

# CRITICAL BOLTING APPLICATIONS FOR MILITARY INDUSTRIES AND DEFENSE APPLICATIONS

**WHEN FAILURE IS NOT AN OPTION**





## DO YOU HAVE A SPECIALIZED BOLTING NEED?

Mechanical integrity takes on a whole new meaning when operating deep in the unknown, far from any possibility of doing repairs or sheltering.

Trucks, helicopters, aerospace vehicles, and dozens more critical defense applications rely on bolted connections that can withstand both anticipated and unknown challenges. For the toughest missions, from manufacturing to maintenance, count on Nord-Lock Group for the safest, most reliable technologies and solutions to safeguard mechanical integrity.

### INDUSTRY-LEADING SOLUTIONS

We have been providing the world's safest bolting and engineering solutions for over four decades. The result is an unparalleled innovative and expansive product offering.

### GLOBAL AVAILABILITY

With dedicated technical centers around the globe, you can rest assured that you will have quick access to expert advice, guidance, and critical components when needed.

### TECHNICAL SUPPORT

Ensure your applications are ready for the challenges ahead by relying on our renowned technical support for rigorous testing and validation.

### CRITICAL FASTENERS FOR ADVANCED INDUSTRIES AND APPLICATIONS INCLUDING:

- Space and space defense
- Maritime vessels (surface and subsea)
- Aerospace
- Government
- Nuclear power generation (fission, fusion, SMR's, etc.)
- Advanced solutions for all commercial and industrial markets
- Military vehicles
- Land systems
- Drones and autonomous vehicles

### ADDITIONAL SERVICES:

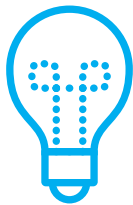
- Clean room capabilities
- Foreign object and debris prevention
- Individual packaging
- End-user specific instructions
- Torque calibration
- Finite element analysis
- Hardware (studs, nuts, washers, spacers, bolts, etc. – standard and custom)
- SMART products (remote preload monitoring, data collection, traceable fastenings, operator error-proofing, etc.)
- End-user training
- Consulting (bolted joints, fasteners, etc.)





## PERFORMANCE

- Billions of bolted connections secured in millions of applications, all over the world
- Industry-first lifetime warranty across all technologies
- Deep expertise in the lifecycle of secure bolted joints



## INNOVATION

- Pioneers in technologies that ensure the safety and reliability of critical connections
- Ongoing research and development to continue optimizing profit and performance in the industrial world
- Business always conducted with sustainability and the wellbeing of people in mind



## CONSISTENCY

- Meticulous production, patented processes, and an outstanding track record in availability
- A global reach and local presence translating into excellent logistics capability
- Global network of distribution partners with representation in 65+ countries and growing every year



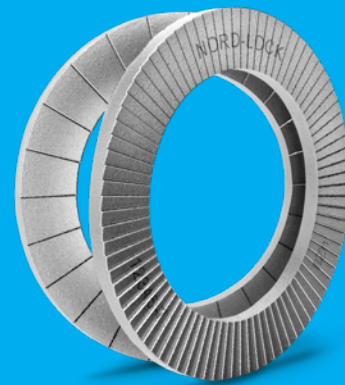




# WHEN SAFETY REALLY MATTERS

Nord-Lock® wedge-locking washers are used all over the world, from sea level to stratosphere.

Our products are engineered to excel in the harshest environments, giving you peace of mind while you focus on the task at hand.



We have the solution for your application problems, such as:

- Fastener failure
- Bolt loosening
- Broken bolt
- Shock loading
- Extreme vibration
- Dynamic loads

## NORD-LOCK ORIGINAL WASHERS

Wedge-locking security for bolted joints subjected to extreme vibration and dynamic loads.

## NORD-LOCK X-SERIES WASHERS

Maximum security for critical bolted joints exposed to spontaneous bolt loosening and slackening.

## NORD-LOCK STEEL CONSTRUCTION WASHERS

Optimal contact between bolts and washers used in steel construction applications, including HV and HR sets.

## NORD-LOCK WHEEL NUTS

High clamping force that eliminates wheel loosening on heavy vehicles operating under extreme conditions.

## NORD-LOCK COMBI NUTS

Simplify assembly, reduce the risk of errors, and optimize efficiency with Nord-Lock combi nuts.

## NORD-LOCK CUSTOMIZED SOLUTIONS

Custom designed bolting solutions for your unique application requirements.



## AN APPROVED SOLUTION

The Nord-Lock washer is a premium product with documented success in many industries. Our products are approved by several industry standards and specified by numerous international companies.





# SIMPLE TOOLS, SUPER RESULTS



Superbolt® is the industry leader in custom engineered solutions, including options for various temperature or corrosion coatings. Our products are engineered to meet the demands of high-tech industries. Whatever the size, location, operating environment, preload

requirement, or application – our industry-leading tensioning technologies secure any bolted joint. With self-imposed quality standards above industry recommendations, you won't find safer, more reliable tensioning.

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## SUPERBOLT OFFERS THE FOLLOWING SOLUTIONS AND MANY MORE

### Exotic materials:

- Alloy steel
- Stainless steel
- Inconel
- Monel
- Nitronic

### Advanced coatings and treatments:

- Xylan
- Zinc flake
- Passivation of stainless steel

### Experience working with many lubricants:

- Molykote
- Loctite
- Dow
- Braycote
- Apiezon

### Variety of testing:

- Ultrasonic testing for flaws
- Magnetic participle inspection
- Liquid penetrant inspection
- Salt spray testing
- Proof loading
- Load to failure
- Charpy testing

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## EZFIT

EzFit expansion bolts are radially expanding, axially tensioned coupling bolts. Replacing traditional fitted bolts, which are difficult to install and dismantle, ease of installation and removal is guaranteed. EzFit expansion bolts are available in standard offerings and can be custom engineered to suit your requirements.



## EFFORTLESS TIGHTENING AND UNTIGHTENING

Superbolt multi-jackbolt tensioners (MJTs) can be installed and removed using a variety of methods, from a simple click wrench to our high-end, custom-fitted Superbolt Tool. The Superbolt Tool significantly reduces installation and removal times, making it the preferred solution for users who employ many MJTs or have frequent maintenance schedules. Alternatively, the Superbolt Single Jackbolt Tool bridges the cost/performance gap between hand-tightening and the Superbolt Tool, improving efficiency and portability.



# BOLTIGHT®

## THE FAST TRACK TO ACCURATE TENSIONING



Boltight® hydraulic tensioners can be engineered for the highest preload, the widest range of sizes, or the toughest environmental challenges. When off-the-shelf parts just won't do the job, our engineers work with you to design and manufacture exactly what you need. We respond fast to keep your downtime to a minimum and get your equipment back up and running safely, efficiently, and cost-effectively.

From our standard range, our pre-engineered range or customized solutions, we have the know-how to provide the right design for your application. Expect the best lead time on custom engineered solutions, such as unique dimensions, materials, or use cases.

Examples of modifications include:

- High- and low-temperature tensioners
- Small and large size tensioners
- Subsea tensioners
- Material requirements
- Corrosion protection
- Low-radial clearance
- Space restrictions
- Unique, industry-specific requirements

### HYFIT

The Superbolt HyFit can be designed for any requirement. The system incorporates a Boltight hydraulic bolt tensioner and hydraulic nut. Superbolt HyFit is ideal for steam turbines, gas turbines, marine propulsion drives, and all heavy rotating equipment. Unlike traditional hydraulically actuated coupling bolts, Superbolt HyFit:

- Uses two separate dimensionally different heads and just one operating pressure, eliminating the risk of using the wrong pressure during operation.
- Uses heads that have a unique design so there is no way to use them incorrectly during the procedure.
- Has a HyFit nut which is used to tension the bolt, so it can be retrofitted to any existing coupling bolt and used with the HyFit system.



### MULTI-STUD TENSIONERS

Multi-stud tensioners (MSTs) enable the simultaneous tightening of all bolts in a joint, significantly speeding up installation time. This process requires fewer hydraulic hoses and connections, resulting in notable time savings for critical applications such as nuclear and subsea operations. MSTs can be designed to meet specific application needs, available in both complete ring and segmented configurations.

Designed for applications including:

- Manway covers
- Hand hole covers
- Subsea flanges
- Vessel lids





# PERFORMANCE PINS FOR HEAVY-DUTY WORK



All machinery is subject to lug wear over time, which results in repairs and critical downtime. Choose Expander® System for longer-lasting pin assemblies that make your machine perform as intended. A traditional pin starts with reduced tolerance for original bore fitment.

This leads to accelerated pivot lug wear, and traditional repair methods consist of a multi-step process of welding and line boring. We design and manufacture to your exact tolerances and requirements, eliminating a weak link in the machine so it can perform for longer, exactly as it was built to.

## RELIABLE EVEN IN THE TOUGHEST CONDITIONS

When operating in the most remote and challenging environments, the strength of your pivot joints define your machine performance. Relying on your mechanical pivots is of outmost importance. With pivot pins central to the function of almost all heavy equipment, Expander System extend operations while shorten maintenance downtime.

## SAFE TO INSTALL AND DISASSEMBLE

Expander simplifies installation and removal, directly in your factory, eliminating line stoppages due to off-tolerance bores, and eases alignment between parts removing safety risk's such as sledges or the need to freeze parts.

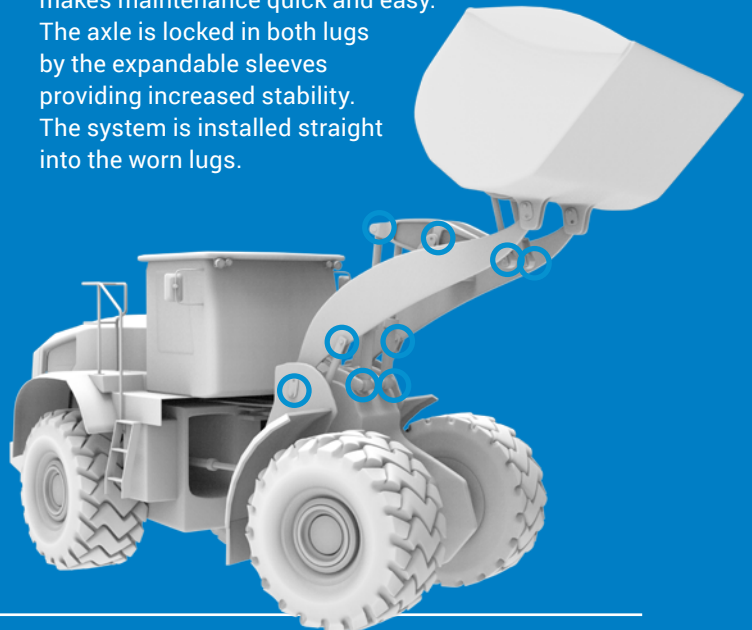
With Expander System, only simple hand tools are needed, reducing the likelihood of accidents.

## QUICK AND EASY

Even in the field, Expander System lug bore repair makes maintenance quick and easy.

The axle is locked in both lugs by the expandable sleeves providing increased stability.

The system is installed straight into the worn lugs.



## WORK SAFELY AND EFFICIENTLY WITH EXPANDER SYSTEM SLIDE HAMMER

The Expander System is by its design, with large conical ends, easy to install and remove with the use of general tooling. Swap traditional methods that require sledgehammers and hydraulic pullers for Expander features and tools. Doing so, you'll not only improve work safety, but also make the task at hand significantly easier to complete, especially when working with large pins ( $\varnothing > 100$  mm).

# NORD-LOCK GROUP HOME OF INNOVATIONS AND ENGINEERING

Nord-Lock Group is a global leader in bolting and engineering solutions. Our innovative technologies and industry-leading expertise secures millions of critical applications across the globe.

Our technology brands are all the original inventors of their respective technologies: Nord-Lock® wedge-locking washers, Superbolt® mechanical tensioners, Boltight® hydraulic tensioners and Expander® System pivot pins.

Nord-Lock Group is owned by the Nasdaq OMX Stockholm quoted company Investment AB Latour.

Nord-Lock Group is an ISO:9001 manufacturer.

## NCAGE CODES FOR NORD-LOCK GROUP:

NCAGE	NORD-LOCK GROUP	COUNTRY
1PUD1	Nord-Lock, Inc.	USA
2D76F	Nord-Lock Korea co. Ltd	Korea
986DB	Nord-Lock Iberia SL	Spain
A416N	Nord-Lock International AB	Sweden
AYL5N	Nord-Lock AB	Sweden
C4264	Nord-Lock GmbH	Germany
FAJS4	Nord-Lock France	France
J1764	Nord-Lock Japan co. Ltd	Japan
KC1F9	Nord-Lock Ltd.	UK
R7524	Nord-Lock APS	Denmark
SLKJ2	Nord-Lock AG	Switzerland
9CCFH	Nord-Lock Poland sp. Z o.o.	Poland
TM792	Nord-Lock Bağlantı Teknolojileri A.Ş.	Türkiye
Z1KW9	Nord-Lock Australia Pty Ltd	Australia
OS9Z9	Superbolt, Inc.	USA
AB70N	Expander Systems	Sweden
9CPW3	Expander Americas, Inc.	USA