



USER GUIDE

PRO-FORME FLEXI

Pro-Forme Flexi 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, 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 product range please visit woodcut-tools.com

PRODUCT BACKGROUND

The Woodcut Pro-Forme Flexi has been specifically designed as a hollowing product. This product is capable of cutting in cross grain situations. It is the ideal tool for small to medium size projects and for narrow openings. The Pro-Forme Flexi comes with both curved and straight joint options and is ideally used with the Woodcut Tools Twin Collet Handle.

BOX CONTENTS



1. Pro-Forme Cutter
2. Straight joint
3. Bent joint
4. Shaft
5. Allen keys
6. Pro-Spanner

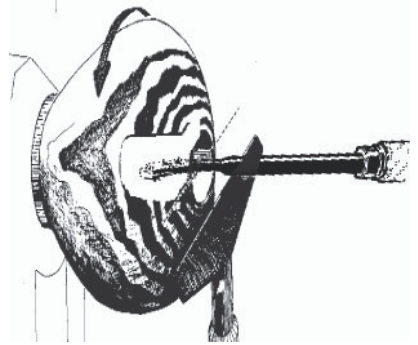
MOUNTING THE BLANK

1. Your blank must be secure as it will not be supported by a tail stock during hollowing. Use a well designed chuck or screw securely to a face plate.
2. Shape the exterior of the piece. Leave plenty of bulk around the anticipated opening point to give strength during hollowing.
3. Leave room at the foot of the work piece for a) screws, b) parting off, c) material in the foot of the finished work.
4. True the entry point on the face of the hollow form. Drill a pilot hole of at least 100mm deep & 12mm in diameter, drill in increments to ensure the hole stays true to axis.

MOUNTING THE BLANK

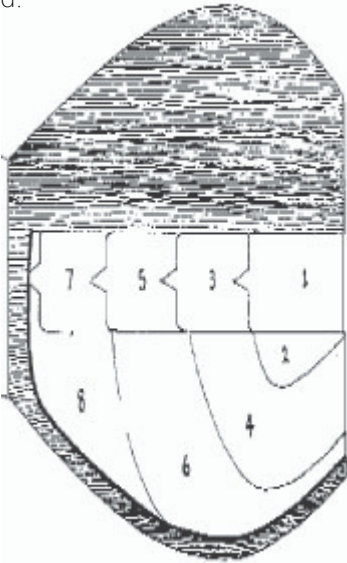
5. Lift the tool rest to 10mm below the axis of the work piece. When first using the Pro-Forme set cutter gap at 0.5mm maximum or use at the factory setting. Hold the tool in a horizontal plane (the tip, tool rest and handle at the same level), (see diagram) with the depth gauge uppermost.

6. Before beginning a hollow form it is worth working out the tools ability to cut the shoulder angle relative to the work pieces entry aperture. The Pro-Forme bent or slightly bent head may be employed once the initial opening has been established.



THE HOLLOWING PROCESS

1. Using a combination of radius and plunge cuts, hollow the work in increments, continue to go deeper with a firm forward pressure onto the wood.



A series of cuts in sequence
Note: Drill down in stages when hollowing deeper vessels

2. If the walls of the project are expected to be less than 10mm thick it is worth leaving a ridge or rim of some bulk around the entry aperture to retain strength. This will reduce chatter and minimize stress cracking in the work piece.

3. Develop and thin the areas nearest the tool rest first and continue that development on down to the base. Remove or refine bulky reinforcement after hollowing.

4. The tail stock may be used to aid this process.

5. A small rotation of the tool body left or right may be needed to achieve the best cutting angle, rub the bevel and gauge on the bore travelling forward. Again rotation of the tool body left or right will find the cutting angle, continue the hollowing sequence as in diagram.

THE HOLLOWING PROCESS

Woodcut Tools recommends that you start by hollowing open neck vessels until you become comfortable with the feel of the Pro-Forme Flexi tool. An open vessel will enable you to see what the tool is doing and learn how to hold the tool. If you are attempting a deeper vessel, drill a 12mm (1/2") hole down through the centre first.

A drilling tool can be produced from a chisel handle with a long series drill bit in the end where the tool would be. Simply hold the tool in your hands level and push into the end grain. Now you can cut to the centre without experiencing a lump at the bottom of the hollow form. Roll the tool anti-clockwise until the gauge is rubbing on the wood, then with the gauge firmly against the vessel wall roll the tool back until the required cut is achieved. You will see the different thickness of shavings appear as you experiment. Do not use the tool tentatively. Keep a firm cut at all times.



Adjust the gauge to enable the correct amount of cutter to show, this will vary from a soft wood to a hard wood i.e. soft or green woods will have more cutter exposed (say up to a 1mm or 3/64") as opposed to hard dry woods (say 0.5mm 1/32"). Of course wood will vary in so many ways that there is no substitute for experience.

The stainless steel set screw has a 7mm A/F head and will accept a socket or ring spanner of that size. To adjust simply loosen the set screw, then hold the tool over a white piece of paper, look down directly from above and move the gauge back or forwards until the required cut is achieved. Then tighten firmly.

Woodcut Tools recommends practice using green branch wood. Many famous woodturners turn all their award winning hollow forms from green wood, season it carefully and then return when dry to finish. Providing it is evenly turned, you will be surprised how it will dry crack free, and some interesting affects will occur.

The Pro-Forme will also hollow face grain timber. Generally, if its unsafe to reach with a conventional gouge then the Woodcut hollowing tools will almost always complete the form.

TROUBLESHOOTING

Clogging of cutter and gauge

- Check cutter for sharpness
- Slow the lathe
- Dry the wood
- Clear shavings with compressed air, a reversed vacuum cleaner or a stick.

Cutting at tip only

- Check gauge position
- Remove a small amount of material from the left & right sides of the gauge

Cuts on side of cutter only

- Check sharpness of the cutter
- Twist tool anti clockwise onto gauge and back again, until desired cut is obtained.
- Check gauge shape. If the tip of the cutter is not being exposed while its sides are, remove a little gauge material at tip, using the diamond hone with the cutter withdrawn.

Cuts too heavily or digs in

- Close or reduce cutter exposure.

Fig 1.

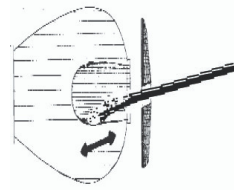
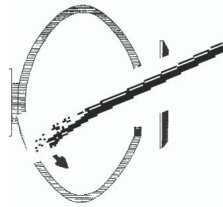


Fig 2.



Hollowing is made up of two basic cuts: the plunge cut as seen in Fig.1. and the arcing cut as illustrated in Fig. 2.

Not cutting

- Check sharpness of the cutter
- Increase cutter exposure
- Check for clogging between gauge and cutter
- Check tool angle.

Woodcut Tools recommends keeping a firm cut at all times to smooth out the bumps.

MAINTENANCE

a) Using the spanner provided, loosen the setscrew holding the depth gauge so that it will slide on the cutter mounting. Tighten the screws when the gauge is between 0.5mm - 1.0 mm behind the cutter edge.

b) The depth gauge can be positioned centrally or on either the left or right side of the cutter. To enable cutting on the entire blade, position the depth gauge centrally, the edge should be visible along the entire gauge edge.

SHARPENING

Sharpen the Pro-Forme Powerhead using the Woodcut Diamond Hone in a circular motion. Hone the outer face of the cutter, ensuring that both the face of the cutter and the face of the diamond hone remain flat against each other. Honing the heel of the cutter will not sharpen it and honing just the edge will change the bevel and cause the cutter to rub rather than slice the fibres cleanly. Ensure the diamond hone is wet for optimal use.



Sharpening the Pro-Forme Powerhead with an Eze Lap diamond lap stone

Important:

Secure the tool while not in use, protecting the cutter from impact and abrasive material. Clean the cutter and gauge with warm soapy water and remove any wet timber and apply a light oil to the cutter area, gauge and tool body. Wipe off excess.

On the tool body's underside, apply a little candle wax. This will help the tool slide over the tool rest.

When the cutter is worn out, remove the cutter holder from the tool body. Replacement cutters & gauge are available from your local Woodcut Tools distributor. Periodically remove cutter holder, clean, grease and replace.

The cutter depth has been set by Woodcut Tools to approximately 0.5mm of cutter showing beyond the safety gauge. Familiarize yourself with this measurement before starting your first cut.

When using the tool it is important to raise the tool rest up until the top of the cutter is at center height, when the tool is level (or horizontal) this will allow the cutter to cut right to the center without bevel bounce.

ADJUSTING THE GAUGE

1. If the tool is cutting too heavily, reduce the cutter gap. If the tool is cutting too slowly, increase the cutter gap by small increments until the cut speed is satisfactory.
2. The cutter is a truncated triangular shape giving three main cutting areas. The left and right-hand sides are segments of a larger radius than the tip and are suitable for cutting across lateral grain. The tip, with its small radius, is designed to load the tool less while cutting through end grain. The open side of the hook is to vent shavings. The plunge cut is used in long narrow bores and walls parallel to the works axis. Using the tip end and one side of the cutter push a shoulder of material ahead the tool.
3. Cutting may continue with the retrieval movement as well. The radius cut uses mainly the tip radius and is used while forming the internal base surface of the work. The tool pivots on the rest with little forward or reverse movement while the tip is moved from centre to periphery and back again. Although the plunge cut and the radius cut are distinct movements, generally the tool operator will find, if they use them in combination, the edge will wear more evenly.

Insufficient Cutter



Excess Cutter



Uneven Cutter



Correct Cutter



ADJUSTING THE GAUGE

4. Adjust the gauge with the eccentric screw adjuster located at the rear of the brass gauge cut limiter.

5. To adjust the gauge to the centre of the cutter simply turn the screw one way or the other until the desired result is achieved. Use the smaller allen key provided. A small adjusting spanner to undo the hex set screw is included. If you find it a little short simply fit a file handle to it (they can be purchased from your local hardware store).

6. Adjust the gauge to enable the correct amount of cutter to show, this will vary from a soft wood to a hard wood i.e. soft or green woods will have more cutter exposed (say up to a 1mm or 3/64") as opposed to hard dry woods (say 0.5mm 1/32").

OPTIONAL EXTRAS

Irons Tool Gate

Woodcut have designed the Irons Tool Gate to not only keep the tool at the correct height but to also support the tool shaft while cutting and leave your hands free to control the handle.



Flexi Scraper Kit

The Flexi Scraper Kit includes two cutters. These additional cutters are a must for that extra smooth finish.

Twin Collet Handle

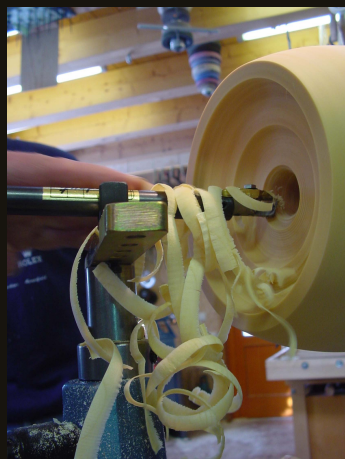
A deluxe 16 inch quick change handle with two collets for 9-10mm shafts and 12-13mm shafts. The collet holds tools securely without marring them. An ideal handle to use with your Pro-Forme Flexi.



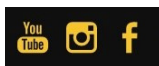
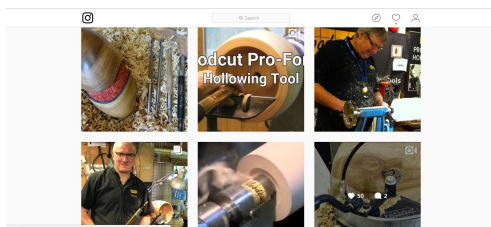
USER SUPPORT

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Alternatively email support@woodcut-tools.com



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STARTER PROJECT - A TURNED GOBLET

Materials

Woodcut Tools recommends using a clean cutting medium density wood between 75mm(3") to 100mm (4") square and approximately 160mm (6.5") long.

Positioning

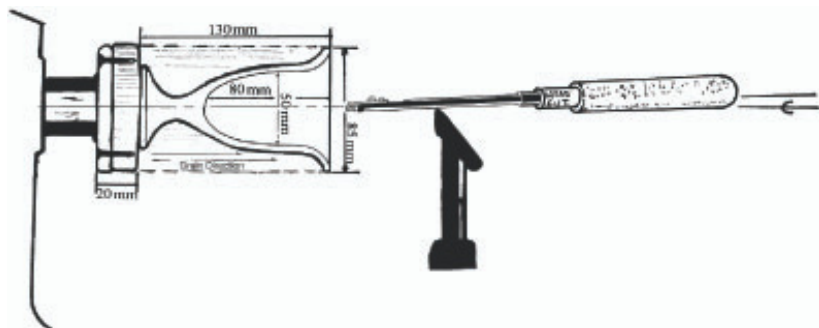
Tool rest height and position (refer to diagram below). Take particular note as this is an important part of the setting up, to get the best and safest use from the tool.

Mounting

Mount the wood between centres and face of the tail stock end so that it is slightly undercut, to enable the faceplate to sit flat and square to the end grain. Fit the face plate in the centre of the undercut end and screw down tight with 4 pozi-drive screws approx 15mm into the wood. If using a chuck ensure that the face of the jaws sit square or flat against the end of the block.

Hollowing

1. Set the lathe at a mid-range speed (depending on type of lathe, pulleys etc.)
2. Present cutter to end grain of timber. Apply forward pressure to the left of centre, and with sweeping motions from left to right ease forward to remove the bulk of the interior material.
3. After removing 75% of material from the inside, check the depth, starting from the top lip of the goblet cut forward and down in a sweeping motion around to the centre (this is called plunge cutting). As you cut down the side, a twisting motion of the wrists will gain you better control in relation to the amount of timber removed. When you have shaped the inside, proceed to shape the outside with a Woodcut Bowl Gouge.





Forms produced by Phil Irons using the Pro-Forme Hollowing Tools



GENERAL SAFETY GUIDELINES

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 lit.
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

Woodcut Tools are guaranteed against faulty workmanship and faulty materials for twelve months from date of purchase. 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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