

Figure 3. Pavilion with girdle facets cut

STEP 2: The Girdle Facets.

Set the protractor at 90° . Set the index at 32. On a fine lap, cut the first girdle facet wider than the pavilion main facet. Cut the next facet to where it removes the extra width of the first facet, so that the two girdle facets now meet on the same line as the pavilion main facets. Repeat this process using the Step 1 index settings until all eight girdle facets are cut. All girdle facets should now be the same height and your gem should resemble Figure 3. Recut the girdle on an extra fine lap to remove scratches left by the fine lap.

STEP 3: Polishing the Pavilion

Using a cerium oxide lap, polish the pavilion main facets. Set the index to 32, adjust the height of the platform so that when the handpiece is at rest on all three restpoints, the main facet is only just touching the lap. Now, move the handpiece to the right so that the front restpoint is off the platform. The handset should now be supported by only the two rear restpoints and the facet resting on the lap. This is the position of the handset for all polishing; remember it! Swing the facet a few times across a dry, motionless lap. Check to see if the facet is beginning to polish. If the facet is slightly polished only near the girdle, raise the platform slightly. If slightly polished only near the culet, lower the platform slightly. If it is slightly polished on only one side, cheating may be required. Ask for instructions if this is the case.

If it appears that the entire facet is polishing, wet the lap and turn it at a slow speed. Polish a few seconds and check again. If the entire facet is not polishing, use one of the methods described above to get the facet flat to the lap before polishing for an extended period. Do not move to a new facet until the one you are working on is completely polished. Do not polish the girdle.

After all of the pavilion facets are polished, the gem is ready to be redopped onto another dop stick. To prepare for this, coat the entire pavilion with a thin layer of shellac. It will take about ten minutes to dry. Directions for redopping are in the fume hood.

STEP 4: Aligning the Crown to the Pavilion

After the stone has been turned onto a second dop stick, it must be aligned so that the crown facets are in their proper positions over the pavilion mains. This is done with the help of a varipin, a removable pin placed close to the gem on the second dop stick and into the notch in the quill, just like the fixed pin on the first dop stick.

Slide a varipin onto the dop stick (leave the screw loose) and place the stick into the quill so that it turns freely (don't tighten the set screw yet). Place a polishing lap on the machine. Check the handset to be sure both cheaters are closed. Set the index on 2 and protractor to 90° . Adjust the height of the platform so that one girdle facet lies flat on the lap and all three restpoints are touching the platform. When you are certain that the facet is flat to the lap, tighten the quill set screw (but not the varipin!). Now, rub the girdle facet across the dry polishing lap to check that it is flat to the lap. If not, loosen the set screw and try again. When the facet polishes slightly across its entire width, the alignment is correct and the varipin set screw can be tightened. **DO NOT POLISH THE GIRDLE.**

CUTTING THE CROWN

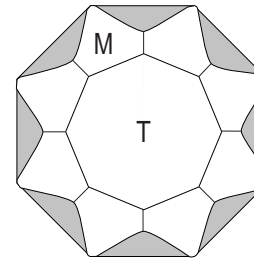


Figure 4. The crown mains

STEP 1. The Crown Main Facets

Begin cutting the crown main facets (M, Fig. 4) on a medium lap. Set the index Setting 2, with protractor set at the crown angle (40° for quartz). Remember this angle! It will be used later. The crown facets should now resemble Figure 4.

The main facets are cut consecutively on settings 2-6-10-14-18-22-26-30. Take care that the girdle at the lower tip of the main is not cut away. The mains touch the girdle at a sharp point. Two millimeters of girdle should remain. When these facets are cut, do not use a fine lap at this time. The crown should resemble Figure 4.

STEP 2: Cutting and Polishing the Table Facet

When the crown mains are in place, the table (T) is cut and polished. Set the protractor to 0° and the index on the ID setting. Cut the table on a medium lap until its width is 60% of the width of the gem. Measure to be sure that it is correct. Recut the table slightly with the fine and extra fine laps. All restpoints must be on the platform during this recutting, and care should be taken to ensure that the entire table is recut by each lap.

Align the table flat to a polishing lap, as was done for the pavilion facets, then polish. If it does not polish throughout, it is not flat to the lap! Do not try to correct this, ask for help.

Slightly recut the main facets with a fine lap to remove medium lap scratches. If the table is not a perfect octagon, recut the smaller main facets. The crown should resemble Figure 4. Recut the main facets on an extra fine lap.

STEP 3: The Star Facets

The star facets (S) are cut on the extra fine lap, indexed on asterisk settings, at an angle of 15° less than the crown angle. The cutting of the star facets (or any other small facets) is best done by wiping the stone across a motionless lap. Do not start the motor at any time during this step. Wiping a facet in this manner takes only a small amount of extra time and has the advantage of much more precise control of facet size.

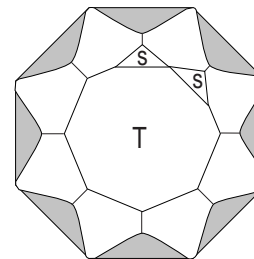


Figure 5. Cutting the star facets

The star facets must just meet the adjoining stars around the table. Begin cutting a pair (settings 32 & 4) of star facets on a motionless, wet, extra fine lap, alternating between them until they are precisely the same size and meet at a point, as shown in Figure 5. If these first two star facets are not the same size, the remaining stars will alternately be small and large.

When the first two star facets are the same size and are touching, cut the remaining six in rotation.