SHEREX FASTENING SOLUTIONS

Fastening Systems Engineered For Performance™

DISC-LOCK®

Wedge Locking Washers

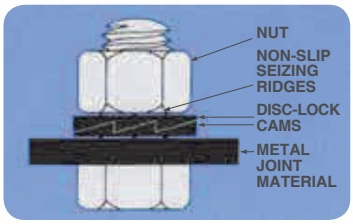
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION
APPROVED

FEATURES AND BENEFITS

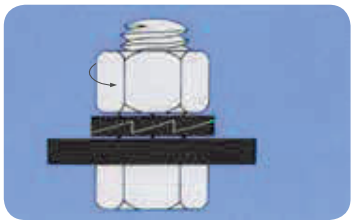
- Heavy duty, self-locking design
- For use with bolts up to Class 10.9, Grade 8
- Available in sizes from ¼" (M6) to 1 ½" (38MM) Other sizes available by special order.
- Available in 1010 Carbon Steel and 316L Stainless Steel
- Carbon Steel washers are case hardened and coated with RoHS-compliant Delta Protekt™
- Provided in pre-assembled, glued pairs
- Easy to install with standard tools
- No re-tightening needed once installed
- Vibration proof according to MIL-STD-1312-7

HOW DOES IT WORK?

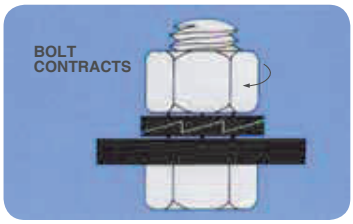
Disc-Lock washers consist of two washer-shaped pieces which have cams on one side and ridges on the other. The cam sides are mated together and then installed between the nut and the joint material.



As the nut is tightened, one half of the Disc-Lock washer is seated to the joint material, and the other is seated to the nut.



When the joint experiences vibration and shock, the nut will attempt to rotate loose. As this happens, one half of the Disc-Lock washer will attempt to rotate with the nut – when it does this, the other half of the washer, with its interlocking cams will provide opposite force, prohibiting movement. Preload will be maintained and the assembly will be locked.



The angle of the cams is greater than the pitch angle of the thread on the bolt; the cams and the non-slip ridges of the Disc-Lock washer work together to stop any movement.

As the bolt contracts, the inclined planes of the cam will cause the nut to rotate back to its original position.

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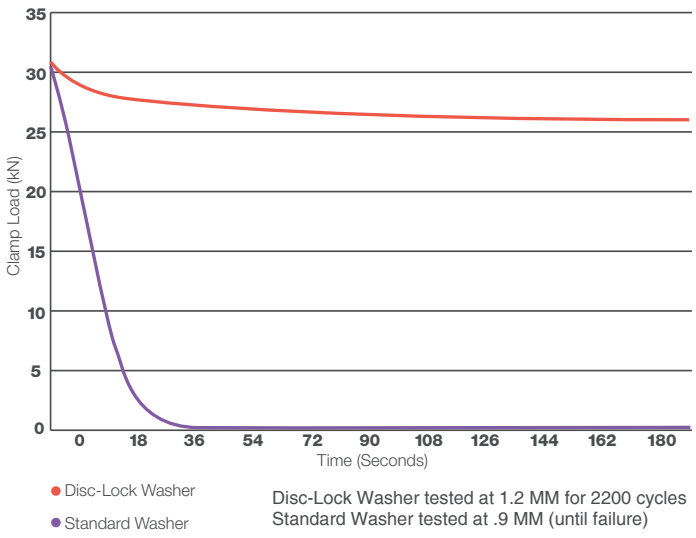
PROVEN RESULTS

DISC-LOCK LOCKING WASHER JUNKER TEST

Disc-Lock Wedge Locking Washers have been tested on a Junker Vibration Machine. The Junker test, considered the most severe vibration test for bolted joints according to DIN 65151, is used to determine the point at which a bolted joint loses its preload when subjected to shear loading due to transverse vibration.

When tested against a standard washer using the Junker test, Disc-Lock Wedge Locking Washers remained secure under severe vibration conditions, while the standard washer loosened significantly.



Disc-Lock Washer tested at 1.2 MM for 2200 cycles
Standard Washer tested at .9 MM (until failure)

PROVEN APPLICATIONS

Disc-Lock wedge locking washers outperform conventional, split-ring, and other style washers in a wide variety of high stress, corrosive, and vibration-sensitive applications including:

- Agriculture Equipment
- Automotive
- Construction Equipment
- Heavy Rail
- Logging Equipment
- Marine
- Military
- Mining
- Oil Drilling Equipment
- Solar
- Wind
- Waste Management

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INSTALLATION

- To install the Disc-Lock Washer, place the preassembled pair of washers between the nut and the joint material.
- As the nut is tightened, one half of the Disc-Lock Washer is seated to the joint material and the other to the nut.
- Disc-Lock Washers should only be used against flat, relatively smooth metal surfaces.
- If the joint material is not metal, the Disc-Lock washer may be used by securing the metal plate to the joint material in such a manner that the metal plate will not rotate.
- A torque wrench is not required to install Disc-Lock Washers.
- An air-gun can be used when installing and removing Disc-Lock Washers.
- If installed correctly, the Disc-Lock Washer will ensure that the fastener remains secure, and will not require any re-tightening.

TORQUE GUIDELINES

When installing Disc-Lock Washers in a common application, expect an increase in required torque over recommended installation torque to achieve proper clamp load and maximum joint safety. Due to varying installation conditions and customer specific applications, additional information and torque recommendations are available by contacting Engineering support at Disc-Lock.

APPLICATION EXAMPLES

Disc-Lock Wedge Locking Washers can be used to protect joint integrity in a wide variety of joint types, including:

Counter Bore

Stud Bolt

Large Hole

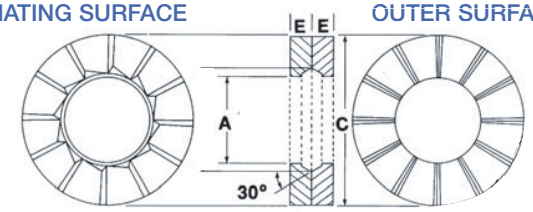
Tapped Hole

Disc-Lock Wedge Locking Washers are not recommended for mating surfaces that are not locked in place or are harder than the washers, and in non-preloaded joints.

SPECIFICATIONS & ORDERING INFORMATION

CAMS ON MATING SURFACE

SEIZING RIDGES ON OUTER SURFACE



CARBON STEEL WASHER

PART #	SIZE		STANDARD DIMENSIONS (INCHES)			METRIC DIMENSIONS (MILLIMETER)			BOX QUANTITY
	INCHES	METRIC	INNER DIAMETER (A)	OUTER DIAMETER(C)	THICKNESS (EE)	INNER DIAMETER (A)	OUTER DIAMETER(C)	THICKNESS (EE)	
DL-M3-#6	#6	3	0.150	0.340	0.080	3.81	8.64	2.03	3,000
DL-M4-#8	#8	4	0.175	0.340	0.080	4.45	8.64	2.03	3,000
DL-M5-3/16	3/16	5	0.203	0.401	0.080	5.15	10.18	2.03	3,000
DL-M6-1/4	1/4	6	0.262	0.495	0.127	6.66	12.57	3.22	3,000
DL-M8-5/16	5/16	8	0.326	0.628	0.142	8.28	15.95	3.60	3,000
DL-M10-3/8	3/8	10	0.409	0.705	0.160	10.38	17.90	4.06	3,000
DL-M11-7/16	7/16	11	0.450	0.880	0.153	11.43	22.35	3.89	2,000
DL-M12-1/2	1/2	12	0.510	0.937	0.166	12.95	23.82	4.22	1,000
DL-M14-9/16	9/16	14	0.572	1.128	0.175	14.53	28.65	4.45	500
DL-M16-5/8	5/8	16	0.651	1.247	0.188	16.53	31.67	4.79	500
DL-M20-3/4	3/4	20	0.820	1.381	0.242	20.82	35.08	6.15	500
DL-M22-7/8	7/8	22	0.883	1.470	0.268	22.44	37.34	6.80	500
DL-M24-1	1	24	1.015	1.626	0.256	25.78	41.30	6.50	500
DL-M27-1-1/8	1-1/8	27	1.140	1.715	0.240	28.96	43.56	6.10	500
DL-M30-1-1/4	1-1/4	30	1.275	1.875	0.265	32.39	47.63	6.73	500
DL-M36-1-3/8	1-3/8	36	1.430	2.196	0.230	36.32	55.78	5.84	500
DL-M38-1-1/2	1-1/2	38	1.523	2.196	0.230	38.68	55.78	5.84	500

*Weight and thickness of pairs will vary slightly with gauge of metal

- Produced from 1010 Carbon Steel.
- Coated in Delta Protekt ® KL100 and VH302 GZ. Contact your Disc-Lock strategic account representative for more information.

STAINLESS STEEL WASHER

PART #	SIZE		STANDARD DIMENSIONS (INCHES)			METRIC DIMENSIONS (MILLIMETER)			BOX QUANTITY
	INCHES	METRIC	INNER DIAMETER (A)	OUTER DIAMETER(C)	THICKNESS (EE)	INNER DIAMETER (A)	OUTER DIAMETER(C)	THICKNESS (EE)	
DL-M6-1/4ss	1/4	6	0.262	0.495	0.101	6.660	12.57	2.560	3,000
DL-M8-5/16ss	5/16	8	0.326	0.628	0.119	8.280	15.95	3.020	3,000
DL-W10-3/8ss	3/8	10	0.409	0.705	0.135	10.38	17.90	3.400	1,000
DL-M11-7/16ss	7/16	11	0.450	0.880	0.135	11.43	22.35	3.330	1,000
DL-M12-1/2ss	1/2	12	0.510	0.937	0.136	12.95	23.82	3.450	1,000
DL-M14-9/16ss	9/16	14	0.572	1.128	0.127	14.53	28.65	3.230	1,000
DL-M16-5/8ss	5/8	16	0.651	1.247	0.134	16.53	31.67	3.400	1,000
DL-M20-3/4ss	3/4	20	0.820	1.381	0.183	20.82	35.08	4.650	500
DL-M22-7/8ss	7/8	22	0.883	1.470	0.240	22.44	37.34	6.100	500
DL-M24-1ss	1	24	1.015	1.626	0.240	25.78	41.30	6.100	500

- Produced from 316L Stainless Steel.

Disc-Lock Wedge Locking Washers are also available through our Made in the U.S.A. product line

IATF 16949:2016 Certified

Disc-Lock washers are manufactured in an ISO-certified facility

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DISC-LOCK AND SHEREX PRODUCT SHOWCASE

Disc-Lock and Sherex are committed to providing customers with the lowest total installed cost fastening solutions in a wide variety of applications.

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BLIND RIVET NUTS

Sherex blind rivet nuts provide load bearing threads in thin sheet materials that are too thin for a tapped thread. Blind rivet nuts are also used when an application has little or no access to the backside as they can be installed from the front side of the work piece.

CLINCH NUTS

Sherex offers three different kinds of clinch nuts to meet the specific requirements of the customer's application. Sherex clinch nuts can be used in various high strength steels such as dual phase alloy, HSLA, and TRIPS to meet class 10 nut strength requirements. Sherex clinch nuts can be used in any material that offers access from both sides of the base material.

RIV-FLOAT® FAMILY

RIV-FLOAT® was developed for easy, accurate, and fast attachment of components in off center applications. RIV-FLOAT® Accounts for tolerance stack up in joint design and misalignment during the service of the joint. RIV-FLOAT®-SHORT is available for applications requiring backside clearance similar to that of various riveted nut plates and cage nuts.

LARGE THREAD RIVET NUTS

Sherex offers the first product line of its kind offering rivet nuts up to 3/4-10 and M16. These rivet nuts were developed for applications where critical joint performance and high tensile loads are required.

FULL HEX RIVET NUTS

Sherex full hex rivet nuts provide increased spin out resistance. The entire line is compatible with Class 8, Grade 5 hardware. Sizes available include 1/4-20 to 1/2-13 and M6 to M12 in both a small flange and large flange.

NAS AND MS RIVET NUTS

Sherex offers full lines of NAS and MS rivet nuts for the aerospace, defense, military, and general industrial markets that meet the NAS 1329, NAS 1330, and MS27130 standards. All styles are available in steel, aluminum, 430 stainless steel, 316 stainless steel, alloy steel, and brass.

IN-DIE AUTOMATION

Sherex combines world class fastener manufacturing and design capability with industry leading automation equipment to offer the best solution for your application. This "One Source Service" ensures that you are receiving the best support before and after the start of production. Whether you are using 10,000 pieces or 10 million pieces, Sherex offers different levels of automation and fastener capability to meet both your budget and performance requirements.

RIVET NUT INSTALLATION TOOLING

Sherex offers an array of installation tooling from hand tools made for prototyping and small volumes to hydro-pneumatic tools made for production runs.

DISC-LOCK®

WEDGE LOCKING NUTS

Disc-Lock wedge locking nuts are patented, heavy duty, self-locking nuts designed to maintain joint integrity in high vibration applications. Available in sizes from M10 to M22, 3/8" to 7/8".

WEDGE LOCKING BOLTS

Disc-Lock wedge locking bolts are designed for blind-hole applications, using the same wedge locking technology as the nut and washer product lines to prevent loosening due to vibration.

Please contact us for more information on any of these product lines.

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