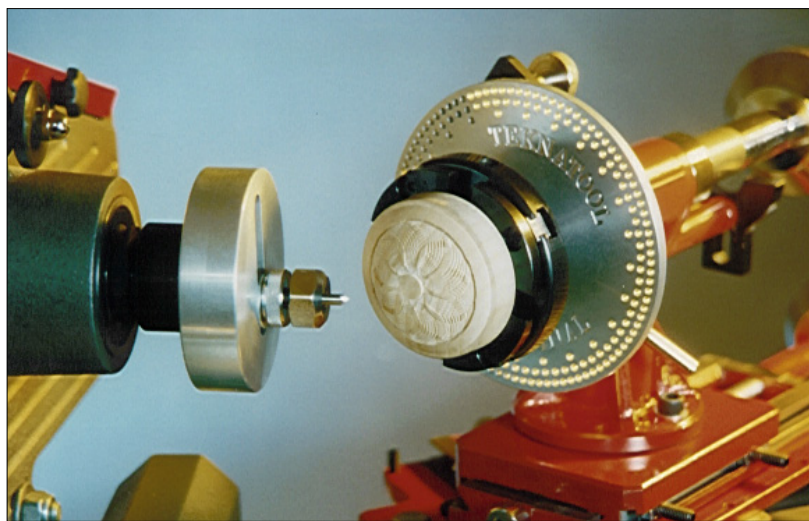




# **NOVA ORNAMENTAL TURNER**



## **MANUAL**

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# NOVA ORNAMENTAL TURNER

Thank you for purchasing our Nova Ornamental Turner. It is one of the latest innovative accessories developed for the Nova range of Woodlathes.

This version is designed to be used with our Nova Woodlathe includes NOVA 3000, DVR 3000, NOVA 1624-44 and NOVA DVR XP. If you have any questions about fitting this unit to your lathe or operation of this unit, please consult with your reseller or contact Teknatool technical support direct (contact address in safety section).

## INTRODUCTION

What sets Ornamental Turning (OT) aside from well done decorative turning?  
For around three centuries woodturners have looked to enhance the surface of their turning. Generally, OT describes the precisely cut decorations that are placed on turned surfaces.

A number of manufacturers produced purpose built OT lathes, one of the better known being John Jacob Holtzapffel who produced his first in 1795 at a cost of 25-4-10d ( a small fortune in those days!). It is obvious that only the very wealthy were to enjoy the pleasures of OT.

Until the late 1800's these lathes were treadle powered, and produced fine results. The few remaining Holtzapffel lathes (they ceased building OT lathes in the early 20<sup>th</sup> century) bear testament to the superb quality of engineering involved.

Now with the introduction of innovative developments like the Nova Ornamental Turner; the recent growing interest in OT amongst woodturners can be realised in modern woodturning applications. You will find that there are endless ways you can apply OT techniques to your woodturning. Many of these can be simply and quickly applied. However you can also develop complex patterns and decoration to match your more intricate projects.

THE ORNAMENTAL TURNER unit gives the opportunity to do the following:

- End - cutting OT
- Side - cutting OT
- Wood - thread OT (using threading attachment)
- Light metal turning (using tool post attachment)

Many very interesting ornamental patterns can be made using an adjustable circle cutter on:

1. a flat end surface  
a curved (radiused) end surface  
the outside curved surface.
2. Side cutting tools of various profiles to place  
radiating incisions on end surfaces  
Rows of linking incisions around outside surfaces.

The placing of all the above cuts are controlled by locking a detent pin into subsequent holes on the index plate.

## SPECIFICATIONS

Spindle Thread:	1 1/4" 8TPI RH
Spindle Height Above Bed:	200mm
Index Plate:	72 and 96 Divisions <b>(NB the inner most holes of 48 and 60 divisions are not designed for use on the Ornamental Turner. The Index pin will not engage and hold in these holes. These holes are for use on another NOVA product.</b>
Cross Slide Travel:	165mm
Top Slide Travel:	165mm
Circular Cutting Frame Diameters:	0 - 55mm

## STANDARD EQUIPMENT

Bedslide plus two stops  
Compound slide (top slide) plus two stops  
Spindle housing with index  
Spindle  
Index plate  
Cutting frame- circular  
End Cutter  
3mm Allan Key  
4mm Allan Key  
5mm Allan Key

## OPTIONAL ACCESSORIES

THREADING KIT (need to also have side cutter unit for threading)  
SIDE CUTTER UNIT  
DELUXE 4 BLADED THREAD CUTTER  
HSS CUTTER BITS  
CUTTER SHARPENING UNIT  
TOOLPOST UNIT  
2MT Ejector Nut  
Spanner

Note Not all accessories are available in all Countries at this time.

For the availability of those accessories, please check with your reseller, our website, or contact us at our address for details.

Watch also for our video on the set up and use of our Nova Ornamental Turner.



**Example of a Lidded Container with both Ornamental Turning and Threaded Lid**

## SAFETY RULES

PLEASE READ AND UNDERSTAND THESE SAFETY RULES BEFORE OPERATING THIS ACCESSORY.

**WARNING: FAILURE TO FOLLOW THESE RULES MAY RESULT IN SERIOUS PERSONAL INJURY.**

All machinery, including the woodlathe, has certain hazards involved with their operation and use. Using the woodlathe with respect and caution, as with any machinery, will considerably lessen the risk of personal injury. However, if normal safety precautions, including those listed here, are overlooked or ignored, personal injury to the operator may result.

This Nova Woodlathe Accessory was designed for certain applications only. It MUST NOT be modified and/or used for any application other than for which it was designed.

**If you have any questions about its application DO NOT use the machine until you have contacted the manufacturers "Teknatool" and we have advised you accordingly.**

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Website: [www.teknatool.com](http://www.teknatool.com)

Please refer to the Safety rules in the Nova Woodlathe Manual.

## ADDITIONAL SAFETY RULES FOR THE ORNAMENTAL TURNER

It is important to be familiar with the function of each adjustment on the ornamental turner. After all settings have been made, the operator must check that every adjustable element has been securely fixed in place before the ornamental turner is used.

### CUTTING FRAMES

The round Cutting Frame is designed for safety. However great care needs to be taken when the Cutting Frame is revolving.

Cutting frames must be securely fixed to the head stock spindle.

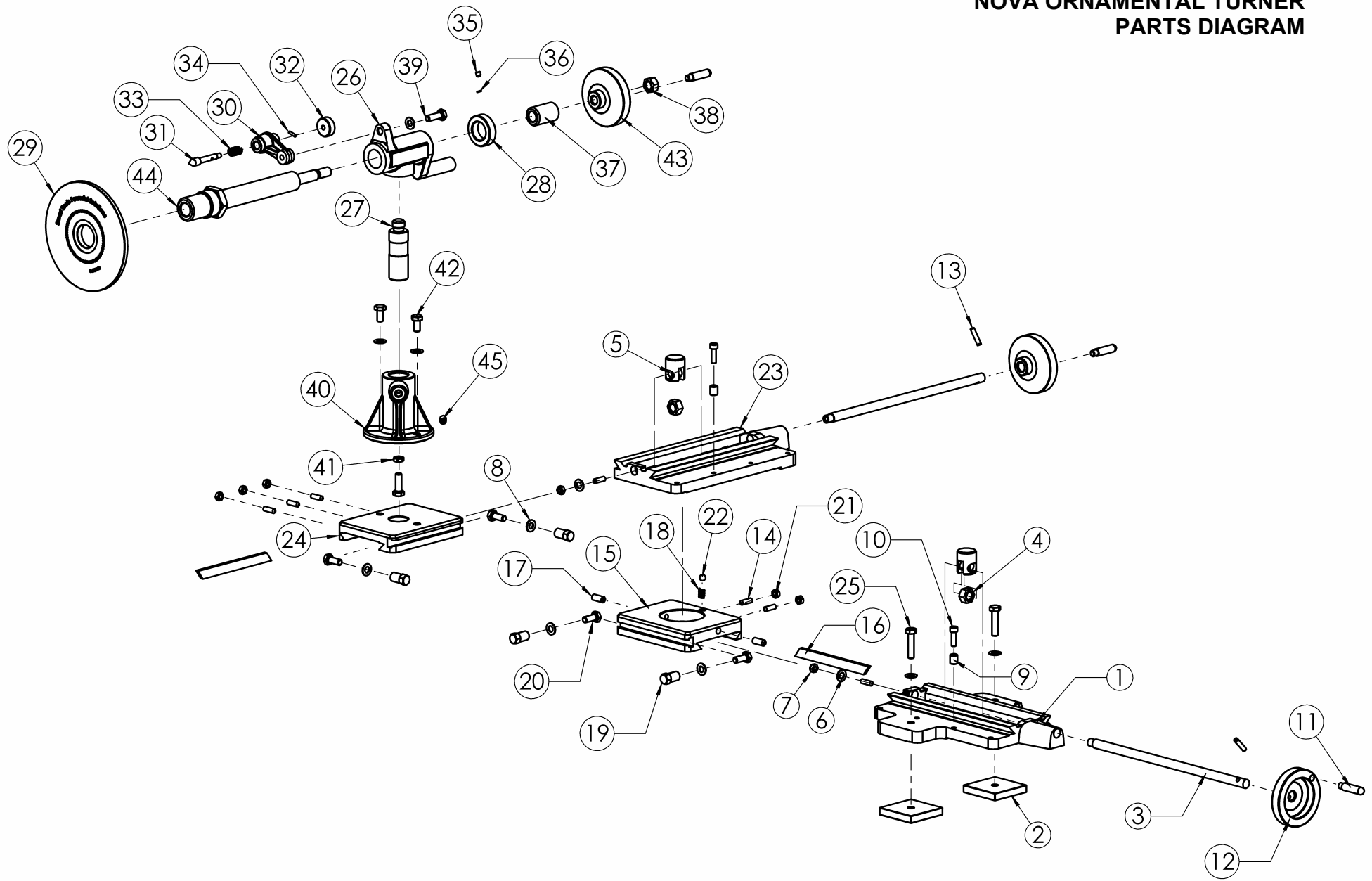
**ALL REPLACEMENT OR ADJUSTMENTS TO CUTTERS MUST BE MADE WHEN THE LATHE IS SWITCHED OFF AND THE CUTTER IS NOT REVOLVING  
BE CAREFUL OF CUTTER POINT WHEN MAKING ADJUSTMENTS**

**SAFETY GLASSES MUST BE USED WHILE THE ORNAMENTAL TURNER IS IN USE**

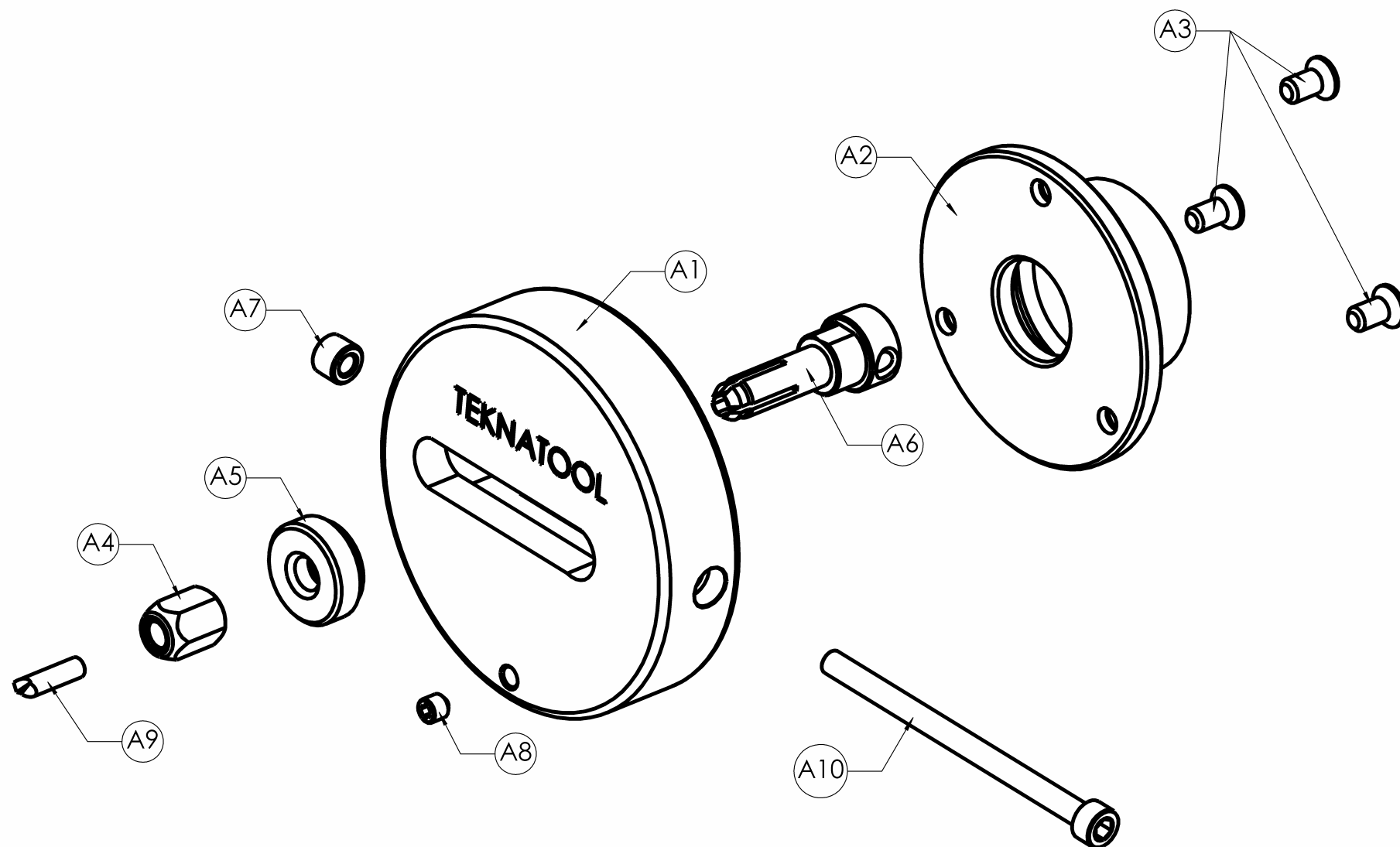
**DO NOT PLACE HANDS ANYWHERE NEAR REVOLVING CUTTING FRAME. ONLY USE THE HANDWHEEL CONTROLS TO ADJUST ORNAMENTAL UNIT WHILE CUTTING.  
TAKE CARE TO ADVANCE CUTTER INTO WORK SMOOTHLY AND SLOWLY**

**MAKE SURE ALL ADJUSTMENTS ARE SECURELY TIGHTENED BEFORE USING ORNAMENTAL TURNER**

# NOVA ORNAMENTAL TURNER PARTS DIAGRAM



**NOVA ORNAMENTAL TURNER  
DIAGRAM CUTTING FRAME**



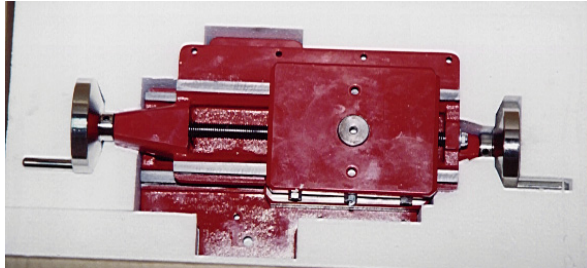
## Nova Ornamental Turner Part List

Please refer to the parts diagram on pages 5 & 6.

Part No.	Product Code	Qty	Description
1	50000	1	Bedslide
2	50021	2	Bed Clamp Plate
3	50006	2	Leadscrew
4	50007	2	Leadscrew Nuts M12x1.75 LH
5	50029	2	Yoke
6	FW6	2	Washer Flat M6
7	NN06	2	Nut Nyloc M6
8	FW8	9	Washer Flat M8
9	50018	2	Bed Stop Sleeve
10	C06020	2	Cap Screw M6x20
11	28026	2	Handle for Handwheel
12	50049	2	HANDWHEEL LEADSCREW
13	TP0524	2	Bissell/Tension Pin 5mmx24
14	G0620	8	Grubscrews M6x20mm
15	50002	1	Bedslide Carriage
16	50012	2	Gibplates
17	G0850	2	Grubscrews M8x50 Swivel Lock
18	50010	1	Detent Spring
19	50020	4	1/2" T-slot Stop (2 for each Slide Carriage)
20	UNCSZ0506	4	BOLT UNC 5/16 X 3/4 MS ZP
21	NHZ6	6	Nut M6 (Gibplates)
22	50011	1	Ball Bearing 8mm diameter
23	50001	1	Compound Slide
24	50040	1	Compound Slide Carriage
25	BNMZ08035	2	BOLT ENG M8X35 ZP
26	50003	1	Spindle Housing
27	50030	1	Post
28	50027	1	Spindle Clamp Collar
29	50028	1	PLATE INDEXING 150MM DIA-Y 1 1/4 "
30	50005	1	Index Arm
31	50037	1	Index Pin
32	50016	1	Index Knob
33	28009	1	Spring
34	TPZ0312	1	Bissell/Tension Pin 3mmx12
35	G0606	1	Grubscrew M6x6
36	NS1000	1	M6 Fibre Pad
37	50026	1	Threaded Bush 2mm pitch
38	NHZ12	1	NUT HEX M12 HT STEEL ZP
39	SZ0825	2	SCREW SET M8X25 ZP
40	50004	1	Pedestal Base
41	NHZ8	1	Nut M8
42	SZ0816	2	Hex Bolts M8x16
43	50013	1	Compound Slide Handwheel
44	50063	1	SPINDLE ORNAMENTAL Y
45	SCS6	1	Grubscrew M8x16
A1	50031	1	Cutting Frame Body
A2	50032	1	Cutting Frame Adapter
A3	CM5010181	3	CSK Screw M6x10
A4	50034	1	Tool-bit Clamping Nut
A5	50035	1	Locknut
A6	50033	1	Cutting Frame Collet
A7	50039	1	End Bush
A8	G0606	1	Grubscrew M6x6
A9	51002	1	Toolbit
A10	C06090	1	Capscrew M6x90

## ASSEMBLY INSTRUCTION

This is a precision piece of equipment, so to obtain good results it is important to understand the function of each component. The unit comes disassembled in two main parts: the Spindle Unit and the Bedslide Unit.



Bottom of the Box: Showing Cross Slide Unit

### **Assembly of Ornamental Turner:**

Please refer to the parts diagram and list on pages 5, 6, and 7.

YOU WILL NEED:

Teknatool Universal Spanner (not provided) or appropriate spanner	AK3 1x 3mm Allen Key	AK4 1x 4mm Allen Key
AK5 1x 5mm Allen Key		

#### **Fastening Kit Included with Unit:**

Removed from the unit for packing.

50021 2x Bed Clamp Plates	BNMZ12035 2xHex Bolt	FW8 8xM8 Flat Washers
50020 4x 1/2" T-slot Stops	50019 4x T-slot Stop Bolts	
50018 2x Bed Stop Sleeves	C06025 2x Cap Screws	SZ0816 2x Hex Bolts

### **Stage 1 Placing Slide Unit on Lathe**

**Note:** The Bedslide (bottom slide) and the Compound Slide (top slide) come preassembled. During setting up it may be necessary to swivel the Compound Slide. This will take a little effort as it is held in place by a spring-loaded detent pin.  
(Later the Compound Slide will be locked by grubscrews (17) for operation).

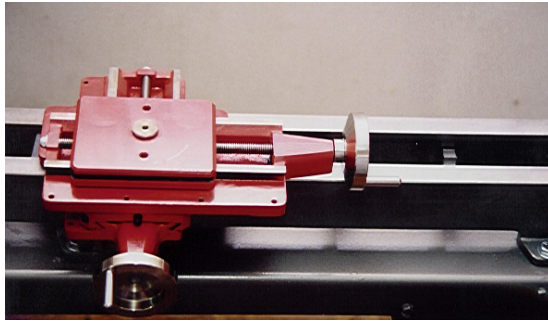
Remove tailstock from your lathe. Position toolrest slide up against headstock and remove toolrest for convenience for the set up procedure.

Before placing O/T unit on lathe bed, place hold-down bolts (including washers) in position on base of Cross Slide and loosely screw on holding plates (2).  
Feed holding plates into end of bed, ensuring the bottom (Bedslide) handwheel (12) faces the operator side of the lathe. Move the entire slide unit along the bed to a central position.

Hold Bedslide assembly firmly to front of bed (towards you) then using a spanner, tighten hold down bolts. Do not over tighten.

Set Top Compound Slide at 90° to Bedslide, wriggling slightly to feel detent pin engage. Then tighten grub screws (17).





**Stage 1: Slide Unit mounted on Lathe.**

## **Stage 2 Fixing Ornamental Spindle unit to Slide Unit**

Fix Pedestal Base (40) on to top slide carriage (24) using setscrews and washers (42) and spanner provided.

## **Stage 3 Adding the index plate**

Add the index plate (29) onto the OT spindle so it registers onto the spindle spigot. Then wind on your chuck so it butts up against the index plate holding it firmly in place.

## **Stage 4 Alignment of Ornamental Spindle Assembly to Lathe**

There are two adjustments that must be made:

1. Vertical alignment to lathe spindle centre.
2. Horizontal alignment of Ornamental spindle to lathe axis.

This will ensure that the cutting operations are even, with a uniform depth of cut. Place spindle assembly in tool post holder.

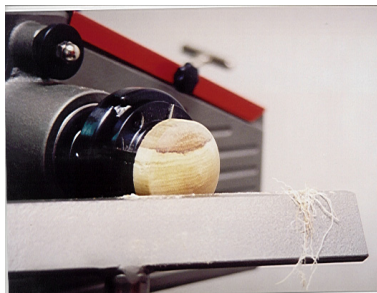
### **Alignment Method 1:**

**Vertical Alignment:** Approx. vertical alignment can be achieved by placing two MT centers in position. One in the headstock and one in the Ornamental Spindle. Align these two centers using the setscrew in the base of the shaft (27) of the spindle unit.

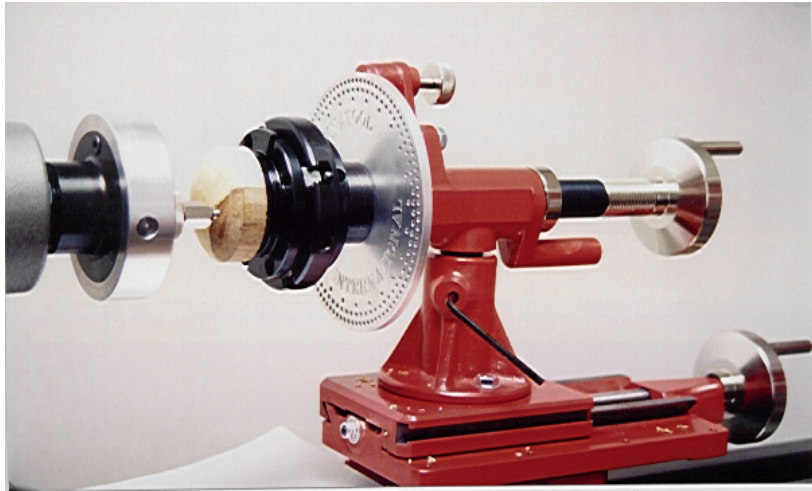
The set screw (45) fits into a groove in the shaft and needs withdrawing a few turns before the shaft can be withdrawn. Unfasten and release the pedestal to get access to the adjustment lock nut underneath (41).

When perfectly aligned use the nut (20b) to lock the height setting.

**Horizontal Alignment:** First turn a heavily domed blank as shown in next photograph. Mount the work in a Nova chuck. You will need to use either of these chucks to mount work in your ornamental unit for operational use.



Remove the chuck from the lathe spindle (leave blank mounted in chuck) and remount on ornamental spindle as shown in photograph below.



**NB Please note photos showing the index plate will differ from your one.**

Mount cutter (A9) in the collet ( A6 ) (see Stage 6 for use of Cutting Frame) of the Cutting Frame with the top cutting face parallel to the adjustment slot and facing the operator. Slide Ornamental unit up close to cutter.

Lightly nip up grub screw (45 See Photo above with Allen Key in grub screw position) on Pedestal Base (40).

With cutter just clear, place a sheet of white paper on the lathe bed - to make visual adjustment easier. Manually rotate cutter making a note of the clearances of cutter to the workpiece.

Adjust alignment of spindle and bottom slide until the cutter scribes a complete circle to a uniform depth of cut.

### **Alignment Method 2:**

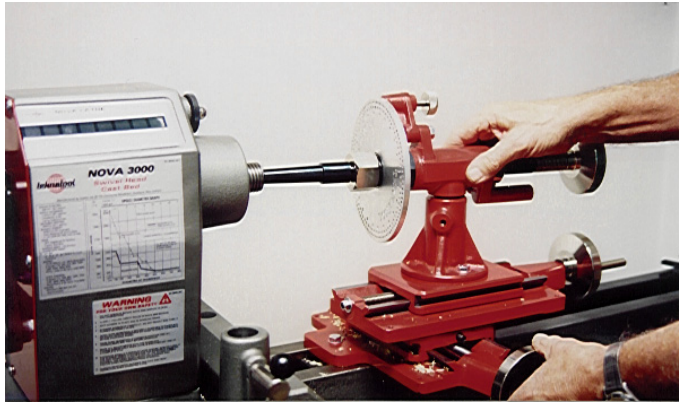
Another method of alignment is to use our Teknatool Acruline™ Double Morse Taper Centering System (Code: 2MTNA) combined with use of our MT Ejector Nut. As seen in the photograph below the Acruline™ is engaged in the Ornamental Spindle with the hold down bolts (10) and the Pedestal Base Grub screw (45) released.

**Make sure the MT Ejector Nut (not supplied) is screwed onto Ornamental Spindle first (see photograph).**

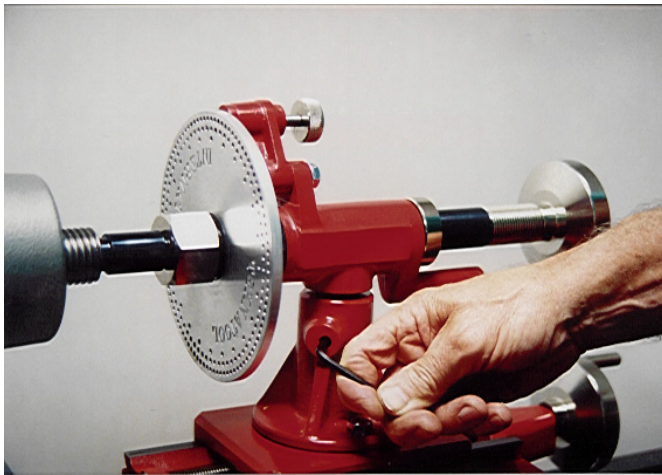
Gently engage the Acruline™ into the headstock MT. Keep adjusting the bottom slide and advancing the whole unit until the Acruline™ is fully seated. Some sensitivity is needed in adjusting the lateral movement with the bottom Bed Slide.

**DO NOT APPLY HEAVY PRESSURE AS THIS COULD DAMAGE SLIDE.**

Give the whole unit a 'wiggle', back and forth to ensure Morse Tapers are fully seated. At this point the Pedestal Grub screw (45) can be tightened very firmly.



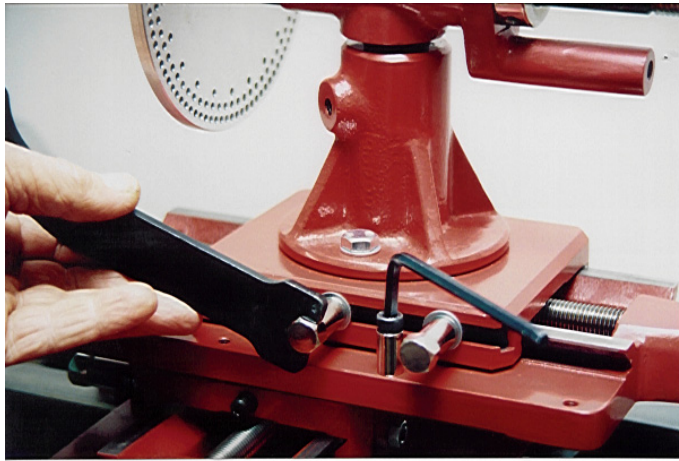
**AcruLine™ Taper being advanced into Headstock MT**



**AcruLine fully home in headstock MT & grub screw (45) tightened.**

## **STAGE 5 Mounting Slide Travel Stops**

Install the T- Slot Stops (19, 20 & 8) into the (top) Compound Slide Carriage (24) and the Bedslide carriage (15) using a spanner. There are two stops provided to limit travel forward and back on each carriage. Next install a Bed Stop (9&10) into one of 4 hole positions on the top Compound Slide and one bed stop into one of 4 hole positions in the bottom Bedslide. Use 5mm Allen Key provided in Spanner Kit. See photograph below.



## Stage 6 Mounting Cutting Frame

Please refer to the Cutting Frame Diagram on pg 6

The Cutting Frame is designed to be mounted on, and is driven, from the lathe spindle.

To install cutter (A9) use a Spanner to tighten Tool -Bit Clamping Nut A4). To adjust Cutter travel in frame, loosen knurled Locknut (A5) and wind out Capscrew (A10) with 5mm Allen Key provided.

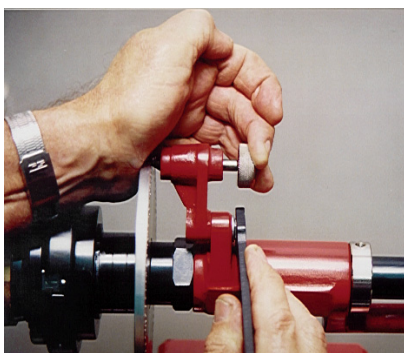
Before use make sure that the Cutting Frame is fully wound on the lathe spindle. Also that the Clamping Nut (A4), the Locknut (A5) are both tight.



NOTE: It is advisable that the cutter be offset to the left side of the frame (as shown in the photo) to cut on the right side of your work. This is so the cutting frame does not work it self off the spindle during operation.

## Adjustment of the Cutter Position in Cutting Frame Stage 7 Adjustment of the Index Unit.

The index arm (30) needs to be adjusted to engage the index pin (31) in to the appropriate circle of holes in the indexing plate. The indexing plate has two index circles: 72 and 96 divisions.



To adjust index arm, loosen the hex bolt (39), with the spanner provided. Swing the Index arm and engage the index pin (31) with the appropriate circle/hole position. Grip the pin unit firmly as illustrated in the photograph above while tightening the hex nut with the spanner.

## **TO USE ORNAMENTAL TURNER**

The piece to be patterned is first turned on the lathe headstock with work fixed to either a scroll chuck or a faceplate.  
After turning is completed, sand to a fine finish.

Note that sanding leaves small abrasive particles on the surface of the timber, which can take the edge off cutters. Cleaning the surface after sanding will minimise this.

The quality of material you are turning is important also. Ideally dense closed grain and clean cutting material are better.

Remove chuck or faceplate from headstock with work still fixed.

### **End Cutting (Face Cutting)**

Note: Please ensure you cut on the side of the piece closest to you. Although these are only light cuts, the tendency of cutting on the near side is to tighten (as opposed to loosening) both the cutting frame and the chuck to the pedestal shaft.

Place circular cutting frame securely on to head stock spindle with the end cutter supplied with unit fixed in collet and set speed to 850 - 1250 rpm (which ever is most stable).

Refer back to alignment method to set up OT.

Place index plate on to ornamental spindle then fix chuck, holding turned work, on to ornamental spindle.  
Slide ornamental turner to close proximity of cutting frame and firmly tighten hold-down bolts.

Adjust one slide stop to allow for sufficient travel to present work to cutting frame and be able to make around a 1mm deep cut.

Adjust second top slide stop to allow work to be withdrawn to clear cutting frame by approximately 3mm - 5mm.

Before first cut is made adjust detent pin to engage in the 72 hole index ring.  
Turn lathe on.

Make first cut by revolving top slide handwheel and moving work steadily towards cutting frame. As soon as the top slide reaches the forward stop (closest to cutting frame) reverse top slide until it reaches the rear stop position.

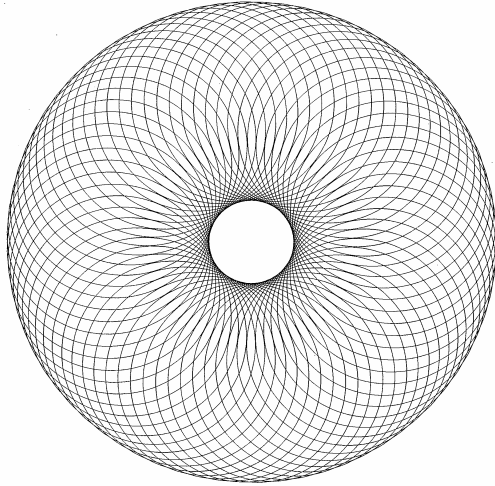
**If work is held against revolving cutting frame,  
prolonged cutting will cause the timber to burn.**

Alternatively a lot of Ornamental Turners use Dial Gauges and measure the depth of cuts to the 1000th of an inch. Bring the cutter up to a thickness gauge of known thickness (feeler

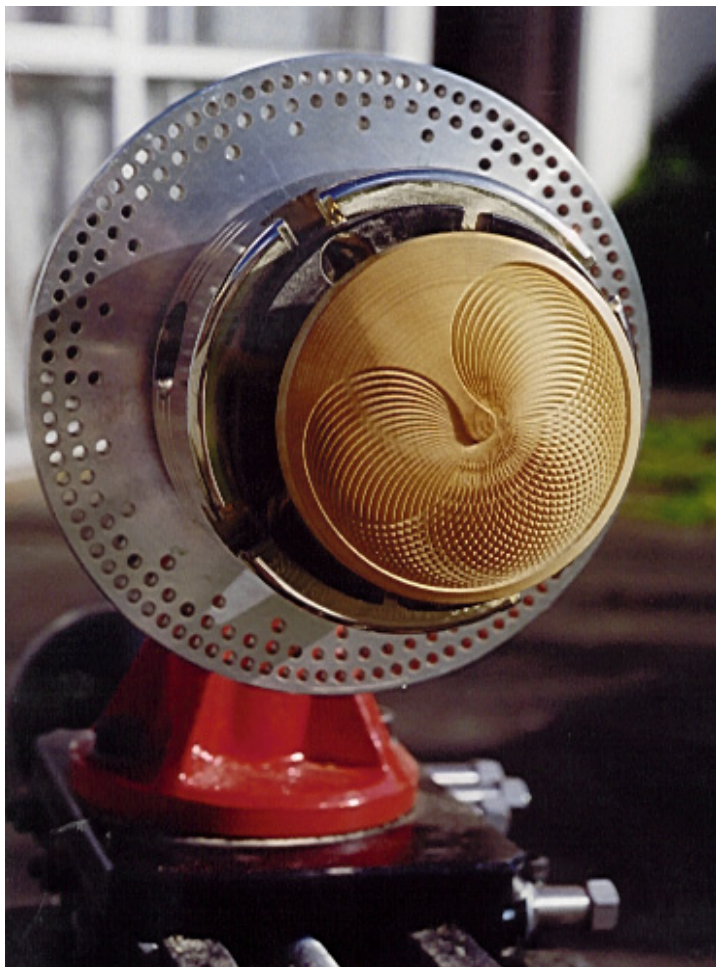


gauges would work well) till it is bound, then use that thickness plus a gauge for the deepness of cut to set the stop position.

To achieve the pattern in Illustration below, known as the 'Barleycorn Pattern', withdraw the detent pin, turn the index plate and **engage the next hole** in the 72 hole circle. Repeat the process until all 72 cuts have been made.



**Full Barleycorn Pattern**



**Partially formed Barleycorn Pattern on a Box Lid.**

## **CUTTING ON A RADIUSSED SURFACE**

After cutting the pattern on a flat surface, restart the whole process by removing work from the chuck and turning a second piece on the headstock. Turn the end face to a radius.

Before the pattern can be cut, the top slide is realigned by first loosening the grubscrews (part no. 3a).

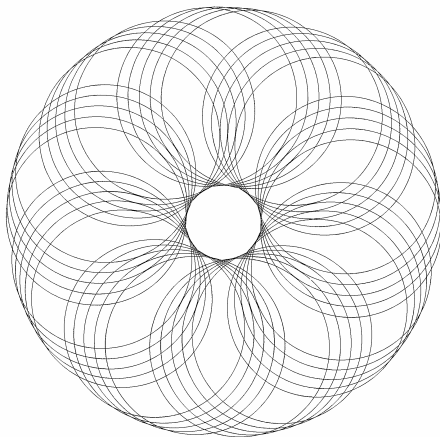
Present the radiused end face to the cutting frame so that when the cutting frame is revolved by hand the cutter nearly touches the radiused timber surface in a full 360° turn.

It is important when setting up for cutting on a radiused surface that the top slide is adjusted to align exactly with the planned cut.

Do not alter the original alignment relationship of the ornamental turning spindle to the top slide.

## **Barleycorn Pattern Variation**

Having achieved the Barleycorn Pattern, try the 'Spaced' Barleycorn Pattern illustrated below.



### **'Spaced' Barleycorn Pattern**

This can be easily achieved by dividing the 72 holes by 9, which equals 8. This will result in 9 repeat patterns.

The Spaced Barleycorn pattern above involves 5 cuts then leaving 3 spaces blank ( $5+3=8$ ). So 9 elements, each consisting of 8 will complete the 72 holes. It is wise to make the entire circle with a marker that can be erased to make sure you have correctly divided.

A common mistake is to complete 5 cuts, then count 3 holes and make the first of the next 5 cuts on the third blank hole - which actually leaves only 2 blanks.

Another attractive pattern can be achieved by using the 96 row. Divide 96 by 6 = 16

The 6 elements consist of 16 holes. The 16 holes then can be arranged thus:

5 cuts, 3 spaces, 1 cut, 3 spaces, 1 cut, 3 spaces. ( $5+3+1+3+1+3=16$ )

Then the pattern repeats.



**Finished Spaced Barleycorn pattern on box lid.**

## **FURTHER USE OF THE INDEX PLATE**

Index plates offer the potential to divide a circle exactly into regular divisions 72 and 96 rings have been chosen to give a wide choice of equal divisions.

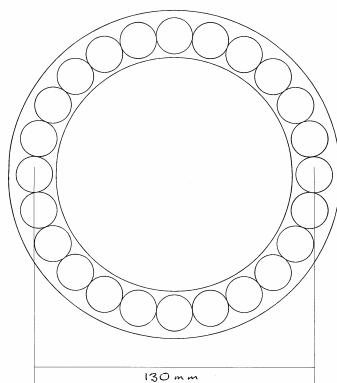
Consider the range of numbers that will divide equally into 72:

2, 3, 4, 6, 8, 9, 12, 18, 24, and 36.

To place 18 circles, the detent pin is fixed at every 4<sup>th</sup> hole ( $18 \times 4 = 72$ ).

If a ring of circles is to be made on the rim of a saucer it must be that each circle will "kiss" the next:

- Measure the visualised centres from centre to centre (Figure 2)
- Multiply by pi (3.1416) to give the circumference.



**Figure 2**

**Using Figure 2 as an example:**

- Centre to centre of circles = 130 mm



- Multiply diameter (130mm) by pi (3.1416) = 408 mm
- Divide circumference by 24 = 17 mm

By setting the cutting frame to describe a 17mm diameter circle, the edges of each circle should just "kiss".

If a circle array is cut using all 72 holes on index plate, an overlap pattern will result as shown in Figure 3.

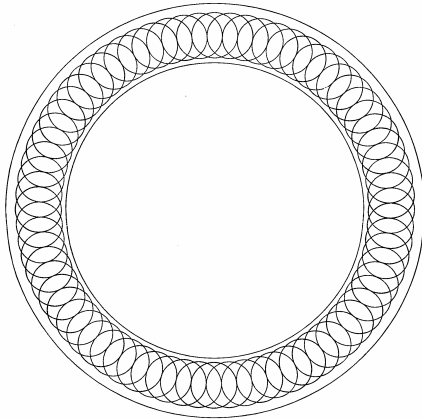


Figure 3

To cut circles around the outer surface of a cylinder, similar principles apply:

- Measure circumference of cylinder
- Calculate the diameters of applied circles by dividing the circumference by two or three of the regular numbers quoted earlier eg. 12, 18, 24, then decide which sized circle is visually appropriate.

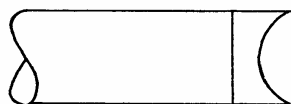
Experience will be gained through experimentation.

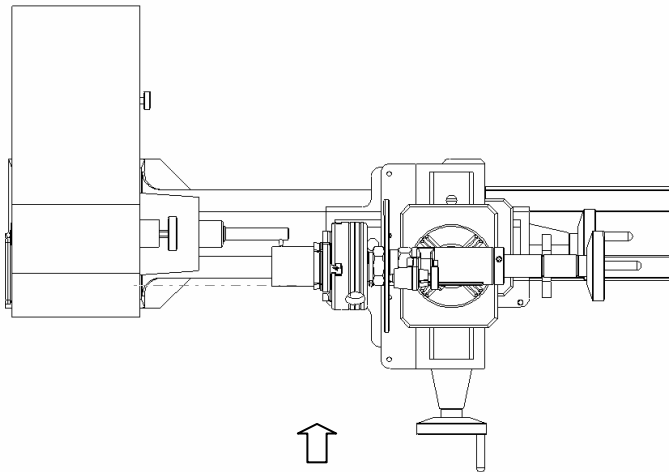
## SIDE CUTTING

The following instructions suit a cylinder of approximately 60mm diameter.

Place side cutting frame securely on to headstock spindle (use MT Clamping Bolt through lathe spindle if the Side cutter is MT type) with cutter fixed firmly using a 'hollow' shaped cutter as illustrated below. Make sure the cutter is facing the direction of "cut".

Slide Ornamental Turner with axis of spindle in alignment with the lathe bed.





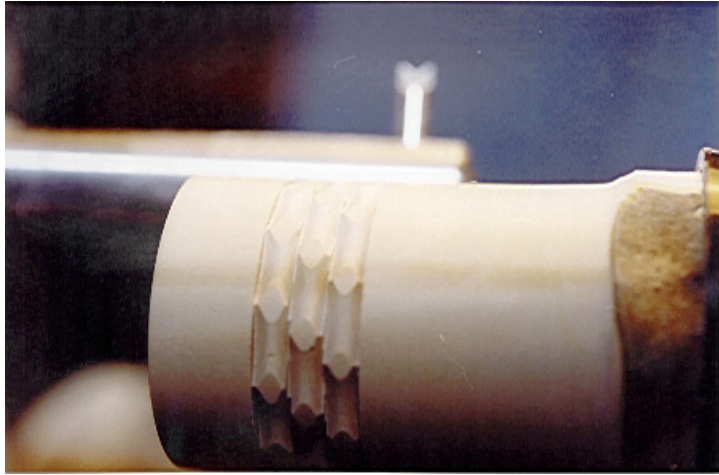
#### **Direction of Cut**

**Side Cutting: Axis of Ornamental Spindle in parallel alignment with Lathe Bed.**

Fix hold down bolts firmly (do not over tighten)  
 Set T-slot Stop on Bedslide Carriage (2) to limit movement in direction of cut.  
 Set back T-slot Stop on Bedslide Carriage (2) to clear cutter by 3mm - 5mm when withdrawn  
 The Bed Stop Sleeve needs to be placed in the most convenient hole position in relation to the T-slot Stops above.  
 Engage detent in index plate on 72 ring  
 Turn lathe on  
 Drive Bedslide steadily toward work  
 Make a cut approximately 12mm long  
 Back cross - slide until back stop is reached  
 Remove detent and re-engage 4 holes around 72 ring  
 Make second cut until front stop is reached on cross - slide before continuing with further cuts  
 check that first two cuts over lap



If they do not then stop needs to be reset to allow for an over lap  
 When this is achieved, continue cuts every forth hole on the index plate  
 This will give 18 cuts ( $18 \times 4 = 72$ )  
 The position used on the index plate for each cut becomes zero, so the four holes are counted 0, 1, 2, 3, 4  
 When a complete circle is cut, wind top slide along until edge of cutter just touches previous finished edge  
 If a stepped pattern is desired, re-engage the detent one hole on from previous cut.



**Example of pattern being cut with Side Cutter**



### **Other Variations with side cutter**

## **THREAD CUTTING OPERATIONS**

Select timber carefully because dense grained, slightly oily, timbers will give better results. Refer to recommended timber list.

Two major factors influence the selection of timber.

1. Ideal timber gives a crisp, clean cut minimising edge fractures.

2. Many tree species tend to shrink in one direction with the result that a lid will fit, but when turned 90 will not fit. This fit means that a prudent choice of timber will reward the effort made. Most timbers experience some shrinkage, so larger diameter pieces will cause problems that smaller diameters may not. Around 100mm or less would be recommended.

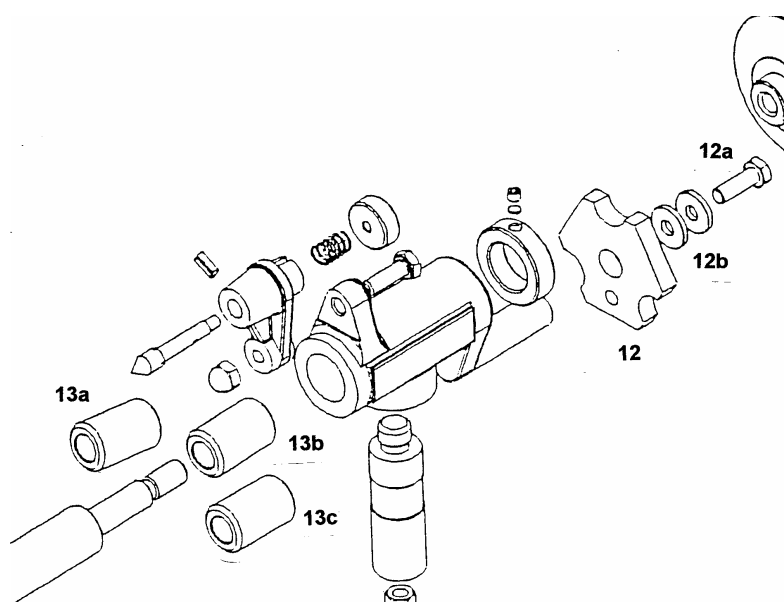
## **PARTS REQUIRED**

To use the Thread cutting facility the Thread Cutting Accessory Kit is required (SEE DIAGRAM BELOW):

Note: 2mm Threaded Bush (13a) is supplied with the Ornamental unit

50028 (12) Thread Chaser	51000 (13b) Thread Bush 1.5mm	51001 (13c) Threaded Bush 3mm
SZ0825 (12a) Hex Bolt M8x25	FWHB8 (12b) 2x Washer Heavy M8	

## **THREAD CUTTING PARTS DIAGRAM**



Also required is the side cutter unit (the same one used for side cutting) or a deluxe thread



Use this shape cutter (end cutter shape - same as the one supplied standard with unit

## **THREAD CUTTING METHOD**

Completely turn piece to have male thread, making sure that the area to be threaded is parallel to the axis.

Do not remove work from chuck before male thread is cut.

Set workpiece on Ornamental Turner. Loosen, and then slide collar along spindle to allow spindle to move freely through housing.

Place threaded bush on to spindle and fix in place by tightening hand wheel. (2mm bush is supplied with unit. 1.5 & 3mm pitch bushes are available in the accessory thread kit).

Raise the thread chaser to engage with threaded bush. (Make sure detent is disengaged from index plate).

Make sure the axis of the Ornamental Turner is in alignment with the lathe bed, otherwise threading will taper.

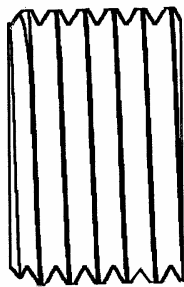
Fix side cutter firmly on to headstock spindle with MT Drawbolt clamping system if it is a MT side Cutter unit. Make sure the cutter is securely installed facing the correct way to cut.

1800 rpm is a good cutting speed for threading.

Slide Ornamental Turner until work is nearly ready to engage with cutter.

Position loose collar along spindle so that it will act as a stop.

Set cross-slide towards workpiece so that a cut can be made leaving a small flat on top of thread.



This can be achieved in either one or two passes.

Completely turn piece to receive female thread leaving inside diameter around 1mm smaller than exterior of male thread.

Set chuck holding second piece on to Ornamental Turner.

Cut thread with either one or two cuts.

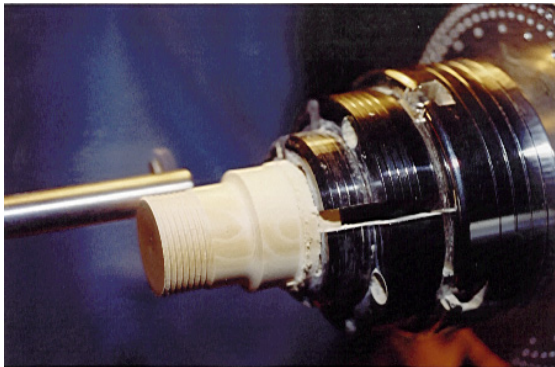
By releasing holding grub screw (9c) on Pedestal Base the Ornamental Turner spindle can be pivoted away to test fit the two pieces. If slightly more needs to be removed, pivot spindle back to reference with cutter against thread.

It is important that once threading has commenced that neither cross slide or top slide hand-wheels are accidentally altered.

Make thread deeper if necessary in very small increments and retry for fit. The difference between a fit or not can be very small. A loose fitting thread is not very satisfying.

Practise on an experimental piece first to become familiar with the process of threading.

#### **Thread Cutting using the Side Cutter unit**



### **TOOLPOST HOLDER**

#### **PARTS REQUIRED**

- Nova Ornamental Toolpost Accessory.

The Toolpost takes 10mm x 10mm or 3/8"x3/8" square Toolsteel (HSS).

Please check with your reseller or our website: <http://www.teknatool.com/> for the latest accessories available.

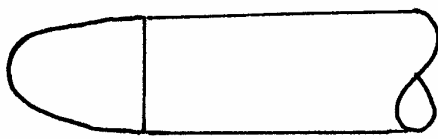
This facility can be used to face off the ends and to ensure that the outside of the cylinder is parallel.

The lower end of the tool post has a height adjustment facility to allow - the tool to cut at exactly centre height. Be sure to retighten grub screw (9c) on toolpost holder.

The square tool (not supplied) is fixed firmly in the square slot with the locking grub screws. When cutting with the tool - post, drive cross slide or top slide in a steady, constant cut to obtain the best results.

Taper cutting can be achieved by pivoting the top-slide then driving with the top-slide hand-wheel.

Good results can be gained by using a cutter shaped like the one below.



## CHOICE OF TIMBER

Good results in O/T and threading are dependent on using appropriate timbers. Slow growing, oily or waxy timbers will cut cleaning and give a crisp finish.

A number of orchard trees are very good: - Olive; Citrus; Pear; Apple; Plum.

Added to these are: - Huon Pine; Ash; and Beech. Excellent results can be gained from using Camellia; Box; African Blackwood (Dalbergia Melanoxylon), Pink Ivory (Berchemi Zeheri); and Boxwood (Buxus Semper Virens).

## HANDY HINTS

You may notice end play on both slides. If the carriage is tensioned against one of the stops, then the end play is taken out.

When ornamenting larger diameters (to rim or outside of a large bowl for instance), the scope is expanded greatly by pivoting the headstock of the lathe.

Because large pieces are prone to movement and distortion once they have been hollowed out, it is wise to do the ornamenting after the outside of a piece has been finished, but before the inside hollowing has taken place.

It is important to complete all ornamenting before taking a break. Concentration can be affected, resulting in minor errors. Also progressive timber movement can make a noticeable difference in interrupted work.

Use an old toothbrush for removing small fibres that sometimes are evident in O/T patterns. When setting cutters and making adjustments prior to beginning O/T or threading place a piece of white paper underneath to make small discrepancies more obvious in the distance between cutter and timber as the cutting frame is revolving by hand.

Always ensure cutting tools are fixed to face the direction of cut.

Always check that all components have been made secure before commencing a cut.

## NOVA ORNAMENTAL TURNER ACCESSORIES

**Note all accessories are available for all Countries at time of printing, check availability via Teknatool.com**

### **Threading Kit (Code: 51011)**

Thread Chaser, 1.5mm pitch Thread Bush (51000), 3mm Pitch Thread Bush (51001), Fastenings.

(2mm Pitch Thread Bush (51018) is standard with Ornamental unit.

#### **There are three options for thread cutting:**

Deluxe thread cutter or using either of the two side-cutting units with a HSS toolbit.

### **Deluxe Thread Cutter (Code 51012)**

Four-Blade cutter to give you absolute thread cutting precision and convenience.

### **Side Cutter Unit (Threads to lathe spindle)**

Thread Versions:

Code: 51013 Y Spindle 1 1/4" 8 TPI RH

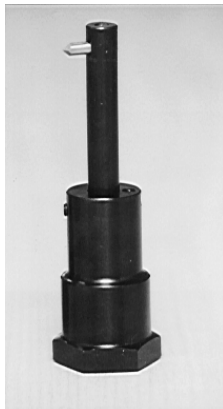
Can be used as a side cutter for the ornamental function or used with the threading unit.

Can also take the Deluxe Thread Cutter (51012)

(HSS Toolbit not included)

### **Extension Holder (for threaded side cutter unit) (Code: 51014)**

This is to give a longer reach for the side cutter unit (lathe spindle thread version)



**Illustration of Threaded Side Cutter (51013/16/17) with Extension (51014)**

### **2MT Side Cutter Unit (Code: 51015)**

This unit goes into the 2MT of the lathe headstock. Includes drawbolt (51019) for specified Nova Lathes. Can be used as a side cutter for the ornamental function or used with the threading unit. (HSS Toolbit not included). Fits Nova lathe.

(HSS Toolbit not included)



**Illustration of 2MT Side Cutter (Code:51015)**

## HSS Cutter Bits

High Speed Steel Cutters can be used in the Cutting Frame and with the side cutter units

60° End Cutter (Std with Ornamental unit) (Code: 51002)

End Cutter (Code:51003)

Hollow 'U' Side Cutter (Code:51004)

Square Side Cutter (Code:51005)

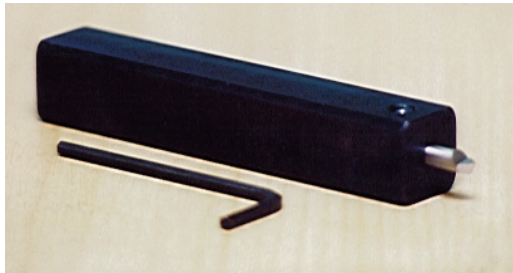
Left Hand Radius Cutter (Code:51006)

Right Hand Radius Cutter (Code:51007)

**See Illustrations next page.**

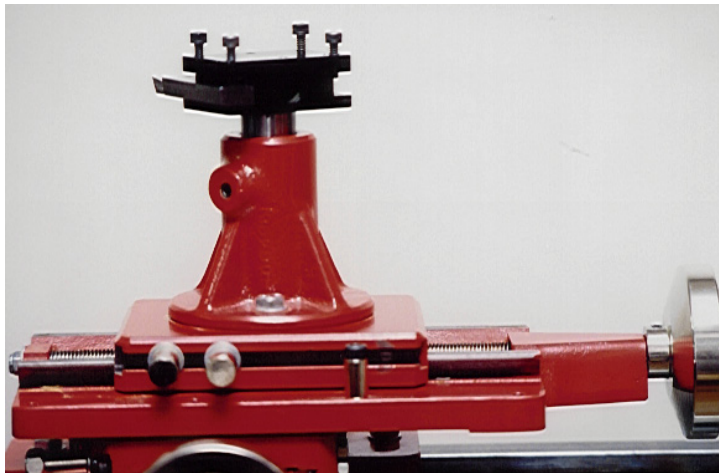
## Cutter Sharpening Unit (Code:51008)

Holder to sharpen HSS Toolbits.



## Deluxe Two Position Toolpost (Code:51009)

Toolpost slots in place of the ornamental spindle unit. Has two slot positions, one on either side (similar to a metal lathe toolpost). Takes square shank tool bits. (Square shank tool bit pictured not supplied).





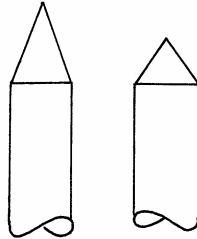
## CUTTERS

When grinding cutters, fix into the cutter holder. This is safer and gives more control than holding the cutter by hand.

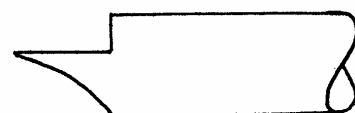
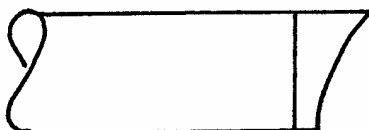
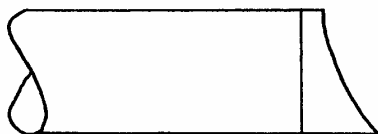
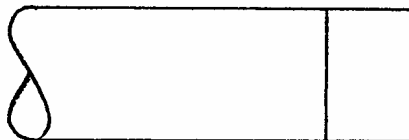
Make sure that cutters are ground to give a clearance angle to prevent bevels rubbing on the cut being made.

Newly sharpened cutters will always do a superior job.

**Cutters for end cutters can be:**



**Cutters for side cutting:**



**Grinding angle when viewed from side**

## **BIBLIOGRAPHY**

The following books, printed from 1884 to 1990, provide much information on history, projects and patterns of O/T.

The Principles and Practise of Ornamental or Complex Turning.

J J Holtzapffel

ISBN 0-486-22965-3

Simple Decorative Lathe Work

James Lukin

ISBN 1-85761-092X

Ornamental Turning

J - H Evans

ISBN 1-879335-35-2

Woodwork, My First Seventy Years

Bob Lynn

ISBN 0-473-01525-0 (NZ)

Ornamental Turnery

Frank M Knox

ISBN 0-671-61369-3

Ornamental Turning

T D Valshaw

ISBN 0-85242-826X