

Preventing Cross Threading

ANJON BREMER HALO PRODUCT TRAINING

Cross Threading

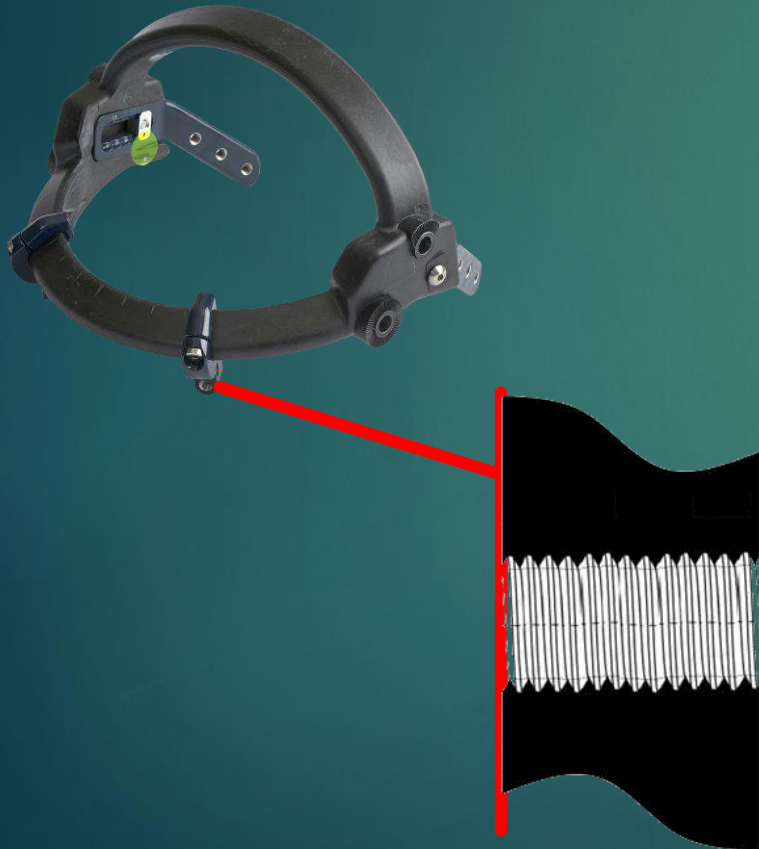
- ▶ A definition: **Cross threading** occurs when the threads of a bolt shift off center and cut into the female threads of a **threaded** hole or nut. The **cross threading** damage caused by the bolt occurs in the top female threads of the **threaded** hole or nut.
- ▶ It can result in:
 - ▶ Stripping the thread so that the bolt does not hold properly.
 - ▶ Seizing of the bolt within the thread so that it cannot be advanced or removed (jamming).

With the Skull Pins

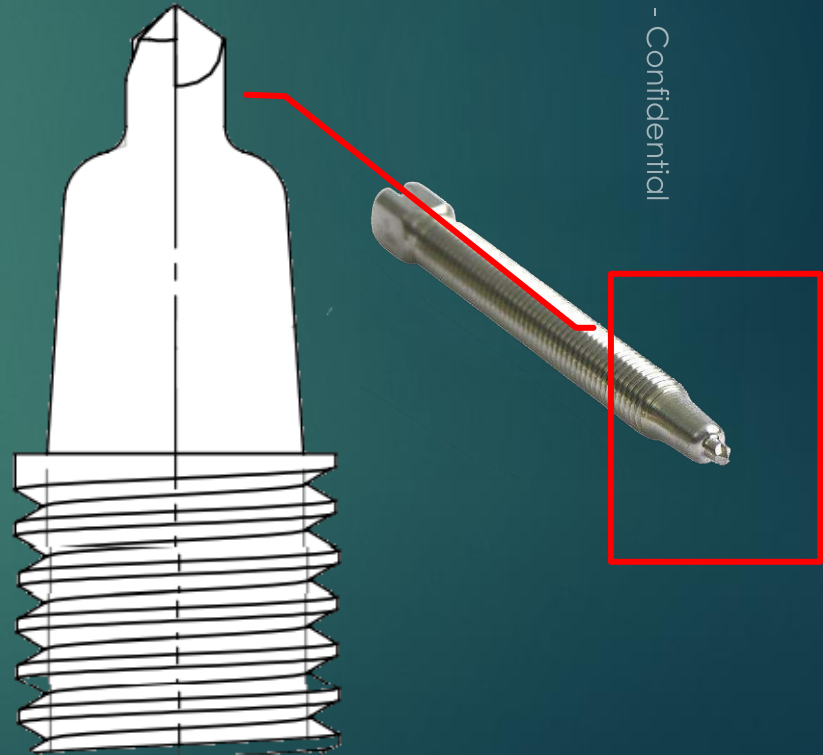
- ▶ A cross threaded skull pin will damage the slider or leg rather than the pin:
 - ▶ The skull pins are a titanium alloy (Ti-6AL-4V-ELI). The Skull Pins are very stiff and much harder than the aluminum (Al-6061) Sliders and Legs.
 - ▶ The rolled threads of the skull pins are 10% harder than cut threads.
- ▶ The material cut off during cross threading of the Skull Pins within the legs or sliders can act to act to jam the thread exacerbating the risks of jamming due to cross-threading.
- ▶ Given the similar metal properties between Al and Ti and the presence of Al in the Ti-6AL-4V-ELI alloy:
 - ▶ Cold welding of the two metals is to be expected. Cross threaded are likely to jam.
 - ▶ This may occur on attempting to back out the skull pin – as the auger effect of the screw compresses the cut fragments back against the thread.

Representation of Current Design

Cross Section of the Crown Slider showing the threaded hole

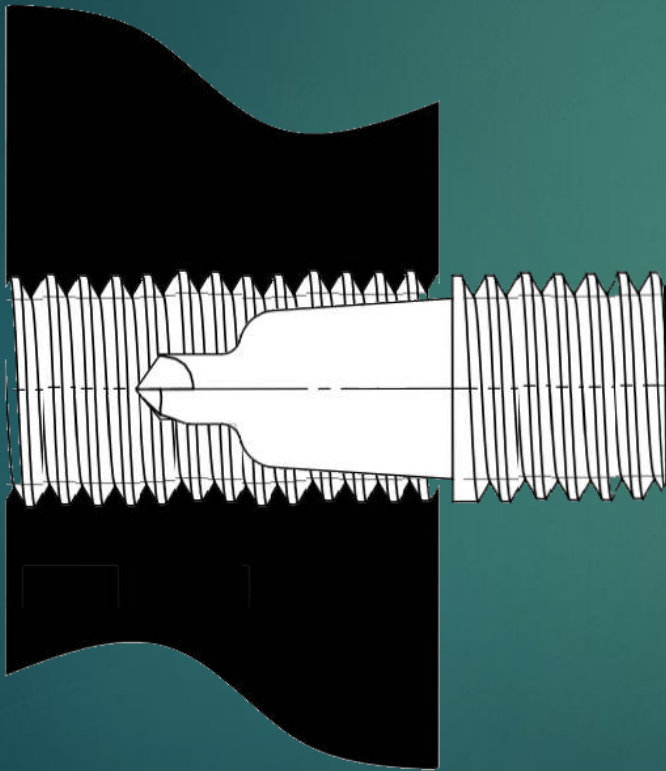


Section of the Tip on a Skull Pin



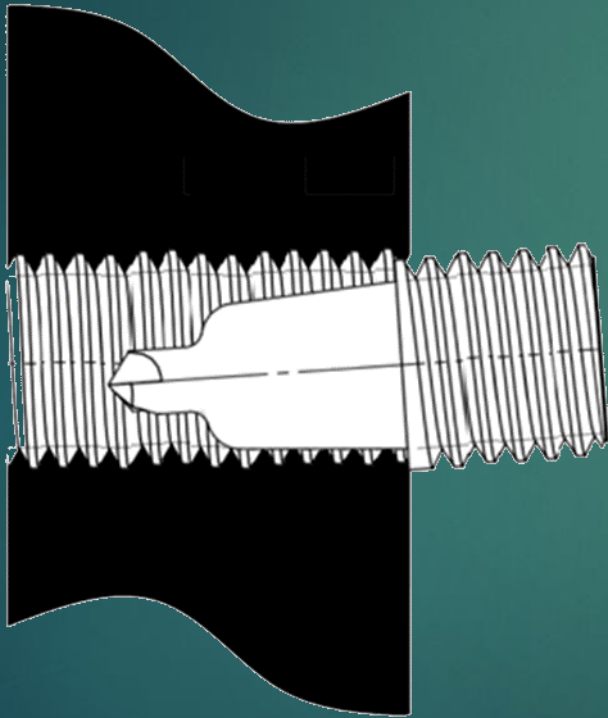
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Correct insertion.



- ▶ Perpendicular to the surface all axes.
- ▶ The screw will properly engage and the thread will not be crossed.

Wrong Insertion – Cross Threads



- ▶ Angling the tip of the skull pin increases the risk of cross threading.
- ▶ Because the shoulder is sloped, it is more prone that a straight machine screw.

Best Insertion Technique

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- ▶ Make sure that the screw is put to the threaded hole perpendicular to the surface of slider or leg i.e. aligned along the center line of the hole.
- ▶ Apply light pressure.
- ▶ Start turning COUNTER CLOCKWISE until you hear or feel a “Click”. This is the male thread of the screw dropping into the female thread of the hole.
- ▶ Once you get the “Click” start turning CLOCKWISE. The skull pin should insert with minimal torque – you should be able to do it with your fingers.