Unit 108: Wood occupations

# Worksheet 11: Common issues encountered when using hand tools incorrectly (tutor)

1. What are the consequences of using a blunt chisel?

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| All cutting tools requires regular maintenance when in use to ensure efficient removal of stock and achieve quality results. Cutting edges are lost due to the abrasive nature of the materials being worked. Softwood has a limited abrasive nature compared with hardwoods. The adhesives used in the manufacture of manufactured boards are very abrasive and, when using these, the cutting edge will be quickly lost.  As soon as the edge of any cutting tool is lost, additional force/pressure is required to make it cut. The chisel’s path will always follow the least line of resistance, veering into the sapwood or causing to the chisel to slip/veer causing damage or even an accident. A sharp chisel will always follow the path required when paring or chopping but a blunt chisel will not |

1. Explain why a panel saw might snag while attempting to cut 9mm plywood.

The thinner the material being cut the lower cutting angle required to ensure that as many teeth as possible are in contact/cutting with the material. A saw cutting at a steep angle will only have one or two teeth cutting, causing the saw to judder as it drags the ply upwards on the backward stroke and jam on the forward stroke.

1. Explain how a smoothing plane should be set up when planing:
2. timber with a high moisture content

To obtain clean shavings when planing timber, it must be well maintained and set. The frog is often not adjusted on purchase, but this can have a major impact on the results achieved. The frog should be adjusted backwards to open up the mouth when planing materials with a high moisture content, or coarse-textured manufactured boards such as chipboard, to prevent the mouth clogging. Similarly, the back iron will need to be adjusted back so it is behind the cutting edge by about 1.5 mm, allowing for additional clearance for the shavings/waste.

1. hardwoods

The frog should be adjusted forwards when fine shavings are required, such as when planing hardwoods, particularly when there is interlocking /refractory grain present. This action will minimise the grain being ‘torn’ up. Again, the back iron will need to be adjusted forward so it is behind the cutting edge by about .5 mm, providing support to the cutting edge as close to the point of cut as possible, reducing vibration and improving the quality of finish.

In both cases, the plane iron should be sharpened with the corners removed and preferably cambered to ensure the corners do not dig in when removing shavings. It should also be adjusted using the lateral adjusting lever to ensure that an equal amount of cutting iron is projecting across the width of the sole of the plane, to ensure shavings of an even thickness are removed and that one corner is not projecting more than the other.

1. Explain how to ensure that a pencil line when squared around a piece of parallel planed timber will meet up.

The accuracy of all marking out is dependent on two main factors. Firstly, the choice of pencil and the requirement for it to be sharp. A soft grade pencil such as a 2B, has a thicker lead and will lose its sharpened point very quickly. A harder pencil, a 2H for example, has a thinner lead and will hold its sharpened point for longer. Secondly, the pencil point must be held against the edge of the marking out tool to ensure accurate lines are marked.

The procedure required to draw a square line around the timber is as follows. The timber should have the face and edge marks applied as these are the reference marks used when applying the square. The rule is that the stock of the square should only ever be against the edge of either mark; this will have the blade pointing in the same direction when marking across both the faces and both the edges.

First, place your pencil point on the mark that is required to be squared around the timber; next, slide the blade of the square up to the pencil point and draw a line across the face, from the face edge. Second, place the pencil point on the edge of the timber at the end of the first line marked, then slide the blade up to the pencil and mark the line on the first edge. Third, repeat the second stage drawing the line down the second edge. Lastly, holding the stock against the face edge mark the last (rear) face following the same procedure. Lastly, check that the lines have joined up at the same place.