



SELECTING A FACETING MACHINE-- A GUIDE OF WHAT TO LOOK-FOR

Careful selection a faceting machine is important. It is a major purchase, not just because of the money, but also in terms of your future time and effort--time and effort that deserves to be well rewarded. You will probably purchase one faceting machine in your lifetime--don't just jump at a "bargain"--get the one you really want. Don't you deserve it?

There are two major aspects of faceting--one or both of these got you interested in the first place:

PLEASURE...You will LOVE Faceting if your equipment does what you want it to, without a struggle. Enjoyment goes away quickly if you have to "fight" with less than excellent equipment.

VALUE...Your gems' value depends on the nature of the material, the finished gem weight and and quality of the cut. A truly accurate machine, even with modest gem material, provides yields that pay for the machine in a short time.

Check it out:

- 1. Review these pages.** They list the important characteristics of faceting machines. Use it as a guide for asking questions and reviewing company literature.
- 2. Check out the Web pages.** The company will have a website—and there are other informative websites—some, like www.faceters.com , offer reviews of faceting machines.
- 3. Speak to the manufacturer.** Ask questions: about faceting, about the equipment, about service--there aren't any "foolish" questions. Get an idea of company responsiveness, and caring about quality.
- 4. See the machine,** if you can, and look over the workmanship--we probably can refer you to a nearby Ultra Tec Representative.

The key TECHNICAL FACTORS are REPEATABILITY AND ACCURACY--the factors that determine the quality of cut and material yield.

Faceting is a 3-step process. Each facet is "visited" 3 times (at least)--there's a rough cut, a fine cut, and then a polish. Each visit to a facet has to be precise: It's called "**REPEATABILITY**"--the ability to get back to the exact prior position. If that return visit is not exact, you will be tweaking and making corrections--and two things happen: the stone gets smaller, losing value, and your temper gets shorter. Getting the most brilliance from a gem results from setting the important angles with **ACCURACY**. When you set an angle, it really needs to be that angle, not just something close. Some designs, like the popular Barion designs, use angles that are only a half-degree apart--no room for error.



SELECTING A FACETING MACHINE-- A GUIDE OF WHAT TO LOOK-FOR

...Cont'd

FACETING REQUIRES A MACHINE THAT IS **VERY ACCURATE**, AND **VERY, VERY REPEATABLE**.

- a) Scales should be clear, and easy to read. Angular resolution should be 0.1° (modern design diagrams define angular positions to 0.1°). Vertical positioning should allow settings of .02 mm or better. All settings should have easy fine-adjustment features so that a position can be dialed-in under control.
- b) With the positions set, the Head should be absolutely firm. Grip portions of the Head and push, pull and twist--and confirm that there is no motion. Movement means inaccuracy—something that will cause you to struggle.
- c) There should be a firm mechanical Angle Stop--even when an indicator is used to signal a stopping point, there are situations that require a firm mechanical stop.
- e) The Platen that holds the lap should be substantial, and you should detect no motion (except its normal rotation) if it is pushed or pulled. -- Also, pay attention to the size of the platen (be sure you are looking at the platen--the part that is permanently attached to the rotating spindle--and not a so-called master lap set on a small platen). A larger platen provides proportionately better accuracy than a small platen.
- f) The baseplate that maintains the relationship between the Head and the lap--is **critical** to the design. Inaccuracy in the baseplate, from either the manufacturing process or subsequent wear, can destroy the needed accuracy. The baseplate must be sturdy, non-warping, easy to keep clean, and be of a hard non-wearing surface hardness.
- g) You should receive a clear specification and certification which states the tested accuracy (in confirmable numbers--not just words).

WORKING CHARACTERISTICS of the machine and its **CONVENIENCE** contribute to both the **quality of the cut and the quality of your experience**--How does it feel to use the machine? Does it allow you to work at a reasonable speed, comfortably, and with minimum fatigue? Does the machine do its job in an effective and efficient way?

- a) **Size**--the machine should be a "right" size--small enough to fit a convenient work space but large enough to be sturdy and comfortable to use.
- b) **"Ergonomics"**--a fancy word for how-does-it-"fit"-you. Your hands should move comfortably, and there should be easy eye motion from the stone to the Index Gear to the Angle setting device, etc.

Also, the Base should enclose the drive components. The Base should have a low profile that allows you to work comfortably on a table-top, or, allows for setting the Base into a desk--with room left for your knees.



SELECTING A FACETING MACHINE-- A GUIDE OF WHAT TO LOOK-FOR

...Cont'd

c) Accessories--devices that help you work faster or more easily or for special faceting needs--should be available and easy to use and install.

d) Working features--the machine should make your work easy. In the Base, a variable speed control is important--grinding and polishing speeds vary with the type of material being used. Direction control is also important--some materials just won't polish in one direction, but polish quickly when the lap is reversed. --**Good torque at low speed** is important since polishing is done at low speed and with pressure on the lap. Check the torque, at low speed, by pressing down with your finger on the platen surface (the way a stone would press). If it stalls, you will have difficulty with polishing. That low speed should be about 100 RPM (manufacturers who state a speed starting at "0", need to tell you the lowest **useable** speed. "0" means it's not turned on).

In regard to the Head--the "logic" of its performance is important--the sequence of looking at the stone and then changing the settings should have a smooth "flow". Setting positions without locks is preferable (locks can accidentally slip--also, as any machinist or woodworker knows, locks work by bending something, affecting the accuracy). --Repositioning the Head relative to the lap should be easy. --The "feel" of the Head should be very smooth, allowing sensitivity to the stone against the lap.

e) Cleanliness--the design should allow easy cleaning (abrasive residues are an enemy of both accuracy and life of the machine). The machine should be free of corners in which residues collect. The Splash guard should have a drain and be easy to remove for washing, with nothing to disconnect.

CONTINUITY OF SERVICE Most important to **you**, is assurance of continued service. **Here are some questions:**

How long has the company been in operation, and is there some assurance of continuity?

Does the company manufacture all its components?

Is there assurance that parts are always available?

Is there assurance of non-obsolescence-- that any future upgrades can fit **your** machine?

Can you reach the company at all times?

Find out lots more about Ultra Tec's
faceting products at:

www.ultratec-facet.com