Installation Torque for Screws with Non-metallic Locking Elements

Materials can be added to screw threads to prevent loosening due to vibration. Referred to as "non-metallic vibration resistant elements", they are more commonly known as "patches" and usually made of nylon, **Figure 1**. The locking elements produce frictional resistance to rotation between mating threads. The amount of torque required to overcome the resistance of the frictional element is known as the prevailing torque. **Table 1** provides approximate prevailing torques for common thread sizes.

Figure 1

The amount of torque required to create the optimum amount of tension or elongation in the screw is referred to as seating torque. The subsequent compressive load developed between the mating parts as a result of the tension is called the clamp load. To obtain seating torques and clamp loads for common threads sizes and screw materials without locking elements, visit the Pencom website at **www.pencomsf.com/pdf/tech_info.pdf**

Thread Size	Prevailing Torque
2-56	9.0 in-oz
4-40	1.5 in-lbs
6-32	3.0 in-lbs
8-32	4.0 in-lbs
10-32	6.0 in-lbs
1/4-20	12.0 in-lbs
5/16-18	24.0 in-lbs
3/8-16	32.0 in-lbs

Table 1

The total torque required to properly join screws with non-metallic locking elements can be calculated by adding the prevailing torque due to the locking element to the seating torque of the plain fastener.

Total Seating Torque = Prevailing Torque + Seating Torque (w/o locking element)

Temperature, installation rpm, and size and location of the frictional element will affect the prevailing torque. Pencom recommends testing in the application to determine total seating torque required to obtain optimum clamp loads.