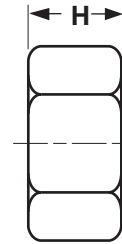
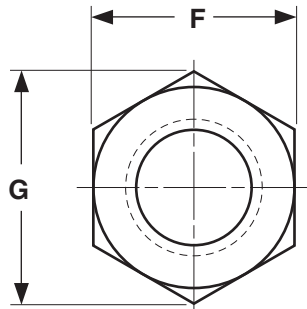


## HEAVY HEX

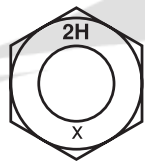
For Use With Structural Bolts



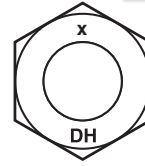
| HEAVY HEX NUTS FOR USE WITH STRUCTURAL BOLTS   |        |                    |       |       |                      |       |           |       |       |
|------------------------------------------------|--------|--------------------|-------|-------|----------------------|-------|-----------|-------|-------|
| ASME B 18.2.2* & 18.2.6                        |        |                    |       |       |                      |       |           |       |       |
| Nominal Size or Basic Major Diameter of Thread |        | F                  |       |       | G                    |       | H         |       |       |
|                                                |        | Width Across Flats |       |       | Width Across Corners |       | Thickness |       |       |
|                                                |        | Basic              | Max   | Min   | Max                  | Min   | Basic     | Max   | Min   |
| 1/4 *                                          | 0.2500 | 1/2                | 0.500 | 0.488 | 0.577                | 0.556 | 15/64     | 0.250 | 0.218 |
| 5/16 *                                         | 0.3125 | 9/16               | 0.562 | 0.546 | 0.650                | 0.622 | 19/64     | 0.314 | 0.280 |
| 3/8 *                                          | 0.3750 | 11/16              | 0.688 | 0.669 | 0.794                | 0.763 | 23/64     | 0.377 | 0.341 |
| 1/2                                            | 0.5000 | 7/8                | 0.875 | 0.850 | 1.010                | 0.969 | 31/64     | 0.504 | 0.464 |
| 5/8                                            | 0.6250 | 1-1/16             | 1.062 | 1.031 | 1.227                | 1.175 | 39/64     | 0.631 | 0.587 |
| 3/4                                            | 0.7500 | 1-1/4              | 1.250 | 1.212 | 1.443                | 1.382 | 47/64     | 0.758 | 0.710 |
| 7/8                                            | 0.8750 | 1-7/16             | 1.438 | 1.394 | 1.660                | 1.589 | 55/64     | 0.885 | 0.833 |
| 1                                              | 1.0000 | 1-5/8              | 1.625 | 1.575 | 1.876                | 1.796 | 63/64     | 1.012 | 0.956 |



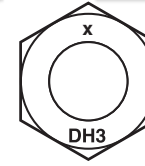
Grade-C



A194 Grade-2



A 563 Grade-DH



A 563 Grade-DH3

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Description</b>             | A six-sided internally threaded fastener which is both thicker and wider across the flats than a same-sized finished hex nut. Nuts in sizes 7/16 & smaller shall be double chamfered. Larger sizes are either double chamfered or chamfered on top with a washer faced bearing surface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Applications/Advantages</b> | This is the strongest of all comparably-graded nuts due to its greater length of thread engagement and greater resistance to dilation (widening or stretching). <b>Grade-C</b> nuts are to be used with A-325 structural bolts. <b>Grade-2H</b> nuts are to be used with bolts in high-pressure and high-temperature service. <b>Grade-DH</b> nuts are recommended for use with A-490, Type-1 structural bolts and <b>Grade-DH3</b> nuts for use with A-490, Type-3 structural bolts.                                                                                                                                                                                                                                                                                                                                                            |
| <b>Material</b>                | Nuts shall be made from a steel which conforms to the following chemical composition requirements (heat analysis)--<br><b>Grade C-- Carbon:</b> 0.55% maximum; <b>Phosphorus:</b> 0.12% maximum; <b>Sulfur:</b> 0.023% maximum.<br><b>A 194 Grade-2H-- Carbon:</b> 0.40% min; <b>Manganese:</b> 1.00% max; <b>Phosphorus:</b> 0.04% max; <b>Sulfur:</b> 0.05% max; <b>Silicon:</b> 0.40% max.<br><b>A 563 Grade-DH-- Carbon:</b> 0.20-0.55%; <b>Manganese:</b> 0.60% minimum; <b>Phosphorus:</b> 0.04% maximum; <b>Sulfur:</b> 0.05% maximum.<br><b>Grade-DH3-- Carbon:</b> 0.20-0.53%; <b>Manganese:</b> 0.40% minimum; <b>Phosphorus:</b> 0.046% maximum; <b>Sulfur:</b> 0.050% maximum; <b>Copper:</b> 0.20% minimum; <b>Chromium:</b> 0.45% minimum; (Either <b>Nickel:</b> 0.20% minimum or <b>Molybdenum:</b> 0.15% minimum, may be used). |
| <b>Heat Treatment</b>          | <b>Grade-2H:</b> Nuts are heat treated by quenching in a liquid medium from a temp above the transformation temp and tempering at a temp of at least 850°F.<br><b>Grades-C, DH &amp; DH3:</b> Nuts are heat treated by quenching in a liquid medium from a temp above the transformation temp and tempering at a temp of at least 800°F.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Core Hardness</b>           | <b>Grade-C:</b> Rockwell B78 - C38<br><b>A 194 Grade-2H, A 563 Grades DH &amp; DH3:</b> Rockwell C24 - C38                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Proof Load</b>              | <b>Grade-C:</b> 144,000 psi.<br><b>Grade-2H:</b> 150,000 psi.<br><b>Grades-DH &amp; DH3:</b> 175,000 psi.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Plating</b>                 | See Appendix-A for plating information.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |