



WE 953

General Specifications, Assembly Information, Mechanical and Performance Requirements for Single Thread Spring Nuts

1. SCOPE. This standard covers performance and other requirements for single thread form spring nuts designed for assembly on panels 0.6 to 3.8 thick.

NOTE: The design of the thread impression, retaining feature and other features may vary between manufacturers, provided all requirements of this standard are met.

1.1 REFERENCES.

ISO 683/18 - Heat-treated steels, alloy steels and free cutting steels - Part 18: Wrought unalloyed steels in the normalized, or normalized and cold-drawn, or hot-rolled and cold-drawn condition.

ISO 6932 - Cold reduced carbon steel strip with a maximum carbon content of 0.25%.

2. MATERIAL AND HEAT TREATMENT.

2.1 MATERIAL. The material shall be spring steel, the specific grade of material shall be at the discretion of the manufacturer to meet the performance requirements and provide adequate ductility.

2.2 HEAT TREATMENT. Harden and Temper to HV420 - 520 or Austemper to HV500 - 570.

3. PERFORMANCE.

3.1 ASSEMBLY AND RETENTION. Spring nuts shall preassemble onto steel test plates of thickness equal to the two extremes of the panel range specified for the nut to be tested. The maximum installation force during the assembly of the spring nut shall be 55 N. The minimum force to then remove the spring nut shall be 2 N.

3.2 TORQUE AND CLAMP FORCE TEST. A spring nut shall be assembled on a test panel (See Figure 1 and Table 2) of thickness equal to the maximum thickness of the panel range specified for the nut to be tested with a device suitable for measuring clamp force incorporated. A test screw (See Clause 4) shall then be driven into the assembled spring nut until the installation torque specified in Table 1 is achieved. The clamp force shall not be less than the minimum clamp force specified in Table 1.

Upon disassembly, the thread impression shall return to a condition that will accept re-entry of the screw.

3.3 DESTRUCTIVE TORQUE TEST. Using the same method as described in Clause 3.2, but without a device for measuring clamp force, a spring nut shall be assembled on a test panel (See Figure 1 and Table 2) of thickness equal to the maximum thickness of the panel range specified for the nut to be tested and a torque applied to a test screw (See Clause 4) driven into the spring nut. Torque to cause failure shall not be less than the value specified in Table 1.

3.4 TENSILE TEST. Using the same assembly procedure as described in Clause 3.2 but replacing the clamp force measuring device with a tensile load measuring device, a test screw (See Clause 4) shall be driven into the spring nut but not tightened to induce any pre-load. A tensile load shall now be applied to the screw until the spring nut fails. The tensile load to cause failure shall not be less than the value specified in Table 1.

4. TEST SCREW. The test screw shall be Type AB as specified in WD900 and shall not be less than 25mm long. The surface coating shall be S309 in accordance with WX100.

Table 1. Performance requirements

Screw Size	Installation Torque Nm	Clamp Force kN	Minimum Destructive Torque Nm	Minimum Tensile Strength kN
ST3.5	1.35	1.06	1.92	2
ST4.2	2.25	1.67	2.82	2.22
ST4.8	3.47	2.3	5.2	3.53
ST6.3	6.78	3.34	9.04	4



WE 953

General Specifications, Assembly Information, Mechanical and Performance Requirements for Single Thread Spring Nuts

Table 2. Test panel

Screw Size	Distance from Edge A	Hole Diameter G	Panel Range
ST3.5	0.75 x B	4.8	See
ST4.2	Where B is the spring nut throat depth	5.6	Clause
ST6.3		7.9	3

MATERIAL: Cold rolled steel to ISO 6932 or ISO 683/18.

Figure 1. Test panel

