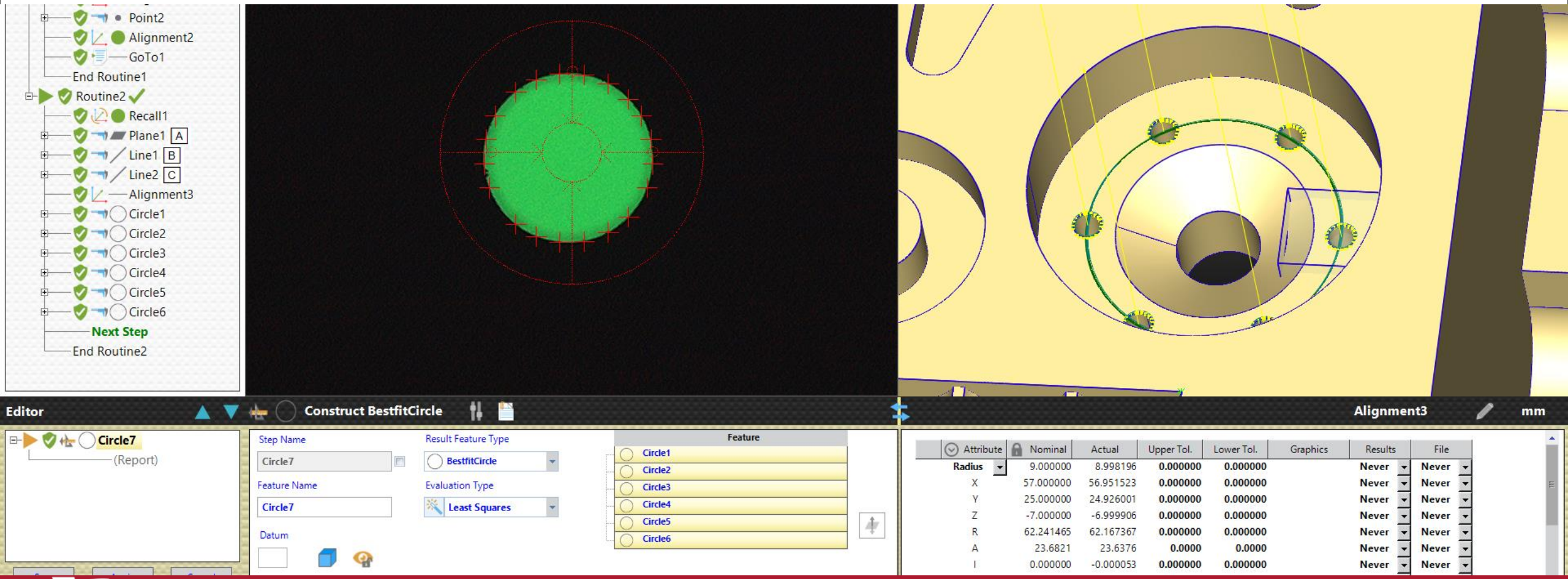
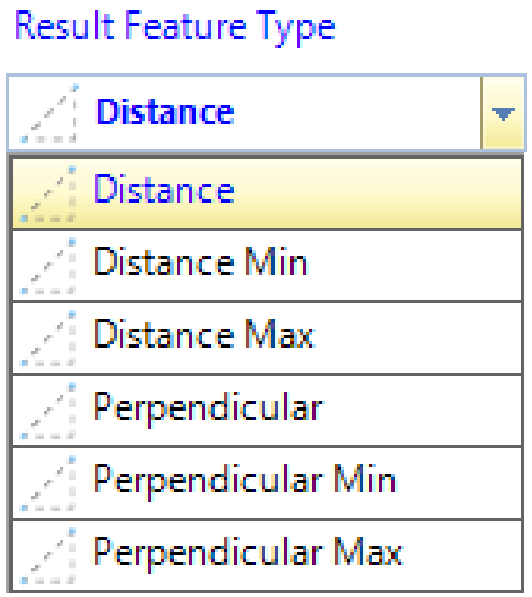
Constructions in ZONE3

Reference Slides



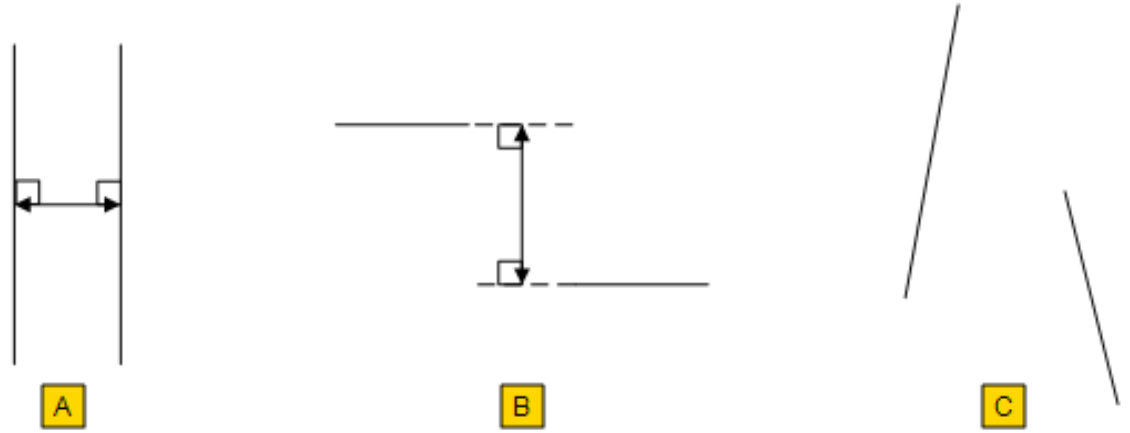
Distance



- Adds a step that constructs a distance between two input features
- Calculates the distances from one feature's center point to another feature's center point
- Center point is the centroid or apex of cone

Width

- Adds a step that constructs a Width between two approximately parallel lines or planes
- GD&T evaluations can be done on Width steps



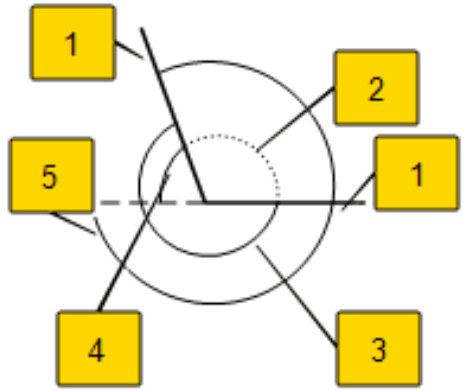
Examples of Width constructions

A Parallel lines of the same length, between which a *Width* construction is calculated

B Parallel lines, extended, between which a *Width* construction is calculated

C Lines which are not approximately parallel, between which a meaningful *Width* construction cannot be calculated

Angle



Attributes of a constructed angle projected into the XY plane

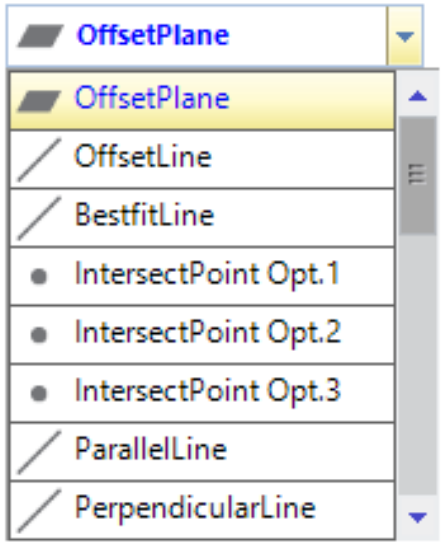
1. A feature vector
2. XYInc – The included angle between the feature vectors after they have been projected into the XY plane
3. XYIncB – The conjugate of XYInc (i.e., 360° - XYInc)
4. XYSup – The supplement of XYInc (i.e., 180° - XYInc)
5. XYSupB – The conjugate of XYSup (i.e., 180° + XYInc)

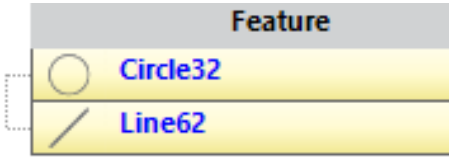
- Adds a step that constructs an angle between two input features
- Calculates angle after the feature vectors have been projected into the XY, YZ, and XZ planes
- Calculates angle in 3D

Auto

- Adds a step that constructs a feature based on the selected input features

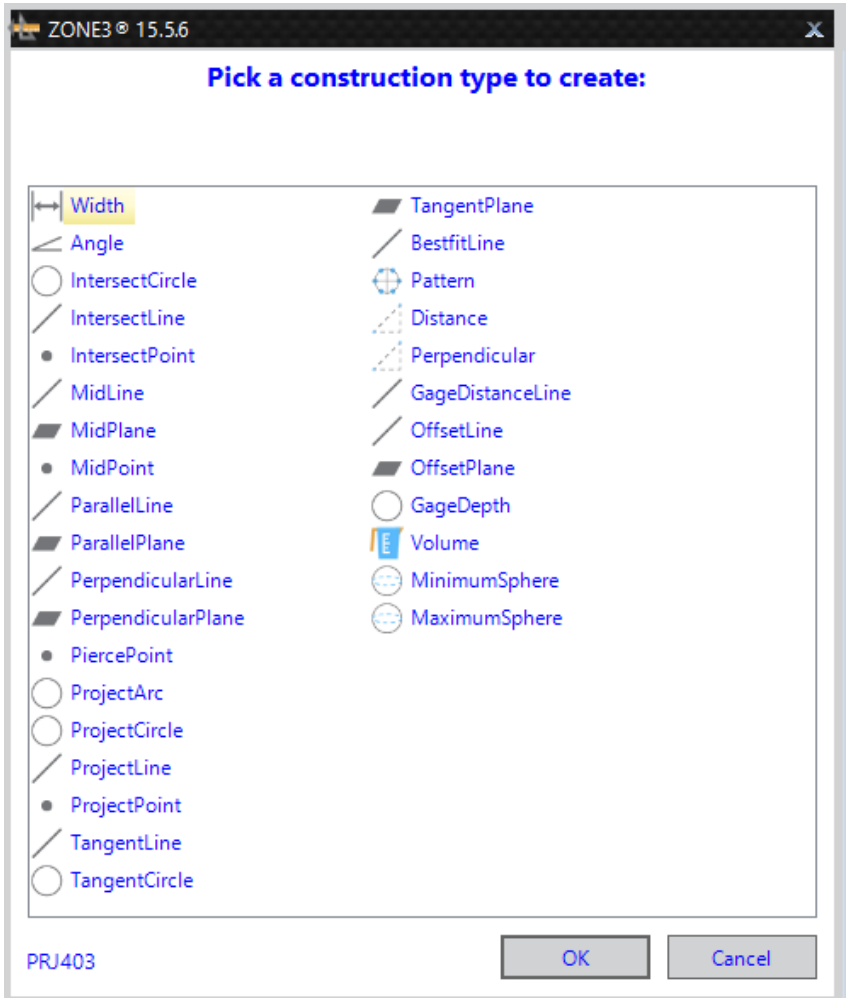
- Displays a rank-ordered list of candidate constructions, based on the form error of the constructed feature calculations





Construction Workflows

1. Select the type of feature you want to construct
   - Select feature from Construct tab
2. Have ZONE3 suggest feature types based on input features
   - Select Auto from the Construct tab 
3. Select multiple input features and construct a specific type of feature between each consecutive pair of input features
   - Right-click on group step(s) or multiple steps from the Routines Tree and select Create Constructions Between



Constructions: Key Terms

Angle: A step that constructs an angle between exactly two input features.

Auto: A step that constructs a feature based on the input features you select. A rank-ordered list of candidate constructions is displayed, based on the form error of the constructed feature calculations.

Construct Tab: Ribbon group that contains constructed-feature steps.

Create Constructions Between: Workflow used to create constructions between multiple pairs of features in a single operation.

Distance: A step that constructs a distance between two input features.

Distance Max: For circles and holes; adds the radius of each feature to the distance calculation. Generally only valid for the construction of 2D distances between two coplanar reference features.

Distance Min: For circles and holes; subtracts the radius of each feature from the distance calculation. Generally only valid for the construction of 2D distances between two coplanar reference features.

Pattern: A step that constructs a pattern.

Perpendicular (distance): For line reducible and planar features: calculates the length of a line drawn perpendicular to the reference feature to the centroid point of the considered feature. For conical and cylindrical features: calculates the centroid-to-centroid distance of the circles.

Width: A step that constructs a width between two approximately parallel lines or planes.