Woodcut® TOOLS LIMITED

USER GUIDE

MILL DRILL UNIVERSAL

Mill Dril Universal User Support Video available at www.woodcut-tools.com in the User Guides Tab.

for turners
BY TURNERS

ABOUT WOODCUT TOOLS

Established in 1990, Woodcut Tools is a family owned manufacturer of innovative, high quality tools for wood turners based in Hawkes Bay, New Zealand.
Attention to detail, customer service, hard work and an absolute commitment to quality are the hallmarks of our business.
Our products are designed by turners for turners. Driven by tradition while pushing the boundaries with innovative products.
To view our complete range of products visit www.woodcut-tools.com or email support@woodcut-tools.com to request a product catalogue.

PRODUCT BACKGROUND

Australian turner Brendan Stemp had the idea of making the process simpler and faster to produce Peppermills. Frustrated with the complexity of using multiple drill bits, Brendan's idea to develop a product was inspired from observing the process of a Mill Drill press and adding two cutters.
Brendan worked with Peter Hewitt of Woodcut Tools to produce the Woodcut Mill Drill product, designed to operate with the CrushGrind® Diamond 25L mechanism. This product has been available since 2010.

Responding to customer feedback to simplify the setup of the cutters for optimal cutting, Woodcut Tools added machined flats to the cutters in 2021.

As use of the CrushGrind® Diamond Mini grew, so did customer interest in updating the Woodcut Mill Drill to also support the operation of the CrushGrind® Diamond Mini mechanism in 2022. Woodcut Tools worked with German woodturner Mario Nagel www.mareihoiz.com, who production turns pepper mills, to ensure the Woodcut Mill Drill Universal is well designed for turners.

The Mill Drill Universal is a versatile tool and with some adjustments to the cutters it can be used to cut a wide range of hole sizes making it unnecessary to buy a number of drill bits. It incorporates a No2 Morse Taper so it will fit into the tail stock of most lathes which means the drilling process can be done on a lathe.

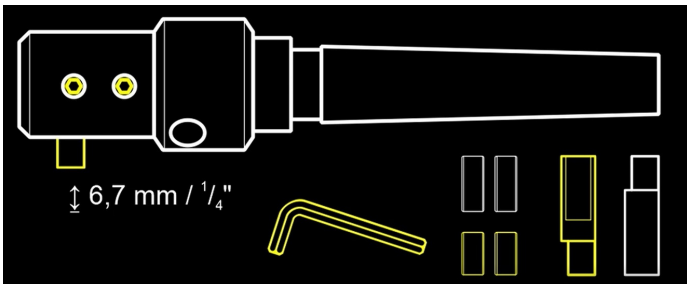
CRUSHGRIND® SHAFT
CRUSHGRIND® DIAMOND 25L

38MM - 42MM
1.1/2" - 1.21/32

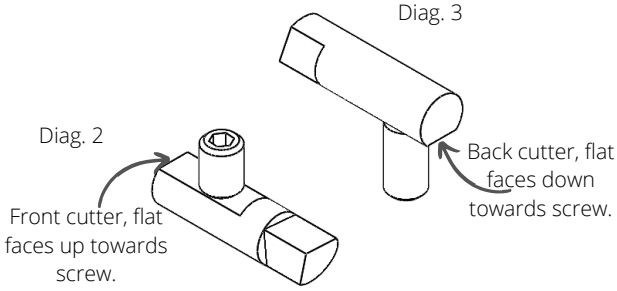
The Woodcut Mill Drill will accurately cut the first two holes (38mm and 42mm) at the correct depths for fitting a CrushGrind® Shaft / Diamond 25L mechanism once the cutters have been set.
Setting the cutters is a simple process. All that is needed is the Hex key provided and either a set of Vernier Callipers or an accurate ruler.

1. Set the front cutter first. This cutter is located at the top of the shaft. This cut needs to create a 38mm diameter hole so the tip of the cutter needs to protrude 6.7mm or 1/4" from the shaft (see diag. 1 below).
Please note: Placement of the cutters into the Mill Drill holes is important as this also sets up the blades at the correct angle for cutting. (See diagram 2. below).
To set this cutter please ensure the flat faces up towards the screw-set and slide the cutter into the shaft. Use Vernier Callipers or a ruler to measure 6.7mm from the shaft to the tip of the cutter. Tighten the grub screws.

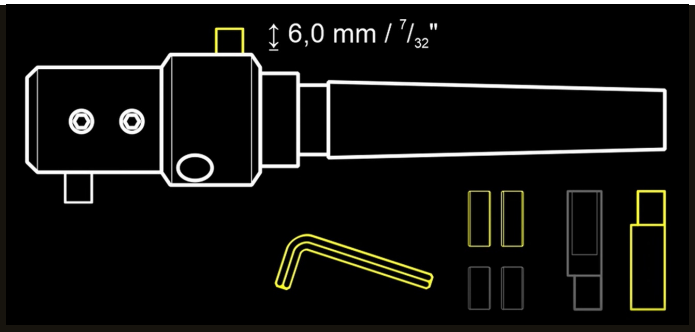
Diag. 1



Diag. 3



2. Next set the back cutter. This cutter is located at the other end, furthest away from front cutter on the shaft. You want the cutter to cut a 42mm diameter hole so the tip of the cutter needs to protrude 6mm from the shaft (see diag. below). Set this cutter using the same process used to set the front cutter. With this cutter the flat will face downwards towards the screw-set on this cutter. (See diag. 3 above)



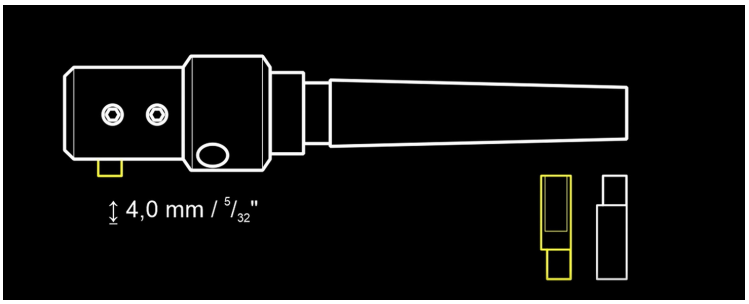
CRUSHGRIND® MINI SHAFT
CRUSHGRIND® DIAMOND MINI

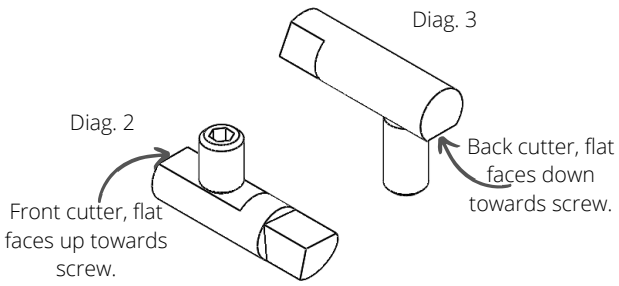
33MM - 38MM
1.19/64" - 1.1/2"

The Woodcut Mill Drill will accurately cut the first two holes (33mm and 38mm) at the correct depths for fitting a CrushGrind® Shaft / Diamond Mini mechanism once the cutters have been set.
Setting the cutters is a simple process. All that is needed is the Hex key provided and either a set of Vernier Callipers or an accurate ruler.

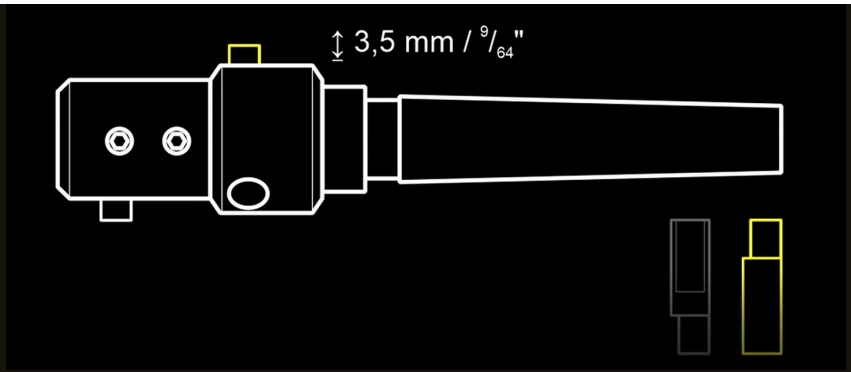
1. Set the front cutter first. This cutter is located at the top of the shaft. This cut needs to create a 33mm diameter hole so the tip of the cutter needs to protrude 4mm or 5/32" from the shaft (see diag. 1 below).
Please note: Placement of the cutters into the Mill Drill holes is important as this also sets up the blades at the correct angle for cutting. (See diagram 2. below).
To set this cutter please ensure the flat faces up towards the screw-set and slide the cutter into the shaft. Use Vernier Callipers or a ruler to measure 33mm from the shaft to the tip of the cutter. Tighten the grub screws.

Diag. 1



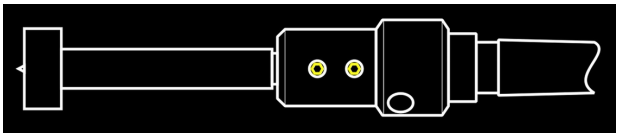


2. Next set the back cutter. This cutter is located at the other end, furthest away from front cutter on the shaft. You want the cutter to cut a 38mm diameter hole so the tip of the cutter needs to protrude 3.5mm from the shaft (see diag. below). Set this cutter using the same process used to set the front cutter. With this cutter the flat will face downwards towards the screw-set on this cutter. (See diag. 3 above)



USING THE MILL DRILL

1. Drill a 1" or 25mm hole down the middle of your pepper mill body to a depth of at least 70mm. This hole can be drilled the entire length of the body or half the length. It can be drilled either on a pedestal/bench drill or on the lathe using a forstner bit secured into the 10mm/3/8" end hole of the Mill Drill.



2. Insert the Woodcut Mill Drill in the tail stock of your lathe and give it a gentle tap with a hammer or mallet to seat it tightly in the morse taper.

3. Mount the timber securely on the lathe, if not already, with the hole facing the tail stock.

4. Ensure the nose of the Mill Drill is in line with the hole by sliding the tail stock and Mill Drill up to the timber.

5. When the two are aligned lock your tail stock and wind the Mill Drill into the hole a short distance (5 –10mm) making sure the cutter is NOT in contact with the wood. By doing this the first 5 -10mm of the Mill Drill's shaft will act a 'dead centre'.

6. Adjust your lathe to a speed of approx 700rpm and turn it on.

7. Wind your tail stock in. The front cutter should just touch the wood creating a slight indent. Stop the lathe and measure this with callipers. (See image beside)
It should measure:

- 38mm for Diamond 25
- 33mm for Diamond Mini

Adjust cutter protrusion if required and repeat process to ensure correct diameter will be cut.

USING THE WOODCUT MILL DRILL

8. Once correct wind the shaft in keeping lathe speed at approx. 700rpm. Pull out frequently to clear shavings.

9. As you reach the back cutter let it touch gently to create a slight indent. Wind the Mill Drill out and check diameter with Callipers as you did with the first cut.

It should measure:

- 42mm for Diamond 25
- 38mm for Diamond Mini

Adjust cutter protrusion if required and repeat process until correct.

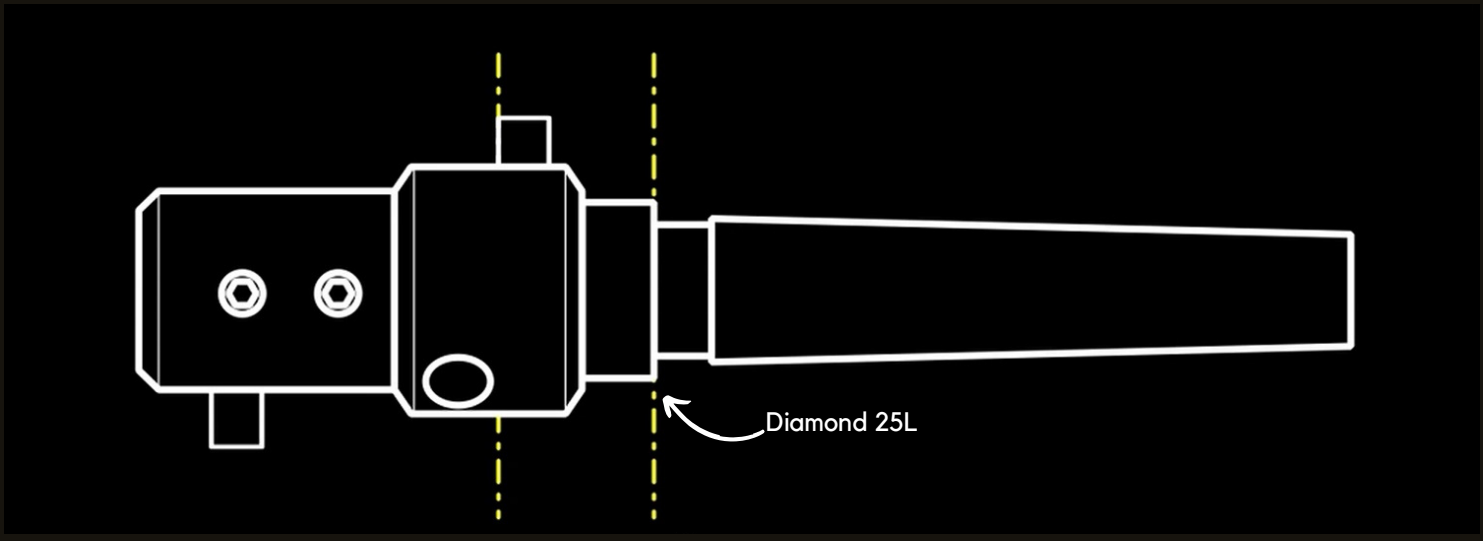
10. Proceed with your second cut, pulling back to clear shavings, if required.
The required depth is indicated by the "Diamond 25" Line or "Diamond Mini" line. See next page for these indicator areas.

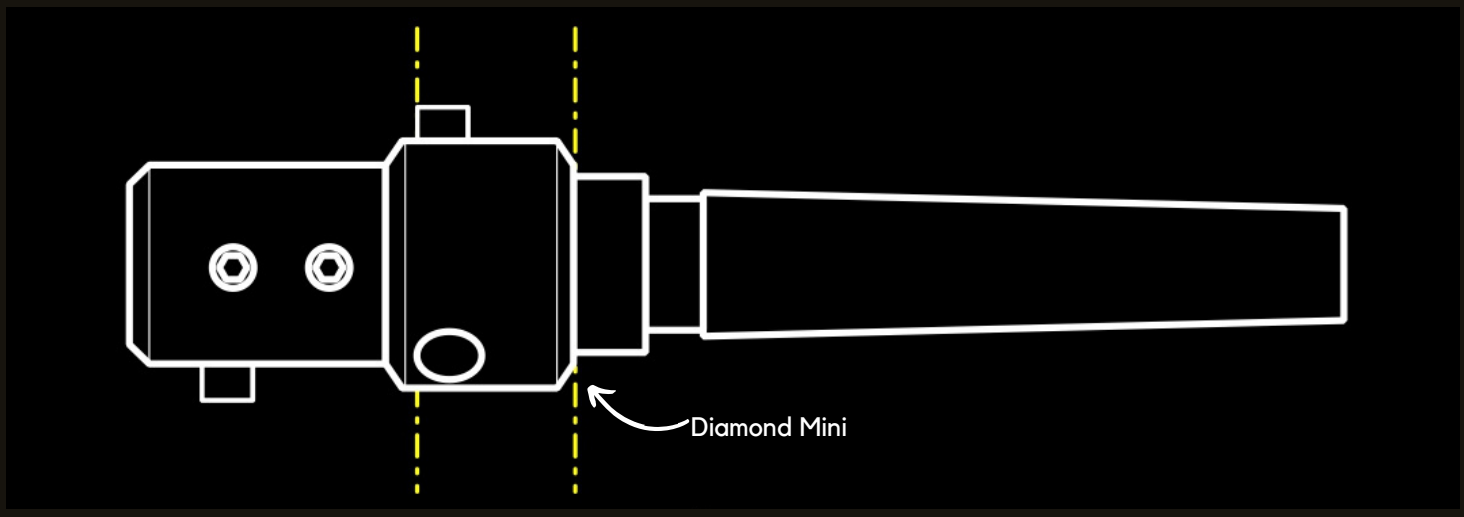
Once you reach, *at least*, this point remove the Mill Drill and this process is complete.

DRILL DEPTH

See below the indicator lines on your Mill Drill Universal which shows the minimum drill depth required.

These areas indicate the depth required to reach, in able to insert the CrushGrind® "Diamond 25" or "Diamond Mini" correctly.
Note, It is possible to drill past these lines, depending on the design of your peppermill.

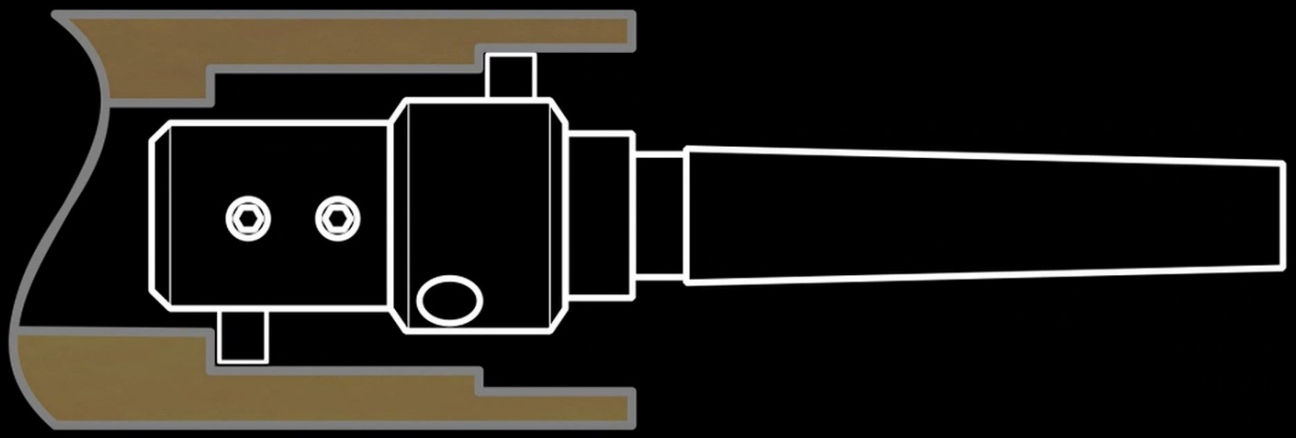




WOODCUT MILL DRILL CUTS

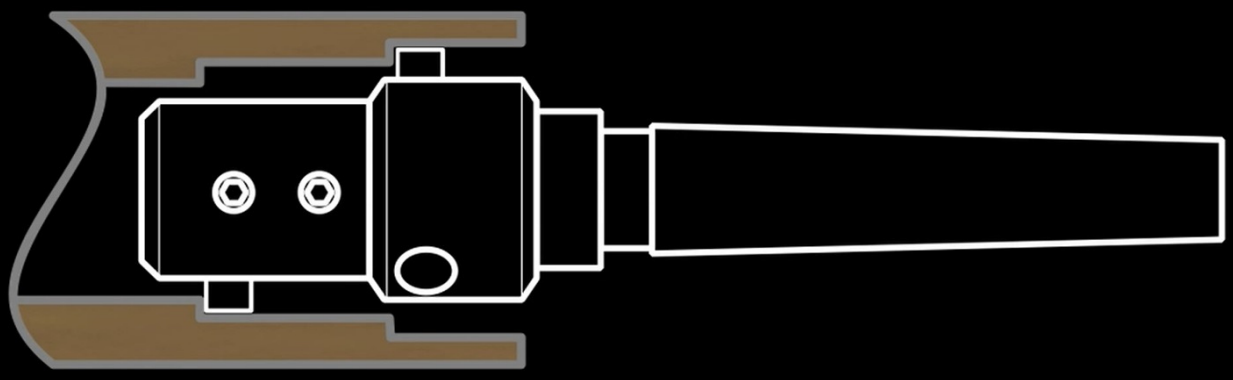
CrushGrind ® Shaft
CrushGrind ® Diamond 25

Ø 38 mm / Ø 42 mm
Ø $1^{1}/_{2}$" / Ø $1^{21}/_{32}$



CrushGrind ® Mini Shaft
CrushGrind ® Diamond Mini

Ø 33 mm / Ø 38 mm
Ø $1^{19}/_{64}$ / Ø $1^{1}/_{2}$"



SETTING THE CUTTER FOR OTHER HOLES

Using the front cutter only, the Woodcut Mill Drill can be used to drill a variety of hole sizes from 26mm to approx 50mm. The depths that these holes can be drilled will vary according to the size of the hole but any size greater than 35mm can be drilled up to 70mm plus the length of your quill deep. Hole sizes less than 35mm can be drilled up to 30mm deep.

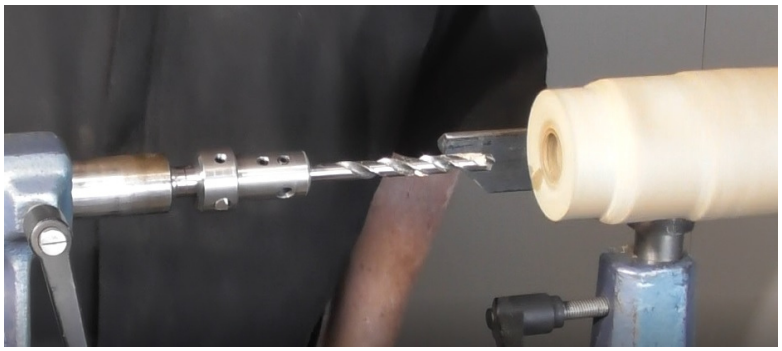
You will need to set the front cutter only using the same procedure described earlier on.

In order to set the cutter length the following simple formula can be used:
cutter length = (x – 25mm)/2 where x = the size of hole needed.
So if you want to cut a 42mm hole the cutter should be set at 8.5mm i.e. 42mm -25mm = 17mm 17/2 = 8.5mm

USING THE MILL DRILL TO HOLD FORSTNER BITS

The Woodcut Mill Drill has the added feature of being able to act as a chuck for drill bits with a 10mm shank. Many forstner bits, for example, have reduced shanks that measure 10mm and these can be inserted into the front of the Woodcut Mill Drill.

Before doing so the cutters need to be removed and then, with the drill bit inserted in the front hole, the two grub screws can be tightened. The Woodcut Mill Drill is now ready to be inserted in the tailstock and drilling can take place on the lathe negating the need for a Jacobs chuck.



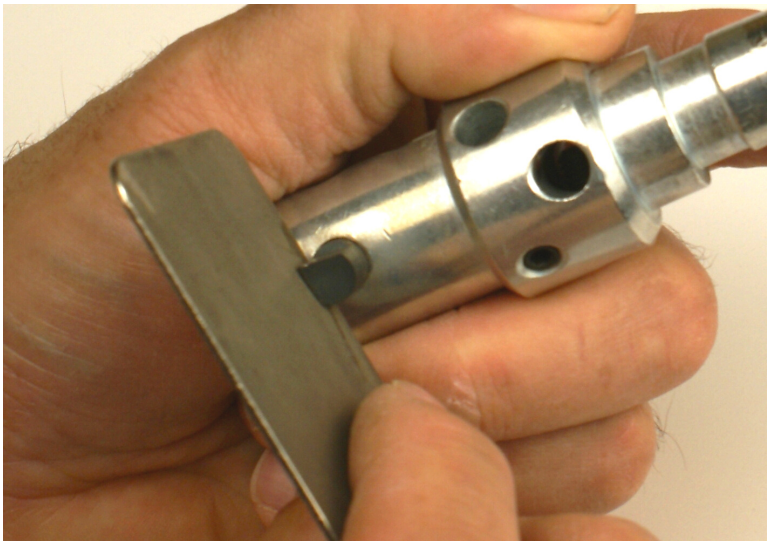
SHARPENING THE CUTTERS

The Woodcut Mill Drill Universal cutters have been pre-sharpened ready for immediate use but will need to be sharpened again when the cutters become dull or blunt.

How regularly you sharpen the cutters will depend on the timbers being used. It is advised that you sharpen both cutters at the same time.

Sharpening can be done with a Tru-Grind Credit Card Diamond Hone, or similar, by simply rubbing the flat cutting edge.

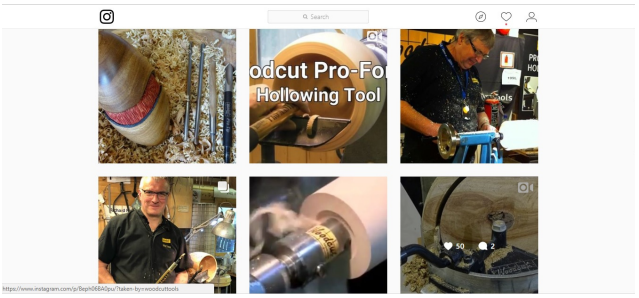
See images below.



USER SUPPORT

Please find the Mill Drill User Support Video at www.woodcut-tools.com in the "Support" Tab.

Subscribe to our Woodcut Tools YouTube channel, Facebook and Instagram pages, to stay up to date with our latest product videos.



#woodcuttools
#woodcutmilldrill

GENERAL SAFETY RULES

Woodcut Tools recommends these guidelines to ensure your safety.

1. Please read this user guide before operating this product.. Ensure you are familiar with the product's application and limitations plus the specific hazards peculiar to it.
2. Wear safety glasses. A full face mask is recommended. . Safety glasses (must comply with ANSI STANDARD Z87.1 USA) Everyday eye glasses usually are only impact resistant; they are not safety glasses. Also use face or dust mask if cutting operation is dusty.
3. Wear appropriate clothing. Do not wear loose clothing, gloves, neckties, rings, bracelets or other jewellery, which may get caught in moving parts. Non-slip footwear is recommended. Wear protective hair covering to contain long hair.
4. Use ear protectors. Use earmuffs for extended period of operation. Use muffs rated to 103 DBA LEQ (8 hr).
5. Do not operate in a high risk environment.. Don't use power tools in damp or wet locations, or expose them to rain. Keep work area well lighted.
6. Ensure the work area is clean. Cluttered areas and benches invite accidents. Build up of sawdust is a fire hazard.
7. Keep children and visitors away. All children, infirm and visitors should be kept a safe distance from work area.
8. Ensure the workshop is childproof with locks, master switches, or by removing starter keys.
9. Ground all tools. If the tool is equipped with a three-prong plug, it should be plugged into a three hole electrical receptacle. If an adapter is used to accommodate a two-prong receptacle, the adapter lug must be attached to a known ground. Never remove the third prong.
10. Ensure the tool is disconnected from the power supply while the motor is being mounted, connected or reconnected.
11. Disconnect tools from wall socket before servicing and when changing accessories such as blades, bits, cutters and fuses.
12. Prevent accidental starting . Make sure switch is in the Off position before plugging in power cord.
13. Never leave machine running unattended. Do not leave tool unless it is turned off and has come to a complete stop.
14. Keep guards in place and in working order.
15. Use the correct tool. Do not use a tool or attachment to do a job for which it was not designed.
16. Use recommended accessories. The use of improper accessories may cause hazards.
17. Don't force the tool. It will do the job better and be safer at the rate for which it was designed.
18. Maintain tools in optimum condition. Keep tools sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.
19. Avoid standing on the tool. Serious injury could occur if the tool is tipped or if the cutting tool is accidentally contacted.
20. Remove adjusting keys and wrenches. Form a habit of checking to see that keys and adjusting wrenches are removed from tool before turning it on.
21. Don't over reach. Keep proper footing and balance at all times.
22. Direction of feed. Feed work into a blade or cutter against the direction of rotation or the blade or cutter only.
23. Attention to work. Concentrate on your work. If you become tired or frustrated, leave it for awhile and rest.
24. Secure work. Use clamps or a vice to hold work when practical. It's safer than using your hand and frees both hands to operate tool.
25. Check for damaged parts. Before further use of the tool, any part that is damaged should be carefully checked to ensure that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, mounting, and any other conditions that may affect its operation. Any damaged part should be properly repaired or replaced.
26. Drugs, alcohol and medication. Do not operate tool while under the influence of drugs, alcohol or any medication. 27. DUST WARNING. The dust generated by certain woods and wood products can be harmful to your health. Always operate machinery in well ventilated areas and provide for proper dust removal. Use wood dust collection systems whenever possible.

WARRANTY TERMS

We are committed to our products and customers and guarantee our tools against faulty workmanship and faulty materials for twelve months. Fair wear and tear excluded. We will replace or repair any tool returned to the supplier or factory free of charge. Freight to and from the factory will be at the expense of the purchaser.

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