

KEYED DOPS - PROBLEM AND SOLUTION

by Robert H Long and Norman W Steele

Normally we make an effort to avoid facet design details that are specific to a particular type of faceting machine. Some faceting machines are equipped with "keyed dops", but the machines we use do not have keyed dops so orientation problems are not ones we routinely face.

However, a recent article in ANGLES (April 91) titled "CUTTING INSTRUCTIONS FOR THE DEMI-MARQUISE" by Paul C. Smith demonstrates one of the problems a faceter may encounter when using a faceting machine which incorporates keyed dops. The article reminded us that we may have a considerable readership who do have this particular problem, so we thought it would be in order to make an exception in this case. Smith's problem involved cutting the DEMI-MARQUISE design, but the same problem occurs when cutting any heart or pear shape design with a line culet and one symmetry axis. If normal orientation of the design is used, one where the axis of symmetry coincides with the transfer axis, then it is virtually impossible to dop the stone securely on a normal Vee dop after transferring. We would normally use a "Vee" dop to hold the faceted pavilion on a culet as a keel stone, but invariably the vee in the dop is orientated the wrong way. The vee groove is orientated at right angles to the line culet.

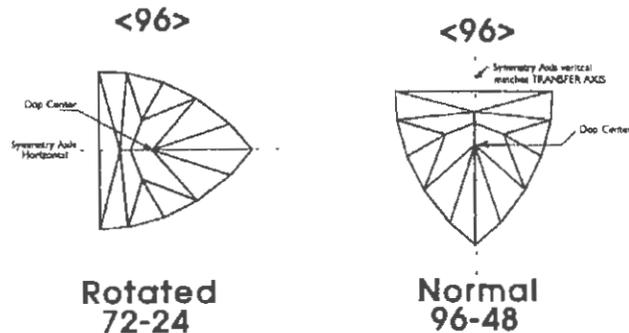


Figure 1 Demi-Marquise design example of rotation to accommodate keyed dops.

Paul Smith's solution is to modify the indexing and orientation of the design (See Figure 1). To quote from the article "The indexing may seem unconventional to some: it was chosen as though for a complete marquise, then only the right-hand half was used. This makes it look like unsymmetrical indexing, but it allows machines with keyed dops such as the Raytech to be used. Transfer dopping can then be made to a V-dop."

To illustrate the situation, Figure 2 shows the keying arrangement of the Raytech-Shaw dops (but there are others). The keying pin is orientated perpendicular to the direction of the V groove in the dop. When mounted in the quill, the keying pin points to the 0 (or 96, for example) on the index gear. The transfer block then properly makes the transfer about the 96-48 axis, with the 96 before transfer matching the 96 after transfer. This is fine for cutting a full marquise. When cutting a semi-marquise and the dop is in the center of the stone, the transfer axis and the axis of symmetry do not match and the indexing must be transposed, 24 to 72, 95 to 1, etc. as Paul Smith has done. This works, but the manufacturers of keyed dop machines have provided an alternative solution. Raytech Industries, for example, makes a device called a Rotational Adjusting Collar which "Provides adjustable vee groove on quill for rotationally adjusting dop". It is Stock No. 20-208, and presently retails for \$8.00. In effect, it provides a way of defeating or adjusting the keying orientation of the dop. To cut the Demi-Marquise using this collar, the Pavilion would be cut normally, then after transferring, the alignment could easily be adjusted with the collar in place, using the large flat facet at index 96.

Another machine which uses keyed dops is the Facetron. On this machine the means of re-orientating the dop is built into the machine. There is a hex-head screw located at the upper end of the quill shaft. Simply loosening this screw allows the dop to be orientated at will. This is valuable not only to solve transferring problems, but to allow adjustments to be made to the orientation of the rough when faceting the first side. If you are using the popular epoxy or superglue dopping techniques, it is impossible to shift the stone on the dop. . .the dop itself has to be shifted. It is not always possible to get the stone aligned on the dop with respect to the keyway in the proper manner to eliminate flaws and get maximum yield. Using the dop realignment feature, either the built-in one of the Facetron, or the collar from Raytech, provides the desired freedom to adjust the rough rotationally after dopping.

In summary, if you have a machine which uses keyed dops, check with the manufacturer to see if they have provided a means of defeating the key alignment. They undoubtedly have something. Also as an interesting aside, in researching the catalogs for this article I came across some gadgets from the Graves Company which in effect turn their non-keyed dops into keyed dops. So you can have the best of both worlds--the convenience of keyed dops and the rotational freedom of non-keyed dops.

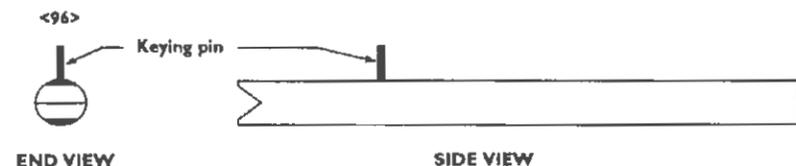


Figure 2 Raytec-Shaw type Keyed Dop