STRETCH & CHALLENGE!

S&C Code: S&C004

S&C Type: Individual

S&C Title: Leg-endary – The Battle for the reduced Haunch!

Rating: Medium/Difficult

Educon

LCB

STRETCH & CHALLENGE!

This end-of-year Stretch & Challenge event is designed to push your carpentry and joinery skills further than ever before. Throughout the course you've built confidence with tools, techniques, and teamwork — now it's time to put those abilities to the test in a series of fun, hands-on challenges.

You'll work both individually and as part of a team to produce accurate joints, solve practical problems, and demonstrate the craftsmanship you've developed this year. Each task is designed to stretch your precision, creativity, communication, and professional standards, giving you a taste of the expectations found in real workshop environments.

This is your chance to show what you can do, challenge yourself, and take pride in the progress you've made. Let's see your best work.

AIM:

The **Leg-endary Joinery Challenge** throws learners into the world of high-precision furniture making, where only the sharpest minds and sharpest chisels survive. This isn't your everyday mortise and tenon — this is the **reduced haunched, mitred, shoulder-stacked, geometry-loving, brain-twisting table-leg joint** that separates the apprentices from the artisans. Learners will need **accuracy**, **patience**, **clean marking out**, and the ability to think in 3D while keeping all ten fingers intact. If they can conquer this joint, they can conquer almost anything the workshop throws at them.

LEARNING OBJECTIVES:

By the end of this activity, learners will be able to:

- **Identify joint purpose** — Explain why reduced haunching and mitred shoulders are used in table construction.
- **Mark out accurately** — Use datum edges, gauges, and squares to mark out the joint with precision.
- **Cut the joint safely** — Apply correct sawing and chiselling techniques to produce clean, accurate shoulders and haunches.
- **Assemble and evaluate** — Test fit, refine, and assess the quality of the joint against professional standards.
- **Use correct terminology** — Confidently use terms such as *haunch*, *mitre*, *cheek*, *shoulder*, *mortise*, and *reduction*.

ACTIVITY OVERVIEW:

Learners will produce a **table-leg corner joint** using a reduced Haunched and mitred mortise and tenon. This involves:

- Creating a **mortise** with a reduced depth section for the haunch
- Cutting a **tenon** with a reduced haunch and a mitred shoulder
- Ensuring the mitre closes cleanly when assembled
- Achieving a tight, square, flush fit suitable for furniture construction
- Competing for **“Most Leg-endary Joint”** based on accuracy, cleanliness, and craftsmanship

Difficulty: **Medium–Hard**
Time: **60–90 minutes** depending on skill level

WHY?:

- **Develops precision** — The reduced haunch forces learners to work to fine tolerances.
- **Strengthens tool control** — Mitred shoulders require controlled sawing and careful paring.
- **Builds spatial reasoning** — Learners must visualise how multiple planes meet.
- **Reinforces real-world application** — This joint is used in traditional table construction.
- **Encourages resilience** — Mistakes require problem-solving, not giving up.

STUDENT INSTRUCTIONS:

- Collect your prepared stock and tools.
- Identify your **datum edges** and mark them clearly.
- Mark out the mortise and haunch reduction using a gauge and square.
- Cut the mortise first, keeping walls straight and clean.
- Mark out and cut the tenon, including the reduced haunch.
- Cut the **mitred shoulder** accurately — this is the trickiest part.
- Test fit, refine, and adjust using paring cuts only.
- Present your finished joint for judging.

LECTURER INSTRUCTIONS:

- Introduce the purpose of the joint and show a completed example.
- Demonstrate marking out using datum edges and gauges.
- Model safe mortising and tenon-cutting techniques.
- Highlight common mistakes (over-cut shoulders, misaligned haunch, sloppy mitre).
- Circulate to support learners with tool control and accuracy.
- Run the competition element:
  - Fastest accurate joint
  - Cleanest mitre
  - Best overall craftsmanship
- Provide feedback using assessment criteria.

SCAFFOLDING STRATEGY:

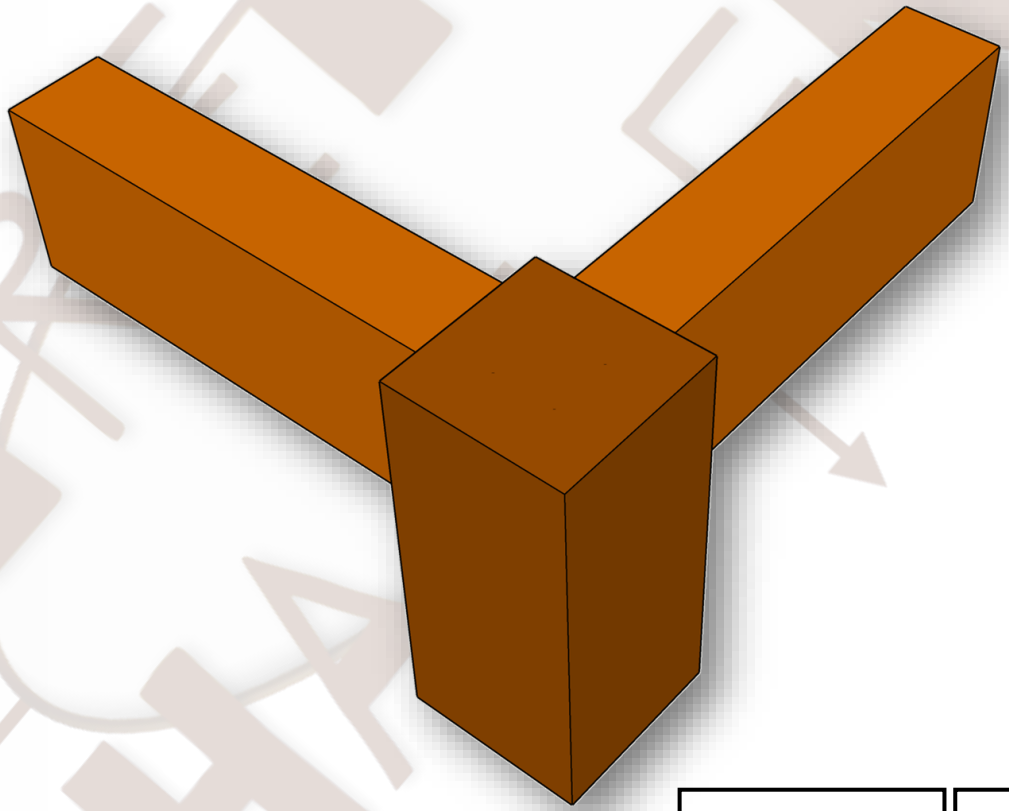
- **Pre-cut mortise** — For lower-ability learners, provide a mortise so they only cut the tenon.
- **Guided marking out** — Use dotted-line templates or step-by-step marking prompts.
- **Tool-skill stations** — Practice mitre cuts or shoulder cuts separately before attempting the full joint.
- **Chunked instructions** — Break the task into micro-steps with check-ins.

DIFFERENTIATION STRATEGIES:

- **Stretch task** — Ask high-ability learners to produce a second joint with a tighter tolerance or mirrored orientation.
- **Support task** — Allow learners to use a mitre box or marking jig.
- **Visual learners** — Provide exploded diagrams and colour-coded marking guides.
- **Verbal learners** — Use call-and-response marking out steps.
- **SEND support** — Provide tactile templates, simplified diagrams, or pre-scribed marking lines

ASSESSMENT OPPORTUNITIES:

- Accuracy of marking out
- Cleanliness of saw cuts
- Squareness and fit of the joint
- Quality of the mitred shoulder
- Correct terminology used during explanation
- Ability to reflect on mistakes and improvements

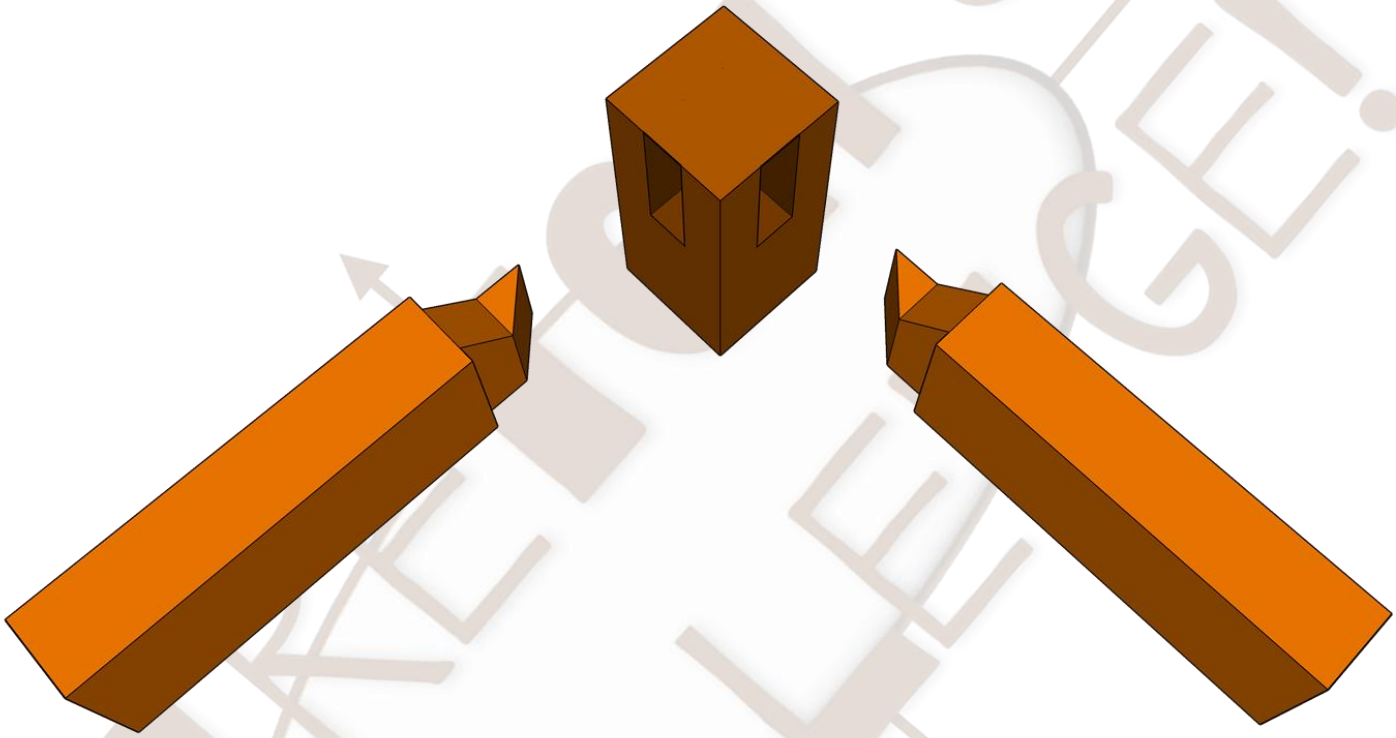


S&C004:
Leg-endary!

LCB STRETCH & CHALLENGE!	Stretch & Challenge.
	Leeds College of Building
S&C004	Scale: none.
	Drawing No.001.
Date20/04/2026.	James Rix.

Reduced Haunched and Mitred Mortice & Tenon Joint.

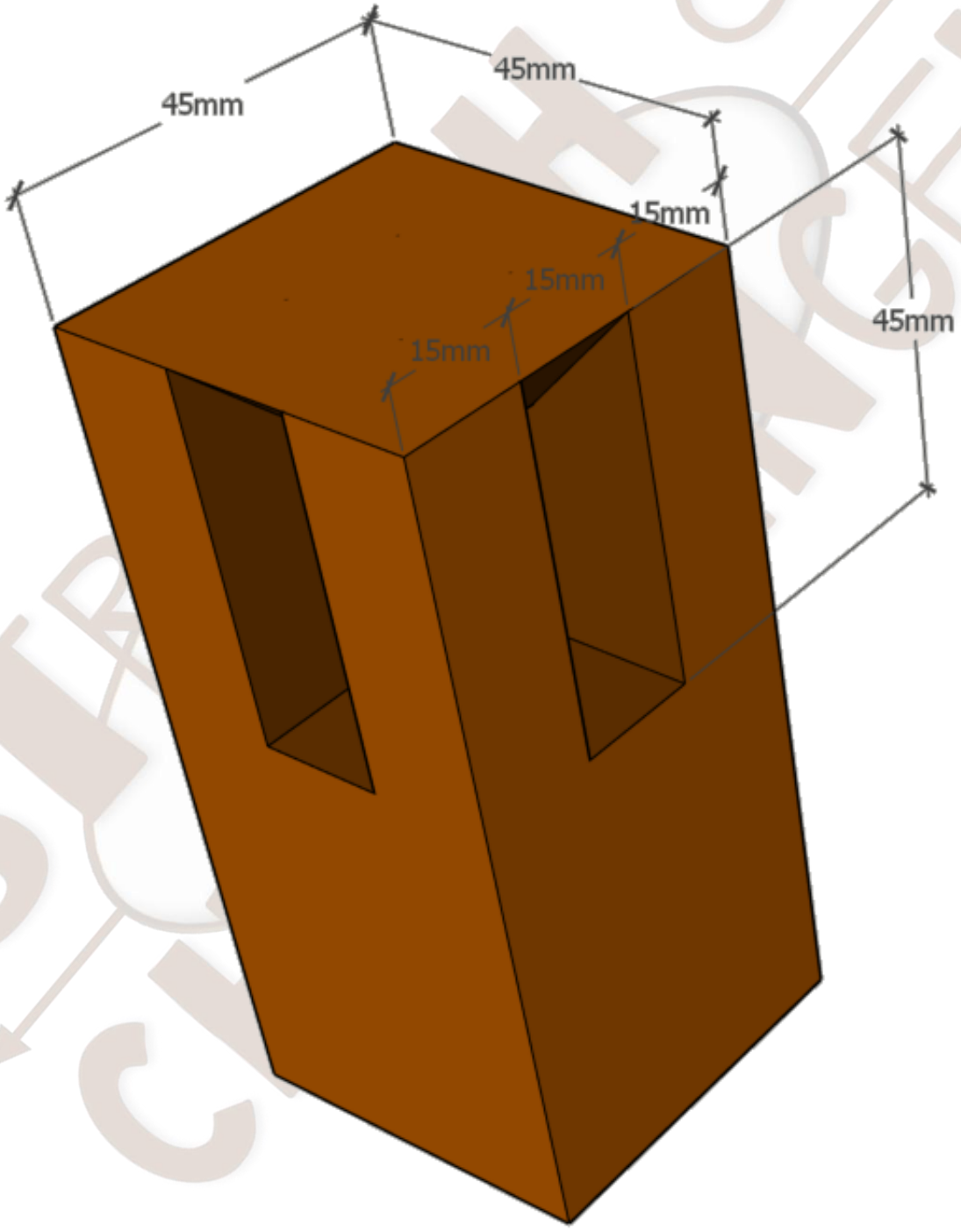
Exploded View.



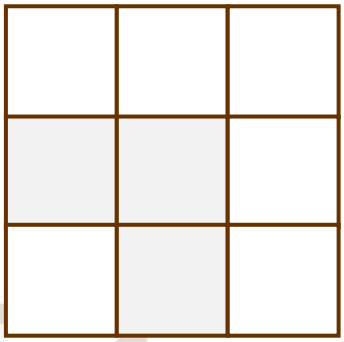
A **Reduced Haunched Mitred Mortise and Tenon Joint** is an advanced table-frame joint that combines strength with a neat, professional finish. The reduced haunch helps prevent twisting in narrow rails, while the mitred shoulder hides the joint at the visible corner. It's a precise, technical joint that tests accuracy, tool control, and clean fitting.

Mortice.

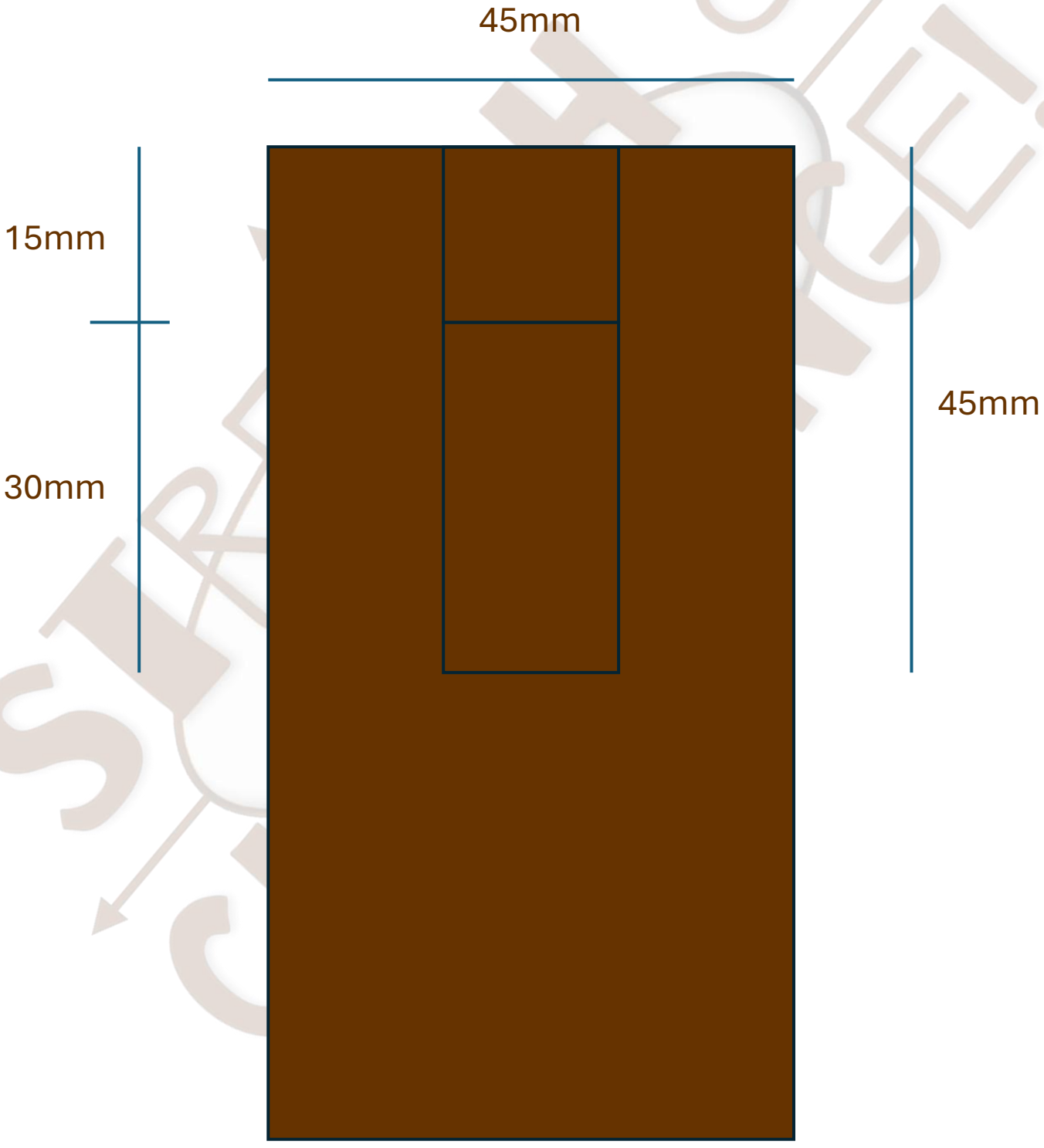
3D Projection.



Mortice.

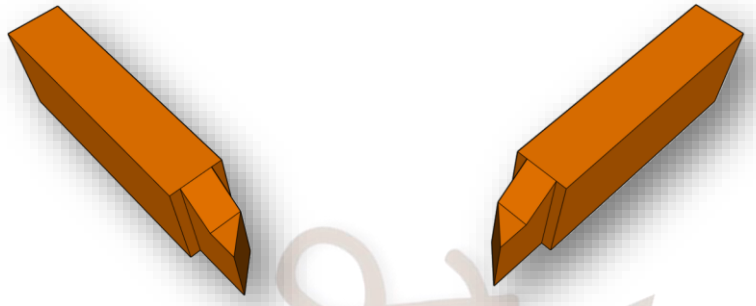


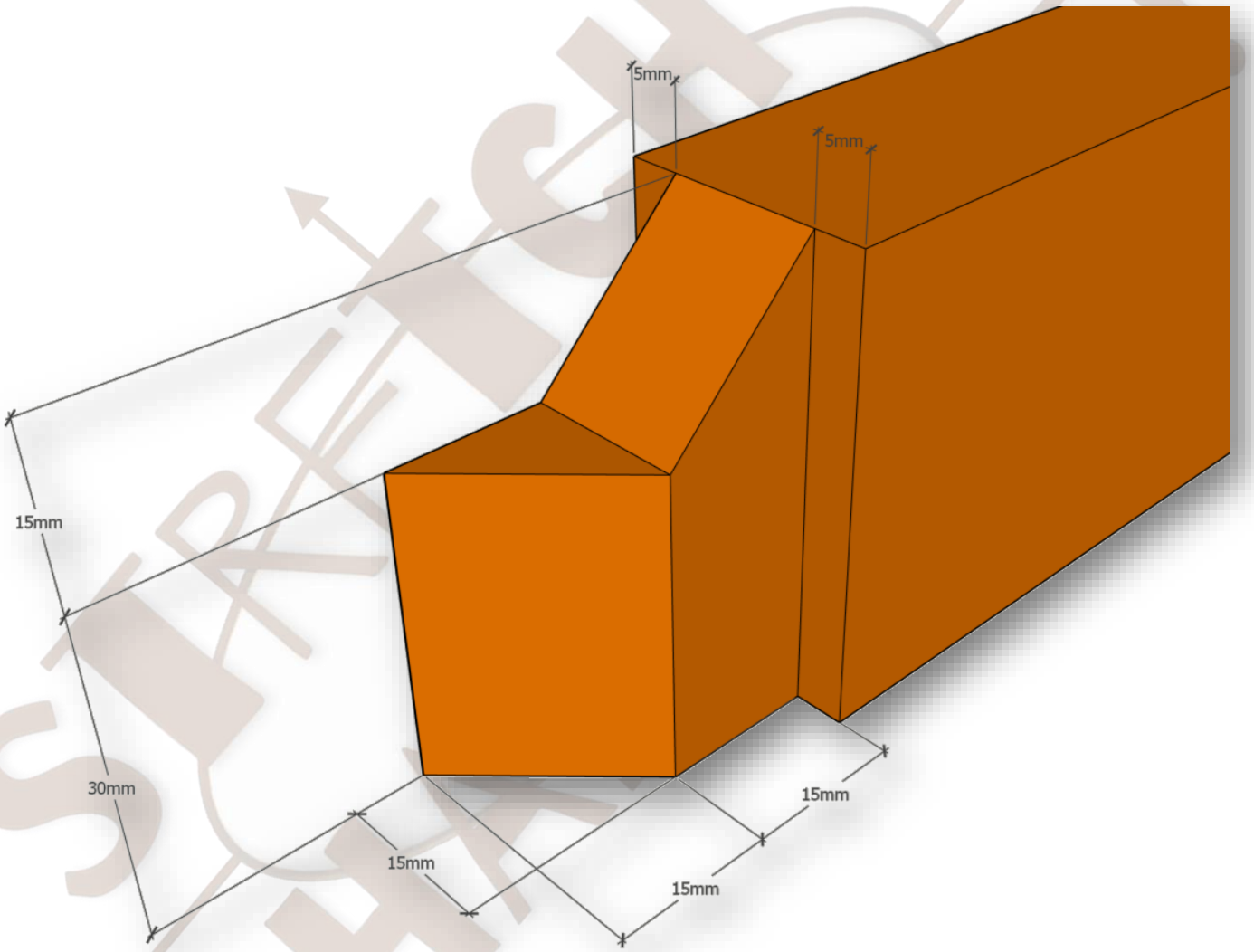
Orthographic Projection.



Tenon.

3D projection.





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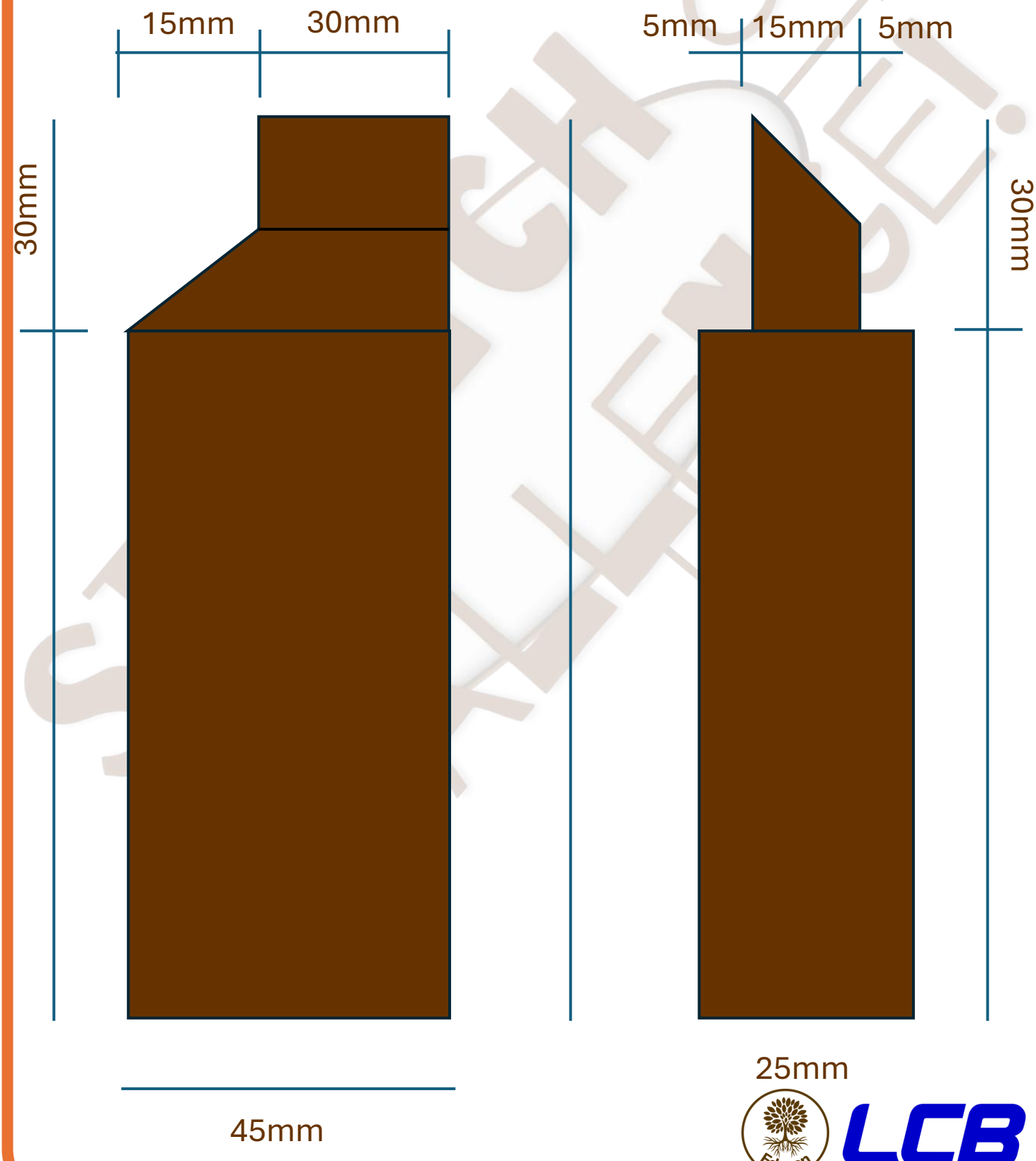

MARKING CRITERIA:

Task	★★★	★★☆	★☆☆
Marking Out			
Face side & face edge marked	yes	no	Not used
Lines are sharp, clear and consistent	Good	Medium	Requires Improvement
Lines are within accuracy	1mm	2mm	3mm
Waste clearly identified			
Sawing			
Saw cuts with no drifting	1mm	2mm	3mm
Cuts are straight and vertical	1mm	2mm	3mm
Accuracy of cutting to lines	1mm	2mm	3mm
Tear out & Bruising			
Chisel Work			
Cuts are controlled and follow marked lines	1mm	2mm	3mm
Shoulders are crisp and square	Yes	No	N/A
Depth is consistent	Yes	No	N/A
Waste removed cleanly			
Joint Fit			
Joints fit together without force	1mm	2mm	3mm
No visible gaps when assembled	1mm	2mm	3mm
Shoulders are tight and sit flush	1mm	2mm	3mm
Joint sits square when fitted	1mm	2mm	3mm

Task	★★★	★★☆	★☆☆
Surface Quality			
Edges are clean and free from splinters			
No deep tool marks or gouges			
Faces are smooth and consistent			
Arrises are slightly eased			
Behaviours			
Tools used safely and correctly			
Work area kept tidy and safe			
Handled with care			
Good communication throughout			