

# **Sharpening Woodturning Tools the Tormek way**

**THIS HANDBOOK COVERS** most types of turning tools but focuses on the tools that are the most common and also the most difficult to shape and sharpen – spindle gouges, bowl gouges of various shapes as well as rectangular and oval skews with a straight or a radius edge. It is comprehensive and should be seen as a reference book rather than a quick guide.

To quickly get used to the system we suggest that you start by using the TTS-100 Turning Tool Setter method for gouges and skews; see enclosed Selection Chart with recommended profiles.

Since the first edition, we have introduced the BGM-100 Bench Grinding Mounting Set. This set enables you to do the initial shaping on your bench grinder with the same geometries as the fine sharpening on your Tormek machine.

A description of the complete Tormek system and how it works can be found in the HB-10 Tormek Handbook, which is included with each machine and also available on [tormek.com](http://tormek.com).

In the preparation of this handbook, and in the selection of optimal shapes and edge angles for the TTS-100 Turning Tool Setter method, professional wood turners around the world have been of great help. We would like to thank you all for your experienced advice.

*Torgny Jansson, Founder of Tormek.*

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*[tormek.com/woodturningtools](http://tormek.com/woodturningtools)*

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## Shaping and Sharpening

A distinction should be made between *shaping* a tool and *sharpening* a tool. When shaping you remove steel to achieve the shape and edge angle you want. When sharpening you just touch up an existing shape to renew the sharpness.

The strength of the Tormek method is *sharpening*, which is carried out with an exact replication of both the shape and the edge angle. Since so little steel is removed – you just touch up the edge – the Tormek method is very fast. The finer edge achieved with the water cooled grinding wheel gives the wood a smoother finish with less need for sanding. A finer edge also stays sharp longer than a rough edge.

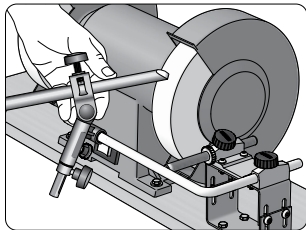
*Shaping* the tool, which is normally a once only job, can take from 10 up to 20 minutes depending on the size of the tool and how much steel you need to remove. Bear in mind that you shape the tool only once, and with the water cooled grinding you will not risk changing the properties of the steel.

## All-in-One Jig System

Dry grinders excel at quickly establishing a profile but the Tormek Water Cooled Sharpening System has been proven in both the laboratory and the real world to provide a superior cutting edge. Once the profile is established, nothing is faster, more reliable, or more conservative with your expensive tools than the Tormek sharpening system.

If you need to considerably change the shape of your woodturning tools, the initial rough shaping can be done on a high speed bench grinder. With the BGM-100 Bench Grinding Mounting Set you can use the same precise Tormek jigs throughout the entire shaping and sharpening process.

You get the best of both worlds: the fast steel removal from your high speed bench grinder, and the fine surface from your Tormek Grinding Wheel and Honing Wheel – all in one jig system. Thanks to the patented design, the TTS-110 Turning Tool Setter works on any grinding wheel diameter. So you can go from a 6" wheel to a 10" grinding wheel and achieve the same shape. Instructions on how to use the Tormek jigs on a bench grinder come with the BGM-100 Bench Grinder Mounting Set.



*With the BGM-100 Bench Grinder Mounting Set you can also use all Tormek woodturning jigs on your bench grinder: the SVD-186 R Gouge Jig, the SVS-50 Multi Jig and the SVD-110 Tool Rest. (The picture shows the BGM-100 Bench Grinder Mounting Set with the SVD-186 R Gouge Jig.)*

## Shaping Advice for Water Cooled Grinding

On a grinding wheel with low RPM, you need to press harder than on a high-speed grinder to remove steel. The same high grinding pressure on a high-speed grinder will cause overheating. Do not be afraid of pressing hard on the tool. Press with your fingers close to the cutting edge.

Move the tool side to side and use the whole width of the grinding wheel to avoid grooving. Reduce pressure or lift the tool when moving to a new spot on the grinding wheel.

When shaping large surfaces such as a skew chisel with a straight edge, too little grinding pressure slows down the grinding. If you are using the SG-250/SG-200 Original Grindstone or the SB-250 Blackstone Silicon you can re-activate the grindstone several times during the grinding with the SP-650 Stone Grader to speed up the work. If you are using a DC-250 Diamond Wheel Coarse you will always have a fast steel removal without having to re-activate the stone.

## Some Comments on Dry Grinding

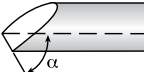
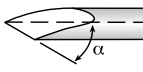
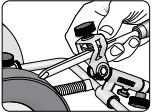
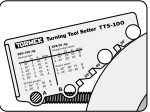
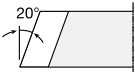
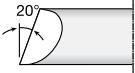
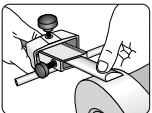
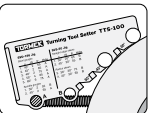
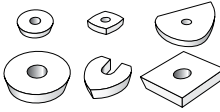
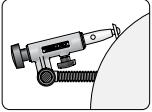
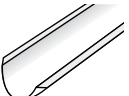
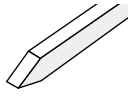
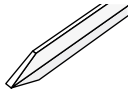
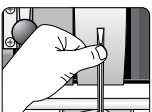
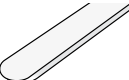
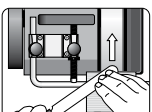
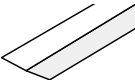
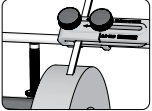
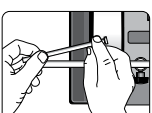
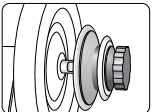
Not all grinding wheels are suitable for the precision sharpening of edge tools. Standard bench grinder wheels are often too hard and become glazed easily, which reduces the rate of steel removal and causes overheating of the tool. Use an aluminium oxide wheel with the correct binding – not too hard to avoid glazing and not too soft to reduce grooving.

The surface of the grinding wheel must be kept fresh and clean. Worn grains must wear away so that new ones come into play. If not, the surface becomes glazed and the grains will rub instead of cut. This will increase friction and heat development. Use a diamond hand wheel dresser to maintain the shape and condition of the surface. Do *not* attempt to use the Tormek TT-50 Truing Tool for this task.

HSS steel can withstand a much higher temperature than carbon steel without decreasing the hardness. However, at the tip of the edge, which is very thin, the temperature can easily rise to a level that will affect the hardness. Therefore, grind cautiously at the tip of the edge and do not allow it to become blue. Overheating HSS steel can cause a decrease in the hardness by as much as 4 HRC, which shortens the life of the edge. If you cool it in water, do not cool abruptly from a high temperature as this can cause micro cracks invisible to the naked eye.

A bench grinder must be handled with knowledge and care. These instructions show how to use the Tormek jig system on a Tormek machine. If you use a bench grinder follow the instructions enclosed with the BGM-100 Bench Grinding Mounting Set and the safety instructions that come with your machine.

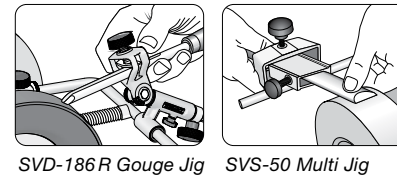
## Which Jig Should I Use?

| Tool                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Jig                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p>Bowl gouges</p>  <p>Spindle gouges</p>                                                                                                                                                                                                                                                         |  <p>SVD-186 R<br/>Gouge Jig</p>  <p>TTS-100 Turning<br/>Tool Setter</p> |
|  <p>Flat skews</p>  <p>Oval skews</p>                                                                                                                                                                                                                                                              |  <p>SVS-50<br/>Multi Jig</p>  <p>TTS-100 Turning<br/>Tool Setter</p>    |
|  <p>Cutter/scraper tips</p>  <p>Ring tools</p>                                                                                                                                                                                                                                                     |  <p>SVD-186 R<br/>Gouge Jig</p>                                                                                                                          |
|  <p>Roughing<br/>gouges</p>  <p>Beading tools</p>  <p>Parting tools,<br/>diamond section</p>                                                                                                                      |  <p>SVS-50<br/>Multi Jig</p>                                                                                                                             |
|  <p>Conventional<br/>scrapers</p>  <p>Hollowing<br/>tools</p>  <p>Large<br/>cutters</p>  <p>Thin, flat<br/>parting tools</p> |  <p>SVD-110<br/>Tool Rest</p>                                                                                                                           |
|  <p>Bedan tools</p>                                                                                                                                                                                                                                                                                                                                                               |  <p>SE-77<br/>Square Edge Jig</p>                                                                                                                      |
|  <p>Cutters with a shank</p>                                                                                                                                                                                                                                                                                                                                                      |  <p>US-105/US-103<br/>Universal Support</p>                                                                                                            |
| <p>Hone gouge flutes</p>                                                                                                                                                                                                                                                                                                                                                                                                                                             |  <p>LA-120<br/>Profiled Leather<br/>Honing Wheels</p>                                                                                                  |

## The Turning Tool Setter TTS-100

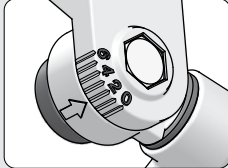
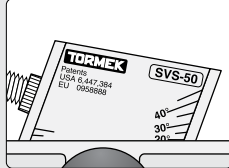
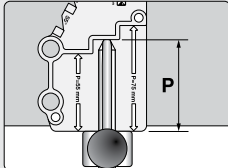
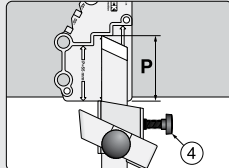
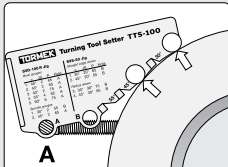
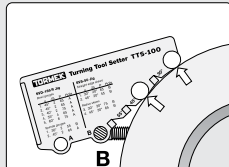
The patented Turning Tool Setter is the key to the Tormek Sharpening System for woodturning tools. It enables you to exactly create and replicate the edge on your bowl and spindle gouges as well as on your flat or oval skews with either a straight or a curved edge. It works in conjunction with the SVD-186 R Gouge Jig and the SVS-50 Multi Jig.

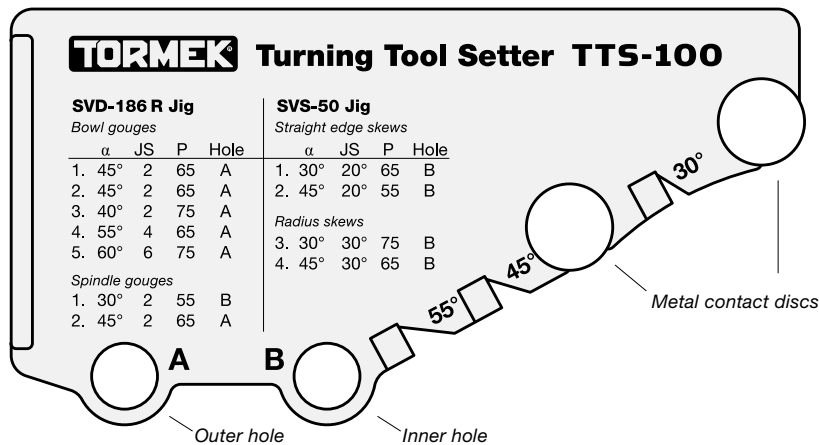
- Gives you geometries recommended by experienced woodturners
- Works with any grinding wheel diameter
- Works on Tormek machines as well as bench grinders



### How does it work?

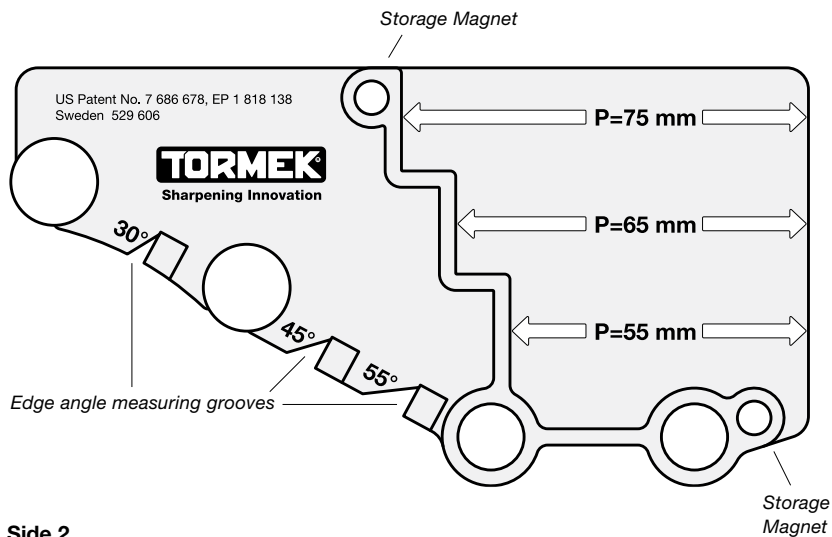
Three factors determine the shape of a gouge or a skew: the jig setting (JS), the protrusion (P) and the distance from the Universal Support to the grinding wheel (hole A or B). By controlling these factors and repeating them at each sharpening, you will get an exact replication of the shape and edge angle every time.

| THE SVD-186 R<br>GOUGE JIG                                                            | THE SVS-50<br>MULTI JIG                                                               |                            |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------|
|   |   | JIG SETTING = JS           |
|  |  | PROTRUSION = P             |
|  |  | DISTANCE TO GRINDING WHEEL |



#### Side 1

There are two holes for the Universal Support, A and B.  
The type of tool and profile you require decide which hole to use.



#### Side 2

This side has stops for the recommended protrusions of the tool in the jig (P).

## Selected Shapes and Edge Angles

There are quite a few manufacturers of turning tools and the shapes and edge angles vary considerably. For example there are factory made skew chisels with skew angles from 15° to 30° and the edge angles vary from 25° to 40°. Factory made bowl gouges have edge angles from 30° to 60°.

The wide range of shapes is the reason why recommendations for setting the shape and edge angle can be hard to define. At first we only offered the technique, and left it to each woodturner to find their own geometry, i.e. shape and edge angle. However, after working with many turners around the world, we saw the need for a tool that would aid in the setting of jigs and provide advice for suitable shapes and edge angles. The TTS-100 Turning Tool Setter offers both.

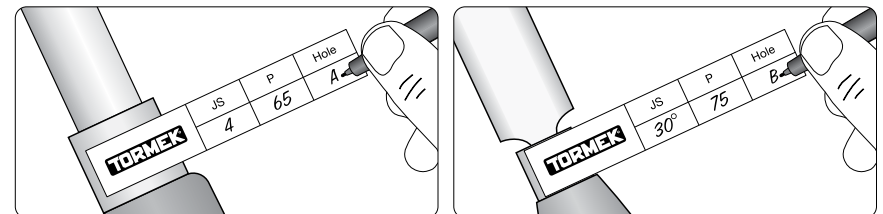
The Selection Chart on the next page shows geometries recommended by experienced woodturners and recognized woodturning training workshops around the world such as Craft Supplies in the USA, Drechselstube Neckarsteinach in Germany, Glenn Lucas in Ireland, Nick Agar in the USA, among others.

Since a tool can have an unlimited number of combinations of shapes and edge angles, a new tool will more than likely have a different shape than any of the shapes on the chart. Therefore, you first need to shape your tool to one of these geometries. Then, subsequent sharpenings will be effortless and accomplished in less than a minute.

**Tip** Stick to the shape you have chosen. Altering the shape even slightly, takes unnecessary time away from your turning. If you want a different shape for a different type of work, buy an additional tool and keep the unique shape permanently rather than changing it each time you change your work. In the long run this will save you time and money. Your tools will last your lifetime since you just touch up the edge when sharpening.

#### Profile labels

Note the settings on a Profile Label, which comes with the TTS-100 Turning Tool Setter, and put it on the ferrule of the tool. Now you have a reminder of the three settings and you can exactly replicate them every time.



# Selection Chart for TTS-100

| Bowl gouges |                   |  |                        |                                                                                         |
|-------------|-------------------|--|------------------------|-----------------------------------------------------------------------------------------|
| 1           | $\alpha=45^\circ$ |  | JS 2<br>P 65<br>Hole A | Standard profile.<br>Only lightly swept back wings.<br>For turners of all skill levels. |
| 2           | $\alpha=45^\circ$ |  |                        | Irish profile. Swept back wings.<br>Swing the tool 180° from side to side.              |
| 3           | $\alpha=40^\circ$ |  | JS 2<br>P 75<br>Hole A | With long swept back wings.<br>Somewhat aggressive.<br>For professional level turners.  |
| 4           | $\alpha=55^\circ$ |  | JS 4<br>P 65<br>Hole A | The larger edge angle is beneficial<br>when turning deep bowls.                         |
| 5           | $\alpha=60^\circ$ |  | JS 6<br>P 75<br>Hole A | "Ellsworth" shape.<br>Wings are pronounced convex.                                      |

| Spindle gouges |                   |  |                        |                                                                                       |
|----------------|-------------------|--|------------------------|---------------------------------------------------------------------------------------|
| 1              | $\alpha=30^\circ$ |  | JS 2<br>P 55<br>Hole B | For tight spots, detail work and<br>finest finish.<br>For professional level turners. |
| 2              | $\alpha=45^\circ$ |  | JS 2<br>P 65<br>Hole A | Standard profile.<br>For turners of all skill levels.                                 |

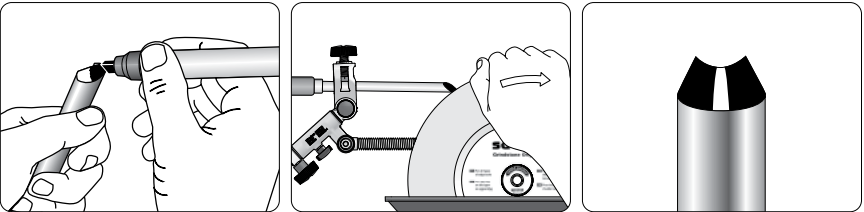
| Skews |                                     |  |                          |                                                                                       |
|-------|-------------------------------------|--|--------------------------|---------------------------------------------------------------------------------------|
| 1     | Straight edges<br>$\alpha=30^\circ$ |  | JS 20°<br>P 65<br>Hole B | For tight spots, detail work and<br>finest finish.<br>For professional level turners. |
| 2     | Straight edges<br>$\alpha=45^\circ$ |  | JS 20°<br>P 55<br>Hole B | For broad application.<br>Easier to control than<br>a 30° edge angle.                 |
| 3     | Radius edges<br>$\alpha=30^\circ$   |  | JS 30°<br>P 75<br>Hole B | For tight spots, detail work and<br>finest finish.<br>For professional level turners. |
| 4     | Radius edges<br>$\alpha=45^\circ$   |  | JS 30°<br>P 65<br>Hole B | For broad application.<br>Easier to control than<br>a 30° edge angle.                 |

# Other Shapes

Of course you can shape your tools to profiles other than those in the TTS-100 Selection Chart. Make a note of your jig setting (JS) and the protrusion (P) so you can repeat your shape in the future. Use the Tormek Marker Method to correctly position the Universal Support.

## The Tormek Marker Method

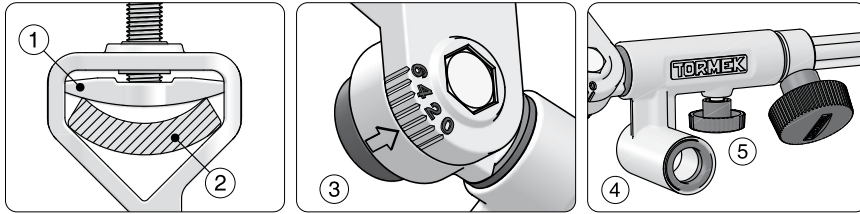
This method is universal and can be used for any grinding wheel diameter. It is exact, but not as fast as the the Turning Tool Setter Method.



Color the bevel with a marker. Rotate the grinding wheel by hand, adjusting the setting until the grinding wheel removes the coloring from the tip to the heel.

**Tip** If the geometry does not differ too much from the shapes the TTS-100 Turning Tool Setter offers, you should consider changing the shape to the Turning Tool Setter shape for easier replication in the future.

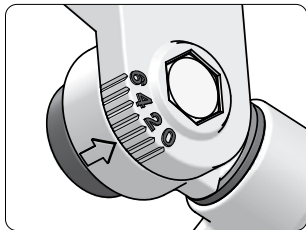
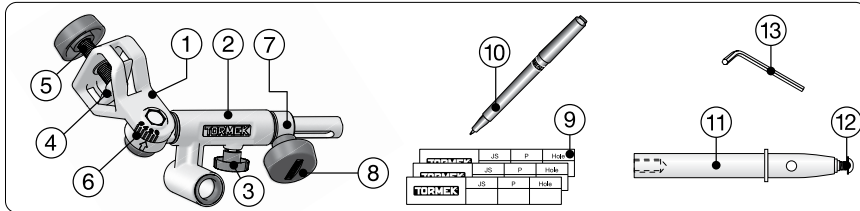
## SVD-186 R Gouge Jig



The SVD-186R Gouge Jig is a further development of the SVD-185 and SVD-186. The SVD-186R Gouge Jig fits up to 36 mm wide tools (2), has an improved disc (1) and an easy and precise click setting (3). The lower sleeve (4) has been shortened in order to work better with the Tormek T-3 and T-4. A new locking knob (5) allows you to fix the jig's rotation.

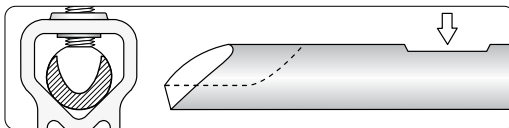
### For fingernail gouges and cutter/scrapper tips

The jig comprises a *tool holder* (1) which runs in a *sleeve* (2). The *locking knob* (3) locks the rotary motion of the gouge jig. The tool is aligned with a *disc* (4) and tightened with a *screw* (5). Easy and precise *click setting* (6). The *stop ring* (7) can be set with the *screw* (8) in order to round off the heel of the grinding bevel. The setting can be noted on a special *Profile Label* (9), which is attached to the tool's ferrule. A special *pen*, which works on these labels, is included (10). For turning cutters there is a *shaft* (11) with a *mounting screw* (12) and a 2.5 mm *hex key* (13).



### Setting

The jig can be set from 0 to 6, which permits the sharpening of gouges with different geometries.

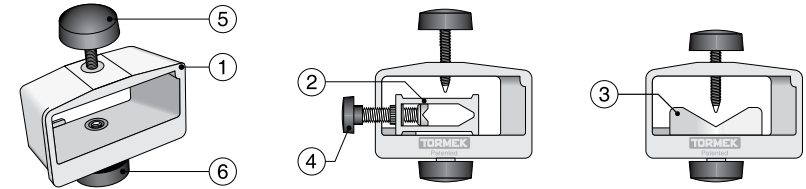


For a large gouge with a short flute the locking disc is removed. Grind a flat surface for repeatable alignment.

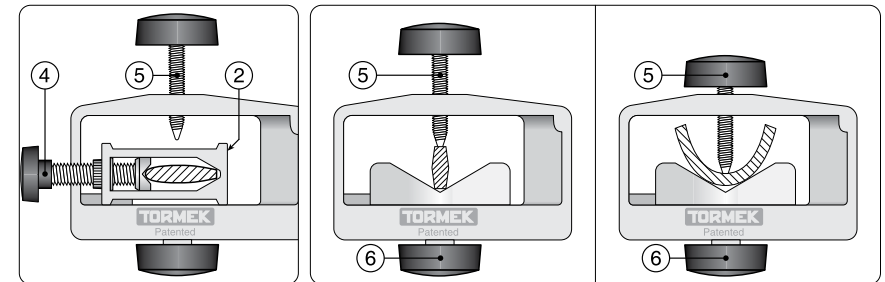
## SVS-50 Multi Jig

### For skews, roughing gouges and parting tools

This jig consists of a *housing* (1) and two *interchangeable seats* – one closed (2) and one open (3). The seats can swivel and be locked with the *screw* (6) at any skew angle between 0° and 45°. Skew chisels have symmetrical bevels on both sides. With this jig, you mount the tool only once for grinding both bevels. By turning the jig upside down, you can grind both bevels symmetrically.



The closed seat was developed for the precision sharpening of skew chisels with an oval or rectangular section. Since the chisel is mounted in the center of the seat, the bevels on both sides can be ground to exactly the same shape. The open seat, where the tool is fixed with a top screw (5), is used for tools which have the edge ground square across the shank, such as parting tools and roughing gouges. Both seats are mounted with a bottom screw (6), which also locks the chosen skew angle. A scale on each seat shows the skew angle.

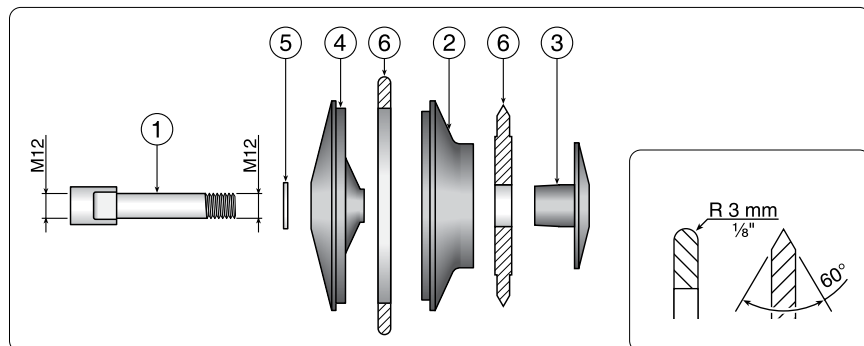


The closed seat (2) is for skew chisels. The tool is fixed with the side screw (4). The top screw (5) is not used and may be removed.

The open seat is designed for tools which have the edge square across the shank. The tool is fixed with the top screw in the housing (5).

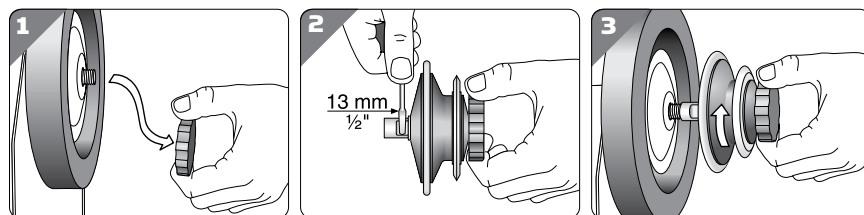
# LA-120 Profiled Leather Honing Wheel

The Tormek Profiled Leather Honing Wheel makes it easy to remove burr and polish the inside of gouges and V tools. It has two exchangeable discs, one with a 3 mm ( $\frac{1}{8}$ ") radius and one with a 60° point. We also offer the LA-124 Narrow Exchange Discs with a 2 mm ( $\frac{3}{32}$ ") radius and a 45° tip, which is sold separately.

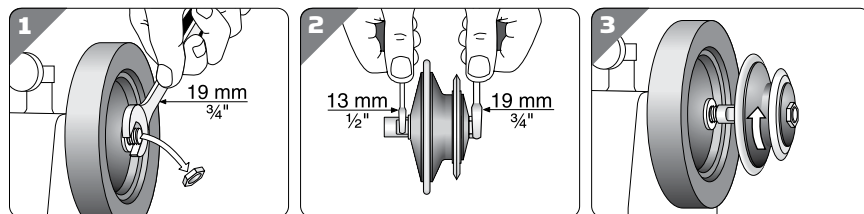


The set consist of a shaft (1), a spacer (2), a flange (3), a hub (4), a washer (5) and a set of standard exchangeable discs (6). When putting together LA-120 Profiled Leather Honing Wheels, mount the parts as shown above.

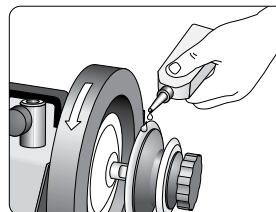
## Tormek T-8/T-7 Mounting Instructions



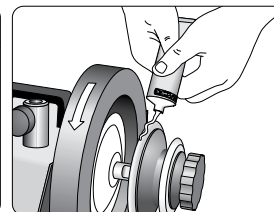
## Tormek T-4/T-3 Mounting Instructions



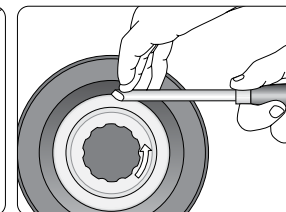
## Preparations



Impregnate the leather with some light oil (e.g. sewing machine oil). It will soften the leather and help the honing compound penetrate.

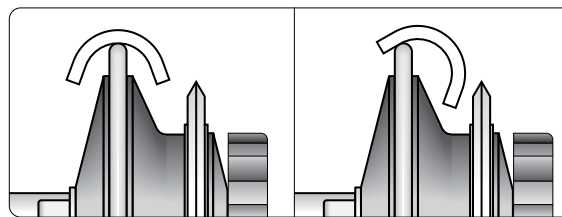


Apply a thin string of the PA-70 Honing Compound before starting the machine. Rotate the wheel by hand.



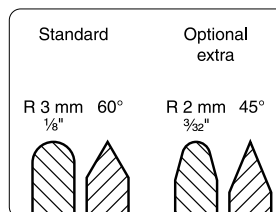
Hold the tool so the flute is at a tangent to the wheel.

## Copes with all size of gouges

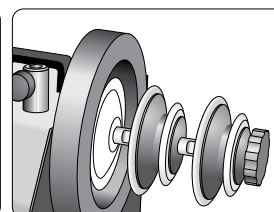


The LA-120 Profiled Leather Honing Wheel copes with all sizes of gouges. The generous space between the discs allows honing even of large roughing gouges, here size 32 mm ( $1\frac{1}{4}$ ").

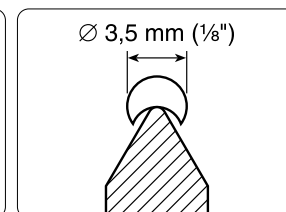
## Extra wheels and micro tools



LA-122 Set of standard exchange discs to the left.  
LA-124 Set of narrow exchange discs to the right. Full scale.



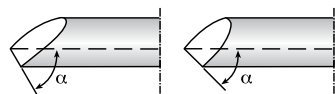
You can mount an extra wheel if you want both sets available.



For micro tools you can use a disc with a point. Scale 2.5:1.

# Bowl Gouges

## SVD-186R Gouge Jig and the TTS-100 Turning Tool Setter



Select the desired shape from the Selection Chart for TTS-100 (page 12).

The jig positions the gouge on the grinding wheel so that you can get a specific and repeatable grinding at any point along the bevel. This enables you to get an even, single bevel around the entire profile from the left to the right wing.

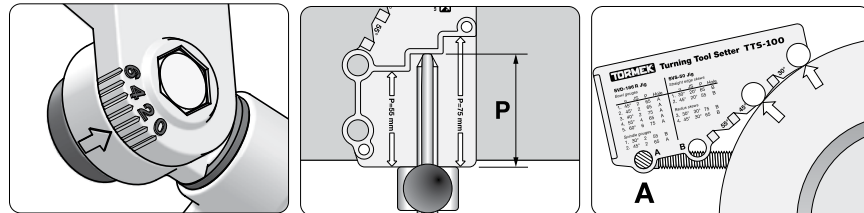
When changing the shape of a gouge you need to remove quite a lot of metal. Therefore, press with your hand or thumb on the tool to increase the grinding pressure. Grind one side at a time. This is easier since you do not need to swing the tool from side to side. Finish the grinding with a full swing over the entire bevel.

If you are using a Grindstone, make sure to use the whole width of the stone and avoid grinding on the same spot for too long as it will leave grooves on the stone. With this technique the remaining grooves will not be too pronounced. They will reduce with future grindings of straight edges. If you immediately require a flat surface of the Grindstone, you can true it with the TT-50 Truing Tool.

If you are using Tormek Diamond Grinding Wheels you don't have to worry about creating grooves. The Diamond Grinding Wheels have a consistent shape and will always have a flat surface.

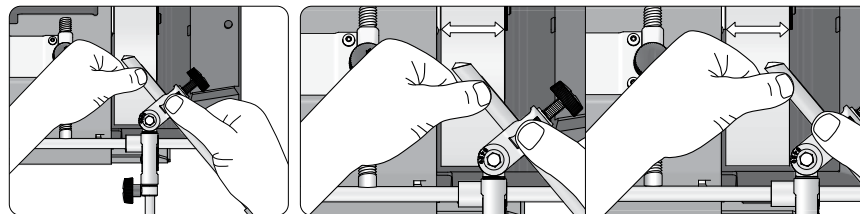
Check your grinding frequently to ensure that the gouge is evenly shaped. Grind more on the spots where necessary. Your hands and eyes decide the final evenness and shape of the bevel. To create a new shape, it may take 10-20 minutes depending on how much steel you need to remove. But remember, this initial shaping only needs to be done once. Once your desired fingernail shape is created, it is quick and easy to maintain.

### Settings

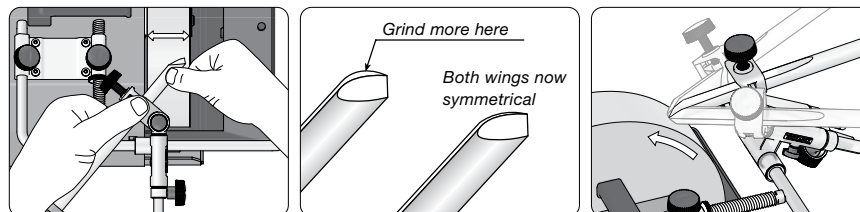


Choose a profile from the Selection Chart for TTS-100 (page 12). Select the jig setting (JS) and tighten securely. Set the protrusion (P) using the TTS-100 Turning Tool Setter. When setting the Universal Support, the hole A is used for bowl gouges. Note all three settings on a Profile Label (page 11).

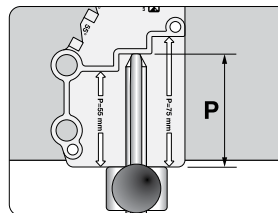
### Shaping



Make the first rough shaping on one side at the time. Move the tool side to side so you use the entire width of the grinding wheel to avoid creating grooves.



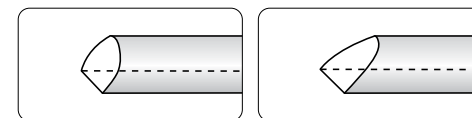
Grind the other side. Again use the entire width of the grinding wheel to make it wear evenly. Check frequently to ensure that you are grinding evenly. Grind more where necessary. Decrease the grinding pressure as you complete the shape and finish the grinding with a full swing over the entire bevel.



When the desired shape is nearly achieved, check that the protrusion (P) has not decreased during the shaping. If it has, re-position the tool to the correct protrusion (P) and then make the final shaping. By doing so, you will ensure that you exactly replicate the edge geometry at future sharpenings.

### Length of the wings

The length of the wings depends on how wide you swing the tool from side to side.

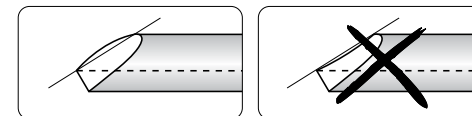


Limited swing.

Full swing.

### Shape of the wings

Make sure to grind on the right spots on the bevel so the wings become symmetrical and slightly convex or straight. They must never be concave.



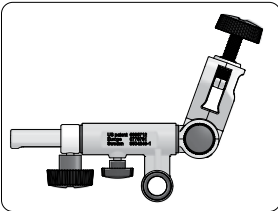
Convex.

Concave. Not suitable!

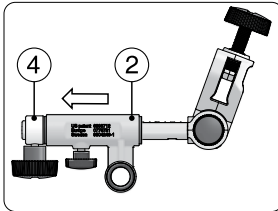
**Note** You decide how much grinding takes place on any one spot and hence the final shape. If the wings start to become concave, grind more on the center of the edge.

### Rounding off the heel

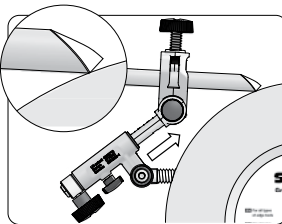
Some turners round off the heel of the bevel on bowl gouges and spindle gouges. The jig is designed so that you can move the tool towards the grinding wheel and grind the heel. The heel can be ground either as a flat secondary bevel or rounded off by sliding the jig back and forth during grinding. If you want a more pronounced rounding off, move the Universal Support a little towards the grinding wheel.



Normal position.

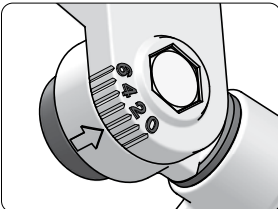


Round off the heel by moving the stop ring (4) and the sleeve (2) backwards.

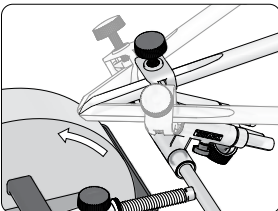
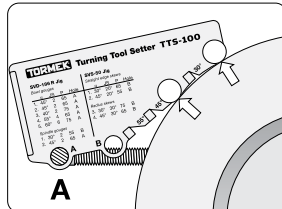
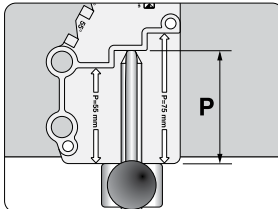


Now press the jig towards the grinding wheel to round off the heel.

### Sharpening

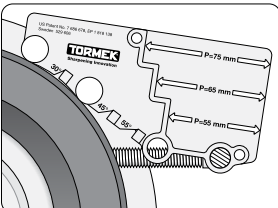


Replicate the shape by using the data from the Profile Label. Tighten the jig setting (JS) securely. Set the protrusion (P) using the TTS-100 Turning Tool Setter. When setting the Universal Support, use hole A for bowl gouges.

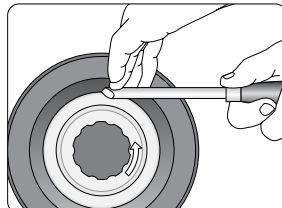
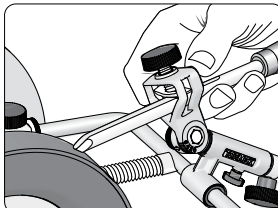


Sharpen with a light pressure and swing the tool from side to side. Since the shape is exactly replicated and the edge is just touched up, the sharpening takes just 15–20 seconds.

### Honing



Move the Universal Support to the Honing Wheel and use hole A on the Turning Tool Setter to maintain your settings. Hone by swinging the tool from side to side. You now have an extra fine finish. Polish the flute and remove the burr on the LA-120 Profiled Leather Honing Wheel.



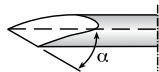
### Other shapes

You can of course shape your gouge to a different geometry from those provided in the Selection Chart for TTS-100. This graph shows examples of shapes you can achieve on a bowl gouge at various jig settings (JS) and at various edge angles. The protrusion (P) of the tool in the jig is 65 mm or 2½". The gouge is swung fully 180° from side to side.

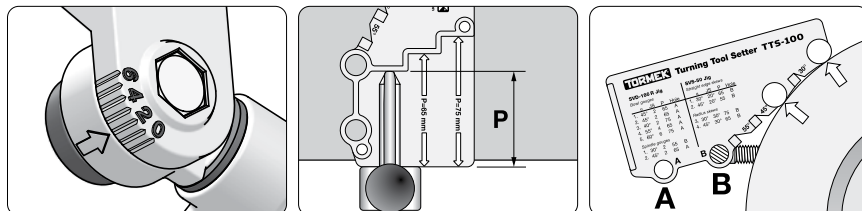
| Jig Setting | Edge angle<br>35° | Edge angle<br>45° | Edge angle<br>55° | Edge angle<br>75° |
|-------------|-------------------|-------------------|-------------------|-------------------|
| JS 0        |                   |                   |                   |                   |
| JS 1        |                   |                   |                   |                   |
| JS 2        |                   |                   |                   |                   |
| JS 3        |                   |                   |                   |                   |
| JS 4        |                   |                   |                   |                   |
| JS 5        |                   |                   |                   |                   |
| JS 6        |                   |                   |                   |                   |

\* Geometries achieved with the TTS-100 Turning Tool Setter.

## Spindle Gouges



The sharpening principles are the same as for bowl gouges (page 18),  
Choose your shape from the Selection Chart for TTS-100 (page 12).

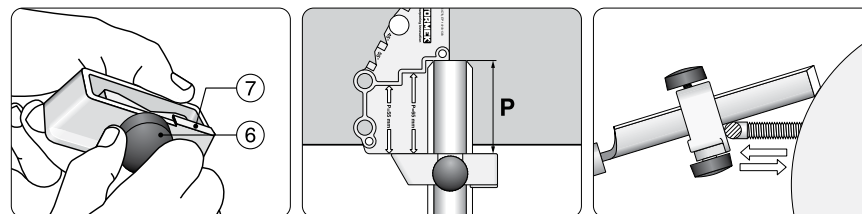


Set and lock the SVD-186 R Gouge Jig to jig setting (JS) 2. Tighten the setting securely. Mount the tool with the protrusion (P) shown on the Selection Chart for TTS-100. Set the Universal Support with the Turning Tool Setter using hole A or hole B.

## Roughing Gouges

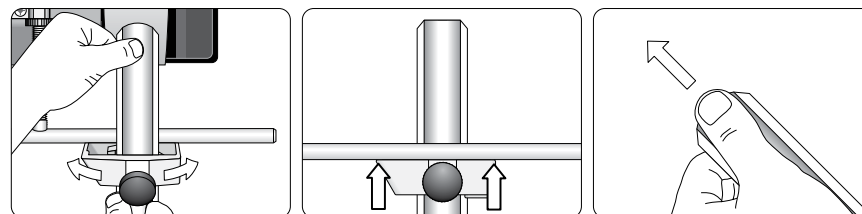
**SVS-50 Multi Jig fitted with the open seat**

### Settings



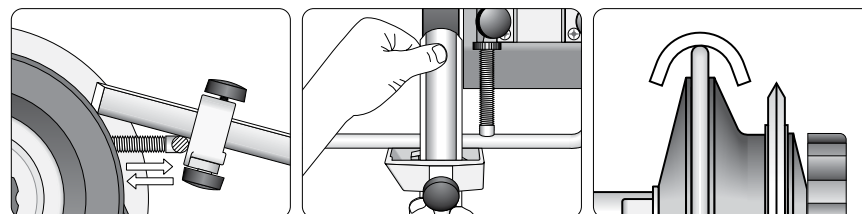
Lock the seat with the bottom screw (6) in the straight position (0°). The seat should touch the stop (7). Mount the gouge with a 75mm protrusion (P) using the TTS-100 Turning Tool Setter. Set the edge angle by adjusting the Universal Support. It should be approx. 45°. Use the Tormek Marker Method (page 13).

### Sharpening



Roll the gouge on the Universal Support while you slide it across the grinding wheel so that it wears evenly. Ensure that the entire flange of the jig is in contact with the Universal Support. Grind until you can feel burr along the entire edge.

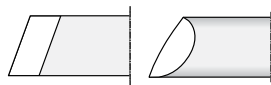
### Honing



Move the Universal Support to the Honing Wheel.hone and polish the bevel with the tool still mounted in the jig. The honing angle should be the same as the grinding angle. Use the Tormek Marker Method.hone away the burr and polish the flute on the LA-120 Profiled Leather Honing Wheel.

# Skew Chisels with a Straight Edge

## SVS-50 Multi Jig and the TTS-100 Turning Tool Setter



Select the desired shape from the Selection Chart for TTS-100 (page 12).

The instructions below show the shaping of a flat skew, which has a rectangular section. The oval skew is done in the same way. The TTS-100 Turning Tool Setter is designed to give a skew angle of 20° and you can select an edge angle of 20° or 30°. You can also give the edge a radius shape.

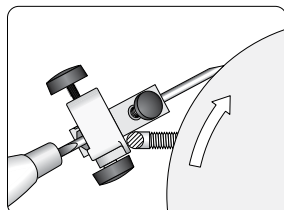
Should your skew have a different shape, then you need to shape it to one of these geometries in order to use the TTS-100 Turning Tool Setter. Please be aware that this initial shaping can take 10–20 minutes. Once this is done, you will appreciate how quickly you can regain a perfect edge during each sharpening.

**Tip** You may want to consider changing your skew to the radius profile used by many professional turners. This is easily done with the SVS-50 Multi Jig, see page 29. Shaping a skew with a curved edge is faster since the reduced area in contact with the grinding wheel results in a higher grinding pressure.

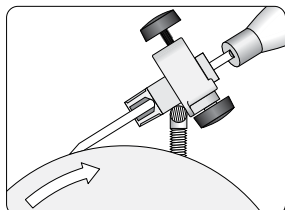
## Position of the Universal Support

You can work with the Universal Support placed either horizontally with the grinding wheel running away from the edge, or vertically so the grinding wheel runs towards the edge. In the horizontal position the rotation of the grinding wheel pulls the jig towards the Universal Support. In the vertical position the grinding pressure is increased by the rotation of the grinding wheel. Make sure to press the jig firmly towards the Universal Support to ensure that the edge does not catch the grinding wheel.

The instructions show the horizontal position. For initial shaping, working in the vertical position offers faster steel removal. Future sharpenings should always be done in the horizontal position to make sure that the rotation of the grinding wheel pulls the jig towards the Universal Support. This method eliminates the risk that the edge catches the grinding wheel.



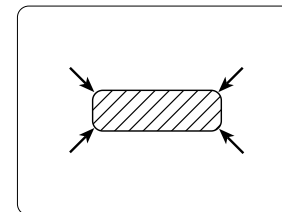
Horizontal mount. The grinding wheel runs away from the edge.



Vertical mount. The grinding wheel runs towards the edge.

## Round off the corners on a flat skew

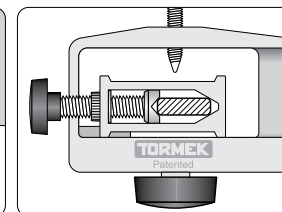
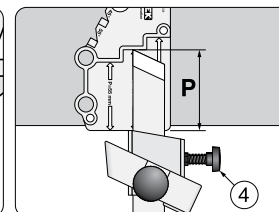
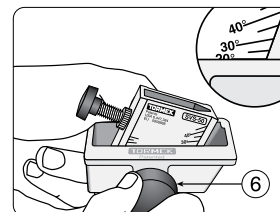
Before shaping a *flat* (rectangular) skew for the first time, you should make sure the corners are rounded off for two reasons. First, the tool works smoother on your lathe tool rest, and second, the skew lines up easier in the seat of the jig.



A flat skew should have rounded off corners.

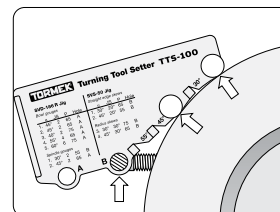
The rounding off can be done on your Tormek machine. You can polish the surfaces on the Honing Wheel for the lowest possible friction on the tool rest of your lathe.

## Settings for shaping

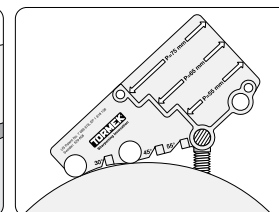


Set the SVS-50 Multi Jig on 20° for a straight skew or on 30° for a radius edge. Lock the position securely with the bottom screw (6). Mount the tool with the protrusion shown on the Selection Chart for TTS-100. Check that the tool is aligned to make sure the shape later on will be exactly the same.

## Set the Universal Support



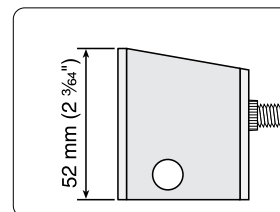
Horizontally.



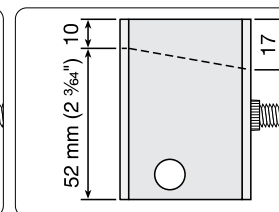
Vertically.

The Universal Support can be mounted either horizontally or vertically (page 24). Use the inner hole of the Turning Tool Setter. Both metal discs must touch the grinding wheel.

## The Closed Seat



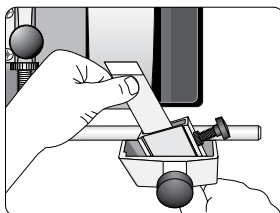
Current design.



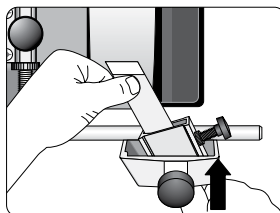
Earlier design.

This seat has been re-designed (2006). It is now 10 mm shorter and also slanted in order to allow the sharpening of shorter tools. If you have the longer seat, you should trim it to 52 mm (2 3/4 inch). The protrusion (P) on the TTS-100 Turning Tool Setter is made for this new design.

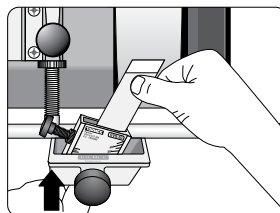
## Shaping



Lift the tool and then move it sideways during the sharpening. Do not slide the tool. Press with your thumb close to the edge.

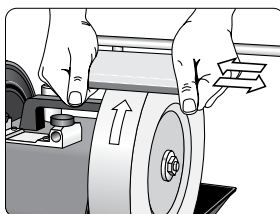


Apply forward pressure on the handle side to compensate for the force of the grinding wheel against the tool.

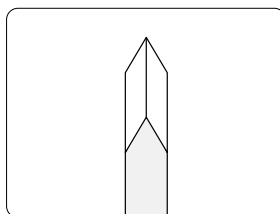


Turn the jig around and shape the other side. Apply forward pressure on the handle side.

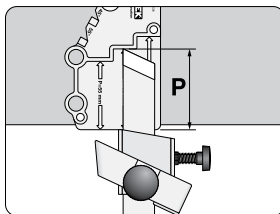
**Note** This shows shaping with the Universal Support in the horizontal mount. You can also work with the Universal Support in the vertical mount (page 24).



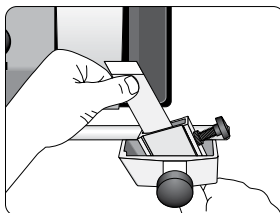
Activate the grinding wheel during the grinding process with the coarse side of the SP-650 Stone Grader.



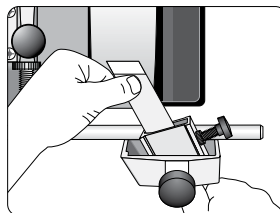
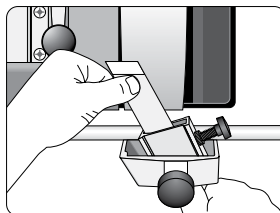
Grind until the bevels are symmetrical. If necessary grind the first side again.



When the desired shape is achieved, check that the protrusion (P) has not decreased during the shaping. If so, re-position the tool to the right protrusion (P) and then complete the shaping. By doing so, you ensure that you will exactly replicate the edge geometry during future sharpenings.

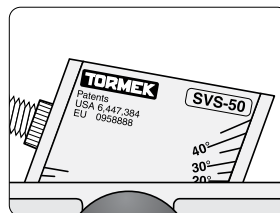


When shaping a wide chisel, you can increase the efficiency of the grinding wheel by grinding half the width at a time. The grinding pressure will increase, which makes the grinding wheel grind faster.

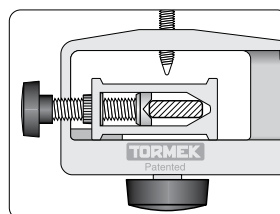
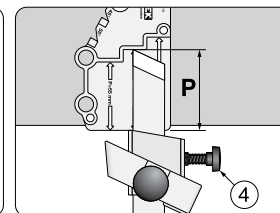
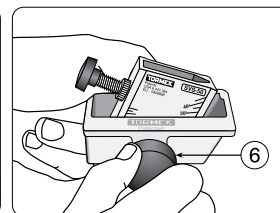


Complete the sharpening with the entire bevel on the grinding wheel. Lift the tool to move it sideways.

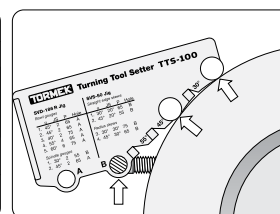
## Settings for sharpening



Set the SVS-50 with the jig setting (JS) and protrusion (P) from the Profile Label. Lock the JS securely with the bottom screw (6) and the P with the side screw (4). Check that the tool is aligned so the shape later on will be exactly the same.

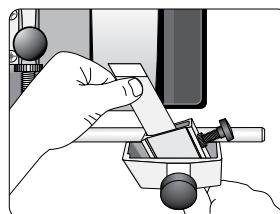


Check that the tool is perfectly centered to make sure that the shape will be the same on both sides.

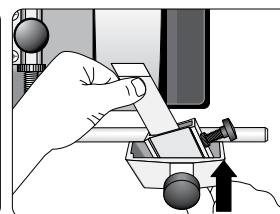


Set the Universal Support with the Turning Tool Setter using the inner hole, B.

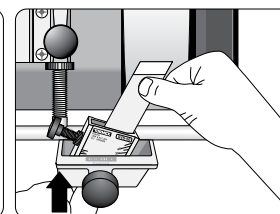
## Sharpening



Lift the tool and then move it sideways during the sharpening. Do not slide the tool. Press with your thumb close to the edge.

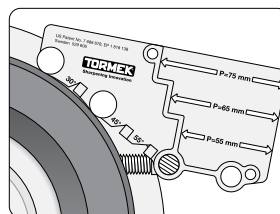


Apply forward pressure on the handle side to compensate for the force of the grinding wheel against the tool.

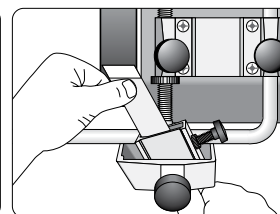


Turn the jig around and sharpen the other side.

## Honing



Move the Universal Support to the honing wheel and position identically with the Turning Tool Setter.

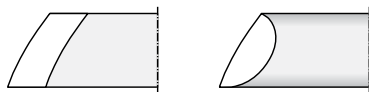


Hone both sides alternately until the burr is removed and the bevels are polished to a mirror finish.



# Skew Chisels with a Curved Edge

## SVS-50 Multi Jig and the TTS-100 Turning Tool Setter



You can put a curved (convex) edge on both your flat and oval skew chisels. You pivot the jig with the tool on the Universal Support to create the curve. This curved edge has certain advantages and has been popularized, amongst others, by the Australian professional woodturner Richard Raffan. He prefers a slightly curved edge, which is shown in full scale on the next page.

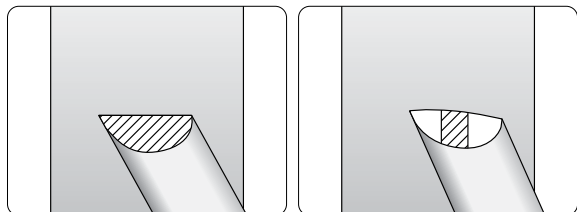
To achieve this shape, you need to set the SVS-50 Multi Jig on 30° (instead of 20° for the straight edge shape). The edge angle with these settings will be the same. Select the shape from the Selection Chart for TTS-100 (page 12).

To achieve the radius shape, you will need to remove quite a bit steel, which can take 10–20 minutes depending on the original shape. But again, this is a once only task, from which you will benefit during future sharpenings. If you have access to a bench grinder, you can use it to do the initial shaping but it is important that you grind gently so the edge does not get burned. After which, you do the final sharpening on your Tormek machine.

A certain grinding pressure is required to maintain an active grindstone surface so it does not become glazed. When shaping or sharpening a skew chisel with a straight edge, which has a large grinding area, you need to re-activate the grindstone frequently with the SP-650 Stone Grader. Since the grinding pressure is higher on a skew with a convex edge, even with the same force applied on the tool, the Grindstone activates itself and therefore grinds more effectively. This is why a skew with a convex edge is shaped faster than a skew with a straight edge.

You can also use Tormek Diamond Grinding Wheels if you prefer a grinding wheel that has consistent sharpening ability. The Diamond Grinding Wheels always have a constant diameter and you never have to re-activate the grinding wheel when you are shaping or sharpening a skew chisel with a straight edge.

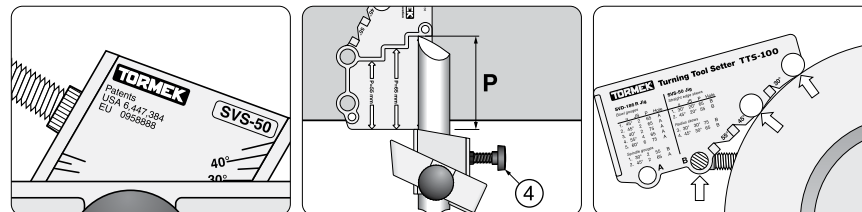
### Grinding area and grinding pressure



**Straight edge:** Large grinding area. Same as the entire grinding bevel. Low resulting grinding pressure. Grindstone works more effectively. Grindstone requires activating.

**Convex edge:** Smaller grinding area. Higher resulting grinding pressure. The Grindstone works more effectively.

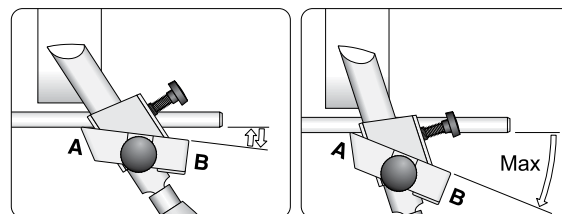
### Settings for shaping



Set the jig setting (JS) to 30°. Lock the position securely. Mount the tool with a 75 mm protrusion (P). Lock with the side screw (4). Set the Universal Support with the Turning Tool Setter using the inner hole, B.

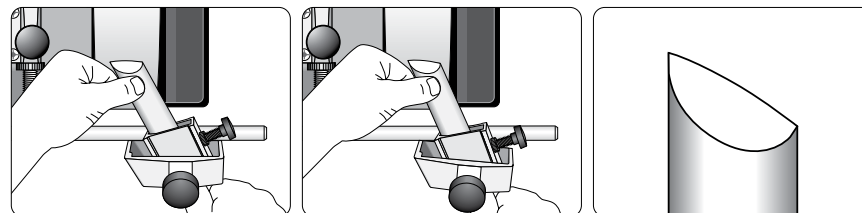
Note! There are two versions of the closed seat which have different lengths. This influences the setting of the protrusion (page 25).

### Principle of Creating the Curve

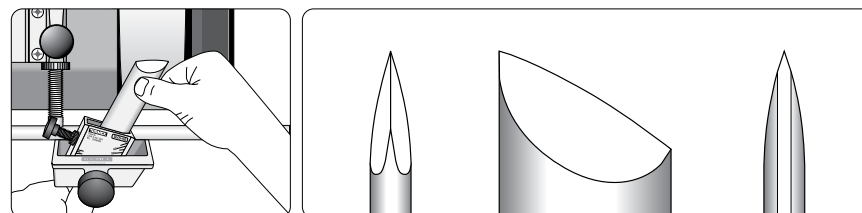


Pivoting the jig on the bevelled corner of the jig (A) creates the curve. Do not turn the jig more than the max. shown so the seat rests on the Universal Support all the time.

### Shaping

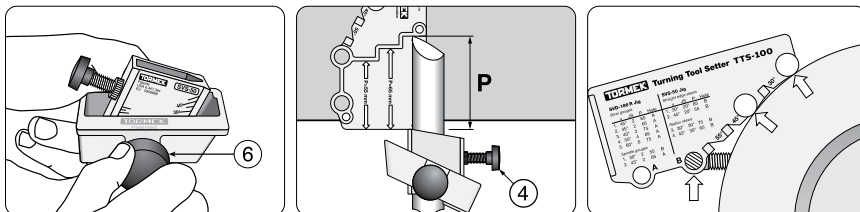


Pivot the jig to create the shape of the edge. Be careful not to grind too much on the long point. This is a suitable shape (full scale) for a 19 mm (3/4") oval skew.



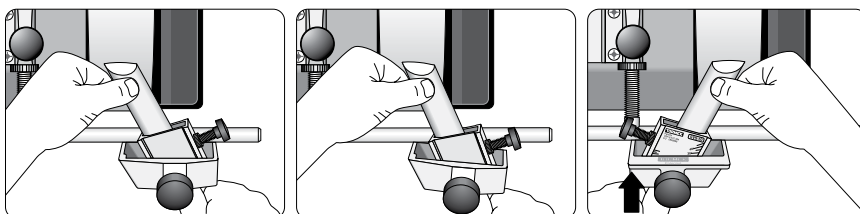
Turn the jig around and shape the other side. Grind until the bevels are symmetrical. If necessary, grind the first side again.

## Settings for sharpening



Set the jig setting (JS) and protrusion (P) from the Profile Label. Lock the JS securely with the bottom screw (6) and the P with the side screw (4). Check that the tool is aligned so the shape later on will be exactly the same.

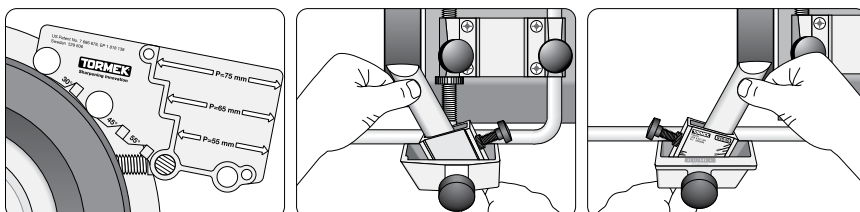
## Sharpening



Pivot the jig so that you follow the convex shape of the edge.

Turn the jig around and sharpen the other side.

## Honing



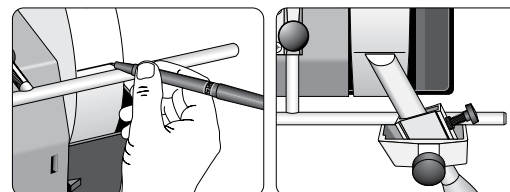
Move the Universal Support to the Honing Wheel and position identically with the Turning Tool Setter.

Hone both sides alternately until the burr is removed and the bevels are polished to a mirror finish.

## Customized profiles

You can also sharpen skews with different geometries other than the standard shapes provided by the Selection Chart for TTS-100. This is the way you can replicate an existing edge geometry on a skew with a straight edge.

1. Mount the tool with a 65 mm protrusion using the TTS-100 Turning Tool Setter.
2. Set the skew angle as shown below.

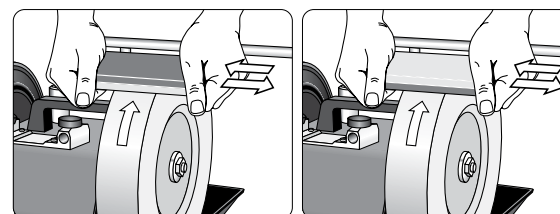


3. Set the edge angle with the Universal Support. Use the Tormek Marker Method (page 13).
4. Note the protrusion (P) and the jig setting (JS) on the Profile Label that comes with the jig. Put the label on the tool's ferrule.

**Tip** If the geometry does not differ too much from the shapes the Selection Chart for TTS-100 offers, you should consider changing the shape to one of these predefined shapes for easier replication in the future.

## Grading the stone

If you are using a Grindstone when sharpening small tools such as micro tools, you should grade the stone to achieve an extra fine surface. This is done with the fine side of the SP-650 Stone Grader. You can also do this for your ordinary tools to give them an extra fine finish. This does not apply if you are using a Diamond Grinding Wheel.



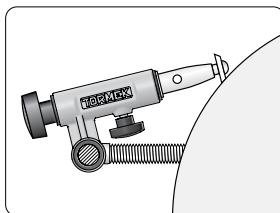
**Grading for fine grinding**  
Press the fine side of the Stone Grader onto the grindstone for 30–45 seconds while moving it side to side across the stone. Apply a high pressure.

**Return to normal fast grinding**  
Press the coarse side onto the grindstone for 30–45 seconds while moving it side to side across the stone. Use the corners of the grader for best results.

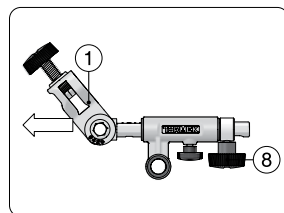
# Exchangeable Cutters



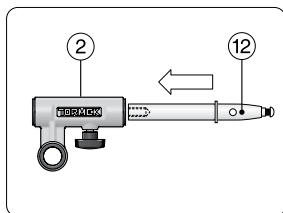
These are sharpened with the SVD-186 R Gouge Jig. There are various types and sizes of exchangeable cutters for hollowing and scraping. The holes vary from 5–8 mm. Due to the shoulder on the shaft they can all be mounted with the same screw. The cutters can be sharpened to their existing shape or to a new shape.



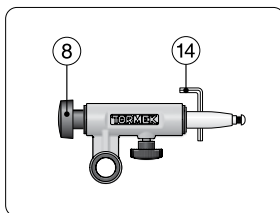
## Mounting the jig



Loosen and remove the screw (8) and the tool holder (1).

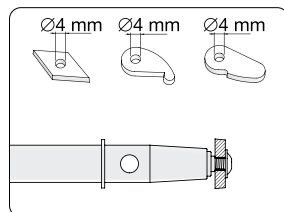


Insert the shaft (12) into the sleeve (2). Note: Position the sleeve according to the picture!

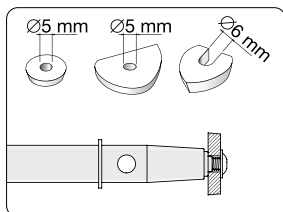


Mount the screw (8). Lock the shaft with the hex key (14) to tighten.

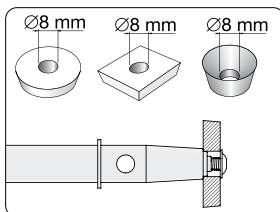
## Mounting the cutter



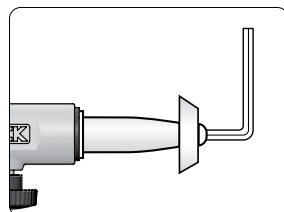
Cutters with 4 mm ( $\frac{1}{8}$ " ) holes are centered by the M4 screw.



Cutters with 5 and 6 mm ( $\frac{3}{16}$ "– $\frac{1}{4}$ " ) holes are centered on the first shoulder on the shaft.

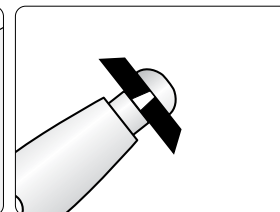
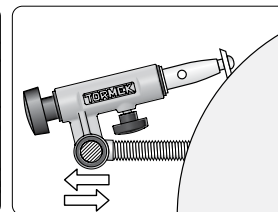
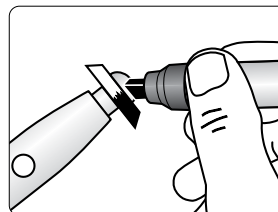


Cutters with 8 mm ( $\frac{5}{16}$ " ) holes are centered on the second shoulder on the shaft.



Use the hex wrench (14) that comes with the jig to tighten or loosen the bolt.

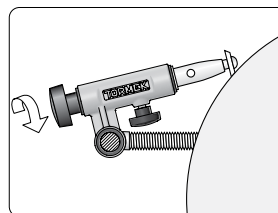
## Setting the edge angle



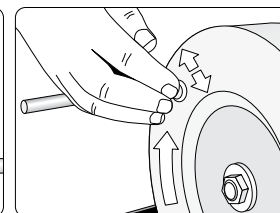
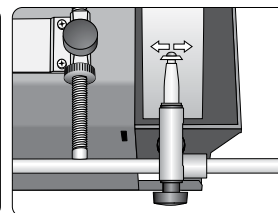
Use the Tormek Marker Method (page 13) during the first sharpening. Set the Universal Support so that the grinding wheel touches the entire width of the bevel when rotating it by hand. At the correct setting, the grinding wheel removes the coloring along the entire width of the bevel.

If the cutter is not round, the edge angle will not be exactly the same all around. This will have a minimal effect on the woodturning.

## Sharpening



Rotate the jig during the sharpening to achieve an even grinding around the whole circumference. Slide the jig side to side on the Universal Support to make sure that the grinding wheel wears evenly. Use a light pressure for the best result.

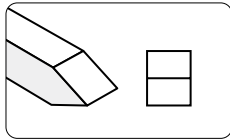
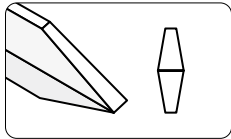


Dismount the cutter and smooth the back on the machined, flat outside of the grinding wheel. Move the cutter up and down in order to use the whole surface of the grinding wheel.

**Important** Do not hone these small tools on the honing wheel! They can easily get caught on the surface and ruin the honing wheel.

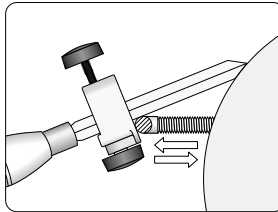
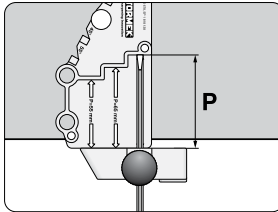
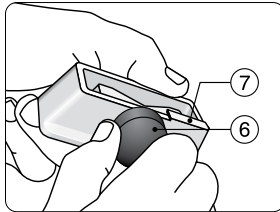
**Tip** When smoothing the back of the cutter, hold it against the grinding wheel before you start the machine. This is easier and you will not risk dropping it into the water trough!

## Parting and Beading Tools



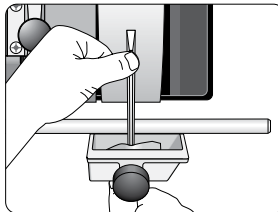
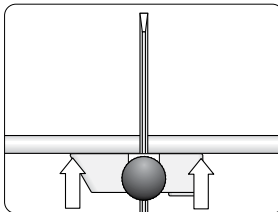
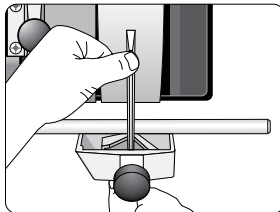
These tools have two symmetrical bevels. Using the SVS-50 Multi Jig with the open seat enables the sharpening of both bevels without re-mounting the tool.

### Settings

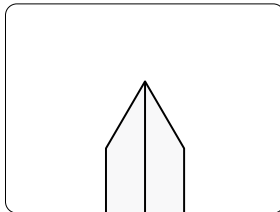


Lock the seat with the bottom screw (6) in the straight position (0°). The seat should touch the stop (7). Mount the tool with a protrusion (P) 75 mm using the TTS-100 Turning Tool Setter. Set the edge angle by adjusting the Universal Support. Use the Tormek Marker Method (page 13).

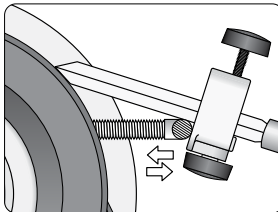
### Sharpening



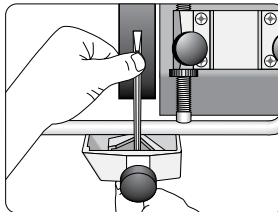
Press with your fingers close to the edge for best control while your other hand ensures that the tool is vertical. Ensure that the entire flange of the jig is in contact with the Universal Support. When the first side is sharpened, turn the tool around whilst still mounted in the jig and sharpen the other side.



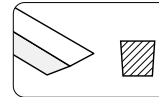
Sharpen until the bevels are symmetrical.



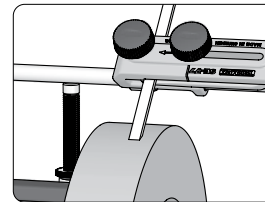
Move the Universal Support to the honing wheel side and hone the bevels with the tool still mounted in the jig. Use the Tormek Marker Method to make the setting.



## Bedan Tools



These tools have a flat under side and a single bevel like a wood chisel. They are best sharpened with the SE-77 Square Edge Jig.

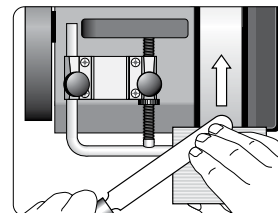


By positioning the Universal Support vertically, the rotation of the grinding wheel will help press the tool towards the grinding wheel. Another benefit with this position is that you can keep the tool in the jig for honing.

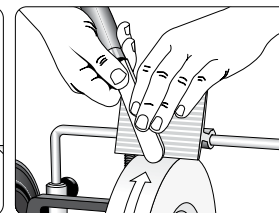
## Scrapers

Scrapers normally come from the manufacturers with an edge angle between 70° and 80°. Some turners prefer a smaller angle – 60° or even 45° – and will re-grind their tools. The SVD-110 Tool Rest can be mounted either vertically for grinding towards the edge or horizontally for grinding away from the edge. In the vertical mount the rotation of the grinding wheel presses the tool towards the Tool Rest. For edge angles larger than approx. 60°, vibrations can occur. We then recommend grinding with the Tool Rest mounted horizontally. In the horizontal mount you need to press the tool towards the Tool Rest to prevent the grinding wheel from lifting the tool. This risk can be decreased if you round off the heel of the tool.

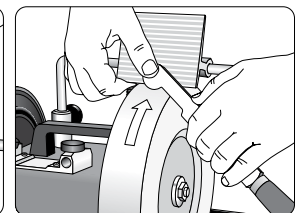
### Recommended positioning of the Universal Support



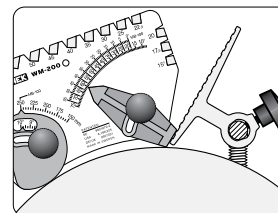
Horizontally for edge angles larger than approx. 60°.



Vertically for edge angles up to approx. 60°.

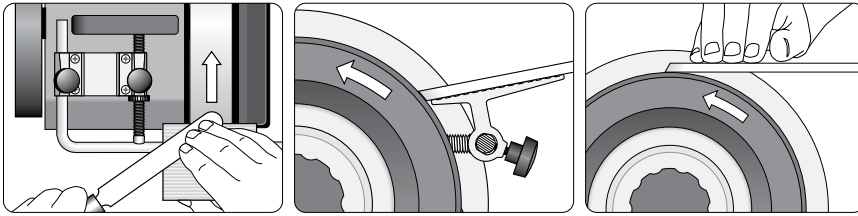


### Setting the edge angle



If you are satisfied with the existing edge angle, use the Tormek Marker Method. If you want a new and specific edge angle, use the WM-200 AngleMaster.

## Sharpening and honing



Press with your fingers close to the grinding wheel for maximum control.

Move the Universal Support and the Tool Rest to the honing wheel. Use the Tormek Marker Method when setting the angle. Hone away the burr, free-hand, on the top face and hold the tool at a tangent to the wheel.

**Tip** Use an extra Universal Support (available as an optional accessory) with the SVD-110 Tool Rest locked into position at the desired edge angle. This will save you set up time during the next sharpening.

## Keeping or honing away the burr?

A scraper, unlike other tools, removes wood by *scraping* instead of *cutting*. A scraping action is harsh on wood. Fibres are pulled out of the wood leaving a rough surface that needs to be sanded. Some turners do not hone away the burr as it works like a "cutting edge" on the top of the large bevel.

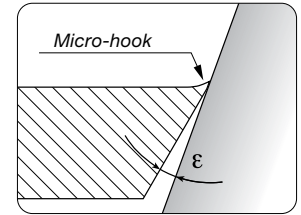
The burr that is left from *high speed dry grinding* consists of a sintered (melted) mixture of steel waste and abrasives from the Grinding Wheel, plus the steel that was pushed upwards by the Grinding Wheel. The sintered mixture wears away when you start turning, leaving the residual edge. Some argue that the burr changes the action of the scraper causing it to work like a *cutting tool*.

However the burr is very uneven and coarse, and it is not durable. Therefore, you need to regrind frequently to make new burr. This takes time from your turning and shortens the life of your tool. Another drawback to keeping the burr after high speed dry grinding is that the particles removed from the burr, i.e. the mixture of steel and abrasives, can get stuck in the wood and cause further wear of the edge. The burr that is left after *low speed Water Cooled Grinding* does not contain any loose particles. It is just pure steel and is therefore smoother, sharper, and more durable.

## Burnishing the edge

There is an even better method to make a scraper work as a cutting tool. If you press with a hard steel rod towards the bevel at an angle ( $\epsilon$ ) of approx. 5°, the tip will bend upwards creating a micro-hook. The pressure from the rod compresses the steel, smoothes the small scratches from the grinding wheel, and makes the hook shiny.

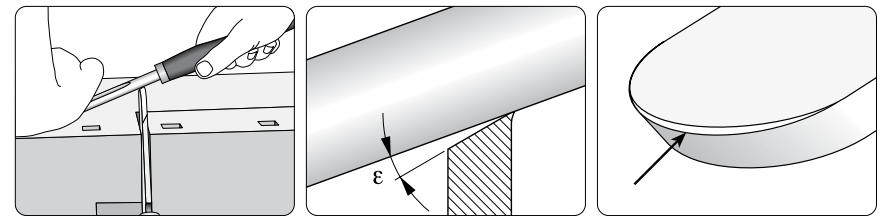
The result is an even, sharp, and durable micro-hook; or a *cutting edge*. The method is called *burnishing* and gives you a better and more durable hook than a burr. When using the burnishing method, you should grind the bevel as evenly and finely as possible. *Hone the bevel as well as the top face* to get a sharper and more durable cutting edge.



*Burnishing the edge. The tip of the edge is pressed upwards forming a small edge hook. (Here enlarged for clarity)*

There are special burnishing tools available on the market. You can also do the burnishing by using a 12 mm (1/2") bowl gouge. Clamp the scraper in your workbench vice so you can hold the burnishing tool steadily with both hands.

You must not burnish too heavily so that the hook is bent backwards. The tip of the hook must point upwards to work. You should also adjust the pressure according to the edge angle. A scraper with a large edge angle (70–80°) requires a larger pressure than one with a smaller edge angle. If you use the scraper for *final smoothing*, e.g. the inside of a bowl, you should pay extra attention to honing to leave the finest possible surface on the wood.



*Clamp the scraper in your workbench and support one hand on the bench. Use a light pressure. Press the gouge on the bevel at an angle ( $\epsilon$ ) of approx. 5°. The hook is exaggerated for clarity. It can be noticed how the burnishing has compressed the tip of the edge to a smooth and shiny surface.*

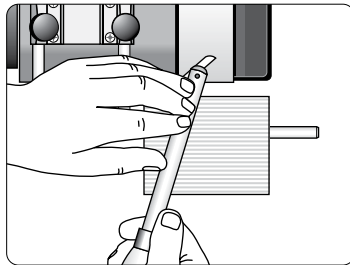
The function of the scraper after burnishing depends on how large a hook you put on the edge. The size and shape of the hook depends on the edge angle of the scraper, the burnishing angle ( $\epsilon$ ) and how hard you press the burnishing tool.

You should not put too large of a hook on the scraper, as the tool will be difficult to control, and you can risk digging into your work. Remember that you now actually have a *cutting tool* instead of a scraper!

## Hollowing Tools

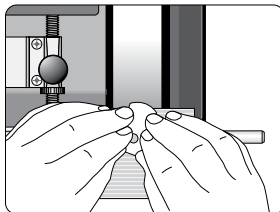
Hollowing Tools are sharpened on the SVD-110 Tool Rest with the Universal Support placed horizontally.

1. Mount the tip on the shank as shown. Position the Tool Rest as closely as possible to the grinding wheel, but not closer than the protrusion of the tip.
2. Set the edge angle by adjusting the Tool Rest using the Tormek Marker Method (page 13).
3. When sharpening, hold your fingers close to the grinding wheel and press downwards ensuring that the shank stays in contact with the Tool Rest. Follow the shape of the tip.

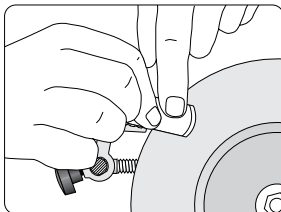


## Larger Cutters

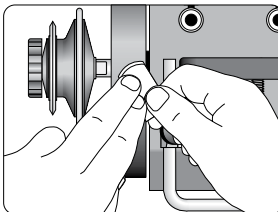
These are sharpened using the SVD-110 Tool Rest. The Universal Support can be placed vertically or horizontally. Press with your fingers close to edge for best control.



Position the Tool Rest close to the grinding wheel. Use the Tormek Marker Method to set the edge angle. Press with your fingers close to edge for best control.



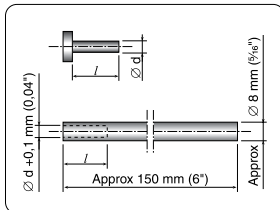
Flatten the back. Rest your hand on the Tool Rest. Ensure that the entire flat side is in contact with the grinding wheel.



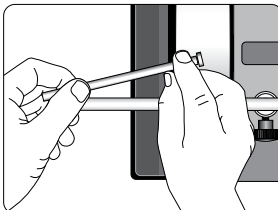
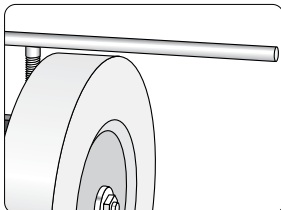
Remove the burr and polish the bevel on the Honing Wheel. Press with your fingers close to the edge for best control.

## Cutters with a Shank

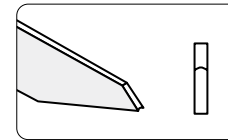
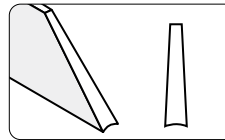
These cutters do not fit in the SVD-186R Gouge Jig as there is no hole to mount them. You can sharpen them by using a round rod with a hole for the shank.



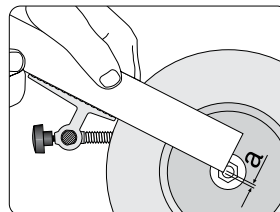
Make a rod with the dimensions as shown. The hole should be approx. 0.1 mm (0.04") larger than the shank so the shank can rotate freely. Position the Universal Support close to the grinding wheel. Hold the rod as shown. Let the grinding wheel rotate the cutter so you achieve a slight sharpening effect. Do not allow the rotation to stop; otherwise, the sharpening is done on one spot only.



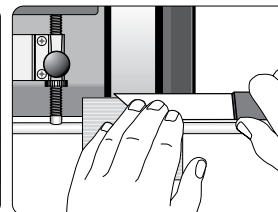
## Thin and Flat Parting Tools



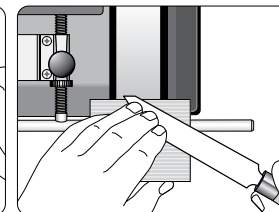
Use the SVD-110 Tool Rest and position it close to the grinding wheel. Align and lock the Tool Rest so its surface points slightly under the center of the grinding wheel. The distance (a) should be approx. half the tool's thickness. Press with your fingers close to the edge so that the grinding wheel does not pull the tool upwards.



Align the Tool Rest.



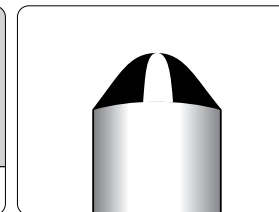
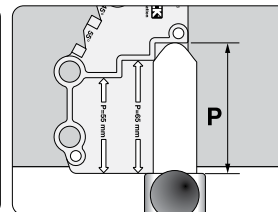
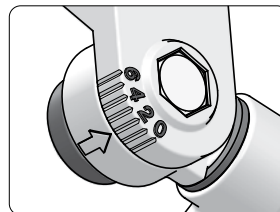
Thin parting tool.



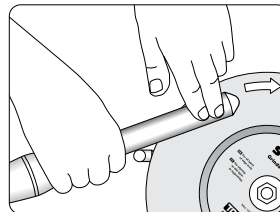
Fluted parting Tools.

## Elliptical Spindle Tools

If the edge is heavily worn or damaged, you should shape it using the SVD-186R Gouge Jig. Jig setting (JS) on No 1 and a 75 mm (3") protrusion (P) match the geometry of the Sorby Spindle Master. Use the Tormek Marker Method for setting the edge angle (page 13). Light touch up sharpening is carried out on the side of the grinding wheel.



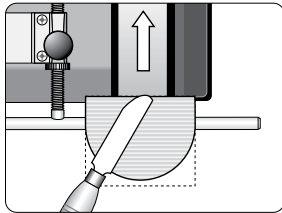
Set the jig (JS) on No 1. Mount the tool with 75 mm protrusion (P). Set the edge angle with the Tormek Marker Method (page 13).



Light touch up sharpening. Sharpen the flat face on the side of the grinding wheel. Keep the tool moving so the grinding wheel wears evenly. Hold it absolutely flat against the grinding wheel so you do not round off the tip. Hone and polish on the honing wheel.

## Micro Tools

These tools are shorter and have smaller dimensions than full size tools. Most are sharpened in the same way as the full size tools. When sharpening scrapers you can modify your SVD-110 Tool Rest so that the handle does not hit the rest.



*Trim the surface of the SVD-110 Tool Rest so that the handle moves freely.*

## Our Grinding Wheels

| <i>Grinding Wheels for the Tormek T-8 and Tormek T-7</i>                            |                                                |                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <b>SG-250<br/>Original<br/>Grindstone</b>      | Ø 250×50 mm. Developed to combine efficient steel removal, smooth surface finish and long life. Fits Tormek T-8, Tormek T-7 and previous Tormek models with a 250 mm stone diameter.                                                        |
|  | <b>SB-250<br/>Blackstone<br/>Silicon</b>       | Ø 250×50 mm. Delivers fast steel removal on HSS, exotic alloys and tools with large bevel area. It can also touch up carbide. 220 grit. Fits Tormek T-8, Tormek T-7 and previous Tormek models with a 250 mm stone diameter.                |
|  | <b>SJ-250<br/>Japanese<br/>Waterstone</b>      | Ø 250×50 mm. Provides an extra fine surface finish on hand tools where a minimum of steel removal is needed. Fits Tormek T-8, Tormek T-7 and previous Tormek models with a 250 mm stone diameter.                                           |
|  | <b>DC-250<br/>Diamond Wheel<br/>Coarse</b>     | Ø 250×50 mm. Gives an efficient steel removal and rapidly repairs a dull or damaged edge. 360 grit. Fits Tormek T-8, Tormek T-7 and previous Tormek models with a 250 mm stone diameter.                                                    |
|  | <b>DF-250<br/>Diamond Wheel<br/>Fine</b>       | Ø 250×50 mm. The ultimate all-round wheel. It combines efficient steel removal with smooth surface finish. 600 grit. Fits Tormek T-8, Tormek T-7 and previous Tormek models with a 250 mm stone diameter.                                   |
|  | <b>DE-250<br/>Diamond Wheel<br/>Extra fine</b> | Ø 250×50 mm. Gives an extra fine surface finish. Especially suited for carving tools and knives when the need for steel removal is minimal. 1200 grit. Fits Tormek T-8, Tormek T-7 and previous Tormek models with a 250 mm stone diameter. |

| <i>Grinding Wheels for the Tormek T-4 and Tormek T-3</i>                              |                                                |                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | <b>SG-200<br/>Original<br/>Grindstone</b>      | Ø 200×40 mm. Developed to combine efficient steel removal, smooth surface finish and long life. Fits Tormek T-4, Tormek T-3 and previous Tormek models with a 200 mm stone diameter.                                                        |
|  | <b>SJ-200<br/>Japanese<br/>Waterstone</b>      | Ø 200×40 mm. Provides an extra fine surface finish on hand tools where a minimum of steel removal is needed. Fits Tormek T-4, Tormek T-3 and previous Tormek models with a 200 mm stone diameter.                                           |
|  | <b>DC-200<br/>Diamond Wheel<br/>Coarse</b>     | Ø 200×40 mm. Gives an efficient steel removal and rapidly repairs a dull or damaged edge. 360 grit. Fits Tormek T-4, Tormek T-3 and previous Tormek models with a 200 mm stone diameter.                                                    |
|  | <b>DF-200<br/>Diamond Wheel<br/>Fine</b>       | Ø 200×40 mm. The ultimate all-round wheel. It combines efficient steel removal with smooth surface finish. 600 grit. Fits Tormek T-4, Tormek T-3 and previous Tormek models with a 200 mm stone diameter.                                   |
|  | <b>DE-200<br/>Diamond Wheel<br/>Extra fine</b> | Ø 200×40 mm. Gives an extra fine surface finish. Especially suited for carving tools and knives when the need for steel removal is minimal. 1200 grit. Fits Tormek T-4, Tormek T-3 and previous Tormek models with a 200 mm stone diameter. |

## Questions and Answers

### ***Why does a Tormek edge cut more easily?***

Sharpening on a Tormek Grinding Wheel and honing on a Tormek Honing Wheel creates a very fine edge surface. A finer edge surface means a sharper edge, which cuts more easily.

### ***Why does a Tormek sharpened edge leave a smoother cut?***

Since a Tormek edge is finer and sharper, it cuts the wood fibres cleaner and leaves a smoother surface on the wood so there is less need for sanding.

### ***Why does a Tormek edge stay sharp longer?***

There are two reasons. An edge obtained from a high-speed dry grinder is serrated while the Tormek sharpened edge is more even and more resistant to wear. In addition, the Tormek edge will never overheat while sharpening and lose its hardness.

### ***Why is the Tormek method fast?***

The answer is the fast setting of the jigs and the exact repeatability. You just touch up the existing shape of the edge. Only a small fraction of the steel is removed. It is a myth that the Tormek System is slow. It has arisen because turners have not made a clear distinction between shaping and sharpening. Once you have ground the right shape on your tool, which you normally only need to do once, it is a quick job to touch up and hone the edge.

### ***How can the Tormek Grinding Wheels last so long?***

Since you just touch up the edge during each sharpening, there is little wear on the Grinding Wheels. Since the sharpness stays longer, you sharpen less frequently.

### ***Should I color the bevel when using the TTS-100 Turning Tool Setter?***

No. The Tormek TTS-100 Turning Tool Setter will automatically replicate the edge angle.

### ***Should I use slip stones after sharpening?***

Not for the bevel. The grinding wheel and the honing wheel give you a superior sharpness without slip stones. The flute on gouges is honed and polished on the LA-120 Profiled Leather Honing Wheel. You could alternatively use a slip stone, which matches the flute profile.

### ***Is the technique when shaping on the Tormek the same as on a bench grinder?***

No. You need to press harder on the Tormek. Press with your fingers close to the edge for the best effect. There is no risk to your fingers since the grinding wheel runs so slowly.

### ***How long does it take to shape a gouge or a skew on a Tormek?***

Shaping takes between 10 and 20 minutes depending on the original shape of the tool and on how much steel you need to remove. The extra minutes you might spend on the Tormek is a good investment to ensure the best performance of your expensive tool; you are sure that the edge will not be softened due to overheating and that the durability of the sharpness will not be affected. Bear in mind that you normally shape the tool only once. The time also depends on which Grinding Wheel you use. For faster shaping use the Blackstone Silicon or a Diamond Wheel Coarse.

### ***Can an HSS edge be affected with high speed dry grinding?***

Yes. It is well known that carbon steel is easily affected when overheated. This is also the case for HSS steel, but the critical temperature is much higher. The extreme end of the tip, which is very thin, can easily reach the temperature that will affect the temper. You can limit the heating by cooling the tool in water, but then there is a risk of micro cracks, which are invisible to the naked eye.

### ***Do I need a bench grinder?***

Not necessarily, but you can benefit from the fast steel removal for the initial rough shaping. With the BGM-100 Bench Grinding Mounting Set you can use the same precise Tormek jigs throughout the entire shaping and sharpening process.

You get the best of both worlds; the fast steel removal from your high speed bench grinder, and the fine surface from your Water Cooled grinding wheel and honing wheel – all in one jig system. Thanks to the patented design, the Turning Tool Setter works on any grinding wheel diameter. So you can go from a 6" wheel to a 10" grinding wheel and achieve the same shape.

### ***Will a low speed (4-pole) bench grinder eliminate the risk of overheating the edge?***

No. This grinder works without water cooling and the speed is still too high even though it runs at half of the rpm of a conventional 2-pole grinder.





