

Turfgrass Maintenance Mowers

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Both homeowners and professional turf managers have benefitted from technological advancements since 1830 when Edwin Buntin, an English textile engineer, invented the first mechanical mower. Yet, the basic



Vintage Reel Mower^a

principle on which Mr. Budding's machine was built is applied by engineers designing today's most advanced reel mowers. Modern mowing equipment is developed with operator safety, comfort and convenience; the environment; fuel efficiency; cutting quality; and value in mind.



Riding Reel Mower

Which Mower Is Best?

Several factors deserve consideration when deciding what type, size and number of mowers are needed to maintain turf. These include the

primary turfgrass species; cutting-height range; anticipated level of turfgrass quality; the size

^aThis vintage lawn mower, believed to have been made between 1840 and 1850, is very similar in design to those in the 1830s. It may be viewed at the Vintage Lawn Mowers Display, Milton Keynes Museum, Southern Way, Wolverton, Milton Keynes MK 12 5EJ. Published with permission, The Old Lawnmower Club based at the Milton Keynes Museum, TEL+44(0) 1908 316222 <http://www.mkmuseum.org.uk>

and topography of the landscape; the texture, depth, infiltration rate and water-holding capacity of the soil; available labor; and the number of obstructions, including trees, shrubs and 'hardscape.' Although most walk-behind and riding mowers are powered by gasoline or diesel fuel, engineers continue to design and test models powered by alternative fuels. One mower manufacturer headquartered in Germany has unveiled a laser-mower.

How Do They Cut? Reel mowers are equipped with horizontal blades mounted on a rotating cylinder or reel and a stationary bedknife. As the reel rotates, turfgrass leaves are pulled to the bedknife and cut. The number of blades mounted on a reel varies among these mowers. For example, turf maintained at a height of 1 inch or more may be mowed with a reel mower having five blades per reel, while 7- or 8-blade reels smaller in diameter are often recommended for cutting turf at a height of ½ inch or less. Rotary mowers cut turf by impact as blade(s) with sharp cutting edges rotate horizontally on a vertical shaft above the soil surface. Clippings and other objects hidden from the operator's view may be discharged to the side or rear. The cutting blades of rotary, mulching-mowers strike suspended clippings several times before they are uniformly broadcast over turf directly below the mower deck. As their name implies, flail mowers have many pivoting cutting blades or 'flails' hinged to a horizontal axle that rotates at high speed. Due to the limited distance between the flail tips and the mower housing, tall vegetation is quickly reduced to very fine clippings. The free-swinging flails fold back when they strike stones and other hard objects. As a result, there is less risk of projectiles when mowing with a flail mower compared to mowing with a side-discharge rotary mower. When

turf is mowed with a rotary or flail mower, leaf blades are cut by a tearing action rather than a shearing action. This wounds leaf tissue, increasing the amount of water loss from turfgrasses and the potential for disease.



Large Rotary Mower Deck

Which Mower Delivers the Highest-Quality Cut? Although rotary and flail mowers are often less expensive to purchase and maintain, reel mowers, when properly adjusted, cut more closely and cleanly, providing the highest cutting quality. A grinder is used to renew reels and bedknives that are nicked and worn. Cutting quality is maintained between grindings by brushing a lapping compound (e.g., emory powder + oil slurry) on the cutting edges as the reel rotates backwards. Reel mowers are most often used to mow dense, intensely managed residential and commercial lawns, as well as sports and golf course turfs.

How Is the Mowing Height Adjusted?

The height of cut of a reel mower is adjusted incrementally by raising or lowering the roller. This changes the height of the bedknife. The mowing height of a flail mower may be changed by raising or lowering the mower housing. The cutting height of a rotary mower is adjusted by raising or lowering the mower deck or wheels. The effective mowing height is the height of aerial turfgrass shoots immediately after mowing. This height may not be equal to the mechanically set mowing height or 'bench setting.' If the soil is dry and the mower wheels ride on compressed vegetation, the cutting blade is elevated above the soil surface and the effective mowing height is greater than the bench setting. The reverse may be true if turf is mowed when soils are wet and soft, and the mower wheels 'sink' below the surface.



Flail Mower

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