

Shoulder Plane

Asked why he might use a shoulder plane, John Lloyd explores the value of this tricky tool

I was recently asked if I ever use a shoulder plane and if so, when? I was tempted to reply with a rather curt, 'Of course I do, doesn't every woodworker?' and, 'Among other things I use it to trim shoulders, I would have thought the clue was in the name!' But I avoided this Grumpy Old Woodworker option because the person asking the question was the editor of an excellent woodworking magazine that I rather enjoy writing for, and also because it reminded me of a conversation I had with a couple of highly esteemed woodworkers in a big tent in Gloucestershire last August. The gist of the conversation in the Classic Hand Tools marquee at Westonbirt's Festival of the Tree

was that Garrett Hack was enthusing about the Clifton 410 he said he uses, of course, for trimming shoulders, but also for many other trimming and shaping tasks. David Charlesworth then dropped the bombshell that he never uses a shoulder plane to trim shoulders! In David's case I'm sure this decision was made, as you might expect from a man who is known for his precise approach to 'engineering in wood', in the interests of control. He prefers to pare using a big chisel, probably with a long handle, arguing that the relatively narrow tenons that tend to be used in furniture making don't lend themselves well to shoulder planes, in any case the short end of the shoulder will be trimmed with a

chisel so why not use a chisel for the whole operation? This paring approach does have some merit of course, ensuring there is no breakout at the end of a shoulder, which is a distinct possibility when using a shoulder plane for this task. Garrett seemed bemused by David's bombshell: surely a well-tuned, finely-set shoulder plane would be quicker, less fuss and more precise than waving a big chisel around? A subsequent discussion with Garrett confirmed his commitment to the shoulder plane. His 410 and other shoulder planes are used often and are much loved, and he maintains that breakout needn't be an issue when planning right across a shoulder if the plane is set up right, but his

final comment said it all: "They are a bit tricky to sharpen and set up." That is perhaps the key to the successful use of the shoulder plane and might be the reason why many woodworkers avoid using them. From my point of view, when I was training, the shoulder plane was one of only four planes that we had in our tool kits. We were encouraged to use hand tools whenever possible, and this versatile, nimble, little plane, in my case the rather poorly made Stanley 92, was in pretty regular use. It could do things and get into places where other planes didn't stand a chance: tenon cheeks and shoulders, rebates, mouldings, grooves; but it was always a bit tricky to sharpen and set up!



Types of shoulder plane

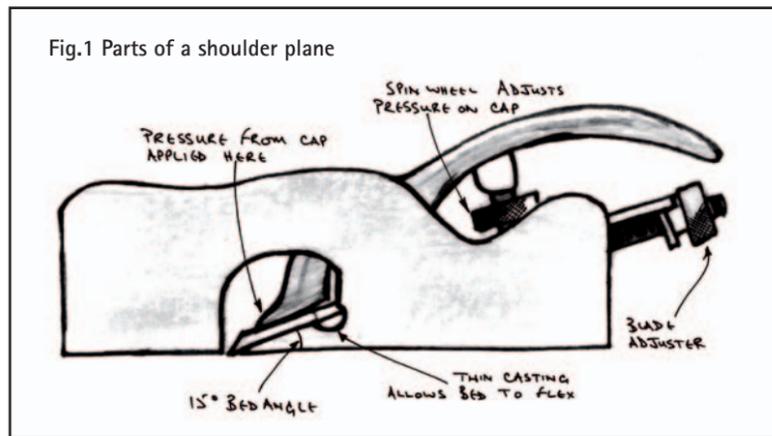
What's the difference between all the shoulder planes?



Pic.3 Take a Clifton 3110 apart and it becomes a chisel plane, bullnose and shoulder plane

Shoulder planes are sometimes referred to as 'shoulder rebate planes', not in an effort to confuse, but perhaps to give the idea that they might actually be good at doing more than one thing. They come in all sorts of different shapes and sizes, from the Veritas Large Shoulder Plane, a strapping 32mm wide, 210mm long, and weighing in at a hefty 1.7kg, to the diminutive, Preston-based Clifton 400; 11mm wide, 83mm long and a sylphlike 160grams. Different-sized planes are ideally used for different-sized shoulders and rebates, although most cabinetmaking requires a plane at the smaller end of the scale, probably referred to as 'medium' or 'small' by a plane maker. For many years I just had my trusty, but rather diminutive 92, but at the last count I now have five and that's without having a 'large', which would have very limited use, unless I branch out into making hulking great workbenches or refectory tables with cleated ends.

Then there's the bull-nose version of the shoulder plane which looks a bit like a bull-dog, all chunky and flat-nosed, which is rather at odds with the fact that this is a plane that's for getting into those tight spots that an ordinary shoulder plane cannot reach. And finally the chisel plane, not really a shoulder plane, but some shoulder planes can become a 'chisel plane' by removing their nose section; well the old Stanleys, like my old 92 can, and so can the ever so clever Clifton 3110 (Pic.4). The 3110 is all three planes mentioned above, in one. I will generally give any tool that is trying to be more than one thing a very wide berth, and I'm very sure that many quests to come up with tools that are multi-talented have been littered with spectacular failures. To pull off this 3-in-1 plane trick requires a very high level of engineering prowess, each component fitting precisely and accurately or this plane would be destined to be an expensive paperweight. But Clifton have created a spectacular success, and this plane, which, on the face off it, looks a bit on the lumpy side, is impeccably behaved in all of its three guises and changing from one mode to another is simple and quick.



Pic.2 Setting up a shoulder plane is notoriously difficult and may be a reason many woodworkers avoid them



Pic.1 John's first shoulder plane, a rather ordinary Stanley 92, was bought from Thanet Tools in about 1990. He had just started training at Bruce Luckhurst's and a shoulder plane was on the tool list



Pic.4 The magnificent Clifton 3110, which is three planes in one

When not to use

They aren't always best!



Pic.5 An angled shoulder prevents the use of a shoulder plane

Even if I manage to convince you that shoulder planes are not the devil's work, there are going to be times when it's impossible for them to perform their primary function of shoulder trimming. Any angled rail or stretcher is likely to have a tenon with its shoulder at less than 90° to its cheek, when this is the case it is impossible to use a shoulder plane effectively. If the plane is held at the right angle for the shoulder, it will only deal with part of it and will be rather precarious, consequently it is difficult to maintain the correct shoulder angle. In this case the only real option is to pare with a nice wide chisel.



Pic.6 When the shoulder is angled you have to use a large chisel instead

Setting a Shoulder Plane

How to set up a shoulder plane

The key to any plane working effectively and efficiently is to set the plane up correctly. It's not actually a very time-consuming operation to tune a shoulder plane because it's relatively small. The first, and most important, issue is the flatness of the sole. This is a particular problem for a shoulder plane because the part of the casting that the blade sits on is pretty flimsy and will flex when the cap is tightened, in effect making the sole convex.

This isn't so much of a problem on cast iron planes like the Clifton because this material is stiffer than the more commonly used malleable iron, but it's still an issue. Fit the blade (retracted a bit), and tension it with its cap or wedge. Then give it a rub on a nice thick piece of glass faced with some 240 Wet & Dry paper, lubricated with a little white spirit (Pic.8). Keep going until the scratches from the paper extend over the whole sole.

Sharpening a shoulder plane is critical in two respects. It's a bevel up plane, so the bevel angle has a dramatic effect on the way the plane works, and the lateral adjustment on a shoulder plane is very limited so skewing the end of the blade while sharpening will prevent the plane from being set up correctly. The shoulders of a tenon are endgrain, so a low cutting angle



Pic.7 The thin casting on which the blade sits in a shoulder plane can flex. You have to flatten the sole with the blade in position

is beneficial. The bed angle of most shoulder planes will be 15°, so keeping the bevel angle of the blade to 25° will achieve a cutting angle of 40°.

The easiest way to sharpen this sort of blade is to pull back in a single straight line. If you need to rectify a slight skew (Pic.7), you can put a little pressure on that side. I use 3000 and 8000 Japanese waterstones, after a hollow grind on a Tormek.

Meticulously flatten the back of the blade and sharpen it taking care not to induce a skew. Fit it to the plane and adjust it with a very fine even projection by sighting along the sole. Now check the mouth opening, and if it's adjustable, set the mouth to a gap that a shaving can just squeeze through. The fact that the mouth is adjustable is now of no use to you because when it's finely set you'll never change it!



Pic.8 Flatten the sole with the blade fitted



Pic.9 Mark the edge of the blade with a felt tip pen as a reminder when sharpening which side of the blade you need to grind back. There is only a tiny amount of lateral adjustment on a shoulder plane, so the blade has to be ground very accurately. The blade must stick out evenly, and there is very little tolerance



Pic.10 Set the blade up with a fine, even projection by sighting along the sole (see Pic.2)



Pic.11 Check that the mouth opening is fine and even. You can see where the plating on John's old 92 has been ground away for a short length behind the blade opening where the sole flexes (bottom right)



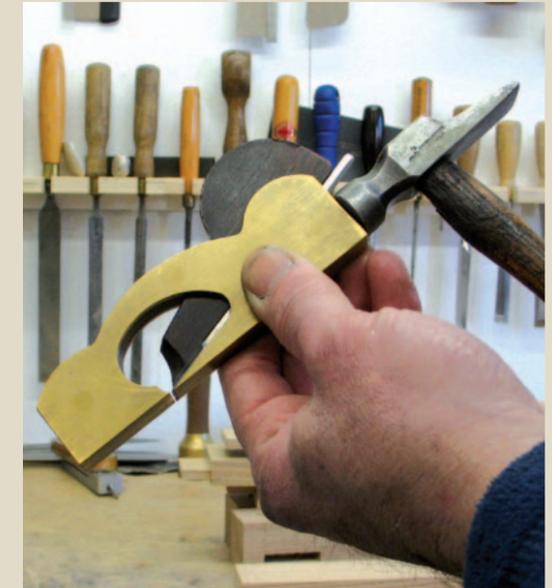
Pic.12 Ensure that the back of the blade is flat right across its width (right). People are wary of sharpening shoulder plane blades for fear of skewing the blade. Sharpness is critical to cutting fine shavings in endgrain



Pic.13 Veritas grub screws can help to position the blade

Working with wedges

How to set wedged shoulder planes



Pic.14 Tapping the heel of a wedged plane will retract the blade. Wedged shoulder planes are more difficult to set, but probably have to be wedged to be small

There are a couple of petite shoulder planes that are currently being produced (see p20), based on old English patterns of plane and with blades that are held in position with a wedge. Lie-Nielsen's offering is the '1/2' bronze-bodied infill plane, 1/2in wide with cocobolo infill and wedge. The other is the Clifton '400', showing its heritage with its Preston markings, a little slimmer and shorter than the Lie-Nielsen and fitted with a rosewood wedge.

Both of these planes are lovely to use, but they're a little bit tricky to set up! A good starting point with traditional wedged plane blades is to sit the plane on a nice flat piece of wood and insert the blade so that it lays on its seating and sits on the piece of wood. At this point the blade should be pretty level with the sole of the plane and have a very fine setting, so without moving it from where it's sitting, gently insert the wedge and secure it with a light tap from a pin hammer. Now check the blade projection by sighting along the sole, if it's not visible, nudge the blade forward a little with a tap on the end of the blade. Too far out requires a tap on the heel of the plane. But remember that a tap on the heel is likely to also loosen the wedge, so a tap on the heel might need to be followed by tap on the wedge to prevent everything falling apart.

Adjust the blade laterally with just a little finger pressure on the blade in an appropriate place and everything can be locked into place with a final, slightly firmer, tap with the hammer, but this is likely to advance the blade a little; more trial and error is required to get that perfect fine shaving.

Using a shoulder plane

How to put your turned, sharpened and set plane to work

As I mentioned earlier, a shoulder plane has many uses, and when it's tuned and set up correctly it should be a joy to employ. Its main function, unless you're a disciple of David Charlesworth, is to trim shoulders, but the absolutely critical part to this is that the blade is set with an even projection across its width and to a VERY fine shaving.

This will involve a bit of fiddling around and a bit of trial and error on a piece of scrap. Adjusting the blade back and forth and side to side might involve reducing the pressure slightly on the cap, then re-tightening, and as we know, pressure on the cap can make the sole flex, so this is all a bit of a balancing act, and making slight adjustments to the cap tension can itself be used to make minute adjustments to the depth of cut.

You will notice that the blade of a shoulder plane is slightly wider than the body and ideally the blade will project just a tiny amount on both sides of the body. If it's too much it will become a nuisance, but this can be adjusted by carefully grinding away a little of the blade's width. So for trimming shoulders the plane must be producing even, gossamer-thin, shavings across the whole width of the blade. In this state, minute adjustments can be made to get a shoulder to sit perfectly against a stile, and there will actually be no risk of

breakout if a shaving is taken along the full length of the shoulder. With the side of the plane held snugly against the cheek of a tenon, the shoulder cut will be at 90° (if the plane's casting is square), and this will remove any angle caused, perhaps, by slightly wayward sawing of the shoulder.

Having dealt with the shoulders, flip the shoulder plane through 90° and it is the perfect plane to make any fine adjustments to the cheeks of the tenon.

Cleated ends

The long shoulders of a tongue, for instance on a cleated end to a table top, are another perfect use for the shoulder plane. The plane is slightly more difficult to hold at a right angle to the tongue because it provides less support than a tenon, but a little practice will pay dividends.

The shoulder plane excels adjusting the bottom of a groove, although a selection of plane widths is useful here, for different grooves. Rebates can also be adjusted with a shoulder plane, although the low cutting angle can occasionally cause this long-grain cut to tear, so be aware of grain direction. Making adjustments to mouldings is easy with a shoulder plane because the plane's slimness makes it easy to guide and control, using fingers as a sort of human fence, and the open-sided plane with its exposed blade edges gives a clear view of what's being cut.



Pic. 17 A shoulder plane can be used for the shoulders of a double tenon on a door rail (above left), and for rebates (above), but beware tearing the grain



Pic. 15 The tiny Clifton 400 is great for making very small adjustments



Pic. 16 Shoulder planes can be used across the grain to tickle a rebate (or tenon, left) or to clean up a housing (above). A chisel plane can be used for a stopped housing



Pic. 18 Because it's quite slim you can get a really good feel with the shoulder plane, using your hands as a fence for rebates (top) and for working on cross-grain mouldings (left). It is for this sort of shaping that Garrett Hack praises the shoulder plane. Sometimes you have to hold the plane in both hands, working across the grain (above)

Bullnose or Chisel?

Choosing which shoulder to use



Pic. 19 The chisel plane (above) can get into corners other bullnoses (top) cannot reach

If a bullnose plane will almost get into a blind corner and a chisel plane will get right into the same blind corner, surely there's no contest in the choice of plane? The chisel plane must win because it can do the whole job. If only life were that simple.

The thing about a chisel plane is that because there is nothing in front of the blade it can become a little unpredictable and it has a tendency to dig into the wood, whereas the bullnose has a little area of support just ahead of the blade, which prevents those impromptu nose-dives. If I could have either a bullnose or a chisel plane, I would go for the bullnose. This will get very close to the corner more reliably than the chisel plane and the last little bit is relatively easy to pare back with a nice sharp chisel. But then of course if I had a Clifton 3110 three in one plane, I would have the best of all worlds in just one plane. Adjusting the blade of a chisel plane is once again one of those slightly tricky things to get just right, a test cut on a scrap is a good plan.