

At the grindstone

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Have you ever wanted to know the benefits of grinding but were too afraid to ask? Ben Taylor, Technical Training Manager from Bernhard Grinders, gives you a guide to the practice and answers key questions



What is grinding? Do we need it? How can blade sharpness affect the health of turf? These are just some of the key questions many turf professionals ask about grinding – read on for the answers!

Any agronomist or Master Greenkeeper will tell you that a sharp blade cuts cleaner. In fact you don't have to be an agronomist to know that. We have all used a blunt knife at some time or another, and we know how it hacks and tears at whatever we are cutting, be it bread, hair or grass. The simple fact is a clean cut is just that. Clean.

Surgically sharp mowers slice cleanly through grass blades, severing the tissue cleanly and with minimal damage. Because all the grass blades are the same height and uniform in their appear-

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ance, the overall definition of the turf is improved and the ball roll is smoother, more consistent and often faster.

How a grinder works

To help you understand the process let's look at the two different components of the cutting unit: the bedknife and the cylinder (reel)

Spin or relief?

Spin grinding puts the cutting edge on the leading (front) edge of the cylinder blade and makes the reel cylindrical and even.

Relief from friction between the bedknife and cylinder is also essential. A 'no-contact' set up gives relief from this friction, whereas a relief grind (or blade thinning) removes metal from the back of the cylinder blade so there is less metal to come into contact with the bedknife, also reducing friction.

The bedknife

The bedknife is the most important part of any cutting unit and although it looks simple, is actually a very complex piece of steel. When you have your hair cut (if you have any!) the hairdresser doesn't just take the scissors and cut randomly away at your hair.

What they do is use one hand to hold on to the hair, at equal height and present the hair into the scissors.

The bedknife in a cutting unit is the hairdresser's hand. It gathers the grass and holds it in to position until the reel blade comes around to cut the grass evenly.

The bedknife is not just a flat piece of steel that needs to be sharp to cut grass. In fact, the bedknife is only sharp as a by-product of why you actually grind it. The main

reason for grinding a bedknife, is to create or maintain two angled faces on it, which make the difference as to whether the grass is cut or not.

The first of these, the "top face" angle, is ground on the top of the bedknife as its name suggests. It is a negative angle which slopes backwards, away from the actual point of cut on the unit.

This is ground to allow the grass to eject away from the point of cut and clear from the grass coming into the mower. The degree of angle required varies, depending on the size and condition of the grass being cut.

Obviously the clippings from a golf green are tiny and only require a very small angle. Once this angle becomes worn and therefore creates a narrower gap, the grass isn't ejected correctly and hangs around the cutting area, clogging the point of cut and therefore not allowing the incoming grass to be cut cleanly and leaving a bad finish.

This is the point at which the untrained operator would "tighten" the cutting unit down, bringing the reel and bedknife closer together to try and improve the cut. What they are actually doing is wearing the bedknife angle even more, closing the ejection gap even more and making the whole process worse.

The second angle is known as the front face angle. If the bedknife is the most important part of the mower, then the front face is the most important part of the bedknife, so good maintenance of this is critical.

The front face is simply a ground level even face on the front of the bedknife. It's there simply to push the grass up evenly and stand it up in front of the reel blades as the cutting unit moves forward. This is the 'hairstresser's hand'.

The front face needs to be flat and even. If the face becomes worn or rounded, which it will do over time because grass and especially top-dressing are very abrasive, then grass which is designed to grow horizontally rather than vertically such as creeping bentgrass will not be presented evenly toward the cutting blades of the reel.

It is essential that this front face is maintained so it can carry out its job correctly. This can be done with a file, a facing tool or with a precision grinder while renewing the angle on the top face.

The cylinder

Often overlooked are the reasons we spin grind the reel. Yes it is to make each blade sharp, but it is

also to make it cylindrical and even. There is no point having all the blades sharp, if only every third blade cuts because they are not of even height.

The importance of an even reel

We are often asked, when do you know a reel is finished grinding? The answer is not when it's sharp, but when it's even.

A reel that is maintained and ground more regularly is going to be easier and quicker to grind than one that is only ground once a year because it is going to be more even. The actual sharpening of a blade only takes seconds.

Sharpening is an essential process that has to be done regularly in order to guarantee golfers who judge the course the playability they demand today, so these machines have to be very simple to use, and fast and accurate in order to deliver such high standards and save the course money.

Let's look at what happens if you cut grass with blades that are not sharp enough.

Your cutting machine will tear at the grass leaving uneven and poorly cut blade tips.

These ripped and ragged blades of grass will bleed losing plant moisture and nutrient.

This also leaves the tips open and vulnerable to disease from spores such as Fusarium and other leaf-spot diseases.

The moisture lost through damaged tips has to be replaced. Repairing and regenerating plant health requires accelerated growth and that means a greater demand for food, which often means more fertiliser and water too.

Both these are very costly to supply and to deliver.

"I don't have the budget" is the cry we hear constantly, but sharpening need not cost the course money.

Savings come from two main areas – agronomic and mechanical.

Agronomically speaking, clearly a reduction in the use of water, fertiliser, fungicide and top dressing can be a massive gain for the club.

Not only are these expensive consumables reduced but also the labour costs of handling the materials, electricity to pump the water and places to store the chemicals – can all be dramatically reduced.

Mechanically, trials at several training colleges have demonstrated fuel consumption reductions of between 17% and 21% – massive in today's competitive climate.



BERNHARD GRINDERS - Who are we?

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Our business dates back over 150 years. We are an unusual company insofar as we are horticulturalists.

We don't just sell grinders, we believe strongly in education, working alongside turf professionals, course and club managers, associations and technical colleges in an ongoing programme of education and development.

We give presentations and seminars all over the world, and we have a dedicated training centre at our new factory in the UK where we welcome visitors from across the globe.

We are involved with many turf associations and support the IGCEMA Certificate Programme and GTC as Quality Assured trainer Providers.

Translate fuel reduction into mower life, engine wear, fewer parts to be replaced and so on – and it soon becomes clear that the benefits are very attractive to the bottom line profits of the course. Also, of course, if you burn less fuel, you create fewer emissions.

Now add the improved appearance and better playability factor into the mix and you have customer appeal and satisfaction. And that affects revenue.

Finally you have to think about 'cost of ownership'.

Bernhard Grinders are well known for their build quality and long life. Always evaluate the speed, ease of use and accuracy provided by our machines, but now add the life expectancy of fifteen years of trouble free use and a warranty of ten years and you can see the cost of owning Bernhard grinders can be less than £300 per month.