<table>
<thead>
<tr>
<th>Nominal Screw Size</th>
<th>Tolerance on Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 1 in., incl.</td>
<td>-0.08</td>
</tr>
<tr>
<td>Over 1 in. to 2-1/2 in., incl.</td>
<td>-0.04</td>
</tr>
<tr>
<td>Over 2-1/2 in. to 4 in., incl.</td>
<td>-0.06</td>
</tr>
<tr>
<td>Over 4 in. to 6 in., incl.</td>
<td>-0.10</td>
</tr>
<tr>
<td>Longer than 6 in.</td>
<td>-0.16</td>
</tr>
</tbody>
</table>

† Length of a cap screw is measured from the underhead bearing surface to the extreme end of the screw.
### Description
A low or medium carbon steel, externally threaded mechanical device 1/4" diameter or larger, with a trimmed hex head and a washer face on the bearing surface.

### Applications/Advantages
Economical for use in non-critical applications where the fastener is not subject to extreme temperatures or stress beyond the limits listed herein.

### Material
AISI 1006 - 1050 or equivalent steel.

### Hardness
- **1/4 through 3/4 in. diameter, 6 in. and shorter in length:** Rockwell B80 - B100.
  - 1/4 through 3/4 in. diameter, over 6 in. in length: Rockwell B70 - B100.
  - 7/8 through 1-1/2 in. diameter, all lengths: Rockwell B70 - B100.

### Proof Load
- **1/4 through 3/4 in. diameter, 6 in. and shorter in length:** 55,000 psi.
  - 1/4 through 3/4 in. diameter, over 6 in. in length: 33,000 psi.
  - 7/8 through 1-1/2 in. diameter, all lengths: 33,000 psi.

### Yield Strength*
- **1/4 through 3/4 in. diameter, 6 in. and shorter in length:** 57,000 psi. minimum.
  - 1/4 through 3/4 in. diameter, over 6 in. in length: 36,000 psi. minimum.
  - 7/8 through 1-1/2 in. diameter, all lengths: 36,000 psi. minimum.

### Tensile Strength
- **1/4 through 3/4 in. diameter, 6 in. and shorter in length:** 74,000 psi. minimum.
  - 1/4 through 3/4 in. diameter, over 6 in. in length: 60,000 psi. minimum.
  - 7/8 through 1-1/2 in. diameter, all lengths: 60,000 psi. minimum.

### Elongation*
- 18% minimum (all diameters)

### Reduction of Area*
- 35% minimum (all sizes)

### Plating
See Appendix-A for plating information.

### Description
18-8 and 316 stainless steel cap screws are both made from austenitic alloys as described below.

### Applications/Advantages
**18-8:** Used in products that require general atmospheric corrosion resistance, such as chemical and food-processing equipment. Some chemical environments may require special corrosion resistant materials and procedures.

**316:** The molybdenum content gives this type of stainless steel greater corrosion resistance than 18-8 as well as superior strength at high temperatures.

### Material
**18-8:** A cap screw made from one of the following austenitic alloys: 303, 303Se, 304, XM7, all of which are characterized as having a chromium content of 17-19% and nickel content of 8-10%.

**316:** A cap screw made from 316 stainless steel, an austenitic alloy which differs from 18-8 by its molybdenum content (2-3%) and a higher nickel content (10-14%).

### Heat Treatment
The austenitic alloys develop their strength through work hardening during the fastener manufacturing process, as seen from the hardness properties below. The only heat treatment normally available on austenitic stainless alloys is annealing, which is done at approximately 1900°F to a dead soft condition and is not normally thermally reversible.

### Hardness
- **1/4 through 5/8 in. diameter:** Rockwell B95 - C32
  - 3/4 through 1 in. diameter: Rockwell B80 - C32

### Yield Strength*
- **1/4 through 5/8 in. diameter, 2.25D and longer:** 65,000 psi. minimum
  - **3/4" (2.25D & longer) & 7/8 through 1 in. diameter (3D & longer):** 45,000 psi. minimum

### Tensile Strength
- **1/4 through 5/8 in. diameter, 2.25D and longer:** 100,000 - 150,000 psi.
  - **3/4" (2.25D & longer) & 7/8 through 1 in. diameter (3D & longer):** 85,000 - 140,000 psi.

### Elongation in 4D*
- **1/4 through 5/8 in. diameter:** 20% minimum
  - **3/4 through 1 in. diameter:** 25% minimum.