



FASTENERS / HIGH PRESSURE BOLT-UPS

“The “Connection” to Safe and Reliable Production”

(2 Days)

COURSE DESCRIPTION

Hendrix Precision Maintenance Instructors are now providing courses that will help you to keep things from coming apart...Literally!

Fastener Integrity takes a back seat until a failure occurs! Hendrix Precision Maintenance Training has a course dedicated to the integrity of fasteners.

For many years, fastener integrity has taken a back seat to more visible and what some consider more important issues, such as pumping efficiency, production maximization, or minimizing time to repair to name a few. Fastener Integrity has long been considered a labor-intensive task that can be assigned to the less experienced mechanic or laborer. However, Fastener Integrity is kind a like “atta boys”. It only takes one failure to wipe out the advantage of the many that were done correctly. Lack of fastener integrity can cause disruptions in production, safety hazards at a minimum. One fastener failure has the potential to put operations out of business.

Reviewing news headlines over the past several years reveals many unfortunate events that have occurred in industry. Some of which have been caused by inadequate fastening. The training curriculum that has been developed by Hendrix professionals is comprehensive, covering fasteners for rotating equipment, piping and vessel flanges, and structural steel.

RECOMMENDED AUDIENCE: Millwrights, Mechanics, Supervisors, Operators, Planners, Reliability Engineers, and Managers.

- Any size workforce, any size company including international customers!
- Attendance can be up to 20 trainees, with hands on demonstrations.
- On boarding New Hires! Refresher Training especially pre outage training!



(888) 233-9777 info@HendrixPM.com

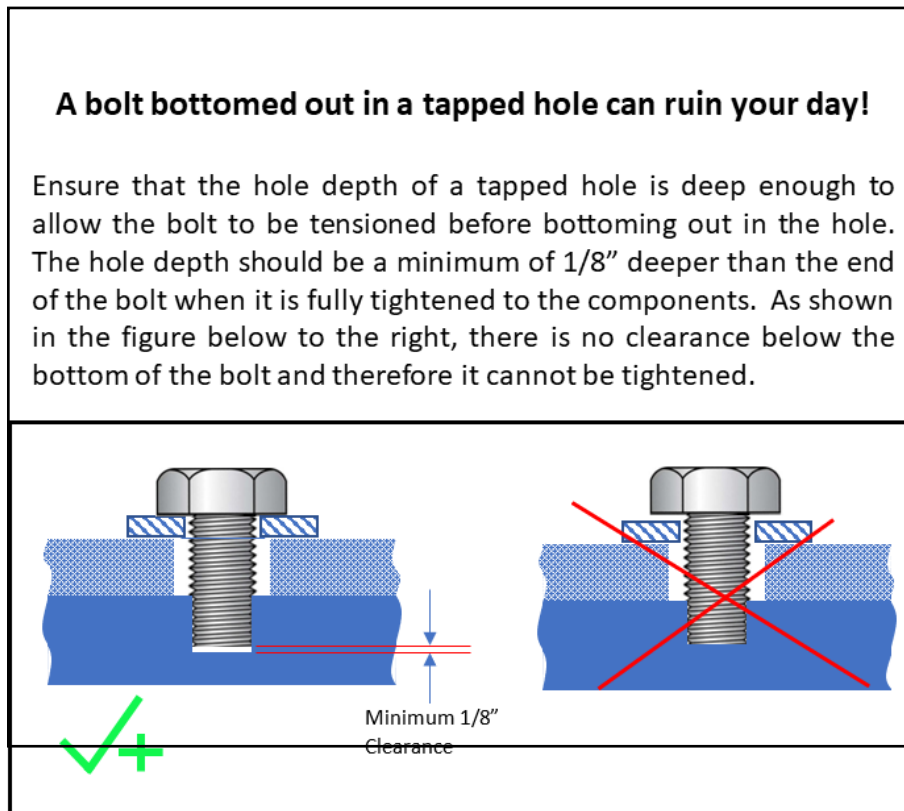
www.HendrixPrecisionMaintenance.com

TOPICS COVERED

- Understanding Fastener Terminology & Specifications
- Use of PCC-1 Standards to Ensure Proper Piping Alignment and Proper Sealing Surfaces
- Fastener Charts and How to Use Them
- Safe Disassembly of Bolted Connections – Precautions that are too often overlooked
- Bolting/Fastener Reliability – Importance of correct Thread Engagement, Proper Tensioning, Adverse Effect of Stress Risers
- The Stress Strain Curve of a Threaded Fastener and how to stay within the Margin of Error (Elastic Range)
- Methods to achieve correct Bolt Tension, Torque Relationship to Bolt Tension.
- Working with assemblies that have Multiple Fasteners – Flanges, Heads, etc.
- Flange Union Integrity including Gasket Technology and Correct Selection
- Adjusting Fastener Tension for Temperature & Pressure changes to stay within the Margin of Error
- Specialty Applications such as Broken Bolt Extraction, Locking of Fasteners, etc.

Just a few of the “pitfalls” that we encounter & solve for in our

FASTENERS / HIGH PRESSURE BOLT-UP COURSE!



Be careful not to exceed yield strength when tensioning bolts!

Once the yield strength is exceeded the elasticity (clamp force) of the bolt is destroyed and we are in the plastic deformation or dangerous range. The bolt is no longer useful and should be discarded. It can only be used as a boat anchor. See the stress-strain chart below. All mechanics involved in bolting should keep a mental image of this chart.

