Positioning of machine

Grinding direction: Towards the edge.
Honing direction: Away from the edge.

Design

The jig comprises a base (1) and a clamp (2) for holding the tool in position. The jig slides across the grindstone guided in nylon bushings on the Universal Support. The edge angle is set by adjusting the height of the Universal Support.

Grinding direction

Plane irons and wood chisels are best ground towards the edge with the Universal Support placed vertically. You then achieve a higher grinding pressure, which is preferable since the grinding area is large. Here there is no risk of accidentally overgrinding as the area of the bevel is flat and large.
Flatten and hone the back of the tools

To achieve a really sharp and durable edge, each of its two meeting surfaces must be smooth. It does not help if we sharpen and hone the bevel to perfection, if the back is not equally flat and smooth. On most new tools, the back has visible grooves from the manufacturing process. These should be removed and the surface honed and polished.

Remove the grooves on the side of the grindstone and then hone and polish the surface on the leather honing wheel. This work only needs to be done once, when you start using the tool. It is an investment in your quality tool and will last its lifetime.

Note: You must keep the tool absolutely flat against the grindstone. Otherwise the tip can cut into the wheel and be rounded off. Let the side of the tool rest on the Universal Support placed close to the stone as shown. You do not need to smoothen the tool more than 25–30 mm (1–1 ¼") from the edge.

Preparations

Before you start grinding, check that the stone is true by letting the Universal Support touch the stone. If necessary, true it with the Truing and Dressing Tool TT-50 so the surface is flat and parallel to the Universal Support.
Mounting the tool in the jig and grinding at 90°

Mount the tool protruding \((P)\) approx. 50 mm \((2\text{”})\). For tools with parallel sides, check that the tool rests against the two stops.

For a wood chisel you should check that the entire top face is in contact with the clamp \((2)\) and that this clamp is parallel to the base \((1)\). This is important for achieving an exact 90° grinding. Align the chisel and the clamp \((2)\) by adjusting the knobs. Loosen one knob whilst tightening the other.

Grinding

Set the edge angle by adjusting the Universal Support. Either at the original angle using the Marker Method (page 40) or at a new angle using the AngleMaster WM-200, (page 41).

Press with your fingers close to the edge for best control. Move the tool across the stone. Ensure that half of the blade is always in contact with the stone.

The amount of grinding on each spot along the edge depends upon both the pressure and the time that it is in touch with the stone. Therefore you should compensate for the fact that the middle of the plane iron is always in touch with the stone, by grinding more at the sides.

Check that you are grinding evenly. You can remove the jig from the Universal Support with the tool mounted. Towards the end of the grinding, apply a lighter pressure onto the stone and you will achieve a finer surface.

You should aim to grind a plane iron as closely as possibly to square. However, in practise it does not need to be an exact 90°, since you can compensate for a deviation of one or two degrees with the setting in the plane.
Grade the stone to a finer grit with the Stone Grader SP-650. Check with your fingers that the stone is entirely smooth.

Do the fine sharpening with the same jig setting until you have achieved a finely ground surface across the entire bevel.

**Finer surface**

**Honing**

Hone the bevel with the tool mounted in the jig as you then have full control of the honing angle. You can use a higher honing pressure and so achieve a more effective and faster honing. Turn the machine around so that the honing wheel rotates away from you and move the Universal Support to the honing wheel side. Hone the back of the tool free-hand.

Set the Universal Support so that you get the same honing angle as the grinding angle. Use the Marker Method. Move the tool sideways during the honing. The back is honed free-hand.

**Convex edge angle**

Sometimes there is an advantage if the plane iron is ground with a slightly convex shape, e.g. when joining boards. Also when planing a wide surface, a convex shape is recommended as the plane iron will not leave sharp steps at the sides. The convex shape is achieved by grinding more at the sides of the plane iron whilst you move it across the stone. The picture to the right shows a plane iron ground with a slightly convex shape, approx. 0.25 mm (0.01").
**Wider plane irons**

Irons wider than 60 mm (2 ⅜") can be ground, if you remove the clamp and mount the iron with the slot around the left mounting screw. Then tighten with the left screw only. Use a square to mount the tool straight.

**Secondary bevel?**

Some people recommend that you should put a secondary bevel (or microbevel) on your plane irons and wood chisels. The reason is that the honing work after the grinding is quicker since you do not need to hone the entire surface of the bevel, just the smaller new bevel at the tip.

For wood chisels there is a drawback with a secondary bevel since you do not have the support of the large original bevel to control the cutting in the wood. For plane irons, a secondary bevel increases the risk that the heel of the secondary bevel will touch the wood and cause chattering.

Since the grinding and honing of the entire bevel with the Tormek method is an easy and fast operation, there is no need for a secondary bevel. With a single bevel, you can set exactly the angle that you want and easily maintain it at every grinding and honing.

![Support length with a monobevel.](image1)

![Reduced support length with a secondary bevel on a wood chisel.](image2)

**Edge angle**

Plane irons, wood chisels and spoke shave blades are usually ground with a 25° edge angle ($\alpha$).

- If you need to work delicate details with a wood chisel in soft wood, you can decrease the edge angle down to 20°.
- If you work in hard wood and when using a mallet, you must increase the edge angle to 30°.