ONE-PAGE SUMMARY

ASME Y14.5-2009 vs 2018: what changed

By Fred Vierheller, senior mechanical engineer, Certified SOLIDWORKS Professional · Updated November 4, 2026 · Versión en español

The 2018 edition is the current one (reaffirmed in 2024). Most of it reads the same as 2009, but a few changes affect drawings you release today. Here they are in plain language, with what to update.

Removed

Concentricity ◎ and symmetry ⌯ are gone

The standard now has 12 geometric characteristic symbols instead of 14. Coaxial and centered features are controlled with position, runout or profile.

On your drawings: Replace every ◎ and ⌯ before you cite the 2018 edition.

Phantom-line unequal profile

Showing an unequally disposed profile zone with phantom lines is no longer used. The Ⓤ modifier in the frame is the only method.

On your drawings: Convert old unequal-profile callouts to Ⓤ.

± dimensions to locate features

The rules moved from 'each dimension has a tolerance' to 'each feature is toleranced'. ± tolerances are meant for size; locations should come from basic dimensions with position or profile.

On your drawings: Look for holes located with ± dimensions and a position frame at the same time.

New

Dynamic profile modifier (triangle)

Lets a profile tolerance control form (and orientation or location with datums) without also controlling size. Usually used as a refinement under a regular profile.

On your drawings: Make sure your supplier knows how to inspect it before you use it.

From-to symbol

Used with profile when the tolerance changes gradually from one point to another, with two values in the frame.

Datums

One datum solution by default

When a datum feature is imperfect (a rocking face, a size feature at RMB), the 2018 edition sets a single default solution that minimizes separation, instead of accepting several. The math is in ASME Y14.5.1.

On your drawings: Inspection results on rocking parts can change between editions; agree on the edition with your supplier.

Free state on a single datum

The free state symbol can now be applied to an individual datum reference without releasing the rest of the restraint.

New names

'True geometric counterpart' is the theoretical datum simulator, and 'common datum features' covers datums like A-B.

Clarified

Profile all over in a general note

A profile tolerance that applies all over may be given in the general tolerance block or a general note, which is what model-based drawings rely on.

On your drawings: Our model-reference note (GEN-07) uses this.

Continuous feature (CF)

The rules for when interrupted surfaces are one feature, and how nX counts relate to CF, were clarified.

Line elements around a datum axis

Shown with profile of a line to the datum axis, instead of an orientation tolerance with an 'EACH RADIAL ELEMENT' note.

Runout and restraint

Runout is now defined by theoretical boundaries rather than by an inspection method, and restrained-condition notes got more detail (force, location, direction, sequence).

Layout

The standard grew from about 214 to about 326 pages, with figures grouped at the end of each section and many more 3D, model-based examples.

Update checklist for your drawings

1. Change the interpretation note to INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5-2018.
2. Replace every ◎ and ⌯ with position, runout or profile.
3. Convert phantom-line unequal profile to Ⓤ.
4. Make dimensions that locate positioned features basic; keep ± for size.
5. Delete Ⓢ symbols (regardless of feature size is the default).

Sources

- GD&T Basics — ASME Y14.5 2009 vs. 2018
- GeoTol — Quick guide to ASME Y14.5-2018
- Made to Measure — Y14.5-2018 vs 2009
- ASME Y14.5-2018 preview (ANSI)