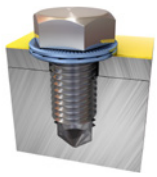
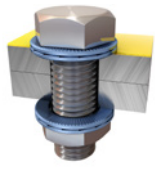


X-SERIES JOINT GUIDE



Tapped holes



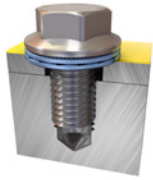
Through holes



Counter bores



Stud bolts -
No need for
adhesives



Applications
with large or
slotted holes



Mating surfaces
must be locked
in place

Tested and Certified

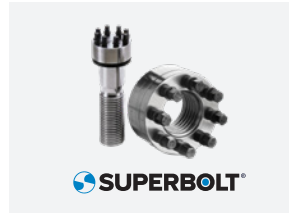
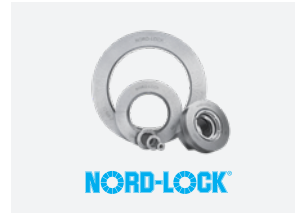
Nord-Lock washers are produced to the highest specifications and quality standards and they have been approved by independent institutes as well as certification authorities.



WANT TO LEARN MORE?

Ask your Nord-Lock representative for case stories and details on how X-series can secure your challenging joints. Find your local Nord-Lock representative and contact us today to arrange a visit:
www.nord-lock.com/contact

NORD-LOCK GROUP HOME OF INNOVATIONS AND ENGINEERING



Nord-Lock Group is a global leader in bolted solutions. In 1982, the original Nord-Lock® wedge-locking technology that safely secures bolted joints was developed. Since then, our range of innovative bolting technologies and expertise has grown to be the most comprehensive on the market, incorporating Superbolt® mechanical tensioners, Boltight® hydraulic tensioners and Expander® System pivot pins.

All solutions are developed and manufactured in-house, ensuring they meet the highest standards in the industry. Our team of dedicated experts work closely with customers all over the world.

Nord-Lock Group
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Email: info@nord-lock.com

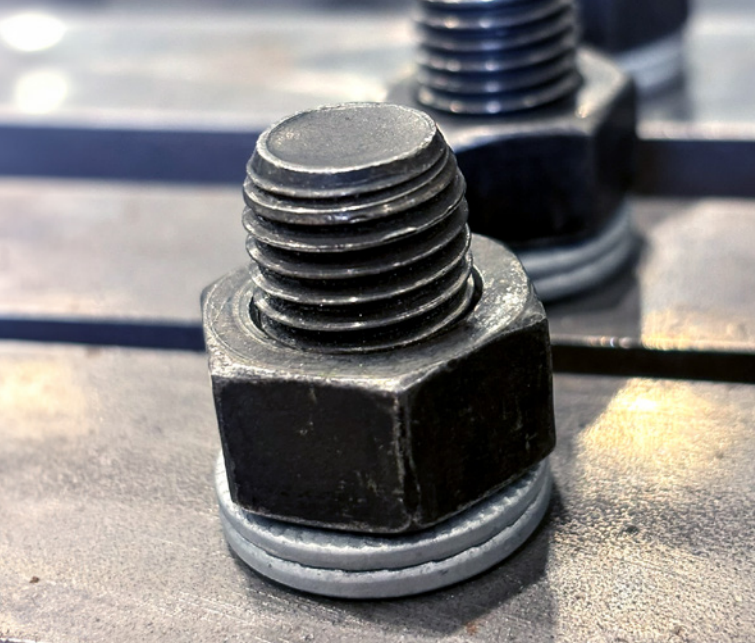


NORD-LOCK
GROUP

NORD-LOCK® X-SERIES

EXPAND YOUR DESIGN POSSIBILITIES





The main bolt loosening reasons:



Spontaneous bolt loosening
shock, vibration, dynamic load



Slackening
settlement, creep, relaxation

THE CHALLENGE

DESIGN TRENDS AND NEW REQUIREMENTS SUCH AS FUEL SAVING, LIGHTER PARTS AND INCREASED CAPACITY CALL FOR NEW CAPABILITIES.



Multiple clamped parts or short clamp length

Settlements are increasing with the amount of interfaces. Those are greatly compensated by the NLX feature against slackening



Gasketed joints

Sealings material are increasing bolts' preload variation range under temperature or pressure change. The NLX is fit to counteract it.

CHALLENGING CONDITIONS



Vibration and dynamic loads

The wedge-locking technology in Nord-Lock X-series washers has been proven as the most secure solution to prevent spontaneous bolt loosening.



Thermal cycling

Thermal cycling accelerates creep and relaxation of materials, leading to preload loss. The NLX greatly reduces the pace of preload losses.

CHALLENGING MATERIALS



Painted or powder coated surfaces

Surface treatments are often soft substances which can cause preload loss. The NLX washers compensates against this.



Soft materials

Maintaining preload is challenging when using soft materials due to slackening.

By using NLX Washers, the benefits from advanced technologies such as polymers and sandwich composites, can be utilized without compromising safety.

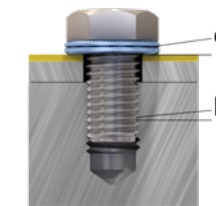


THE SOLUTION

THE X-SERIES WASHER IS THE WORLD'S MOST MODERN WEDGE-LOCKING SOLUTION ALLOWING YOU TO EXPAND YOUR DESIGN POSSIBILITIES.



A pair of Nord-Lock X-series washers has cams on one side and serrations on the opposite side to secure the bolted joint with tension instead of friction. The conical shape keeps a continuous reaction force against the parts, compensating for all possible loss of preload in the joint.



Since the cam angle (α) is greater than the thread pitch (β), the wedge-locking effect will prevent any rotation of the fastener.

FEATURES AND BENEFITS

- Prevents bolt loosening caused by vibration and dynamic loads
- Compensates for loss of preload due to settlements and relaxation
- One solution to cover multiple design challenges
- Defined and uniform friction provides accurate preload when tightening
- Quick and easy assembly / disassembly
- Increases operational reliability while reducing the risk of unplanned production stops, accidents, and warranty claims