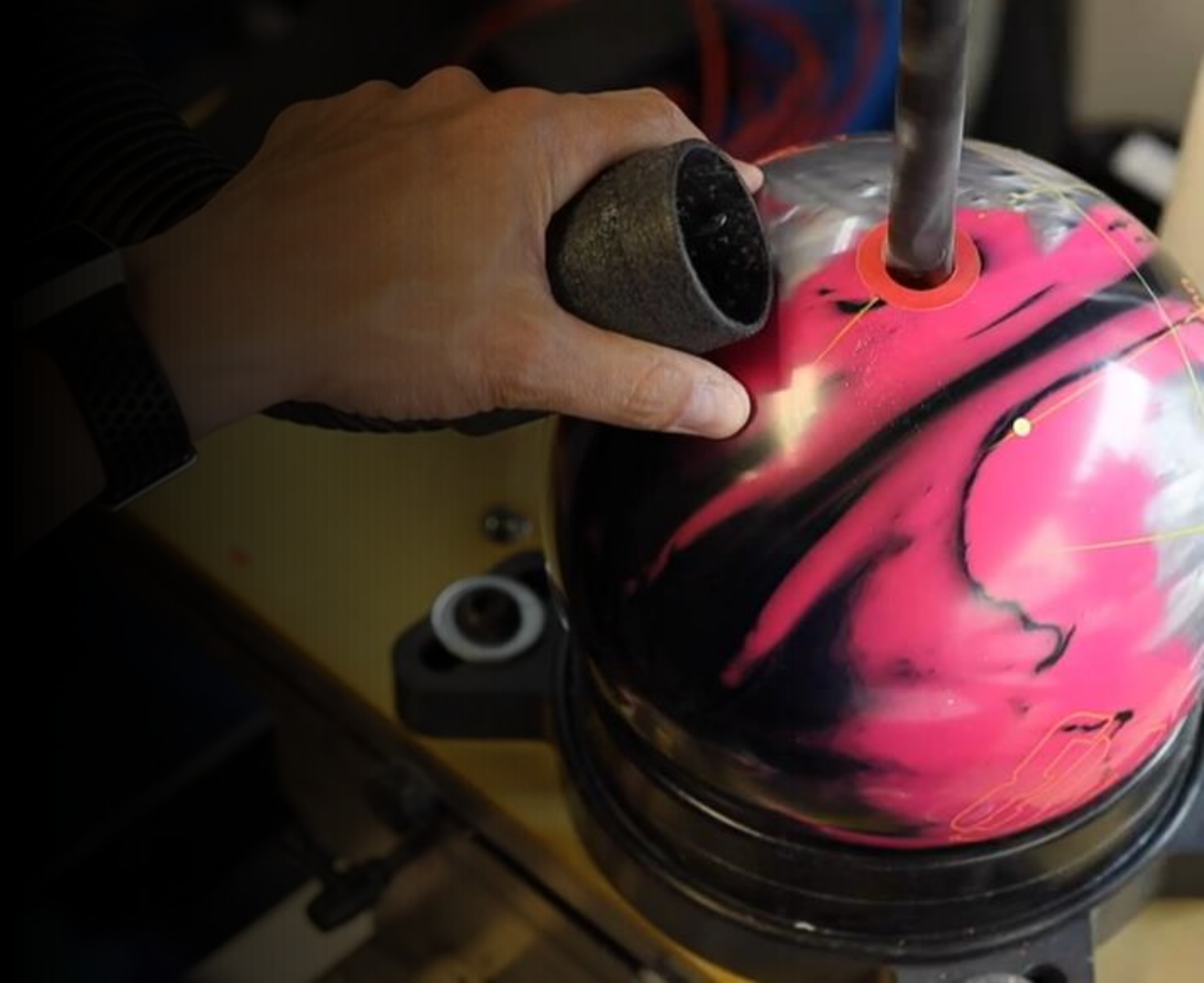




CUTTING OVALS

SPECTRE PROSHOP SOFTWARE



HOW DO YOU CUT OVALS NOW?

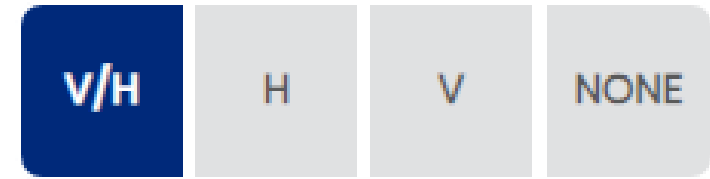
- Start by asking yourself these questions before starting with Spectre.
 1. Do you cut ovals using V and H, or V or H
 2. When you cut ovals, is the intended pitch of the hole at the EDGE(TOP) of the total oval cut, or in the CENTER of the total oval cut
 3. Do you INITIALIZE your digital readouts to 0/0 when starting to cut your oval, or do you KEEP THE DESIRED PITCH on the readout?

This will help you identify which settings you should put in Spectre.

Thumb Hole Preferences



OVAL CUT DIRECTIONS



Oval Cut 'Move' Direction



V/H: Will calculate the V and H moves needed to cut the hole along the hypotenuse of the desired triangle.



H or V: Used mostly when you have an Ovalmatic press where you can swing the ball a desired degree. From there, you just cut in one direction.



None: This will allow you to manually input your cuts and not take advantage of the oval calculator.

HOW SPECTRE DISPLAYS OVALS

- No matter your settings in Spectre, it will always display the cuts in a linear direction. Starting from the top of the oval, moving in one direction towards the bottom.
- By cutting always in one direction, it minimizes table movement for greater time savings and ease of use.
- All scenarios listed in the next slides result in the exact same oval hole.

EXAMPLE BASES

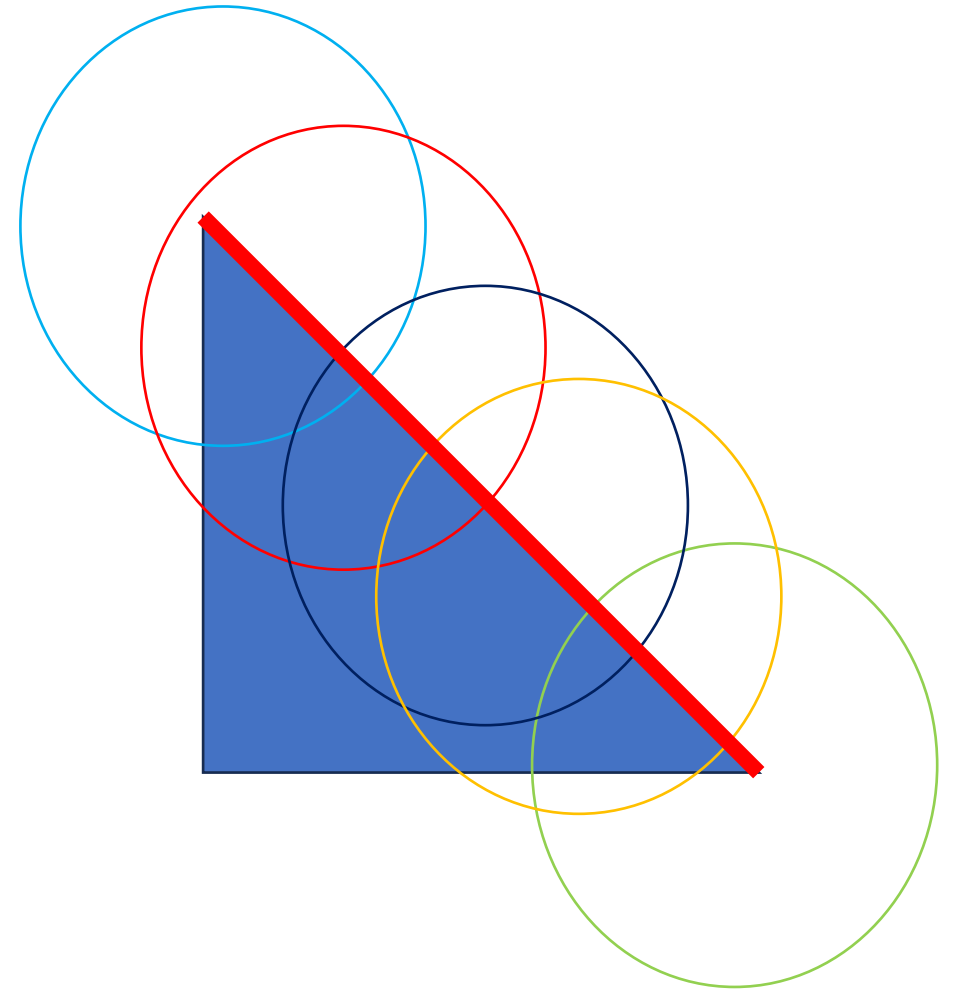
Starting Bit	Oval Width	Oval Degree
3/4	7/8	45°

- For the following examples, we are using the following:
 - Starting Bit: 3/4
 - Oval Width: 7/8
 - Degree: 45 degrees

- All 4 examples will result in the exact same oval shape.

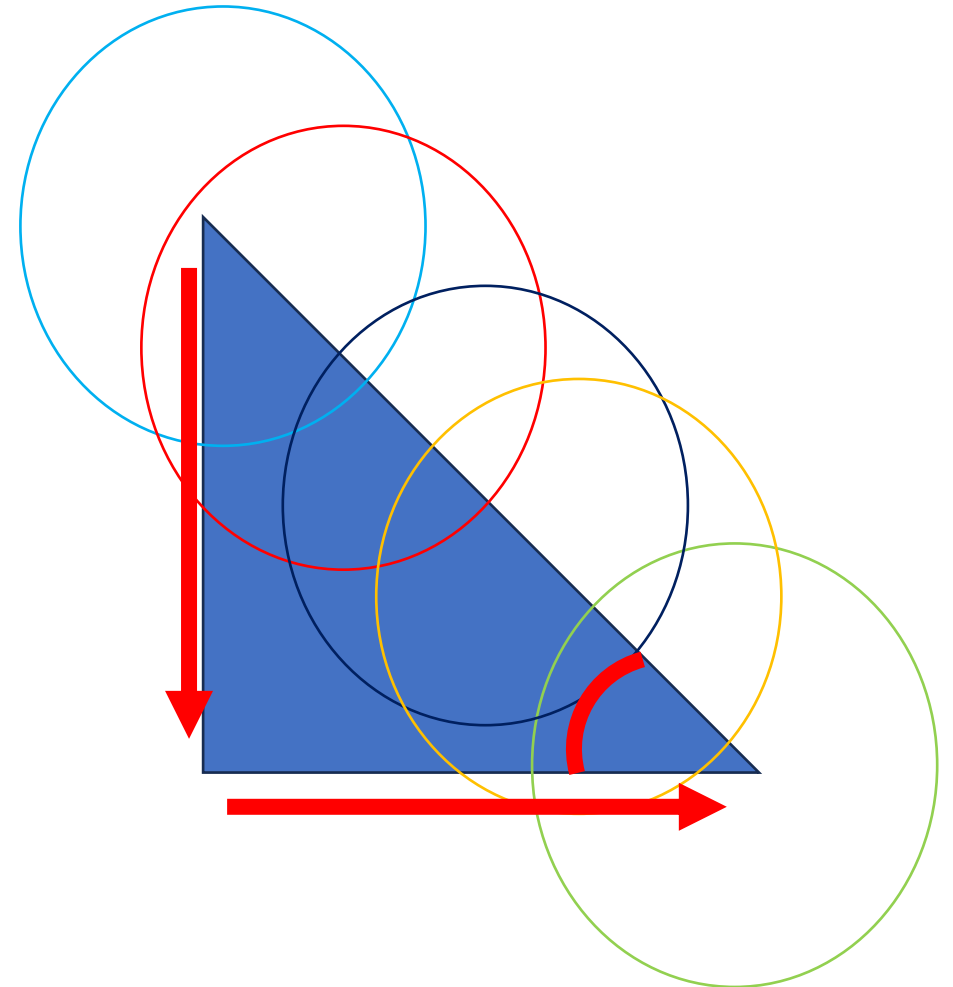
UNDERSTANDING THE MATH

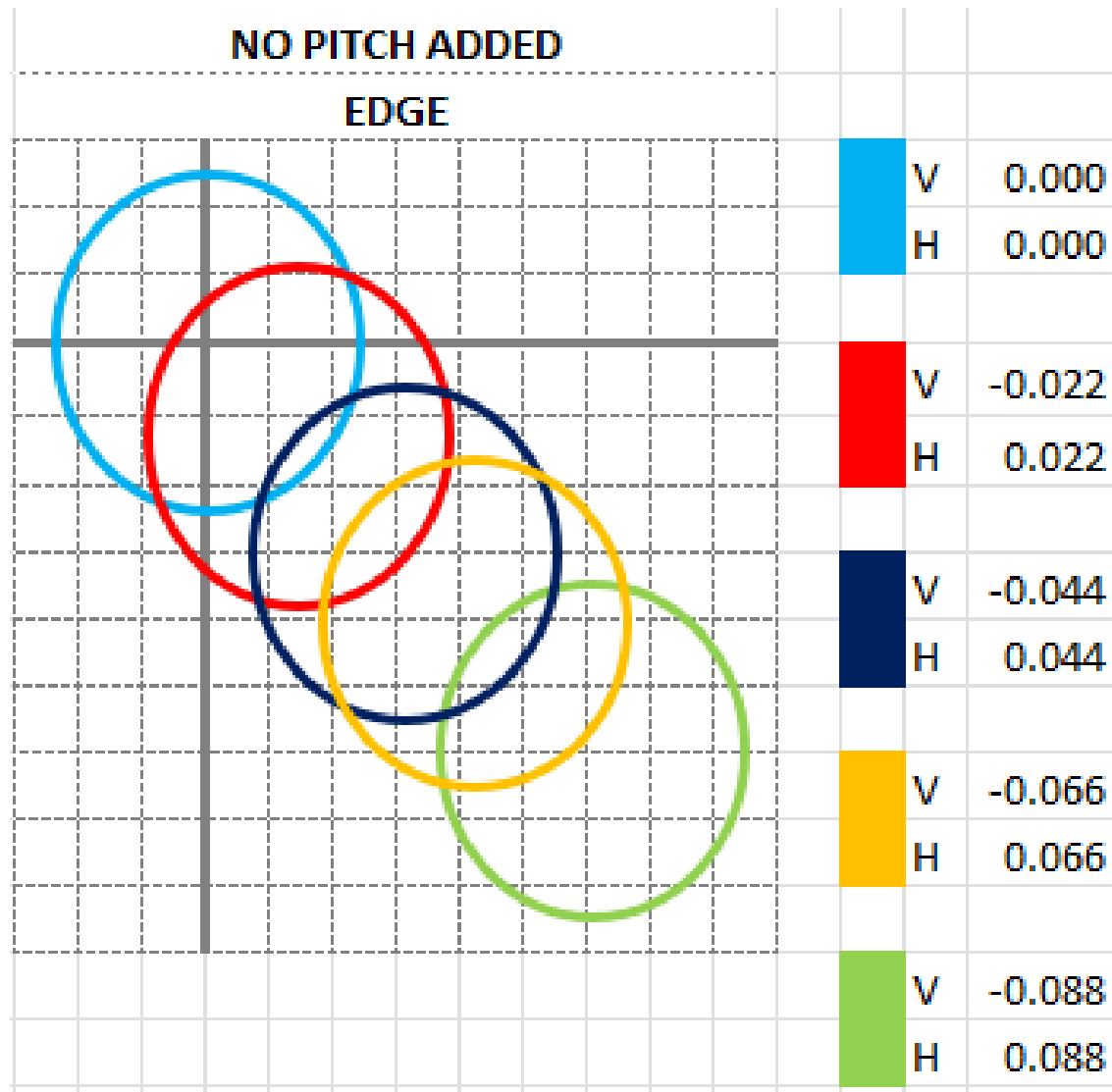
- Starting bit is the drill bit we will use to cut the entire oval. This is important since it is the thickness of the thumb.
- Oval width will determine how much we need to move the table.
- First equation
 - $\text{Oval Width} - \text{Starting Bit} = \text{Difference}$
 - The difference is the hypotenuse of the triangle.



UNDERSTANDING THE MATH

- The oval degree is the degree of the triangle.
- Using this, we can use trigonometry to find out X and Y coordinates
 - Sin and Cos will give us the proper X and Y displacement needed
- From there, Spectre displays the complete move as cuts, displayed in 32nds at the most.
 - Cutting in 32nds will not chatter that much, creating a nice smooth oval hole.





SCENARIO 1

EDGE, NO PITCH

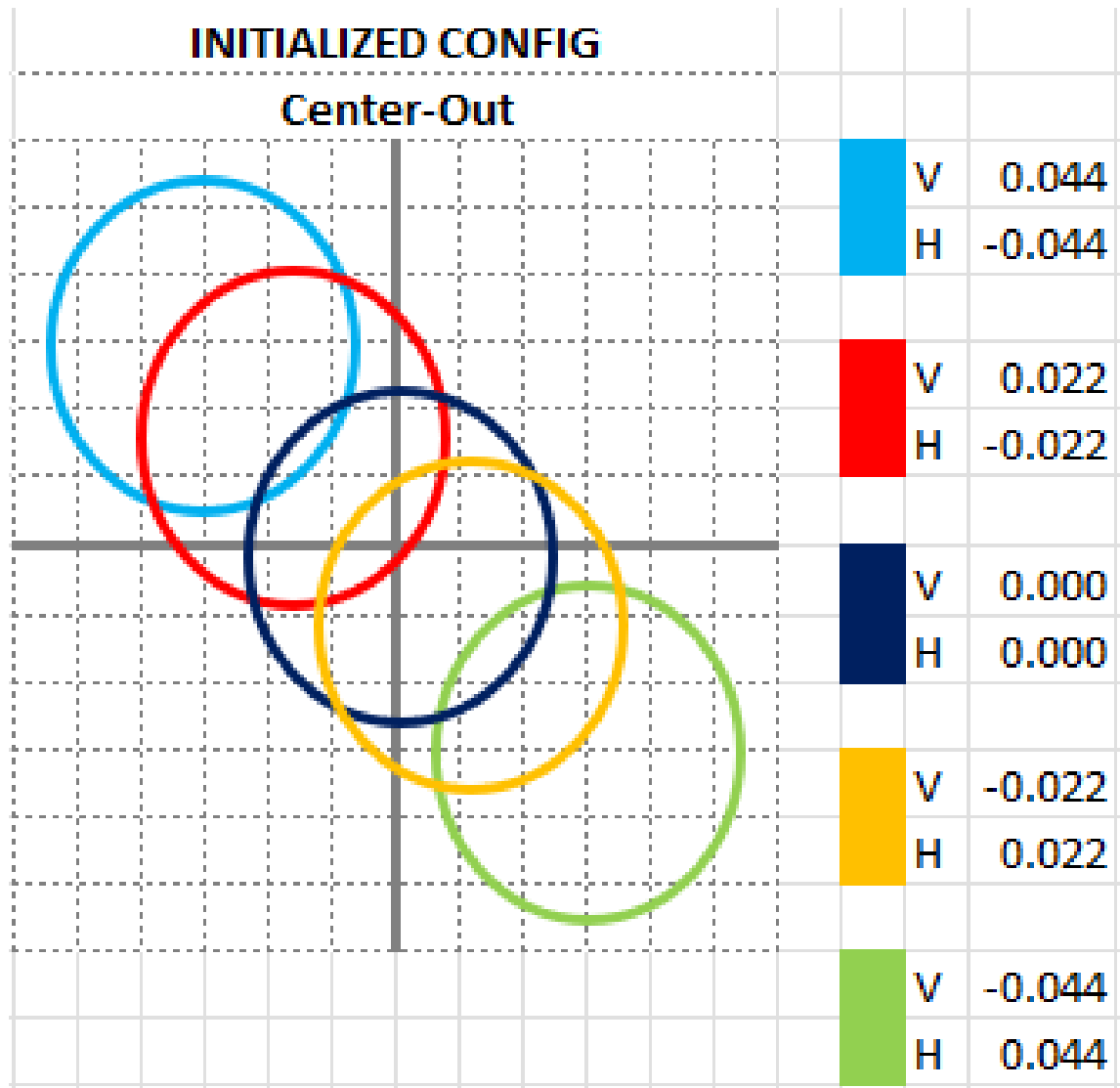


Initial pitch inside the total oval



Add Thumb Pitch to Oval Cut Calculation

- In this case, your starting point is always the TOP of the oval hole. That coordinate is always 0/0. This is probably how you learned how to drill ovals if you used charts or ratios.
- This setting is to be used if you want to zero-out your digital readouts everytime you cut an oval.

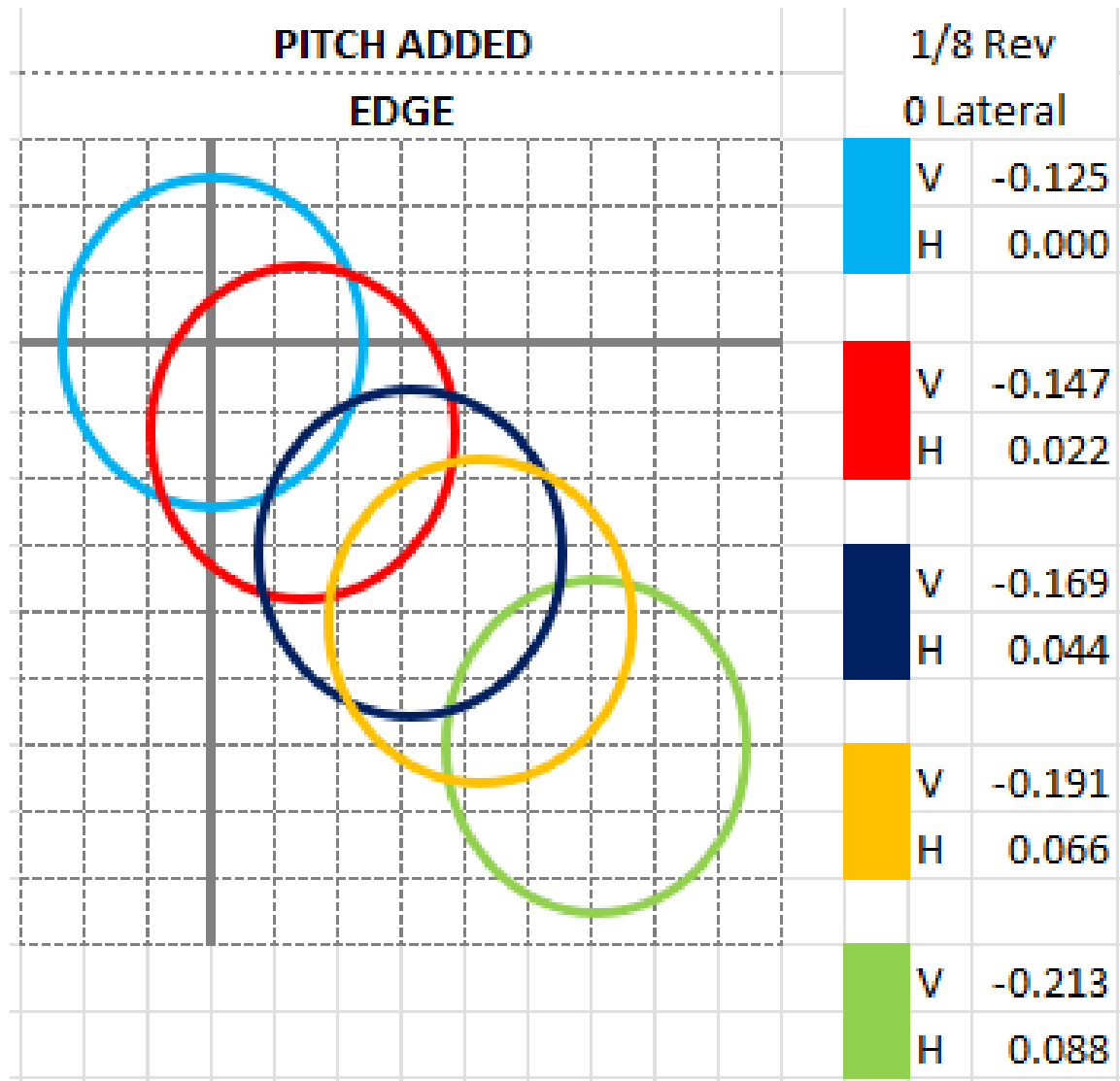


SCENARIO 2

CENTER, NO PITCH



- In this case, your starting point is always the CENTER of the oval hole. That coordinate is always 0/0. This is a great way to learn how to properly center a slug/interchangeable.



SCENARIO 3

EDGE, PITCH INCLUDED

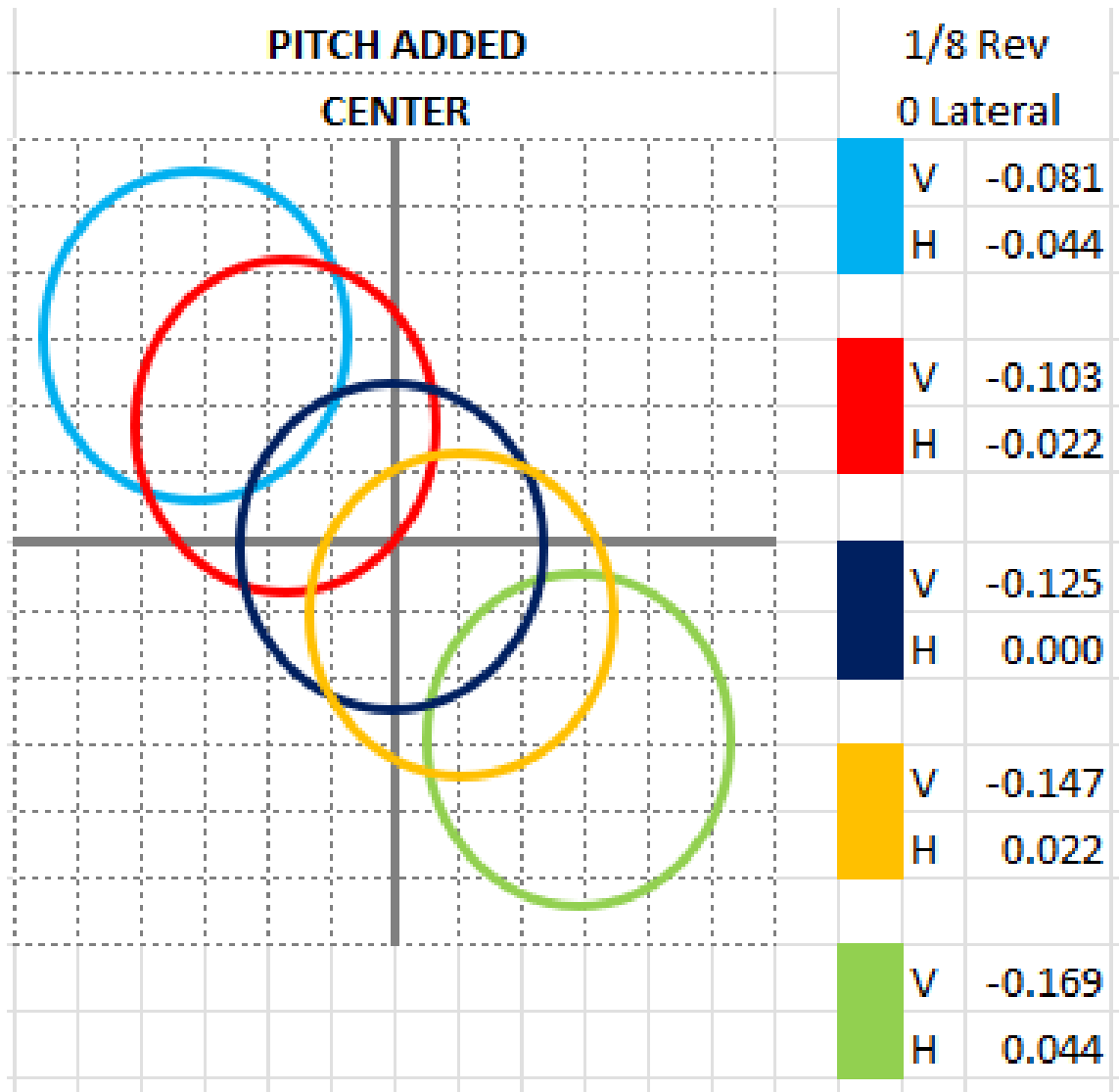


Initial pitch inside the total oval



Add Thumb Pitch to Oval Cut Calculation

- Same as #1
- Pitch is included in first cut.
 - In this case, .125 reverse
 - Same math as scenario #1 is then added to that base.
- This setting is to be used if you don't want to zero-out your digital readouts everytime you cut an oval.



SCENARIO 4

CENTER, PITCH INCLUDED



Initial pitch inside the total oval



Add Thumb Pitch to Oval Cut Calculation

- In this case, your starting point is always the CENTER of the oval hole. That coordinate is always 0/0. This is a great way to learn how to properly center a slug/interchangeable.
- This is by far the easiest way to teach a novice ball driller how to cut ovals. No need to touch the press at all. Oval will be perfectly geometrically centered all the time!

CALCULATE OVAL USING DIFFERENCE OR DRILL BIT SIZES

- Spectre Cloud allows you to also cut ovals by specifying the DIFFERENCE right away.
- This is used when you measure using a caliper.
- The end result is exactly the same as listed above.
- In lieu of the Oval Width (drill bit) you will be prompted with a DIFFERENCE. This must be input in thousands.
 - This is the equivalent to the subtraction that we do in the math
(Oval Width – Starting Bit)

