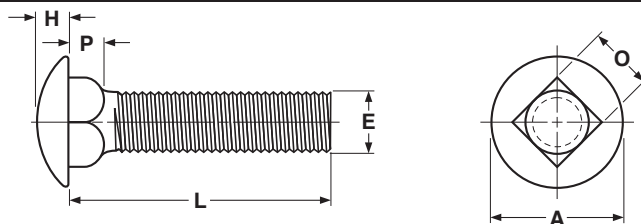


# Cap Screws & Bolts

## Carriage Bolts Round head, Square Neck

Low Carbon &  
Hot-Dip Galvanized



| CARRIAGE BOLTS - ROUND HEAD, SQUARE NECK |        |               |       |               |       |             |       |              |       |              | ASME B18.5-1990 |
|------------------------------------------|--------|---------------|-------|---------------|-------|-------------|-------|--------------|-------|--------------|-----------------|
| Basic Bolt Diameter                      |        | E             |       | A             |       | H           |       | O            |       | P            |                 |
|                                          |        | Body Diameter |       | Head Diameter |       | Head Height |       | Square Width |       | Square Depth |                 |
|                                          |        | Max           | Min   | Max           | Min   | Max         | Min   | Max          | Min   | Max          | Min             |
| •6                                       | 0.1380 | 0.122         | 0.108 | 0.313         | 0.278 | 0.086       | 0.071 | 0.160        | 0.135 | 0.094        | 0.062           |
| •8                                       | 0.1640 | 0.173         | 0.157 | 0.328         | 0.298 | 0.102       | 0.083 | 0.169        | 0.155 | 0.108        | 0.078           |
| 10                                       | 0.1900 | 0.199         | 0.182 | 0.469         | 0.436 | 0.114       | 0.094 | 0.199        | 0.185 | 0.125        | 0.094           |
| •12                                      | 0.2160 | 0.225         | 0.206 | 0.500         | 0.468 | 0.149       | 0.125 | 0.215        | 0.197 | 0.135        | 0.105           |
| 1/4                                      | 0.2500 | 0.260         | 0.237 | 0.594         | 0.563 | 0.145       | 0.125 | 0.260        | 0.245 | 0.156        | 0.125           |
| 5/16                                     | 0.3125 | 0.324         | 0.298 | 0.719         | 0.688 | 0.176       | 0.156 | 0.324        | 0.307 | 0.187        | 0.156           |
| 3/8                                      | 0.3750 | 0.388         | 0.360 | 0.844         | 0.782 | 0.208       | 0.188 | 0.388        | 0.368 | 0.219        | 0.188           |
| 7/16                                     | 0.4375 | 0.452         | 0.421 | 0.969         | 0.907 | 0.239       | 0.219 | 0.452        | 0.431 | 0.250        | 0.219           |
| 1/2                                      | 0.5000 | 0.515         | 0.483 | 1.094         | 1.032 | 0.270       | 0.250 | 0.515        | 0.492 | 0.281        | 0.250           |
| 5/8                                      | 0.6250 | 0.642         | 0.605 | 1.344         | 1.219 | 0.344       | 0.313 | 0.642        | 0.616 | 0.344        | 0.313           |
| 3/4                                      | 0.7500 | 0.768         | 0.729 | 1.594         | 1.469 | 0.406       | 0.375 | 0.768        | 0.741 | 0.406        | 0.375           |

| Tolerance on Length | Nominal Bolt Size | Nominal Bolt 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. | Over 6 in.   |
|                     | No. 6 thru 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 - 0.05                   | +0.06 - 0.08                   | +0.08 - 0.10               | +0.12 - 0.18 |
|                     | 9/16 thru 3/4     | +0.02 - 0.03        | +0.06 - 0.08                   | +0.08 - 0.10                   | +0.10 - 0.14               | +0.14 - 0.18 |

†Length of a cap screw is measured from the underhead bearing surface to the extreme end of the screw.

ASME B18.5-1990 does not specify dimensions for the #6, #8 or #12 diameters. Data listed for these sizes is independent of the ASME specification.

## LOW CARBON & HOT-DIP GALVANIZED CARRAIGE BOLT

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X

| Description             | <p><b>Low Carbon Steel Carriage:</b> Round head bolt with a square neck under the head, and a unified thread pitch. Made from low or medium carbon steel.</p> <p><b>Hot-Dip Galvanized Steel Carriage:</b> Carriage bolt made from low or medium carbon steel with a galvanic zinc finish applied.</p>                  |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Applications/Advantages | <p><b>Low Carbon Steel Carriage:</b> The square neck is designed to keep the bolt from turning as a nut is tightened.</p> <p><b>Hot-Dip Galvanized Steel Carriage:</b> Same design advantages as a low carbon carriage bolt but with a thicker protective coating for outdoor use. Often used in outdoor furniture.</p> |
| Material                | <b>Low Carbon Steel &amp; Hot-Dip Galvanized Steel Carriage:</b> AISI 1006 - 1050 or equivalent steel.                                                                                                                                                                                                                  |
| Core Hardness           | <b>Low Carbon Steel &amp; Hot-Dip Galvanized Steel Carriage:</b> Rockwell B70 - B100                                                                                                                                                                                                                                    |
| Proof Load              | <b>Low Carbon Steel Carriage:</b> 33,000 psi.                                                                                                                                                                                                                                                                           |
| Yield Strength*         | <b>Low Carbon Steel Carriage:</b> 36,000 psi. minimum                                                                                                                                                                                                                                                                   |
| Tensile Strength        | <b>Low Carbon Steel Carriage:</b> 60,000 psi. minimum                                                                                                                                                                                                                                                                   |
| Elongation*             | <b>Low Carbon Steel Carriage:</b> 18% minimum                                                                                                                                                                                                                                                                           |
| Reduction of Area*      | <b>Low Carbon Steel Carriage:</b> 35% minimum (all sizes)                                                                                                                                                                                                                                                               |
| Minimum Thread Length   | The minimum length of thread shall be equal to twice the basic bolt diameter plus 0.25 in. for bolts 6 in. or shorter, and twice the diameter plus 0.50 in. for bolts longer than 6 in..                                                                                                                                |
| Plating                 | See Appendix-A for information on the plating of steel carriage bolts.                                                                                                                                                                                                                                                  |

\* These properties are tested only on machined specimens when the testing machine cannot provide for full testing of the parts.

\*\*Product standards require the manufacturer's head marking to appear on the top of all bolts 1/4" diameter and larger. "X" represents one location such a marking may appear.