Diamond Calculator Quick guide
on Key operations (How to..)

September 16, 2006

This document contains the Quick guide on Key operations of DiamCalc.

1. Select cut shape

DiamCalc Standard supports the following cut types: Baguette, Brilliant, Emerald, Flanders, Happy-8, Heart, Marquise, Oval, Pear, Princess 2-chevron, Princess 3-chevron, Prism and Radiant.

The current shape is shown in «Shape and cut» drop-down box. Setting a desired cut type is the first thing that should be done when parameters of a new diamond are entered. To change a cut type, click «Shape and cut» box with a mouse. A list of possible values appears. Clicking on a cut type in this list will select this cut. A diamond image in the left half of Diamond Calculator window will change, displaying a diamond of a newly selected cut.
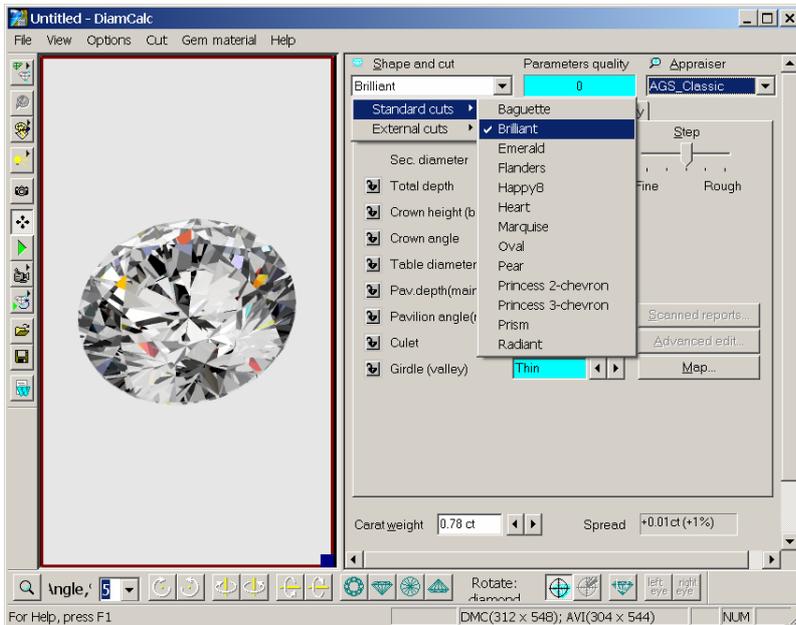
2. Vary cut parameters

DiamCalc displays cut parameters in the parameter panel, which is located in the right half of the application's window:
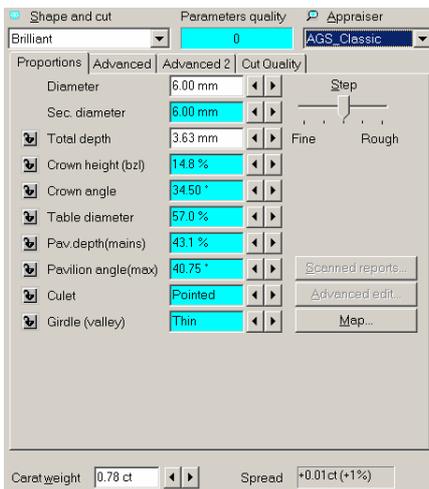
A notebook-like structure has two tabs: Proportions and Advanced. Proportions tab holds most common parameters, such as diamond diameter, total height, etc. Most values can be adjusted to describe the stone more precisely. If only some proportions are known, DiamCalc assigns reasonable estimates for parameters that cannot be measured.

There are two different methods of changing parameter's value. First, a new value can be entered directly from the keyboard. To do this, select a chosen parameter value with the mouse, type in a new value, and press Enter key at the end. The other method is to use buttons that are on the right of each parameter which value can be changed. Note that a slider named «Step» allows to tune the amount by which those buttons change the value. For example, when the slider

is average (default) positions, ◄►buttons change the diameter by 0.1 mm; when it is in the «Fine» position, those same buttons change the diameter by 0.01 mm.

See also «Selecting measurement units and parameters to show» section that describes how to change presentation of some parameters: select one of available measurement units, choose one of similar parameters («dual» parameters), etc.

The parameters on Advanced page of parameter panel usually depend on the current cut. Let us examine parameters that are available for Brilliant cut diamonds.
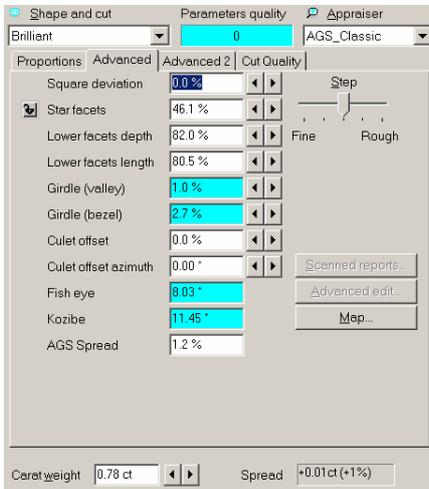
«Square deviation», «Star facets» and «Lower facets» parameters describe proportions that rarely change in modern diamonds, but can vary in unusual and especially old cuts. This allows to apply DiamCalc not only to standard Brilliant cut, but also to older round cuts.

3. Calculate the exact weight

To estimate the weight of the diamond with DiamCalc, one should choose a cut style and input the main parameters (e.g. the diameter).The stone weight is promptly displayed in the relevant field. The other parameters should be specified for more accurate weight estimation.

Let us see how it is done. Start DiamCalc and look at the panel with parameters. All parameters have some values. Marquise cut is selected initially (see «Shape and cut» drop-down box). Initial diameter of the stone is 6.00 mm (assume this is what we need). Now we can enter all parameters that we know to describe the diamond as precisely as possible. To change a parameter, select a value in the corresponding box by the mouse and type in a new value, pressing Enter at the end.

For example, let us set a different value for the total depth. Select a field right to «total depth» caption. At this moment, the panel with diamond parameters should look like the following:
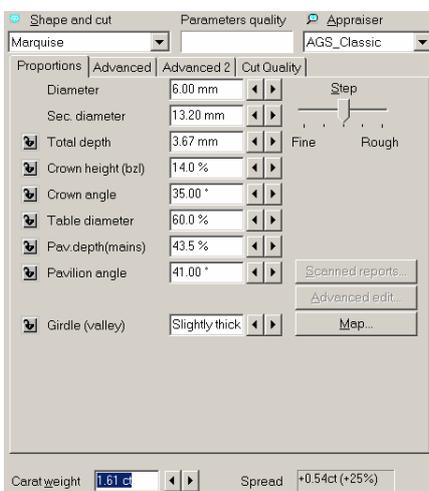
The carat weight is 1,61 ct. The total depth is 3,67 mm.

Then we change the total depth from 3,67 mm to 3,87 mm, the carat weight will be 1,68 ct.
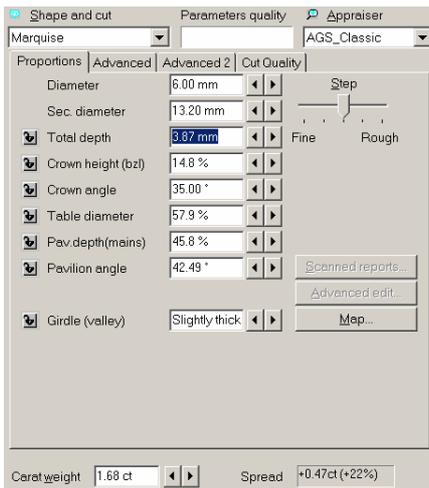
Note that the diameter remains the same (6 mm), both crown and pavilion heights have increased proportionally to accommodate to a total height increase, and the carat weight has been recalculated using a new piece of information: 1.68 ct.

Other parameters can be changed the same way: select the corresponding value, enter a new one from the keyboard and press Enter key.

If a meaning of some parameter is not clear, move mouse cursor to the corresponding box and leave it there, not pressing any keys or buttons. In couple of seconds, a hint with the description of the parameter will pop up. For instance, moving the mouse cursor to the value of «Diameter» parameter will produce the following effect:

4. Find out the unknown cut parameters

The simplest way to estimate unknown parameters with DiamCalc is just to enter all known values. DiamCalc will produce a reasonable estimation of other parameters.

In practice, the process can be a bit longer due to the fact that the parameters can affect each other. For example, changing crown angle will lead to a change of either the table diameter or the crown height. Relationships between parameters can be quite complex. To neutralize this effect, it may be required to adjust parameter's value once more after it was automatically recalculated due to a change of another parameter. One more option of handling this problem is parameter fixing.

Another way to find parameters that cannot be measured directly is to examine the diamond image produced by DiamCalc, adjusting parameters until the computer image looks similar to the real stone. See section «How to vary lighting and viewing condition» for more information. Note that a computing-intensive Photoreal mode is the most suitable for the purpose, so that a powerful enough computer is required to quickly display the image when parameters are changing.

5. Lock parameter value

Some parameters have a small button with a lock on it on the left of the parameter's name. These Lock buttons allow to fix the parameter value to avoid an accidental change or a change due to interrelation between parameters.

Example of using Lock buttons (measuring parameters of mounted diamonds).

The user measures diameter and total height of the diamond and enters them in Diamond Calculator, then fixes total depth with Lock button. After that, measuring the crown height and entering it into the software will cause an automatic adjustment of current pavilion depth and girdle thickness in such a way that the total height will not change.

Parameter fixing is also very useful in diamond marking for maximizing the diamond mass with respect to restrictions imposed by a diamond with old cut, a semi-cut diamond, or a rough diamond.

Note: If a proportion allows a choice of units of millimeters or percents of diameter, only the value in percents will be fixed when Lock button is checked, even if a value in millimeters is displayed currently.

6. Select a unit system

By default, size parameters are presented as a ratio of the corresponding value to the diameter. In some situations, other units, e.g. millimeters, can be more useful. The user can choose measurement units for each particular parameter. To do this, point the mouse cursor to the parameter value and click right mouse button. A menu appears, allowing to see available units and select one of them:
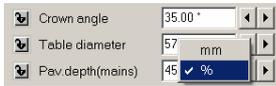
The menu above was produced by pointing the mouse to the value of Girdle thickness parameter and pressing the right mouse button. A check mark shows that the current unit of measurement is percents of the diameter. If millimeters are selected from the menu, a value will be recalculated and shown in a new format.

When values of parameters are entered from the keyboard, units of measurement can be specified along with values. When a string like «1.1 %» or «0.02 mm» is typed, DiamCalc recognizes what is the value and what is the unit of measurement and change them if needed. If only a number is typed, DiamCalc applies the current unit of measurement.

7. Vary viewing parameters

It is possible to use different presentations for some parameters. For instance, a slightly oval shape of the girdle can be described by two diameters, minimum and maximum. Alternatively, it can be specified by maximum diameter and deviation (brilliant cut) or ratio of maximum and minimum diameters (fancy cuts).

To choose a presentation option of such a parameter, point the mouse cursor to the parameter's name and click right mouse button. A menu appears, allowing to select a presentation option:

The picture above was taken when the mouse cursor was over «Girdle ratio» field and the right mouse button was pressed. As you see, a menu allows to select between showing maximum and minimum diameters or just one diameter and ratio of diameters.

There are other dual parameters:

Girdle square deviation <-> Alternative diameter (measured at direction 45°);
Star facet length <-> Table picture square-likeness.

There is also a similar way to choose mass precision: 2 digits after decimal point <-> 4 digits.

8. Load the standard (given) proportions

Use the menu Cut → Load proportions then select the desired proportions from the list in the menu.
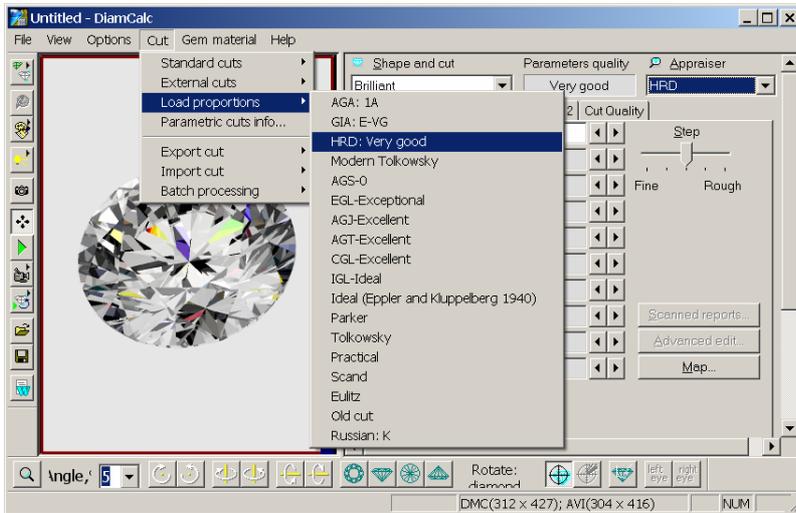
9. Open GemCad GEM files in DiamCalc

Unfortunately, the format of the GemCad GEM files is not open, but you can load them in GemCad and then save in ASCII format. To import GemCad ASCII files use menu command Cut → Import cut → From GemCad ASC file.

10. Import 3D Sarin format (*.SRN)

To import SRN file to DiamCalc, choose from menu Cut → Import cut → From Sarin SRN file...

Note: DiamCalc works only with 3d-model of diamond from Sarin (*.SRN) and doesn't work with reports or rough diamonds models.
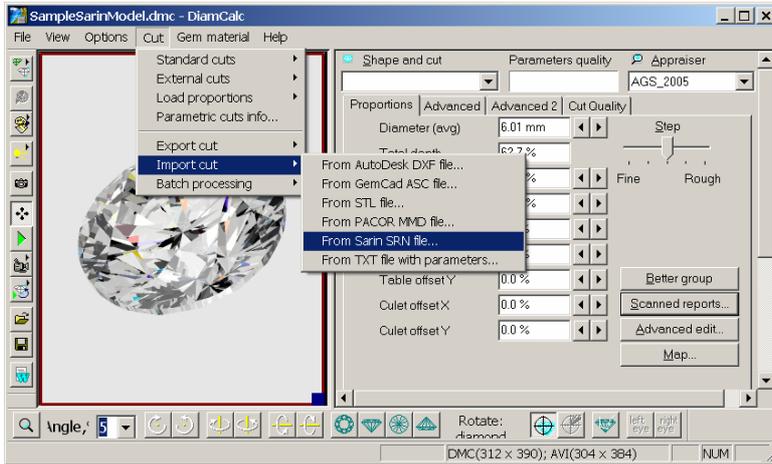
11. Make report for a model obtained by Sarin scanner

Procedure outline

- Import model
- Set cutting type
- Specify facet types
- Calculate report parameters
- Make report

Step-by-step instruction

1) Locate file with Sarin 3D model in your computer. This file usually has SRN extension.
2) **Import** this file into DiamCalc. There are several ways to import the model.
   a) Use menu Cut → Import cut → From Sarin SRN file.
   b) Drag SRN file from Windows Explorer into the DiamCalc window.
3) DiamCalc window will look similar to this.
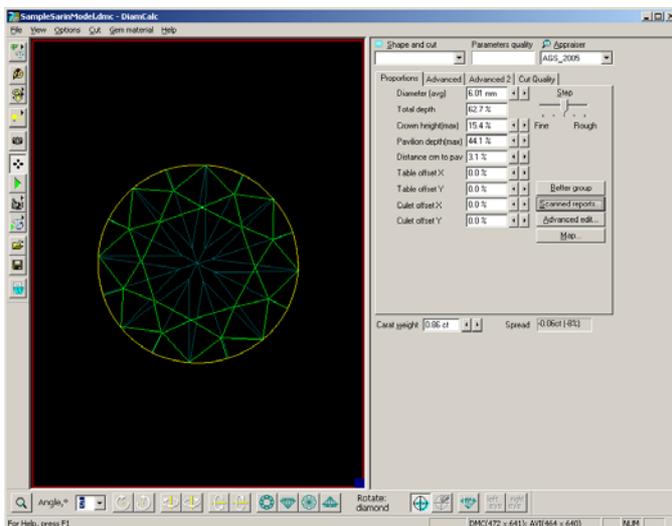
The «Scanned reports…» button will become enabled. Press this button.

4) The new «Scanned model reports» window will open. It will look similar to this.
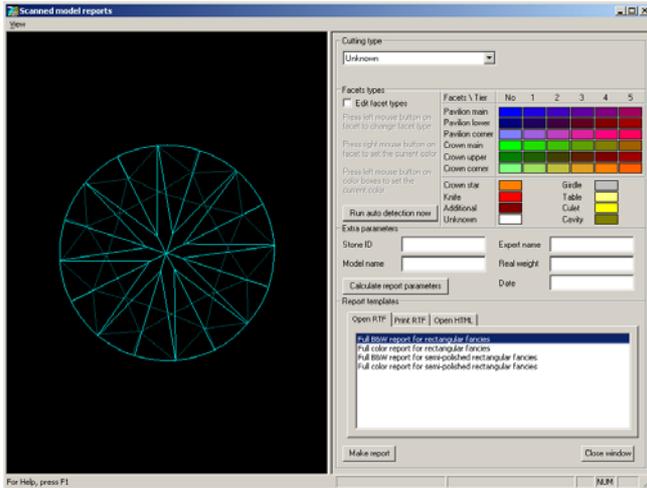
5) Choose **correct Cutting type** in the drop-down list of cuttings:
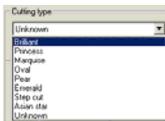
Please note, that there are different sets of report templates for different cuttings. The list on the bottom of the window will show templates available for the selected cutting:
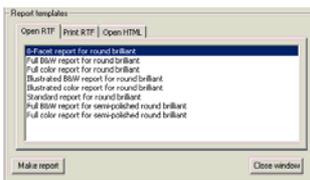
6) Now you need to **specify types of each facet** so that the software will be able to calculate stone parameters. Check the «Edit facet types» checkbox. As it is the first time when you begin to edit facet types on this stone the DiamCalc will try to detect facet types automatically (the same is done when you press the «Run auto detection now» button). The DiamCalc window will look similar to this.
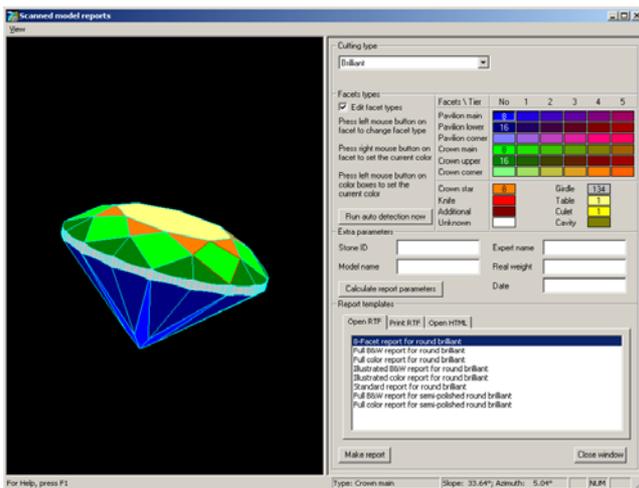
7) The current version of DiamCalc detects automatically types of all facets only for Round Brilliant cut. Processing of other cuts is not implemented yet and they are treated as semi-polished, i.e. only the basic facet types are detected (Main Crown, Main Pavilion, Girdle, Table, Culet). You will need to adjust types of other facets manually.

8) Verify that all facets are colored correctly and adjust colors where necessary. Refer to sample stones included with DiamCalc to see how different cuttings should be colored. Rotate the model to check all facets visually. Pay

attention to numbers drawn above color boxes. They show the quantity of corresponding facets on the model. Make sure that there are no facets marked as Unknown. If you find it difficult to specify facet type mark it as Additional.

9) In the window with the model left mouse button rotates the model, right mouse button moves the model, mouse wheel changes zoom. When the mouse pointer hovers over the model facet you can see its type (if it is colored already) and angles of inclination in the status bar of the window.

10) In the edit mode (when «Edit facet types» is checked) you may select facet types in two ways and change types of facets on the model.

    a) To select facet type you may use the table of color boxes. Press left mouse button on the color box that represents the necessary facet type. It will become selected (it will be drawn sunken). Then press left mouse button on the model facet and its type and color will be changed to the currently selected.

    b) On the other hand, you may choose the facet type by clicking right mouse button on the colored facet and the currently selected color box will switch to the color of this facet.

    c) Color boxes in the table show the quantity of facets of the given type. It may be useful as a quick check, e.g. it is known that the full round brilliant cut should have 8 main facets and 16 halves.

11) Once all facets have correct types uncheck the «Edit facet types» checkbox to prevent accidental changes.

12) Enter values for extra parameters that you need: Stone ID, Model name, Expert name, Real weight and Date.

13) Press **«Calculate report parameters»** button. DiamCalc will measure stone parameters based on the Cutting type and facet types that you provided.

14) In order to see the result, choose tab with report type (Open RTF, Print RTF, Open HTML). The «Open RTF» and «Print RTF» options require MS Word installed to work correctly.

15) Select template in the list and press the **«Make report»** button.

12. *See ray-tracing*

DiamCalc has the ray tracing mode showing the users how the ray of light travels trough the diamond.

Activating and deactivating of the ray tracing mode

Ray tracing mode is activated or deactivated by menu command Options → Model type → Ray trace or with the «Ray trace» command from the popup «Model type» menu. When the ray tracing activated the ray appears on the screen. You can change the positions of the ray and the diamond and adjust some of the ray parameters.
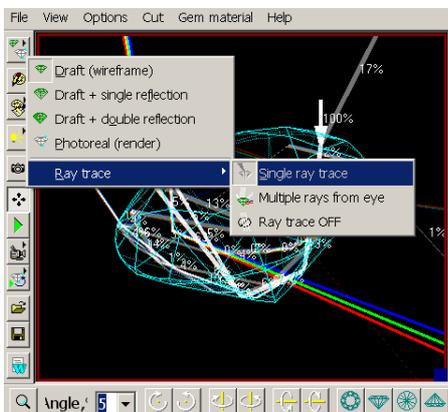
Changing the diamond and the ray positions

The diamond and ray positions can be changed in two ways - by «movement» bar commands and with the mouse. The movement bar is usually placed at the bottom of the program window and looks as follows: By pressing a button with an arrow you perform a rotation of the selected object (objects) by the angle selected (or entered) in the «Angle» combo-box. You can select the diamond or the ray or both of them with last two buttons with the crosshairs. This kind of rotation by fixed angle is also called «digital» contrary to the «analog» rotation performed by hand with the mouse.

To rotate objects with the mouse you need to place mouse cursor in the diamond view and press the left mouse button down then «drag» it to the given direction. Note, with the mouse you rotate the objects selected in the «movement» bar. To move the rays along the diamond use the right mouse button.

Note: with the right mouse button only rays are moved.

Ray parameters

The ray parameters can be adjusted with the «Raytracing options» panel. Activate this panel with the menu Options →
Advanced → Raytracing options. The following parameters are available:

- **Ray spectra** - allows you to customize the ray spectra structure.
- **Minimum intensity, %** - defines the minimum intensity of shown rays. All rays with less intensity are not shown.
- **Ray width, mm** - the ray width.
- **Reflections number** - the ray trajectory after this number of reflections is not shown.

13.   Get the photo-realistic image

This mode simulates the real diamond under certain lighting conditions and considering the particular properties of a
diamond specimen. Sometimes, a photoreal image is very similar to the photograph of the real diamond. From this
image, one can judge about the appearance of the polished diamond and select unknown parameters by comparison of
the real diamond to the computer model.

Select «Photoreal» from the menu Options → Model type or press the «Diamond model type» button and then select
«Photoreal» from popup menu.

14. Make fancy color photoreal pictures with DiamCalc

The present version of DiamCalc allows to select from two predefined colors (choose menu item Gem material →
Standard types), but you may enter arbitrary absorption spectrum (Gem material → View/Modify properties). In the
«Gem properties» on the «General» tab click the «Add» button. This will add an «Absorption» tab that allows to
specify the absorption spectrum. You need to know absorption characteristics of your stone to get accurate results. See
section 10.2 for more details.

We are planning to enlarge the list of predefined materials in future versions of DiamCalc.

15. Record and play a movie

This is a major improvement in diamond display as it features a moving image of the diamond allowing a dramatic view
of the diamond's scintillation and sparkle. This new feature and several other new additions to DiamCalc capabilities
enhances its use in both research in diamond cut design and use in displaying to a customer the brilliance, fire, and
sparkle of well cut diamonds. This movie feature is fully integrated into the other advanced features of DiamCalc, so
that the moving diamond image may be observed under all the varied and special lighting conditions supplied with the
program. Go to Options → Animation menu or just click on the «camera» button to begin using this feature.
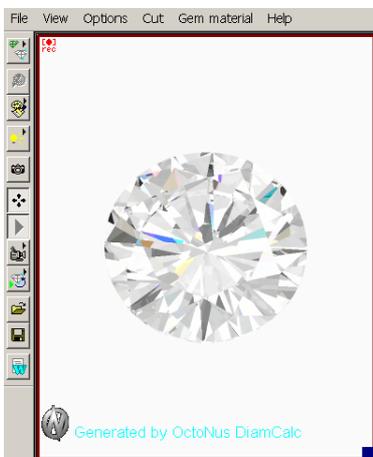
16. Place a movie recorded by the DiamCalc on a web site

The DiamCalc allows exporting of the generated movies into common AVI format. Moreover, during export you may
choose the desired codec from the list of codecs installed in your system for encoding your movie. Thus you may share
your movies with everyone through your web site. If you want the movie to play directly on your web-page without
explicit download of the file you may convert AVI file into animated GIF format with third-party programs. In this case
we recommend to save the source AVI file without compression to avoid artifacts caused by lossy compression.
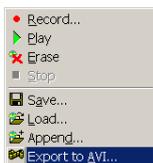
17. See a stereoscopic image

Three-dimensional image of a diamond can be seen by using two color filters, red and blue. This mode not only provides the stereo effect but also makes visible reflections on facets - fire of diamond, which is not visible on photographs and ordinary computer pictures.
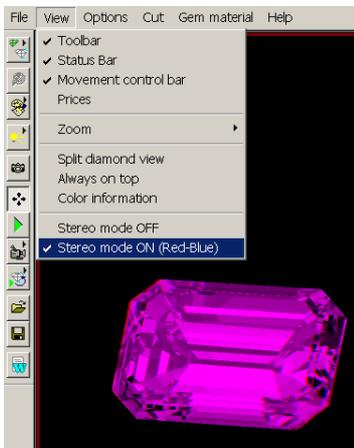
Note: A pair of stereo glasses (one with red and blue filters) is required to view Stereo model. Without such glasses, the image in Stereo mode cannot be seen meaningfully.

18. Use given lighting (office, shop, firescope, etc)

DiamCalc can imitate various light sources. This option is available for Photoreal model type only, as Draft model types do not take illumination into account.

To changes a type of lighting, use Options-Lighting menu, and then select a desired type. The following common types of lighting may be turned on in the photoreal mode:

One scattered light source located above the diamond «Dialite»

The main scattered light source above the diamond and several auxiliary point sources directed from different sides
- «Jewelry Shop»
- «Disco»
- «Office»
- «Incandescent lamp»
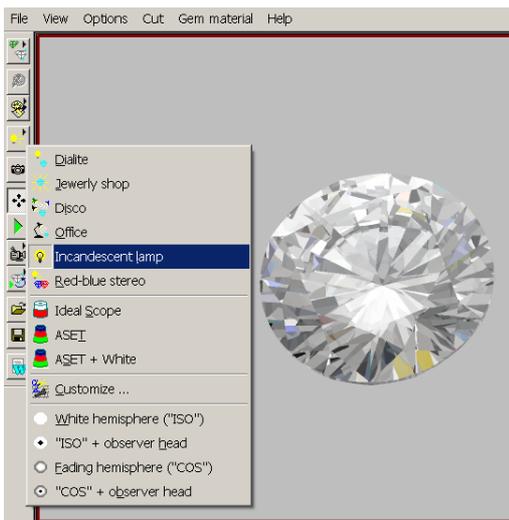
The Options → Special View menu contains a list of special lightings.

The DiamCalc also gives you a possibility to adjust the lighting with the «Customize...» option of the light menu. Select this option and you will be presented with the panel that allows you to con-figure number of sources, location, size, brightness and other characteristics of each light source.

19.   Vary viewing condition

Setting diamond position

DiamCalc allows to easily reposition the diamond with the mouse to view it from a different angle. To do this, press the left mouse button anywhere on the image:

Note the position of the mouse cursor above - it is the place where mouse button was pressed. To move the diamond, simply move the mouse in the direction where you want to rotate it, holding the button. After diamond is moved to the desired position, release mouse button. On the screenshot below, mouse cursor is where the button was released:

As you see, moving the mouse in vertical direction looks like «dragging» the diamond around horizontal axis. Moving the mouse in another direction would cause a different rotation. Such operation can be repeated, and the diamond can be set to any position after several steps.

There is another tool for moving the diamond: the movement panel. It can be called by Movement panel command in View menu. The movement panel allows to specify by which angle the diamond should be rotated, and perform the rotation by one of six buttons (one for each direction).
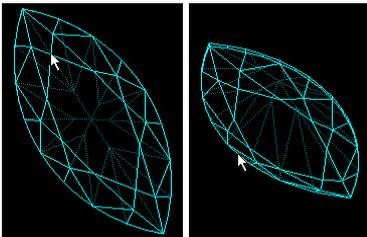
Setting one or two simultaneous views of a diamond

DiamCalc can show two simultaneous views of the same diamond taken from different angles. To do this, use Split command in View menu. A horizontal bar will appear, letting to split the diamond image into two panes.

When there are two images, each one can be tuned separately: e.g. one can hold a frame model of the diamond and the other view can be a photoreal model.

A split line between two models can be moved at any time by mouse, changing sizes of the images. Also, two images can be converted back to a singe one by moving the split line to the top or to the bottom, decreasing the size of one image to zero.

20.   Create an Expert Report for printing

3DCalc can create a diamond grading report. This feature requires that MS Word 95 or MS Word 97 is installed. To create a report, select File → Report → Export to Word command in menu. MS Word will be started (if not active already), and a new document created. You can view the report or print it from Word as usual. A report describes cut, proportions and contains a schematic image of the diamond:
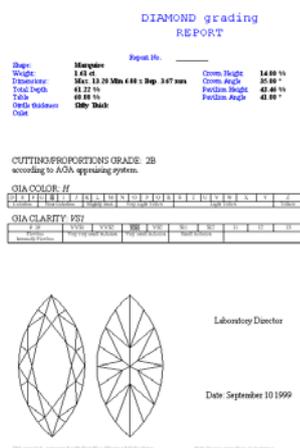
21.   Get coefficient of demerits (fish eye, nail head)

Select the «advanced» tab on the right panel. See fish eye value displayed here.
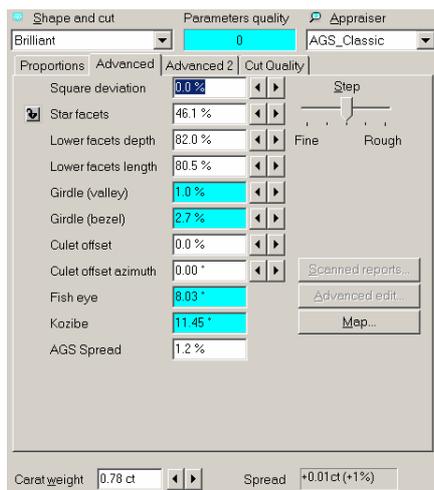
22.   Use Rapaport price list in 3Dcalc

DiamCalc is shipped with sample price lists, which may significantly differ from the prices on the today market. DiamCalc on-line documentation contains information on customizing price lists. For those who are subscribed to Rapaport price lists in electronic format, DBFCONV program (Rapaport price list converter) provides an easy opportunity to always have an up-to-date price data in DiamCalc. DBFCONV can be downloaded free of charge. See «how to set up and use the price list converter» section for more details.

23.   Select the version of Rapoport you need

Which version of DBFCONV to download?

This document describes differences between two versions of DBFCONV (Rapaport Price List Converter) distribution and shows how to select the version you need. Also, installation instructions for both versions are given.

Differences between versions of DBFCONV

The only difference between the small and the large versions is that the full version includes ODBC (Open DataBase Connectivity engine by Microsoft). If you already have a properly configured ODBC engine on your system, it makes no sense to download the full version (the full version is many times as big as the small one). Check the next section to determine if you have the necessary components already.

How to check if the small version is enough for your configuration

Click Start button - Settings - Control Panel. Search for an icon that looks like:

The icon's name should contain word «ODBC» (Open Database Connectivity), e.g. «ODBC Data Sources (32-bit)», «ODBC (32 bit)» or simply «ODBC». If there is no such icon, then ODBC is not installed on your system and you should download the full version of DBFCONV (see the note below). If there is such icon, double-click it. The options are presented in a notebook-like format. Choose Drivers tab. You will see a list of installed ODBC drivers. If there is an item named «Microsoft dBase Driver (*.dbf)» in the list, then the small version is enough. Otherwise, you have to download the full version (see the note below).

Note: Even if there is no ODBC and/or Microsoft dBase ODBC driver on your system, you can avoid downloading the full version by installing ODBC from a different source. It is included in various software products, e.g. Microsoft Office family (MS Word, Excel, Access). The process of installing ODBC is specific for each product (for Microsoft Office products, default installation options include everything that is necessary for DBFCONV). Depending on the software, sometimes you need explicitly to mark which ODBC drivers should be installed together with the ODBC engine. In this case, install the driver named «Microsoft dBase Driver (*.dbf)».

Installing the small version

Start dbfcnv_s.exe. It will ask whether to install DBFCONV and then prompt you for the installation folder. By default, DBFCONV will be installed to the same folder as DiamCalc. Change the folder if necessary and click OK button to

start the installation. After installation is completed, use shortcut in DiamCalc program group to start the software (i.e. click Start-Programs-DiamCalc-DBFCONV).

Installing the full version

Start dbfcnv_l.exe. Follow on-screen instructions to install the software, using Next button when available to continue the installation. You will be asked to what folder DiamCalc should be installed and where to create shortcuts for the program. You may be asked to reboot your computer to finish the installation.

By default, a shortcut of the program is created in DiamCalc program group (click Start-Programs-DiamCalc-DBFCONV to start the conversion).

24.   Set up and use the price list converter

This document presents step-by step instructions on working with DBFCONV (rapaport price list converter)

DBFCONV converts Rapaport price lists from dBase (*.dbf) format to the format used by OctoNus. Rapaport provides the following files to subscribers:

- **RNDDAT.DBF** - price list for Brilliant cut;
- **PEARDAT.DBF** - price list for Pear cut;
- **MQDAT.DBF**- price list for Marquise cut;
- **EMDAT.DBF** - price list for Emerald cut.

DBFCONV does not require that the file names are exactly as the listed above, but the extension must be .dbf (other formats are not supported). If necessary, one, several, or all cuts can be imported at a time.

To begin, start DBFCONV (a shortcut to it is usually located in Start-Programs-DiamCalc menu) and follow the instructions below.

Selecting the input folder

When DBFCONV is started, it prompts for a location of data files

RNDDAT.DBF file name is proposed initially, but you can choose any other .DBF file you want to load instead. After selecting a file, click Open button to continue (clicking Cancel button will abandon the whole operation).

Inspecting and modifying conversion options

After selecting the input folder, «DBFCONV» window appears. Its purpose is to verify that all the data for the conversion process is specified correctly: which cuts' data will be converted, which files hold the data, and where to put output files. All fields are filled automatically. Standard file names are used for all cuts, only the cuts which are found in the folder you specified will be processed, and the output folder is where OctoNus Diamond Calculator expects to find the data:
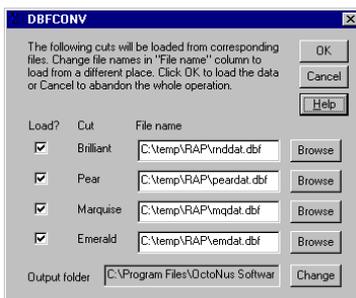
Usually it is enough to leave everything as is. However, you can change data in «DBFCONV» window as you like, e.g. remove check mark in «Load?» column of the cuts which you do not load. If your data is stored in the files with names

different from the listed above, you should specify necessary names in «File name» column (use Browse buttons to easy select the file names). After changing file names, set check marks near the names of cuts you want to load.

After making your changes (or deciding that all is right as is), click OK button to start conversion process. It can take some time. After completing, you will be notified that the data is converted, or presented with an error log which describes encountered problems.

If you leave an output folder as is (by default, it will point to the place where DiamCalc stores price lists), DiamCalc will use the new data the next time it is started.

Errors and messages

There can be some error conditions during DBFCONV operation. If an error occurs, an error message may be shown. Additionally, you will be presented with a detailed error log after conversion is completed. If error messages do not describe the situation clearly, look at the log for additional information. The most common problems are the following:

ODBC is missing or installed incorrectly. Download and install the Microsoft Data Access Components package (MDAC) which contains the driver named «Microsoft dBase Driver (*.dbf)». You may download it from our web-site or directly from the Microsoft's web-site. The version of the MDAC on our site is 2.8. This package is being constantly updated by Microsoft and we recommend you to use the latest version from the Microsoft's web-site. This component may be found in the «Data Access and Storage Developer Center» section of the microsoft.com (http://msdn.microsoft.com/data/downloads/updates/default.aspx).

An input file cannot be opened (an error message may also look like «Cannot open the table rnddat»). This sort of error can occur if a wrong name of input file is specified, or if the file is broken, or it does not contain price lists in Rapaport format, or the file is open already by some application (Access, Excel or some other). Check that you specified correct file names, close other applications working with the Rapaport price lists, and try again.

An output file cannot be opened (this message appears in error log). Possible reasons are: output folder does not exist, you do not have permissions to write to the output folder/file (on Windows NT systems), or the output file is already opened by some program with exclusive access (e.g. MS Word or another text processor). Check that the output folder is specified correctly, close the output files if they are opened by other programs, and try again.

25. DiamCalc prices diamonds

This section shows in details how DiamCalc calculates diamonds prices

DiamCalc can estimate a price of the diamond taking into account the mass of the diamond, its cut, color, clarity, quality of cut and a user-defined discount.

The following method is used:

- Base price per carat is calculated with price lists using mass group, cut, color and clarity;
- A discount for cut quality is taken (cut quality is determined by «DiamCalc appraisers description»);
- The final price is calculated on the basis of base price per carat, mass, discount for quality of cut and user discount.

Price lists are stored in text files. The main file is Price.txt which is located in the folder where DiamCalc is installed. The shipped version of Price.txt file does not contain price lists itself, but rather has references to OctBrill.txt file (it is located in the System subfolder and lists prices for Brilliant cut) and OctPear.txt file (it is also in System subfolder and contains prices for Pear cut).

Price.txt file also specifies that the price for diamonds of other shapes is a half of the price of the Brilliant cut diamonds with similar other parameters. For the details of individual file formats, see the links below. Note that there are three price list files in the shipped version of the software (Price.txt, System\OctBrill.txt and System\OctPear.txt), but formats of the last two are essentially the same.

Detailed file formats:

Price.txt file format - http://www.octonus.com/oct/products/3dcalc/standard/key/price_txt.phtml
System\OctBrill.txt file format - http:// www.octonus.com /oct/products/3dcalc/standard/key/OctBrill_txt.phtml

26. Modify appraiser data

DiamCalc allows to examine or modify data of appraisers, i.e. to change criteria which are used for diamond grading

Before examining or especially editing appraiser data you need to study «Appraise.txt file format» thoroughly. The best is to keep a printed copy of that document with you while working with Appraise.txt file. To study the data shipped with DiamCalc see «How to DiamCalc grades diamonds.»

Please keep in mind that an incorrect modification of configuration files may make appraising not work. Please make a backup copy of Appraise.txt file before changing it. Having it will help to restore a working configuration if something goes wrong. It is especially important if you made some modifications of this file before, so there is a risk that your previous work can be lost. Let us look at the following examples of modifying Appraise.txt file. Note that data of all grading systems is stored in a similar format, so that you can use any of examples as a guideline for similar change in any of the supported grading systems.

Setting a different discount for a cut quality

Example: 12% discount for Good quality in HRD system instead of 10%

1) Open *Appraise.txt* file with a text editor of your choice (e.g. Notepad).
2) Find a section of the file where HRD data is listed. Browse the file for «`[Appraiser]`» lines. There are several such lines, each for a supported marking system. Find the one which is preceded by comment «; HRD» («;» denotes beginning of a comment). There is «Title: HRD» text somewhat below.
   Tip: use your text editor's search capabilities to find «`[Appraiser]`» lines.
3) There is a list of all quality groups at the beginning of HRD section. Look for a «`[quality]`» line, it is followed by several quality group names accompanied by discount values. There is a «Good 10» line which means that the Good diamonds are currently discounted by 10%. Change the value of «10» to «12» and save the file.
4) The next time DiamCalc is started, new discount value for Good diamonds in HRD system will be used.

Setting a numerical range for a gradation of parameter

Example: setting a border value between «Very thin» and «Thin» girdles in AGA system to 1.1% of diameter instead of 1.0%

1) Open Appraise.txt file with a text editor of your choice (e.g. Notepad).
2) Find a section of the file where AGA data is listed. Browse the file for «`[Appraiser]`» lines. There are several such lines, each for a supported marking system. Find the one which is preceded by comment «; AGA (GEMS & GEMOLOGY Fall 1998 p. 164)» («;» denotes beginning of a comment). There is «Title: AGA» text somewhat below.
   Tip: use your text editor's search capabilities to find « `[Appraiser]`» lines.
3) Find the «`[other]`» section (it begins with «`[other]`» line and ends with the next «`[end]`» line). Find a line that begins with «StringValue: GirdleHeight_GIA (%)». Grades of girdle height follow. After each one, there is a pair of values which means minimum and maximum values for this grade. For example, «Thin 1.0 1.5» means that Thin girdle is one with height between 1.0 and 1.5% of diameter. To modify a border value between Very thin and Thin girdles, change values for both gradations: substitute «Thin 1.0 1.5» by «Thin 1.1 1.5» and «Very thin» 0.4 1.0» by «Very thin» 0.4 1.1».
4) The next time DiamCalc is started, it will place a border between «Thin» and «Very thin» girdles in AGA system at 1.1% of diameter.

Setting a range for a parameter in a quality group

Example: defining a range of Good crown angle in GIA system as 33-35% of diameter instead of 32-36%.

1) Open Appraise.txt file with a text editor of your choice (e.g. Notepad).
2) Find a section of the file where GIA data is listed. Browse the file for «[Appraiser]» lines. There are several such lines, each for a supported marking system. Find the one which is preceded by comment «; GIA» («;» denotes beginning of a comment). There is «Title: GIA» text somewhat below. Tip: use your text editor's search capabilities to find «[Appraiser]» lines.
3) Scroll down the file to find a section of GIA data where parameters for Brilliant cut are stored. It begins with «[cut]» end ends with the next «[end]» line. Between those lines, there should be «Name: Brilliant» line and a line beginning with «Mass: 0.01 100000». It means that the section between «[cut]» and «[end]» line refers to diamonds of Brilliant cut with any mass (from 0.01 to 100000 carat).
   Note: if you would like to modify an appraiser which supports different cuts (e.g. AGA appraiser), there will be several «[cut]»...»[end]» sections, each one for a different cut or for different range mass. For example, there is a «[cut]»...»[end]» section in AGA data which is relevant to Pear cut only; it can be found by line «Name: Pear» between «[cut]» and «[end]» lines.
4) Find a line beginning with «Mass: 0.01 100000» in the section. After it, a block of data follows. To understand it, look at several lines just before «Mass....» line. «Quality: «E-VG» G F» means that there is data for three quality groups: Excellent/Very good, Good and Fair. After «Mass: 0.01 100000», the data for quality groups follows, one line for each group.
   We are going to modify Good crown angle data, so we select the second line for Good group (remember, their order was «E-VG G F», so G (Good) is the second one). The line begins with «32 36 42 44 Thin Thick ...». To understand the meaning of this, look at the line above that begins with «Parameters: UpAngle (°)

DownHeight_GIA (%) GirdleHeight_mm (s)...». There are two values in the data line for each parameter, and the line can be read as follows: Good group has first parameter (UpAngle, i.e. crown angle) between 32 and 36 degrees, second parameter (DownHeight, i.e. pavilion height) between 42 and 44% of diameter, third parameter (GirdleHeight, i.e. girdle thickness) from Thin to Thick, etc. To complete what we were going to do, correct «32» by «33» and «36» by «35».

5) The next time DiamCalc is started, the Good group for Crown angle in GIA system will be defined as being from 33 to 35 degrees.

27.   *Modify price list*

This document instructs on modifying price lists supplied with DiamCalc

DiamCalc has its price lists stored in a text format, allowing to examine or modify price lists with any text editor. The file names shipped with DiamCalc are Price.txt (located in the folder where DiamCalc is installed), OctBrill.txt and OctPear.txt (located in System subfolder of the folder where DiamCalc is installed).

Before examining or especially editing price lists data you need to study «Price.txt file format» and «System\OctBrill.txt file format» thoroughly. The best is to keep a printed copy of those documents with you while working with Price.txt or System\Brill.txt files.

For a less technical description of methods that used in DiamCalc to calculate price of diamonds, see «How to DiamCalc calculates diamond price» section.

Please keep in mind that an incorrect modification of price list files may make pricing not work. Please make a backup copy of Price.txt, OctBrill.txt and OctPear.txt files before changing them. Having it will help to restore a working configuration if something goes wrong. It is especially important if you made some modifications of those files before, so there is a risk that your previous work can be lost.

The following examples show how to modify price lists. The examples can be used as a guideline for similar changes in the price lists.

Modifying price values for a specific cut, mass range, color and clarity

Example: setting the price of Brilliant cut diamonds of 0.08-0.14 carat, I, SI3 to 425 US dollars per carat.

The price lists for Brilliant cut is stored in System\OctBrill.txt file (the reference to it is in Price.txt file). Therefore, it is necessary to modify System\OctBrill.txt file only. If we would like to change Pear cut data, we would modify System\OctPear.txt file; for other cuts, the price is calculated as a discounted price of similar Brilliant cut diamonds.

The step-by-step instructions are given below:

1) Open *System\OctBrill.txt* file with a text editor of your choice (e.g. Notepad).
2) Find a price table for the chosen mass range (the file contains several tables for different mass ranges). In our case, look for the string:
   Mass: 0.08 0.14
   (Note that the other lines describing the table are «Format: clarity 8 5», which sets the dimension of the table to 8 rows, 5 columns, and «Magnify: 1», which means that all values in the table should be multiplied by 1, i.e. left the same.) The table we are looking for is below. Its rows and columns have captions to find necessary combinations of color and clarity.
3) Find a number for the chosen color and clarity values. In our case, find a number that is in «I-J» row and «SI3» column. It is 420. Change it to 425.
4) The next time DiamCalc is started, it will value Brilliant diamonds with parameters 0.08-0.14 carat, I, SI3 at 425 US dollars per carat
   Note: a discount for cut quality will probably be applied also, which will make the price somewhat different.

Setting a different discount for fancy cuts

Example: setting the price of fancy cut diamonds to 60% of Brilliant cut diamonds with the same mass, color and clarity.

The price of fancy cut diamonds except Pear are defined in Price.txt file as having 50% of the price of Brilliant cut diamond with similar parameters. To change this number to 60% of the Brilliant, it is enough to modify Price.txt file only.

1) Open Price.txt file with a text editor of your choice (e.g. Notepad).
2) Find the following line in the file:
   Cut: Other
   It refers to the cuts that were not specifically processed, i.e. for all cuts except Brilliant and Pear. After this line,

other parameters follow.

```
Source: cut= Brilliant
```

means that the base price is taken from Brilliant price lists (*System\OctBrill.txt*), and «*Magnify: 0.5*» sets the price to be 50% of the base price.

3) Change «Magnify: 0.5» to «Magnify: 0.6» (i.e. to 60%).
4) The next time DiamCalc is started, the price for all cuts except Brilliant and Pear will be 60% of Brilliant.

Defining a custom discount for a specific cut except Brilliant and Pear

Example: setting Marquise price to 55% of Brilliant with the same mass, color, and clarity, leaving prices for all other cuts unchanged.

This example is similar to the previous one, but it shows how to define price of different cuts more precisely. We will modify Price.txt file in a way that will give different prices for Brilliant (separate price list), Pear (separate price list), Marquise (55% of Brilliant), and all other cuts (50% of Brilliant in the original file version). You can extend this approach for other cuts, so that each one can have its own discount relative to Brilliant or Pear.

Possible cuts names are Brilliant, Pear, Heart, Oval, Marquise, Prince, Emerald, Radiant.

1) Open Price.txt file with a text editor of your choice (e.g. Notepad).
2) Find line: `Cut: Other`
   Make a copy of it along with the following lines `Magnify ... Discount ... Source ...` `DiscountPerFluorescence ...`
   and place the copy after the original lines, adding a blank line to divide cut types. You can use «Copy» and «Paste» commands in your editor to make a copy.
3) Change «Other» in the copied lines by «Marquise» and «0.5» magnify coefficient by «0.55» (it means 55%). So, we appended the following lines to the file:
   ```
   Cut: Marquise Magnify: 0.55 DiscountPerCut: N/A Source: cut= Brilliant
   DiscountPerFluorescence: N/A
   ```
   IMPORTANT! Find line: `PriceList: 3`
   It sets the number of cut types processed separately (Brilliant, Pear and Other cut types are supported initially). As we add a new type, we should change this to
   ```
   PriceList: 4
   ```

The next time we start DiamCalc, Marquise cut will be priced at 55% of similar Brilliant diamonds.

28. Order DiamCalc

DiamCalc 2.x Standard is just $280 US.

Upgrade from version 1.x to 2.x is only $80 (for registered DiamCalc 1.x users only).

Important note: *The license gives you the right to use DiamCalc on a single computer (identified by the registration number you were provided during registration). Whenever you want to use the DiamCalc on any other computer(s) you have to purchase additional license(s).*

At the moment, purchasing of DiamCalc can be done with bank transfer, with the PayPal system, ShareIt and Kagi companies and our distributors. For details on ordering DiamCalc, please go to our web-site at:

http://www.octonus.com/oct/products/3dcalc/standard/purchase.phtml

29. Contact the DiamCalc support

If you have any problems with the DiamCalc or have any suggestions for its improvements you may always write e-mail to diamcalc@next.msu.ru.