Smart Recut

Smart Recut provides more sophisticated and customizable algorithms of finding controllably asymmetric recut solutions, superior to the ordinary Recut procedure.

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Running Smart Recut

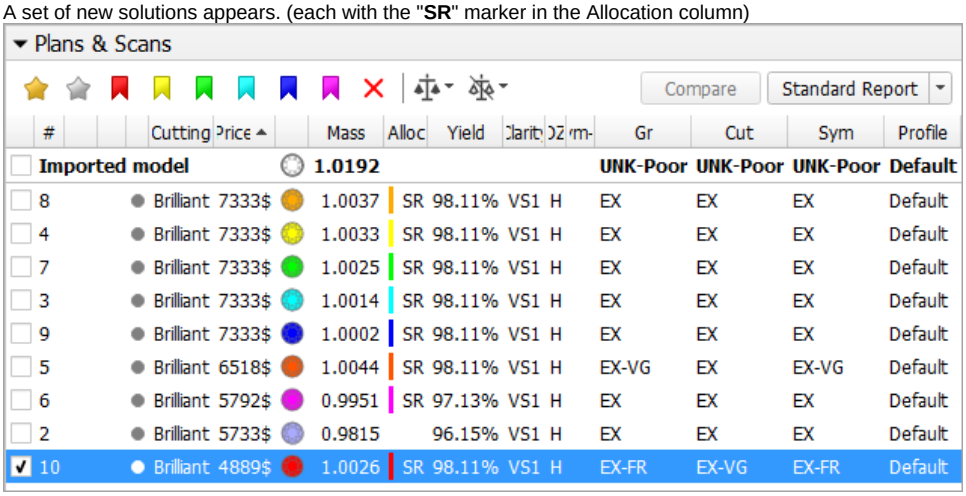
Standalone Run

To run Smart Recut:

1. Select Recut solution.
2. Set **Algorithm** = your available Smart Recut algorithm.
3. If necessary, set the algorithm options:
   a. **Allow Girdle Extra Facets** - see Using Girdle Extra Facets
   b. **Fix Girdle**, **Fix Crown**, **Fix Pavilion** - see Smart Recut with Restrictions
   c. Select **Presets** - see the Smart Recut Presets section below
   d. Target **Cut grade** and **Symmetry grade**
4. Click **Start Allocation**.

> Smart Recut algorithm seeks to keep the table plane of the model unchanged unless the solution found deviates from the original by a considerably wide margin. Besides that, Smart Recut is enabled with the options to fix the girdle, girdle + crown, or girdle + pavilion. See **Smart Recut with Restrictions** for more details.

A set of new solutions appears. (each with the "**SR**" marker in the Allocation column)

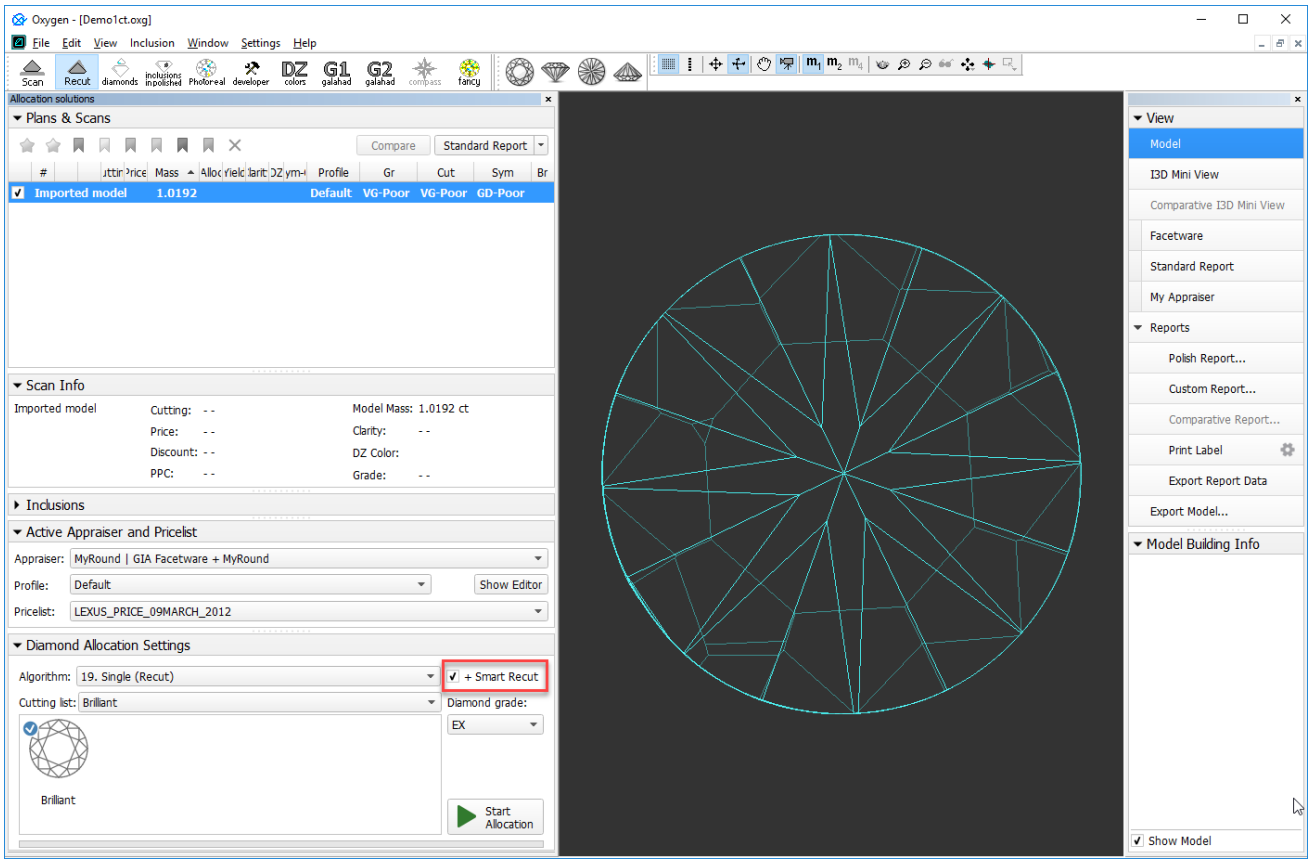


#	Cutting	Price	Mass	Alloc	Yield	Clarity	Gr	Cut	Sym	Profile
Imported model			**1.0192**				**UNK-Poor**	**UNK-Poor**	**UNK-Poor**	**Default**
8	Brilliant	7333$	1.0037	SR	98.11%	VS1 H	EX	EX	EX	Default
4	Brilliant	7333$	1.0033	SR	98.11%	VS1 H	EX	EX	EX	Default
7	Brilliant	7333$	1.0025	SR	98.11%	VS1 H	EX	EX	EX	Default
3	Brilliant	7333$	1.0014	SR	98.11%	VS1 H	EX	EX	EX	Default
9	Brilliant	7333$	1.0002	SR	98.11%	VS1 H	EX	EX	EX	Default
5	Brilliant	6518$	1.0044	SR	98.11%	VS1 H	EX-VG	EX	EX-VG	Default
6	Brilliant	5792$	0.9951	SR	97.13%	VS1 H	EX	EX	EX	Default
2	Brilliant	5733$	0.9815		96.15%	VS1 H	EX	EX	EX	Default
10	Brilliant	4889$	1.0026	SR	98.11%	VS1 H	EX-FR	EX-VG	EX-FR	Default

By default, Smart Recut produces 8 solutions, each according to certain *preset* (see the definition in the Smart Recut Presets section below). The solution markers in the tree are color-coded to match the corresponding presets.

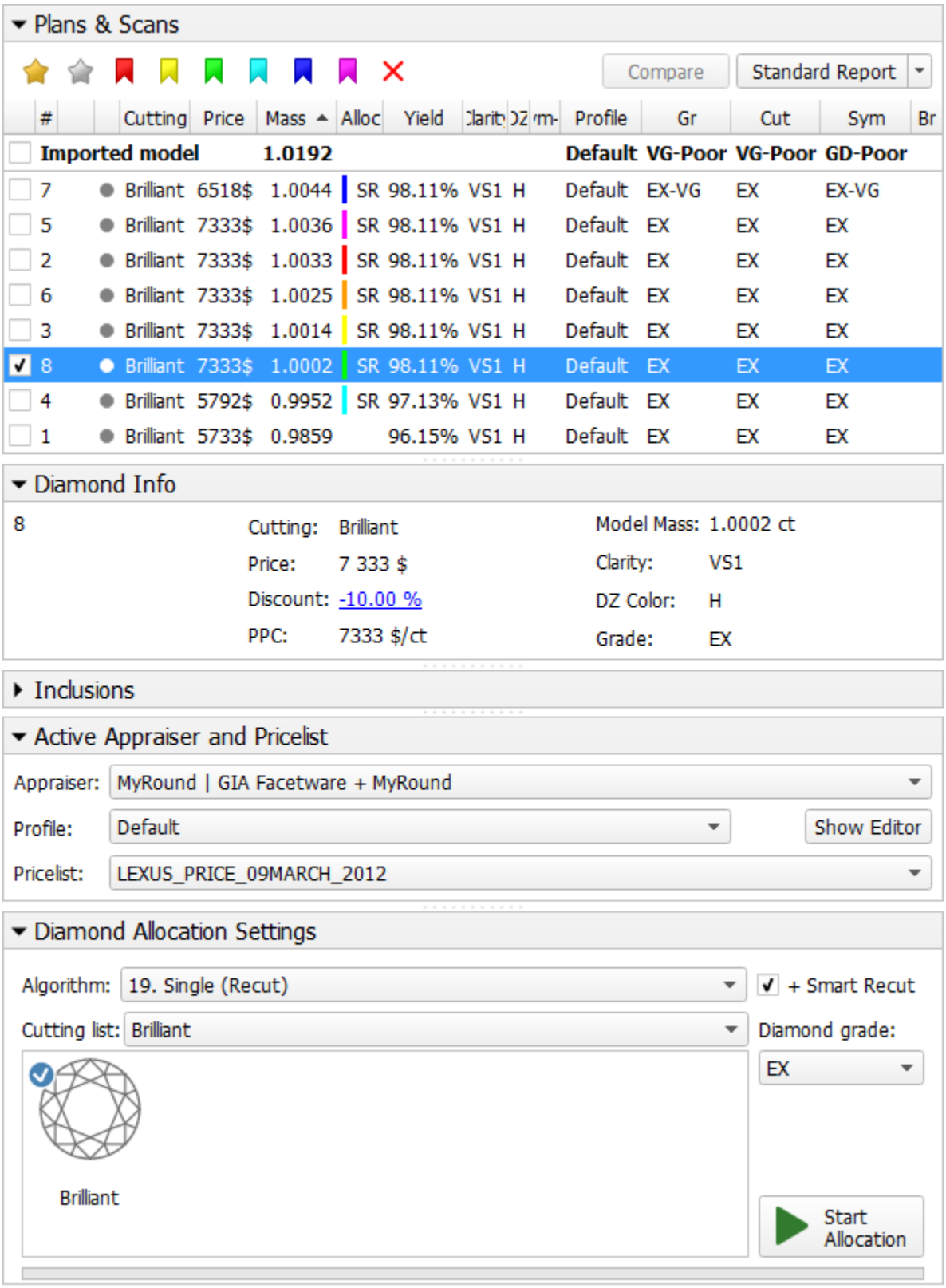
Recut and SmartRecut in One Run

The system provides the ability to apply Recut and Smart Recut algorithms sequentially **within one run**. To enable, select your Recut algorithm, then select the **+ Smart Recut** option, then start allocation.



With the **+ Smart Recut** option, the SmartRecut will start automatically after the Recut, basing on the two best Recut solutions. In the solution list, you will obtain both recut and SmartRecut solutions.

> SmartRecut starts with the last selected options.



Smart Recut Presets

A *preset* is a collection of additional limitations on top of the appraiser which are imposed on the solution. Each Smart Recut solution seeks a balance between retaining the most mass of the stone and achieving the highest possible symmetry. The presets, in effect, assign different weights to the geometrical requirements, thus shifting that balance to a varying extent. The presets are ordered from the strictest to the most relaxed. Below is the list of all presets:

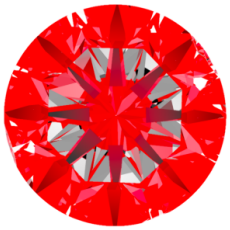
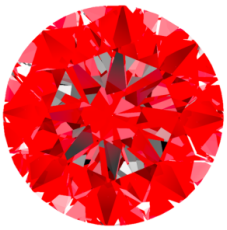
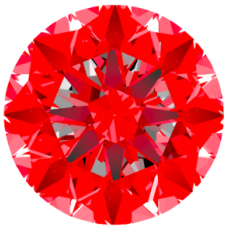
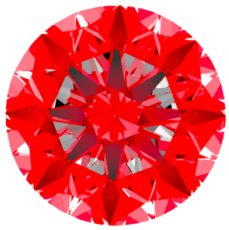
- 1. UltraSym
- 2. HighSym
- 3. MediumSym
- 4. NormalSym
- 5. Standard
- 6. LowSym
- 7. ExtendedLimits
- 8. MaxMass

> While comparing the Smart Recut solutions, keep in mind the following features:
>
> - The solutions, generally speaking, are **not** numbered in the same order as presets. In fact, the numbering of solutions is based on which preset finishes its job before the others.
> - Smart Recut algorithm is not fully deterministic and might give slightly different results on the same input data. The difference in mass does not exceed 0.0001 ct.
> - Though Smart Recut presets are designed to be uniformly distributed in a certain range on the imaginary scale "higher symmetry - higher mass", the solutions are not guaranteed to behave in the same way. Occasionally a preset with stricter limitations might return a solution with lower symmetry.

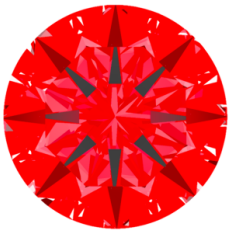
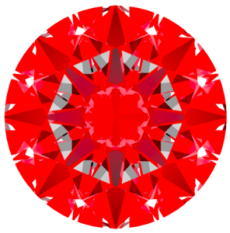
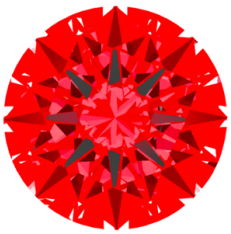
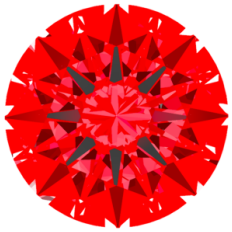
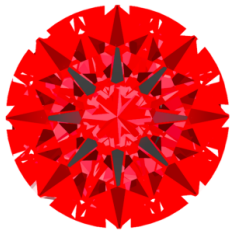
The preset with the most relaxed limitations is called MaxMass, for it should be expected to produce the solution of maximal mass (but probably lacking in symmetry and other qualities).

Consider these two sets of Smart Recut solutions together with their photorealistic images. Each set is obtained from one stone and ordered by decreasing mass.

First set

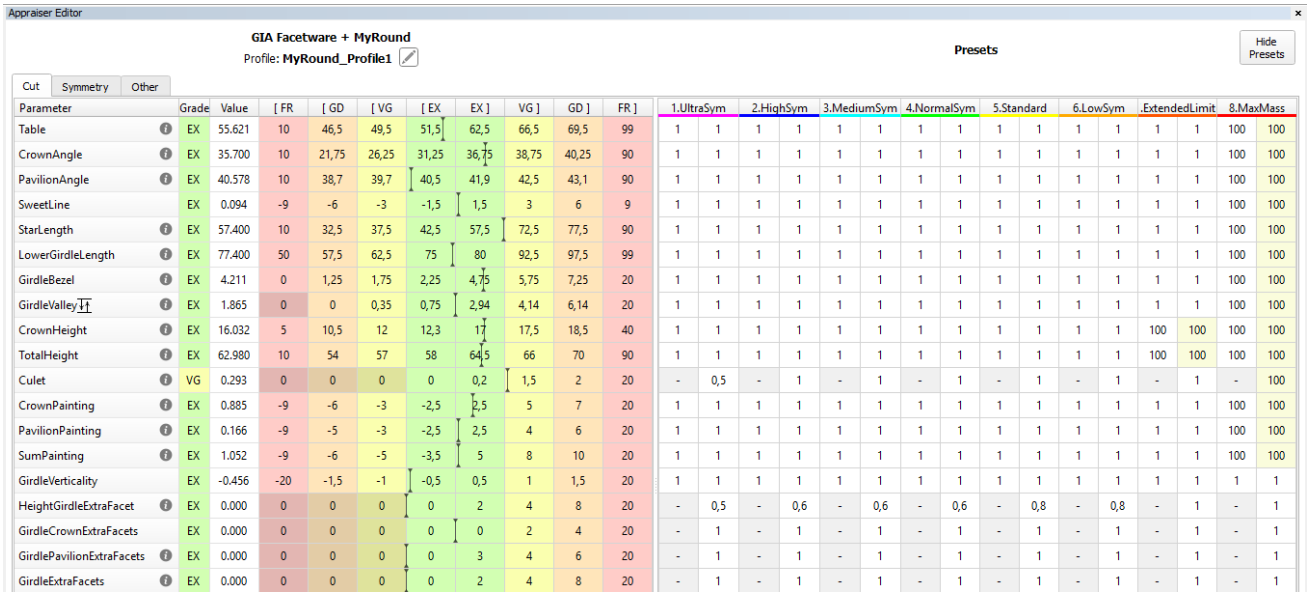
Preset	- (Original stone)	- (13. Single-M)	MaxMass	LowSym	ExtendedLimits	
Mass	4.3900	4.1069	4.2596	4.2540	4.2493	4.2
Optical symmetry	-	8.22	2.47	4.66	5.29	6.6
Picture						

Second set

Preset	- (Original stone)	- (13. Single-M)	MaxMass	LowSym	ExtendedLimits	
Mass	1.1269	1.0952	1.1224	1.1221	1.1216	1.1
Optical symmetry	-	9.13	4.63	5.63	6.02	5.9
Picture						

To obtain a photorealistic view of the stone, click **Photoreal** in the main menu. The main view field will be split in two, with the photorealistic view in the lower half. Note that in this mode you may still operate the **Plans & Scans** panel. As you select other models, the photorealistic image would change accordingly.

To view and edit presets, open the **Appraiser editor** panel (see **My Appraiser**), then click the **Show presets** button.



Parameter	Grade	Value	[FR	[GD	[VG	[EX	EX]	VG]	GD]	FR]	1.UltraSym		2.HighSym		3.MediumSym		4.NormalSym		5.Standard		6.LowSym		.ExtendedLimit		8.MaxMass	
Table	EX	55.621	10	46,5	49,5	51,5	62,5	66,5	69,5	99	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100	100
CrownAngle	EX	35.700	10	21,75	26,25	31,25	36,75	38,75	40,25	90	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100	100
PavilionAngle	EX	40.578	10	38,7	39,7	40,5	41,9	42,5	43,1	90	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100	100
SweetLine	EX	0.094	-9	-6	-3	-1,5	1,5	3	6	9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100	100
StarLength	EX	57.400	10	32,5	37,5	42,5	57,5	72,5	77,5	90	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100	100
LowerGirdleLength	EX	77.400	50	57,5	62,5	75	80	92,5	97,5	99	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100	100
GirdleBezel	EX	4.211	0	1,25	1,75	2,25	4,75	5,75	7,25	20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100	100
GirdleValley	EX	1.865	0	0	0,35	0,75	2,94	4,14	6,14	20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100	100
CrownHeight	EX	16.032	5	10,5	12	12,3	17	17,5	18,5	40	1	1	1	1	1	1	1	1	1	1	1	1	100	100	100	100
TotalHeight	EX	62.980	10	54	57	58	64,5	66	70	90	1	1	1	1	1	1	1	1	1	1	1	1	100	100	100	100
Culet	VG	0.293	0	0	0	0	0,2	1,5	2	20	-	0,5	-	1	-	1	-	1	-	1	-	1	-	1	-	100
CrownPainting	EX	0.885	-9	-6	-3	-2,5	2,5	5	7	20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100	100
PavilionPainting	EX	0.166	-9	-5	-3	-2,5	2,5	4	6	20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100	100
SumPainting	EX	1.052	-9	-6	-5	-3,5	5	8	10	20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100	100
GirdleVerticality	EX	-0.456	-20	-1,5	-1	-0,5	0,5	1	1,5	20	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
HeightGirdleExtraFacet	EX	0.000	0	0	0	0	2	4	8	20	-	0,5	-	0,6	-	0,6	-	0,6	-	0,8	-	0,8	-	1	-	1
GirdleCrownExtraFacets	EX	0.000	0	0	0	0	0	2	4	20	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1
GirdlePavilionExtraFacets	EX	0.000	0	0	0	0	3	4	6	20	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1
GirdleExtraFacets	EX	0.000	0	0	0	0	2	4	8	20	-	1	-	1	-	1	-	1	-	1	-	1	-	1	-	1

The limitations are defined with respect to those of MyAppraiser. Each parameter within each preset is described by two numbers. These are the multipliers for the left and right border, correspondingly. If both numbers are 1, this means that both borders are unchanged, that is, MyAppraiser values are used.

Sweetline is a derived parameter with special meaning; see **Using SweetLine** for more details.



Blue background denotes the selected field, if any. The name of the preset and the side (**Min** or **Max**) corresponding to the selected field are repeated in bold at the table header. Selection can be moved around using the arrow keys.

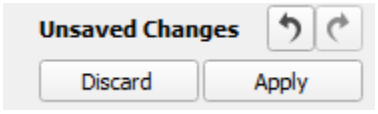
Hyphen on gray background denotes the positions where the corresponding limit is physically impossible to overstep, and thus need not be enforced specifically (lower limit of 0 for the culet size, for example). Such positions are not accessible for editing and can't be selected. When the selection is moved around with arrow keys, it jumps over them.

Yellow background denotes the multipliers which are loosening the MyAppraiser limitations, that is, left-border multipliers with value less than 1 and right-border multipliers with value greater than 1.

All numeric values are editable. Double-clicking in any table cell transforms it to the input field: . Pressing **Enter** does the same to the selected cell. You may change the field using the arrow keys **Up**/**Down** on the keyboard, or the arrow buttons next to the field, or simply by typing the values in. Pressing **Esc** finishes the editing and discards changes. Pressing **Enter** or clicking in another cell finishes the editing and keeps the newly entered value in the edited cell.

Changed values are shown in bold. The presence of such values is further indicated by the bold note **Unsaved changes** at the bottom of the panel.

Life cycle of the edited parameters is controlled by the following buttons at the bottom of the panel:



These buttons are not to be confused with the similar buttons controlling the MyAppraiser parameters (see **My Appraiser**).

Undo 	Undo the most recent change, if any.

Redo 	Redo the recently undone change, if any.
Discard	Discard the recent edits.
Apply	Save the parameters within the program, so from that point on the new values would be applied to all models.

The parameters are stored in *.ini files located at `%USERPROFILE%\OctoNus Software\SmartRecutPresets\`. No mechanism for managing multiple versions of presets is provided. If you want to return to the default values, copy the files manually beforehand and save them elsewhere.
