

PEM LINE

Fastening Products, Systems, and Applications from the Industry Pioneer

Hard Facts: *Clinching* *into Stainless* See Page 3



NEW FASTENER A WINNER

Even before an official introduction, our new PEM® SpotFast™ fastener has won First Place in the "Golden Mousetrap Awards" sponsored by *Design News* magazine.

The fastener allows the permanent joining of two metal sections, leaving both sides of the material flush in appearance.

This new joining technology can replace riveting, welding, and other such methods.

The SpotFast fastener will be generally available for sale later this year, although early inquiries are welcome.

New Tooling Capability: See Page 4



TECH TALK

Installing into Sound-Dampening Panels

Laminated steel products (such as Quiet Steel®) are gaining popularity in the end-user marketplace. But they can present challenges when installing self-clinching fasteners.

Such laminated steel products typically are used in automotive, consumer, industrial, electrical, and electronic applications and offer the ability to reduce overall noise and vibration in assemblies.

The laminated panels usually consist of two pieces of sheet metal, which "sandwich" one or more extremely thin polymer layers. It is the polymer layer that provides the dampening function. Sound and vibration are dissipated as they pass from one sheet of metal through the polymer layer(s) into the second sheet of metal.

However, due to the sandwich, only the top sheet of metal is available to clinch into with a PEM® fastener.

To support our customers who design with these types of materials, we have now tested our studs, nuts, and standoffs in .060" (1.5mm) total thickness Quiet Steel and recommend the following:

- When possible, use a drilled or laser-cut hole, because a punched hole can cause excessive blowout of the hole in the bottom layer.
 - For nuts select the longest shank possible for the total sheet thickness.
 - Use standard flat anvil installation tooling for nuts and studs and de-rate the published pushout values by 20%.
 - Use a raised ring anvil for standoffs and de-rate the published pushout values by 20%. (De-rate by 60% if a standard flat anvil is used.)
- Note: Torque-out performance is minimally affected for all parts.

(Quiet Steel® is a registered trademark of Material Sciences Corporation.)



Update on Our RoHS Compliance

We now offer an RoHS compliant zinc plus yellow chromate plating.

This new trivalent formula is capable of passing a salt-spray test per ASTM B117 as follows:

96 hours minimum without white corrosion and 120 hours without red rust corrosion on significant surfaces.

This is an optional plating available for all steel fasteners.

A new compliant zinc plus clear trivalent chromate plus sealant/lubricant has now been developed for our standard Type HNL locking nuts.

This was the last standard plating that required conversion to be RoHS compliant.



PRODUCT SPOTLIGHT: Standoffs for 'Close-to-Edge'

Patented PEM® Type DSOS self-clinching threaded standoffs can be installed close to edges in thin metal sheets for a reliable method to stack or space components in an assembly.

The standoffs can serve ideally where space may be limited.

They are available in two lengths and in thread sizes #4-40 and M3 and can be installed flush in steel or aluminum sheets as thin as .037"/0.94mm and with minimum centerline-to-edge distances of .126"/3.2mm.

Stainless are standard and steel standoffs can be ordered. All are RoHS compliant.

CLINCHING INTO STAINLESS

A prevalent misconception is that all stainless self-clinching fasteners will perform as intended in all stainless sheets.

But the relative hardness of fastener and sheet looms as an overriding influence, because self-clinching requires that the fastener always be harder than its host sheet.

For effective installation into stainless users should realize that work hardening can occur around the mounting hole during the process. Every effort must be made to enable the displaced sheet material to flow as intended.

Proper installation can best be accomplished by using a special anvil with a raised ring, which acts as a second displacer of the stainless sheet material (thereby ensuring that the annular groove of the fastener is filled).

With differing stainless hardness levels available and widely varying degrees of desired corrosion resistance, decision-making can become complicated.

Following are some guidelines to help make the job easier when selecting stainless fasteners for 300 Series stainless applications (the most-often used stainless panel material):



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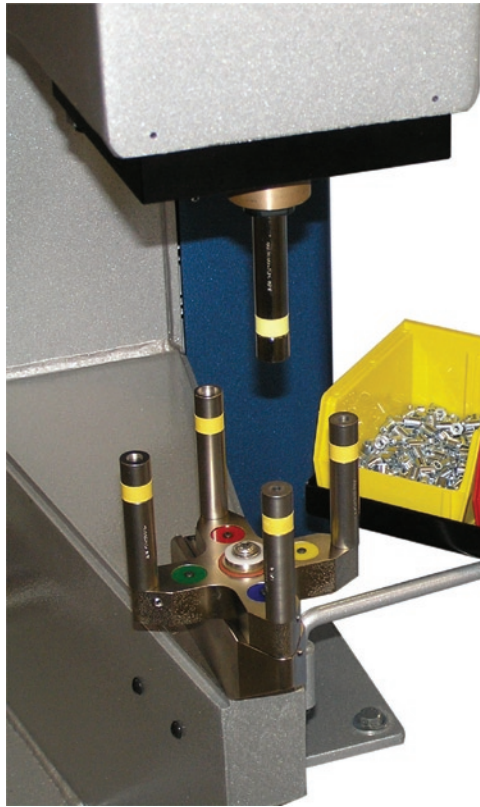
Fastener Material. Standard stainless self-clinching fasteners made from 300 Series cannot be expected to perform reliably in 300 Series stainless sheets, due to the hardness relativity issue. These fasteners can, however, serve ideally when installed in other types of metal sheets (steel or aluminum) whose hardness is 70 or less on the Rockwell "B" scale (also designated HRB 70).

The proper fastener solutions for installation into 300 Series stainless sheets include types manufactured from 400 Series stainless or those made from special alloy (precipitation hardened) stainless. Depending on type, these fasteners can be used effectively in sheets with hardness ranges from HRB 88 to HRB 92.

| Stainless Type | Installs Into HRB | Corrosion Resistance |
|------------------------|-------------------|----------------------|
| 300 Series | 70 or less | High |
| 400 Series | 92 or less | Limited |
| Precipitation Hardened | 92 or less | High |

Corrosion Resistance. Precipitation hardened stainless clinch fasteners provide extremely high corrosion resistance for use in challenging environments, including medical, foodservice, fluid handling, and marine applications, among others. The 400 Series stainless types will usually provide corrosion resistance comparable to zinc plated steel.

NEW TOOLING CAPABILITY



PEMSERTER®

QX4™ Manual Turret Tool System

Our new PEMSERTER QX4 Manual Turret Tool System provides an efficient method to alternate between four anvil tools and install four different types and/or sizes of self-clinching fasteners using only one press and initial set-up.

The QX4 System is compatible with all new and existing PEMSERTER Series 4® and Series LT/4™ manual fastener-installation presses.

Users can realize increased productivity from quicker set-up times, easy one-handed rotation of the turret, and elimination of tooling changeovers.

Other noteworthy features and benefits: a **star turret design** ideally suited for fastener-type installations more difficult to access; **positive locking of the turret** in place for increased reliability and safety; and **color-coded positions with matching color-coded parts trays** to minimize risk of missing a fastener or damaging the workpiece.

PennEngineering® develops and manufactures PEM® self-clinching, broaching, weld, and surface mount 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, the StickScrew® System for small-screw insertion, and Atlas tools.

PennEngineering®



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