

# ***Keencut Evolution3 44'' SmartFold Cutter - E3SF110***

Instruction Manual



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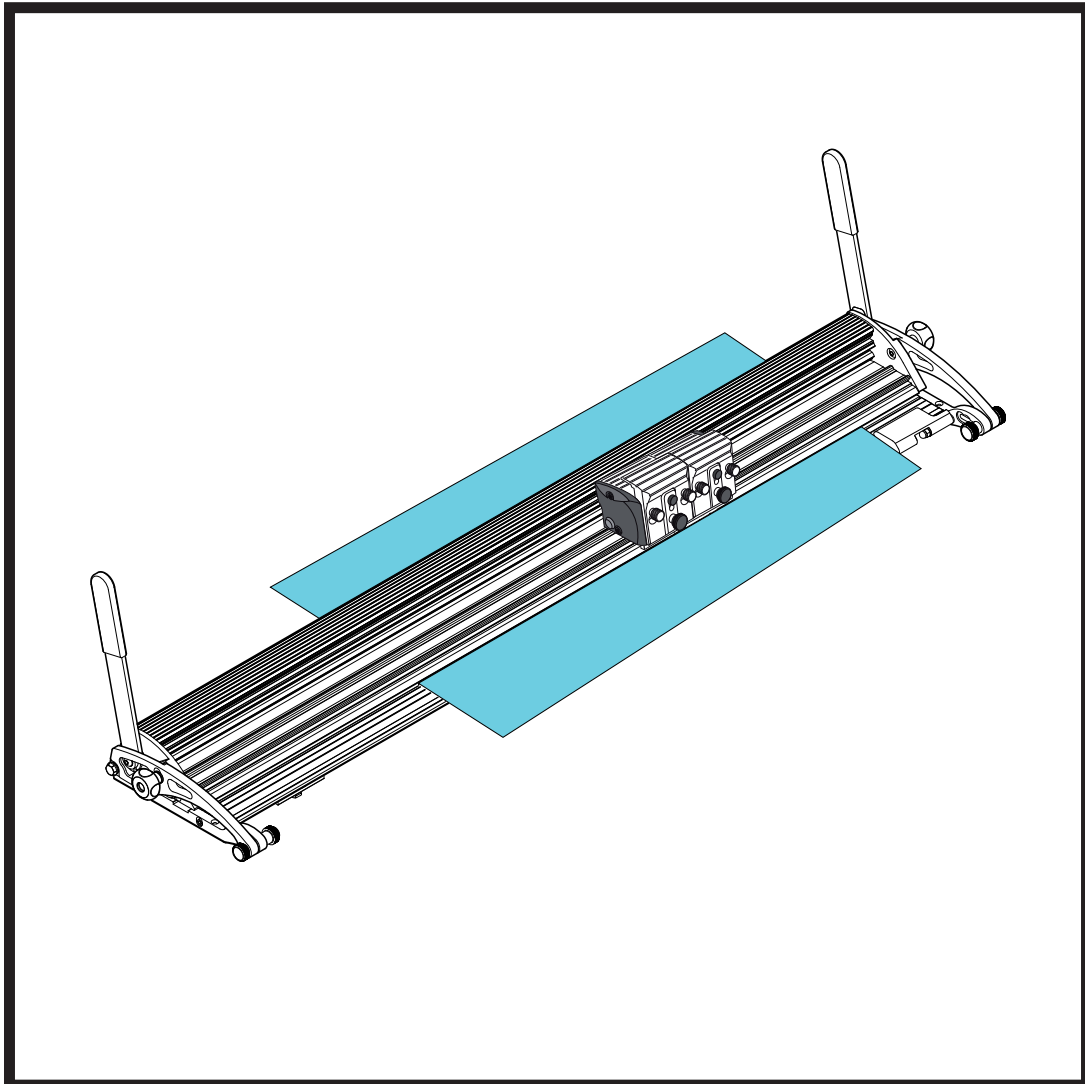


# Evolution E2

*Inspired Design – Precision Engineering*

## USER INSTRUCTIONS

Thank you for choosing the Keencut Evolution E2. Every effort has been made to bring you a precision engineered product with the promise of many years of valuable service. In order to obtain maximum benefit from your machine please read these instructions carefully. For advice and assistance or replacement parts please contact your distributor or Keencut.



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## CHECKING THE BENCH FOR INSTALLATION

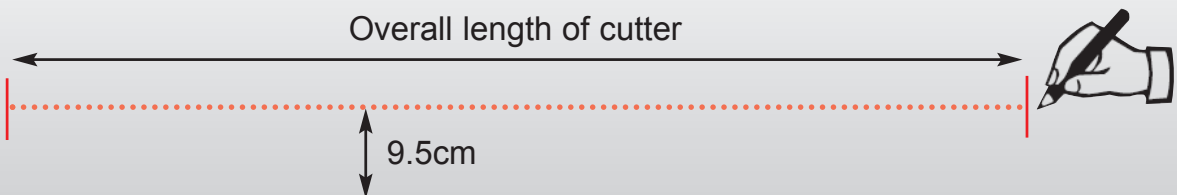
■ **Please note!** As part of the installation there are a number of checks and adjustments to be made and it is important to perform them correctly to ensure consistent top quality performance for the life of the machine.

The Evolution E2 Cutter Bar can be fixed to a KEENCUT Proteus bench or to an existing work bench. The bench should be rigid with a flat worktop (within 3mm (1/8") overall) and made from MDF or similar material to accept fixing screws.

To enable the flip-over storage function to operate the Evolution E2 must be fitted close to the edge of the bench but if it is required nearer the centre of the bench do remember that cutting tough materials will be more difficult if the operator needs to stretch too far to reach the cutter head.

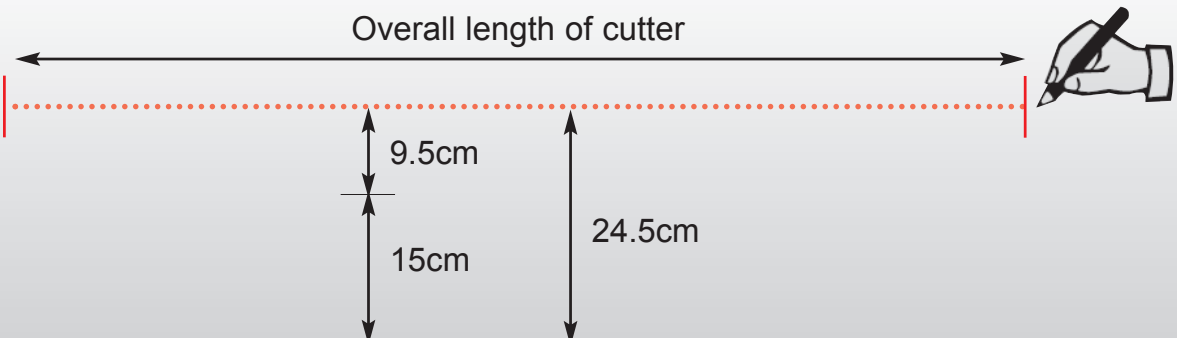
If the cutter is to be mounted along the edge of the bench draw a line **9.5cm** in from the edge of the worktop and the length of the cutter as listed below.

### Worktop



Should you want to use the cutter, for example 15cm in from the edge, draw the line  $15 + 9.5 = 24.5\text{cm}$  from the edge of the worktop.

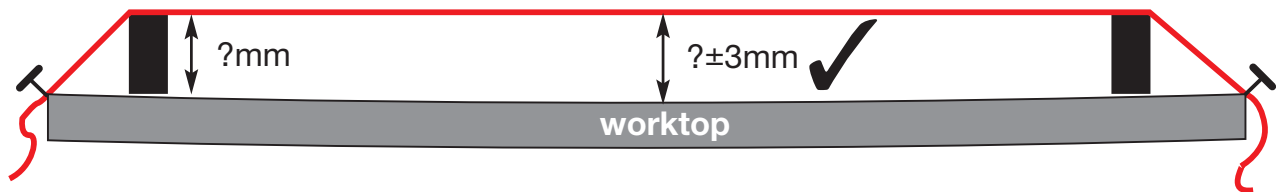
### Worktop



● Evolution E2 160cm (64")	overall length	193cm (74")	<b>4 base fixing brackets</b>
● Evolution E2 210cm (84")	overall length	243cm (94")	<b>5 base fixing brackets</b>
● Evolution E2 260cm (104")	overall length	293cm (114")	<b>6 base fixing brackets</b>
● Evolution E2 310cm (124")	overall length	343cm (133")	<b>7 base fixing brackets</b>
● Evolution E2 360cm (144")	overall length	393cm (153")	<b>8 base fixing brackets</b>

## CHECK & ADJUST THE WORKTOP FLATNESS

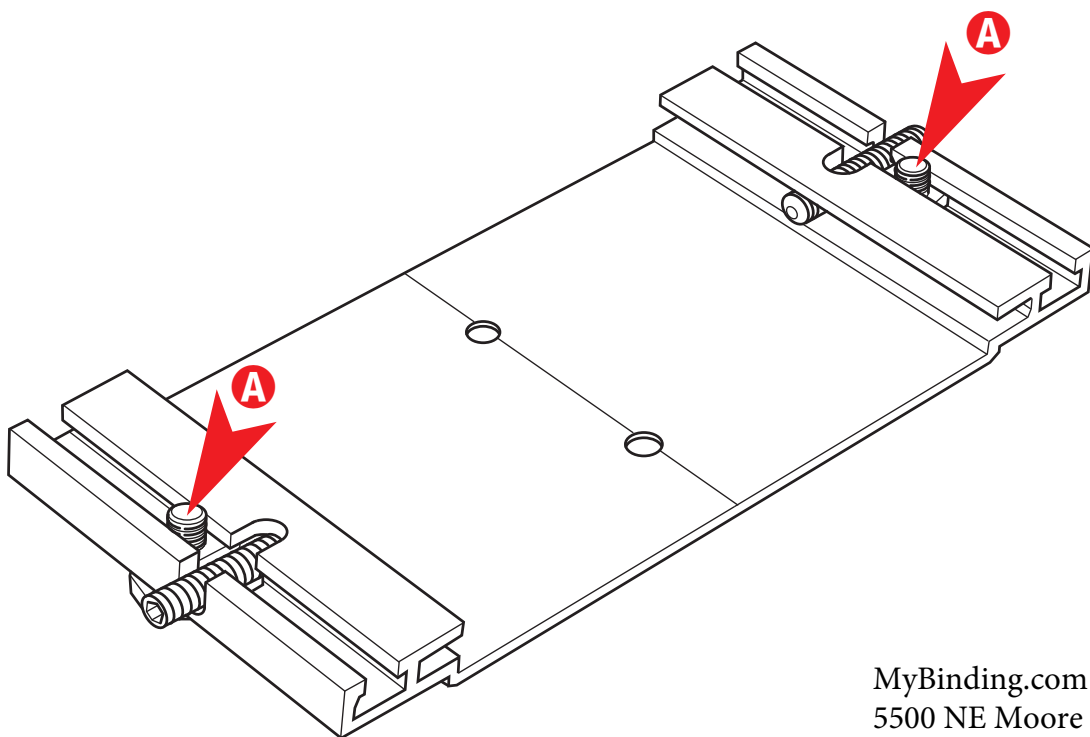
Check the flatness of the worktop by stretching a thin piece of strong thread between two blocks (of the same height) approximately over the line. Measure the highest and lowest part of the worktop under the thread, the difference between the two measurements should be no more than 3mm (1/8"). If it is greater it will be necessary to adjust the



Adjust the surface flatness by adding packing pieces made from 1.5mm - 3mm (1/16" - 1/8") thick rigid material such as PVC Foamboard, under the Base Mounting Brackets as they are installed (next section).

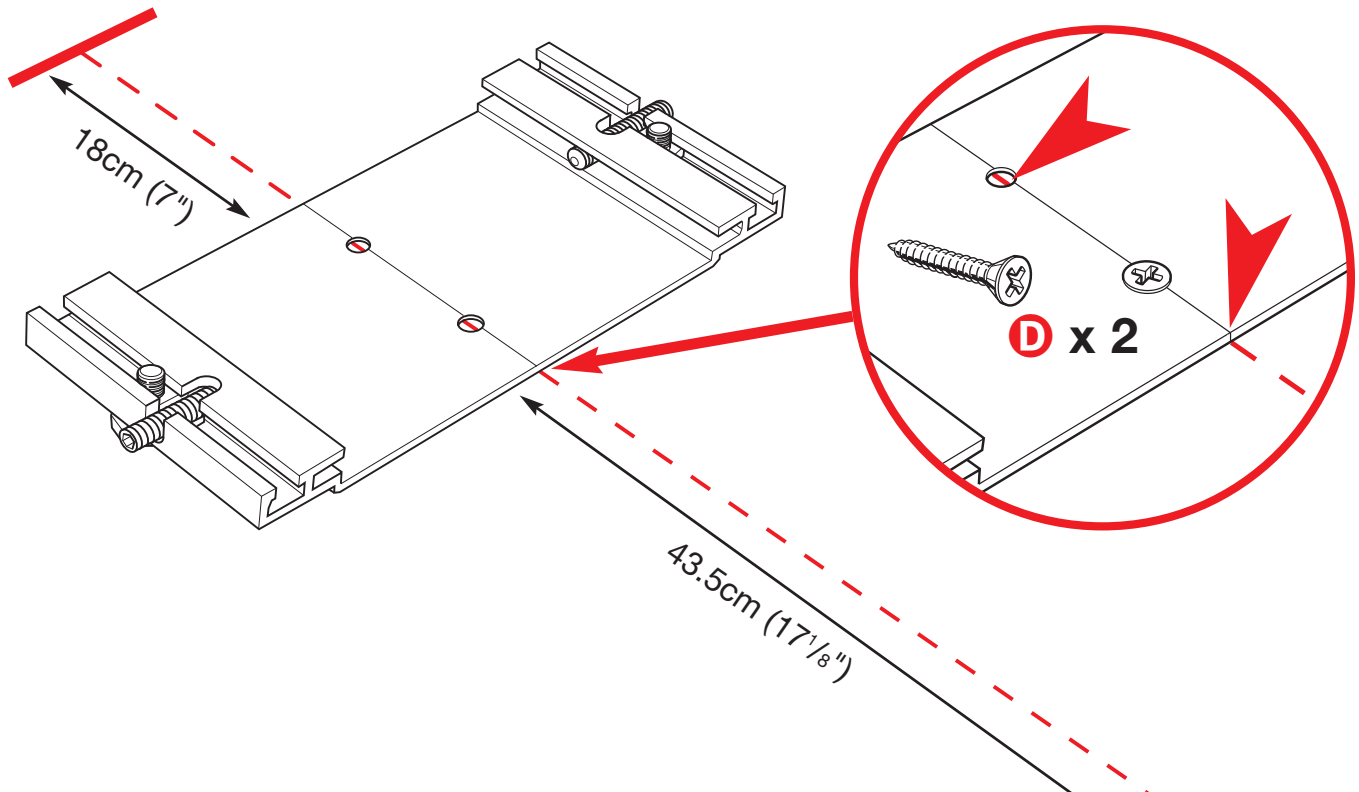
## THE FIXING BRACKET JACKING SCREWS

The Base Fixing Brackets are designed to hold the Base of the cutter firmly in position and provide a means to adjust the cutter Base for both flatness and alignment of the cutting groove. Check that the Jacking Screws "A" are inserted finger tight as shown before fitting the Brackets to the worktop.



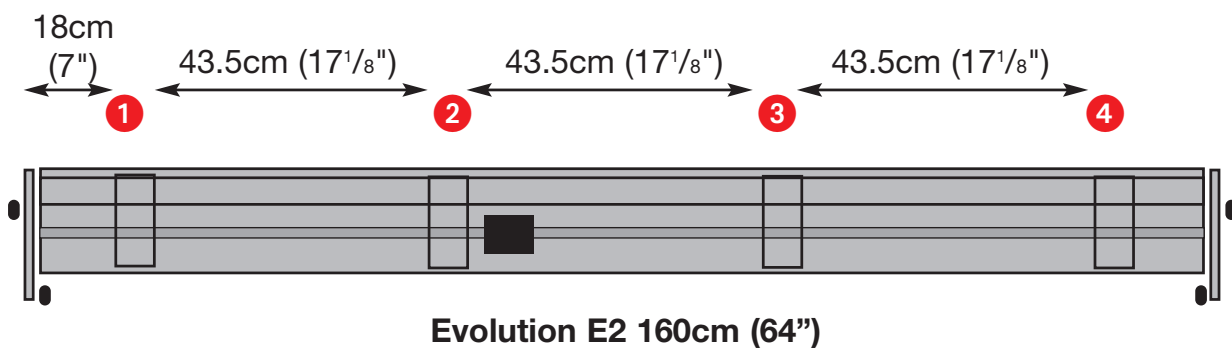
### SET OUT THE FIXING BRACKETS

Place a Bracket 18cm (7") from the end of the pencil line as shown, ensuring that the groove in the centre of the Bracket is aligned with the pencil line and fix to the worktop using two short screws "D" provided. Fix the remaining brackets accurately along the line leaving a 43.5cm (17<sup>1</sup>/<sub>8</sub>") gap between each one. Check that the brackets are all aligned correctly and if not remove the incorrectly positioned bracket and replace slightly to one side of the original position to create new screw holes.



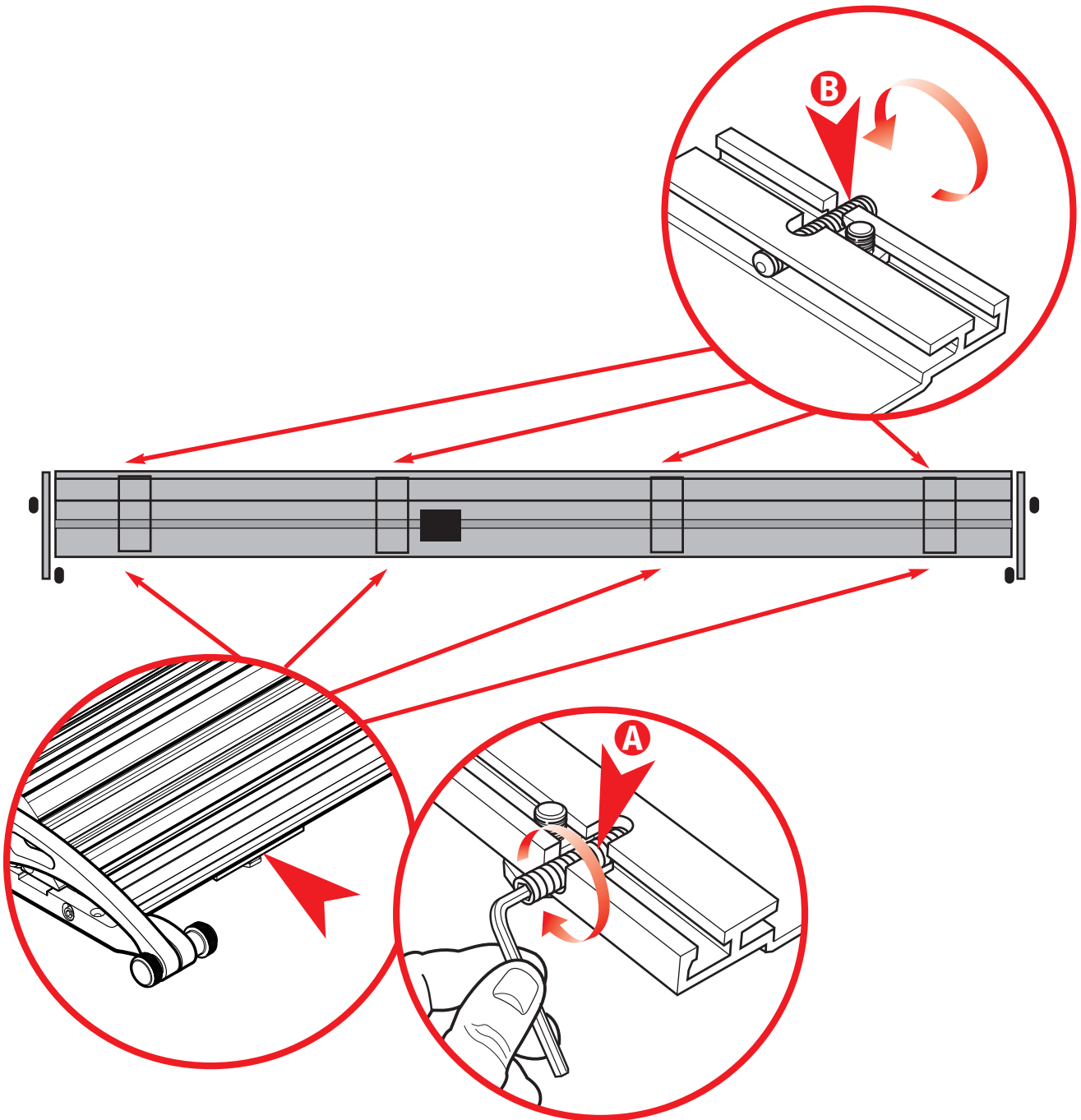
● Example:

**Evolution 160, 4 base fixing brackets**



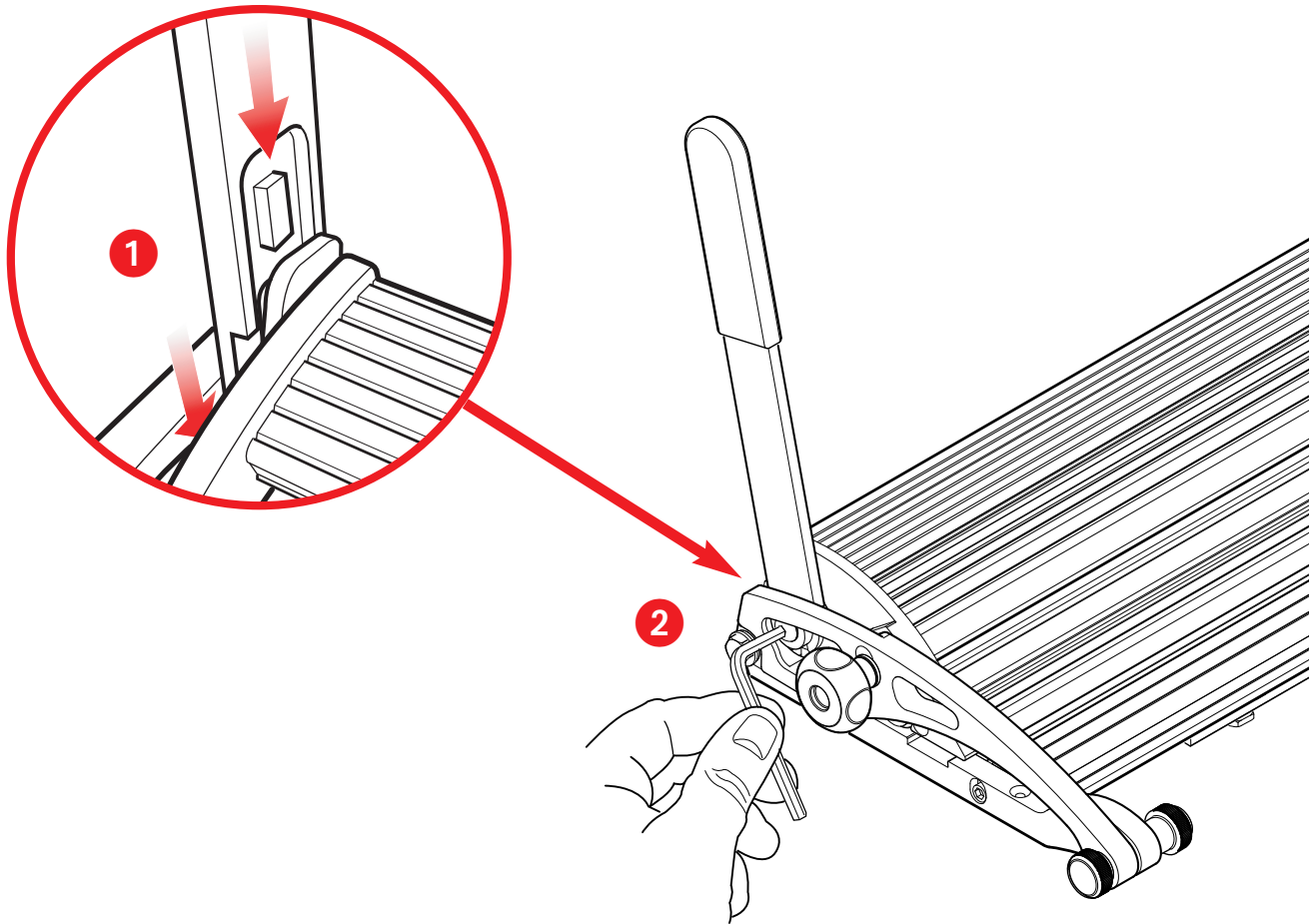
Lift the Evolution E2 cutter bar from its crate **but do not remove the clear plastic stretch-wrap bands** holding the base to the cutter bar. Place the Evolution E2 centrally on the Brackets and manoeuvre it until the base is located properly down on each of the Brackets.

Tighten the grub screws "B" at the back of each of the Brackets by 4 full turns and then tighten the front grub screws "A" fully (approx 4- 6 turns). Remove the clear plastic stretch-wrap bands.



## FIT THE LIFTING HANDLES

Fit the Lift & Hold Handles at each end of the cutter bar. Position the machined section of the handle towards the centre of the Evolution E2 and insert it into place at the angle shown (Fig 1). Once in position straighten so that the rectangular feature on the handle fits into its mating hole in the adjacent black steel component attached to the machine. Fully tighten the fixing screw (Fig 2) using the 5mm Allen key provided.

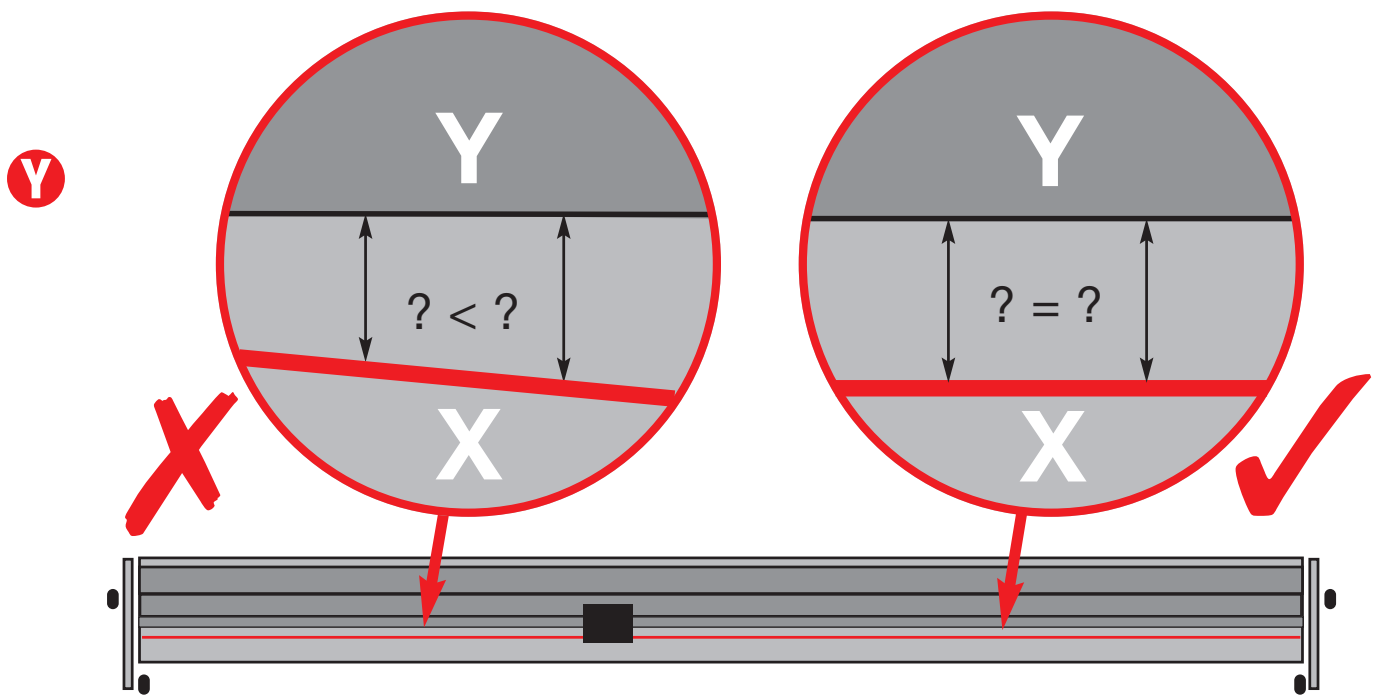


## CHECK & ADJUST THE CUTTING GROOVE ALIGNMENT

The Evolution E2 cutter bar has been adjusted to a straightness of 1:15000 along its full length using a laser beam controlled instrument. It is desirable to adjust the cutting groove in the aluminium base to match the straightness of the cutter bar and the base brackets provide the means to do so.

The back of the cutting groove in the Evolution E2 Base should be in line with the edge of the cutter bar to allow the blade in the cutting head to run the full length of the machine without touching either side of the groove, if it does not....



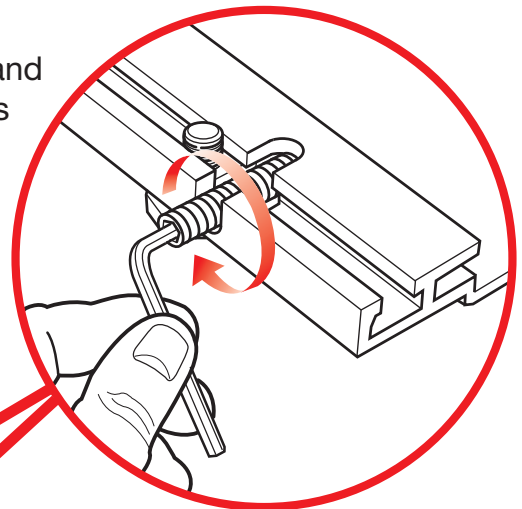


**Adjust** the straightness of the Base by adjusting the front "A" and rear "B" grub screws in the Base Fixing Brackets:

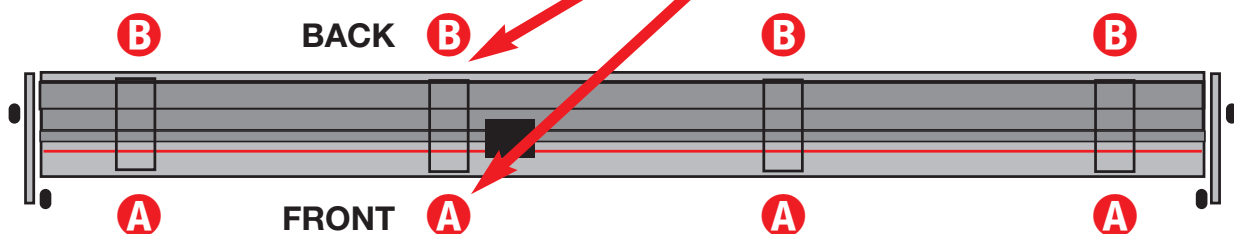
To move the cutting groove towards "Y" loosen the rear grub screw "B" in the nearest Brackets and tighten the front grub screw "A" until the groove is aligned with the cutter bar. Tighten the rear grub screw "B" until it meets resistance and the Base is held firmly. Using a Lift handle raise the cutter bar and lower it again to the Base surface and check the alignment. Adjust the cutting groove finally if required.

To move the cutting groove towards "X" loosen screw "B" first and reverse the sequence above.

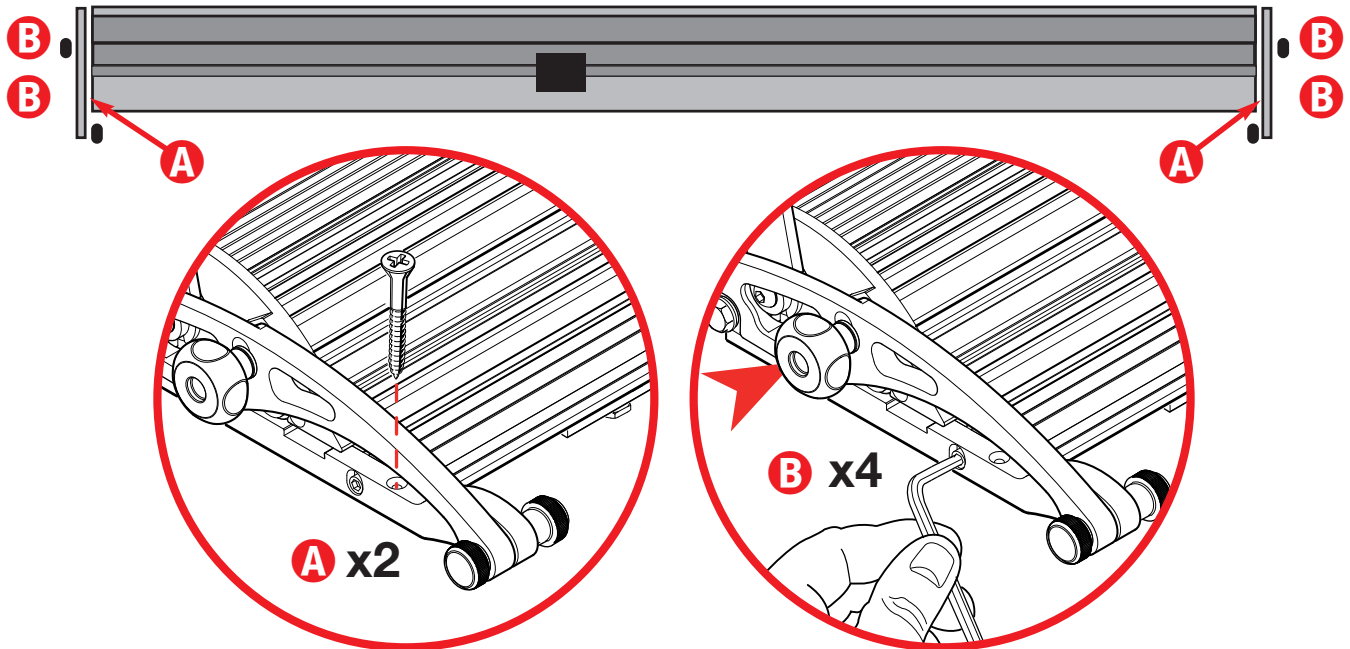
If there is insufficient Base adjustment using the "A" and "B" screws it is likely that one or more of the Brackets will need to be removed and realigned on the bench top.



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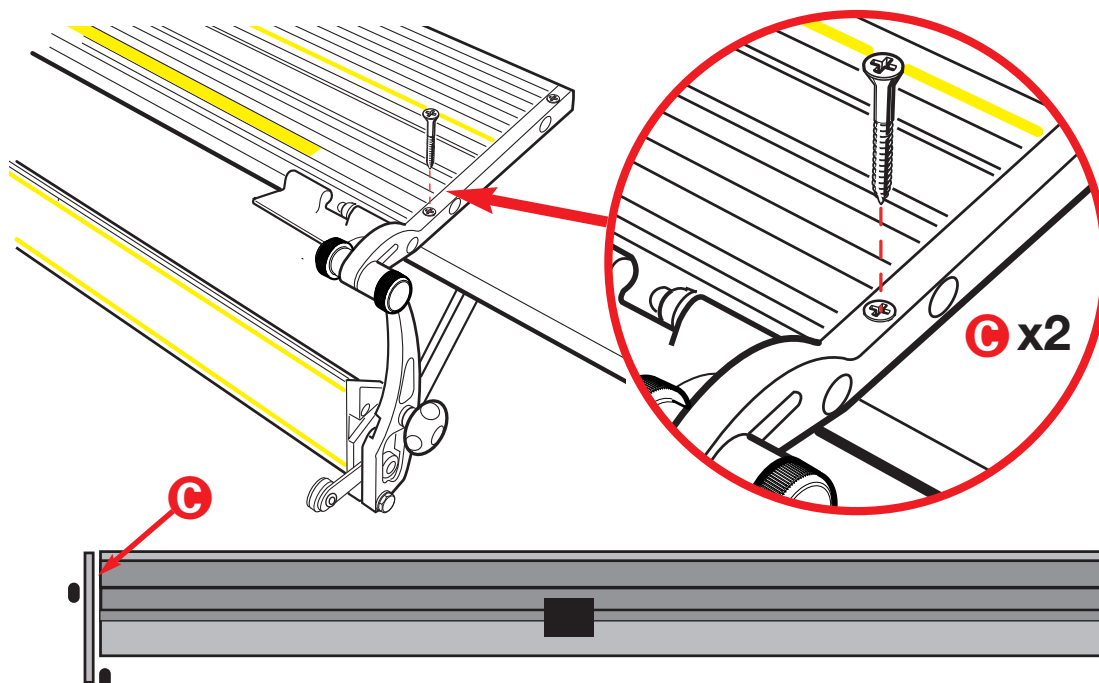
Place two of the long wood screws "A" in the front holes of the Fixed Arms and partially insert them into the bench surface but do not tighten. Loosen, by one full turn anti-clockwise, the four hexagon socket screws "B" joining the Fixed Arms to the Base. Fully insert the two wood screws "A".



To enable the table surface to be cleared of the cutter bar when it is required for other work the whole cutter bar can be lifted and rotated on its hinges towards you so that it hangs down along the edge of the work bench (this also helps with cleaning).

**NOTE:** Be particularly careful with the longer versions of cutter as they are very heavy.

Carefully swing the cutter bar down and place the remaining two long wood screws "C" into the back two holes of the Fixed Arms and tighten. Return the cutter bar to its working position. Tighten all four Allen screws "B".

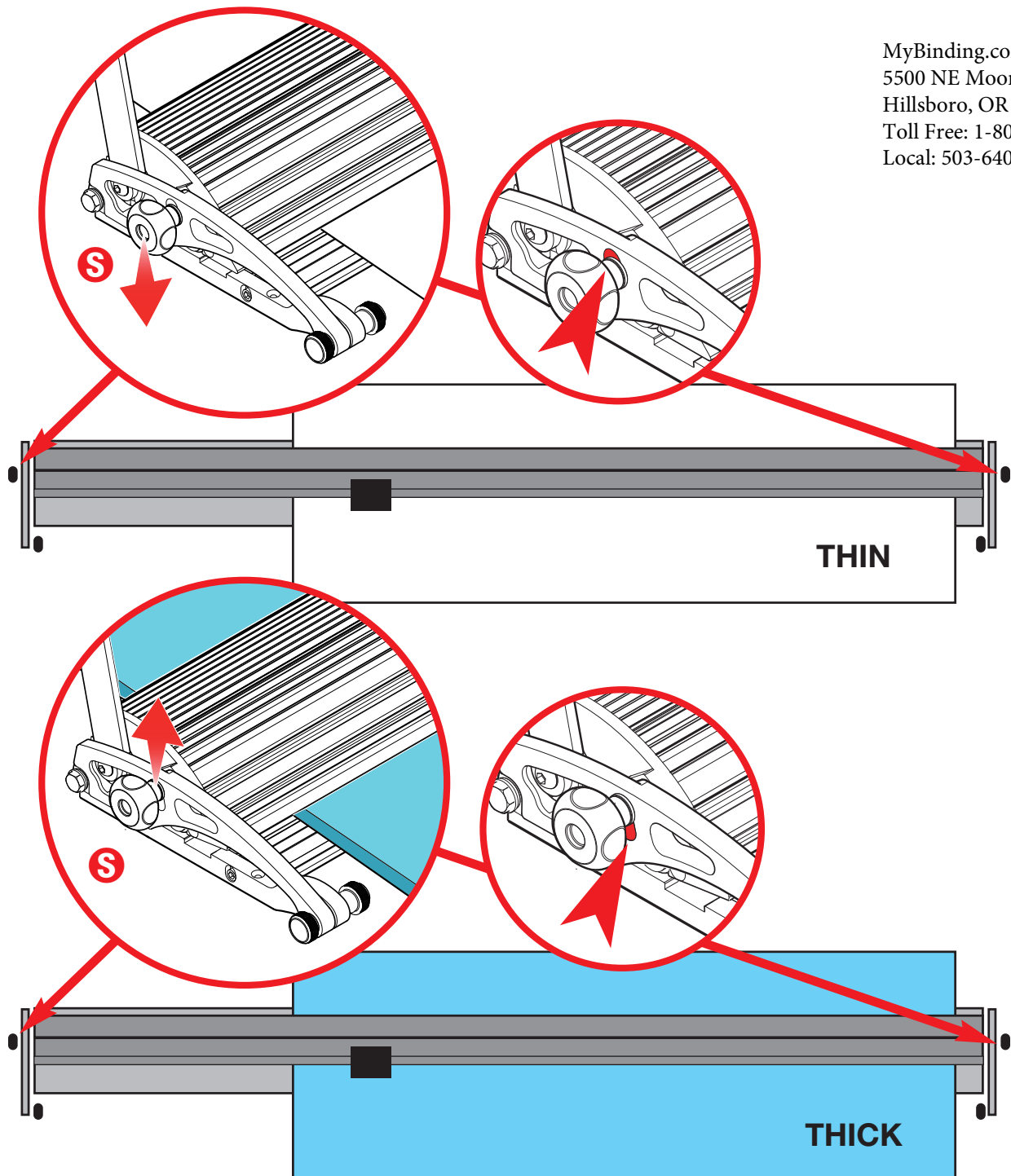


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It is essential that the material being cut, whether a thin paper/film or a thick board, is held securely in the machine during cutting. There is a silicon cord set into the Evolution E2 Base to grip the underside of the material and two similar grip cords set into the underside of the Cutter Bar. These should be periodically checked for good condition and replacements obtained from your Keencut distributor.

There is an integral Levelling Adjustment that enables the full width of the cutter bar to lay flat on any thickness of material. Place the chosen material under the cutter bar and release both thumbscrews "S" the cutter bar will settle to the surface of the new material. Raise the cutter bar using the lift handle and lower again to ensure correct alignment and tighten both thumbscrews "S".

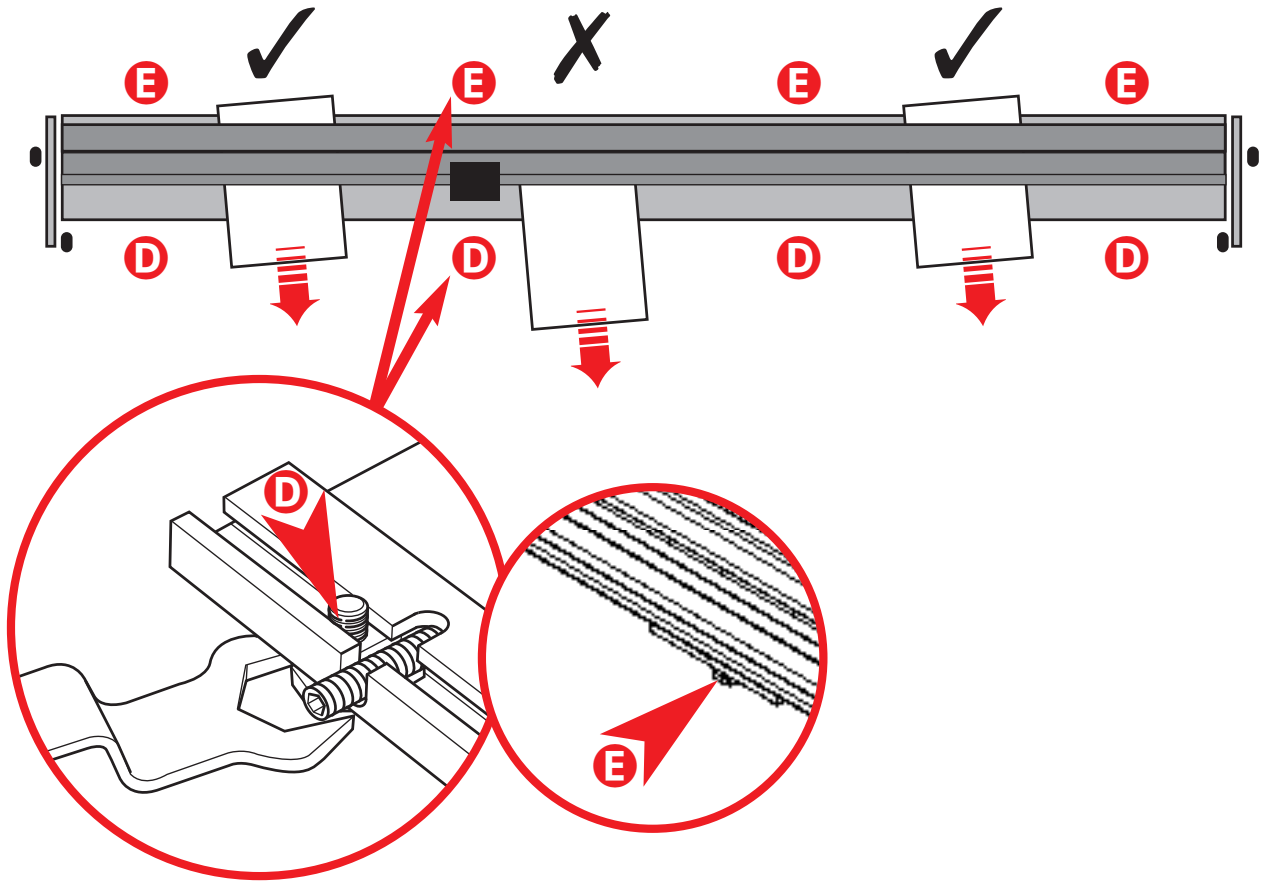
Set the Levelling adjustment knobs to suit paper.



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**CHECK AND ADJUST FOR FLATNESS AND GRIP**

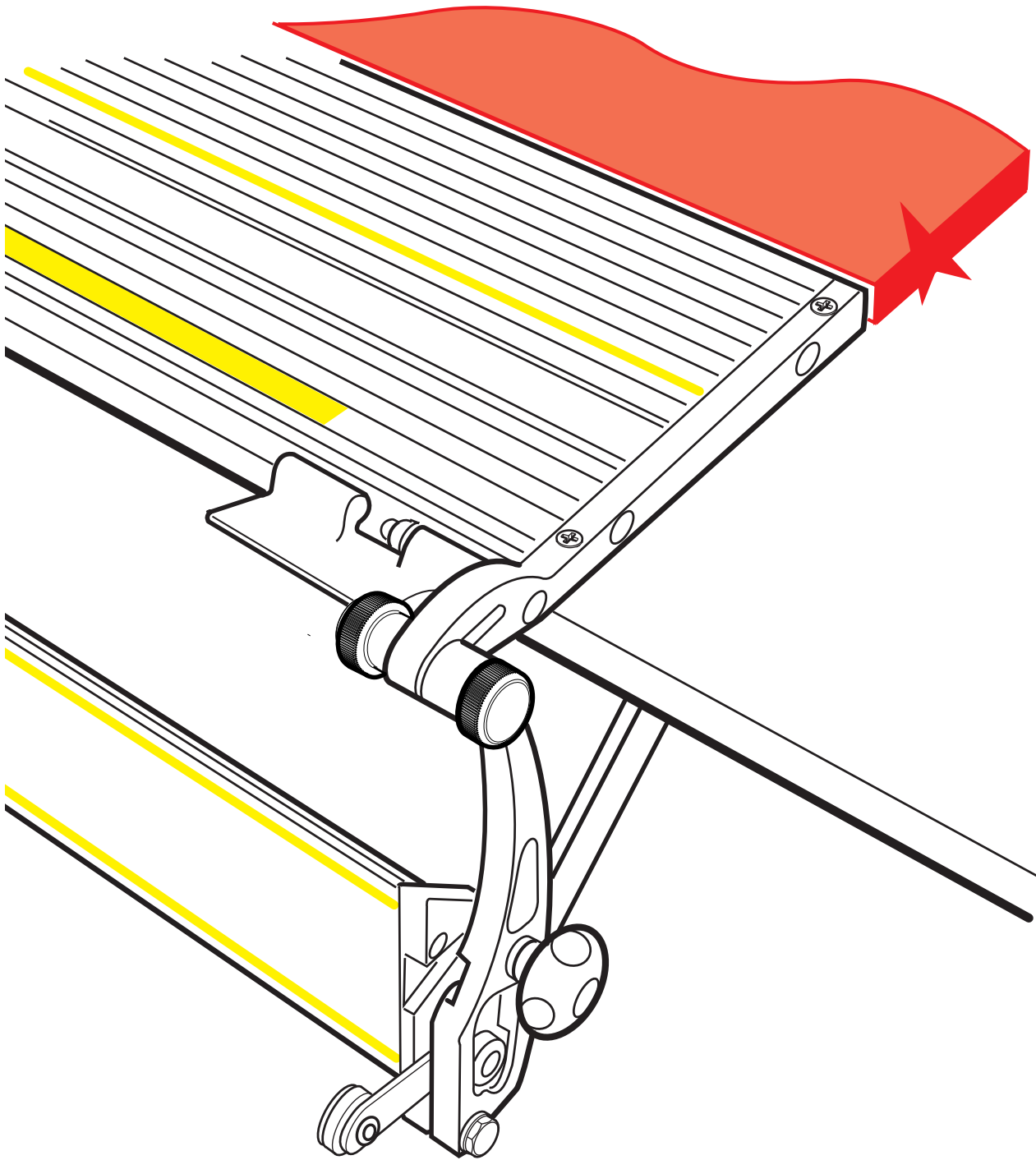
Check the grip of the cutter bar using a sheet of office copy paper. Starting at one end, lift the cutter bar and place the paper under it, when lowered, the weight of the cutter bar should grip the paper. Try to pull the paper free, if it is not clamped sufficiently note its position and work your way down the cutter repeating the test with the paper and noting where it is not clamped sufficiently.



Adjust the clamping by turning the Jacking Screws "D" & "E" in the Base Fixing Brackets that are adjacent to the areas that are not clamping the paper. Turn the Jacking Screws clockwise (as you look down on them) using the wrench supplied, turn both the front and rear Jacking Screw by the same amount (to keep the Bracket level) until the paper is gripped. You may find that two or three adjacent Brackets need adjusting if you have a wide area that does not clamp.

**BUILD UP BENCH SURFACE**

Once the Evolution E2 has been installed all that remains is to raise the level of the remaining surface of the bench by 15 - 16 mm (5/8") The best way is to add a new top made of MDF or similar solid material. To fix the new top use a thick sealant type adhesive in preference to screws, as screws may distort the bench top and disturb the Evolution E2 Base installation adjustments.

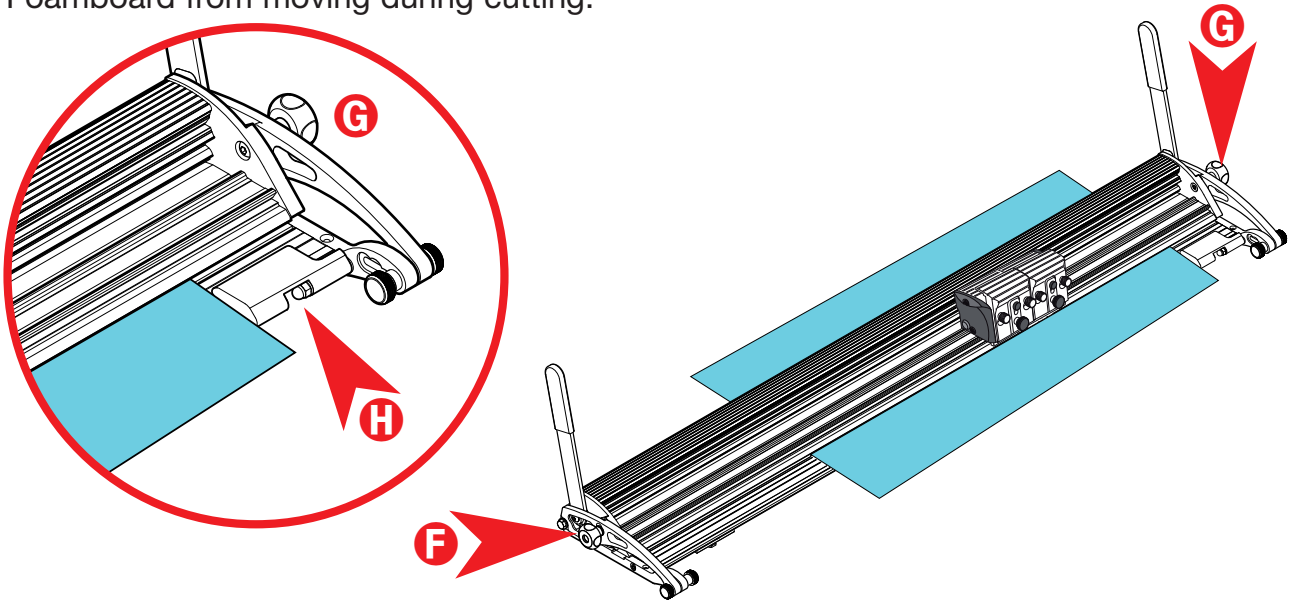


### INSERT AND ALIGN THE MATERIAL

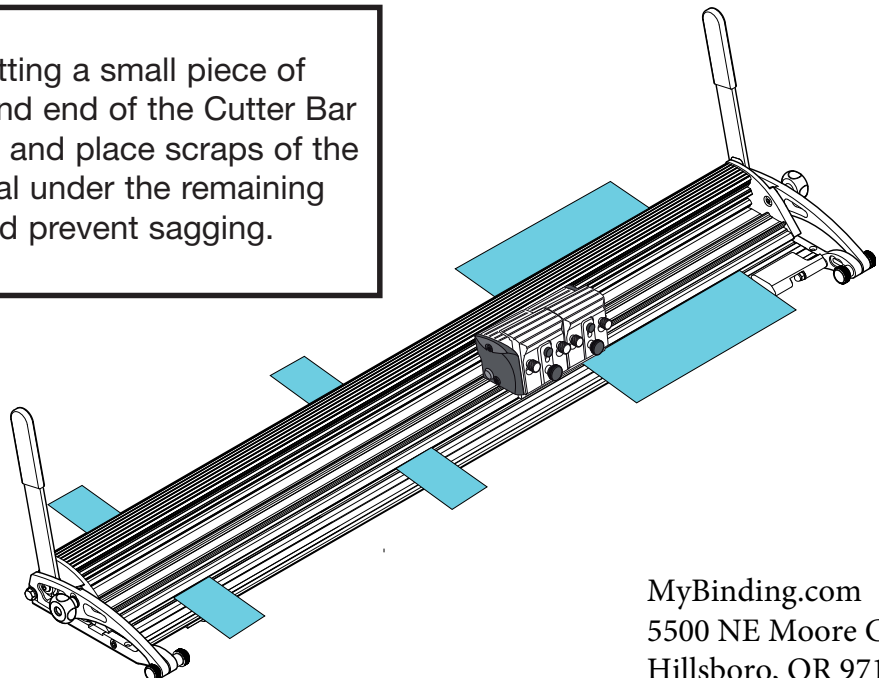
Use one of the two Lift Handles to raise the Cutter Bar. With the cutter bar raised place the material to be cut on the Base. Lower the Cutter Bar by pushing the Lift Handle towards the cutting edge of the machine. To align the edge of the cutter bar with your cutting marks slightly raising the Cutter Bar, using the Lift Handle, and adjust the position of the board at each end. The blade will cut within 0.5 to 1mm [0.02" to 0.04"] of the sight edge; this small gap allows easier alignment when cutting to the edge of an image.

Check that the width of the Cutter Bar is laying flat on the surface of the material, if not loosen both Tilt Adjustment Knobs "G" & "F" then lift the Cutter Bar and lower it down again to settle it in position and tighten both "G" & "F". The cutter is now set for cutting all types of material of that thickness.

The flip over Material Stop "H" is provided to prevent tough materials such as PVC Foamboard from moving during cutting.



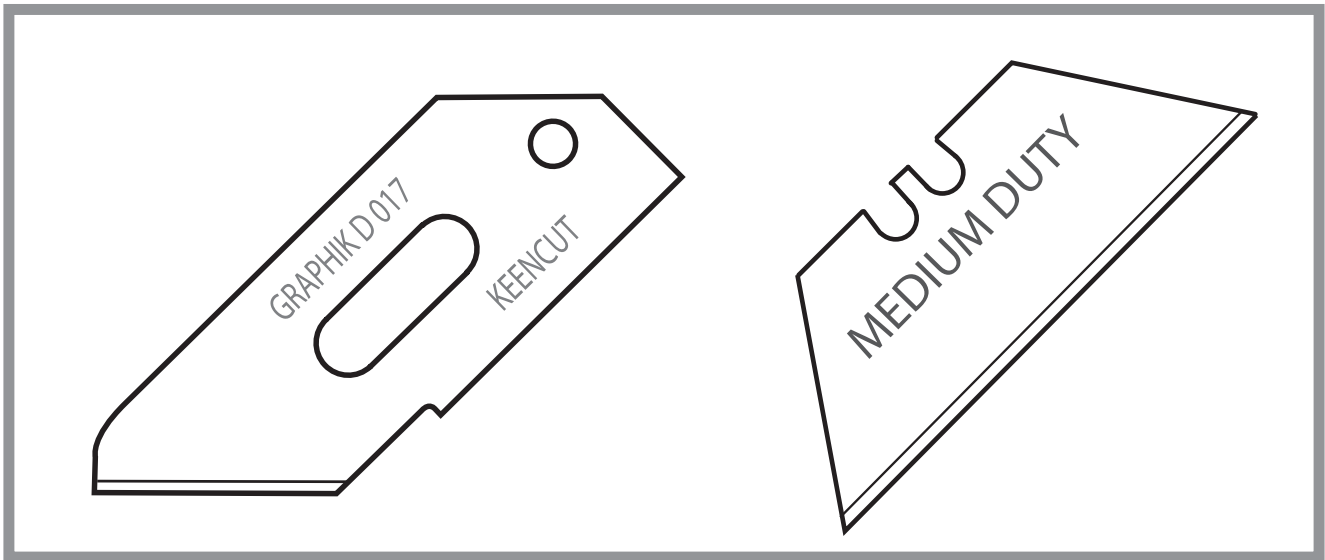
**NOTE:** If you are cutting a small piece of board place it at right hand end of the Cutter Bar against the Material Stop and place scraps of the same thickness material under the remaining bar to support it and prevent sagging.



## BLADES AND BLADE HOLDERS

The Evolution E2 is fitted with an all-new vertical action cutting head which reliably controls the blade depth and eliminates the need for heavy downward hand pressure when cutting tough materials such as PVC foamboard. Providing a smooth consistent cutting action on just about every flexible material used in the Graphics and Sign making Industries.

The Sabre Cutter bar has been designed to cut a variety of boards to a thickness of 10mm (3/8") using standard Medium Duty utility blade. Materials to 13mm (1/2") can be cut using the GRAPHIK D 017 blade holder.



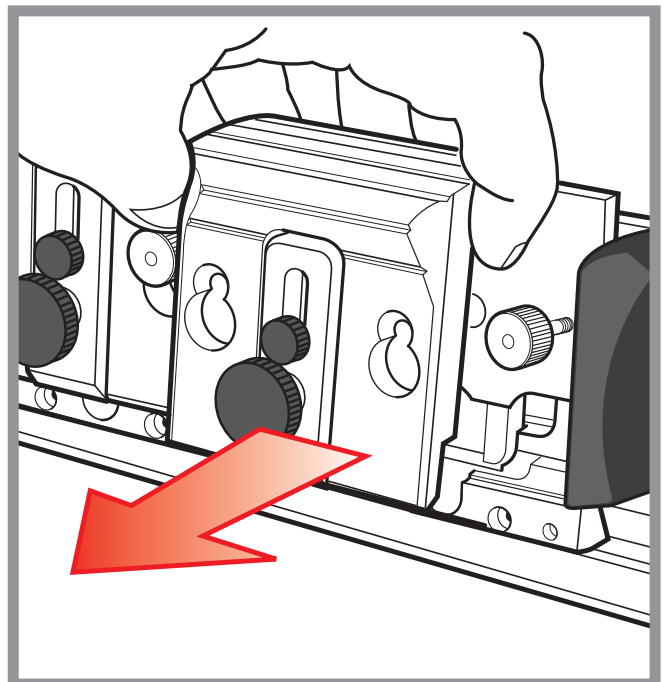
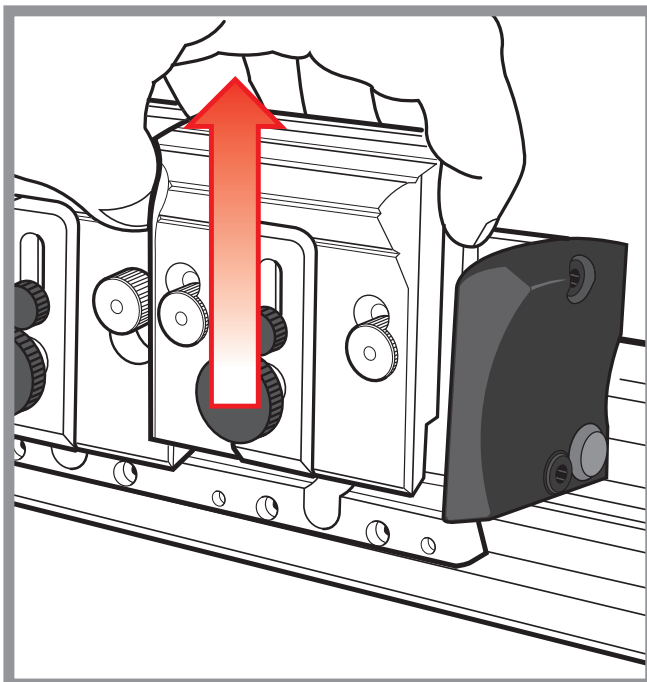
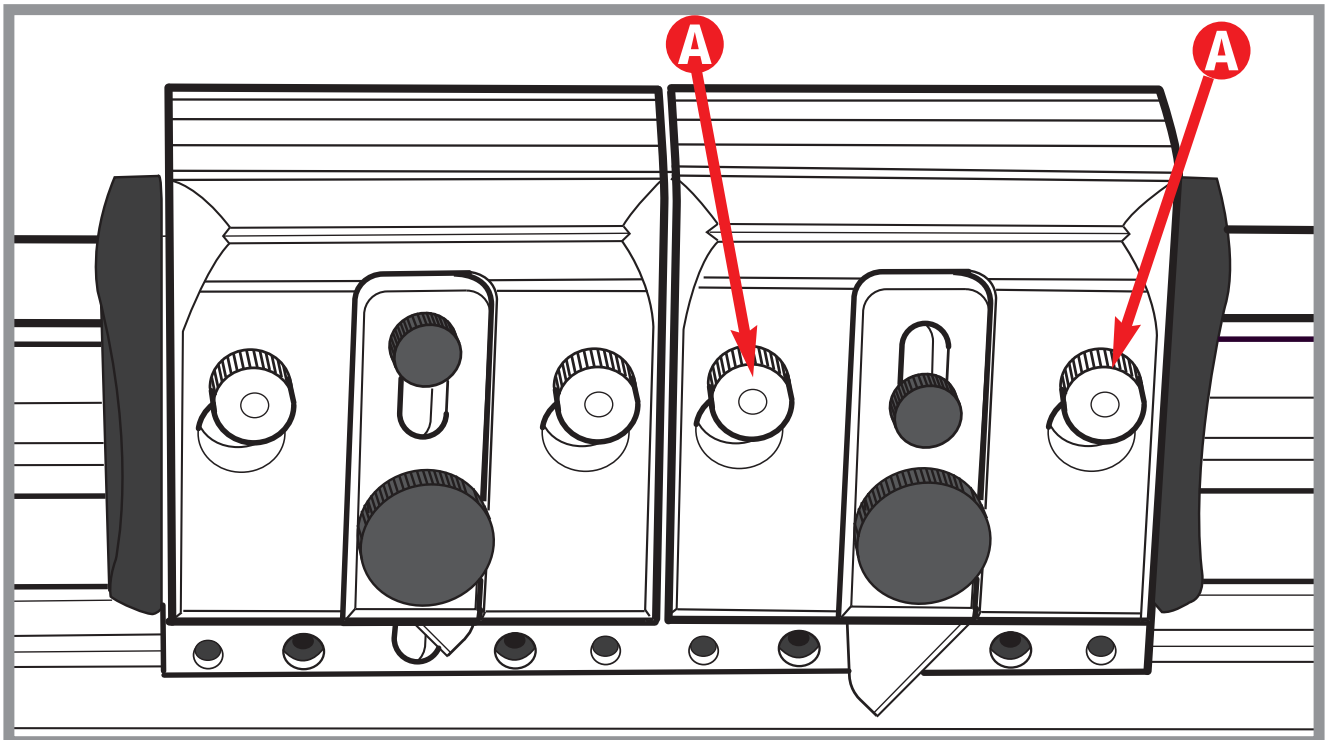
Consideration should be given to the toughness of the board being cut and the maximum depth of cut. It is recommended that heavy materials such as PVC foamboard should ideally be cut using the Graphik blade holder and to a maximum of 6mm (0.25") whereas, lighter materials like foam centred board can be cut up to the maximum cutting depth of the blade being used.

### CHANGING THE BLADE HOLDER

Before removing a blade holder make sure the blade has been removed or guarded (dependent upon type).

Loosen both of the small knurled knobs **A** by about two turns, raise the blade holder to align the knobs with holes in the blade holder then pull towards you to release. Reverse the procedure to attach a blade holder to the cutting head.

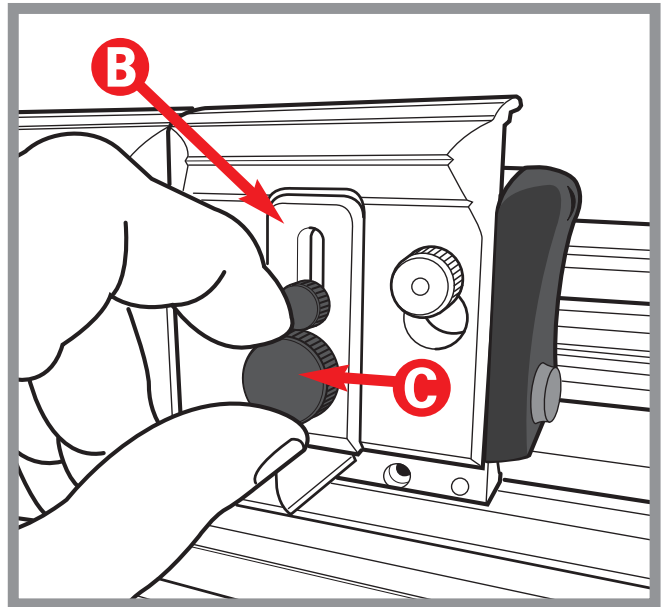
The Rotary blade holder has a special safety device to ensure the blade is guarded before the holder can be removed, this is covered in the Rotary Cutter section.



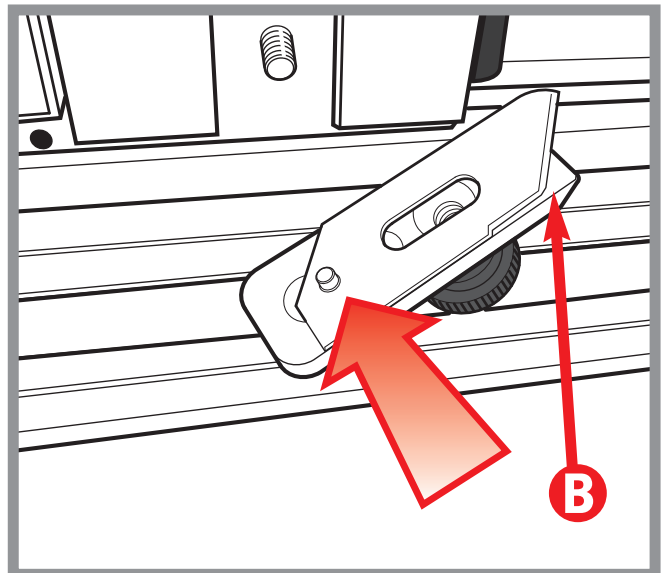


### INSERTING THE GRAPHIK BLADE AND SETTING THE DEPTH

Remove the blade clamping plate **B** by undoing the large black clamping screw **C**, if there is a blade already in the holder it will come away with the magnetic clamping plate **B**. You will notice the blade depth adjuster with the small black knob is free to slide along its slot and the raised pip on its underside locates in the small hole in the GRAPHIK blade.

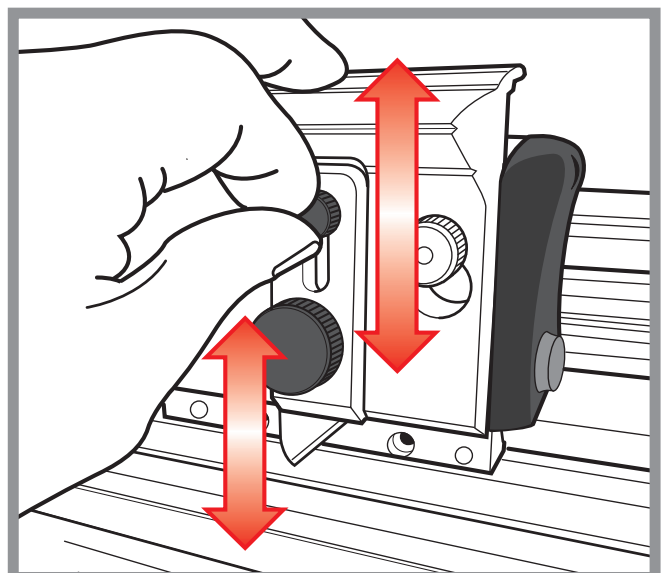


Ensure there is no debris on the underside of the clamping plate particularly around the magnet before fitting the new blade. The blade can be positioned on the clamping plate either way round enabling the blade to cut either left to right or right to left .

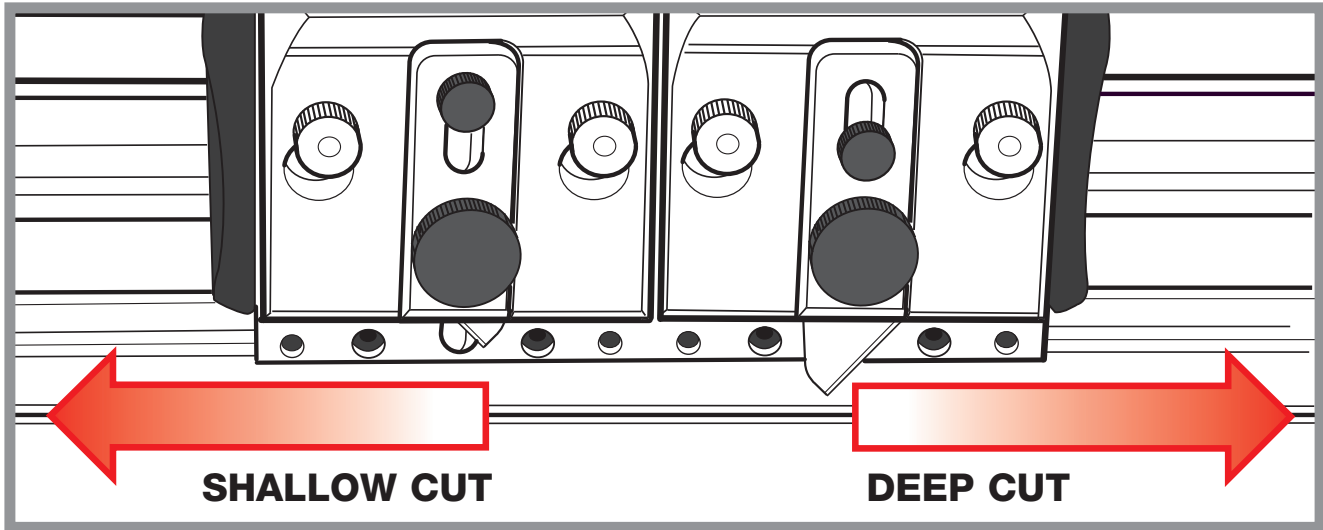


Hold the clamping plate in place on the blade holder and tighten the clamping knob ensuring the blade is properly located in its groove.

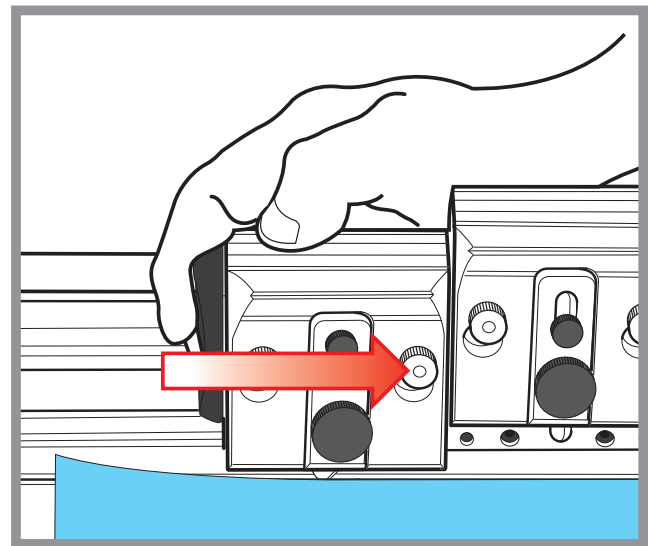
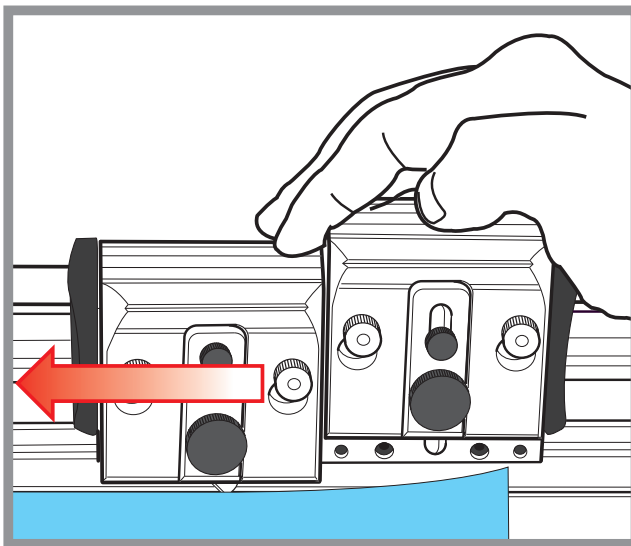
Before tightening the clamping screw the blade depth can be adjusted by sliding the adjustment knob up or down to retract or extend the blade. It is good practice to set the depth so that the minimum amount of blade is exposed to just cut through the material, it takes much less effort and produces a better cut.



The VA (vertical action) cutting head holds two cutters which can be changed and used independently of each other. Each of the standard GRAPHIK blade holders can be set to cut at different depths and in either direction by simply adjusting or flipping the blade over in the holder. You can also push or pull the cutting head to suit your own comfort.



Once your blade is set move the cutting head near to the start of the cut, press down the blade holder and push or pull to take the cut. Only light finger pressure is usually required to depress the blade holder so most of your effort can be directed into pushing the blade through the material.



### SCORING HARD PLASTICS

Many hard plastics such as Acrylic can be scored and snapped by hand or over the edge of a bench (use hand and eye protection). The back edge of the GRAPHIK blade can be used as a scoring blade, position the plastic sheet in the cutter and draw the blade backwards across the surface applying downward pressure to the blade holder, some plastics will benefit from being scored a number of times before snapping.

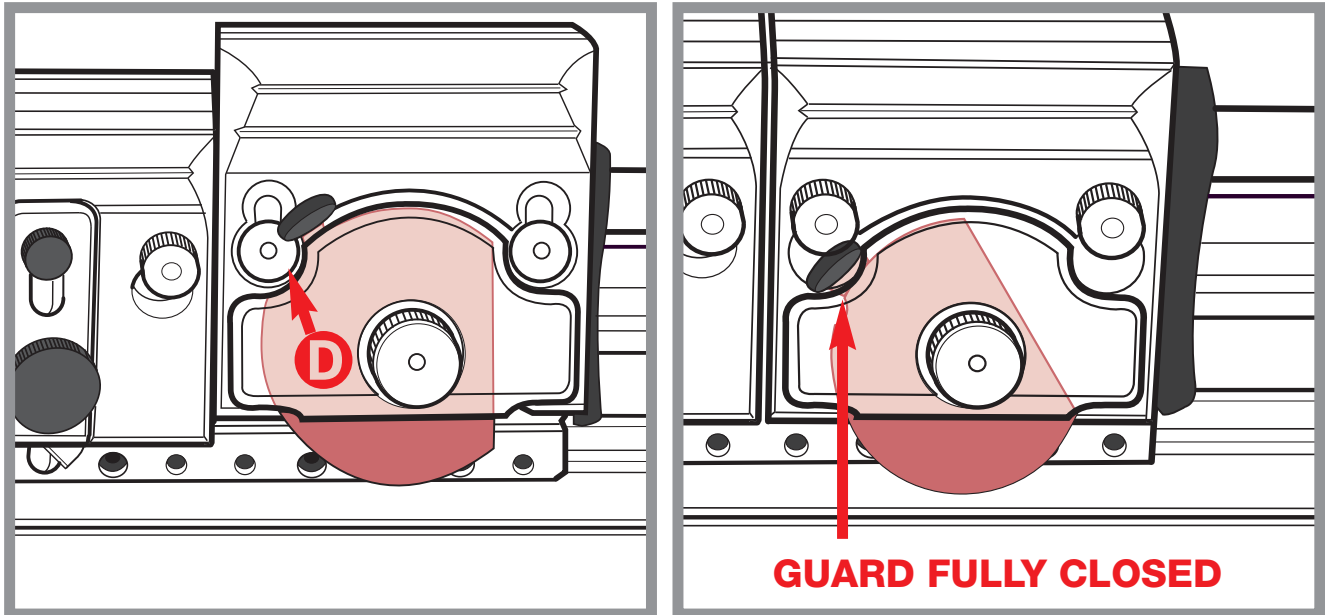
### CUTTING PVC FOAMBOARDS

PVC is a very tough and durable material, to obtain a straight and smooth edge cut the material slowly, if you cut too fast the board will rip and give a jagged uneven edge. Considerably higher cutting performance is obtained from warm room temperature boards, if you store your boards in an unheated room in winter you will find them much more difficult to cut and the colder the board the slower they will need to be cut.

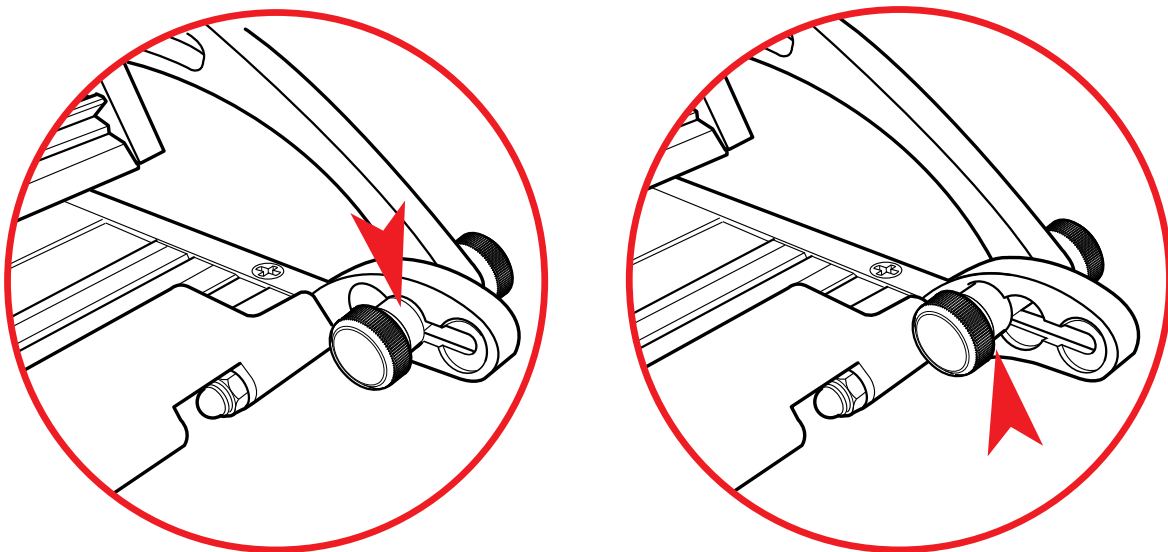
## THE ROTARY CUTTER

The Rotary Blade Holder supplied with the machine is used to cut textiles, thin papers and other flimsy materials, it uses a circular blade to press down onto the surface of the textile which is held over a plastic strip embedded in the base of the machine.

The red plastic blade guard protects the blade and makes it safe to handle, however, be very careful as the blade is very sharp. The guard has to be closed to allow the blade holder to be fitted or removed, align the scallop **D** in the red plastic guard with the left hand release hole and fit/remove the blade holder in the normal way.



First raise the Cutter Bar using either Lift & Hold Lever, then loosen both of the Hinge location screws until the underside of the screw clears its location recess. Push the Cutter Bar until the underside of the location screw is positioned over the middle recess and tighten Hinge location screws. Repeat at the other end. The Cutter Bar is now positioned over the plastic Cutting Strip.

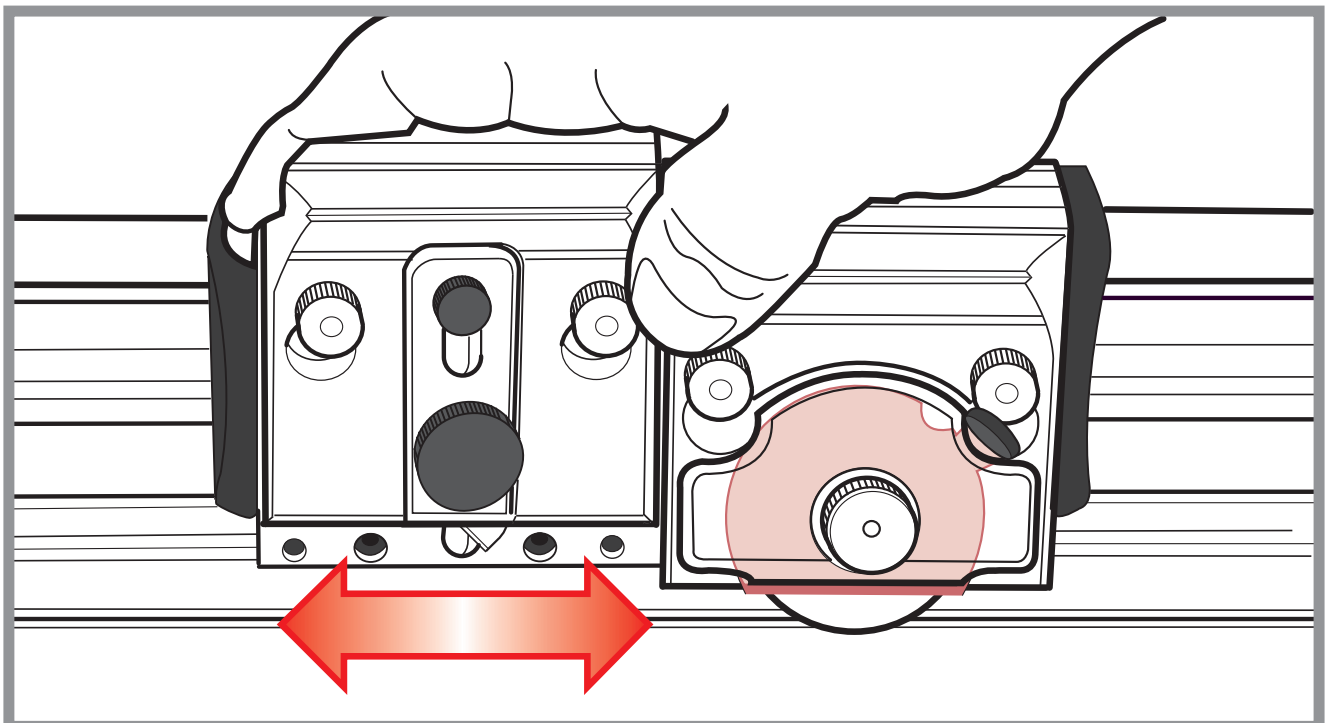
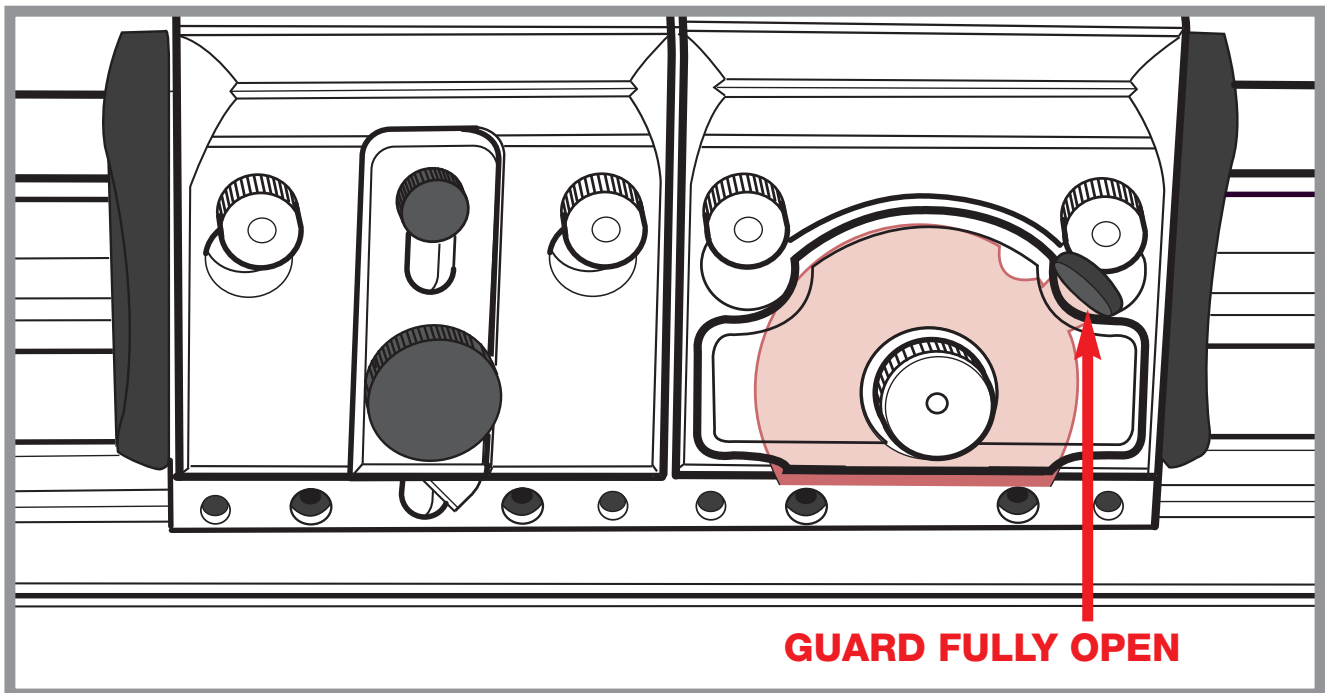


The third (furthest) position is also for cutting textile but uses a different part of the Cutting Strip should it become worn. The Cutting Strip can also be removed, turned around or flipped over to allow eight tracks to be used before the strip requires replacement. Replacement Cutting Strips are available from your Keencut agent.

### USING THE ROTARY BLADE CUTTER

Position the material to be cut on the machine and lower the cutter bar. Rotate the safety guard grip clockwise to reveal the blade. Apply downward pressure to the blade holder whilst drawing the cutting blade along the material in one continuous motion.

Some materials will cut better if a harder plastic base is used in place of the plastic strip embedded in the machine. Acrylic works well for this, use a piece at least 15cm (6") wide and long enough to support the full cut length of the material, place it under the cutter bar and the material on top, set the tilt adjustment knobs if necessary and cut in the normal way. Lighter downward pressure will be required with harder plastic bases.



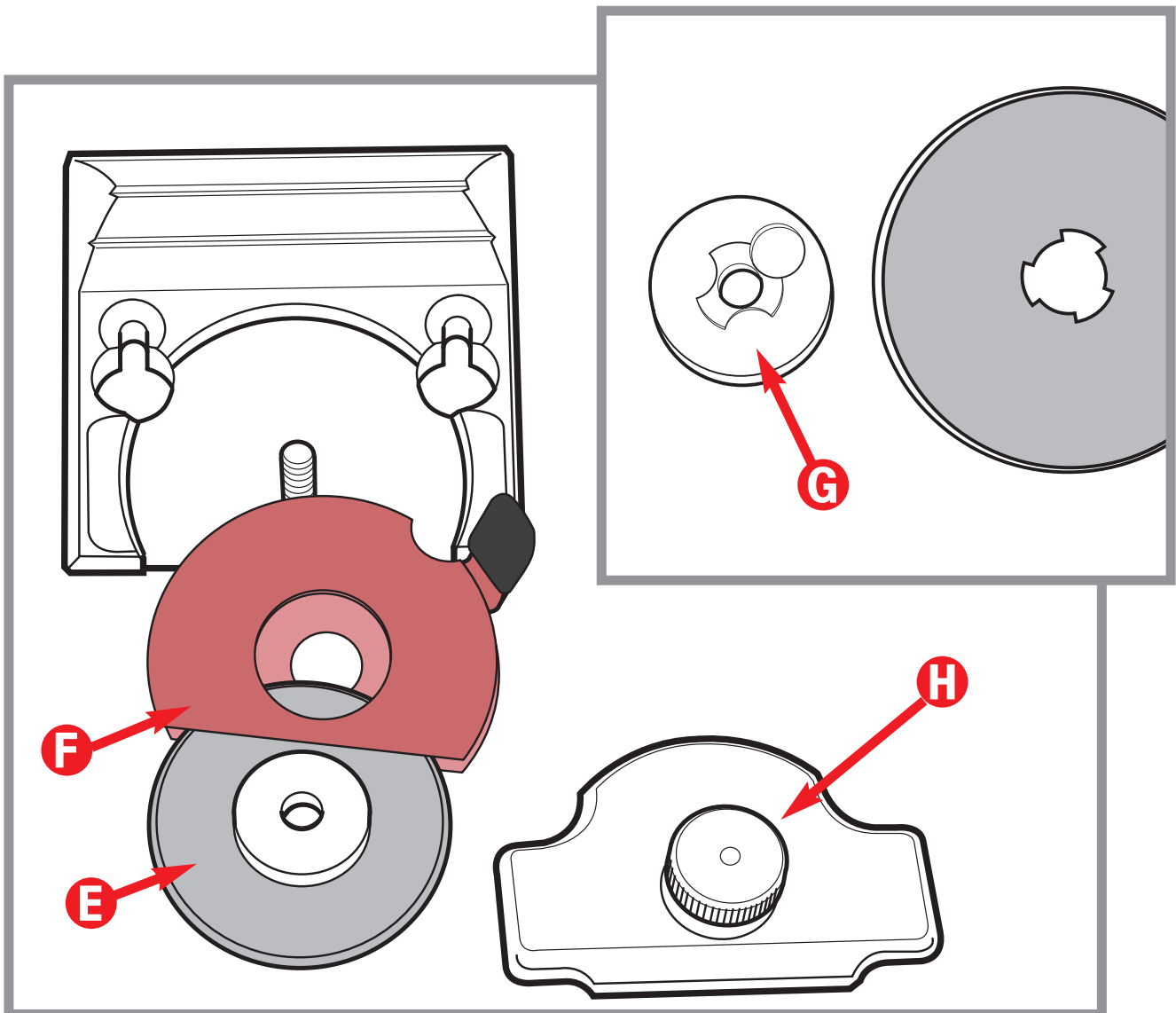
**CHANGING THE ROTARY BLADE**

- **The circular blades are extremely sharp - wear protective gloves and handle with care.**

Unscrew the clamping knob **H** to release the clamp plate then carefully remove the blade with the red guard and the blade centre boss.

Separate the blade **E** from the red guard **F** and push out the magnetic centre boss **G**, be extremely careful, the point of a pencil can be used to help push the boss free of the blade. Ensure there is no debris attached to the magnetic boss or any of the other components, reverse the procedure to install the new blade.

Upon first use check the blade is revolving, if it is not it is an indication that the clamping knob **H** is too tight or there is debris inside.

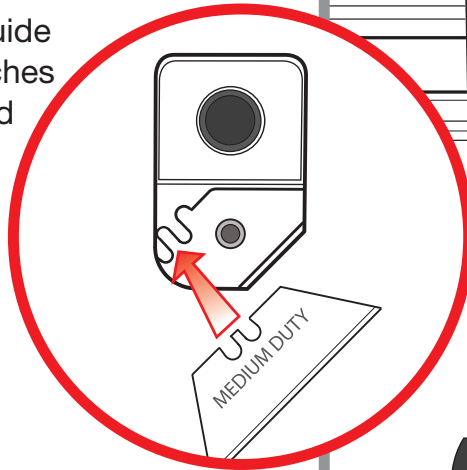


## MEDIUM DUTY BLADE HOLDER

### Fitting the blade.

Remove the magnetic blade guide by releasing the blade clamping knob ❶.

Place blade onto the guide ensuring the blade notches are properly located and the back face of the blade is lying flat on the guide.



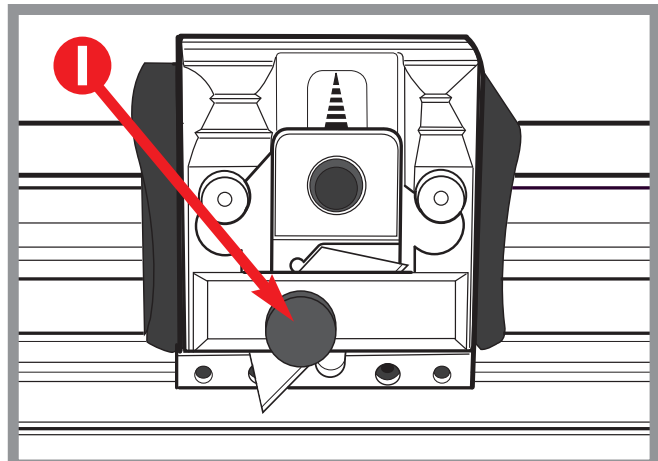
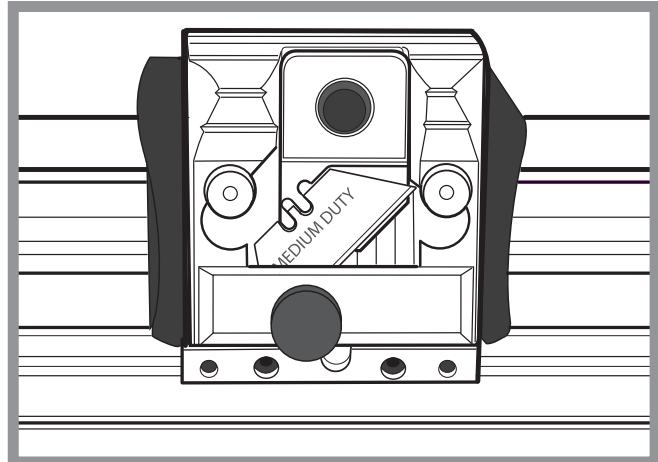
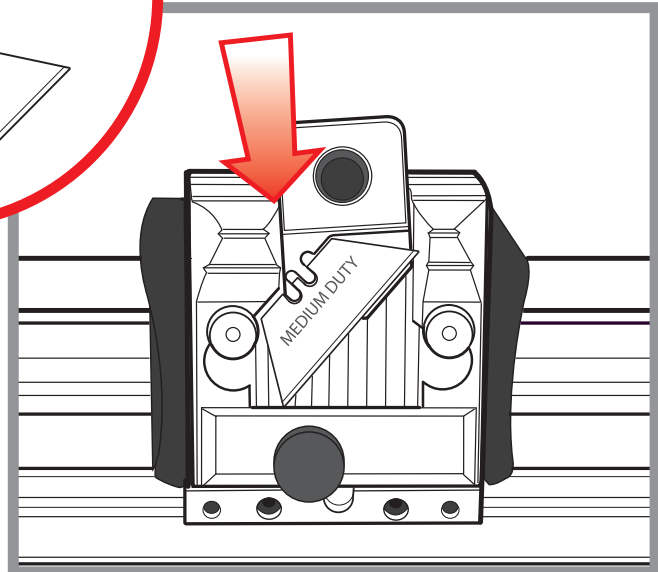
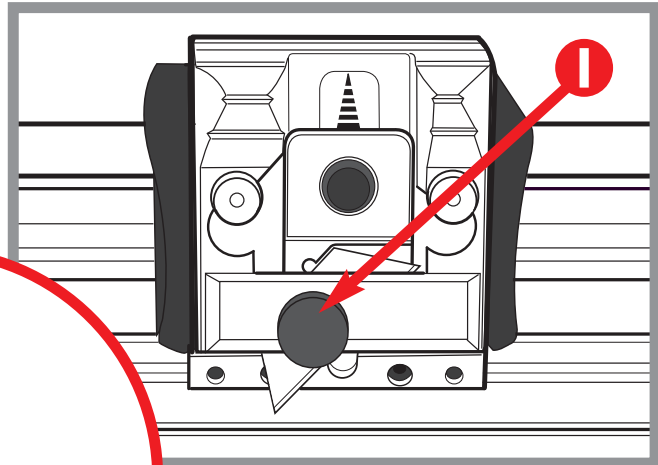
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Lower the blade guide into position feeding the blade behind the clamping bar.

Adjust the height of the blade guide to give the correct blade depth and tighten the blade clamping screw ❶.

Optimum performance is achieved with a sharp blade set so it is only just deep enough to cut through the material.

For cutting tougher materials such as PVC foamboard and materials up to 13mm (1/2") thick the 'Graphik' blade holder is recommended.



## CLEANING AND LUBRICATION

It is good practice to keep a dust sheet over the cutter if it is not to be used for extended periods. In any event regularly clean it with a dry cloth, to remove any stubborn stains use a cloth dampened with a little water/detergent.

Should the cutting head slideway require lubrication use a silicon spray or impregnated sponge.

- **Please note!** Do not use oil or spirits to lubricate or clean the cutter, some of the plastic components and bearings may be damaged.

## CUTTING HEAD BEARINGS

The bearings that control the sliding motion of the cutting head are manufactured from a high grade polymer and under normal use will last for an extremely long time. As they settle into position you may find a slight amount of side play, this can be removed by tightening the two adjustment screws:

Place the long end of the 2mm Allen key provided into any of the two screws **J** and very gradually tighten it with one hand whilst moving the cutting head up and down the cutter bar with the other. Once you feel the sliding motion start to tighten undo the screw the smallest amount so the cutting head just slides easily.

Repeat this on the other screw, further finer adjustment on each screw may be needed to achieve an easy sliding movement with zero side play.

