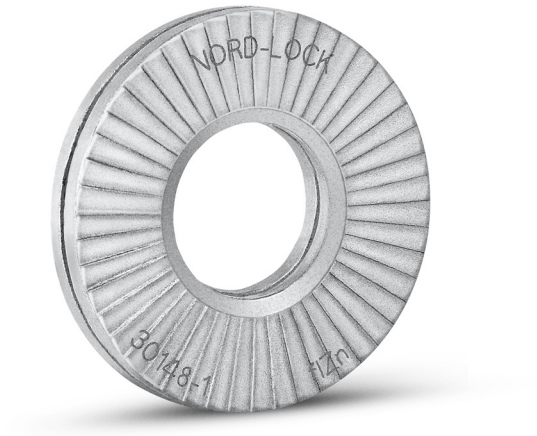
Nord-Lock Steel Construction Washers

USER MANUAL

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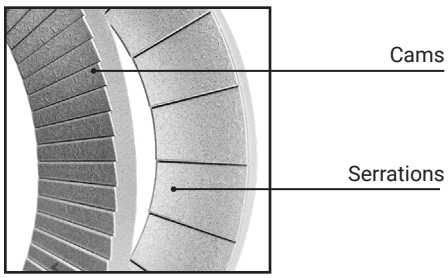


Nord-Lock Group
Tel: +46 40 602 46 00
Email: info@nord-lock.com
www.nord-lock.com

NORD-LOCK®
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Prevents bolts from loosening





A pair of washers for maximum safety

Nord-Lock bolt securing solutions consist of a pair of washers with cams facing each other and serrations gripping the mating surfaces. They use cam-geometry to effectively prevent the bolt from vibrating loose. A hot melt adhesive is used to assemble the washers in pairs. The ingredients of the adhesive meet the compositional requirements of the American Food & Drug Administration regulations 21 CFR 175.105 “Adhesives”. Store dry the washer boxes at -15°C to 25°C (5°F to 77°F).

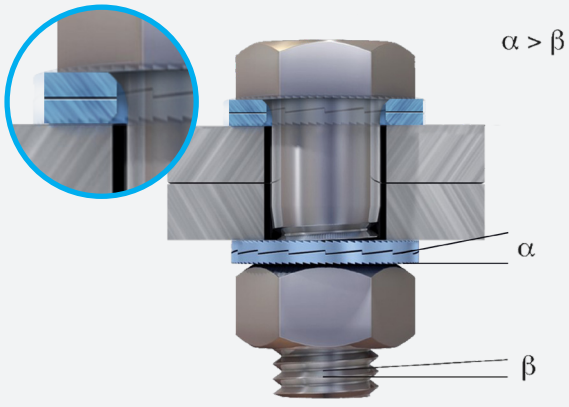
Applications

Nord-Lock SC-washers can easily replace a standard plain washer according to EN 14399-6, to prevent the bolt from rotating loose. The SC-washers are suitable for a wide variety of applications across the construction and bridge-building industry. They are safe to use with high-strength bolts and are confirmed by the National Technical Approval No. Z-14.4-629 and the European Technical Approval ETA-13/0246 issued by DIBt.

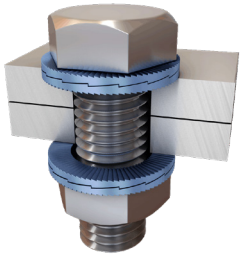
How it works

The system consists of a pair of washers that use Nord-Lock wedge-locking technology. Each washer has cam faces on one side and serrations on the other. They also have chamfers on the inner diameter.

The chamfer on the inner diameter ensures optimal contact surface between the bolt and the washer. Since the chamfer is present on both sides of each pair, it also eliminates the risk of incorrect installation.



Joint Guide



Through holes

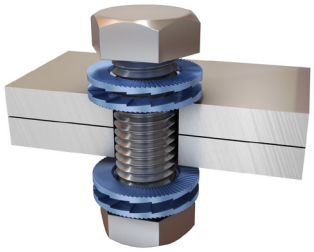
Nord-lock SC-washers are very simple to use. They come pre-glued together, ready to be installed together with your HV- or HR bolt set. Through holes require two pairs of Nord-Lock SC-washers — one pair for securing the bolt and one pair for securing the nut.



Designs where Nord-Lock SC-washers are not recommended

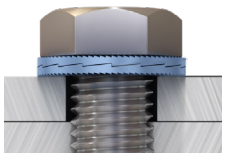
- When mating surfaces are not locked in place
- When mating surfaces are harder than the washers
- With very soft mating surfaces — for example, wood and plastic
- For applications with extremely large settlements
- With non-preloaded joints

Assembly Instructions

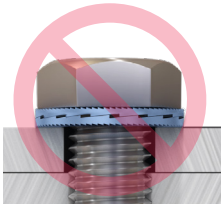


1.

Place one pair of Nord-Lock washers underneath the head of the bolt and mount it in the through hole. Place the second pair of washers on the bolt and mount the nut.



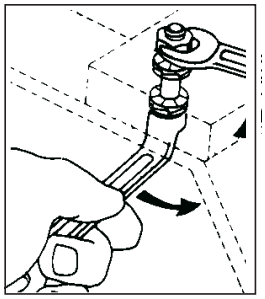
Closed cams - correct



Open cams – not correct

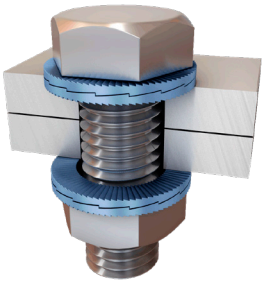
2.

Turn both fasteners (bolt head/nut) in order to close the cams on both washers before tightening to minimize settlements.



3.

Keep the bolt/nut secured while tightening the other part (bolt/nut). For guidance on which torque to tighten with, check the Nord-Lock torque guidelines.



4.

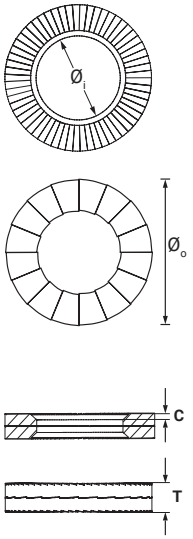
Ready!

Material Guide

Material standard	Hardening	Coating	Corrosion resistance	Temperature range
Steel EN 1.7182	Through hardened	Base coat: Delta Protekt® KL100 zinc flake coating Top coat: VH 302 GZ	Minimum 1,000 hours in salt spray test (according to IS0 9227)	-40°C to 150°C

Dimension Chart

Bolt size Metric	UNC	Product designation	$Ø_i$ [mm]	$Ø_o$ [mm]	Thickness T [mm]	Chamfer C [mm]	Approx. weight kg/100 pairs	Min. Package [pairs]
M12		NL12SC	13.1	23.7	4.6	1.2	1.0	100
M16	**5/8"**	NL16SC	17.1	29.7	4.6	1.2	1.5	100
M20		NL20SC	21.4	36.7	4.6	1.5	2.3	100
M22	**7/8"**	NL22SC	23.4	38.7	4.6	1.5	2.5	50
M24		NL24SC	25.3	43.7	4.6	1.5	3.2	50
M27		NL27SC	28.4	49.5	5.8	1.8	5.6	25
M30	**1 1/8"**	NL30SC	31.4	55.4	5.8	1.8	6.9	25
M36	**1 3/8"**	NL36SC	37.4	65.4	6.0	1.6	11.0	25



Torque Guidelines

Washer size	Reduced preload force	Modified torque method	Modified combined method* [torque + angle]
	$F_{P, C, NL*}$	torque moment $M_{A, NL}$	pre-torque moment $M_{A, MKV, NL}$
	[kN]	[Nm]	[Nm]
NL12SC	45	130	100
NL16SC	90	330	250
NL20SC	145	660	490
NL22SC	170	850	640
NL24SC	200	1100	825
NL27SC	260	1600	1220
NL30SC	315	2150	1650
NL36SC	460	3750	2800

Nord-Lock SC-washers are developed to be used within the steel construction industry together with HV- or HR bolt sets in accordance to the European standard EN 14399-4 / EN14399-3.

* *Torque conditions are specified in ETA-13/0246 for HV bolts, grade 10.9*