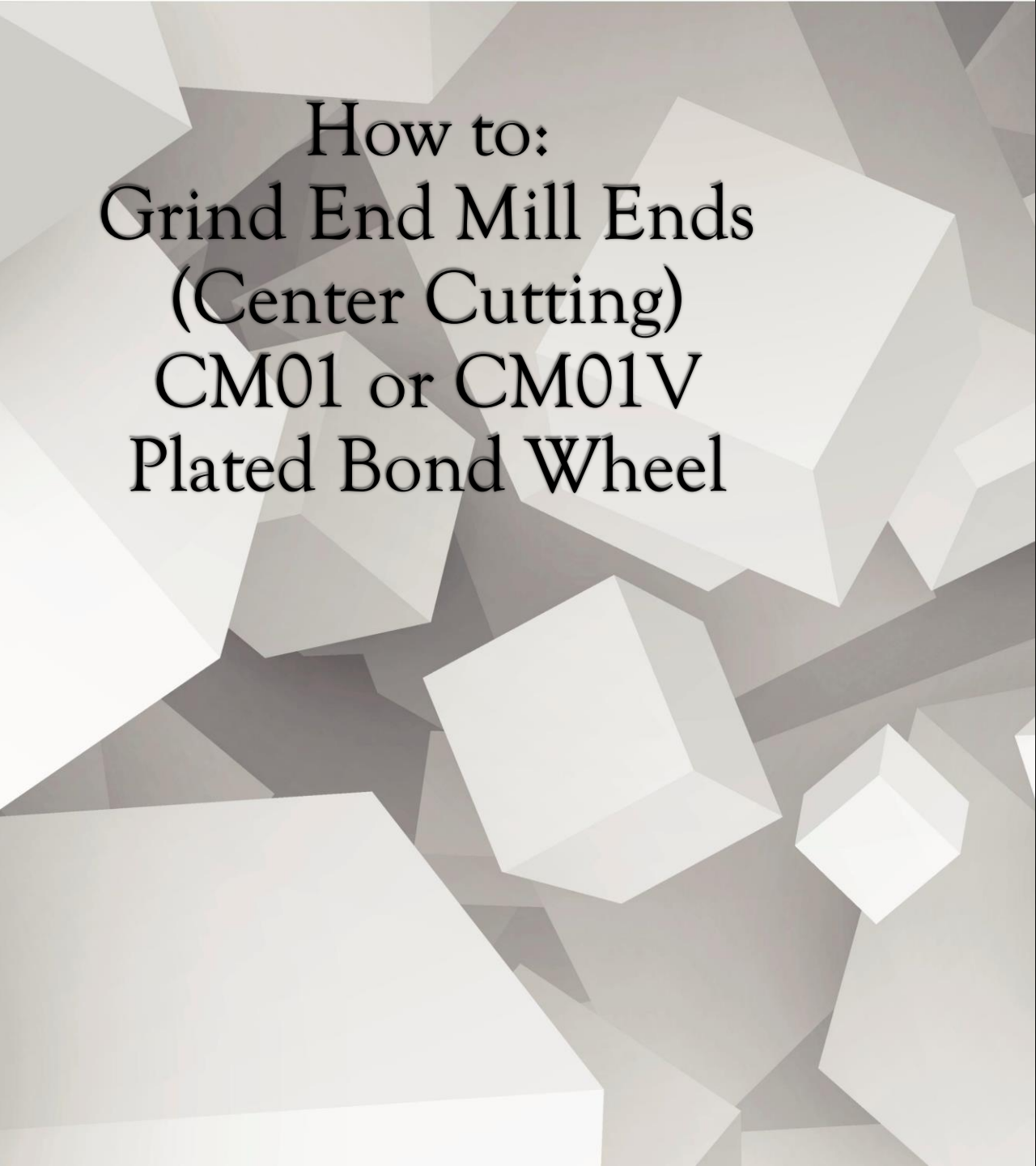


# Cuttermaster Professional CM01 Endmill Sharpeners

The worlds most popular end  
mill sharpener.

Ends made Easy

Plated Bond Small 12V Rim  
Wheel



# How to: Grind End Mill Ends (Center Cutting) CM01 or CM01V Plated Bond Wheel

In this short presentation we explain an easy way to produce a beautiful center cutting end on a basic Cuttermaster using the outside of a plated bond wheel.

We are going to grind the secondary then the primary and produce a center gash

Needed:

2.5 inch Spindle extension and  
3 inch Plated bond rim wheel CBN or Diamond

Secondary Grind

Primary Grind

Center Gash

Procedure Summary

Air Spindle Positioning

About the 12V9 Plated bond Wheel

Keeping Track of Center

Setting and Squaring the tool to the machine

How to check and reset Motor angle (initial set up)

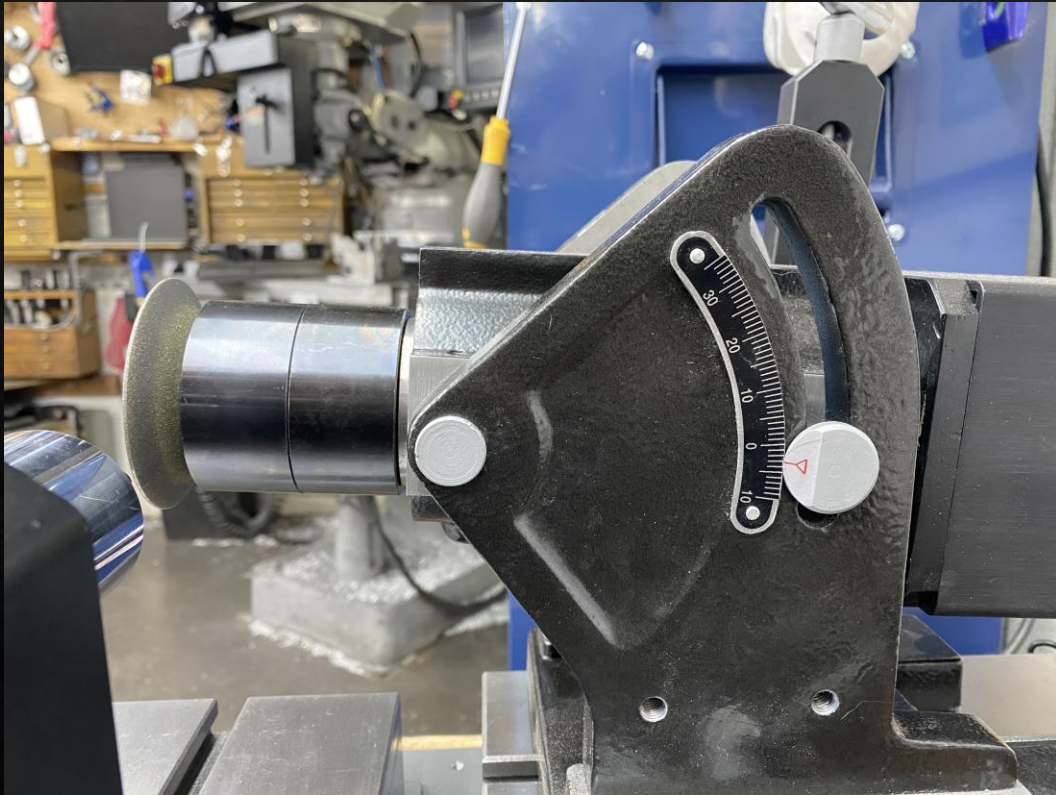
The end



# Grinding the Secondary Angle

The Secondary angle is a good place to start.  
Work your way around the tool until the end looks uniform  
and ready to accept a primary grind.

Set the motor to minus 3 degrees



Feed across the tool at a good rpm and an even rate  
Stopping just before center.

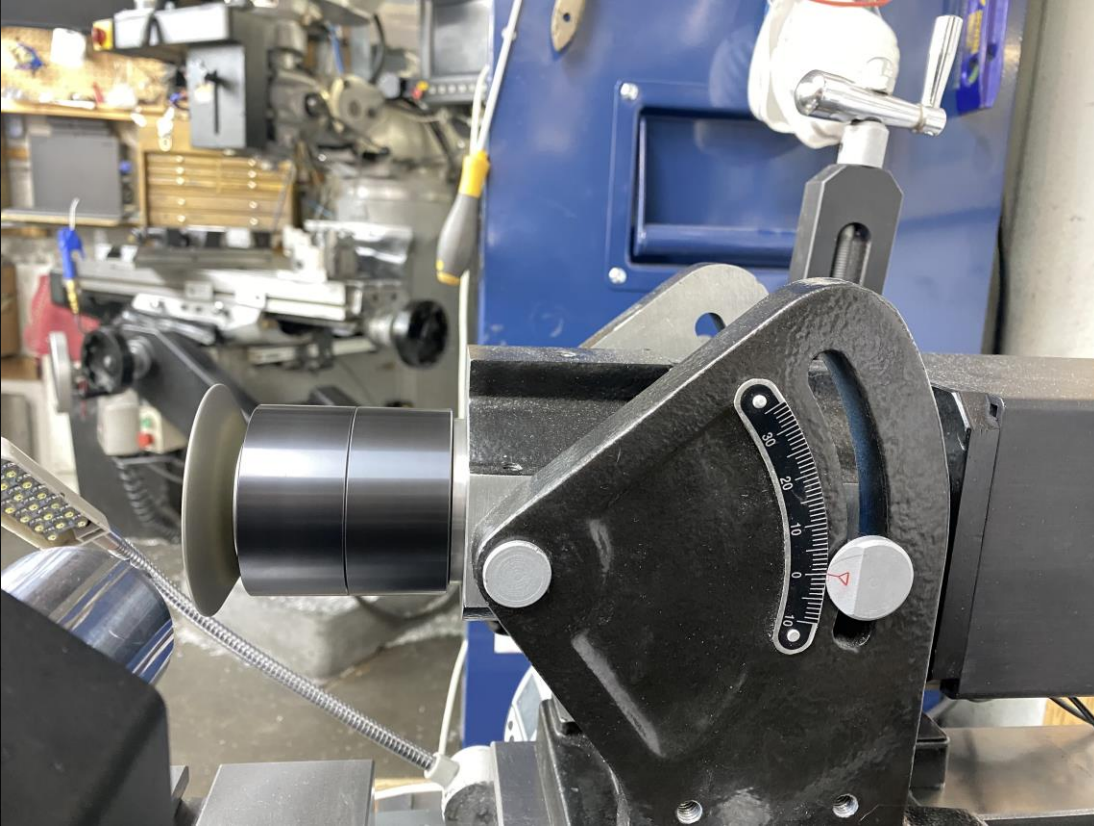
In this operation is it good stay a few thousands away  
from the center .005 .010.

Final center features are done as a last operation.



# Grinding the Primary

Set the motor to Level (Zero)

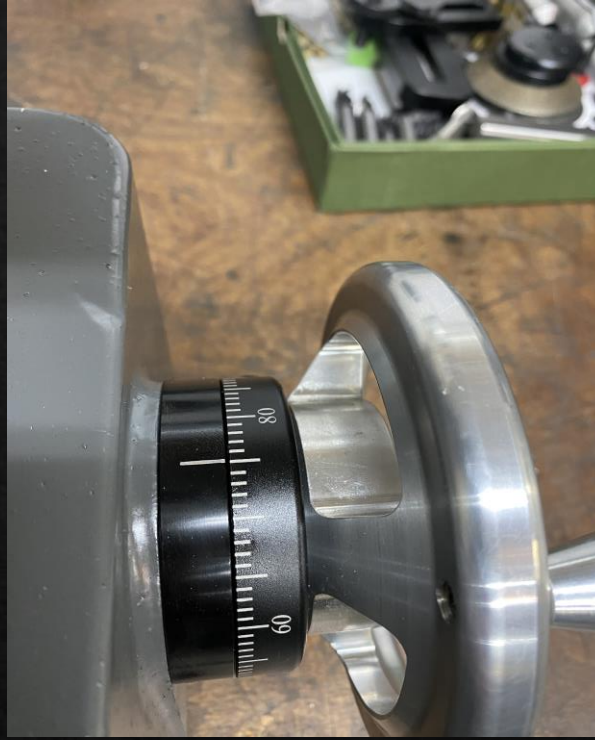


Grind the primary angle, watch your indicators. Go as close to center as you can with out taking the tips off the corners





## Grinding the Gash Motor to Level (Zero)



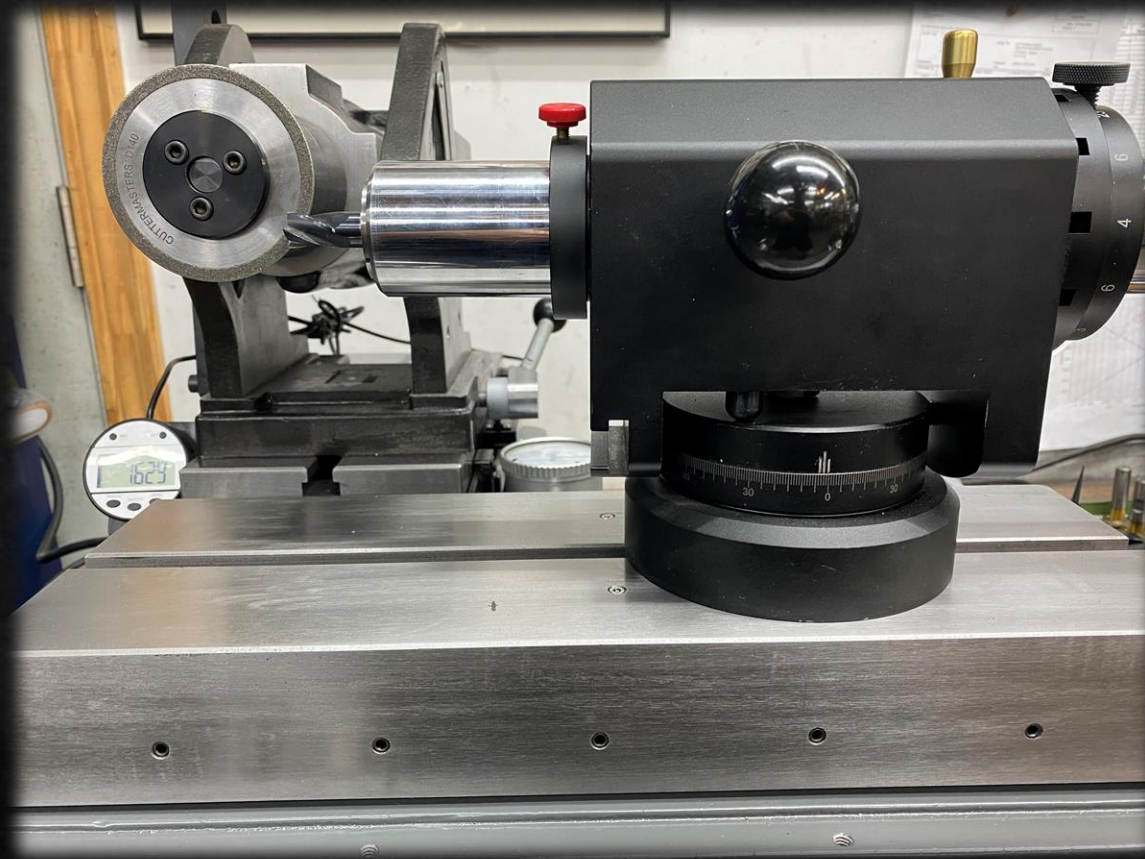
- 1 After you have done the primary, set the X axis handwheel dial to zero (or remember it)
- 2 Feed the grinding wheel in using Y (machine off ) until almost touching the flute tip Read the indicator and remember your center. Probably a little less than  $\frac{1}{2}$  the tool diameter
- 3 Using X Axis back the tool away from the wheel just far enough that you can index it. Air spindle collars secure.
- 4 Index flutes number 1 and 3 feed in X to .025 back away
- 5 Index flutes number 2 and 4 feed in do not go past zero

# Procedure Overview

- ◆ Rotate the air spindle clockwise 2 degrees
- ◆ Check the motor angle to make sure when the motor is perfectly level it reads zero, check the wheel with a square, remember where true vertical is. (see the last slide for how to do this)
- ◆ Tool snug in the collet Square to the machine Use a square (the flute tips should be perfectly vertical).
- ◆ Locate and set for center touch off the OD Zero your indicator and machine dial or mark you will be grinding in towards center  $\frac{1}{2}$  the tool diameter
- ◆ Secondary angle grind tilt the motor to minus 3 degrees ( this is about 19 degrees ) , grind secondary grinds all flutes until sharp (feed in using indicator  $\frac{1}{2}$  the tool diameter stay off center .01 until finish pass
- ◆ Primary angle grind Tilt the motor to zero (this is about a 8 degree primary, tilt at plus 2 degree is 5 degrees)
- ◆ Gash for center cutting on final primary pass plunge 1 and 3 for center cutting plunge .025 in x axis to produce the gash
- ◆ plunge 2 and 4 not past zero in x
- ◆ Set the motor to level (Zero Degrees) grind primary making sure flutes 1 and 3 almost connect in the center
- ◆ There may be a small protrusion from the .01 wheel rad (don't ruin the flute tips trying to get it)

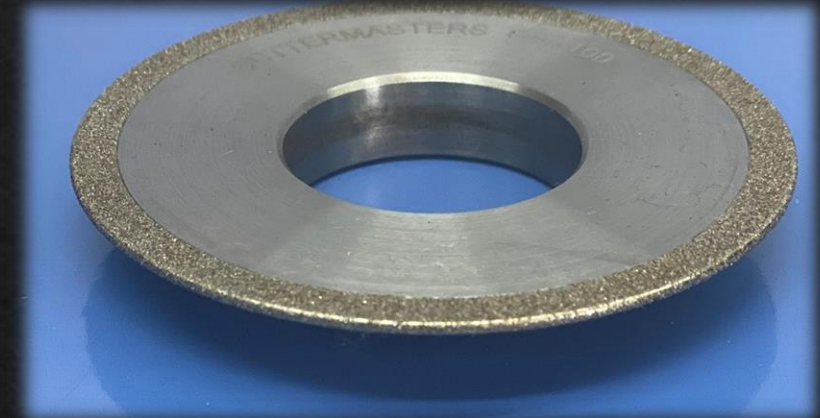
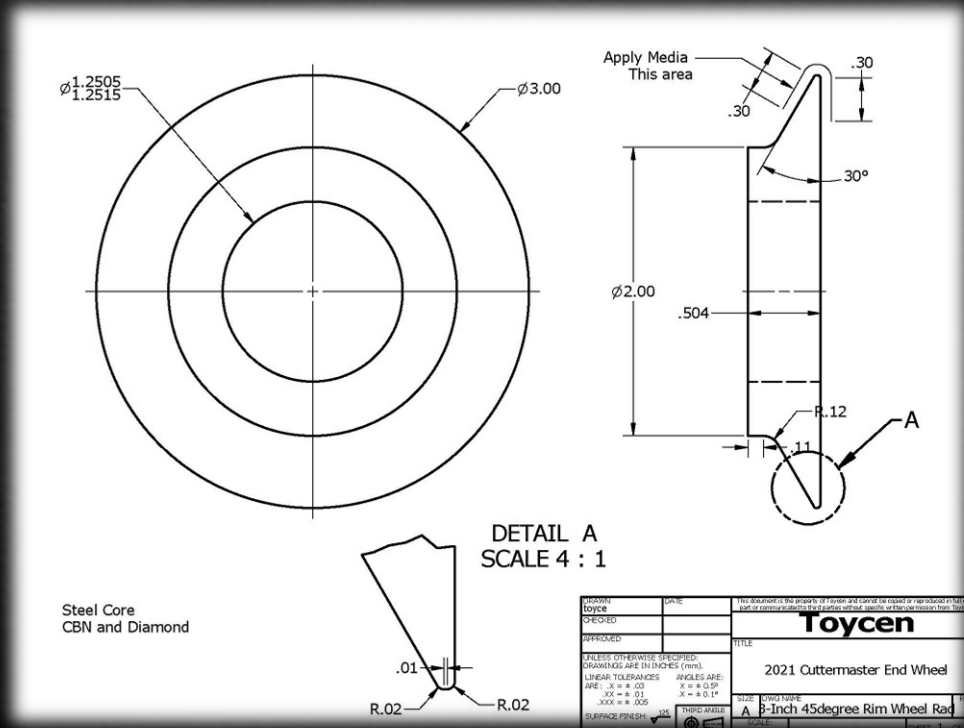


# Tool Spindle / Air Bearing

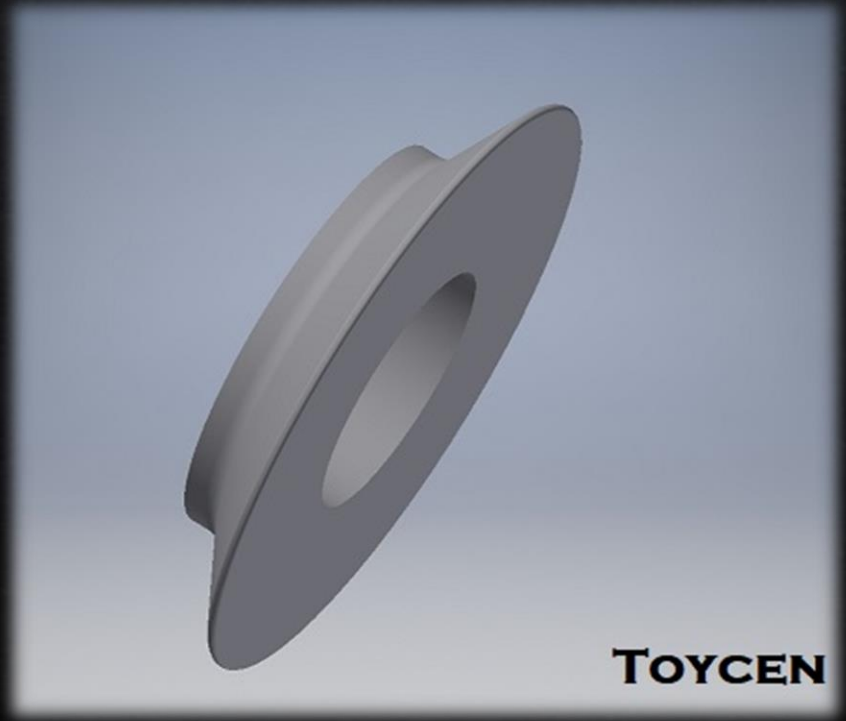


End mills should cut with the tips of the tool , relief in the center makes this happen  
To Produce the Fishtail or dish on the end of the tool rotate 2-3 degrees clockwise  
This will create the desired center clearance for your application.

# Cuttermasters Small 12V Rim Wheel



Good wheel life  
Available in CBN100 Grit or Diamond 140



**TOYCEN**



Set up and Indicator to keep track of center  
This set up will produce an accurate center cutting end on your tool.



When doing end features, one needs to keep track of the center of the tool

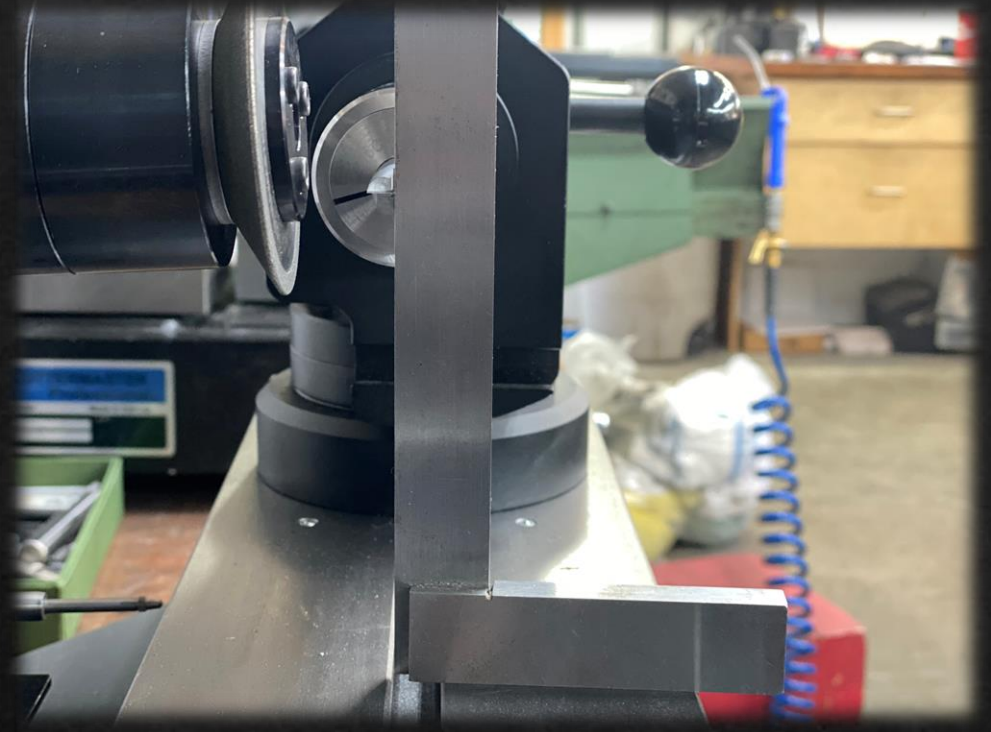
This can be done with the Y axis Dial, Indicator or a DRO is better



# Set the tool to the machine - Square

The sharp flute tips are used to determine true vertical or horizontal

It is important to protect the tips through the process



## Finding the center

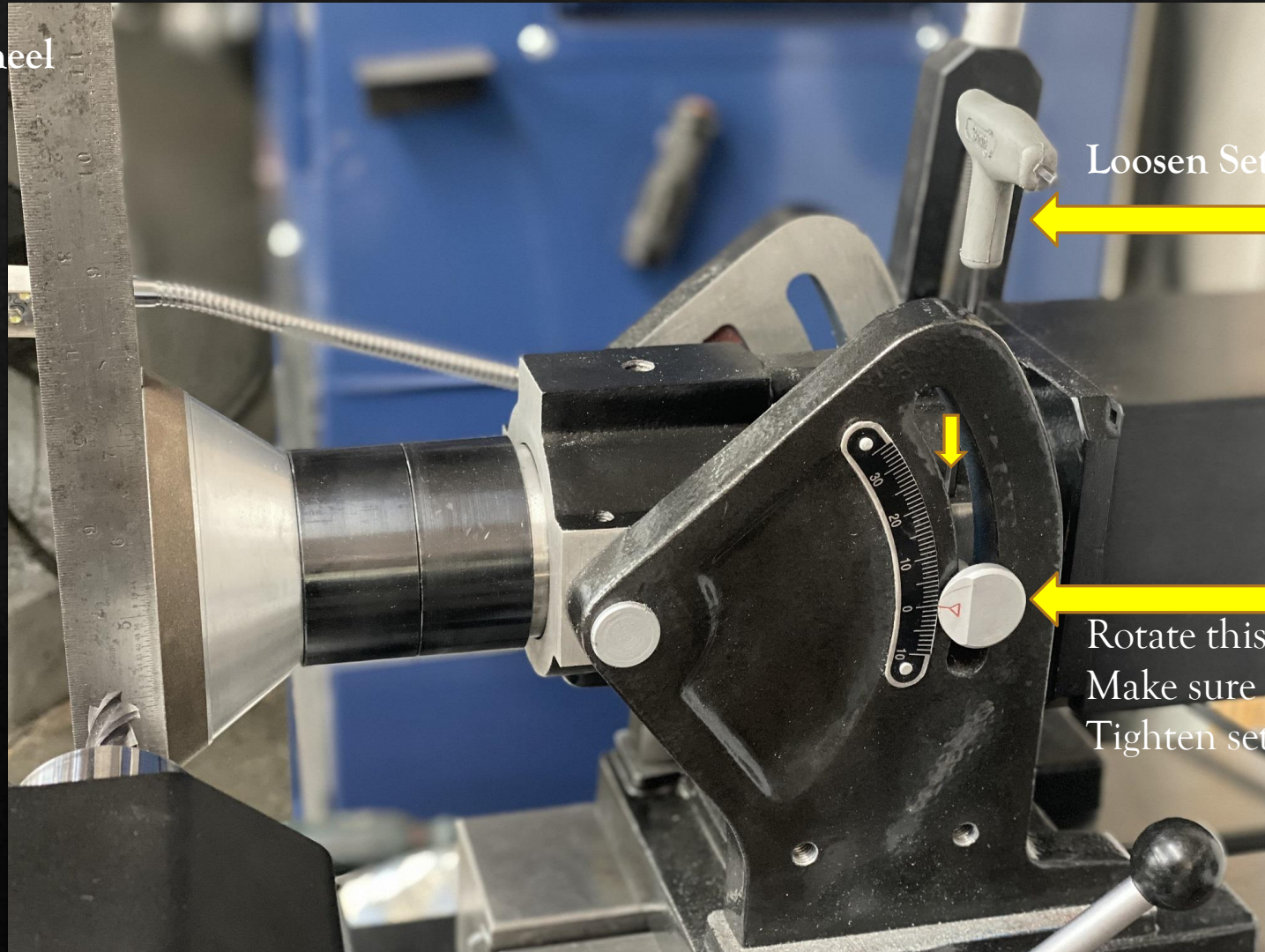
In each operation pick up the outside of the tool to find center when you change motor angle the wheel location will change

Touch the outside set zero, travel in approx  $\frac{1}{2}$  the diameter to locate center ( always stay away from center .005-.010 until your final passes



Make sure the angle setting is correct before you start

Square the wheel



Loosen Set Screw

Rotate this pin  
Make sure this is at 0  
Tighten set screw

This only need to  
be done once  
But it must be  
checked

The end ☺

