



The best engineering solution to the problem of determining the right point to stop cutting – the Ultra Tec Digital Angle Dial (DAD).



I have been using the new Ultra Tec Digital Angle Dial (DAD) and I find it excellent. I regard it as the best engineering solution to the problem of determining the right point to stop cutting.

Consider what has been used in the past. The simplest arrangement is to use the basic angle dial, but this is not very precise. The next step is to use a Beale/Woolley Indicator (B/W), preferably with an ohmmeter. This gives a sharp end-point and reproducible whorls of facets, but only if the contacts do not get splashed with water and the user is careful to stop cutting as soon as the needle reaches the chosen resistance value.

There are two problems with the B/W: one is that the precise end-point, with the needle at, say, mid-scale, is hard to set so that it occurs at a definite angle and the other is that this setting is very close to the hard stop position. If the gem is allowed to cut with the B/W contacts pressing together, the flexibility of the arm under its own weight will overcut the stone to a depth of 1/5 mm even if you are not pressing on it. I am not saying that the B/W cannot give superb results in the hands of a skilled faceter, but I did find that a moment of inattention to the needle position was severely punished by this device.

The next step up was the Ultra Tec micrometer dial. I really liked this, because it was possible to set it so that the extremely sensitive needle zeroed precisely at the correct angle and the hard stop, with its attendant danger of arm-bending, could be set in a distant part of the range of the needle, simply by backing off the knurled screw after the micrometer had been set.



The best engineering solution to the problem of determining the right point to stop cutting – The Ultra Tec Digital Angle Dial (DAD) ...cont'd

In my opinion, the ideal solution would have the following properties:

1. The absolute angle should be indicated with at least 1/10 degree and preferably 1/100 degree accuracy.
2. There should be no time-consuming setting of a second gauge with a very limited range, such as the micrometer.
3. The meter should operate with zero force, so that there is no danger of bending the arm. It should be completely independent of the hard stop.
4. The reading should be really bright and distinct, so that you can see it even if your eyes are not perfect and you have been dazzled while inspecting the last facet with a bright light. This means a luminous display, not a liquid crystal one.
5. There should be a buzzer that you can set to sound when you reach the correct angle.
6. The meter should keep its calibration for ever, even when powered down.

The UT DAD does all of these things.



Brad Amos
amos.brad@googlemail.com

- Note: Dr. W. Brad Amos is the Ultra Tec Lapidary Representative for the United Kingdom.
- Note: This text was edited & reprinted from the usgfaceterslist, www.usfacetersguild.org, January 2009
- For information on the Beale / Woolley Indicator, http://www.rockhounds.com/rockshop/gem_designs/bw_indicator/