

Performance Requirements for Bolts with Plastic Prevailing Torque Feature

- SCOPE:** This specification gives the prevailing torque performance requirements for bolts with a plastic prevailing torque feature incorporated in the threads.

The prevailing torque feature on bolts covered by this specification will be adversely affected by temperatures above 120°C or below -50°C.

1.1 REFERENCE.

ISO 1	Standard reference temperature for industrial length measurement.
WSD-M13P7-A	Lubricant-torque/clamping force control.

- GENERAL:** All performance requirements apply to the finished product as received by Ford (i.e., after the application of any specified protective finish).

Any protective coating applied to bolts may be affected by the heating process used to bond the plastic prevailing torque feature. This is considered acceptable only if the effect on the corrosion resistance and color is confined to the threads. The lubrication for torque/clamping force control must not be affected by the bonding process.

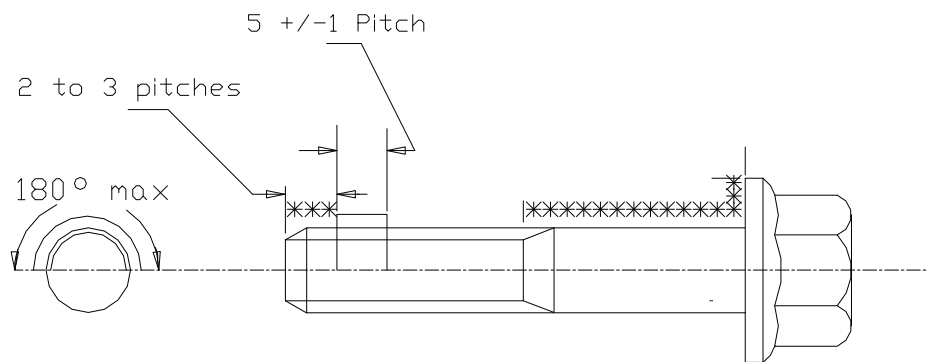
The patched portion of the thread shall be able to pass through a hole in a test plate of thickness not less than 6 pitches. The hole diameter shall be in accordance with ISO 273 Fine series.

3. MATERIAL, DIMENSIONS AND POSITION:

- 3.1 MATERIAL:** The material of the feature and the method by which it is incorporated in the bolt is optional provided that all the requirements of this specification are met.

- 3.2 DIMENSIONS AND POSITION:** The dimensions of the feature shall be as specified in Figure 1. The position of the feature shall be as specified in the Ford utility part drawing.

Figure 1.



No prevailing torque feature material permitted in areas marked *****



4. PERFORMANCE REQUIREMENTS

- 4.1 TORQUE/CLAMPING FORCE:** The torque/clamping force requirements of products required to meet this specification shall be in accordance with WZ 101.
- 4.2 PREVAILING TORQUE PERFORMANCE:** The prevailing torque test shall be conducted at room temperature as specified in ISO 1.

All prevailing torque measurements shall be taken with the bolt in motion and with the full length of the prevailing torque feature in contact with the test nut thread.

Using a suitable test spacer or spacers (see Clause 4.2.2) assemble the sample bolt in the test nut (see Clause 4.2.3). The bolt shall be advanced in the nut until all prevailing torque feature threads are in full contact with the test nut thread. The highest torque occurring while the bolt is being advanced through the next 360° of rotation shall be measured. For the bolt to be acceptable this torque shall not exceed the maximum prevailing torque value as specified for the applicable bolt in Table 1.

Tightening shall be continued until the bolt is seated against the test spacer and the tightening clamp force in Table 1 is achieved. The thickness of the test nut shall be such that seating of the bolt occurs when the feature is still fully in contact with the test nut thread. The test spacer shall be prevented from turning during bolt tightening.

The bolt shall then be slackened by the application of reverse torque until the tensile load has been reduced to zero. The highest torque occurring while the bolt is being removed through the next 360° of rotation shall be measured. For the bolt to be acceptable, this torque shall not be less than the first removal prevailing torque specified for the applicable bolt in Table 1 nor greater than the maximum prevailing torque. After the first removal prevailing torque has been measured, the bolt shall be backed off until the feature is disengaged from the nut thread.

The bolt shall then be reassembled to the specified tightening clamp force and removed two more times. On each removal, the feature shall be disengaged from the nut thread.

During the third removal, the highest torque occurring while the bolt is being removed through the first 360° of rotation shall be measured. For the bolt to be acceptable, this torque shall be not less than the third removal prevailing torque value as specified in Table 1. In addition, at no time during these two subsequent tightening and slackening shall the torque exceed the maximum prevailing torque value specified in Table 1.

To avoid overheating of the test assembly, sufficient time shall elapse between the torque application cycles.

Speed of installation and removal of the nut shall not exceed 30 rpm. and shall be continuous and uniform.

The test spacer shall be cleaned and examined for compliance with the requirements of Clause 4.2.2 for each new sample bolt.

- 4.2.1 TORQUE MEASURING DEVICE:** The torque measuring device (torque wrench or power device) shall be accurate to 2% of the maximum specified torque range of the device. For referee purposes, the measuring device shall be chosen so that all readings fall within the upper half of its torque range.