DEVELOPMENT OF THE AMERICAN POWER MOWER

The following information on the history of the development of power mowing in America has been collected from the most reliable sources we could find.

1890 - This "One Horsepower" Henderson Mower Was Popular. Similar to First Patented Mowers.

The first mechanical mower of which we have any record was patented in England in 1830 by a Mr. Edwin Budding of Stroud, Gloucestershire. This mower moved on a massive iron roller and featured a reel blade that worked against a parallel bedplate. The Budding mower gave us the still-popular principle of the reel-cutting blade. 1500 of these were produced between 1833 and 1859. Successors to this company are still in business, under the name of Lawn Mower Works.

The first power was added in 1842, when a Mr. Shanks of "Shanks' Mare" fame patented a Budding-type horse-drawn mower. In 1859 a mower using chain drive instead of the Budding gear drive was patented - the Silens Messer mower.

In 1869, Follows & Bates, of Manchester, England, patented a side-wheel lawn mower, driven by internal teeth in the wheels that engaged pinions on the reel spindle. This machine was considerably lighter than previous roller types.

1855 Model of the English Roller Type Budding Mower, First Patented in 1830.

The first line of reasonably moderate-priced mowers was brought out by the firm of Ransome, Sims and Jeffries, Ltd. in the 1860's. These mowers were of light construction and produced in a number of sizes with varying features.

In 1878, the Pennsylvania Mower Company patented a side-wheel machine that was driven by a train of gearing instead of internal gear ring and pinion.

The first gasoline powered lawn mower was patented by Mr. Edward Ransome in 1902, and the first successful attempt to market a gasoline powered mower was made by the Thomas Green firm in 1904.

The electric power mower made its appearance in the early 1920's and rapidly gained wide popularity. The Ransome firm also mass-produced an electric mower several years later which featured headlights for night mowing.

Following World War I, mass production and the general awakening of the American industrial giant brought forth a host of power mower and hand mower manufacturers. From 1918 to 1925 millions of the familiar type hand-push reel mowers were made by scores of manufacturers in the U.S. and abroad. By 1925, however, the gasoline-powered reel mower began to take a bigger and bigger share of the market.

For example: in 1924, 880,000 hand-push mowers retailing for $7,000,000 were sold in the U.S. The same year, 5,000 reel-type power mowers were sold for $1,250,000.
Toward the middle of the 1930's the rotary power mower, featuring a horizontally-mounted cutting blade, began to appear on the American home scene. This was the first and most significant advance in a century of lawn mowing.

Since World War II there have been great strides in the development of power mowers. The rotary has become increasingly popular; and in 1958 approximately 90% of the power mowers sold were rotaries, either self-propelled or push-propelled.

Lawn-Boy became the country's first Production-line manufacturers of complete power mowers, including engines, in the early 1950's when Outboard Marine bought out the Roto Power Mower Company of Kansas City, Missouri, one of the very first rotary power manufacturers.

Power mower sales in 1971 exceeded 5,500,000 units. The walk-behind rotary accounted for 4,700,000, or 85% of all power mower sales according to the Outdoor Power Equipment Institute. About 80% of the 1971 sales were for the replacement of the 38,000,000 power mowers currently in use in the United States. Sales of rider mowers and lawn tractors have grown to over 800,000 units annually.

Lawn and garden business is booming and will continue to boom. Saturation? . . . it will HELP, NOT HURT, the quality manufacturer.

1934 - The 1934 "Lawn-Boy" was Manufactured by Evinrude. Self-Propelled Chain Drive Reel Type.

1959 - The New Lawn-Boy QUIETFLITE ushered in the "Golden Age of Power Mowing." Its moving and working parts are completely Sealed and Insulated. QUIETFLITE in 1959 was the Last Word in Modern Quiet Power Mower Development.
Thru the years Lawn-Boy has continued to improve in design and performance of Lawn-Boy products. This is one reason why Lawn-Boy is one of the world leaders in the industry. Lawn-Boy is one of the few manufacturers that offers a complete choice of models designed to fit all mowing requirements. From the apartment dweller to the estate owner Lawn-Boy offers a choice to satisfy all lawn and garden requirements.

Tests have shown the Lawn-Boy D-400 Series, 2 Cycle Engine, to be one of the best engines available. The heart of your mower is the engine and the D-400 Series is designed to offer years of dependable service.

1972 Lawn-Boy introduced its first Solid State (CD) D-600 Series engine. Available with manual or electric start - self-propelled or push propelled type models. The solid state ignition system has no moving parts, is completely enclosed reducing ignition failure while producing up to 30,000 volts. No points, coil or condenser to replace, offering longer spark plug life. The all new carburetor used on the D-600 Series engine is completely automatic. No adjustments other than an atmospheric pressure adjustment is required. A new primer system forces compressed air into the float chamber which forces fuel into the carburetor venturi. This method of priming is effective and consequently, one prime is usually sufficient to start the engine. The larger muffler design reduces noise and exhaust down into the turf.
Lawn-Boy developed the revolutionary CORDLESS ELECTRIC MOWER - powered by 36 volts this compact mower contains all the engineering "know-how" and safety features of gasoline operated mowers. Excessive noise and exhaust fumes are eliminated. One more FIRST for Lawn-Boy.

In the future Lawn-Boy will continue to improve to offer you, the dealer, and your customers the best product available.
THE NEW GENERATION

The new generation series of Lawn-Boy mowers combines 68 years of 2-cycle technology with advanced engineering and manufacturing procedures. The final result is an all new look from the “grass up.” 21 fewer parts, less weight, and introducing an all NEW “F” series Lawn-Boy engine which produces 20 to 30% more usable power.

Lawn-Boy has retained and refined all the outstanding features that have made us famous.

- Easy fingertip starting - a reduced 4 to 1 gear ratio resulting in the easiest starting mower in Lawn-Boy's history.

- Quiet operation - featuring a new exhaust system. The welded muffler assembly contains an additional baffle and muffler tube. Designed as a one-piece assembly secured to the mower with only three screws.

- Super vacuum action - the design of the mower housing and famous durable Lawn-Boy high lift blade has been improved to discharge clippings into the rear of the grass bag -- this creates a well manicured mowing appearance. Also added under the deck is a crankshaft support located approximately 2 inches above the blade to provide additional protection for the crankshaft and crankcase.

The new generation began in the summer of 1972. WHY?

1. Contain fewer parts.

2. Design a new engine which develops more power at lower RPMs which meets or exceeds OPEI safety standards.

1973: First engineering prototype “F” engine run.
1974: New fuel and governor system developed and tested.
1975: In May, first factory “die cast” engine tested.
1975: In October, first units released for extensive field testing.
1977: In October, full factory production began after 2 years of thorough and extensive testing.

This is not the end -- rather, the beginning of a NEW GENERATION for us the manufacturer and you the service dealer.

1983: In July, after 9 years of research and development, Lawn-Boy started producing compliance lawn mowers that featured two different blade stopping systems.

One is the blade, brake, clutch (BBC) system which stops the blade within 3 seconds after the operator releases the bail. The engine continues to run with this system.

The other is a flywheel brake system which stops both the blade and engine within 3 seconds after the operator releases the bail.
THE NEW GENERATION "F" SERIES 2 CYCLE ENGINE

UNITIZED POWERHEAD
An automated, computer-controlled machine manufactures two pieces into a cylinder block assembly that has uniformity and precision.

PRESSURE-BACK PISTON RING
Minimizes compression blowby to increase usable power, improve fuel economy and aid starting ease.

FRICITION-REDUCING NEEDLE BEARINGS
The crankshaft, top and bottom, as well as the connecting rod, are nestled in precision needle bearings, resulting in free running, smooth operation. Silverplated bearing liner at the big end of the connecting rod.

NO-TUNE-UP ELECTRONIC IGNITION
Redesigned solid-state circuitry. No points or condenser to adjust or replace.

QUICK-RESPONSE GOVERNOR
This air vane governor almost instantly senses the need to open the throttle when you hit tall or tough grass. The result is more constant cutting speed for smooth, clean mowing performance.

MORE USABLE POWER
Displacement is increased from 6.6 to 7.7 cubic inches. This and other improvements add 20-30% more usable power.

Lawn-Boy mowers meet or exceed current A.N.S.I. B71.1@ 1977 safety standards for rotary-type mowers. We proudly display this Outdoor Power Equipment Institute seal on each machine.

21 FEWER PARTS
Weighs less than any previous Lawn-Boy engine.
Rotary mowers are generally designed with four wheels to support a housing on top of which is mounted the engine, and with the cutting blade mounted horizontally inside and beneath the housing.

The blade is designed to "lift" the grass as it rotates, by creating an upward flow of air. This insures even cutting.

The housing covers the blade, channeling the flow of grass out a discharge chute. Ridding the housing of cut grasses is a necessity, in order to eliminate power loss.

On the rotary mower, height of cut is changed by changing the wheel height. The cutting blade is usually attached directly to the engine shaft, and is generally made of tempered steel of varying widths. Length of the cutting blade is determined by the size of the mower housing.

Rotary mowers are capable of cutting level, clean lawns, as well as rough lawns. They are limited in their cutting ability in height of grass (or weeds), only by the amount of material to be discharged.
WHAT IS THE DIFFERENCE BETWEEN 2-CYCLE ENGINES?

There are four main Differences in the operation of 4-cycle and 2-cycle engines:

POWER - Number of power strokes per crankshaft revolution.
INTAKE - Method of getting fuel vapor to the combustion chamber.
EXHAUST - Method of scavenging burned gases from combustion chamber.
LUBRICATION - Method of providing internal moving parts with oil film.

2-CYCLE OPERATION

First Stroke - UP - COMPRESSION
- Piston moves up in cylinder.
- Piston movement creates vacuum in crankcase.
- Fuel entry reed valve opens.
- Fuel air vapor enters crankcase.
- As piston reaches top of cylinder, fuel vapor in cylinder is compressed.
- Explosion forces piston down, delivering power.

Second Stroke - DOWN - POWER STROKE
- Fuel entry valve closes.
- Exhaust ports open, burned gases escape.
- Downward movement of piston creates pressure in crankcase.
- Intake ports open as piston moves by - Crankcase pressure forces fuel vapor to rush into cylinder.
- Incoming fuel vapor clears cylinder of all burned gases.

4-CYCLE OPERATION

First Stroke - DOWN - INTAKE
- Piston moves down towards the crankcase.
- Intake valve is open, exhaust valve closed.
- Fuel enters compression chamber (cylinder).

Second Stroke - UP - COMPRESSION
- Piston moves up in cylinder.
- Intake and exhaust valves are closed.
- Fuel vapor is being compressed for igniting.

Third Stroke - DOWN - POWER STROKE
- Piston moves down after spark ignites and explodes fuel vapor, furnishing power output.

Fourth Stroke - UP - EXHAUST
- Piston moves up.
- Exhaust valve is open.
- Burned vapors are forced out of cylinder.

NOTE: 2-cycle fires EACH revolution, requiring only one turn of the crankshaft to complete intake, firing, and exhaust. 2-cycle delivers TWO power strokes while 4-cycle is completing ONE.

NOTE: NUMBER OF MOVING PARTS IN 4-cycle operation. 4-cycle fires every fourth stroke, requiring TWO complete turns of the crankshaft to complete the four operations.
The 4-cycle engine requires a separate system of lubrication, with an oil sump that must be kept full and operated on a fairly level surface to prevent lack of lubrication to internal moving parts. The 4-cycle system includes an oil reservoir, slinger or oil pump (which are ineffective if the mower engine is run with a low oil supply or tilted to an extreme angle), often resulting in damage to the engine.

The 2-cycle engine is always lubricated as long as there is a fuel mixture in the fuel tank. No attention to oil level is required, as the oil is pre-mixed with the fuel. The engine is kept lubricated regardless of angle of operation. The oil, suspended in the fuel vapor, adheres to the surfaces of all the moving parts, keeping them continually coated with a film of oil.

Ease of maintenance increases with 2-cycle operation, because: (1) There are fewer moving parts to wear. (2) 2-cycle lubrication reaches every moving part every stroke, and the oil is always fresh and clean. (3) Clean lubrication means longer life for moving parts.

Include timing gears, cam shaft, intake and exhaust valves, slinger or oil pump, springs. All are additional parts required for 4-cycle engines. These create more friction, more wear, and require more equipment, extra time and materials for overhaul.

There are only THREE major moving parts in the 2-cycle engine. These can be repaired or replaced with the simplest of working tools. No valves to grind, cam shafts, push rods, timing gears, valve springs, etc. to adjust or replace.

THE 2-CYCLE ENGINE IS EASIER TO CARE FOR AND TO REPAIR