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|---|---|---|---|
| GM | WORLDWIDE ENGINEERING STANDARDS | General Specification | GMW18169 |

# M-NJ Point for External Metric Thread, Coarse Pitch Fasteners

## 1 Introduction

**Note:** Nothing in this standard supercedes applicable laws and regulations.

**Note:** In the event of conflict between the English and domestic language, the English language shall take precedence.

**1.1 Purpose.** This standard specifies the characteristics of M-NJ Points for external metric threaded fasteners with coarse pitch; M4, M5, M6, M8, M10, M12, M14, M16, M18 and M20.

**1.2 Applicability.** This specification applies to the design of a short point configuration of an anti-cross threading feature for externally threaded fasteners.

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

**1.3 Remarks.** GMW3362 is the preferred anti-cross threading feature for externally threaded fasteners. This specification defines a shorter dog point length that differentiates it from the M Point specification GMW3362 which has a longer dog point length. This specification may be used when reduced mass and clearance to the fastener point end is required. Compared to GMW3362 this specification slightly reduces the ability of the fastener to engage the mating thread off-axis.

## 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

**2.3 Additional References.** None.

## 3 Requirements

**3.1 Dimensions.** All dimensions in this standard are given in millimeters (mm) unless otherwise stated.

**3.1.1 Length.** For fasteners of Nominal Thread Length (Lnom) ≤ 50 mm, the tolerance, T, shall be ± 0.15 mm. For fasteners of Nominal Thread Length (Lnom) > 50 mm, the tolerance, T, shall be ± 0.25 mm. The nominal length is calculated from the required full thread length or the maximum overall length required of the fastener for the joint. The nominal length is the distance parallel to the fastener axis from the bearing surface or datum surface (example: end of the shoulder on a shoulder bolt) to the lead thread where the thread profile approximates 0.20× the thread pitch in height (measured from the thread root).

**3.1.2 M-NJ Point Thread.** The M-NJ Point thread length, U, is a reference dimension used for calculation purposes. The profile of all lead threads shall not exceed maximum material condition boundaries of the standard thread. At least one (1) complete turn (360 degrees) of the first two (2) threads shall be smoothly and uniformly curved for its entire profile with no localized scallops, fissures, underfill, flats or other discontinuities permitted at the crest of the thread. A thread specific **GO** screw ring gauge shall pass freely over first four (4) threads after coating.

**3.1.3 Dog Point.** The dog point cylinder (Dx), is comprised of a length and diameter. The length section, $Z_4$ minus $Z_5$, is a floating transition length that is controlled via pre and post roll requirements in MAThread Design and Manufacturing Standards. The cylinder diameter is controlled and defined in Table 1.

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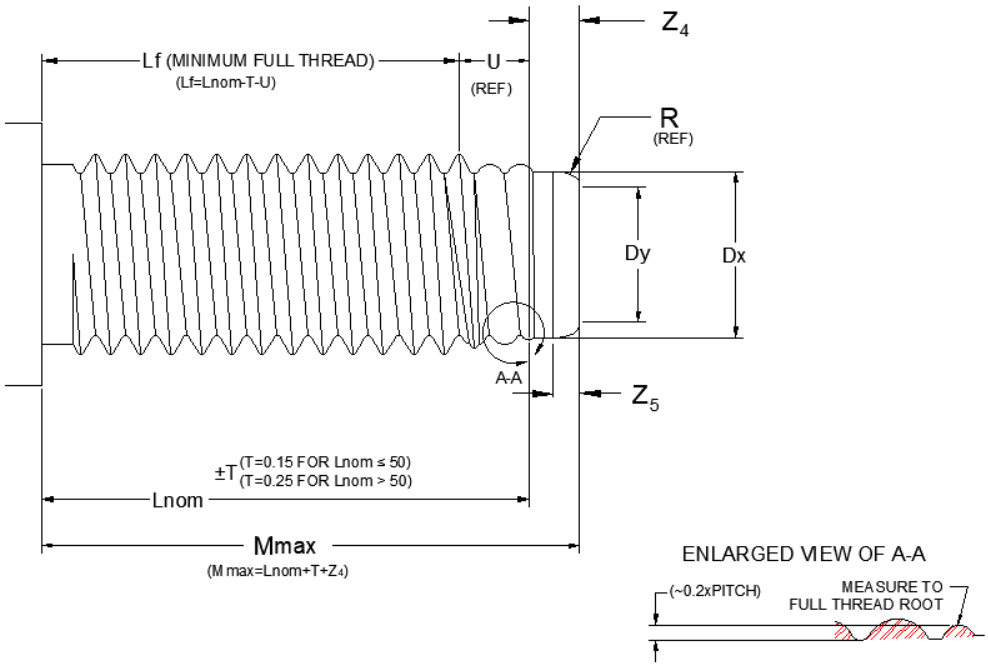
**3.1.4 Radius Point.** The radius point length, $Z_5$, is a minimum length for the point beyond the dog point. The radius of this point, R, is a reference dimension only, and its shape may not be a true radius. The end of the point shall be reasonably square with the thread axis, and the edge may be irregular. The tip diameter, $D_y$, is a maximum for the radius point.

**3.1.5 Point Length.** The overall point length, $Z_4$, is a maximum length. It represents the sum of the dog point length and the radius point length. $Z_4$ is measured from the point where the round thread terminates at the dog point (see Figure 1 Enlarged View A-A).

**3.1.6 Minimum Full Thread Length.** The minimum full thread length, Lf, is measured from the bearing surface or datum surface to a point where the last full thread is equal to the major diameter minimum tolerance limit. The minimum full thread can be derived by calculation or specified depending on the fastener requirements.

**3.1.7 Maximum Overall Length.** The maximum overall (built-in) length, Mmax, is the sum of the maximum nominal length (maximum) and the maximum overall point length ($Z_4$ maximum). It is the maximum distance from the bearing surface to the end of the fastener, (Mmax).

**Figure 1: Dimension Illustration**




**Note:** REF = Reference.

**Table 1: Dimensions**

| Thread | | M4 | M5 | M6 | M8 | M10 | M12 | M14 | M16 | M18 | M20 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $D_x$ | maximum | 3.17 | 4.03 | 4.80 | 6.54 | 8.23 | 9.95 | 11.72 | 13.72 | 15.17 | 17.17 |
| $D_y$ | maximum | 2.70 | 3.40 | 4.00 | 5.50 | 6.80 | 8.20 | 9.60 | 10.90 | 12.20 | 13.30 |
| R | reference | 1.20 | 1.50 | 1.80 | 2.30 | 2.80 | 3.30 | 4.10 | 4.70 | 5.20 | 6.00 |
| U | reference | 1.50 | 1.80 | 2.30 | 2.80 | 3.40 | 4.00 | 4.50 | 4.50 | 5.60 | 5.60 |
| $Z_4$ | maximum | 1.08 | 1.37 | 1.45 | 1.90 | 2.51 | 3.12 | 3.38 | 3.64 | 4.40 | 4.60 |
| $Z_5$ | minimum | 0.50 | 0.60 | 0.75 | 1.00 | 1.25 | 1.50 | 1.75 | 2.00 | 2.90 | 3.21 |

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