offer a complete range of fastening options and support throughout the design life-cycle.

We can make all the difference with practical ideas, engineering, prototyping, production systems, and logistics grounded in decades of experience and industry leadership.

Kenneth A. Swanstrom,
Chairman and CEO
PennEngineering

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New Forms & Functions for Fasteners

Many of the recent innovations in fastening technology owe much to marketplace directives for smaller and lighter packages produced quickly and cost-effectively.

These demands dictate that fasteners work harder, "smarter," and in more ways to advance product design and development.

Two noteworthy related trends:

- **Hardware Promoting Specific Functional Permanence™.** These types, including our self-clinching fasteners, can be installed permanently and then mated with minimal loose hardware to complete attachment. Their primary benefit is in providing the means for components to be attached securely while enabling subsequent removal, whether for service or replacement. In short, attachment is "permanent" until or unless otherwise required.



- **Use of "Unconventional" Fastener Materials.** These are playing newfound roles in achieving benefits that otherwise would not be possible from traditional all-metal fasteners.

As examples, hybrid fasteners incorporate a combination of metal and injection-molded plastic elements and, depending on type, can be less expensive, lighter, and easier to manipulate and install than standard mechanical fasteners.

Plastic introduces the opportunity for color-coding, whether for purposes of identification, raising "safety" flags, matching parts, or cosmetics. In this way, fasteners further are serving as multi-functional devices.

Fastener manufacture also has derived benefits from the use of unconventional materials and processes. Powdered metal processes have been utilized to create unusual yet highly functional fastener shapes unable to be formed any other way.

CLINCH FASTENER INSTALLATION TROUBLESHOOTING

PROBLEM: Edge of panel bulges.

POSSIBLE CAUSES:

- Mounting hole violates specified minimum edge distance.
- Nut is over-squeezed.

SOLUTIONS:

- Put panel or bracket in restraining fixture during installation or move mounting hole away from edge.
- Reduce installation force if possible.

PROBLEM: Tight threads and buckled sheet.

POSSIBLE CAUSE:

- Fastener over-squeezed.

SOLUTION:

- Reduce installation force.



Clinch Fasteners for a 'Shrinking World'

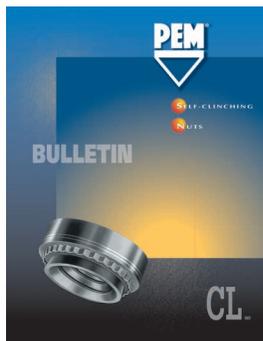
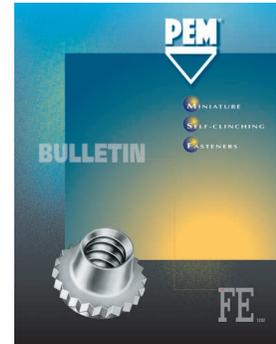
- **Ideal for Thinner Materials**
- **Enable Close-to-Edge Mounting**
- **Feature Smaller Thread Sizes**
- **Designed with Lower Profiles**

Self-Clinching Locking and Non-Locking Threaded Nuts. This specialized family of miniature locking and non-locking fasteners is characterized by extremely small thread sizes (as low as #0-80 and M2) and the tiniest of footprints. They can be permanently installed in aluminum or steel sheets as thin as .019"/0.76mm.

The tops of locking Types FE, FEO and UL are elliptically squeezed to add tightening action around the mating screw and meet locking torque requirements of NASM25027.

Non-locking fasteners in this family: Types U, FEX, and FEOX.

Both locking and non-locking types feature knurled collars, which embed completely in a metal sheet upon fastener installation to guarantee against rotation. A dry-film lubricant provides smooth, non-galling prevailing torque performance.



Self-Clinching Threaded Nuts for Ultra-Thin Sheets.

Compared with conventional nuts, Type SMPS fasteners can be mounted up to 50% closer to the edge of ultra-thin steel sheets.

Their diameter (.220"/5.6mm) and height (.065"/1.4mm) contribute to the low profile and maximized use of space in an assembly.

Once installed (in sheets as thin as .025"/0.64mm), these clinch nuts will provide permanent threads in sizes as small as #2-56 and M2.

Self-Clinching Threaded Studs with Low-Displacement Heads. Depending on thread size (as small as #2-56 and M2), Type FHL studs can be installed 25% to 50% closer than standard self-clinching studs without causing that edge of the metal sheet to bulge.

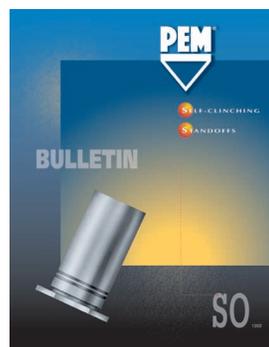
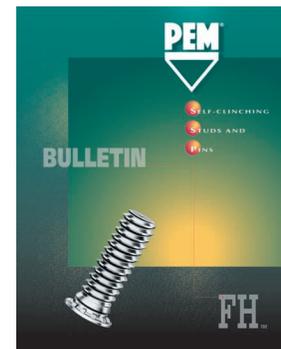
When installed in aluminum or steel sheets as thin as .040"/1mm, a flush assembly is created and the stud locks securely in place.

Self-Clinching Threaded Studs for Thinner Sheets.

Non-flush stud types (thread sizes as small as #2-56 and M2) can be installed in aluminum or steel sheets as thin as .020"/0.51mm.

As with the low-displacement head studs, Type TFH studs will provide ample torque-out and pushout resistances.

These fasteners will enable "close to edge" installation in metal sheets half as thick as the thickness of materials required for installation of flush-head studs.



Self-Clinching Threaded Standoffs for Ultra-Thin Sheets. The primary function of Type TSO fasteners is to enable components made from the thinnest metal sheets to be stacked or spaced securely.

The steel, stainless steel, or aluminum fasteners can be utilized in aluminum or steel sheets as thin as .025"/0.63mm.

The standoffs can be specified in various lengths and in small thread sizes (#2-56 and M2).

When installed, the heads of the standoffs are flush with one surface of the mounting sheet.

Learn more at www.pennfast.com

PRODUCT PROFILE

SI® Threaded Inserts for Plastic Assemblies



SI® threaded inserts provide strong, reusable metal threads in plastics to enable subsequent access to assemblies when required.

The brass, stainless steel, or aluminum threaded inserts can serve as practical alternatives to permanent, or "fixed," joining methods, such as adhesives or rivets.

Components can be removed and re-attached quickly and easily utilizing mating hardware.

Applications include computer and terminal boards, automotive and aerospace components, electronic and communications



equipment, and others where plastic assemblies can benefit from permanently installed metal threads allowing for accessibility.

The product line includes **ultrasonic/heat staking threaded inserts** installed ultrasonically or with a thermal press; **molded-in threaded inserts** installed during the molding process; **press-in threaded inserts** installed by pressing them into pre-molded or drilled holes; and patented **DeltaForm™ brass threaded inserts** installed by cold-press, ultrasonic, or heat-stake methods.

SI threaded inserts are available in a variety of types and in a wide range of unified and metric thread sizes.

PennEngineering® Fastening Technologies develops and manufactures PEM® self-clinching and broaching fasteners, SI® inserts for plastics, and Atlas™ SpinTite®, MaxTite®, and Plus+Tite™ blind threaded inserts.

Fastener installation equipment includes PEMSERTER® automatic and manual precision presses, In-Die and robotics capabilities, and the StickScrew® System for small-screw insertion, and Atlas tools.

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