

SELF-LOCKING WASHERS

VIBRALOCK-BLOCKED BY VIBRATIONS



ISO 9001

BUREAU VERITAS
Certification



DESCRIPTION OF THE SELF-LOCKING WASHERS

The vibralock self-locking washers don't loose at vibrations, they have a system of fixing screws that don't use a traditional technique, even so it's a secure locking system.

The proven method of self-locking wedge that follows the norm DIN 25201, Use tension instead of friction in order to block the screw which makes it superior to traditional methods.

The wedge self-locking system incorporates a pair of washers for fixing screws which have cams with angel " α " greater than the one of the thread " β ".

Also have radial teeth in the opposite sides. These washers are pre-assembled in pairs with part of the cams facing each other.

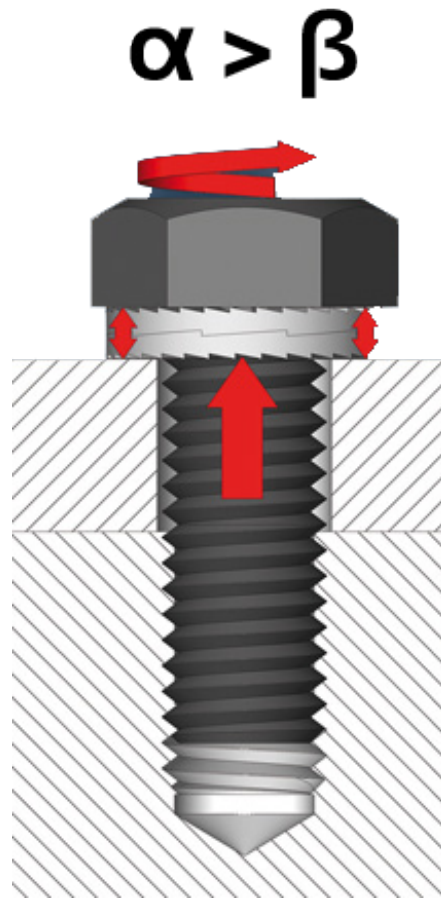
When the screw and / or nut is squeezed the teeth of the washers grip and lock onto the surfaces and only allow movement between cam faces.

Any rotation of the screw/ nut is self-locked by the wedging of the cams. Washers wedge ensure & block even the exposed joints to the vibration and dynamic loads.



ENSAYO DE LAS Washers AUTOBLOCANTES ANTE VIBRACIONES

Test of Junker's vibration



One method used to measure the tension maintained by a screw a board submitted to vibration, is the Junker test.

The tension applied to the screw is recorded by a load cell, and the effects of vibration occur radially on the screw and self-locking washers.

Using washers lock against any vibrations with a standard nut, as seen we have a safety tightening in, very superior to that obtained with self-locking Nylon nuts and spring washer.

The self-locking screws lose more tension due to vibration, while the self-locking washers mounted cam, present a much lower loss; caused mainly by the settling of the thread.

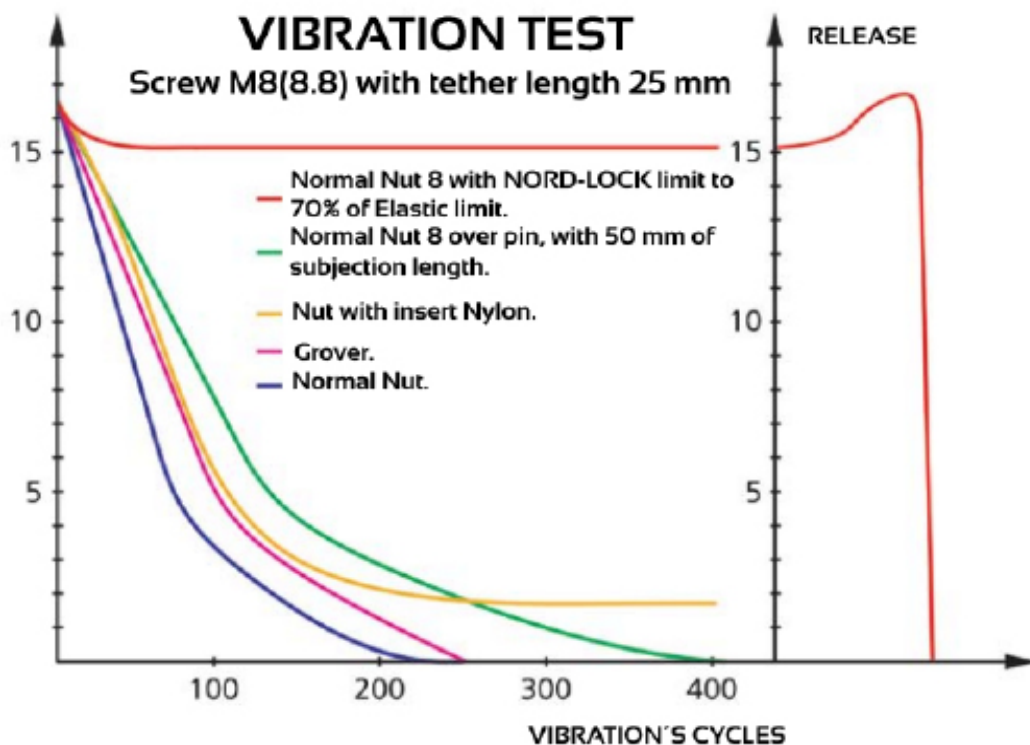
The recommended values of tightening are based on tests performed in the laboratory calibrated torque and torque transducers cells load.



APPLICATIONS OF NOT LOOSEN WASHERS BY VIBRATIONS

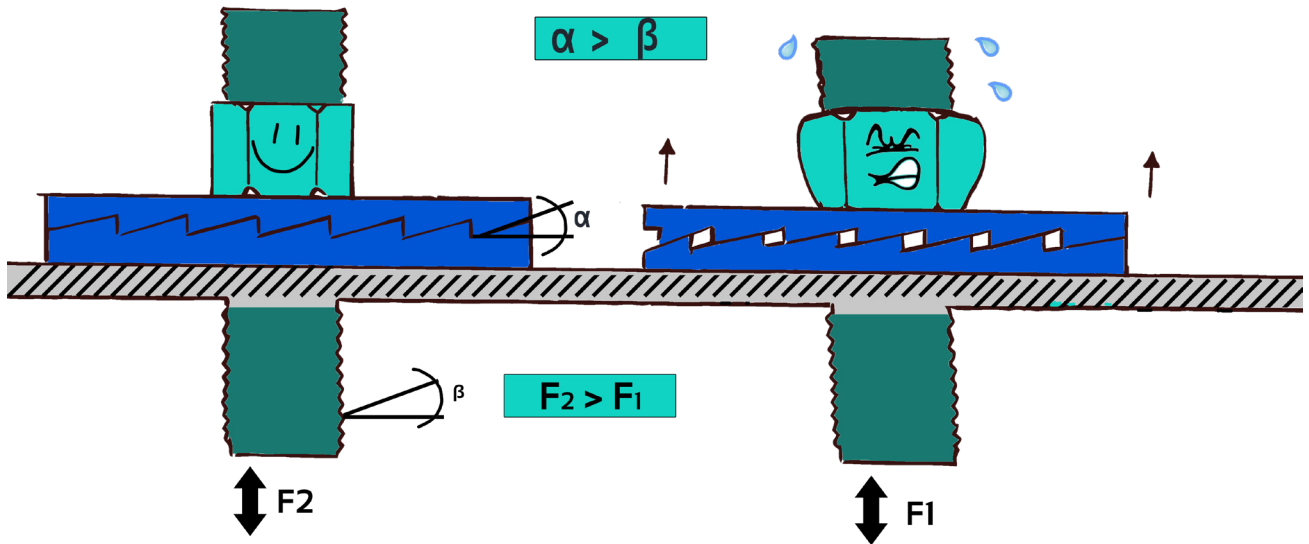
Applications are so large, to block washers in any type of machines submitted to mechanical vibrations, some of the most important ones are for example:

- Lathes
- Milling machines,
- Grinders
- Transport pipe vibration
- Drills,
- Looms
- Sewing machines
- Wind generators
- Drawn
- Stamping presses
- Cutting presses
- Hydraulic presses
- Machines guillotines printing
- Shears
- Vibrating tapes
- Screeners
- Sieves
- Timbering
- Vibrating tables
- Axis chain conveyors
- Turbines
- Funiculars
- Motors
- Pneumatic components
- Bulldozers
- Nuclear power plants

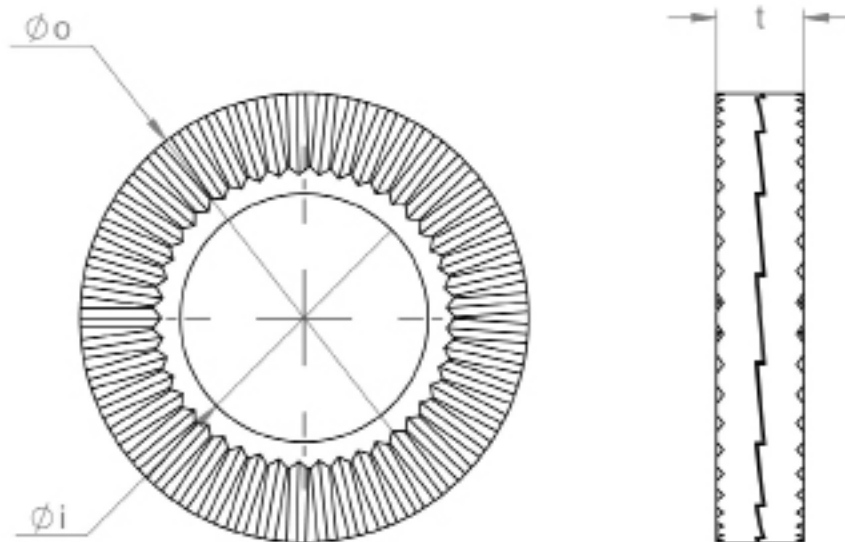


The exterior splines of each self-locking washer by tightening the nut against washers, the washer remains firmly joined to the nut and the other washer to the base of the machine or the surface.

So when the nut want to loosen it only allows to spin between two self-locking washers on the side of the cams having an angle " α " more than the thread " β " this produces a force F_2 more than F_1 , which implies that in order to loosen the nut, it must make a higher effort to tighten so it prevents washers to get loosening by vibrations.



CHARACTERISTICS OF THE SELF-LOCKING WASHERS



Reference	Metrics	UNC	Ø i mm	Ø o mm	t mm
Washer VL 3	M3	#5	3,4	7	1,8
Washer VL 3,5	M3,5	#6	3,9	7,6	1,8
Washer VL 3,5G	M3,5	#6	3,9	9	1,8
Washer VL 4	M4	#8	4,4	7,6	1,8
Washer VL 4G	M4	#8	4,4	9	1,8
Washer VL 5	M5	#10	5,4	9	1,8
Washer VL 5G	M5	#10	5,4	10,8	1,8
Washer VL 6	M6		6,5	10,8	1,8
Washer VL 6G	M6		6,5	13,5	1,8
Washer VL 1/4"		1/4"	7,2	11,5	1,8
Washer VL 1/4"G		1/4"	7,2	13,5	2,5
Washer VL 8	M8	5/16"	8,7	13,5	2,5
Washer VL 8G	M8	5/16"	8,7	16,6	2,5
Washer VL 3/8"		3/8"	10,3	16,6	2,5
Washer VL 3/8"G		3/8"	10,3	21	2,5
Washer VL 10	M10		10,7	16,6	2,5
Washer VL 10G	M10		10,7	21	2,5
Washer VL 11	M11	7/16"	11,4	18,5	2,5
Washer VL 12	M12		13	19,5	2,5
Washer VL 12G	M12		13	25,4	3,4
Washer VL 1/2"		1/2"	13,5	19,5	2,5
Washer VL 1/2"G		1/2"	13,5	25,4	3,4



Reference	Metrics	U N C	Ø i mm	Ø o mm	t mm
Washer VL 14	M14	9/16"	15,2	23	3,4
Washer VL 14G	M14	9/16"	15,2	30,7	3,4
Washer VL 16	M16	5/8"	17	25,4	3,4
Washer VL 16G	M16	5/8"	17	30,7	3,4
Washer VL 18	M18		19,5	34,5	3,4
Washer VL 18G	M18		19,5	34,5	3,4
Washer VL 3/4"		3/4"	20	30,7	3,4
Washer VL 3/4"G		3/4"	20	39	3,4
Washer VL 20	M20		21,4	30,7	3,4
Washer VL 20G	M20	3/4"	21,4	39	3,4
Washer VL 22	M22	7/8"	23,4	34,5	3,4
Washer VL 22G	M22	7/8"	23,4	42	3,4
Washer VL 24	M24		25,3	39	3,4
Washer VL 24G	M24		25,3	48,5	4,6
Washer VL 1"		1"	27,9	39	3,4
Washer VL 1"G		1"	27,9	48,5	4,6
Washer VL 27	M27		28,4	42	6,6
Washer VL 27G	M27		28,4	48,5	6,6
Washer VL 30	M30	1 1/8"	31,4	47	6,6
Washer VL 30G	M30	1 1/8"	31,4	58,5	6,6
Washer VL 33	M33	1 1/4"	34,4	48,5	6,6
Washer VL 33G	M33	1, 24"	34,4	58,5	6,6



Reference	Metrics	U N C	Ø i mm	Ø o mm	t mm
Washer VL 36	M36	1 3/8"	37,4	55	6,6
Washer VL 36G	M36	1 3/8"	37,4	63,5	6,6
Washer VL 39	M39	1 1/2"	40,4	58,5	6,6
Washer VL 42	M42		43,2	63	6,6
Washer VL 45	M45	1 3/4"	46,2	70	9,5
Washer VL 48	M48		49,6	75	9,5
Washer VL 52	M52	2"	53,6	80	9,5
Washer VL 56	M56	2 1/4"	59,1	85	9,5
Washer VL 60	M60		63,1	90	9,5
Washer VL 64	M64	2 1/2"	67,1	95	9,5
Washer VL 68	M68		71,1	100	9,5
Washer VL 72	M72		75,1	105	9,5
Washer VL 76	M76	3"	79,1	110	9,5
Washer VL 80	M80		83,1	115	9,5
Washer VL 85	M85		88,1	120	9,5
Washer VL 90	M90		92,4	130	9,5
Washer VL 95	M95		97,4	135	9,5
Washer VL 100	M100		103,4	145	9,5
Washer VL 105	M105		108,4	150	9,5
Washer VL 110	M110		113,4	155	9,5
Washer VL 115	M115		118,4	165	9,5
Washer VL 120	M120		123,4	170	9,5



Reference	Metrics	UNC	Ø i mm	Ø o mm	t mm
Washer VL 125	M125		128,4	173	9,5
Washer VL 130	M130		133,4	178	9,5

DIMENSIONAL WASHERS SELF-LOCKING STAINLESS STEEL

Reference	Metrics	UNC	Ø i mm	Ø o mm	t mm
Washer VL 3 INOX	M3	#5	3,4	7	2,2
Washer VL 3,5 INOX	M3,5	#6	3,9	7,6	2,2
Washer VL 3,5G INOX	M3,5	#6	3,9	9	2,2
Washer VL 4 INOX	M4	#8	4,4	7,6	2,2
Washer VL 4G INOX	M4	#8	4,4	7,6	2,2
Washer VL 5 INOX	M5	#10	5,4	9	2,2
Washer VL 5G INOX	M5	#10	5,4	10,8	2,2
Washer VL 6 INOX	M6		6,5	10,8	2,2
Washer VL 6G INOX	M6		6,5	13,5	2,2
Washer VL 1/4" INOX		1/4"	7,2	11,5	2,2
Washer VL 1/4"G INOX		1/4"	7,2	13,5	2,2
Washer VL 8 INOX	M8	5/16"	8,7	13,5	2,2
Washer VL 8G INOX	M8	5/16"	8,7	16,6	2,2
Washer VL 3/8" INOX		3/8"	10,3	16,6	2,2
Washer VL 3/8"G INOX		3/8"	10,3	21	2,2
Washer VL 10 INOX	M10		10,7	16,6	2,2



Reference	Metrics	UNC	Ø i mm	Ø o mm	t mm
Washer VL 10G INOX	M10		10,7	21	2,2
Washer VL 11 INOX	M11	7/16"	11,4	18,5	2,2
Washer VL 12 INOX	M12		13	19,5	2,2
Washer VL 12G INOX	M12		13	25,4	2,2
Washer VL 1/2" INOX		1/2"	13,5	19,5	3,2
Washer VL 1/2"G INOX		1/2"	13,5	25,4	3,2
Washer VL 14 INOX	M14	9/16"	15,2	23	3,2
Washer VL 14G INOX	M14	9/16"	15,2	30,7	3,2
Washer VL 16 INOX	M16	5/8"	17	25,4	3,2
Washer VL 16G INOX	M16	5/8"	17	30,7	3,2
Washer VL 18 INOX	M18		19,5	29	3,2
Washer VL 18G INOX	M18		19,5	34,5	3,2
Washer VL 3/4" INOX		3/4"	20	30,7	3,2
Washer VL 3/4"G INOX		3/4"	20	39	3,2
Washer VL 20 INOX	M20		21,4	30,7	3,2
Washer VL 20G INOX	M20		21,4	39	3,2
Washer VL 22 INOX	M22	7/8"	23,4	34,5	3,2
Washer VL 22G INOX	M22	7/8"	23,4	42	3,2
Washer VL 24 INOX	M24		25,3	39	3,2
Washer VL 24G INOX	M24		25,3	48,5	3,2
Washer VL 1" INOX		1"	27,9	39	3,2
Washer VL 1"G INOX		1"	27,9	48,5	3,2



Reference	Metrics	U N C	Ø i mm	Ø o mm	t mm
Washer VL 27 INOX	M27		28,4	42	6,8
Washer VL 27G INOX	M27		28,4	48,5	6,8
Washer VL 30 INOX	M30	1 1/8"	31,4	47	6,8
Washer VL 30G INOX	M30	1 1/8"	31,4	58,5	6,8
Washer VL 33 INOX	M33	1 1/4"	34,4	48,5	6,8
Washer VL 36 INOX	M36	1 3/8"	37,4	55	6,8
Washer VL 39 INOX	M39	1 1/2"	40,4	58,5	6,8
Washer VL 42 INOX	M42		43,2	63	6,8
Washer VL 45 INOX	M45	1 3/4"	46,2	75	9
Washer VL 48 INOX	M48		49,6	75	9
Washer VL 52 INOX	M52	2"	53,6	80	9
Washer VL 56 INOX	M56	2 1/4"	59,1	85	9
Washer VL 60 INOX	M60		63,1	90	9
Washer VL 64 INOX	M64	2 1/2"	67,1	95	9
Washer VL 68 INOX	M68		71,1	100	9
Washer VL 72 INOX	M72		75,1	105	9
Washer VL 76 INOX	M76	3"	79,1	110	9
Washer VL 80 INOX	M80		83,1	115	9



CONTACT

Address:

C/ Industria 77 - Parque Industrial Tirso G21 / 39610 El Astillero - Cantabria - España

Phone:

0034-942-544-223 / 0034-942-544-224

E-mail:

silentflex@silentflex.com

Web:

silentflex.com

