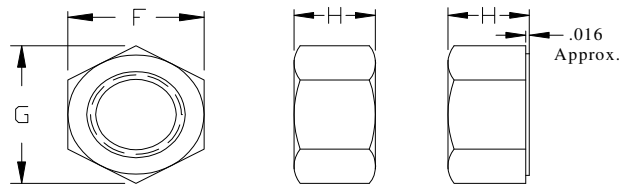


Heavy Hex Nuts

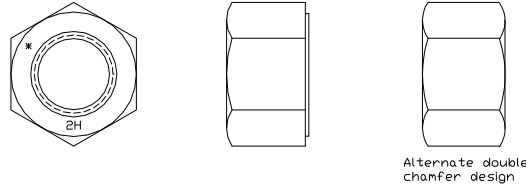


Dimensions for Heavy Hex Nuts (ASME/ANSI B18.2.2)

| Diameter | Width Across Flats F | | | Thickness H | | | Width Across Corners G | |
|----------|-------------------------|-------|-------|----------------|-------|-------|------------------------------|--------|
| | Nom | max | min | Nom | max | min | max | min |
| 1/4 | 1/2 | 0.500 | 0.488 | 15/64 | 0.250 | 0.218 | 0.577 | 0.556 |
| 5/16 | 9/16 | 0.562 | 0.546 | 19/64 | 0.314 | 0.280 | 0.650 | 0.622 |
| 3/8 | 11/16 | 0.688 | 0.669 | 23/64 | 0.377 | 0.341 | 0.794 | 0.762 |
| 7/16 | 3/4 | 0.750 | 0.728 | 27/64 | 0.441 | 0.403 | 0.866 | 0.768 |
| 1/2 | 7/8 | 0.875 | 0.850 | 31/64 | 0.504 | 0.464 | 1.010 | 0.969 |
| 9/16 | 15/16 | 0.938 | 0.909 | 35/64 | 0.568 | 0.526 | 1.083 | 1.037 |
| 5/8 | 1 1/16 | 1.062 | 1.031 | 39/64 | 0.631 | 0.587 | 1.227 | 1.175 |
| 3/4 | 1 1/4 | 1.250 | 1.213 | 47/64 | 0.758 | 0.710 | 1.443 | 1.382 |
| 7/8 | 1 7/16 | 1.438 | 1.394 | 55/64 | 0.885 | 0.833 | 1.660 | 1.589 |
| 1 | 1 5/8 | 1.625 | 1.575 | 35/64 | 0.575 | 0.519 | 1.876 | 1.796 |
| 1 1/8 | 1 13/16 | 1.812 | 1.756 | 1 7/64 | 1.139 | 1.079 | 2.093 | 2.002 |
| 1 1/4 | 2 | 2.000 | 1.938 | 1 7/32 | 1.251 | 1.187 | 2.309 | 2.209 |
| 1 3/8 | 2 3/16 | 2.188 | 2.119 | 1 11/32 | 1.378 | 1.310 | 2.526 | 2.416 |
| 1 1/2 | 2 3/8 | 2.375 | 2.300 | 1 15/32 | 1.505 | 1.433 | 2.742 | 2.622 |
| 1 5/8 | 2 9/16 | 2.562 | 2.481 | 1 19/32 | 1.632 | 1.556 | 2.959 | 2.828 |
| 1 3/4 | 2 3/4 | 2.750 | 2.663 | 1 23/32 | 1.759 | 1.679 | 3.175 | 3.035 |
| 1 7/8 | 2 15/16 | 2.938 | 2.844 | 1 27/32 | 1.886 | 1.802 | 3.392 | 3.242 |
| 2 | 3 1/8 | 3.125 | 3.025 | 1 31/32 | 2.013 | 1.925 | 3.608 | 3.449 |
| 2 1/4 | 3 1/2 | 3.500 | 3.388 | 2 13/64 | 2.251 | 2.155 | 4.041 | 3.862 |
| 2 1/2 | 3 7/8 | 3.875 | 3.750 | 2 29/64 | 2.505 | 2.401 | 4.474 | 4.275 |
| 2 3/4 | 4 1/4 | 4.250 | 4.113 | 2 45/64 | 2.759 | 2.647 | 4.907 | 4.688 |
| 3 | 4 5/8 | 4.625 | 4.475 | 2 61/64 | 3.013 | 2.893 | 5.340 | 5.102 |
| 3 1/4 | 5 | 5.000 | 4.838 | 3 3/16 | 3.252 | 3.124 | 5.774 | 5.515 |
| 3 1/2 | 5 3/8 | 5.375 | 5.200 | 3 7/16 | 3.506 | 3.370 | 6.207 | 5.928 |
| 3 3/4 | 5 3/4 | 5.750 | 5.563 | 3 11/16 | 3.760 | 3.616 | 6.640 | 6.341 |
| 4 | 6 1/8 | 6.125 | 5.925 | 3 15/16 | 4.014 | 3.862 | 7.073 | 6.755 |
| 4 1/4 | 6 1/2 | 6.500 | 6.283 | 4 3/16 | 4.268 | 4.152 | 7.506 | 6.755 |
| 4 1/2 | 6 7/8 | 6.875 | 6.650 | 4 7/16 | 4.522 | 4.400 | 7.939 | 7.581 |
| 5 | 7 5/8 | 7.625 | 7.375 | 4 15/16 | 5.030 | 4.896 | 8.805 | 8.408 |
| 5 1/2 | 8 3/8 | 8.375 | 8.100 | 5 7/16 | 5.538 | 5.392 | 9.671 | 9.234 |
| 6 | 9 1/8 | 9.125 | 8.825 | 5 15/16 | 6.046 | 5.888 | 10.537 | 10.060 |

Heavy Hex Nuts

ASTM A194 Grade 2H



Earnest Machine Products offers Heavy Hex Nuts in sizes 1/4" to 5 1/2" manufactured to the Grade 2H strength level per ASTM A194.

1.) Manufacture: These hex nuts are manufactured in accordance with the latest revision of the following industry standards:

- ASME B18.2.2 Dimensional Requirements
- ASTM A194 Material and Physical Properties
- ASME B1.1 Thread Requirements

2.) Threads: Threads are made to the requirements of ANSI B1.1 Unified Threads, 2B Fit. Thread acceptance based on ANSI B1.3, System 21

3.) Material and Physical Properties: These nuts are made from grade 2H material as specified by ASTM A194.

Proof Load: 175,000 psi min

Chemical Composition Requirements

| Carbon (C) | Manganese (Mn) | Phosphorus (P) | Sulfur (S) | Silicon (Si) |
|------------|----------------|----------------|------------|--------------|
| Min | Max | Max | Max | Max |
| 0.40 | 1.00 | 0.04 | 0.05 | 0.40 |

Hardness

| Nominal Nut Size | Rockwell Hardness |
|------------------|-------------------|
| 1/4 thru 1 1/2 | Rc 24 – 35 |
| 1 5/8 thru 5 1/2 | Rb 95 – Rc 35 |

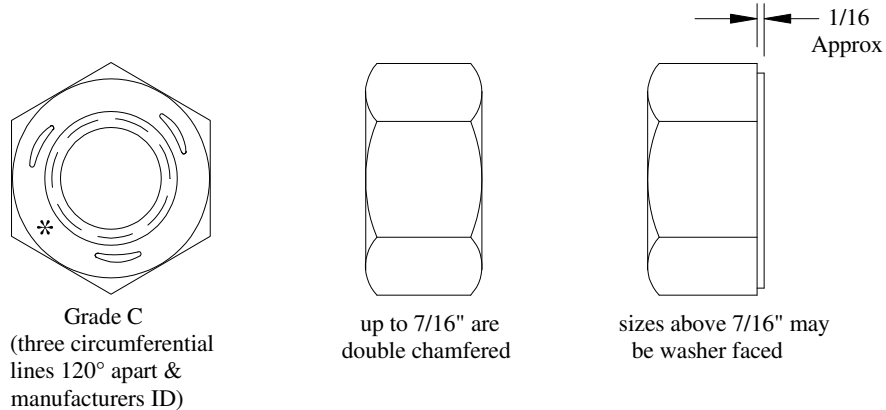
4.) Dimensions: heavy hex nuts are made to the dimensions specified in ASME B18.2.2

| Size | Width Across Flats | Thickness | | Size | Width Across Flats | Thickness |
|-------|--------------------|-----------|--|-------|--------------------|-----------|
| 1/4 | 1/2 | 15/64 | | 1 3/4 | 2 3/4 | 1 23/32 |
| 5/16 | 9/16 | 19/64 | | 1 7/8 | 2 15/16 | 1 27/32 |
| 3/8 | 11/16 | 23/64 | | 2 | 3 1/8 | 1 31/32 |
| 7/16 | 3/4 | 27/64 | | 2 1/4 | 3 1/2 | 2 13/64 |
| 1/2 | 7/8 | 31/64 | | 2 1/2 | 3 7/8 | 2 29/64 |
| 9/16 | 15/16 | 35/64 | | 2 3/4 | 4 1/4 | 2 45/64 |
| 5/8 | 1 1/16 | 39/64 | | 3 | 4 5/8 | 2 61/64 |
| 3/4 | 1 1/4 | 47/64 | | 3 1/4 | 5 | 3 3/16 |
| 7/8 | 1 7/16 | 55/64 | | 3 1/2 | 5 3/8 | 3 7/16 |
| 1 | 1 5/8 | 63/64 | | 3 3/4 | 5 3/4 | 3 11/16 |
| 1 1/8 | 1 13/16 | 1 7/64 | | 4 | 6 1/8 | 3 15/16 |
| 1 1/4 | 2 | 1 7/32 | | 4 1/4 | 6 1/2 | 4 3/16 |
| 1 3/8 | 2 3/16 | 1 11/32 | | 4 1/2 | 6 7/8 | 4 7/16 |
| 1 1/2 | 2 3/8 | 1 15/32 | | 5 | 7 5/8 | 4 31/32 |
| 1 5/8 | 2 9/16 | 1 19/32 | | 5 1/2 | 8 3/8 | 5 7/16 |

Heavy Hex Nuts

ASTM A593 Grade C

Earnest Machine Products line of Grade C heavy hex nuts are made to the dimensional requirements of ANSI B18.2.2 for Heavy Hex Nuts and the material and strength requirements of ASTM A563.



Grade C

The physical and material properties are per the requirements of ASTM A563 for Grade C strength level.

Material: Steel with the following minimum chemical composition requirements (per Heat of steel used)

| Carbon | Manganese | Phosphorus | Sulfur |
|---------|-----------------|------------|---------|
| .55 max | (not specified) | .12 max | .15 max |

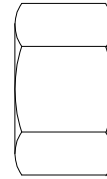
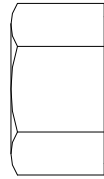
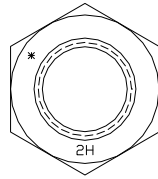
Proof Load Strength:

| Sizes | Proof Load |
|-----------------------------------|-------------|
| 1/4 to 4": Coarse (UNC) Thread | 144,000 psi |

Hardness: Rb 78 to Rc 38

Heavy Hex Structural Nuts

Hot Dip Galvanized and Waxed



Alternate double chamfer design

Earnest Machine Products offers heavy hex nuts that are hot dip galvanized (zinc) coated and lubricated with a wax. These nuts are available in Grade 2H (per ASTM A194) in sizes from 1/2" to 2 1/2" and Grade DH (per ASTM A563) in sizes 1/2" to 1 1/2".

The hot dip galvanized is applied to the requirements of ASTM A153 (ASTM F2329) and are tapped oversized to the thread requirements listed in ASTM A563. Tapping the threads oversized ensures proper assembly with hot dip galvanized structural bolts.

The wax is designed to provide torque tension performance for lubricated assemblies as defined by AISC guidelines. The wax is applied on top of the hot dip galvanizing and has a blue dye added to clearly identify them as "lubricated" nuts (per requirements of ASTM A563).

| Material and Physical Properties: | Proof Load: | Grade 2H | Grade DH |
|-----------------------------------|---|---------------------------------------|---------------------------------------|
| | | (tapped oversized) 150,000 psi min | (tapped oversized) 150,000 psi min |
| | Material: | Medium Carbon Steel | Medium Carbon Steel |
| | Hardness: 1/2" to 1-1/2" 1-5/8" to 4" | Rc 24 to Rc 35 Rb 95 to Rc 35 | Rc 24 to Rc 38 Rc 24 to Rc 38 |

Dimensions: Heavy hex structural nuts per ASME B18.2.6 are made to the dimensions specified in ASME B18.2.2

| Size | Width Across Flats | Thickness | Overtapping Allowance |
|---------------|--------------------|-----------|-----------------------|
| 1/2 – 13 | 7/8 | 31/64 | .018 |
| 5/8 – 11 | 1-1/16 | 39/64 | .020 |
| 3/4 – 10 | 1-1/4 | 47/64 | .020 |
| 7/8 – 9 | 1-7/16 | 55/64 | .022 |
| 1 – 8 | 1-5/8 | 63/64 | .024 |
| 1 1/8 – 7 | 1-13/16 | 1-7/64 | .024 |
| 1 1/4 – 7 | 2 | 1-7/32 | .024 |
| 1 3/8 – 6 | 2-3/16 | 1-11/32 | .027 |
| 1 1/2 – 6 | 2-3/8 | 1-15/32 | .027 |
| 1 3/4 – 5 | 2-3/4 | 1-23/32 | .050 |
| 2 – 4 1/2 | 3-1/8 | 1-31/32 | .050 |
| 2 1/4 – 4 1/2 | 3-1/2 | 2-13/64 | .050 |
| 2 1/2 - 4 | 3-7/8 | 2-29/64 | .050 |

Note that hot dip galvanized nuts can be sold with and without a lubricant applied to them. Earnest line of hot dip galvanized nuts are lubricated with a wax that has a blue dye added to clearly mark the nuts as lubricated. The torque that is used to assemble these nuts should be based on the designers or applications requirements. The torques listed below are based on testing requirements.

| Size | Torque when used with A325 Bolts | Torque when used with A490 Bolts |
|-------|----------------------------------|----------------------------------|
| 1/2 | 60 ft-lb | 70 ft-lb |
| 5/8 | 120 ft-lb | 150 ft-lb |
| 3/4 | 200 ft-lb | 250 ft-lb |
| 7/8 | 350 ft-lb | 450 ft-lb |
| 1 | 500 ft-lb | 650 ft-lb |
| 1 1/8 | 650 ft-lb | 900 ft-lb |
| 1 1/4 | 900 ft-lb | 1300 ft-lb |
| 1 3/8 | 1150 ft-lb | 1700 ft-lb |
| 1 1/2 | 1550 ft-lb | 2200 ft-lb |