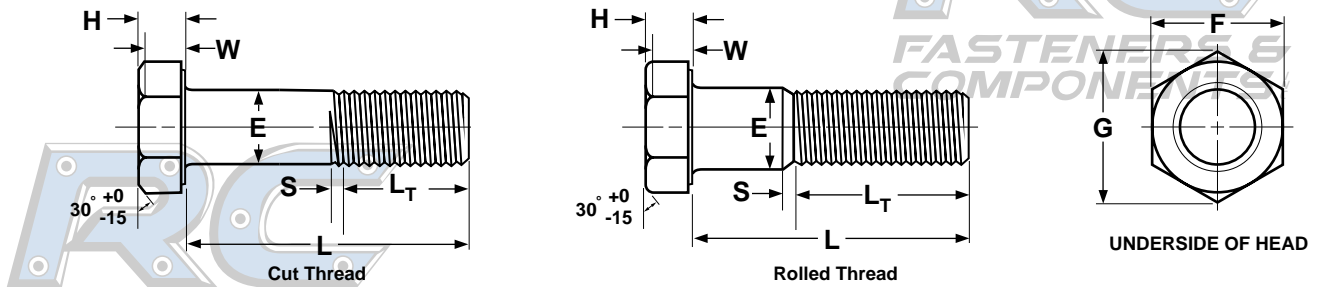


# Heavy Hex Cap Screws

# Bolts & Cap Screws



## HEAVY HEX CAP SCREWS ASME B18.2.1-1996

| Nominal Size or Basic Product Diameter | E             |        | F                  |       | G                    |       | H           |       | W                | L <sub>T</sub>                  |       | S                        |       |
|--|---------------|--------|--------------------|-------|----------------------|-------|-------------|-------|------------------|---------------------------------|-------|--------------------------|-------|
|  | Body Diameter |        | Width Across Flats |       | Width Across Corners |       | Head Height |       | Wrenching Height | Thread Length for Screw Lengths |       | Transition Thread Length |       |
|  | Max           | Min    | Max                | Min   | Max                  | Min   | Max         | Min   |                  | Min                             | Max   |                          |       |
| 1/2                                    | 0.5000        | 0.5000 | 0.482              | 0.875 | 0.850                | 1.010 | 0.969       | 0.323 | 0.302            | 0.215                           | 1.250 | 1.500                    | 0.385 |
| 5/8                                    | 0.6250        | 0.6250 | 0.605              | 1.062 | 1.031                | 1.227 | 1.175       | 0.403 | 0.378            | 0.269                           | 1.500 | 1.750                    | 0.455 |
| 3/4                                    | 0.7500        | 0.7500 | 0.729              | 1.250 | 1.212                | 1.443 | 1.383       | 0.483 | 0.455            | 0.324                           | 1.750 | 2.000                    | 0.500 |
| 7/8                                    | 0.8750        | 0.8750 | 0.852              | 1.438 | 1.394                | 1.660 | 1.589       | 0.563 | 0.531            | 0.378                           | 2.000 | 2.250                    | 0.556 |
| 1                                      | 1.0000        | 1.0000 | 0.976              | 1.625 | 1.575                | 1.876 | 1.796       | 0.627 | 0.591            | 0.416                           | 2.250 | 2.500                    | 0.625 |
| 1 1/8                                  | 1.1250        | 1.1250 | 1.098              | 1.812 | 1.756                | 2.093 | 2.002       | 0.718 | 0.658            | 0.461                           | 2.500 | 2.750                    | 0.714 |
| 1 1/4                                  | 1.2500        | 1.2500 | 1.223              | 2.000 | 1.938                | 2.309 | 2.209       | 0.813 | 0.749            | 0.530                           | 2.750 | 3.000                    | 0.714 |
| 1 3/8                                  | 1.3750        | 1.3750 | 1.345              | 2.188 | 2.119                | 2.526 | 2.416       | 0.878 | 0.810            | 0.569                           | 3.000 | 3.250                    | 0.833 |
| 1 1/2                                  | 1.5000        | 1.5000 | 1.470              | 2.375 | 2.300                | 2.742 | 2.622       | 0.974 | 0.902            | 0.640                           | 3.250 | 3.500                    | 0.833 |
| 1 3/4                                  | 1.7500        | 1.7500 | 1.716              | 2.750 | 2.662                | 3.175 | 3.035       | 1.134 | 1.054            | 0.748                           | 3.750 | 4.000                    | 1.000 |
| 2                                      | 2.0000        | 2.0000 | 1.964              | 3.125 | 3.025                | 3.608 | 3.449       | 1.263 | 1.175            | 0.825                           | 4.250 | 4.500                    | 1.111 |
| 2 1/4                                  | 2.2500        | 2.2500 | 2.214              | 3.500 | 3.388                | 4.041 | 3.862       | 1.423 | 1.327            | 0.933                           | ...   | 5.000                    | 1.111 |
| 2 1/2                                  | 2.5000        | 2.5000 | 2.461              | 3.875 | 3.750                | 4.474 | 4.275       | 1.583 | 1.479            | 1.042                           | ...   | 5.500                    | 1.250 |
| 2 3/4                                  | 2.7500        | 2.7500 | 2.711              | 4.250 | 4.112                | 4.907 | 4.688       | 1.744 | 1.632            | 1.151                           | ...   | 6.000                    | 1.250 |
| 3                                      | 3.0000        | 3.0000 | 2.961              | 4.625 | 4.475                | 5.340 | 5.102       | 1.935 | 1.815            | 1.290                           | ...   | 6.500                    | 1.250 |

| Tolerance on Length | Nominal Screw Size | Nominal Screw Length |       |                                |       |                                |       |                            |       |                   |       |
|---------------------|--------------------|----------------------|-------|--------------------------------|-------|--------------------------------|-------|----------------------------|-------|-------------------|-------|
|                     |                    | Up to 1 in., incl.   |       | Over 1 in. to 2 1/2 in., incl. |       | Over 2 1/2 in. to 4 in., incl. |       | Over 4 in. to 6 in., incl. |       | Longer than 6 in. |       |
|                     | 1/4 to 3/8         | +0.02                | -0.03 | +0.02                          | -0.04 | +0.04                          | -0.06 | +0.06                      | -0.10 | +0.10             | -0.18 |
|                     | 7/16 and 1/2       | +0.02                | -0.03 | +0.04                          | -0.06 | +0.06                          | -0.08 | +0.08                      | -0.10 | +0.12             | -0.18 |
|                     | 9/16 to 3/4        | +0.02                | -0.03 | +0.06                          | -0.08 | +0.08                          | -0.10 | +0.10                      | -0.10 | +0.14             | -0.18 |
|                     | 7/8 and 1          | ....                 | ....  | +0.08                          | -0.10 | +0.10                          | -0.14 | +0.12                      | -0.16 | +0.16             | -0.20 |
|                     | 1 1/8 to 1 1/2     | ....                 | ....  | +0.12                          | -0.12 | +0.16                          | -0.16 | +0.18                      | -0.18 | +0.22             | -0.22 |

|                          |  |
|--------------------------|--|
| Description              | A low carbon steel hex cap screw with a wider head than that of a standard hex cap screw.  |
| Applications/ Advantages | Offers greater wrenching area than standard hex cap screws and more consistent body diameter dimensions than heavy hex bolts (the following specifications pertain to Grade-2 heavy hex cap screws; performance requirements for grades 5 & 8 are on page 63). |
| Material                 | Grade-2 heavy hex cap screws shall be made from a carbon steel which conforms to the following chemical composition requirements-- Carbon: 0.55% maximum; Phosphorus: 0.048% maximum; Sulfur: 0.058% maximum   |
| Hardness*                | Rockwell B80 - 100   |
| Tensile Strength         | 74,000 psi. minimum  |
| Proof Load               | 55,000 psi.  |
| Elongation in 2 in.      | 18% minimum  |
| Plating                  | See Appendix-A for plating information.  |