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| GM | WORLDWIDE ENGINEERING STANDARDS | General Specification | GMW16457 |

# Non-Propriety (NP) Point for External Metric Thread, Coarse Pitch Fasteners

## 1 Introduction

**1.1 Purpose**. This point is offered as an alternative to the M point (GMW3362), which is the GM Fastening Engineering approved strategy to prevent cross threading occurrences of externally threaded fasteners. The use of the non-propriety (NP) point style should be limited and must be approved by Fastening Engineering.

**1.2 Applicability.** This standard specifies the characteristics of NP points for external metric threaded fasteners with coarse pitch M5, M6, M8, M10, M12, M14 and M16.2.

## 2 References

**Note:** Only the latest approved standards are applicable unless otherwise specified.

**2.1 External Standards/Specifications.**

None

**2.2 GM Standards/Specifications.**

GMW3059 GMW3362 GMW16551

## 3 Requirements

**3.1 Dimensions.** All dimensions in this standard are given in millimeters (mm) unless otherwise stated. A dimensional illustration of requirements is shown in Figure 1. Table 1 contains dimensional detail of requirements. (See 3.1.1 through 3.1.8 for detailed description.)

**3.1.1 Nominal Length.** The nominal length of the fastener is $l_{nom}$. For $l_{nom}$ up to, and including 50 mm, the tolerance shall be ± 0.15. For $l_{nom}$ over 50 mm, the tolerance shall be ± 0.25. The nominal length, $l_{nom}$, is the distance, parallel to the fastener axis, from the bearing surface to the lead thread where the thread profile first exceeds 0.2 times the thread pitch in height (measured from the thread root).

**3.1.2 Non-Propriety Point Transition Thread Length.** The NP point transition threads length, $U_{(ref)}$ is calculated from $l_{nom}$ at an angle of approximately 20 degrees to a point where the partial thread ends.

**3.1.3 Non-Propriety Point.** The NP point length, $Z_4$, is a minimum/maximum length for the NP point cylinder. The length of the NP point cylinder shall be measured from the point where the length, $l_{nom}$, transitions to a point on the cylinder where the end radius (r) is tangent. The diameter of the NP point cylinder, $d_x$, after thread rolling and coating, shall fall within the dimensions as specified in Table 1, for entire NP point length, $Z_4$. The profile of all truncated lead threads shall not exceed maximum condition boundaries of the standard thread. A thread specific "**GO**" gage shall pass freely over threads after coating (GMW16551).

**3.1.4 Point Radius.** The radius of this point is a minimum dimension only, and its shape may not be a true radius after threading. The end of the point shall be reasonably perpendicular with the thread axis, and the edge may be irregular.

**3.1.5 Point Tip.** The tip diameter, $d_y$, is a maximum for the point tip.

**3.1.6 Point Length.** The overall point length, $Z_2$, is a maximum length. It represents the sum of the NP point length, $Z_4$ and the NP point thread transition length, $U_{(ref)}$.

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**3.1.7 Minimum Full Thread Length.** The minimum full thread length, $l_{eff}$, is measured from the bearing surface to the last full thread.

**3.1.8 Maximum Overall Length.** In this standard, $l_1$ is a maximum dimension to be used when developing the overall length of the fastener design. The maximum overall (built in) length is the sum of the maximum nominal length ($l_{nom}$ maximum) (3.1.1) and the maximum NP point length ($Z_4$ maximum) (3.1.3). It is the maximum distance from the bearing surface to the end of the fastener.

**3.2 Material/Mechanical Properties.** Per Requirements/Standards associated with the fastener design.

**3.3 Surface Treatment.** Per Requirements/Standards associated with the fastener design.

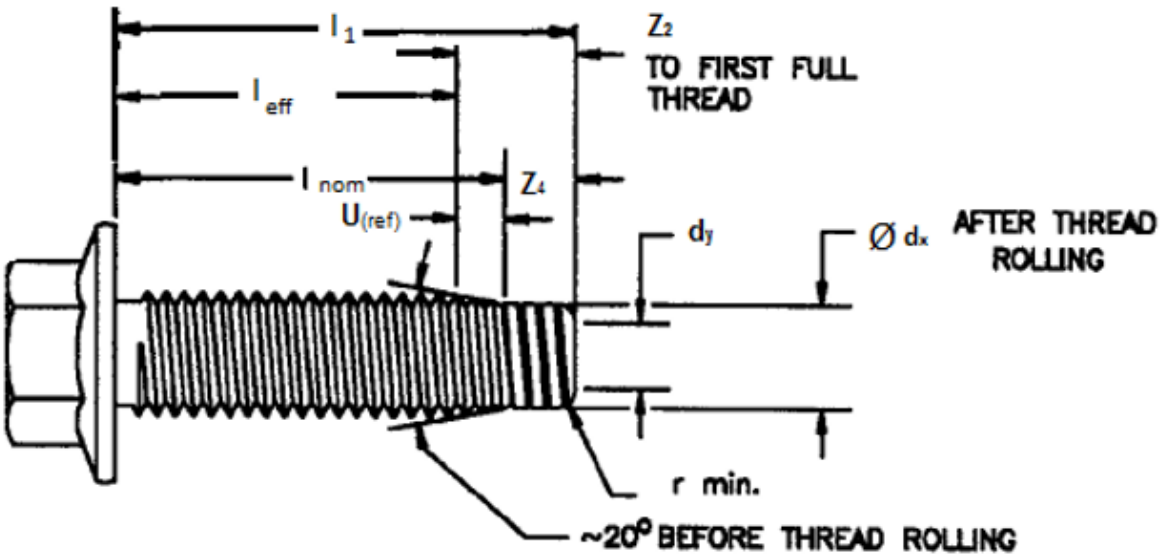
**3.4 Thread.** For external metric coarse thread pitch fasteners in diameters M5, M6, M8, M10, M12, M14 and M16.

**3.5 Tolerances.** Tolerances as specified in Table 1 for NP point. All non-specified tolerances follow that of the Requirements/Standards associated with the fastener design.

**3.6 Surface Discontinuities.** Follow requirements of the standards associated with the fastener design.

**3.7 Proof Load Requirements.** Not applicable.

**3.8 Acceptability.** As specified in Table 1 for NP point. All non-specified tolerances follow that of the Requirements/Standards associated with the fastener design.




$l_{nom}$ - Refers to Nominal Length (Full and Transition thread length)

$l_{eff}$ - Refers to Minimum Full Thread Length

$l_1$ - Overall Length at Maximum

$U_{(ref)}$ - Transition Thread Length

**Figure 1: Dimensional Illustration**

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