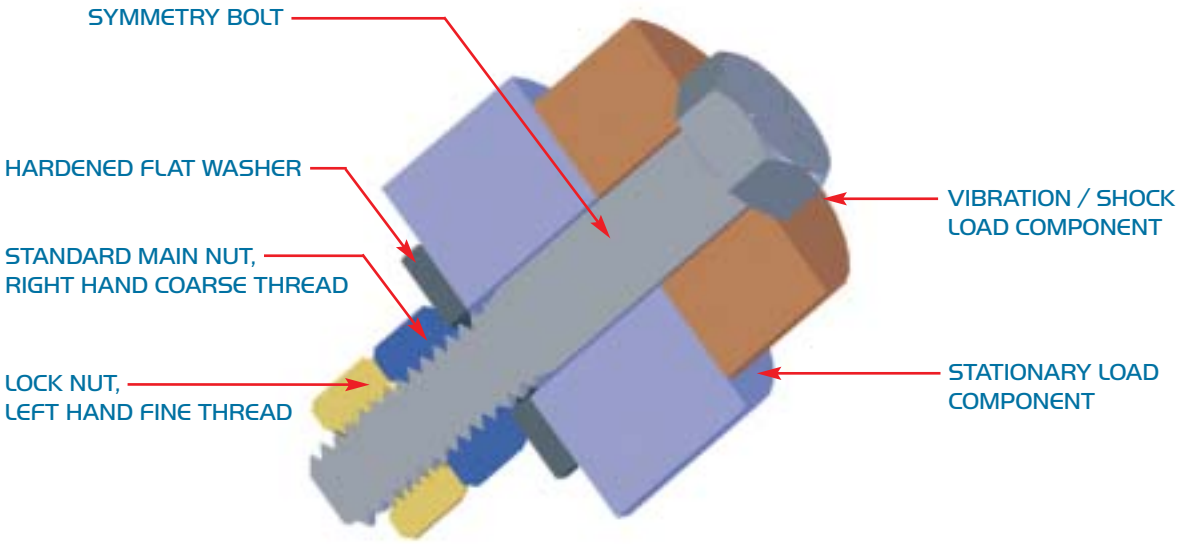
SYMMETRY BOLT

AN INNOVATIVE NEW FASTENER THAT BEATS VIBRATION AND KEEPS BOLTED JOINTS TIGHT UNDER THE MOST SEVERE SHOCK AND VIBRATION CONDITIONS

The Symmetry Bolt is a revolutionary concept in vibration resistant self-locking fasteners.



It is based on a unique external thread form that includes a right hand thread, a left hand thread, a standard right hand thread main nut and a left hand thread jam nut. The two nuts lock against each other with opposing forces. The effect is to maintain clamp load in high vibration applications where standard self-locking fasteners come loose.

As an example, a typical Symmetry Bolt system would consist of a 3/8-16/24 Grade 8 Symmetry Bolt, a 3/8-16 Grade 8 hex nut, and a 3/8-24 left hand jam nut, or a PC 10.9 M10x1.5/.75 Symmetry Bolt, a M10x1.5 PC 10 hex nut and a M10x.75 left hand jam nut. A hardened flat washer appropriate to the application should be used if needed.

The Symmetry Bolt is well suited to the most severe shock and vibration conditions.

Typical applications include rock crushers, heavy construction equipment, truck and rail transportation, chippers, and mining equipment.

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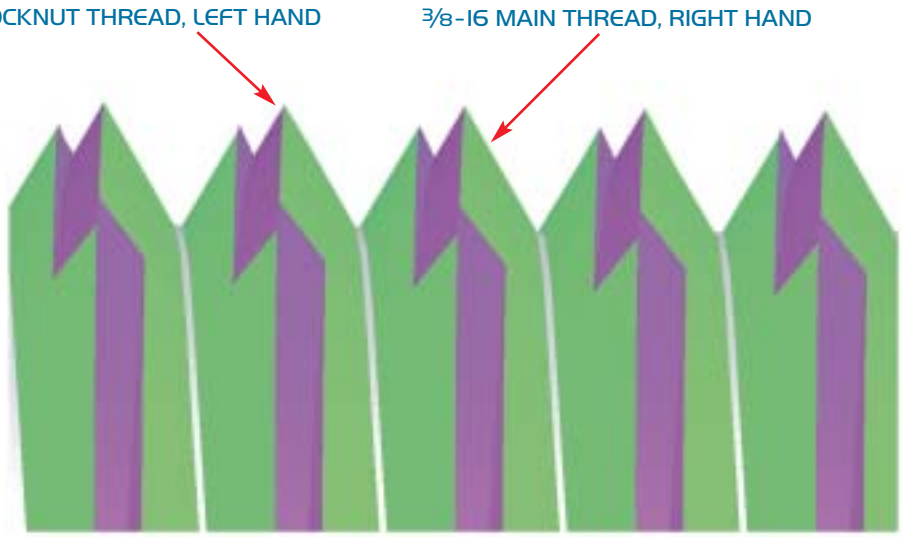

CLOSE UP OF SYMMETRY BOLT THREAD FORM

The stronger the vibration the greater the locking force created by the Symmetry Bolt.

This is because the vibration and shock forces that would normally cause a standard lock nut to come loose work to force the Symmetry Bolt lock nut to tighten.

The Symmetry Bolt has been laboratory tested for a severe vibration and impact based on **National Aerospace Standard 3350**. This test requires the bolted joint to undergo a vibration of 1750 cycles per minute for 17 minutes under controlled conditions. Normal self locking nuts and bolts loosen quickly at this vibration level. The Symmetry Bolt, on the other hand, was certified by JQA, Japan Quality Assurance Organization as maintaining clamp load even after 17 minutes. Additionally, the Symmetry Bolt is tested under severe vibration conditions combined radial loosening forces and simultaneous random shock forces. Under this test the Symmetry Bolt holds its clamp load when other "vibration proof" fastener systems fail.

Installation of the Symmetry Bolt system is easily accomplished. Simply install and tighten the main right hand nut as you normally would, then install and tighten the left hand nut to a torque that is about 20-30% of the main nut torque.

Disassembly is just as easy. If the bolted joint was subjected to vibration forces, typically, the left hand nut removal torque may be slightly higher than the installation torque.

The Symmetry Bolt is reusable provided the bolting material yield strength has not been exceeded during installation or use.

The Symmetry Bolt thread form is made in production using a proprietary thread rolling design. It gives maximum thread strength and ensures a perfect thread that is easily inspected with standard inspection equipment.

The Symmetry Bolt can be produced in any material, plating, size or configuration.

Typical materials include Grade 5 and Grade 8, PC 8.8, 10.9 and 12.9, 316 stainless steel, 17-4PH stainless steel, alloy steel, 6-4 titanium and various super alloys.

Our Symmetry Bolt engineering team will gladly examine your application to determine if the Symmetry Bolt is suitable for your high vibration application.
If qualified, we will provide samples for you to test and we will help you to develop a qualification procedure.

Contact us now for a demonstration of the Symmetry Bolt and to get us started on your bolted joint application analysis.

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