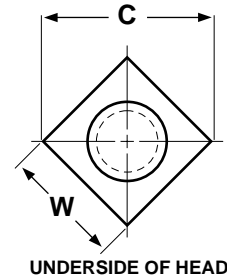
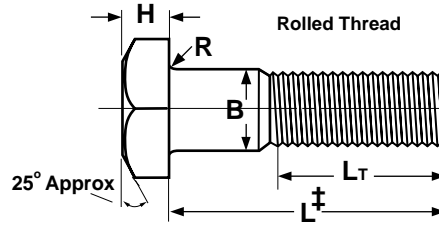
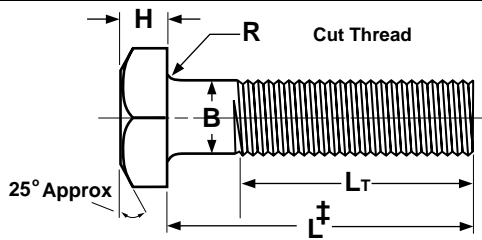


# Square Bolts

# Bolts & Cap Screws



| SQUARE BOLTS                                 |        |               |       |                       |       |                         |       |             |       |                  |      |                                   | ANSI/ASME<br>B18.2.1 |  |
|--|--------|---------------|-------|-----------------------|-------|-------------------------|-------|-------------|-------|------------------|------|-----------------------------------|----------------------|--|
| Nominal Size or<br>Basic Product<br>Diameter |        | B             |       | W                     |       | C                       |       | H           |       | R                |      | L <sub>T</sub>                    |                      |  |
|  |        | Body Diameter |       | Width Across<br>Flats |       | Width Across<br>Corners |       | Head Height |       | Radius of Fillet |      | Thread Length for<br>Bolt Lengths |                      |  |
|  |        | Max           | Min   | Max                   | Min   | Max                     | Min   | Max         | Min   | Max              | Min  | 6 in. &<br>Shorter                | over 6<br>in.        |  |
| 1/4  | 0.2500 | 0.260         | 0.237 | 0.375                 | 0.362 | 0.530                   | 0.498 | 0.188       | 0.156 | 0.03             | 0.01 | 0.750                             | 1.000                |  |
| 5/16   | 0.3125 | 0.324         | 0.298 | 0.500                 | 0.484 | 0.707                   | 0.665 | 0.220       | 0.186 | 0.03             | 0.01 | 0.875                             | 1.125                |  |
| 3/8  | 0.3750 | 0.388         | 0.360 | 0.562                 | 0.544 | 0.795                   | 0.747 | 0.268       | 0.232 | 0.03             | 0.01 | 1.000                             | 1.250                |  |
| 7/16   | 0.4375 | 0.452         | 0.421 | 0.625                 | 0.603 | 0.884                   | 0.828 | 0.316       | 0.278 | 0.03             | 0.01 | 1.125                             | 1.375                |  |
| 1/2  | 0.5000 | 0.515         | 0.482 | 0.750                 | 0.725 | 1.061                   | 0.995 | 0.348       | 0.308 | 0.03             | 0.01 | 1.250                             | 1.500                |  |
| 5/8  | 0.6250 | 0.642         | 0.605 | 0.938                 | 0.906 | 1.326                   | 1.244 | 0.444       | 0.400 | 0.06             | 0.02 | 1.500                             | 1.750                |  |
| 3/4  | 0.7500 | 0.768         | 0.729 | 1.125                 | 1.088 | 1.591                   | 1.494 | 0.524       | 0.476 | 0.06             | 0.02 | 1.750                             | 2.000                |  |
| 7/8  | 0.8750 | 0.895         | 0.852 | 1.312                 | 1.269 | 1.856                   | 1.742 | 0.620       | 0.568 | 0.06             | 0.02 | 2.000                             | 2.250                |  |
| 1  | 1.0000 | 1.022         | 0.976 | 1.500                 | 1.450 | 2.121                   | 1.991 | 0.684       | 0.628 | 0.09             | 0.03 | 2.250                             | 2.500                |  |
| 1 1/8  | 1.1250 | 1.149         | 1.098 | 1.688                 | 1.631 | 2.386                   | 2.239 | 0.780       | 0.720 | 0.09             | 0.03 | 2.500                             | 2.750                |  |
| 1 1/4  | 1.2500 | 1.277         | 1.223 | 1.875                 | 1.812 | 2.652                   | 2.489 | 0.876       | 0.812 | 0.09             | 0.03 | 2.750                             | 3.000                |  |
| 1 3/8  | 1.3750 | 1.404         | 1.345 | 2.062                 | 1.994 | 2.917                   | 2.738 | 0.940       | 0.872 | 0.09             | 0.03 | 3.000                             | 3.250                |  |
| 1 1/2  | 1.5000 | 1.531         | 1.470 | 2.250                 | 2.175 | 3.182                   | 2.986 | 1.036       | 0.964 | 0.09             | 0.03 | 3.250                             | 3.500                |  |

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

†Length of a square bolt is measured from the underhead bearing surface to the extreme end of the bolt.

|                                     |   |
|-------------------------------------|---|
| <b>Description</b>                  | A low or medium carbon steel, externally threaded mechanical device 1/4" diameter or larger, with a trimmed square shaped external wrenching head.                              |
| <b>Applications/<br/>Advantages</b> | Offers greater bearing surface for wrenching than hex head bolts.   |
| <b>Material</b>                     | Bolts shall be made from a carbon steel which conforms to the following chemical composition requirements--<br><i>Phosphorus</i> : 0.06% maximum; <i>Sulfur</i> : 0.15% maximum |
| <b>Hardness</b>                     | <b>Bolts of a length less than 3 times diameter:</b> Rockwell B69-100<br><b>Bolts of a length 3 times diameter and longer:</b> Rockwell B100 maximum                            |
| <b>Tensile Strength</b>             | 60,000 psi. minimum   |
| <b>Elongation in 2 in.</b>          | 18% minimum   |
| <b>Plating</b>                      | See Appendix-A for plating information.   |