

PIVOT FRAME JIG



trend®
routing technology

Dear Customer

Thank you for purchasing this Trend product.
We hope you enjoy many years of creative and
productive use of this product.

Please remember to return your guarantee card
within 14 days of purchase.

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TECHNICAL DATA

Min. cutting dia.	10mm
Max. cutting dia.	320mm
Weight	1.4kg

The following symbols are used throughout this manual:



Denotes risk of personal injury, loss of life or damage to the tool in case of non-observance of the instructions in this manual.



Denotes risk of electric shock.



Refer to the instruction manual of your power tool.

This unit must not be put into service until it has been established that the power tool to be connected to this unit is in compliance with 98/37/EC (identified by the CE marking on the power tool).



If you require further technical information or spare parts, please call our technical support department on 01923 224681.

SAFETY



Observe the safety regulations in the instruction manual of the Power Tool to be used or connected to this attachment. Also observe any applicable additional safety rules. Read the following safety instructions before attempting to operate this product.

PLEASE KEEP THESE INSTRUCTIONS IN A SAFE PLACE.

The attention of UK users is drawn to The Provision and Use of Work Equipment Regulations 1998, and any subsequent amendments.

General

- Disconnect power tool, when not in use. Before servicing and when changing accessories such as cutters. Disconnect power tool and attachment from power supply. Ensure the machine is switched off before plugging tool in or connecting to a power supply.
- Always mount the power tool, accessory or attachment in conformity with the present instructions.
- Keep children and visitors away. Do not let children or visitors touch the tool, accessory or attachment. Keep children and visitors away from work area.
- Make the workshop child proof with padlock and master switch.
- Dress properly. Do not wear loose clothing or jewellery, they can be caught in moving parts. Rubber gloves and non-skid footwear is recommended when working outdoors. Wear protective hair covering to contain long hair.
- Consider working environment. Do not use the product in the rain or in a damp environment. Keep work area well lit. Do not use power tools near gasoline or flammable liquids. Keep workshop at a comfortable temperature so your hands are not cold.
- The accessory or attachment must be kept level and stable at all times.

- Keep work area clean. Cluttered workshops and benches can cause injuries
- Use the attachment with the power tools and accessories specified in this manual only. Do not force the tool or attachment to do a job for which it is not designed.
- Secure idle tools. When not in use, tools should be stored in a dry and high or locked up place, out of reach of children.
- For best control and safety use both hands on the power tool and attachment. Keep both hands away from cutting area. Always wait for the spindle and cutter to stop rotating before making any adjustments.
- Always keep guards in place and in good working order.
- Remove any nails, staples and other metal parts from the workpiece.
- Maintain tools and cutters with care. Keep cutters sharp and clean for better and safer performance. Do not use damaged cutters. Follow instructions for lubricating and changing accessories. Keep handles dry, clean and free from oil and grease.
- Maintain accessories. Do not use damaged accessories. Only use accessories recommended by the manufacturer.
- Check damaged parts. Before operation inspect the attachment, the power tool, the cable, extension cable and the plug carefully for signs of damage. Check for alignment of moving parts, binding, breakage, mounting and any other conditions that may effect its operation. Have any damage repaired by an Authorised Service Agent before using the tool or accessory.
- Do not use tool if switch does not turn it on or off. Have defective switches replaced by an Authorised Service Agent.
- Don't over reach. Keep proper footing and balance at all times.
- Don't abuse the cable. Never carry power tool or accessory by cord or pull it to disconnect from the socket. Keep cord from heat, oil and sharp edges. Always trail the power cord away from the work area.
- Connect dust extraction equipment. If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used.
- Check all fixing and fastening nuts, bolts and screws before use to ensure they are tight and secure. Periodically check when machining over long periods.
- Stay alert. Watch what you are doing. Use common sense. Do not operate tools when you are tired, under the influence of drugs or alcohol.
- Personal Protective Equipment (PPE). All PPE must meet current UK and EU legislation.
- Do not leave tools running unattended. Do not leave tool until it comes to a complete stop.
- Always clamp workpiece being machined securely.

Routing Safety

- Disconnect router power tool. When not in use, before servicing and when changing accessories such as cutters, disconnect router and attachment from power supply.
- Ensure router cutter has stopped rotating before changing it. Never use the spindle lock as a brake.
- Remove adjusting keys and spanners. Form the habit of checking to see that keys and adjusting spanners are removed from the router tool, cutter and attachment before turning router on. Make sure cutter can rotate freely.
- Check all ball bearing and blade fixing screws before use to ensure they are tight and secure. Periodically check when machining over long periods.
- When using a template guide bush ensure it cannot come into contact with collet and nut.
- Noise. Take appropriate measures for the protection of hearing if the sound pressure of

85dB(A) is exceeded. Routing sound pressure may exceed 85dB(A), so ear protection must be worn.

- Eye protection. Wear safety goggles, spectacles or visors to protect the eyes from ejected waster particles.
- Respiratory protection. Wear a face or dust mask, or powered respirator. Dust masks/filters should be changed regularly.
- Do not switch router on with the cutter touching the workpiece.
- The direction of routing must always be opposite to the cutter's direction of rotation.
- After work, release the router plunge and allow spindle to stop rotating before putting machine down.
- Check before cutting that there are no obstructions in the path of the router. When cutting through the full thickness of the workpiece, ensure there are no obstacles beneath workpiece, and that a sacrificial work surface is used.

Additional Safety Rules For Router Cutters

- Cutting tools are sharp. Care should be taken when handling them.
- Always use cutters with a shank diameter corresponding to the size of the collet installed in your tool.
- Always run router cutters at the spindle speed recommended and marked accordingly. Ensure cutter has reached correct speed before entering workpiece. Recommended speeds can be found on the packaging, in cutter instructions or in the Trend Routing Catalogue.
- Always use router cutters in a router. Router cutters must not be used in a drill. Drill and boring bits must not be used in a router.
- Never use cutters with a diameter exceeding the maximum diameter indicated in the technical data.
- Do not drop cutters or knock them against hard objects. Do not use cutters that are damaged.

■ Cutters should be kept clean. Resin build up should be removed at regular intervals with Resin Cleaner[®]. The use of a dry lubricant (Trendicote[®] PTFE) will act as a preventative. Do not use PTFE spray on plastic parts.

- Cutter shanks should be inserted into the collet to the mark line on the shank. This ensures that at least 3/4 of the shank length is held in the collet. Do not over-tighten the collet nut as this will score the shank and create a weakness and fracture point.
 - Observe the correct assembly instructions in the router instruction manual for fitting the collet and nut. Observe the router power tool manual instructions on fitting cutters correctly.
 - It is advisable to periodically check the collet and collet nut. A worn, distorted or damaged collet can cause vibration and damage the shank, and should be replaced. Worn collet nuts should be replaced.
 - Do not take deep cuts in one pass; take several shallow or light passes to reduce the side load applied to the cutter. Too deep a cut in one pass can stall the router.
 - Very small diameter cutters must be handled and used with care.
 - Always return cutter to its packaging after use.
- Do not use awkward or uncomfortable hand positions.
- Do not reach underneath table or put your hands or fingers at any time in the cutting path while tool is connected to a power supply.

Useful Advice When Routing

- Judge your feed rate by the sound of the motor.
- Feed the router at a constant feed rate. Too slow a feed rate will result in burning.
- Take many light passes rather than one deep cut to reduce the side load applied to both router and router cutter.
- Trial cuts should be made on waste material before starting any project.
- When using some attachments including a router table or dovetail jig, the use of a fine height adjuster is highly recommended.
- When using a template guide bush, ensure there is sufficient clearance between cutter tip and inside each of bush. Ensure cutter and guide bush are concentric.

Using Routers In A Fixed Position

- After work, release the router plunge to protect the cutter.
- Always use a push-stick or push-block for last 300mm of the cut.
- Whenever possible use a work holding device or jig to secure component being machined.
- Ensure attachment is securely fitted to the workbench, with table surface at approximately hip height.
- Ensure a No-Volt Release Switch is fixed to or adjacent to the attachment and that it is used correctly.
- Check the direction of the workpiece is always opposite to the cutter's direction of rotation.

ITEMS ENCLOSED



x1



x1



x4



x4



x16



x1



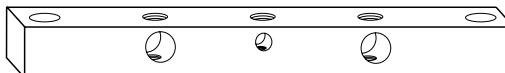
x1



x8



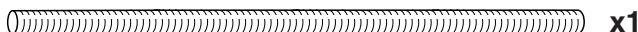
x4



x2



x1



x1



x1



x1

INTRODUCTION

The Pivot Frame Jig is a versatile device which permits the user to carry out a wide variety of router activities. It has four distinct modes of operation:

1. Mini-Pivot Mode

In its mini-pivot form, it allows a number of small diameter trammel operations to be executed, normally extremely difficult to perform, to the same degree of accuracy and repeatability with any form of machinery normally available to the home workshop.

2. Beam Trammel Mode

Conversion to a standard beam-trammel mode permits extension of the range to the maximum permitted by the router fence-rods used.

3. Guided Ski Mode

The jig may also be used in a 'ski-mode' guided by external battens. This permits the router to be used at a constant 'ride-height' above the workpiece (which may be set by the user). This feature permits planing and thicknessing of long lengths of irregular stock timber and also a number of guided edging and grooving operations.

4. Freehand Ski Mode

The jig may also be used in a freehand ski-mode. In this mode, the jig will execute planing and thicknessing of relatively small stock material, but can also be used in conjunction with a router guide-bush and template for internal or external profiling operations.

In all modes the jig also functions as an anti-tipping device.

Pivot Frame Jig - PFJ/SET/1

Using Accessory Ref. ROD/8X500	Min. cutting dia.	Max. cutting dia.
Mini Pivot	10mm	320mm
Beam Trammel	170mm	1050mm

Pivot Frame Jigs - PFJ/SET/2 & PFJ/SET/3

Using Accessory Ref. ROD/10X500	Min. cutting dia.	Max. cutting dia.
Mini Pivot	10mm	320mm
Beam Trammel	186mm	1050mm

Suitable Routers



In this manual, assembly and operation of the jig is described and illustrated in conjunction with the Trend T5E router.

PFJ/SET/1 can be operated directly with any of the following 8mm rod diameter routers:

Trend T3, T5
AEG OF450S, OFE710
Atlas Copco OFS50, 720, OFSE850, 1000
Black & Decker SR100
DeWalt DW613, 614, 615
Draper R850V
Einhell EOF850SP
Elu MOF 96, 96(E) Mk 1 & 2
Ferm FBF-6E, FBF-8E
Hitachi FM8, M8, M8V
Holzher 2335, 2336, 2356
Kango R8550S
Nu-tool NPT850
Performance Power 1020W
Perles Eurotool OF808(E)
Power Devil PDW5026, PDW5027
Ryobi R150, R151, R155, RE155K
Stayer PR50
Virutex FR77, 78C
Wickes 900W

The following machines can be used with the jig but will not accept the fine adjuster unless a slight modification is made:

Black & Decker BD780(E), KW779, 780(E), 800(E), 850ET
Bosch GOF900A, 900ACE
Elu MOF69
Makita 3620

Wherever possible use the longest rods available, i.e. Ref. ROD/8X500 are 500mm long and 8mm diameter.

PFJ/SET/2 can be used directly with the Trend T9, Felisatti R346EC.

PFJ/SET/3 can be used directly with the Elu MOF131, 177 and 177(E), DeWalt DW624, 625EK, 629 and Mafell L065E.

The Bosch GOF 1300ACE can also be fitted but will not allow fitment of the fine adjuster.

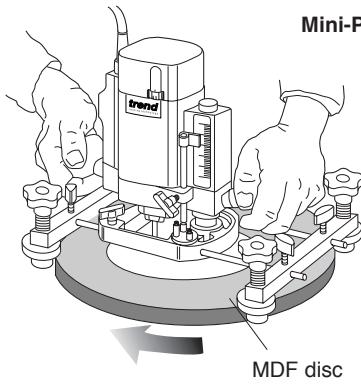
When using the larger routers, the longer 500mm guide rod bars of 10mm diameter Ref. ROD/10X500 should be used. Care must be taken when using the heavier routers to reduce bar flex.



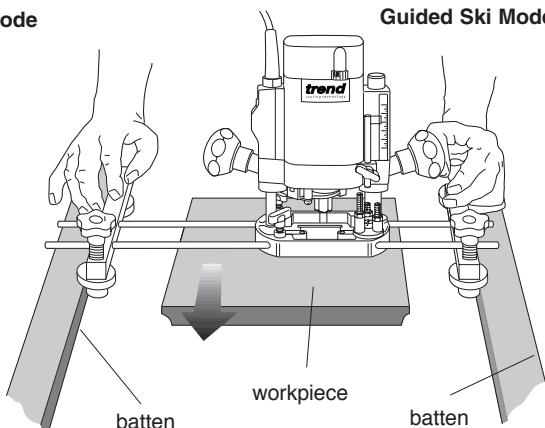
Do not mount any power tool not specified in the lists above.

PIVOT JIG MODES

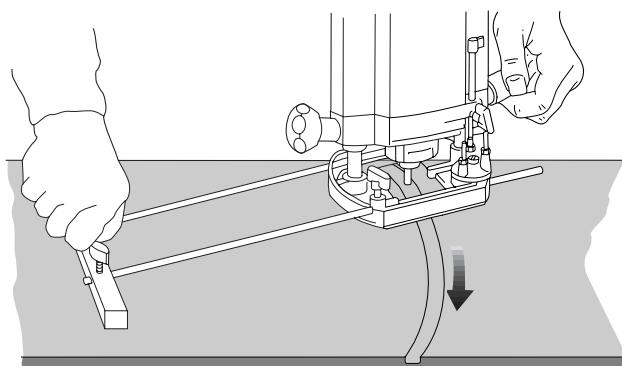
Mini-Pivot Mode



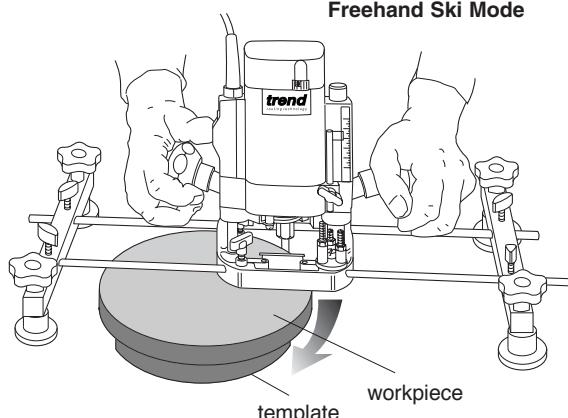
Guided Ski Mode



Beam Trammel Mode



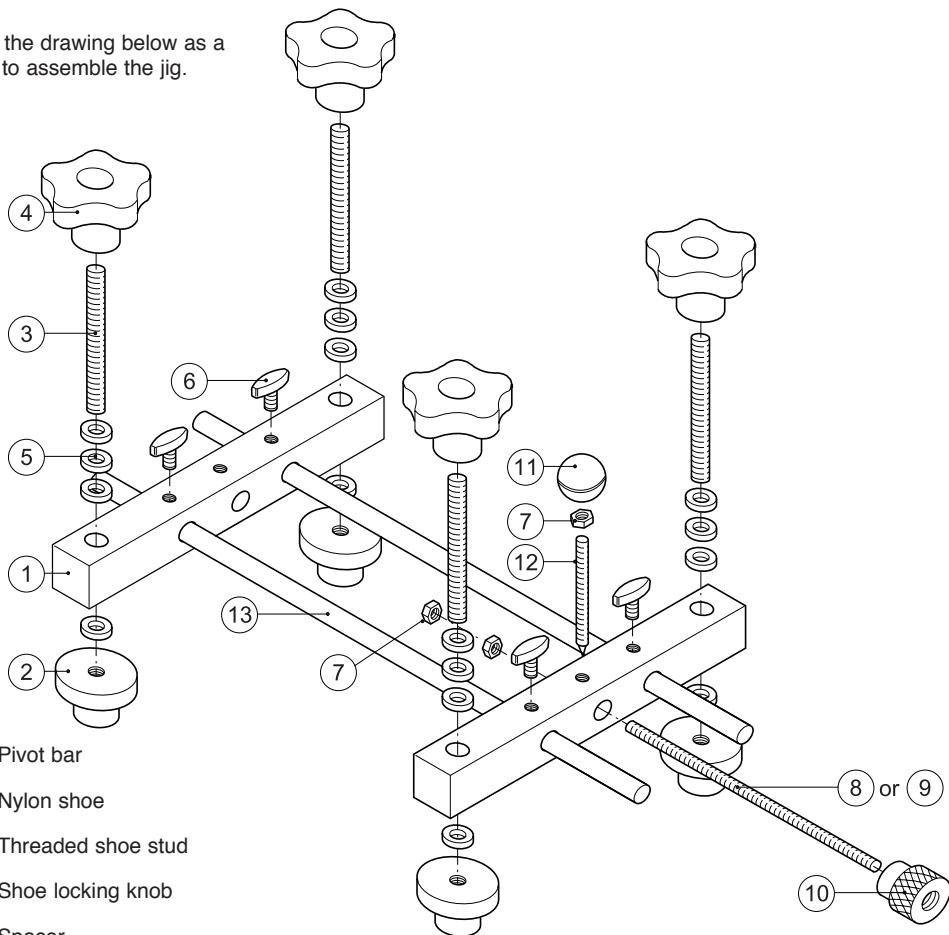
Freehand Ski Mode



The jig will not be complete in its mini-pivot mode without a machined disc of min. thickness 15mm. In view of the wide variety of operations which may be performed, it is not practical to supply discs with the kit. It is very simple for the user to make discs as required, using the jig itself.

DESCRIPTION OF PARTS

Using the drawing below as a guide to assemble the jig.



- 1) Pivot bar
- 2) Nylon shoe
- 3) Threaded shoe stud
- 4) Shoe locking knob
- 5) Spacer
- 6) Rod locking knob
- 7) Nut
- 8) Long adjuster stud
- 9) Short adjuster stud
- 10) Knurled adjuster
- 11) Trammel pivot knob
- 12) Trammel pivot stud
- 13) Accessory Rods - suggested accessory Refs. ROD/8X500 or ROD/10X500

ASSEMBLY

Mini-Pivot & Ski Frame



- Screw the four studs into the larger-diameter end of the four shoes. The stud should be screwed almost to the bottom of the shoe, but must not be allowed to protrude beyond the end. The fit of the stud in the shoe may be tight. In this case, the stud may be held in soft vice jaws. Repeat the operation for the remaining three studs and shoes.



In the freehand ski-frame mode, it may be found preferable on occasion to work with the shoes reversed on the studs, ie. with the large flanges in contact with the worktop. This is best effected by removing the shoes, reversing and re-fitting them to the same end of the studs. Do not wind the shoes along the full length of the studs, as unnecessary wear of the nylon screw-threads will occur.

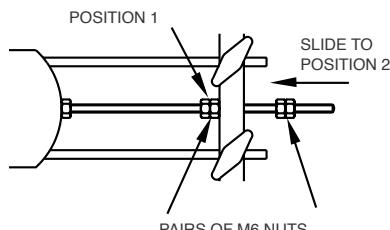
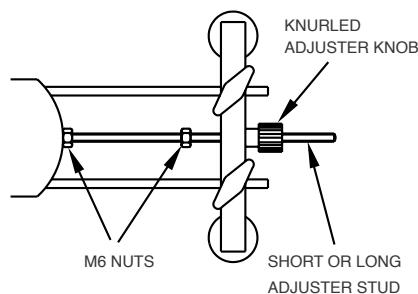
- Fit the shoe/stud assembly to the outer-most holes in the pivot bars, using three shoe spacers per assembly. The spacers are intended to offer a choice of 'ride-height' of the router above the workpiece. Finally, screw the shoe locking knob hand tight on to the spacer.
- Screw the four guide rod locking knobs lightly into the tapped holes immediately above the fence rod holes, from the same side as the knobs which lock the shoe assemblies. Slide the fence rods into the router and temporarily lock in position with the locking knobs which form part of the router.
- Slide a completed pivot bar assembly on to each end of the fence rods, and temporarily lock in position by means of the guide rod locking knobs.

- The next step is to allow fitment of the fine adjuster. The M6 stud is threaded onto the tapped hole and an M6 locking nut is tightened against router base. If your router does not have a tapped hole in the edge of the base similar to the Trend T5 then the router base must be drilled out and a thread tapped. The following routers will need modification:

Black & Decker BD780, 780E, KW779, KW780(E), 800(E), 850ET
Bosch GOF 900A, 900ACE, Elu MOF69 and Makita 3620

The edge of the router base must be drilled in the correct central position to align with the hole in the pivot bar when fitted on to the guide rails. The pivot bar can be used as a drilling jig. The hole diameter must be 5.0mm and 6.0mm deep. An M6 x 1.0mm pitch tap must then be used to thread the hole.

- For the Hitachi M8, M8V the base of the router has a recess which will accept a M6 nut so giving the same facility as a threaded hole.



Beam Trammel Mode



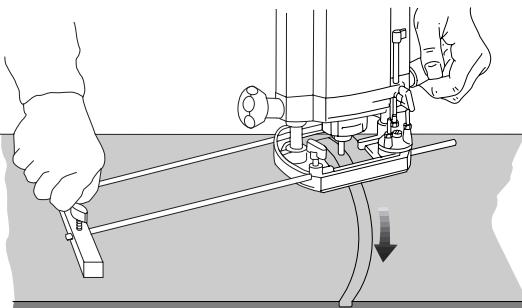
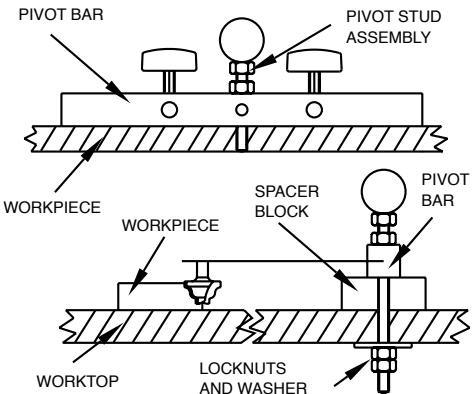
Remove the entire adjuster assembly and its associated pivot bar assembly, leaving the remaining pivot bar assembly in position.

The trammel pivot stud has a point ground at one end. This point may be used as a fulcrum on soft timbers or where a high degree of precision is not required. However, the user should be aware that it is possible for the point to leave its indentation during machining, with adverse effect upon the workpiece. Wherever possible, the stud should be used in conjunction with a bored hole, thereby ensuring precision and workpiece safety and also allowing both hands free to control the router if necessary. In such cases, the pointed end of the stud is screwed into the pivot knob, to avoid accidental contact by the user. Run two plain nuts loosely on to the stud, almost to the knob and use one to lock the knob in position. Screw the assembly vertically into the central tapped hole in the remaining pivot bar, with the knob on the same side as the shoe and fence rod locking knobs. Keep screwing until the stud protrudes below the bar by approximately 12mm and use a spanner to lock the stud to the bar with the remaining nut. Remove both shoe assemblies from the pivot bar.



In many cases it will be useful to lock the stud in position with a washer and pair of locknuts beneath the worktop.

The jig is now in its most elementary beam trammel mode. This set-up will provide the maximum machining radius for any given fence rod length, since both the router and the single pivot bar may be positioned at the extreme ends of the rods. This arrangement requires the router to ride with its base plate in contact with the top face of the workpiece.



Ensure electric cord of router does not foul the rods of the jig.

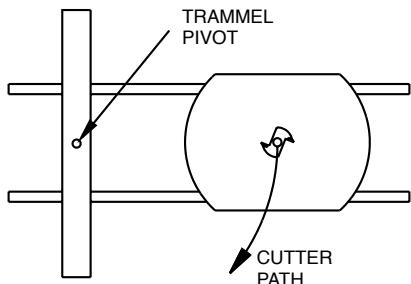
OPERATION



Mini-Pivot Trammel mode

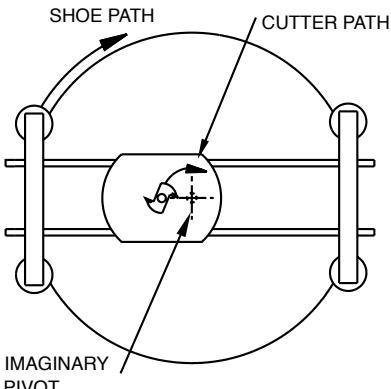
This is the basic operating mode of the device, enabling the user to execute a number of controlled small diameter trammel applications which would otherwise be extremely difficult. It is important that the user fully understands the operating principle of the device before proceeding further:

The normal mode of operation of a router in beam trammel mode. In this configuration, the pivot point is placed outside the area covered by the base of the router, enabling circles or parts of circles to be cut by swinging the router on the pivot. This method cannot be used however for the cutting of circles of small diameter, since this would require the pivot point to be placed within the area covered by the router baseplate.



The Mini-Pivot configuration creating an artificial or 'imaginary' pivot. This is done by mounting the router over a circular disc 'work-surface' on four nylon guide shoes which engage its rim. For convenience this item will be referred to as the 'primary disc'. The guide shoes are held in position by a pair of pivot bars, which are themselves attached to the router fence rods enabling the entire assembly, including the router, to be rotated on the disc.

The arrangement is shown in outline plan-view. It can be seen from this drawing that the position of the router on the rods can be adjusted so that the cutter follows a pre-determined circular path about an imaginary pivot at the centre of the disc.



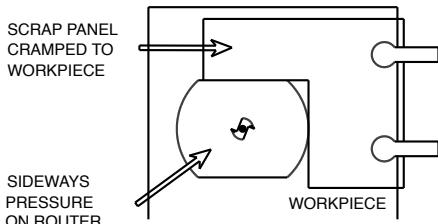
In its simplest arrangement, the workpiece may be directly mounted on the disc but it will be seen that the system is highly versatile and many other mounting arrangements are possible. For the moment it is perhaps sufficient to note that, for example, a rough-sawn workpiece may be fixed to the disc by any convenient means, and machined internally or externally to a high order of accuracy. The minimum machined diameter is limited only by the strength and general behaviour of the workpiece. The maximum available diameter is limited only by the length of the guide rods, since the disc may be made any required size.

Select an adjuster stud, long or short as preferred. Pass the stud through the central horizontal hole in one of the pivot bars and fit two M6 Nuts loosely on the stud, inside the pivot bar. Screw the stud into the tapped hole on the end flange of the router base as far as it will go. Use the spanner to lock the stud in position with the innermost nut. Screw the knurled adjuster knob on to the free end of the stud, until it bears lightly against the pivot bar. The knurled knob may now be used for fine adjustment of the router on the fence rods and may be locked in any desired position by means of the free plain nut inside the pivot bar. Use of the hexagon nut in conjunction with the knurled knob will clearly lock the position of the router on the guide rods by itself. The knobs on the router should always be used for added security. It is often convenient to add pairs of locknuts on both sides of the pivot bar. This enables the router position on the guide rods to be pre-set in two positions, for repeat work.

Producing a Circular Disc Work Surface



The first application for mini-pivot work is necessarily the construction of a primary disc of suitable size. For this purpose, the jig will be required in its beam trammel mode. Initially however, the router alone is used in conjunction with a simple jig. This is simply a scrap panel with a rectangular cutaway at one corner, used to locate the position of the router.



Where it is desired to maximise the working range in mini-pivot mode, the diameter of the primary disc is made equal to the guide rod length.

MDF is an excellent material for the disc, since it is flat, smooth, of constant thickness and dimensionally stable. The minimum thickness which may be used is 15mm.

A piece of MDF which will accommodate the required diameter is selected, and the centre found and carefully marked. A hole 6 mm diameter is now drilled, to accommodate the pivot assembly. It may be noted at this point that the inherent accuracy of the jig is of a very high order. In the mini-pivot mode, this accuracy is however, critically dependent upon that of the disc. It is therefore extremely important that the disc is machined as accurately as possible. It may well be that the throat capacity of any available drill-press is insufficient to enable the drilling of the centre hole to be carried out by this means.

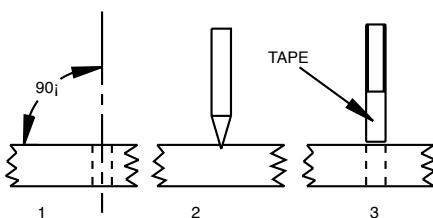
Freehand operation is not advised, since it is important that the hole is drilled precisely at right angles to the face of the stock material moreover, it is also possible to drill oversize

when working freehand. Given however, that the stock material is squared-off to begin with, it is a simple matter to use the router as a drill press. The router is placed in the desired position on the workpiece, possibly with the aid of a scribing point held in the collet. The jig is then brought up to the router and cramped in position. The router is then fitted with the required cutter and the hole bored. Note that sideways pressure on the router is required to keep it in position during machining.

It is equally important, for maximum accuracy, that the pivot stud fits the hole fairly tightly. Any play arising from a slightly oversize hole may however, be removed by wrapping thin plastic adhesive tape around the end of the bolt until the fit is satisfactory.

The jig may now be used in the simple beam trammel mode to profile the workpiece to the diameter required. If desired, the adjuster may be used on the free end, but is not strictly necessary. The disc may be machined directly from rectangular stock, in which case, a small-diameter 6.35mm (1/4") straight cutter should be used (eg. Trend Ref. C008 or 3/22X1/4TCT), to reduce loading and minimise dust. A better method is to profile the disc slightly oversize with a scroll saw or similar device and use the router only to generate the final profile. In this case, finish will be improved with a larger diameter cutter.

Cutting should be carried out in a series of passes, gradually increasing the depth of cut. It is important that the disc blank is fixed firmly to a flat worktop before routing the profile. This can be done with two woodscrews on a diameter of the disc, at some personal 'standard' radius.



If this standard is adhered to for all primary discs made, it becomes a simple matter to fix any disc to a worktop with matching holes. After initial making of the disc, an excellent method of subsequent fixing is to bore out and counterbore the holes, to accept flat-topped bolts, which may also be passed through the worktop. Accurate router boring and counterboring may be implemented with the jig.

Setting-up the Mini-Pivot Configuration



At this stage, the disc may be left attached to the worktop for the moment in order to assemble and get the general feel of the mini-pivot configuration. For this purpose, the jig should be re-assembled in accordance with the assembly instructions, but (temporarily) without the lateral adjuster stud and knob. This is because the stud does impart a slight frictional resistance to the movement of the pivot bars on the rod and it is important, at least to begin with, that the user gets the feel of the shoes against the disc.

The jig is placed over the disc such that the flanges of the shoes rest on the top of the disc and the smaller diameter of the shoes bears against the edge of the disc. In this position, the bars are locked on to the rods. It should be possible to rotate the jig on the disc freely, without any undue play in the system. Some slight resistance to motion will be felt; this is normal. The shoes must always be tight on the pivot bars; they are not meant to rotate on their threaded studs.

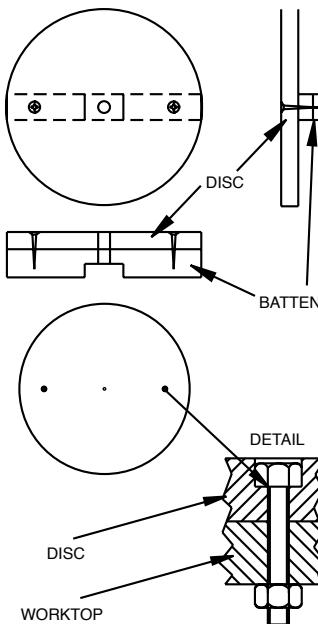
Of particular interest is the ability to cut a complete circle without changing operator position, i.e. there is no need to walk round the work. This feature should be practiced somewhat, since it is necessary to get used to the idea of controlling the plunge locking knob at the same time.



Please note that the router cable can get in the way of the shoes, unless it is held by an overhead mount.

It is suggested that a few experimental cuts are taken, with a small cutter (of more or less any type, as long as it has a bottom-cut facility), on scrap timber. This may be attached to a sacrificial piece of hardboard, which is then attached to the primary disc, with fillets of hot-melt glue. The purpose of the hardboard is to avoid possible damage to the surface of the disc by over-depth cutting. A very good exercise in this respect is to machine a full circular hole of about 50mm diameter in one workpiece and then machine another into a disc which fits it exactly.

Note that for operations of this kind, the mini-pivot assembly may be removed from the disc for the purpose of a trial fit, then replaced for further machining, with no loss of accuracy. The workpiece must of course, be left in its original position on the disc.



If some means of accurate measurement of disc diameter (eg. vernier caliper) is available, trial fits are unnecessary, since the adjuster knob and locking nut can be used in conjunction with feeler gauges (available from most auto parts suppliers) to adjust the router position directly.

In some applications, it is inconvenient to mount the disc to a flat worktop. Instead, the disc may be screwed to a substantial batten, which may then be held in a vice, or the jaws of a Workmate[®]. It will also be found helpful to cut away a fairly substantial slot in the centre of the batten, to give clearance for bolts which are fitted to the disc in certain advanced applications.

With large discs, it may sometimes be necessary to place additional temporary support blocks beneath the disc, to avoid undue strain on the batten.

Annular Disc Work



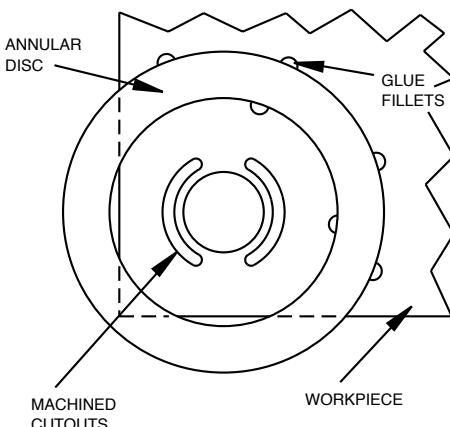
Where the thickness of the workpiece is beyond the capacity of the shoe spacers, an annular disc may be used. Discs of this type are easily machined with the jig, the inner cut-out being taken in either beam trammel or mini-pivot mode, dependent upon dimensions. Both the disc and the workpiece are mounted on a flat worktop. The arrangement allows the disc thickness to be added to available ride-height.

A very powerful additional facility with discs of this type is the machining of circular holes or slots etc., in very large workpieces, such as kitchen worktops requiring cutouts for essentially circular plumbing or other fixtures. This is effected by mounting the disc on the workpiece in the desired position, with screws if possible, but otherwise by adhesive means and using the pivot frame to cut such holes or shapes as are required.

A simple way of locating the disc is to draw a pencil circle on the workpiece with a compass, of a slightly smaller diameter than the internal diameter of the disc and use this for visual location. Clearly, if the workpiece is actually fixed in its final position, for example, against a wall, the arrangement is necessarily limited to operations which are not too close to the wall.

On the other hand, if the workpiece can be removed from its location and treated as a 'bench job', the system is immediately much more flexible. Where the workpiece completely

supports the disc, any convenient disc size may be used. It is quite feasible to allow the disc to overhang the workpiece slightly when working near an edge or a corner however. But in this case, for safety reasons, the disc should be as small as the required work will allow and both the workpiece and the disc must be very well-supported.



Simple Ski-Mode

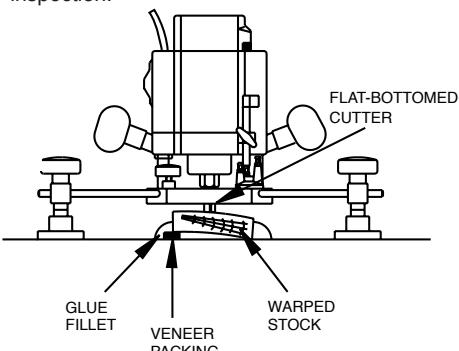


In its standard mini-pivot assembly configuration, the jig may be used without the guide disc in a completely freehand mode on a flat worktop. In this way, it may be used to plane the surface of a small piece of material of irregular thickness and finish, then reverse it and machine it down to a pre-determined thickness.

It may also be used in conjunction with a template and guide bush or ball bearing guide for profiling. For any of these operations, the jig operates the router in a completely stable anti-tipping configuration.

Moreover, the router ride-height may be adjusted to suit the workpiece, by means of the spacers. The size of work which may be handled is limited only by the length of the fence rods and can be maximised by moving the router to one end of the rods. Since the ride-height is fixed, the router plunge facility can be used for freehand lettering etc. even in uneven

workpieces (eg. rustic nameplates). A particular advantage of the 'open' construction of the pivot frame, is the ability to see the workpiece clearly, with the router assembly riding well above the workpiece. This can be of particular advantage for work against a template, where the cut needs to be 'stopped' by visual inspection.



Guided Planing Mode



This machining mode is essentially an extension of the foregoing arrangement and permits planing of long work, together with a facility for machining parallel grooves or edge-mouldings.

It requires a flat work surface and two straight-edged battens of constant thickness, which may be fixed to a flat work surface (cramping is quite suitable), such that the straight edges are separated by a fixed distance and are parallel.

The jig is adjusted so that the flanges of the nylon shoes ride on the battens and the smaller diameter of the shoes bears against the edges of the battens. Ride-height is determined initially by the depth of the battens, but may be modified by suitable arrangement of the shoe spacers.

The workpiece may be attached to the worktop by fillets of hot-melt glue. Where the workpiece is uneven on both surfaces (e.g. it may be twisted), it may be packed with small pieces of veneer at the high spots, until it cannot be rocked on the worktop; the glue fillets may then be applied.

It is recommended that the largest diameter bottom-cut router cutter available is used for this operation. The use of routers limited to 1/4" diameter shanks will reduce the possibilities but, for example, a 25.4mm (1") diameter cut will be obtained from straight two-flute cutter Trend Ref. 4/08X1/4TC and a 30mm cut from scribing ovolo cutter Trend Ref. 6/5X1/4TC, both available with 1/4" shank.

To begin, the jig should be moved over the work with the cutter stationary, in order to find the highest point; depth of cut may then be set with reference to this point. It is recommended that several passes are made over the work with a very small depth of cut (no greater than 0.5mm), gradually clearing the high-spots and eventually arriving at a flat smooth surface.

The router may be left to slide freely on its rods and guided by means of its plunge knobs for this operation, since it will stay in place at any set position, provided the cut is light. If the cut is too deep, the router may take control and pull itself across the work off-line.

For the final cut in particular, which should be no greater than 0.2mm, the router should be locked on the rods for each pass, and moved across the work by means of the locking knobs on a pivot bar and not by the handles on the router itself. This will eliminate any tendency for over-depth cutting due to hand-pressure 'springing' the guide rods.

Another possibility with the system is that of machining straight parallel grooves, either continuous or stopped, with any of a number of straight or profiling cutters.

It is not wise to rely on accurate tracking of the system along both parallel battens for work of this nature, where positional accuracy of the router is of importance. The work is better carried out by preferential pressure on one batten only.

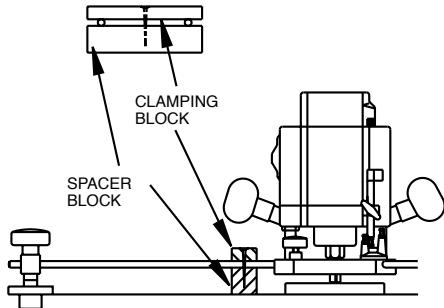
Moreover, it is perfectly possible for even a stout batten to spring slightly in the centre under pressure, if it is cramped at the ends only. An additional cramp or two towards the centre will

considerably reduce the problem.

Where work of the highest accuracy is required, the clamp guide is strongly recommended. This is available in three lengths (Trend Refs. CG/24, CG/36 and CG/50) and furnishes a straight edge which is both straight and parallel to very close tolerances. It is used in conjunction with an extra pivot bar and shoe assembly.

Wherever possible, regardless of operating mode of the jig, it is advisable to set the depth of the final cut off the workpiece and operate the jig from the pivot bars rather than the plunge knobs, to avoid over-depth cutting due to flexing of the rods under hand pressure.

In many cases, this will not be possible and there is consequently some risk of indentation of the workpiece as the initial plunge is taken (particularly with profiling cutters). It is possible to alleviate the problem with an extra attachment, easily home-made. This comprises a small block of wood, of appropriate thickness, clamped to the guide rods with a single woodscrew, as close to the router as operation will allow.

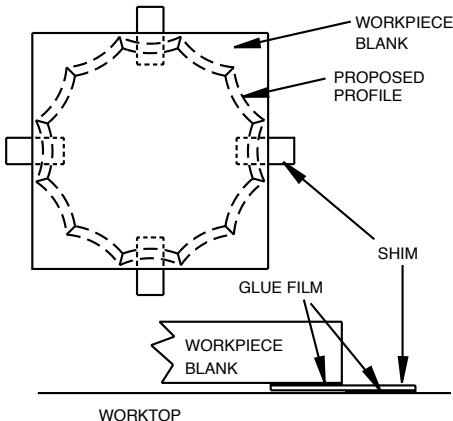
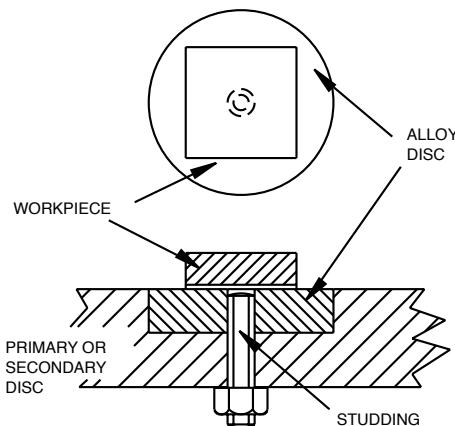


Mounting the Workpiece

Wherever possible, the safety of the workpiece should be ensured by fixing to the disc or worktop by the most positive means allowable. Double-sided tape Trend Ref. DS/TAPE, may be used for many applications, particularly where the surfaces to be joined are flat, smooth and not porous or dusty.

Fillets of hot-melt glue, applied with a gun at convenient places, can be very effective.

Where the central portion of a given workpiece is that which is finally required (ie. the scrap material occurs at the edges), the system can be very useful. The system is best used with 'glue-film', which is essentially hot-melt glue in sheet form.



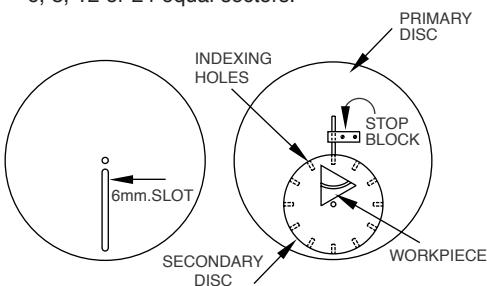
ADVANCED APPLICATION

Mini Pivot Mode - Off-Centre Work



For decorative applications, the scope of the Pivot Frame Jig may be considerably extended. By mounting the workpiece in various positions on the main disc and using the mini-pivot facility to cut circles or parts of circles many designs can be achieved.

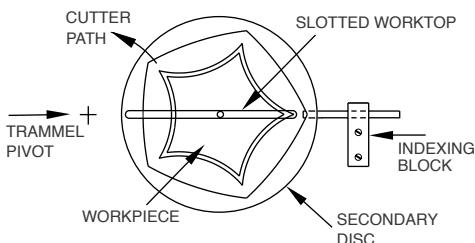
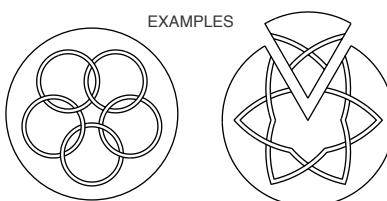
A highly-versatile arrangement may be created by machining a 6mm slot in the disc (referred to from now on as the 'primary disc'). The slot is used to mount a 'secondary disc', preferably in birch plywood, of about half the diameter of the primary disc and about 9mm thick on to the latter, via a central 6mm bolt, nut and washer. Thus, the secondary disc may be rotated on the primary disc to any desired angular position relative to the mini-pivot centre and may also be offset from this centre by any desired amount. The secondary disc may be marked out with the aid of rule and compasses into any number of equal angular divisions, 24 being fairly versatile since it allows the disc to be divided into 2, 3, 4, 6, 8, 12 or 24 equal sectors.



From these divisions, the disc may be drilled on its edge with a series of holes of equal depth (it is very easy to set up the router to do work of this kind). The holes may be used in conjunction with a simple stop block and metal rod. Exactly the same idea may be applied to beam trammel work. In this case, the trammel pivot is mounted on a flat worktop and the secondary disc run in a slot on the same worktop, a suitable distance away from the trammel pivot. The workpiece is mounted on the secondary disc by any preferred means.

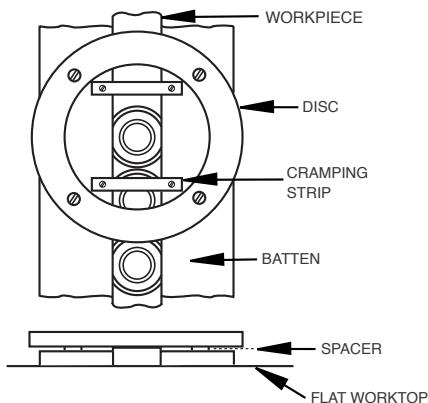
It is a simple matter to cut tubes (or parts of tubes), of a depth limited only by the reach of the cutter, for inlay purposes. For example, imagine that a tube of contrasting timber is required to be glued precisely into an aperture which has been machined by a 3.2mm (1/8") diameter cutter eg. Trend Ref. C001 or 3/10X1/4TCT. This can be done by fixing a suitable offcut of timber to the centre of the MDF disc and setting the Mini-Pivot system to two positions in succession, to machine the outer and inner diameters in turn.

Note that, if the same 3.2mm (1/8") dia. cutter is used, the router will need to be moved along the rods by 6.35mm (1/4") or in fact just slightly less, to allow a little gluing clearance.

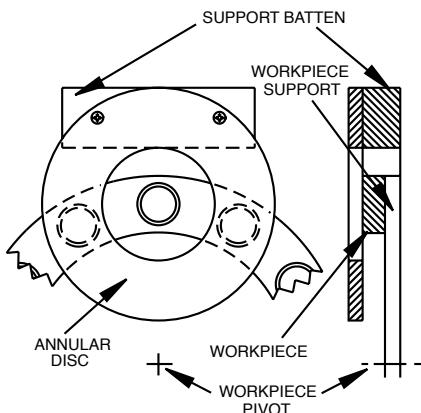


The work discussed thus far in this section is obviously limited by the size of the primary disc, since the top flanges of the mini-pivot shoes must be allowed sufficient clearance to do their job. It may seem at first sight that this represents a limitation of the system, but in fact it doesn't.

It was pointed out in the applications section that the primary disc, in the form of an annular ring, could be mounted over a large workpiece for the purpose of machining cutouts in the latter. In this case, the annular disc is mounted over a pair of parallel battens, such that a workpiece, in the form of a long strip of timber, may be slid between them and cramped in a series of predetermined positions.



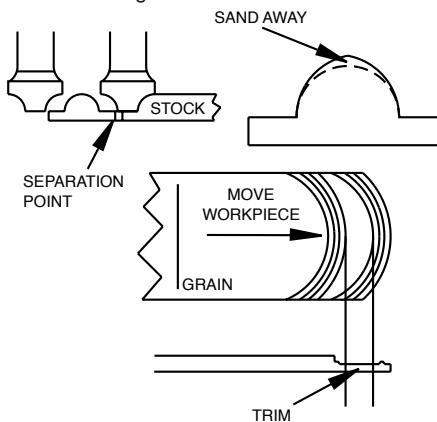
In this way, the workpiece does not impede the path of the nylon shoes (since they ride above it), thus enabling repeated decorative patterns to be cut. The principle is easily extended to deal with essentially circular workpieces (eg. mirror-frames, with the addition of a further pivoted disc, to provide accurate positioning of the workpiece).



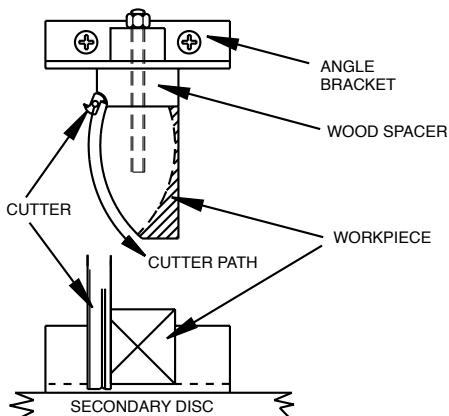
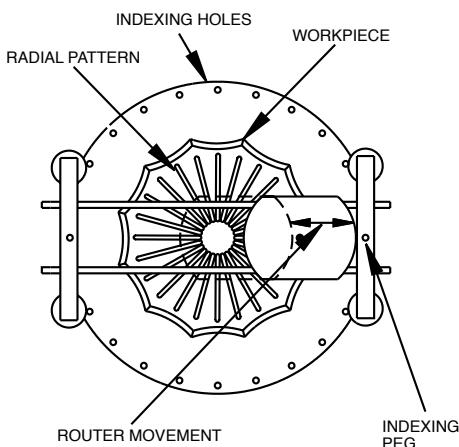
This arrangement is but a variation of the 'secondary disc' system discussed earlier. Note however, that the annular primary disc may be required to overhang its support batten by a considerable amount and may thus require extra support. This can often be provided by the workpiece itself.

Both arrangements require that the workpiece is cramped firmly to the worktop during machining. In a lateral sense, the cramping can be more or less anywhere convenient.

The Pivot Frame Jig may be used in its linear and mini-pivot modes to generate decorative panel mouldings (of particular interest to furniture restorers). Linear lengths of moulding are easily produced as 'cut-offs' from a single sheet of stock. Generally, a small-radius ovolo cutter (typically Trend Ref. 7/01) will be required. Radiused parts may also be machined from a single piece of timber, but require the workpiece to be moved between individual operations. The method illustrated will also ensure that the grain of the timber can be arranged to provide maximum strength.



Only a simple user-modification is required to enable the jig to cut radial patterns. The primary disc is furnished with a number of holes (24 will be found useful) equally spaced around the periphery, such that they fall under the central hole in either of the pivot bars. A peg may now be passed through the hole in the pivot bar such that it engages with any of the holes in the disc, thus temporarily locking the router in position.



Radial slots may now be machined in the workpiece, their length being determined by pairs of locknuts on the adjuster. The adjuster must be fitted to the pivot bar not occupied by the peg. The fit of the peg must be such as to minimise movement of the pivot frame on the primary disc.

ACCESSORIES

'Decorative Routing Jigs and Techniques' Book - Ref. DRJT/BOOK.

Pack of 8 spacers, 3mm thick - Ref. PJ/

Long rods 8mm x 500mm - Ref. ROD/8x500

Long rods 10mm x 500mm - Ref. ROD/10x500

MAINTENANCE

The jig has been designed to operate over a long period of time with a minimum of maintenance. Continual satisfactory operation depends upon proper tool care and regular cleaning.

Cleaning

- Regularly clean the bars with a soft cloth. Keep rods and studs free of resin build up.

Lubrication

- Your jig requires no additional lubrication.

RECYCLING

The jig, accessories and packaging should be sorted for environmentally friendly recycling.

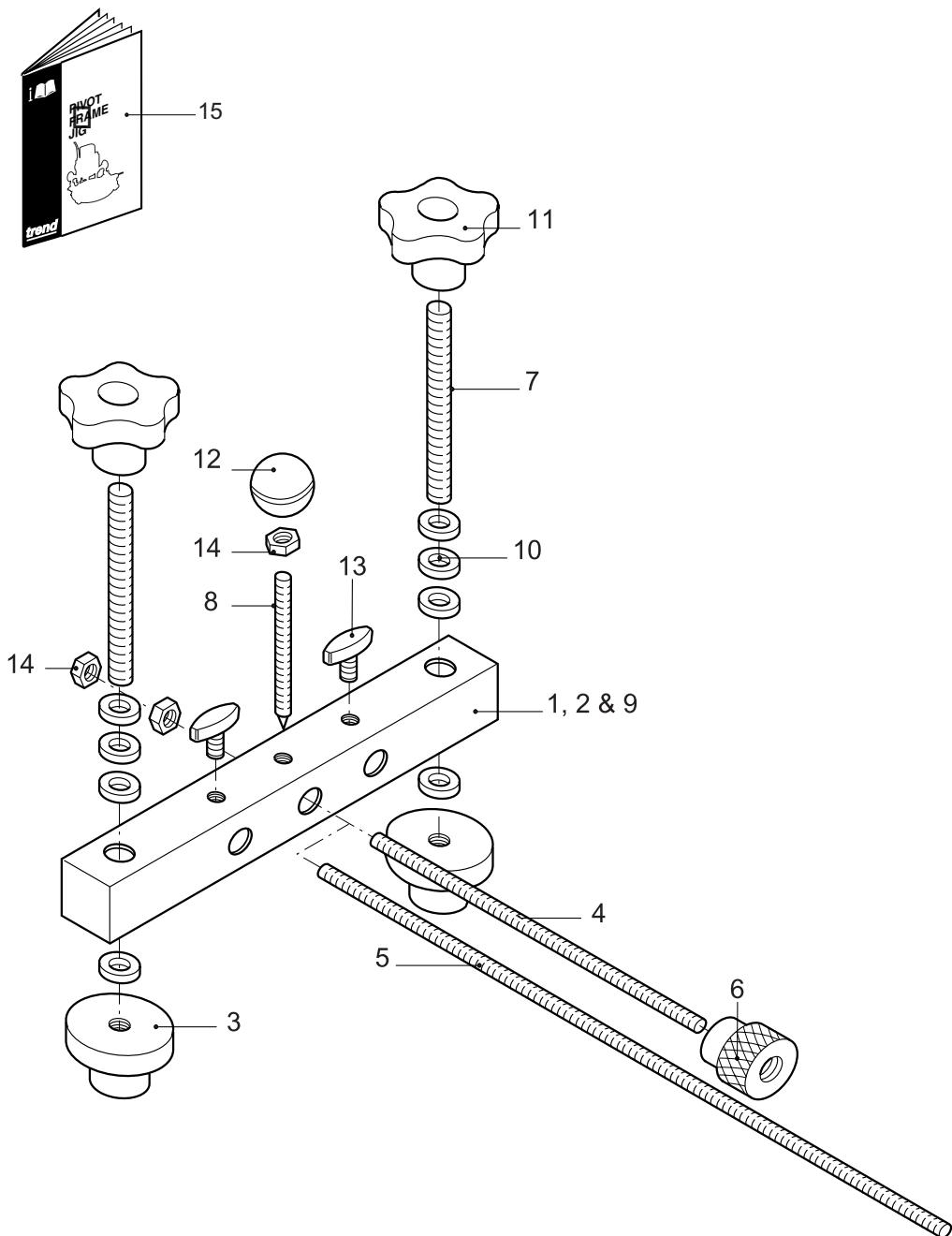
GUARANTEE

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

PFJ - SPARE PARTS LIST

v2.0 08/2002

No.	Qty.	Desc.	Ref.
1	2	PFJ/SET/1 Main Bar for Trend T5	WP-PJ/01
2	2	PFJ/SET/3 Main Bar for Elu MOF177	WP-PJ/02
3	4	Delrin® Shoe M8	WP-PJ/03
4	1	Short Stud M6 x 180mm	WP-PJ/04
5	1	Long Stud M6 x 180mm	WP-PJ/05
6	1	Knurled Nut M6	WP-PJ/06
7	4	Stud M8 x 75mm	WP-PJ/07
8	1	Trammel Stud M6 x 50mm	WP-PJ/08
9	2	PFJ/SET/2 Main Bar for Trend T9	WP-PJ/09
10	16	Spacer 8mm OD x 6mm thick	WP-RR/50
11	4	Locking Knob M6 x 10mm	WP-KNOB/01
12	1	Lobe Knob M8	WP-KNOB/06
13	1	Knob M6	WP-KNOB/08
14	8	Nut Hex M6	WP-NUT/06
15	1	Manual	MANU/PFJ





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