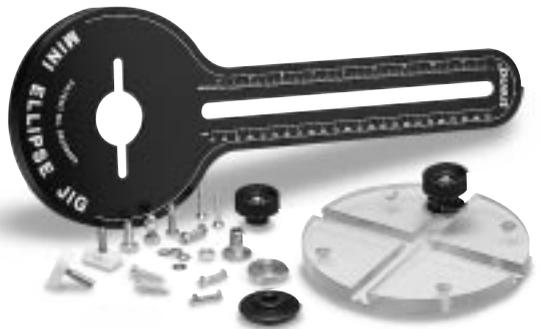




# MINI ELLIPSE JIG



***trend***<sup>®</sup>  
routing technology

## INTRODUCTION

The Mini Ellipse Jig is ideal for routing elliptical picture frames, mirrors, clocks and small coffee tables.

The twin slider system produces perfect ellipses.

- Axis points are fully adjustable
- Single fixed slider can be locked to provide circles up to 600mm diameter
- Metric and imperial measurement scales for accurate adjustment
- Can be used as a drawing instrument by fitting pen plug and plotter pen
- Can be fitted to most makes of light duty router, for which bolts are supplied

The following table shows limitations of sizes for ellipses it is possible to make.

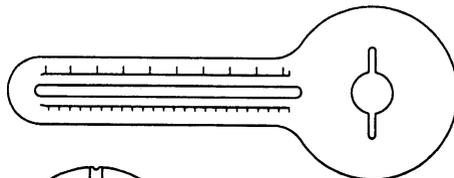
Major Axis	Minor Axis	
	Max.	Min.
580mm	520mm	430mm
500mm	450mm	360mm
400mm	340mm	250mm
300mm	250mm	160mm
220mm	160mm	160mm



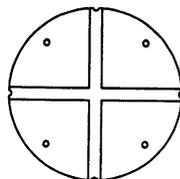
### IMPORTANT!

The Ellipse Jig should be used and stored at normal room temperature, and out of direct sunlight to maintain a smooth operation of the sliders.

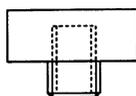
## ITEMS ENCLOSED



1 x Main Plate



1 x Cross Frame



2 x Securing Knobs



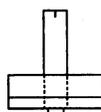
2 x Index Washers



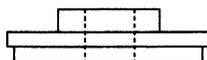
2 x Index Sleeves



2 x Ellipse Sliders



1 x Circle Slider



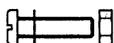
1 x Pencil Plug & Grommet



4 x Mounting Screws

1 x Mounting Kit for router

1 x Manual



1 x Guarantee card



## SAFETY PRECAUTIONS

- Always switch off the power and unplug the router when changing cutters or when making adjustments.
- Always wear protective goggles when routing.
- Wear sound protective ear muffs when routing for long periods of time.
- Always wear a dust mask. Use dust extraction equipment whenever possible.
- Do not wear loose clothing. Make sure baggy sleeves are rolled up and ties are removed.
- Always remove spanners and hex keys from the workpiece before switching router on.
- Keep hands well clear of the router cutter when routing.
- Avoid accidental starting of the router. Make sure the power switch is in the 'Off' position before plugging in and connecting to the electrical supply.
- Never leave the router unattended when running. Always wait until the router comes to a complete stop before making any adjustments.
- Do not switch the router on with the cutter touching the workpiece.
- Mount the material securely to a work bench.
- Periodically check all nuts and bolts to make sure they are tight and secure.

## Cutter Care

- Do not drop cutters or knock them against hard objects.
- Cutters should be kept clean. Resin build-up should be removed at regular intervals with Resin Cleaner<sup>®</sup>. The use of a dry lubricant will act as a preventative such as Trendicote<sup>®</sup> PTFE spray.
- Cutter shanks should be inserted into the collet at least 3/4 of shank length to prevent distortion. A distorted collet should be discarded, as it can cause vibration and

damage the shank.

- Do not over-tighten collet as this will score the shank and create a weakness there.
- It is also advisable to periodically check the router collet nut for wear.

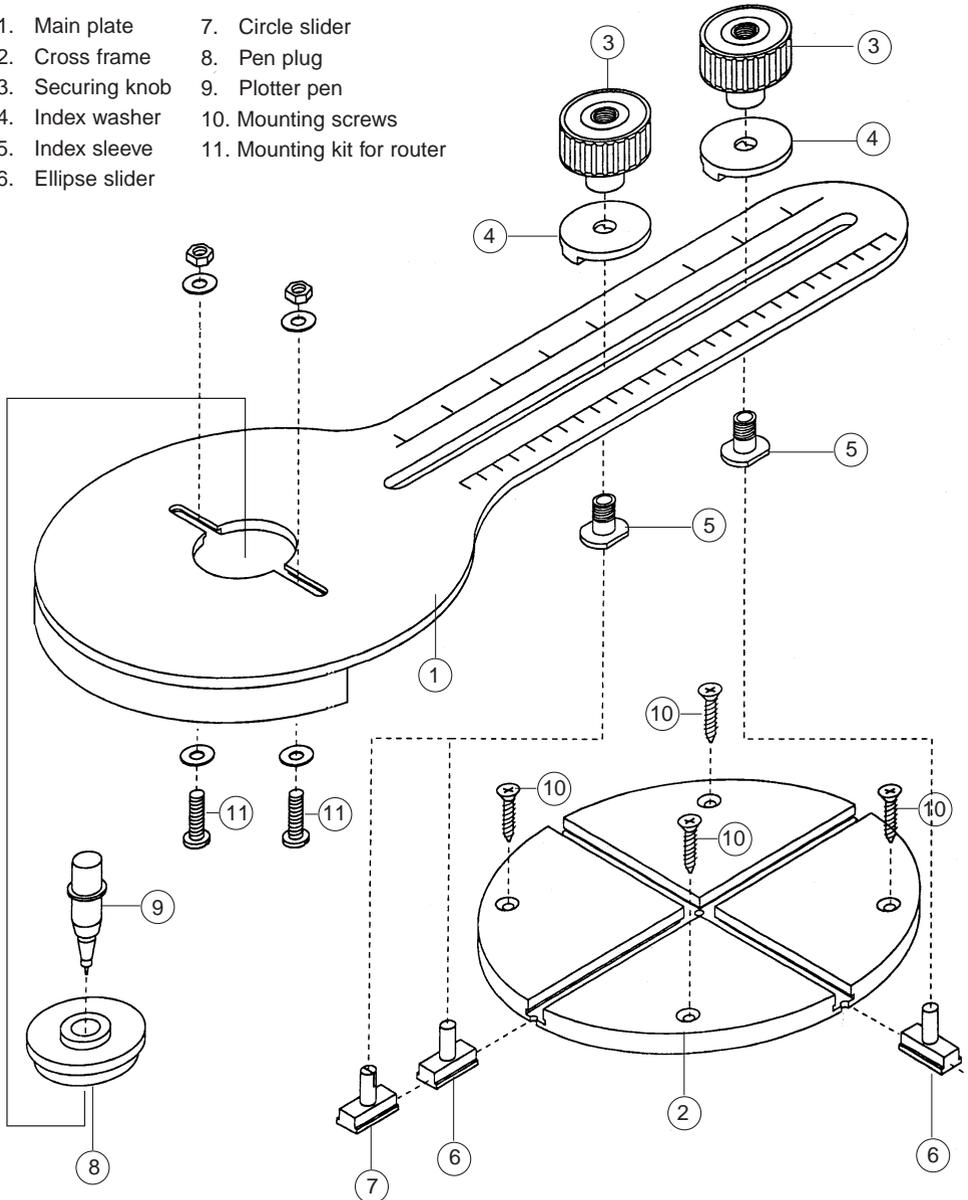
## Useful Advice

- Judge your feed rate by the sound of the motor. In time, the operator will acquire a 'feel' for the router, and a feed speed relative to the work will come naturally. Too slow a feed will result in burning.
- Apply the normal precautions as with any electric power tool.
- The main abuse of routing machines is the inclination for operators to overload them. The motto is 'Keep the revs up'. The drop in revolutions should not exceed, if possible, more than 20% of full running speed.
- The motor of a router is susceptible to the accumulation of sawdust and wood chips, and should be blown out, or 'vacuumed', frequently to prevent interference with normal motor ventilation.
- Refer to the Instruction Manual supplied with your router for full details of its features and safety information.
- Trial cuts should be made on waste material before starting any project.
- Do not store the router on the floor, as chippings, pins or dirt can drop into the air intake of the router.

## ASSEMBLY

Use the diagram below as a guide to assembling the jig.

- |                   |                             |
|-------------------|-----------------------------|
| 1. Main plate     | 7. Circle slider            |
| 2. Cross frame    | 8. Pen plug                 |
| 3. Securing knob  | 9. Plotter pen              |
| 4. Index washer   | 10. Mounting screws         |
| 5. Index sleeve   | 11. Mounting kit for router |
| 6. Ellipse slider |                             |



## Mounting Router

Bolts are provided for mounting the router to the router plate. See chart on page 6 for correct selection. Ensure router spindle is central with central hole in main plate. Slots are provided in main plate to allow for the various positions of the fixing points on the router base.

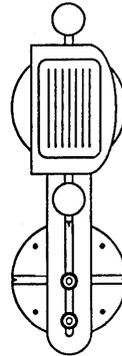
Certain router models will require additional nuts and washers. The position of the router will vary according to its design. The removal of one of the handles may be necessary with certain models that require an 'in line' position.



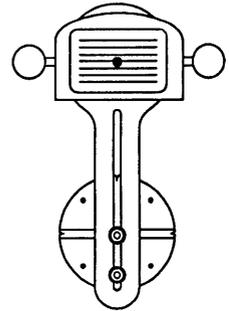
### IMPORTANT!

Please do not over-tighten fixing bolts when fitting the router to the router plate.

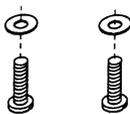
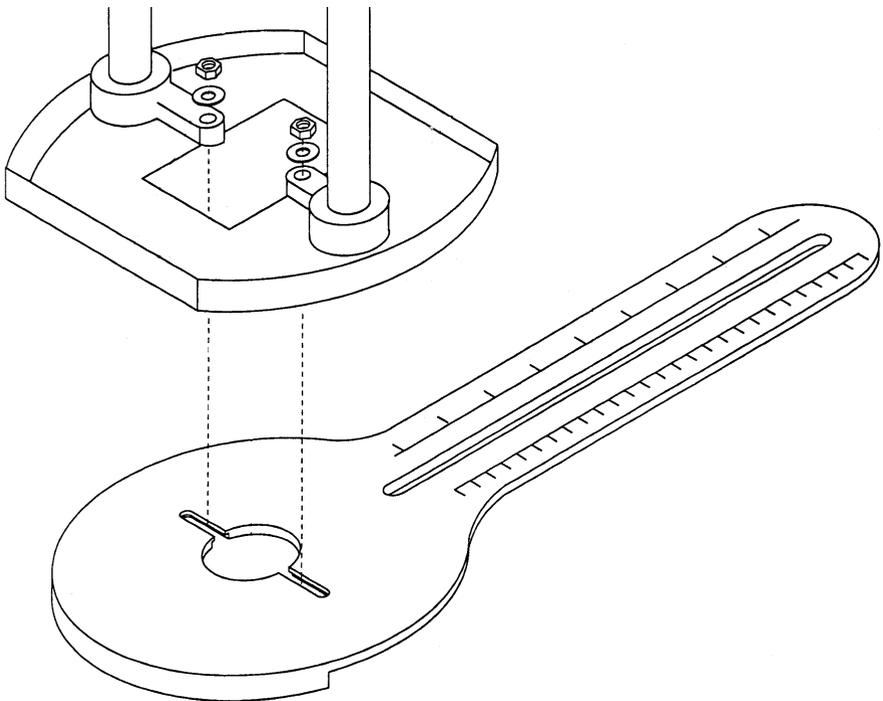
## Mounting Position of Routers



'In Line'



At 90°



## Screw sizes required for Mini Ellipse Jig

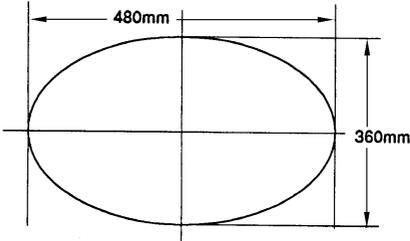
Make and model of suitable routers		Size and quantity of mounting machine screws	Distance between fixing centres	Handle position of router
<b>Trend</b>	T5	M5 x 20 (x2)	50mm	At 90°
<b>AEG</b>	OFE710, OF500S, OF450S	M5 x 20 (x2)	50mm	At 90°
<b>Atlas Copco</b>	OF550, OFSE850, OFSE1000, OFS720	M5 x 20 (x2)	50mm	At 90°
<b>Black &amp; Decker</b>	BD66	M4 x 20 (x2) + Nut (x2) + Washers (4)	48mm	At 90°
	BD780(E), KW779, KW780(E)	M5 x 20 (x2) + Nut (x2)	50mm	At 90°
	KW900(E) SR100	M5 x 20 (x2)	50mm	At 90°
<b>Bosch</b>	POF400A	M6 x 16 (x2)	75mm	In Line
	POF52	M6 x 16 (x2)	75mm	In Line
	POF500A, 600ACE	M6 x 16 (x2)	75mm	In Line
	GOF900A, 900ACE, POF800ACE	M4 x 20 (x2) + Nut (x2) + Washers (x2)	83mm	At 40°
<b>DeWalt</b>	DW613	M5 x 20 (x2) + Nut (x2)	50mm	At 90°
	DW620, 621	M4 x 20 (x2)	74mm	At 60°
<b>Einhell</b>	EOF850SP	M5 x 20 (x2)	50mm	At 90°
<b>Elu</b>	MOF96(E)	M5 x 20 (x2)	50mm	At 90°
	MOF69	M5 x 20 (x2)	50mm	At 90°
	OF97(E)	M4 x 20 (x2)	74mm	At 60°
<b>Festo</b>	OF900(E), 650 1000(E)	M4 x 20 (x2)	65mm	At 20°
<b>Freud</b>	FT1000(E)	M5 x 20 (x2)	74mm	At 60°
<b>Hitachi</b>	FM8	M5 x 20 (x2)	60mm	At 90°
	M8(V)	M5 x 20 (x2)	60mm	At 90°
<b>Holzher</b>	2335, 2336, 2356	M5 x 20 (x2)	50mm	At 90°
<b>Kango</b>	R855OS	M5 x 20 (x2)	50mm	At 90°
<b>Kinzo</b>	25C44	M6 x 16 (2)	72mm	At 90°
<b>Kress</b>	FM6955	M5 x 20 (x2)	50mm	At 90°
<b>Makita</b>	3620	M5 x 20 (x2)	74mm	At 90°
<b>Mafell</b>	LO50E	M5 x 20 (x2)	76mm	At 22.5°
<b>Metabo</b>	OF528, OF1028	M5 x 20 (x2)	65mm	At 90°
	OFE1229	M5 x 20 (x2) + Nut (2)		
<b>Nutool</b>	NPT850	M5 x 20 (x2)	50mm	At 90°
<b>Perles Eurotool</b>	OF808(E)	M5 x 20 (x2)	50mm	At 90°
<b>Peugeot</b>	DEF570E, DF55E	M6 x 16 (x2)	54mm	In Line
		M6 x 16 (x2) + Nut (x2)		
<b>Power Devil</b>	PDW5027	M5 x 20 (x2)	50mm	At 90°
<b>Ryobi</b>	R150, R151, RE155K, RE120	M5 x 20 (x2)	60mm	At 90°
		M6 x 16 (x2) + M6 Nut (x2)	54mm	In Line
<b>Skil*</b>	1835U	No.8 UNF x 3/4" (x3) (not supplied)	Re-drill	N/A
<b>Sparky</b>	X52E	M5 x 20 (x2)	60mm	At 90°
<b>Stayer</b>	PR50	M5 x 20 (x2)	50mm	At 90°
<b>Virutex</b>	FR77C, 78C	M5 x 20 (x2)	50mm	At 90°

\*The main plate will require drilling by the user when fitting the Skil router.

## OPERATION

### Basic Setting Up Procedure

for an Ellipse 480mm x 360mm



#### Marking out

- Determine size of workpiece required.
- Ensure chosen workpiece is sufficiently larger to accommodate the ellipse and support the jig.
- Mark the centre lines for the major and minor axis.
- Mark overall dimensions of ellipse onto centre lines.

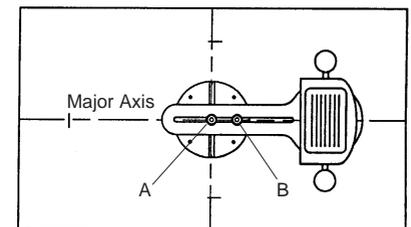
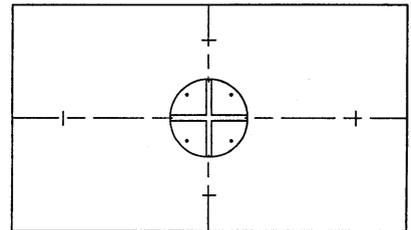
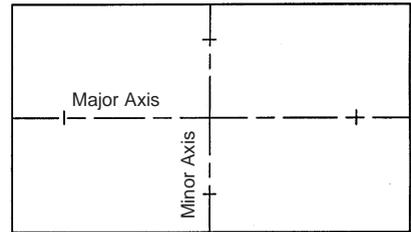
#### Fixing Cross Frame

- Position cross frame using the four sighting marks on the perimeter of the cross frame.
- Drill four 3.2mm (1/8") diameter holes through the holes of the cross frame into the workpiece.
- Using the four mounting screws, fix the cross frame to the workpiece.

#### Setting Major Axis

- Slide the two sliders into each slot at 90° to each other.
- Locate each of the pivot points over the vertical pin of the slider.
- Loosen both knobs, A and B.
- Position the router over major axis mark, slide main frame until cutter is positioned over mark and check that index washer on pivot point 'A' reads 240mm, then lock knob 'A'.

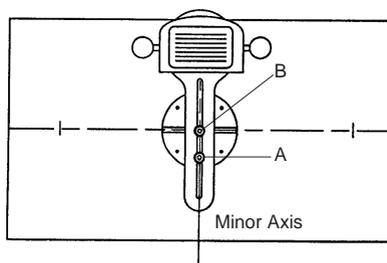
Illustrations are symbolic and not to scale



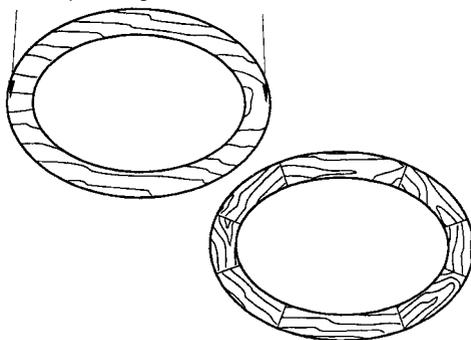
### Setting Minor Axis

- Position router cutter over minor axis mark, slide main frame until cutter is positioned over mark and check that index washer on pivot point 'B' reads 180mm, then lock knob 'B'.

Setting up of the Mini Ellipse Jig is now complete. Alternatively the positions of the pivot points can be set before locating the pivot points onto the slider pins using the measurement scale. The calculation requires simply halving the major and minor axis and allowing for the cutter diameter.



Weakest points & possible poor/rough finish



### Fixing Methods

The workpiece should be fixed onto a false or waste piece to stop you damaging your work bench.

There are many methods depending on the application as follows:

1. 'G' clamps should be positioned outside the swing area of the jig.
2. Camclamps are ideal as they will not obstruct the jig. An adjustable camclamp jig can be made for various sizes of ellipses.
3. Double-sided tape Ref. X/05/019 can be used and rolled off easily after operation.
4. Spot gluing with a hot melt glue gun will allow the workpiece to be prized off with minimal surface damage.
5. Panel pins are a quick and easy method providing the small holes are acceptable.

### Choice of Material

Whilst it is perfectly possible to produce frames with solid panels of natural wood, there will be a weakness at the short-grained parts of the ellipse. The frame will be delicate and liable to break at these points unless care is taken. A more professional approach is to use a series of mitred jointed sections which overcome the cross-grain problems and give an attractive grained finish. Sections can be dowel or biscuit jointed to give strength to the frame.

### Routing Operation

- Fit cutter, switch router on, plunge in and make repeat sweeps with the router at 3mm steps.



#### IMPORTANT!

Note that when cutting or central panelling, one can reverse direction of feed to stop the electric cable becoming twisted. However, when edge moulding and cutting, feed direction must be opposite to that of the cutter.

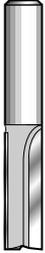


#### IMPORTANT!

Care should be taken on the last cut prior to break through, as the resultant ellipse or circular plaque or ring can possibly move. Double-sided tape can be used to eliminate any danger of this occurring.

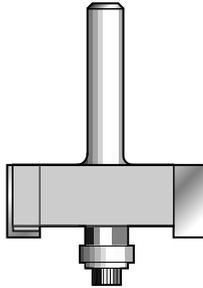
- Trial runs should be made on scrap material when first using this Jig.

## Cutters suitable for Elliptical Routing

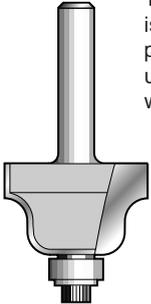


**Straight Flute Cutter**  
Trend Ref. 3/20 or 3/20L.  
To cut an elliptical or circular shape, use a narrow two flute straight cutter which is long enough to break-through the material.

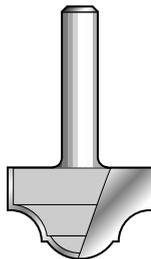
**Rebate Cutter**  
Trend Ref. 46/39.  
Used to create the recess for the backing piece and glass. The cutter is supplied with four bearings to allow alternate widths of rebate.  
Rebate widths = 8mm, 9.5mm, 11mm and 12.7mm.



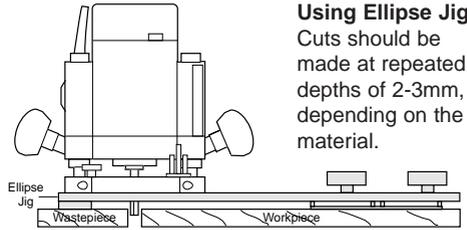
**Ogee Cutter**  
Trend Ref. 46/230.  
This type of bearing guided cutter is ideal for moulding the frame or plaque once it has been cut out using the ellipse jig. Best used with the router in a table.



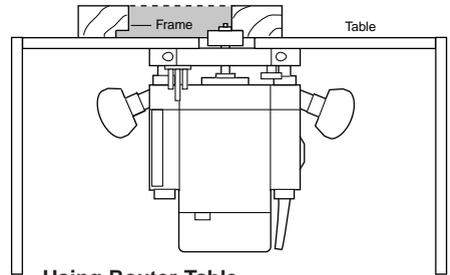
**Panelling Cutter**  
Trend Ref. 18/52.  
Can be used with an elliptical template made on the ellipse jig in conjunction with a guide bush fitted to the router.



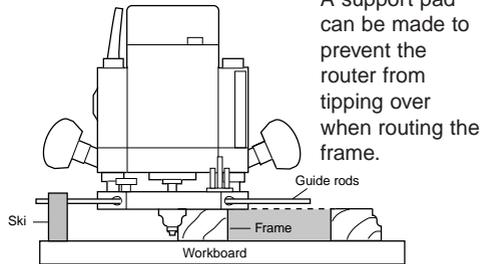
## Suggested methods of working



**Using Ellipse Jig**  
Cuts should be made at repeated depths of 2-3mm, depending on the material.



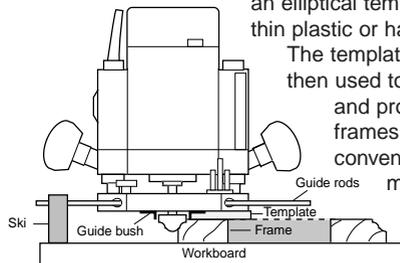
**Using Router Table**  
A lead on piece should be used when performing any bearing guided work.



A support pad can be made to prevent the router from tipping over when routing the frame.

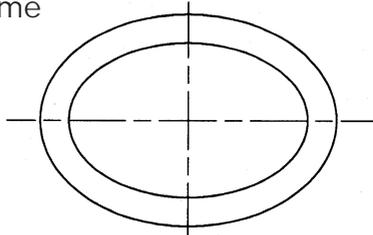
For batch production of elliptical frames, the ellipse jig is used to cut an elliptical template from thin plastic or hardboard.

The template is then used to cut and profile the frames in the conventional manner.



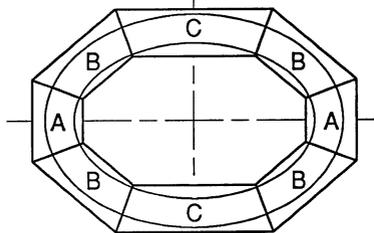
## Producing a Natural Timber Frame

1.



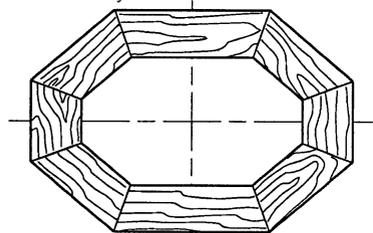
Draw frame onto workboard by fitting plotter pen attachment to the ellipse jig.

2.



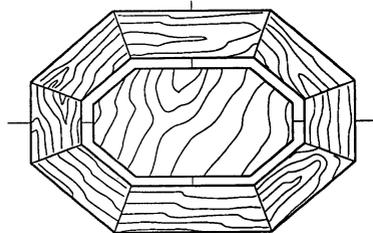
Plan the wood sections to fit the frame allowing enough waste material to support the jig. Calculate the angles and lengths of the sections and cut accurately.

3.



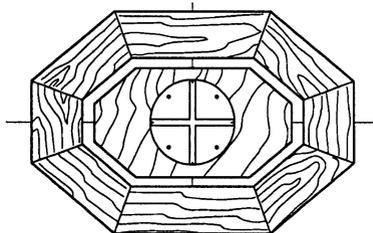
Glue wood sections together to form the frame. Dowel joints can be used for extra strength.

4.



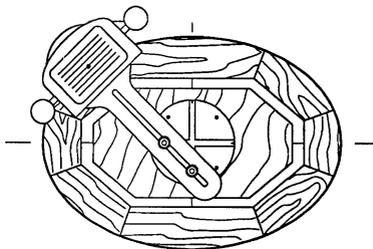
Secure frame to workboard by using double-sided tape or spot hot melt gluing. Fit a scrap piece (the same thickness as the sections) to the centre in the same way.

5.



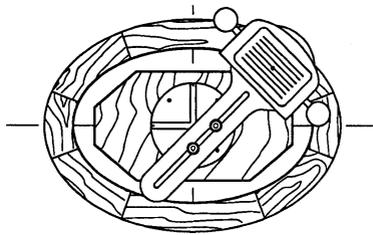
Drill and screw cross frame to the centre of the scrap material.

6.



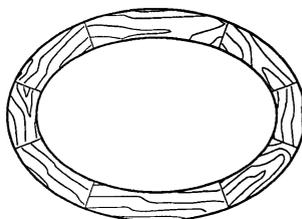
Rout the outside edge of the frame in an anti-clockwise direction at repeated depths of 2-3mm until breakthrough is achieved.

7.



Rout the inside edge of the frame in a clockwise direction at repeated depths of 2-3mm until breakthrough is achieved.

8.



Remove frame from workboard and lightly sand to remove any imperfections that may affect the following stages.

**Routing the rebate on a router table**

Using Trend Ref. 46/39.

The rebate for the glass and backing piece can be produced with a bearing guided rebate cutter inverted in a table as shown.

Alternatively, the frame can be left fitted to the work-board as in step 8 and the ellipse jig adjusted so that the correct sized rebate can be made with the same two flute cutter as used to cut the frame.

**Routing the outside mould on a router table**

Using Trend Ref. 46/230.

The moulding of the frame is best suited to a table mounted router fitted with a bearing guided cutter. The frame is inverted with the face side down onto the table. The cutter should be well guarded and the frame rotated against the rotation direction of the cutter.

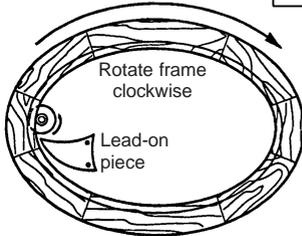
Two passes at increased depths may be necessary to cut the mould safely.

**Routing the inside mould on a router table**

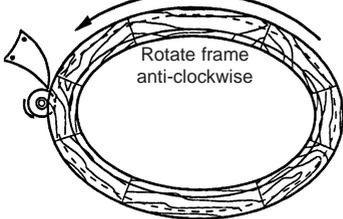
Using Trend Ref. 46/41.

Repeat the above procedure to rout the outside mould.

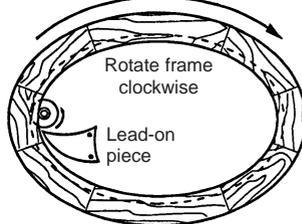
9. plan



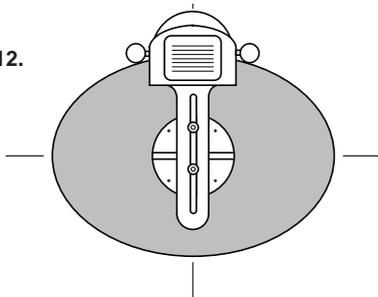
10. plan



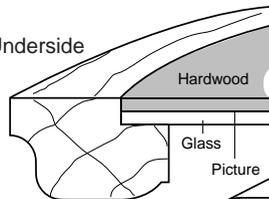
11. plan



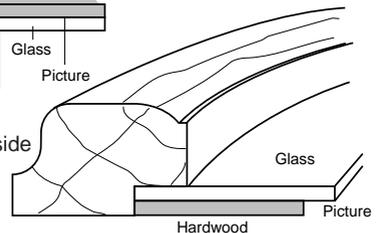
12.



Underside



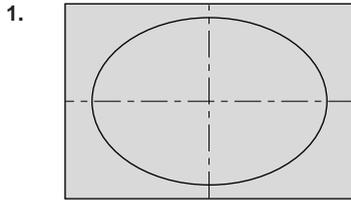
Faceside



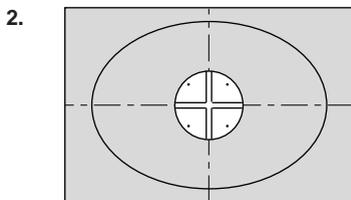
When routing out the backing hardboard piece, secure the cross frame with double-sided tape.

## Producing an Elliptical Plaque in MDF

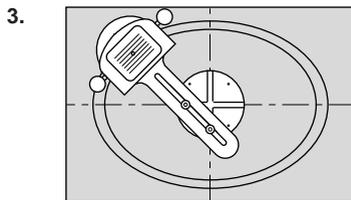
This example does not include the use of bearing guided cutters



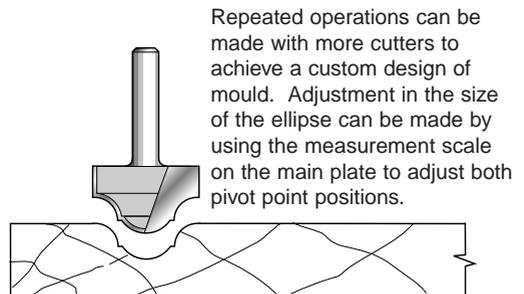
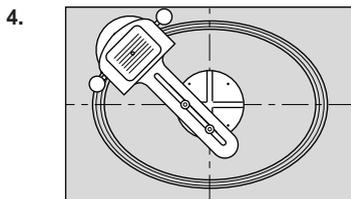
Draw plaque dimensions onto workpiece and clamp to a false baseboard to prevent routing into the workbench. Secure centre area of plaque to baseboard (see clamping section) to prevent plaque from moving when breakthrough is achieved.



Align the cross frame with the line up notches. It is advisable to secure the cross frame to the workpiece using double-sided tape, this is easily removable and will not damage the workpiece.



Produce the mould required with a panel type cutter.



Repeated operations can be made with more cutters to achieve a custom design of mould. Adjustment in the size of the ellipse can be made by using the measurement scale on the main plate to adjust both pivot point positions.

Change the cutter to a straight and take repeated passes until breakthrough is achieved.



### Guarantee

- The jig carries a manufacturers guarantee in accordance with the conditions on the enclosed guarantee registration card.

### Recycling

- Jig, accessories and packaging should be sorted for environmentally friendly recycling.

ME/JIG - SPARE PARTS LIST v3.0 01/2000			
Item	Qty	Description	Ref.
1	1	Main Plate	WP-MEJ/1
2	1	Cross Frame	WP-MEJ/2
3	1	Plate Support c/w Pins	WP-MEJ/3
4	2	Index Washer	WP-MEJ/4
5	2	Index Sleeve	WP-MEJ/5
6	2	Ellipse Slider	WP-MEJ/6
7	1	Circle Slider	WP-MEJ/7
8	1	Pencil Plug and Grommet	WP-MEJ/8
10	4	Screw Wood No 8 x 25mm	WP-SCW/100
11	1	Mounting Kit For Router	WP-MEJ/11
12	2	Knob Female M10	WP-MEJ/12
13	1	Manual	MANU/MEJ

