Earnest Machine Products line of NE series (sizes 1/4" and larger) and NM series (sizes #2 to #12) nylon insert lock nuts are made to the dimensional requirements of the Industrial Standards Institutes specification IFI 100/107 for top insert style with light series hex. The NE series is the most common style of lock nut used in industry.

Earnest offers NE series nylon insert lock nut in several strength levels. Typically inch (or imperial) sizes of lock nuts are supplied to the strength levels specified by the IFI 100/107 of grades of A, B or C instead of the more common nut grade designations per the Society of Automotive Engineers standard SAE J995 for grades 2, 5 and 8.

Since the Grade 2, 5 and 8 designations are automotive designations, and automotive represents a high percentage of the fastener market, many nylon insert lock nut manufacturers prefer to refer to their nuts using the SAE grade designations than to the IFI grade designations.

<table>
<thead>
<tr>
<th>IFI Grade</th>
<th>for Sizes</th>
<th>Proof Load Strength</th>
<th>SAE Grade</th>
<th>for Sizes</th>
<th>Proof Load Strength</th>
<th>Maximum Grade of Cap Screw to be used with</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade A</td>
<td>#2 - 1 1/2, NC &amp; NF</td>
<td>90,000 psi</td>
<td>Grade 2</td>
<td>1/4 - 1 1/2</td>
<td>90,000 psi</td>
<td>Grade 2</td>
</tr>
<tr>
<td>Grade B</td>
<td>#2 - 1, NC &amp; NF</td>
<td>120,000 psi</td>
<td>Grade 5</td>
<td>1/4 - 1 NC</td>
<td>120,000 psi</td>
<td>Grade 5</td>
</tr>
<tr>
<td></td>
<td>&gt;1 - 1 1/2, NC &amp; NF</td>
<td>105,000 psi</td>
<td></td>
<td>1/4 - 1 1/2 NC</td>
<td>120,000 psi</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&gt;1 - 1 1/2 NF</td>
<td>109,000 psi</td>
<td></td>
</tr>
<tr>
<td>Grade C</td>
<td>#4 - 1 1/2, NC &amp; NF</td>
<td>150,000 psi</td>
<td>Grade 8</td>
<td>1/4 - 1 1/2, NC &amp; NF</td>
<td>150,000 psi</td>
<td>Grade 8</td>
</tr>
</tbody>
</table>

The performance requirement of Earnest’s nylon insert lock nuts are per the requirements of IFI 100/107 (see page 3 for requirements).

Earnest nylon insert lock nuts use a ring of Nylon 66 as the locking element. The physical characteristics of Nylon 66 make it an excellent choice as a self-locking material. The combination of its tensile strength, elastic recovery, chemical resistance, temperature resistance and impact resistance enables nylon insert lock nuts to resist vibrations and impact forces while maintaining the applied preload on the fastener.

When the mating bolt is inserted into the nylon insert, the threads compress the nylon (they do not cut into it). The elastic properties of the nylon then cause the nylon to flow into the threads creating a locking action a full 360° around the thread. This full engagement of the threads by the nylon material provides a dampening effect when subjected to vibration and impact loading.

Physical Properties of Nylon 66:

- Resistance to Chemical: Organic Acids, Solvents, Caustics
- Operating Temperature: 250°F

Earnest offers various platings and coatings for its line of nylon insert lock nuts.

Standard stock finishes are:
- Zinc/Yellow – zinc base plating with a yellow chromate top coat per ASME B633 SC1 Type II
- Zinc/Clear – zinc base coat with a clear chromate top coat per ASME B633 SC1 Type III

Both of these platings have a .0002” (or 5 micron) coating thickness and provide uniform torque tension performance along with corrosion resistance.
The recommended torques listed below are based on using the zinc plated locknuts on a bolt or stud of equal strength. Torques are listed in ft-lbs unless otherwise noted.

### Coarse Thread (UNC)

<table>
<thead>
<tr>
<th>Size</th>
<th>Thread Pitch</th>
<th>Grade A or 2</th>
<th>Grade B or 5</th>
<th>Grade C or 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>#2</td>
<td>56</td>
<td>3 in-lb</td>
<td>6 in-lb</td>
<td>7 in-lb</td>
</tr>
<tr>
<td>#3</td>
<td>48</td>
<td>4 in-lb</td>
<td>9 in-lb</td>
<td>11 in-lb</td>
</tr>
<tr>
<td>#4</td>
<td>40</td>
<td>6 in-lb</td>
<td>12 in-lb</td>
<td>15 in-lb</td>
</tr>
<tr>
<td>#5</td>
<td>40</td>
<td>9 in-lb</td>
<td>18 in-lb</td>
<td>22 in-lb</td>
</tr>
<tr>
<td>#6</td>
<td>32</td>
<td>11 in-lb</td>
<td>23 in-lb</td>
<td>28 in-lb</td>
</tr>
<tr>
<td>#8</td>
<td>32</td>
<td>21 in-lb</td>
<td>41 in-lb</td>
<td>52 in-lb</td>
</tr>
<tr>
<td>#10</td>
<td>24</td>
<td>30 in-lb</td>
<td>60 in-lb</td>
<td>75 in-lb</td>
</tr>
<tr>
<td>#12</td>
<td>24</td>
<td>47 in-lb</td>
<td>94 in-lb</td>
<td>117 in-lb</td>
</tr>
<tr>
<td>1/4</td>
<td>20</td>
<td>5</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>5/16</td>
<td>18</td>
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<td>21</td>
</tr>
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<td>16</td>
<td>27</td>
<td>37</td>
</tr>
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<td>7/16</td>
<td>14</td>
<td>27</td>
<td>43</td>
<td>57</td>
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<tr>
<td>1/2</td>
<td>13</td>
<td>41</td>
<td>61</td>
<td>88</td>
</tr>
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<td>9/16</td>
<td>12</td>
<td>58</td>
<td>87</td>
<td>125</td>
</tr>
<tr>
<td>5/8</td>
<td>11</td>
<td>79</td>
<td>121</td>
<td>175</td>
</tr>
<tr>
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<td>311</td>
</tr>
<tr>
<td>7/8</td>
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<td>148</td>
<td>349</td>
<td>492</td>
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<td>8</td>
<td>199</td>
<td>511</td>
<td>719</td>
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<td>640</td>
<td>1100</td>
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<td>515</td>
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<td>1877</td>
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### Fine Thread (UNF)

<table>
<thead>
<tr>
<th>Size</th>
<th>Thread Pitch</th>
<th>Grade A or 2</th>
<th>Grade B or 5</th>
<th>Grade C or 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>#2</td>
<td>60</td>
<td>3 in-lb</td>
<td>6 in-lb</td>
<td>7 in-lb</td>
</tr>
<tr>
<td>#3</td>
<td>56</td>
<td>5 in-lb</td>
<td>9 in-lb</td>
<td>12 in-lb</td>
</tr>
<tr>
<td>#4</td>
<td>48</td>
<td>7 in-lb</td>
<td>13 in-lb</td>
<td>17 in-lb</td>
</tr>
<tr>
<td>#5</td>
<td>44</td>
<td>9 in-lb</td>
<td>19 in-lb</td>
<td>23 in-lb</td>
</tr>
<tr>
<td>#6</td>
<td>40</td>
<td>13 in-lb</td>
<td>25 in-lb</td>
<td>31 in-lb</td>
</tr>
<tr>
<td>#8</td>
<td>36</td>
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<td>43 in-lb</td>
<td>543 in-lb</td>
</tr>
<tr>
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<tr>
<td>#12</td>
<td>28</td>
<td>50 in-lb</td>
<td>100 in-lb</td>
<td>125 in-lb</td>
</tr>
<tr>
<td>1/4</td>
<td>28</td>
<td>6</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>5/16</td>
<td>24</td>
<td>10</td>
<td>17</td>
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</tr>
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<td>61</td>
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<tr>
<td>5/8</td>
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<td>90</td>
<td>135</td>
<td>205</td>
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<tr>
<td>3/4</td>
<td>16</td>
<td>150</td>
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<td>7/8</td>
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<td>560</td>
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<td>14</td>
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<td>591</td>
<td>790</td>
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</tr>
<tr>
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<td>1340</td>
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<td>12</td>
<td>770</td>
<td>1858</td>
<td>2718</td>
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</table>
# Nylon Insert Lock Nuts NE and NM Series

<table>
<thead>
<tr>
<th>Nut Size and Threads per Inch</th>
<th>Carbon Steel, Grade 2 &amp; Grade A Nuts</th>
<th>Grade 5 &amp; Grade B Nuts</th>
<th>Grade 8 &amp; Grade C Nuts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First Install in-lb max</td>
<td>First Removal</td>
<td>Fifth Removal</td>
</tr>
<tr>
<td></td>
<td>Lowest Reading min in-lb</td>
<td>Highest Reading min in-lb</td>
<td>Lowest Reading min in-lb</td>
</tr>
<tr>
<td>4 – 40</td>
<td>3.0</td>
<td>1.0</td>
<td>0.5</td>
</tr>
<tr>
<td>6 – 32</td>
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<td>1.5</td>
<td>1.0</td>
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<tr>
<td>8 – 32</td>
<td>9.0</td>
<td>2.0</td>
<td>1.0</td>
</tr>
<tr>
<td>10 – 24</td>
<td>13</td>
<td>2.5</td>
<td>1.0</td>
</tr>
<tr>
<td>12 – 24</td>
<td>20</td>
<td>3.5</td>
<td>1.5</td>
</tr>
<tr>
<td>1/4 – 20</td>
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<td>5.0</td>
<td>2.5</td>
</tr>
<tr>
<td>5/16 – 18</td>
<td>60</td>
<td>8.0</td>
<td>4.0</td>
</tr>
<tr>
<td>3/8 – 16</td>
<td>80</td>
<td>12.5</td>
<td>5.5</td>
</tr>
<tr>
<td>7/16 – 14</td>
<td>100</td>
<td>17.5</td>
<td>12.5</td>
</tr>
<tr>
<td>1/2 – 13</td>
<td>150</td>
<td>22.0</td>
<td>15.5</td>
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</table>

### Coarse Thread Series

<table>
<thead>
<tr>
<th>Nut Size and Threads per Inch</th>
<th>Carbon Steel, Grade 2 &amp; Grade A Nuts</th>
<th>Grade 5 &amp; Grade B Nuts</th>
<th>Grade 8 &amp; Grade C Nuts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First Install in-lb max</td>
<td>First Removal</td>
<td>Fifth Removal</td>
</tr>
<tr>
<td></td>
<td>Lowest Reading min in-lb</td>
<td>Highest Reading min in-lb</td>
<td>Lowest Reading min in-lb</td>
</tr>
<tr>
<td>9/16 – 12</td>
<td><em>ft-lb 17</em></td>
<td>30</td>
<td>15</td>
</tr>
<tr>
<td>5/8 – 11</td>
<td>25*</td>
<td>39</td>
<td>17.5</td>
</tr>
<tr>
<td>3/4 – 10</td>
<td>35*</td>
<td>58</td>
<td>25</td>
</tr>
<tr>
<td>7/8 – 9</td>
<td>50*</td>
<td>88</td>
<td>40</td>
</tr>
<tr>
<td>1/2 – 8</td>
<td>70*</td>
<td>120</td>
<td>60</td>
</tr>
<tr>
<td>1 1/8 – 7</td>
<td>75*</td>
<td>150</td>
<td>70</td>
</tr>
<tr>
<td>1 1/4 – 7</td>
<td>85*</td>
<td>188</td>
<td>90</td>
</tr>
<tr>
<td>1 3/8 – 6</td>
<td>100*</td>
<td>220</td>
<td>110</td>
</tr>
<tr>
<td>11/16 – 7</td>
<td>110*</td>
<td>260</td>
<td>130</td>
</tr>
</tbody>
</table>

### Fine Thread Series

<table>
<thead>
<tr>
<th>Nut Size and Threads per Inch</th>
<th>Carbon Steel, Grade 2 &amp; Grade A Nuts</th>
<th>Grade 5 &amp; Grade B Nuts</th>
<th>Grade 8 &amp; Grade C Nuts</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>First Install in-lb max</td>
<td>First Removal</td>
<td>Fifth Removal</td>
</tr>
<tr>
<td></td>
<td>Lowest Reading min in-lb</td>
<td>Highest Reading min in-lb</td>
<td>Lowest Reading min in-lb</td>
</tr>
<tr>
<td>4 – 48</td>
<td>3.0</td>
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<td>0.5</td>
</tr>
<tr>
<td>6 – 40</td>
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<td>1.5</td>
<td>1.0</td>
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<tr>
<td>8 – 36</td>
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<td>1.0</td>
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<td>2.5</td>
<td>1.0</td>
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<td>12 – 28</td>
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<td>1.5</td>
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<td>1/4 – 28</td>
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<td>2.5</td>
</tr>
<tr>
<td>5/16 – 24</td>
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<td>4.0</td>
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<tr>
<td>3/8 – 24</td>
<td>80</td>
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<td>5.5</td>
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<tr>
<td>7/16 – 20</td>
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<td>17.5</td>
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</tr>
<tr>
<td>1/2 – 20</td>
<td>150</td>
<td>22.0</td>
<td>15.5</td>
</tr>
</tbody>
</table>

### Earnest Technical Bulletin

- **Nylon Insert Lock Nuts**
- **NE and NM Series**