

Main project

**Window in rebated
frame**

Learner's name.....

Date.....

Construct a frame and light, using hand, fixed and portable woodworking tools and machinery.

This project has the following aims:

- To develop your use of hand tools.
- To develop your understanding and use of jointing techniques.
- To provide you with training and practice in the safe use of a range of Portable Power Tools (PPT).
- To provide you with training and practice in the safe use of a small range of fixed woodworking machinery.
- To ensure that you employ safe methods of work.
- To provide you with the skills and knowledge that will enable you to successfully complete the construction of a window with a light.
- To provide you with an effective grounding that will enable you to complete the end of year phase test to the required standard.

Important note

😊 Before using machine and portable power tools you must have received training and be supervised at all times by a member of staff

To successfully finish this project you will need to complete each of the tasks listed below. You will not be allowed to continue with the next task until the previous one has been completed to the required standard.

Task	Date completed	Assessor initials
Produce an accurate (+/- 0.5mm) full size rod for the project. To do this you will need to carefully read the drawings provided. If you are unsure of any details ask your tutor .		
Complete a cutting list (use the one supplied in this booklet). Remember to include any materials that may be required to produce any patterns or jigs that will be needed to complete the project. <u>(Note that the window frame is to be made from pre-moulded materials.)</u> All materials required must be shown.		
<p>Produce a pattern/jig to make the shaped top rail of the light. To do this you will need to discuss the design and manufacturing process with you tutor. (Refer also to the "Producing a jig for your top rail" section of this booklet.)</p> <p>You will be required to use a range of PPTs, spoke shave and compass plane.....</p> <p>Safe working methods used at all times.....</p>		
<p>From suitably sized PSE produce the mouldings needed for the window light including the top rail. Rebate and moulding quirk in line (+/- 0mm). (Refer also to the machining rebates and mouldings section in this booklet.)</p> <p>Safe use of PPT.....</p> <p>Correctly used appropriate PPE.....</p>		
Accurately cut to length and mark out materials and joints needed for making the light (+/- 0.25mm).		

To successfully finish this project you will need to complete each of the tasks listed below. You will not be allowed to continue with the next task until the previous one has been completed to the required standard.

Task	Date completed	Assessor initials
Set up and use the morticer to cut the mortices for the light		
Safe and correct use of morticer.....		
Correct use of PPE.....		
Accurately cut the tenons for the light and dry assemble. All joints must be flush and have no gaps. Frame must be accurate to +/- 0.5mm		
Mark out glazing bars and cut joints. Use jig and circular saw supplied to cut cross halving joints. All joints must be flush and have no gaps.		
Safe and correct use of jig and circular saw.....		
Correct use of PPE.....		
Clean up inside faces of light and assemble, ensuring that light is: Free from twist.....		
Accurate +/- 0.5mm.....		
Square.....		
All joints flush.....		
Cut to length and mark out materials needed to make the frame.		
Set up and use the mortice machine to cut the mortices in the head of the frame Safe and correct use of morticer.....		
Correct use of PPE.....		

To successfully finish this project you will need to complete each of the tasks listed below. You will not be allowed to continue with the next task until the previous one has been completed to the required standard.

Task	Date completed	Assessor initials
Use the electric or air drill to remove the waste from the mortices in the cill and clean up with the appropriate chisel		
Safe use of PPT		
Safe and appropriate use of PPE		
Clean up the inside faces of the frame and dry assemble. Frame must be: Free from twist..... Accurate +/- 0.5mm..... Square..... All joints flush..... Glue up frame.....		
Shoot light into frame ensuring a parallel gap of 1.5mm between light and frame.		
Hang light using appropriate butt hinges. Light must close without touching sides of frame or being hinge bound.		
Comments	All completed	
	Date	Assessor

Produce a jig for your curved top rail from manmade board ($\frac{1}{2}$ a lessons work).

- Select materials = MDF or PLY (9mm to 15mm thick)
- Add your full NAME, DATE and your class GROUP onto it in pen
- Use a sharp pencil and the curved template to draw the curve onto your material as well as the jig fixing positions.
- Select an electric Jigsaw and follow instructions to secure a sharp (general purpose) woodworking blade - *REMEMBER APPROPRIATE HEALTH AND SAFETY CHECKS* (review health and safety procedures for this tool if you are unsure).
- Secure your material to a safe stable area such as the end of a work bench using suitably positioned clamps. (Consider the route your tool will follow at this stage and also the safety and well being of others around you. For example - will you obstruct walkways with wires etc; will the dust and waste directly affect other people? If so re-consider your work area. Use goggles, dust mask and ear protection when working with this tool on manmade boards *Please use dust extraction where possible*
- Cut in the waste area about 5mm away from your line using the jigsaw *DO NOT CUT TOWARDS YOURSELF OR OTHERS WHO ARE VERY CLOSE AND BE CAREFUL WHERE YOU POSITION YOUR FINGERS DURING THE CUTTING PROCESS*
- Clear up waste safely and dispose of into the appropriate bin *dust mask advisable for manmade board waste*
- Secure your work in a vice with the curve upwards and your curved line facing you.
- Remove the remaining waste carefully using 1st a *sharp* curved Spokeshave and 2nd = a *sharp* Compass Plane (this needs to be set to a convex shape that suits your curve). Work very carefully until you reach

your line. *YOU NEED TO END UP WITH A SMOOTH CONTINUAL CURVE THAT IS 90° (SQUARE) WITH ITS THICKNESS (this curve will be used to produce the rebate on the top rail by running your router along it - neatness and accuracy is important).

- You will need fixing holes in your jig so that it can be attached to the light top rail. To do this proceed as follows:
- Select an air powered drill and set it up with an appropriate 5mm drill bit.
- Choose a suitable location for drilling and countersinking your work with this tool (as with the jigsaw, consider the others around you and the effects of the trailing airline and the dust and waste produced). You obviously need a location where a compressed air connection is present.
- Clamp your work as you did with the jigsaw process but this time, position some waste material underneath your work behind the areas that you will drill - this is to protect the bench as well as prevent breakout on the back of your work.
- If possible, check that the air pressure in the location you have chosen is set correctly for this tool, adjust if necessary. *ASK IF YOU ARE AT ALL UNSURE*
- Check the airline hose for any defects (*DO NOT USE IF DAMAGED* Report any damage and check suitability with a member of staff if you are unsure)
- Check the oil level in the inline feed - top up if necessary (ask for assistance from a member of staff if you are unsure how to do this)
- If it is safe to do so, 1st connect the airline hose to the air supply and 2nd connect the drill to the airline hose.
- You can now drill and countersink your fixing holes in the jig at the point where the tenons will be on the top rail, as previously marked.

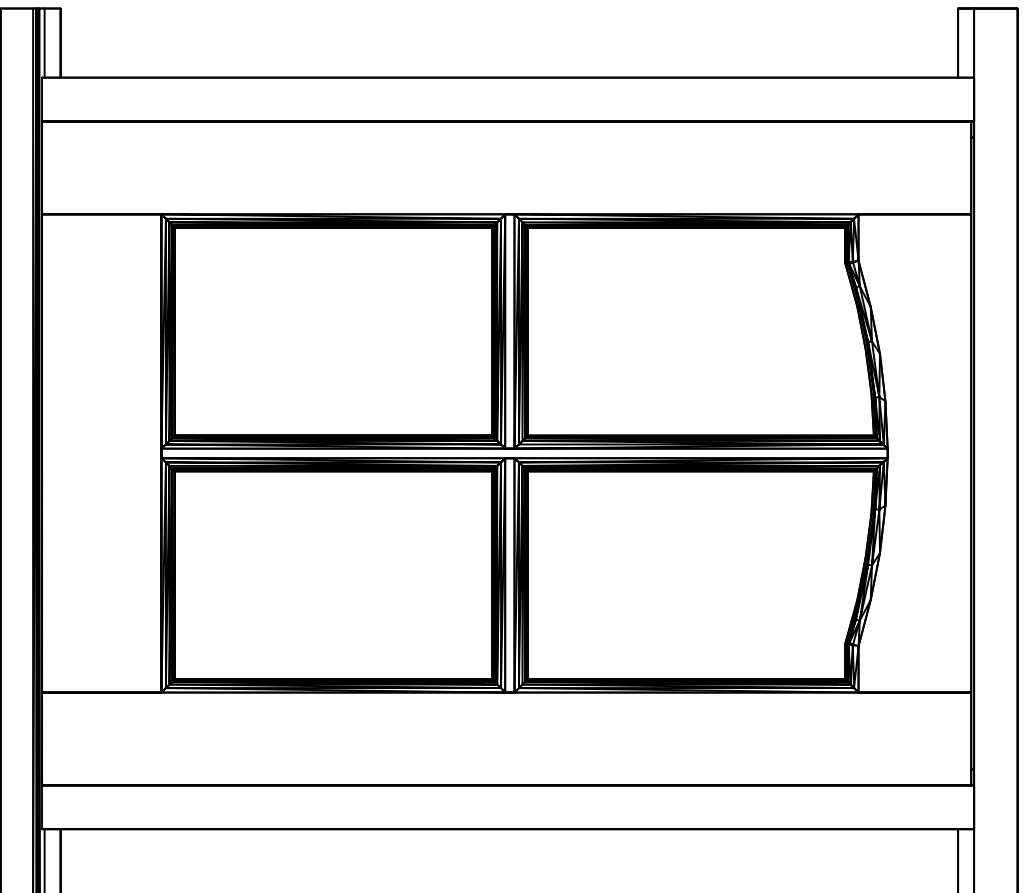
Machining the rebate and moulding in the PSE and top rail for the light.

For this process ensure that you are wearing the correct PPE at all times eg ear muffs, goggles, boots.

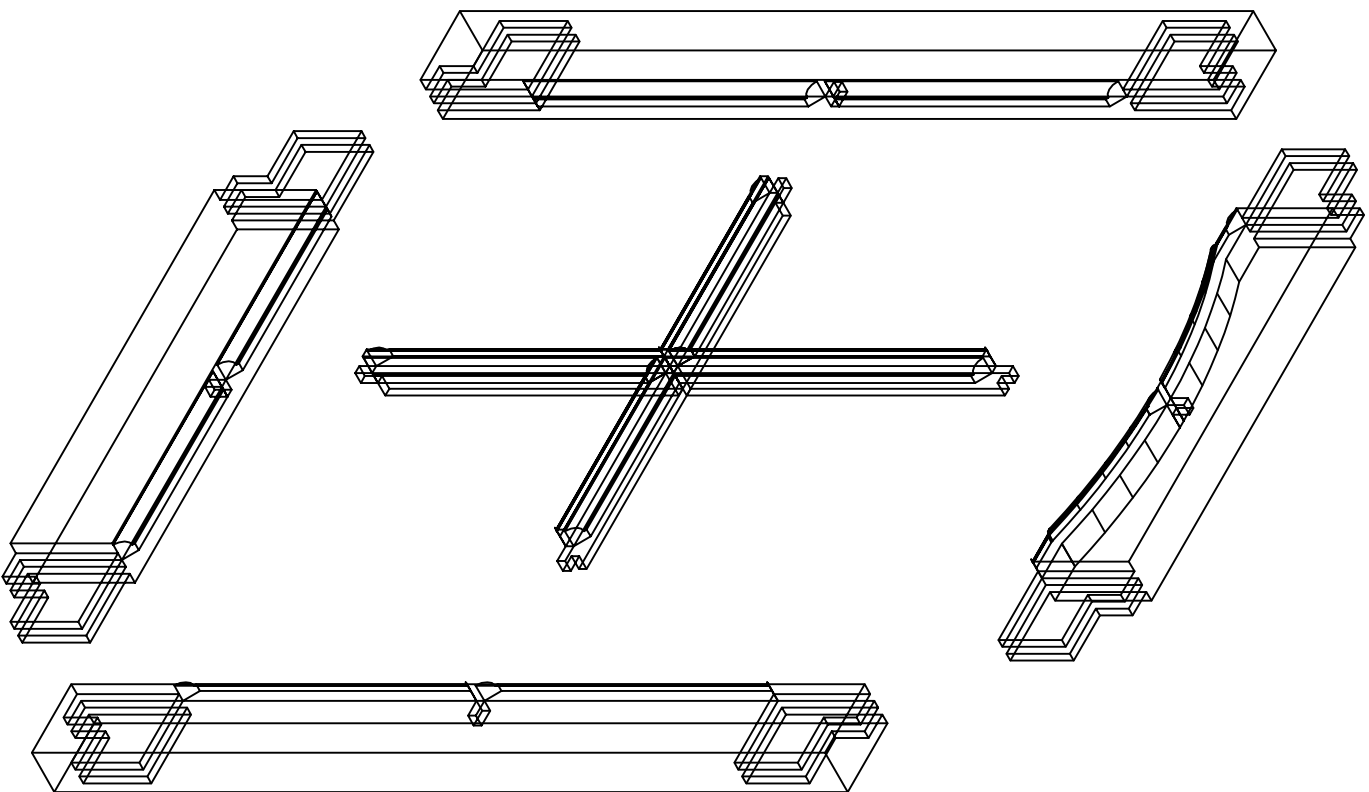
Ensure that you use safe working practices at all times.

- Use the jig you made earlier to mark out the shape on the timber selected for the top rail.
- Using the jig saw and the same technique as you used to make the first pattern cut out the shape of the top rail
- Fix your jig to the timber and using a router fitted with a 20mm diameter straight cutter and 20mm diameter bearing guide trim in the shape using the jig as a guide. Remove jig when complete.
- Disconnect the router from the power and replace the 20 mm bearing guide with a 10mm one.
- Set the router to the correct depth. Reconnect the power supply and with the work piece securely held in place run to the edge of the timber machine in the rebate. This will enable you to produce the rebate on both the straight and curved pieces.
- Disconnect the router from the power supply. Replace the 20mm straight cutter with an ovolo moulding cutter and bearing guide. Set the router to the required depth and running to the edge of the timber machine in the moulding.

Remember ASK YOUR TUTOR IF IN DOUBT



*Window in rebated frame.
Front elevation.*



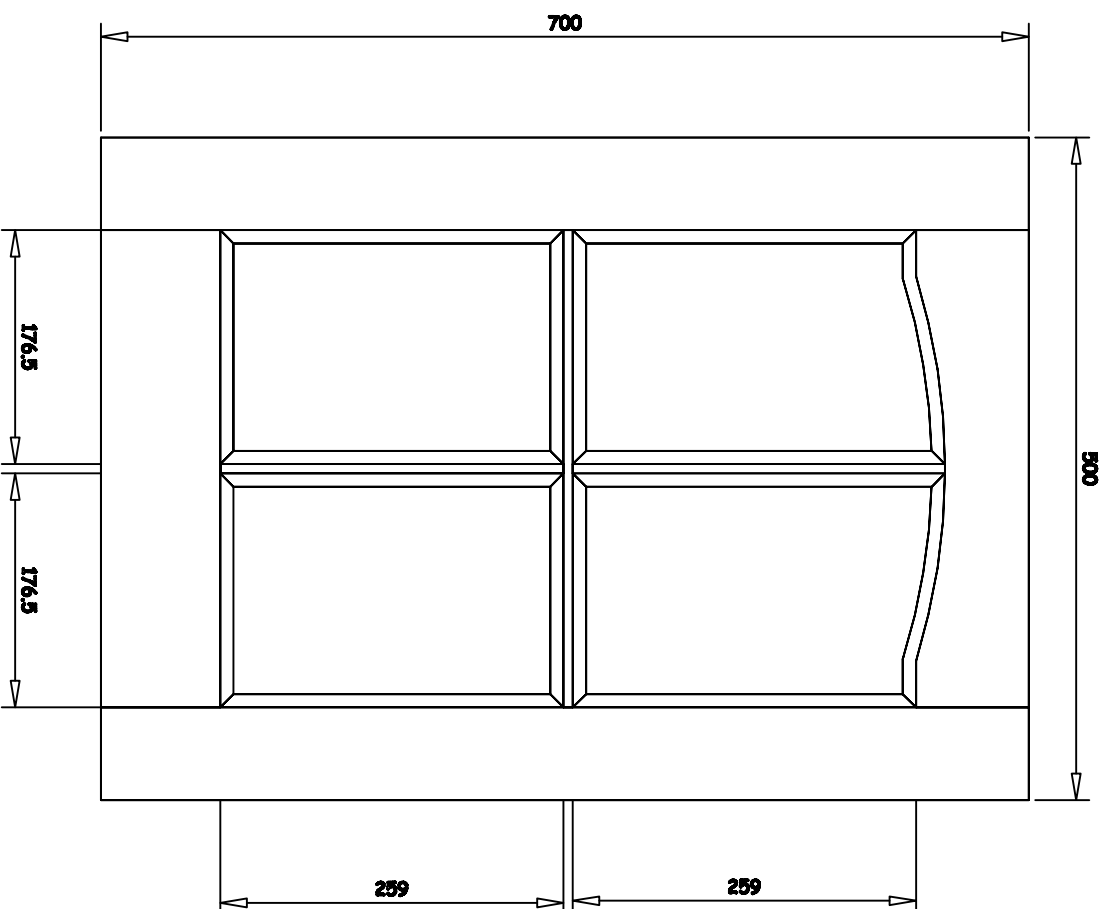
Detail of window joint construction

Double haunched M & T with mitred shoulder to the top and bottom rails.

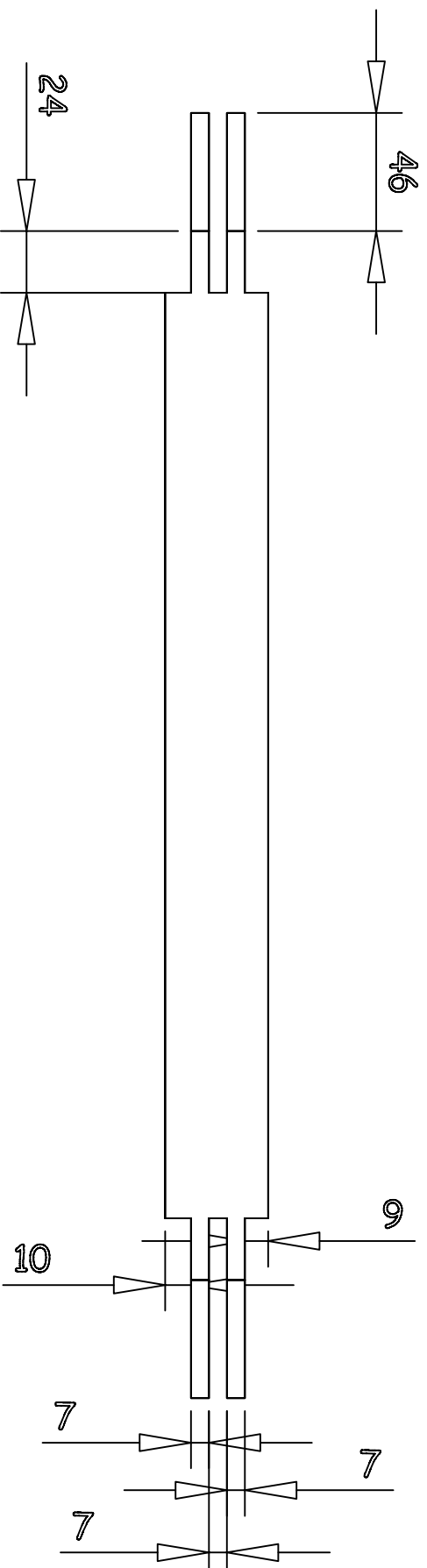
Single mitred M & T to the ends of the glazing bars.

Cross halving where glazing bars cross.

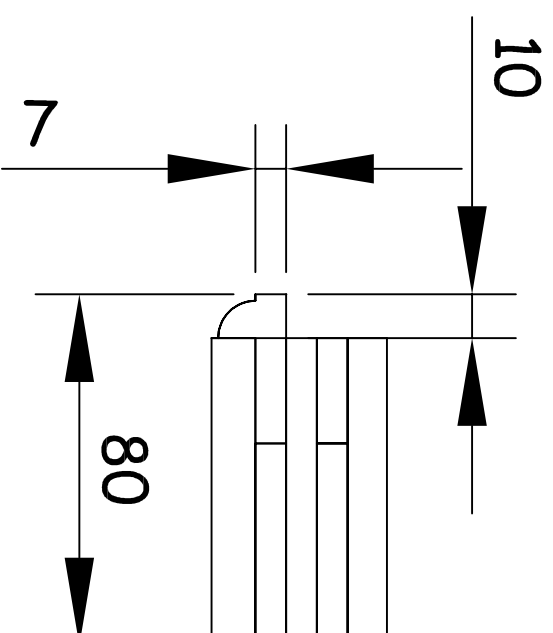
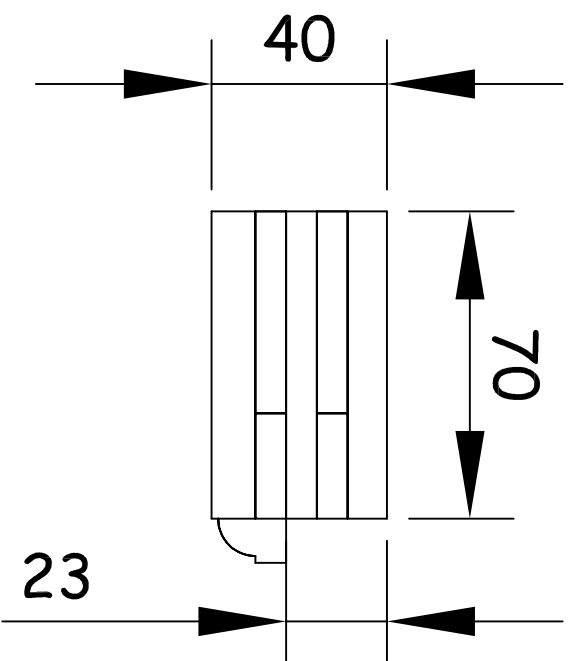
Overall dimensions for window



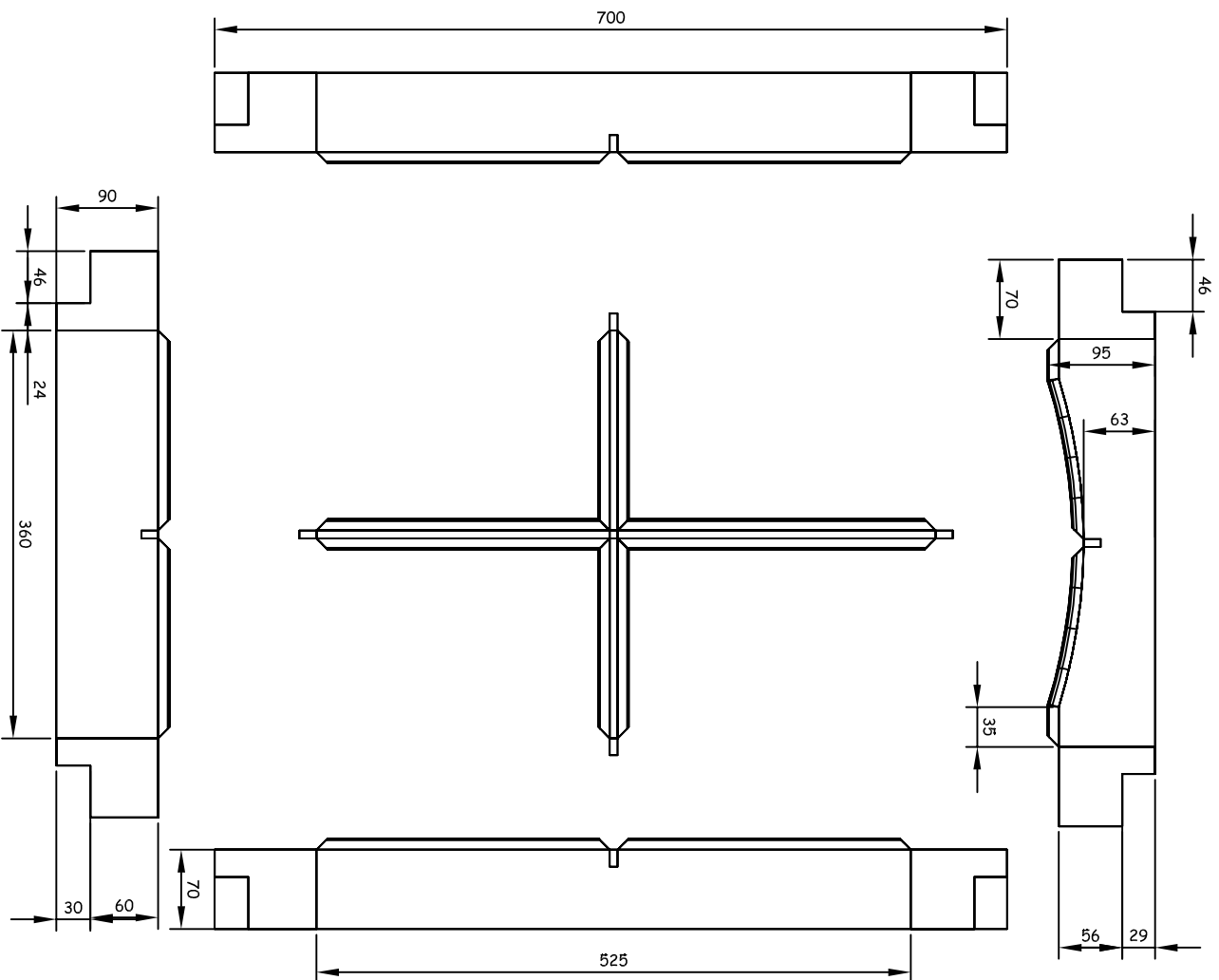
Joint dimensions for top and bottom rails



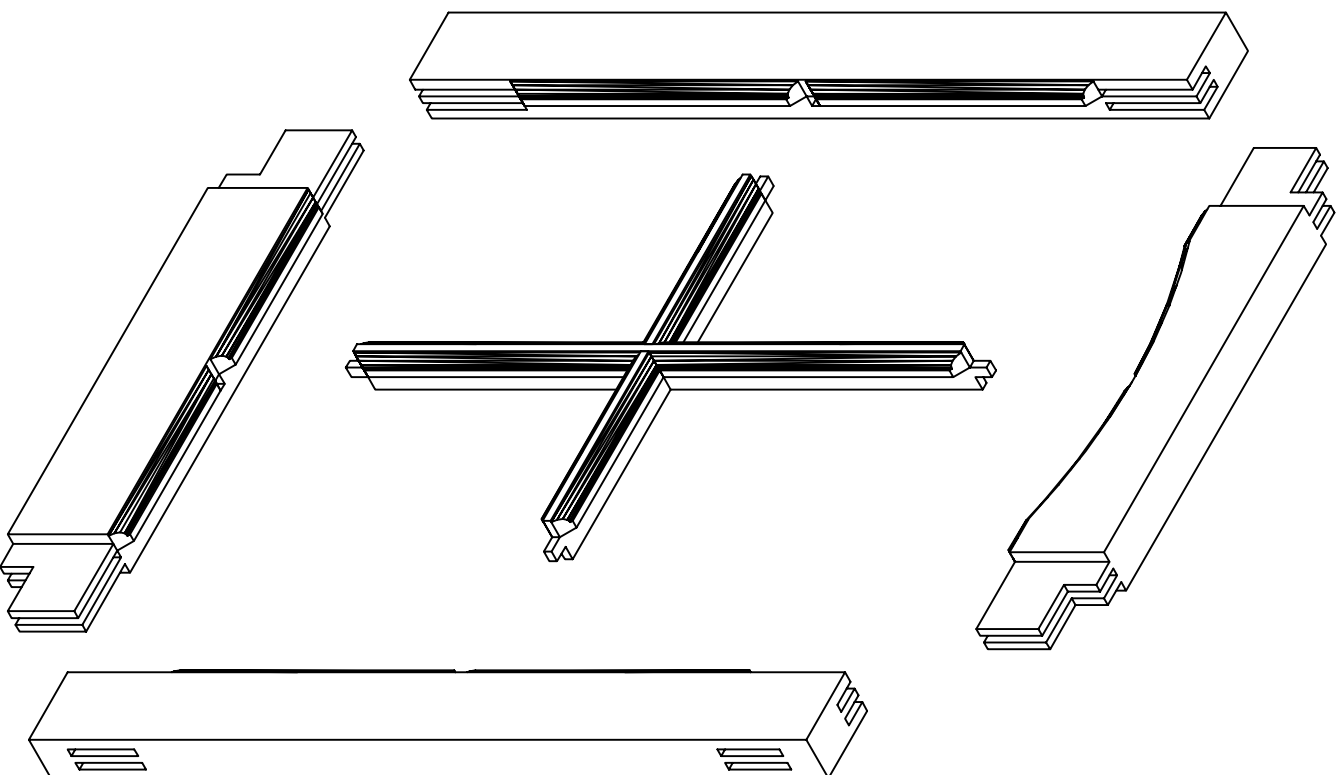
Dimensions of door stile sections



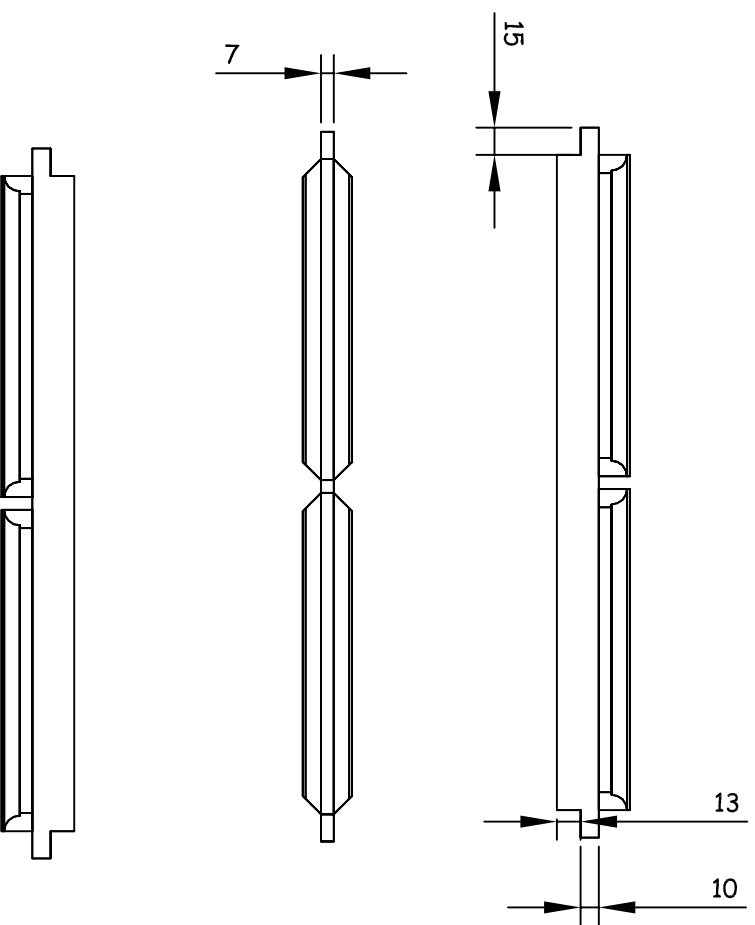
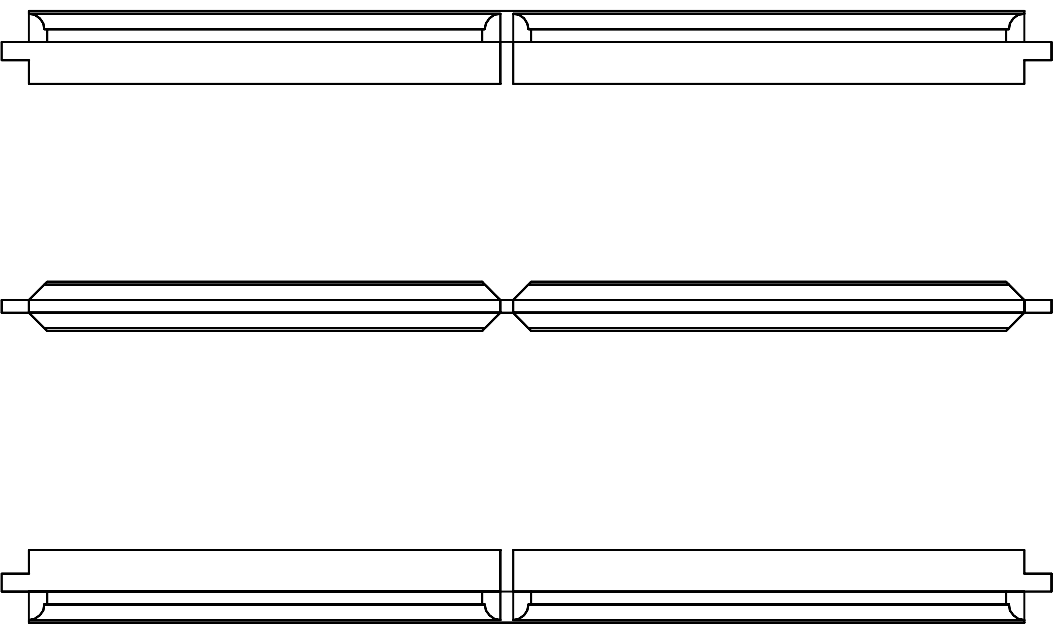
Dimensions of rails and joints for the window



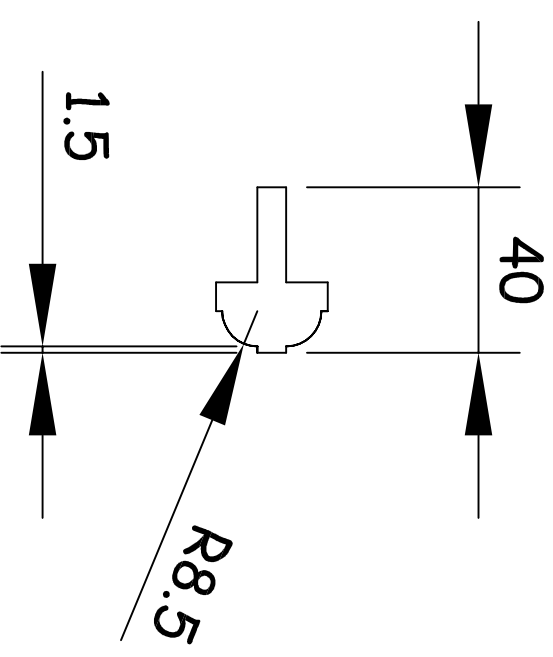
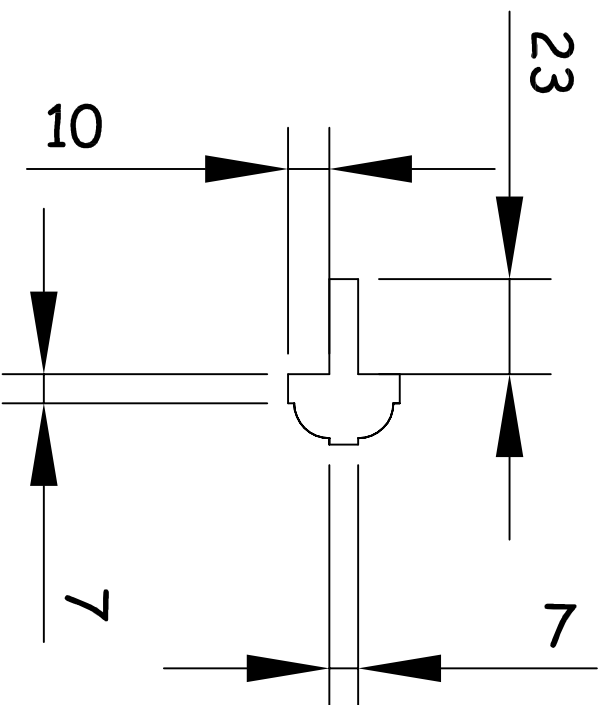
Hidden view of window joint detail



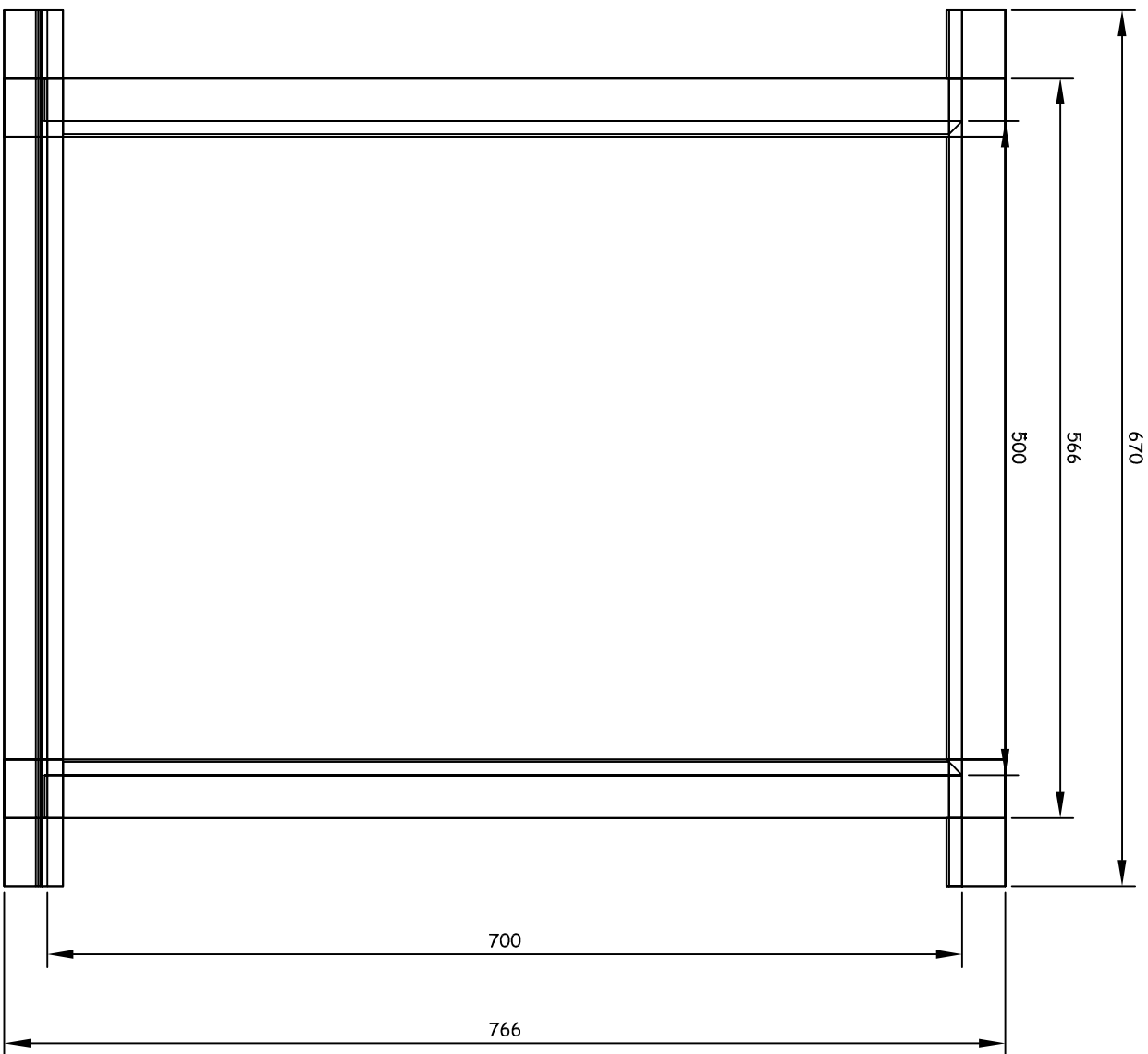
Glazing bar detail. All joint dimensions are the same as detailed.



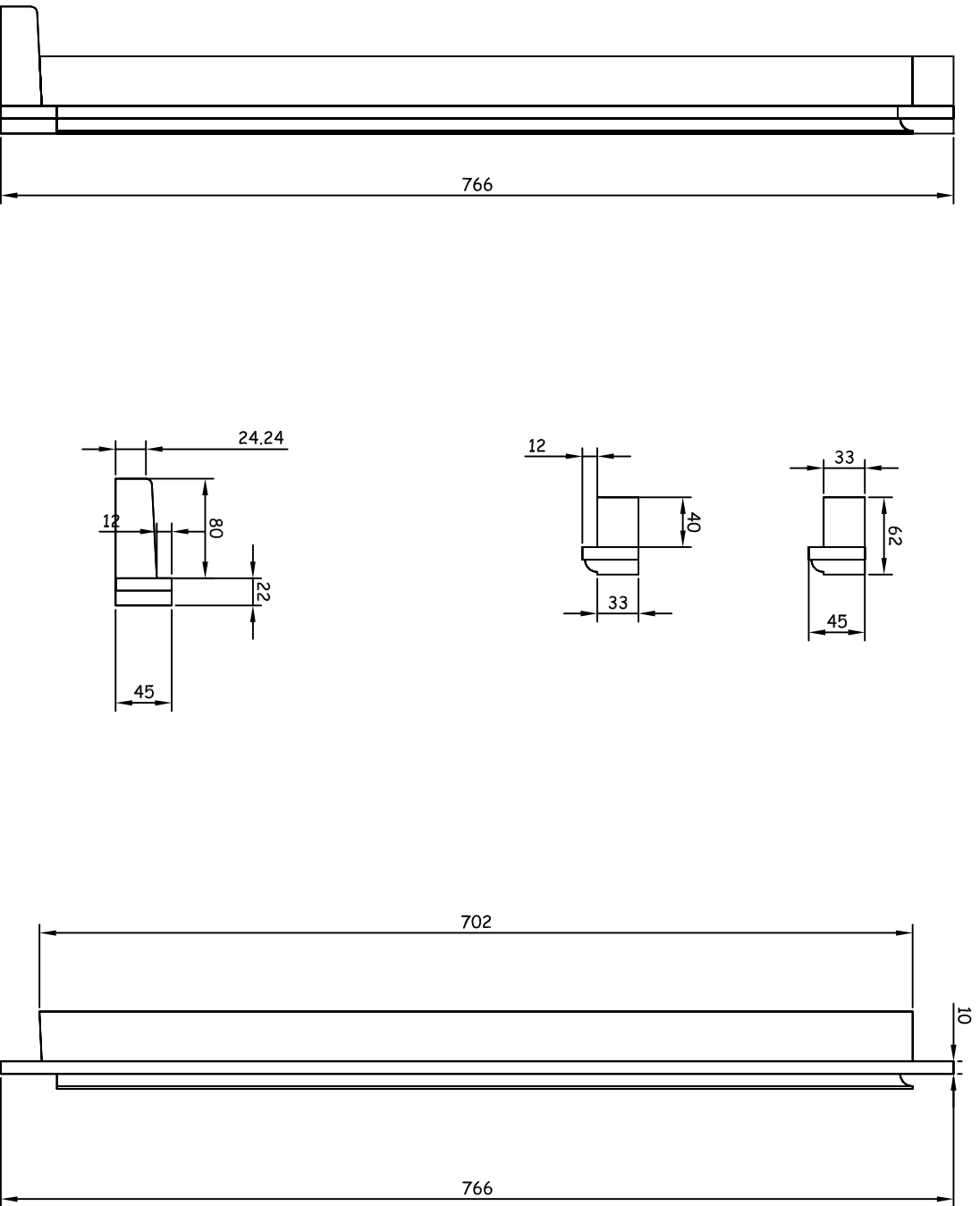
Dimensions of glazing bar section



Overall dimension details for frame

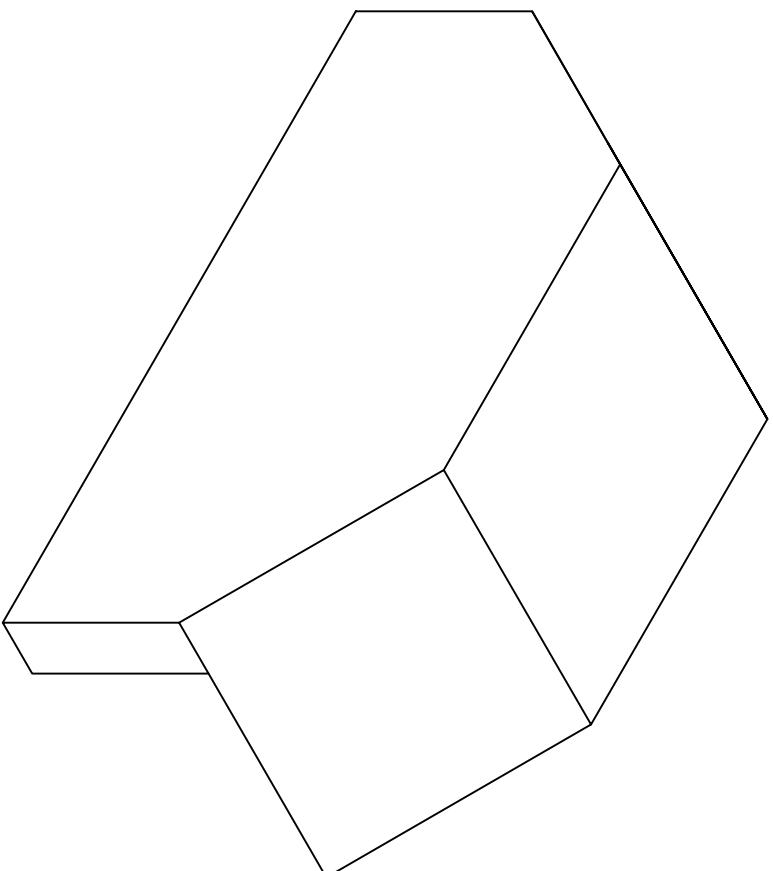


Details for frame head, cill and stile sections



Tenons with scribed shoulders at the head and angled long and short shoulders at the cill

Useful jig to help with cutting mitre joints



Dimensions of mitre jig

