



Make this dovetail puzzle

Behind the scenes of an interlocking, two-way dovetail T-joint

By Tom Strange



...revealed.

Early in my apprenticeship, several intriguing dovetail joints in the form of interlocking puzzles made the rounds. I thought *The Shed* magazine readers might also be keen to look at one of these puzzles and to know how to construct it. This is a compound dovetail, bevelled in both directions. This same joint is used in dovetail infill planes and peened into position. Contrasting coloured hardwoods are best suited for these joints as the dovetail shape shows more clearly. Soft woods can lose their edges very quickly. For this puzzle I have

used mahogany for the dark wood and Indian silver grey wood for the lighter colour. It is also best to select fairly tough species, as they retain the corners longer. You will find there could be a bit of rough handling as people try to “solve” the dovetail puzzle by pulling it apart. Everyone has a particular way of working and I don’t suggest a set method of making the joints. The dovetail puzzle I have chosen is the best joint to start with as it is the least complicated. The best place to start would probably be the socket, if only because you will find it

is easier to enlarge the pin should anything go wrong during the shaping of the socket.

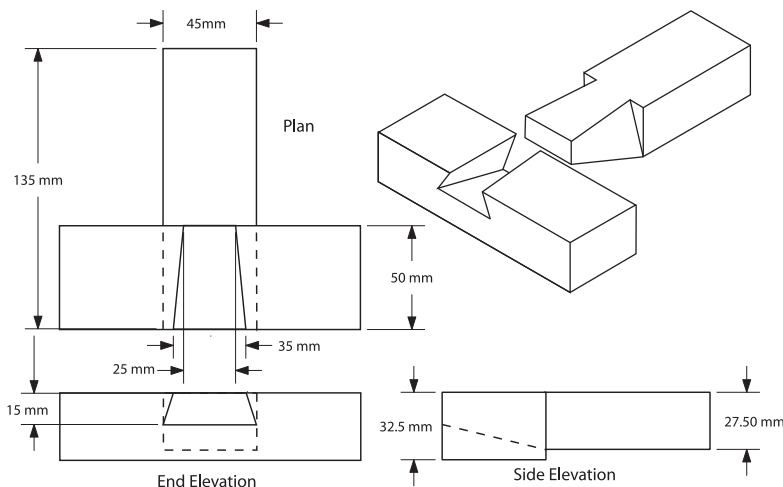
Marking up

The angle of the shoulder in the socket is determined primarily by the size of the timber. The normal angle for a dovetail in hardwoods is approximately 1 to 8 (or around 5°) and for softwoods is 1 to 6. But do not use this as a determinate angle for your dovetail puzzle because it can give the wrong fit. The dimensions and marking up are the imperative way of determining the angle, depending on the size of wood you are using.

Step one is to mark out both parts of the joint together. Cross-check your measurements frequently. You may find you need to rub chalk into the grain of the darker wood around the joint area to make the marking-out more visible. Check to make sure the sizes align.

Socket

Cut the slope of the socket with a sharp knife. This cut will help to prevent the joint-edge chipping. Remove enough waste wood with a sharp chisel to form a shoulder on each side to guide the saw. Use a fine-toothed saw and cut down the compound angles on both sides of the socket, keeping





Marking up. Chalk on mahogany socket wood brings out marks.



Cut slope with sharp knife.



Remove waste with chisel.



Fine-toothed saw cuts compound angles.



Wax lubricates tenon saw.



Tenon saw in action. Note wood at angle so cut is vertical.



Chisel and mallet removes waste from socket base.



Cut pin shoulders with sharp knife.



Chisel forms ledge to guide saw.



Cut shoulders accurately.



Saw down sloping sides.



Plane any waste to the line.

both cuts in the waste wood. Keep them as close to the line as possible. Put the wood at an angle in the vice so the saw cut is vertical.

For the next stage, use a fine-toothed saw to start and then the tenon saw. I lubricate the tenon saw with candle wax / paraffin wax. The fine-toothed saw in this case is a closed handle dovetail saw and it fits more accurately to the ridge when we cut. It is easier to produce a reasonable

finish with this kind of saw, particularly a sharp one. You can waste a lot of time with blunt tools. I am a bit of a fanatic when it comes to sharp chisels and planes especially.

Try to finish the sloping sides of the socket without having to resort to chiselling. To finish the base of the socket, remove the waste layer by layer with a chisel and mallet. The best way to hold the piece of wood in the vice is end-to-end because there is such a thin sliver of timber left it would be difficult to work any other way. I use a wider chisel for smoothing off the base of the socket.



Test fit and...

Pin

If the socket is right you create the pin to fit it, so leave lines in deliberately. It can be extremely difficult to saw accurately on the sloping side of the pin, so the marking finally is only a guideline. Adjust the rest of the pin with the chisel. You could mark waste wood with pencil hatching, a useful guide if you are not sure which area you are supposed to be cutting off.

Cut the shoulders of the pin with a sharp knife to help produce a clean joint-line, then use a chisel to form a shoulder or ledge to guide the saw. Cut both shoulders as accurately as possible. Note there is no shoulder or shoulder-line across the top surface of the pin.

Saw down the sloping sides of the pin to remove the waste wood.



...chisel to shape.

Finally, mark out the waste wood on the underside of the pin, then cut and plane away the waste down to the line.

Fitting the pin is the laborious part because you are looking at five surfaces that have to be made to fit into the socket. Constantly check the fit because unless you are extremely good, it will always be too big to sit in. But it is better to get a tight fit than one that is sloppy. Hold the work against the light to see what gap is left.

It's laborious because you do a bit and then check, do a bit then check



Finished fit.

again. But it's not laborious if you are enjoying it and that's the point of what you do. After about an hour it starts to go in.

Chalk

Fitting the pin into the socket can be made easier if you coat the faces of the socket with a smear of chalk. As the pin is presented for fitting, you will readily identify positive points of contact. They can be trimmed to smooth the entry of the pin into the socket to complete the fit.

Correct any unevenness on the surfaces of the joint with a scraper or plane and fine sandpaper. Two or three coats of thin French polish will help to keep the wood clean. ▲

PLANE MAKER

Tom Strange repairs and restores vintage planes, particularly for fellow vintage tool collectors club members. He even makes replica planes, such as a copy of a Stanley No 1 (originally cast iron) he is finishing in wood and zinc. He collected his first vintage plane in 1946 – it was then a “vintage” 30-year-old Norris 21 ½-inch jointer.

“When I was an apprentice in England, I couldn't afford new tools. I used to cycle around at lunchtimes to secondhand tool places and came across two planes, a Stanley No 7 and a red rusty plane I didn't recognise. Each one cost 30 shillings which was three weeks' wages. I chose the red rusty unknown tool and I have used it ever since. I took it to the Vintage Tool Collectors' Club 14 years ago, and it's worth thousands, more than a new one.” Among Tom Strange's tools which include a Stanley Victor compass plane from 1870 and Stanley 55 combination plough plane used to make a prize-winning cornice display wall, lies a violin he built. He also has the tools he had to make for the violin job such as a chariot plane, thickening calipers and a purfling gauge (purfling is the thin, decorative strip around the edge of the instrument).

And does the violin sound okay? The former violinist was thrilled to hear the instrument, a Stradivarius model with 13 coats of varnish, used by the principal violinist in the Nottingham Symphony Orchestra, a true test. – TS.



Tom Strange and planes.