

GRINDING OUT

Hugh Tilly in his sharp suit and newly sharpened pencil was sent out to examine the world of grinding.

Successful cutting equipment

Everyone agrees (don't they?) that mowers, greens mowers in particular, need to be kept 'razor' sharp, but there is significant dissension over how this should be done. Most ride-on hydraulic mowers have built-in back-lap facility, but there are electric drives for pedestrian and trailed cylinder mowers which enable these to be quickly and easily 'touched-up' by back-lapping. But not everyone believes that back-lapping is a good idea, in fact, there are some who believe that back lapping is an anachronism, that it increases drag and considerably reduces the life of both bottom blades (or bed knife) and cylinders – most of these people either sell grinders or have a grinder. Never-

theless for many greenkeepers back lapping is the quickest and most economic way of resharpening, using a grinder to put the correct edge back.

Nor is there agreement over whether cylinders (reels in American), should be relief, single blade or spun ground, although there is a change in perception in this and an increasing number of converts to relief grinding – single blade grinding would seem to all intents to be the same as relief grinding. For any greenkeeper to make a decision it is necessary to know what each process involves. So first a little explanation of the terms and methods, and a diagram. Of course the final test is the effect on the grass and whether it can be cut cleanly. The

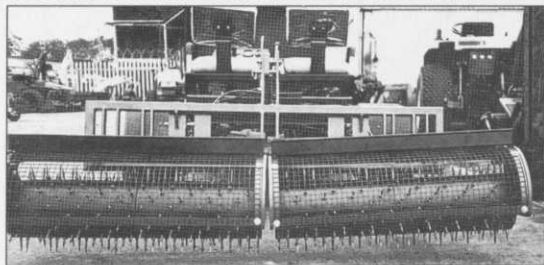
universal test is to cut a piece of paper. This is, of necessity, done by hand which is slightly different to operating with grass, on the ground, but still... The accepted standard seems to be 'ordinary' copy paper, but perfectionists will state 'bank' – 35gms – paper which is thinner, or even cigarette paper.

Greenkeeper International has spoken to several Course Managers, Head Greenkeepers or their Mechanics, First Assistants about what they were trying to achieve and their means of achieving it. There are now only two UK manufacturers of cylinder and bottom blade grinders, (and no obvious importers), and an increasing number of clubs have invested in one of these (or

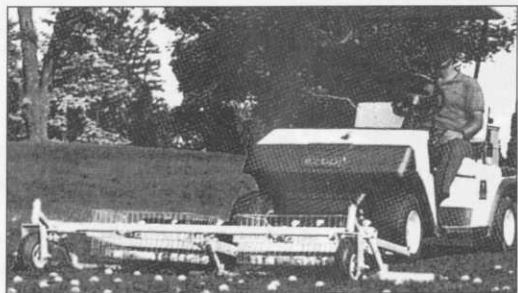
those of the two recent ex manufacturers BRL and Supreme Mowing, nevertheless there are still many clubs which send their mowers away and rely on back-lapping to keep an edge on their blades and cylinders.

In simple terms spin grinding involves grinding the cylinder while it is revolving – this gives a face behind the cutting edge which follows the circumference of the cylinder, whereas relief grinding means each blade is cut so that the face is angled back from the circumference. Single blade grinding means grinding each blade separately without specifying the relief. Back lapping is essentially a spin grinding process. Whatever process is used the aim is to produce clean sharp

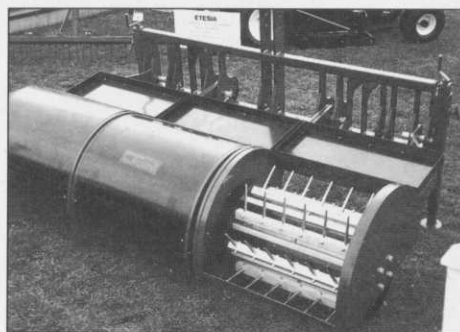
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Jim McKenzie, left, Course and Estate Manager and Patrick Callaby, Head Mechanic with Express Dual grinder at Celtic Manor

edges to both cylinder and bottom line. Some relief angle is automatically produced by the relative locations of bottom blade and cylinder but there is no formula for this and each manufacturer has his own idea of what is "optimum" but extra relief can be introduced by how cylinder and bottom blades are ground. How much varies by make and model – and a greenkeeper/mechanics past experience, but most people rely on the figures provided by either mower or grinder manufacturer

The advantage of providing relief is that it gives better clearance behind the cutting edges thus reduces the power required to drive the cylinder and the heat build up. Relief grinding should (perhaps) be followed by a light spin grind or back lap to ensure concentric surfaces and an optimum match of cylinder and bottom blades. The disadvantage of a lot of relief is that edges will (perhaps) blunt more easily and

quickly. On the other hand it is possible to back-lap more often or for longer before all the relief has been ground away. Back-lapping should ensure optimum sharpness of the edges, but it will remove relief and extend the contact area of the blades, thus increase power requirement and heat. Top dressing – sand – is abrasive and so quickly removes any cutting edge and wears down the blades.

Most greenkeepers aim for a minimum of back-lapping and an increasing number have bought a grinder to enable the club to sharpen their mowers more often. Frequent light sharpening is far better than an infrequent heavy sharpening. Having to screw the cylinder tight to the bottom blade to get a good cut leads to rapid heat build-up which may destroy the temper on the blades or even distort them. Most modern grinders will both spin and relief or single blade grind, and some will sharpen

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both cylinders and bottom blades on the same machine. Older machines may not be able to be adapted to the latest requirements such as in-situ grinding, where the cylinder and perhaps the bottom blade do not have to be removed from the machine for sharpening. There are also attachments for getting the mower or cutting unit up on the machine for in-situ grinding.

The Celtic Manor Hotel, Golf & Country Club with Atterton Ellis Express

With a third course now in construction things at Celtic Manor have to be 'right' – and mowing is only one aspect where Course and Estates Manager Jim McKenzie expects the best. He sees Celtic Manor's workshop as a maintenance facility, and justifies two mechanics in it. But theirs is not a 'fire fighting' job – repairing machines that go wrong – they are expected to be active in ensuring that machinery is set

right and produces its optimum performance before it goes out on the course.

As regards mowers, all the cylinder mowers, (or reel mowers they are mostly Toro), are checked for 'cut' daily and are resharpened every three to five weeks. This requires a comprehensive facility and Celtic Manor certainly has that – built specifically with wall level light and ventilation, and fume extraction. For grinding they have an Atterton & Ellis Express Dual with the attachment for relief grinding and an Anglemaster for bottom blades and these machines served for the exclusive use by trained personnel and for mowers so excluding the possibility of misuse or abuse.

The machines are fitted in the main building in the walled maintenance bay and not separated as Patrick 'Cal' Callaby, Head Mechanic likes to see and hear the grinder when it is working. Jim also said that it is essen-

tial that whoever does the grinding is always aware of what is happening and so should not be called away and detained. The grinders have automatic traverse. Celtic Manor has estimated that currently it has 70 mowing cylinders to maintain.

Cal is also adamant that the machines are only used for their intended purpose, so that the stones remain true and unblemished. A line is painted round each machine in the workshop indicates the danger area – a simple health and safety feature – and is intended to keep the operator aware of his need to be conscious of the risk when venturing within working distance of each machine.

The Express Dual has in-situ ability and a lift table to raise mowers and units to working height this table is used to raise pedestrian mowers to a convenient height for their daily check. The machine was also bought with the relatively new relief

grinding kit and the club's aim is to spin grind during the season and then to overhaul each machine during the winter and to relief grind the cylinders. Cal said that this relief will then be removed progressively during the next season. He intends to take the manufacturer's suggestions for the angle of relief to be ground in. In-situ ability was an important feature in selecting the A & E machine as it is not seen as practical to dismantle the cutting mechanism each time before sharpening. The Express Dual is normally kept set up for grinding pedestrian mowers and the fittings do not have to be removed to allow the cutting units of other machines to be ground.

The Anglemaster is seen mainly as a stand-by machine as most bottom blades are replaced rather than sharpened. However some part worn blades are kept in case an almost new blade has to be replaced having been

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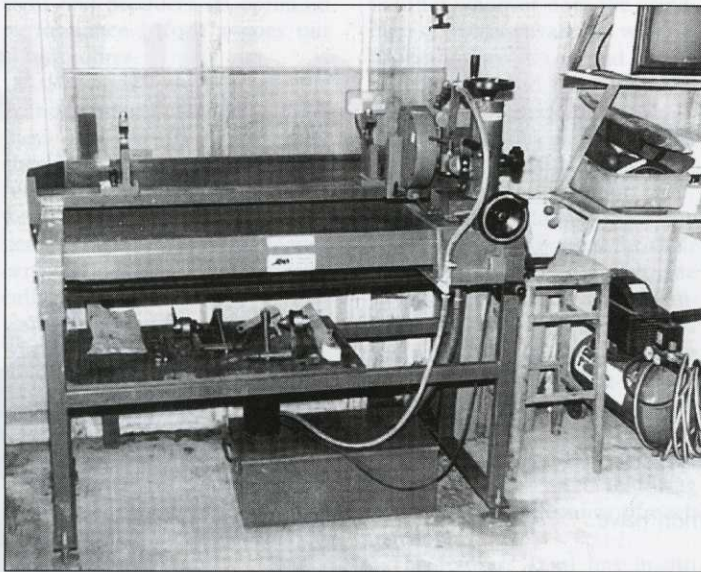
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notched by a stud or similar foreign body. It is admitted that this may be extravagant but the view is that bottom blades are relatively cheap, and a high priority at Celtic Manor is to maintain the 'look good factor' in the belief that this equates to 'feel good' and leads to actually 'being good'.

The club carries over £8,000 worth of parts in stock but this is seen as an important insurance, and perhaps it relates to the past when the supply of parts was not good. Another perspective to this is that the club will soon have three courses and the building and perhaps some re-building of these places extra emphasis on the maintenance facility. At Celtic Manor, Cal insists that all cylinders are installed accurately, thus bearings or bottom blade carrier are packed if and as required to ensure that each cylinder relates correctly to the carrier and bottom knife – he commented upon how inaccurate this can be on supposedly new machines.



Eric Hunter Grinders - Juno 36" at Taunton & Pickering Golf Club

Toro has now appointed Ted Hopkins of Wentloog in Gwent as dealer, he is both more active and more local to Celtic Manor than their previous Toro dealer.

Taunton & Pickering Golf Club with a Eric Hunter Grinders' Juno

Taunton bought a Juno grinder about two years ago because they

found themselves with time to spare in the winter and the club considered it cost effective to buy a machine which would allow them to undertake their own maintenance and sharpening during the 'off' season. Taunton and Pickering is a private 18 hole club built on clay overlying rock without drainage, and therefore it has times when the course has to be closed.

The greenkeeping staff of five includes Head Greenkeeper Roger Bale, plus one part-timer who concentrates on cutting banks. Thus with time at a premium all greens and tees are cut using triples while a Ransomes Commander (5 gang) is used for the fairways. The Jacobsen Green King with hydraulic cylinder drive is back-lapped about once a month while tees and fairway mowers are not re-sharpened at all during the season. The eventuality of hitting a rock or other 'hard' object has either not occurred or had not been consid-

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ered, however, although to most people having to dismantle a cutting unit is seen as taking time and being a great nuisance, in point of fact it seldom proves to be too much of a problem nor take too much time when the necessity occurs and the alternative is to send the machine away. New bottom blades are normally fitted each year during the annual overhaul.

The Juno has proved to be extremely reliable and easy to use. It has been mainly used by one specific greenkeeper and he reported no problems in using the machine. Eric Hunter Grinders which provided the machine is proud of the training that they give new buyers and obviously this has been particularly effective, up to two days is allowed, while telephone support is always available there after. One of the major reasons for selecting the Juno was that it was particularly price competitive, furthermore one machine

handles both cylinders and bottom blades. However Roger said that by adding various options it was easy to upgrade the grinder, and he anticipated that the club would be upgrading the system, although at present he has no plans to change to in-situ or more frequent sharpening. Both in-situ and a hoist are available for the machine and can be retro fitted according to the makers.

One comment that Roger made was that when the club first began to undertake its own resharping it found 'all the problems' and how inaccurate past sharpening and aligning had been. This equates with the Eric Hunter's boast that his machines are exceptionally accurate and can produce cutting edges which can be set for a 0.002 inch (0.05mm) clearance. There is a large body of opinion that says cutting edges should never touch – a blade of grass is perhaps 0.2mm thick and can be cut cleanly

by a mower with a clearance of up to 4 thou. (0.1mm).

Other Golf Clubs

Greenkeeper International also spoke to Paul Bishop, Course Manager at Manor House Golf and Country Club at Castle Combe, expecting to find a Charterhouse 'Easy-lap' back lapping machine.

However Paul said that the machine had been stolen and has not been replaced but that since building the new greenkeepers' facility with its heightened security the club has bought and installed Atterton & Ellis Express Dual and Anglemaster machines to maintain their mowers. Paul said he had found the Charterhouse machine effective and it made back-lapping very easy. Mowers were back lapped every two or three weeks, however he felt that a full grinding facility was more efficient and the objective will be to relief grind in winter and to spin grind in-situ as

necessary during the cutting season. The club has a full time mechanic.

Ransomes since deciding to close its Supreme Mowing subsidiary will be making parts and service available from head office at Ipswich. While ceasing to produce grinders Ransomes will still produce and market Super-lap and Ecolap machines.

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