



Westfield Fasteners Product Specification:

ASME B18.2.2 - UNC Full Hex Nuts

This product guide contains the specifications for UNC Full Hex Nuts, a range of standard parts available from Westfield Fasteners. The basis of this specification is the ASME standard ASME B18.2.2.

Product Description

Hexagon full nut to ASME B18.2.2. Typically fitted with a spanner or ratchet with socket. Full size hexagon nuts are the most popular design, whatever the thread type, and are the standard nut employed on parts and assemblies throughout the world.

Scope of the ASME Standard.

Unlike ISO standards, each ASME standard generally covers a range or family of product types. ASME B18.2.2 covers several nut types, including specific dimensions and tolerances for these full hexagon nuts, with thread diameters from 1/4 inch up to and including 4 inches. Table 1 below defines the overall dimensions and tolerances for UNC hex full nuts, together with the threads per inch for each size.

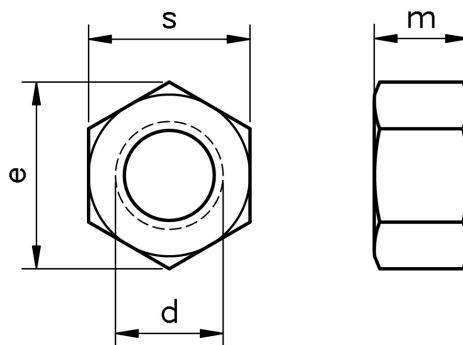


Figure 1: UNC Full Hex Nut

Table 1: UNC Hex Nut Dimensions & Tolerances according to ASME B18.2.2

| Nominal Size | Threads Per Inch (TPI) | Basic Major Diameter of Thread, d | Width Across Flats, s | | Width Across Corners, e | | Thickness, m | |
|--------------|------------------------|-----------------------------------|-----------------------|-------|-------------------------|-------|--------------|-------|
| | | | min | max | min | max | min | max |
| 1/4 | 20 | 0.2500 | 0.428 | 0.438 | 0.488 | 0.505 | 0.212 | 0.226 |
| 5/16 | 18 | 0.3125 | 0.489 | 0.500 | 0.557 | 0.511 | 0.258 | 0.273 |
| 3/8 | 16 | 0.3750 | 0.551 | 0.563 | 0.628 | 0.650 | 0.320 | 0.337 |
| 7/16 | 14 | 0.4375 | 0.675 | 0.688 | 0.768 | 0.794 | 0.365 | 0.385 |
| 1/2 | 13 | 0.5000 | 0.736 | 0.750 | 0.840 | 0.866 | 0.427 | 0.445 |
| 9/16 | 12 | 0.5625 | 0.861 | 0.875 | 0.982 | 1.010 | 0.473 | 0.496 |
| 5/8 | 11 | 0.6250 | 0.922 | 0.938 | 1.051 | 1.083 | 0.535 | 0.559 |
| 3/4 | 10 | 0.7500 | 1.088 | 1.125 | 1.240 | 1.299 | 0.617 | 0.665 |
| 7/8 | 9 | 0.8750 | 1.269 | 1.312 | 1.447 | 1.513 | 0.724 | 0.776 |
| 1 | 8 | 1.0000 | 1.450 | 1.500 | 1.653 | 1.732 | 0.831 | 0.887 |
| 1 1/8 | 7 | 1.1250 | 1.631 | 1.688 | 1.859 | 1.949 | 0.939 | 0.999 |
| 1 1/4 | 7 | 1.2500 | 1.812 | 1.875 | 2.066 | 2.165 | 1.030 | 1.094 |
| 1 3/8 | 6 | 1.3750 | 1.994 | 2.062 | 2.273 | 2.382 | 1.138 | 1.206 |
| 1 1/2 | 6 | 1.5000 | 2.175 | 2.250 | 2.480 | 2.598 | 1.245 | 1.317 |
| 1 3/4 | 5 | 1.7500 | 2.538 | 2.625 | 2.893 | 3.031 | 1.460 | 1.540 |
| 2 | 4 1/2 | 2.0000 | 2.900 | 3.000 | 3.306 | 3.464 | 1.675 | 1.763 |
| 2 1/4 | 4 1/2 | 2.2500 | 3.263 | 3.375 | 3.719 | 3.897 | 1.890 | 1.986 |
| 2 1/2 | 4 | 2.5000 | 3.625 | 3.750 | 4.133 | 4.330 | 2.105 | 2.209 |
| 2 3/4 | 4 | 2.7500 | 3.988 | 4.125 | 4.546 | 4.763 | 2.319 | 2.431 |
| 3 | 4 | 3.0000 | 4.350 | 4.500 | 4.959 | 5.196 | 2.534 | 2.654 |
| 3 1/4 | 4 | 3.2500 | 4.713 | 4.875 | 5.373 | 5.629 | 2.749 | 2.877 |
| 3 1/2 | 4 | 3.5000 | 5.075 | 5.250 | 5.786 | 6.062 | 2.964 | 3.100 |
| 3 3/4 | 4 | 3.7500 | 5.438 | 5.625 | 6.199 | 6.495 | 3.178 | 3.322 |
| 4 | 4 | 4.0000 | 5.800 | 6.000 | 6.612 | 6.928 | 3.393 | 3.545 |

Material and Strength Specifications

The relevant ASTM standards give an idea of the strength using Proof Load Stress. This is the maximum amount of force that a bolt or nut can withstand before deforming plastically (permanent deformation).

Plain and zinc plated carbon steel variants of these full hex nuts are typically produced to material specification ASTM A563-A. This means that the proof load stress is 90 ksi for plain nuts and 68 ksi for zinc plated variants.

Stainless steel items are typically produced to ASTM F594, with the proof load stress beginning at 70ksi, depending on condition.

For brass, the manufacturer can decide on the chemical and mechanical properties of the nuts.

For verification of details and for further information please refer to the ASME standard document for this item.
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