Limited Warranty and Disclaimer

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Sarin Technologies Ltd.
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March 2006
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About this Document

☐ This document provides the information necessary to operate the Advisor system.

Notes and Warnings

The following note is used in this document.

NOTE
This is an example of a note.

Related Documents

<table>
<thead>
<tr>
<th>Document</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advisor Administrator Guide</td>
<td>This document describes how to configure Advisor.</td>
</tr>
</tbody>
</table>

Important Safety Information

Laser Description and Class

The Advisor is a class 1 laser system and contains two laser assemblies for mapping and marking.

Marking Laser
DiaMark: wavelength 1064nm, max power 80mw, class 4
DiaMark-Z: wavelength 1064nm, max power 1w, class 4

Mapping Laser
Wavelength 600-700nm, max power <1mw, class 2

NOTE
Exposure to the beam of a Class 1 laser will not result in eye injury and may therefore be considered safe.
However because this class 1 system contains laser systems of a higher class it is vitally important that the machine is NOT operated with any of the protective doors, covers, hoods or windows open.
Laser Safety

We at Sarin recommend that you provide laser safety training to all employees who work on or around the laser system. It is important that they understand the bio-effects of lasers as well as the facts about laser-radiation.

System installation, disassembly, maintenance and repair must only be performed by authorized Sarin customer support engineers. Sarin trained engineers are trained to comply with all applicable safety requirements regarding the use of laser devices at the customer’s premises.

**NOTE**

The Sarin warranty becomes null and void if servicing of the system is undertaken by a third party.

What is a Laser Class?

Laser products are classified to take account of the amount of laser beam you can get access to when the product is in normal use or during routine user maintenance. A laser product may contain a laser of a higher Class and this may be accessible during servicing.


Waste Electrical and Electronic Equipment (WEEE)

**Disposal of Electrical and Electronic Waste**

The symbol is now displayed on Sarin products to show our compliance with directive WEEE. The WEEE directive is about recycling parts and states that no electrical or electronic equipment can be discarded into the city’s normal waste disposal system.

**Obligatory Acceptance of Discarded Electrical and Electronic Equipment**

The end user of this product now has the right to request the product supplier to dispose of the product. Therefore, if you require help in discarding this product please contact your local agent or Sarin directly.
How to Contact Us

Please contact your local Sarin representative with any questions or comments you may have regarding the site preparation procedure.

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support@sarin.com

Website:

www.sarin.com
Advisor is a unique system designed to calculate optimally proportioned shapes in rough diamonds, for maximum yield. By combining computerized machine vision and advanced 3-dimensional image processing, Advisor accurately forecasts the best proportions of a final stone for all commercial shapes. In effect, Advisor is a decision support tool which assists the diamond cutter in the most crucial step of diamond processing – cutting the rough diamond while achieving the maximum yield possible, calculating millions of cutting options in seconds. Advisor takes into consideration different shape possibilities, proportions and internal flaws and provides the optimal solutions. Advisor maps grooves, holes, and other concave areas on the rough surface, enabling users to analyze complicated stones in a way not possible before.

This manual assumes that you have installed the system and that the system administrator has configured your Advisor. For instructions on how to use the hardware, contact your system administrator.

You can contact us through your local dealer or simply visit our website at: www.sarin.com

Languages

☐ During the Advisor installation, you will be prompted to select an interface language from the available options. Your operating system must support the language you select. If you do not see your local language in the list of available languages you may contact your local Sarin dealer to inquire about obtaining a localized version of Advisor.

Window 98 (no longer supported)

From version 2.0 Windows 98 is no longer supported and Advisor cannot be installed on this operating system.

Window 2000

1. Go to the Windows Control Panel and choose Regional Options.
2. Click the General tab, and then click the Set default button.
3. From the Select System Locale window, choose a Language.

Windows XP

1. Go to the Windows Control Panel and choose Regional and Language Options.
2. Click the Advanced tab.
3. Select a language for non-Unicode languages.
## What’s New in Release 2.0

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Best Value Feature</strong></td>
<td>Advanced algorithms will automatically decide which solution is more profitable while taking into account different shapes, cut grades and inclusions clarity and location. The solution is based on the price tables that can be customized according to your company pricing policy.</td>
<td>Planning for Best Value on page 32.</td>
</tr>
<tr>
<td><strong>Greatly Improved</strong></td>
<td></td>
<td>Planning for Multiple Stones (Two or More) on page 31.</td>
</tr>
<tr>
<td><strong>Multiple stone planning</strong></td>
<td>Now you can simply and quickly plan more than two stones out of the same rough. This feature enables you to simultaneously divide the stone into as many parts as you want and then plan each part separately.</td>
<td>Planning the Remainder on page 57.</td>
</tr>
<tr>
<td><strong>Remainder Advisor</strong></td>
<td>Planning multiple remainder planes (tops) is simple with the new remainder function. The system can even suggest the best tops to be removed.</td>
<td>Adding Inclusions (Advanced Inclusion Editor) on page 19.</td>
</tr>
<tr>
<td><strong>Advanced Inclusion mapping</strong></td>
<td>This revolutionary function enables you to accurately plot inclusions. The software automatically calculates the position and clarity of the inclusion according to the position of the inclusion as viewed by the user.</td>
<td></td>
</tr>
<tr>
<td><strong>Bottom saddle mapping</strong></td>
<td>Advisor can now map stones with a high precision that have bottom saddles.</td>
<td>Bottom Saddle Mapping on page 5.</td>
</tr>
<tr>
<td><strong>Marking improvements</strong></td>
<td>Marking options have been expanded.</td>
<td>Marking Stones on page 67.</td>
</tr>
<tr>
<td></td>
<td>- Control the size of table and culet cross</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Marking of the center girdle line</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Separate control of width and velocity for each type of marking</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Table and culet marking parameters have been separated for more flexibility</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Multiple saw planes can be marked simultaneously</td>
<td></td>
</tr>
<tr>
<td><strong>Manufacturing Stages</strong></td>
<td>Enables you to visualize the upcoming stages in the manufacturing process</td>
<td>Manufacturing Stages on page 66.</td>
</tr>
<tr>
<td><strong>Pricing Discount</strong></td>
<td>This feature enables you to create your own discount table below the official list price.</td>
<td>See the Administrator Guide</td>
</tr>
<tr>
<td><strong>Default Saw Thickness</strong></td>
<td>Automatically calculate the required thickness of the saw plane according to the rough part weight. The ranges can be customized according to your requirements.</td>
<td>Default Saw Thickness on page 13.</td>
</tr>
<tr>
<td><strong>Pricing Calculator</strong></td>
<td>A small tool that enables you to quickly calculate the price of different planning possibilities before even starting to plan the stone.</td>
<td>Pricing Calculator on page 27.</td>
</tr>
<tr>
<td><strong>Report improvements</strong></td>
<td>A wide range of available reports and labels have been added (including designing your own). All angles for all shapes can now be used in views, labels and reports.</td>
<td>Printing on page 85.</td>
</tr>
<tr>
<td><strong>Export all Results</strong></td>
<td>All planned results can now be exported simultaneously and automatically.</td>
<td>Exporting the Results on page 62.</td>
</tr>
<tr>
<td><strong>Cut grade Sequence</strong></td>
<td>Changing the display order of the cut grades is now possible.</td>
<td>Administrator Guide</td>
</tr>
</tbody>
</table>
## Feature

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Additional data display</strong></td>
<td>A large number of new data fields have been added All angles for all shapes can now be displayed</td>
<td></td>
</tr>
<tr>
<td><strong>Forced Allocation</strong></td>
<td>You can now control the restrictions on the forced allocations in ALL THREE axes enabling you to define both the direction and position of the final allocation.</td>
<td></td>
</tr>
<tr>
<td><strong>Laser Export safety distance</strong></td>
<td>Enables you to set the safety distance to the requirements of the external cutting equipment. For example the Quazer.</td>
<td>Administrator Guide</td>
</tr>
<tr>
<td><strong>Password protection</strong></td>
<td>You can now safeguard your production line by prohibiting anyone from changing the Proportion information, Pricing Table, Planning and Marking options, using a password.</td>
<td>Administrator Guide</td>
</tr>
<tr>
<td><strong>New File Types</strong></td>
<td>Sarin have added a new file type (*.cap) that includes all the video images when saving your data.</td>
<td>New File Types on page 3</td>
</tr>
<tr>
<td><strong>Stone Properties</strong></td>
<td>The Stone Properties window now contains more information.</td>
<td>Entering Properties on page 8</td>
</tr>
<tr>
<td><strong>Improved Mapping</strong></td>
<td>The mapping is not only more accurate but you can now select the different levels of accuracies.</td>
<td>Selecting the Mapping Accuracy Level on page 4</td>
</tr>
<tr>
<td><strong>Selectable Mark-up and Discounting</strong></td>
<td>You can make a selectable discount or markup using the Discount option for a combination of grading system, cut grade and weight range.</td>
<td>Selectable Price Discounts and Markup on page 50</td>
</tr>
<tr>
<td><strong>Select Report and Label Feature</strong></td>
<td>Right-click the report or label buttons to select different types of reports and labels.</td>
<td>Printing (Labels and Reports) on page 85</td>
</tr>
</tbody>
</table>

## New File Types

Before version 2.0 you could only save your stone information files in the *.stn format. Sarin have added the new *.cap format that also includes all the video images. This means that when loading *.cap files the video viewer is now enabled even though you are not connected to the hardware.

## Using the Help File

To display the built-in Help file do one of the following:

- Click the ? button
- Press the **F1** key on the computer keyboard
- From the **Help** menu, choose **Sarin Advisor Help**
The mapping procedure takes a video picture of the rough stone, measures it and creates a three-dimensional model of the rough stone. At the end of the mapping procedure, Advisor displays an accurate representation of the stone in the work area for further processing.

From version 2.0 the mapping is not only more accurate but you can now select the different levels of accuracies.

Advisor provides two mapping options:

**Regular Mapping**
This delivers a picture of the convex surfaces of the rough diamond. Concave areas are not thoroughly mapped. You will use this method, if your system does not include the optional concave mapping system.

**Concave Mapping**
This delivers a more accurate mapping of the stone by scanning the concave and convex areas. Concave mapping requires the optional concave mapping system available at Sarin Technologies Ltd.

### Selecting the Mapping Accuracy Level

Right click either the (regular mapping) or the (concave mapping) buttons and select an accuracy.

### Using Regular Mapping

Use regular mapping if your Advisor is not equipped with the optional concave mapping system. Regular mapping is done using a video camera. For this reason stones having an irregular surface should be mapped using concave mapping (if installed).

**To perform a regular mapping of the rough stone:**

1. Place the stone you want measured on the stage.
2. Click the button to start the regular mapping.
   
   The stage starts to rotate, showing, for a few seconds, a silhouette of the stone. The machine takes several pictures to later combine them into a three-dimensional representation of the rough stone.
3. If necessary, set the stage height. See *Setting the Stage Height* on page 6.
   
   The stage height only needs to be set manually when it has not been automatically detected.

When the mapping is completed the Plan tab opens automatically.
Using Concave Mapping

Use concave mapping if your Advisor is equipped with the optional laser mapping system. Concave mapping delivers a highly accurate picture of the rough diamond, including all sunken and indented areas.

◆ To perform a concave mapping of the rough stone:

1. Coat the stone with the special coating liquid.
2. Place the rough stone on the stage.
3. From the toolbar, click the button to start the laser mapping.
   The stage starts to rotate. For a short while, Advisor displays a silhouette of the stone, then a regular picture, and finally the laser picture.
4. If necessary, set the height of the stage. See Setting the Stage Height on page 6.

When the mapping is completed the Plan tab opens automatically.

Bottom Saddle Mapping

From version 2.0 Advisor uses a new algorithm enabling it to accurately map stones with a high precision that have bottom saddles. An example of a stone with a bottom saddle is shown below.
Remapping the Stone

The coating fluid adds volume and therefore affects mapping information. After concave mapping another step can be done to recalculate stone data without the coating.

To remap the stone:

1. Wipe the coating and place the stone on the stage (close lid).

2. From the toolbar, click the button to start the re-mapping.

Another set of silhouettes are taken of the cleaned stone and adjusts the stone data. The displayed picture is the final one.

When the mapping is completed the Plan tab opens automatically.

Setting the Stage Height

Although the stone sits on a physical stage, Advisor features a “virtual” stage that you can control via the software. The virtual stage is a plane that, like the physical stage, represents the surface where the stone is currently placed. It is represented by a horizontal line that, by default, coincides with the table of the stone.

You can change the vertical position of this virtual stage, which causes Advisor to map the rough stone from that line upwards. The portion of the stone that remains below the virtual stage line is not mapped.

The stage height is normally set automatically. However, if the stone overlaps the stage, or malleable material is used to fix the stone securely on the stage, this process may need to be done manually.

To change the height of the virtual stage:

1. Click the button. A red line is displayed across the work area and the stone.
2. Right-click anywhere on the stone image will cause the line to jump to that position.

   You can rotate the stone by clicking on the left mouse button and dragging the mouse left and right.

3. When the red line is in the correct height, click the **Stage Height** button on the bottom right-hand part of the screen. This sets the stage height.

4. Perform regular or concave mapping, as explained in the subsequent sections.

**NOTE**

If you conduct a regular mapping, Advisor considers the stone as if its table coincides with the virtual stage line and "discards" any remainder left below it. If you conduct a concave mapping, Advisor transforms the virtual stage line into a cut plane.

### Control Panel

The control panel located at the bottom of the screen contains the video controls and the Rotation Control.

**Video Controls**

The brightness and contrast adjustment sliders are used to adjust the illumination of the stone.

**Rotation Control**

Left-click the arrows to rotate the stone either left or right in small increments, or right-click the left and right arrows rotate the stone 90° for each click.

Clicking the Reset button positions the stone in its original position.

### Controlling the Vacuum Pump

You can manually switch the machines vacuum pump ON and OFF.

- From the **Toolbar**, click the button to turn the vacuum ON.

  To turn OFF the vacuum, click the button again.
Entering Properties

You can change the values of the stone color, clarity, fluorescence, price list and change the User Weight field. The Calculated weight field is disabled and cannot be changed.

◆ To enter properties:

1. Click the Stone Properties button. OR

From the File menu, choose Properties.

2. Using the table below as a guide you can change all the enabled fields to better describe the selected stone.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name field can contain a number or a mixture of letters and numbers. The name entered here is displayed in all reports, views and labels and is the default name when saving the stone.</td>
</tr>
<tr>
<td>Calculated</td>
<td>In the Calculated (weight) field Advisor displays the calculated weight of the stone, based on the measurement. This value cannot be changed.</td>
</tr>
<tr>
<td>User Weight</td>
<td>If you have reason to believe that the returned weight is not accurate and you know the real weight of the stone, you can manually change the weight in the User Weight field. This automatically changes the percentage of the part value in the Results.</td>
</tr>
<tr>
<td>Color</td>
<td>You can change the color value manually.</td>
</tr>
<tr>
<td>Clarity</td>
<td>You can change the clarity value manually.</td>
</tr>
<tr>
<td>Fluorescence</td>
<td>You can change the fluorescence value manually.</td>
</tr>
<tr>
<td>Price List</td>
<td>You can select another available price list.</td>
</tr>
</tbody>
</table>
This is the most important part of Advisor as it gives you complete control over planning uncut stones. You can plan for a single, multiple or matching stones. You can also choose anything between maximum price and maximum yield.

**Saw Planes**

The saw plane is a tool that enables you to determine how to section a stone into multiple parts. To achieve this, you define one or more saw planes that allow you to see, on the screen, the effects of the real saw plane.

Advisor provides the following methods for simulating saw planes:

- Adding a Saw Plane Directly
- Defining a Saw Plane Using Points
- Adding a Saw Plane with Auto Track
- Sawing the Remainder of a Stone

**Adding a Saw Plane Directly**

- **To add a saw plane directly:**
  1. Map the rough stone.
  2. Click the [Saw Plane] button either from the Toolbar or the Planes tab.

A saw plane is now displayed on the rough stone and a new saw is added to the saw plane list in the Planes tab.

3. To move the saw plane up and down, point to the saw plane, press and hold the right-hand mouse button and then drag the saw plane to another location.
To tilt the saw plane, point to the saw plane, press and hold the left-hand mouse button and then drag the saw plane until you reach the required angle.

The weight of each part is updated while moving the saw plane.

**NOTE**

If the Saw Plane button is clicked again without moving the saw plane a duplicate saw plane is created with the same parameters.

◆ **To delete a saw plane:**
You can remove saw planes that you do not need.

**NOTE**
You cannot delete saw planes already part of a planned stone.

☐ Select a saw plane and click the **Delete Saw Plane** button
OR

Point to the saw plane, right-click and click **Delete Saw Plane** from the menu.

◆ **To delete all the saw planes at one time:**
You can remove all the saw planes simultaneously.

**NOTE**
You cannot delete saw planes already part of a planned stone.

☐ Click the **button.

**Defining a Saw Plane Using Points**

A different method for defining a saw plane consists of marking points on the rough stone and letting Advisor draw a saw plane that passes through the marked points or at an optimal distance from the points.

◆ **To create a saw plane using points:**

1. On the Toolbar, click the **Track Saw** button.

   The **Toolbox** automatically displays the **Planes** tab and the cursor changes shape, as shown below.

   ![Cursor Shape Change](image)

   If the stone in the work area is not shown on the stage, click the **button on the video picture in the top-right-hand corner of the screen.)
2. Use the **Control Panel** or the mouse to rotate the rough stone to the position you want to place the first point.

3. With the mouse, left-click the rough stone wherever you want to place a point (either in 3D or video).

   Clicking the point again removes it.

4. You can also rotate the stone in order to get a different orientation and click the stone to create the more points. Advisor creates the saw plane. It should look like this.

5. You can repeat the above steps to add more points for better accuracy. As you add points, Advisor calculates the average location and angle of the plane.

6. When you have placed all the required points, right-click anywhere in the work area (not on the stone). The following pop-up dialog opens.

7. Click **Save and Exit** to add the saw plane.

   The new saw plane is now displayed in the **Planes** tab.

**Removing Points from the Stone**

◆ **To delete points:**

   - Right-click anywhere in the work area, NOT on the stone.

   Choose **Remove Points** to delete all the points you have made.

   **OR**

   Click the button on the left-hand side of the Control Panel to remove all the points.
Adding a Saw Plane with Auto Track

If the saw plane has already been manually marked on the diamond, the Auto-Track function enables you to create the saw plane on the screen, based on the manual marking. The Auto-Track function uses the hardware and takes additional pictures of the mapped stone.

◆ To add a saw plane by auto-track:

1. Map a stone that has been marked with the laser or a marker pen.
2. If your Advisor machine does not automatically turn the light on and off, then you must turn on the light. Otherwise, skip this step.
3. On the Toolbar, click the Auto Track button.

A saw plane is created using the marks on the stone. If the auto-tracking fails (for example, because the light was not on), a message is displayed showing the following options:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retry</td>
<td>If you can correct the error that caused the failure, correct it and click Retry.</td>
</tr>
<tr>
<td>Track Manually</td>
<td>If you cannot correct the error, click Track Manually. This automatically moves you to Track Saw mode for manually defining a saw plane along the marking.</td>
</tr>
</tbody>
</table>

Adjust to Marked Plane

When using Track Cut, Track Saw or Auto Track it is possible to move the newly created saw plane and then return it to its originally tracked position using the button.

Setting Saw Plane Thickness

You can change the saw plane thickness on the Planes tab. The thickness of the saw is recorded in microns or as a percentage of the rough stone. If you intend to use a thicker or thinner saw, you can change the values here.

The thickness of the saw affects the weight and height of the sectioned stones.

Advisor assumes that changing the thickness of the saw affects Part B. When you change the saw plane values Advisor changes the displayed width of the saw plane (the plane becomes visibly thicker or thinner) and recalculates the height and weight of Part B.
Default Saw Thickness

The default saw thickness is 50 microns unless the Default Saw Thickness option using rough part weight is enabled. See Advisor Administrator Guide.

Sawing the Remainder of a Stone

This procedure is carried out after allocating the final stone. It is designed to produce a final gem from the remainder of the planned stone. See Planning the Remainder on page 57.

Cut Planes

Advisor allows you to simulate the effect of cut planes by defining screen-displayed cut planes that “trim” the stone from different angles. Advisor provides the following methods for simulating cut planes:

- Adding a New Cut Plane
- Defining a Cut Plane Using Points

Adding a New Cut Plane

◆ To add a new cut plane:

1. Map the rough stone.

2. Click the New Cut button either from the Toolbar or the Planes tab.

A cut plane is now displayed on the rough stone and a new cut plane is added to the cut plane list.
3. You can now move the cut plane to where you intend to cut the rough stone. You can use the rotating and zooming functions to display the stone at an angle that provides the best display aspect.

Point to the cut plane, press and hold the right mouse button, and drag the plane to where you want. If you need to rotate the cut plane, point to it, press and hold the left mouse button and drag the mouse until you reach the required angle.

4. Right-click the section of the stone you want to keep.

You can change the selection by simply right-clicking the other side of the cutting plane.

After adding the cut plane and selecting the side you want to process, you can repeatedly rotate the stone, move and tilt the cut plane, and right-click the side you want to plan, until you are satisfied with the cutting angle.

◆ **To delete cut planes:**

You can remove individual cut planes that you do not need.

☐ Select a cut plane and click the button

OR

Point to the cut plane, right-click and click **Delete Cut Plane** from the menu.

◆ **To delete all the cut planes at one time:**

You can remove all the cut planes simultaneously.

☐ Click the button.

### Defining a Cut Plane Using Points

This function can be used for both video and 3D.

◆ **To define a cut plane using points:**

1. On the Toolbar, click the **Track Cut** button.

2. Use the Control Panel or the mouse to rotate the stone to a position where you want to place the first point.

3. With the mouse, left-click the rough stone wherever you want to mark another point. Clicking the point again removes it.
4. Using the left mouse button, mark points along the line, rotating the stone to bring more of the track mark into view. See *Removing the points* for removing all the points.

After marking more than three points, a purple line appears on the stone.

![Purple line on stone](image)

For accuracy you can add as many points as you require. The position of the cut plane changes to the average value of the points. This enables you to make fine adjustments to the positioning of the cut plane.

5. Right-click anywhere in the work area to open the pop-up menu.

6. Click **Save and Exit** to save the cut plane.

![Cut Planes tab](image)

The new cut plane is now displayed in the **Planes** tab and your work area should look something similar to the example shown below.

![Plan display](image)

7. Right-click either side of the cut plane to select it for processing. The other side will be discarded.
Removing the points

- To remove the points:
  - Right-click anywhere in the work area, NOT on the stone.

Choose **Remove Points** to delete all the points you have made.

OR

Click the button on the left-hand side of the Control Panel to remove all the points.

Using Multiple Cut Planes

Advisor enables you to simulate different cuttings and to compare between them and even view their combined effect.

Add more cut planes using one or more of the methods explained in the previous sections.

Now, you can view the combined effects of several cut planes or the effects of a single cut plane, by selecting or clearing the checkboxes in the Cut Plane list.

The options are:

a. Clear a box to remove the effect of a cut plane.

   For example, if you defined four cut planes, you can clear the checkboxes of two of them to inspect the combined effect of the remaining two.

b. When you clear a box, the cutting plane is no longer displayed.

   Click a name in the list (not the checkbox) to display the corresponding cut plane. You can display one cut plane at a time.

c. Remove a cut plane permanently.

   Click its name, and then click the button located on the side of the **Cut Planes** list.

d. Remove **ALL** cut planes permanently.

   Click the button.
Changing a Saw Plane into a Cut Plane

To change a saw plane into a cut plane:

1. Select a saw plane.

   The **Saw->Cut** button becomes active in the **Planes** tab

2. Click the **Saw->Cut** button.
   **OR**
   Right-click on the saw plane.

3. Choose **Make Cut Plane**.

   If the original saw plane has not been used for any plan, the saw is deleted and replaced by the cut plane. If it has been used already in a plan, Advisor automatically discards the unused side of the stone.

Adding Inclusions (Older Inclusion Tab Method)

This is the older method and uses the **Inclusion** tab and was the only method available before version 2.0.

The Inclusions function enables you to mark impurities and if necessary, to exclude them from the allocation.

To mark inclusions in the rough stone:

1. With the rough stone displayed in the work area, click the **Inclusions** tab.

2. Click the **Add String** button.

   The string is an auxiliary tool designed to help you mark inclusions accurately.

3. Either left-click two locations on the stone to create a string.
   **OR**
   Right-click anywhere on the stone to create a perpendicular string at that exact spot. You have to rotate the stone to see the string.

4. If necessary, drag the string so that it crosses though the inclusion.

5. Click the **Add Inclusion** button to add an inclusion mark on the string. An inclusion is now displayed on the string.

6. Left-click the inclusion and drag it along the string to the required position.

   The mark moves only along the string. Therefore, positioning the string
accurately along the real inclusions help you position the mark accurately on the inclusion.

7. If necessary, add more inclusion marks and use them to mark other inclusions the stone may have along the string.

Note the following:

- You can add multiple strings and each string can have multiple inclusion marks.
- When adding strings you may prefer to switch to video mode for better visualization. When adding inclusion marks you may prefer to work in 3D mode.
- When you select (click) a string or an inclusion on the screen, its color changes.
- The selected inclusion mark is colored red all the others are blue.
- Each inclusion is recorded in the Inclusion tab.

To delete inclusion marks:

- Select an unwanted inclusion or string and click the Delete Inclusion button.

  If a single inclusion mark was selected it is deleted.
  If a string was selected it is deleted with all its inclusion marks.

- The Delete all button deletes ALL the strings together with their inclusion marks from the rough stone.
Attaching a Saw Plane to an Inclusion

◆ To attach a saw plane to an inclusion:

☐ Click the Create Saw with Inclusion as Axis button.

A saw plane is created passing through the selected inclusion. The saw plane is now locked to the inclusion and can now be rotated freely using the inclusion as the axis.

NOTE
See Enabling and Disabling Inclusions (Considering Inclusions) on page 40.

Adding Inclusions (Advanced Inclusion Editor)

This method is more advanced than using the Inclusion tab and uses the Inclusion editor introduced in version 2.0.

Helpful Control Panel Buttons

The control panel buttons most helpful for this section are listed below:

<table>
<thead>
<tr>
<th>Button/Slider</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Changes the backlighting using the slider at the bottom of the screen.</td>
</tr>
<tr>
<td></td>
<td>Click the Zoom button and either scroll the mouse or operate the scroll wheel to zoom in and out. You can also click the 3D/Video image and do the same thing.</td>
</tr>
</tbody>
</table>

Marking Inclusions in the Rough Stone

The Inclusions function enables you to mark impurities and if necessary, to exclude them from the allocation. The Advanced Editor is able to include two types of inclusions:
Pique
These are round or bubble-like in shape and can be represented as a circular mass.

3D
This function uses Ray Tracking techniques to create a three dimensional inclusion anywhere inside the stone.

◆ To mark inclusions in the rough stone:
1. Ensure that the rough stone is displayed in the work area.
2. Click the button.

OR

From the Tools menu, click Inclusion Editor.

The Inclusion Editor opens displaying the stone on the stage.

<table>
<thead>
<tr>
<th>Inclusion Column Or Checkbox</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inclusion List and Type</strong></td>
<td>Lists the inclusions and the co-ordinates of the plots. The Inclusion type is displayed at the end of the inclusion name string and is either 3D or Pique.</td>
</tr>
<tr>
<td><strong>Clarity</strong></td>
<td>Choose a clarity value for the stone. As soon as you have chosen a value the entry is highlighted to indicate that it has been done.</td>
</tr>
</tbody>
</table>
| **Mode**                     | There are three modes (default is Ignore):
  - **Use** – The inclusion is included in the planning.
  - **Ignore** – The inclusion is NOT included in the planning.
  - **Auto** – Advisor decides whether the inclusion is inserted. |
| **Show Virtual Inclusion**   | This checkbox enables Advisor to use Ray Tracking techniques to add dots on the rough where the inclusion will most probably be. |

See also Inserting a 3D Type Inclusion on page 24.
Inserting a Pique Type Inclusion

◆ To insert a pique type inclusion:

1. The default Inclusion Type is Pique.
2. If Pique is not selected as the Inclusion Type, select it from the Inclusion Type selection box, as shown below.

3. Inspect the stone and determine where you want to insert a Pique inclusion.

   If you realize that a 3D inclusion is required, please see Inserting a 3D Type Inclusion on page 24.

4. When you have decided where to insert the inclusion, click the Add Inc. button on the top of the Inclusion Insertion pane.

   The inclusion is now displayed in the Inclusion List.

   **CAUTION**

   The Mode values are retained from the last time you inserted an inclusion as there are NO default values. The Clarity value is determined automatically by the size of the inclusion and can be overridden manually.

5. Click the New Plot button.

   The co-ordinates of the first plot are now displayed. They represent the X,Y co-ordinates of 0,0 to represent the starting point on the stone.
6. Click the stone (left-click) where you want to insert a pique inclusion.

A red circle is now displayed on the face of the stone and marks the spot where you want to insert the inclusion.

Left-click the circle to drag it to another position (without moving the stage), or right-click and drag it to either increase or decrease its diameter of the inclusion.

7. Click the **End Plot** button.

The button is now disabled until you move the stage.

If the **Show Virtual Inclusion** check box is selected on the bottom of the Inclusion Insertion pane, the Ray Tracing technique generates a series of red dot to signify a possible inclusion position. An example is shown below.

8. Click the **Edit Plot** button (now enabled) if you want to move the plots without moving the stage.

   Click the **End Plot** button to save the co-ordinates (The **Edit** button changes to **End Plot** when clicked)

9. Move the stage using the mouse and then click the **New Plot** button.

   If you do **NOT** move the stage the **New Plot** button is not enabled.
10. Click the stone for the second plot of the inclusion.

Making two plots on the stone enables the inclusion to be inserted anywhere on the surface or inside the stone. If you look at the video picture above you can see that the stone has been rotated.

The pique inclusion is now visible in the video image as a green dot.

11. Click the End Plot button.

12. Use the mouse right button to zoom in and out.

13. If required in the Clarity column you can change the clarity for each specific inclusion.

The change is high lighted marking the value as changed.

14. In the Mode column, change the value to Use if you want the inclusion included in the planning calculations. Set to Auto if you prefer the application to decide automatically. See example below.

15. Click the button to exit the Inclusion Editor.

The co-ordinates and any changes you made are saved.

NOTE

See Enabling and Disabling Inclusions (Considering Inclusions) on page 40.
Inserting a 3D Type Inclusion

The 3D type inclusion uses Ray Tracing for inserting an inclusion that is tracked along the path of light through the stone. Use this method when the inclusions are neither round nor bubble like in shape.

◆ To insert a 3D type inclusion:

1. The default Inclusion Type is Pique.
2. In the Inclusion Type list box, select 3D, as shown below.

3. Inspect the stone and determine where you want to insert a three dimensional (3D) inclusion.

If you realize that a pique inclusion is required, please see Inserting a Pique Type Inclusion on page 21.

4. When you have decided where to insert the inclusion, click the button on the top of the Inclusion Insertion pane.

CAUTION

The Clarity and Mode values are retained from the last time you inserted an inclusion as there are NO default values.

5. Click the button.

The co-ordinates of the first plot are now displayed. They represent the X,Y co-ordinates of 0,0 to represent the starting point on the stone.
6. Click the stone (left-click) multiple times to build an area that conforms to the inclusion you want to insert.

In the example above we see a multi-sided figure. Each click extends the side of the figure. The [Delete Plot] button removes the plotted lines.

7. Click the [End Plot] button.

The video image now displays the plot using Ray Tracing techniques. The [New Plot] button is now disabled until you move the stage.

If the Show Virtual Inclusion check box is selected on the bottom of the Inclusion Insertion pane, the Ray Tracing technique generates a series of red dot to signify a possible inclusion position. An example is shown below.

8. Click the [Edit Plot] button (now enabled) if you want to move the plots without moving the stage. Move the cursor over the plot until it changes shape. You can now edit the plot. An example is shown below.

9. Click the [End Plot] button to save the co-ordinates (The Edit button changes to End Plot when clicked).
10. Move the stage using the mouse and then click the **New Plot** button.

If you do **NOT** move the stage the **New Plot** button is not enabled.

11. Click the stone multiple to times to enclose the inclusion.

12. Click the **End Plot** button.

The 3D inclusion is now visible in the video image as a green mark.

13. If required in the **Clarity** column you can change the clarity value for each separate inclusion.

The change is highlighted marking the value as changed.

14. In the **Mode** column, change the value to **Use** if you want the inclusion included in the planning calculations. Set to **Auto** if you prefer the application to decide automatically. See example below.

15. Click the **button to exit the Inclusion Editor.**

The co-ordinates and any changes you made are saved.

**NOTE**

See *Enabling and Disabling Inclusions (Considering Inclusions)* on page 40.
Pricing Calculator

Before planning the rough stone it is important to know that you are able to use the Pricing Calculator to verify your decisions when planning the stone.

◆ To use the calculator:

1. Click the button.

2. Enter the values in the data boxes that you want to use in the planning.

3. Click the button to add the values to the list.

4. Select a row and then click the button to erase the row.

5. Click the button to erase the complete list.

6. Click the button to close the screen.

Planning the Rough Stone

Setting the Planning Parameters

After the stone has been mapped, this section explains how to plan the optimal polished stone that can be cut from the rough stone. This is based on the rough stone after adding any saw and cut planes that are required.

Advisor suggests an optimal polished stone according to a set of planning parameters. You can perform one or more plans using different planning parameters, and later compare the resulting polished stones in the results list. This section explains the basic planning process. After performing a
A basic plan, which is fully automatic, special Advisor tools allow to allocate residues and to fine-tune the planning by manually controlling a wide range of parameters.

**Planning Parameters Pane**

The basic planning controls are located at the top right-hand corner of the screen and display the current values for each planning parameter.

The planning parameters are:
- Shape
- Tilt
- Grading Institute
- Cut Grade
- Program

### Selecting the Shape

**To select a shape:**

1. Click the **Shape** button located in the Planning Parameters pane.

   ![Shape Selection Window]

   This opens the **Shape Selection** window. The **Shape Selection** pane contains all the available shapes.

2. Click any shape.

   The window closes and the selected shape is updated in the **Planning Parameters** pane.

**NOTE**

Any shape with no cut grade is disabled.

To add a new shape see the **Advisor Administrator Guide**.
Tilt
This parameter represents the tilting angle of the table above the stage, in either direction. During the planning, Advisor automatically tilts the table in order to find the angle that yields the biggest stone.

Tilt Values

<table>
<thead>
<tr>
<th>Tools Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Results in a final stone whose table is parallel to the stage.</td>
</tr>
<tr>
<td>180</td>
<td>Enables Advisor to find the best angle for the table that would yield the biggest stone.</td>
</tr>
<tr>
<td>0+0 distance</td>
<td>To ensure the final stone's table is &quot;locked&quot; to the stage or saw plane.</td>
</tr>
</tbody>
</table>

To select a custom angle:
1. Click the Tilt value to open the drop down-box displaying the built-in values.
2. Enter a custom value as shown below.

The entered value represents the maximum tilt: that Advisor will use to plan a final stone whose table is not tilted more than the angle displayed here.

Grading System Selection
This parameter represents one of the standard grading systems. Advisor is shipped with widely accepted institute settings; and your system administrator may have defined additional institutes.

Select an institute for Advisor to use in planning the stone to meet your specific quality requirements.

Cut Grade Selection
Each grading system may offer a different number of cut grades.

Program Selection
Manual
When in Manual mode all four of the planning parameters must be entered manually (Shape, Tilt, Institute and Grade).
Program
A program can be created that will plan a pre-determined set of shapes or cut grades.
The manual parameters are disabled when selecting a program.

Best Value
This is a program for determining the best value of a stone using the specially created best value templates.

Planning a Single Stone
This section describes how to plan a single stone within the rough stone.

◆ To plan a single stone:
1. Set the planning parameters if required.
2. Click the Makeable button located on the toolbar to plan a whole stone using the Part A planning options.

The planned polished stone is displayed inside the rough stone. The Results tab is automatically selected and displays the result.
Detailed stone data is displayed on the screen listing the dimensions and angles of the polished stone.

NOTE
When planning a polished stone using the Makeable button any saw plane currently displayed is disregarded.
Planning for Multiple Stones (Two or More)

You can now divide the stone into as many parts as you want and plan each one separately.

◆ To plan for multiple stones:

1. Add multiple saw planes as shown below. In the example below some of the saw planes added are not viable and are used only to demonstrate the new feature.

Only the first four saw planes are displayed with the information on the five parts they have formed.

2. After planning it could look like this.

The information for each part is displayed on the left-hand side of the screen using the same color as the sections of the stone.
Planning for Best Value

The best value planning has been remarkably improved. We suggest you use the improved default template (HRDVGVG) as described below.

This revolutionary feature enables Advisor to automatically suggest the best plan for two stones that yield the highest profit. This however, may not necessarily result in the highest yield. The results from Best Value planning are identified by a $ sign displayed on the shape icon. You can also create your own Best Value templates as described in the Advisor Administrator Guide.

◆ To create a best value plan:

1. In the Planning Parameters pane, click the Manual field.

   ![Planning Parameters Pane]

2. If you do not have your own template use the Sarin default template, HRDVGVG as shown in the figure above.

   HRD is the name of the Institute and VG is the cut grade (Very Good). VG is repeated again (VGVG) to signify that the planning is for two stones of the same quality.

3. Click the button.

   ![Planning in Progress]

   A message, Planning in Progress is displayed on the top of the planning area until the planning is completed.
4. You can click the **Stop** button to stop the planning and exit from the planning mode.

Advisor creates the planning for two stones using sophisticated algorithms and the template parameters. As soon as the planning is completed the stone planning information is displayed on the screen. The results are displayed in the **Results** tab with a $ sign displayed on the shape icon.
Creating a Multiplan

Multiplan plans a sequence of plans with different orientations enabling you to decide which plan is more suitable for the rough stone.

◆ To make a multiplan:

1. Click the button. The following screen is displayed:

![Multiplan screen]

You can rotate the individual plans using either the mouse or the control panel. You can also sort the displays by either weight or tilt. You can also switch between 3D and video displays.

2. You can select and save one or more plans in multiple ways.

All saved results have the Multiplan icon displayed in the center of the shape symbol.

a. Select a plan and then click the button to save the results.

b. Right-click to open the short cut menu.

Choose Add to result list.

c. Double-click any plan to save the results and exit the window.

3. Click the button to exit the window.
4. If you want to change the **Multi-Plan** restriction options, click the `Edit Options...` button.

The **Multi-Plan Restrictions** window enables you to change the restrictions. You can select a maximum weight loss in either percentage or in points, and give a value for the minimum allowed tilt.

**Results Comparison Table**

You can compare the results while they are displayed in a table that can be customized to your own needs.

**Displaying the Results Comparison Table**

- **To display the results comparison table:**
  
  1. Click the `button.`
  
  The results comparison table is displayed.

  2. Click the `Print` button to print the table.
Customizing the Results Comparison Table

To customize the results comparison table:

1. With the Results Comparison Table displayed right-click anywhere inside the window or on the table.

   ![Field chooser](image)

   The short cut menu opens.

2. Choose Field chooser.

3. Select a field you want to Include in the table and then click the Add button.

   Only those fields listed in the Displayed Fields pane are displayed in the table.

4. Select a field you want to Remove from the table and then click the Remove button.

   The fields are displayed in the table as listed in the Displayed Fields pane.

5. Change the position of the columns using the ‘Up’ (moves the column to the left of the table) and the Down (moves the column to the right of the table) buttons.

6. Click the OK button to save the changes and close the window.
   OR

   Click the Cancel button to discard any changes and close the window.
Planning Parts of a Sectioned Stone

If you have sectioned the stone with a saw plane, you can plan the parts separately or simultaneously.

To plan parts of sectioned stone:

1. Set the planning parameters.
2. Select a saw plane using one of the methods described below:
   a. Right-click anywhere in the work area.

   ![Display Saw Plane]

   Choose Display Saw Plane, and then select a saw plane from the list

   OR

   b. Select the Planes tab, and then select the required saw plane from the list.

3. Choose a planning button:
   - To plan the blue part of the sectioned stone click the Plan A button.
   - To plan the red part of the sectioned stone click the Plan B button.
   - To plan both parts simultaneously click the Plan A+B button.
Planning Similar Pairs

Another method for planning two stones consists of using the Best Pair function. Clicking the Best Pair icon produces two near-identical stones using the Part A planning options. You do not have to section the stone with a saw plane first; the procedure adds the saw plane automatically.

◆ To plan similar stones:
  1. Set the Part A planning parameters.
  2. Click the Best Pair button to plan similar stones using the Part A planning parameters.

![Planning Similar Pairs](image)

Advisor produces two almost identical polished stones inside the rough stone.

Natural Skin Factor (Rough Skin)

The Natural Skin Factor is used when the rough stone has a very pitted or uneven outer surface, and you prefer to exclude a certain thickness of the outer layer from the planning computation. The Skin Factor can be between 0 to 3,000 microns per stone. The Skin Factor is reset after each measurement.

◆ To change the rough skin factor:
  1. Right-click in the work area to open the following menu.

![Natural Skin Factor](image)
2. Choose **Change rough skin**.

![Rough Skin window]

The **Rough Skin** window opens.

3. Check the **Leave** checkbox to enable the **Rough Skin** settings, and then enter the required value.

4. Click **OK**.

All plans will now consider the rough skin according to the value defined above. When a new rough stone is measured the rough skin function is automatically cancelled (the checkbox is cleared) to ensure that it is not left active in error.

All plans that were made using rough skin have a rough skin status symbol inside the shape displayed in the **Results** tab.

**Asymmetrical Polish Planning**

Asymmetrical planning is designed to get a better yield from a specific rough stone or from the usable remainder left on a rough stone. This enables you to offset the culet or the table so they are no longer exactly on the same vertical axis. The culet size can also be changed making it flatter, so it can fit into the available area of the rough stone.

**NOTE**

Asymmetrical allocation is currently supported on all shapes except for Emerald, Princess, Rectangle, Triangle and user (GemCad) shapes.
Enabling and Disabling Inclusions (Considering Inclusions)

If the inclusions are disabled on the Inclusions tab, Advisor still shows the inclusions in the stone but does not exclude the impurities from the allocated gem: the inclusions that remain within the allocated gem are shown in red and those that happen to remain outside are shown in green.

See also Adding Inclusions (Older Inclusion Tab Method) on page 17.

Example of Pique Inclusions

This is an example of a polished stone that excludes the pique inclusions shown below marked in the rough stone.

Example of a 3D Inclusion

This is an example of a polished stone that contains a 3D inclusion shown below inside the rough stone.

You can enable or disable the inclusions, using the:

- Inclusion tab
- Inclusion editor
- Right-click menu when clicking the inclusion on the 3D/Video image

**NOTE**

Except for the mouse method, each inclusion must be enabled or disabled in the editor it was created in (tab or editor method).
Using the Inclusion Tab

- To enable/disable pique inclusions using the inclusion tab:

1. Click the **Inclusion** tab.

   ![Inclusion Tab](image)

   The **Inclusion** tab table is displayed.

2. Select the checkbox to enable the inclusion, or clear the checkbox to disable the inclusion.

   **NOTE**

   To insert inclusions using the older method, see *Adding Inclusions (Older Inclusion Tab Method)* on page 17.

Using the Inclusion Editor

This example shows a 3D inclusion but the procedure is exactly the same for a pique inclusion.

- To enable/disable inclusions using the inclusion editor:

1. From the toolbar, click the **button**.

   ![Inclusion Editor](image)

   The **Inclusion** Insertion pane is displayed. The **Clarity** selection changes color when the value is changed.

2. In the **Mode** column, click a mode.

   The **Auto** mode enables the planning algorithm to decide.
Using the Mouse

◆ To enable/disable inclusions using the mouse:

This method uses the mouse to toggle the Ignore or Use, in planning options.

1. Right click the inclusion you want to enable or disable.

The menu displays Ignore in Planning
OR

Use in Planning.

2. Click Ignore in Planning to DISREGARD the inclusion in the planning.
OR

Click Use in Planning to INCLUDE the inclusion in the planning.

Standard Size Planning

For each institute, shape, cut grade combination you can define standard sizes in order to produce plans that yield stones of a pre-defined length and width to better suit your customers.

For each combination you can define multiple standard sizes: Advisor will plan the biggest among them. When Standard Size Planning is enabled Advisor generates two plans: the regular (best possible) and the biggest among the pre-defined standard sizes. The Results tab then displays both the results. In the second result in the Results table if it exists, the standard size symbol is shown inside the stone shape.

To define this feature, see the Advisor Administrator Guide.

Recall Plan

This is used when a rough stone has been previously planned and the results accepted by the customer or the diamond cutter before being sent for blocking or bruting. The previous plan can now (after sawing and bruting/blocking) be recalled and located into the current state of the rough stone. This function is especially useful for marking girdle lines on bruted or blocked stones.
To recall a previous plan:

1. From the Toolbar click the Recall Plan button.

   ![Select Allocation to Recall window](image)

   The Recall Planning window opens.

2. Choose a rough stone from the list in the upper pane.

   The rough stones results are displayed in the results table in the lower pane.

3. Select the required result from the lower pane.

4. Click Recall.

   This inserts the selected polished stone into the new rough at zero tilt. The Calculator tab is opened automatically enabling you to make small adjustments before you mark the stone.
Forced Planning

Forced planning is used to force the system to plan the polished stone in a specific orientation or position. The degree of movement and rotation after positioning the polished stone in the required position can be controlled by a set of pre-defined parameters.

See the Advisor Administrator Guide for details on how to change these parameters.

To force a plan using movement restrictions:

1. Click either the Forced A button or the Forced B button.

2. When in Forced Planning mode, select either the Low or High restriction parameters.

3. Move the polished stone into the desired position. Left-click and drag, moves the polished stones within the rough stone. Right-click and dragging the polish rotates the polished stone within the rough.

4. When the polish is in the required position click right click and select the Plan Polish option.

A stone is now planned using the selected movement restriction parameters for forced planning.
Planning Results

The Result list displays all the plans created for the current rough stone.

Planning Status Symbols

When the Results tab is selected the planning results are displayed. The stone shape in each row can display a progress symbol to show what the status of each result is. If there is no symbol displayed in the stone shape it means that the plan has been processed successfully without any special events.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The planning process has ended normally.</td>
</tr>
<tr>
<td></td>
<td><strong>Stopped</strong> - The plan has been halted and has not been fully planned.</td>
</tr>
<tr>
<td></td>
<td><strong>Process</strong> - The planning is currently in progress.</td>
</tr>
<tr>
<td></td>
<td><strong>Pending</strong> - The plan is queued. It will start as soon as the previously queued plan ends. As programs usually perform several plans, this button is often seen after launching a program.</td>
</tr>
<tr>
<td></td>
<td>Result was created using <strong>Remainder</strong>.</td>
</tr>
<tr>
<td></td>
<td>Result was created using <strong>Interactive</strong>.</td>
</tr>
<tr>
<td></td>
<td>Result was created with <strong>Rough Skin</strong> active.</td>
</tr>
<tr>
<td></td>
<td><strong>Calculator</strong> - This plan has been computed using the Calculator tool.</td>
</tr>
<tr>
<td></td>
<td>This plan has been generated automatically based on the best standard size defined for the current institute-shape-cut grade combination.</td>
</tr>
<tr>
<td></td>
<td>Denotes the result of valued based planning. The system now automatically suggests the best plan for two stones so that they will yield the highest profit, not necessarily the highest yield.</td>
</tr>
<tr>
<td></td>
<td>This is the Multiplan, which consists of a sequence of plans with different orientations enabling you to decide which plan is more suitable for the rough stone.</td>
</tr>
</tbody>
</table>

The Results Table and Viewing Results

Advisor displays the results of the different plans, and lists them in the Results table on the right-hand side of the screen. Notice that a pre-defined program may include several plans of the same rough stone, performed under different parameters. In such cases, the results table lists as many rows as the number of plans performed by the program. The Result table is automatically displayed when planning is completed.
Selecting a result in the table displays the detailed stone information in the work area. You can select either a single result or two results of a sectioned stone.

A description of data displayed in the Result table is shown below:

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Shape**                         | Advisor indicates the shape you selected  
A status symbol, if present, is displayed in the center of the shape. |
| **Saw Plane ID**                  | If you selected a saw plane for this plan, its ID is displayed here. Otherwise, this field is empty. |
| **Polish Weight**                 | Advisor displays the calculated weight of the polished stone. This value can be changed manually if enabled in the Options window General tab. |
| **Part Weight**                   | If this plan applies to only one stone it is the same as the rough weight. If there are multiple parts this value reflects the selected part. |
| **Grading System and Cut Grade**  | These values were selected either manually or defined in the planning program. |
| **Color**                         | Click the field to open a list, and select a color.                         |
| **Clarity**                       | Click the field to open a list, and select a clarity value.                 |
| **Price List**                    | Click the field to open a list, and select a price table to calculate the price of this stone. |
| **Value**                         | Displays the calculated value of the stone.                                |
| **Shape**                         | Advisor indicates the shape you selected  
A status symbol, if present, is displayed in the center of the shape. |
Weight Pointer Indication

This indicator works in conjunction with the selected price table to inform you when the weight of the planned stone is approaching a weight pointer that could greatly increase your profit.

![Weight Pointer Indication Image]

Polished weight value turns **RED** when in range

When the polish weight is within 2% range of a weight pointer, the polish weight value turns **RED** and a blinking message is displayed at the bottom of the screen.

- **To show/hide color, clarity and price in the results table:**
  1. Right-click anywhere in the **Results** table.

  The following menu opens.
  2. Click **Show Color/Clarity** or **Hide Color/Clarity** to toggle the entire pricing row on or off.

- **To change the color:**
  1. Click the **Color** value to open the color list.

  ![Color Change Image]

  2. Choose a color for the polish stone. Changing the color will affect the value of the stone.
To change the clarity:

1. Click the **Clarity** value to open the color list.

![Image of clarity options]

2. Select the clarity for the polish stone. Changing the clarity will affect the value of the stone.

To select another price list:

1. Select the **Results** tab, located in the Toolbox pane.
2. Ensure that the **Color/Clarity** is displayed. **IF NOT**
   - Right-click the **Result** and choose **Show Color/Clarity**.
3. Click the **Pricelist** displayed.

![Image of price list options]

   The Price List menu opens.
4. Choose a **Price List**.
Detailed Stone Information

Selecting a result in the result table displays the relevant result details in the work area. For a sectioned stone you can select both results in the results table and the detailed stone information is displayed in the work area.

Pricing the Polished Stone

As soon as the planning ends, Advisor calculates the value of the final stone, based on the price list that is currently selected in the Results tab. You can recalculate the price according to a different price list, by simply selecting another Price Table. You can also make use of the Advisor calculates the value according to the stone’s weight, color, and clarity. If you change the values in the results table, the calculated prices changes accordingly. If the currently selected price lists does not include any prices for the weight, color, and clarity of the current stone (or if your system does not have any price lists yet), the Value field remains empty.

Price Discount for Individual Results

Each result can be given a specific discount as a percentage of the price according to your company’s discount policy to accurately determine the final price of the polished stone.

◆ To discount a result by a value of X%:
1. Click the price value in a planning result.

The Discount menu opens.
2. Click a value close to the target discount. The selected discount is now displayed and the price is changed according to the selected discount. The discount value is displayed on the left of the color.

3. The cursor changes to a double sided arrow when hovering over the discount value.

Right-clicking increases the discount value, and left-clicking decreases the discount value.

Global Price Discounts and Markup
You can make a global discount or markup using the Discount option for a combination of grading system, cut grade and weight range. This is explained in the Advisor Administrator Guide.

Selective Price Discounts and Markup
If you require only specific mark-ups and discounts use the explanation below: It is important to realize that these changes must be set for each combination of:

- Grading system
- Cut Grade
- Weight range

This means that each discount or mark-up you set is specific to a combination of grading system, cut grade and weight range.

For making simple discounts or mark-ups use the instructions below.

◆ To make a selected discount or markup:

1. Click the button to open the Options screen.
2. Click the Price Lists tab.
3. Make a discount setting as shown below.

In the example above we have two examples.

a. Stones using the HRD grading system, a color of D, clarity of VS2 and within the 3.00 to 4.00 ct. weight range have a 25% price mark-up (+25.00).
b. Stones using the HRD grading system, a color of D, clarity of IF and within the 3.00 to 4.00 ct. weight range have a 25% price discount (-25.00).

4. Open the **Results** tab.

As you can see the stone we planned meets these requirements exactly and therefore shows a mark-up of 25%.

5. To remove the mark-up, click on the price ($21,210).

6. Click the 0% entry.

   The true price is now shown as $16,968, without any mark-up (0%).

**Optimizing the Weight/Price Ratio**

Due to the non-linear makeup of the pricing tables you can now slightly bias the polished diamond’s weight in the results list to see the change in price. You can bias the weight up to ±20% of the original value. This is useful in determining how the stone’s price changes due to a change in the weight. The weight is also changed on all the reports and labels. To enable this feature please see the **Advisor Administrator Guide**.
To optimize the weight/price ratio:
1. Select the Result you want to change.
2. Place the cursor over the Weight value.
3. Use the left-hand mouse button to decrease the value and the right-hand button to increase the value.

Polish weight that has been changed is displayed with a yellow background.

Deleting Results
To delete a result:
1. Select a result.
2. In the control pane on the right-hand side of the screen click the Results tab.
3. Right-click to open the following menu.
4. Click Delete to delete the selected row.
OR
Click Delete All to delete all the results.

Using the 3D and Video Control Panel

Rotating, Tilting and Zooming the Stone
After mapping a stone, its video picture remains on screen when you activate main menu commands that use the picture. In all such displays, you can rotate the stone in all directions to see its different sides. You can also zoom in and out, and use the fine tilt and rotate.
To rotate and tilt the rough stone using the mouse:

- Point anywhere inside the work area, then press and hold the left mouse button, and drag the mouse in any direction you want.

To rotate and tilt the rough or polish using the control panel:

1. Select the Rough or Polish selector buttons.
2. Left-click the Rotate and Tilt buttons for changing the position of the stone in small increments or right-click for 90° increments.

To change the rough and polish increments:

1. Right-click either the Rough or the Polish buttons.

The Rotation increment window opens.
2. Enter a value (degrees).
3. Click OK.

To rotate and tilt the saw plane using the mouse:

- Select the saw plane, then press and hold the left mouse button, and drag the mouse in any direction you want.

To rotate and tilt the saw plane using the control panel:

1. Select the Saw Plane selector button.
2. Left-click the Rotate and Tilt buttons for changing the position of the saw plane in small or large increments.

**NOTE**

Before this function can be used you have to position the saw plane into an almost horizontal position to enable the tilt buttons. There are two types of increment settings, small and large.

To change the saw increments:

1. Right-click the Saw button.

The Saw increment window opens.
2. Click either **Small** or **Large** steps.

<table>
<thead>
<tr>
<th>Increment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td><strong>Tilt:</strong> 1° <strong>Rotate:</strong> 10 microns</td>
</tr>
<tr>
<td>Large</td>
<td><strong>Tilt:</strong> 3° <strong>Rotate:</strong> 50 microns</td>
</tr>
</tbody>
</table>

3. Click **OK**.

**Reset Button**

Click the Reset button to move both the video and the 3D picture to their original state (after rotating them). In case a saw plane has been defined, the stone will rotate to display a perpendicular view of the plane.

**Top, Side and Bottom View Buttons**

These buttons are only enabled when a polished stone is selected.

Click one of these buttons to change the display view and rotate the polish stone to the required orientation.

**Zoom Button**

Click the **Zoom** button with the left-hand mouse button to zoom in and the right-hand button to zoom out.

帮扶
to zoom using the mouse:

- Right-click either the rough stone or the polish and then drag the mouse to zoom in and zoom out.

**Synchronize 3D -> Video Button**

Click the **Synchronize** button to synchronize the 3D image with the video image. When synchronized, rotating the video also rotates the 3D. Select **None** from the right-click menu to cancel synchronization.

**Custom Views (PhotoReal and Video)**

You can add your own customized views using the Views/Report Editor.

The **Custom Views** button is located on the left-hand side of the 3D and Video Control Panel.

**Regular View**

This returns the display to the normal Advisor view.

**Photorealistic View**

This view displays a photorealistic view of the diamond.
To display the PhotoReal view:

1. Click the Custom Views button at the bottom right-hand corner of the screen.

The Custom Views menu opens.

2. Select PhotoReal.

Exiting Photorealistic View

On the Custom Views menu choose Regular.

Photorealistic Display Tools

A set of tools at the top of the photorealistic display allows you to perform different operations. In this mode, you use the following functions:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotating the picture</td>
<td>Use the mouse to rotate the picture as you would rotate the 3D display. Click this button to build a video sequence of the photorealistic pictures of the diamond. As you click the button, DiaVision starts taking a series of pictures of the photorealistic image itself (the camera is not involved in the process). A progress bar indicates how much of the process has been completed at any given time. Wait until the progress bar runs its course to completion.</td>
</tr>
<tr>
<td></td>
<td>Opens a menu where you can select a background color for the photorealistic display area.</td>
</tr>
<tr>
<td></td>
<td>Opens a menu where you can select a display angle (view) of the picture.</td>
</tr>
<tr>
<td></td>
<td>Opens a menu where you can select a lighting option for showing the photorealistic picture under different lighting.</td>
</tr>
</tbody>
</table>

Interpreting the Photorealistic View

Most researchers agree there is no one ideal cut. There is a natural law of crown / pavilion angle relationship which makes cutting for better brilliance and yield possible. This means there are many proportion combinations for ‘ideal cuts’.
The diamond on the left has more light return, but less fire. It is a Brilliant Ideal Cut (BIC). On the right is a Fiery Ideal Cut, with a little less light return, but lots of fire because of the strong crown angles. The Tolkowsky fits in the middle. It provides a good balance between the Brilliance (light return) and Fire (dispersion or rainbow colors).

The Ideal-Scope view is used to gauge light return, leakage and symmetry. Too much leakage is bad. And if you see a lot of darkness in a diamond then its light return is reduced. A good dark star provides that contrast in a diamond that makes it sparkle and scintillate when it is moved. Dispersion or rainbow fire comes from those dark areas. The star means the diamond is symmetrical.

### Ideal Scope Reference Chart

- **Light Return:**
  - EXCELLENT
  - VERY GOOD
  - GOOD
  - FAIR
  - POOR

- **Symmetry:**
  - Excellent
  - Good
  - Fair
  - Poor
Planning the Remainder

After obtaining a satisfactory polished gem, and if you still have a usable remainder left on the rough stone, you can then get Advisor to plan the residue. This procedure can define a new saw plane between the final stone and the residual part, or multiple parts. You can then select the remaining part or parts for planning.

There are two methods available:

- **Quick method** - plans the remainder automatically
- **Manual method** - gives you complete control over the planning process as well as a **Remainder Advisor** option

**Automatic Method**

The **Best+Remainder** function is used to automatically plan a best stone and then use the remainder to plan the remaining best stone.

◆ **To plan the remainder automatically:**

1. Map or load a stone.
2. Set the **Part A** and **Part B** planning parameters.
3. Click the **Best+Remainder** button.

The optimal stone is planned according to **Part A** planning parameters and then the best remaining polish is planned according to the **Part B** planning parameters.
**Manual Method**

This method allows you to place a saw plane where you want, whereas the automatic process places the saw plane on the facet for the best possible polish, which could be different from what you actually require.

- **To plan the remainder manually:**
  1. Plan a single stone.
  2. Right click the button.

    ![Auto Tops, Best Top, Table Top]

    **NOTE**
    
    If you left-click the button without first opening the menu the option last selected is performed.

  3. Using the table below as a guide, click an option.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Tops</td>
<td>Attaches multiple saw planes to deliver the best yield.</td>
</tr>
<tr>
<td>Best Top</td>
<td>Attaches a saw plane to the facet that would give the best remainder.</td>
</tr>
<tr>
<td>Table Top</td>
<td>Works exactly like the previous version, a saw plane is automatically placed on the table. You can then move it when clicking another facet.</td>
</tr>
</tbody>
</table>

  4. If required you can also manually tilt and move the saw planes until they meet your requirements.

    ![3.03oct (4.728ct ) 63.9%]

    The information for each part is displayed on the left-hand side of the work area when the **Results** tab is selected. The initial saw plane is blue the others are red.
5. When the saw or saw planes are positioned correctly, right-click inside the work area to display the following menu.

   Save and Exit
   Exit Without Saving

6. Click **Save and Exit** to save the result.
   OR
   Click **Exit Without Saving** if you don’t want to save the result.

   Results created using Remainder will show the Remainder status symbol on the shape in the result.

**Adding a Remainder**

While in Remainder mode, you are able to add as many remainders as you require using the special button.

**Fine-tuning the Planning**

The automatic planning endeavors to cut the best stone, preserving standard proportions. However, you can manually change the proportion parameters and create a slightly different plan in order to produce a stone that better serves your interests.

Advisor uses two methods to fine tune the planning:

**Manual Method Using the Diamond Calculator**

You fine-tune the parameters manually. For example, if the rough stone is large enough to let you produce a higher-grade stone, you can freeze proportion parameters affected by the height and manually add more height. The result would be a stone the height of which is not proportionate to the girdle thickness but weighs more than the automatically allocated one.

**Interactive Method**

You move the saw plane and dynamically see the changes in the planning as you use the mouse to change the saw plane position.

**Using the Diamond Calculator**

The stone calculator is used to fine tune the final polished stone. You can lock any of the values that you do not want changed.
To fine tune the planning manually:

1. After the planning is completed, select the **Calculator** tab.

   ![Calculator Tab](image)

   The **Calculator** tab opens showing the current grade.

2. Select a grading system (Institute).

3. To change the numeric value of a parameter directly, type the value in the corresponding box. You can also click the arrow buttons to increase or decrease the value.

   When you change the value of a parameter, Advisor automatically updates the values of related parameters in order to preserve proportions. For example, changing the pavilion angle also changes the total height. Advisor allows you to freeze affected parameters so you can change a value without updating other values. To freeze a parameter, click its **Lock** toggle button. To reinstate a parameter, click its **Unlock** toggle button. As you change the parameters, you see the results on the picture of the stone. Rotate the stone to see the effects of the changes on all sides of the stone. **This is an important feature:** if you set values that create a final stone which surpasses the dimensions of the rough stone, the protruding part appears in a different color, to warn you that the gem you have just drawn cannot be actually produced. A warning message is also displayed in the status bar.

**NOTE**

For Round shape AGL, AGS and HRD grading systems the parameters displayed in the calculator are color coded. When changing any of the parameters causes a lowering in grade, the parameters affected change color enabling you to correct the stone dimensions in order to restore the higher grade.
4. As an example, change the **Crown Angle**.

The **Crown Angle** value changes color, causing the grade to drop from **Excellent** to **Very Good**. You can now see which value you need to change to return the grade to **Excellent**.

5. Click the **Plan Polish** button to plan the stone.

6. Click the **Save Result** button to save.

**Calculator Shortcut Key List**
See the **Calculator Shortcut Keys** on page 92.

**Using the Interactive Method**
This method enables you to change the position of the saw plane after it has been planned.

- **To fine tune the planning interactively:**
  1. Select a result with a saw plane.
  2. Click the **Interactive** button. The saw plane can now be moved.
  3. Move or tilt the saw plane using the right and left mouse buttons, or use the rotational control on the 3D control panel.

The polished stone changes its dimensions as the saw plane is moved. As you drag the saw plane an approximate view of the result is displayed. The plan is then recalculated as soon as the mouse button is released.
4. As soon as the saw plane is located in the final position, right-click anywhere in the work area.

The right-click menu opens.

5. Choose **Save Results**.

A new plan is created and two results are added to the result table.

**NOTE**

If the Interactive checkbox on the General Options tab is NOT checked, the result of the last Interactive function does not perform a full plan when saving the Interactive results and contains the Interactive symbol in the Shape as shown below.

<table>
<thead>
<tr>
<th>0.714t</th>
<th>1.501t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saw 3</td>
<td>AGL Very Good</td>
</tr>
<tr>
<td>D</td>
<td>IF</td>
</tr>
</tbody>
</table>

Table to Culet Flipping

Click the **Table<->Culet** button or from the **Planning** menu choose **Flip Table <-> Culet** to invert the plan (table and culet change places). This feature is available when you have only one plan.

The inversion generates a new plan. The plan flips by 180 degrees but Advisor may seek an optimal flipping by more or less than 180 degrees, depending on the flipping tolerance defined.

- **To flip the stone:**

  - Click the **Table<->Culet** button to flip the displayed plan by +/- 180 degrees (swaps the table and culet positions).

Exporting the Results

The **Export** button enables you to export automatically all the results of your measurements to a plain text file. The export settings are configured in the **Advisor Administrator Guide**.

- **To export the stone data:**

  1. On the **Toolbar** click the button.
  2. Enter a template file name (if required).
  3. Enter a name for the data file (if required).
  4. Click **OK**. The file is saved to the location defined in the export options.
Using the Caliber Tool

The caliber tool enables you to measure the distance between two points on the rough stone in both millimeters and Moe gauge units on either 3D or Video.

Caliber Options

There are two caliber options available:

- Projection
- Distance (3D only)

Projection

- A ruler is displayed in 3D and video.

To use the caliber tool in projection mode:

1. Click the Caliber button.

   OR

   click anywhere on the work area or on the rough stone. The right-click menu opens. Choose Caliber Tool.

The Caliber Tool always opens in Projection Mode

2. Use the mouse to move the ruler.

<table>
<thead>
<tr>
<th>Button</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left-click</td>
<td>Rotates the ruler in either direction, depending on which end of the ruler is selected</td>
</tr>
<tr>
<td>Right-click</td>
<td>Moves the ruler in a straight line, up and down, left and right or diagonally</td>
</tr>
</tbody>
</table>
3. Using right click the following caliber options are available:
   - Measure length without cut part
   - Show/Hide Caliber
   - Projection measurement (visible ruler)
   - Distance measurements (between two points)
   - Girdle length (polish stone only)
   - Girdle width (polish stone only)
   - Table/Culet to rough (polish stone only)
   - Show total length (one side of the rough to the other)
   - Show intermediate lengths (includes parts of the polish)

**Distance**

Used with 3D only and measures the distance between two points selected on the surface of the rough stone.

**To use the caliber tool in distance mode:**

1. Click the **Caliber** button.
2. Right-click to open the popup menu
3. Choose **Distance Measurement**.

   The ruler is no longer displayed.

4. Use the mouse to select two points on the rough stone.

   If necessary, rotate the stone and then click on the two points you want to measure the distance between.

A "distance" line and the distance value are now displayed. The measurement is in both millimeters and MOE units.
Running the Auto Sequences

The sequences are displayed as numbers in the **Sequence Bar**.

The buttons show a number of the sequence. The full sequence name is displayed when the mouse pointer hovers over a sequence button.

◆ **To run an auto-sequence from the Advisor screen:**

1. Click a sequence button to execute the corresponding sequence.

2. While running the sequence, click the **Stop** button to stop execution.

   Advisor finishes executing the current action and does not execute the subsequent ones. To stop an ongoing action, use the Advisor commands (such as Abort Mapping).

3. After the sequence stops as a result of a “+ Wait” action, use the **Resume** button to resume execution.

◆ **To show/hide the sequence Bar:**

1. Right-click the **Sequence Bar**.

2. Choose either **Show sequences bar** or **Hide sequences bar**.

   The **Sequence Bar** toggles between Show and Hide.

See the *Advisor Administrator Guide* on how to edit the preplanned sequences.
Manufacturing Stages

To show the manufacturing stages:

1. Click the button
   OR
   From the Tools menu, click Manufacturing Stages.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mic</td>
<td>Distance in microns.</td>
</tr>
<tr>
<td>Deg</td>
<td>Angle in degrees.</td>
</tr>
</tbody>
</table>

2. Select the required check boxes.
3. Using the figure below as a guide, enter the required values for the distance and angle.

4. Click the button to print the screen.
5. Click the button to exit.
After planning the stone you can mark the rough stone with the laser marker to accurately transfer the plan to the rough stone. The **Marking Options** pane is shown below.

### Markings Options

<table>
<thead>
<tr>
<th>Saw Plane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above ✓ Middle □ Below</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cut Planes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cut Planes (Active)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Polished Reference Lines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table □ Cross ✓</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Girdle Shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Table □ On Culet ✓</td>
</tr>
</tbody>
</table>

- **Activate Safety Distance**
Control Buttons and Setting Indicators

Control Buttons

The table below describes the function of the control buttons.

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Start saw mark]</td>
<td>Start saw mark.</td>
</tr>
<tr>
<td>![Start the marking process]</td>
<td>Start the marking process.</td>
</tr>
<tr>
<td>![Stop]</td>
<td>Halts the marking process.</td>
</tr>
<tr>
<td>![Toggles between wire frame and polished mode]</td>
<td>Toggles between wire frame and polished mode.</td>
</tr>
</tbody>
</table>

Setting Indicators

The table below describes the function of the setting indicators.

<table>
<thead>
<tr>
<th>Setting Indicators</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Line thickness in microns]</td>
<td>Line thickness in microns.</td>
</tr>
<tr>
<td>![Laser intensity]</td>
<td>Laser intensity.</td>
</tr>
<tr>
<td>![Safety distance in microns]</td>
<td>Safety distance in microns.</td>
</tr>
<tr>
<td>![Velocity]</td>
<td>Velocity</td>
</tr>
</tbody>
</table>

Resetting the Marking Selection

There is a selectable option that resets the marking selection when opening the Mark tab. See the Advisor Administrator Guide on how to enable or disable this option.

Marking Saw Planes

After planning the parts of a sectioned stone satisfactorily, you can transfer the location of the one or more saw planes to the physical stone using a laser to physically etch the tracked mark onto the rough stone. The stone can now be cut exactly on these lines.

Make sure the marking device is connected and in proper working order. Example saw planes are shown below.
Selecting Multiple Saw Planes

How to Mark a Saw Plane

◆ To mark a saw plane:

1. After defining a saw plane (with or without planning the stone), click the Mark tab.
2. In the Saw plane, select the required settings.

<table>
<thead>
<tr>
<th>Check Box</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saw Plane</td>
<td>Select the saw plane you want to mark.</td>
</tr>
<tr>
<td>Above</td>
<td>Draws a line above the selected saw plane.</td>
</tr>
<tr>
<td>Middle</td>
<td>Draws a line along the center of the selected saw plane.</td>
</tr>
<tr>
<td>Below</td>
<td>Draws a line below the selected saw plane.</td>
</tr>
</tbody>
</table>
3. Right-click inside the **Saw** pane.

4. Select the laser settings.

<table>
<thead>
<tr>
<th>Laser Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Marking Intensity</strong></td>
<td>Controls the intensity of the laser. Not available on older machines.</td>
</tr>
<tr>
<td><strong>Line Thickness</strong></td>
<td>Controls the number of times the line is marked.</td>
</tr>
<tr>
<td><strong>Line Velocity</strong></td>
<td>Regulates the rotational speed of the stage. Lowering the Line Velocity darkens the marked line.</td>
</tr>
</tbody>
</table>

5. Ensure that your settings are correct.

6. Click the button on the bottom of the screen to toggle between a wire frame and polished display.

The laser marking process begins. You are able to monitor the marking progress using the progress status bar at the bottom of the screen, and any displayed status messages.

7. Click the **Stop** button to halt the process, but it is recommended that you allow the laser marking process to complete on its own.
Marking a Saw Starting Point

You can mark a starting point for initially positioning the saw or laser. The point can be marked anywhere on the saw plane.

◆ To mark a starting point:

1. Click the **Mark** tab.

2. Select the **Start Sawing Point** checkbox.

3. Click the **Start Sawing Point** button.

   As you move the mouse pointer into the work area, the pointer color changes to yellow.

4. Click a spot on the sawing plane where you want the sawing to start. A mark is displayed on the plane, together with a yellow arrow.

5. Click the **button** again to mark the rough stone with a saw start point.
Marking Cut Planes

You can mark a cut plane on the rough stone if there is at least one active cut plane. Each cut plane has a checkbox that when selected enables this specific cut plane. The Cut Planes are located on the Planes tab in the Toolbox pane. An example cut plane is shown below.

◆ To mark active cut planes:

1. Click the Marking tab.
2. Select the Cut Planes (Active) checkbox, located in the right-hand pane under Marking Options.

   ![Cut Planes checkbox](image)

   The active cut planes are displayed on the video image.
3. Right-click inside the Saw pane.
4. Select the laser settings.

   ![Laser Settings - Cut Planes](image)

<table>
<thead>
<tr>
<th>Laser Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Marking Intensity</strong></td>
<td>Controls the intensity of the laser. Not available on older machines.</td>
</tr>
<tr>
<td><strong>Safety Distance</strong></td>
<td>The default is 50 microns. This value increases or decreases in 10 micron steps the distance between the cut plane and the actual cut.</td>
</tr>
<tr>
<td><strong>Line Thickness</strong></td>
<td>Controls the number of times the line is marked.</td>
</tr>
<tr>
<td><strong>Line Velocity</strong></td>
<td>Regulates the rotational speed of the stage. Lowering the Line Velocity darkens the marked line.</td>
</tr>
</tbody>
</table>
5. Ensure that your settings are correct.
6. Click the button on the bottom of the screen to toggle between a wire frame and polished display.

7. Click the button to mark the rough stone.

The laser marking process begins. You are able to monitor the marking progress using the progress status bar at the bottom of the screen, and any displayed status messages.

8. Click the button to halt the process, but it is recommended that you allow the laser marking process to complete on its own.

**Marking Polished Reference Lines**

You can mark the polished reference lines for the table, girdle, crown, pavilion and culet on the rough stone corresponding to the location/limit on the polished gem.

There are multiple options:

- Table and Cross
- Girdle: Upper – center - lower
- 8 Crown Mains
- 8 Pavilion Mains
Marking the Table

To mark the table reference lines:

1. Click the **Marking** tab.
2. Select the **Table** (and **Cross** if required) checkbox.

3. Right-click inside the **Table** pane.

4. Select the laser settings.

<table>
<thead>
<tr>
<th>Laser Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Marking Intensity</strong></td>
<td>Controls the intensity of the laser. Not available on older machines.</td>
</tr>
<tr>
<td><strong>Safety Distance</strong></td>
<td>The default is 50 microns. This value increases or decreases in 10 micron steps the distance between the cut plane and the actual cut.</td>
</tr>
<tr>
<td><strong>Line Thickness</strong></td>
<td>Controls the number of times the line is marked.</td>
</tr>
<tr>
<td><strong>Line Velocity</strong></td>
<td>Regulates the rotational speed of the stage. Lowering the Line Velocity darkens the marked line.</td>
</tr>
<tr>
<td><strong>Cross Size</strong></td>
<td>Changes the physical size of the cross.</td>
</tr>
</tbody>
</table>
5. Ensure that your settings are correct.

6. Click the button on the bottom of the screen to toggle between a wire frame and polished display.

7. Click the button to mark the rough stone.

   The laser marking process begins. You are able to monitor the marking progress using the progress status bar at the bottom of the screen, and by any displayed messages.

8. Click the button to halt the process, but it is recommended that you allow the laser marking process to complete on its own.
Marking the Girdle

▲ To mark the girdle reference lines:

1. Click the **Marking** tab.

2. Select the **Girdle** checkboxes required.

3. Select the **8 Crown Mains** or **8 Pavilion Mains** check boxes to see them superimposed on the rough stone.

4. Right-click inside the **Girdle** pane.

5. Select the laser settings.

<table>
<thead>
<tr>
<th>Laser Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Marking Intensity</strong></td>
<td>Controls the intensity of the laser. Not available on older machines.</td>
</tr>
<tr>
<td><strong>Safety Distance</strong></td>
<td>The default is 50 microns. This value increases or decreases in 10 micron steps the distance between the cut plane and the actual cut.</td>
</tr>
<tr>
<td><strong>Line Thickness</strong></td>
<td>Controls the number of times the line is marked.</td>
</tr>
<tr>
<td><strong>Line Velocity</strong></td>
<td>Regulates the rotational speed of the stage. Lowering the Line Velocity darkens the marked line.</td>
</tr>
</tbody>
</table>
6. Ensure that your settings are correct.

7. Click the button to mark the rough stone.

The laser marking process begins. You are able to monitor the marking progress using the progress status bar at the bottom of the screen, and by any displayed messages.

8. Click the button to halt the process, but it is recommended that you allow the laser marking process to complete on its own.

Example of 8 Crown Mains
Example of 8 Pavilion Mains

Marking the Culet

- To mark the culet reference lines:
  1. Click the **Marking** tab.
  2. Select the **Culet** (and **Cross** if required) checkbox.
3. Right-click inside the Culet pane.

![Laser Settings - Culet](image)

4. Select the laser settings.

<table>
<thead>
<tr>
<th>Laser Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marking Intensity</td>
<td>Controls the intensity of the laser. Not available on older machines.</td>
</tr>
<tr>
<td>Safety Distance</td>
<td>The default is 50 microns. This value increases or decreases in 10 micron steps the distance between the cut plane and the actual cut.</td>
</tr>
<tr>
<td>Line Thickness</td>
<td>Controls the number of times the line is marked.</td>
</tr>
<tr>
<td>Line Velocity</td>
<td>Regulates the rotational speed of the stage. Lowering the Line Velocity darkens the marked line.</td>
</tr>
<tr>
<td>Cross Size</td>
<td>Changes the physical size of the cross.</td>
</tr>
</tbody>
</table>

5. Ensure that your settings are correct.
6. Click the button on the bottom of the screen to toggle between a wire frame and polished display.

7. Click the button to mark the rough stone.

The laser marking process begins. You are able to monitor the marking progress using the progress status bar at the bottom of the screen, and by any displayed messages.

8. Click the button to halt the process, but it is recommended that you allow the laser marking process to complete on its own.

Marking Girdle Shapes

◆ To mark a girdle shape on table and culet:

This marks a line corresponding to the location of the girdle as “seen” from the sides of the table and culet.

1. Click the **Marking** tab.

<table>
<thead>
<tr>
<th>Girdle Shape</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>On Table</td>
<td></td>
</tr>
<tr>
<td>On Culet</td>
<td></td>
</tr>
</tbody>
</table>

2. In the **Polished Reference Lines** pane, set the girdle parameters.

3. If required, select the check boxes **On Table** or **On Culet** (or both) in the **Girdle Shape** pane.

4. Click the button to mark the rough stone.
Safety Margin

Used when laser marking the table line, culet line, girdle shape and cut planes. This feature enables you to specify a safety margin to the system planned dimensions. The safety distance “forces” the table line, the culet line, and the cut planes away from the polished stone. This therefore moves the girdle shape lines in order to keep a safe distance from the actual planned result.

Safety distance does not affect saw planes and upper and lower girdle lines.

◆ To enable the Safety Distance:

☐ Select the Activate Safety Distance checkbox at the bottom left of the marking screen.
Saving a Stone Data File

◆ To save a stone data file using the current name:

□ From the Toolbar, click the button.

◆ To save a stone data file using another name:

1. From the Toolbar, click the button.

2. Select a package from the Package name box.

3. Click the button if you need to select a private folder.

4. In the Stone name field, enter a unique stone name for this file.

5. Add a comment if required.

6. Click the button to save the file and close the window.

◆ To add a new package:

1. From the Toolbar, click the button.

2. Click the Add button to create a new package.

3. Enter a name for the new package.

4. Click the button.
To delete a package:

1. From the Toolbar, click the button.
2. Open the Package name box and select a name.
3. Click the Delete button.
4. If there are stone data files saved in this package a warning message is displayed.
5. Click the Yes button.

The selected package is deleted.

Save file with video Images

Usually only 3D information is saved. In some cases you might need to save a stone that includes video images as well. This allows you to load the stone at a later date and view the stone as if it were on the machine.

To save the Video images:

1. After mapping the stone click the (Save Images) button.
2. Select a package from the Package name box.
3. In the Stone name field, enter a unique stone name for this file.
4. Add a comment if required.
5. Click the OK button to save the file and close the window.
Loading a Saved Stone Data File

◆ To load a stone data file:

1. From the Toolbar, click the button.

2. Select a package from the Package name box (each package contains a group of saved stones).
3. From the Stone List, double-click a file (row).

OR

From the Stone List, choose a file (row), and then click the button.

Stone List

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Name of the file stored inside the selected package</td>
</tr>
<tr>
<td>Weight</td>
<td>Weight of the rough stone</td>
</tr>
<tr>
<td>Polish Weight</td>
<td>The displayed weight and the picture displayed at the right-hand side of the window is that of the result selected when the file was saved. If no result was selected the file is loaded without displaying the polished weight or a picture of the stone.</td>
</tr>
<tr>
<td>Date</td>
<td>Date the file was saved</td>
</tr>
<tr>
<td>Comments</td>
<td>A comment is added to the saved file</td>
</tr>
<tr>
<td>Stone name</td>
<td>This is a find function and will find the specific file or the file with the closest name</td>
</tr>
<tr>
<td>Delete</td>
<td>For deleting the selected file and placing it in the Recycle Bin</td>
</tr>
<tr>
<td>Print</td>
<td>Prints all the files in the current package</td>
</tr>
</tbody>
</table>

NOTE

The Name, Weight, Polish weight, Date and Comment columns can be sorted by clicking the column heading. Each time you click the column heading the sorting is reversed.
For setting up the printers see the *Advisor Administrator Guide*.

Advisor enables you to print

- Labels
- Reports
- Current view
- Results

### Printing Labels

From version 2.0 you can have a default label for each view and can select more than one label.

#### Printing the Default Label

- **To print to default label:**
  
  - Click the button located on the toolbar to print the default label on your label printer for the displayed view

#### Selecting a Label

- **To select a label:**
  
  1. Right-click the button.
     
     Click *Select Label* (you can select the pictures and zoom them).
  
  2. Click the button on the bottom of the screen.
     
     The selected label is printed.
  
  3. Click the button to exit.

#### Setting the Default Label

- **To select the default label:**
  
  1. Right-click the button.
  
  2. Click Select Label.
3. Right-click the label you want as the default label.

4. Click Set As Default.

5. Click the button to exit.

**Printing Reports**

From version 2.0 you can have a default report for each view and can select more than one report.

**Selecting a Report**

- **To select a report:**
  1. Right-click the button.
  2. Click Select Report (you can select the pictures and zoom them).
  3. Click the button on the bottom of the screen.

    The selected report is printed.

  4. Click the button to exit.

**Setting the Default Report**

- **To set the default report:**
  1. Right-click the button.
  2. Click Select Report.
  3. Right-click the report you want as the default label.

    Click Set As Default.

  4. Click Set As Default.

  5. Click the button to exit.
Printing the Results Table

☐ Click the button located on the toolbar to print the information contained in the **Results** tab directly to the default printer.

◆ **To change the default printer:**

1. Click the button to open the **Results Comparison Table** window.
2. Click the **Print** button to open the Windows print window enabling you to change the default printer.

Print Current View

☐ Click the button located on the toolbar to print the current work area.
# TOOLBAR BUTTONS AND SHORTCUT KEYS

## Map Tab Buttons

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Button" /></td>
<td>Starts the regular video mapping function</td>
</tr>
<tr>
<td><img src="image2.png" alt="Button" /></td>
<td>Starts the laser mapping function</td>
</tr>
<tr>
<td><img src="image3.png" alt="Button" /></td>
<td>Starts the Remap function</td>
</tr>
<tr>
<td><img src="image4.png" alt="Button" /></td>
<td>Export the stone data</td>
</tr>
<tr>
<td><img src="image5.png" alt="Button" /></td>
<td>Starts the function for setting the stage height</td>
</tr>
<tr>
<td><img src="image6.png" alt="Button" /></td>
<td>Activates the vacuum pump for locating the stone</td>
</tr>
<tr>
<td><img src="image7.png" alt="Button" /></td>
<td>Load and store stone data</td>
</tr>
</tbody>
</table>

## Plan Toolbar Buttons

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image8.png" alt="Button" /></td>
<td>Track Saw</td>
</tr>
<tr>
<td><img src="image9.png" alt="Button" /></td>
<td>Auto track saw</td>
</tr>
<tr>
<td><img src="image10.png" alt="Button" /></td>
<td>New saw</td>
</tr>
<tr>
<td><img src="image11.png" alt="Button" /></td>
<td>Track cut</td>
</tr>
<tr>
<td><img src="image12.png" alt="Button" /></td>
<td>New cut</td>
</tr>
<tr>
<td><img src="image13.png" alt="Button" /></td>
<td>Convert saw to cut plane</td>
</tr>
<tr>
<td>Button</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>![Plane]</td>
<td>Creates a plane on one of the polished facets</td>
</tr>
<tr>
<td>![Adjust]</td>
<td>Adjust to mark plane</td>
</tr>
<tr>
<td>![Delete]</td>
<td>Delete saw plane</td>
</tr>
<tr>
<td>![Undo]</td>
<td>Undo last action only</td>
</tr>
<tr>
<td>![File]</td>
<td>Opens a stone file</td>
</tr>
<tr>
<td>![Export]</td>
<td>Export stone data</td>
</tr>
<tr>
<td>![Save]</td>
<td>Save stone to file</td>
</tr>
<tr>
<td>![Save]</td>
<td>Save current stone with video images</td>
</tr>
<tr>
<td>![Save]</td>
<td>Save stone to file with new name (save as)</td>
</tr>
<tr>
<td>![Planning]</td>
<td>Single stone planning</td>
</tr>
<tr>
<td>![Planning]</td>
<td>Planning Part A of the stone</td>
</tr>
<tr>
<td>![Planning]</td>
<td>Planning part B of the stone</td>
</tr>
<tr>
<td>![Planning]</td>
<td>Planning both part A and B of the stone</td>
</tr>
<tr>
<td>![Best]</td>
<td>Best pair for earrings and cuff links</td>
</tr>
<tr>
<td>![Best]</td>
<td>Gives the best similar pair possible using Part A planning</td>
</tr>
<tr>
<td>![Flip]</td>
<td>Flips the stone 180° +/- the freedom option</td>
</tr>
<tr>
<td>![Flip]</td>
<td>The freedom option is determined by the operator and is normally 10</td>
</tr>
<tr>
<td>![Flip]</td>
<td>A freedom option value of 0 (zero) = 180° exactly</td>
</tr>
<tr>
<td>![Flip]</td>
<td>This freedom value is used when there are flaws in the culet area</td>
</tr>
<tr>
<td>Button</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------------------------------------------------------------------</td>
</tr>
<tr>
<td><img src="image" alt="Button" /></td>
<td>Compares between two plans</td>
</tr>
<tr>
<td><img src="image" alt="Multiplan" /></td>
<td>Multiplan</td>
</tr>
<tr>
<td><img src="image" alt="Manufacturing stages" /></td>
<td>Manufacturing stages</td>
</tr>
<tr>
<td><img src="image" alt="Inclusion editor" /></td>
<td>Inclusion editor</td>
</tr>
<tr>
<td><img src="image" alt="Best value" /></td>
<td>Best value</td>
</tr>
<tr>
<td><img src="image" alt="Recall plan" /></td>
<td>Recall plan</td>
</tr>
<tr>
<td><img src="image" alt="Forced A" /></td>
<td>Forced A</td>
</tr>
<tr>
<td><img src="image" alt="Forced B" /></td>
<td>Forced B</td>
</tr>
<tr>
<td><img src="image" alt="Interactive" /></td>
<td>Interactive</td>
</tr>
<tr>
<td><img src="image" alt="Creates a plane on one of the polished facets" /></td>
<td>Creates a plane on one of the polished facets</td>
</tr>
<tr>
<td><img src="image" alt="Edit stone properties" /></td>
<td>Edit stone properties</td>
</tr>
<tr>
<td><img src="image" alt="Opens the Options window" /></td>
<td>Opens the Options window</td>
</tr>
<tr>
<td><img src="image" alt="Opens the Views and Reports editor" /></td>
<td>Opens the Views and Reports editor</td>
</tr>
<tr>
<td><img src="image" alt="Caliber" /></td>
<td>Caliber</td>
</tr>
<tr>
<td><img src="image" alt="Printing results tab" /></td>
<td>Printing results tab</td>
</tr>
<tr>
<td><img src="image" alt="Print current view" /></td>
<td>Print current view</td>
</tr>
</tbody>
</table>
### Toolbar Buttons and Shortcut Keys

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Printer" /></td>
<td>Printing predefined reports</td>
</tr>
<tr>
<td><img src="image" alt="Label" /></td>
<td>Printing labels</td>
</tr>
<tr>
<td><img src="image" alt="Calculator" /></td>
<td>Pricing calculator</td>
</tr>
</tbody>
</table>

### Shortcut Keys

#### General Shortcut Keys

<table>
<thead>
<tr>
<th>Shortcut</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>Help</td>
</tr>
<tr>
<td>F2</td>
<td>Mapping – regular</td>
</tr>
<tr>
<td>F3</td>
<td>Mapping - concave</td>
</tr>
<tr>
<td>F4</td>
<td>Track Saw</td>
</tr>
<tr>
<td>F5</td>
<td>Track Cut</td>
</tr>
<tr>
<td>F6</td>
<td>Print Report</td>
</tr>
<tr>
<td>F7</td>
<td>Print Label</td>
</tr>
<tr>
<td>F8</td>
<td>Interactive</td>
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<tr>
<td>F9</td>
<td>Plan Whole</td>
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<tr>
<td>F10</td>
<td>Plan A</td>
</tr>
<tr>
<td>F11</td>
<td>Plan B</td>
</tr>
<tr>
<td>F12</td>
<td>Save support files</td>
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</table>
# Calculator Shortcut Keys

<table>
<thead>
<tr>
<th>Shortcut</th>
<th>Function</th>
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<tbody>
<tr>
<td>Ctrl - E</td>
<td>Weight</td>
</tr>
<tr>
<td>Ctrl - D</td>
<td>Diameter</td>
</tr>
<tr>
<td>Ctrl - L</td>
<td>Length</td>
</tr>
<tr>
<td>Ctrl - W</td>
<td>Width</td>
</tr>
<tr>
<td>Ctrl - N</td>
<td>Diameter Deviation</td>
</tr>
<tr>
<td>Ctrl - H</td>
<td>Total Depth</td>
</tr>
<tr>
<td>Ctrl - G</td>
<td>Girdle Thickness</td>
</tr>
<tr>
<td>Ctrl - R</td>
<td>Crown Height</td>
</tr>
<tr>
<td>Ctrl - C</td>
<td>Crown Angle</td>
</tr>
<tr>
<td>Ctrl - V</td>
<td>Pavilion Depth</td>
</tr>
<tr>
<td>Ctrl - P</td>
<td>Pavilion Angle</td>
</tr>
<tr>
<td>Ctrl - T</td>
<td>Table Diameter</td>
</tr>
<tr>
<td>Ctrl - S</td>
<td>Culet Size</td>
</tr>
<tr>
<td>Ctrl - M</td>
<td>Move Polish</td>
</tr>
<tr>
<td>Ctrl - Y</td>
<td>Change tilt</td>
</tr>
<tr>
<td>Up arrow key</td>
<td>Move polish up</td>
</tr>
<tr>
<td>Down arrow key</td>
<td>Move polish down</td>
</tr>
<tr>
<td>Left arrow key</td>
<td>Move polish left</td>
</tr>
<tr>
<td>Right arrow key</td>
<td>Move polish right</td>
</tr>
<tr>
<td>Right arrow key</td>
<td>Move polish right</td>
</tr>
</tbody>
</table>