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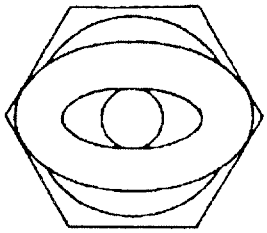

Figure 075-5-4. Distorted Collar Nuts.

075-5.3.3.2 Distorted Thread Nuts. Distorted thread nuts are made either with depressions on the face of the nut, which distort a few of the top threads locally, or depressions in the center of three of the wrench flats, which distort some of the threads in the center of the nut. In both designs, threading the nut on the bolt forces the threads back into round. As in the distorted collar nuts, the spring properties of the nut cause it to try to return to its distorted shape, creating high frictional forces between the nut and the bolt. Similar to the distorted collar nuts above, these nuts are not commonly found on board ship. They may also be found in high temperature components where plastic locking elements cannot be used or in specialized components as part of a positioning device.

075-5.3.4 JAM NUTS (LOCK NUTS). Jam nuts are an older variation of the prevailing torque concept. They are not usually recommended for new installations due to the tendency to use an improper thickness for the jam nut and to install them in the wrong relative positions.

075-5.3.4.1 Jam Nut Assembly. The jam nut assembly requires a regular or main nut and a thin jam nut, as shown in Figure 075-5-5. The assembly is installed with the thinner nut between the thick nut and the bearing surface. The main nut has to be as thick as if no jam nut were being used, because the main nut carries all the working load. The jam nut is usually about 2/3 as thick as the main nut. If the jam nut is too thin, however, the threads in the jam nut area will be damaged as the main nut will pull the bolt threads partially through the jam nut. Conversely, if the jam nut is too thick, the main nut cannot distort the threads enough.

075-5.3.4.2 Tightening the Jam Nut. At assembly, first tighten the jam nut to the same or slightly less percentage of the preload torque specified for the main nut, based on the relation the jam nut thickness bears to the thickness of the main nut. Then hold it in position with a wrench while you tighten the main nut. For example, if the jam nut is 2/3 as thick as the nut, tighten the jam nut to 1/2 to 2/3 of the torque used for the main nut. Then, when the main nut is tightened to the preload torque specified for the bolt, it stretches the bolt (stud), thereby tending to pull it through the jam nut. Any vibration or load that tends to loosen the bolted joint will allow the bolt to shrink back to its original length, leaving the jam nut tight against the main nut. This creates the necessary prevailing torque to prevent the jam or main nut assembly from rotating on the bolt.

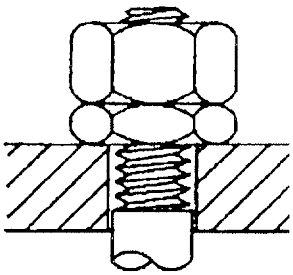

Figure 075-5-5. Jam Nut Assembly.

075-5.3.5 SETSCREWS. Setscrews are seldom used in the U.S. Navy to lock threads. Setscrews can be used in a variety of ways to lock threads (see Figure 075-5-6). A setscrew can:

a. Jam a plug of softer material (plastic, copper, or lead) against the threads to be locked.

b. Be installed between the nut and a stationary member, physically restricting the nut from turning.