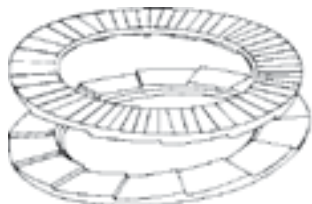


**Nord-Lock Washers maintain preload at loosening movements.**

**The Nord-Lock Principle**

The Nord-Lock washer has cams or wedges on one side, with a lead angle greater than a thread angle, and radial teeth or ribs on the other side. The washers are installed cam face to cam face, forming the unique Nord-Lock fastener.

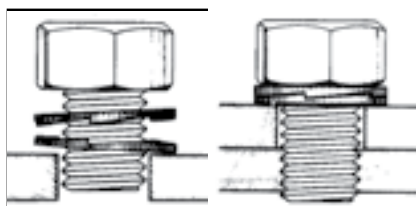


When tightening the fastener to preload, the teeth penetrate and seat against the joint material and the nut and/or fastener head.

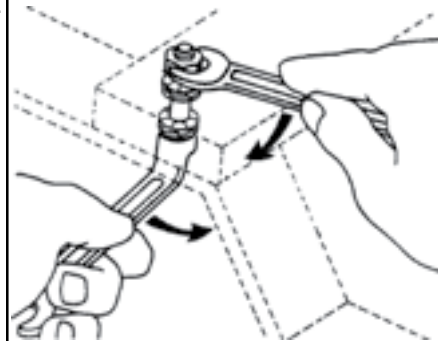
When subjected to vibration the interacting cams create a wedge action thereby maintaining preload in the joint which prevents the fasteners from vibrating loose.

**Assemblies**

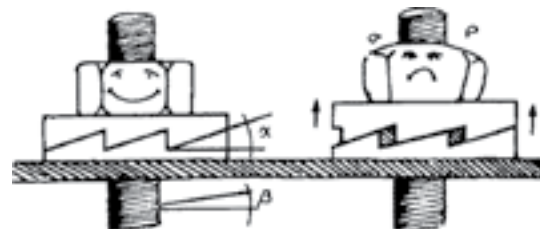
Nord-Lock washers can be used on standard as well as high-grade bolts. When tightening, a 20% higher torque is used than on standard flat electro-zinc plated washers.



Hold the screw cap when tightening the nut.



**BENEFITS OF NORD-LOCK**



The key is the difference in angles. Here you see what happens when a nut attempts to loosen. The pair of washers expand more than the corresponding pitch of the thread. Nord-Lock washers positively lock the fastener in a joint which is subjected to extreme vibration.

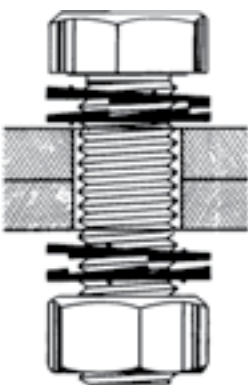
See following pages for Nord-Lock® Washers.

**\*Recommended torque - ft./lbs.**

Bolt Size	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"	3/4"	7/8"	1"	1-1/8"	1-1/4"	1-3/8"	1-1/2"
	(M5)	(M6)	(M8)	(M10)	(M11)	(M12)	(M14)	(M16)	(M20)	(M22)	(M24)	(M30)	(M33)	(M36)	(M39)
Grade 2*	N/A	8	16	28	44	66	96	131	231	225	338	481	675	875	1144
Grade 5*	N/A	11	24	41	67	101	144	200	362	581	875	1075	1513	1963	2587
Grade 8*	N/A	16	34	59	95	144	206	287	506	825	1225	1738	1831	3187	4200

**CAUTION**

**READ BEFORE INSTALLING NORD-LOCK WASHER PAIRS**



The superior locking performance of a Nord-Lock fastener is secured only if it is correctly assembled and the proper Nord-Lock fastener combination is selected. It is imperative that the following instructions are closely observed:

**Nord-Lock Washer Pairs must be assembled cam face to cam face.**

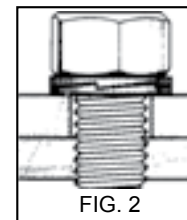
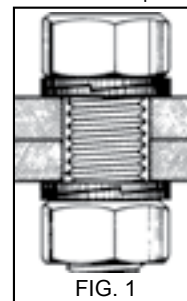
When used in conjunction with a bolt/nut fastener, install a pair of Nord-Lock Washers, cam face to cam face, between both the bolt head and the joint material and the nut and the joint material (see Fig. 1). The teeth of the washer pairs will now bite into the bolt head and the joint material as well as the nut, and the joint material on the corresponding side.

When used in conjunction with a cap screw or bolt in a threaded hole, install one pair of Nord-Lock Washers, cam face to cam face, under the cap screw or bolt head (see Fig. 2). The teeth of the washer pair will now bite into the cap screw or bolt head on one side and the joint material on the other side.

Due to the preload, the screw is prevented from turning in either direction. Should the screw tend to loosen, it causes the mating washer to slide up the cams on the other washer, producing a wedge action, and the preload is maintained.

These washers can be used on low-grade and high-grade screws, and on joint surfaces with hardness up to HRC45.

Technical Information provided by Nord-Lock. For critical applications testing in the actual assembly should be conducted to determine Torque Values.



INTERLOCKING CAMS

CATALOG 14 SPAENAUR

**Wedge Lockwashers**

Rondelles de sécurité

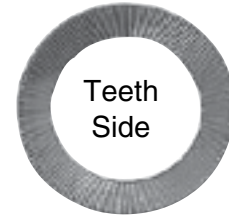
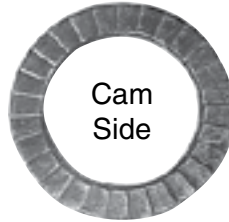


Inch and Metric  
Pouce et Métrique

**NORD-LOCK**  
*Bolt Securing System*  
**C1020 LOW CARBON STEEL**

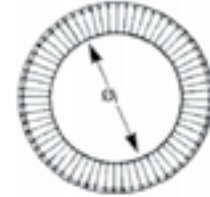
Heat Treated

Zinc Plated and Yellow Chromate Finish



**INCH SIZES**

Spaenaur No.		Bolt Size	Inch Dimensions			PKG QTY.
Loose Pairs	Glued Pairs		ID	OD	T	
-	677-318	1/4"	0.28	0.45	0.07	50 pairs
-	677-319	1/4"	0.28	0.53	0.10	50 pairs
-	677-303	3/8"	0.41	0.65	0.10	50 pairs
677-121	677-321	3/8"	0.41	0.83	0.10	50 pairs
-	677-304	7/16"	0.45	0.73	0.10	25 pairs
-	677-323	1/2"	0.53	0.77	0.10	25 pairs
677-124	677-324	1/2"	0.53	1.00	0.13	25 pairs
677-115	677-315	3/4"	0.79	1.21	0.13	20 pairs
-	677-328	3/4"	0.79	1.54	0.13	20 pairs
-	677-310	1"	1.10	1.54	0.13	20 pairs
-	677-332	1"	1.10	1.91	0.18	20 pairs



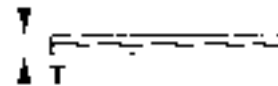
**Inside Dia. Tolerances**  
For 1/4" to 5/16" Bolt Size ± .004"  
For 3/8" to 1-1/2" Bolt Size ± .008"  
For M3 to M8 Bolt Size ± 0,1mm  
For M10 to M42 Bolt Size ± 0,2mm

**METRIC SIZES**

Loose Pairs	Glued Pairs	Bolt Size	Metric Dimensions (mm)			PKG QTY.
			ID	OD	T	
-	677-300	M5	5.4	9.0	1.8	50 pairs
-	677-301	M6	6.5	10.8	1.8	50 pairs
-	677-317	M6	6.5	13.5	2.5	50 pairs
-	677-302	M8	8.7	13.5	2.5	50 pairs
677-116	677-316	M8	8.7	16.6	2.5	50 pairs
-	677-342	M10	10.7	16.6	2.5	50 pairs
-	677-320	M10	10.7	21.0	2.5	50 pairs
-	677-305	M12	13.0	19.5	2.5	25 pairs
-	677-322	M12	13.0	25.4	3.4	25 pairs
-	677-336	M14	15.2	23.0	3.4	25 pairs
-	677-325	M14	15.2	30.7	3.4	25 pairs
-	677-307	M16	17.0	25.4	3.4	25 pairs
677-126	677-326	M16	17.0	30.7	3.4	25 pairs
-	677-308	M20	21.4	30.7	3.4	20 pairs
-	677-327	M20	21.0	39.0	3.4	20 pairs
-	677-337	M22	23.4	34.5	3.4	20 pairs
-	677-329	M22	23.4	42.0	4.6	20 pairs
-	677-330	M24	25.3	39.0	3.4	20 pairs
-	677-331	M24	25.3	48.5	4.6	20 pairs
-	677-333	M27	28.4	42.0	4.6	20 pairs
-	677-334	M27	28.4	48.5	4.6	20 pairs
-	677-338	M30	30.5	47.0	4.6	10 pairs
-	677-339	M33	33.5	48.5	6.6	10 pairs
677-140	677-340	M36	37.4	55.0	6.6	10 pairs
-	677-341	M39	40.4	58.5	6.6	10 pairs
-	677-335	M42	42.5	63.0	4.6	10 pairs



**Outside Dia. Tolerances**  
For 1/4" to 1-1/2" Bolt Size ± .008"  
For M3 to M42 Bolt Size ± 0,2mm



**Thickness Tolerances**  
For 1/4" to 1-1/2" Bolt Size ± .010"  
For M3 to M42 Bolt Size ± 0,25mm

**Larger Sizes are available - Prices on Request.**  
**See following page for Stainless Steel Washers.**

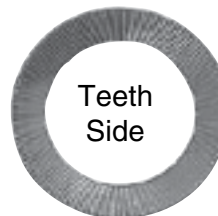
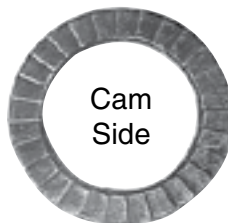
Inch and **Metric**  
Pouce et **Métrique**

**NORD-LOCK®**  
Bolt securing systems

**Wedge Lockwashers / Assortment**  
Rondelles de sécurité et assortiment

**NORD-LOCK**  
Bolt Securing System

**316 STAINLESS STEEL**



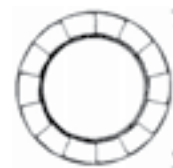
**INCH SIZES**

Spenaaur No. Glued Pairs	Bolt Size	Inch Dimensions			PKG QTY.
		ID	OD	T	
677-A93-1Y	1/4"	0.28	0.453	0.09	50 pairs
677-A92-1P	3/8"	0.41	0.630	0.09	50 pairs
677-A91-1A	7/16"	0.45	0.73	0.09	25 pairs

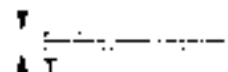
**Inside Dia. Tolerances**  
For 1/4" to 5/16" Bolt Size ± .004"  
For 3/8" to 1-1/2" Bolt Size ± .008"  
For M3 to M8 Bolt Size ± 0,1mm  
For M10 to M42 Bolt Size ± 0,2mm

**METRIC SIZES**

Spenaaur No. Glued Pairs	Bolt Size	Metric Dimensions (mm)			PKG QTY.
		ID	OD	T	
677-A87-1M	M5	5.4	9.0	2.2	50 pairs
677-A90-1X	M6	6.5	10.8	2.2	50 pairs
677-A96-1E	M8	8.7	13.5	2.2	50 pairs
677-A88-1X	M10	10.7	16.0	2.2	50 pairs
677-A89-1A	M12	13.0	19.5	2.2	25 pairs
677-A94-1Z	M14	15.2	23.0	3.2	25 pairs
677-A95-1S	M16	17.0	25.4	3.2	25 pairs
677-A04-1P	M39	40.4	58.5	6.6	5 pairs



**Outside Dia. Tolerances**  
For 1/4" to 1-1/2" Bolt Size ± .008"  
For M3 to M42 Bolt Size ± 0,2mm



**Thickness Tolerances**  
For 1/4" to 1-1/2" Bolt Size ± .010"  
For M3 to M42 Bolt Size ± 0,25mm

**ASSORTMENT 805-516C**

**INCH AND METRIC  
NORD-LOCK® VIBRATION  
PROOF FASTENERS**  
Zinc Plated Steel  
14 SIZES - 361 GLUED PAIRS



Name	Spenaaur No.	Compatible Bolt Size	Inner Diameter	Outer Diameter	Pair Thickness	Qty.	Page
Lockwasher (Inch)	677-A61-1G	#10	5.4mm	9.0mm	1.8mm	50	D36
	677-A68-1Z	3/8"	0.406"	0.654"	0.098"	25	
	677-A70-1Z	7/16"	0.449"	0.728"		15	
	677-A59-1G	1"	1.098"	1.535"	0.134"	15	
Lockwasher (Metric)	677-A66-1P	M6	6.5mm	10.8mm	1.8mm	50	
	677-A67-1Y	M8	8.7mm	13.5mm	2.5mm	25	
	677-A86-1W	M12	13.0mm	19.5mm			
	677-A73-1G	M14	15.2mm	30.7mm	3.4mm		
	677-A75-1M	M16	17.0mm	25.4mm			
	677-A83-1S	M20	21.4mm	30.7mm	6.6mm		
	677-A56-1Z	M22	23.4mm	34.5mm		15	
	677-A82-1Z	M30	31.4mm	47.0mm			
	677-A85-1G	M33	34.4mm	48.5mm	2		
677-A51-1M	M39	40.4mm	58.5mm				

Shipping Wt.: 3.74 kg (8-1/4 lbs.) Regular Size welded steel drawer has hinged lid and is finished in grey enamel. Fits into Slide Racks shown on page A2.