**Sizes and modifiers**

Sizes are dimensions of encoded geometric features, e.g. diameter of cylindrical features or distance of parallel faces. The geometric evaluation can be superimposed here by indicating specification modifiers.

**Form and location tolerances**

Form tolerances limit the deviations of an individual feature from its geometrically ideal form. Orientation tolerances limit the deviations of individual features or characteristic lines of two or more features. One or more features can be specified as function features.

**Additional drawing entries**

Maximum material requirement: permits the addition of unused dimension tolerance portions to the tolerated form or location error. Example: (single) cylinder diameter d = 6 mm and axis straightness tolerance t = 0.1 mm (relative to the right). If the actual diameter t = 6.0 mm, the straightness of the axis can deviate up to 1.5 mm.

Minimum material requirement: enables the addition of unused dimensional tolerance portions from the material side to the tolerated form or location error. Example: (single) cylinder diameter d = 6 mm and axis straightness tolerance t = 0.1 mm (relative to the right). If the actual diameter t = 5.9 mm, the straightness of the axis can deviate up to 1.5 mm.

- **Responsibility requirement**
  - The B requirement enables the “bas” or “bus” (base) of form or location tolerances. In the tolerance box, the entire feature must be evaluated in accordance with ISO 10579.
  - The C requirement enables the “cyl” or “cy” (cylinder) of form or location tolerances. In the tolerance box, the entire feature must be evaluated in accordance with ISO 10579.

**Tolerance indications for associativity and filters**

- **Intersection plane indicator**: The tolerance should only be inspected in the intersection plane. For example, the tolerance must be inspected perpendicular to B.

- **Cylindrical radial run-out**: The tolerance zone is limited by two curves which envelop circles of diameter t whose mid-points are on a curve of geometrically ideal form.

- **Cylindrical parallelism**: The tolerance zone is limited by two parallel lines a distance t apart.

**Datum feature functions only as a point.**

Other parameters of the datum feature (e.g. origin coordinates) are not considered.

- **Total axial run-out**: The tolerance zone is limited by two parallel planes a distance t apart.

- **Total radial run-out**: The tolerance zone is limited by two coaxial cylinders or parallel planes a distance t apart.

**Datum feature functions only as a point.**

Other parameters of the datum feature (e.g. origin coordinates) are not considered.

**Important ISO standards for the GPS**

- ISO 1101
  - GPS – tolerances of form, orientation, location and runout

- ISO 1102
  - GPS – tolerances of form, orientation, location and runout

- ISO 8015
  - GPS – tolerances of form, orientation, location and runout

- ISO 1160
  - GPS – tolerances of form, orientation, location and runout

- ISO 5458
  - GPS – tolerances of form, orientation, location and runout

- ISO 14405-2
  - GPS – tolerances of form, orientation, location and runout

- ISO 10560
  - GPS – tolerances of form, orientation, location and runout

- ISO 14405-1
  - GPS – tolerances of form, orientation, location and runout

- ISO 14405-1:2021
  - GPS – tolerances of form, orientation, location and runout

**ZEISS endeavors to ensure that all information is correct. However, the accuracy of the information cannot be guaranteed and ZEISS assumes no liability regarding the accuracy or completeness of the information.**