

GIA Cut Grade Estimation Tables for Standard Round Brilliant Cut Diamonds

The following example tables provide guidelines for estimating a GIA Cut Grade for round brilliant diamonds with crown angles between 22.0 and 40.0 degrees, pavilion angles between 38.8 and 43.0 degrees, and table sizes between 50 and 67 percent. The ranges for these parameters exceed the common proportion ranges seen in practice today. Values for the other essential proportion parameters are kept constant: star length (55 percent), lower half length (80 percent), girdle thickness (3.0 percent), polish and/or symmetry (VG or EX), girdle min/max (THN-STK), culet size (NON-SML), and painting or digging out at none or negligible. Variations in these fixed parameters may result in a different final cut grade.

How to use these tables

These tables can be used to estimate the proportion cut grade for a particular standard round brilliant, or they can be used for general cut planning. The proportions provide a primary component of the overall cut grade; other critical factors include polish, symmetry, and verbal descriptions of the girdle and culet (see, “Finish, Culet Size and Girdle Thickness; Categories of the GIA Diamond Cut Grading System” for details). The lowest grade for any category establishes the final overall cut grade.

Example: Consider a round brilliant diamond with these proportions: *table 56%, crown angle 36.5°, pavilion angle 41.2°, star length 55%, lower half 80%, medium girdle, no culet, Very Good polish and symmetry, and girdle thickness 3.0%*. This example is one of many proportion combinations that lie on the boundary between Excellent and Very Good cut grades.

Use the table at the top of page 5 for the 56% table size. Find the 36.5° crown angle across the top and the 41.2° pavilion angle down the side. Since the values for the other three proportion parameters match the values used for these tables, the grid box where the crown and pavilion angle values intersect is the estimated cut grade (Excellent).

This cut grade falls close to the grade border between Excellent and Very Good. If the average measurements also lie close to one or more rounding boundaries, the slightest difference between a measurement taken by GIA’s Laboratory and one taken by a cutter can cause a difference in the estimated cut grade. (See “Proportion Measurement: Tolerances for the GIA Diamond Cut Grading System” at http://www.gia.edu/diamondcut/pdf/0805_pg34_39.pdf)

For our example stone, the rounded pavilion angle is 41.2°. If 41.2° is derived from an unrounded value of 41.26°, it is within measuring tolerance of a value like 41.31°. However 41.31° would round to 41.4° and be reported as such. As shown on the table, a 36.5° crown angle and 41.4° pavilion angle yields an estimated cut grade of Very Good. Although the estimated grade for this combination of crown angle, pavilion angle, and table size may seem to be Excellent, differences in measurements can push a grade over rounding borders and consequently over cut grade borders.

A two-dimensional table can only show variations with respect to two variables; a number of such tables are given here to provide the proportion cut grade dependence on three parameters. The list provided here is not exhaustive.

GIA Cut Grade Estimation Tables

GIA's online tool, Facetware® (www2.gia.edu/facetware/), can be used to explore how variations in star or lower half length, or girdle thickness, culet size, polish, and symmetry affect the estimated cut grade. Use girdle thickness percent for Facetware® in order to receive the most accurate results. Total depth percent should be used only when girdle thickness percent is not available. When total depth percent is used in calculations, Facetware® will “estimate” the girdle thickness percent from the other data available and produce less accurate results.

Compare the results of diamond 1 (left) with diamond 2 (right) in figure 1. A change in the star length from 55% to 60%, with all other proportions remaining identical,

changes the estimated cut grade from Excellent to Very Good. *Appearance* is the key cut grade aspect for this case because longer stars combined with the other proportions negatively affect the face-up appeal. Another common situation is shown in figure 2, where changing the girdle thickness from 3.0% (diamond 1, left) to 3.5% (diamond 2, right), with all other proportions remaining identical, changes the grade to Very Good. In this case, *design* is the key cut grade aspect because these proportions combined with a thicker girdle create a weight ratio value that exceeds the threshold for Excellent. (See “A Foundation for Grading the Overall Cut Quality of Round Brilliant Cut Diamonds” at http://www.gia.edu/diamondcut/pdf/cut_fall2004.pdf)



Figure 1. Changing the star length value from 55% to 60% changes the estimated cut grade from Excellent to Very Good.

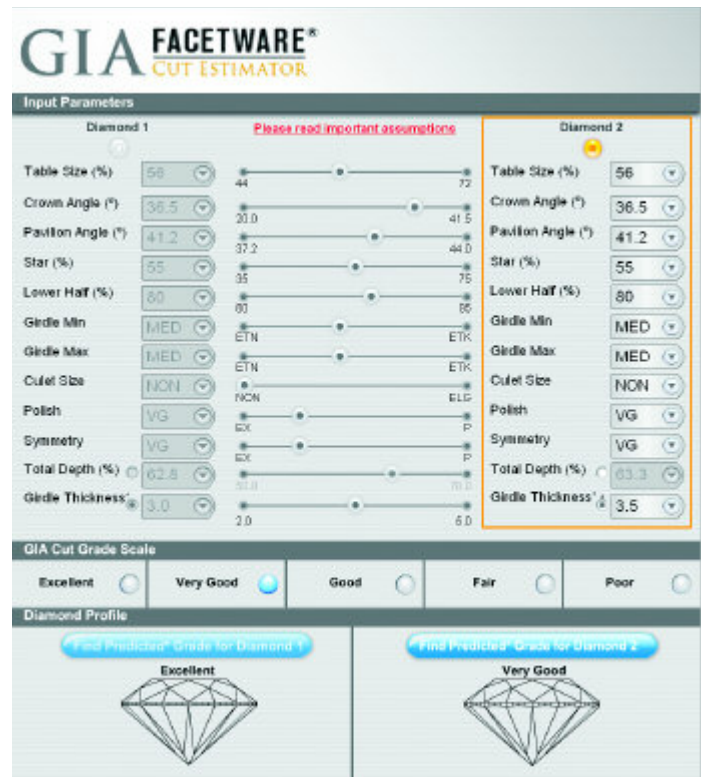


Figure 2. Changing the girdle thickness value from 3.0% to 3.5% changes the estimated cut grade from Excellent to Very Good.

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