Stainless Steel Hardware - Thread Galling

Occasionally a customer will call with a problem about the stainless steel hardware sent with our products. Usually the complaint is the hardware “seized” or “froze up”. When that happens, the only thing that can usually be done is to cut the clamp or bolt apart to get it loose. So why do we use the hardware that freezes up?

There is nothing wrong with the hardware. What is wrong is how users unknowingly mistreat it.

The hardware we use is top quality stainless steel. We use stainless steel for a few reasons: it’s tough, it lasts a long time and it won’t corrode over time. If the hardware was common steel, it would corrode which can make disassembly nearly impossible.

So why does stainless steel hardware freeze up? The problem is called “Thread Galling”.

Thread galling is common with fasteners made of stainless steel, aluminum, titanium, and other alloys which self-generate an oxide surface film for corrosion protection. During tightening, as pressure builds between the contacting and sliding thread surfaces, protective oxides are broken, possibly wiped off, and interface metal high points shear or lock together. This cumulative clogging-shearing-locking action causes increasing adhesion. In the extreme, galling leads to seizing - the actual freezing together of the threads. If tightening is continued, the fastener can be twisted off or its threads ripped out.

Sometimes this is referred to as "cold welding". Anyone who has had or seen a bolt and nut with this problem can understand this description. It’s not cheap hardware; it’s the lack of common preventative measures that should be taken when using stainless steel hardware.

So, what can we do to eliminate the possibility of galling?

Lubricating the threads frequently eliminates thread galling. The suggested lubricants for our stainless steel hardware are Anti-Seize or Never-Seez products available from DX Engineering.

Using a thread lubricant on new stainless steel hardware is a must. We have seen a stainless steel V-bolt seize up even when putting the hardware on by hand! Just spinning on the nut produced enough heat between the threads to cause them to freeze up!

Using a good Anti-Seize or Never-Seez on all stainless steel hardware is a must. A small amount of this lubricant on the threads will do the job and you will not have to "break your knuckles" getting frozen hardware removed.
ANTI SEIZE 8oz Brush Top Can - DXE-80078
8 oz. brush top can of Anti-Seize - Particularly effective on stainless steel bolts and nuts which have a high likelihood of seizure. A highly refined blend of aluminum, copper and graphite lubricants. Use during assembly to prevent galling, corrosion and seizing and to assure easier disassembly. Protects metal parts against rust, corrosion, and seizure. Temperature range: -60°F to 1600°F (-51°C to 871°C). Salt, corrosion and moisture resistant – ideal for marine use. Non-aerosol version meets Mil Spec #907E. Aerosol

Anti-Seize, 1 oz. Squeeze Tube - DXE-81343
1 oz. squeeze tube of Anti-Seize
Protects metal parts against rust, corrosion, and seizure. Particularly effective on stainless steel bolts and nuts which have a high likelihood of seizure.
- Squeeze tube
- Lubricant and sealant

Anti-Seize, 8.5 oz. Aerosol Can - DXE-81464
8.5 oz. aerosol can of Anti-Seize
Protects metal parts against rust, corrosion, and seizure. Particularly effective on stainless steel bolts and nuts which have a high likelihood of seizure.
- Aerosol can
- Lubricant and sealant

Never-Seez, 8 oz. Brush Top - DXE-NSBT8
An 8 oz. brush-top bottle of Never-Seez
Protects metal parts against rust, corrosion, and seizure. Particularly effective on stainless steel bolts and nuts which have a high likelihood of seizure.
- Brush-top bottle
- Lubricant and sealant

Never-Seez, 8 oz. Brush Top, Mariner's Choice - DXE-NMCBT8
An 8 oz. brush-top bottle of Never-Seez Mariner's Choice heavy duty marine grade lubricant and sealant used to help protect against salt-water/air. This formula is for use in high moisture environments, preventing galling and galvanic corrosion. It protects against seizure, galling and corrosion in fresh and salt water environments with unparalleled resistance to water washout.
- Brush top bottle
- Marine grade lubricant and sealant

DXE-TECHTIP-GALLING Rev 0
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