Positioning of Machine

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

Design

See illustration on the next page. The jig comprises an upper base with a lower clamp and two locking knobs for fixing the tool. The jig slides on the Universal Support on nylon bushings across the grindstone. The edge angle is set with the Micro Adjust (4) on the Universal Support (5).

There are two safety stops to prevent the tool from slipping off the stone when grinding. One inner stop (2) to be positioned according to the width of the tool and one outer stop (3) mounted on the end of the Universal Support.

The jig lines up the chisel to its upper flat side, making it easier to mount it correctly (not twisted). Conventional jigs need manual alignment.

The lower clamp has a ridge in the centre enabling shorter tools with a tapered shank to be firmly mounted, e.g. Japanese chisels. The upper base, which lines up the tool, is designed so the clamping pressure is distributed to the ends and the tool mounts firmly without a heavy tightening of the knobs.

The jig is designed for grinding towards the edge with the Universal Support placed vertically and for honing away from the edge with the Universal Support placed horizontally.
The jig automatically aligns the tool to its upper flat side, which is parallel to the edge.

The clamping pressure from the ridge in the centre is distributed to the edges for the firm mounting even of tapered chisels.

Safety stops. These prevent the tool from slipping off the edges of the stone, which can hurt your fingers. The inner stop (2) is removed when sharpening blades wider than 60 mm (2 ¾").

Note The safety stops should be used when sharpening plane irons, since these are partly moved outside the stone. This is because the tool is wider than the stone (page 125). The stops are not used for wood chisels since these are not moved outside the edges of the stone (page 124).
Flatten and Hone the Back of the Tools

To achieve a really sharp and durable edge, both of the two converging surfaces must be smooth. If we sharpen and hone the bevel to perfection but the back is not equally flat and smooth, you will never achieve a satisfactory result. On most new tools, the back has visible grooves from the manufacturing process. These should be removed and the surface honed and polished.

Working free-hand, 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 a good investment in your quality tool and will last its lifetime.

**Note** 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 which should be placed close to the stone as shown. You do not need to smooth the tool more than 25–30 mm (1–1¼”) from the edge.
**Mounting the tool**

Open the clamp to the thickness of the tool and approximately parallel to the base. Mount the tool protruding (P) approx. 50–75 mm (2–3”). Lock the tool by tightening the knob nearest to the tool only.

Tools with parallel sides must rest on the shoulder. For mounting tools without parallel sides, see page 124.

**Setting the Edge Angle**

The height of the Universal Support determines the edge angle. This can be set in two ways. Either you can exactly replicate the existing angle using the Marker Method or you set to a new angle according to your choice using the Tormek AngleMaster WM-200.

**Sharpening an existing edge angle**

Colour the bevel with a marker. Turn the grindstone by hand and check where the grinding will take place. Adjust with the Micro Adjust until the stone touches the entire bevel from the tip to the heel.

**Sharpening a new edge angle**

Set the AngleMaster WM-200 to the diameter of your stone. Set the height of the Universal Support with the Micro Adjust. The entire base should rest on the tool with the corner (a) on the stone.
Sharpening

These differ in shape from the Western style chisels. The rough shape from the forging is retained without machining, the sides are usually not parallel and the blades are shorter. This means that you cannot use the alignment shoulder in the jig for an exact 90° alignment. The clamp is designed so tools with a tapered shank can also be firmly mounted (page 121).

Be cautious when sharpening Japanese chisels! Compared to longer Western style chisels there is a limited amount of available steel, so you should set carefully to minimize the removal of expensive steel. The back has a hollow, which moves closer to the edge at each sharpening. After some sharpenings you might need to flatten the back, so the hollow does not reach the edge. Then use the side of the stone.

Important Bring the tool to the stone carefully when flattening the back. The edge must not touch the stone before the heel.
Sharpening a Plane Iron
To get a 100% straight edge when sharpening wide tools such as a plane iron, you need to pay attention to a couple of factors that influence the result. The grinding jig gives the tool a constant edge angle towards the stone but the shape achieved depends on how much pressure you apply on the right or left side. Also the time you spend sharpening on each side influences the shape.

If you press equally on both sides and move the tool evenly across the stone, you will get a concave and not a straight edge. This is because the middle part is exposed to a longer sharpening time than the sides. Compensate for this effect by spending more time sharpening on the sides.

**Important** Like for all Tormek jigs (except for the planer/jointer blade and moulding knife attachments) you should keep in mind that there is no grinding depth stop. This means that you decide with your hands – pressure and grinding time – where the grinding takes place. Check the shape frequently and grind more, where it is needed.

Camber Shape
Most types of plane irons should have a slight convex shape or a camber. The degree of camber depends on type of plane and should be approximately the same as the thickness of the shavings. The camber (c) varies from 0.8 mm (1/32") for a jack plane down to 0.05 mm (0.002") for a smooth plane. A scrub plane should have a much larger camber, which cannot be achieved in the SE-76 jig. Use the Tool Rest SVD-110. The camber is achieved by pressing harder on the sides. A longer protrusion of the blade in the jig will facilitate this effect, as most plane irons are a bit flexible. On a thick, stiff tool you create the camber shape by spending more time sharpening on the sides.

**Setting the safety stops**

First mount the inner, movable stop (2) so the tool rests with approx. 6 mm (¼") on the stone. Then mount the outer stop (3), which is fixed and independent of the tool width.

Move the tool continuously between the two stops. Spend more time sharpening the sides.
Finer Surface with the Stone Grader

You can refine the tool surface by grading the grindstone with the fine side of the Tormek Stone Grader SP-650. Pressing the Stone Grader firmly towards the grindstone refines the grindstone surface so it acts like a 1000 grit stone. If you are replicating an established edge angle, you can go directly to this finer surface of the stone.

Press the fine side of the Stone Grader onto the stone for about 45 seconds. Use a fair amount of pressure.

Use the same setting and fine sharpen for 30–40 seconds. Do not press too hard.

Honing on the Leather Honing Wheel

Turn the machine around so that the honing wheel rotates away from you. Move the Universal Support to the honing wheel side and mount horizontally.

The jig gives you full control of the honing angle on the T-7 model. Set to the same honing angle as the grinding angle. Use the Bevel Marker Method for the setting. Hone the back without the jig.

The safety stops are not used when honing – they are designed for use on the grindstone. Therefore, check that you do not slide the jig too far sideways. A part of the blade must always be in contact with the wheel.

Colour the bevel. Start honing on the heel. Adjust until the colour is removed to the tip.

On the T-7 model you can beneficially use the jig.

On the T-4 model you use the Universal Support as a tool rest. Lock the position with your index finger.

Please note: When using the SE-76 jig with T-3 or T-4, you must hone without the jig since space is limited.
**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.

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.

**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°.