

Surface Plane Advanced Tool User Manual

1. General introduction

Just like the Surface Plane tool, the advanced version provides measurements that report a plane's position and orientation (X Angle, Y Angle, Z Offset, Normal, Distance), as well as the maximum and average deviations from the plane.

The Z offset reported is the Z position at zero position on the X axis and the Y axis.

The results of the Angle X and Angle Y measurements can be used to manually customize the tilt angle in the Hole, Opening, and Stud tools.

There are two main differences from the Surface Plane tool

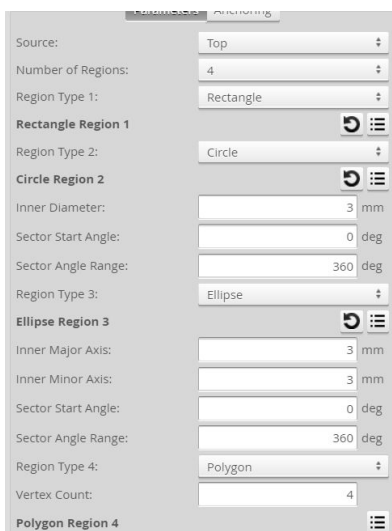
- The advanced version supports Z Angle Anchoring
- The advanced version supports up to 16 flexible regions instead of only 4 traditional regions

Flexible regions include the following types

- Rectangular
- Polygonal
- Circular
- Elliptical
- Surface Mask from a secondary source
- Intensity Mask from a secondary source

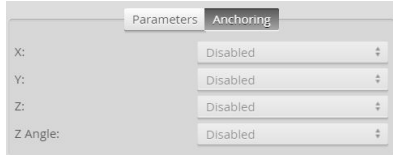
2. Parameters

Source	The sensor, or combination of sensors, that provides data for the tool's measurements.
Number of Regions	Up to 16 region count could be chosen
Region Type	- Rectangular - Polygonal - Circular - Elliptical - Surface Mask from a secondary source - Intensity Mask from a secondary source

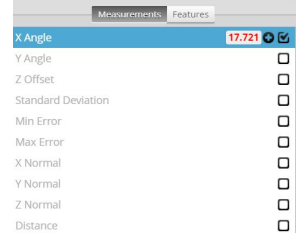
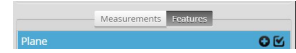


The screenshot shows the configuration interface for the Surface Plane Advanced Tool. It includes a 'Source' dropdown set to 'Top', a 'Number of Regions' dropdown set to '4', and a 'Region Type 1' dropdown set to 'Rectangle'. Below these, there are four region configurations: 'Rectangle Region 1' (with a refresh icon), 'Circle Region 2' (with a refresh icon), 'Ellipse Region 3' (with a refresh icon), and 'Polygon Region 4' (with a refresh icon). Each region configuration has input fields for 'Inner Diameter', 'Sector Start Angle', 'Sector Angle Range', 'Inner Major Axis', 'Inner Minor Axis', 'Vertex Count', and 'Region Type'. The values are: Region 1 (Rectangle), Region 2 (Circle, 3 mm, 0 deg, 360 deg), Region 3 (Ellipse, 3 mm, 3 mm, 0 deg, 360 deg), and Region 4 (Polygon, 4 vertices).

3. Anchor

X,Y,Z, Z Angle	Lets you choose the X, Y, Z or Z Angle measurement of another tool to use as a positional/rotational anchor for this tool.	
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4. Measurements and Features

Measurements	X Angle	Determines the X angle of the surface with respect to the alignment target.	
	Y Angle	Determines the Y angle of the surface with respect to the alignment target	
	Z Offset	Determines the Z value of intersection of the plane and the Z axis	
	Standard Deviation	Measures the standard deviation of the points of the surface from the detected plane within the specified region or regions.	
	Min Error	Measures the minimum error from the detected plane (the maximum distance below the plane, perpendicular to the plane) within the specified region or regions.	
	Max Error	Measures the maximum error from the detected plane (the maximum distance above the plane, perpendicular to the plane) within the specified region or regions.	
	X Normal	Returns the X component of the surface normal vector.	
	Y Normal	Returns the Y component of the surface normal vector.	
	Z Normal	Returns the Z component of the surface normal vector.	
	Distance	Distance from the origin to the plane.	
Features	Plane	The fitted plane.	



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