

Blairbe®

CONTRACTOR



STAIR JIG

Model No: CSJ100

Part No: 6462120

OPERATION & MAINTENANCE
INSTRUCTIONS



0405

Please note that the details and specifications contained herein, are correct at the time of going to print. However, CLARKE International reserve the right to change specifications at any time without prior notice.



Thank you for purchasing this CLARKE Stair Jig.

Before attempting to use the jig, please read this manual thoroughly and follow the instructions carefully. In doing so you will ensure the safety of yourself and that of others around you, and you can look forward to the jig giving you long and satisfactory service.

CLARKE GUARANTEE

This CLARKE product is guaranteed against faulty manufacture for a period of 12 months from the date of purchase. Please keep your receipt as proof of purchase.

This guarantee is invalid if the product is found to have been abused or tampered with in any way, or not used for the purpose for which it was intended.

Faulty goods should be returned to their place of purchase, no product can be returned to us without prior permission.

This guarantee does not effect your statutory rights.

Introduction

Easy to follow step by step instructions.

The all in one jig accommodates open and closed staircases.

Producing a stair case is a fairly complicated task, even for the experienced carpenter.

Understanding the various technical terms and conforming to BS585 (1989 Wood Stairs) and building regulations requirement (Approved document K of the buildings regulations 1985) can seem very daunting. However, once you have familiarised yourself with the terminology for the various parts of the staircase, you will make the job quicker and easier to do than you may have first thought. This jig is certainly simpler and more user friendly than anything else currently on the market.

Check List

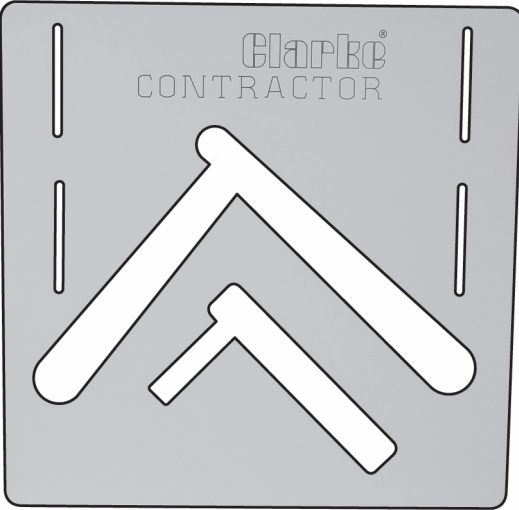
4 x Wing nuts. 

4 x Washers. 

4 x Aluminium spacers. 

2 x Threaded studs.  1 x Adapter Plate. 

2 Guide bushes. (1 Pair) 

1 x Template. 

1 x Sliding bar. 

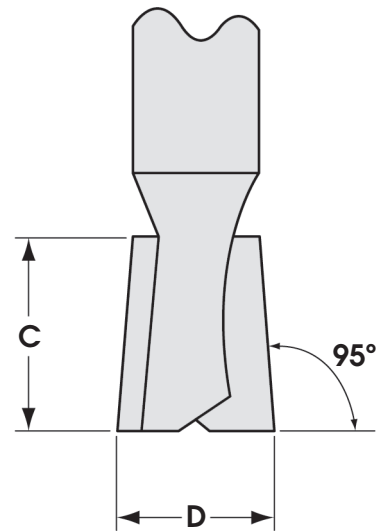
NOTE: The guide bushes are universal and fit the majority of routers on the market.

An adapter plate is supplied, to enable the use on routers that do not support these guide bushes.

IMPORTANT When using the adapter plate, always ensure the guide bushes are firmly secured and sit flat. Always refer to the router manufacturers instructions.

Other equipment required for use with this jig

- ◆ Hand Router capable of taking a 22mm dovetail cutter + standard 30mm guide bush.
- ◆ Minimum of 2 'G' clamps.
- ◆ For closed staircase:-
 - ◆ 16mm cutter for 22mm & 25.4mm treads.
 - ◆ 22mm cutter for 28.1mm & 32mm treads.
(only use 95° dovetail cutters - see diag opposite).
 - ◆ Added option to use a 30mm template guide to produce 38mm nose.
- ◆ For open staircase:-
 - ◆ 30mm guide bush.
 - ◆ 16mm straight cutter.



Closed Staircase Cutter

D = 16mm or 22mm

C = 25mm

Before commencing, 3 key features that need assessing.

1. **The number of steps and pitch of the staircase.**
2. **Projectional length of the nosing.**
3. **The thickness of the staircase tread.**

It is recommended you start by understanding these terms before commencing. Once you do understand these terms, and the measurement and planning of your staircase, the actual time to produce the stair strings could take less than an hour.

Terminology and standards - Parts of a staircase(GLOSSARY)

String

The string is the wooden side support, which holds the tread. It is either positioned on one or both sides. All machining with the router takes place on the string.

Tread

The tread is the wooden part on which you stand on a staircase.

Riser

The riser is the part between each tread (See diagram). This effects the rise which is measured from the top of the tread to the top of the next tread and every step or landing must have an equal amount of risers. British standards insist that the rise of a step must be no more than 220mm for a private stairway and not more than 190mm for a common stairway. Approved Document K states that the number of risers in a flight should be limited to 16 if a stairway serves an area used for shop or assembly purposes.

Nosing

The nosing is the length of material which overlaps the riser. we reccomend that this should project by no less than 22mm and is the size of nosing that can be routed by the smallest guide bush provided with this jig. However BS585 (Wood stairs) states the minimum should be no less than 16mm

Going

The going of a step is the space between the nosing of one step and the nosing of the step above - or as British Standards state, face of a riser to face of a riser. Like the riser, British Standards state strict regulations. These are - The going should not be less than 220mm for a private stairway and not less than 250mm for a common stairway.

Pitch line

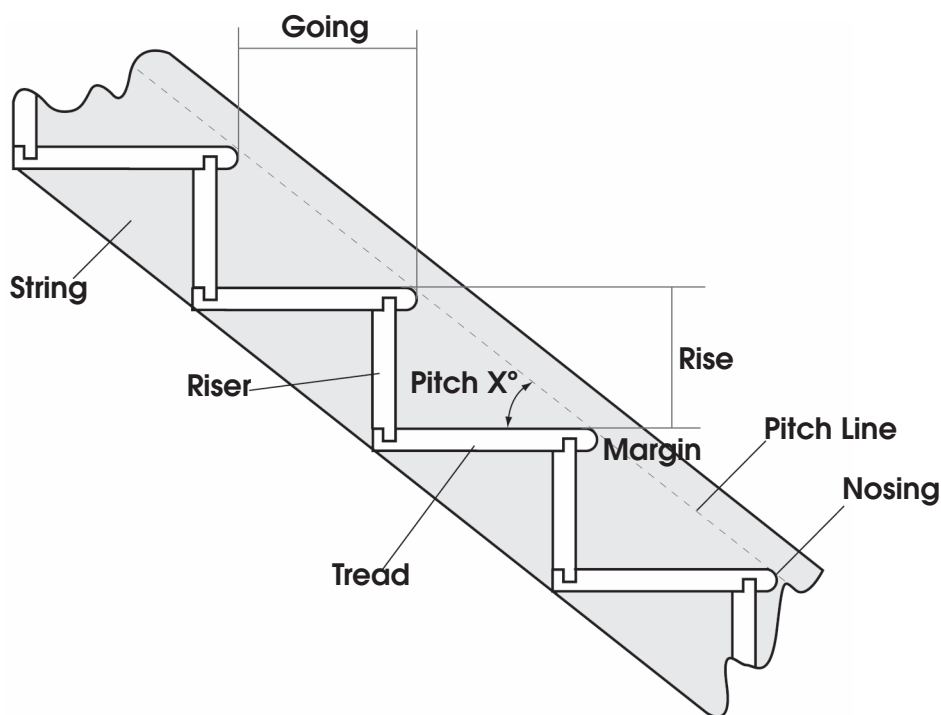
The pitch line is an imaginary line, which is drawn from the edge of each tread. It stretches from the floor to the landing.

Pitch

The pitch is the angle between the imaginary pitch line and the horizontal of the tread. (See diagram). Regulations state that this should not exceed 42° for a private stairway and 38° for a common stairway. The pitch should never be less than 25° because a stairway with a shallow angle takes up more room than those with a deeper angle.

Margin

The margin is the distance between the imaginary pitch line and the edge of the string.



Planning your staircase

The first information that you will need to find out is the total rise of the flight and the total going of the flight, if this is restricted. The normal rise of a step is between 170mm and 200mm. Therefore, divide the total rise by say 180.

For example, If the total rise of a flight is 2405mm and we have assumed that 180mm is your chosen rise, calculate the exact size as follows;

$$\frac{2405}{180} = 13.36$$

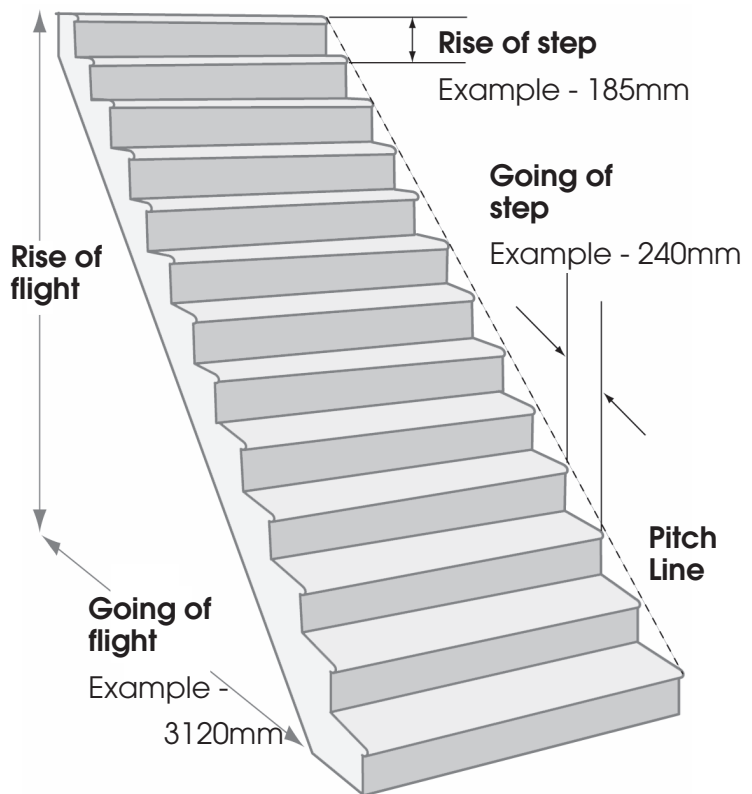
Round off to the nearest decimal point, this example = 13.

You will therefore need 13 steps (13 risers) $\frac{2405}{13}$ = the size (185mm) of each rise.

As stated earlier in the terminology, the going should be no less than 220 for a private stairway or 250mm for a common stairway. Let us presume that the going (G) is 240mm. Calculate your total going for the flight and ensure that this falls within your permissible space. This is calculated by multiplying the number of steps ie $13 \times 240 = 3120$ (This is your total going of flight). If this is not permissible, adjust accordingly.

To ensure your sizes comply with both the building regulation requirements and BS585, you need to calculate the following $2R + G$ (R=Rise and G=Going)

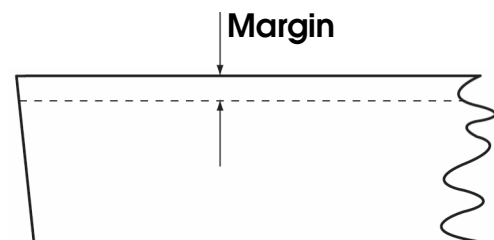
For example: $2 \times 185 + 240 = 610\text{mm}$.
If this number falls between 550mm and 700mm, it fits all requirements.



Closed Stair Jig

Procedure for finding start point

1. Prepare string for marking out and keep best face upper most. It is best to keep any bow in the string towards the top of the stairs.
2. A line has to be drawn for a metre or so, a certain distance away from the edge of the string. The distance is governed by the nose length which will be used. To obtain the right distance, refer to the table below.

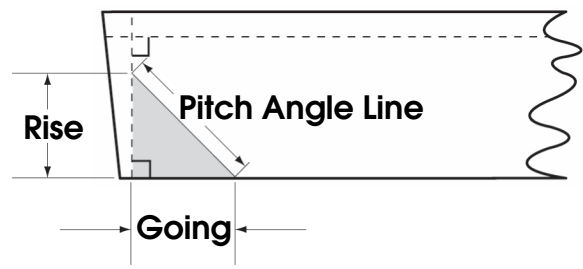


Nose Projection Distance	Margin Gap
22.0mm	51mm
25.4mm	53mm
28.1mm	55mm
32.0mm	57mm
38mm (achievable only using standard 30mm guide bush)	61mm
17 mm (open staircase)	51mm

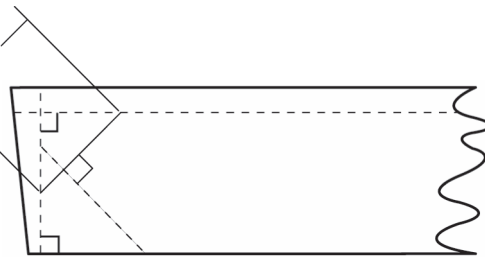
3. To create the pitch (Angle of slope) on the string. First of all, mark a right angled line across the string, on the end from which you will start (i.e. the bottom of the string). Important: check that the line is at right angles to the edge of the string as well as the margin line.



4. Measure from the right angled line along the side of the string, the going length and mark this point. From the same corner point intersection, measure across the end along the right angled line, the rise, and mark this point. Now draw a line between these two points. This line creates your pitch angle. (Measure pitch line and note for point 15 - page 8).

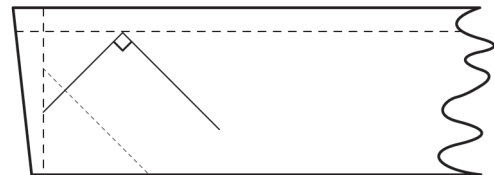


FIRST RISER AT BASE OF STAIRS

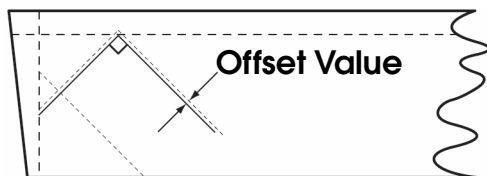


5. To find your start point along the margin, you need to draw a line at right angles to this pitch angle line. This line must be no less than the length of the rise and must be at right angles with the pitch line angles. The intersection of this line (The first riser line) with the margin will be your start point and the angle at which this line is drawn will be the angle to set the jig.

6. Finally, mark a line (The first tread line) at right angles to the first riser line from the intersection point with the riser and the pitch line.



Setting Up the Jig



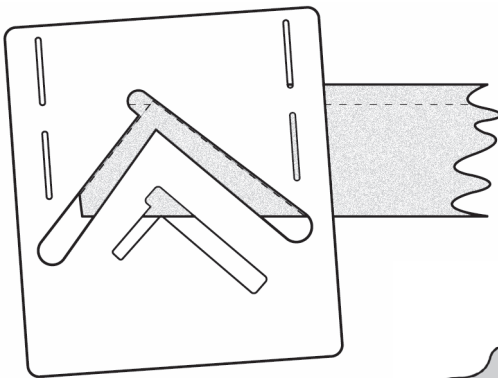
7. The final thing to calculate is the offset value between the edge of the cutter and the edge of the jig cut out.
8. This offset value varies according to which tread thickness you require.
9. Select from the table (page 7) the tread thickness and nose projection you require. As a general rule the nose projection equals the tread thickness. This will tell you which cutter size to use and the resultant offset value required to set the jig. Refer back to the table to determine which guide bush and cutter to use, before cutting.

10. Mark the offset value against the first riser and the first tread line as shown in the diagram above.

NOTE: If a 30mm guide bush is going to be used instead of the supplied guide bushes, then refer to table below.

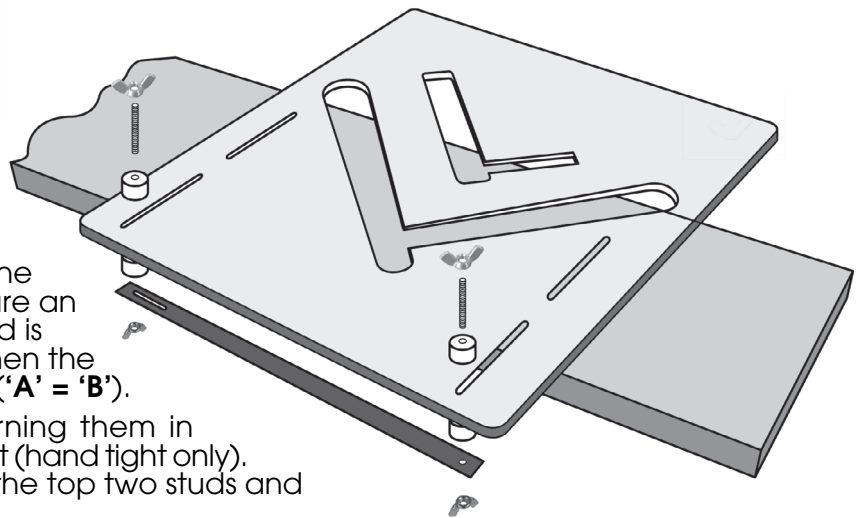
38mm Fixed Nose	
Ø16mm Cutter	25.4mm tread - 8mm offset
Ø22mm Cutter	32mm tread - 5mm offset

	NOSE →			
TREAD ↓				
	22.0mm	25.4mm	28.1mm	32.0mm
22.0mm	Ø16mm Cutter 10mm Offset Bush 2		Ø16mm Cutter 10mm Offset Bush 1	
25.4mm		Ø16mm Cutter 8mm Offset Bush 3		Ø16mm Cutter 8mm Offset Bush 4
28.1mm	Ø22mm Cutter 7mm Offset Bush 2		Ø22mm Cutter 7mm Offset Bush 1	
32.0mm		Ø22mm Cutter 5mm Offset Bush 3		Ø22mm Cutter 5mm Offset Bush 4



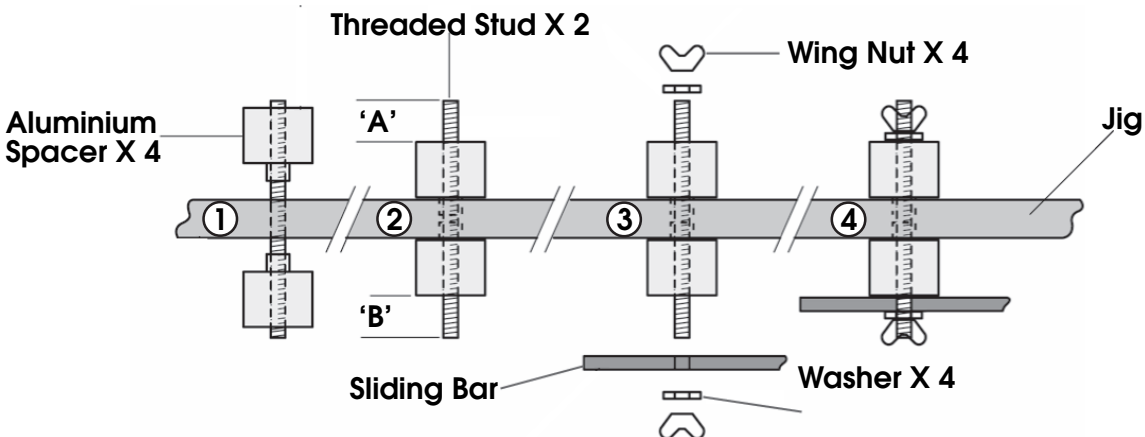
11. Line up The jig perfectly with the two offset lines, as per diagram Clamp the jig firmly to the string in this position.

12. Attach the aluminium spacers, (steps 1 to 4 below) to the relevant slots in the jig, push spacers firmly against the edge of the string. Ensure an equal amount of the stud is visible on both sides when the spacers are tightened ('A' = 'B').

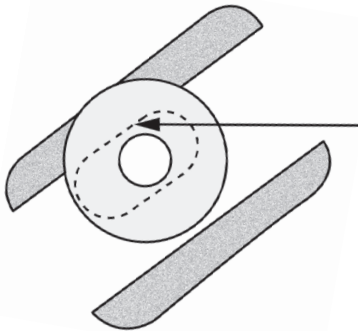


Tighten the spacers by turning them in opposing directions until tight (hand tight only). Fit washer and wingnut on the top two studs and gently tighten.

Attach the sliding bar to the bottom studs and secure with washers and wingnuts. The jig is now fully assembled, and does not require disassembling for storage etc. To use again, simply loosen wingnuts and spacers, adjust the jig accordingly.

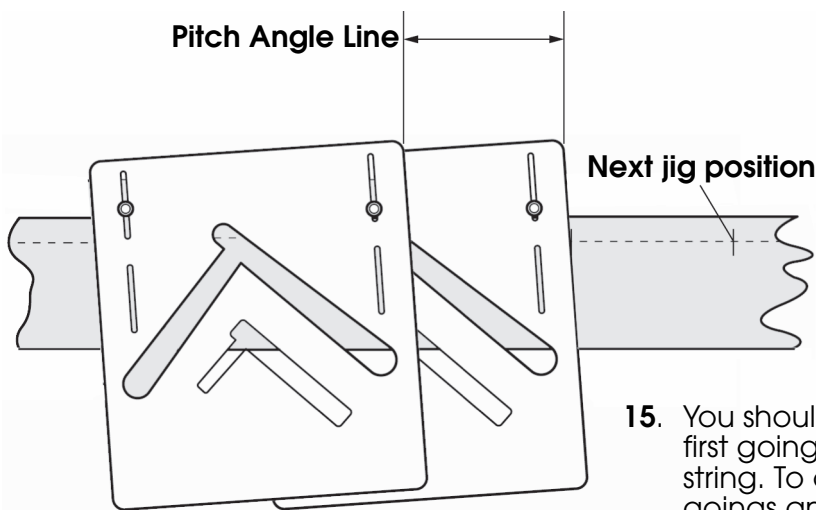
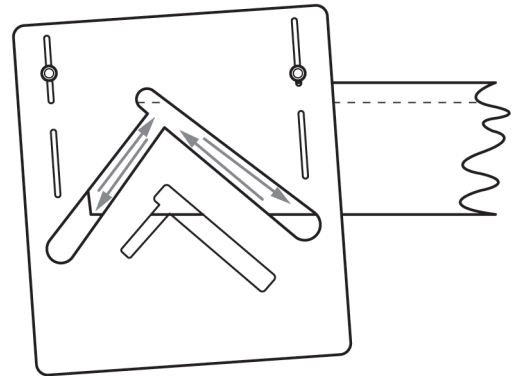


13. Attach the correct nosing bush and cutter size to the router, set the plunge depth to 12mm (refer to table on page 7 for correct guide bush and Cutter).



The edge of bush has to be flat with inside edge of jig to ensure correct nosing and gap thickness for tread. Ensure the long side of the guide bush is flat against the side of the aperture to ensure a correct size nose and width of cut for the tread to fit comfortably.

14. Proceed to cut out the tread and riser housing using the sequence shown in diagram (right). Always refer to router manufacturers instructions before commencing.



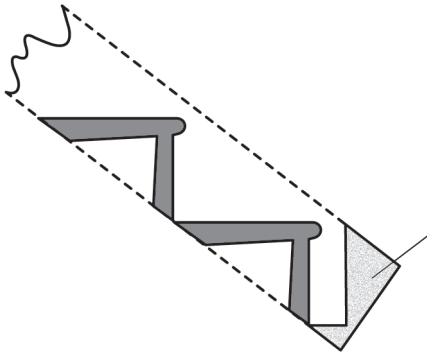
15. You should now have completed the first going and riser recess on the first string. To complete the succession of goings and risers along this string, the jig must be moved sequentially along the

string. The distance between each movement of the Jig is equal to the length of the pitch angle line (See diagram above), refer back to page 6 when steps were followed to calculate the pitch angle line and the length measured. The angle of the pitch is maintained by the sliding bar mechanism.

The procedure to follow is to mark a line along the margin where the right hand side of the stair jig crosses. From this point, measure the length of the pitch angle line along the margin and mark this point. This is the place at which to position the right hand side of the stair jig for the next succession. Please ensure before re-clamping the jig, the sliding bar is pushed firmly against the top edge of the string.

Repeat this procedure until the required number of rise and going recesses have been cut.

IMPORTANT: whenever repositioning the jig, always ensure the spacers are pushed up firmly against the edge of the string before clamping in position.



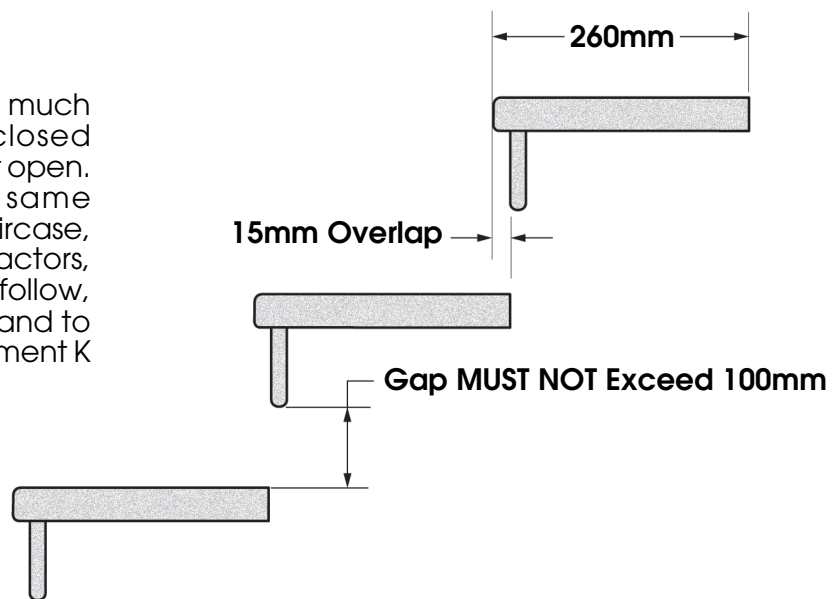
NOTE:

Enough room has to be left on the string before the first riser is cut to ensure there is no break-out. It is better to have more material, than not enough as the strings can be cut to size afterwards.

16. All you need to do now is complete your "mirror image" string. The jig makes this very simple. Remove the sliding bar from the spacers taking care not to move or loosen them whilst doing so. Refit sliding bar on opposite side of the jig and secure in position with the wingnuts, again taking care not to loosen or allow the spacers to move. The jig is now prepared for the opposing string.
17. Draw the margin along the second string to the same distance as on the first. Next, position the jig on the string, utilising the sliding bar to achieve the pitch angle and ensuring that the first riser will not break out through the end of the string. See diagram above. No measuring or calculating is required as the jig transfers all the required datum information to the second string.
18. Repeat the succession of risers and treads along the second string in the same way as the first string, (see point 15). Please note, you must, of course, use the same pitch angle line distance as on the first string.

Open Stair Jig

The open stair jig works very much in the same way as the closed staircase, but the risers are left open. Setting up follows the same procedure as the closed staircase, but there are a number of factors, which the user will have to follow, to ensure right construction, and to comply with approved document K Building Regulations 1985.



- ◆ A 30mm guide bush is used with a 16mm straight cutter, producing the correct gap for the riser and tread.
- ◆ The tread has a fixed length of 260mm, with a thickness of 33mm.
- ◆ The radius of the base of the riser and the nosing of the tread is set at 8mm.
- ◆ The nosing on the tread has a fixed projection of 17mm.
- ◆ The tread should overlap each other by 15mm (see diagram above).
- ◆ The gap between the base of the riser and the upper face of the tread below should not exceed 100mm. This is to ensure that a 100mm diameter sphere, the equivalent of a child's head, will not pass through the riser (see diagram above).

1. Follow the same procedure as in points 1 — 3 on page 5, making sure that the margin is set at 44mm.
2. Calculate the rise with the going to make sure it complies with approved document K. As there is an overlap of 15mm on the tread, the going is set at 245mm as opposed to 260mm. Use this figure to calculate the relationship between the rise and going making sure the final figure using the formula $2R + 6$ falls between 550mm and 700m.
3. Mark out your going and rise as in point 4, page 6, to calculate the pitch angle line, and continue to follow steps 5 to 6 on page 6.
4. Follow point 10, marking an offset value of 7mm (page 6).
5. Follow procedure as for the closed stair jig, but remembering that the gap between base of riser and upper face of lower tread does not exceed 100mm (see diagram above). A block spacer can be put in the base of riser aperture on the jig to decrease the length of the riser altering the gap accordingly.
6. Continue to slide the jig up the string sequentially following the procedure on page 8 remembering to cut in the direction shown in the diagram.
7. The stair jig is flipped to opposite face on the opposing string in the same manner as the construction of the closed staircase.

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