

ROTARY BLADE SHARPENING NEED NOT BE A GRIND

By James de Havilland

Rotary blades can be sharpened using a bench or angle grinder. Getting the job right, however, takes skill. Hurry the task and you can overheat the blade, making it more liable to damage. Get the sharpening angle wrong and you will compromise the quality of cut and almost certainly cause the mower to use more fuel.

Among the blade sharpening systems that will avoid this is the now well proven Bernhard Rotamaster 4000. Here we take a look at how it operates.

Developed from the Bernhard Rotamaster 3000 rotary blade sharpener, the 4000 model is much easier to set up for different types of blade. It also does a good job, the company fitting a 'SuperBlue' ceramic sharpening stone as standard. This is designed not only last longer than a traditional grinding stone but to also work at a lower temperature. This should ensure blade 'blueing' is eliminated.

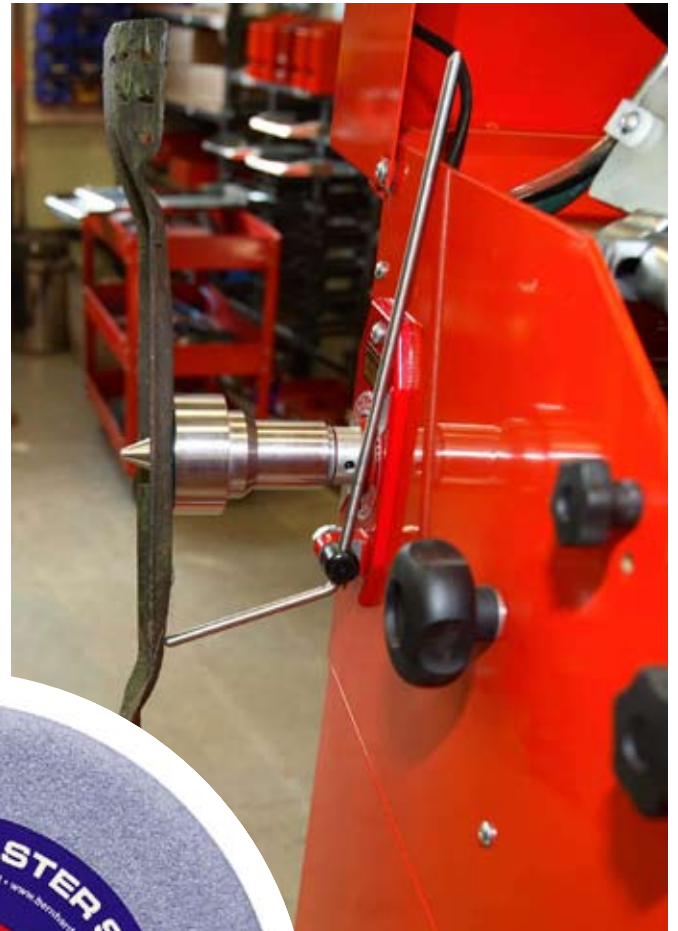
Once the Rotamaster 4000 has been set up, it will take up to 10 minutes for a really blunt and damaged blade to be properly sharpened. This will perhaps reduce to a couple of minutes if the blade has been regularly maintained.

Setting the machine to sharpen the 'light' end of the blade first enables the stop setting to be adjusted so that the heavy end has less metal removed by the time the process stops. This simple system evens up wear between the blades tips and so restores the balance.

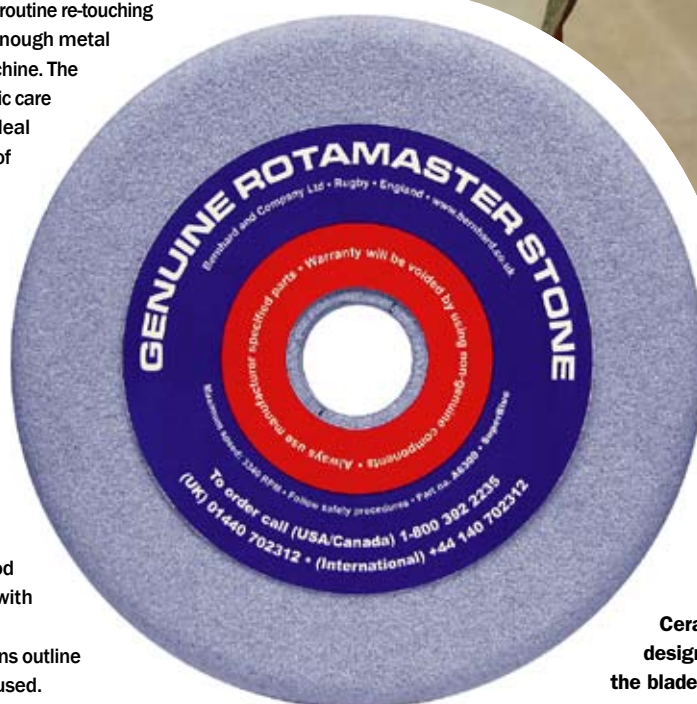
In trials, Bernhard has found routine re-touching allows a typical blade to have enough metal for 12 plus trips through the machine. The same blade receiving only periodic care will actually wear out a great deal faster. The hardness or temper of the original blade is protected by the integral cooling system and the use of a ceramic grindstone. When setting up, the aim is to ensure the blade is never allowed to blue.

The Rotamaster 4000 retails for £3,527. Sounds a tidy sum compared to an angle or bench grinder. The point is this is a precision grinding tool. A modern rotary mower can deliver a really good finish. But only when it is run with properly maintained blades.

The following picture captions outline the way the unit is set up and used.



A magnetic coupling allows the blade to be quickly checked for balance, the metal bar providing fixed datum to check blade is not bent. Dirty blade pictured should have been cleaned prior to balance check.



Ceramic SuperBlue grinding stone is designed to reduce the chance of damaging the blade by overheating it during the grind.



Rotamaster 4000 is able to accommodate most types of rotary blade, the machine's carriage incorporating a simple spring clamp with adjustable bar rest to keep it securely retained as it is sharpened.



For added security, a quick thread nut secures the blade through its central bolt hole. Note how the tip of the blade rests on a cross member. This provides support as the carriage moves back and forth. Blade sharpened light end first.



The distance the carriage travels across the face of the grind stone is set by setting manual stops. Once set for a specific blade type, this setting can be retained. Micro switches trigger the pneumatic ram powering the carriage to change direction.



Doing a dummy run with the carriage pushed in and out by hand is recommended. This allows the amount of travel to be fine tuned to suit the blade. Note also the adjustment incorporated for the rear blade support.



The carriage can be angled to allow the degree of blend grinding to be adjusted. This feature enables sharpening to be concentrated more at the blade tip and also reduces material removed from the blade shoulder, so retaining the blade's strength.



A simple jockey wheel can be lowered onto the blade so the grinding wheel follows a ramped profile. Simple and effective, it ensures consistent sharpening across the area to be ground.

Fine tuning

Although it may take as long as 5 minutes to set up the machine when getting used to it, practice will see this time more than halved, even when clamping in a blade type that has not been encountered before. Once the blade is clamped in place and set to match the sharpening angle recommended by the mower manufacturer, the Rotamaster 4000 can be left to automatically sharpen the blade.



The black handle to the left is used to manually track the carriage during initial setting, the adjacent switch setting the auto track mode to the left or right according to how the blade is handed. Flow control determines the quantity of cooling water pumped to the ceramic grindstone.



An enclosure is lowered to cover the action when the blade is being sharpened, a vacuum drawing most of the waste away from the work. Water is used to cool the blade to prevent it from overheating. Ceramic grindstone claimed to virtually eliminate the chance of 'blueing'.



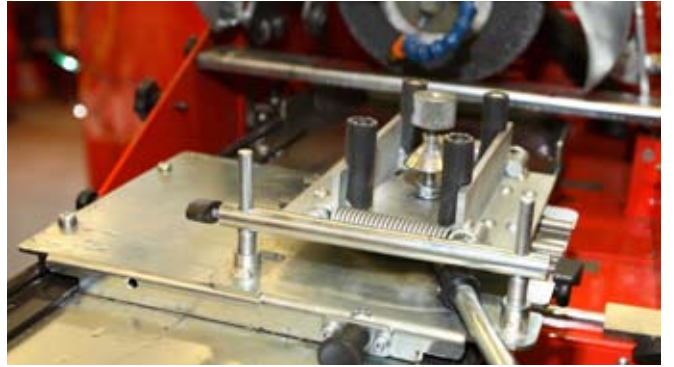
Main controls on the front panel are self-explanatory, the big red panic button stopping everything in one simple action. Thoughtful fuse position is an example of the detail that has gone into the design of the machine.

Coping with different handed blades

The carriage has two separate positions to allow left- and right handed blades to be sharpened, the grinding wheel flipping to work on either side. The key travel settings can be retained for pairs of handed blades, but any blend grind settings will need to be re-set when switching over.



The carriage is set to the left for right-handed blades.



It is then moved over to the right for left-handed blades.



The direction of grind wheel also needs to be reversed...



...to accommodate the blade type.



Detail shot of ground blade, showing concave grind. According to Bernhard, this produces a better quality of cut. Bernhard has designed the Rotamaster 4000 so it can achieve the correct cutting angle for a specific blade.