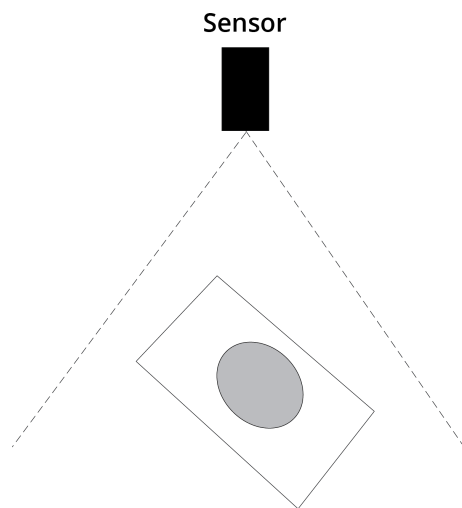


# Surface Hole

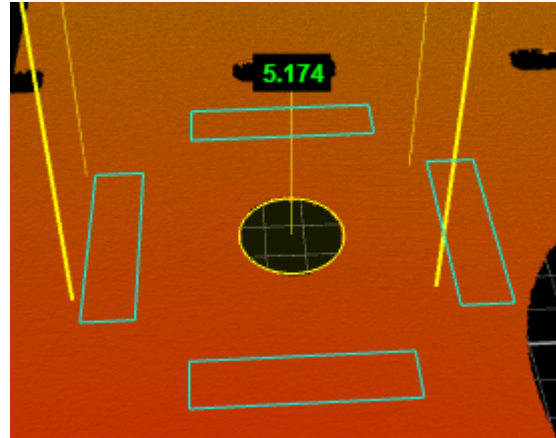
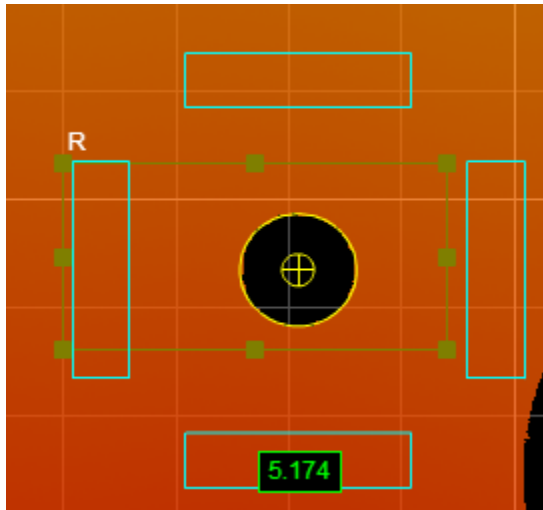
## Purpose

The Hole tool measures a circular opening within a region of interest on the surface and returns its position and radius.

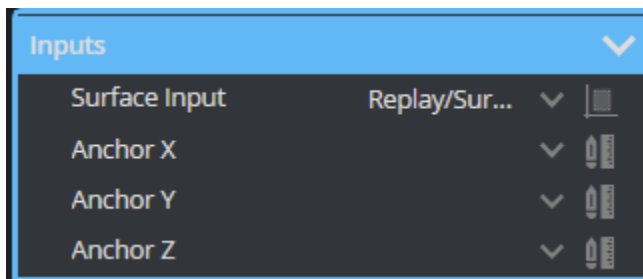
The hole can be on a surface at an angle to the sensor.



The tool uses a complex feature-locating algorithm to find a hold and then return measurements. See "Hole Algorithm" in the Gocator Measurement Tool Technical Manual for a detailed explanation of the algorithm. The behavior of the algorithm can be adjusted by changing the parameters in the measurement panel.





## Inputs



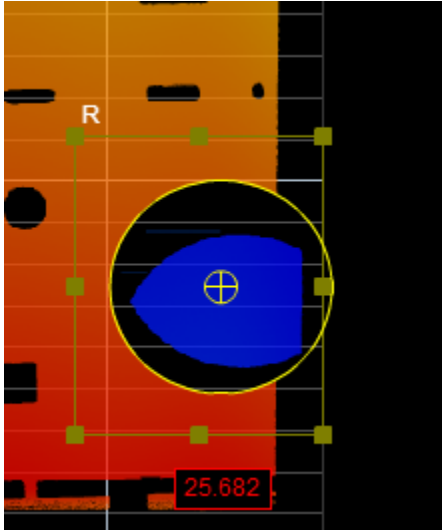
Name	Description
Profile Input	The profile data that the tool will apply measurements to.
Anchor X Anchor Y Anchor Z	Lets you choose the X, Y or Z measurement of another tool to use as a positional anchor for this tool.

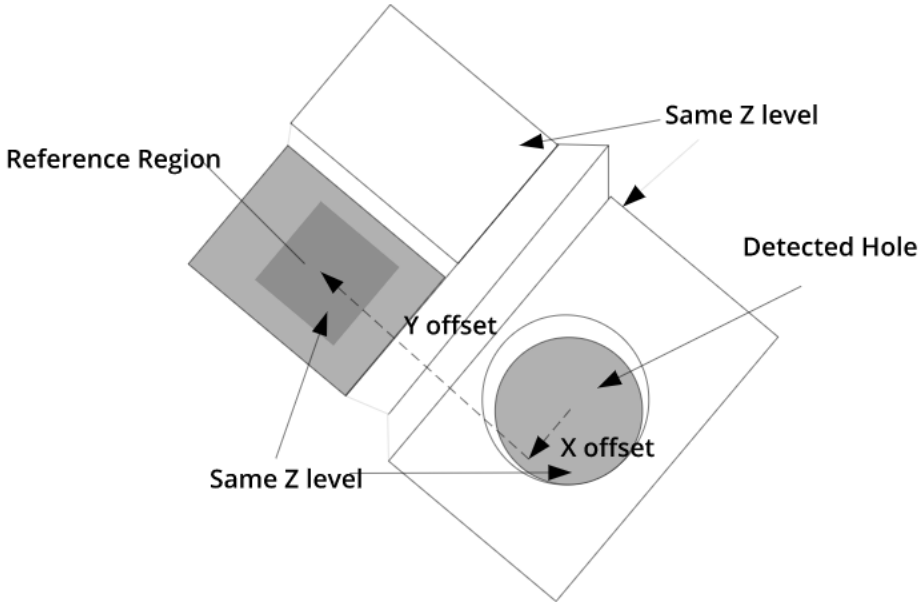
## Parameters

Parameters 

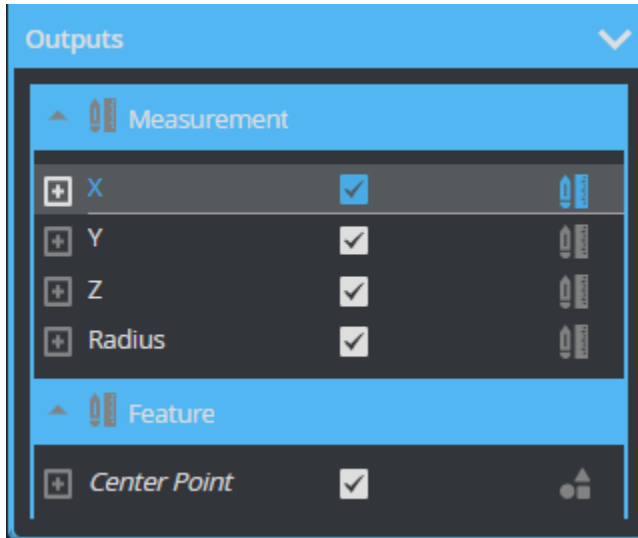
Nominal Radius	10	mm
Radius Tolerance	1	mm
Partial Detection	<input type="checkbox"/>	
Use Depth Limit	<input type="checkbox"/>	
Use Region	<input checked="" type="checkbox"/>	
▼ Region		
Use Reference Region	<input checked="" type="checkbox"/>	
Reference Region	1 Region	▼
 Reference Region 1		
Tilt Correction	Custom	▼
X Angle	0	deg
Y Angle	0	deg
External ID	SurfaceHole-0	

Name	Description
Nominal Radius	Expected radius of the hole.
Radius Tolerance	The maximum variation from the nominal radius (+/- from the nominal radius).
Partial Detection	Enable if only part of the hole is within the measurement region. If disabled, the hole must be completely in the region of interest for results to be valid.

	
Use Depth Limit Depth Limit	Whether use depth limit or not. If used, data below this limit (relative to the surface) is excluded from the hole calculations.
Use Region Region	Whether use region and the region to which the tool's measurements will apply.
Use Reference Region	Whether use reference region or not.
Reference Region Reference Region {n}	The tool uses the reference regions to calculate the Z position of the hole. It is typically used in cases where the surface around the hole is not flat.

	 <p>When this option is set to <b>Autoset</b>, the algorithm automatically determines the reference region. When the option is not set to <b>Autoset</b>, you must manually specify one or two reference regions. The location of the reference region is relative to the detected center of the hole and positioned on the nominal surface plane.</p> <p>When <b>Reference Region</b> is disabled, the tool measures the hole's Z position using all the data in the measurement region, except for a bounding rectangular region around the hole.</p>
Tilt Correction	<p>Tilt of the target with respect to the alignment plane.</p> <p><b>Autoset:</b> The tool automatically detects the tilt. The measurement region to cover more areas on the surface plane than other planes.</p> <p><b>Custom:</b> You must enter the X and Y angles manually in the X Angle and Y Angle parameters (see below).</p>

## Outputs



Type	Name	Description
Measurement	X	Determines the X position of the hole center.
Measurement	Y	Determines the Y position of the hole center.
Measurement	Z	Determines the Z position of the hole center.
Measurement	Radius	Determines the radius of the hole.
Feature Point	Center Point	The hole center.

## Major Revisions

### Gocator Classic to GoPXL

- 'Surface Hole' and 'Surface Hole Advanced' merged into a single tool adopting Surface Hole Interface.
- To match Gocator Classic's functionality, hide parameter "Match Percentile".

Application Examples

Algorithm Details