

**Pepper Mills For Africa
Fitting the CrushGrind Ceramic
Mechanism
“MY WAY”**

By Piet Smith – Distributor for Africa

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Safety First!

- Pray
- No gloves on band saw – R10 fine
- No mask when working on lathe – R10 fine
- No eye protection – R10 fine
- Leaving tools in chuck – R10 fine
- Ecclesiastes 10:10

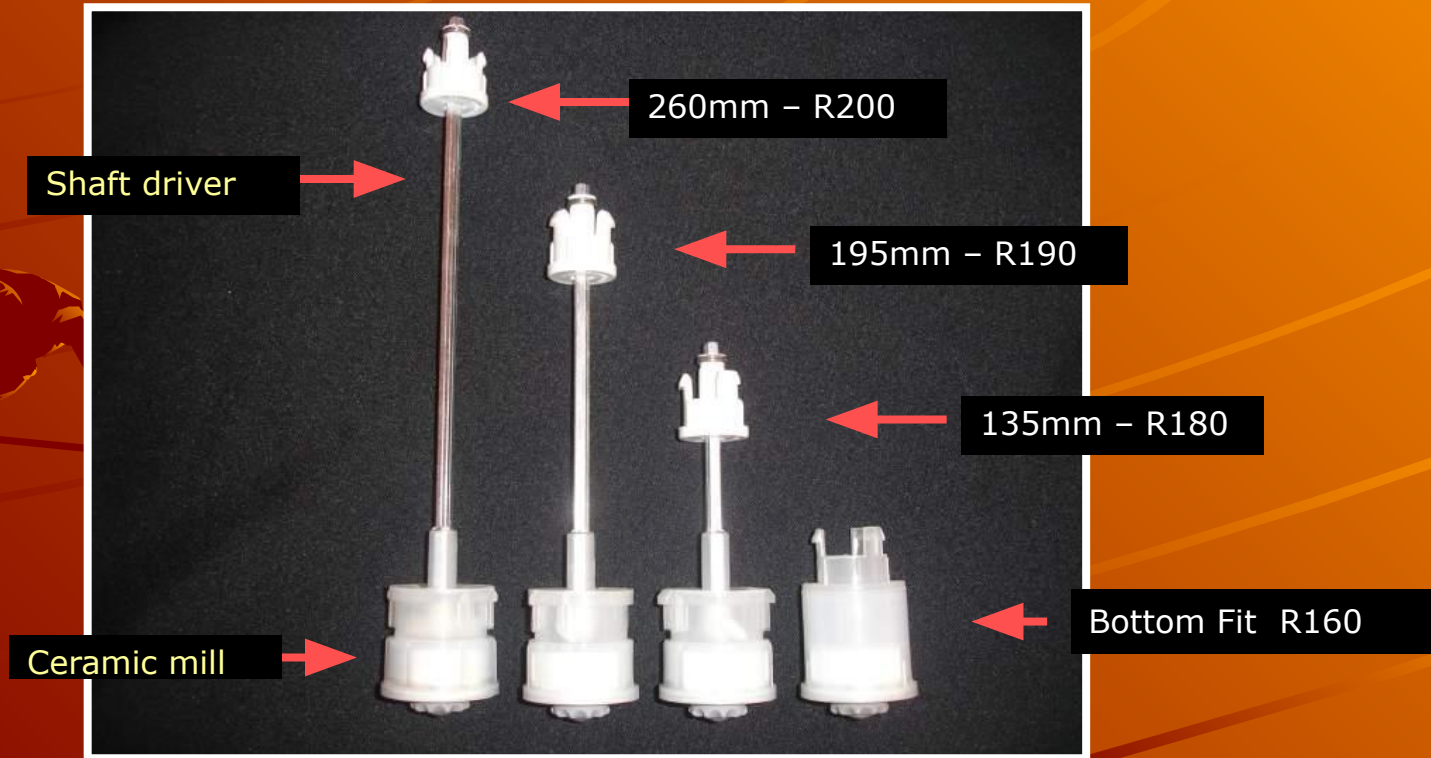
End Target

- To Make a Pepper/salt/spice grinder



End Target

- To fit the unique CrushGrind ceramic mechanism



Ceramic Mill

25 years International warranty
backed by CrushGrind Denmark



Preparing your blank

- Turn your blank down to the length of the mechanism you have in mind. Cut spigots' on both ends to fit your chuck



Laying out the mechanism

- Place mechanism on top of blank
- Allow 20mm from bottom (Ignoring spigot)
- Mark of seat for shaft driver 10mm from top of shaft



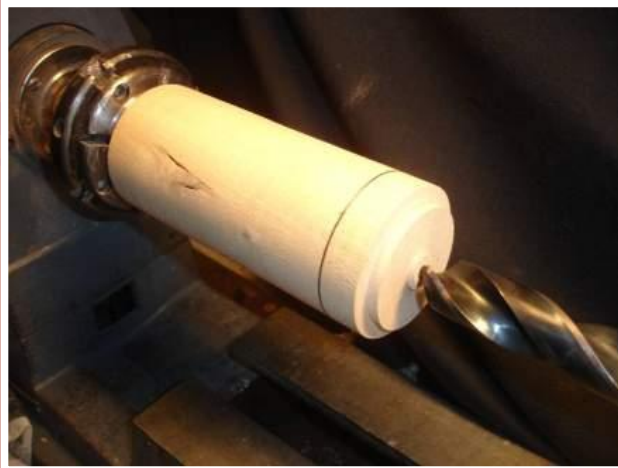
Parting Top from Body

- Use parting tool to cut a TENNON (>38mm) on BODDY side of inner mark - 10mm wide
- Use parting tool to cut a SPIGOT to fit your chuck -5mm wide
- Saw of the Top with band saw
- Saw closely to Top the retain spigot



Drilling the Body “My Way”

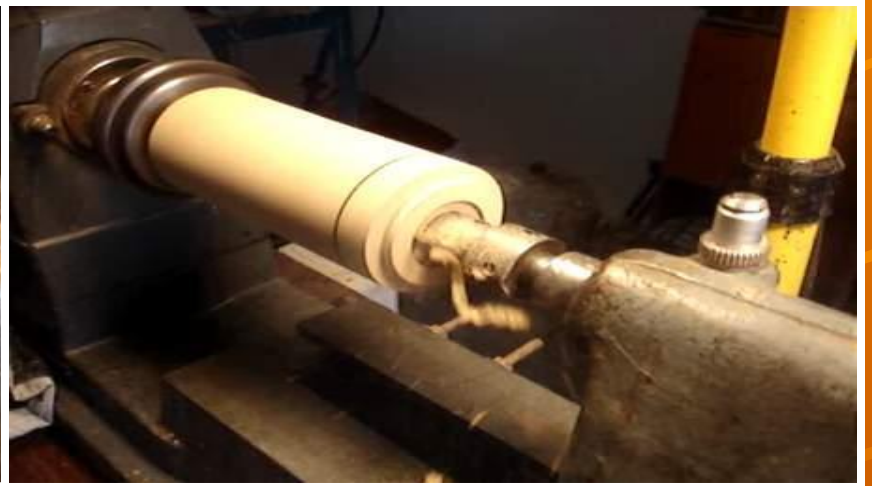
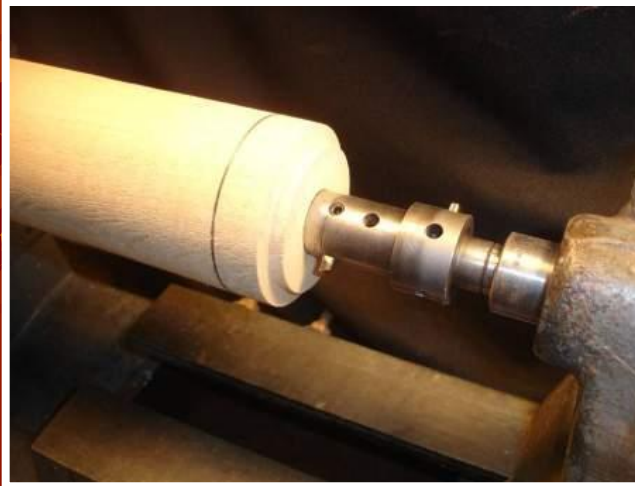
- Drill a 25mm hole through the Body (from both sides)
- Use my special MILLDRILL which will drill the needed 38mm & 45mm all in one



For Sale! - R850

Drilling the Body “My Way”

- Use my special MILLDRILL which will drill the needed 38mm & 45mm all in one



Drilling the Body “My Way”

- Use my special MILLDRILL which will drill the needed 38mm & 45mm all in one.
- Drill up to mark (ignoring spigot) to assure a perfect fitting
- Use the MILLDRILL on the other side (top of body) to drill a 38mm hole 30mm deep



Drilling the Body “My Way”

- Finished hole!



Using the Recess Cutting Tool

- Use a shop made Recess Cutting Tool to cut a recess for the mechanism clips
- (Alternatively use a epoxy to eventually glue the mechanism in)



American Woodturner

KIT & TOOLS
MillDrill



Woodcut MillDrill

The MillDrill from Woodcut could be considered useful for anyone who is making a large number of CrushGrind mills on a regular basis, says **Chris West**

Do you make a number of CrushGrind shaft mills if so, you may find this drill useful. The Woodcut MillDrill has been designed to complete the drilling for the CrushGrind shaft mechanisms in one go. It drills the two different diameter holes, to the correct diameter and distance apart to the mechanism. Its accuracy: a 30mm (1 1/8") diameter hole for the body of the mechanism and, finally, a larger 44.5mm (1 3/4") hole which allows the mechanism to rest against a shoulder at a depth from the base of the mill of your choice, giving ample clearance for access to the knurled knob at the base of the CrushGrind mechanism.

What it is
The Woodcut MillDrill has a No. 2 Morse taper, which will fit into the tailstock of most lathes allowing the barrel to be wound in to achieve the necessary cuts.
The two cutters come supplied already installed in the drill but the settings should be checked before using it in earnest. The cutters have three level edges and protrude from two different

diameters of steel. An Allen key is supplied and with either an V-neck calliper or an accurate rule, they can be set to the correct orientation and distance required.

In use
The instructions state that a starter hole of 27mm (1") diameter should be first drilled to a maximum depth of 10mm (2/5"). I found that going deeper with the tool did not cause any problems. This allows the first part of the MillDrill to enter a similar size hole and the cutter engages this to 30mm (1 1/8") leaving a clean hole.

It aware that the drill is likely to be hot when you remove it from the tailstock. The one thing left for you to do is to cut the 44.5mm (1 3/4") internal groove for the two spring clips of the mill body to locate.

Sharpening is a little difficult in that the cutters are made from C1 tool-king. The cutters can be honed with a diamond lap stone for just touching up, but if more steel is required to be removed, being careful, gripping the cutters with your fingers and holding them to a grinder in frangit with danger

to your fingers. Woodcut do have a scraper tool holder which can be used to hold the cutters, but it comes at a price.

Verdict
As this is not a cheap tool but could be considered useful for anyone who is making a large number of CrushGrind mills on a regular basis.

SCORE
Build quality: 90% Versatility: 70% Ease of use: 90%
DETAILS
Price: £67.27 (inc VAT at 20%) Contact: PH Irons Woodturning Tel: 01799 204 052 Website: www.phironswoodturning.co.uk

SECOND OPINION - MARK BAKER
If you make a fair number of salt and pepper mills using the CrushGrind mechanism then this MDRB is a tool well worth looking at. It is well made and has adjustable/replaceable cutters for boring the bottom section. It is definitely efficient, fast, accurate and works first time, over and over again.

ABOVE: The MillDrill enters the two different diameter holes, to the correct diameter and distance apart to the mechanism. To the right: The body of the mill.

PHOTOGRAPHY COURTESY OF PH IRONS WOODTURNING

KIT & TOOLS
Recess cutting tool



Recess cutting tool for CrushGrind mechanisms

Chris West looks at this clever recess cutting tool, designed by Brian Fitzsimmons, which will prove a welcome addition to anyone who regularly turns salt and pepper mills

The location and depth of the recess for the three plastic spring clips on the CrushGrind shaft and wood mechanisms is one of the key cuts to successfully fit the mechanisms correctly. The recess cutting tool helps you achieve this.

What it is
The tool blade is shaped in such a way that the groove position can be cut accurately if the shoulder is lined up with the end of the cut-out portion of the tool blade. Additionally the 'V' notch gave me the correct positioning for cutting the groove in the die.

Verdict
For anyone turning salt and pepper mills using a CrushGrind mechanism,

this tool will be a welcome addition to the necessary tools required. The price of around £22.50 is very reasonable and would be money well spent.

In use
I found that the length of the tool blade was correct, thus allowing me to feel that I was in control. This resulted in a clean and accurate cut.

The instructions supplied were clear and informative, which gave me further confidence in using the tool for the first time. Sharpening the tool can be easily achieved with a diamond file - which will save removing an excessive amount of steel - and will keep the keen cutting dimensions accurate.

Verdict
For anyone turning salt and pepper mills using a CrushGrind mechanism,

SCORE
Build quality: 95% Performance: 95% Versatility: 78%

DETAILS
Price: £22.50 (plus P&P)
Contact: Everette Woodcrafts (Brian Fitzsimmons)
Tel: 01206 290 400 Website: www.peppergrinders.co.uk

SECOND OPINION - MARK BAKER
Repeatable and accurate cutting of the locking recess for CrushGrind mechanisms is a merit. Failure to have this sorted will result in faulty fitting and possible problems in removing them later on. This is a well made tool from Robert Searcy and addresses a specific issue with CrushGrind tools. I would take off the sharp edges underneath with a diamond file for easier movement across the rest, and would suggest only honing the cutting tip to maintain a sharp edge. The tool works superbly and does what it is supposed to do well.



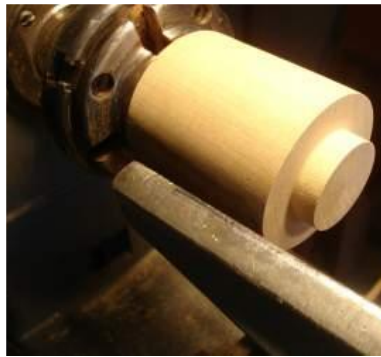
Drilling the Body with Forstner or Spade bits

- Start with the biggest first!!
- Drill 20mm deep into Body (ignoring spigot) with a 45mm drill
- Drill a further 40mm+ into the Body with a 38mm drill
- Drill through the Body with a 25mm drill but stop 30 mm before through then "come Back" with a 38mm drill from the top side of the body, 30mm deep or till you meet the 25mm hole (after 30mm proceed with the 25mm drill until holes meet)



Drilling the Top

- Clear up the bottom of the Top
- Turn the TENNON down to $< 38\text{mm}$ – to fit into the body (Test fitting with body)
- Drill a 22mm hole 40mm into the top



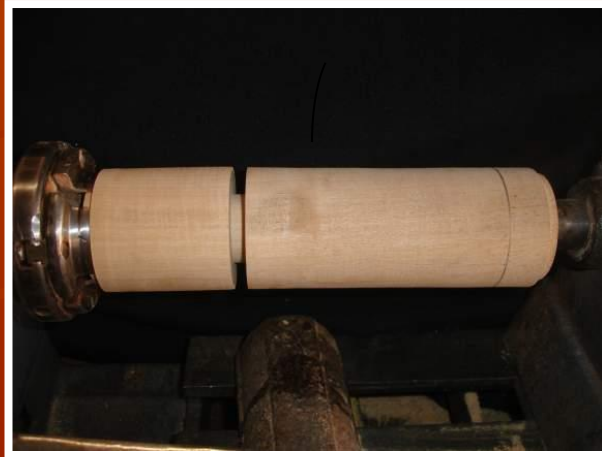
Using the Recess Cutting Tool

- Use a shop made Recess Cutting Tool to cut a recess for the driver's clips
- (Alternatively use a epoxy to eventually glue the driver in)



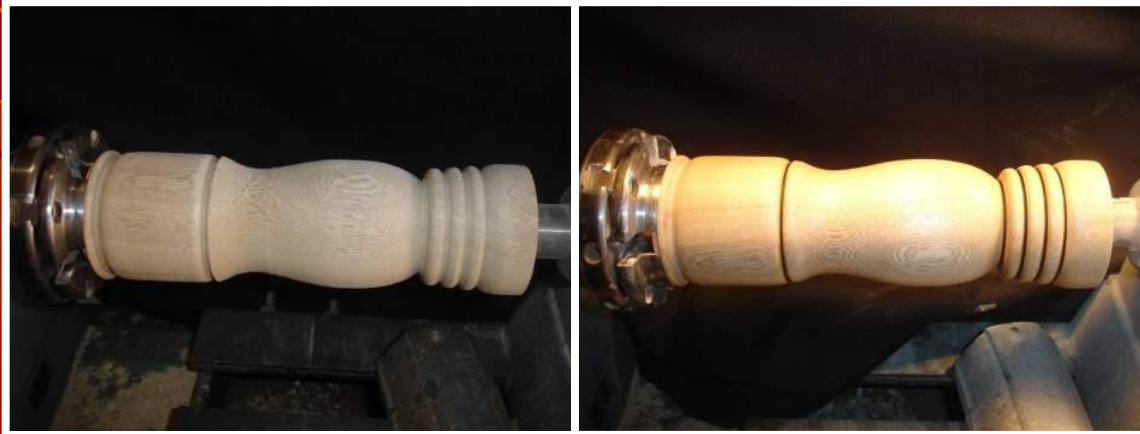
Turning and designing your Pepper/Salt/Spice mill

- Turn off top spigot from Body
- Press the Top and Body tightly together with a tailstock cone that fits inside



Turning and designing your Pepper/Salt/Spice mill

- Shape, sand and finish your mill
(Remove bottom spigot)



Finishing the Top

- Make a jam chuck to hold the Top with support from the tailstock
- Turn of excess material and design, sand and finish Top



Final finish and buffing

“My Way”

- Use a 50/50 mix of Sanding Sealer and Thinners – Apply 3 layers
- Buff with Carnauba/Beeswax mix



Fitting the mechanism

- Tap the Shaft Driver into the 22mm hole in the Top (groove or epoxy)



Fitting the mechanism

- Tap the Ceramic Mill into the Body by using a shop made "Centering Tool" and a "Tap Tool" (groove or epoxy)



Voila!!!

- Ready for the Market



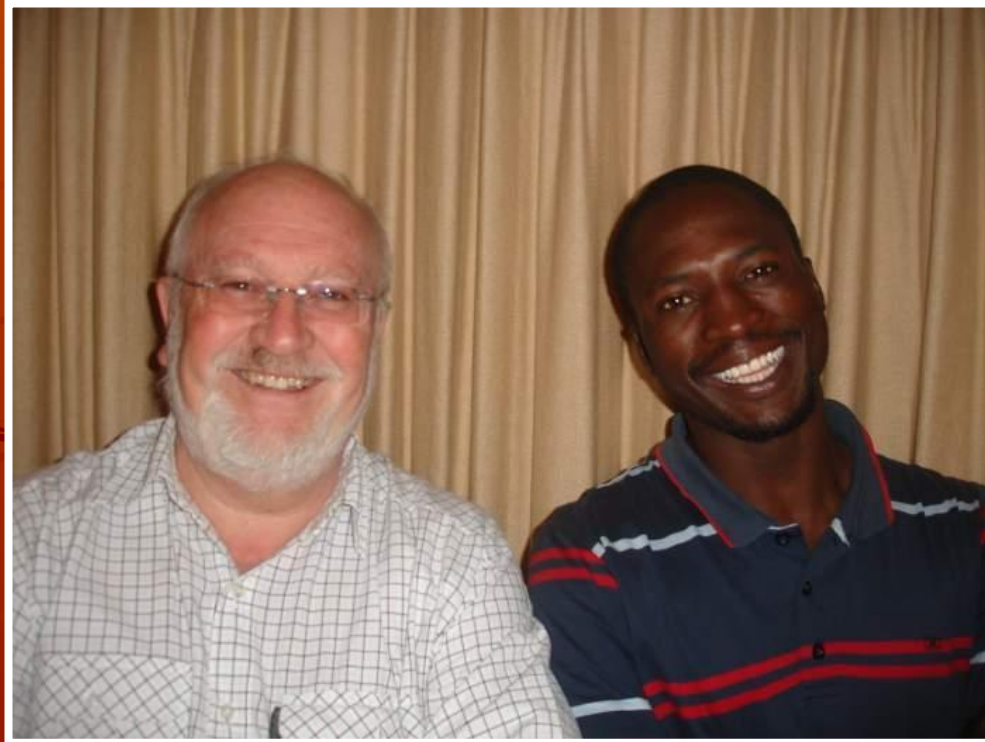
Final Say

- Every man kisses his wife in his own way!
- You may find many easier ways. Do it!
- This is "MY WAY" – > 6000 fittings later and still learning



THANK YOU!!

- Piet and Charlie



Question Time!!

- Don't redesign the wheel
- I am a phone call away!
- Cell Phone: 0824568372
- E-mail: piethome@absamail.co.za
- Website: www.peppermills.co.za

*Disclaimer: Please note, while all care is taken to ensure the correctness of prices on this document, price changes might have occurred. Please refer to our website for latest information. Thank you.

Way Forward

- “Pepper Mills 101” – R500 – 2 Hours
We offer a Saturday morning course on the above process, as the need arises.
- The course includes a ‘take home’ mechanism worth R180
- We offer a bulk discount on any future orders. On every 10 mechanisms you order, you receive one free of charge