Code 106843

Universal Dovetail Jig

BRITISH MADE

BOX / FINGER JOINTS

THROUGH DOVETAILS

HALF BLIND DOVETAILS

GROOVE / HOUSING JOINTS

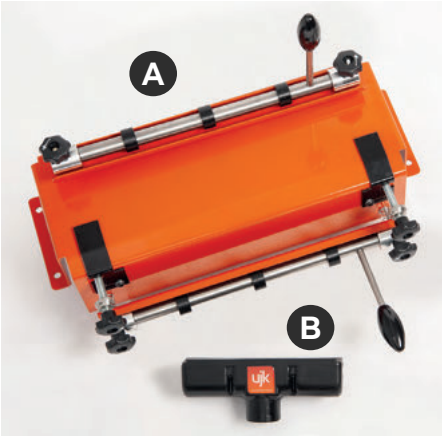
SLIDING DOVETAILS

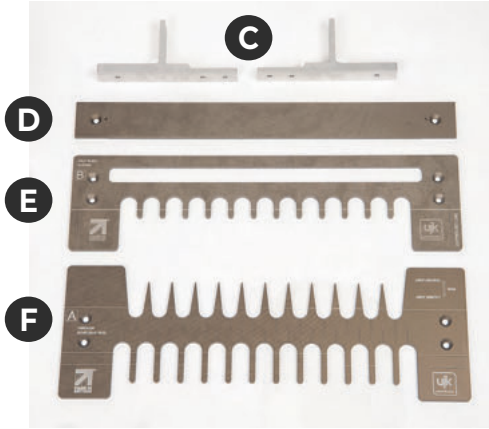
CORNER DOVETAIL REBATES

AT: 11/7/2024

CONTENTS

WHAT'S INCLUDED





Quantity	Item	Part	Model Number
1	UJK Universal Dovetail Jig with Cam Clamps	A	106843
1	Magnetic Extraction	B	
2	Comb Bar Support Arm	C	
1	Router Extraction Support Bar	D	
1	Comb Half Blind / Sliding (Template B)	E	
1	Comb Through Dovetail / Box (Template A)	F	
1	1/4" Shank, 13.55mm Diameter Dovetail Cutter	G	
	1/4" Shank, 10.39mm Diameter Twin Flute Straight Pin Cutter	G	
	1/4" Shank, 12.5mm Diameter Twin Flute Straight Box Joint Cutter	G	
1	Magnetic Set Gauge	H	
6	Countersink Hex Screws M6 x 12mm	I	
2	Guide Bushes & Locking Ring 3/4" (19.1mm) & 5/8" (15.9mm)	J	
1	4mm 'T' Key	K	

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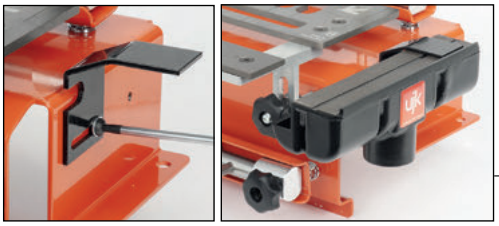
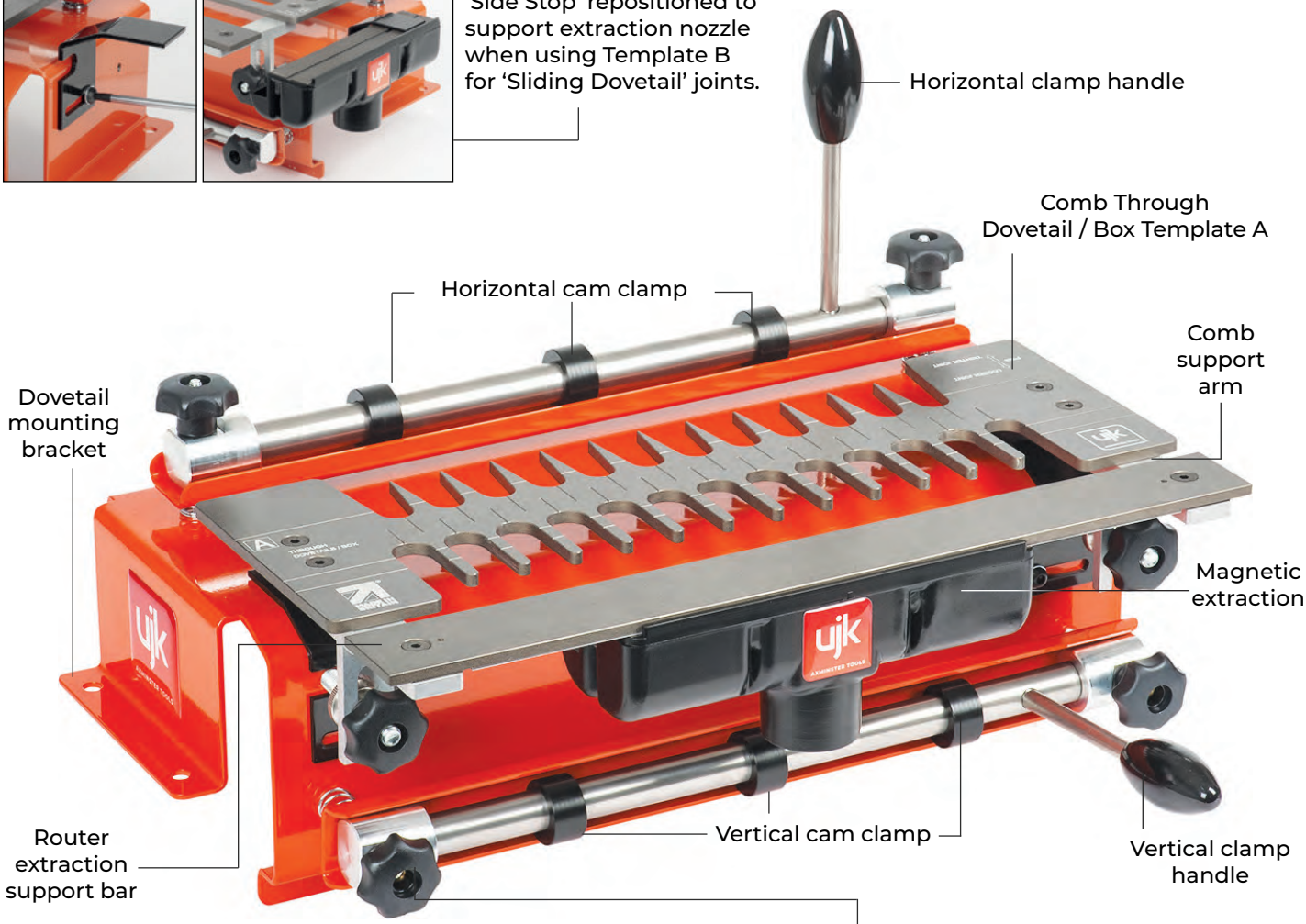
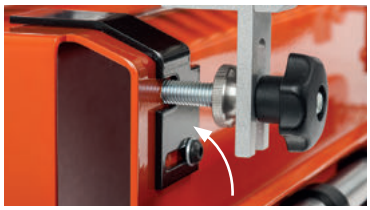
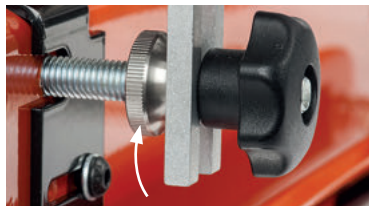


'Side Stop' repositioned to support extraction nozzle when using Template B for 'Sliding Dovetail' joints.





Side stop



Comb adjuster wheel & clamping knob

Clamp adjustment knob

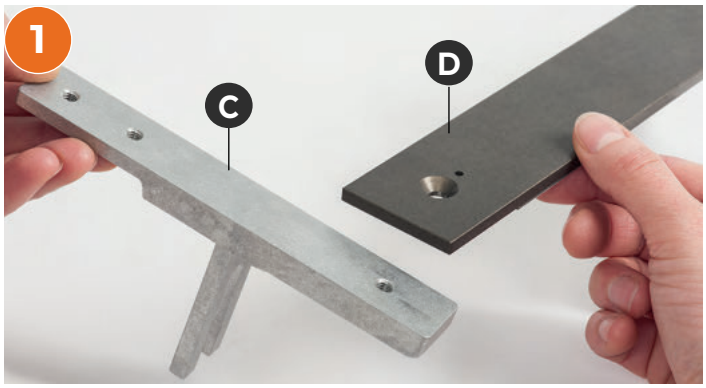
GENERAL SAFETY INSTRUCTIONS

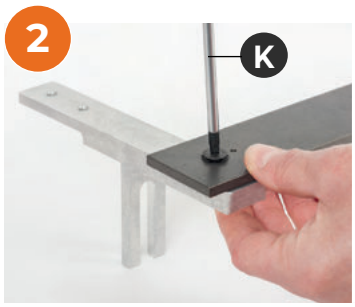
WARNING! KEEP TOOLS AND EQUIPMENT OUT OF REACH OF YOUNG CHILDREN.

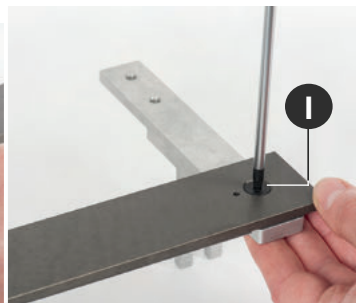
KEEP WORK AREA AS UNCLUTTERED AS IS PRACTICAL. UNDER NO CIRCUMSTANCES SHOULD CHILDREN BE ALLOWED IN WORK AREAS.

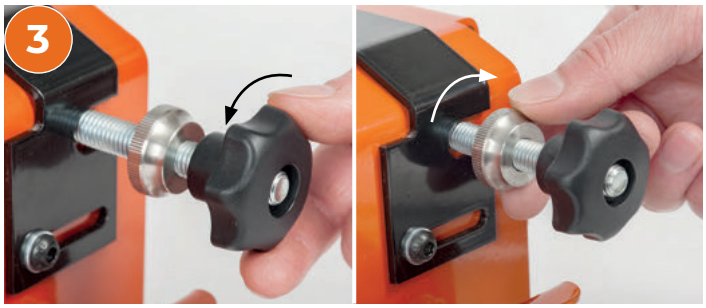
- **Make Sure:** you have read and fully understood the General instructions and safety precautions that is explained in your 'Router's' owners manual.
- **Check:** the router cutter bit you are about to fit is the correct tool for the job. Check the bit for damage, make sure it is sharp and clean.
- **IMPORTANT: MAKE SURE** the cutter shank is inserted 3/4" into your router's collet. Most cutter shanks have the letter **'K'** engraved onto the shaft for the correct depth.

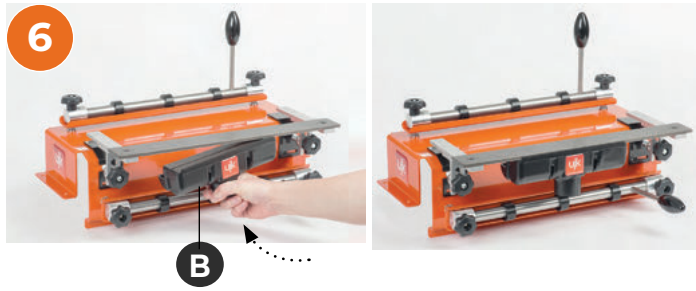
Assembly

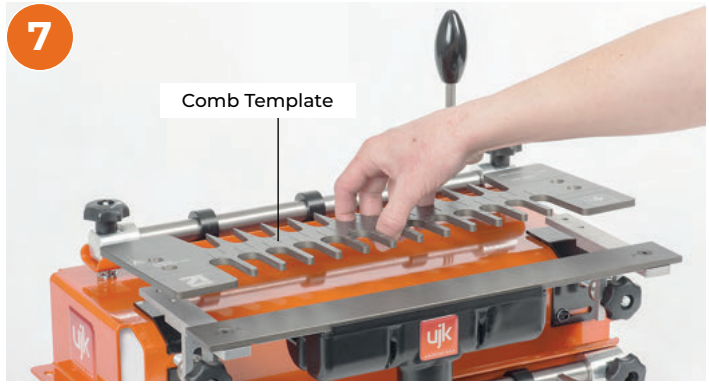


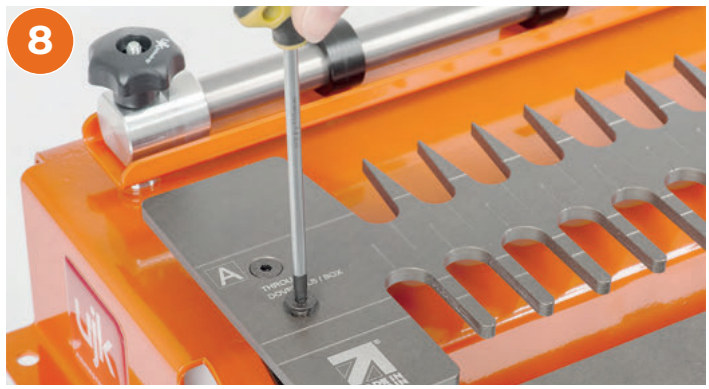












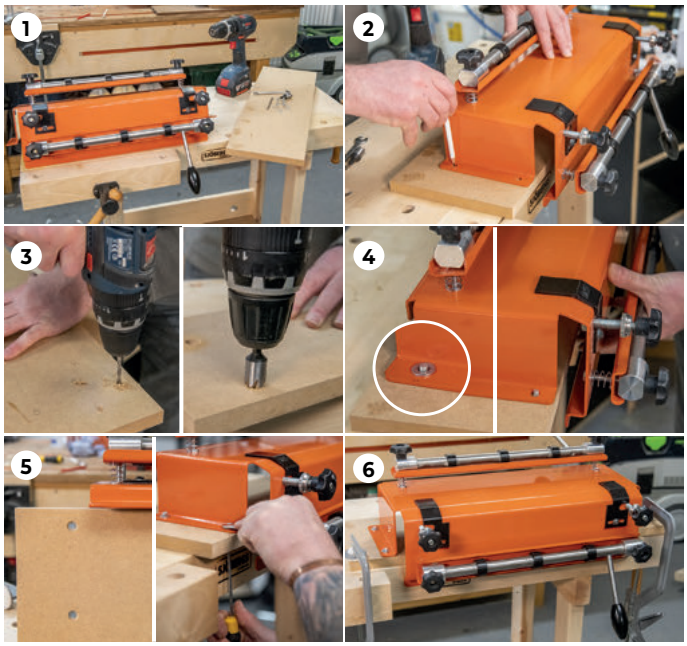
Lower the comb template down & line up the countersink holes with the holes in the comb bar support arms (C). Secure in place using four countersink Hex screws (I)

Mounting the Jig

Mount the jig onto a firm and stable workbench at a comfortable height, remembering that the router sits on top of the jig. The jig must be mounted close to the front edge so as to leave clear passage for the timber to the front, vertical clamp. Also, leave ample clearance to the rear of the jig to accommodate the longest length of timber you are likely to want to work with in the dovetail jig.

There are two mounting holes to either side of the jig allowing permanent attachment to a workbench or similar stable base. Where work space is limited, the same holes can be mounted to a movable base that can be secured in the jaws of a vice or to the top of a workbench using 'F' or 'G' clamps, see fig A. The jig can then be stored away when not in use.

Fig A

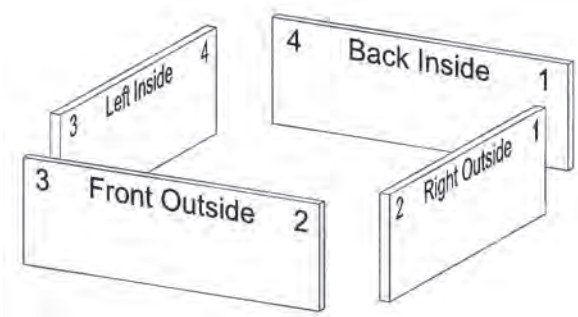


Preparation of Timber

As with all joinery work, the drawer or box components must be sized and cut square and accurately. It is preferable that the width of the timber increases in **1/2" measurement (i.e. 5", 5 1/2", 6", 6 1/2", etc.)** as this will give a series of fully-formed dovetails without part formed pins or sockets at the ends.

It is a good idea to identify the drawer pieces, see fig B so that they are positioned correctly in the jig.

Fig B



Router Cutter

Supplied with three Axcaliber 1/4" shank cutters, (7˚dovetail/ straight), see fig C. You can also purchase 8mm or 1/2" shank cutters. You will need to use one of the two guide bushes, these are included in the boxed kit. To attach to the router a guide bush adaptor to suit the make of router will need to be purchased, see fig D.

Fig C

1/4" Shank, 13.55mm Dovetail Cutter

1/4" Shank, 10.39mm Straight Cutter

1/4" Shank, 12.5mm Box Joint Cutter

Code: 104509

Code: 105919

Fig D

A selection of different makes of router guide bush adaptors

Screw together the guide bush and fixing ring, fix this to the base of the router, with the flange section facing downwards out of the bottom of the router, this will run on the template. **It is important that the cutter is totally central within the located guide bush**, if unsure check with a centralising cone (not supplied), see fig E-F.

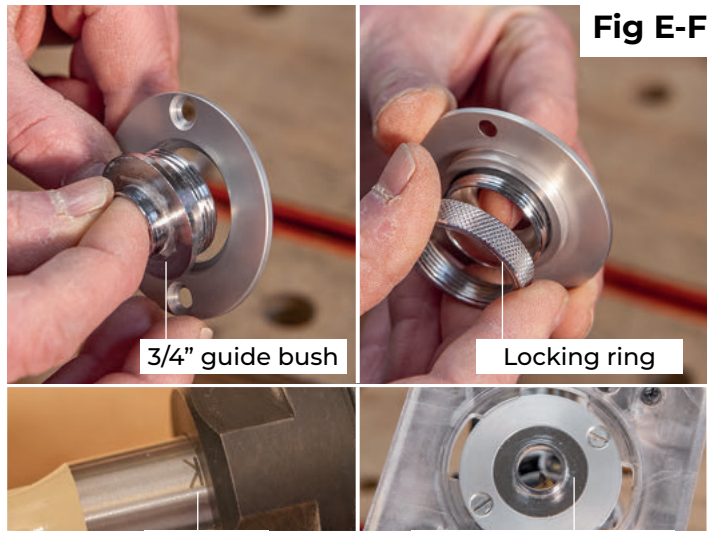


Fig E-F

'K' Mark

Flange facing down

- **Max timber width - 300mm**
- **Min timber thickness - 13mm**
- **Max timber thickness - 25mm**

Parts needed -

- Template B (half blind / sliding)
- 13.55mm Dovetail cutter
- ¾" (19mm) Guide bush

Both parts of this joint are cut at the same time, (single pass)

1) Attach comb B (half blind / sliding) with the straight fingers at the front of the jig, see fig 01-02. Use the horizontal board to be cut to level the comb, see fig 03. A support board with equal thickness to the cut board may be required to support the comb when using narrow boards, see fig 03.

Fig 01-02

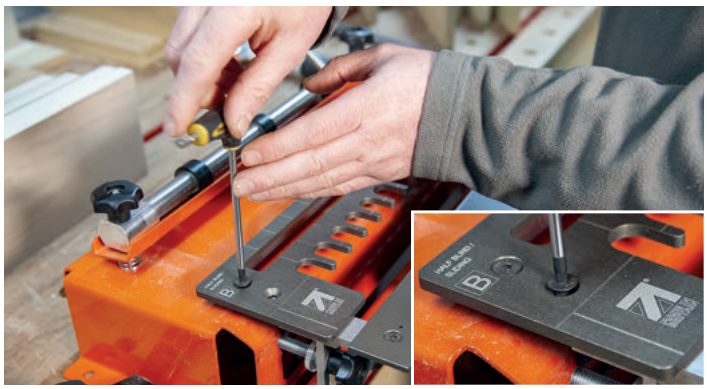
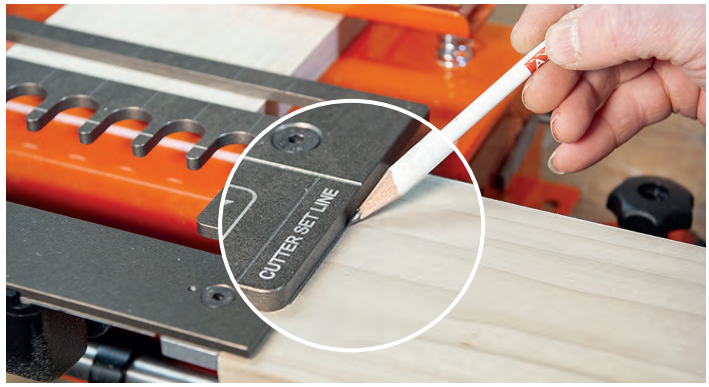


Fig 03

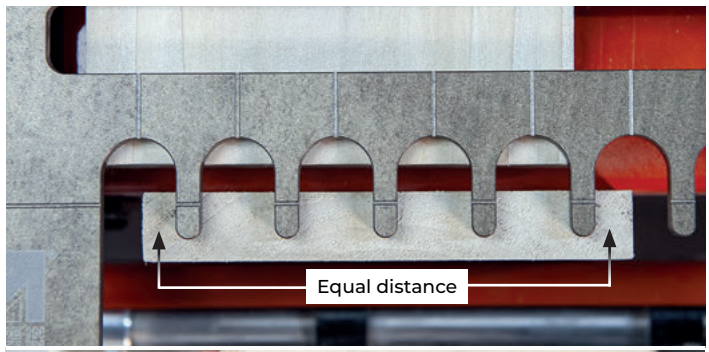
2) Before loading in the opposing vertical board use the cutter set line mark on the right of the comb & a sharp pencil to mark a line at the top of the board, see fig 04.

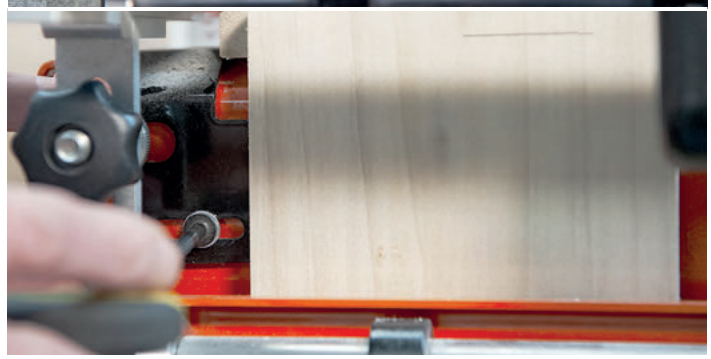
Fig 04



3) Load in vertically the first board on the left of the jig pushing up to the underside of the comb & centralising to the fingers, see fig 05. Slide the side stop towards the right to make contact with the side of the material, see fig 06 & lock in place.

Fig 05-06





4) Slide the horizontal board forward to meet the vertical board and slide to the left to make contact with the side stop, see fig 07. Then undo the comb lock knobs & use the comb adjuster knobs to ensure that the finger line on the comb is in line with the point where both boards meet, see fig 08-09. Double check that the comb is sat flat on top of the horizontal board & ensure that both boards are level, see fig 10.

Fig 07

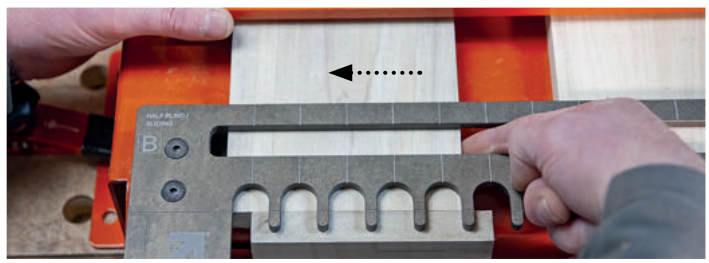
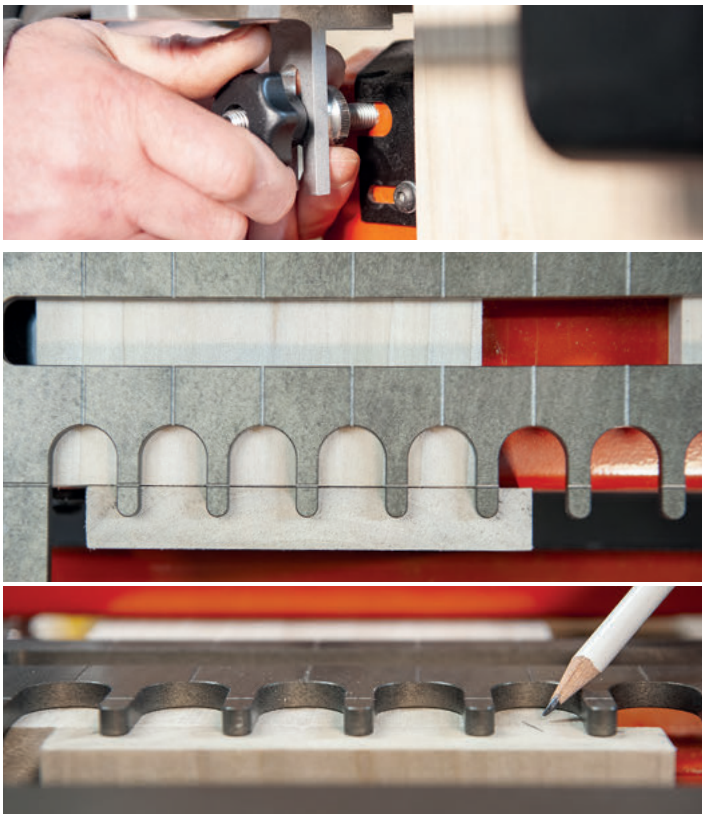
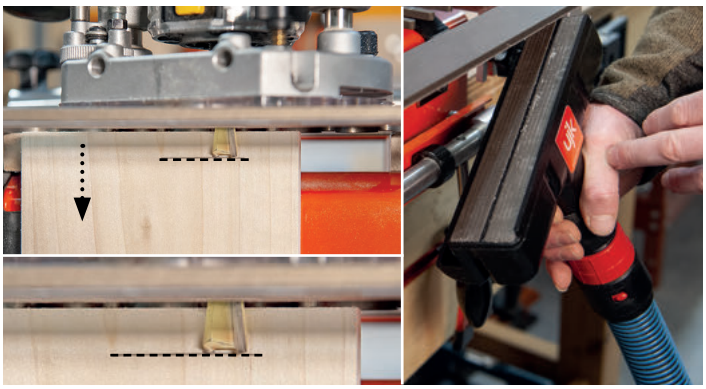


Fig 08-09-10



5) Plunge the cutter down through the fingers in front of the material so that the tip of the cutter just meets the marked line, see fig 11. Slide or reattach the extraction, see fig 12.

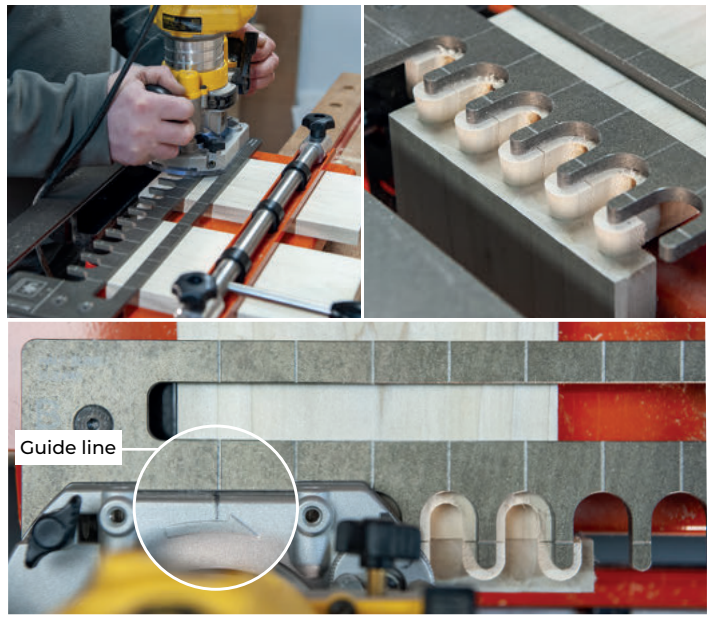
Fig 11-12



6) Make a light scribe cut on the front of the board working from right to left, see fig 13. Then starting at the left hand side of the comb follow the fingers to make the dovetail cut working from left to right ensuring that the router stays flat on the comb at all time, see fig 14-15. Use the guide lines to help find the fingers, see fig 16. **DO NOT LIFT THE ROUTER WHILST IT IS RUNNING!**

Fig 13

Fig 14-15-16



7) Remove both boards & try for fit. If the joint is too tight & won't fit together with a light tap then raise the cutter very slightly (approx 0.5mm) and recut new boards, see fig 17.

Fig 17-18

Trouble shooting -

- **Joint too tight -** raise the cutter very slightly (approx 0.5mm) and recut new boards, see fig 17.
- **Joint too loose -** lower the cutter very slightly (approx 0.5mm) and recut new boards.
- **Gaps at one end of the joint -** timber not square, comb not sat flat on timber, see fig 18
- **Gaps in the middle of the joint -** Board cupped
- **Box sides not in line -** timber not centralised or timber not cut equally, see fig 19.
- **Too much overhang -** use the comb adjuster knobs to slightly move comb forwards, see fig 20.

Fig 19-20

- **Max timber width - 290mm**
- **Min timber thickness - 10mm**
- **Max timber thickness - 25mm**

Parts needed -

- Template B (sliding / half blind)
- Any straight cutter up to 14.5mm in diameter
- ¾" (19mm) Guide bush

Slot boards are cut horizontally

Groove Slot

1) Attach comb B with the long groove slot at the front of the jig, see fig 01, move both side stops to a central position & lock in place, see fig 02.

Fig 01-02

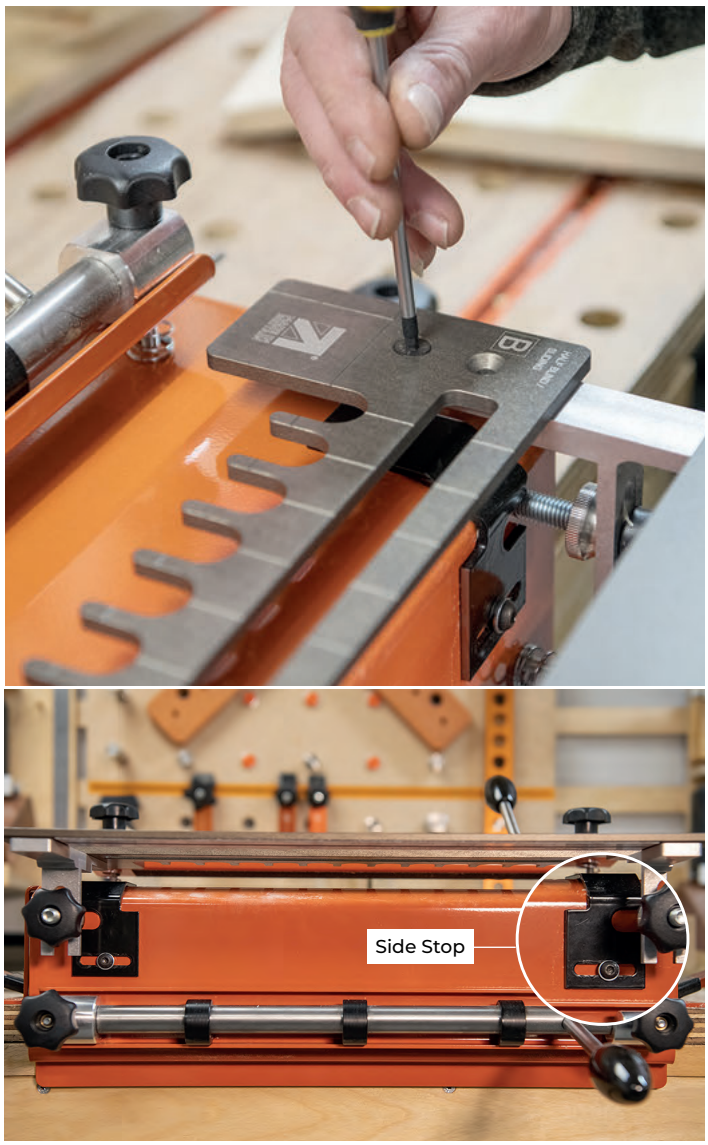


Fig 03-04-05

2) Mark a square line across the board where the centre of the groove slot will be, load in & clamp the board horizontally under the comb & up against the left hand side stop, see fig 03-04-05.

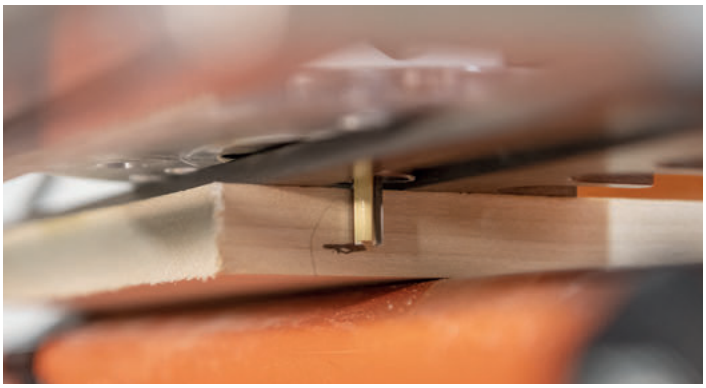
3) Ensure that the comb is sat flat & level on top of the board, see fig 06. Use the wider part of the set gauge to ensure that the marked square line is central to the comb slot, see fig 07-08. Use the comb adjuster knobs to align & adjust, see fig 09.

Fig 06-07-08

Fig 09

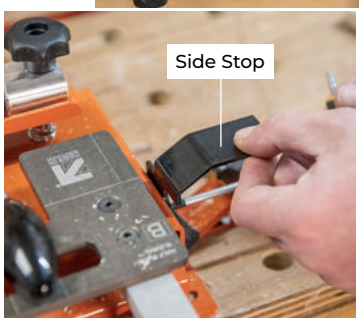
4) The cutter size will generally match the board to be slotted into the routed groove (eg 10mm board = 10mm cutter). If a wider cut is required then comb or board adjustments can be made & multiple cuts made to achieve a wider groove slot. The cutter depth is optional but for the best aesthetic & strength results set the cutter depth to approx ⅔ the thickness of the material, see fig 10.

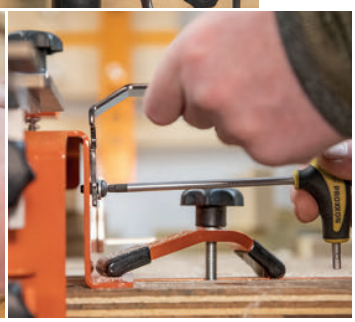
Fig 10



5) Attach the magnetic extraction at the right hand end of the support bar, see fig 11 or on a larger width board attach the right hand side stop to the right hand end of the jig to support the work, see fig 12-13-14.

Fig 11-12-13-14





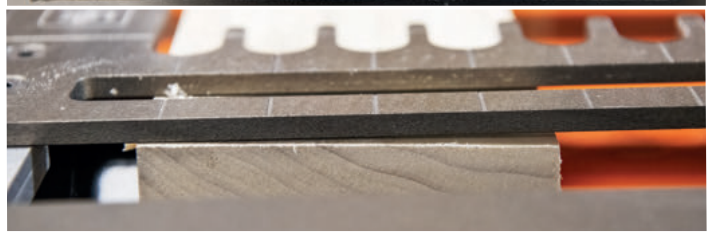
6) Start the cut at the right hand side of the jig moving the router from right to left, see fig 15-16. in a slow steady continuous motion **DO NOT LIFT THE ROUTER AT ANY TIME DURING A CUT**- NB if working in very hard wood a half depth cut may be required.

Fig 15-16

Trouble shooting -

- **Groove deeper one end than the other -** see fig 17 comb not sat flat on the board, see fig 18.
- **Joint too tight -** remove more material by slightly adjusting comb position.
- **Joint too loose -** cutter too large.
- **Joint not square on board -** pencil line not marked square, comb slot set gauge not used.

Fig 17-18



- **Max timber width - 290mm**
- **Min timber thickness - 13.5mm**
- **Max timber thickness - 25mm**

Parts needed -

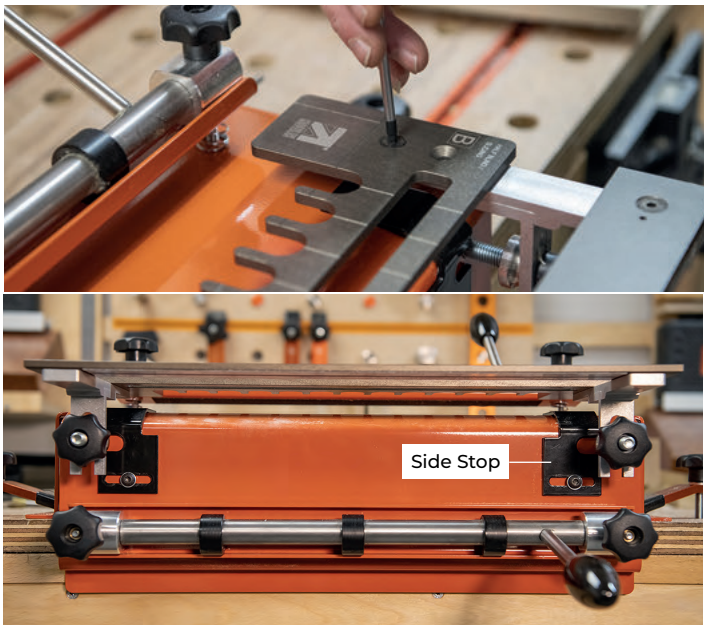
- Template B (sliding / half blind)
- Dovetail cutter
- ¾" (19mm) Guide bush

Dovetail slot boards are cut horizontally, the opposing tenon boards are cut vertically

Dovetail slot

1) Attach comb B with the long groove slot at the front of the jig, see fig 01, move both side stops to a central position & lock in place, see fig 02.

Fig 01-02



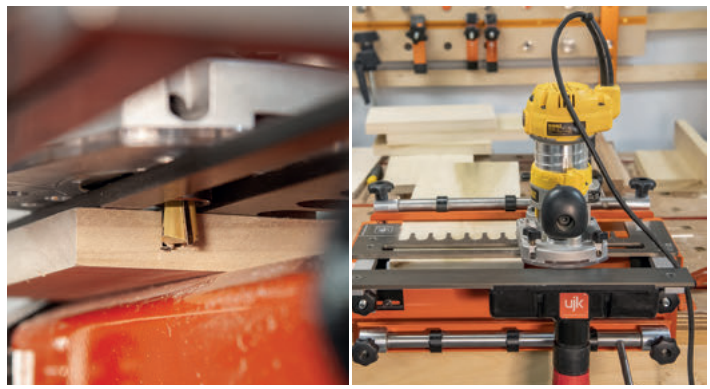
2) Mark a square line across the board where the centre of the dovetail slot will be, see fig 03. Load in & clamp the board horizontally under the comb & up against the left hand side stop, see fig 04.

Fig 03-04

Fig 05-06-07-08

3) Ensure that the comb is sat flat & level on top of the board, see fig 05. Use the wider part of the set gauge to ensure that the marked square line is central to the dovetail comb slot, see fig 06. Use the comb adjuster knobs to align & adjust, see fig 07-08.

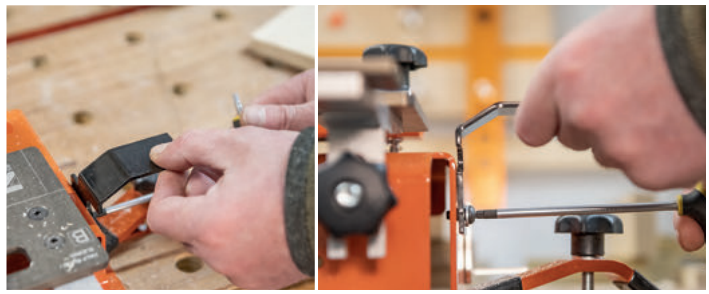
Fig 09-10



4) The cutter depth is optional & will always be the same for both the dovetail slot & the opposing tenon. For the best aesthetic & strength results set the cutter depth to approx ⅔ the thickness of the material- **NB max cutter depth 19mm**, see fig 09.

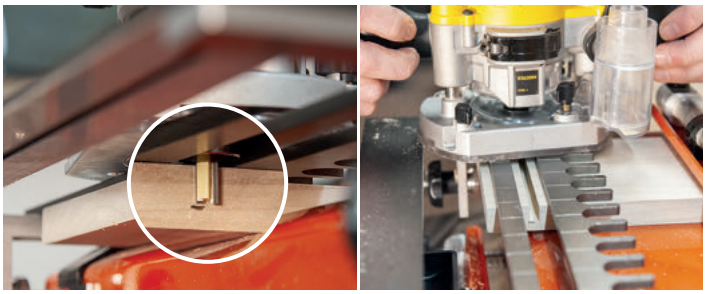
5) Attach the magnetic extraction at the right hand end of the support bar, see fig 10 or on a larger width board attach the right hand side stop to the right hand end of the jig to support the magnetic extraction, see fig 11-12. Start the cut at the right hand side of the jig moving the router from right to left. **DO NOT LIFT THE ROUTER AT ANY TIME DURING A CUT.**

Fig 11-12



NB if working in very hard wood a stock removal cut may be wise, this is done by running a 6mm cutter through the slot first, with the cut depth a little less than the required dovetail cut, see fig 13-14.

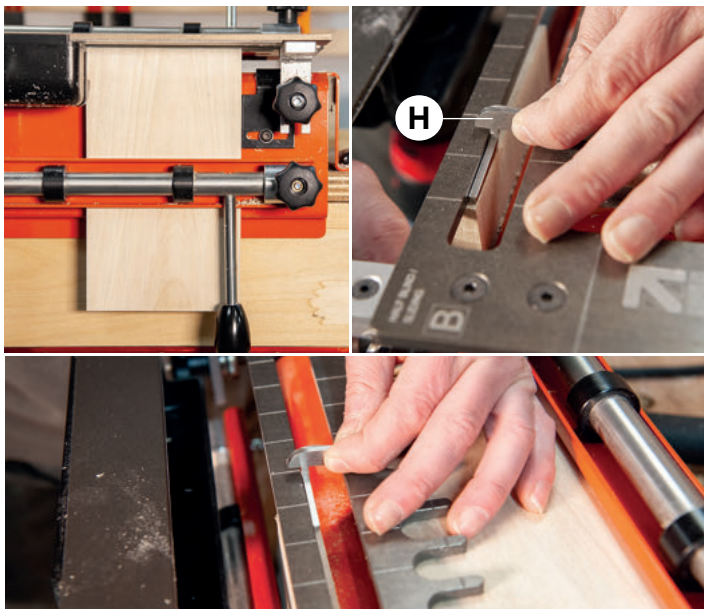
Fig 13-14



Dovetail tenon cut

1) With the comb in the same position load in & clamp the tenon board into the jig in the vertical position ensuring that the board is against the side stop on the right & the board is up against the underside of the comb, see fig 15. NB a comb support board may help keep the comb from flexing if a large heavy router is being used.

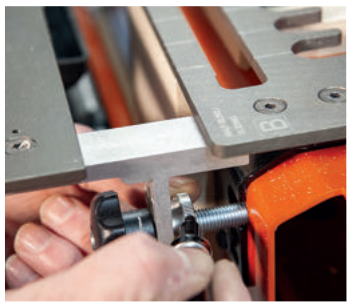
Fig 15-16-17



2) Use the smaller (3.2mm) end of the setting gauge (H) to align the comb slot to the edge of the board ensuring that both ends of the board are set the same, see fig 16-17. No cut will be made at this stage.

Fig 18-19-20-21

3) To set the comb to make the first cut move the comb towards the front of the jig by first unlocking the comb lock knobs & then turn both comb adjuster knobs one full turn anticlockwise. Making a pen mark on the adjuster knob may help with this, see fig 18-19-20-21.



4) With the cutter set at the same depth as when cutting the dovetail slot (approx ⅔ material thickness) position the router at the left side of the comb, cutting from left to right in a slow continuous motion, **DO NOT LIFT THE ROUTER AT ANY TIME DURING A CUT**, see fig 22-23. With the board the same end up flip the board & cut the other side, see fig 24-25-26. Position the magnetic extraction to the left or you may prefer to use the router's extraction for best extraction results on this cut, see fig 27. Try for fit, see fig 28.

Fig 22-23-24-25-26

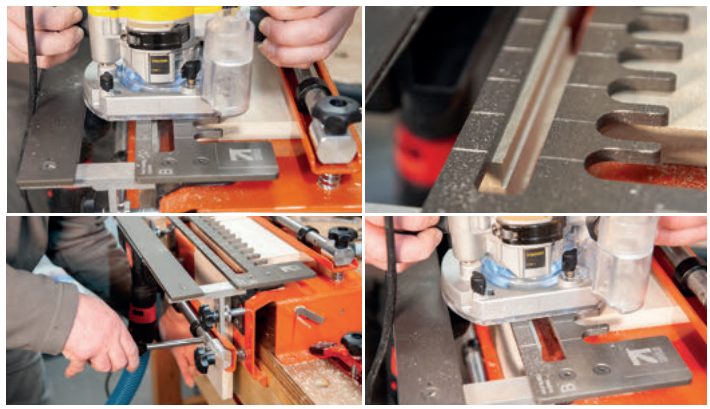


Fig 27-28-29

More passes may be required depending on board thickness. To remove more material simply adjust the comb towards the front of the jig as in step 3, see fig 29.

Trouble shooting -

- **Gap one end of the dovetail -** comb not sat flat on the board, see fig 30.
- **Joint too tight -** remove more material by moving comb very slightly forwards.
- **Joint too loose -** move comb slightly backwards & recut new board.
- **Joint not square on board -** pencil line not marked square, comb slot set gauge not used.
- **Gaps on shoulders / tenon top -** cutter depth not the same for both cuts , comb not sat flat on board, see fig 31.

Fig 30

Fig 31

- **Max timber width - 300mm**
- **Min timber thickness - 10mm**
- **Max timber thickness - 19mm (pin board)**
  25mm (tail board)

Parts needed -

- Template A (through / box)
- 10.39mm Straight cutter (pins)
- 13.55mm Dovetail cutter (dovetails)
- ⅝" (15.9mm) Guide bush (pins)
- ¾" (19mm) Guide bush (dovetails)

All boards are cut vertically

Cut dovetails first - dovetail cutter, ¾" guide bush used

1) Attach comb A with the straight fingers (tails) at the front of the jig, see fig 01 & level the comb by placing a 15-20mm thick x 150mm - 200mm wide x 200mm - 250mm long flat board underneath the comb locking the comb in place using the comb lock knobs, see fig 02.

Fig 01-02

2) Move the magnetic extraction then use the hex key provided to move the side stop to the left, see fig 03-04-05. Load in vertically the first board on the left of the jig pushing up to the underside of the comb & centralising to the fingers, see fig 06-07.

Fig 03-04-05

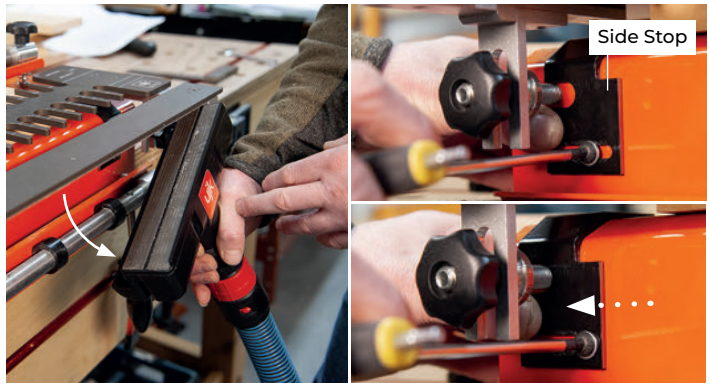
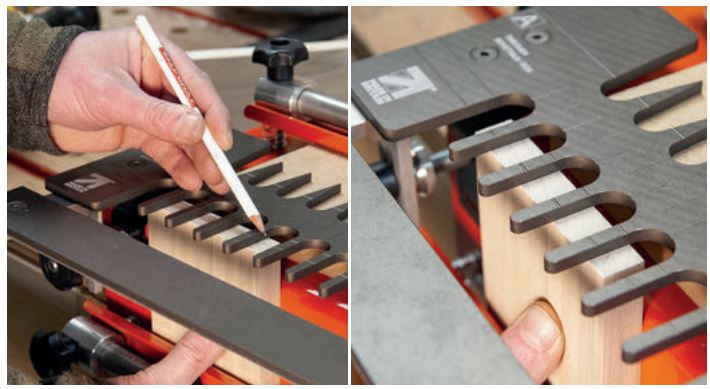
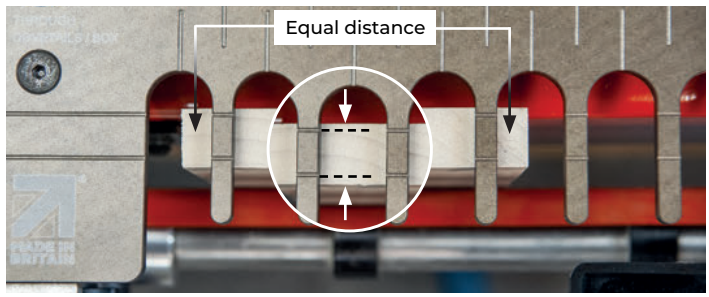


Fig 06-07



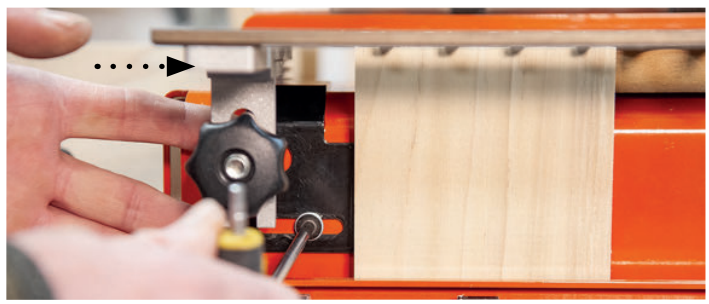
3) Ensure that the material markers on the comb are centralised to the top of the board & look equal along the length, see fig 08.

Fig 08



4) Slide the side stop towards the right to make contact with the side of the board, see fig 09 & lock in place.

Fig 09

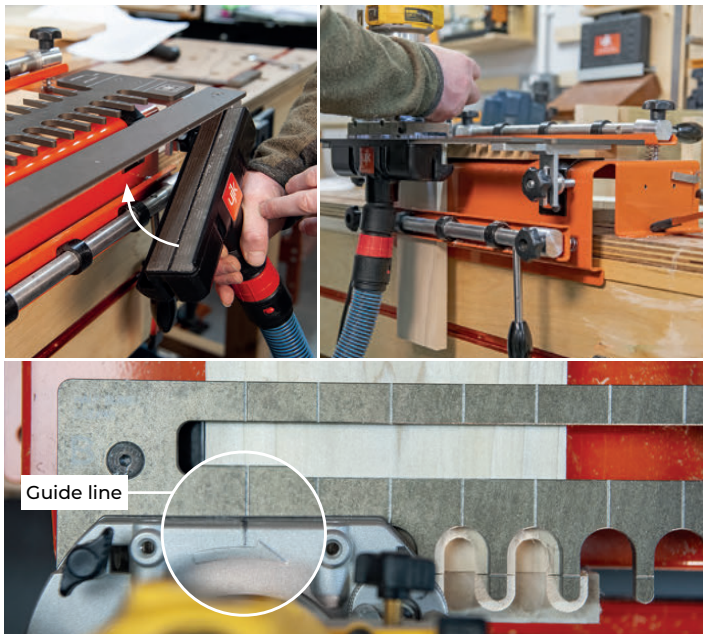


5) Use the opposing board to mark a cutter depth set line on the material, see fig 10 then plunge the dovetail cutter down through the fingers in front of the board so that the tip of the cutter just meets the marked line, see fig 11.

Fig 10-11

6) Slide or reattach the extraction, see fig 12 on the right & begin the cut working from left to right ensuring that the router stays flat on the comb at all time, see fig 13. Use the guide lines to help find the fingers, see fig 14 **DO NOT LIFT THE ROUTER WHILST IT IS RUNNING!**

Fig 12-13-14



Cutting pins - 10.39mm straight cutter, ⅝" guide bush used

1) Undo the 4 countersunk hex screws & turn the comb around so that the V shape fingers are at the front of the jig (pins), see fig 15-16-17-18. Load in vertically the pin board against the left hand side stop & up against the underside of the comb, see fig 19-20. Undo the comb lock knobs & use the comb adjuster knob to align the finger line to the edge of the board, see fig 21-22.

Fig 15-16-17-18

Fig 19-20

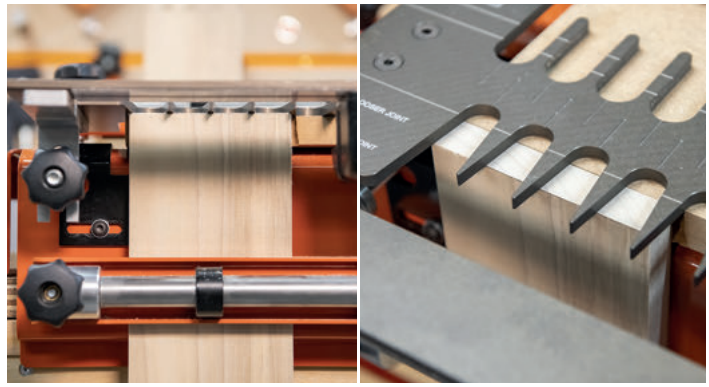
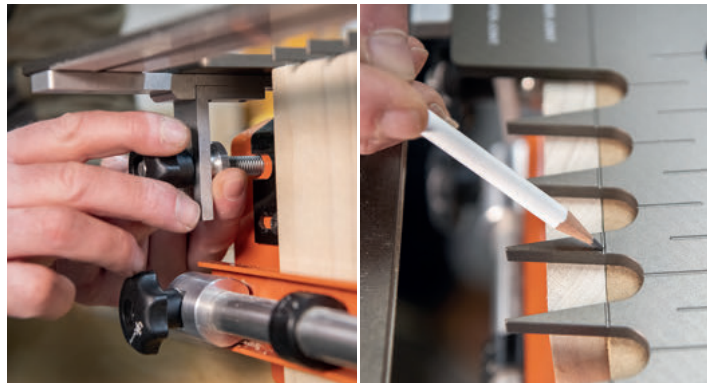
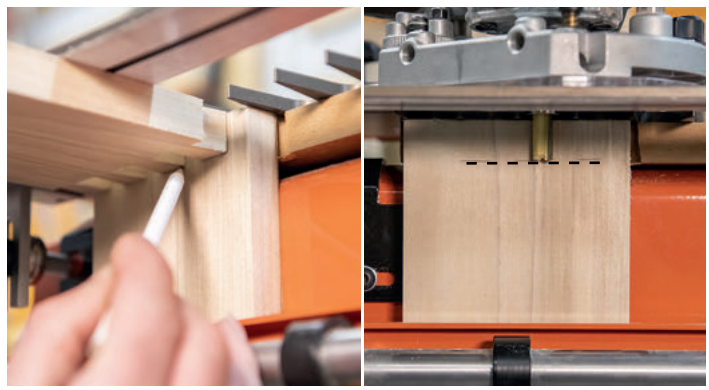


Fig 21-22



2) Use the opposing board to mark a cutter depth set line on the material, see fig 23 then plunge the straight cutter down through the fingers in front of the board so that the tip of the cutter just meets the marked line, see fig 24.

Fig 23-24



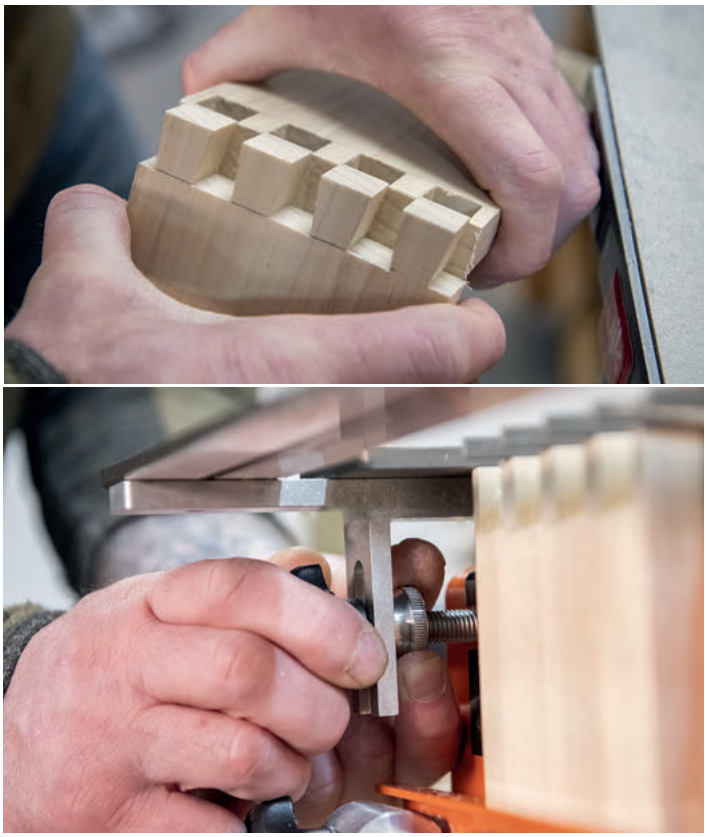
3) Reposition the magnetic extraction, see fig 25 on the left & begin the cut working from left to right, see fig 26-27. **DO NOT LIFT THE ROUTER WHILST IT IS RUNNING!**

Continues over...

Fig 25-26-27

4) Remove the now cut pin board & try for fit, see fig 28. If the pins are too tight & won't slide into the dovetails they can be recut to ensure a good fit. Simply load the board back into the jig in exactly the same position, undo the comb lock knobs & move the comb backwards by turning the adjuster knobs clockwise, see fig 29. Try half a turn to start with. Recut taking a very light skim & try for fit again - repeat if still too tight, see fig 30.

Fig 28-29-30



Trouble shooting -

- **Joint too tight -** move comb backwards & recut
- **Joint too loose -** move fingers forward & recut new board
- **Gaps at one end of the joint -** timber not square, comb not sat flat on timber, see fig 31
- **Excessive break out at the back of the cut -** add a sacrificial breakout board behind the cut, see fig 32-33
- **Box sides not in line -** timber not centralised or timber not cut equally, see fig 34

Fig 31-32-33-34

- **Max timber width - 300mm**
- **Min timber thickness - 6mm**
- **Max timber thickness - 25mm**

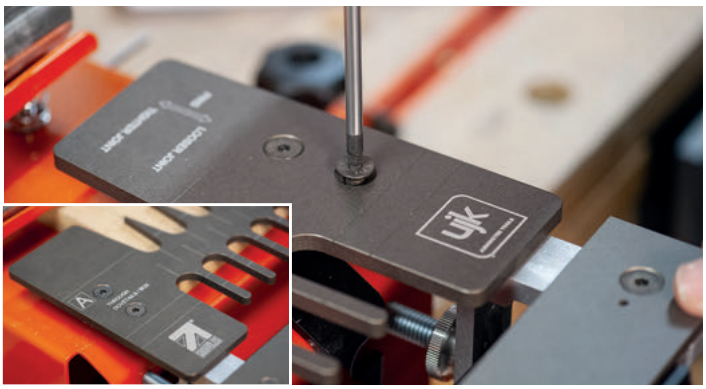
Parts needed -

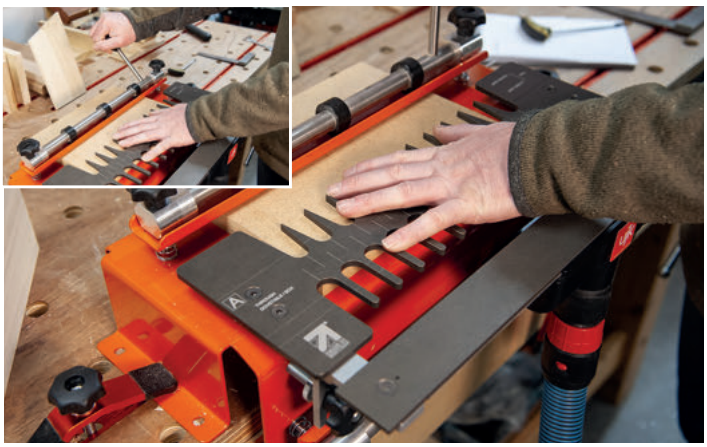
- Template A (through / box)
- 12.5mm Straight cutter
- ¾" (19mm) Guide bush

All boards are cut vertically

1) Attach comb A with the straight fingers at the front of the jig, see fig 01 & level the comb by placing a 15-20mm thick, 150mm - 200mm x 200mm - 250mm flat board underneath the comb locking the comb in place using the comb lock knobs, see fig 02.

Fig 01-02



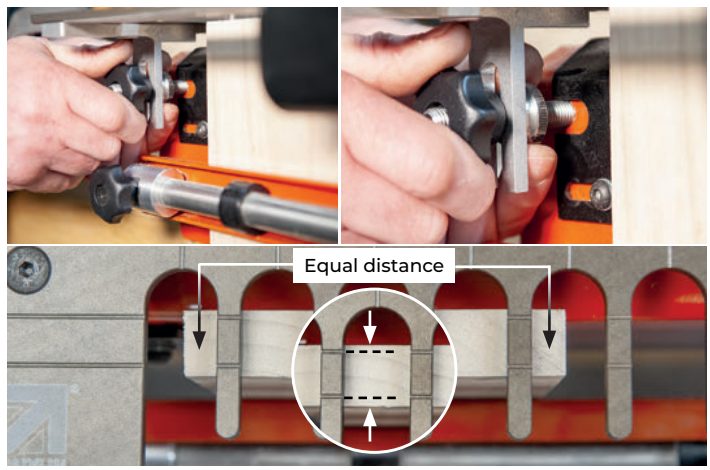


2) Remove the magnetic extraction then use the hex key provided to move the side stop to the left. Load in vertically the first board on the left of the jig pushing up to the underside of the comb & centralised to the fingers, see fig 03-04-05-06.

Fig 03-04-05-06

3) Undo the comb lock knobs & use the comb adjuster knobs to ensure that the two finger lines on the comb are centralized to the top of the board & look equal along the length, see fig 07-08-09.

Fig 07-08-09



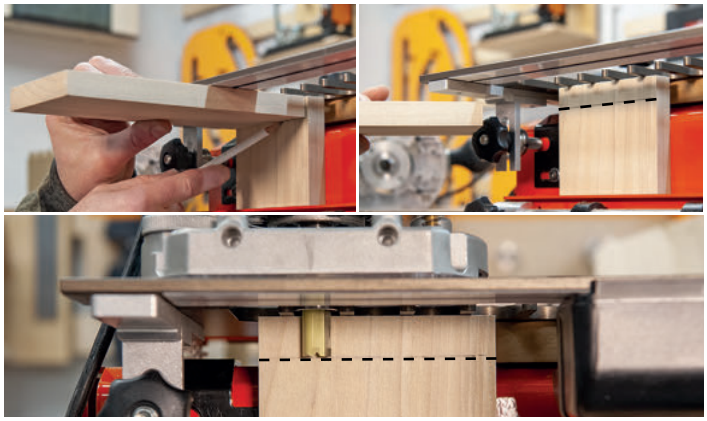
4) Slide the side stop to the right to make contact with the side of the material, see fig 10 & lock in place.

Fig 10

5) Use the opposing board to mark a cutter depth set line on the material then plunge the cutter down through the fingers in front of the material so that the tip of the cutter just meets the marked line, see fig 11-12-13.

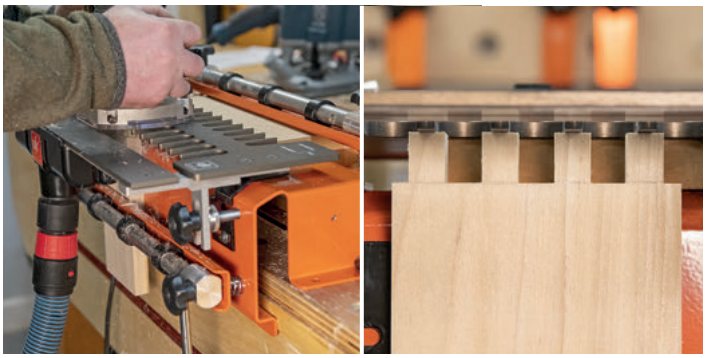
Continues over...

Fig 11-12-13



6) Slide or reattach the extraction & begin the cut working from left to right ensuring that the router stays flat on the comb at all times, see fig 14. Use the guide comb lines to help find the fingers, see fig 15. **DO NOT LIFT THE ROUTER WHILST IT IS RUNNING!**

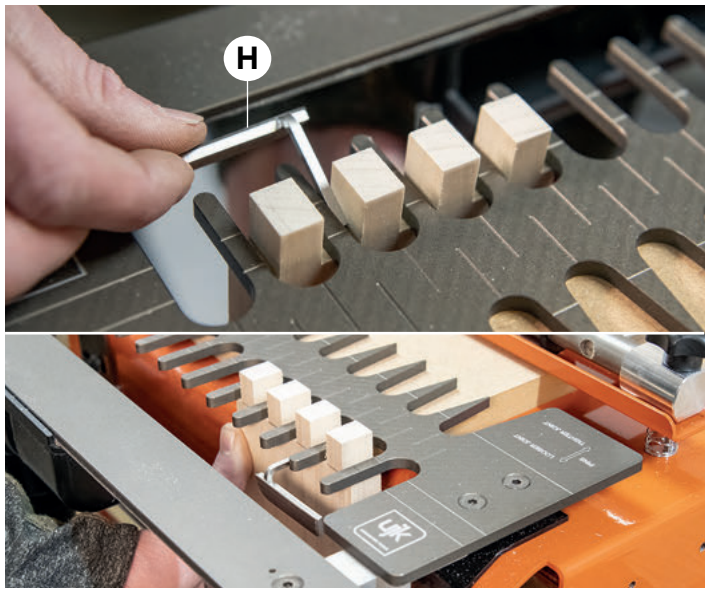
Fig 14-15



NB If working in very hard wood a half depth cut may be required.

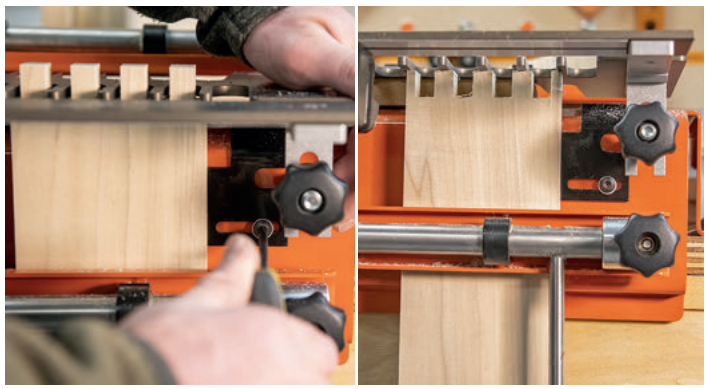
7) The opposing cut is done on the right hand side of the jig & uses the fingers just cut to set up. Firstly undo the side stop & slide it to the right. Then push the precut fingers fully up through the comb & centralise using the smaller part of the set gauge (H) provided and lock in place, see fig 16-17-18-19-20.

Fig 16-17-18-19-20



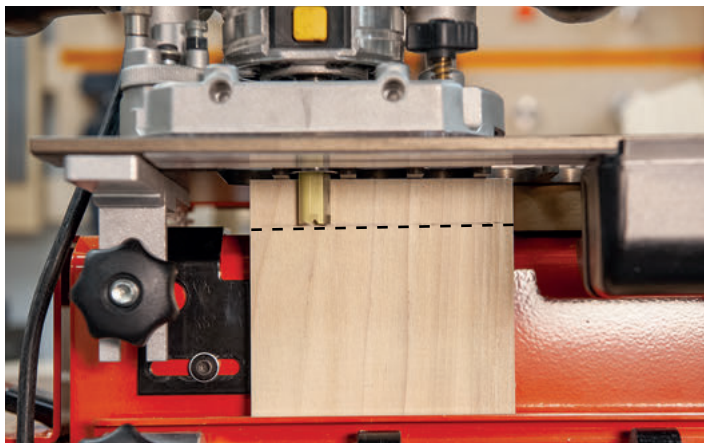
8) Slide side stop to the left to make contact with the board & lock in place. Remove the set up board & replace with the board to be cut, sliding it in against the side stop & up against the underside of the fingers, see fig 21-22.

Fig 21-22



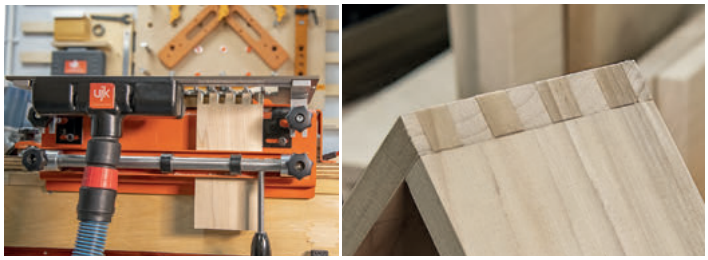
9) As before, use the opposing board to mark a cutter depth set line on the material then plunge the cutter down through the fingers in front of the material so that the tip of the cutter just meets the marked line, see fig 23. **NB** If using different thickness boards the cutter depth will need to be reset, if the board thickness is the same then the cutter depth remains the same as the previous cut board.

Fig 23



10) Cut from left to right at a slow steady pace & check for fit, see fig 24

Fig 24



Trouble shooting -

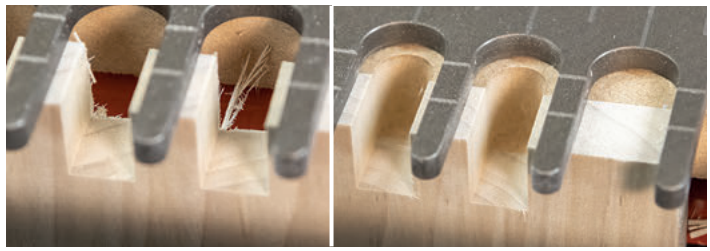
- **Box sides not in line -** timber not centralised or timber not cut equally, see fig 25.
- **Gaps one end of the joint -** timber not cut square, comb not flat & level to the base, timber not pushed up to the underside of the fingers, see fig 26.
- **Top of the cut fingers not coming all the way through the oppsing board -** cutter not deep enough, see fig 27.
- **Splintering at the back of the cut -** slow down the cut rate, add in sacrificial backing board, see fig 28.

Fig 25

Fig 26

Fig 27

Fig 28



CORNER DOVETAIL REBATES

Max timber width - 290mm
Min timber thickness - 12mm
Max timber thickness - 25mm

Parts needed -

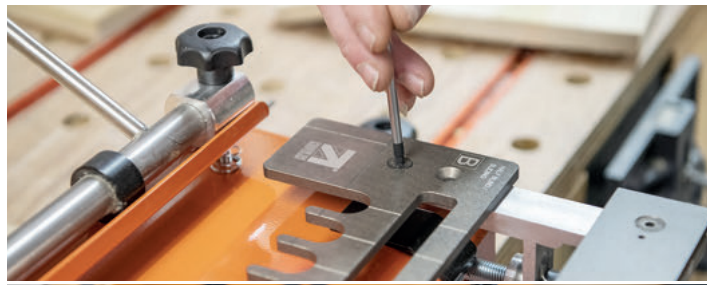
- Template B (sliding / half blind)
- 13.55mm Dovetail cutter
- ¾" (19mm) or ⅝" (15.9mm) Guide bush

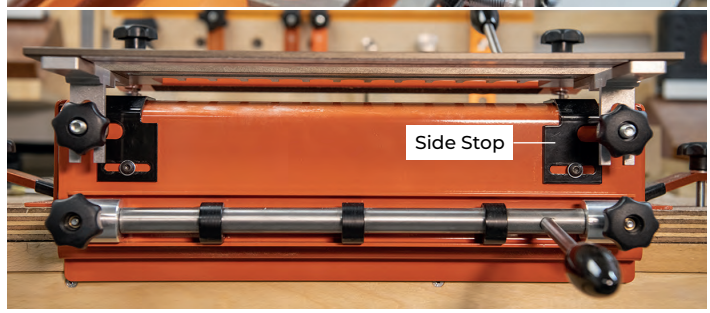
For good corner edge alignment using 12mm & 15mm thick boards both parts of this joint can be cut at the same time, (single pass). It is recommended that other board thicknesses are cut in 2 passes.

Single pass 12mm board thickness, ¾" guide bush -

1) Attach comb B with the long groove slot at the front of the jig, see fig 01, move both side stops to a central position & lock in place, see fig 02.

Fig 01-02





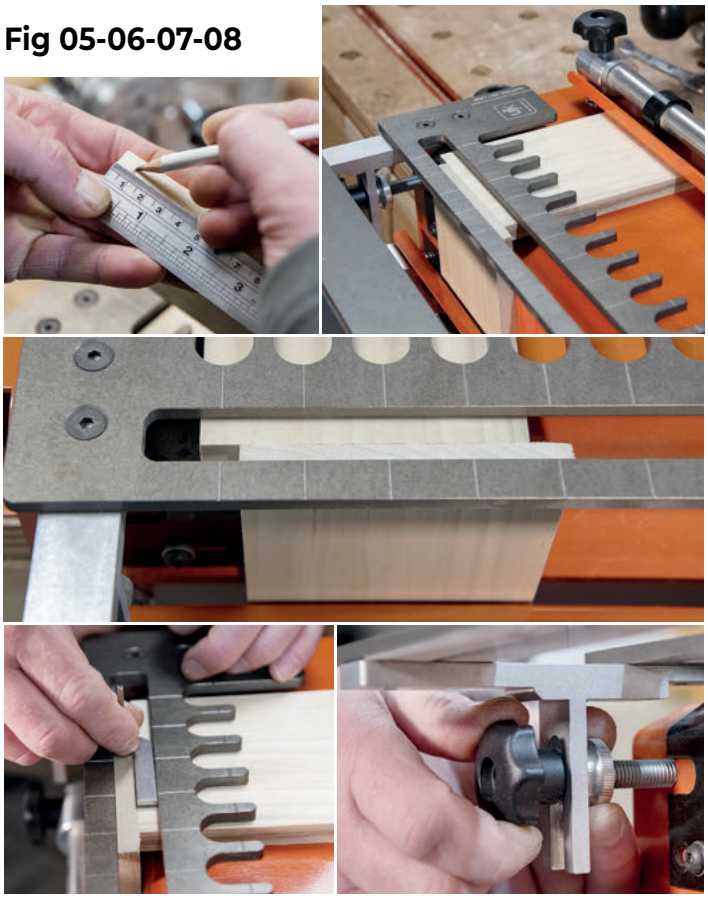
2) Load in the horizontal board. Against the left hand side stop ensuring that the comb is sat flat on the board, a support board with equal thickness to the cut board may be required to support the comb when using narrow boards, see fig 03-04.

Continues over...

Fig 03-04

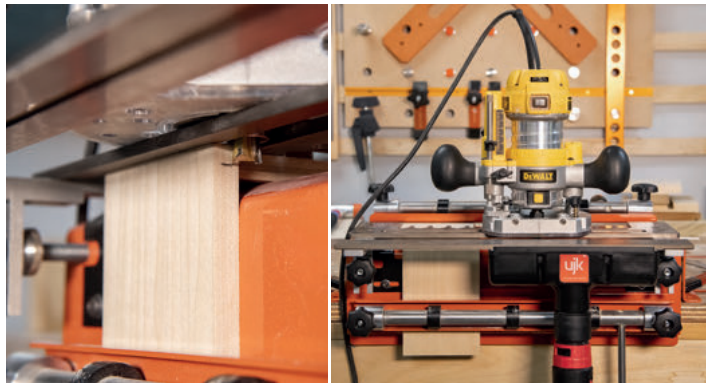
3) Mark an 8mm line from the top edge on the side of the vertical board, see fig 05 then load in the vertical up against the left hand side stop and up against the underside of the comb to meet the edge of the horizontal board, see fig 06-07. Use the wider part of the magnetic set gauge to ensure that the joint line is central to the comb slot, see fig 08. Use the comb adjuster knobs to align & adjust, see fig 08.

Fig 05-06-07-08



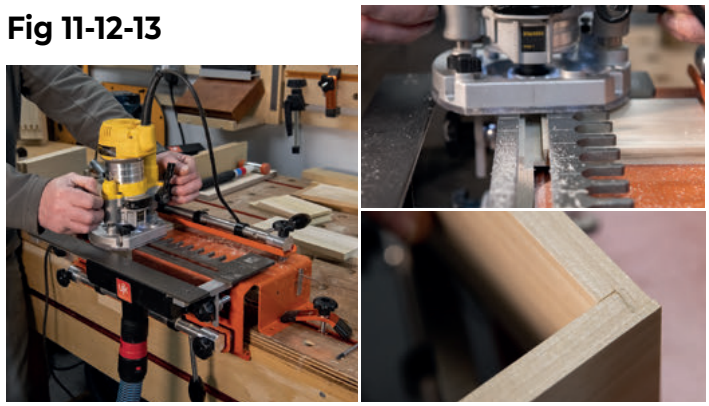
4) Plunge the cutter down through the comb slot so that the tip of the cutter just meets the marked line, see fig 09. Attach the magnetic extraction at the right hand end of the support bar, see fig 10.

Fig 09-10



5) Start the cut at the right hand side of the jig moving the router from right to left in a slow, steady, continuous motion, see fig 11 **DO NOT LIFT THE ROUTER AT ANY TIME DURING A CUT**, see fig 12-13.

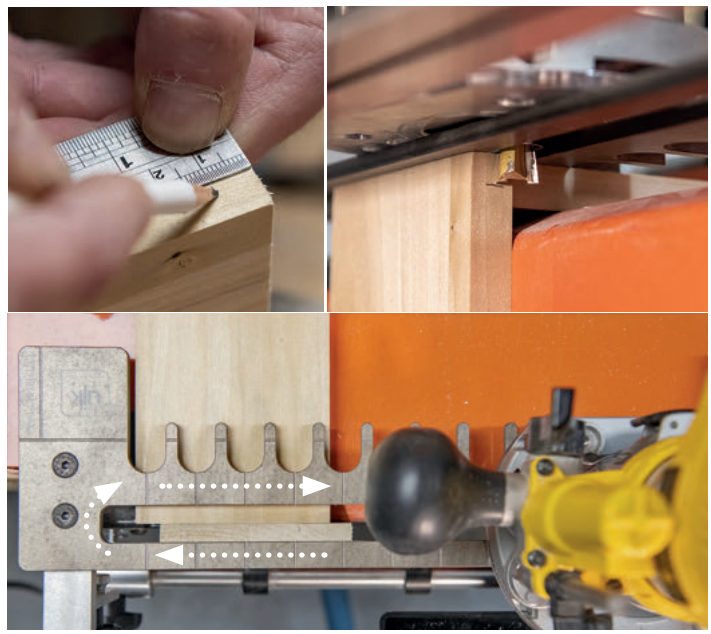
Fig 11-12-13



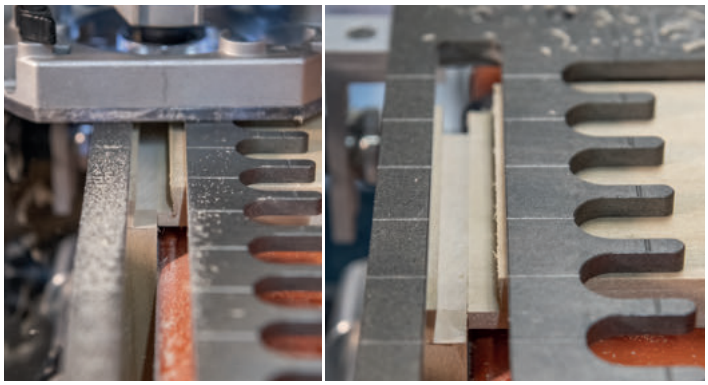
Single pass 15mm board thickness, 5/8" guide bush -

The process to achieve a good corner edge alignment on a 15mm board is as previously described in steps 1 to 5 apart from the use of the ⅝"(15.9mm) guide bush & the direction of travel with the router, 14-15-16-17-18.

Fig 14-15-16-17-18

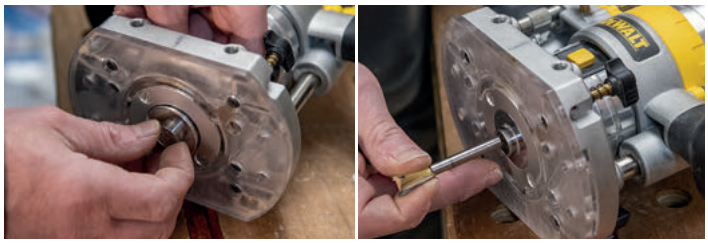


Direction of travel - **clockwise**



NB - The cutter will need to be loaded in through the base of the router with the ⅝" guide bush already in position, 19-20. **DO NOT RELEASE THE PLUNGE FULLY WHEN CUTTER IS FITTED**, the cutter will be damaged as it passes through the inner guide bush.

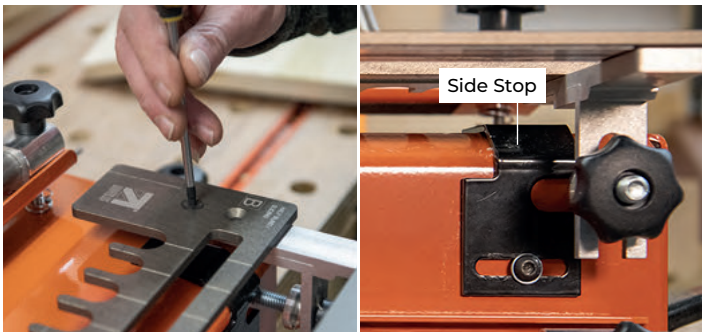
Fig 19-20



A corner dovetail rebate joint can be achieved in any board thickness above 12mm in 2 passes using the ¾" guide bush & dovetail cutter -

1) Attach comb B with the long groove slot at the front of the jig, see fig 21 move both side stops to a central position & lock in place, see fig 22.

Fig21-22

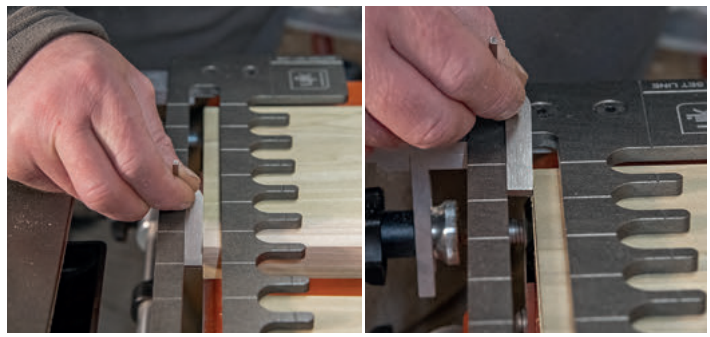


2) Mark a line ⅔ thickness of the board, see fig 23 & load in the horizontal board. Support board gainst the left hand side stop ensuring that the comb is sat flat on the board, a support board with equal thickness to the cut board may be required to support the comb when using narrow boards, see fig 24.

Fig 23-24

3) Use the wider part of the set gauge to position board edge to the centre of the comb slot, see fig 25-26.

Fig 25-26



4) Plunge the cutter down through the comb slot to set the cutter depth to the marked pencil line, see fig 27. Attach the magnetic extraction at the right hand end of the support bar, see fig 28 or on a larger width board attach the right hand side stop to the right hand end of the jig to support the magnetic extraction. Alternatively the router's in built extraction nozzle can be used, see fig 29-30.

Fig 27-28

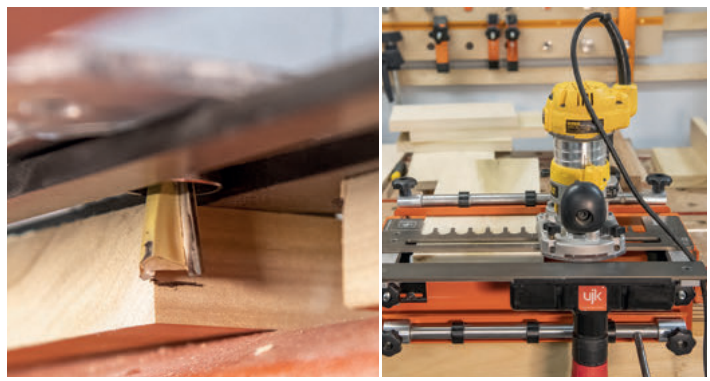
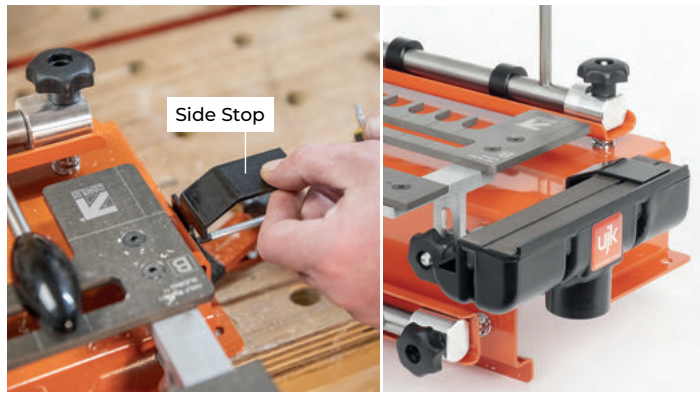


Fig 29-30



Continues over...

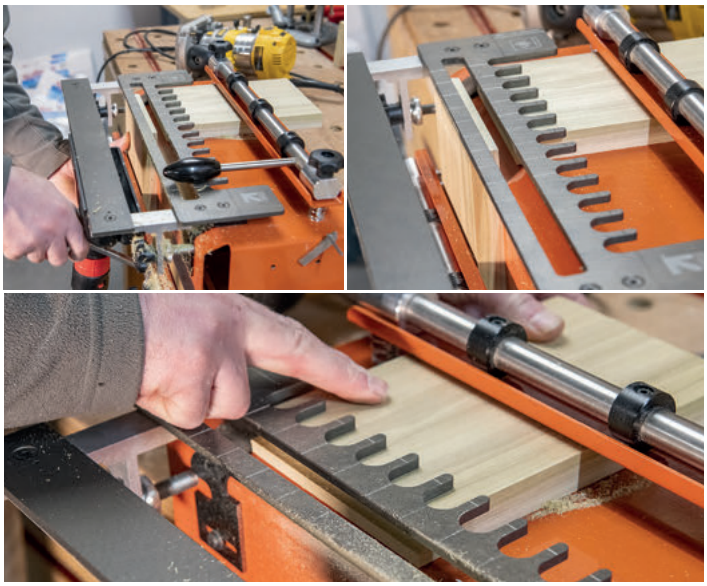
Fig 31-32

5) Start the cut at the right hand side of the jig moving the router from right to left in a slow steady continuous motion **DO NOT LIFT THE ROUTER AT ANY TIME DURING A CUT**, see fig 31-32.

Opposing board - Vertical cut

1) With the comb in the same position load in & clamp the tenon board into the jig in the vertical position ensuring that the board is against the side stop on the left & the board is up against the underside of the comb, see fig 33-34. **NB** To support the comb leave the horizontal board under the comb but slide it back slightly out of the cutting area, see fig 35.

Fig 33-34-35



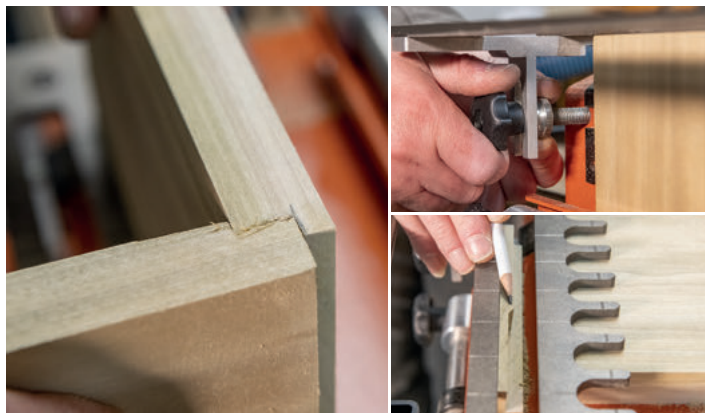
2) Use the wider part of the set gauge to position board edge to the centre of the comb slot, see fig 36. **NB** The cutter depth should remain the same as the previous horizontal board cut.

3) Start the cut at the right hand side of the jig moving the router from right to left in a slow steady continuous motion **DO NOT LIFT THE ROUTER AT ANY TIME DURING A CUT**, see fig 37.

Fig 36-37

4) Try the fit, see fig 38. If more material needs to be removed to achieve perfect corner edge alignment then simply use the comb adjuster knobs to move the comb towards you & recut the board - **NB** Ensure that both comb adjuster knobs are moved the same amount to ensure that the comb stays parallel to the board edge, see 39-40.

Fig 38-39-40



Trouble shooting

Gap at one end of the joint - board not cut square, not pushed up to the underside of the fingers, see fig 41.

Gap along the length of the joint on the inside - cutter depth altered between cuts, board not pushed up to the underside of the fingers, see fig 42.

Fig 41-42