



SHEREX FASTENING SOLUTIONS®
Fastening Systems Engineered for Performance™

DISC-LOCK®



WEDGE LOCKING WASHERS



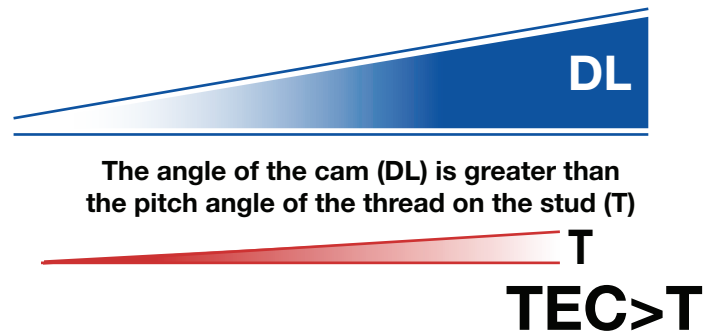
APPROVED

U.S. DEPARTMENT OF
TRANSPORTATION
FEDERAL RAILROAD
ADMINISTRATION



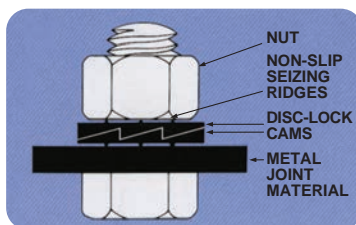
FEATURES AND BENEFITS

- 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

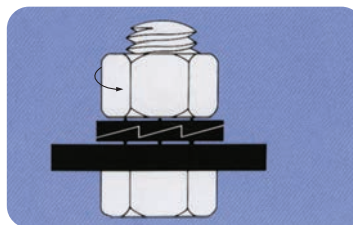


HOW DOES IT WORK?

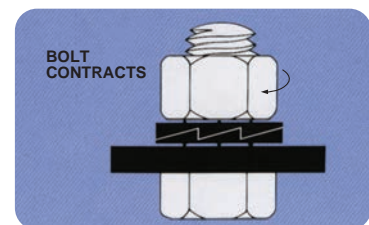
Disc-Lock washers consist of two washer-shaped pieces which have cams on one side and ridges on the other. The cam sides are mated together and then installed between the nut and the joint material.



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.

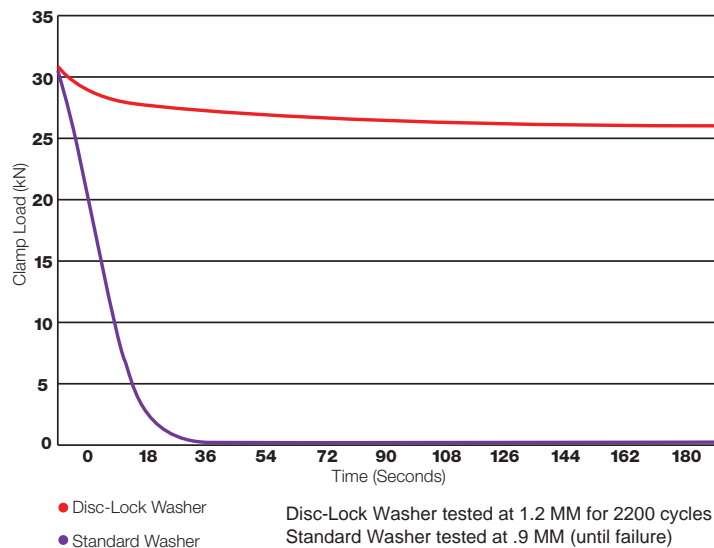


PROVEN RESULTS

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.



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

DISC-LOCK®


SHEREX FASTENING SOLUTIONS®

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:

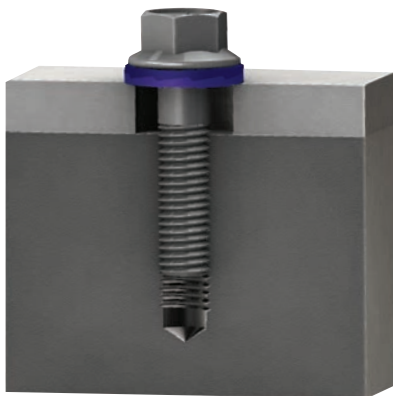
Counter Bore



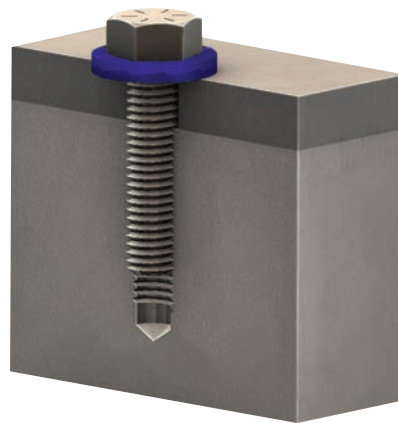
Stud Bolt



Large Hole



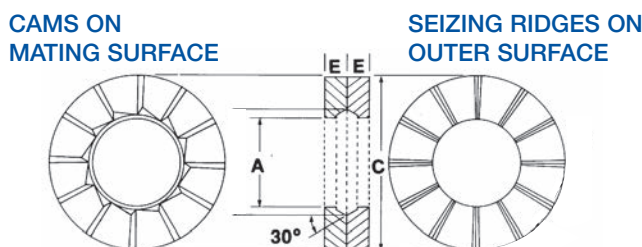
Tapped Hole



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



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



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.

SHEREX FASTENING SOLUTIONS

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.

OPTISERT® RIVET NUTS



Optisert® is Sherex's best performing round rivet nut. Its combination of knurled body design and underhead wedges gives it superior strength, performance, and spin-out resistance over typical round body rivet nuts. Ideal applications for Optisert include use in softer material like aluminum, composite, fiberglass, and plastic.

FULL HEX RIVET NUTS



Sherex full hex rivet nuts provide increased spin out resistance over round or half hex body styles. These products are compatible with Class 8, Grade 5 hardware, and are available in sizes 1/4"-20 to 1/2"-13 and M6 to M12 in small flange and large flange styles.

LARGE SIZE RIVET NUTS



Sherex large size rivet nuts are offered from 1/2"-13 through 3/4"-10, and M12 to M16 sizes. These rivet nuts were developed for applications where critical joint performance and high tensile loads are required.

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® RIVET NUTS



RIV-FLOAT® rivet nuts provide easy, accurate, and fast attachment of components in off-center applications. RIV-FLOAT®-SHORT rivet nuts provide the same benefits with a shorter body for increased back-side clearance.

NAS AND MS RIVET NUTS



Sherex NAS and MS rivet nuts are ideal for aerospace and defense applications that require NAS 1329, NAS 1330, and MS27130 standards. All styles are manufactured in our AS9100-certified Akron, Ohio facility, and are available in several materials.

**SHEREX CAN CREATE CUSTOM RIVET NUTS FOR YOUR PROJECT.
CONTACT US TO SEE HOW WE CAN HELP.**

RIVET NUT INSTALLATION SYSTEMS

Sherex offers a broad line of installation tools, from hand tools ideal for prototyping and small volumes to hydro-pneumatic, process monitoring, and robotic installation systems ideal for large production runs.



DLHT Hand Tool



SSG Spin-Spin Tool



Flex-5 Spin-Pull Tool



Flex-18 Spin-Pull Tool



Calibration Unit



Process Monitoring



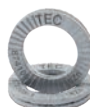
Robotic Installation

WEDGE LOCKING WASHERS AND NUTS

DISC-LOCK®

TECSERIES®

TEC Series® washers and Disc-Lock® washers and nuts are heavy duty, reusable, self locking fasteners designed to secure safety-critical applications against vibrational loosening. Manufactured using stamping process. Available in standard and large outer diameter carbon and stainless steel M3-M72, #5-3".





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Ask About Our **MADE IN THE U.S.A.** Product Line

DISC-LOCK®

