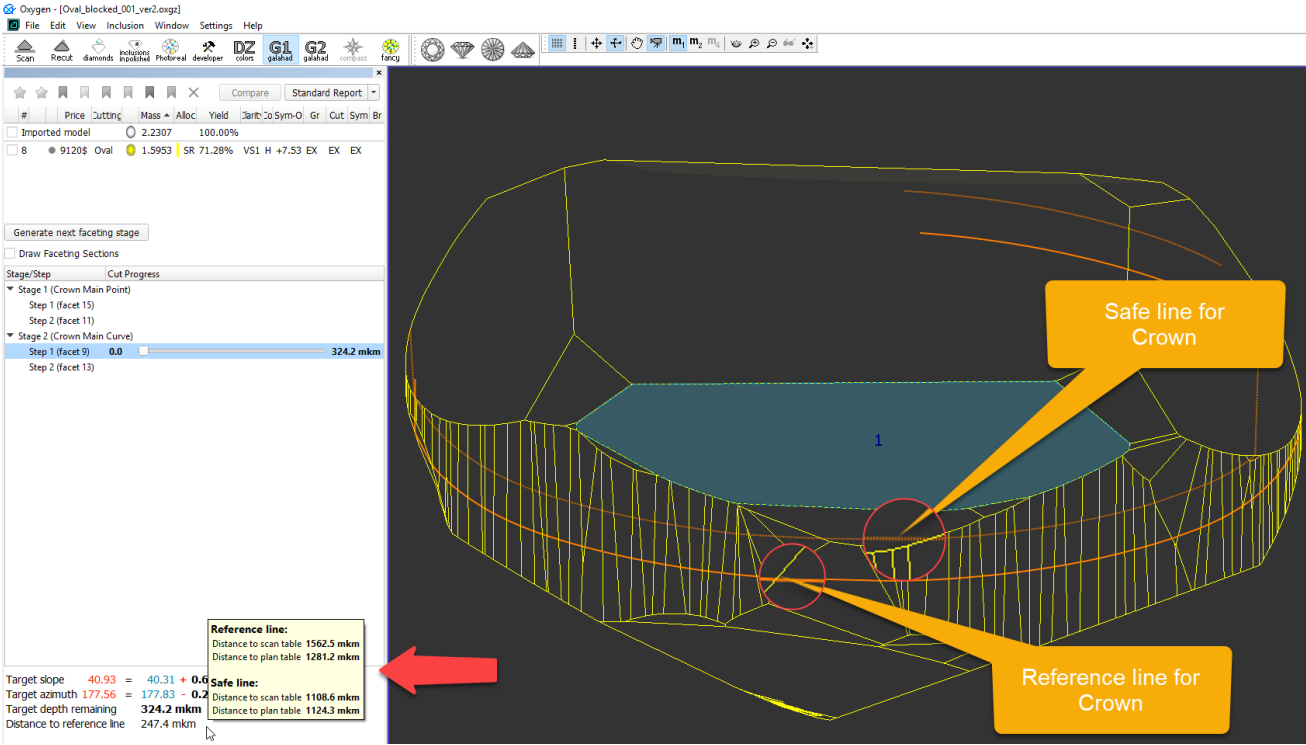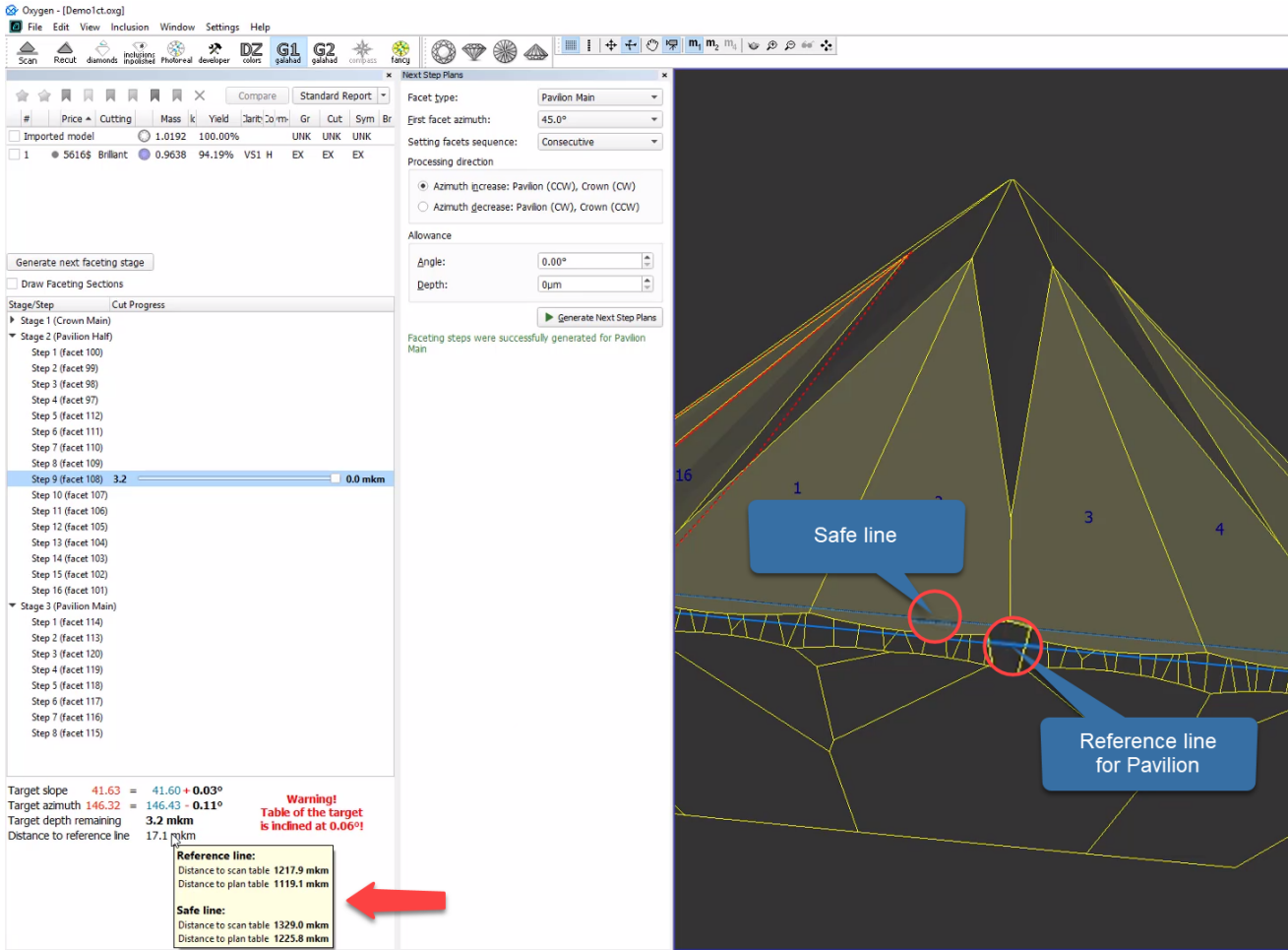# Reference Line and Safe Line

The reference line is calculated only once for the entire polishing process. Also, the *safe line* is calculated which is the limit of safe polishing, i.e. each big facet, with the correct facet angles, can be safely polished down to the safe line without risk of damaging the future brilliant. For the crown, the reference line is displayed by a bold orange line, safe line - by a thin dotted orange line. On the left panel, on mouse over the **Distance to reference line** parameter, the tooltip is displayed with the information about reference and safe lines.

> ⓘ The reference line is not displayed for the rough models.

For the pavilion, the reference line is displayed by a bold blue line, safe line - by a thin dotted blue line. The tooltip with the detailed information is also available.
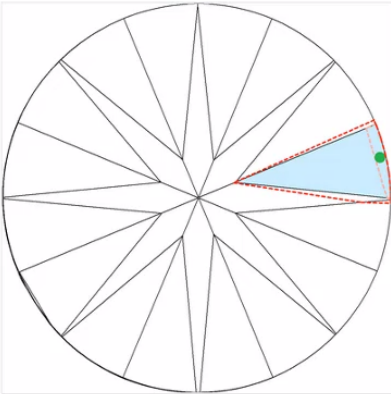
Information about reference and safe lines is also presented in the Faceting Report.
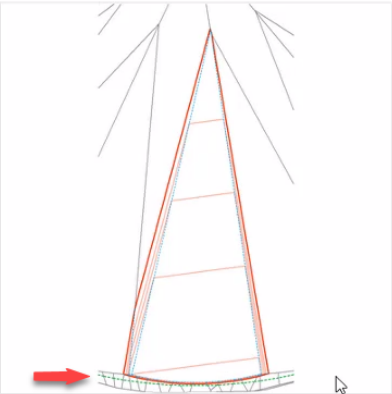
octonus Faceting Report

Pavilion Half   **Demo1ct**

Reference line: 1.218 mm from semicut table (1.119 mm from plan table), Safe line: 1.329 mm

Step 1 of 16

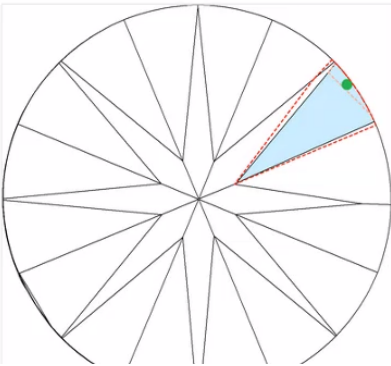| Location	Shape	Parameters

Parameters

	Target	Current	Difference (Δ)
Azimuth, °	326.28	326.22	0.06
Slope, °	42.12	41.81	0.31
Slope allowance		0.00°	
Depth allowance		0 µm	
Distance to reference line		23 µm	
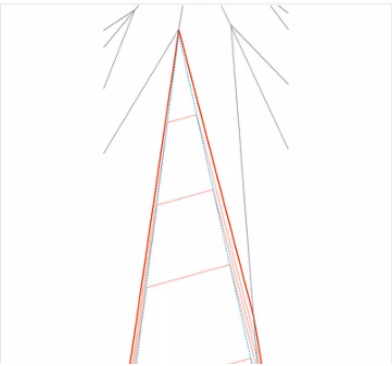
Processing depth		Width, mm	Height, mm	Ratio (W/H)
5 %	1.0 µm	1.428	0.275	5.187
30 %	6 µm	1.482	1.290	1.149
50 %	10 µm	1.515	2.102	0.721
70 %	13 µm	1.549	2.913	0.532
100 %	19 µm	1.598	3.913	0.408

Step 2 of 16

Location	Shape	Parameters

Parameters

	Target	Current	Difference (Δ)
Azimuth, °	348.76	348.64	0.11
Slope, °	42.08	41.80	0.27
Slope allowance		0.00°	
Depth allowance		0 µm	
Distance to reference line		24 µm	

Processing depth		Width, mm	Height, mm	Ratio (W/H)
5 %	0.9 µm	0.988	0.279	3.541
30 %	5 µm	1.376	1.314	1.047
50 %	9 µm	1.408	2.142	0.657
70 %	13 µm	1.439	2.970	0.485

⚠ Note that if the "Girdle" or "Table" stages are included in the process, the distance to the reference line is **recalculated** for all other stages.

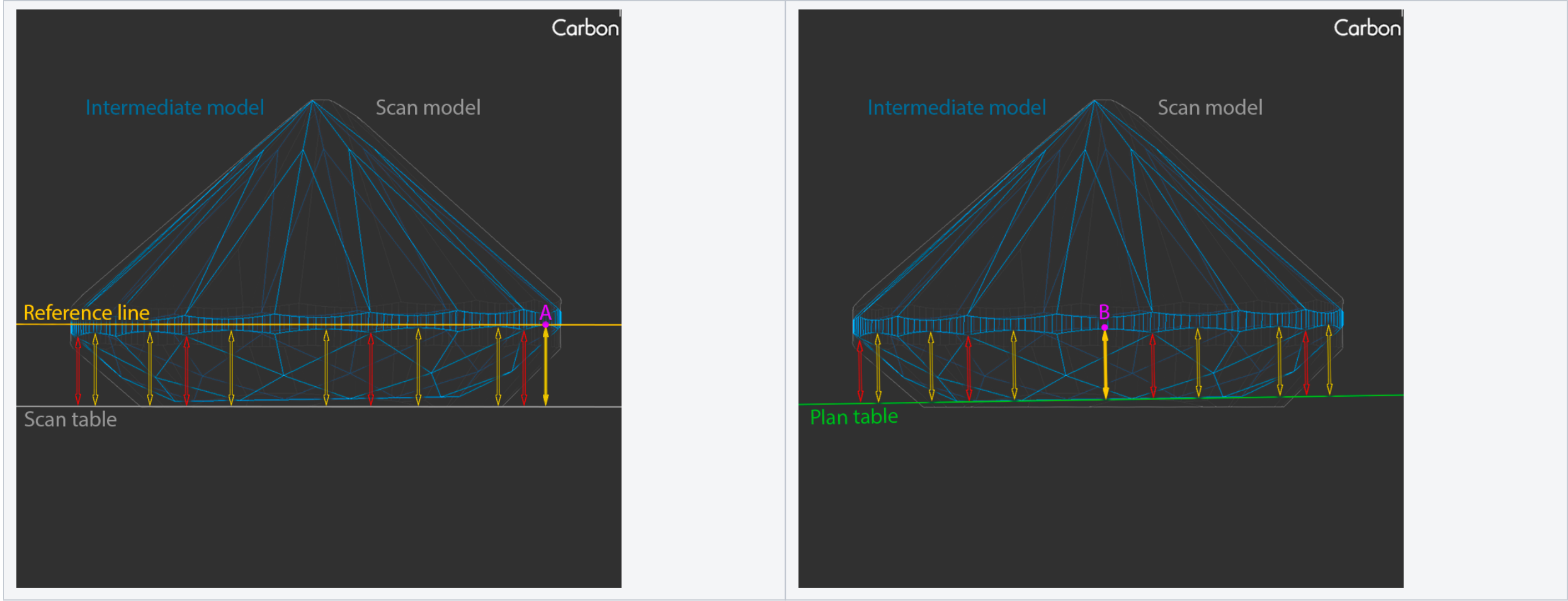## Reference line calculation

For the calculation of reference line an intermediate model (the blue one) is generated by polishing all facets of pavilion, crown and table of the scan (grey) down to facets of plan (green):
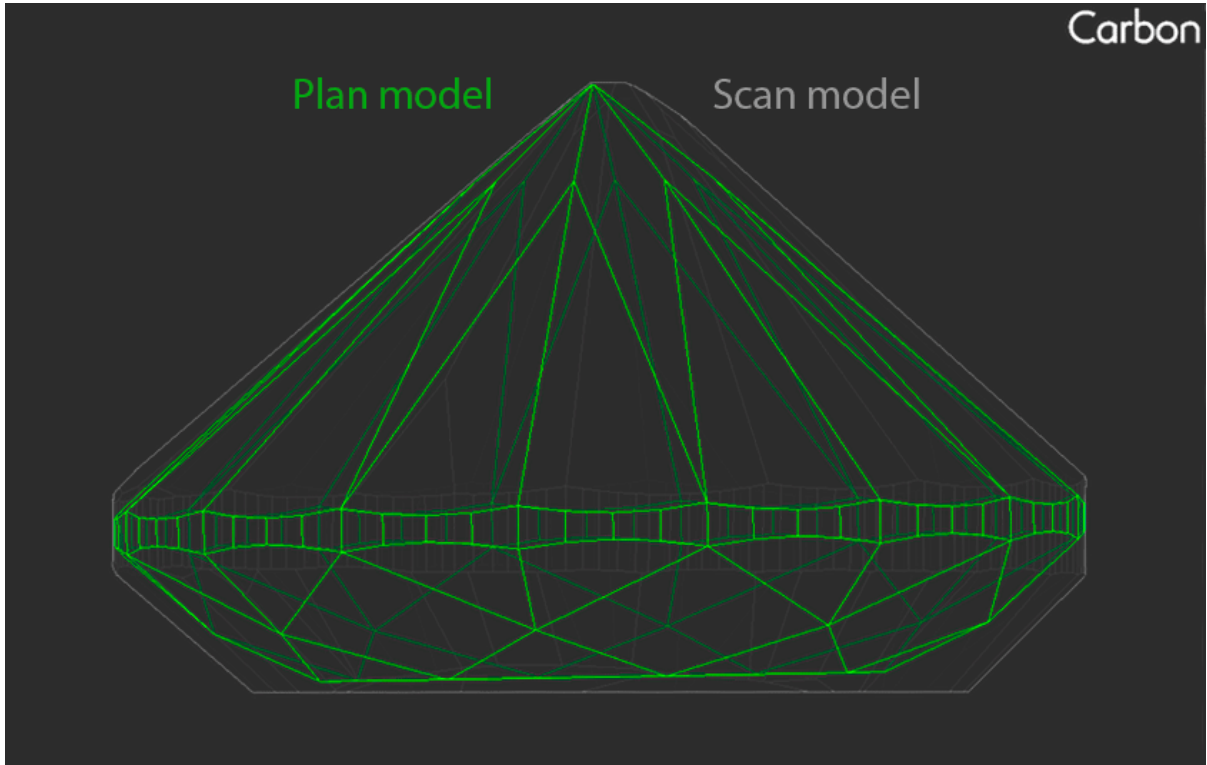
Reference line on Crown is the line of section of the scan's model by the plane passing through point A and parallel to the scan's table. Point A is the point on the crown's mains and halves of the intermediate model, which is most distant from the scan's table plane.

The B point is the point on the crown's mains and halves of the intermediate model, which is most distant from the plane of plan's table.

For the calculation of Reference line on Pavilion points A and B are the points closest to planes of scan and plan, amongst main and halves pavilion facets respectively.


Reference line: Distance to scan table is distance between point A and scan's table plane.

Reference line: Distance to plan table is distance between point B and plan's table plane.

Safe line calculation

For the calculation of Safe line an intermediate model (the blue one) is generated by polishing all facets of pavilion, crown and table of the scan (grey) down to facets of plan (green):
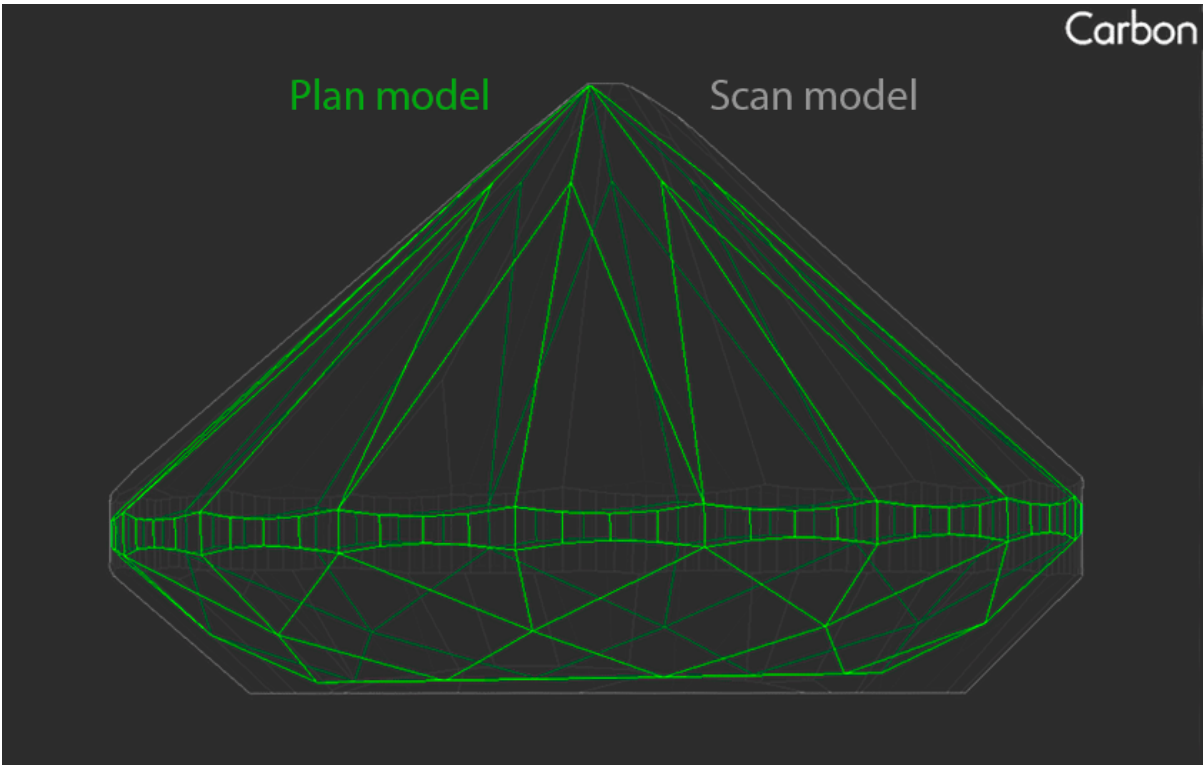
Safe line on Crown is the line of section of the scan's model by the plane passing through point C and parallel to the scan's plane. For each facet on the crown's mains and halves of the intermediate model a point on the facet is determined which is most distant from the scan's plane. From these points the closest to the scan's plane is point C.

For each facet on the crown's mains and halves of the intermediate model a point on the facet is determined which is most distant from the plan's plane. From these points the closest to the plan's plane is point D.

For the calculation of Safe line on Pavilion the points are found in the same manner except inversion: most distant point is selected amongst points closest to planes for each facet on the pavilion's mains and halves

Safe line: Distance to scan table is distance between point C and scan's table plane.

Safe line: Distance to plan table is distance between point D and plan's table plane.