

Marking Time

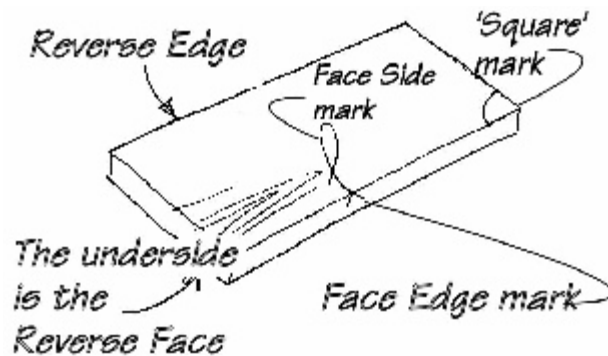
Face Marks to Marking Knife Use & more

Table of Contents

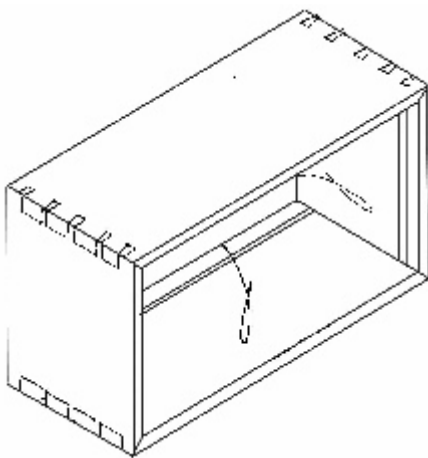
Marking Time	1
Face Side and Face Edge (Datum) Marks.....	3
Using A Marking Gauge	6
Marking Gauge Tips	9
Shop-made Marking Gauges	12
Marking Knife Bevels.....	17
A Close-Up On The Bevel.....	22
Why Use A Marking Knife?	25
Marking Gauge Tips	28

Face Side and Face Edge (Datum) Marks

The looped face-side mark shoots off the face and joins the face-edge mark. As well as indicating datum surfaces and showing the mating surfaces for joints, the fs & fe serve as reference faces for fences of machine and hand tools.

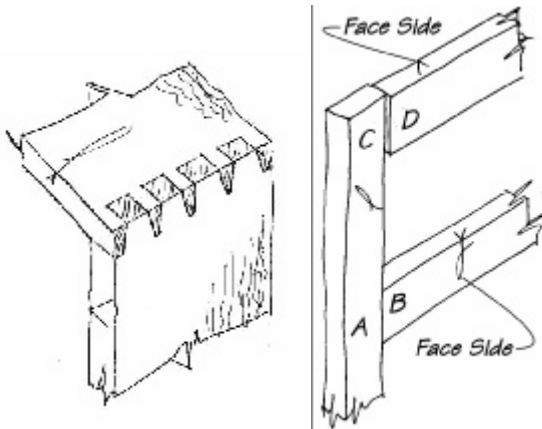


Oops! Why don't the grooves line up?



The worker failed to keep the fence of the plough (or router) against the face-edge.

As a case where the face-sides are not co-planar. It will not unduly matter if some frame joint tenons and mortises are not quite dead centre, providing that gauging, etc is always done from the datum faces.

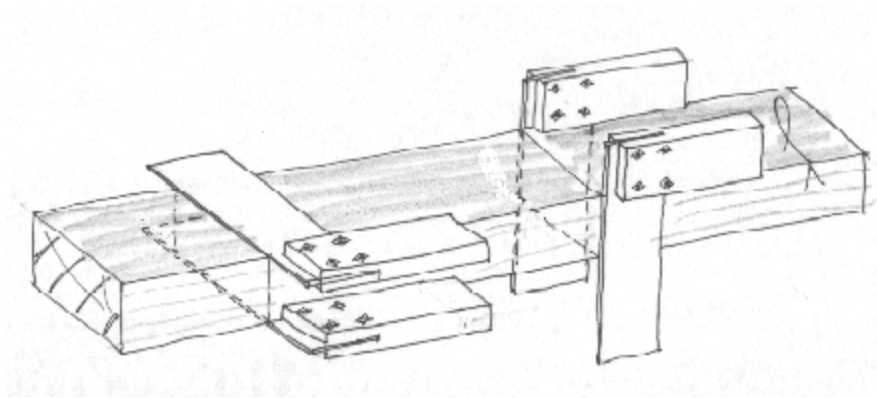


They can prevent the kind of error that lead to the 'shove-tail' joint on the left. This can happen when novice makers forget to align the face-sides so that they face each other

Illustrating how a try square should always rest against a datum face.

Providing that the datum faces and the stock of the square are true, the lines should join up, even if the square is not set at a true 90deg.

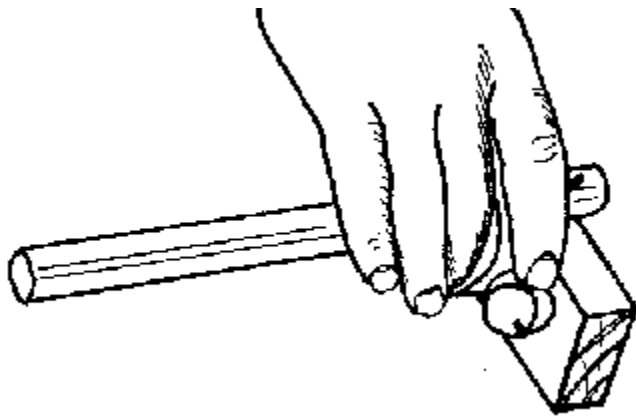
You could check this with a sliding bevel set to an angle other than 90deg



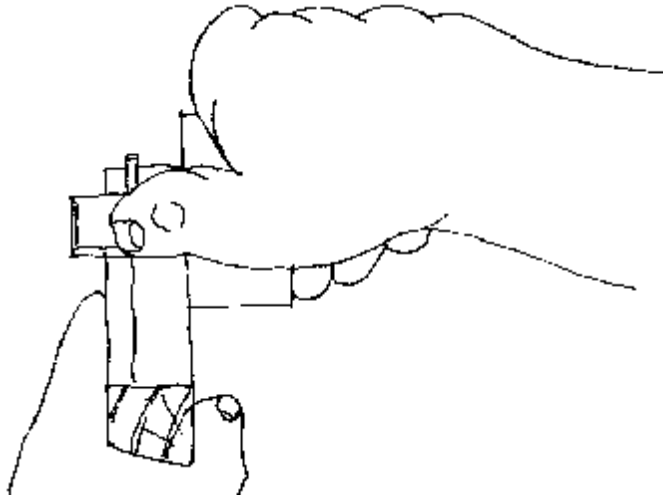
These long-standing traditional marks relate to hand woodworking. While the marking of datum faces on one-off machine work is still a desirable practice, it is not always possible to offer a datum face to a machine fence. In this case very accurate thicknessing will avoid the kind of error shown in the framing joint diagram

Using A Marking Gauge

For those of us for whom the gauge sometimes goes adrift, in addition to firmly keeping the stock against the datum face, control of the depth of cut depends on tilting the stock so that the forward corner of the stem rests on the surface of the job. Follow the usual advice to make a light cut first, then follow-up. Hold the gauge so that the thumb is as near to the point as possible, the index finger over the curve of the stock and the lateral pressure applied by the third finger



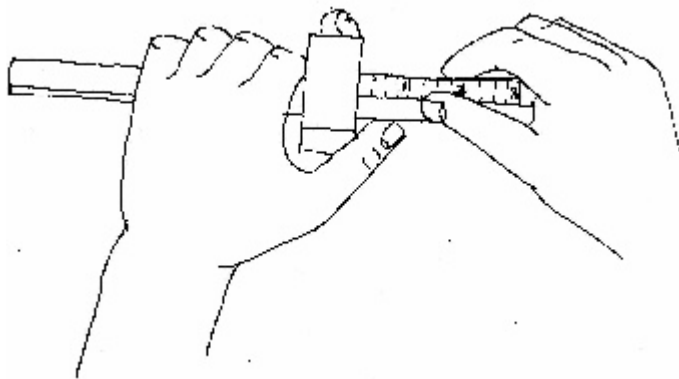
Note the thumb position



First set the gauge while holding it this way.

Make final adjustments by tapping one end or the other on the bench top.

Notice that when the stock is too tight to jump you will hear a dull thud, whereas when set just right, you hear a clicking sound.



Use a half-round file to make a comfort notch where the thumb rests against the corner of the stock



(Left) Start the stroke with the lower end of the work resting on something firm such as the bench top.

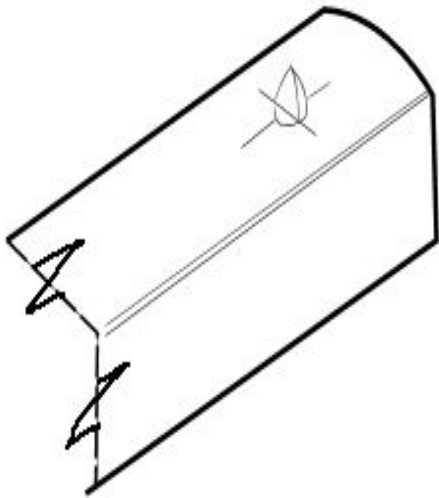
(Right) Note the firm grip from the upper hand. As you approach the end of the stroke, the gauge might catch the bench top.

(Centre) Tilt the workpiece so that the stock can clear the end.

When you want to limit the length of a gauged line, first stab the points where the line should end. You can then feel when the gauge jumps into the mark

Marking Gauge Tips

An as-bought conical gauge point filed to make a cutting point.



For many years I've been using two main gauges, one with a point filed one side and the other on the other side. I marked the end of the stem of one with a bit of inserted plastic knitting needle so that I can easily tell which is which. (Actually, having more than two can be very convenient for some complicated jobs).

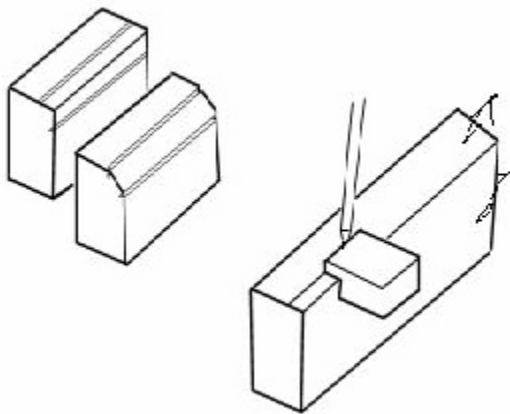
For dimensioning timber, one uses the gauge as shown, but for marking say, a rebate cut into a face side or edge), one uses the second type. The principle is that the sloping side goes in the waste.

Avoid conical points because they compress and burnish the arrises.

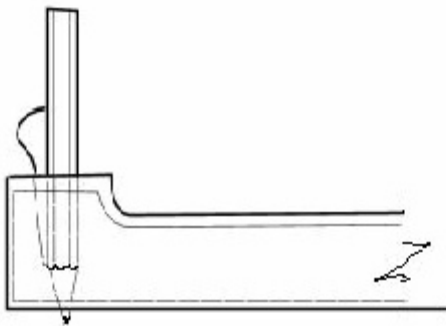
The knife edges leave cut lines with square arrises. They will cut cleanly across the grain, so you do not need a cutting gauge, few of which when new are well made.

Gauge points need project no more than about 1/16" (1.5mm) from the stem.

Never gauge chamfers with a pointed gauge. If you want to know why, just try it on a piece of scrap! If you haven't the time, the left-most drawing shows what happens.

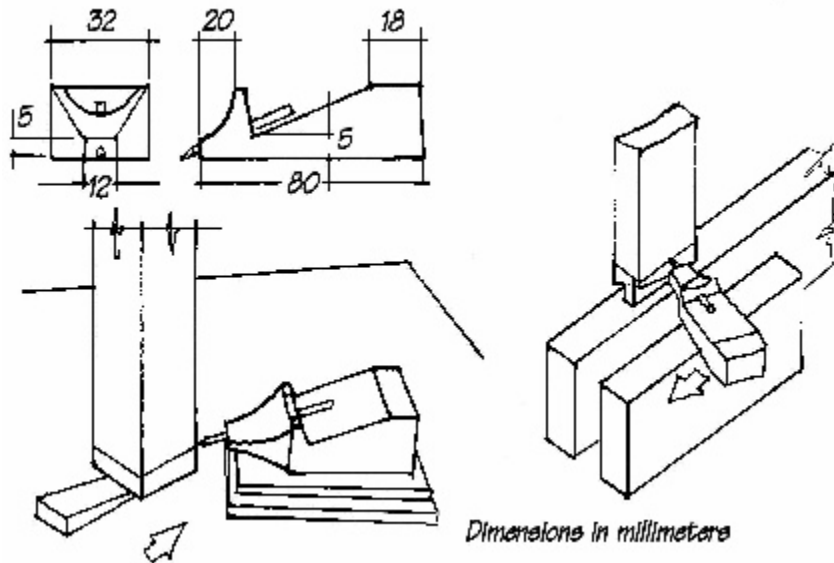


Use a Button Gauge instead. Also see the pencil gauge below.



A Pencil Gauge, useful for chamfers, (amongst other things).

The point needs to project very slightly, so to ensure that the wedge gets a good grip on the pencil, thicken the stem with a glued-on block.



This shows a pattern maker's 'Mouse' that at times can be an extremely addition to your toolkit.

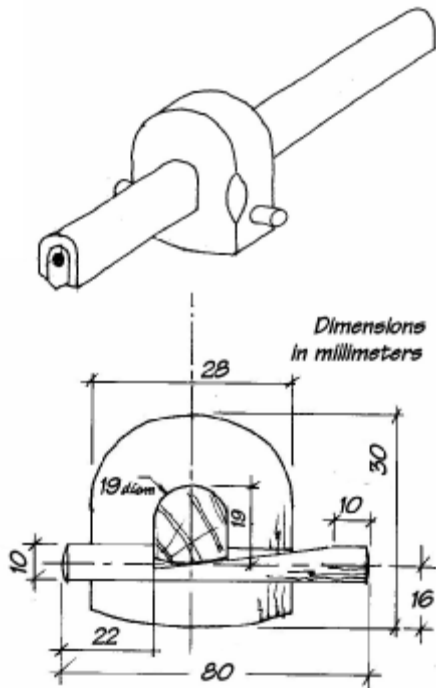
The lower left-hand drawing shows its use in scribing the end of a table leg, all four legs being set up on a flat surface.

To check for twist, stretch two threads diagonally between the legs of the upturned table. There should be no gap where they cross.

The right-hand drawing shows how to correct a wonky tenon shoulder. Get a good clean cut by 'trailing' the point.

Shop-made Marking Gauges

This gauge was made to work inside a rebate (rabbet) where the end of the usual stem would catch the rebate wall.



The cutter is made from the end of a hacksaw blade, ground to shape and inset with its outer face flush with the stem tip.

To reach to the face of the rebate wall, you'll need to ensure that the screw head does not project, but since the blade will be hardened, don't try to countersink the hole with a drill or countersink bit. Ideally; you'll need a conical grinding stone for the job.

Since you would otherwise be screwing into end-grain, use a small-diameter wall plug to receive the screw.

File a comfort chamfer for your thumb.

Give a professional finish by slightly cambering the remote end of the stem and the ends of the pin.

Make a conventional point by grinding the end of a broken drill (or perhaps a fine masonry nail).

To ensure a smooth cut, work a polished finish on the point.

My stem was European beech, the stock (1in to 1-1/8in thick (25 - 28mm)) was some Hawthorn from the garden. Rosewood for the dowel pin made a nice contrast.

First drill and pare (or file) to form the stem hole. If paring, you will need a scribing gouge for the curved parts.

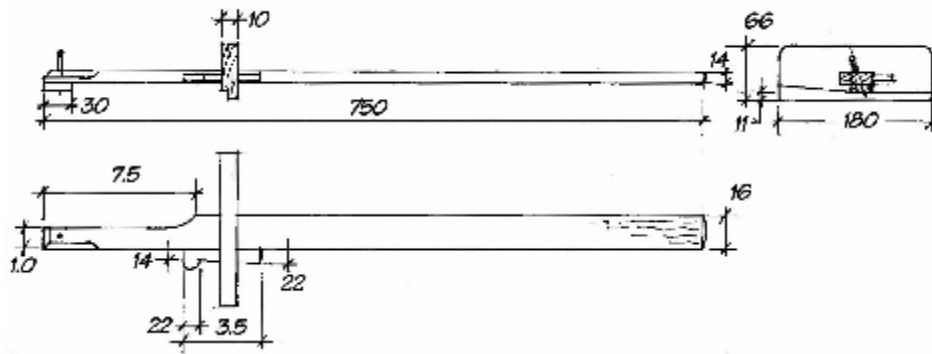
Plane the stem to offer a nice sliding fit.

Drill for the pin. Its centre line should be level with the lower face of the stem.

Insert the pin and use a gouge or file to make a cut that indents the pin almost level with the lower face of the hole.

Pare the wedge, using this 'witness mark' as a guide to the required depth. (Be careful how you hold the pin - holding it in your hand is just asking for trouble. Make a dinky little vee-block).

Finally fit by trial and error until tapping a pin end on the bench top will both either lock or unlock the stem.

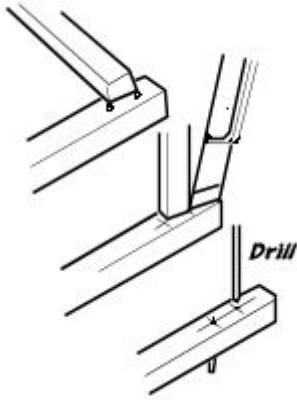


The drawing is slightly simplified. Because of the small bearing area between the stock and the stem, there is a tendency for the stock to tilt out of right-angles. My own gauge has been shaped to increase the thickness of the stock in the region of the wedge.

You can adjust the gauge by the usual method of tapping one end or the other, but with this model there is a chance that the wedge will be loosened.

How many of us use more than a couple of sizes of mortise chisel?

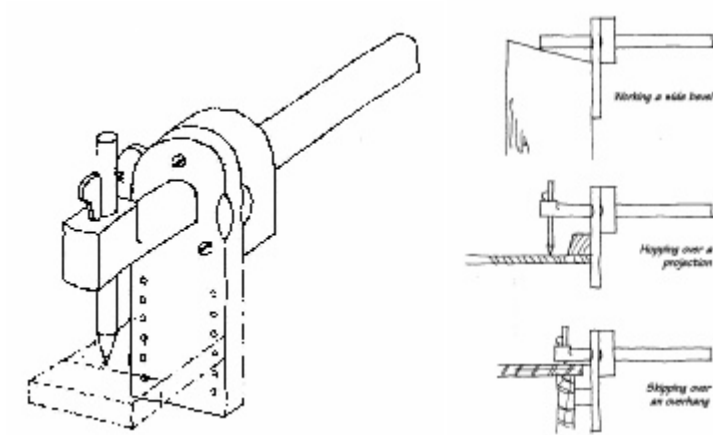
Mortise gauges, while often nice to look at, are expensive, and apart from the Ultimium (Ultimate?) pattern, can't be satisfactorily adjusted by tapping one end or other of the stem against the bench end. (The screw that bears on the brass slider tends to move the slider as well, usually taking up the backlash (lost movement) in the collar at the thumbscrew end. The Ultimium pattern has the slider inside a cylindrical stem operated by a screwhead inset in the far end).



The diagram (right) should be self-explanatory. Some people arrange that the mortise chisel should just be able to fit between the points at their extreme tips. This marks a tenon very slightly wider than the mortise.

If anything, aim to make the separation slightly too small. If you don't get the distance quite right, you can adjust the pins by filing or abrading with a hone.

Shanks of broken drills make good points (fine masonry nails less so, but possible). Grind them by using an egg-whisk type handrill to rotate the pin. Finish by hand to form a polished surface.



A Grasshopper Gauge

I got a screw adjustment by fixing a facing to an old one.

Marking Knife Bevels

On which side should a marking knife be bevelled?

Many of the marking knives available from run-of-the-mill suppliers have the blade ground (when viewed from the operating position) on the right-hand-side

These knives have been re-ground. To gain a wide bevel, a small grinding bevel has to be used, hence there is a very narrow bevel honed on the opposite face to give a stronger edge



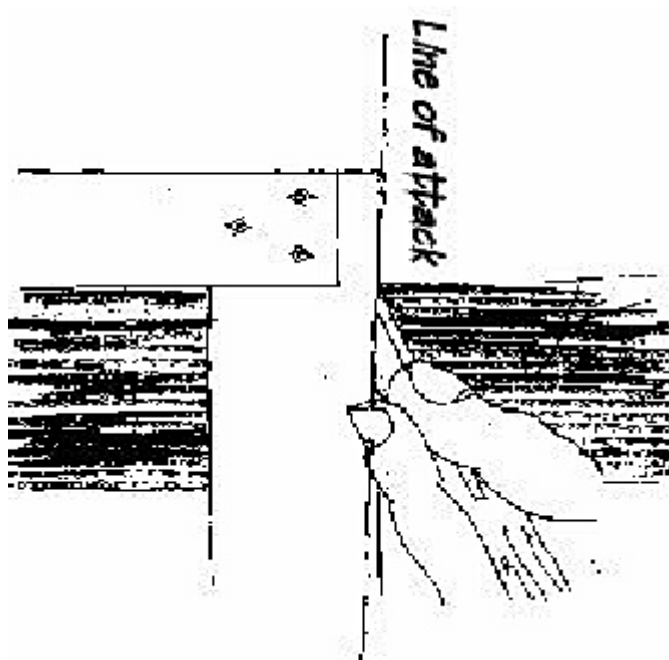
The upper knife has its uses in marking dados and suchlike. I don't like it very much

The round-handled knives are about 3mm (1/8in) thick near the ferrule, tapering to about 2mm at the start of the bevel. The edge makes an angle of about 40deg with the longitudinal axis, but ideally

this should give a 10 to 15deg clearance angle with the top of the workpiece, according to your height, bench height and so on.

The grinding angle should be as small as is reasonable, the idea is to form as wide and as visible (from above) a bevel as you can.

Probably a 'backface' bevel will be needed because most steels will not survive too low an angle. Do not create a sharpening bevel on the grinding bevel.



The worker's eye view of a knife with the bevel ground on the 'inside'.

The drawing intends to show the bevel vertical to the surface of the workpiece. The broader the bevel, the easier it is to see.

If the knife is slightly turned inwards as indicated by the chain line (labelled 'Line of attack') the knife's edge will steer itself into the blade of the square and keep it from wandering, as can so often happen.

When squaring say, a shoulder, we want one side of the cut to be square to the surface, with the sloping, crushed side in the waste.

To do this with a knife bevelled on the right-hand side means that if the line is to be directly below the right eye, (where it should be), the wrist will have to be held at an unnatural angle and your upper arm and elbow will probably rub against your side, especially if you are a bit "dimensionally challenged".



Try grinding a wide bevel on the left-hand side of a fairly thick blade and hold the knife sloping outwards but with the bevel vertical. The wrist should now be in a more natural position, offering greater control.



Instead of a marking knife, some old hands use a very short sideways-tilted 25mm (one-inch) chisel with the bevel against the square.

By the way, note how the square is grasped, the location of the index finger and you'll see why I prefer to use a marking knife.



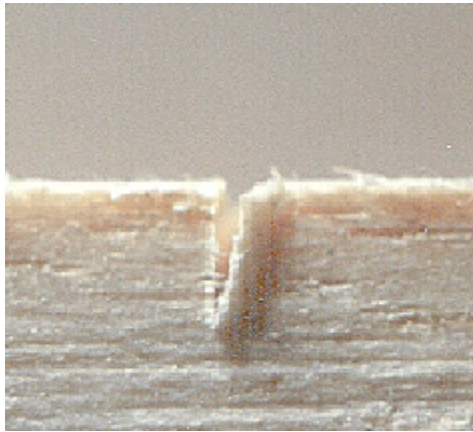
An 'Eclipse' honing jig adapted to grasp this round-handled knife.. Unless you have a water-cooled grinder, it is very easy to overheat and soften the very point.

To grind the bevel I used a fairly coarse abrasive paper stuck to glass, and then re-worked the entire bevel with finer paper to form a sharp edge without a honing bevel.

A small bevel has been honed on the other face, otherwise the angle of the edge would have been too acute for a durable edge.

A Close-Up On The Bevel

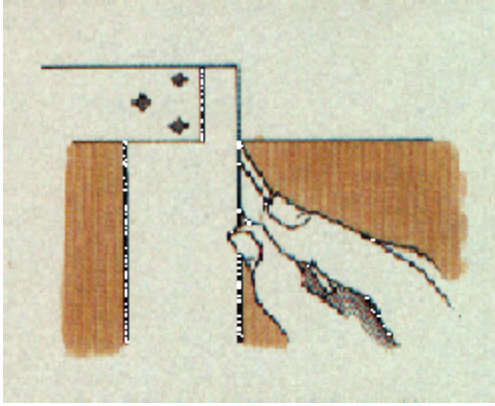
A close-up of a marking knife cut. For the sake of the size of an extreme close-up, this was cut in a soft hardwood (Jelutong).



Note how the left-hand side of the cut is at right-angles to the face of the wood. Close inspection will show that the fibres on the upper corner are slightly deformed downwards.

Although it is not very evident, the right-hand fibres are considerably crushed and bent downwards.

In a moderately hard wood the line width could be about 0.4mm (15thou) and the depth 0.8mm (30thou).



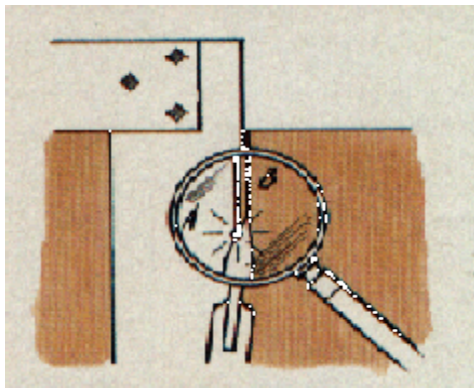
To make the photo, the knife was held as shown. Note how the bevel (on the left-hand side of the blade) is (approximately!) vertical to the surface of the workpiece.



The two sides of the same cross-halving joint, also in Jelutong. (Two prints were necessary at this magnification, hence the slight difference in colour). Although the joint was a perfect fit, this is not apparent when you look at its right-hand side. Each knife line was struck with the try square and knife position as above. This meant that the crushed side of the left-hand line was in the waste.

Does it really matter? The gap will go when the surface is cleaned up, won't it? Even with a fairly large 1.5thou set on a smoothing plane, twenty strokes would (in theory at least) be needed to remove this depth of surface.

Of course, there is a chance that the crushed fibres will swell back when the joint absorbes moisture from the glue, but it would have been better to have turned the square over and rotated the job so that the crushed side of the line was in the waste.



It would, of course, be possible simply to alter the angle of the marking knife so that its right-hand side becomes vertical. The actual point of contact is starred. However, the knife point is no longer tucked firmly against the square. If the worker's hand were to tilt to the right as he/she pulls, the line could easily go adrift. Since the wrist and arm positions are now uncomfortable this is quite possible.

Why Use A Marking Knife?

You can hear people discussing whether to split the line or not. When they do, they must be discussing a pencil line. If this kind of precision is needed, they might be better to use a marking knife. Then there's no doubt or cause for error.

Pencil lines have their appropriate places of course.

Some people avoid cutting lines because mistakes are difficult to remove. All the same the work will be better for using a knife.

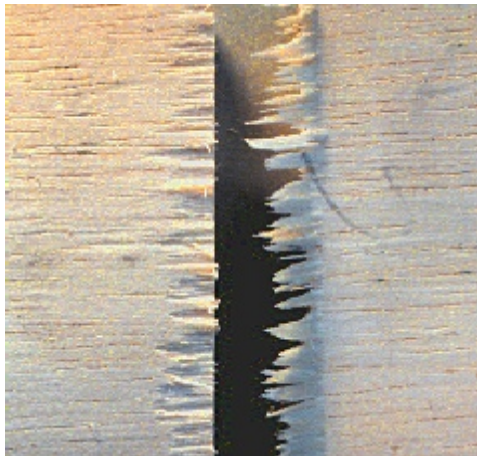


There's only one place to put your chisel when working to a cut line.

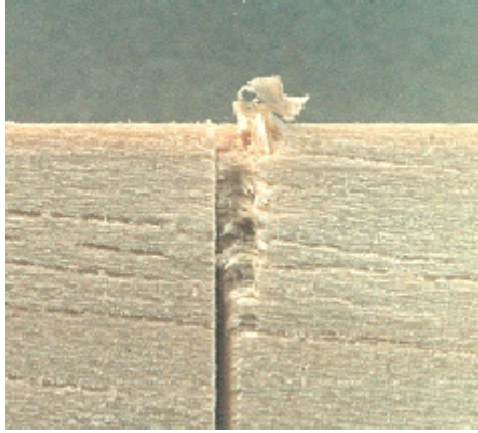


A view of piece of soft hardwood sawn to reveal the cleanly-cut witness marks left by the knife as it passed around the perimeter of the workpiece. Note that the saw has nearly gone over the line at the bottom left-hand corner of the pic.

Having witness marks, workers can know exactly where to stop when working a surface. The marking gauge also leaves similar marks.



A line knifed all round this piece would have ensured a cleaner finish to the sawcut.



The very first stroke of a tenon saw.

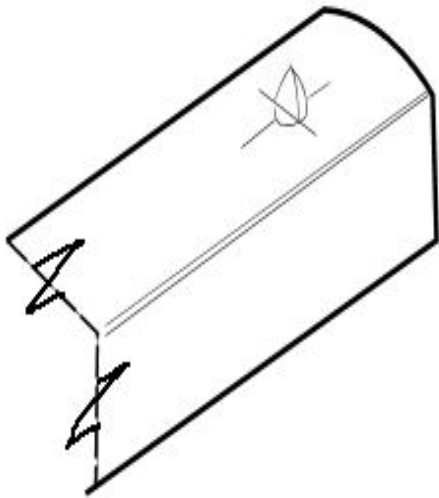
The saw cut started a little to the right of the line, but the wood fibres break away as far as the line. This means that you drift the saw into the tiny rebate that has been formed.



When you make a knife peck, the knife is positively and securely located. This means that you can slide the square, for example, up to the knife and then strike a line.

Marking Gauge Tips

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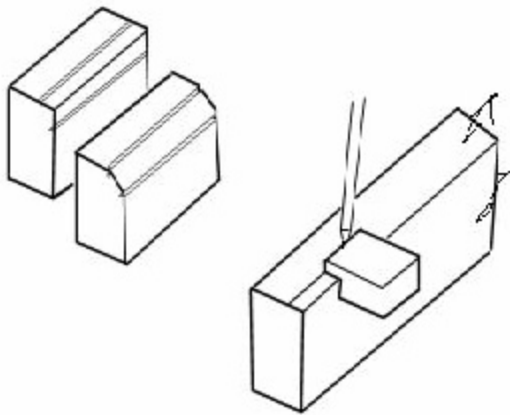
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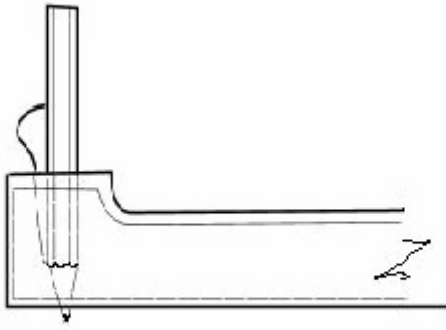
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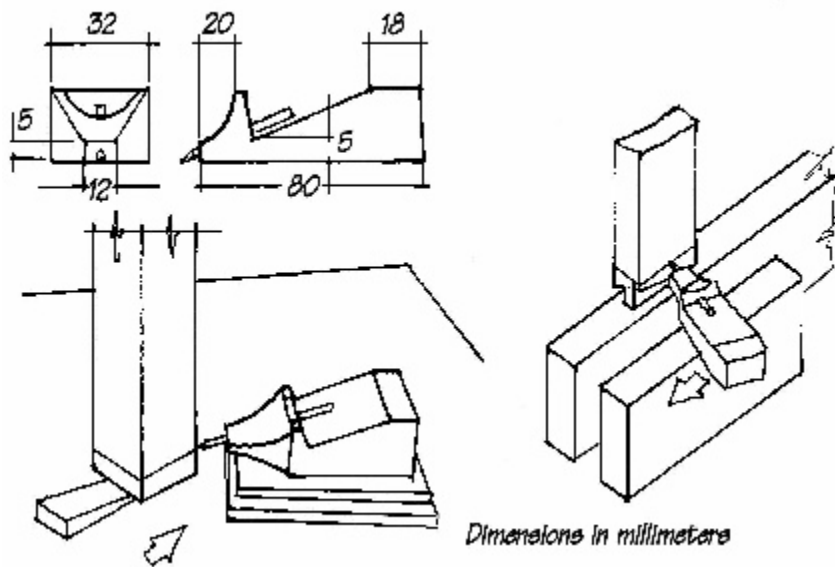
When working across end-grain it can sometimes pay to treat the gauge the same way as a plane, ie start by pushing, and end by pulling backwards and so prevent breakout at the end of the line. Likewise when marking across the grain.

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