


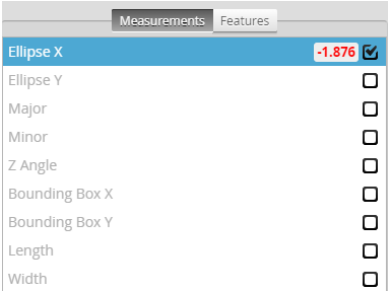
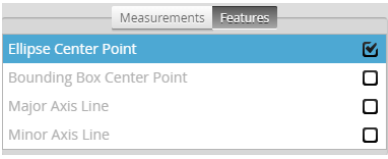
Surface Ellipse Advanced Tool User Manual

1. General introduction

Surface Ellipse Advanced tool is used to approximate the surface data distribution by an ellipse. It is NOT to fit exactly the surface boundary to an ellipse. Therefore, this tool works with the same principle as the built-in surface ellipse tool while adding the oriented bounding box calculation and also more measurement and feature outputs.

Regarding the bounding box, it is NOT calculated the same way as surface bounding box tool. In this tool, the bounding box orientation is aligned with the major/minor axes of the fitted ellipse. Therefore, calculating the ellipse from the surface data distribution is a prerequisite. The length direction of the bbox is the same as the major axis of the ellipse. The same principle applies to the width direction of bbox and the minor axis of the ellipse.

2. Parameters

Asymmetry detection	Function of the asymmetry parameter in both std and advanced surface ellipse tools are slightly different as the default selection is different and the parameter in the advanced tool is the same as the detection along the major axis.	 <p>Asymmetry Detection: None Region</p>
Region	The same as in Surface Ellipse tool	
Measurements	Compared to Surface Ellipse tool, It adds Ellipse X, Y position; adds calculated bounding box X, Y position; adds bounding box length and width. The way of calculating the bounding box refers to Section 1 second paragraph.	 <p>Measurements Features</p> <ul style="list-style-type: none"> Ellipse X -1.876 <input checked="" type="checkbox"/> Ellipse Y <input type="checkbox"/> Major <input type="checkbox"/> Minor <input type="checkbox"/> Z Angle <input type="checkbox"/> Bounding Box X <input type="checkbox"/> Bounding Box Y <input type="checkbox"/> Length <input type="checkbox"/> Width <input type="checkbox"/>
Features	Adds bounding box center point.	 <p>Measurements Features</p> <ul style="list-style-type: none"> Ellipse Center Point <input checked="" type="checkbox"/> Bounding Box Center Point <input type="checkbox"/> Major Axis Line <input type="checkbox"/> Minor Axis Line <input type="checkbox"/>

3. New Feature Additions

Features

Adds two additional features to facilitate operations on the ellipse by other tools

- Major Point - Intersecting point between major axis and the ellipse boundary
- Minor Point - Intersecting point between minor axis and the ellipse boundary

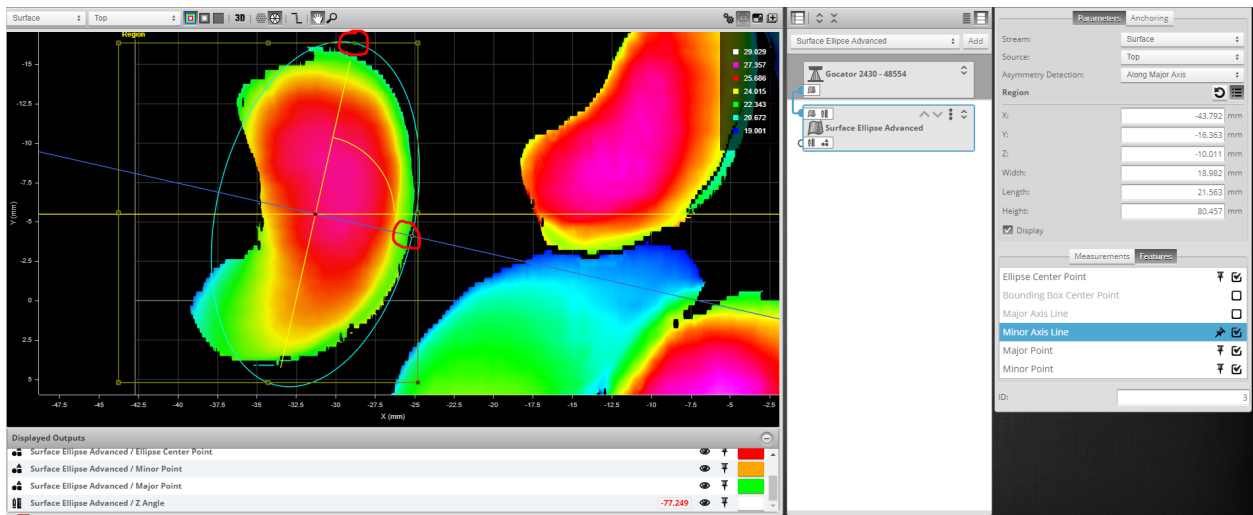
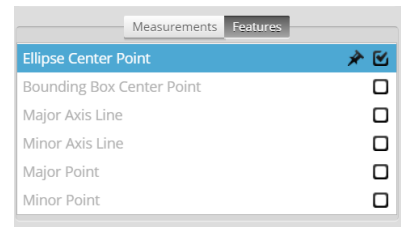


Image 1

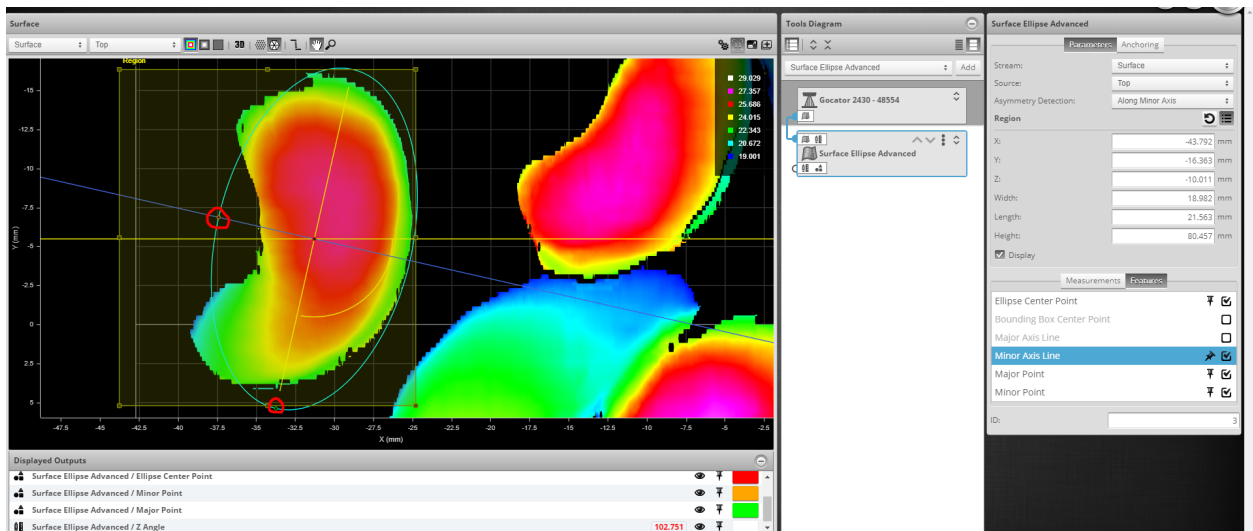


Image 2

As the Asymmetry Detection parameter changes from None/Major (Image 1) to minor (Image 2), the ZAngle measurement (orientation of the fitted ellipse of the object) changes. Along with the changes, the position of the points (intersecting points between ellipse and the major and minor axes) also changes accordingly.