

# Ask The Oracle

## Question - to be answered in the next issue

What are the different types and makes of Faceting Machine and what are the main differences between them, as I am looking to buy my first machine and would like to make an informed choice based on the pros and cons of each type.



**Q: Can the Oracle tell me how to cut part degrees on my Graves MK1, convert diagrams to different index gears , placement of 96 / 64 index number and different rotation directions**

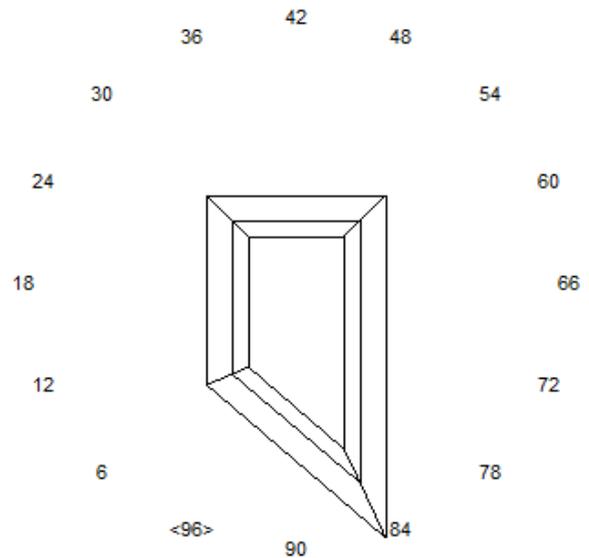
### Answer by Steve Smith

In Gemcad you can alter the number of teeth on the index wheel, the rotation of the indexing numbers as well as having the 96 (or equivalent) at the top or bottom of the design to reflect/exactly mimic how your machine works in practice. This is done on the Index gear icon of the toolbar.

Do you find it annoying or costly when you dop a piece of rough and find it does not sit exactly right to cut the maximum size from the diagram without either disengaging the dop location device, re doping or just grinding more of the stone away?

A quick and easy fix is to go into the index icon on Gemcad and check the "other bottom index" to a tooth that gives you the best rotation of your 96 index for the shape of the rough, and in the diagram below this was 90. The cutting instructions are automatically updated for printing.

The question of cutting part degrees on any machine is always a judgment call. Computer software was designed for 2 Decimal Places and computer designs automatically follow this rule. In practise if you have a machine that does decimal places, round up or down to what your machine will do.

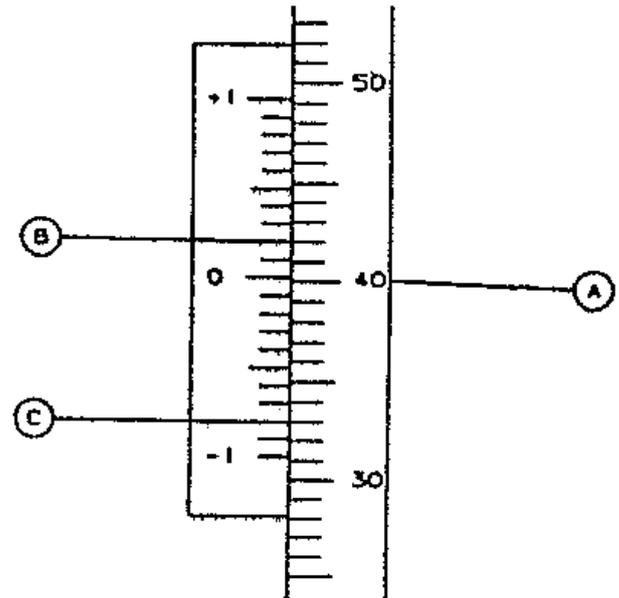


If you have an older machine that only has 1 degree calibrations ....Guess. You can judge a half, or half of this for giving you a quarter calibration.

This is close enough for all designs. If you wish to be more accurate, for example with a Graves, take a pencil and piece of writing paper, place it on the protractor scale and do a brass rubbing.

Highlight 10 individual degree marks then photocopy and reduce the image to 90 percent size. Print this out, cut to requirement and stick it onto your moveable stop block with one of the end lines overlapping the score mark you already use.

By lining up the protractor and paper scales you can get an approximate 10th degree accuracy. This principle could be adapted for other machines, always remembering that a lap that is not flat will move the angle + or - of your setting anyway.



**Answer by Mike Richardson**

### How to Cut part Degrees on a Graves machine:

Most faceting diagrams give angles to 1/100 of a degree, eg: 40.24, 40.26 etc. The first thing to do is to round this figure to one decimal place, which is to give an accuracy of 1/10 degree. So 40.24 becomes 40.2 and 40.26 becomes 40.3. If your machine is not fitted with a vernier scale you will have to guess the 1/10 between the protractor markings. It is probably not realistic to expect 1/10 accuracy in this case, 1/4 maybe. In any case repeatability is more important than the absolute value.

Fortunately, most Graves machines come with a 1/10 vernier scale marked on the protractor stop block. I quote verbatim on how to use this directly from Graves instruction book 'Fundamental Faceting'. The only thing I would add is that a magnifying glass should be used to ensure accuracy and despite the criticisms that have appeared on the internet from time to time, many competition winning stones have been produced on Graves machines.

Using the Graves 1/10 degree vernier scale. Your stop block is embossed with a vernier scale that reads 1 degree both positive and negative. To read actual setting in 1/10 degrees note the position (either + or -) where the next line on the vernier best matches with any line on the protractor scale. Add or subtract the vernier reading in 1/10 to the whole degree angle.

Example:

1. Note position of 0 on vernier to protractor scale. Between 40 and 41 in the diagram(A)
2. Notice where the lines on the vernier match the lines on the protractor scale(B). In the example shown, count the number of lines on the vernier = 2; 2 equals 2/10 or 0.2 degrees.
3. For a positive reading use the lower number, 40 and add the 2/10 degree = 40.2. For a negative reading use the higher number, 41 and subtract the 8/10 degree = 40.2. Thus your stop block is set at 40.2 degrees.

Note: Many of the older Graves faceting machines have stop blocks with zero points that are not positioned near the centre of the stop block. In these cases the entire + or - degree vernier scale will not be positioned on the stop block, however, this does not indicate a problem or decrease its accuracy. In these cases the user must use the portion of the vernier that shows (either the plus or minus scale) and apply the factor as shown in 1. or 2. above.

