

# Superbolt

Multi-jackbolt tensioners (MJT) standard range





# A **revolution** in the design & tightening of bolted joints



Superbolt multi-jackbolt tensioners (MJTs) from Nord-Lock offer an innovative technology for tightening bolts & studs. Superbolt products have been proven and established as a preferred solution for bolting in every major industry, all over the world.

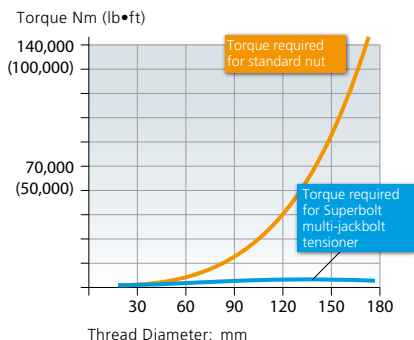
Our multi-jackbolt tensioners offer you simple and cost effective tightening, even for large size bolts. Your joints can be tightened with high accuracy without requiring specialist skills or heavy tooling. MJTs ensure a profitable life cycle cost by improving the bolt design for OEM manufacturers, ensuring reliable operation and by facilitating maintenance procedures.

## Complete solutions

From space to deep sea, from small to large - no matter what your bolting challenge, the Nord-Lock Group has done it before. Bring your bolting questions to us and we will work with you to find the best possible solution.

*The Nord-Lock Group is your trusted partner in bolting solutions.*

## Torque curve for 310 MPa (45,000 psi) bolt stress



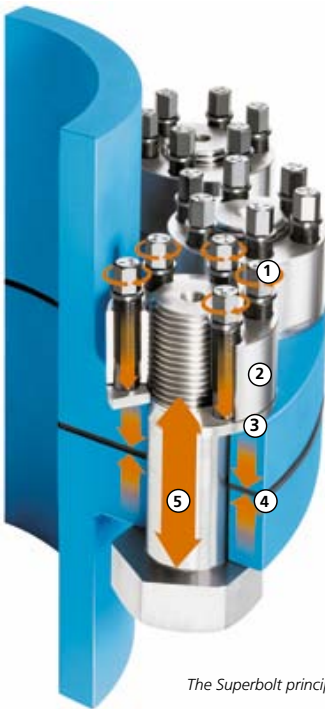
*The above chart shows how Superbolt tensioners remain easy to install, even on larger sizes, compared to standard hex nuts. Only hand tools are required to tighten any diameter stud / bolt.*



# The **innovative** bolting solution

## What is Superbolt?

Superbolt tensioners are designed as direct replacements for conventional nuts and bolts. These devices can be threaded onto a new or existing bolt, stud, threaded rod or shaft. The main thread serves to position the tensioner on the bolt or stud against the hardened washer and the load bearing surface. Once it is positioned, actual tensioning of the bolt or stud is accomplished with simple hand tools by torquing the jackbolts which encircle the main thread. The jackbolts transfer the preload evenly into the main thread and, consequently, onto the joint. The main thread is tightened in pure tension.



## How Superbolt tensioners work:

- 1) By tightening the jackbolts, a strong thrust (axial) force is generated. This thrust force is directed against a hardened washer. Jackbolts have a small friction diameter and can therefore create a high thrust force with relatively little torque input.
- 2) The loads are transferred through the nut body which is positioned on the main thread by hand.
- 3) A hardened washer is used to transfer the force while protecting the flange face.
- 4) The thrust (axial) force of many jackbolts and the opposite reaction force of the main bolt head create a strong clamping force on the flange.
- 5) The thrust (axial) force from the jackbolt creates an equally strong reaction force in the main bolt.

### Proven and certified

Over the years, the product types in our wide range of multi-jackbolt tensioners have been tested and approved by several certification institutes. For some of our product series we have also achieved design and type approvals for production. Below are some examples:

- DNV (Det Norske Veritas)
- GL (Germanischer Lloyd)
- Siemens system audit

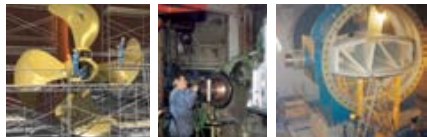
The high level of experience we have in pre-engineered products for specific challenges allows us to upon request for certain ranges supply certification from for example:

- ABS (American Bureau of Shipping)
- TÜV
- Lloyd's Register
- Vinçotte

For more detailed information on certificates / approvals for a specific product or production site, please contact your local Nord-Lock office. Please note that the certificates you require should be requested prior to ordering to ensure we comply with your needs.

### Proven in the field

Superbolt tensioners are used in many industries: Hydropower, wind turbines, gas and steam turbines, nuclear, steel, mining, shipbuilding, offshore, chemical, transportation, to name a few.



For detailed case studies, please visit [www.bolted.com](http://www.bolted.com)

# Advantages from start to finish



Our engineers can help you determine dimensions and load conditions of your bolted joints. We can evaluate your current tightening method and calculate bolt preloads necessary for reliability and durability. OEMs all over the world specify our multi-jackbolt tensioners in their design to improve the performance of their product.

*Advantages:*

- **Higher preload** - Tightening in pure tension allows higher preloads on the same size bolt versus other tightening methods.
- **Proper bolted joint** - Generating preload high enough above the separating forces means your bolting will not vibrate loose on properly designed joints. This can eliminate costly equipment downtime.
- **Elasticity** - Added elasticity increases fatigue life of the bolted joint.
- **Design options** - High preload capacity and accuracy can allow for the design of smaller bolt sizes. Compact dimensions and reduction of tooling sizes allows for reduction of the size of machinery, reducing material and machining cost.



The huge mechanical advantage of Superbolt products means only simple hand tools are required to tighten any size bolt or stud. Let's take a closer look at the advantages your workers will realize during installation.

*Advantages:*

- **Hand tools only** - Ordinary hand wrenches or pneumatic wrenches are the only tools required to generate immense bolt stresses.
- **Increased safety** - Installations are safe because only small hand tools are required. This means no safety hazards from immense hydraulic pressures, pinching hazards, heavy lifting of large tools, or sockets breaking under high pressure.
- **Space restrictions** - Multi-jackbolt tensioners are easy to install in confined spaces.
- **Save time** - Superbolt tensioners can be tightened in a fraction of the time compared to most other methods. Even though there are multiple jackbolts to tighten, field experience has proven that by using air tools installation times are fast and easy. Case studies available at [www.superbolt.com](http://www.superbolt.com)

## Operation



The ability to maintain necessary preload is crucial for keeping machinery running. Using multi-jackbolt technology allows proper preloading of the bolted joint in operation.

### *Advantages:*

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- **Accuracy** - Accurate and even tension across bolted joints reduces the tendency for leakages or uneven loading of adjacent fasteners.
- **Properly bolted** - The ability to achieve high preloads ensures a joint that does not loosen unintentionally.
- **Reliability** - Superbolt tensioners increase the fatigue life of the bolted joint.
- **Meeting your challenges** - Special designs can accommodate space restrictions or environmental / temperature conditions in any type of operating environment.
- **Downtime** - Properly designed and tightened joints will not come loose in service. This reduces downtime.

## Maintenance



Routine equipment maintenance requires removal and re-installation of Superbolt tensioners. Using and maintaining multi-jackbolt tensioners is safe and easy.

### *Advantages:*

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- **Easy to check** - Due to the low torques required, it is easy to inspect that the joint is tight with simple torque tests using hand tools.
- **Multiple workers** - Because only hand tools are needed, multiple workers can work in conjunction when required.
- **Galling** - Tightening in pure tension eliminates thread galling that commonly occurs with direct torquing methods.
- **Removal** - Ease of removal reduces expensive downtime that can occur with standard bolting methods.
- **Reusable** - Preload can be restored almost anywhere under any conditions with simple hand tools. Superbolt tensioners are fully reusable.