Faceting Machine Instructions

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Chapter One

Components

1. Correct Feed Lever **Figure 2**
2. Adjustable Motor Tie Support
3. Removable Motor Pot
4. Tool Holder Support
5. Not for Cutting Gem Stones
6. Faceter Head See **Figure 3**
7. Tool Holder
8. Threaded Hundreds (Lines and lowers platform as needed)
9. Cutting Wheel
10. Motor Tie Support
11. Threaded Hundreds Not necessary but can fit with function operator and for platform attachment

The Faceter by utilizes the model dops described above to transfer your stone/ from pavilion to crown arbor/ any kind of alignment. Complete instructions on use of the Faceter are given in Chapter Four.

The cutting lens are supplied with your machine. The 260 grit Detailer II is an electroplated diamond for polishing and cutting in large holes. The electroplated diamond is a very aggressive cutting lens. The 600 grit Detailer II is a finer lens for cutting and polishing. The 600 grit lens is also used for cutting and polishing of stones with extremely diamond hardness like sapphire and corundum. The lap is used for cutting small holes and polishing of hard stones. The lap is also used for cutting and polishing of soft stones. The lap is also used for cutting and polishing of stones with extreme hardness. The lap is also used for cutting and polishing of a wide range of stones using oxide polishes.

The operation of your Faceter Model is very simple. To begin, make sure your speed control is set to zero (0).

1. Flange plate
2. Lap
3. Lap retaining nut
4. Threaded rod
5. Mounting flange

Your diamond flange must been in a container to catch the water. **Never move this water! Always fill water pot with fresh tap water to avoid possible contamination of your lap.** Check the face of the flange and the rotating surface of the lap to be sure there are no particles which could cause the lap to lift, then place the lap on the flange. Place the lap retaining nut on the threaded rod.

The threaded rod is the shaft on which the lap is attached and the other end is mounted. This rod is removable so the lap may be removed from it faceter. The rotator connected rod is used to secure the lap in place. When you are mounting only one lap, use the side of the rod as shown in Fig. 4. When more than one lap is used, the threaded end of the rod is used to secure the lap. Always be sure that the lap is secure and tighten the lap retaining nut. Do not overtighten the lap retaining nut.

To turn the machine on, turn the rotator speed control clockwise to a clockwise direction stopping at the desired speed (usually between 400 RPM and 700 RPM for cutting and between 70 RPM and 400 RPM for polishing). The rotator speed control is located on the left side of the machine. Turn the rotator speed control to the Figure 2 is right hand side, the rotator speed control is normally used to a clockwise direction. The rotator speed control is located on the left side of the machine. Turn the rotator speed control to the left side of the machine. **Never change direction of lap while rotator is turning.** Turn the rotator speed control to the left side of the machine. Turn the rotator speed control to the left side of the machine. Turn the rotator speed control to the left side of the machine. Change the flow (200-300 and replace cap. If the machine does not operate, check the fuse holder, replace blown fuse, reset breaker, or the factory for advice.

1. Correct lever
2. Switch and speed control
3. Rotator
4. Reverse switch
5. Fuse holder
6. Power cord

The tool is placed on the platform with all three feet firmly seated. Before cutting begins, be sure the tool holder clamp handle rotates clear when turned counterclockwise. Tighten the tool holder clamp handle. Be sure the tool holder is tight and secure. Be sure the tool holder is tight and secure. Be sure the tool holder is tight and secure

back as you grind so you can look down along the dop and see the position of the stone in relation to the wheel face and grind only a little at a time.

Note: If you don't have a grinding wheel, the pavilion can be roughed out on the coarse side of your cutting lap after the dop is mounted in the faceting head.

For square and rectangular stones, the facet finder should be set in (M) position and only every other notch is used. Set the angle at 80° and cut all four sides to establish the girdle. Now, set the angle to 43° and cut the four sides until they meet in a point forming the cutet as shown in Figure 30-d.

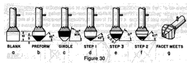

Figure 30

Change the angle to 51° and cut until facets meet those of the first step halfway as shown at 30-e, then change the angle to 47° and cut until these facets are the same width as the other two at 30-f. When cutting each row of facets, be sure that their junctions on each side of the stone line up with the junctions on the adjacent sides as shown in 30-g.

All sixteen facets should now be polished, commencing with the culet step at 43° then the second step at 47°, the third step at 51° and the girdle at 80°.

Figure 31

"OTHER STEP-CUT STONES"

Transfer to another dop and grind some of the excess material from the four sides of the crown (being careful not to over grind), then replace the dopped stone in the facetter, set the angle to 40° and cut the four sides nearly to the girdle line, leaving a girdle about2mm wide. The crown will then appear as in Figure 31A.

Change the angle to 22° and cut the four diagonal facets until their points match the depth of the side facets as shown at 31B. There may or may not be a small square spot left uncut at the center of the crown depending on the amount of material left above the girdle line. Pay no attention to this, but set the angle to zero and cut the table until it assumes the form of a square with its four corners just touching the tips of the side facets shown (31C). Polish all the crown facets and the girdle and your stone will be finished.

The French Star you just cut was a square stone having a step-cut pavilion and a cardinal-type crown. Step-cut stones are made in many shapes with varying numbers of steps and/or facets in the crown and Pavilion.

Making the following step-cut rectangular (Cushion Cut) will give you the remaining knowledge and experience needed to understand how the various shapes and types are formed and cut.

Figure 32

Unlike the brilliant cut, in which the depth of the pavilion is less than half the diameter of the girdle, the pavilions of step-cut stones should be given a depth of 50%-70% of the girdle diameter (or girdle width), and this can present a problem in mounting them. For this reason, most of the step-cut stones we see are too shallow *so shallow, in fact, that they appear to have a window in the center through which one can sometimes see with such clarity as to be able to read newsprint through them. Such stones, of course, are virtually devoid of "life", hence they have no beauty other than that which comes from their color. This is not necessary and should be avoided whenever possible.

Caution: Never cut a pavilion facet at less than the critical angle (see Appendix I).

Rectangular step-cut stones, both sharp-corner and cut-corner types

To minimize the depth of the pavilion and to maximize the amount of light returned, it is important to keep pavilion facet angles as low as possible, however, it is difficult to cut facets accurately if the change in the angle is less than 4° for each step.

The following diagrams show some good proportions and slope angles for both two-step crown and three-step crown cuts on 11 different gemstone materials using 4° steps. In each case, the width of the girdle is 1/00 and that of the table is .500.

100
.500
.200
20+6
20+6
14°
14°
14°