

DEDICATION

OBJECTIVE

This Service Manual is Dedicated to --

- FIRST - Lawn-Boy Service Accounts everywhere. It has been designed for your use primarily.
- SECOND - Our Lawn-Boy Retailers. If they will use it, all our jobs will be easier.
- THIRD - Our Consumer. Without him this book would not be possible.

The objective of LAWN-BOY, A PRODUCT GROUP OF OUTBOARD MARINE CORPORATION GALESBURG, ILLINOIS is to provide quality lawn and garden equipment to its customers at as reasonable a price as possible. There will be no compromise on quality of product, or on SERVICE behind our products.

THE RIGHT WAY IS THE ONLY WAY TO DO ANYTHING. FAIRNESS AND HONESTY TO EVERYONE WITH WHOM WE DO BUSINESS IS OUR CREED.

With these as our standards, we (you and Lawn-Boy) will have continuing success, year after year.

SAFETY

THE PURPOSE OF SAFETY SYMBOLS IS TO ATTRACT YOUR ATTENTION TO POSSIBLE DANGERS. THE SYMBOLS, AND THE EXPLANATIONS WITH THEM, DESERVE YOUR CAREFUL ATTENTION AND UNDERSTANDING. SAFETY WARNINGS DO NOT BY THEMSELVES ELIMINATE ANY DANGER; THE INSTRUCTIONS OR WARNINGS THEY GIVE ARE NOT SUBSTITUTES FOR PROPER ACCIDENT PREVENTION MEASURES.

Symbol Meaning



SAFETY
WARNING

FAILURE TO OBEY A SAFETY
WARNING MAY RESULT IN IN-
JURY TO YOU OR TO OTHERS.



NOTE:

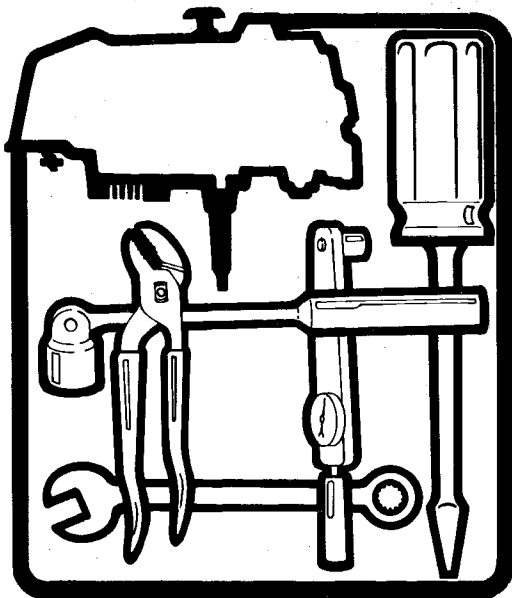
ADVISES YOU OF INFORMATION
OR INSTRUCTIONS VITAL TO THE
OPERATION OR MAINTENANCE OF
YOUR EQUIPMENT.

Over the past 60 years the American consumer has been offered many kinds of luxury items, conveniences, labor saving devices, and recreation and sports equipment. The ingenuity of the inventor, combined with engineering and manufacturing know-how, has provided the consumer with many things he would not even have dreamed before. That's PROGRESS.

Today, service and repair shops "never had it so good." Many of these luxuries and conveniences are mechanical. They have become necessities. As a result, the good service repair shop has started to build and expand. And, the number of shops has increased terrifically in the past few years.

New discoveries are being made every day. Inventions are turned into products ready for the consumer in ever increasing quantities year after year. So, the service business should be good for many, many years to come. And, manufacturers are becoming increasingly aware of the consumer as the "guy who pays for everything." He is the one they have to keep happy.

foreword



Quality manufacturers realize that the closest link they have with the consumer is that which exists through their service dealers. That's why many manufacturers, including Lawn-Boy, have based their over all service programs on the service dealer level, planning the entire program upward from there. Years ago we started our Lawn-Boy service program by planning the easiest and simplest methods of service procedure and policy, including the no parts returned to the factory unless requested - standard per hour warranty labor rate - fair and reasonable time limits established for various repair jobs with reimbursement of service dealer costs for parts used in

warranty repairs. We will continue to do everything we can to make servicing accounts work easier and, if possible, more profitable.



There will be a tremendous opportunity, in our opinion, in the service repair business during the next 10 to 15 years. There will be many new mechanical labor saving devices produced which cannot help but demand more, better, and faster repair shop service throughout the country. Lawn-Boy will continue to develop new products and improve design of all their lawn and gardening products from year to year.

THE OPPORTUNITY IS YOURS. IT'S UP TO YOU.

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Symbol Meaning

	SAFETY WARNING	Failure to obey a safety warning may result in injury to you or to others.
	NOTE:	<i>Advises you of information or instructions vital to the operation or maintenance of your equipment.</i>

This mower is designed and intended for the purpose of mowing (cutting) grass and, when specially equipped with a grass bag, for bagging cut grass. Any use for purposes other than those noted above could prove dangerous to user or bystanders.



SAFETY WARNINGS

Prevent accidents. Use the following practices for operating your mower safely. These warnings apply to all rotary, gasoline engine powered mowers, regardless of manufacturer. They are recommended by LAWN-BOY and the Outdoor Power Equipment Institute, Inc., Washington, D.C.

CLEAR THE AREA

Clean the lawn of sticks, stones, wire, etc. They can be picked up and hurled great distances by the blade. Mow only in cleaned areas.

Keep children and pets away from vicinity of mower as you would any cutting machinery.

WEAR PROPER ATTIRE

Don't wear loose fitting clothing. Provide some external protection for yourself by means of long, heavy denim trousers and heavy shoes. Never mow when barefoot or wearing open sandals. Safety shoes are recommended.

CHECK THE MOWER BEFORE USE

Check all nuts, bolts and fasteners for tightness, especially the blade nut (torque blade nut 45-50 ft. lbs.). Disconnect spark plug lead (Electric start models; also disconnect battery connections) before check.

Keep all guards in place at all times.

Keep either cover plate or grass catcher chute with bag in place and secure at all times.

Check grass or leaf bags for wear or deterioration. Replace bag if necessary.

Have a competent serviceman make a thorough inspection of your mower at least once a year.

HANDLE FUEL PROPERLY

Gasoline is extremely flammable and highly explosive under certain conditions. Always stop engine, and do not smoke or allow open flames or spark when mixing fuel or refueling.

Do not fill fuel tank while engine is hot or running. Spilling fuel on a hot engine may cause a fire or explosion.

To prevent possible explosion or ignition of vaporized fuel, do not store mower with fuel in tank or carburetor in enclosure with open flame. (Example: Furnace or water heater pilot light.)

Always store or transport mower with fuel shut-off valve in the "OFF" position.

Fill tank outdoors. Wipe up spilled gasoline. Replace cap securely. Use an approved safety container to handle and store gas. Keep engine free from accumulations of grass, leaves or excessive grease. These combustible materials could result in a fire.

Never start or run the engine inside where exhaust fumes can collect. Carbon monoxide present in the exhaust is an odorless and deadly gas.

KNOW YOUR CONTROLS

Learn how to stop the engine quickly. Be sure the control handle is in "NEUTRAL" position (to the rear) before starting or stopping self-propelled models.

START AND MOW WITH CARE

Never allow anyone to operate your mower without complete instructions. Teach all safety rules and operating instructions to all users. **DO NOT ALLOW CHILDREN TO OPERATE MOWER.**

Don't start the engine until you are ready to mow. Be sure mower will not tip or roll during starting operation. When starting engine, place one foot on top of blade housing as designated with heel off the ground to aid stability. Never stand in front of self-propelled mowers. Keep clear of discharge opening. Keep hands and feet away from moving parts. Never place hands or feet under the mower while blade is turning. Stop the engine and make sure the blade has come to a complete stop and the spark plug wire is disconnected, (Electric start models; disconnect battery connections) before attempting to clean or unclog the catcher assembly or discharge chute.

Always push, never pull, a mower with the engine running. Mow across face of slopes. Do not mow excessively steep slopes. Control direction of mower by hand pressure on the handle, not foot pressure on the mower housing. Do not lag behind or let mower pull you. Keep a firm hold on the handle and walk, never run with mower. Mow in daylight or good artificial light. Never operate equipment in wet grass. Always be sure of your footing. Stop engine before changing or emptying catcher bag, pushing mower across walks, drives, roads or before leaving operating position, even for a moment.

If operating mower on uneven or rough ground, be especially careful. Front of mower may drop lower than normal, and hidden objects may be thrown by blade. Keep all four wheels on the ground when mowing. If mower is tipped while blade is turning, blade is exposed and accidents can occur.

Avoid striking trees, walls, curbs or other solid objects with mower. Never deliberately mow over any object. Exercise special care when mowing around objects to prevent the blade striking them. If an object is struck, or mower starts to vibrate, stop engine immediately, remove spark plug wire (Electric start models; also disconnect battery connections) and examine mower for damage. Replace damaged parts before restarting and operating mower.

MAKE ADJUSTMENTS CAREFULLY

Do not overspeed engine or alter governor settings. Excess speed is dangerous and shortens mower life. Stand to one side and keep feet and hands clear while making carburetor adjustments. Height adjustments should be made only after engine and blade are stopped. Disconnect spark plug lead (Electric start models; also disconnect battery connections) prior to performing service on engine or mower. Keep lead away from plug. On self-propelled models be sure control is in "NEUTRAL" position.

Never rotate blade with hand or foot without first removing spark plug wire (Electric start models; also disconnect battery connections) to prevent starting.

REMOVE KEYS WHEN STORING

Electric start mowers cannot be started, even manually, with key removed.

REPLACEMENT PARTS

When replacement parts are required, use genuine OMC parts or parts with equivalent characteristics including type, strength, and material. Failure to do so may result in product malfunction and possible injury to the operator and/or bystanders.

IT'S UP TO YOU. A POWER MOWER IS NO SAFER THAN ITS OPERATOR.

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.

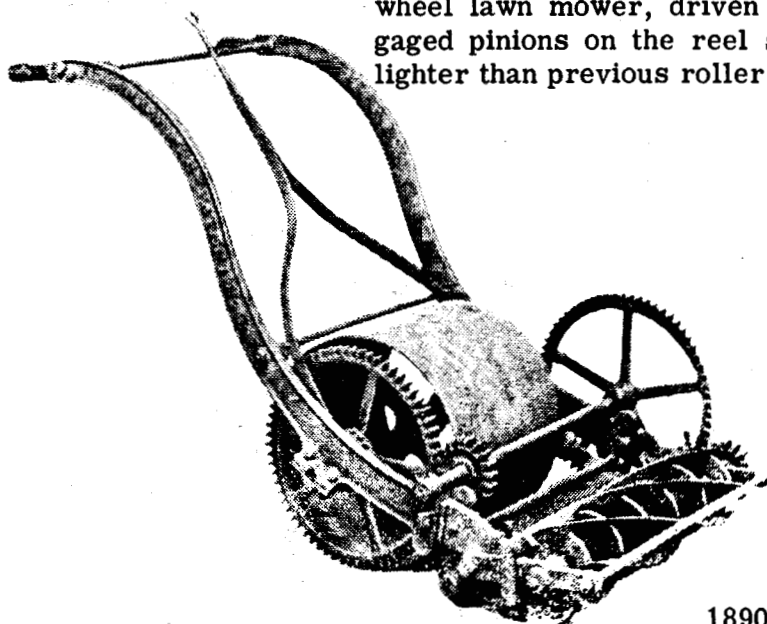


1890 - This "One Horsepower" Henderson Mower Was Popular. Similar to First Patented Mowers.

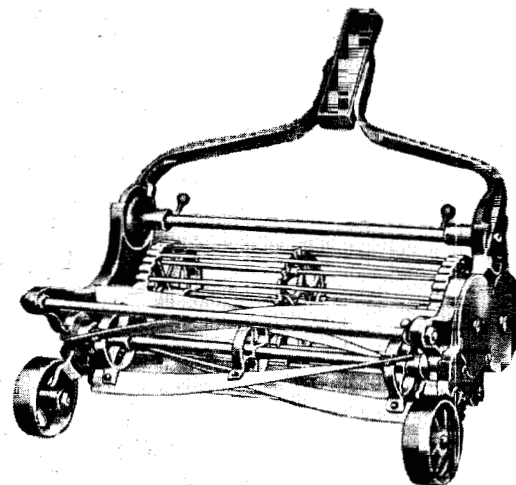
The first mechanical mower of which we have any record was patented in England in 1830 by a Mr. Edwin Budding of Stroud, Gloucestershire. This mower moved on a massive iron roller and featured a reel blade that worked against a parallel bedplate. The Budding mower gave us the still-popular principle 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.

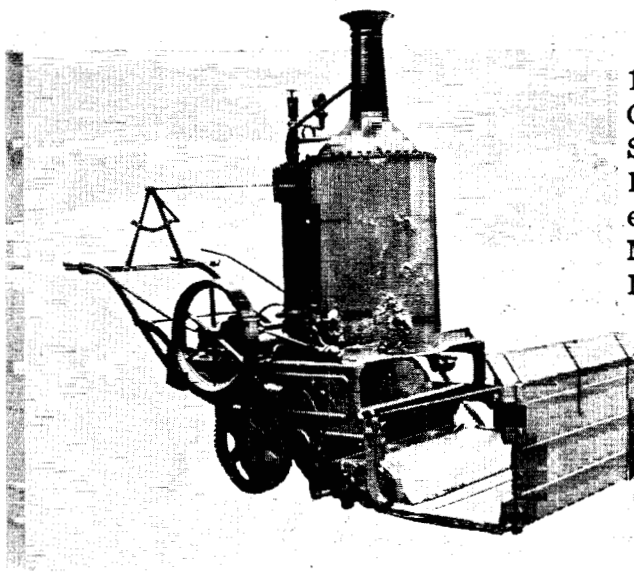


1890 - A Refinement of the Original Budding Design. The "Easy" Produced by Blair Mfg. Co., Springfield, Mass.

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.

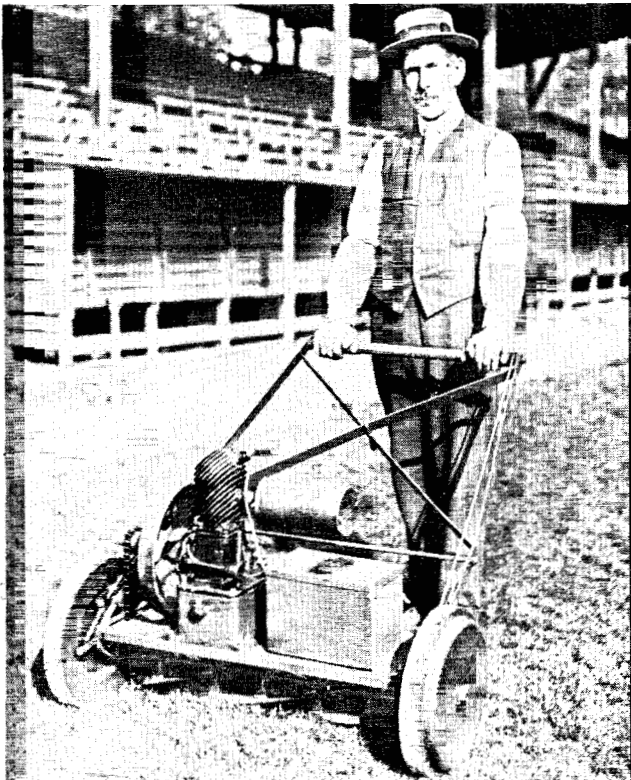


1900 - One and One-Half Ton Steam Driven Lawn Mower Patented in 1893 by Mr. Sumner of Ipswich, England.

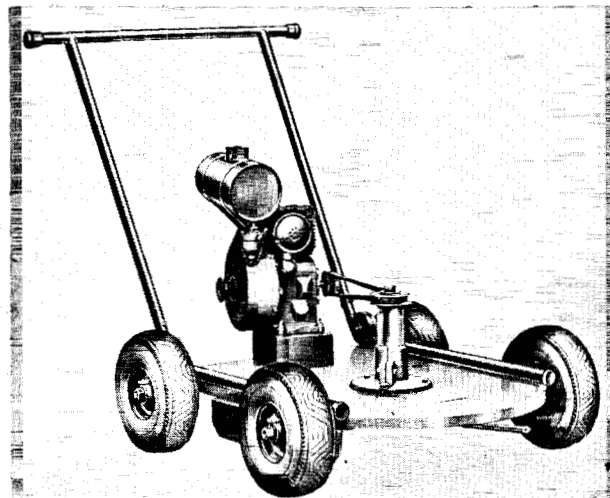
The electric power mower made its appearance in the early 1920's and rapidly gained wide popularity. The Ransome firm also mass-produced an electric mower several years later which featured headlights for night mowing.

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.



1917 - Power Mowers of This Type Were Becoming Popular. Equipped Complete with Toolbox.



1920's - One of the First Rotary Power Mowers, Produced in the Late 20's. Note the Belt Drive.

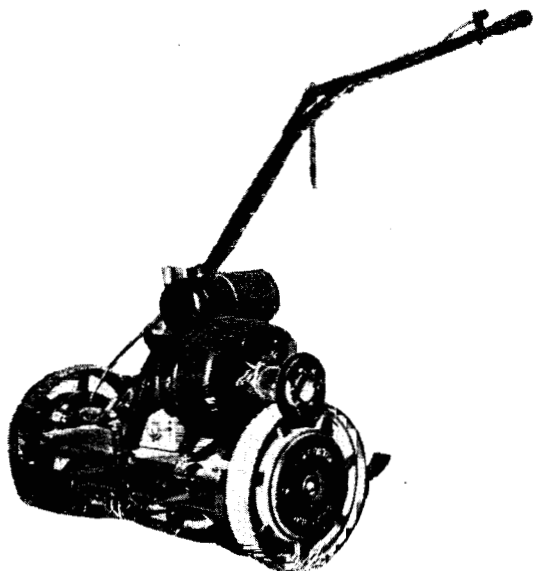
Toward the middle of the 1930's the rotary power mower, featuring a horizontally-mounted cutting blade, began to appear on the American home scene. This was the first and most significant advance in a century of lawn mowing.

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.

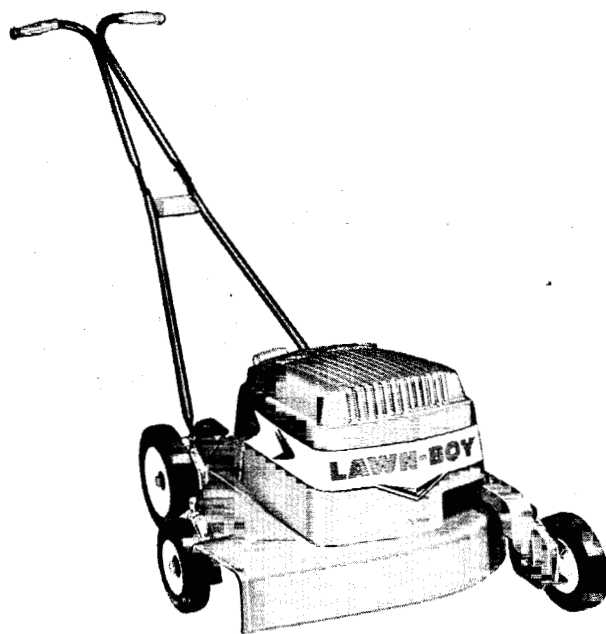
Lawn-Boy became the country's first Production-line manufacturers of complete power mowers, including engines, in the early 1950's when Outboard Marine bought out the Roto Power Mower Company of Kansas City, Missouri, one of the very first rotary power manufacturers.

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.

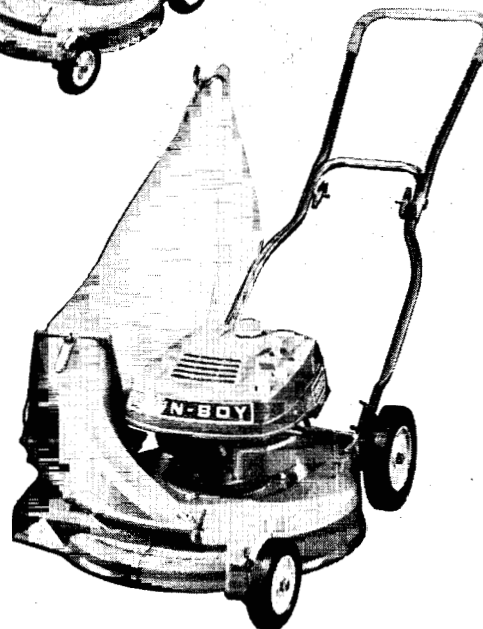
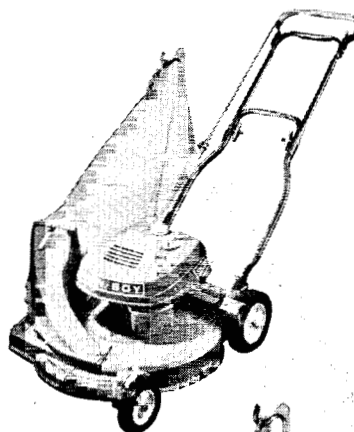
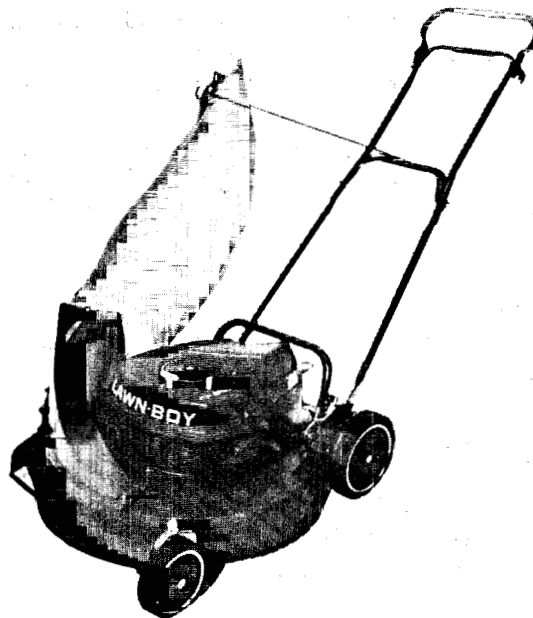


1959 - The New Lawn-Boy QUIETFLITE ushered in the "Golden Age of Power Mowing." Its moving and working parts are completely Sealed and Insulated. QUIET-FLITE in 1959 was the Last Word in Modern Quiet Power Mower Development.

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.

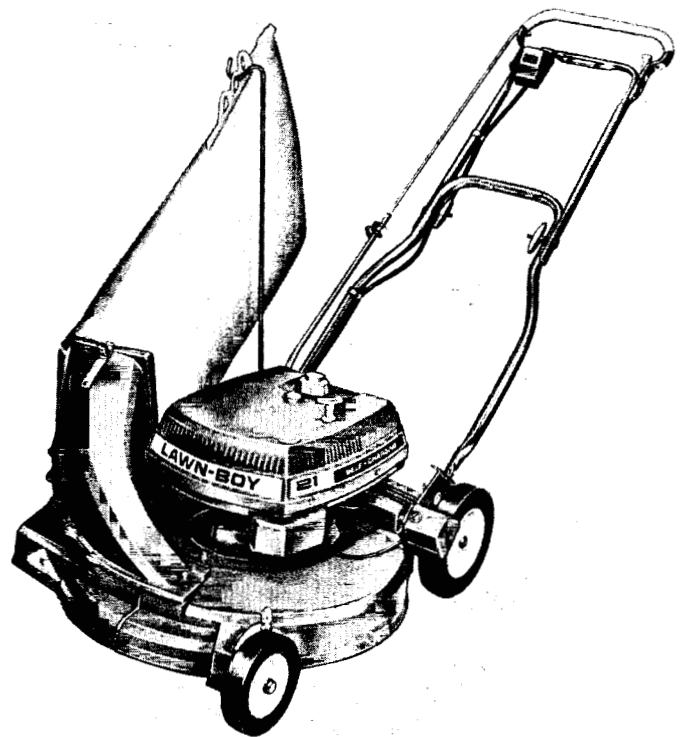
Tests have shown the Lawn-Boy D-400 Series, 2 Cycle Engine, to be one of the best engines available. The heart of your mower is the engine and the D-400 Series is designed to offer years of dependable service.

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.

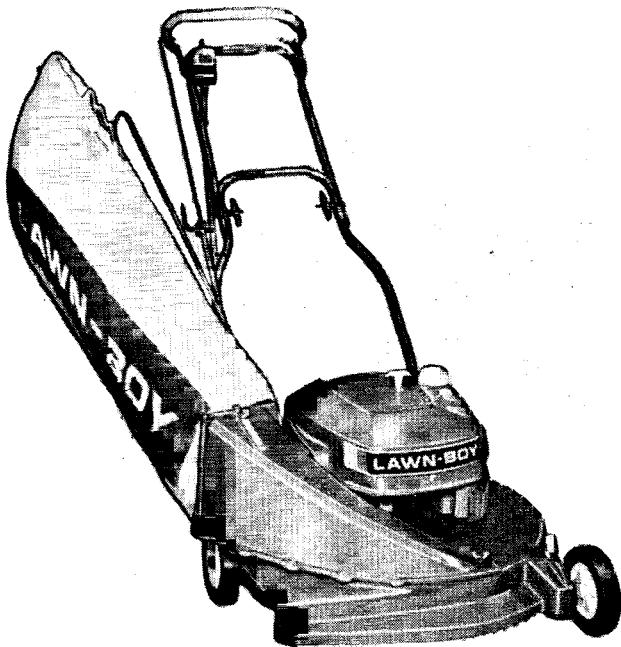
1977: In October, full factory production began after 2 years of thorough and extensive testing.

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.

FRICTION-REDUCING NEEDLE BEARINGS

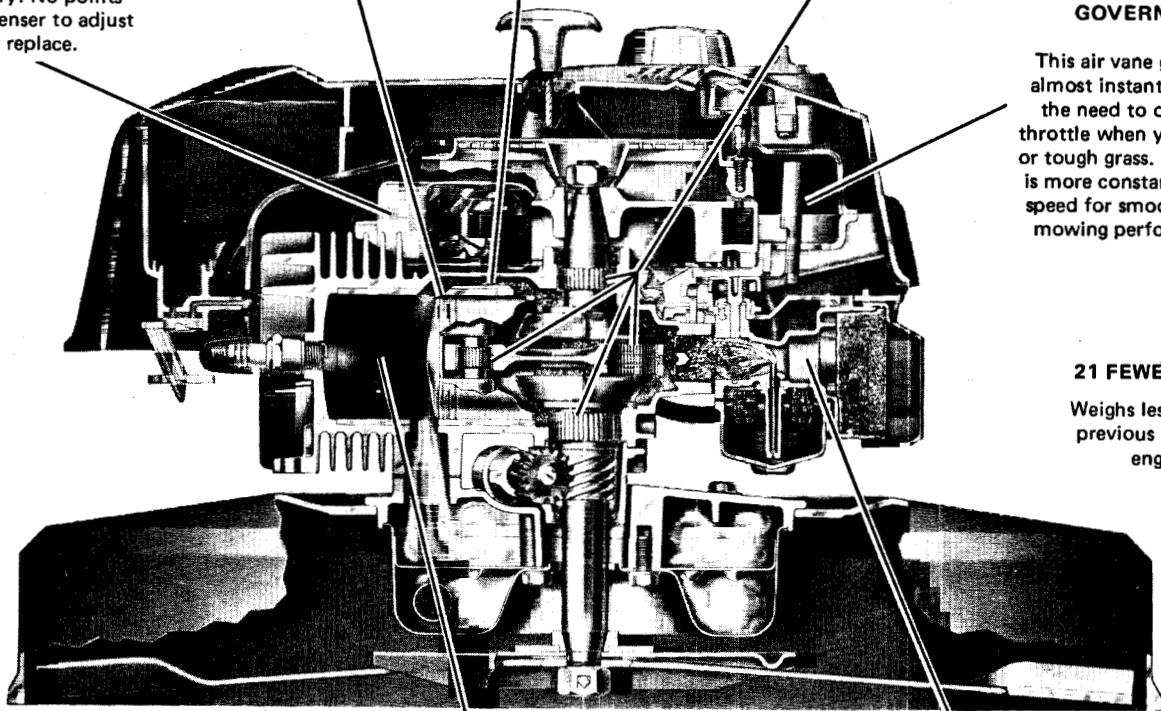
The crankshaft, top and bottom, as well as the connecting rod, are nestled in precision needle bearings, resulting in free running, smooth operation. Silverplated bearing liner at the big end of the connecting rod.

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.



21 FEWER PARTS

Weighs less than any previous Lawn-Boy engine.

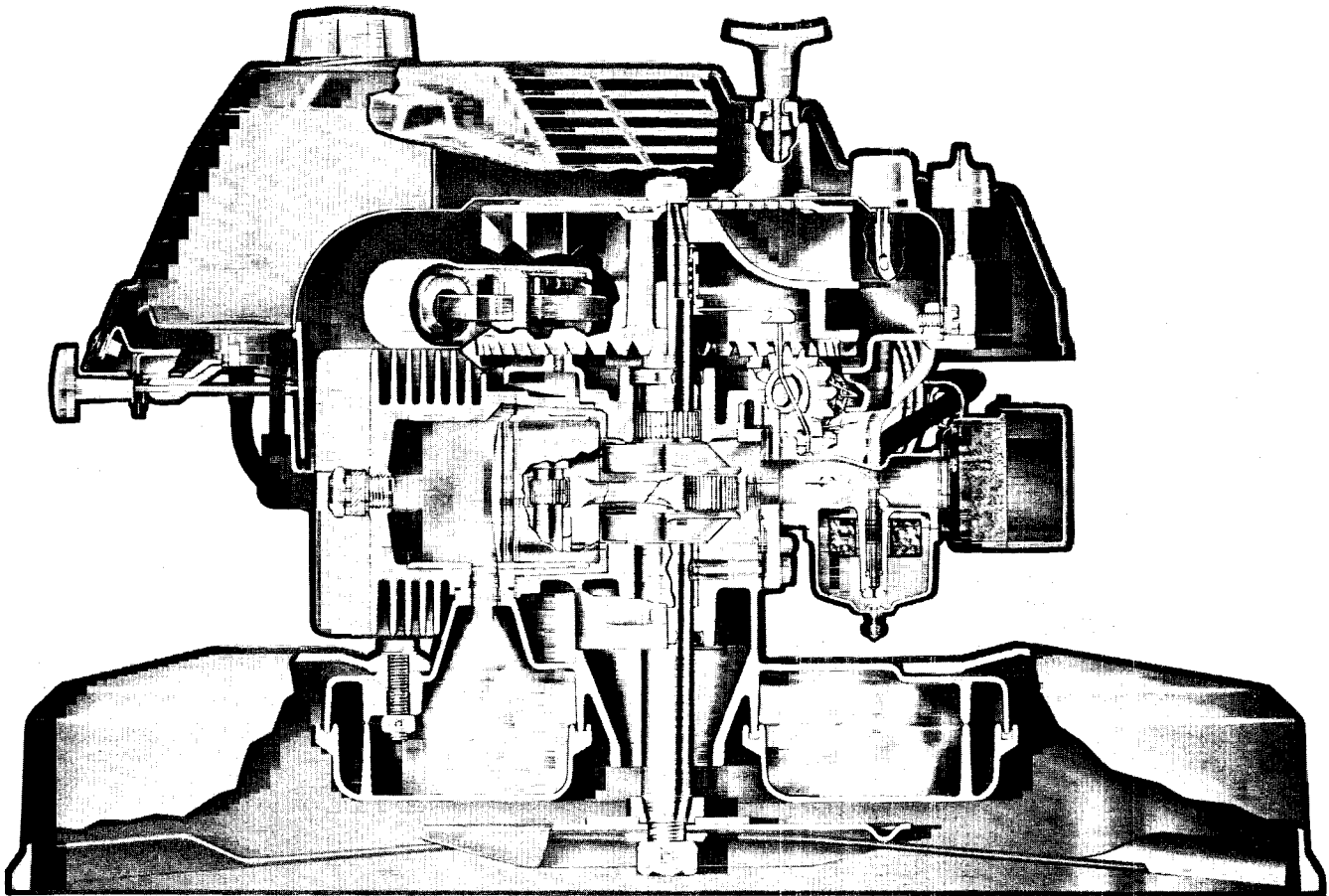
MORE USABLE POWER

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, 1b 1977 safety standards for rotary-type mowers. We proudly display this Outdoor Power Equipment Institute seal on each machine.

PRINCIPLES OF OPERATION ROTARY POWER MOWERS



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:

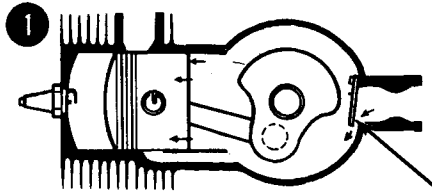
POWER - Number of power strokes per crankshaft revolution.

INTAKE - Method of getting fuel vapor to the combustion chamber.

EXHAUST - Method of scavenging burned gases from combustion chamber.

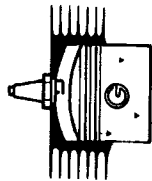
LUBRICATION - Method of providing internal moving parts with oil film.

2-CYCLE OPERATION



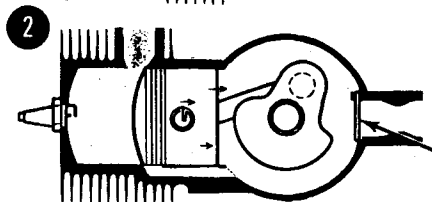
First Stroke - UP -
COMPRESSION

- 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.



Second Stroke - DOWN -
POWER STROKE

- Explosion forces piston down, delivering power.

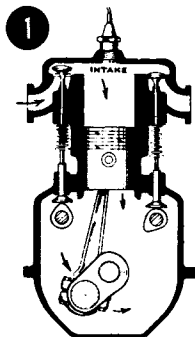


REED VALVE
CLOSED

- 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.

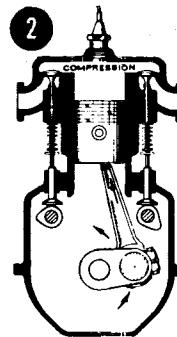
NOTE: 2-cycle fires EACH revolution, requiring only one turn of the crankshaft to complete intake, firing, and exhaust. 2-cycle delivers TWO power strokes while 4-cycle is completing ONE.

4-CYCLE OPERATION



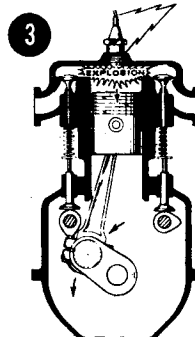
First Stroke - DOWN - INTAKE

- Piston moves down towards the crankcase.
- Intake Valve is Open, Exhaust Valve Closed.
- Fuel enters compression chamber (cylinder).



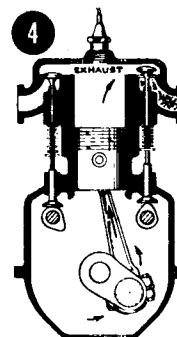
Second Stroke - UP - COMPRESSION

- Piston moves up in cylinder
- Intake and Exhaust valves are closed.
- Fuel vapor is being compressed for igniting.



Third Stroke - DOWN - POWER STROKE

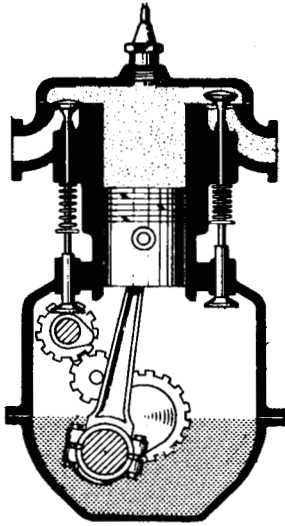
- Piston moves down after spark ignites and explodes fuel vapor, furnishing power output.



Fourth Stroke - UP - EXHAUST

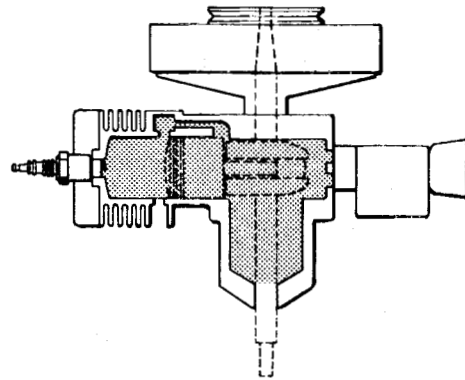
- Piston moves up.
- Exhaust valve is open.
- Burned vapors are forced out of cylinder.

NOTE: 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.



4-CYCLE LUBRICATION

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.

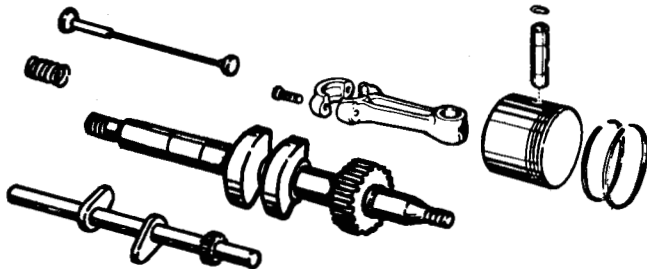


2-CYCLE LUBRICATION

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.

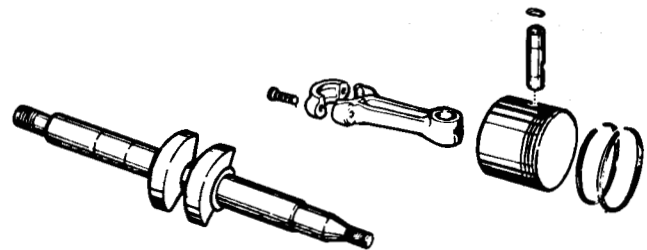
MAINTENANCE

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.



MOVING PARTS - 4-CYCLE ENGINE

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.



MOVING PARTS - 2-CYCLE ENGINE

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

Using This Manual - Section 2

This manual applies directly to Lawn-Boy products produced between 1950 and 1988. It is also used for servicing the F Series engine used on select Lawn-Boy walk mowers through 2000. It contains service information for Lawn-Boy C, D, and F Series 2-cycle engines; Piston Power Products (Ryobi) 2-cycle trimmer engines; and related drive train and chassis information.

This manual, form 492-4608, is several hundred pages long. For ease of use in electronic form, this manual has been broken down into numerous smaller files. Please ensure the file you are viewing is the correct one for the machine being serviced. The list below gives model number, model year, serial range, and engine manufacturer/model information to assist you in selecting service information. You may also find the information in Section 16 helpful (Quick Reference Guide, Engine and Torque Specs).

Model	Year	Serial Range	Engine Manufacturer	Engine Model Number
0292	1980	000000001-099999999	Lawn-Boy	F210
0292A	1981	100000001-199999999	Lawn-Boy	F211
0292B	1982	A00000001-A99999999	Lawn-Boy	F211
0296	1983	B00000001-B99999999	Lawn-Boy	F100
0363	1984	C00000001-C99999999	Briggs & Stratton	110902-0542-02
0392	1980	000000001-099999999	Lawn-Boy	F250
0392A	1981	100000001-199999999	Lawn-Boy	F251
0392B	1982	A00000001-A99999999	Lawn-Boy	F251
0393	1982	A00000001-A99999999	Briggs & Stratton	110908-0542-02
0394	1982	A00000001-A99999999	Briggs & Stratton	92908-0164-02
0395	1982	A00000001-A99999999	Briggs & Stratton	110908-0542-02
0396	1983	B00000001-B99999999	Lawn-Boy	F
0397	1983	B00000001-B99999999	Briggs & Stratton	110902-0542-02
0399	1983	B00000001-B99999999	Briggs & Stratton	92908-0164-02
0425A	1985	D00000001-D99999999	Briggs & Stratton	110702-3186-01
0426A	1985	D00000001-D99999999	Briggs & Stratton	110702-3186-01
0427	1985	D00000001-D99999999	Briggs & Stratton	110702-3186-01
1010	1961	100000001-199999999	Lawn-Boy	C71
1010	1962	200000001-299999999	Lawn-Boy	C71
1011	1963	300000001-399999999	Lawn-Boy	C74
1011	1964	400000001-499999999	Lawn-Boy	C74
1012	1965	500000001-599999999	Lawn-Boy	C74
1012	1966	600000001-699999999	Lawn-Boy	C74
1013	1967	700000001-799999999	Lawn-Boy	D460
1013	1968	800000001-899999999	Lawn-Boy	D460
1013	1969	900000001-999999999	Lawn-Boy	D460
1014	1968	800000001-899999999	Lawn-Boy	D461
1014	1969	900000001-999999999	Lawn-Boy	D461
1015	1970	000000001-099999999	Lawn-Boy	D462
1015	1971	100000001-199999999	Lawn-Boy	D462
1015	1972	200000001-299999999	Lawn-Boy	D462
1015	1973	300000001-399999999	Lawn-Boy	D462
1015	1974	400000001-499999999	Lawn-Boy	D462

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Model	Year	Serial Range	Engine Manufacturer	Engine Model Number
10400	1993	3900001-3999999	Lawn-Boy	F
10400	1994	4900001-4999999	Lawn-Boy	F
10400	1995	5900001-5999999	Lawn-Boy	F
10401	1996	6900001-6999999	Lawn-Boy	F
10401	1997	7900001-7999999	Lawn-Boy	F
10401C	1998	8900001-8999999	Lawn-Boy	F
10401C	1999	9900001-9999999	Lawn-Boy	F
10401C	2000	200000001-200999999	Lawn-Boy	F
10415	1993	3900001-3999999	Lawn-Boy	F
10415	1994	4900001-4999999	Lawn-Boy	F
10415	1995	5900001-5999999	Lawn-Boy	F
10420	1993	3900001-3999999	Lawn-Boy	F
10420	1994	4900001-4999999	Lawn-Boy	F
10422	1996	6900001-6999999	Lawn-Boy	F
10422	1997	7900001-7999999	Lawn-Boy	F
10515	1993	3900001-3999999	Lawn-Boy	F
10515	1994	4900001-4999999	Lawn-Boy	F
10515	1995	5900001-5999999	Lawn-Boy	F
10518	1996	6900001-6999999	Lawn-Boy	F
10518	1997	7900001-7999999	Lawn-Boy	F
10520	1993	39000001-39999999	Lawn-Boy	F
10520	1994	4900001-4999999	Lawn-Boy	F
10520	1995	5900001-5999999	Lawn-Boy	F
10523	1996	6900001-6999999	Lawn-Boy	F
10523	1997	7900001-7999999	Lawn-Boy	F
10545	1994	4900001-4999999	Lawn-Boy	F
10545	1995	5900001-5999999	Lawn-Boy	F
10546	1996	6900001-6999999	Lawn-Boy	F
10546	1997	7900001-7999999	Lawn-Boy	F
10600	1993	39000001-39999999	Lawn-Boy	F
10600	1994	4900001-4999999	Lawn-Boy	F
10600	1995	59000001-59999999	Lawn-Boy	F
10601	1996	6900001-6999999	Lawn-Boy	F
10650	1994	4900001-4999999	Lawn-Boy	F
10650	1995	59000001-59999999	Lawn-Boy	F
10651	1996	6900001-6999999	Lawn-Boy	F
10700	1993	39000001-39999999	Lawn-Boy	F
10725	1993	39000001-39999999	Lawn-Boy	F
10735	1993	39000001-39999999	Lawn-Boy	F
1100	1984	400000001-499999999	Piston Powered Products (Ryobi)	
1100	1985	500000001-599999999	Piston Powered Products (Ryobi)	
1100	1986	600000001-699999999	Piston Powered Products (Ryobi)	
1100	1987	700000001-799999999	Piston Powered Products (Ryobi)	
1100	1988	800000001-899999999	Piston Powered Products (Ryobi)	
1100	1989	900000001-999999999	Piston Powered Products (Ryobi)	
11000	1997	790000001-799999999	Lawn-Boy	F
11000B	1994	49000001-49999999	Lawn-Boy	F

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Model	Year	Serial Range	Engine Manufacturer	Engine Model Number
11000B	1995	59000001-59999999	Lawn-Boy	F
11000B	1996	69000001-69999999	Lawn-Boy	F
11001	1997	79000001-79999999	Lawn-Boy	F
11001B	1996	69000001-69999999	Lawn-Boy	F
1116	1961	100000001-199999999	Lawn-Boy	C72
1116	1962	200000001-299999999	Lawn-Boy	C72
1116	1963	300000001-399999999	Lawn-Boy	C72
1116	1964	400000001-499999999	Lawn-Boy	C72
1150	1987	700000001-711999999	Piston Powered Products (Ryobi)	
1150	1987	712000000-799999999	Piston Powered Products (Ryobi)	
1150	1988	800000001-811999999	Piston Powered Products (Ryobi)	
1150	1989	812000000-899999999	Piston Powered Products (Ryobi)	
1150	1989	900000001-999999999	Piston Powered Products (Ryobi)	
1300	1980	000000001-099999999	Piston Powered Products (Ryobi)	
1300	1981	100000001-199999999	Piston Powered Products (Ryobi)	
1330	1980	000000001-099999999	Piston Powered Products (Ryobi)	
1360	1980	000000001-099999999	Piston Powered Products (Ryobi)	
1360	1981	100000001-199999999	Piston Powered Products (Ryobi)	
1400	1983	300000001-399999999	Piston Powered Products (Ryobi)	
1400	1984	400000001-499999999	Piston Powered Products (Ryobi)	
1400	1985	500000001-599999999	Piston Powered Products (Ryobi)	
1400	1986	600000001-699999999	Piston Powered Products (Ryobi)	
1400C	1985	D00000001-D99999999	Piston Powered Products (Ryobi)	
1400C	1987	700000001-799999999	Piston Powered Products (Ryobi)	
1400CL	1986	600000001-611999999	Piston Powered Products (Ryobi)	
1400CL	1986	612000000-699999999	Piston Powered Products (Ryobi)	
1400CL	1987	700000001-711999999	Piston Powered Products (Ryobi)	
1400CL	1987	712000000-799999999	Piston Powered Products (Ryobi)	
1400CL	1988	800000000-811999999	Piston Powered Products (Ryobi)	
1400CL	1988	812000000-899999999	Piston Powered Products (Ryobi)	
1400CL	1989	900000001-999999999	Piston Powered Products (Ryobi)	
1400CLC	1987	700000001-799999999	Piston Powered Products (Ryobi)	
1460	1984	400000001-499999999	Piston Powered Products (Ryobi)	
1460	1985	500000001-599999999	Piston Powered Products (Ryobi)	
1460	1986	600000001-699999999	Piston Powered Products (Ryobi)	
1460C	1985	500000001-799999999	Piston Powered Products (Ryobi)	
1480	1986	600000001-611999999	Piston Powered Products (Ryobi)	
1480	1986	612000000-699999999	Piston Powered Products (Ryobi)	
1480	1987	700000001-711999999	Piston Powered Products (Ryobi)	
1480	1987	712000000-799999999	Piston Powered Products (Ryobi)	
1480	1988	800000000-811999999	Piston Powered Products (Ryobi)	
1480	1988	812000000-899999999	Piston Powered Products (Ryobi)	
1480	1989	900000001-999999999	Piston Powered Products (Ryobi)	
1480C	1986	600000001-699999999	Piston Powered Products (Ryobi)	
1480C	1987	700000001-799999999	Piston Powered Products (Ryobi)	
1490	1985	500000001-599999999	Piston Powered Products (Ryobi)	
1490C	1986	600000001-699999999	Piston Powered Products (Ryobi)	

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Model	Year	Serial Range	Engine Manufacturer	Engine Model Number
1816	1961	100000001-199999999	Lawn-Boy	C12AA
1817	1962	200000001-299999999	Lawn-Boy	C17AA
1818	1963	300000001-399999999	Lawn-Boy	D470, C18AA
1820	1965	500000001-599999999	Lawn-Boy	C18AAR, C19AA
1820	1966	600000001-699999999	Lawn-Boy	C18AAR, C19AA
1840	1972	200000001-299999999	Briggs & Stratton	100202-0434-01
1840	1975	500000001-599999999	Briggs & Stratton	100202-0434-01
1840A	1973	300000001-399999999	Briggs & Stratton	100202-0434-01
1840A	1974	400000001-499999999	Briggs & Stratton	100202-0434-01
1840A	1975	500000001-599999999	Briggs & Stratton	100202-0434-01
1840A	1976	600000001-699999999	Briggs & Stratton	100202-0434-01
1850	1979	900000001-999999999	Lawn-Boy	D570
1851	1980	000000001-099999999	Lawn-Boy	D572
1871	1980	000000001-099999999	Lawn-Boy	D572E
1920	1964	400000001-499999999	Lawn-Boy	C18AAR, C19AA
1921	1965	500000001-599999999	Lawn-Boy	C18AAR, C19AA
2010	1962	200000001-299999999	Lawn-Boy	C81
2010	1963	300000001-399999999	Lawn-Boy	C81
2010	1964	400000001-499999999	Lawn-Boy	C81
2010	1965	500000001-599999999	Lawn-Boy	C81
22240	1997	7900001-7999999	Lawn-Boy	F
22241	1997	7900001-7999999	Lawn-Boy	F
25574	1974	400000001-499999999	Briggs & Stratton	130902-0207
25575	1975	500000001-599999999	Briggs & Stratton	130902-0207
2650	1970	000000001-099999999	Briggs & Stratton	130202-0196-02
2650	1971	100000001-199999999	Briggs & Stratton	130202-0196-02
2650A	1972	200000001-299999999	Briggs & Stratton	130202-0237-02
2650B	1973	300000001-399999999	Briggs & Stratton	130202-0237-02
2650B	1974	400000001-499999999	Briggs & Stratton	130202-0237-02
2650B	1975	500000001-599999999	Briggs & Stratton	130202-0237-02
2680	1970	000000001-099999999	Briggs & Stratton	190402-0171-01
2680	1971	100000001-199999999	Briggs & Stratton	190402-0171-01
2680A	1972	200000001-299999999	Briggs & Stratton	190402-0654-02
2680B	1973	300000001-399999999	Briggs & Stratton	190402-0654-02
2680B	1974	400000001-499999999	Briggs & Stratton	190402-0751-01
2680B	1975	500000001-599999999	Briggs & Stratton	190402-0751-01
2680B	1976	600000001-699999999	Briggs & Stratton	190402-0751-01
3001	1967	700000001-799999999	Lawn-Boy	C78
3002	1967	700000001-799999999	Lawn-Boy	C78
3002	1968	800000001-899999999	Lawn-Boy	C78
3002	1969	900000001-999999999	Lawn-Boy	C78
3003	1970	000000001-099999999	Lawn-Boy	C79
3003	1971	100000001-199999999	Lawn-Boy	C79
3050	1959	900000001-999999999	Lawn-Boy	C70
3050	1960	000000001-099999999	Lawn-Boy	C70
3050	1961	100000001-199999999	Lawn-Boy	C70
3051	1962	200000001-299999999	Lawn-Boy	C73

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Model	Year	Serial Range	Engine Manufacturer	Engine Model Number
3052	1963	3000001-3999999	Lawn-Boy	C73
3052	1964	4000001-4999999	Lawn-Boy	C76
3052	1965	5000001-5999999	Lawn-Boy	C76
3053	1966	60000001-699999999	Lawn-Boy	D430
3054	1967	700000001-799999999	Lawn-Boy	D430
3054	1968	800000001-899999999	Lawn-Boy	D430
3055	1969	900000001-999999999	Lawn-Boy	D431
3056	1970	000000001-099999999	Lawn-Boy	D432
3056	1971	100000001-199999999	Lawn-Boy	D432
3057	1972	200000001-299999999	Lawn-Boy	D432
3058	1973	300000001-399999999	Lawn-Boy	D431
3060	1987	F00000001-F99999999	Lawn-Boy	F
3100	1957	700000001-799999999	Lawn-Boy	C20
3100	1979	900000001-999999999	Piston Powered Products (Ryobi)	
3130	1979	900000001-999999999	Piston Powered Products (Ryobi)	
3160	1979	900000001-999999999	Piston Powered Products (Ryobi)	
3210	1959	900000001-999999999	Lawn-Boy	C70
4230	1983	B00000001-B99999999	Lawn-Boy	F
4230	1984	C00000001-C99999999	Lawn-Boy	F
4230	1985	D00000001-D99999999	Lawn-Boy	F
4250	1983	B00000001-B99999999	Lawn-Boy	F
4250A	1984	C00000001-C99999999	Lawn-Boy	F
4260	1985	D00000001-D99999999	Lawn-Boy	F
4261	1985	D00000001-D99999999	Lawn-Boy	F
4261	1986	E00000001-E99999999	Lawn-Boy	F
4262	1986	E00000001-E99999999	Lawn-Boy	F
4262	1987	F00000001-F99999999	Lawn-Boy	F
4262	1988	G00000001-G99999999	Lawn-Boy	F
4263	1988	G00000001-G99999999	Lawn-Boy	F
4270	1983	B00000001-B99999999	Lawn-Boy	F
4271	1984	C00000001-C99999999	Lawn-Boy	F
4271	1985	D00000001-D99999999	Lawn-Boy	F
4275	1987	F00000001-F99999999	Lawn-Boy	F
4275	1988	G00000001-G99999999	Lawn-Boy	F
4275	1989	H00000001-H99999999	Lawn-Boy	F
4275	1990	J00000001-J99999999	Lawn-Boy	F
4300	1962	200000001-299999999	Lawn-Boy	C18
4301	1963	300000001-399999999	Lawn-Boy	D400
4301A	1964	400000001-499999999	Lawn-Boy	D401
4302	1965	500000001-599999999	Lawn-Boy	D402
4500	1979	900000001-999999999	Lawn-Boy	D410
4501	1980	000000001-099999999	Lawn-Boy	D411
4502	1981	100000001-199999999	Lawn-Boy	F300
4502	1982	A00000001-A99999999	Lawn-Boy	F300
4503	1982	A00000001-A99999999	Lawn-Boy	F340
4505	1983	B00000001-B99999999	Lawn-Boy	F300
4505A	1984	C00000001-C99999999	Lawn-Boy	F301

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Model	Year	Serial Range	Engine Manufacturer	Engine Model Number
4506	1984	C00000001-C99999999	Lawn-Boy	F
4530	1979	900000001-999999999	Lawn-Boy	D415
4531	1980	000000001-099999999	Lawn-Boy	D415
4532	1981	100000001-199999999	Lawn-Boy	D415
4550	1979	900000001-999999999	Lawn-Boy	F100
4551	1980	000000001-099999999	Lawn-Boy	F100
4551	1981	100000001-199999999	Lawn-Boy	F100
4551	1982	A00000001-A99999999	Lawn-Boy	F100
4570	1979	900000001-999999999	Lawn-Boy	F100
4571	1980	000000001-099999999	Lawn-Boy	F100
4571	1981	100000001-199999999	Lawn-Boy	F100
4571	1982	A00000001-A99999999	Lawn-Boy	F100
4571	1983	B00000001-B99999999	Lawn-Boy	F100
4571	1984	C00000001-C99999999	Lawn-Boy	F100
4573	1983	B00000001-B99999999	Lawn-Boy	F100
4600	1984	C00000001-C99999999	Lawn-Boy	F
4600	1985	D00000001-D99999999	Lawn-Boy	F
4600	1986	E00000001-E99999999	Lawn-Boy	F
4602	1988	G00000001-G99999999	Lawn-Boy	F
4630	1984	C00000001-C99999999	Lawn-Boy	F
4631	1985	D00000001-D99999999	Lawn-Boy	F
4631	1986	E00000001-E99999999	Lawn-Boy	F
4650	1983	B00000001-B99999999	Lawn-Boy	F
4651	1984	C00000001-C99999999	Lawn-Boy	F
4651	1985	D00000001-D99999999	Lawn-Boy	F
4652	1984	C00000001-C99999999	Lawn-Boy	F
4652	1985	D00000001-D99999999	Lawn-Boy	F
4656	1986	E00000001-E99999999	Lawn-Boy	F
4656	1987	F00000001-F99999999	Lawn-Boy	F
4656	1988	G00000001-G99999999	Lawn-Boy	F
4656A	1988	G00000001-G99999999	Lawn-Boy	F
4861	1988	G00000001-G99999999	Lawn-Boy	F
5000	1956	600000001-699999999	Lawn-Boy	C12
5001	1967	700000001-799999999	Lawn-Boy	C18
5002	1968	800000001-899999999	Lawn-Boy	C18
5003	1969	900000001-999999999	Lawn-Boy	C18
5004	1970	000000001-099999999	Lawn-Boy	C18
5004	1971	100000001-199999999	Lawn-Boy	C18
5006	1982	A00000001-A99999999	Lawn-Boy	D415
5020	1971	100000001-199999999	Lawn-Boy	D437
5021	1972	200000001-299999999	Lawn-Boy	D432
5022	1973	300000001-399999999	Lawn-Boy	D432
5023	1974	400000001-499999999	Lawn-Boy	D433
5024	1975	500000001-599999999	Lawn-Boy	D433
5024	1976	600000001-699999999	Lawn-Boy	D433
5024	1977	700000001-799999999	Lawn-Boy	D433
5024	1978	800000001-899999999	Lawn-Boy	D433

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Model	Year	Serial Range	Engine Manufacturer	Engine Model Number
5024	1979	900000001-999999999	Lawn-Boy	D433
5024	1980	000000001-099999999	Lawn-Boy	D433
5024	1981	100000001-199999999	Lawn-Boy	D433
5026	1978	800000001-899999999	Lawn-Boy	F200
5026	1979	900000001-999999999	Lawn-Boy	F200
5063	1974	400000001-499999999	Lawn-Boy	D433
5064	1975	500000001-599999999	Lawn-Boy	D433
5064	1976	600000001-699999999	Lawn-Boy	D433
5064	1977	700000001-799999999	Lawn-Boy	D433
5070	1987	F00000001-F99999999	Lawn-Boy	F
5070	1988	G00000001-G99999999	Lawn-Boy	F
5070	1989	H00000001-H99999999	Lawn-Boy	F
5070	1990	J00000001-J99999999	Lawn-Boy	F
5080	1972	200000001-299999999	Lawn-Boy	D433
5081	1973	300000001-399999999	Lawn-Boy	D433
5100	1957	700000001-799999999	Lawn-Boy	C12
5100X	1958	800000001-899999999	Lawn-Boy	C12
5124	1977	700000001-799999999	Lawn-Boy	D409
5124	1979	900000001-999999999	Lawn-Boy	D409
5124	1981	100000001-199999999	Lawn-Boy	D409
5124	1982	A00000001-A99999999	Lawn-Boy	D409
5125	1981	100000001-199999999	Lawn-Boy	D412
5126	1982	A00000001-A99999999	Lawn-Boy	F380
5126	1983	B00000001-B99999999	Lawn-Boy	F380
5126	1984	C00000001-C99999999	Lawn-Boy	F380
5126	1985	D00000001-D99999999	Lawn-Boy	F380
5126	1986	E00000001-E99999999	Lawn-Boy	F380
5127	1987	F00000001-F99999999	Lawn-Boy	F
5127	1988	G00000001-G99999999	Lawn-Boy	F
5200	1958	800000001-899999999	Lawn-Boy	C13
5210	1959	900000001-999999999	Lawn-Boy	C14
5210	1960	000000001-099999999	Lawn-Boy	C14
5210	1961	100000001-199999999	Lawn-Boy	C14
5210A	1961	100000001-199999999	Lawn-Boy	C14
5230	1962	200000001-299999999	Lawn-Boy	C17
5231	1963	300000001-399999999	Lawn-Boy	C17
5232	1964	400000001-499999999	Lawn-Boy	D400
5233	1965	500000001-599999999	Lawn-Boy	D401
5234	1966	600000001-699999999	Lawn-Boy	D402
5235	1967	700000001-799999999	Lawn-Boy	D403
5236	1968	800000001-899999999	Lawn-Boy	D404
5237	1968	800000001-899999999	Lawn-Boy	D405
5238	1969	900000001-999999999	Lawn-Boy	D403
5239	1970	000000001-099999999	Lawn-Boy	D408
5239	1971	100000001-199999999	Lawn-Boy	D408
5239A	1972	200000001-299999999	Lawn-Boy	D408
5239B	1973	300000001-399999999	Lawn-Boy	D408

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Model	Year	Serial Range	Engine Manufacturer	Engine Model Number
5239C	1974	400000001-499999999	Lawn-Boy	D408
5239D	1975	500000001-599999999	Lawn-Boy	D409
5239F	1976	600000001-699999999	Lawn-Boy	D409
5239G	1977	700000001-799999999	Lawn-Boy	D409
5239G	1978	800000001-899999999	Lawn-Boy	D409
5239G	1979	900000001-999999999	Lawn-Boy	D409
5239G	1980	000000001-099999999	Lawn-Boy	D409
5239G	1981	100000001-199999999	Lawn-Boy	D409
5240	1972	200000001-299999999	Lawn-Boy	D600
5241	1973	300000001-399999999	Lawn-Boy	D600
5242	1974	400000001-499999999	Lawn-Boy	D600
5243	1975	500000001-599999999	Lawn-Boy	D601
5244	1976	600000001-699999999	Lawn-Boy	D601
5245	1977	700000001-799999999	Lawn-Boy	D601
5245	1978	800000001-899999999	Lawn-Boy	D601
5247	1978	800000001-899999999	Lawn-Boy	F100
5247	1979	900000001-999999999	Lawn-Boy	F100
5247	1980	000000001-099999999	Lawn-Boy	F100
5247	1981	100000001-199999999	Lawn-Boy	F100
5247	1982	A00000001-A99999999	Lawn-Boy	F100
5247	1983	B00000001-B99999999	Lawn-Boy	F101
5247	1984	C00000001-C99999999	Lawn-Boy	F101
5247	1985	D00000001-D99999999	Lawn-Boy	F101
5247	1986	E00000001-E99999999	Lawn-Boy	F101
5248A	1983	B00000001-B99999999	Lawn-Boy	F
5248B	1984	C00000001-C99999999	Lawn-Boy	F
5248B	1985	D00000001-D99999999	Lawn-Boy	F
5249	1983	B00000001-B99999999	Lawn-Boy	F
5250	1959	900000001-999999999	Lawn-Boy	C60
5250	1960	000000001-099999999	Lawn-Boy	C61
5250	1961	100000001-199999999	Lawn-Boy	C61
5250A	1962	200000001-299999999	Lawn-Boy	C61
5251	1962	200000001-299999999	Lawn-Boy	C61
5253	1984	C00000001-C99999999	Lawn-Boy	F
5253	1985	D00000001-D99999999	Lawn-Boy	F
5253	1986	E00000001-E99999999	Lawn-Boy	F
5254	1986	E00000001-E99999999	Lawn-Boy	F
5254	1987	F00000001-F99999999	Lawn-Boy	F
5254	1988	G00000001-G99999999	Lawn-Boy	F
5255	1988	G00000001-G99999999	Lawn-Boy	F
5265	1967	700000001-799999999	Lawn-Boy	D405
5266	1968	800000001-899999999	Lawn-Boy	D405
5267	1968	800000001-899999999	Lawn-Boy	D406
5269	1970	000000001-099999999	Lawn-Boy	D408
5269	1971	100000001-199999999	Lawn-Boy	D408
5269	1973	300000001-399999999	Lawn-Boy	D408
5269A	1972	200000001-299999999	Lawn-Boy	D408

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5269B	1973	300000001-399999999	Lawn-Boy	D408
5269C	1974	400000001-499999999	Lawn-Boy	D408
5269D	1975	500000001-599999999	Lawn-Boy	D409
5269D	1976	600000001-699999999	Lawn-Boy	D409
5269F	1975	500000001-599999999	Lawn-Boy	D409
5269F	1976	600000001-699999999	Lawn-Boy	D409
5269G	1977	700000001-799999999	Lawn-Boy	D409
5269G	1978	800000001-899999999	Lawn-Boy	D409
5269G	1979	900000001-999999999	Lawn-Boy	D409
5269G	1980	000000001-099999999	Lawn-Boy	D409
5269G	1981	100000001-199999999	Lawn-Boy	D409
5269S	1970	000000001-099999999	Lawn-Boy	D409
5269S	1971	100000001-199999999	Lawn-Boy	D409
5270	1972	200000001-299999999	Lawn-Boy	D600
5271	1973	300000001-399999999	Lawn-Boy	D600
5272	1974	400000001-499999999	Lawn-Boy	D600
5273	1975	500000001-599999999	Lawn-Boy	D601
5273	1976	600000001-699999999	Lawn-Boy	D601
5274	1976	600000001-699999999	Lawn-Boy	D601
5275	1977	700000001-799999999	Lawn-Boy	D601
5275	1978	800000001-899999999	Lawn-Boy	D601
5277	1978	800000001-899999999	Lawn-Boy	F100
5277	1979	900000001-999999999	Lawn-Boy	F100
5277	1980	000000001-099999999	Lawn-Boy	F100
5277	1981	100000001-199999999	Lawn-Boy	F100
5277	1982	A00000001-A99999999	Lawn-Boy	F100
5277	1983	B00000001-B99999999	Lawn-Boy	F100
5277	1984	C00000001-C99999999	Lawn-Boy	F100
5277	1985	D00000001-D99999999	Lawn-Boy	F100
5278	1988	G00000001-G99999999	Lawn-Boy	F100
60-1618-2	1982	A00000001-A99999999	Lawn-Boy	F201
60-1618-2	1983	B00000001-B99999999	Lawn-Boy	F
60-1618-2	1984	C00000001-C99999999	Lawn-Boy	F
60-1618-2	1985	D00000001-D99999999	Lawn-Boy	F
6100	1957	400000001-799999999	Lawn-Boy	C40
6116	1969	900000001-999999999	Lawn-Boy	C41
6117	1969	900000001-999999999	Lawn-Boy	C41
6120	1986	E00000001-E99999999	Lawn-Boy	C41
6200	1958	800000001-899999999	Lawn-Boy	C41
6210	1959	900000001-999999999	Lawn-Boy	C41
6211	1984	C00000001-C99999999	Lawn-Boy	F
6211	1985	D00000001-D99999999	Lawn-Boy	F
6212	1984	C00000001-C99999999	Lawn-Boy	F
6212	1985	D00000001-D99999999	Lawn-Boy	F
6221	1984	C00000001-C99999999	Lawn-Boy	F
6221	1985	D00000001-D99999999	Lawn-Boy	F
6222	1987	F00000001-F99999999	Lawn-Boy	F

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6222	1988	G00000001-G99999999	Lawn-Boy	F
6222	1989	H00000001-H99999999	Lawn-Boy	F
6222	1990	J00000001-J99999999	Lawn-Boy	F
6230	1986	E00000001-E99999999	Lawn-Boy	F
6250	1964	400000001-499999999	Lawn-Boy	C19
6251	1965	500000001-599999999	Lawn-Boy	C19
6251	1966	600000001-699999999	Lawn-Boy	C19
6252	1966	600000001-699999999	Lawn-Boy	C19
6252	1967	700000001-799999999	Lawn-Boy	C19
6252	1968	800000001-899999999	Lawn-Boy	C19
6252	1969	900000001-999999999	Lawn-Boy	C19
6252	1970	000000001-099999999	Lawn-Boy	C19
6252	1971	100000001-199999999	Lawn-Boy	C19
6253	1972	200000001-299999999	Lawn-Boy	D476
6254	1973	300000001-399999999	Lawn-Boy	D476
6254	1974	400000001-499999999	Lawn-Boy	D476
6255	1975	500000001-599999999	Lawn-Boy	D476
6255	1976	600000001-699999999	Lawn-Boy	D476
6255	1977	700000001-799999999	Lawn-Boy	D476
6255	1978	800000001-899999999	Lawn-Boy	D476
6257	1978	800000001-899999999	Lawn-Boy	F200
6257	1979	900000001-999999999	Lawn-Boy	F200
6258	1978	800000001-899999999	Lawn-Boy	F200
6258	1979	900000001-999999999	Lawn-Boy	F200
6259	1980	000000001-099999999	Lawn-Boy	F201
6259	1981	100000001-199999999	Lawn-Boy	F201
6259	1982	A00000001-A99999999	Lawn-Boy	F201
6259	1983	B00000001-B99999999	Lawn-Boy	F201
6259	1984	C00000001-C99999999	Lawn-Boy	F201
6259	1985	D00000001-D99999999	Lawn-Boy	F201
6259	1986	E00000001-E99999999	Lawn-Boy	F201
6260	1981	100000001-199999999	Lawn-Boy	F201
6261	1983	B00000001-B99999999	Lawn-Boy	F
6262	1984	C00000001-C99999999	Lawn-Boy	F
6275	1969	900000001-999999999	Lawn-Boy	D475
6275	1970	000000001-099999999	Lawn-Boy	D476
6275	1971	100000001-199999999	Lawn-Boy	D476
6275	1972	200000001-299999999	Lawn-Boy	D476
6276	1973	300000001-399999999	Lawn-Boy	D476
6276	1974	400000001-499999999	Lawn-Boy	D476
6277	1975	500000001-599999999	Lawn-Boy	D476
6277	1976	600000001-699999999	Lawn-Boy	D476
6277	1977	700000001-799999999	Lawn-Boy	D476
6279	1978	800000001-899999999	Lawn-Boy	F200
6279	1979	900000001-999999999	Lawn-Boy	F200
6280	1980	000000001-099999999	Lawn-Boy	F201
6280	1981	100000001-199999999	Lawn-Boy	F201

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6280	1982	A00000001-A99999999	Lawn-Boy	F201
6280	1983	300000001-399999999	Lawn-Boy	F201
6280	1984	C00000001-C99999999	Lawn-Boy	F201
6280	1985	D00000001-D99999999	Lawn-Boy	F201
6286	1983	B00000001-B99999999	Lawn-Boy	F
6290	1979	900000001-999999999	Lawn-Boy	F200
6290	1980	000000001-099999999	Lawn-Boy	F200
6290	1981	100000001-199999999	Lawn-Boy	F200
6291	1980	000000001-099999999	Lawn-Boy	F201
6291	1981	100000001-199999999	Lawn-Boy	F201
6300	1980	000000001-099999999	Lawn-Boy	F201
6300	1981	100000001-199999999	Lawn-Boy	F201
6300	1982	A00000001-A99999999	Lawn-Boy	F201
6301	1983	B00000001-B99999999	Lawn-Boy	F201
6302	1984	C00000001-C99999999	Lawn-Boy	F201
6302	1985	D00000001-D99999999	Lawn-Boy	F201
6350	1980	000000001-099999999	Lawn-Boy	F201
6420	1983	B00000001-B99999999	Lawn-Boy	F
6421	1984	C00000001-C99999999	Lawn-Boy	F
6421	1985	D00000001-D99999999	Lawn-Boy	F
6430	1986	E00000001-E99999999	Lawn-Boy	F
6431	1987	F00000001-F99999999	Lawn-Boy	F
6431	1988	G00000001-G99999999	Lawn-Boy	F
6461	1986	E00000001-E99999999	Lawn-Boy	F
6461	1987	F00000001-F99999999	Lawn-Boy	F
6461	1988	G00000001-G99999999	Lawn-Boy	F
680521	1992	L00000001-L99999999	Lawn-Boy	F
680526	1992	L00000001-L99999999	Lawn-Boy	F
680527	1992	L00000001-L99999999	Lawn-Boy	F
680528	1992	L00000001-L99999999	Lawn-Boy	F
680529	1992	L00000001-L99999999	Lawn-Boy	F
680530	1992	L00000001-L99999999	Lawn-Boy	F
680532	1991	K00000001-K99999999	Briggs & Stratton	126702-3192
680532	1992	L00000001-L99999999	Briggs & Stratton	126702-3192
680539	1992	L00000001-L99999999	Briggs & Stratton	126702-3192
680540	1992	L00000001-L99999999	Lawn-Boy	F
680541	1992	L00000001-L99999999	Lawn-Boy	F
680542	1992	L00000001-L99999999	Lawn-Boy	F
680543	1992	L00000001-L99999999	Lawn-Boy	F
680544	1992	L00000001-L99999999	Lawn-Boy	F
680545	1992	L00000001-L99999999	Lawn-Boy	F
680546	1992	L00000001-L99999999	Lawn-Boy	F
680547	1991	K00000001-K99999999	Briggs & Stratton	126702-3192
680547	1992	L00000001-L99999999	Briggs & Stratton	126702-3192
680548	1991	K00000001-K99999999	Briggs & Stratton	126702-3192
680548	1992	L00000001-L99999999	Briggs & Stratton	126702-3192
680550	1992	L00000001-L99999999	Lawn-Boy	F

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680551	1992	L00000001-L99999999	Lawn-Boy	F
680552	1992	L00000001-L99999999	Lawn-Boy	F
680553	1992	L00000001-L99999999	Lawn-Boy	F
680554	1992	L00000001-L99999999	Lawn-Boy	F
680555	1992	L00000001-L99999999	Lawn-Boy	F
680558	1992	L00000001-L99999999	Lawn-Boy	F
680559	1992	L00000001-L99999999	Lawn-Boy	F
680560	1992	L00000001-L99999999	Lawn-Boy	F
680561	1992	L00000001-L99999999	Lawn-Boy	F
680565	1992	L00000001-L99999999	Lawn-Boy	F
680566	1992	L00000001-L99999999	Lawn-Boy	F
7000	1956	600000001-699999999	Lawn-Boy	C18
7001	1966	600000001-699999999	Lawn-Boy	C18
7001	1967	700000001-799999999	Lawn-Boy	C18
7002	1968	800000001-899999999	Lawn-Boy	C18
7003	1969	900000001-999999999	Lawn-Boy	C18
7004	1970	000000001-099999999	Lawn-Boy	C18
7004	1971	100000001-199999999	Lawn-Boy	C18
7010	1968	800000001-899999999	Lawn-Boy	C18
7010	1969	900000001-999999999	Lawn-Boy	C18
7011	1969	900000001-999999999	Lawn-Boy	C18
7012	1970	000000001-099999999	Lawn-Boy	C18
7012	1971	100000001-199999999	Lawn-Boy	C18
7020	1970	000000001-099999999	Lawn-Boy	C20
7020	1971	100000001-199999999	Lawn-Boy	C20
7021	1972	200000001-299999999	Lawn-Boy	D433
7022	1973	300000001-399999999	Lawn-Boy	D433
7023	1974	400000001-499999999	Lawn-Boy	D433
7024	1975	500000001-599999999	Lawn-Boy	D433
7024	1976	600000001-699999999	Lawn-Boy	D433
7024	1977	700000001-799999999	Lawn-Boy	D433
7025	1978	800000001-899999999	Lawn-Boy	D453
7025	1979	900000001-999999999	Lawn-Boy	F200
7035	1986	E00000001-E99999999	Lawn-Boy	F
7050	1959	900000001-999999999	Lawn-Boy	C70
7050	1982	A00000001-A99999999	Lawn-Boy	F320
7050	1983	B00000001-B99999999	Lawn-Boy	F320
7050	1984	C00000001-C99999999	Lawn-Boy	F320
7050	1985	D00000001-D99999999	Lawn-Boy	F320
7050	1986	E00000001-E99999999	Lawn-Boy	F320
7064	1970	000000001-099999999	Lawn-Boy	C18B
7064	1971	100000001-199999999	Lawn-Boy	C18B
7070	1980	000000001-099999999	Lawn-Boy	F100
7071	1981	100000001-199999999	Lawn-Boy	F101
7071	1982	A00000001-A99999999	Lawn-Boy	F101
7072	1984	C00000001-C99999999	Lawn-Boy	F
7072	1985	D00000001-D99999999	Lawn-Boy	F

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7072A	1986	E00000001-E99999999	Lawn-Boy	F
7072JP	1984	C00000001-C99999999	Lawn-Boy	F
7073	1986	E00000001-E99999999	Lawn-Boy	F
7073	1987	F00000001-F99999999	Lawn-Boy	F
7073	1988	G00000001-G99999999	Lawn-Boy	F
7073B	1987	F00000001-F99999999	Lawn-Boy	F
7074	1988	G00000001-G99999999	Lawn-Boy	F
7080	1970	000000001-099999999	Lawn-Boy	D431
7080	1971	100000001-199999999	Lawn-Boy	D431
7081	1972	200000001-299999999	Lawn-Boy	D433
7082	1973	300000001-399999999	Lawn-Boy	D433
7083	1974	400000001-499999999	Lawn-Boy	D433
7084	1975	500000001-599999999	Lawn-Boy	D433
7084	1976	600000001-699999999	Lawn-Boy	D433
7084	1977	700000001-799999999	Lawn-Boy	D433
7084	1978	800000001-899999999	Lawn-Boy	D433
7086	1978	800000001-899999999	Lawn-Boy	F200
7086	1979	900000001-999999999	Lawn-Boy	F200
7100	1957	400000001-499999999	Lawn-Boy	C12
7100X	1958	800000001-899999999	Lawn-Boy	C12
7150	1982	A00000001-A99999999	Lawn-Boy	C12
7150	1983	B00000001-B99999999	Lawn-Boy	F320
7200	1958	800000001-899999999	Lawn-Boy	C13
7210	1959	900000001-999999999	Lawn-Boy	C14
7210	1960	000000001-099999999	Lawn-Boy	C14
7210	1961	100000001-199999999	Lawn-Boy	C14
7210A	1961	100000001-199999999	Lawn-Boy	C14
7214	1964	400000001-499999999	Lawn-Boy	D401
7215	1965	500000001-599999999	Lawn-Boy	D402
7216	1966	600000001-699999999	Lawn-Boy	D403
7217	1967	700000001-799999999	Lawn-Boy	D404
7218	1968	800000001-899999999	Lawn-Boy	D405
7219	1968	800000001-899999999	Lawn-Boy	D406
7220	1969	900000001-999999999	Lawn-Boy	D407
7221	1970	000000001-099999999	Lawn-Boy	D408
7221	1971	100000001-199999999	Lawn-Boy	D408
7221	1972	200000001-299999999	Lawn-Boy	D408
7221A	1972	200000001-299999999	Lawn-Boy	D408
7221B	1973	300000001-399999999	Lawn-Boy	D408
7221C	1974	400000001-499999999	Lawn-Boy	D408
7221D	1975	500000001-599999999	Lawn-Boy	D409
7221F	1976	600000001-699999999	Lawn-Boy	D409
7221G	1977	700000001-799999999	Lawn-Boy	D409
7221G	1978	800000001-899999999	Lawn-Boy	D409
7221G	1979	900000001-999999999	Lawn-Boy	D409
7221G	1980	000000001-099999999	Lawn-Boy	D409
7221G	1981	100000001-199999999	Lawn-Boy	D409

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7222	1972	200000001-299999999	Lawn-Boy	D600
7223	1973	300000001-399999999	Lawn-Boy	D600
7224	1974	400000001-499999999	Lawn-Boy	D600
7225	1975	500000001-599999999	Lawn-Boy	D601
7226	1976	600000001-699999999	Lawn-Boy	D601
7227	1977	700000001-799999999	Lawn-Boy	D601
7227	1978	800000001-899999999	Lawn-Boy	D601
7229	1978	800000001-899999999	Lawn-Boy	F100
7229	1979	900000001-999999999	Lawn-Boy	F100
7229	1980	000000001-099999999	Lawn-Boy	F100
7229	1981	100000001-199999999	Lawn-Boy	F100
7229	1982	A00000001-A99999999	Lawn-Boy	F100
7229	1983	B00000001-B99999999	Lawn-Boy	F100
7229	1984	C00000001-C99999999	Lawn-Boy	F100
7229	1985	D00000001-D99999999	Lawn-Boy	F100
7229G	1980	000000001-099999999	Lawn-Boy	F100
7231	1983	B00000001-B99999999	Lawn-Boy	F100
7232	1984	C00000001-C99999999	Lawn-Boy	F100
7240	1988	G00000001-G99999999	Lawn-Boy	F100
7250	1960	000000001-099999999	Lawn-Boy	C15
7250	1961	100000001-199999999	Lawn-Boy	C15
7251	1962	200000001-299999999	Lawn-Boy	C18
7252	1964	400000001-499999999	Lawn-Boy	D400
7253	1964	400000001-499999999	Lawn-Boy	C18
7254	1965	500000001-599999999	Lawn-Boy	D400
7254WB	1965	500000001-599999999	Lawn-Boy	D401
7255	1966	600000001-699999999	Lawn-Boy	D403
7256	1967	700000001-799999999	Lawn-Boy	D404
7257	1968	800000001-899999999	Lawn-Boy	D405
7258	1968	800000001-899999999	Lawn-Boy	D406
7258E	1968	800000001-899999999	Lawn-Boy	D406E
7258E	1969	900000001-999999999	Lawn-Boy	D406E
7259	1969	900000001-999999999	Lawn-Boy	D407
7259E	1969	900000001-999999999	Lawn-Boy	D407E
7260	1970	000000001-099999999	Lawn-Boy	D408
7260	1971	100000001-199999999	Lawn-Boy	D408
7260A	1972	200000001-299999999	Lawn-Boy	D408
7260B	1973	300000001-399999999	Lawn-Boy	D408
7260C	1974	400000001-499999999	Lawn-Boy	D408
7260D	1975	500000001-599999999	Lawn-Boy	D409
7260D	1976	600000001-699999999	Lawn-Boy	D409
7260E	1970	000000001-099999999	Lawn-Boy	D408E
7260E	1971	100000001-199999999	Lawn-Boy	D408E
7260F	1976	600000001-699999999	Lawn-Boy	D409
7260G	1977	700000001-799999999	Lawn-Boy	D409
7260G	1978	800000001-899999999	Lawn-Boy	D409
7260G	1979	900000001-999999999	Lawn-Boy	D409

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7260G	1980	000000001-099999999	Lawn-Boy	D409
7260G	1981	100000001-199999999	Lawn-Boy	D409
7260S	1970	000000001-099999999	Lawn-Boy	D409
7260S	1971	100000001-199999999	Lawn-Boy	D409
7261	1972	200000001-299999999	Lawn-Boy	D600
7261E	1972	200000001-299999999	Lawn-Boy	D600
7262	1973	300000001-399999999	Lawn-Boy	D600
7262E	1973	300000001-399999999	Lawn-Boy	D600E
7263	1974	400000001-499999999	Lawn-Boy	D600
7263E	1974	400000001-499999999	Lawn-Boy	D601E
7264	1975	500000001-599999999	Lawn-Boy	D601
7264	1976	600000001-699999999	Lawn-Boy	D601
7265	1976	600000001-699999999	Lawn-Boy	D601
7266	1977	700000001-799999999	Lawn-Boy	D601
7266	1978	800000001-899999999	Lawn-Boy	D601
7268	1978	800000001-899999999	Lawn-Boy	F100
7268	1979	900000001-999999999	Lawn-Boy	F100
7268	1980	000000001-099999999	Lawn-Boy	F100
7268	1981	100000001-199999999	Lawn-Boy	F100
7268	1982	A00000001-A99999999	Lawn-Boy	F100
7268A	1986	E00000001-E99999999	Lawn-Boy	F100
7270	1983	B00000001-B99999999	Lawn-Boy	F100
7270AE	1983	B00000001-B99999999	Lawn-Boy	F
7271	1984	C00000001-C99999999	Lawn-Boy	F
7271AE	1984	C00000001-C99999999	Lawn-Boy	F
7350	1985	D00000001-D99999999	Lawn-Boy	F
7351	1986	E00000001-E99999999	Lawn-Boy	F
7351	1987	F00000001-F99999999	Lawn-Boy	F
7351	1988	G00000001-G99999999	Lawn-Boy	F
7352	1988	G00000001-G99999999	Lawn-Boy	F
8001	1966	600000001-699999999	Lawn-Boy	C43
8001	1967	700000001-799999999	Lawn-Boy	C43
8002	1967	700000001-799999999	Lawn-Boy	C44
8003	1968	800000001-899999999	Lawn-Boy	C45
8004	1969	900000001-999999999	Lawn-Boy	C45
8005	1970	000000001-099999999	Lawn-Boy	C46
8005	1971	100000001-199999999	Lawn-Boy	C46
8020	1970	000000001-099999999	Lawn-Boy	C46
8020	1971	100000001-199999999	Lawn-Boy	D420
8021	1972	200000001-299999999	Lawn-Boy	D420
8025	1984	C00000001-C99999999	Lawn-Boy	F
8025	1985	D00000001-D99999999	Lawn-Boy	F
8035	1986	E00000001-E99999999	Lawn-Boy	F
8035AE	1986	E00000001-E99999999	Lawn-Boy	F
8070	1980	000000001-099999999	Lawn-Boy	F140
8071	1980	000000001-099999999	Lawn-Boy	F141
8071	1981	100000001-199999999	Lawn-Boy	F141

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8071	1982	A00000001-A99999999	Lawn-Boy	F141
8072	1984	C00000001-C99999999	Lawn-Boy	F
8072	1985	D00000001-D99999999	Lawn-Boy	F
8073	1986	E00000001-E99999999	Lawn-Boy	F
8073	1987	F00000001-F99999999	Lawn-Boy	F
8073	1988	G00000001-G99999999	Lawn-Boy	F
8073AE	1988	G00000001-G99999999	Lawn-Boy	F
8074	1988	G00000001-G99999999	Lawn-Boy	F
8100	1957	700000001-799999999	Lawn-Boy	C40
8110	1986	E00000001-E99999999	Lawn-Boy	F
8125	1984	C00000001-C99999999	Lawn-Boy	F
8125	1985	D00000001-D99999999	Lawn-Boy	F
8125	1986	E00000001-E99999999	Lawn-Boy	F
8127AE	1988	G00000001-G99999999	Lawn-Boy	F
8155	1986	E00000001-E99999999	Lawn-Boy	F
8156	1987	F00000001-F99999999	Lawn-Boy	F
8157	1986	E00000001-E99999999	Lawn-Boy	F
8157	1987	F00000001-F99999999	Lawn-Boy	F
8157	1988	G00000001-G99999999	Lawn-Boy	F
8157A	1987	F00000001-F99999999	Lawn-Boy	F
8157A	1988	G00000001-G99999999	Lawn-Boy	F
8157A1	1989	H00000001-H99999999	Lawn-Boy	F
8157A1	1990	J00000001-J99999999	Lawn-Boy	F
8200	1958	800000001-899999999	Lawn-Boy	C41
8210	1959	900000001-999999999	Lawn-Boy	C41
8210	1960	000000001-099999999	Lawn-Boy	C41
8210	1961	100000001-199999999	Lawn-Boy	C41
8210A	1961	100000001-199999999	Lawn-Boy	C41
8220	1962	200000001-299999999	Lawn-Boy	C43
8221	1963	300000001-399999999	Lawn-Boy	D440
8222	1964	400000001-499999999	Lawn-Boy	D441
8223	1965	500000001-599999999	Lawn-Boy	D442
8224	1966	600000001-699999999	Lawn-Boy	D443
8225	1967	700000001-799999999	Lawn-Boy	D444
8226	1967	700000001-799999999	Lawn-Boy	D445
8226	1968	800000001-899999999	Lawn-Boy	D445
8227	1968	800000001-899999999	Lawn-Boy	D446
8227E	1968	800000001-899999999	Lawn-Boy	D446E
8228	1969	900000001-999999999	Lawn-Boy	D447
8228E	1969	900000001-999999999	Lawn-Boy	D477E
8229	1970	000000001-099999999	Lawn-Boy	D448
8229	1971	100000001-199999999	Lawn-Boy	D448
8229A	1970	000000001-099999999	Lawn-Boy	D448
8229A	1971	100000001-199999999	Lawn-Boy	D448
8229A	1972	200000001-299999999	Lawn-Boy	D448
8229B	1972	200000001-299999999	Lawn-Boy	D448
8229C	1973	300000001-399999999	Lawn-Boy	D448

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8229D	1974	400000001-499999999	Lawn-Boy	D449
8229DV	1974	400000001-499999999	Lawn-Boy	D449
8229E	1970	000000001-099999999	Lawn-Boy	D449E
8229E	1971	100000001-199999999	Lawn-Boy	D449E
8229EA	1972	200000001-299999999	Lawn-Boy	D449E
8229F	1975	500000001-599999999	Lawn-Boy	D449
8229F	1976	600000001-699999999	Lawn-Boy	D449
8229H	1977	700000001-799999999	Lawn-Boy	D449
8229H	1978	800000001-899999999	Lawn-Boy	D449
8229S	1970	000000001-099999999	Lawn-Boy	D448
8229S	1971	100000001-199999999	Lawn-Boy	D448
8230	1972	200000001-299999999	Lawn-Boy	D640
8230E	1972	200000001-299999999	Lawn-Boy	D640E
8231	1973	300000001-399999999	Lawn-Boy	D640
8231E	1973	300000001-399999999	Lawn-Boy	D640E
8232	1974	400000001-499999999	Lawn-Boy	D640
8232E	1974	400000001-499999999	Lawn-Boy	D640E
8233	1975	500000001-599999999	Lawn-Boy	D641
8233	1976	600000001-699999999	Lawn-Boy	D641
8233AE	1975	500000001-599999999	Lawn-Boy	D641E
8233E	1976	600000001-699999999	Lawn-Boy	D641E
8234	1976	600000001-699999999	Lawn-Boy	D640
8234AE	1976	600000001-699999999	Lawn-Boy	D641E
8235	1977	700000001-799999999	Lawn-Boy	D641
8235	1978	800000001-899999999	Lawn-Boy	D641
8235AE	1977	700000001-799999999	Lawn-Boy	D641AE
8235AE	1978	800000001-899999999	Lawn-Boy	D641AE
8237	1978	800000001-899999999	Lawn-Boy	F140
8237	1979	900000001-999999999	Lawn-Boy	F140
8237	1980	000000001-099999999	Lawn-Boy	F140
8237	1981	100000001-199999999	Lawn-Boy	F140
8237	1982	A00000001-A99999999	Lawn-Boy	F140
8237	1983	B00000001-B99999999	Lawn-Boy	F140
8237AE	1978	800000001-899999999	Lawn-Boy	F140AE
8238AE	1979	900000001-999999999	Lawn-Boy	F140AE
8238AE	1980	000000001-099999999	Lawn-Boy	F140AE
8238AE	1981	100000001-199999999	Lawn-Boy	F140AE
8238AE	1982	A00000001-A99999999	Lawn-Boy	F140AE
8239AE	1984	C00000001-C99999999	Lawn-Boy	F140AE
8240	1983	B00000001-B99999999	Lawn-Boy	F
8240AE	1983	B00000001-B99999999	Lawn-Boy	F
8241	1984	C00000001-C99999999	Lawn-Boy	F
8241	1985	D00000001-D99999999	Lawn-Boy	F
8241	1986	E00000001-E99999999	Lawn-Boy	F
8241AE	1984	C00000001-C99999999	Lawn-Boy	F
8241AE	1985	D00000001-D99999999	Lawn-Boy	F
8243	1986	E00000001-E99999999	Lawn-Boy	F

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Model	Year	Serial Range	Engine Manufacturer	Engine Model Number
8243	1987	F00000001-F99999999	Lawn-Boy	F
8243	1988	G00000001-G99999999	Lawn-Boy	F
8243AE	1986	E00000001-E99999999	Lawn-Boy	F
8243AE	1987	F00000001-F99999999	Lawn-Boy	F
8243AE1	1988	G00000001-G99999999	Lawn-Boy	F
8243B	1988	G00000001-G99999999	Lawn-Boy	F
8244	1988	G00000001-G99999999	Lawn-Boy	F
8250	1973	300000001-399999999	Lawn-Boy	D480
8250X	1973	300000001-399999999	Lawn-Boy	D480
8251	1974	400000001-499999999	Lawn-Boy	D480
8252	1975	500000001-599999999	Lawn-Boy	D481
8252	1976	600000001-699999999	Lawn-Boy	D481
8253	1976	600000001-699999999	Lawn-Boy	D481
8255	1977	700000001-799999999	Lawn-Boy	D481
8255	1978	800000001-899999999	Lawn-Boy	D481
8255	1979	900000001-999999999	Lawn-Boy	D481
8256	1979	900000001-999999999	Lawn-Boy	D481
8256	1980	000000001-099999999	Lawn-Boy	D481
8256	1981	100000001-199999999	Lawn-Boy	D481
8270	1978	800000001-899999999	Lawn-Boy	F140
8270	1979	900000001-999999999	Lawn-Boy	F140
8270	1980	000000001-099999999	Lawn-Boy	F140
8270	1981	100000001-199999999	Lawn-Boy	F140
8270	1982	A00000001-A99999999	Lawn-Boy	F141
8270	1983	B00000001-B99999999	Lawn-Boy	F141
8270	1984	C00000001-C99999999	Lawn-Boy	F141
8270A	1985	D00000001-D99999999	Lawn-Boy	F141
8270A	1986	E00000001-E99999999	Lawn-Boy	F141
8270AE	1978	800000001-899999999	Lawn-Boy	F140AE
8271AE	1978	800000001-899999999	Lawn-Boy	F140AE
8271AE	1979	900000001-999999999	Lawn-Boy	F140AE
8271AE	1980	000000001-099999999	Lawn-Boy	F140AE
8271AE	1981	100000001-199999999	Lawn-Boy	F140AE
8271AE	1982	A00000001-A99999999	Lawn-Boy	F142AE
8272	1983	B00000001-B99999999	Lawn-Boy	F
8272AE	1983	B00000001-B99999999	Lawn-Boy	F
8273	1984	C00000001-C99999999	Lawn-Boy	F
8273	1985	D00000001-D99999999	Lawn-Boy	F
8273AE	1984	C00000001-C99999999	Lawn-Boy	F
8273AE	1985	D00000001-D99999999	Lawn-Boy	F
8290	1983	B00000001-B99999999	Lawn-Boy	F
8291	1984	C00000001-C99999999	Lawn-Boy	F
8291	1985	D00000001-D99999999	Lawn-Boy	F
8310	1978	800000001-899999999	Lawn-Boy	F
8310	1979	900000001-999999999	Lawn-Boy	F240
8350	1978	800000001-899999999	Lawn-Boy	F240
8350	1979	900000001-999999999	Lawn-Boy	F240

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Model	Year	Serial Range	Engine Manufacturer	Engine Model Number
8400	1980	000000001-099999999	Lawn-Boy	F241
8401	1980	000000001-099999999	Lawn-Boy	F241
8401	1981	100000001-199999999	Lawn-Boy	F241
8401	1982	A00000001-A99999999	Lawn-Boy	F241
8401	1983	B00000001-B99999999	Lawn-Boy	F241
8401	1984	C00000001-C99999999	Lawn-Boy	F241
8401B	1985	D00000001-D99999999	Lawn-Boy	F241
8402	1983	B00000001-B99999999	Lawn-Boy	F241
8403	1984	C00000001-C99999999	Lawn-Boy	F241
8403	1985	D00000001-D99999999	Lawn-Boy	F241
8426	1983	B00000001-B99999999	Lawn-Boy	F
8427	1984	C00000001-C99999999	Lawn-Boy	F
8427	1985	D00000001-D99999999	Lawn-Boy	F
8430	1986	E00000001-E99999999	Lawn-Boy	F
8431	1986	E00000001-E99999999	Lawn-Boy	F
8431	1987	F00000001-F99999999	Lawn-Boy	F
8431	1988	G00000001-G99999999	Lawn-Boy	F
8440	1987	F00000001-F99999999	Lawn-Boy	F
8440	1988	G00000001-G99999999	Lawn-Boy	F
8440	1989	H00000001-H99999999	Lawn-Boy	F
8440	1990	J00000001-J99999999	Lawn-Boy	F
8440AE	1987	F00000001-F99999999	Lawn-Boy	F
8440AE	1988	G00000001-G99999999	Lawn-Boy	F
8440AE	1989	H00000001-H99999999	Lawn-Boy	F
8440AE	1990	J00000001-J99999999	Lawn-Boy	F
8453	1985	D00000001-D99999999	Lawn-Boy	F
8455	1987	F00000001-F99999999	Lawn-Boy	F
8461	1986	E00000001-E99999999	Lawn-Boy	F
8461	1987	F00000001-F99999999	Lawn-Boy	F
8461	1988	G00000001-G99999999	Lawn-Boy	F
8471	1987	F00000001-F99999999	Lawn-Boy	F
8480	1986	E00000001-E99999999	Lawn-Boy	F
8481	1986	E00000001-E99999999	Lawn-Boy	F
8481	1987	F00000001-F99999999	Lawn-Boy	F
8481	1988	G00000001-G99999999	Lawn-Boy	F
8481AE	1986	E00000001-E99999999	Lawn-Boy	F
8481AE	1987	F00000001-F99999999	Lawn-Boy	F
8481AE	1988	G00000001-G99999999	Lawn-Boy	F
8600	1979	900000001-999999999	Lawn-Boy	D410
8601	1980	000000001-099999999	Lawn-Boy	D411
8602	1981	100000001-199999999	Lawn-Boy	F340
8602	1982	A00000001-A99999999	Lawn-Boy	F340
8603	1982	A00000001-A99999999	Lawn-Boy	F340
8604	1983	B00000001-B99999999	Lawn-Boy	F
8604A	1984	C00000001-C99999999	Lawn-Boy	F
8604A	1985	D00000001-D99999999	Lawn-Boy	F
8605	1983	B00000001-B99999999	Lawn-Boy	F340

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Model	Year	Serial Range	Engine Manufacturer	Engine Model Number
8605A	1984	C00000001-C99999999	Lawn-Boy	F340
8650	1979	900000001-999999999	Lawn-Boy	F340
8651	1980	000000001-099999999	Lawn-Boy	F140
8651	1981	100000001-199999999	Lawn-Boy	F140
8651	1982	A00000001-A99999999	Lawn-Boy	F140
8670	1979	900000001-999999999	Lawn-Boy	F140
8671	1980	000000001-099999999	Lawn-Boy	F141
8671	1981	100000001-199999999	Lawn-Boy	F141
8671	1982	A00000001-A99999999	Lawn-Boy	F141
8671AE	1980	000000001-099999999	Lawn-Boy	F141
8671AE	1981	100000001-199999999	Lawn-Boy	F142AE
8671AE	1982	A00000001-A99999999	Lawn-Boy	F142AE
8673	1983	B00000001-B99999999	Lawn-Boy	F
8673AE	1983	B00000001-B99999999	Lawn-Boy	F
8674	1984	C00000001-C99999999	Lawn-Boy	F
8861	1988	G00000001-G99999999	Lawn-Boy	F
9200	1958	800000001-899999999	Lawn-Boy	C50
9210	1959	900000001-999999999	Lawn-Boy	C50
9210	1960	000000001-099999999	Lawn-Boy	C50
9210	1961	100000001-199999999	Lawn-Boy	C50
9211	1962	200000001-299999999	Lawn-Boy	D450
9212	1963	300000001-399999999	Lawn-Boy	D450
9212A	1964	400000001-499999999	Lawn-Boy	D451
9213	1965	500000001-599999999	Lawn-Boy	D452
9266	1974	400000001-499999999	Briggs & Stratton	130902
9266	1975	500000001-599999999	Briggs & Stratton	130902
9266	1976	600000001-699999999	Briggs & Stratton	130902
9300	1967	700000001-799999999	Briggs & Stratton	146702-0652
9300	1968	800000001-899999999	Briggs & Stratton	146702-0652
9301	1969	900000001-999999999	Briggs & Stratton	146702-0652
9302	1970	000000001-099999999	Briggs & Stratton	146702-0652
9302	1971	100000001-199999999	Briggs & Stratton	146702-0652
9302E	1969	900000001-999999999	Tecumseh	V70-125046
9302E	1970	000000001-099999999	Tecumseh	V70-125046
9302E	1971	100000001-199999999	Tecumseh	V70-125046
9303	1970	000000001-099999999	Briggs & Stratton	270702-0662
9303	1971	100000001-199999999	Briggs & Stratton	270702-0662
9303E	1970	000000001-099999999	Tecumseh	V70-125046
9303E	1971	100000001-199999999	Tecumseh	V70-125046
9328	1972	200000001-299999999	Briggs & Stratton	190702
9328E	1972	200000001-299999999	Briggs & Stratton	190707
9328ES	1972	200000001-299999999	Briggs & Stratton	191707
9329	1974	400000001-499999999	Briggs & Stratton	190702
9329	1975	500000001-599999999	Briggs & Stratton	190702
9329	1976	600000001-699999999	Briggs & Stratton	190702
9329E	1974	400000001-499999999	Briggs & Stratton	190707
9329E	1975	500000001-599999999	Briggs & Stratton	190707

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Model	Year	Serial Range	Engine Manufacturer	Engine Model Number
9329E	1976	600000001-699999999	Briggs & Stratton	190707
9329ES	1973	300000001-399999999	Briggs & Stratton	191707
9329ES	1974	400000001-499999999	Briggs & Stratton	191707
9329ES	1975	500000001-599999999	Briggs & Stratton	191707
9329ES	1976	600000001-699999999	Briggs & Stratton	191707
9368	1972	200000001-299999999	Briggs & Stratton	190702
9368E	1972	200000001-299999999	Briggs & Stratton	190707
9368ES	1972	200000001-299999999	Briggs & Stratton	191707
9369	1974	400000001-499999999	Briggs & Stratton	190702
9369	1975	500000001-599999999	Briggs & Stratton	190702
9369	1976	600000001-699999999	Briggs & Stratton	190702
9369E	1974	400000001-499999999	Briggs & Stratton	190707
9369E	1975	500000001-599999999	Briggs & Stratton	190707
9369E	1976	600000001-699999999	Briggs & Stratton	190707
9369ES	1974	400000001-499999999	Briggs & Stratton	191707
9369ES	1975	500000001-599999999	Briggs & Stratton	191707
9369ES	1976	600000001-699999999	Briggs & Stratton	191707
9500	1971	100000001-199999999	Briggs & Stratton	130902
9501	1972	200000001-299999999	Briggs & Stratton	130902
9600	1969	900000001-999999999	Briggs & Stratton	146702-0652
9601	1970	000000001-099999999	Briggs & Stratton	146702-0652
9601	1971	100000001-199999999	Briggs & Stratton	146702-0652
C20CPR	1989	H00000001-H99999999	Lawn-Boy	F
C20CSR	1989	H00000001-H99999999	Lawn-Boy	F
C21CPN	1989	H00000001-H99999999	Lawn-Boy	F
C21CPN	1990	J00000001-J99999999	Lawn-Boy	F
C21CPNA	1990	J00000001-J99999999	Lawn-Boy	F
C21CSN	1989	H00000001-H99999999	Lawn-Boy	F
C21ZPN	1991	K00000001-K99999999	Lawn-Boy	F
C21ZSN	1991	K00000001-K99999999	Lawn-Boy	F
CS19ZPN	1990	J00000001-J99999999	Lawn-Boy	F
CS19ZPNA	1991	K00000001-K99999999	Lawn-Boy	F
EL20ZPR	1991	K00000001-K99999999	Lawn-Boy	F
ES19ZPN	1991	K00000001-K99999999	Lawn-Boy	F
ES20ESR	1991	K00000001-K99999999	Lawn-Boy	F
ES20ZSR	1991	K00000001-K99999999	Lawn-Boy	F
ET-1	1960	000000001-099999999	Lawn-Boy	C71
H21CPN	1989	H00000001-H99999999	Lawn-Boy	F
L20ZPN	1989	H00000001-H99999999	Lawn-Boy	F
L20ZPR	1989	H00000001-H99999999	Lawn-Boy	F
L20ZPRA	1989	H00000001-H99999999	Lawn-Boy	F
L20ZPRB	1990	J00000001-J99999999	Lawn-Boy	F
L21ZPN	1989	H00000001-H99999999	Lawn-Boy	F
L21ZPNA	1989	H00000001-H99999999	Lawn-Boy	F
L21ZPNB	1990	J00000001-J99999999	Lawn-Boy	F
L21ZPNC	1991	K00000001-K99999999	Lawn-Boy	F
L21ZSN	1989	H00000001-H99999999	Lawn-Boy	F

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Model	Year	Serial Range	Engine Manufacturer	Engine Model Number
L21ZSNA	1989	H00000001-H99999999	Lawn-Boy	F
L21ZSNB	1990	J00000001-J99999999	Lawn-Boy	F
L21ZSNC	1991	K00000001-K99999999	Lawn-Boy	F
LPT	1960	000000001-099999999	Clinton	B1290
LPT	1961	100000001-199999999	Clinton	B1290
LVT-1	1960	000000001-099999999	Lawn-Boy	C80
LVT-1	1961	100000001-199999999	Lawn-Boy	C80
M70BC	1961	100000001-199999999	Briggs & Stratton	706018
R7070	1980	000000001-099999999	Lawn-Boy	F100
R7070	1981	100000001-199999999	Lawn-Boy	F100
R7268	1978	800000001-899999999	Lawn-Boy	F100
R7268	1979	900000001-999999999	Lawn-Boy	F100
R7268	1980	000000001-099999999	Lawn-Boy	F100
R7268	1981	100000001-199999999	Lawn-Boy	F100
R7268	1982	A00000001-A99999999	Lawn-Boy	F100
R7268	1984	C00000001-C99999999	Lawn-Boy	F100
R7268	1985	D00000001-D99999999	Lawn-Boy	F100
R7270	1983	300000001-399999999	Lawn-Boy	F100
R7270AE	1983	B00000001-B99999999	Lawn-Boy	F100
R7271	1984	C00000001-C99999999	Lawn-Boy	F100
R7271AE	1984	C00000001-C99999999	Lawn-Boy	F100
R8035	1986	E00000001-E99999999	Lawn-Boy	F
R8035AE	1986	E00000001-E99999999	Lawn-Boy	F
R8035B	1986	E00000001-E99999999	Lawn-Boy	F
R8237	1978	800000001-899999999	Lawn-Boy	F140
R8237	1979	900000001-999999999	Lawn-Boy	F140
R8237	1980	000000001-099999999	Lawn-Boy	F140
R8237	1981	100000001-199999999	Lawn-Boy	F141
R8237	1982	A00000001-A99999999	Lawn-Boy	F141
R8237AE	1978	800000001-899999999	Lawn-Boy	F140AE
R8238AE	1979	900000001-999999999	Lawn-Boy	F140AE
R8238AE	1980	000000001-099999999	Lawn-Boy	F140AE
R8238AE	1981	100000001-199999999	Lawn-Boy	F140AE
R8238AE	1982	A00000001-A99999999	Lawn-Boy	F140AE
R8238AE	1983	B00000001-B99999999	Lawn-Boy	F140AE
R8238AE	1984	C00000001-C99999999	Lawn-Boy	F140AE
R8240	1983	B00000001-B99999999	Lawn-Boy	F140
R8240AE	1983	B00000001-B99999999	Lawn-Boy	F140AE
R8241	1984	C00000001-C99999999	Lawn-Boy	F140
R8241AE	1984	400000001-499999999	Lawn-Boy	F
R8242AE	1986	E00000001-E99999999	Lawn-Boy	F
S19ZPN	1989	H00000001-H99999999	Lawn-Boy	F
S19ZPNA	1990	J00000001-J99999999	Lawn-Boy	F
S19ZPNB	1991	K00000001-K99999999	Lawn-Boy	F
S20BSR	1989	H00000001-H99999999	Lawn-Boy	F
S20ESR	1989	H00000001-H99999999	Lawn-Boy	F
S20ZPR	1989	H00000001-H99999999	Lawn-Boy	F

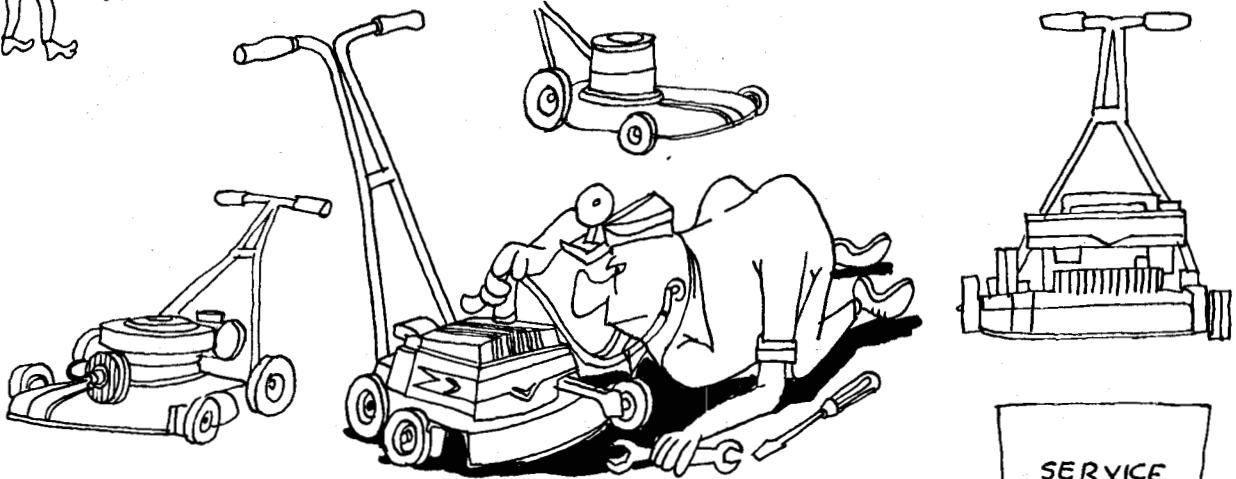
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Model	Year	Serial Range	Engine Manufacturer	Engine Model Number
S20ZSR	1989	H00000001-H99999999	Lawn-Boy	F
S21BSN	1989	H00000001-H99999999	Lawn-Boy	F
S21BSNA	1990	J00000001-J99999999	Lawn-Boy	F
S21BSR	1991	K00000001-K99999999	Lawn-Boy	F
S21ESN	1989	H00000001-H99999999	Lawn-Boy	F
S21ESNA	1990	J00000001-J99999999	Lawn-Boy	F
S21ESR	1991	K00000001-K99999999	Lawn-Boy	F
S21ZPM	1991	K00000001-K99999999	Lawn-Boy	F
S21ZPN	1989	H00000001-H99999999	Lawn-Boy	F
S21ZPNA	1990	J00000001-J99999999	Lawn-Boy	F
S21ZPNB	1990	J00000001-J99999999	Lawn-Boy	F
S21ZPR	1991	K00000001-K99999999	Lawn-Boy	F
S21ZSM	1989	H00000001-H99999999	Lawn-Boy	F
S21ZSM	1991	K00000001-K99999999	Lawn-Boy	F
S21ZSN	1989	H00000001-H99999999	Lawn-Boy	F
S21ZSNA	1990	J00000001-J99999999	Lawn-Boy	F
S21ZSR	1991	K00000001-K99999999	Lawn-Boy	F
SB-12	1959	900000001-999999999	Lawn-Boy	C12AA
SB-13	1960	000000001-099999999	Lawn-Boy	C12AA
SB-13	1961	100000001-199999999	Lawn-Boy	C12AA
SSI	1981	100000001-199999999	Piston Powered Products (Ryobi)	
SSIA	1984	400000001-499999999	Piston Powered Products (Ryobi)	
SSIB	1985	500000001-599999999	Piston Powered Products (Ryobi)	
SSIB	1986	600000001-699999999	Piston Powered Products (Ryobi)	
SSII	1981	100000001-199999999	Piston Powered Products (Ryobi)	
SSIIA	1984	400000001-499999999	Piston Powered Products (Ryobi)	
SSIIB	1985	500000001-599999999	Piston Powered Products (Ryobi)	
SSIIB	1986	600000001-699999999	Piston Powered Products (Ryobi)	

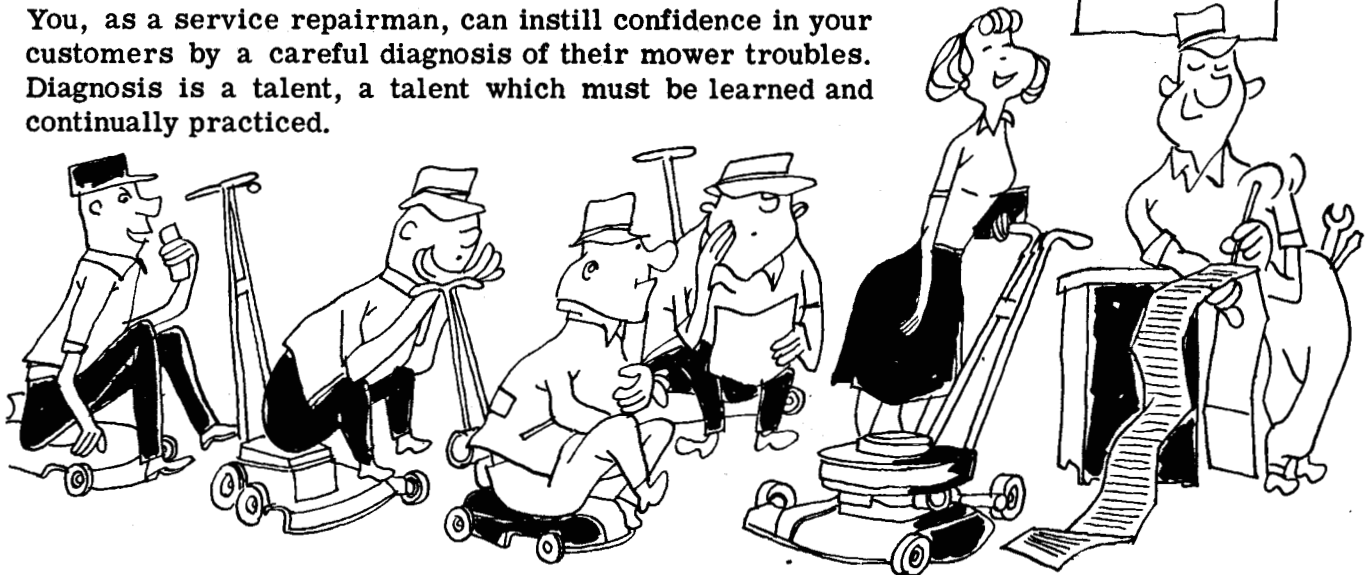
SECTION 3 - ENGINE DIAGNOSIS

DIAGNOSIS IS IMPORTANT

Remember the last time you didn't feel just right, and went to see your doctor? Did he say "hello," then rush you right into the operating room and remove your appendix? If he did, he would probably soon lose most of his patients, in one way or another. What he probably did first was to set you down and ask you some questions. Then he probably made a few tests, such as temperature, blood pressure, etc., before arriving at any sort of diagnosis. With the results, he could make more specific tests and arrive at an accurate diagnosis before treating you. Because of your doctor's training and careful diagnosis, you have confidence in him.



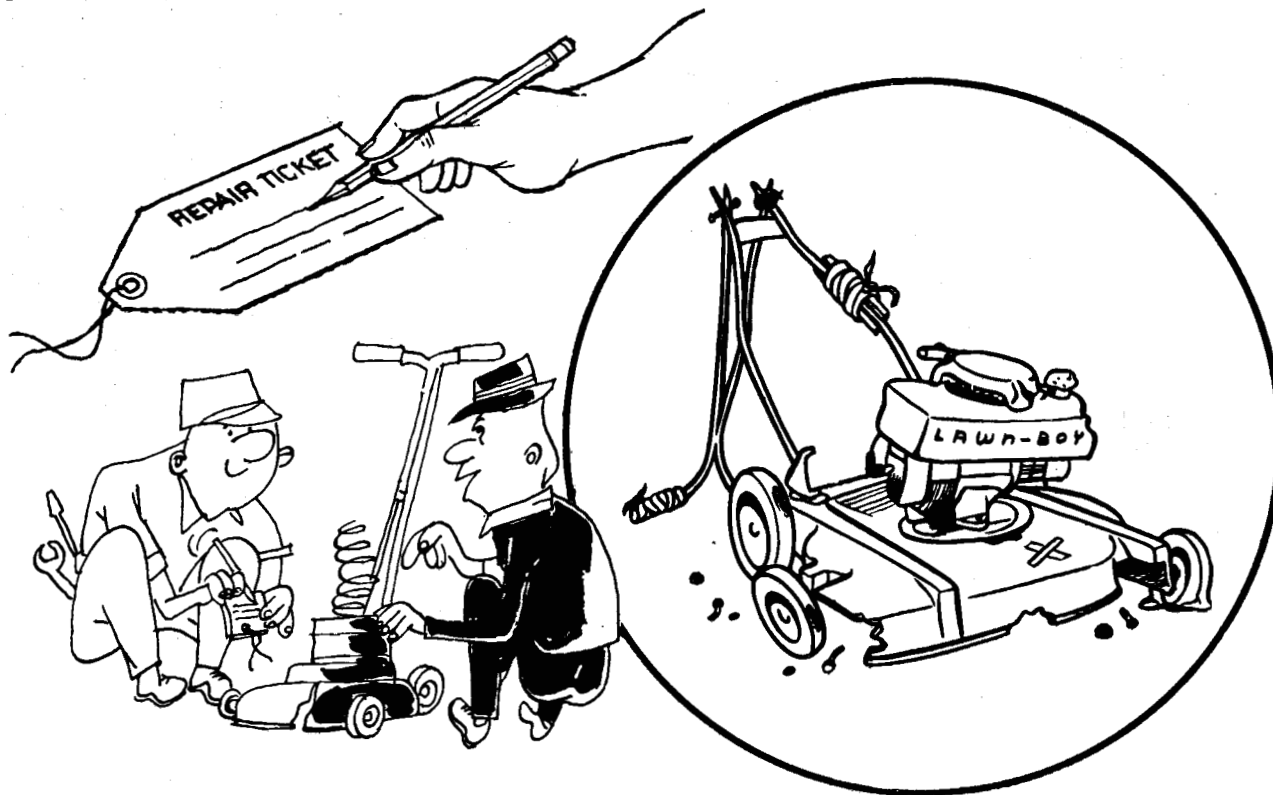
You, as a service repairman, can instill confidence in your customers by a careful diagnosis of their mower troubles. Diagnosis is a talent, a talent which must be learned and continually practiced.



ANY EXPERT AT DIAGNOSIS FOLLOWS A SET PROCEDURE

Your doctor takes your temperature, checks your pulse, heart, etc. before attempting a diagnosis. A service repairman must also follow a set procedure in trouble diagnosis to make fast and accurate repairs.

OBTAIN GENERAL PRELIMINARY INFORMATION



1. Fill out a brief report with the customers help. Put this information on the repair ticket which will be attached to the mower. Unless the failure is obvious, this may help the mechanic later on, especially if work is delayed for several days.
2. Have the customer look over the mower with you. Note obvious damage, removal or alteration of safety equipment such as trailing shield, toe guard, interlock cable etc. on the repair ticket in the presence of the customer. This may protect you if any questions arise later as to the responsibility for damage.
3. Find out how the mower is used:

Was it used in a small or large yard, at home only or often lent out?
Was it used on level, clean lawns, rough ground, vacant lots, heavy weeds, etc?
4. Find out what kind of gasoline and oil is used. Pull the engine through with starter rope, and if it binds or is dry internally (indicating lack of oil) show the customer.
5. If damage is apparent, find out how damage occurred.

**WITH THIS INFORMATION, YOUR MECHANIC CAN PROCEED
WITH SPECIFIC TESTS**

ENGINE DIAGNOSIS PROCEDURE

Train your mechanics in set diagnosis procedures. Normally, diagnosis takes very little time in the beginning, and will probably save a great deal of time in eliminating unnecessary repair work.

1. BEFORE YOU TRY TO START ENGINE

- a. Be sure there is clean fuel in tank.
- b. Be sure gas cap vent and fuel shut-off valve are open.
- c. Be sure ON-OFF Switch is in ON position.
- d. Check ON-OFF switch lead - must be connected to switch.

2. CHECK COMPRESSION

a. With ON-OFF switch in OFF position, pull engine through several times with starter. Feel for compression as you pull engine through. If engine spins very easily, it has little (if any) compression. With little compression, there will be little or no power.

b. If engine resists pull of starter rope, it has compression. If you spin an engine with good compression fast enough, you can hear the carburetor sucking air--and kick-back noise.

c. While checking for compression, also listen for any scraping or squeaking internal noises. These noises indicate piston and cylinder scoring. If you hear such noises, do not try to start the engine, but turn to Section 8, Engine Repair Procedure.



3. IGNITION CHECK

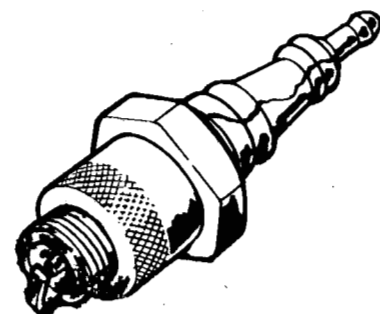
a. Take out the spark plug and examine it. Be sure that the electrodes are clean and the gap is .025" for D-400 SERIES, .035" for D-600 SERIES, and .035" for "F" SERIES. Check the porcelain. If it is cracked, the plug won't fire. If the end of the plug is wet, at least you know fuel is getting through. As a further check to see that fuel is getting through, place your thumb over the spark plug hole, and pull the starter cord several times. Your thumb should be wet with fuel.

b. Check spark plug using special tool part no. 426814. If spark plug tool is not available, remove plug from the cylinder, hold it approximately 1/4"-3/16" away from engine, pull the starter cord several times and check the spark between the plug and ground. The spark should be hot blue and snapping. A weak spark is orange, and makes little, if any, noise.

c. If there is no spark, or a very weak spark, ALWAYS try another plug. It only takes a few minutes, and these few minutes could save you hours. BE SURE YOU USE THE RIGHT PLUG - DON'T GUESS.

d. If the new plug won't fire, remove the plug from the lead wire and place a bolt in the rubber hood, making contact with the spring terminal. Hold the bolt head 1/4"-3/16" away from a metal part of the engine or housing, and pull starter cord several times. A good spark should jump the gap.

e. If you don't get a spark at this point then you have ignition problems. Refer to Section 6 for detailed service information.



4. CARBURETION DIAGNOSIS

If you have a spark at the plug (even though a weak spark), check to see that the fuel mixture is getting into the combustion chamber.

- a. Remove spark plug from cylinder.



SAFETY WARNING

ALLOW 10 SECONDS TIME BEFORE REMOVING SPARK PLUG LEAD. THIS ALLOWS CHARGE IN CD PACK TO LEAK OFF.

- b. Place finger over spark plug hole in cylinder and pull starter rope several times.
- c. If fuel mixture is entering cylinder your finger will be wet. If fuel is not entering cylinder refer to Section 4 for complete carburetor repair.

IMPORTANT

- Always check fuel tank - make sure it is clean and contains no water. Instruct customer in use of correct fuel mixture - Refer to Operator's Manual.
- Air filter element must be clean. Check for dirt or obstructions in carburetor throat.
- D-400 Series - Turn carburetor adjusting knob counterclockwise two turns from seat to make sure needle is open.
- D-600 Series - Check atmospheric pressure adjustment - Correct normal setting is 1-1/2 turns from closed setting.
- "F" Series - Check atmospheric pressure adjustment - Correct normal setting is 1/2 turn from closed setting.
- D-600 Series - Check atmospheric pressure adjustment - normal pre-setting is 1-1/2 turns from closed setting.
- "F" Series - Check atmospheric pressure adjustment - normal pre-setting is 1/2 turns from closed setting.
- "F" Series - Fuel flow needle valve adjustment - normal pre-setting is 2 turns from closed setting.
- Check fuel line to see if fuel is flowing into carburetor.

EXHAUST PORT CLEANING

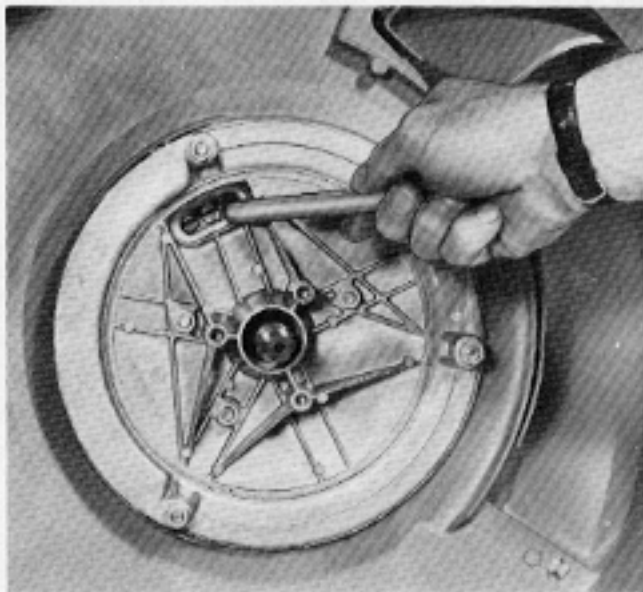
If your checks have indicated that the engine has good spark, fuel flow and compression, yet engine won't run, or "4-cycles," (ignition every other revolution) check the following:


EXHAUST PORT CLEANING

Loss of engine power can be attributed, in many cases, to restricted exhaust ports. This restriction results from a build-up of carbon deposits. Therefore, the muffler plate should be removed every 50 hours of operation or at the end of the mowing season and the exhaust ports checked for carbon accumulation. This routine maintenance check is not only of vital importance to eliminate loss of engine power, but to eliminate particles of carbon from breaking away, entering the powerhead and causing piston scoring.

NOTE

Using LAWN-BOY 2 cycle oil in the required amount will minimize carbon build-up. Most oil is not made for burning and therefore, results in heavy accumulation of carbon.




 SAFETY WARNING: TO PREVENT STARTING OF ENGINE, DISCONNECT AND REMOVE SPARK PLUG PRIOR TO REMOVING MUFFLER.

To clean exhaust ports, tip mower on its side and secure in this position. Remove nuts securing muffler cover to muffler plate and remove muffler cover. On some models the blade, blade stiffener, and adapter plate must be removed prior to removing muffler plate.

Pull starter rope slowly until piston covers the exhaust ports. Using a 3/8 inch diameter dowel, insert dowel into ports to break away carbon. Place mower in upright position and pull starter rope several times to blow out carbon. Clean muffler cover and cover plate and re-secure cover plate to muffler plate. If it was necessary to remove blade, torque blade nut to 50 ft. lbs. Torque blade bolt to 30-32 ft. lbs. Replace spark plug and reconnect high-tension lead.

NOTE

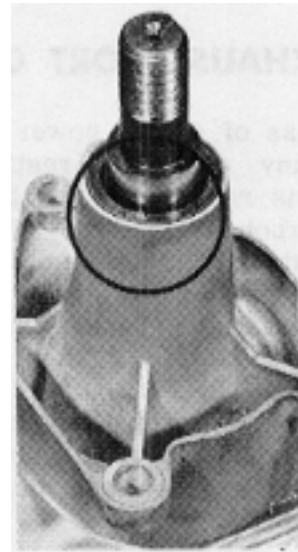
Replace blade nut or bolt if removed or installed MORE THAN FOUR times.

 SAFETY WARNING: WHEN REASSEMBLING METAL MUFFLER COVER, ASSEMBLE FASTENERS (SCREWS) WITH FINGERS TO ENGAGE PREVIOUSLY FORMED THREADS. DO NOT FORCE REINSTALLATION AS THE SCREW WILL FORM A NEW SET OF WEAKER THREADS WHICH MAY EVENTUALLY STRIP AND THE SCREW MAY BECOME A THROWN OBJECT. TORQUE TO 140-170 INCH LBS.

ENGINE DIAGNOSIS

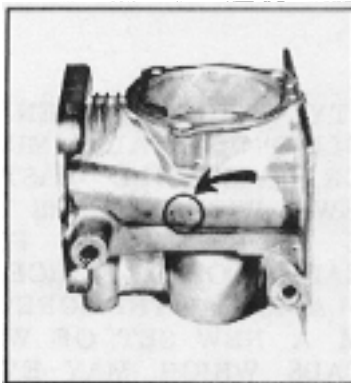


Upper and lower crankshaft seals - Worn seals may develop leaks, which permit air to enter or leave crankcase, impairing the compression and vacuum cycle. Upper (armature plate) seal on later "D" model engines is a spring loaded type. This provides more positive sealing to prevent oil leaking past and fouling breaker point.



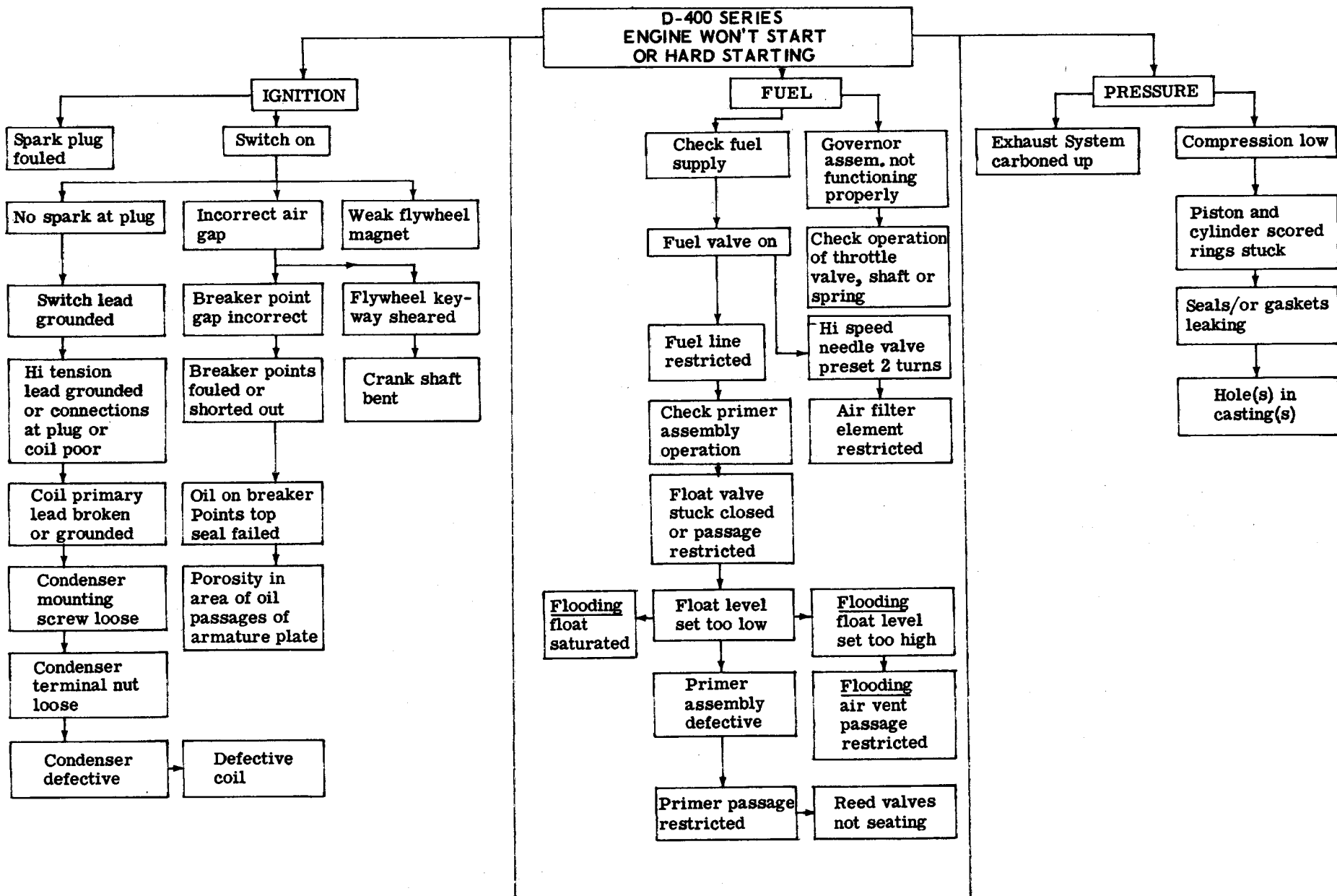
Gaskets - Defective gaskets can allow air leakage in addition to oil leakage. The results are the same as leaky seals.

Screws and bolts - Inspect for tightness. Loose screws or bolts can also permit air to enter or leave, impairing the compression and vacuum cycle.

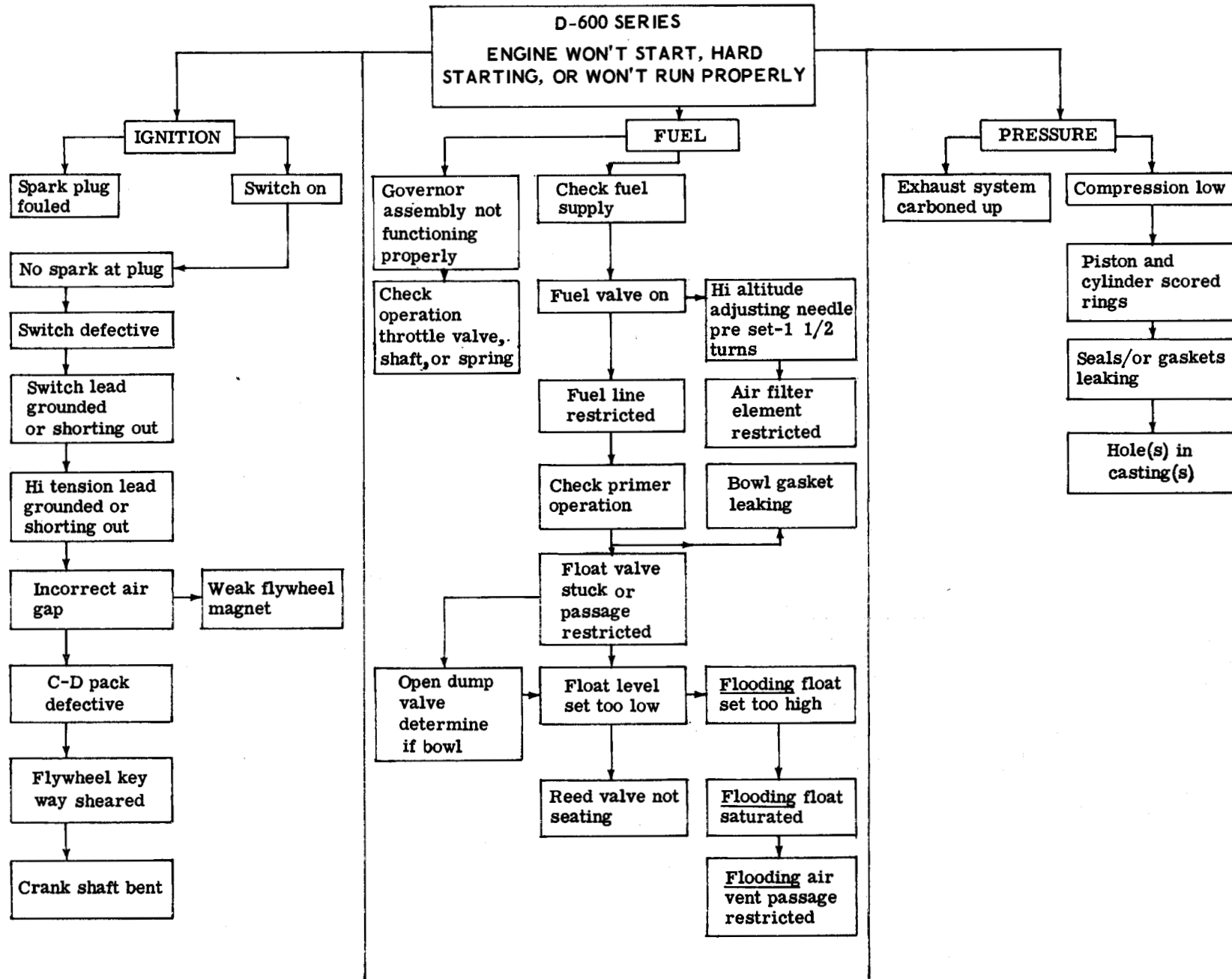


Major castings - Check for porosity in the carburetor, crankcase, cylinder, and magneto plate. Porosity results from a defect in the casting process, and is indicated by tiny air holes in the casting. This condition also results in air leaks. In some cases, the use of a penetrating ink will reveal hidden holes.

LAWN-BOY TROUBLE SHOOTING CHECK CHART



LAWN-BOY TROUBLE SHOOTING CHECK CHART



LAWN-BOY TROUBLE SHOOTING CHECK CHART

"C" Series
ENGINE WON'T START
OR HARD STARTING

IGNITION

Spark plug fouled

Switch on

No spark at plug

Switch or switch lead grounded

Hi tension lead grounded or connections at plug or coil poor

Breaker point gap incorrect

Air gap incorrect

Weak flywheel

Breaker points fouled or shorted out

Oil on breaker points-top seal

Flywheel keyway sheared out

Condenser mounting screw loose

Porosity in area of oil passages of armature plate

Crank shaft bent

Condenser terminal nut loose

Condenser defective

Primary coil lead broken or grounded

Coil defective

FUEL

Check fuel supply

Fuel valve on

Fuel line restricted

Check choke operation

Float valve stuck closed or passage restricted

Float level set too low

Hi speed nozzle restricted

Reed valves not seating

Hi speed needle valve pre set 2 turns

Air filter element restricted

Flooding float saturated

Flooding float level set too high

Flooding air passage restricted

PRESSURE

Exhaust System

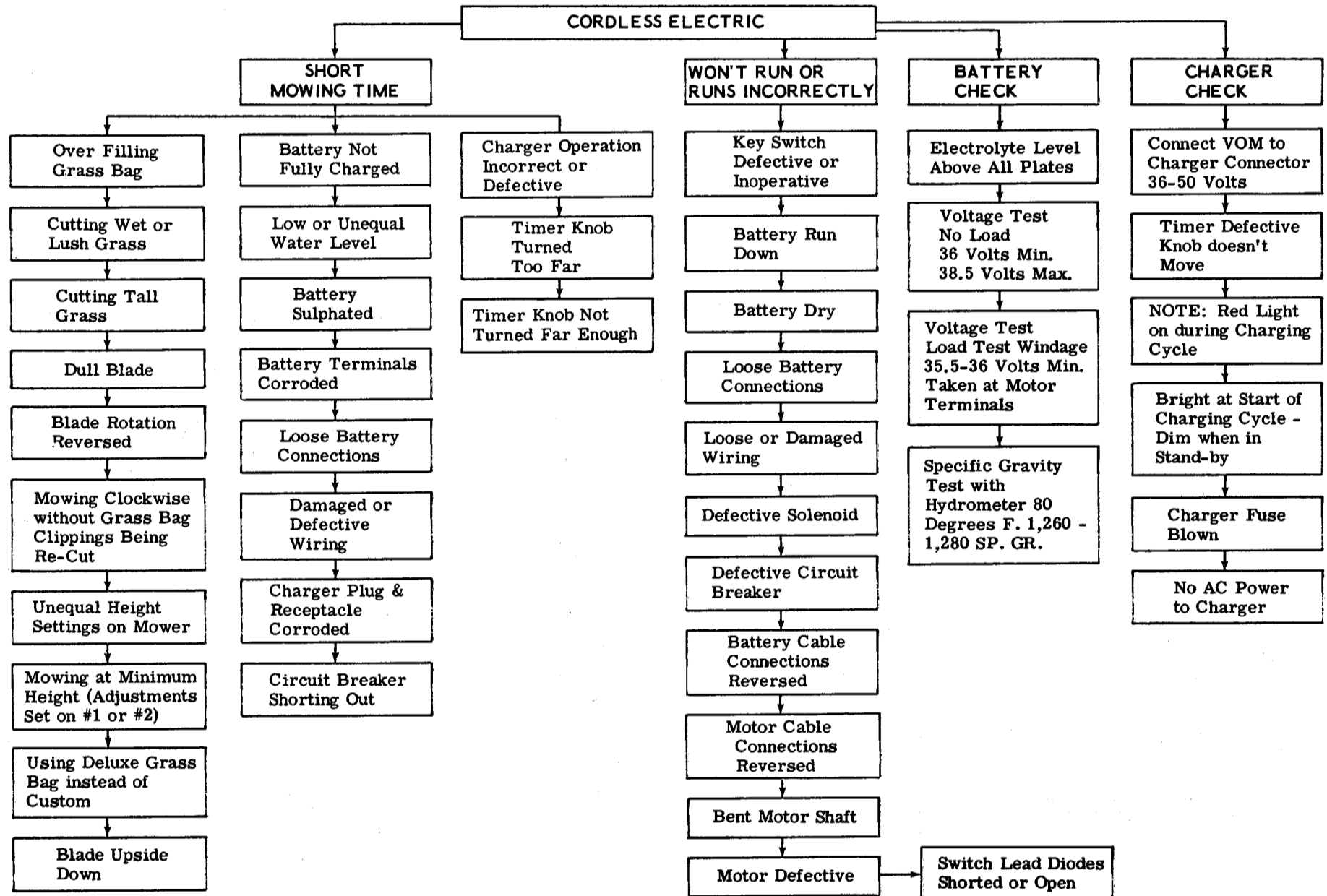
Compression low

Piston & cylinder scored rings stuck

Seals/or gaskets leaking

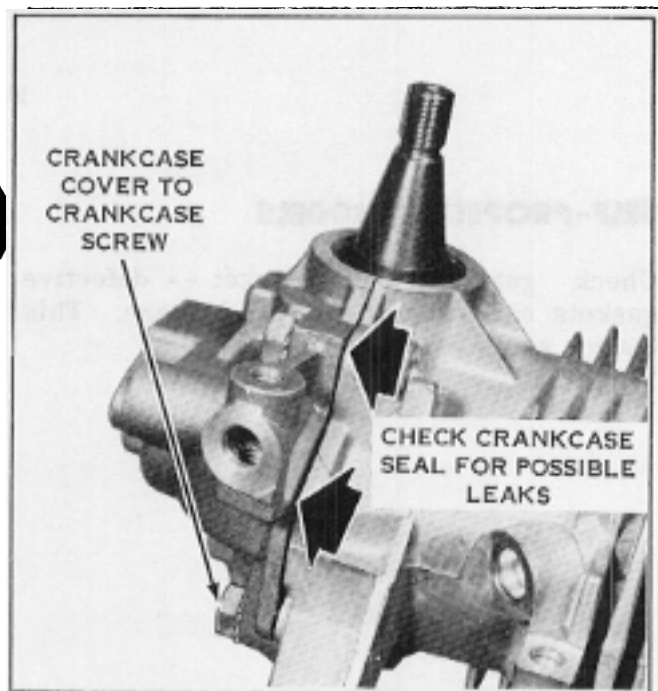
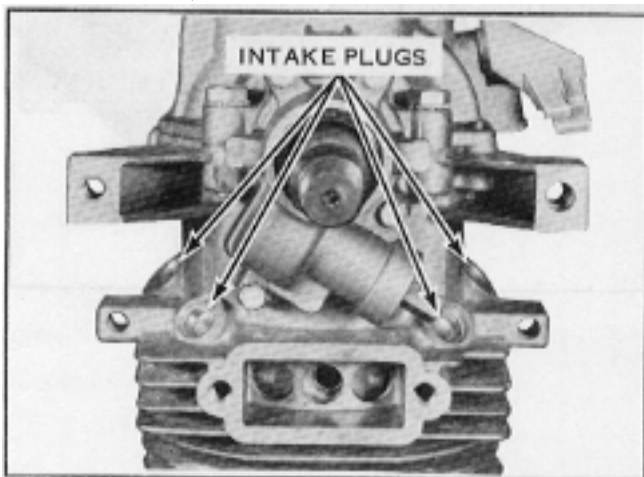
Hole(s) in casting(s)

LAWN-BOY TROUBLE SHOOTING CHECK CHART



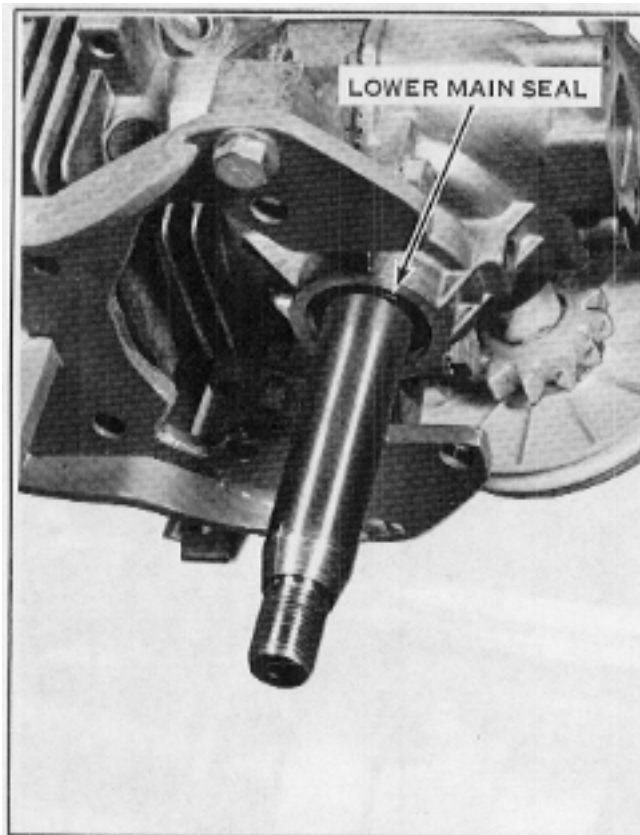
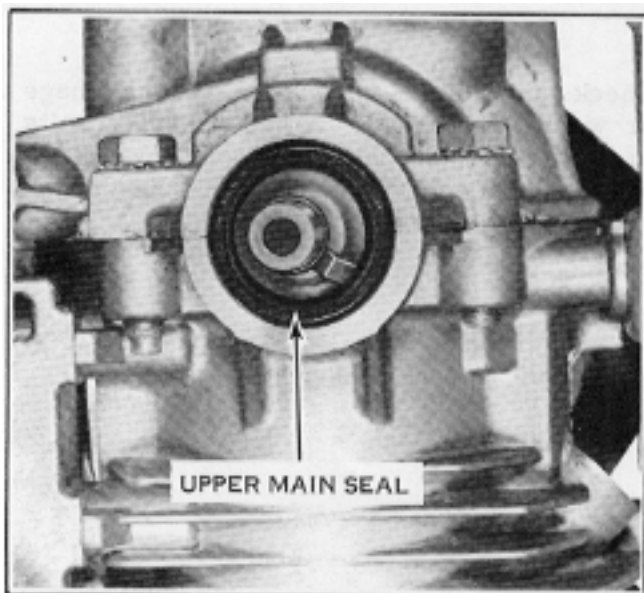
ENGINE DIAGNOSIS

Loss of engine power may be attributed, in many cases, to improper sealing of the crankcase halves and/or incorrect torque applied to the crankcase cover to crankcase mounting screws. A poor seal results in air and oil leakage, impairing the compression and vacuum cycle. Refer to Section 8 for correct installation of crankcase halves.



Check (4) intake plugs for possible leaks. Use special tool part no. 609964 to correctly install intake plugs.

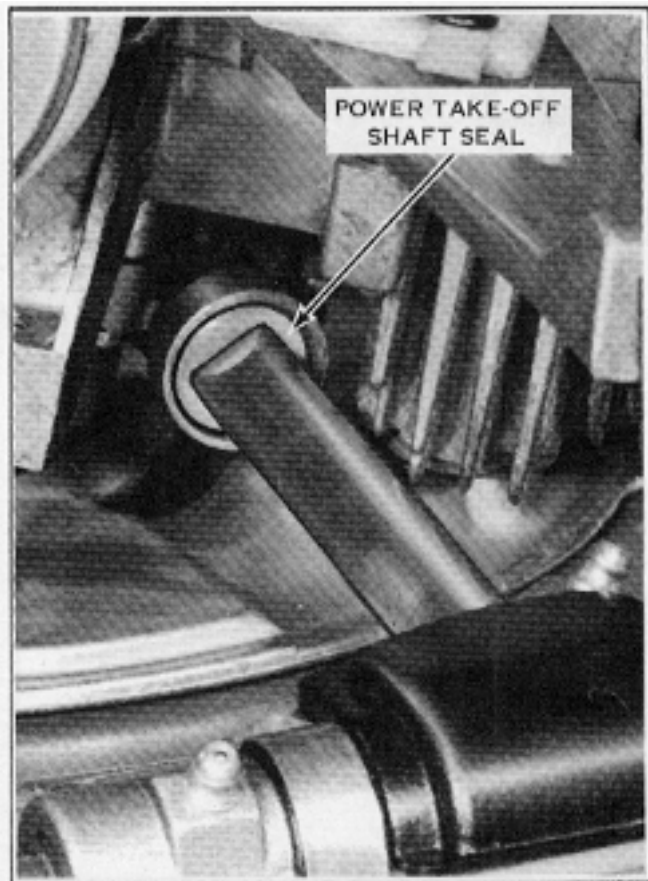
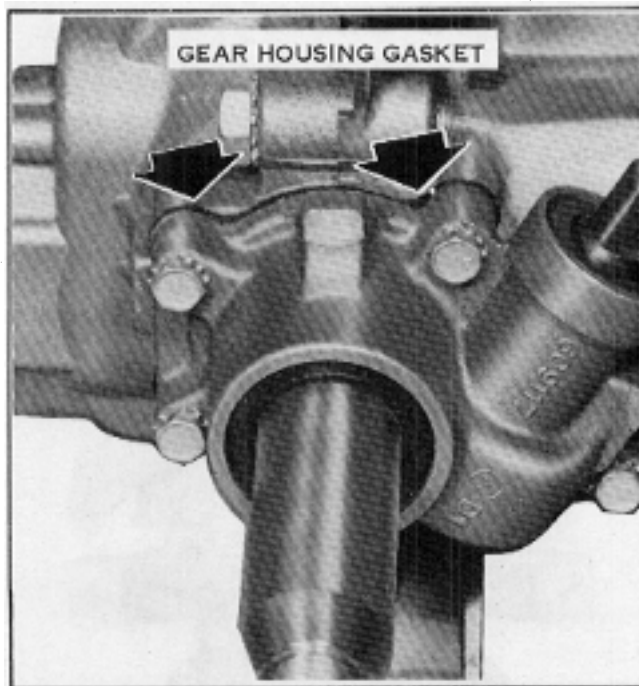
Check for worn or damaged upper and lower main seals. Worn seals may develop leaks, which permit air to enter or leave crankcase, impairing the compression and vacuum cycle.



"F" SERIES (Cont.)

SELF-PROPELLED MODELS

Check gear housing gasket -- defective gaskets can allow air or oil leakage. This causes same results as leaky seals. ▶



◀ Check power take-off shaft seal for damage or wear. A worn or damaged seal results in oil leakage and lower crankcase pressures.

"F" SERIES (Cont.)

EXHAUST PORT CLEANING

Excessive carbon deposits present in the exhaust ports and muffler baffle cause additional wear to engine parts and create a noticeable power loss. Approximately every 50 hours and at the close of the mowing season check for excessive carbon accumulation in exhaust ports and muffler baffle. This routine maintenance check is not only of vital importance to eliminate loss of engine power, but to eliminate particles of carbon from entering the cylinder, causing piston scoring.

NOTE

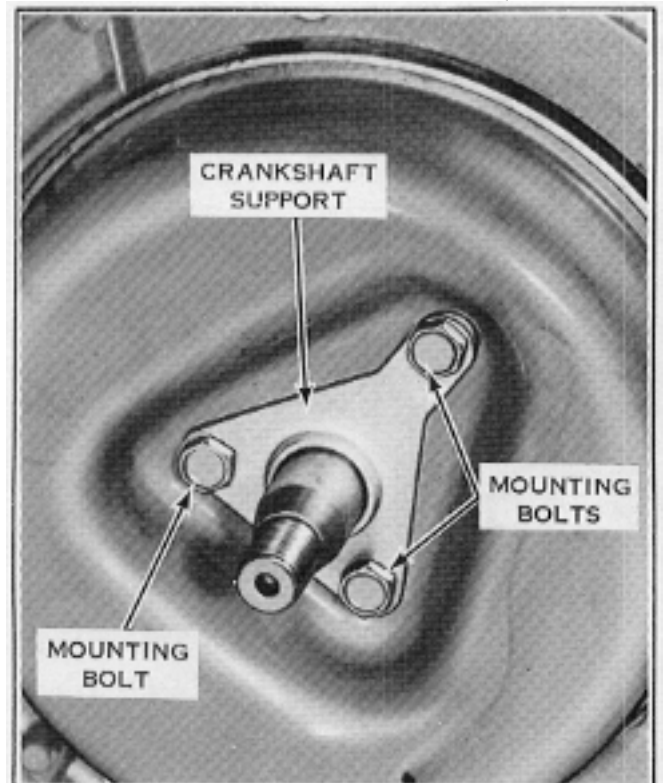
Using Lawn-Boy Special lubricant in the required fuel/oil mixture will minimize carbon build-up. Most oil is not made for burning and therefore, results in heavy accumulation of carbon.

MUFFLER BAFFLE AND EXHAUST PORTS

SAFETY WARNING

TO PREVENT STARTING OF ENGINE, DISCONNECT SPARK PLUG WIRE AND REMOVE SPARK PLUG PRIOR TO REMOVING MUFFLER.

To clean muffler baffle and exhaust ports, tip mower on its side. Remove the blade nut, blade, blade stiffener (washer on 21" models) and blade adapter hub. The hub is tapered to fit the taper of the crankshaft. Tap the hub with a fiber hammer to loosen it from the crankshaft. Remove three bolts securing crankshaft support and muffler to muffler plate. Remove crankshaft support and muffler baffle.

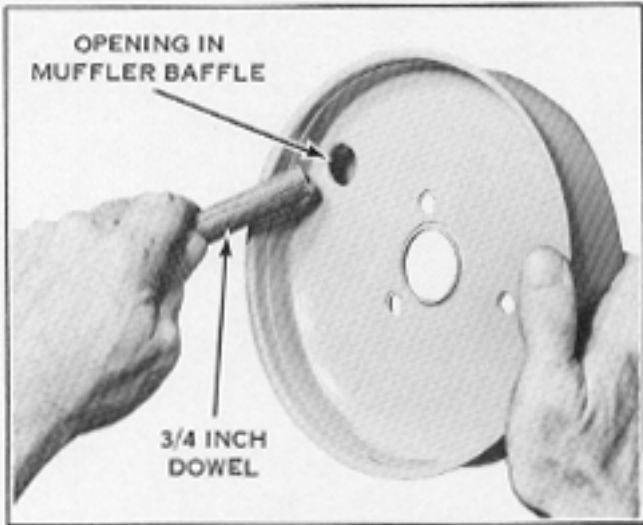


"F" SERIES (Cont.)

Using a 3/4 inch diameter wooden dowel remove carbon deposits from opening in muffler baffle and muffler tube.

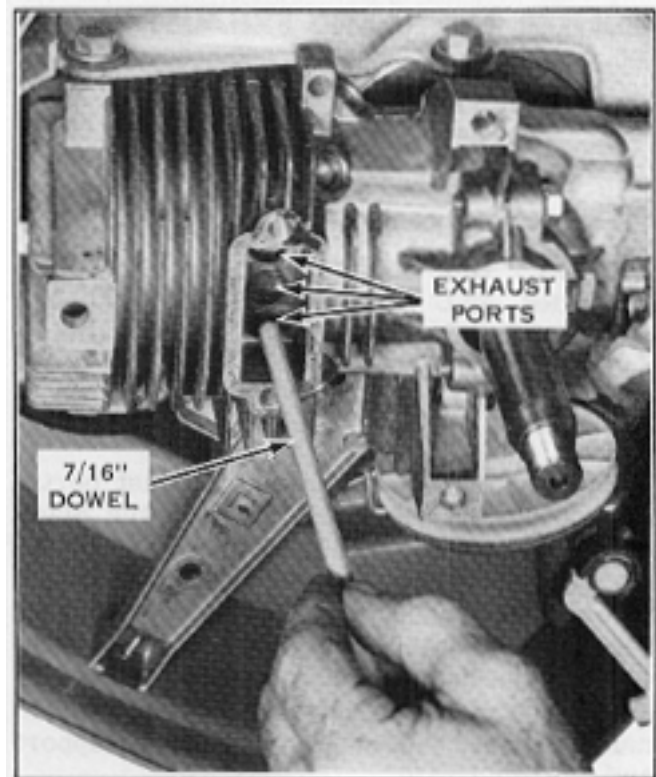
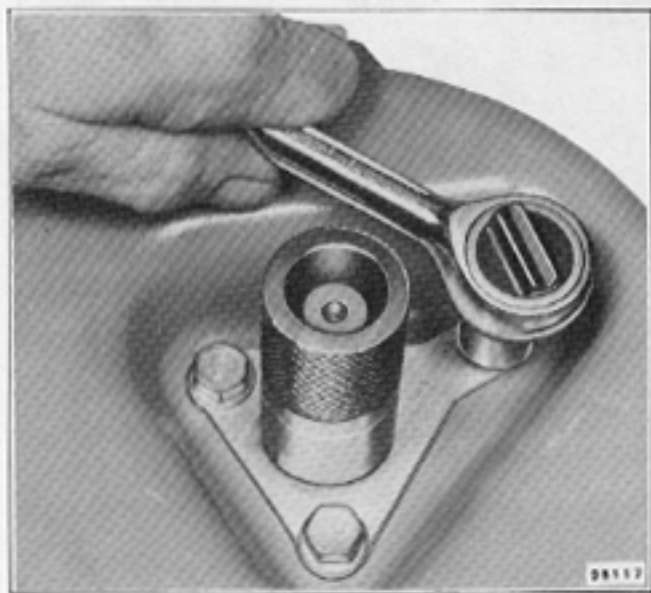
SAFETY WARNING

WHEN REASSEMBLING MUFFLER COVER, ASSEMBLE FASTENERS (SCREWS) WITH FINGERS TO ENGAGE PREVIOUSLY FORMED THREADS. DO NOT FORCE REINSTALLATION AS THE SCREW WILL FORM A NEW SET OF WEAKER THREADS WHICH MAY EVENTUALLY STRIP AND THE SCREW MAY BECOME A THROWN OBJECT. TORQUE TO 140-170 INCH LBS.



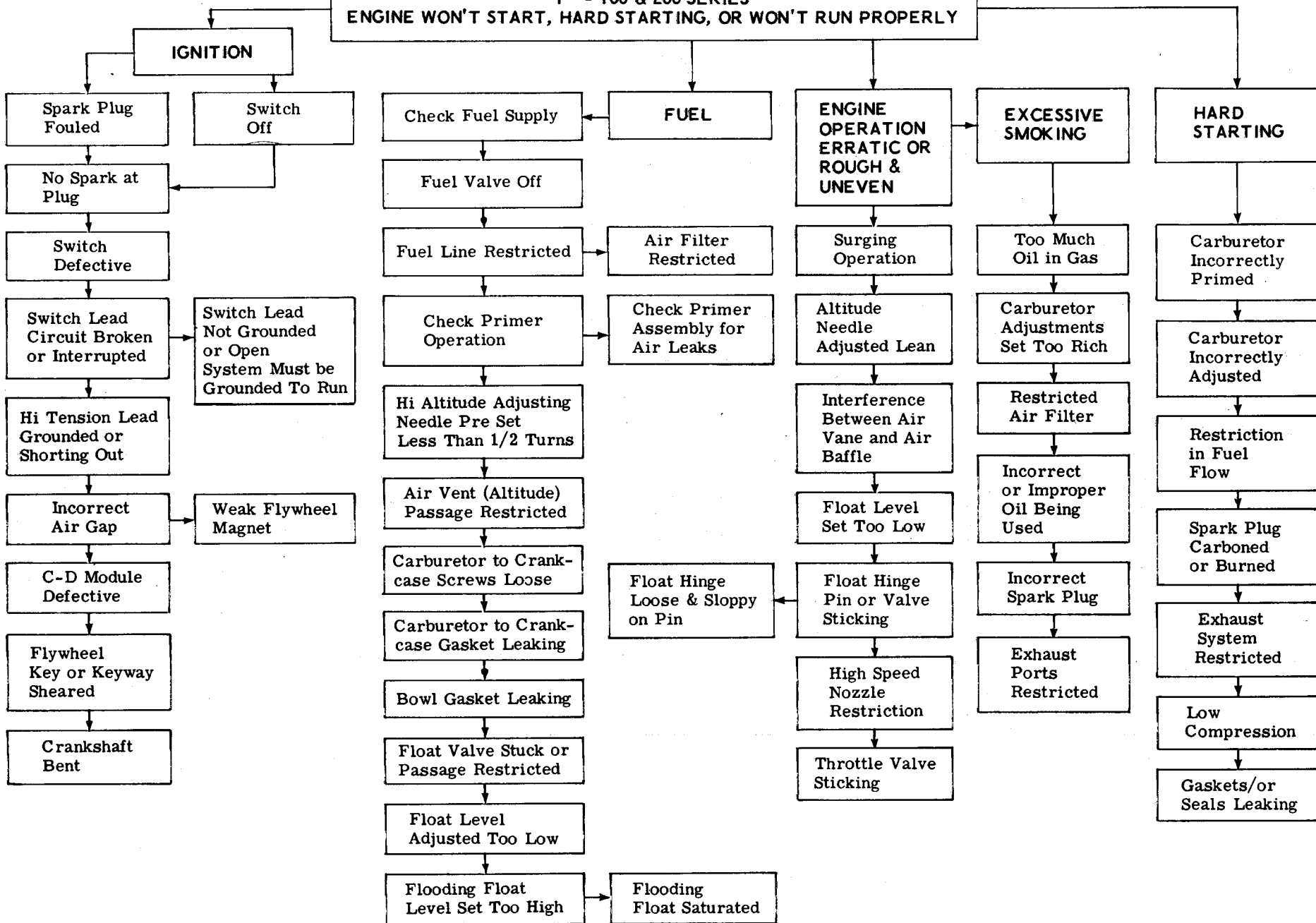
Reinstall adapter hub, blade stiffener (washer on 21" models), blade and blade nut. Torque blade nut to 50 ft. lbs. Replace spark plug and reconnect high-tension lead.

Pull starter handle slowly until piston covers the exhaust ports. Using a 7/16 inch diameter wooden dowel, insert dowel into ports to loosen carbon deposits. DO NOT DAMAGE PISTON BY USING METAL INSTRUMENT. Place mower in operating position and pull starter handle several times to blow out carbon deposits. Reinstall muffler and crankshaft support to mower. Use special tool part no. 609968 to correctly align crankshaft support.



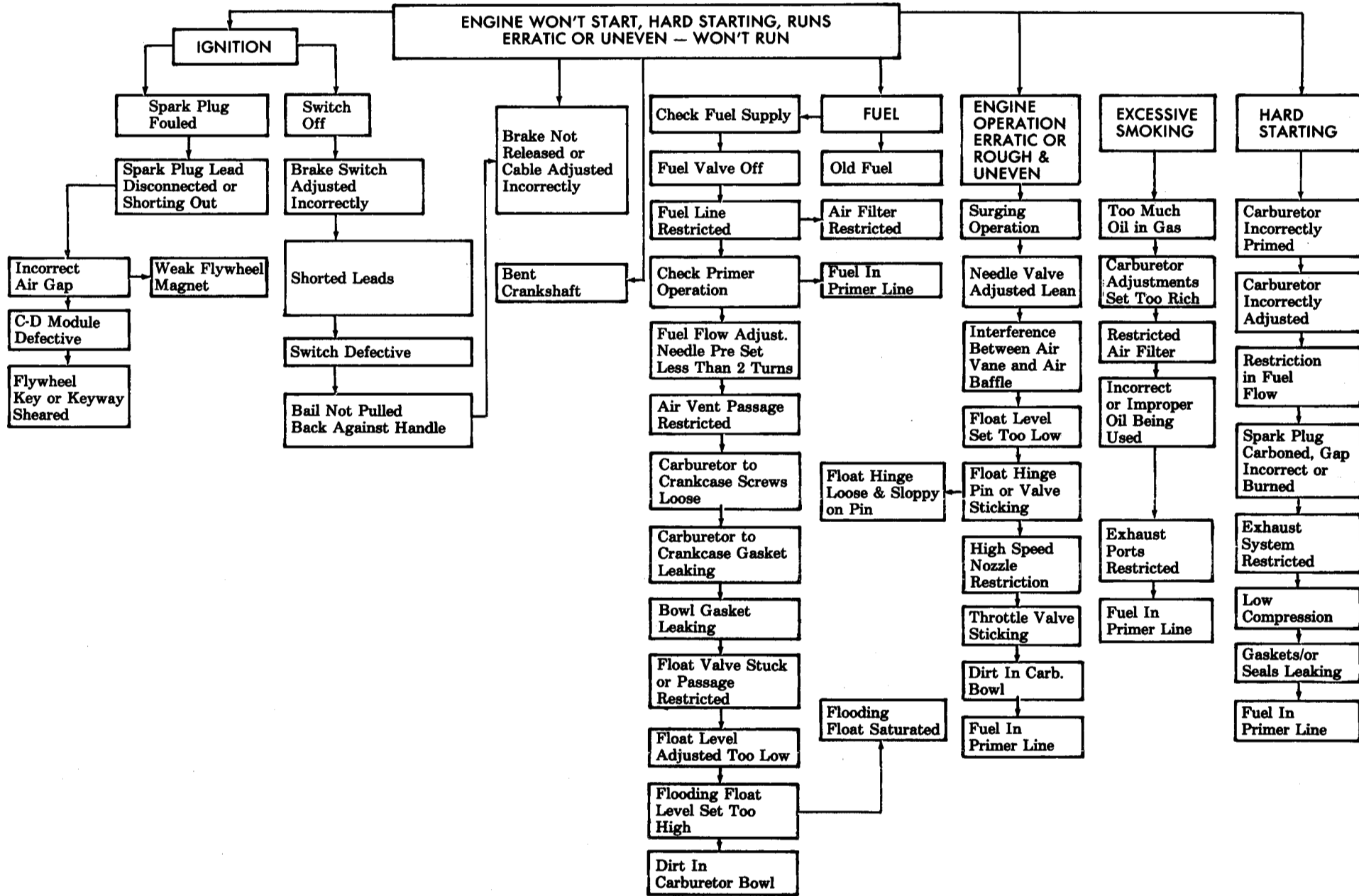
LAWN-BOY TROUBLE SHOOTING CHECK CHART

"F" - 100 & 200 SERIES
ENGINE WON'T START, HARD STARTING, OR WON'T RUN PROPERLY



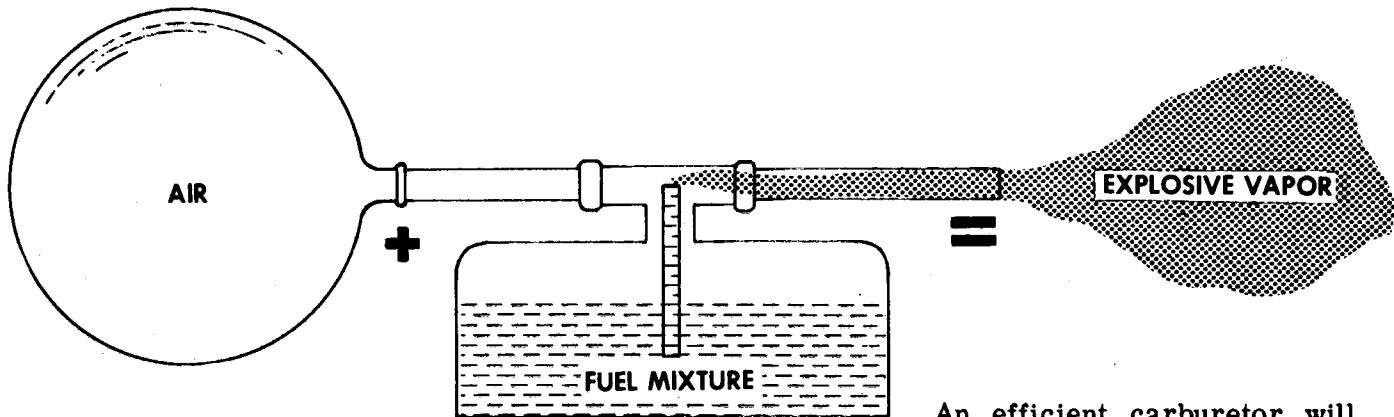
"F" SERIES (Cont.)

LAWN-BOY COMPLIANT MOWER TROUBLE SHOOTING CHECK CHART



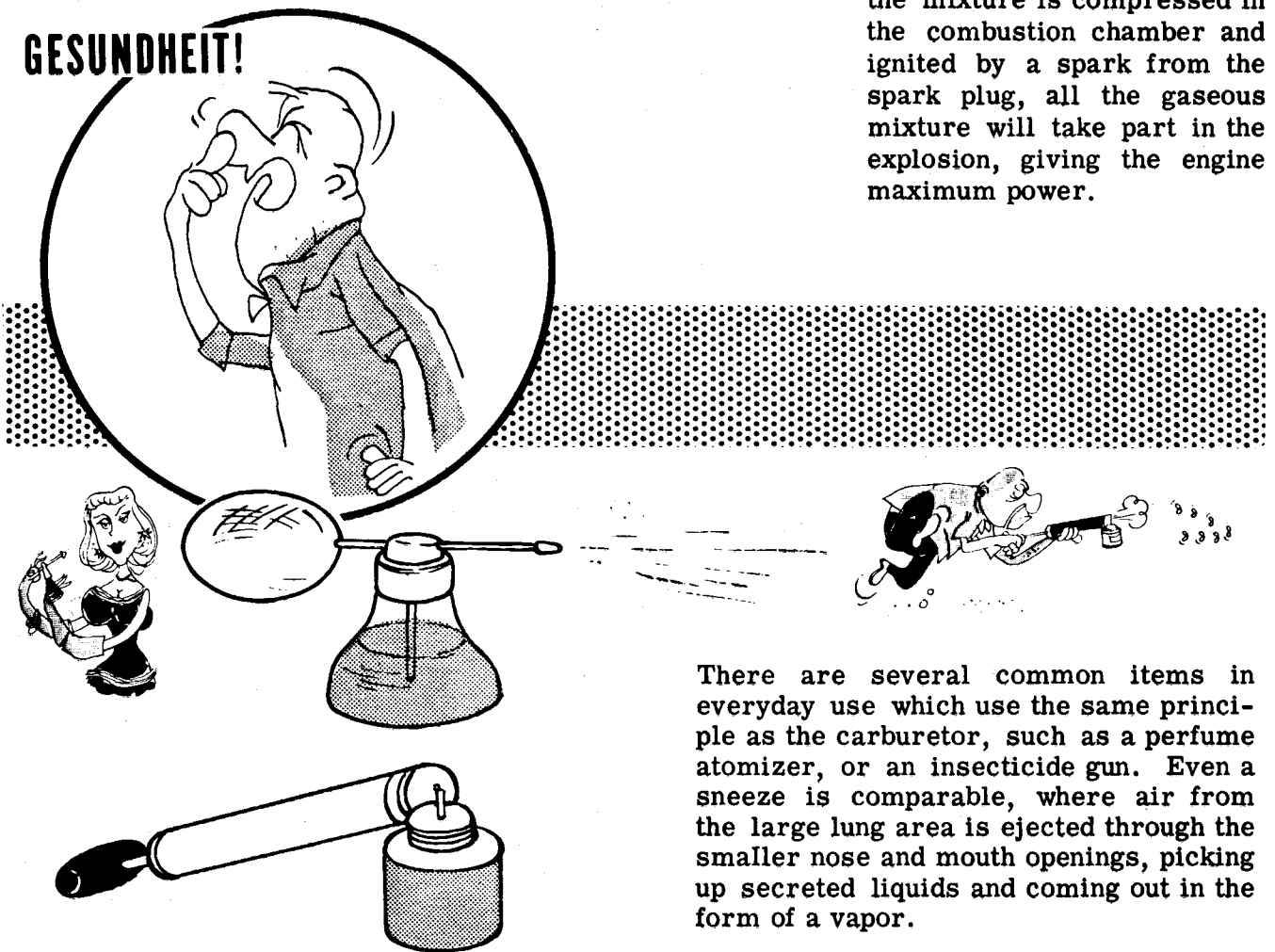
PRINCIPLES OF CARBURETION

The job of the carburetor is to combine liquid gasoline with air to form an explosive gaseous mixture. Gasoline in a liquid form is not explosive. BUT IF ENOUGH GASOLINE VAPOR COMBINES WITH AIR, A VERY EXPLOSIVE MIXTURE WILL RESULT.



An efficient carburetor will form a consistent mixture of gasoline and air, so that when the mixture is compressed in the combustion chamber and ignited by a spark from the spark plug, all the gaseous mixture will take part in the explosion, giving the engine maximum power.

GESUNDHEIT!



There are several common items in everyday use which use the same principle as the carburetor, such as a perfume atomizer, or an insecticide gun. Even a sneeze is comparable, where air from the large lung area is ejected through the smaller nose and mouth openings, picking up secreted liquids and coming out in the form of a vapor.

ENGINE FUEL SYSTEM

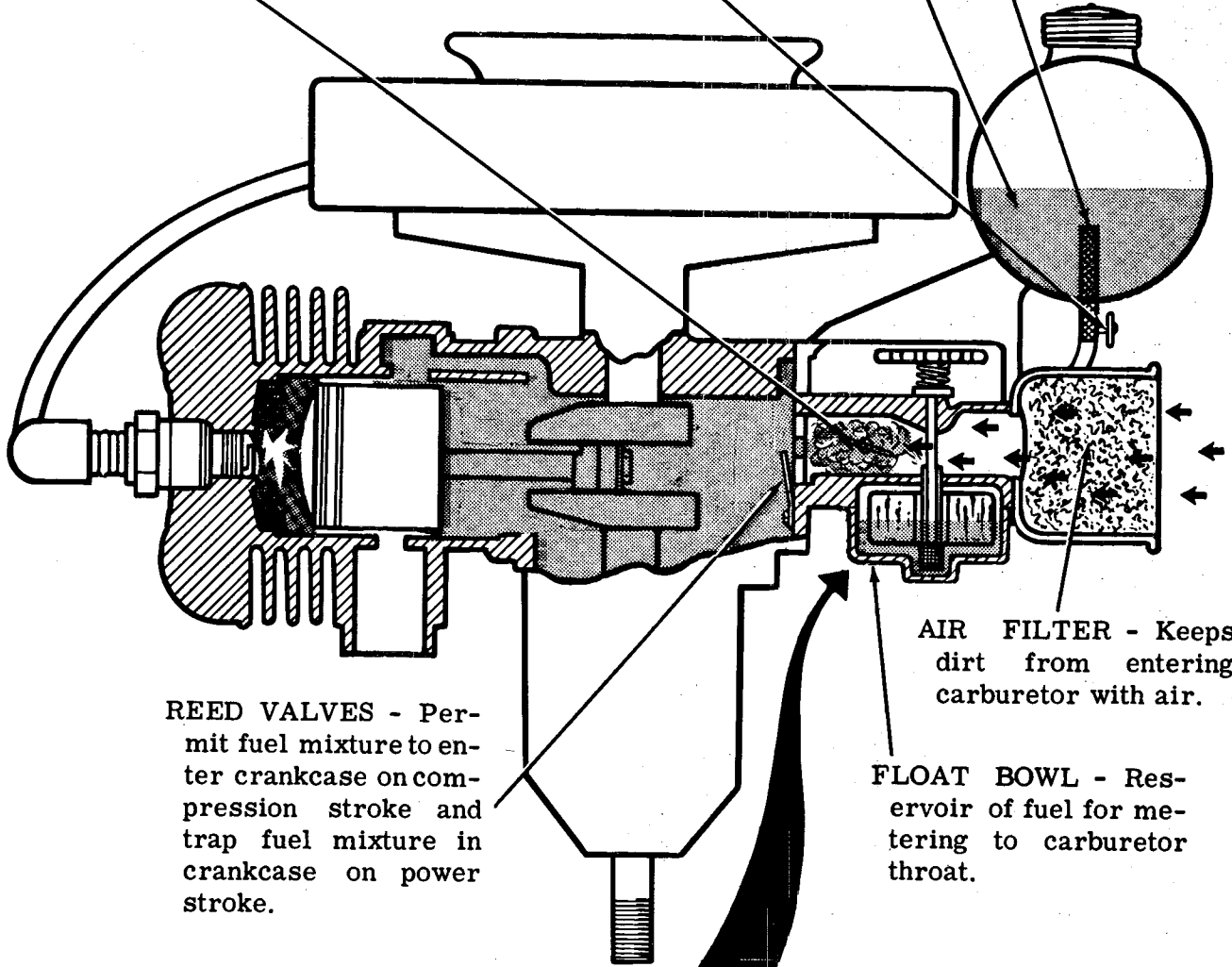
FUEL SYSTEM COMPONENTS AND THEIR FUNCTION

THROTTLE DISC - Varies the volume of fuel and air mixture to engine.

SHUT-OFF VALVE - Stops fuel flow to carburetor.

FUEL TANK - Stores fuel for engine.

FUEL FILTER - Filters out dirt and water, allowing only clean fuel to enter fuel line.



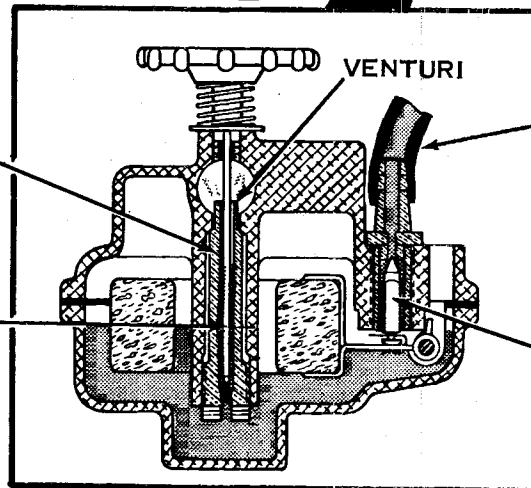
REED VALVES - Permit fuel mixture to enter crankcase on compression stroke and trap fuel mixture in crankcase on power stroke.

AIR FILTER - Keeps dirt from entering carburetor with air.

FLOAT BOWL - Reservoir of fuel for metering to carburetor throat.

NOZZLE - Connects fuel reservoir in float bowl to carburetor throat.

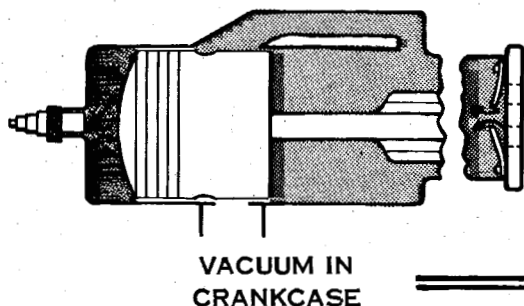
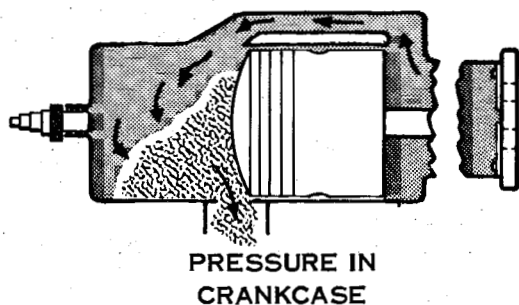
ADJUSTING NEEDLE - Meters flow of fuel through nozzle.



FUEL LINE - Connects tank to carburetor.

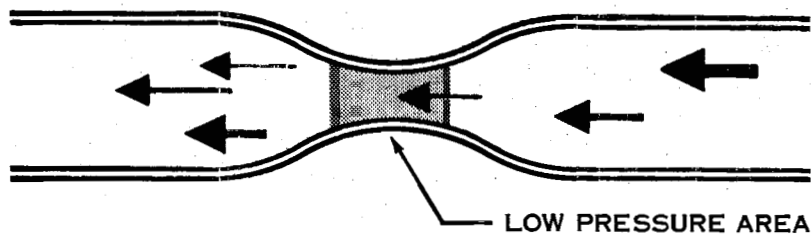
FLOAT VALVE - Provides constant fuel level in float bowl.

The carburetor starts its action and operates as follows:

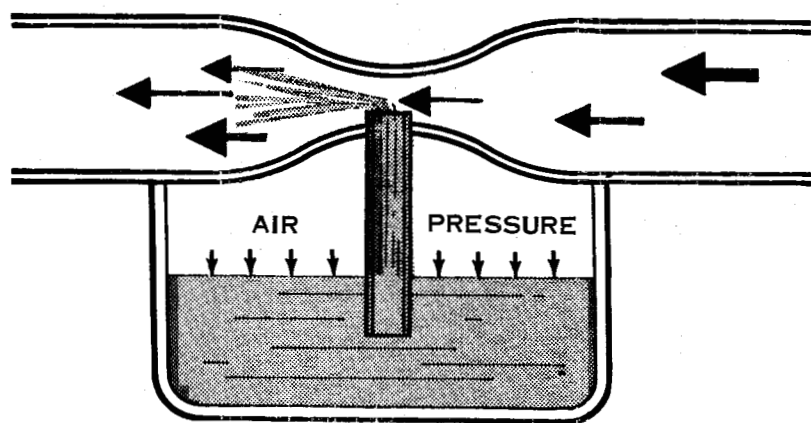


1. The crankshaft rotates when the starter rope is pulled.
2. The rotating crankshaft moves the piston up and down in the cylinder. This creates pressure and vacuum alternately in the crankcase.
3. The vacuum created by movement of the piston upward in the cylinder opens a reed valve - then air rushes through the throat of the carburetor.

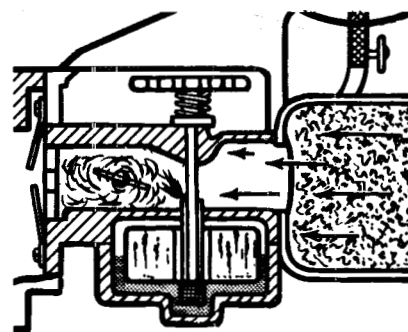
4. The carburetor throat is a Venturi tube, large at each end with a smaller center passage. When air rushes through this tube, the air pressure at the center is less.



5. By inserting a tube from the carburetor float bowl into this center area, the difference in air pressure will force fuel up through this tube, where it is picked up by, and mixed with, the air.



6. Turbulence around the throttle disc helps to mix the fuel and air.
7. As fuel and air mixture enters the crankcase through the reed valves, it is near a gaseous state. The engine, when cold, will not vaporize the mixture completely. As the engine warms up, the mixture is heated in the crankcase and becomes a consistently even gas.



FUEL SYSTEM INSPECTION

⚠ SAFETY WARNING

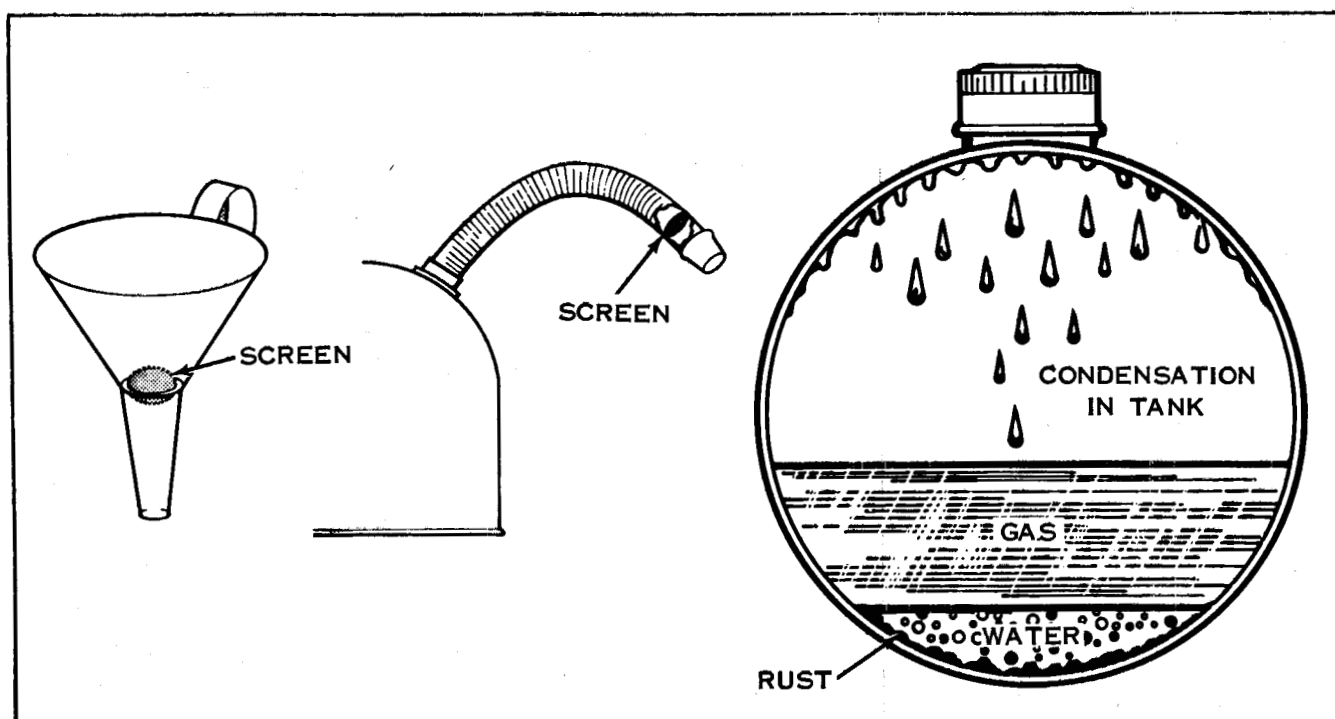
GASOLINE IS EXTREMELY FLAMMABLE AND HIGHLY EXPLOSIVE UNDER CERTAIN CONDITIONS. ALWAYS STOP ENGINE, AND DO NOT SMOKE OR ALLOW OPEN FLAMES OR SPARK WHEN REFUELING.

Start your inspection with the fuel used in the 2-cycle engine. Make sure your customer knows the why and how of fuel mix preparation. The supply can, from which fuel is poured into the engine tank, should have a water and dirt retarding screen. Rust in the tank is caused by water poured into the tank from the supply can or by water accumulated INSIDE the tank through CONDENSATION. Later D Series Deluxe models are equipped with a plastic gas tank assembly eliminating condensation, rust and are not affected by fuel mixture. Extreme changes in temperature can cause heavy condensation in a closed fuel tank that is NOT FULL. ALWAYS TELL CUSTOMERS TO KEEP TANKS FULL WHEN MOWER IS NOT IN USE, DURING THE MOWING SEASON. During storage, the tank should be empty, and the mower stored in an area not subject to extreme temperature change.

⚠ SAFETY WARNING

TO PREVENT POSSIBLE EXPLOSION OR IGNITION OF VAPORIZED FUEL, DO NOT STORE MOWER WITH FUEL IN TANK OR CARBURETOR IN ENCLOSURE WITH OPEN FLAME. (EXAMPLE: FURNACE OR WATER HEATER PILOT LIGHT.)

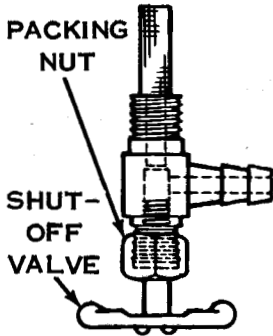
If you find water and/or dirt and rust in the tank, show the customer how a double screen funnel or a flexible nozzle with screen will help.



D-400 SERIES FUEL SYSTEM INSPECTION

FUEL TANK VENTING

Fuel tanks must be vented to prevent vacuum forming and stopping flow of fuel. Tank caps have a plain vent hole. A closed vent will create a vacuum in the tank as fuel is used - the engine will run a few minutes and stop. In a few minutes the vacuum will decrease and the engine can be started again, but it will stop again in a few minutes. The vent hole can become clogged with dirt, inspect and clean as required.

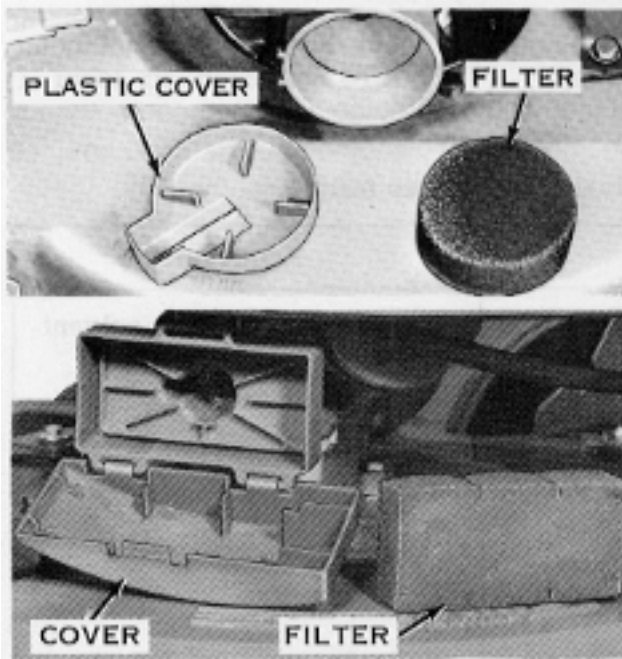


SHUT-OFF VALVE

The screen assembly or the shut-off valve can become clogged. This can be checked easily by removing the fuel hose, opening the valve and observing for fuel flow through the valve. Replace the valve and screen assembly if gummed up, rusted, or if packing is damaged.

NOTE

Shut-off valve should be open and packing nut loose before screwing assembly into tank. Secure assembly to tank, then close valve and tighten packing nut. Wing should turn easily, but snugly.



AIR FILTER

If engine is flooded, fuel can drain back into filter. As filter becomes saturated, incoming air picks up more fuel, causing greater flooding. A puckered filter will allow air and dirt to bypass filter. Make certain that filter covers cup area. If oiled, properly, filter is very efficient. First wash out with hot, soapy water. Wring out and dry completely, then apply 10 to 15 drops of oil. Squeeze several times to distribute oil. If engine "smokes" for no apparent reason, check filter for flooding and a rich running condition.

Later D-400 Series models have a plastic air cleaner. To remove grasp the cover lip and pull back or fold down as required.

FUEL LINE

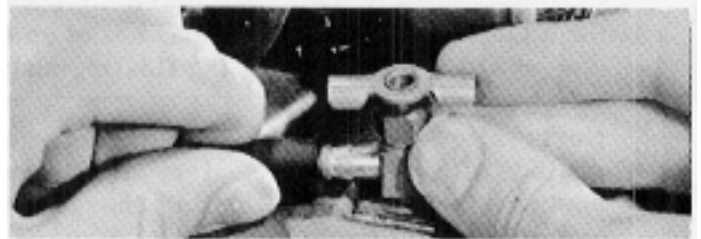
Inspect the fuel line. If cracked, spongy, or otherwise not fit for good safe use, replace. **DON'T TWIST FUEL LINE - INSERT ON CONNECTIONS WITH FINGERS, NOT PLIERS.**

SAFETY WARNING

DO NOT SUBSTITUTE WITH INFERIOR FUEL HOSE WHICH MAY CAUSE LEAKAGE FROM PREMATURE DETERIORATION. LEAKAGE OF FUEL MAY CAUSE AN EXPLOSION AND/OR FIRE.

NOTE

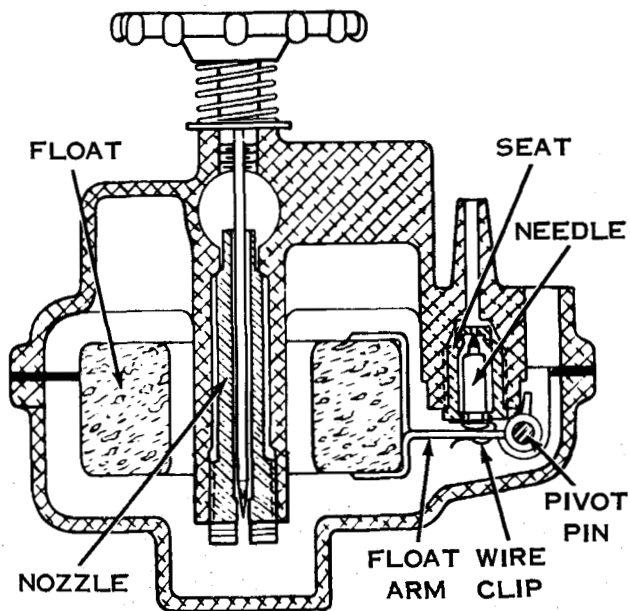
Reinstall filter in the same position which it was removed.



D-400 SERIES FUEL SYSTEM INSPECTION

NOTE

Some later model D-400 engines are equipped with the D-600 Series fuel system. A thorough visual inspection will determine the fuel system used on the engine.



FLOAT VALVE

The float valve consists of a needle and seat assembly, activated with a float in the float bowl. The needle is steel with rubber tip and the seat brass, materials which will not readily adhere together. The needle rests on the float arm, (held in place by a spring clip on later models).

Operation is automatic. When the float bowl is empty, the float rests on the bottom of the bowl. As fuel enters bowl of carburetor, the float rises, moving needle into seat and shutting off fuel. As the engine uses fuel, the float drops slightly, allowing more fuel to enter bowl, maintaining a constant fuel level in bowl.

The needle and seat must be replaced as an assembly. They are matched to form a perfect seal.

Some of the problems you may encounter with the float valve are as follows:

Cause	Effect	Remedy
GUM IN FUEL	Stops up openings	*Clean out carb. with solvent
SPRING WIRE CLIP COMES OFF	Needle may stick shut	Replace Clip
NEEDLE AND SEAT NOT MATCHED	Fuel supply can't be shut off from float bowl	Replace Needle and Seat as an Assembly
FLOAT ARM NOT SET RIGHT	Set too high - carburetor floods Set too low - carburetor starves	Set correctly Set correctly
PIVOT PIN CORRODED OR BENT	Float sticks	Replace Pin
FLOAT STRIKING NOZZLE	Float sticks	Replace Float
VARNISH OFF FLOAT	Float soaks up fuel, changing floating characteristics	*Replace Float

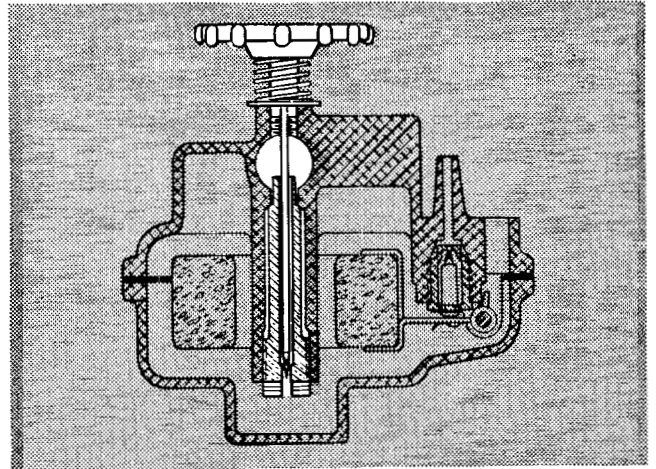
*Never allow a strong solvent to come in contact with the float. The cork float is coated with an epoxy sealer. If the solvent removes the epoxy, the float will absorb gasoline and its floating characteristics will change.

D-400 SERIES CARBURETOR ADJUSTMENTS

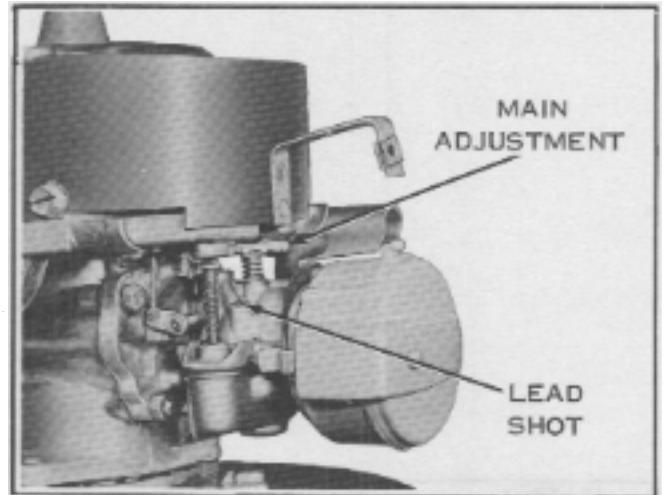
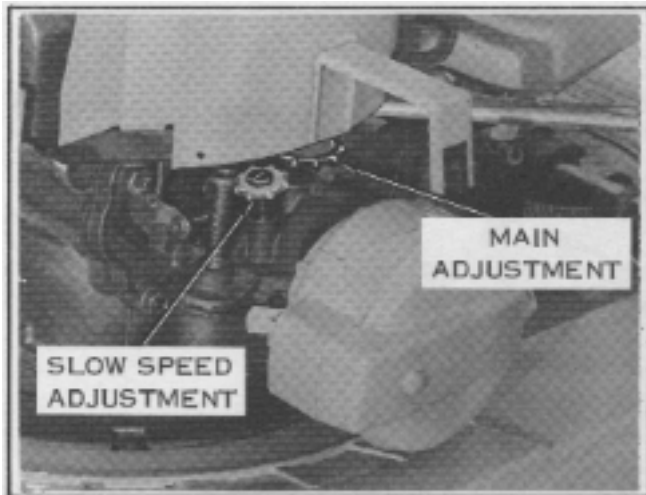


NEEDLE ADJUSTMENT

To adjust needle, turn adjusting knob clockwise until needle seats lightly; **DO NOT FORCE NEEDLE DOWN TOO TIGHT, SINCE YOU MAY DAMAGE NEEDLE OR SEAT IN NOZZLE AND MAKE FURTHER ADJUSTMENT DIFFICULT.**



Then open needle two turns. Start engine. If engine begins to die, open carburetor adjusting knob by turning counterclockwise. If engine runs roughly, close knob by turning clockwise until engine smooths out. Let engine run for about 5 minutes to warm up. Close adjusting knob slowly until engine begins to die, then open adjusting knob 1/4 to 1/2 turn.



Carburetors on earlier "D" 400 model engines also contain a slow speed adjustment. The correct setting for this adjustment is 1 turn open. If an engine runs **ROUGH** or **"HUNTS"** at the "low" speed setting it can be leveled out by opening, or closing this adjustment.

On later "D" 400 model engines the low speed needle adjusting valve has been replaced with a fixed jet. This jet is pressed into the low speed passage and the passage opening is sealed with a lead shot.

D-400 SERIES CARBURETOR SERVICING

FLOAT SETTING

Remove float bowl and gasket. Invert carburetor. With float arm resting on float valve needle, the top of float should be $15/32$ inch above edge of carburetor body. To adjust; bend metal arm with needle nose pliers.

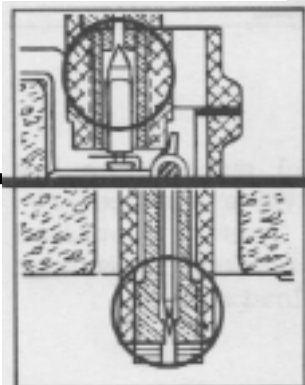
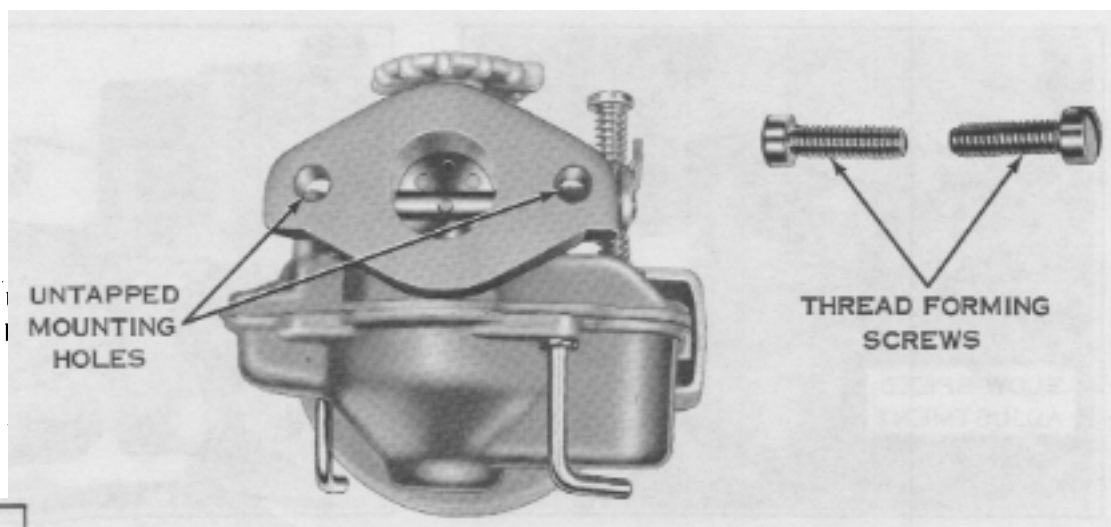
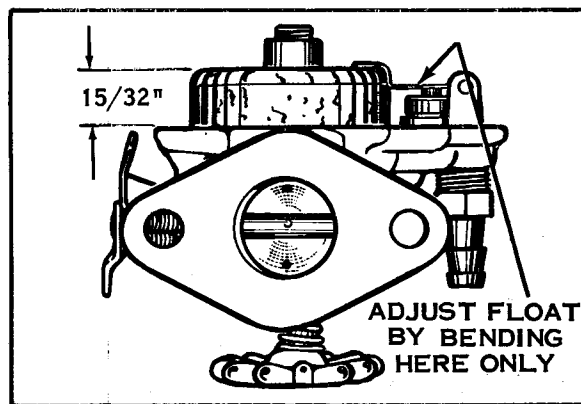
 NOTE

DO NOT attempt to bend by applying pressure to cork float.

Carburetor servicing consists of inspection, cleaning, adjustment, and replacement of faulty parts.

To remove carburetor from engine, carburetor and reed plate must be removed as an assembly, and reed plate removed from carburetor.

Carburetor service assemblies include 2 thread forming screws. The reed plate mounting flange on the carburetor is drilled but not tapped. These screws form a very tight fit eliminating the possibility of screws vibrating loose during engine operation.

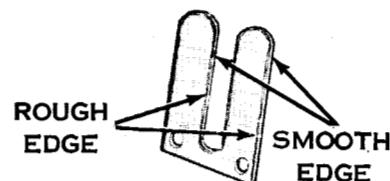
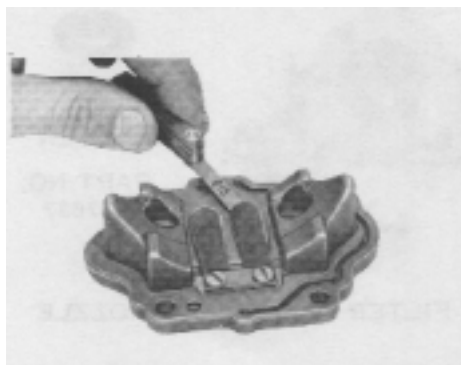
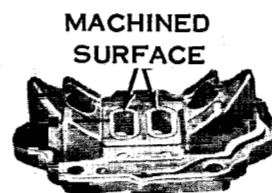


The metal carburetor body can be cleaned with a good solvent and blown dry with air, **EXCEPT THE CORK FLOAT**. A solvent will remove the varnish from the float. Inoperative floats should be replaced. **DO NOT DRY CARBURETOR PARTS WITH A CLOTH**, because lint may stick to the parts and cause trouble in the reassembled carburetor.

Inspect valve needles for grooves or other defects. If grooved or otherwise defective, replace. Use a magnifying glass in the inspection. Tiny scratches or worn surfaces affect the operation.

D-400 SERIES CARBURETOR SERVICING

The reed plate can be cleaned with solvent with the rest of the carburetor. Be careful in handling reeds, so as not to distort them. The reeds must lie flat against the reed plate to form a perfect seal. Bent or otherwise damaged reeds cannot be repaired. Check the reed plate for warpage. **DO NOT USE COMPRESSED AIR ON REEDS.** The rough edge of the reed should be away from the plate.

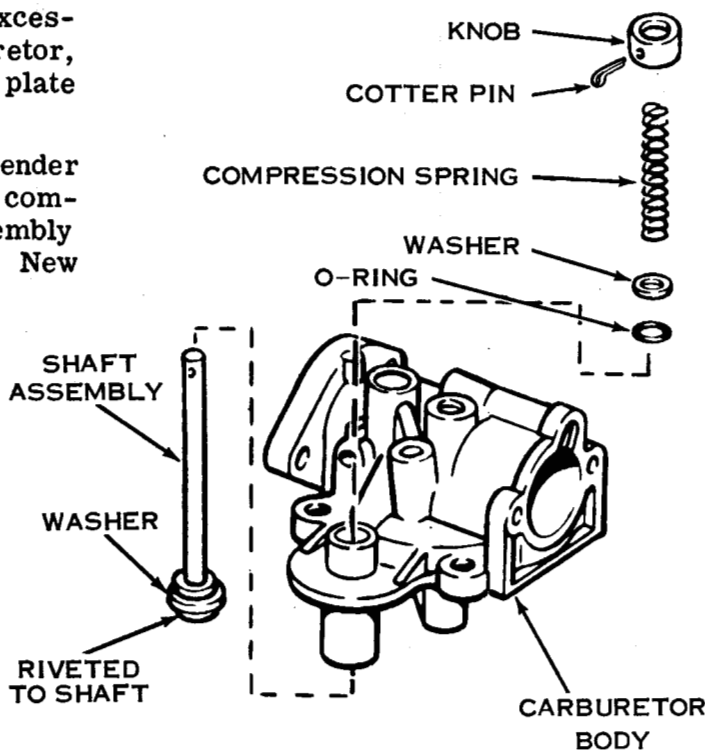
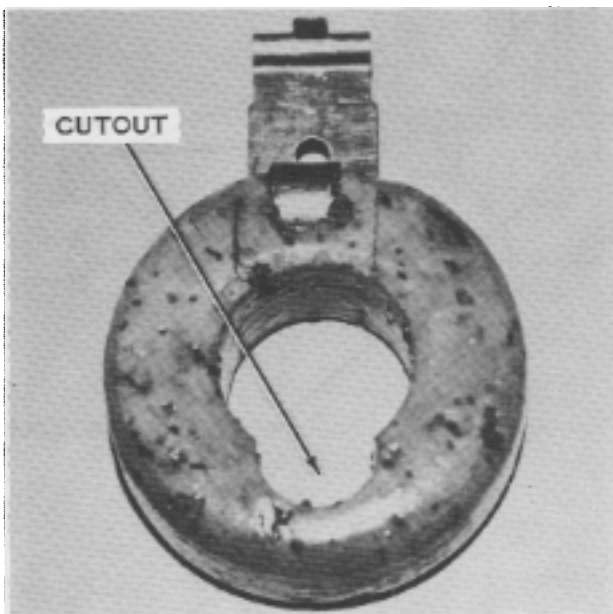


NOTE

Maximum clearance allowed between reed tip and reed plate is .015. If clearance exceeds this, reeds must be replaced.

There are a few things to remember when you reassemble a carburetor.

1. Be sure to use new gaskets.
2. When installing nozzle in carburetor, unscrew control knob a few turns to avoid accidentally tightening needle on seat.
3. Use new attaching hardware if excessively worn, when replacing carburetor, to assure tight seal between reed plate and crankcase.
4. A cut or torn rubber washer can render the Primer inoperative. Replace complete Primer with Service Assembly 678414. Do not reuse old spring. New spring is supplied in kit.



CARBURETOR FLOAT

The carburetor float contains a cutout for proper clearance.

D-400 SERIES CARBURETOR SERVICING

FUEL NOZZLE FILTER

The nozzle filter will provide a secondary filtering device to minimize the possibility of "fuzz" or other minute particles getting into the carburetor area, which causes engine stalling.

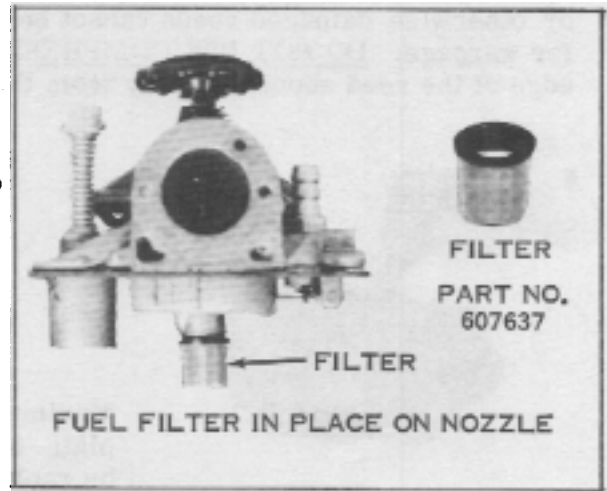
Prior to installing nozzle filter clean carburetor, high speed nozzle, fuel tank, fuel shut-off valve and filter assembly. High speed nozzle must be removed to clean it properly.

Install filter on the nozzle firmly.

 **NOTE**

DO NOT slide neoprene ring over fuel passage hole.

Hold float up and lift bowl carefully in place. (For easier installation, take carburetor off and turn upside down.)

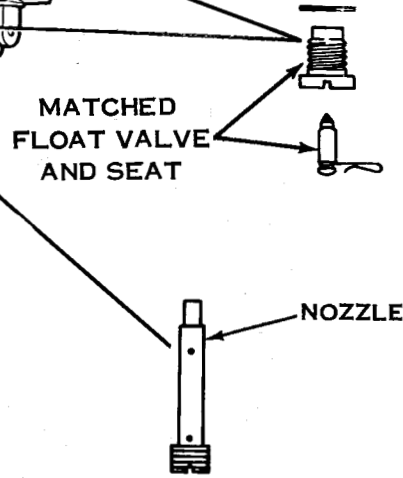
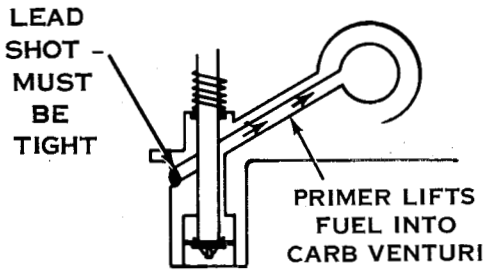
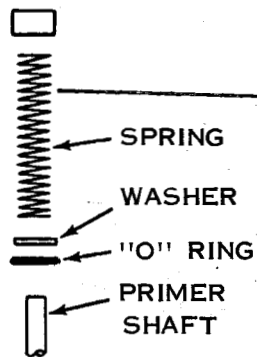
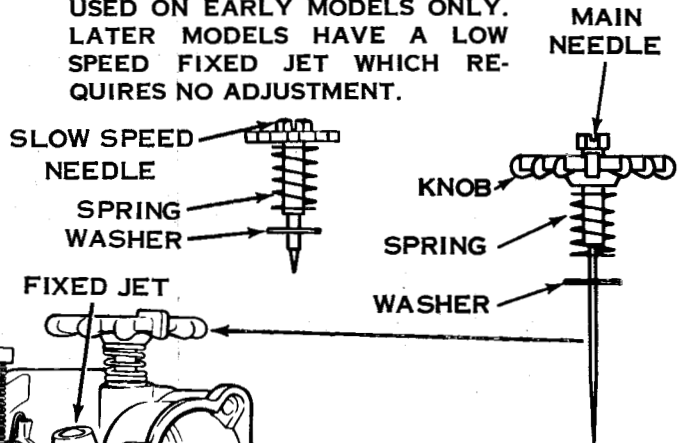


D-400 SERIES ENGINE CARBURETOR SERVICING HINTS



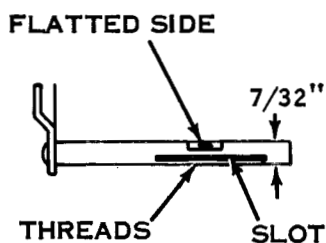
HALF MOONS EMBOSSED IN THE THROTTLE DISC PROVIDE QUICK EASY POSITIONING. INSTALL AS ILLUSTRATED.

LOW SPEED NEEDLE ASSEMBLY USED ON EARLY MODELS ONLY. LATER MODELS HAVE A LOW SPEED FIXED JET WHICH REQUIRES NO ADJUSTMENT.



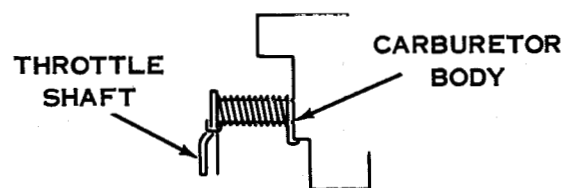
D-400 ENGINE CARBURETOR SERVICING HINTS (CONT)

D-400 SERIES CARBURETOR THROTTLE SHAFT IS SPLIT FOR THROTTLE DISC MOUNTING.



THE SHAFT SIZE IS LARGER THAN "C" ENGINE THROTTLE SHAFTS.

ALWAYS PLACE CORRECT TENSION ON THROTTLE SHAFT SPRING WHEN INSTALLING.

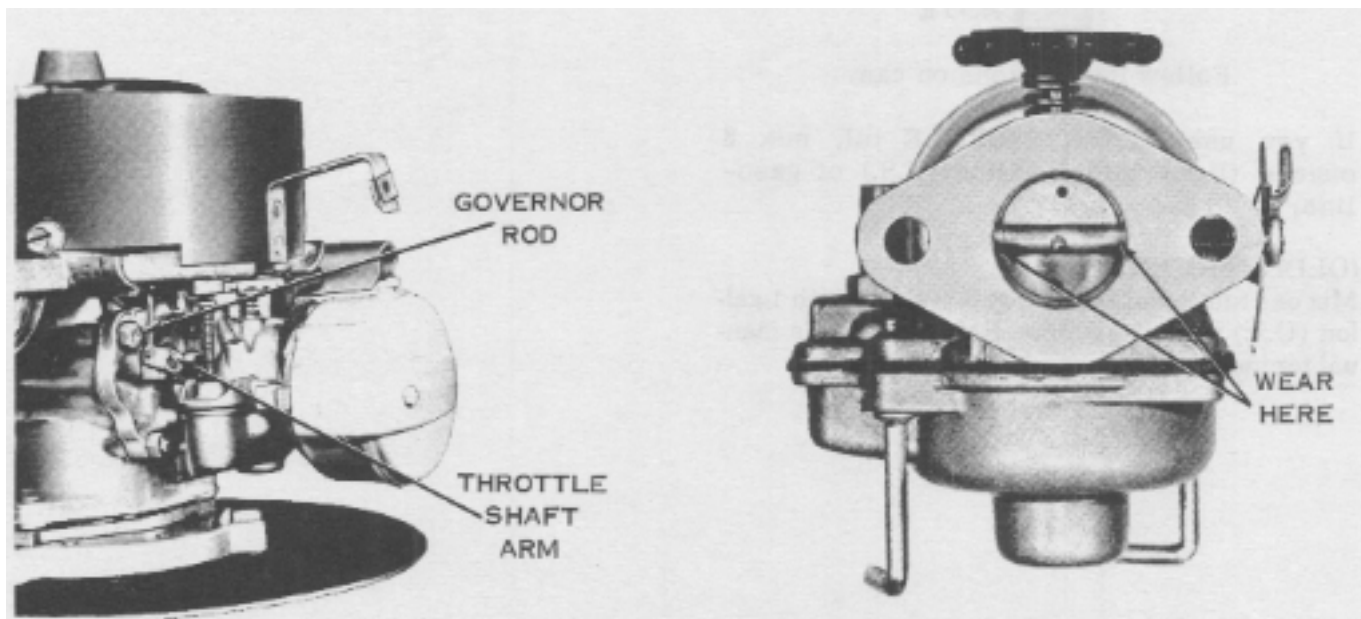


HOOK END IN CARBURETOR BODY AND ADD TENSION BY TURNING SPRING 1/2 - 3/4 TURN AND HOOK ON THROTTLE SHAFT ARM.

ENGINE SURGING DUE TO CARBURETION

Surging explanation: High to Low R.P.M. constantly.

1. A burr on the throttle shaft arm which holds governor rod in place can cause a drag. This can contribute to surging. Repair - clean off burr, check governor rod for wear.
2. Throttle shaft may wear causing shaft and/or throttle disc to bind. Replace shaft and disc.
3. Improper adjustment.



FUEL INFORMATION



NOTE

Your LAWN-BOY uses a two cycle engine. This means the oil and gasoline must be mixed together. Failure to use the proper fuel mixture will result in serious damage to the engine.

GASOLINE - Use automotive regular grade with a minimum of 89 pump octane, "No-Lead" or "lead free" gasoline of 86 pump octane is satisfactory if owner wishes to use it. **DO NOT USE GASOHOL OR OTHER GASOLINES THAT CONTAIN ETHANOL OR METHANOL.**

LUBRICATION (OIL) - Use LAWN-BOY 2 cycle oil available from your LAWN-BOY dealer. If not readily available, use a good grade of two cycle oil from a reputable oil company. **DO NOT USE AUTOMOTIVE OILS.**

FUEL MIXTURE

Use clean container. Mix thoroughly. **DO NOT** mix fuel directly in mower fuel tank.

CORRECT FUEL MIXTURE (CURRENT MODELS)

Use LAWN-BOY SPECIAL 2-cycle oil. Mix one full can with 2 gallons (U.S.) of gasoline.



NOTE

Follow instructions on can.

If you use **OTHER 2-CYCLE** oil, mix 8 ounces (U.S.) with 1 gallon (U.S.) of gasoline.

(OLDER MODELS)

Mix one full can of Lawn-Boy 2-cycle oil with 1 gallon (U.S.) regular gasoline. Refer to owner's manual for instructions.



SAFETY WARNING

GASOLINE IS EXTREMELY FLAMMABLE AND HIGHLY EXPLOSIVE UNDER CERTAIN CONDITIONS. ALWAYS STOP ENGINE, AND DO NOT SMOKE OR ALLOW OPEN FLAMES OR SPARK WHEN REFUELING.

D-600 SERIES FUEL SYSTEM

PRINCIPLES OF CARBURETION



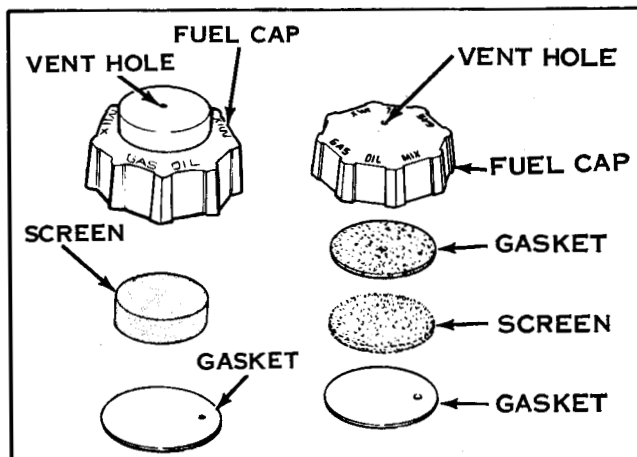
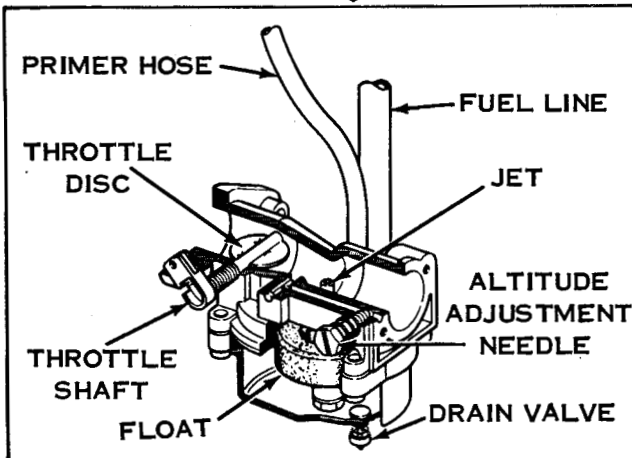
NOTE

Some later model D-400 engines are equipped with the D-600 series fuel system. A thorough visual inspection will determine the fuel system used on the engine.

⚠ SAFETY WARNING

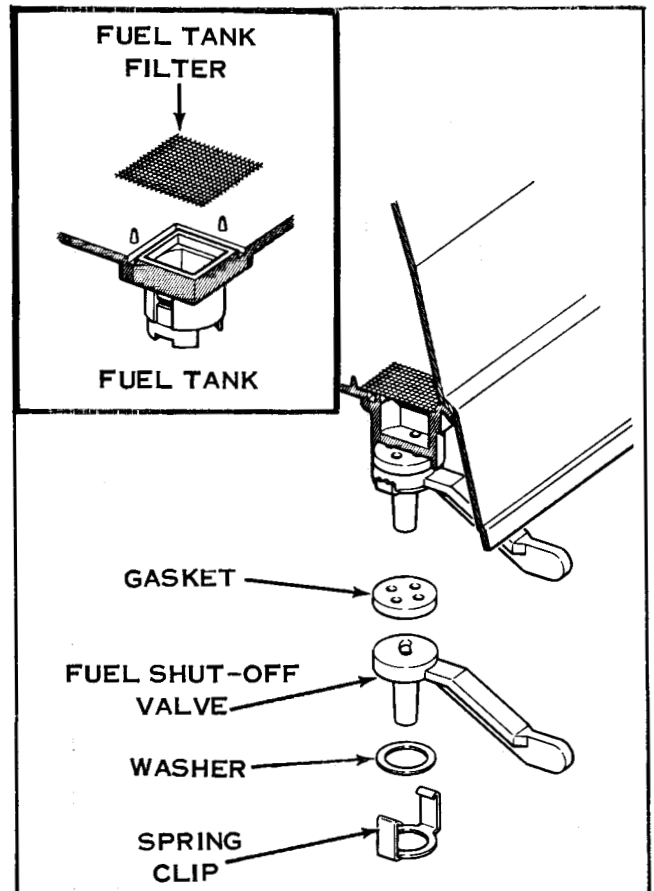
DO NOT SUBSTITUTE WITH INFERIOR FUEL HOSE WHICH MAY CAUSE LEAKAGE FROM PREMATURE DETERIORATION. LEAKAGE OF FUEL MAY CAUSE AN EXPLOSION AND/OR FIRE.

The carburetor used on Solid State (C.D.) ignition engines is automatic. No fuel adjustments are necessary to regulate fuel intake. A single, metered jet allows the correct amount of fuel to mix with the incoming air which is regulated by a single adjusting needle that is explained on page 4-15 of this section. Adjustment must be changed when a significant change in altitude is encountered.



FUEL TANK VENTING

Fuel tanks must be vented to prevent vacuum forming and stopping flow of fuel. Tank caps will have a vent hole. A closed vent will create a vacuum in the tank as fuel is used - and eventually cause the engine to stop. In a few minutes the vacuum will decrease and the engine can be started again, but it will stop again in a short period of time. The vent hole can become clogged with dirt. Check vent hole before each operation and clean if necessary.



SHUT-OFF VALVE

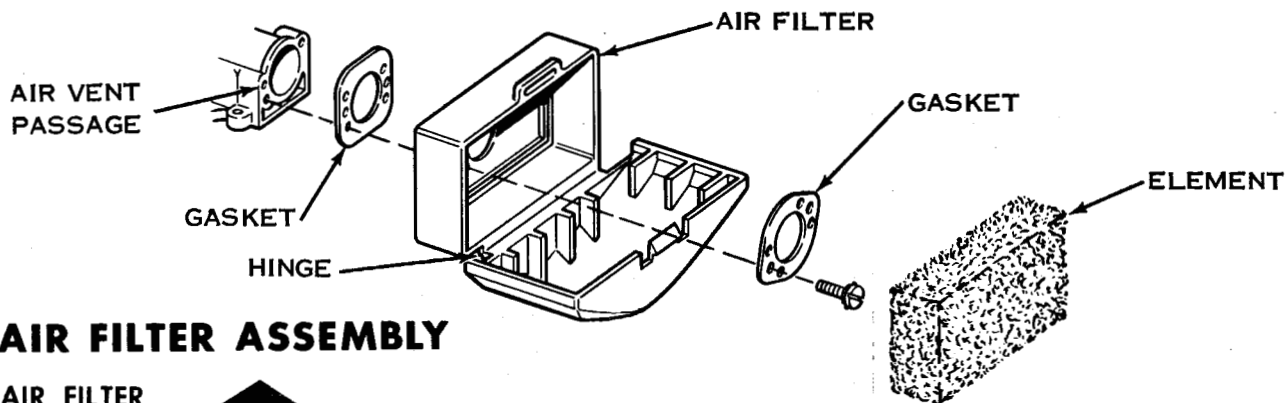
The fuel tank screen assembly or the shut-off valve can become clogged. This can be checked easily by removing the fuel hose, opening the valve and observing for fuel flow through the valve. Replace the fuel shut-off assembly if damaged.



NOTE

Shut-off valve is secured to fuel tank with a spring clip; exercise care when re-installing to fuel tank.

D-600 SERIES FUEL SYSTEM



AIR FILTER ASSEMBLY

AIR FILTER

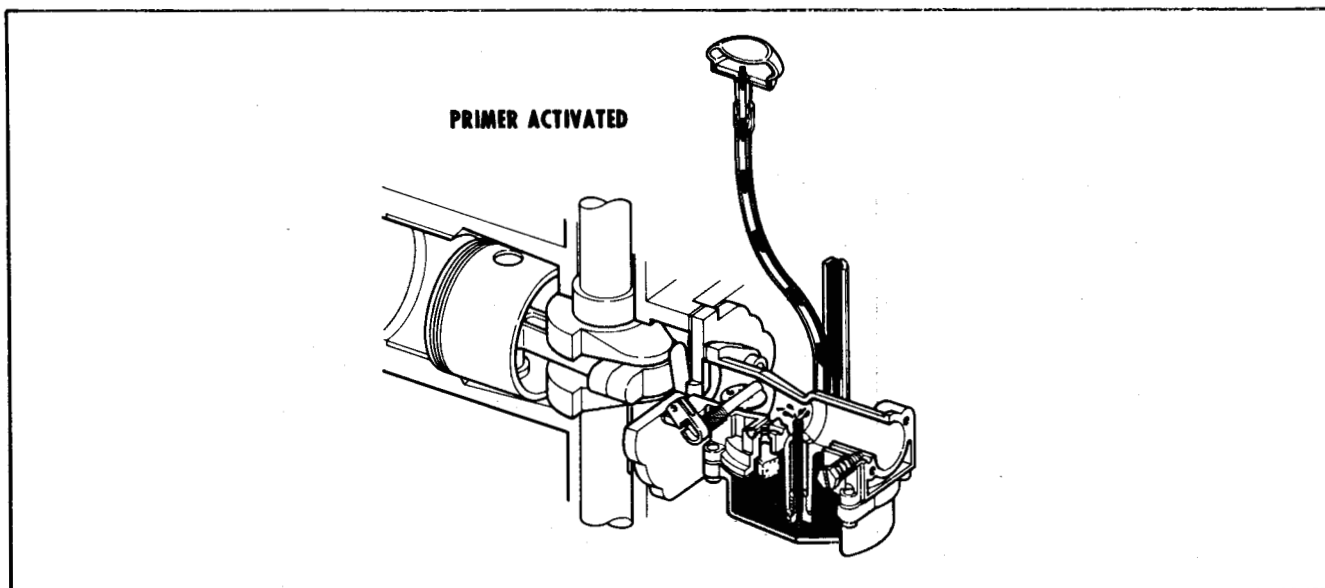
If engine is flooded, fuel can drain back into filter. As filter becomes saturated, incoming air picks up more fuel, causing greater flooding. A puckered filter will allow air and dirt to bypass filter. Make certain that filter covers cup area. If oiled properly, filter is very efficient. First wash out with fuel, then apply 10 to 15 drops of oil. Squeeze several times to distribute oil. If engine "smokes" for no apparent reason, filter may be saturated with fuel mix or may need cleaning.

To remove grasp the cover, loosen snap and fold cover down.



NOTE

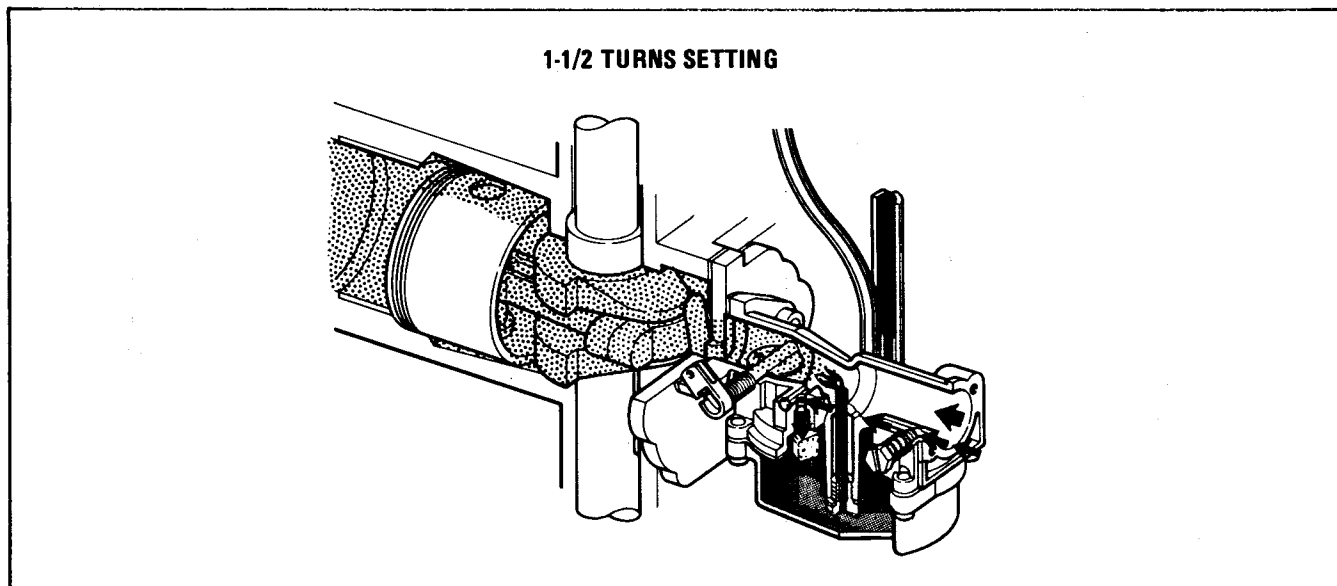
Reinstall filter in the same position which it was removed to prevent imbedded particles in intake side from entering carburetor. Install air filter case correctly. Hinge on bottom. If installed upside down the air vent passage will be blocked.



PRIMER

Examine the primer system. Instead of lifting fuel up in the carburetor throat as in the case with some D-400 series engine, the pneumatic primer forces compressed air

into the float bowl chamber which forces fuel into the carburetor venturi.



AIR ADJUSTMENT ▲

The carburetor is completely automatic. There are no adjustments to be made to regulate the amount of fuel entering the carburetor venturi. There is an atmospheric pressure adjustment that would have to be made if the engine is operating in very high or very low altitudes.

All D-600 series and modular carburetors require a final adjustment of the altitude needle prior to putting the mower into service.

To adjust, proceed as follows:

1. Pre-set altitude needle 1-1/2 turns from seat.
2. Start engine and allow to run for 3 to 5 minutes to warm up.
3. Place speed control lever in **LOW SPEED** running position (2400-2600 R.P.M.)
4. Turn altitude needle clockwise until engine starts to "hunt," "surge" or slow down.
5. Slowly turn altitude needle counterclockwise until engine is running smoothly. Allow engine to run for one or two min-

utes to make sure adjustment is not too lean.

6. Place speed control lever in **HIGH SPEED** running position (3100-3300 R.P.M.) Observe engine operation. If not running smoothly, turn altitude needle counterclockwise approximately 1/4 turn at a time to obtain proper engine operation.
7. After carburetor adjustment is completed, shut off engine. **IMMEDIATELY** attempt to restart engine. It should start within 2 pulls on starter handle. Check starting engine at both **HIGH** and **LOW** speed settings. If difficult to restart, turn altitude needle 1/8 to 1/4 turn counterclockwise to richen fuel mixture and obtain easy restarting.

 **NOTE**

DO NOT PRIME A HOT ENGINE.

 **NOTE**

The governor will control the amount of fuel entering the engine. The purpose of the atmospheric pressure adjusting needle is to mix the right amount of fuel with the correct amount of incoming air.

D-600 SERIES FUEL SYSTEM

AIR ADJUSTMENT (Continued)



NOTE

In the closed position no air is entering the carburetor vent passage. Therefore, the float bowl pressure has been eliminated and the fuel supply to the carburetor venturi is cut off.

FLOAT AND VALVE

Examine float appearance. Should be glossy because of epoxy sealer. If dull in appearance, or portions of epoxy has chipped away - replace.



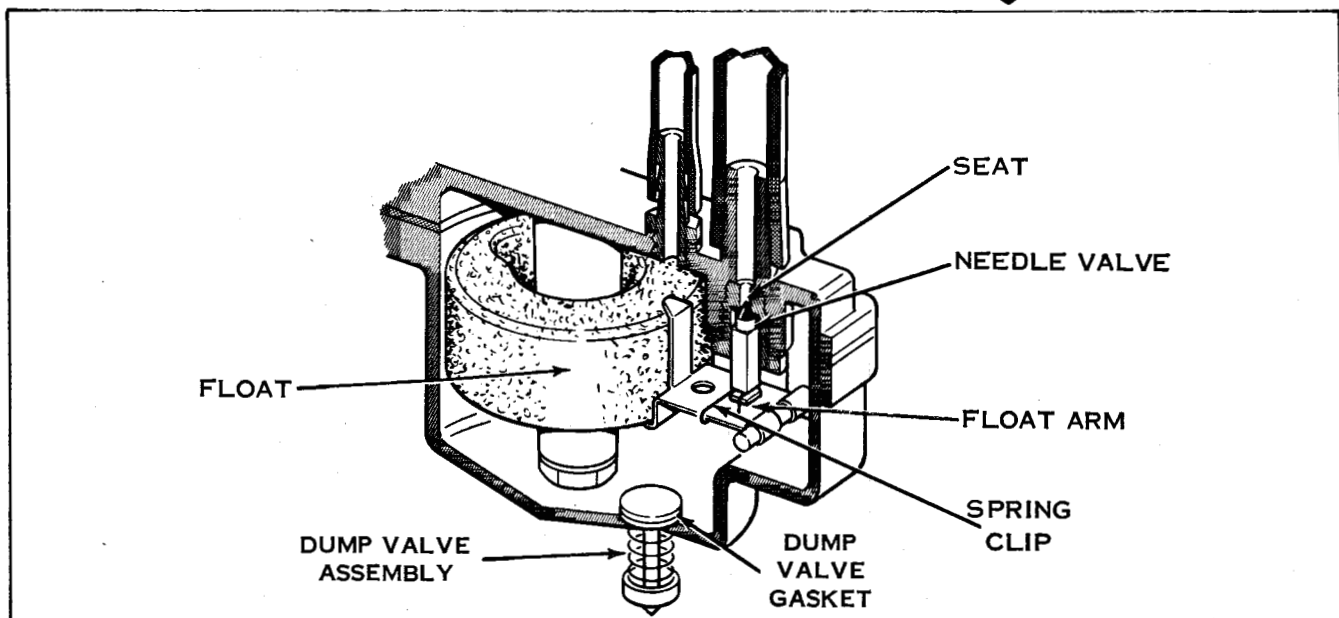
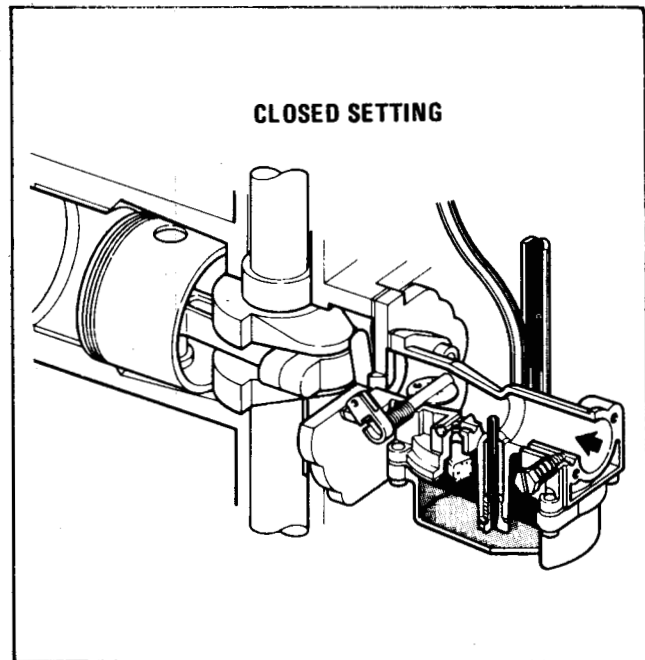
NOTE


Do not clean float with any type of solvent or carburetor cleaner. Clean with standard fuel mix.

The float valve consists of a needle and seat assembly, activated by a float in the carburetor bowl. The steel needle is rubber tipped and the seat brass. This combination eliminates possible sticking and provides a perfect seal. The needle rests on float arm, held in place by a spring clip.

Operation is automatic. When float bowl is empty, float rests on bottom of bowl. As fuel enters bowl of carburetor, float rises, moving needle valve into seat and shutting off fuel. As engine uses fuel, float drops slightly, allowing more fuel to enter bowl, maintaining a constant fuel level in bowl.

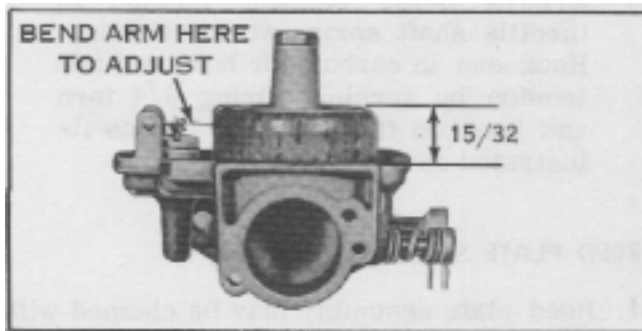
Needle and seat must be replaced as an assembly. They are matched to form a perfect seal.



 NOTE: Check dump valve and gasket for distortion or damage.

Some of the problems you may encounter with the float valve are as follows:

Cause	Effect	Remedy
GUM IN FUEL SPRING WIRE CLIP COMES OFF	Stops up openings Needle may stick shut	*Clean out carburetor with solvent Replace clip
NEEDLE AND SEAT NOT MATCHED	Fuel supply can't be shut off from float bowl	Replace needle and seat as an assembly
FLOAT ARM NOT SET CORRECTLY	Set too high - carburetor floods	Set correctly
	Set too low - carburetor starves	Set correctly
PIVOT PIN CORRODED OR BENT	Float sticks	Replace pin
FLOAT STRIKING NOZZLE	Float sticks	Replace float
VARNISH OFF FLOAT	Float soaks up fuel, chang- ing floating characteristics	*Replace float



FLOAT ADJUSTMENT

FLOAT SETTING

Remove float bowl and gasket. Invert carburetor. With float arm resting on float valve needle, the top of float should be 15/32 inch above edge of carburetor body as shown. To adjust; bend float arm with long nose pliers.



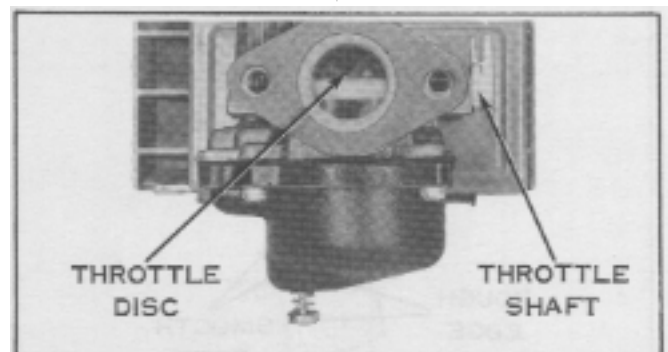
DO NOT bend by applying pressure to cork float. Bend arm only by grasping with pliers.

THROTTLE SHAFT AND VALVE (DISC) SERVICING

Early 1972 production models used plastic throttle shaft and snap-in disc. Later 1972 production models include bronze shaft, disc

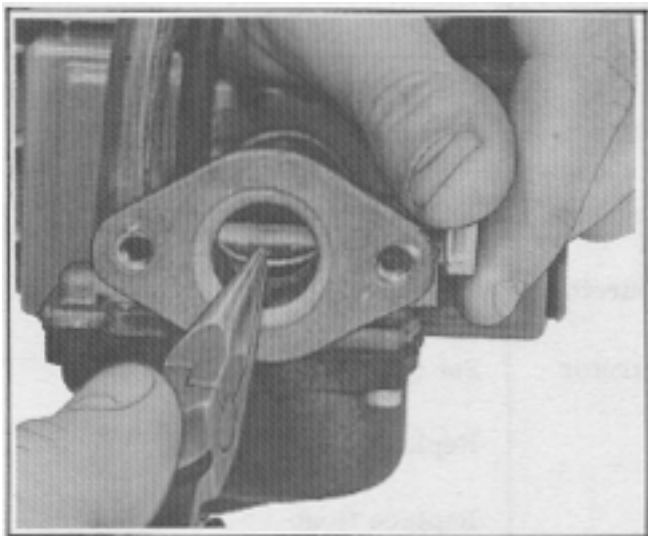
and screw assembly part 681008. If replacement of shaft or disc is necessary, use this assembly number.

Disc is secured to shaft with screw as illustrated.



1. Remove reed plate assembly.

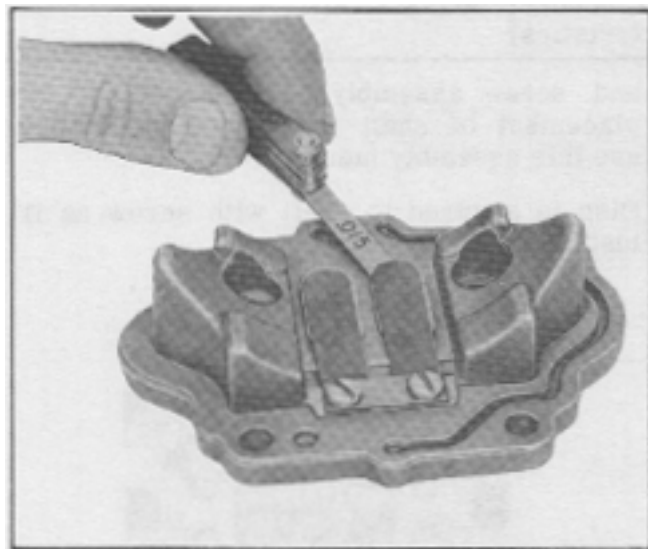
D-600 SERIES FUEL SYSTEM



2. Using needle nose pliers grasp throttle disc and remove disc from throttle shaft. Inspect disc for wear or burrs. Replace if necessary with shaft, disc and screw assembly part no. 681008.

3. Remove "E" ring and slide throttle shaft from carburetor body. Inspect plastic throttle shaft for wear and replace if required with shaft, disc and screw assembly part no. 681008.

4. Reassemble in reverse order making sure small hole in throttle disc is installed facing reed plate assembly.



NOTE

Always place correct tension on throttle shaft spring when installing. Hook end in carburetor body and add tension by turning spring 3/4 turn and hook on throttle shaft leaf as illustrated on page 4-11.

REED PLATE SERVICING

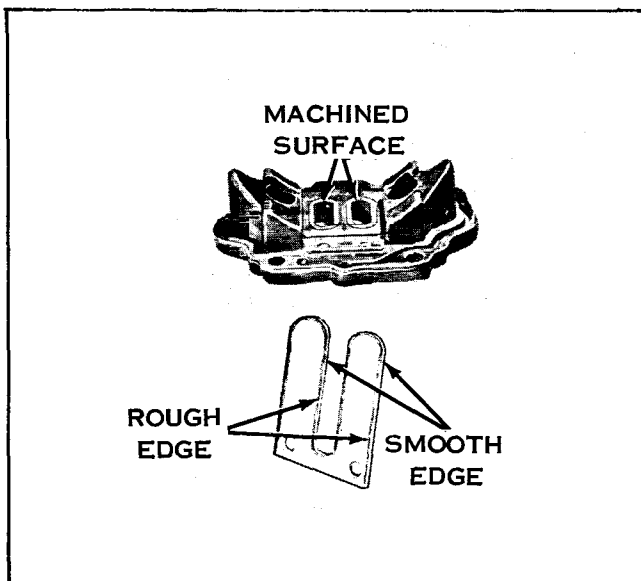
1. Reed plate assembly may be cleaned with same solvent used to clean carburetor. Exercise care in handling reeds, so as not to distort them. Bent or distorted reeds must be replaced.

2. Check for excessive clearance between reed tip and reed plate as illustrated. Maximum allowed clearance .015 inch.

3. Reeds must be installed with rough edge away from plate as shown.

NOTE

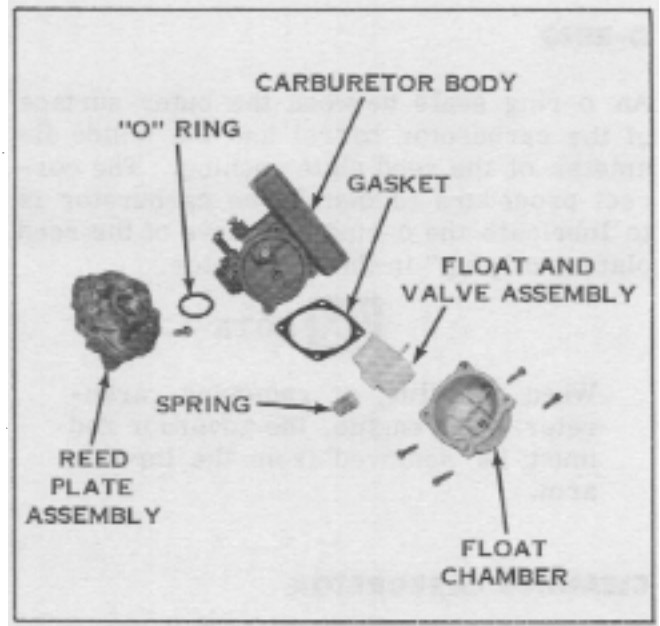
DO NOT USE COMPRESSED AIR TO CLEAN REED VALVES.



MODULAR CARBURETOR

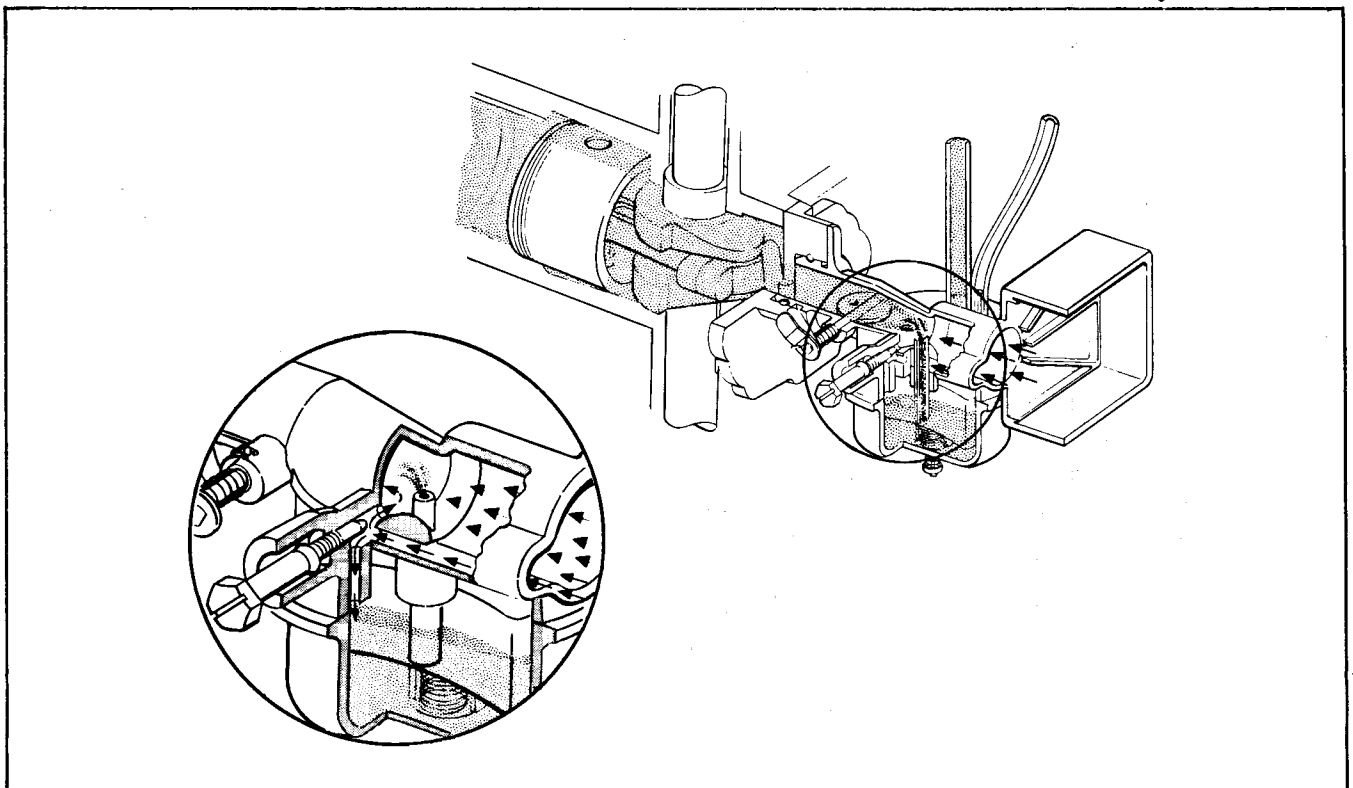
MODULAR CARBURETOR COMPONENTS

The new modular carburetor was introduced in the 1975 D-600 series engines and later production D-400 series engines. This new carburetor is constructed of a special injection molded plastic material. The body and air filter chamber is a one-piece plastic assembly which "plugs" into the reed plate and is secured by a single screw. An O-ring installed between the carburetor and reed plate insures positive sealing. The float and fuel valve is also a one-piece assembly. This assembly rests on a spring located in the plastic float chamber. The spring provides vertical tension against the float forcing the fuel valve into the fuel inlet seat when the float chamber is full of fuel. As fuel enters a single metered jet it is mixed with incoming air to form the correct combustible mixture. The amount of fuel flow through the metering jet is regulated by the altitude needle. Adjustment procedure is same as earlier D-600 series carburetors. Refer to page 4-15 for adjustment procedure.



NOTE

The governor will control the amount of fuel entering the engine. The purpose of the atmospheric pressure adjusting needle is to mix the right amount of fuel with the correct amount of incoming air.



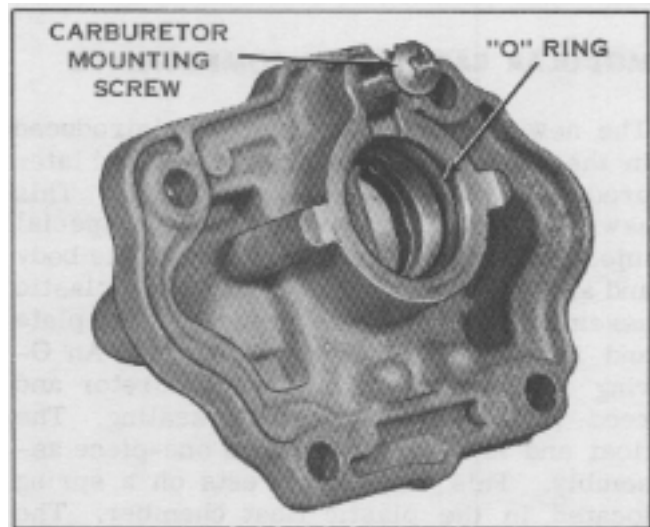
MODULAR CARBURETOR

O-RING

An o-ring seals between the outer surface of the carburetor barrel and the inside diameter of the reed plate opening. The correct procedure to install the carburetor is to lubricate the o-ring in groove of the reed plate and "plug" in the carburetor.

 NOTE

When installing or removing carburetor from engine, the governor rod must be removed from the throttle arm.



CLEANING CARBURETOR

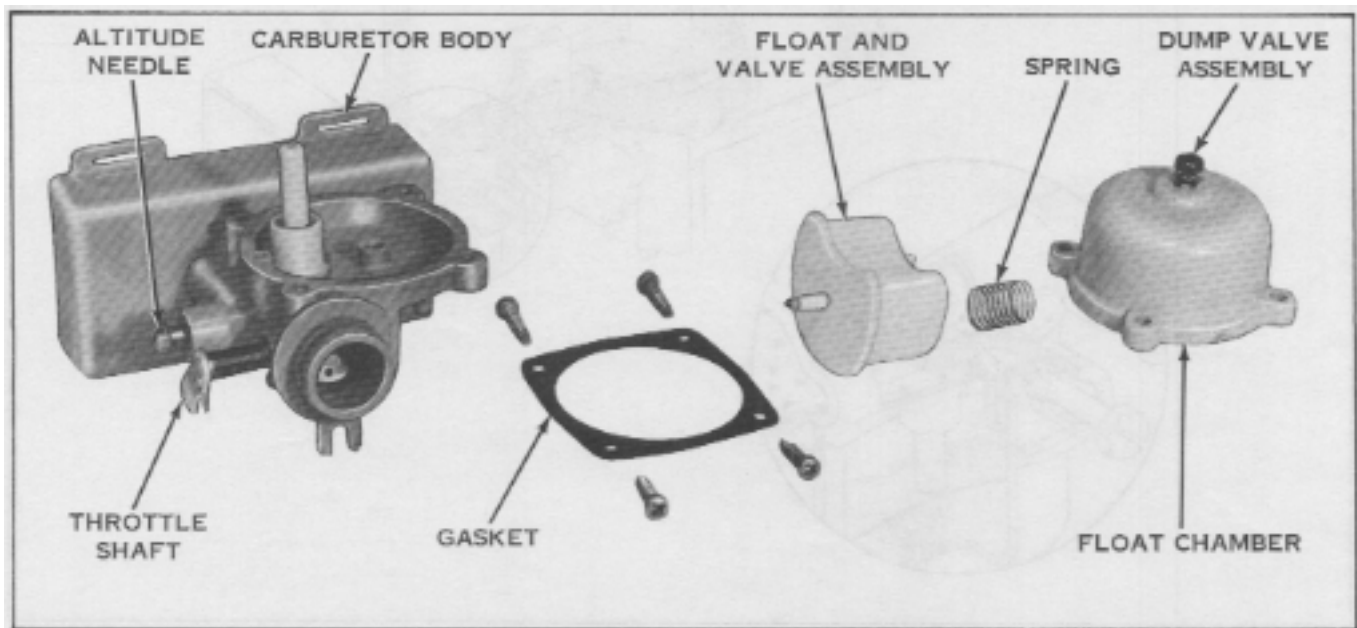
The carburetor assembly is injection molded plastic. DO NOT clean using a standard carburetor cleaner. Disassemble carburetor components, wash and clean using a good grease solvent, dry and clean parts with compressed air — DO NOT dry using a cloth, lint may block passages impeding proper carburetor operation.

After cleaning, inspect all parts. Check float and fuel valves for cracks or damage. Check throttle shaft, valve and spring for smooth operation. Check float chamber for cracks or damage. Check dump valve and gasket for distortion or damage. Check

altitude needle for damage. Check spring for damage - DO NOT BEND SPRING. Check gasket for cracks or wear. Always use new gasket during reassembly.

 NOTE

If any part appears worn or damaged, replace it. To ensure proper float action the float must be correctly installed in float chamber (not binding). After assembling float chamber to carburetor body shake in a vertical motion and listen for float movement. If no sound (movement) is heard remove float chamber and re-install correctly.



MODULAR CARBURETOR

FLOAT SPRING

The float spring is very critical in its operation.

It provides vertical pressure to the float and fuel valve forcing the fuel valve into the fuel inlet to stop the flow of fuel when the bowl has filled. Each end of the spring is located in a recessed area. The walls of these recesses provide guidance for vertical movement of the float and fuel valve. Without these walled recesses the float and fuel valve would move laterally preventing the fuel valve from entering the fuel inlet seat squarely. Mowing at an angle such as a terrace could result in a carburetor flooding without these recesses.

NOTE

DO NOT ATTEMPT TO CHANGE THIS SPRING DIMENSIONALLY. A specific free length dimension of 5/8" (.625 ± .030) is required to complete its function.

AIR FILTER ASSEMBLY

If engine is flooded, fuel can drain back into filter. As filter becomes saturated, incoming air picks up more fuel, causing greater flooding. A puckered filter will allow air and dirt to bypass filter. Make certain that filter covers cup area. If oiled properly, filter is very efficient. First wash out with fuel, then apply 10 to 15 drops of oil. Squeeze several times to distribute oil. If engine "smokes" for no apparent reason, filter may be saturated with fuel mix or may need cleaning.

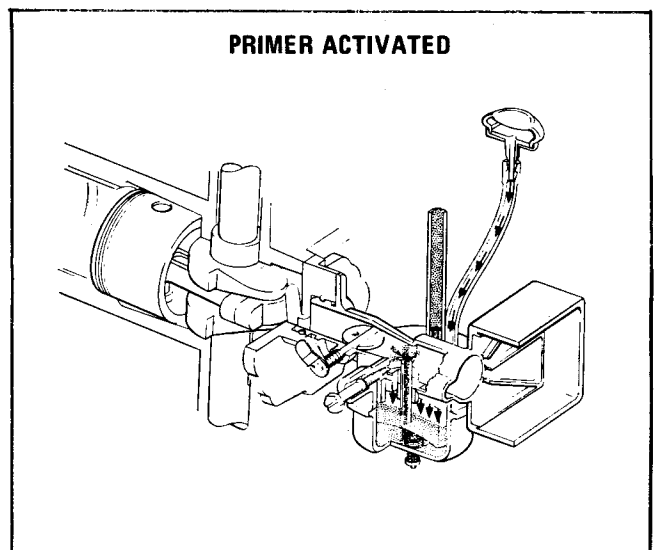
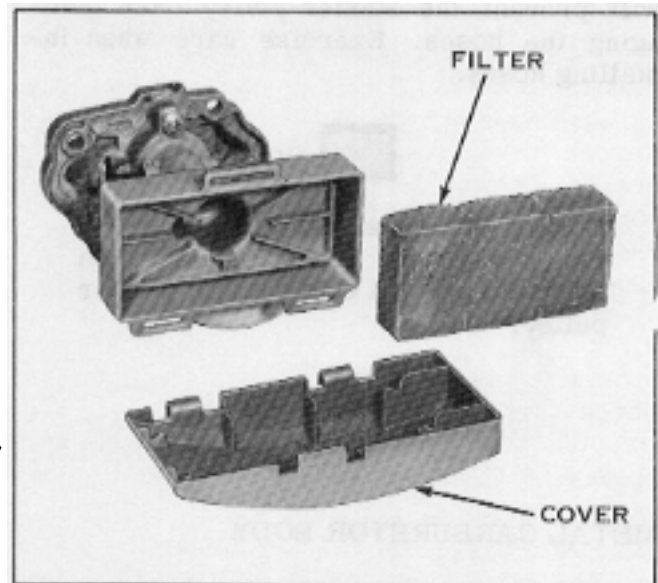
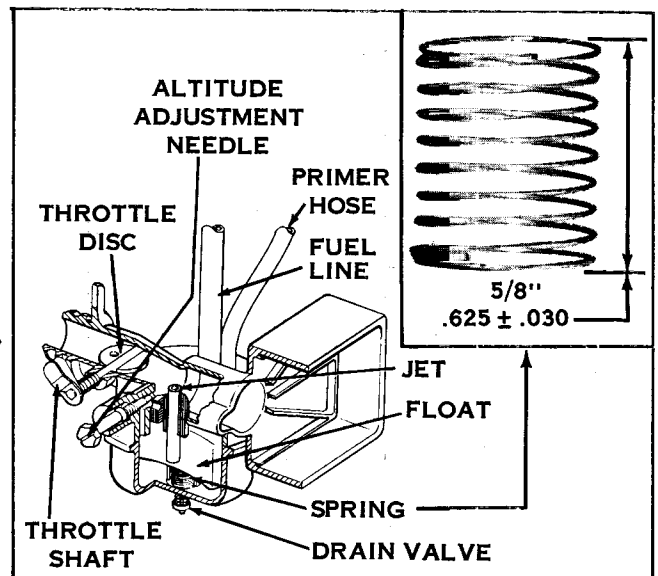
To remove grasp the detachable cover, loosen snap and fold cover down.

NOTE

Reinstall filter in the same position which it was removed to prevent imbedded particles in intake side from entering carburetor.

PRIMER

Examine the primer system. A pneumatic primer forces compressed air into the float bowl chamber which forces fuel into the carburetor venturi.



MODULAR CARBURETOR

FUEL AND PRIMER HOSE ROUTING

SAFETY WARNING

DO NOT SUBSTITUTE WITH INFERIOR FUEL HOSE WHICH MAY CAUSE LEAKAGE FROM PREMATURE DETERIORATION. LEAKAGE OF FUEL MAY CAUSE AN EXPLOSION AND/OR FIRE.

PLASTIC CARBURETOR BODY

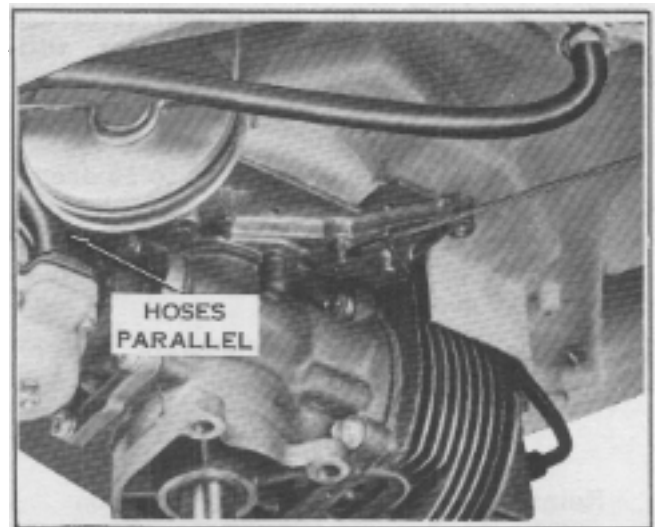
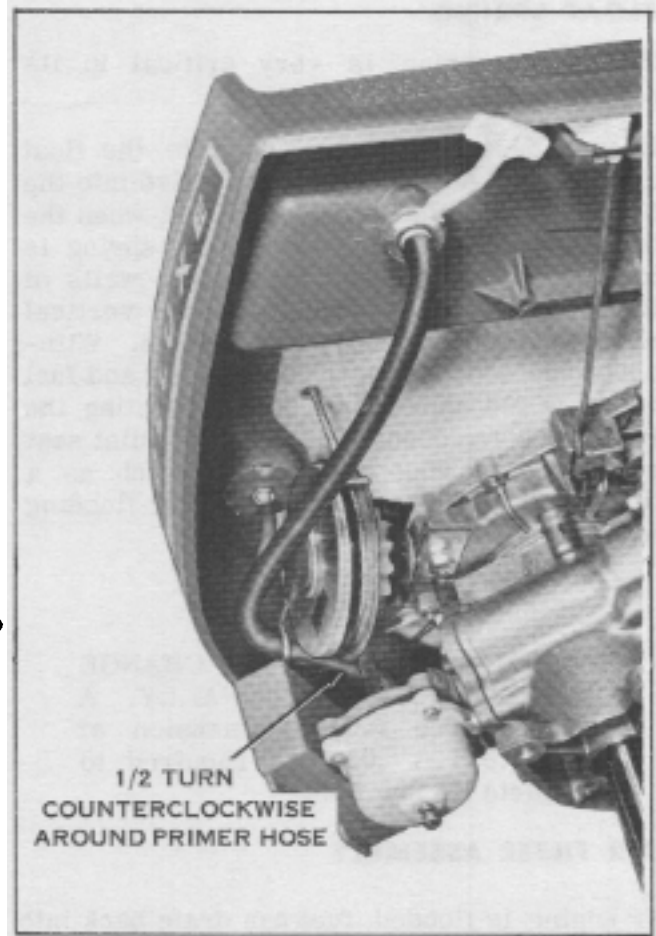
Proper hose routing requires the primer hose to be twisted counterclockwise approximately 1/2 turn around the fuel line. This will prevent the starter pulley from damaging the hoses. Exercise care when installing hoses.

NOTE

Do not pull hoses taut in either direction. Leave sufficient slack in hoses to prevent contact with starter pulley.

METAL CARBURETOR BODY

Proper hose routing requires the hoses to be parallel with each other as shown. If twisted, it is possible for hoses to be damaged by starter pulley. Exercise care when installing hoses.



D-600 SERIES FUEL SYSTEM TROUBLE SHOOTING

FUEL SYSTEM TROUBLE SHOOTING

1. Check for fuel in tank.	A. Fuel shut off (Tank) valve should be open.
	B. Examine vent hole in gas cap. Make sure it is not restricted.
2. Remove air filter element.	A. Watch nozzle in barrel of carburetor and push primer bulb down rapidly.
	B. Fuel should spurt from top of nozzle.
3. If spurting of fuel is not visible.	A. Remove fuel line from carburetor to determine if fuel is flowing from tank thru tank filter, valve and hose.
	B. If not, remove hose from tank valve. Turn valve on to determine if fuel is flowing from tank. If so, restriction is in fuel hose. Wash out in solvent and blow with compressed air.
4. Check function of primer bulb and hose.	A. Place finger over lower end of primer hose and press primer bulb. Resistance should be noted in bulb depression. Remove finger, there should be no resistance present when bulb is depressed.
	B. Depress primer bulb and place finger over end of hose. The bulb should remain collapsed. If not, replace primer bulb and hose assembly.
5. If fuel is spurting from nozzle, when being primed, close fuel valve and remove carburetor and reed plate assembly. Remove float chamber.	A. Check float valve and seat assembly.
	B. Check float level adjustment.*
	C. Check to make sure movement of float and float arm is free.*
	D. Check the throttle valve and shaft for freedom of movement.
	E. Remove metering nozzle and check for restriction.*
	F. Blow out altitude air vent passage.
	G. Check setting and condition of reed valves.

*NOT APPLICABLE TO MODULAR CARBURETOR

MODULAR CARBURETOR - UTILITY MODELS

MODULAR CARBURETOR COMPONENTS

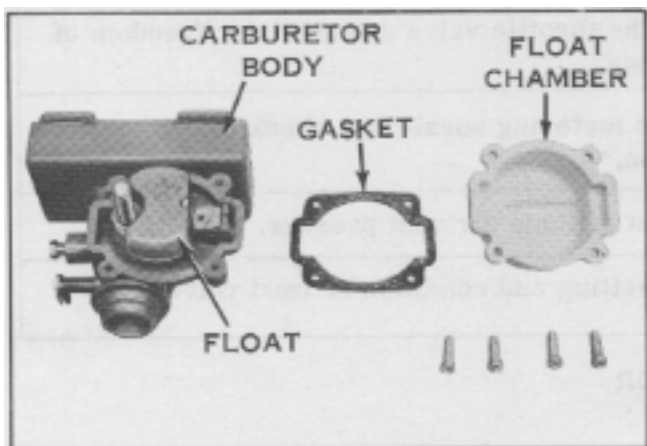
The new modular carburetor was introduced in the 1979 D-410 series engines on all utility models. This new carburetor is constructed of a special injection molded plastic material. The body and air filter chamber is a one-piece plastic assembly which "plugs" into the reed plate and is secured by a single screw. An O-ring installed between the carburetor and reed plate insures positive sealing. The modular carburetor has been redesigned featuring a new float chamber, gasket, float and carburetor body. A hinged type float of special cork material is sealed with an epoxy. During inspection, if the float appears dull or dark in appearance it should be replaced. The float in this new modular carburetor is positioned differently than previous modular carburetors with the float upside down, and a float level adjustment requirement of 11/16 inches from carburetor body to top of float. As fuel enters a single metered jet it is mixed with incoming air to form the correct combustible mixture. The amount of fuel flow through the metering jet is regulated by the altitude needle.

NOTE

The governor will control the amount of fuel entering the engine. The purpose of the atmospheric pressure adjusting needle is to mix the right amount of fuel with the correct amount of incoming air.

NOTE

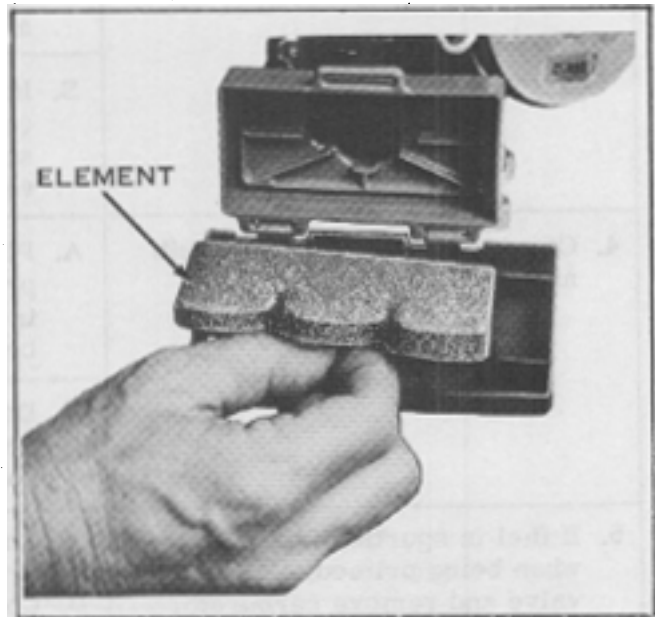
This new modular carburetor is also a Service replacement component for all previous D-Series modular carburetors. A Quick visual inspection will show you which modular carburetor is on the engine.



AIR FILTER ASSEMBLY

If engine is flooded, fuel can drain back into filter. As filter becomes saturated, incoming air picks up more fuel, causing greater flooding. A puckered filter will allow air and dirt to bypass filter. Make certain that filter covers cup area. If oiled properly, filter is very efficient. First wash out with fuel, then apply 10 to 15 drops of oil. Squeeze several times to distribute oil. If engine "smokes" for no apparent reason, filter may be saturated with fuel mix or may need cleaning.

To remove grasp the detachable cover, loosen snap and fold cover down.



NOTE

Reinstall filter in the same position from which it was removed to prevent imbedded particles in intake side from entering carburetor.

CARBURETOR REMOVAL

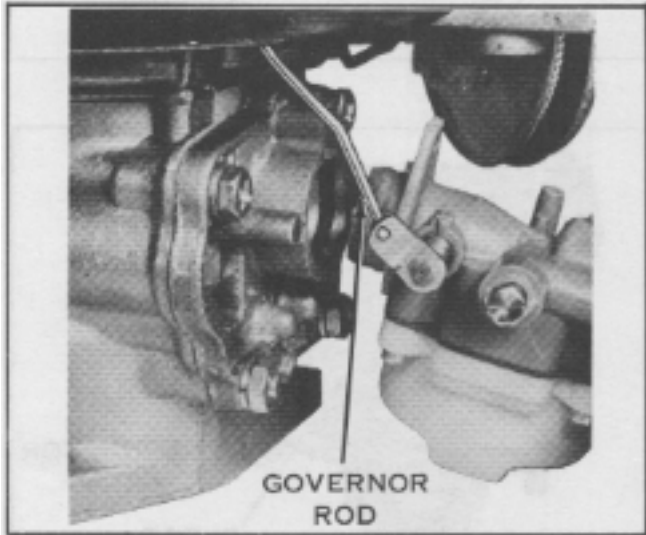
1. The modular carburetor is attached to the reed plate assembly by a single screw.

MODULAR CARBURETOR - UTILITY MODELS

NOTE

During reassembly apply Lawn-Boy nut and screw lock part no. 682301 to threads of mounting screw.

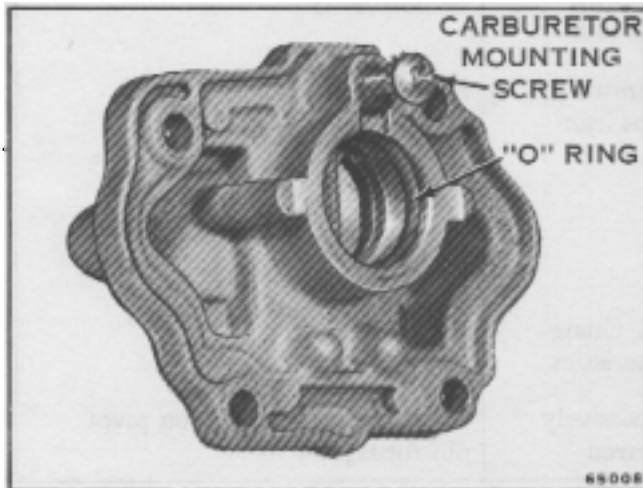
2. Pull carburetor from reed plate assembly. Do not bend or damage the governor rod and/or throttle arm of the carburetor.



3. Check O-ring in reed plate assembly for damage. We recommend replacing O-ring every mowing season and during all tune-up operations.

O-RING

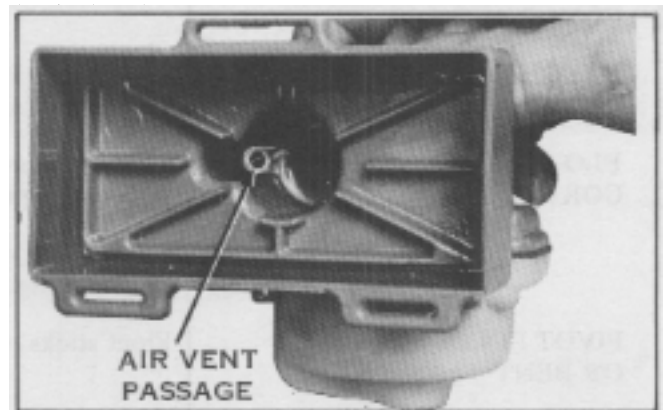
An O-ring seals between the outer surface of the carburetor barrel and the inside diameter of the reed plate opening. The correct procedure to install the carburetor is to lubricate the O-ring in groove of the reed plate and "plug" in the carburetor.



CLEANING CARBURETOR

The carburetor assembly is injection molded plastic. **DO NOT** clean using a standard carburetor cleaner. Disassemble carburetor components, wash and clean using a good grease solvent, dry and clean parts with compressed air — **DO NOT** dry using a cloth, lint may block passages impeding proper carburetor operation.

After cleaning, inspect all parts. Check float and fuel valves for cracks or damage. Check throttle shaft, valve and spring for smooth operation. Check float chamber for cracks or damage. Check altitude needle and O-ring for damage. Check air vent passage which allows air to flow into the float chamber. If this passage should become restricted with dirt and/or debris the engine will not run correctly or stop running and flooding of carburetor will occur. Check gasket for cracks or wear. Always use new gasket during reassembly.



NOTE

If any part appears worn or damaged, replace it. To ensure proper float action the float must be correctly installed in float chamber (not binding). Use needle nose pliers to secure hinge on float arm to pin.

MODULAR CARBURETOR - UTILITY MODELS

FLOAT AND VALVE ASSEMBLY

The float valve consists of a needle and seat assembly, activated by a float in the carburetor bowl. The steel needle is rubber tipped and the seat brass. This combination eliminates possible sticking and provides a perfect seal. The needle rests on float arm, held in place by a spring clip.

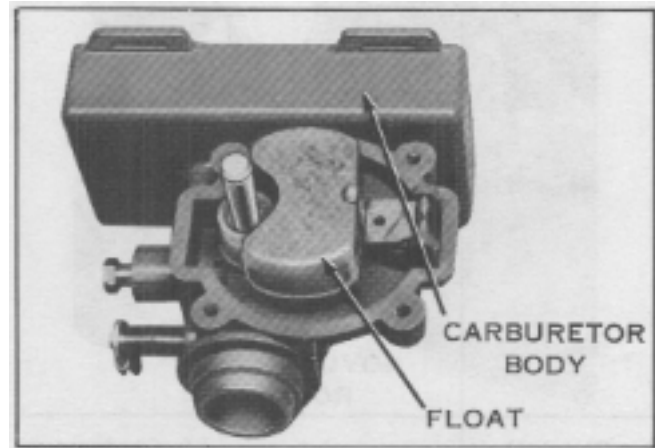
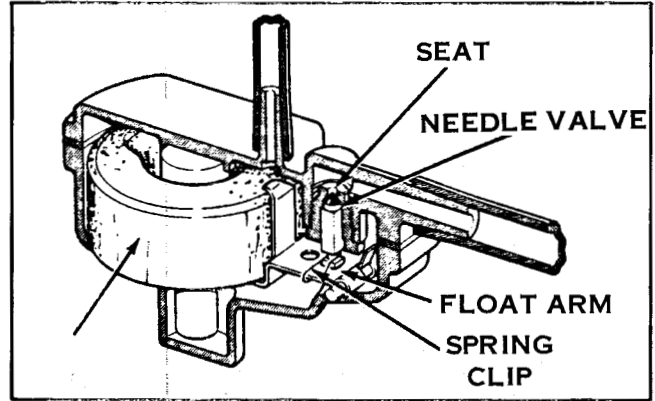
Operation is automatic. When float bowl is empty, float rests on bottom of bowl. As fuel enters bowl of carburetor, float rises, moving needle valve into seat and shutting off fuel. As engine uses fuel, float drops slightly, allowing more fuel to enter bowl, maintaining a constant fuel level in bowl.

Needle, seat and spring clip must be replaced as an assembly. They are matched to form a perfect seal.

Remove float bowl and examine float appearance. Float should be glossy because of epoxy sealer. If dull in appearance, or portions of epoxy have chipped away - replace float.

NOTE

Do not clean float with any type of solvent or carburetor cleaner. Replace it.



Some of the problems you may encounter with the float valve are as follows:

Cause	Effect	Remedy
VARNISH	Stops up openings	Clean out carburetor with solvent
SPRING WIRE CLIP COMES OFF	Needle may stick shut	Replace clip
NEEDLE AND SEAT NOT MATCHED	Fuel supply can't be shut off from float bowl	Replace needle and seat as an assembly
FLOAT ARM NOT SET CORRECTLY	Set too high - carburetor floods - Engine runs rich	Set correctly
	Set too low - carburetor starves - Engine runs lean	Set correctly
PIVOT PIN CORRODED OR BENT	Float sticks	Replace pin
FLOAT STRIKING NOZZLE	Float sticks	Replace float
VARNISH OFF FLOAT	Float soaks up fuel, changing floating characteristics	Replace float
LOOSE FLOAT HINGE CLIP ON PIVOT PIN	Engine 4 cycles excessively when bumped or jarred	Crimp float hinge clip on pivot pin for tighter fit

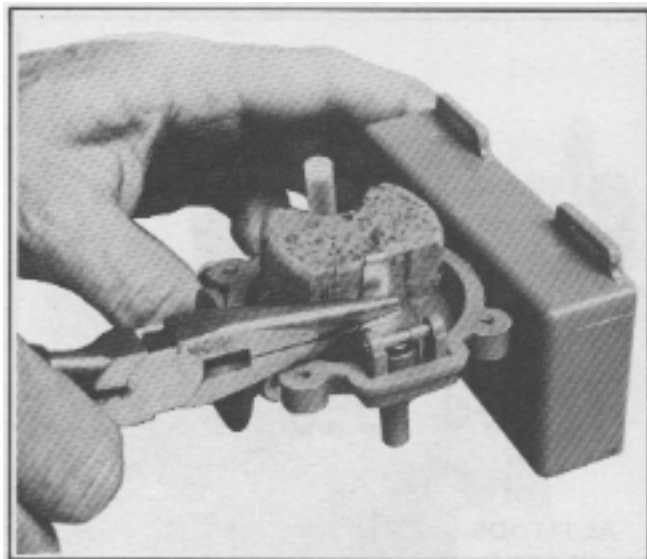
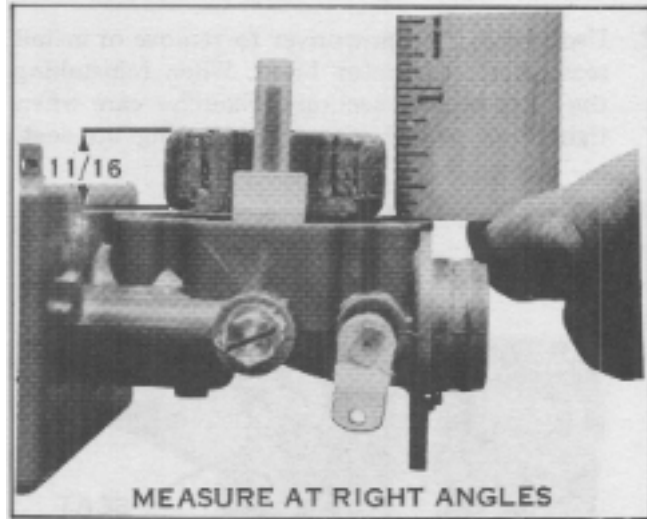
MODULAR CARBURETOR - UTILITY MODELS

FLOAT ADJUSTMENT

Float Setting

Remove float bowl and gasket. Invert carburetor. With float arm resting on float valve needle, the top of float should be 11/16 inch above edge of carburetor body as shown. Obtain measurements at two points at right angles to each other.

If adjustment is required; using needle nose pliers bend float arm as shown. DO NOT bend float arm by applying pressure to float, this will damage rubber tip on inlet needle.



FLOAT VALVE AND SEAT ASSEMBLY

NOTE

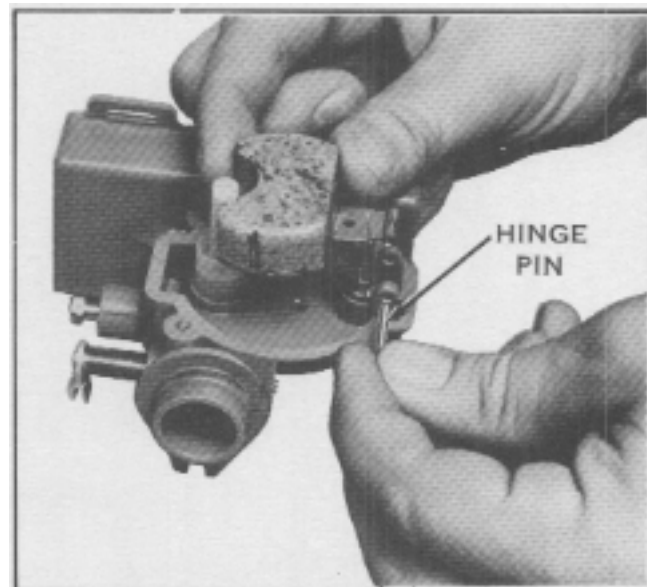
The float valve and seat must be replaced as an assembly. They are matched to form a perfect seal.

1. Remove hinge pin and remove float and valve. Remove spring clip securing valve to float arm.

Check hinge on float arm to be sure it is secured to pin. Use needle nose pliers and tighten hinge. The hinge should be clamped tight enough so that the pin will swivel in the carburetor instead of the arm turning on the pin.

NOTE

Tightening hinge to pivot pin will prevent inlet needle from not seating correctly when mower crosses uneven terrain. This condition is called "fluttering."

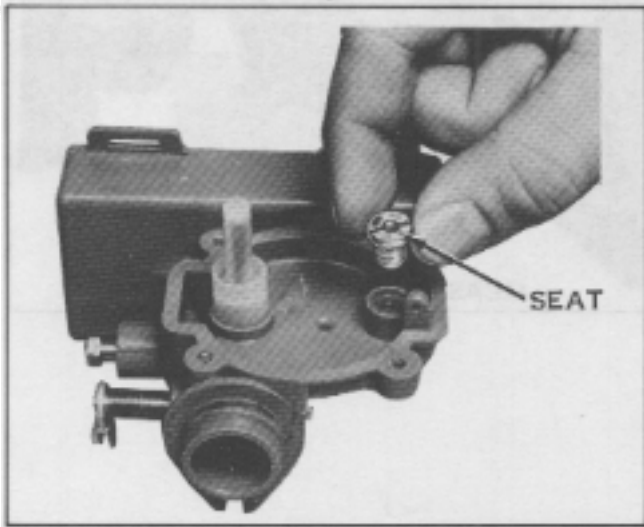


Check pin clip on float arm by rotating carburetor sideways. If clip falls off float arm -- replace it.

MODULAR CARBURETOR - UTILITY MODELS

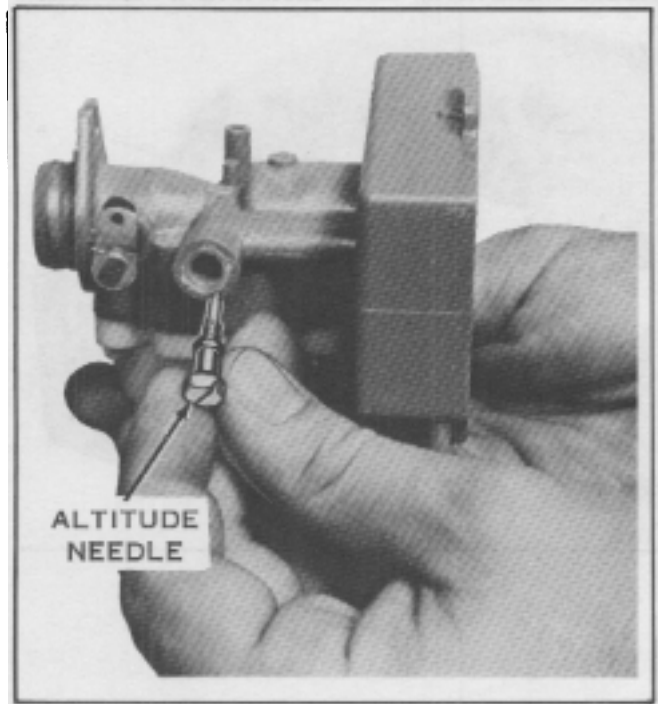
2. Use a wide bit screwdriver to remove or install seat from carburetor body. When reinstalling the seat, tighten securely. Exercise care when tightening seat to prevent damaging the seat.

The pre-setting position is ONE TURN OFF THE SEAT. Use caution when installing this needle as damage may occur to the carburetor body or the needle if it is tightened excessively.



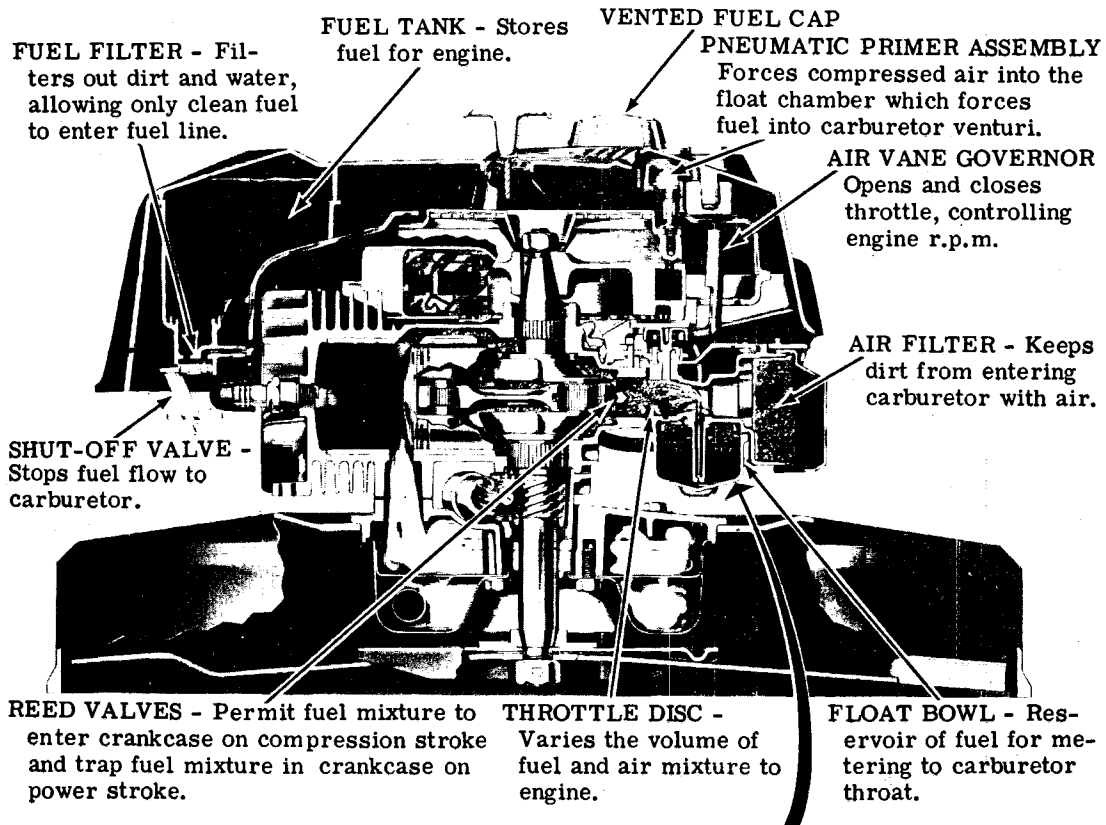
ALTITUDE NEEDLE

The altitude needle has a rubber O-ring around it to seal the threads and prevent air from leaking through. It also serves as a locking feature to prevent the altitude needle from vibrating out of carburetor body.



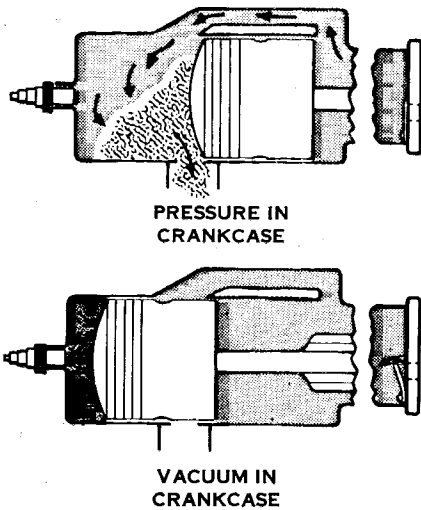
"F" SERIES ENGINE FUEL SYSTEM

FUEL SYSTEM COMPONENTS AND THEIR FUNCTION

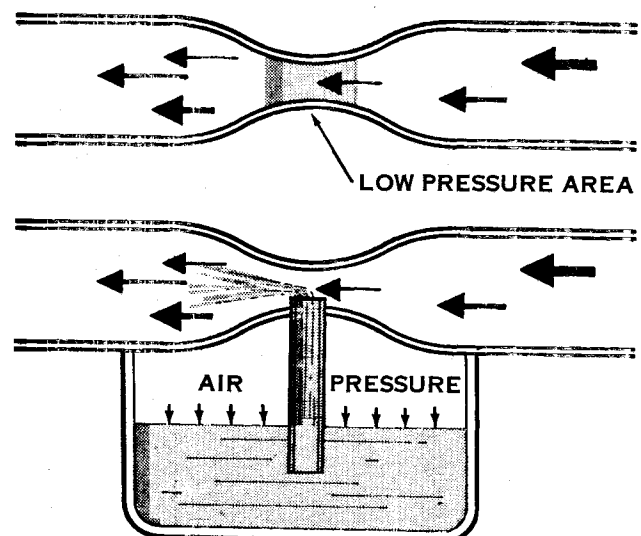


The carburetor starts its action and operates as follows:

1. The crankshaft rotates when the starter rope is pulled (or electric starter motor engaged - electric start models).
2. The rotating crankshaft moves the piston up and down in the cylinder. This creates pressure and vacuum alternately in the crankcase.
3. The vacuum created by movement of the piston upward in the cylinder opens a reed valve - then air rushes through the throat of the carburetor.



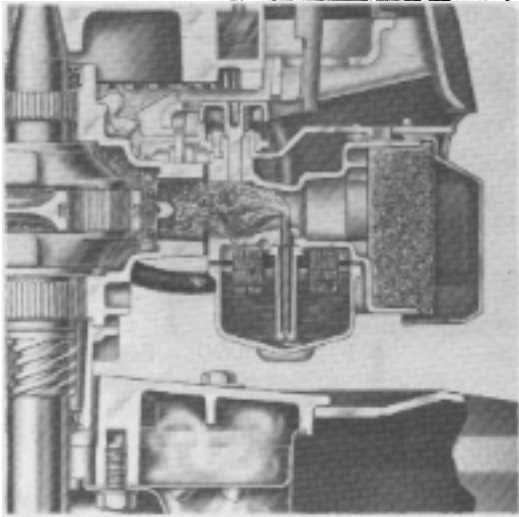
4. The carburetor throat is a Venturi tube, large at each end with a smaller center passage. When air rushes through this tube, the air pressure at the center is less.
5. By inserting a tube from the carburetor float bowl into this center area, the difference in air pressure will force fuel up through this tube, where it is picked up by, and mixed with, the air.



"F" SERIES (Cont.) ENGINE FUEL SYSTEM

FUEL SYSTEM COMPONENTS AND THEIR FUNCTION

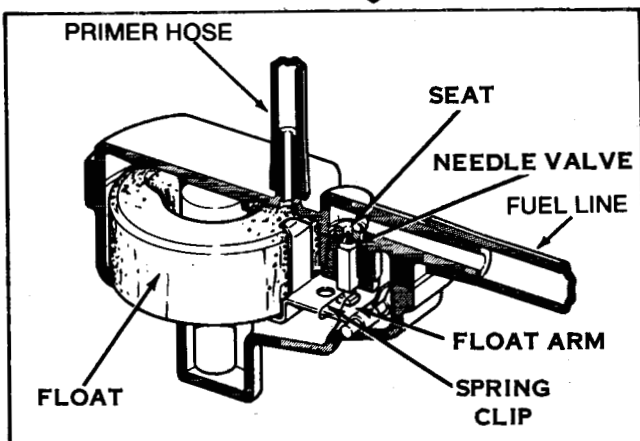
- Turbulence around the throttle disc helps to mix the fuel and air.
- As fuel and air mixture enters the crankcase through the reed valves, it is near a gaseous state. The engine, when cold, will not vaporize the mixture completely. As the engine warms up, the mixture is heated in the crankcase and becomes a consistently even gas.



Float

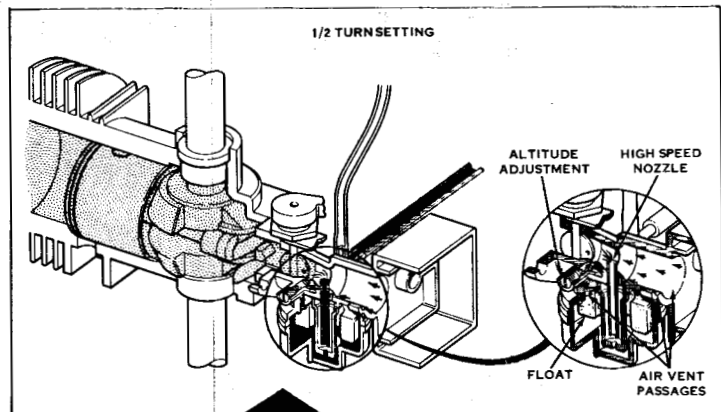
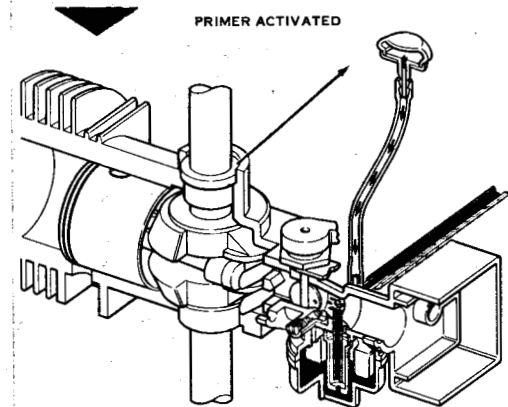
The float valve consists of a needle and seat assembly activated by a cork float in the float bowl. The needle rests on the float arm and is held in place by a spring clip. The needle is rubber-tipped so it will readily seal against the brass seat.

If the float bowl is empty, the cork float rests on the bottom of the bowl. As fuel enters the float bowl, the float rises, moving the needle into the seat, shutting off the fuel supply. As the engine uses fuel, the float drops slightly and the needle moves off the seat, maintaining a constant fuel supply to the engine.



PRIMER OPERATION

Examine the primer system. A pneumatic primer forces compressed air into the float bowl chamber which forces fuel into the carburetor venturi for cold engine starting.



The carburetor is completely automatic. As fuel enters a single metered jet it is mixed with incoming air to form the correct combustible mixture. The amount of fuel flow through the metering jet is regulated by the altitude needle.

There are no adjustments to be made to regulate the amount of fuel entering the carburetor venturi. There is an atmospheric pressure adjustment that would have to be made if the engine is operating in very high or very low altitudes.

All carburetors require a final adjustment of the altitude needle prior to putting the mower into service.

To adjust, proceed as follows:

- Pre-set altitude needle 1/2 turn from seat.
- Start engine and allow to run for 3 to 5 minutes to warm up.

"F" SERIES (Cont.)

ENGINE FUEL SYSTEM

FUEL SYSTEM COMPONENTS AND THEIR FUNCTION



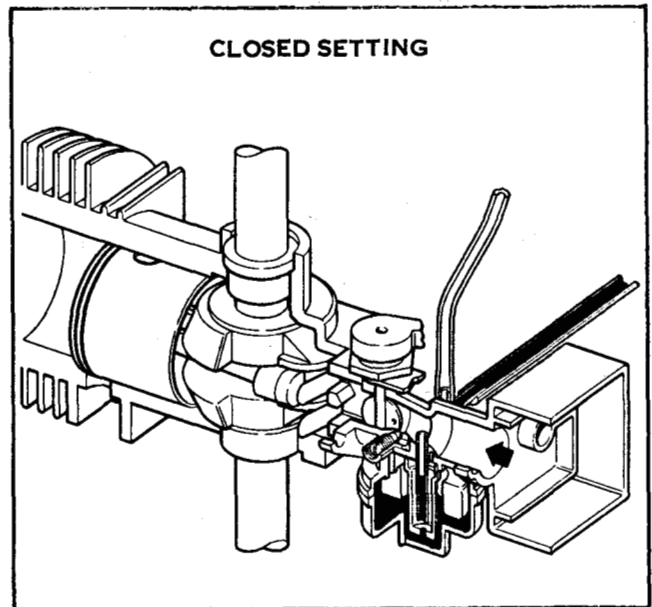
NOTE

The governor will control the amount of air/fuel entering the engine. The purpose of the atmospheric pressure adjusting needle is to mix the right amount of fuel with the correct amount of incoming air.

AIR ADJUSTMENT (CONTINUED)

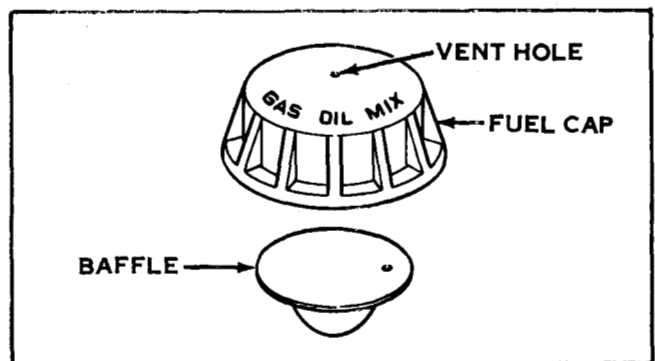
3. Place speed control lever in HIGH SPEED running position (3100-3300 R.P.M.) Observe engine operation. If not running smoothly, turn altitude needle counterclockwise approximately 1/8 turn at a time to obtain proper engine operation.
4. Slowly turn altitude needle counterclockwise until engine is running smoothly. Allow engine to run for one or two minutes to make sure adjustment is not too lean.
5. Place speed control lever in LOW SPEED running position (2400-2600 R.P.M.) and check operation.
6. After carburetor adjustment is completed, shut off engine. **IMMEDIATELY** attempt to restart engine. **DO NOT PRIME A HOT ENGINE.** It should start within 2 pulls on starter handle. Check starting engine at both HIGH and LOW speed settings. If difficult to restart, turn altitude needle 1/8 turn counterclockwise to richen fuel mixture and obtain easy restarting.

7. In the closed position no air is entering the carburetor vent passage. Therefore, the float bowl pressure has been eliminated and the fuel supply to the carburetor venturi is cut off, stopping the engine.



FUEL TANK VENTING

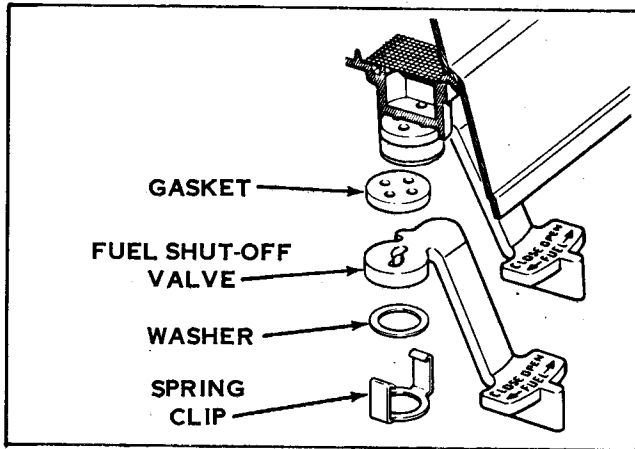
Fuel tanks must be vented to prevent vacuum forming and stopping flow of fuel. Tank caps will have a vent hole. A closed vent will create a vacuum in the tank as fuel is used - and eventually cause the engine to stop. In a few minutes the vacuum will decrease and the engine can be started again, but it will stop again in a short period of time. The vent hole can become clogged with dirt. Check vent hole before each operation and clean if necessary.



"F" SERIES (Cont.) ENGINE FUEL SYSTEM

FUEL SYSTEM COMPONENTS AND THEIR FUNCTION

FUEL TANK VENTING (Cont.)



SHUT-OFF VALVE

The fuel tank screen assembly or the shut-off valve can become clogged. This can be checked easily by removing the fuel hose, opening the valve and observing for fuel flow through the valve. Replace the fuel shut-off assembly if damaged.



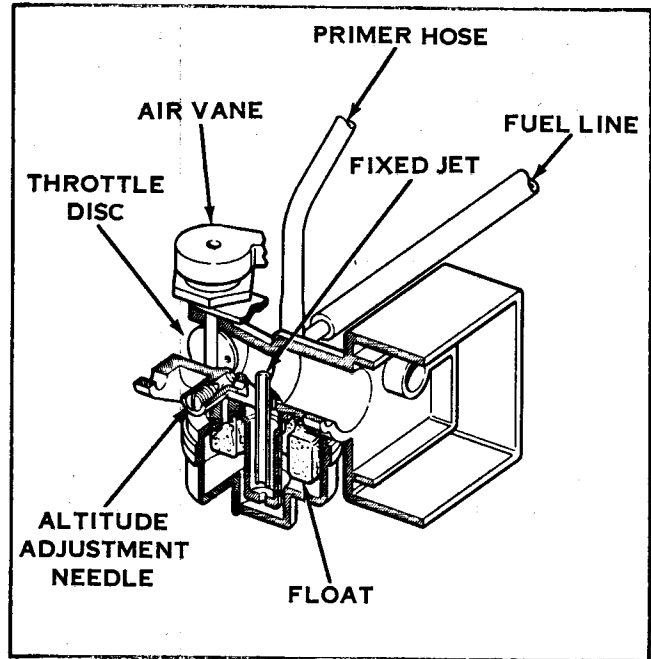
NOTE

Shut-off valve is secured to fuel tank with a spring clip; exercise care when re-installing to fuel tank.

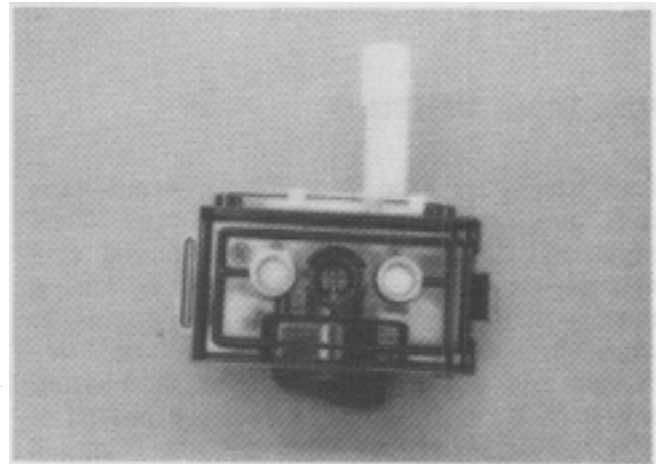


SAFETY WARNING

DO NOT SUBSTITUTE WITH INFERIOR FUEL HOSE WHICH MAY CAUSE LEAKAGE FROM PREMATURE DETERIORATION. LEAKAGE OF FUEL MAY CAUSE AN EXPLOSION AND/OR FIRE.



The carburetor used on the early model F series engines is automatic. No fuel adjustments are necessary to regulate fuel intake. A single, metered jet allows the correct amount of fuel to mix with the incoming air which is regulated by a single adjusting needle. Adjustment must be changed when a significant change in altitude is encountered.



Two plastic plugs are available and recommended for installation in the screw holes located in the back wall of the air filter box. Dirt then is prevented from entering the air box. The part number is 611545.

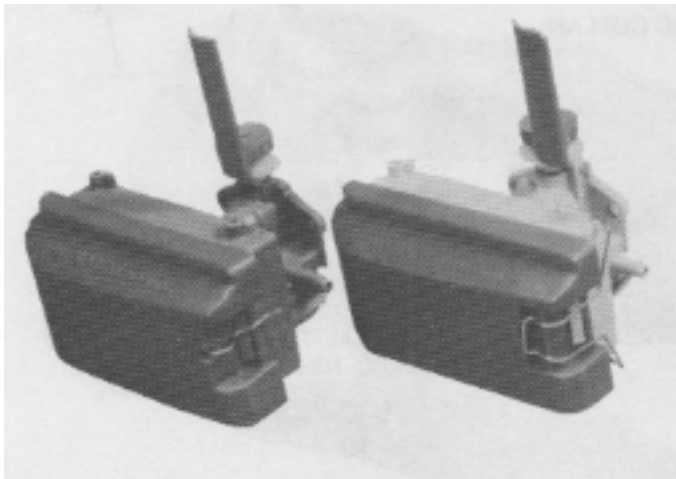
"F" SERIES (Cont.)

AIR FILTER

If engine is flooded, fuel can drain back into filter. As filter becomes saturated, incoming air picks up more fuel, causing greater flooding. A puckered filter will allow air and dirt to bypass filter. Make certain that filter covers cup area. If oiled properly, filter is very efficient. First wash out with fuel, or solvent, blow dry with compressed air, then apply 10 to 15 drops of oil. Squeeze several times to distribute oil. If engine "smokes" for no apparent reason, filter may be saturated with fuel mix or may need cleaning.

 NOTE

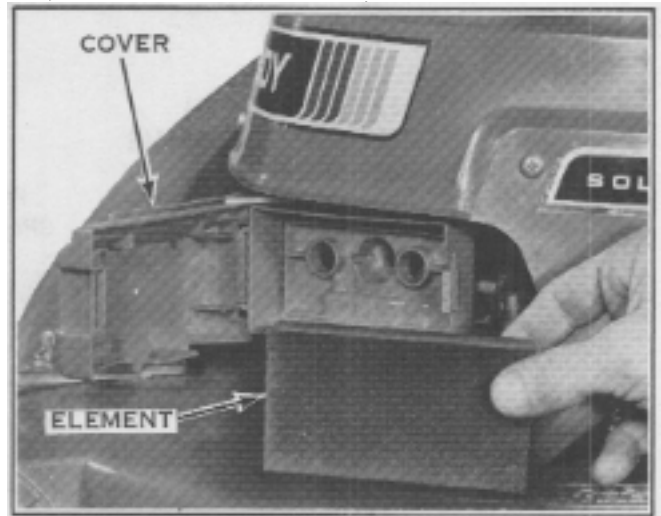
On later production models the air filter cover was retained with a clip or bail.



To remove grasp the cover, loosen snap and open cover.

 NOTE

On early models the air filter element **MUST BE** installed so the small additional piece faces the venturi opening as illustrated. Also make sure it is positioned squarely between both screw holes. If incorrectly installed, the corner of the secondary filter will be drawn into carburetor throat thereby restricting air flow, resulting in a rich fuel mixture entering the engine. Later production, this small square piece (filter) was eliminated.

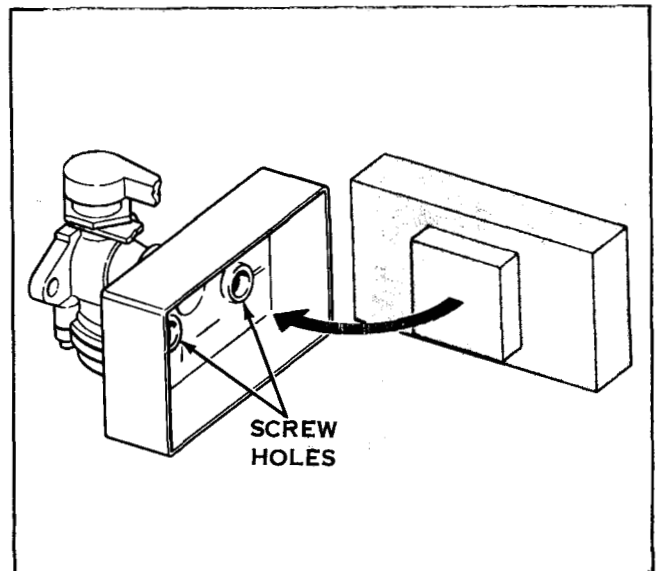


 NOTE

A dirty air cleaner element will create a noticeable power loss, and may reduce engine life.

 NOTE

Operating engine without filter element, or filter element without sufficient oil will shorten engine life. Reinstall filter in the same position which it was removed to prevent imbedded particles in intake side from entering carburetor.



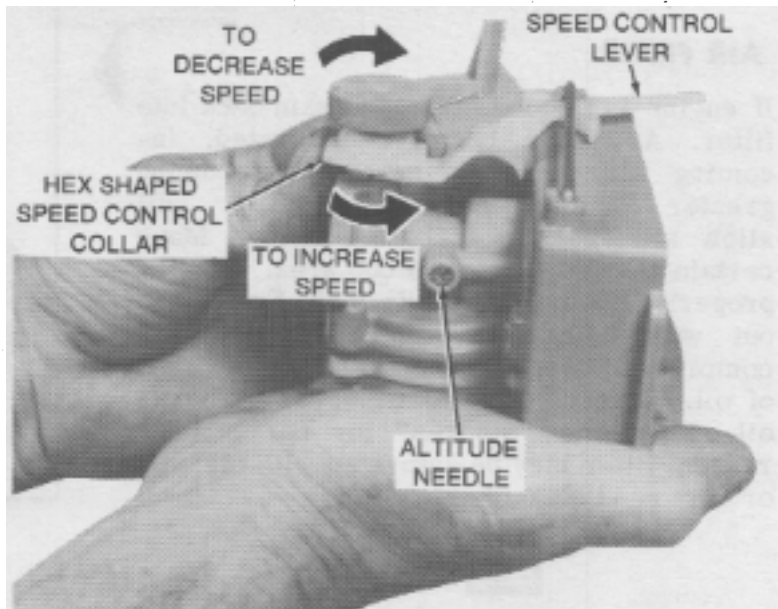
"F" SERIES (Cont.)

"F" SERIES CARBURETOR IDENTIFICATION

F100 SERIES (EARLY MODELS) ADJUSTABLE ALTITUDE NEEDLE VALVE VARIABLE SPEED

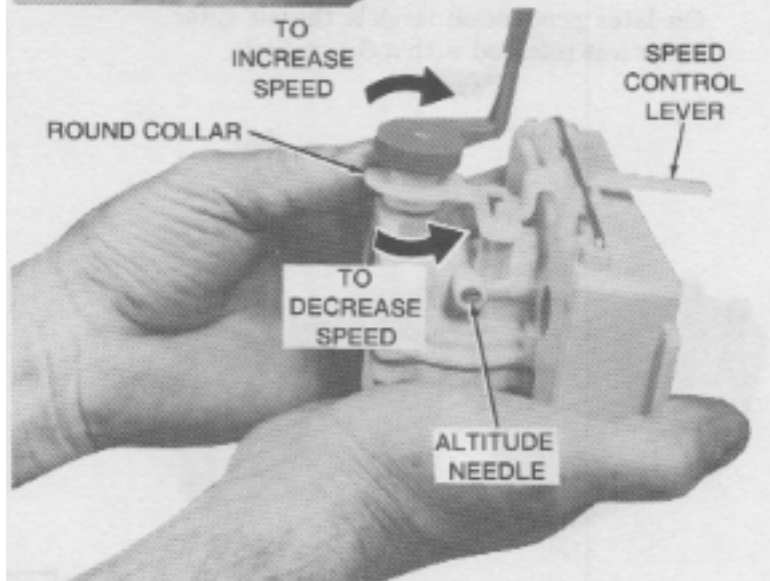
1/2 TURN COUNTER-
CLOCKWISE IF SPEED
CONTROL LEVER IS IN
HIGH POSITION

1/4 TURN COUNTER-
CLOCKWISE IF SPEED
CONTROL LEVER IS
IN LOW POSITION



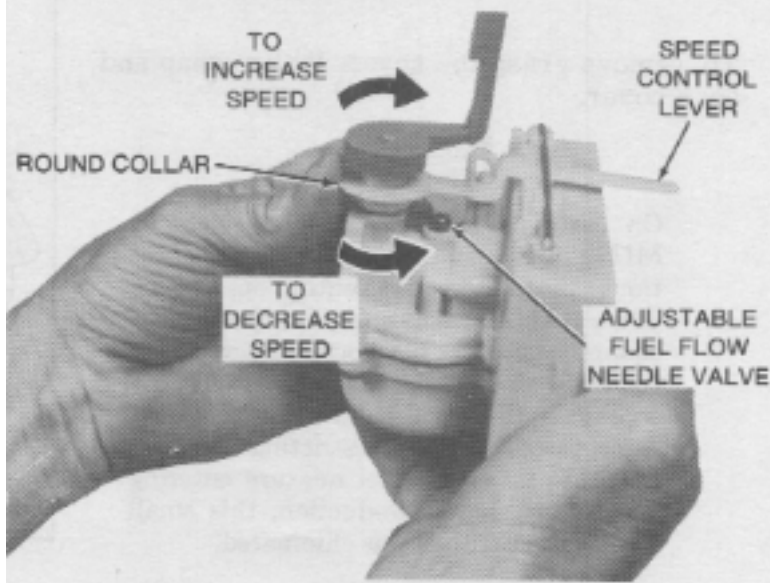
F100 SERIES (LATER MODELS) ADJUSTABLE ALTITUDE NEEDLE VARIABLE SPEED

1/3 - 1/2 TURN
CLOCKWISE IF SPEED
CONTROL LEVER IS IN
HIGH POSITION



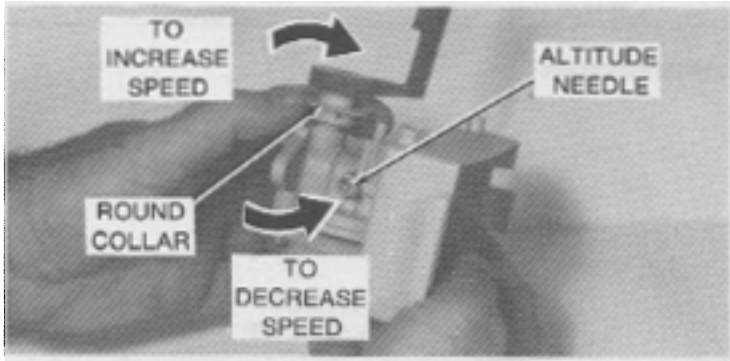
F100 SERIES (LATER MODELS) ADJUSTABLE FUEL FLOW VALVE VARIABLE SPEED

1/3 - 1/2 TURN
CLOCKWISE IF SPEED
CONTROL LEVER IS IN
HIGH POSITION

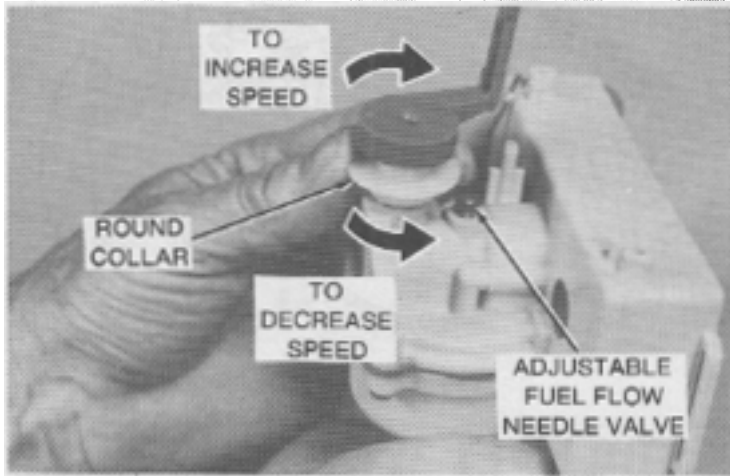


"F" SERIES (Cont.)

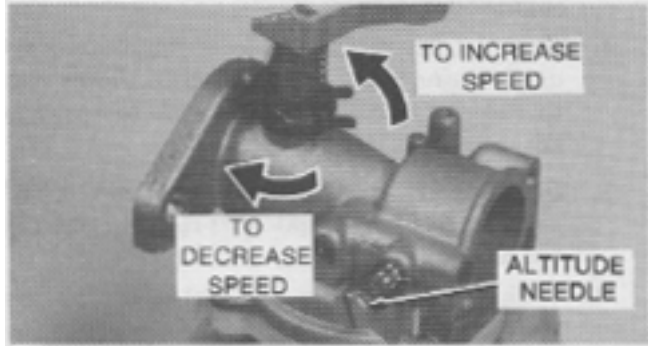
F-SERIES CARBURETOR IDENTIFICATION



**F300 SERIES
SINGLE SPEED**



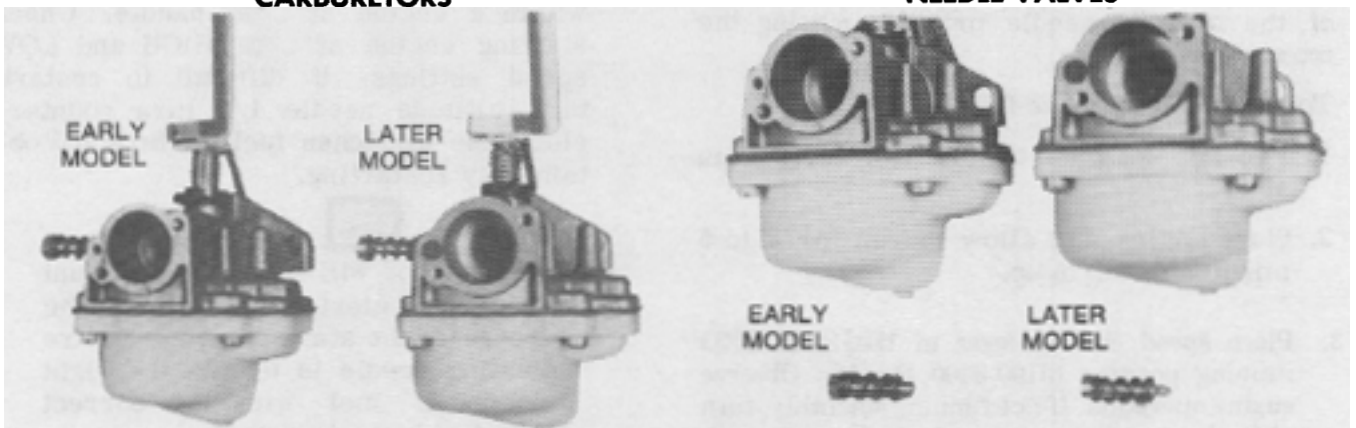
**F300 SERIES ADJUSTABLE FLOW VALVE
SINGLE SPEED**



**F200 SERIES COMMERCIAL CARBURETOR
SINGLE SPEED**

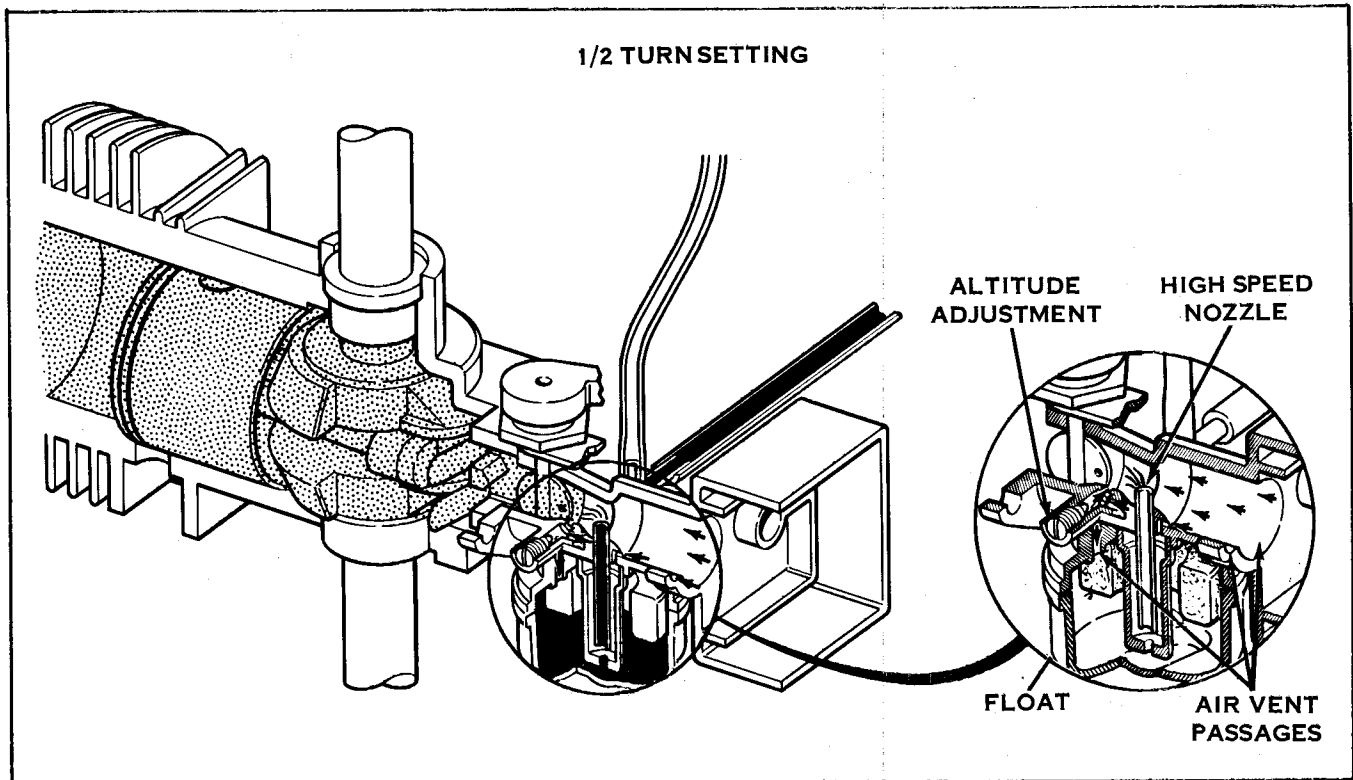
**EARLY AND LATER
CARBURETORS**

**EARLY AND LATER
NEEDLE VALVES**



"F" SERIES (Cont.) F100 SERIES CARBURETOR EARLY MODEL

AIR ADJUSTMENT



The carburetor is completely automatic. As fuel enters a single metered jet it is mixed with incoming air to form the correct combustible mixture. The amount of fuel flow through the metering jet is regulated by the altitude needle.

There are no adjustments to be made to regulate the amount of fuel entering the carburetor venturi. There is an atmospheric pressure adjustment that would have to be made if the engine is operating in very high or very low altitudes.

All carburetors require a final adjustment of the altitude needle prior to putting the mower into service.

To adjust, proceed as follows:

1. Pre-set altitude needle 1/2 turn from seat.
2. Start engine and allow to run for 3 to 5 minutes to warm up.
3. Place speed control lever in HIGH SPEED running position (3100-3300 R.P.M.) Observe engine operation. If not running smoothly, turn altitude needle counterclockwise approxi-

mately 1/8 turn at a time to obtain proper engine operation.

4. Slowly turn altitude needle counterclockwise until engine is running smoothly. Allow engine to run for one or two minutes to make sure adjustment is not too lean.
5. Place speed control lever in LOW SPEED running position (2400-2600 R.P.M.) and check operation.
6. After carburetor adjustment is completed, shut off engine. **IMMEDIATELY attempt to restart engine. DO NOT PRIME A HOT ENGINE.** It should start within 2 pulls on starter handle. Check starting engine at both HIGH and LOW speed settings. If difficult to restart, turn altitude needle 1/8 turn counterclockwise to richen fuel mixture and obtain easy restarting.



NOTE

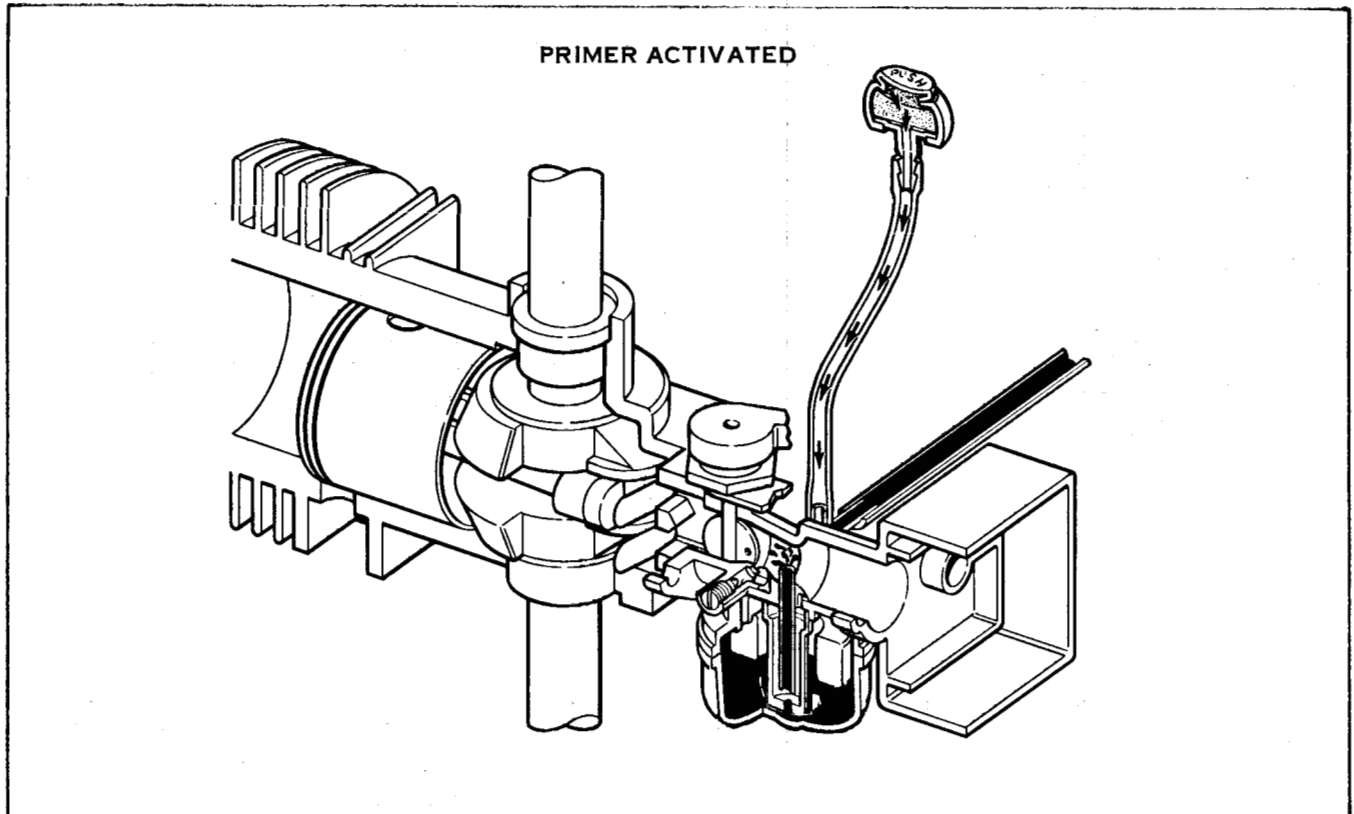
The governor will control the amount of air/fuel entering the engine. The purpose of the atmospheric pressure adjusting needle is to mix the right amount of fuel with the correct amount of incoming air.

"F" SERIES (Cont.)

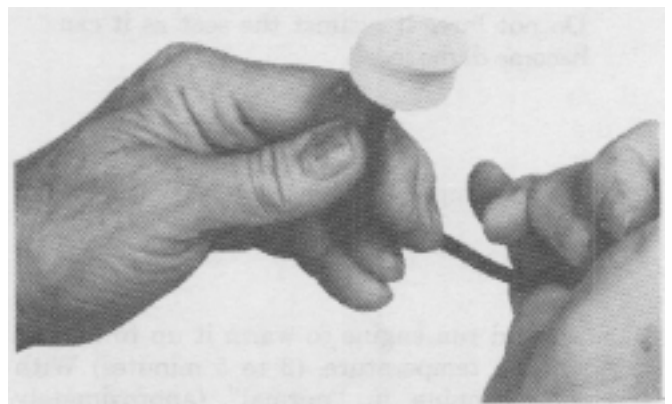
F100 SERIES CARBURETORS EARLY MODEL

PRIMER

Examine the primer system. A pneumatic primer forces compressed air into the float bowl chamber which forces fuel into the carburetor venturi.



To test the function of the primer, disconnect primer hose from carburetor. Depress the bulb, and hold it. Place fingers over end of hose and release bulb. The bulb should remain collapsed. If it does not, determine the location of the air leak and replace that part on assembly.



 NOTE

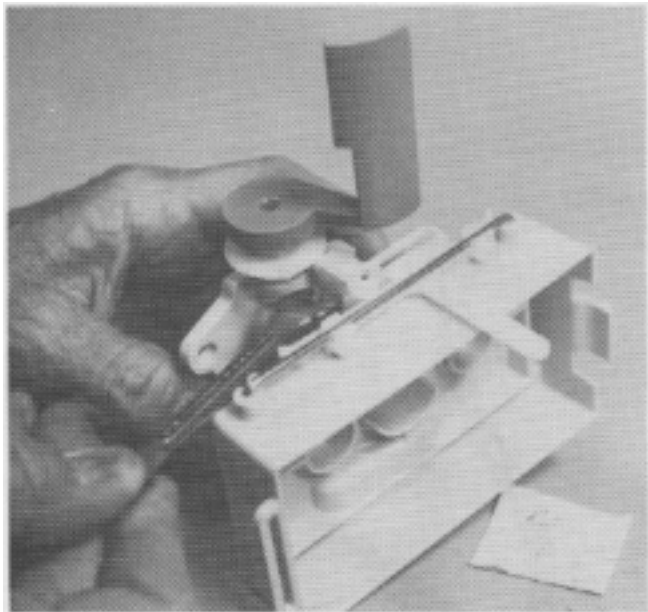
A leaking primer will cause hard starting and a surging operation.

"F" SERIES (Cont.)

F-100-300 SERIES CARBURETOR

(WITH ADJUSTABLE FUEL FLOW NEEDLE VALVE)

ADJUSTMENT PROCEDURES



Always adjust the governor to operate engine between 3100-3300 R.P.M. before proceeding with carburetor adjustments.

NOTE

All carburetors require a final adjustment of the needle valve prior to putting the mower into service.

VENTED CARBURETOR ADJUSTMENT

1. Turn needle valve slowly in a clockwise direction using a 1/4 inch open end wrench until it seats lightly.

NOTE

Do not force it against the seat as it can become damaged.

2. After seating, turn counterclockwise 2 full turns.
3. Start and run engine to warm it up to normal operating temperature. (3 to 5 minutes) With engine running in "normal" (approximately 3200 R.P.M.), slowly turn needle valve clockwise (turning the wrench to the left) approximately 1/8 turn at a time until it runs smooth and even. After the carburetor has been adjusted for smooth and even running, turn needle

valve counterclockwise (turning the wrench to the right) approximately 1/8-1/4 turn. This will correctly set the carburetor for easier starting and cold running. After each movement of needle valve, wait for the engine to respond to the adjustment.

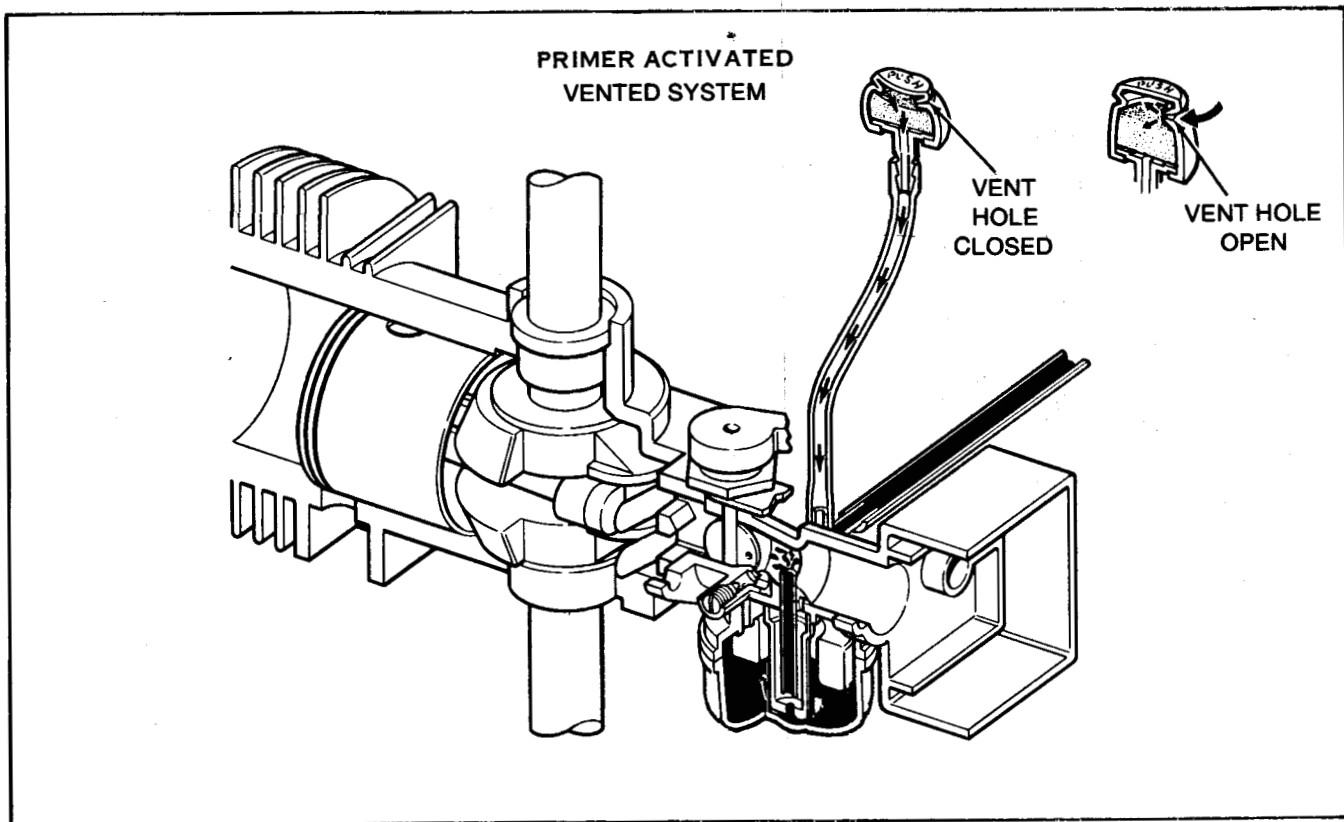
4. Place speed control lever in LOW SPEED running position (2400-2600 R.P.M.). Observe engine operation. If not running smoothly, readjust needle slightly. Recheck high speed operation again.
5. After carburetor adjustment is completed, shut off engine. IMMEDIATELY attempt to restart engine. DO NOT PRIME A HOT ENGINE. It should start within 2 pulls on starter handle. Check starting engine at both HIGH and LOW speed settings. If difficult to restart, turn altitude needle 1/8 turn, counterclockwise to richen fuel mixture and obtain easy restarting.

"F" SERIES (Cont.)
F100-300 SERIES CARBURETORS
ADJUSTABLE FUEL FLOW NEEDLE VALVE

VENTED PRIMER

Examine the primer assembly. A vent hole is located in the primer bulb of this fuel system. When the bulb is depressed, the vent hole will close and forces air through the primer hose into the carburetor for priming which forces fuel up into the venturi.

When the bulb is released, air enters the primer bulb for the next stroke.



"F" SERIES (Cont.)

F100-F300 SERIES CARBURETORS

(PLASTIC BODY)

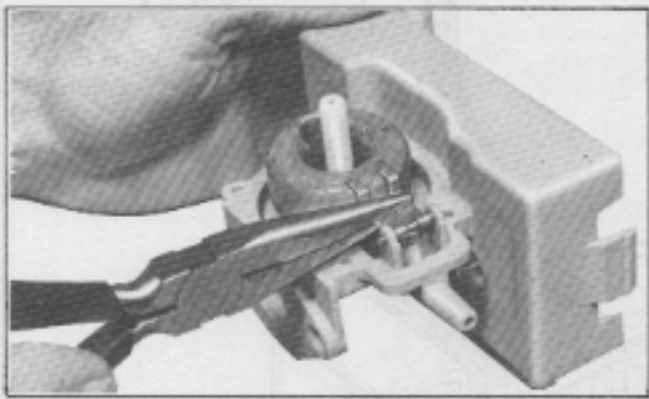
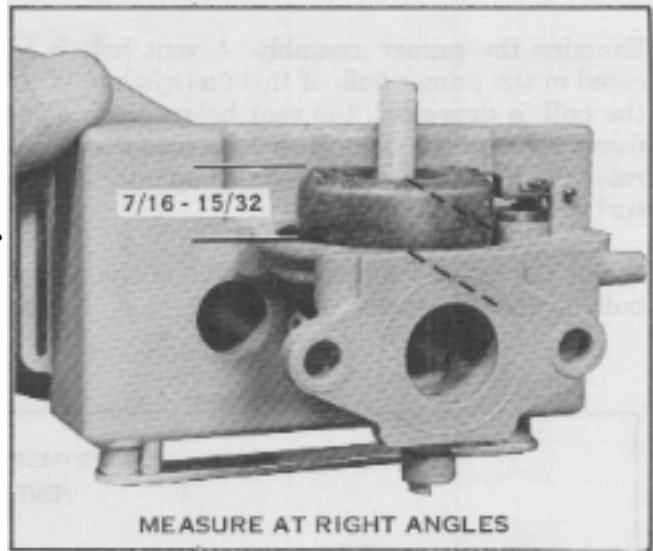
MAINTENANCE—REPAIR AND ADJUSTMENTS—SERVICE

FLOAT ADJUSTMENT

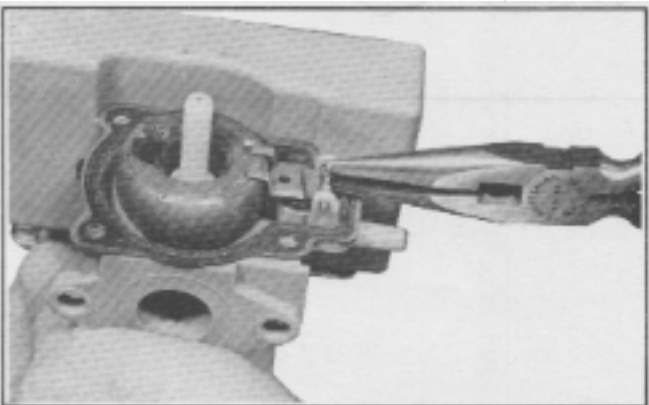
Float Setting

Remove float bowl and gasket. Invert carburetor. With float arm resting on float valve needle, the top of float should be $7/16$ - $15/32$ inch above edge of carburetor body as shown. Obtain measurements at two points at right angles to each other.

If adjustment is required; using needle nose pliers bend float arm as shown. DO NOT bend float arm by applying pressure to float, this will damage rubber tip on inlet needle.

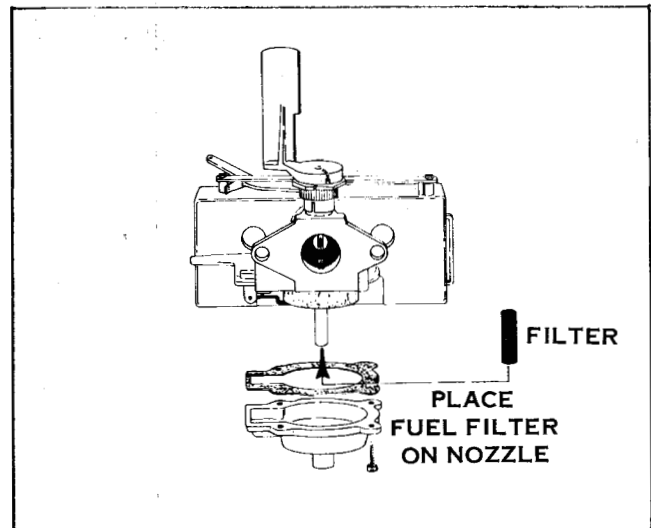


Check pin clip on float arm by rotating carburetor sideways. If clip falls off float arm -- replace it.



NOTE

Tightening hinge to pivot pin will prevent inlet needle from not seating correctly when mower crosses uneven terrain. This condition is called "fluttering."



The Nozzle Filter will provide a secondary filtering device to minimize the possibility of "fuzz" or other minute particles getting into the carburetor area, which causes engine stalling, including hard restarting after shut down.

We recommend the use of the Nozzle Filter in all carburetors. Make sure the nozzle is free from dirt and "fuzz" — then install filter on the nozzle. Hold float up and lift bowl carefully in place. (For easier installation, take carburetor off and turn upside down.)

"F" SERIES (Cont.) F100-F300 SERIES CARBURETORS (PLASTIC BODY)

MAINTENANCE—REPAIR AND ADJUSTMENTS—SERVICE

FLOAT AND VALVE ASSEMBLY

The float valve consists of a needle and seat assembly, activated by a float in the carburetor bowl. The steel needle is rubber tipped and the seat brass. This combination eliminates possible sticking and provides a perfect seal. The needle rests on float arm, held in place by a spring clip.

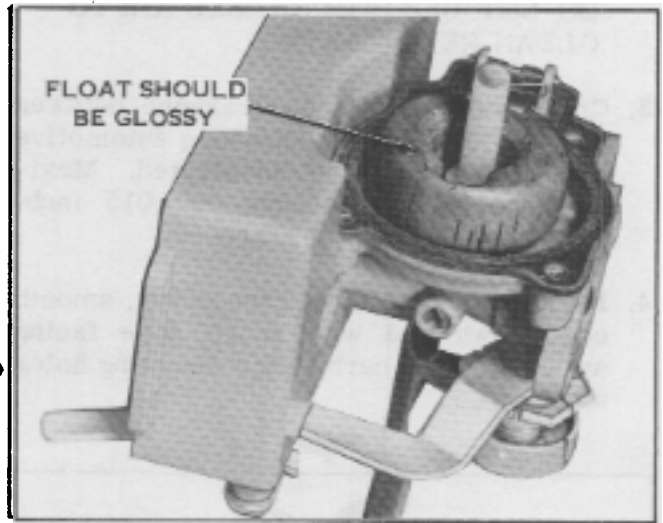
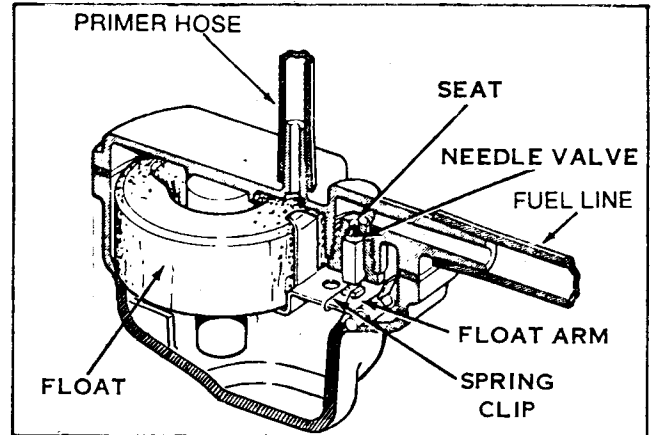
Operation is automatic. When float bowl is empty, float rests on bottom of bowl. As fuel enters bowl of carburetor, float rises, moving needle valve into seat and shutting off fuel. As engine uses fuel, float drops slightly, allowing more fuel to enter bowl, maintaining a constant fuel level in bowl.

Needle, seat and spring clip must be replaced as an assembly. They are matched to form a perfect seal.

Remove float bowl and examine float appearance. Float should be glossy because of epoxy sealer. If dull in appearance, or portions of epoxy have chipped away - replace float.

 **NOTE**

Do not clean float with any type of solvent or carburetor cleaner. Replace it.



Some of the problems you may encounter with the float valve are as follows:

Cause	Effect	Remedy
VARNISH	Stops up openings	Clean out carburetor with solvent
SPRING WIRE CLIP COMES OFF	Needle may stick shut	Replace clip
NEEDLE AND SEAT NOT MATCHED	Fuel supply can't be shut off from float bowl	Replace needle and seat as an assembly
FLOAT ARM NOT SET CORRECTLY	Set too high - carburetor floods - Engine runs rich	Set correctly
	Set too low - carburetor starves - Engine runs lean	Set correctly
PIVOT PIN CORRODED OR BENT	Float sticks	Replace pin
FLOAT STRIKING NOZZLE	Float sticks	Replace float
VARNISH OFF FLOAT	Float soaks up fuel, changing floating characteristics	Replace float
LOOSE FLOAT HINGE CLIP ON PIVOT PIN	Engine 4 cycles excessively when bumped or jarred	Crimp float hinge clip on pivot pin for tighter fit

"F" SERIES (Cont.)

F100-F200-F300 SERIES REED VALVES

(ALL MODELS)

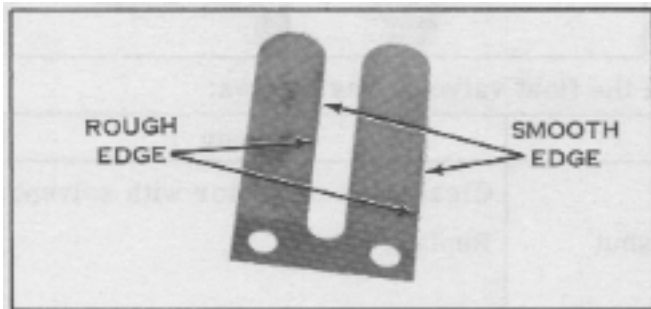
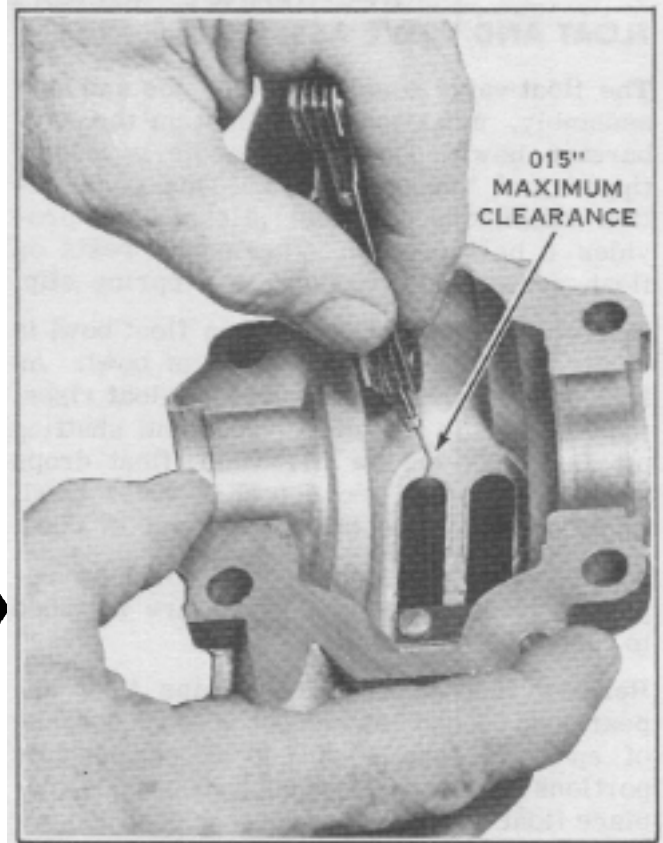
REED VALVE SERVICING

1. Remove crankcase cover as described in Chapter 7 - POWERHEAD.
2. Crankcase cover and reed valve assembly may be cleaned with same solvent used to clean carburetor. Exercise care in cleaning reeds, so as not to distort them. Bent or distorted reeds must be replaced.

 NOTE

DO NOT USE COMPRESSED AIR TO CLEAN REED VALVES.


3. Check for excessive clearance between reed tip and reed plate using automotive type feeler gauge as illustrated. Maximum allowed clearance is .015 inch. Replace reeds if necessary.
4. Install reeds in crankcase cover, smooth edge down and with rough edge facing away from the carburetor mounting holes as shown.



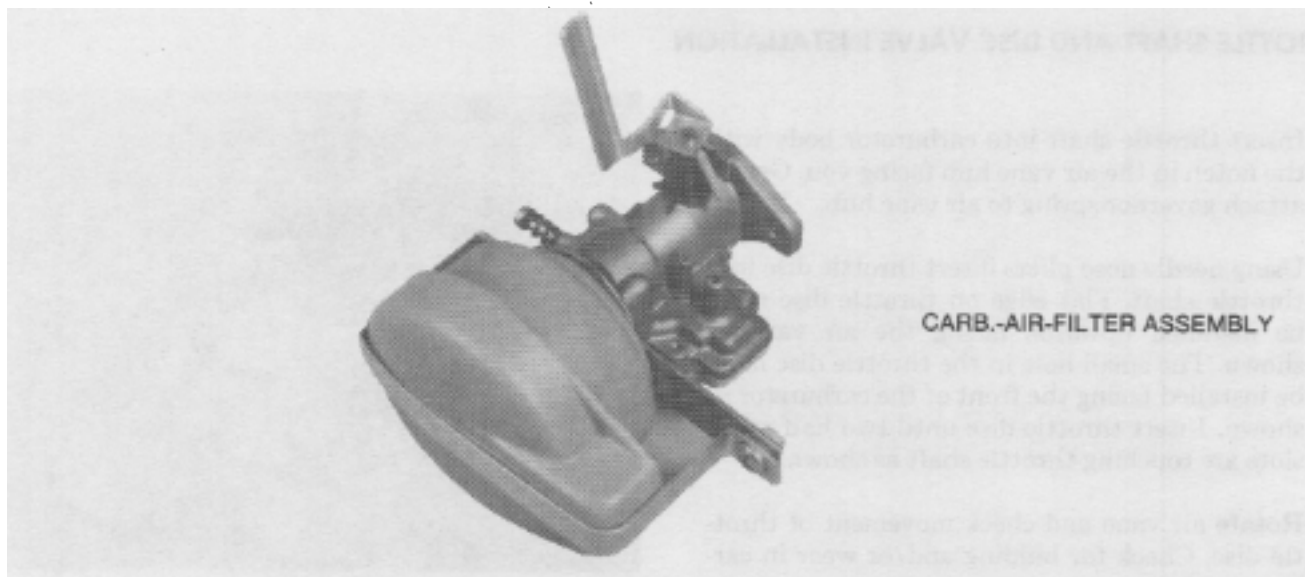
 NOTE

Apply Screw-Loc (Loctite) OMC Part No. 384848 to threads of reed valve screws.

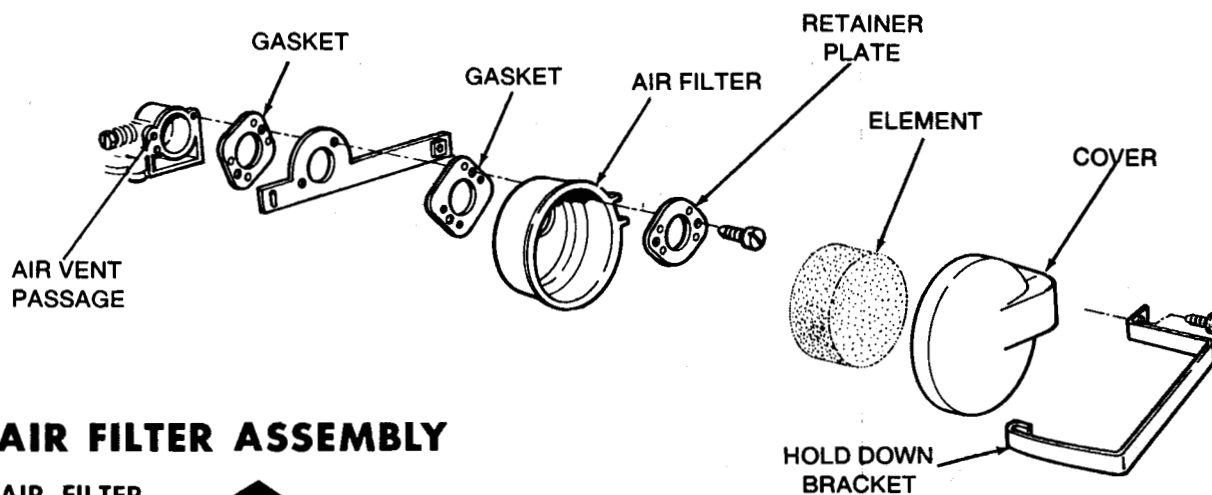
"F" SERIES (Cont.)
F100-F300 FUEL SYSTEM TROUBLE SHOOTING
EARLY MODELS WITH ALTITUDE NEEDLE VALVE
FUEL SYSTEM TROUBLE SHOOTING

1. Check for fuel in tank.	A. Fuel shut off (Tank) valve should be open.
	B. Examine vent hole in gas cap. Make sure it is not restricted.
2. Remove air filter element.	A. Watch nozzle in barrel of carburetor and push primer bulb down rapidly.
	B. Fuel should spurt from top of nozzle.
3. If spurting of fuel is not visible.	A. Remove fuel line from carburetor to determine if fuel is flowing from tank thru tank filter, valve and hose.
	B. If not, remove hose from tank valve. Turn valve on to determine if fuel is flowing from tank. If so, restriction is in fuel hose. Wash out in solvent and blow with compressed air.
4. Check function of primer bulb and hose. <div style="text-align: center;">  NOTE </div> <p>This test does not apply to later model plastic carburetors with the adjustable fuel flow needle valve.</p>	A. Place finger over lower end of primer hose and press primer bulb. Resistance should be noted in bulb depression. Remove finger, there should be no resistance present when bulb is depressed.
	B. Depress primer bulb and place finger over end of hose. The bulb should remain collapsed. If not, replace primer bulb and hose assembly.
	C. If primer hose is disconnected, engine will run extremely rich (lost vacuum).
5. If fuel is not spurting from nozzle, when being primed, close fuel valve and remove carburetor. Remove float chamber.	A. Check float valve and seat assembly.
	B. Check float level adjustment.
	C. Check to make sure movement of float and float arm is free.
	D. Check the throttle valve and shaft for freedom of movement.
	E. Check for dirt or water in bowl or passages.
	F. Blow out altitude air vent passage.

"F" SERIES (Cont.)
F200 SERIES COMMERCIAL CARBURETOR
METAL BODY



CARB.-AIR-FILTER ASSEMBLY



AIR FILTER ASSEMBLY

AIR FILTER

If engine is flooded, fuel can drain back into filter. As filter becomes saturated, incoming air picks up more fuel, causing greater flooding. A puckered filter will allow air and dirt to bypass filter. Make certain that filter covers cup area. If oiled properly, filter is very efficient. First wash out with fuel, then apply 10 to 15 drops of oil. Squeeze several times to distribute oil. If engine "smokes" for no apparent reason, filter may be saturated with fuel mix or may need cleaning.

To remove grasp the cover, loosen snap and fold cover down.

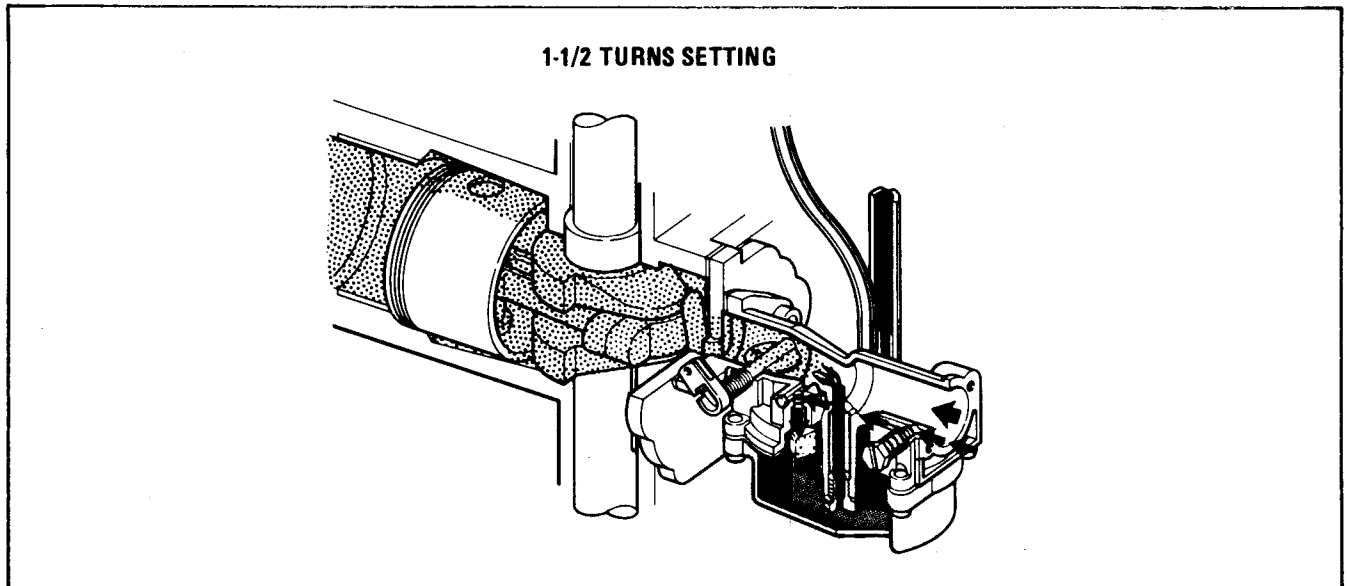
 **NOTE**

A dirty air cleaner element will create a noticeable power loss, and may reduce engine life.

 **NOTE**

Operating engine without filter element, or filter element without sufficient oil will shorten engine life. Reinstall filter in the same position which it was removed to prevent imbedded particles in intake side from entering carburetor.

"F" SERIES (Cont.)
F200 SERIES COMMERCIAL CARBURETOR
METAL BODY



The carburetor is completely automatic. As fuel enters a single metered jet it is mixed with incoming air to form the correct combustible mixture. The amount of fuel flow through the metering jet is regulated by the altitude needle.

There are no adjustments to be made to regulate the amount of fuel entering the carburetor venturi. There is an atmospheric pressure adjustment that would have to be made if the engine is operating in very high or very low altitudes.

All carburetors require a final adjustment of the altitude needle prior to putting the mower into service.

To adjust, proceed as follows:

1. Pre-set altitude needle 1/2 turn from seat.
2. Start engine and allow to run for 3 to 5 minutes to warm up.
3. Slowly turn altitude needle counterclockwise until engine is running smoothly. Allow engine to run for one or two minutes to make sure adjustment is not too lean.
4. If not running smoothly, turn altitude needle counterclockwise approximately 1/8 turn at a time to obtain proper engine operation.
5. After carburetor adjustment is completed, shut off engine. **IMMEDIATELY** attempt to restart engine. **DO NOT PRIME A HOT ENGINE.** It should start within 2 pulls on starter handle. Check starting engine at both **HIGH** and **LOW** speed settings. If difficult to restart, turn altitude needle 1/8 turn counterclockwise to richen fuel mixture and obtain easy restarting.



NOTE

The governor will control the amount of air/fuel entering the engine. The purpose of the atmospheric pressure adjusting needle is to mix the right amount of fuel with the correct amount of incoming air.

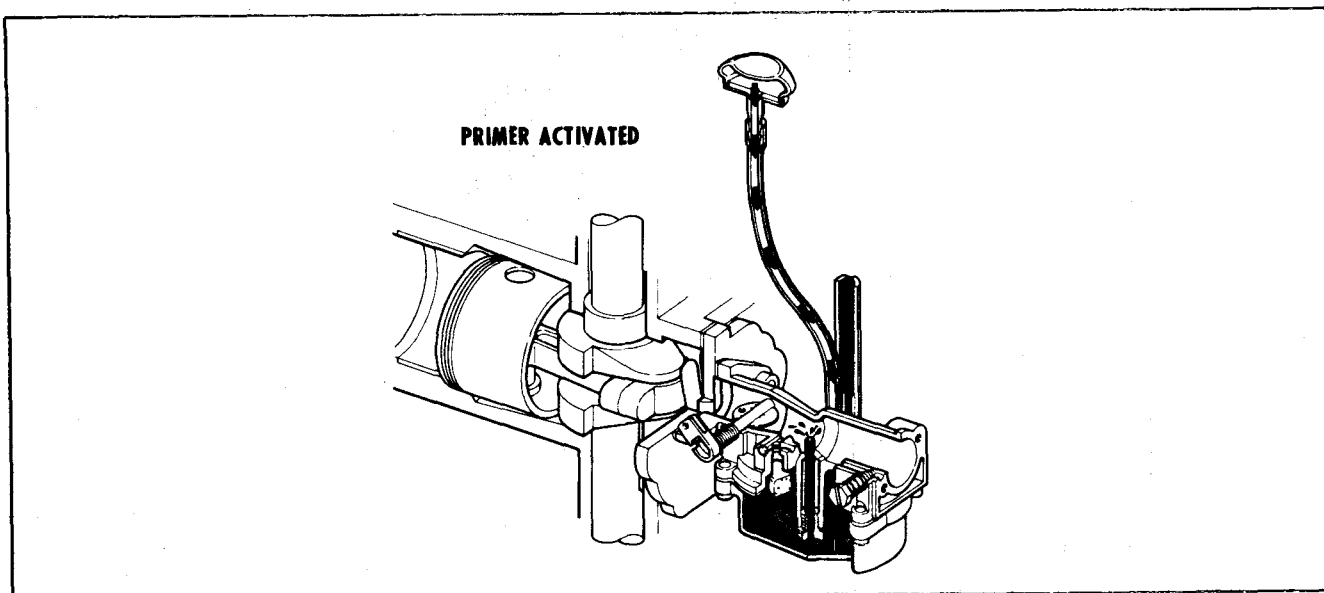
"F" SERIES (Cont.)

F200 SERIES COMMERCIAL CARBURETOR

METAL BODY

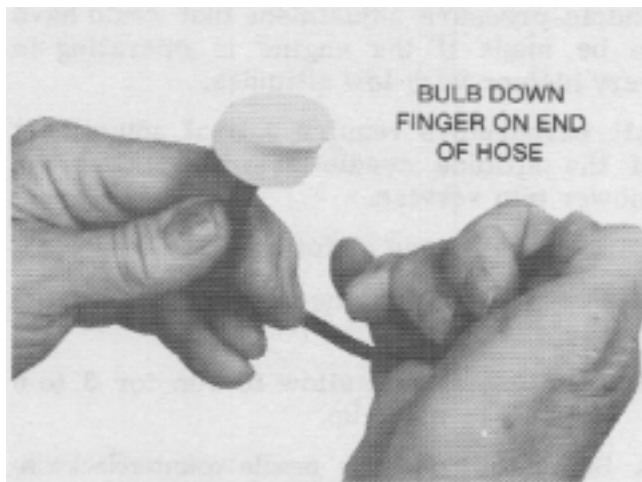
PRIMER OPERATION

Examine the primer system. A pneumatic primer forces compressed air into the float bowl chamber which forces fuel into the carburetor venturi for cold engine starting.



To test the primer for operation, disconnect primer line from the carburetor.

Push the primer bulb down and hold it. Place finger over end of hose. Release bulb. If bulb stays collapsed, primer is okay. If it does not, determine where air leak is and replace the part.



"F" SERIES (Cont.)

F200 SERIES COMMERCIAL CARBURETOR

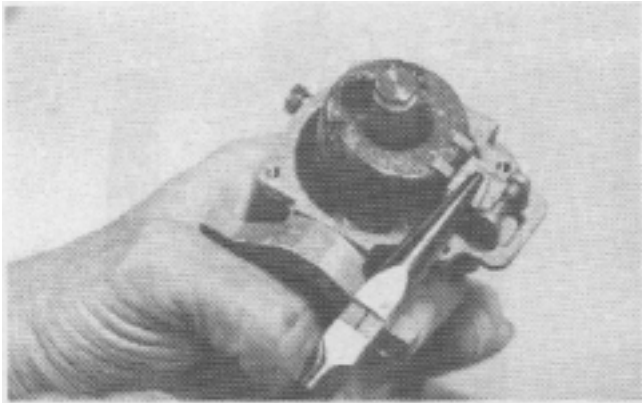
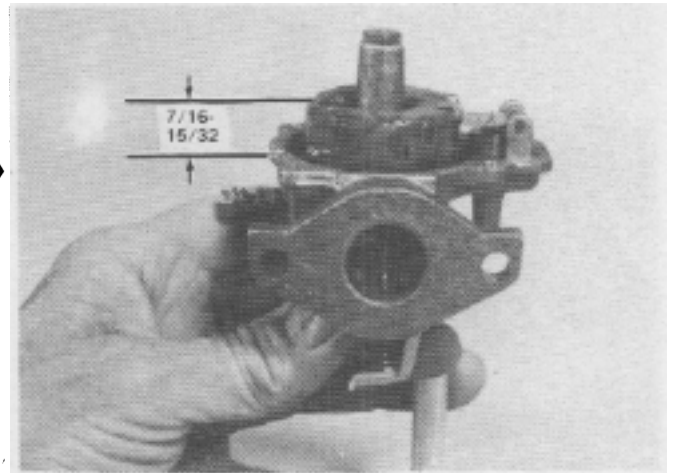
METAL BODY

FLOAT ADJUSTMENT

Float Setting

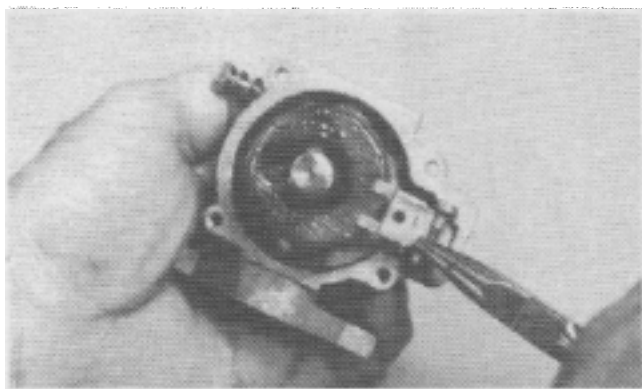
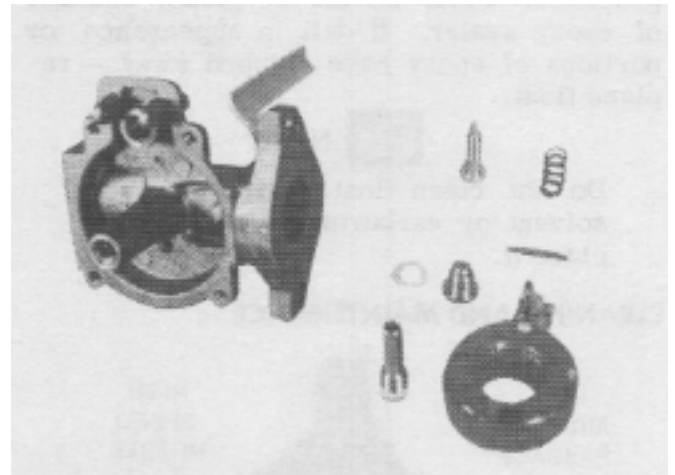
Remove float bowl and gasket. Invert carburetor. With float arm resting on float valve needle, the top of float should be $7/16$ - $15/32$ inch above edge of carburetor body as shown. Obtain measurements at two points at right angles to each other.

If adjustment is required; using needle nose pliers bend float arm as shown. DO NOT bend float arm by applying pressure to float, this will damage rubber tip on inlet needle.



Check pin clip on float arm by rotating carburetor sideways. If clip falls off float arm -- replace it.

Check hinge on float arm to be sure it is secured to pin. Use needle nose pliers and tighten hinge as shown.



The float valve consists of a needle and seat assembly, activated by a float in the carburetor bowl. The steel needle is rubber tipped and the seat brass. This combination eliminates possible sticking and provides a perfect seal. The needle rests on float arm, held in place by a spring clip.

NOTE

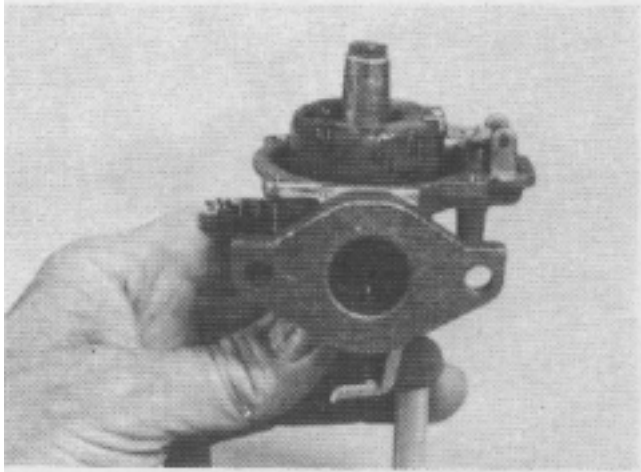
Tightening hinge to pivot pin will prevent inlet needle from not seating correctly when mower crosses uneven terrain. This condition is called "fluttering."

Operation is automatic. When float bowl is empty, float rests on bottom of bowl. As fuel enters bowl of carburetor, float rises, moving needle valve into seat and shutting off fuel. As engine uses fuel, float drops slightly, allowing more fuel to enter bowl, maintaining a constant fuel level in bowl.

"F" SERIES (Cont.)

F200 SERIES COMMERCIAL CARBURETOR

METAL BODY



 **NOTE**

Never run drill bits or other metal objects into or through passages. Damage will result.

Before blowing passages out, determine the direction that fuel and air normally flows and blow air in opposite direction.

 **NOTE**

Always replace gaskets and other parts that may be questionable when reassembling.

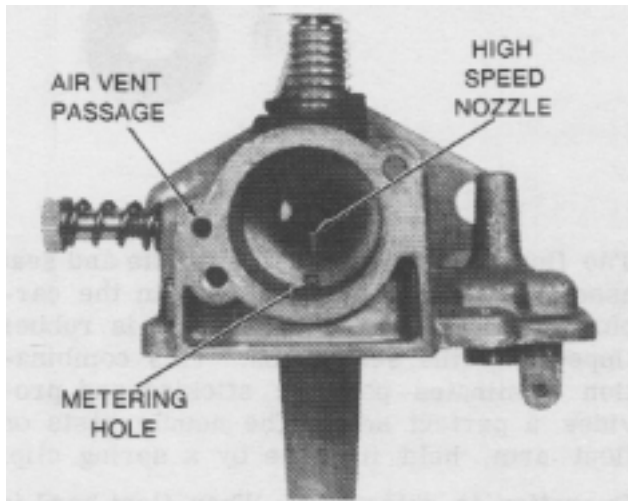
Needle, seat and spring clip must be replaced as an assembly. They are matched to form a perfect seal.

Remove float bowl and examine float appearance. Float should be glossy because of epoxy sealer. If dull in appearance or portions of epoxy have chipped away - replace float.

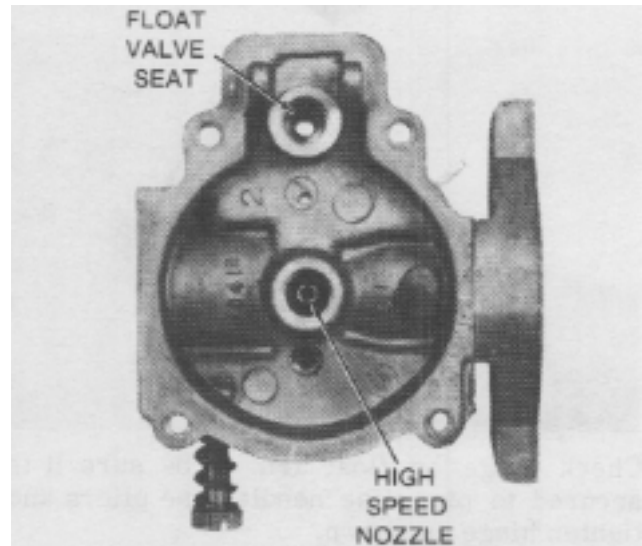
 **NOTE**

Do not clean float with any type of solvent or carburetor cleaner. Replace it.

CLEANING AND MAINTENANCE



After all non-metallic parts are removed from this carburetor assembly, it can be washed and cleaned in carburetor cleaner or other cleaning solvents. All passages should then be blown out with compressed air.



The air vent passage has been plugged with a lead shot on all metal body carburetors. This lead shot will be found on 1980 and later models of commercial mowers.

 **NOTE**

DO NOT REMOVE IT.

"F" SERIES (Cont.)
F200 FUEL SYSTEM TROUBLE SHOOTING
COMMERCIAL CARBURETOR
METAL BODY

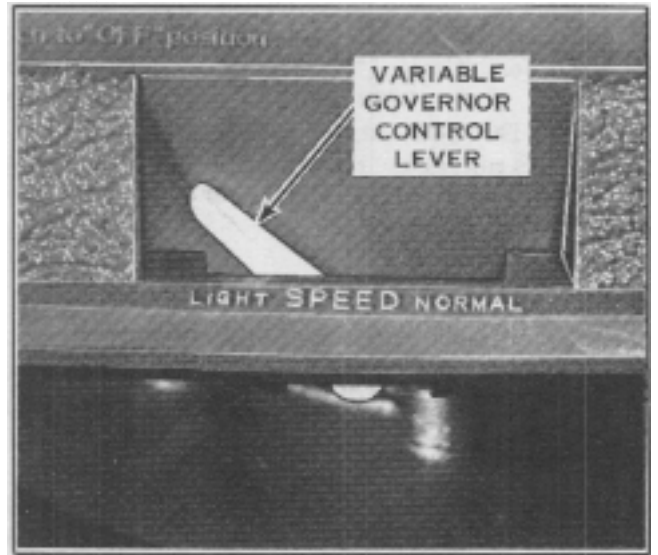
1. Check for fuel in tank.	A. Fuel shut off (Tank) valve should be open.
	B. Examine vent hole in gas cap. Make sure it is not restricted.
2. Remove air filter element.	A. Watch nozzle in barrel of carburetor and push primer bulb down rapidly.
	B. Fuel should spurt from top of nozzle.
3. If spurting of fuel is not visible.	A. Remove fuel line from carburetor to determine if fuel is flowing from tank thru tank filter, valve and hose.
	B. If not, remove hose from tank valve. Turn valve on to determine if fuel is flowing from tank. If so, restriction is in fuel hose. Wash out in solvent and blow with compressed air.
4. Check function of primer bulb and hose.	A. Place finger over lower end of primer hose and press primer bulb. Resistance should be noted in bulb depression. Remove finger, there should be no resistance present when bulb is depressed.
	B. Depress primer bulb and place finger over end of hose. The bulb should remain collapsed. If not, replace primer bulb and hose assembly.
	C. If primer hose is disconnected, engine will run extremely rich (lost vacuum).
5. If fuel is not spurting from nozzle, when being primed, close fuel valve and remove carburetor. Remove float chamber.	A. Check float valve and seat assembly.
	B. Check float level adjustment.
	C. Check to make sure movement of float and float arm is free.
	D. Check the throttle valve and shaft for freedom of movement.
	E. Check for dirt or water in bowl or passages.
	F. Blow out altitude air vent passage.

D-400 SERIES GOVERNOR

GOVERNOR OPERATION

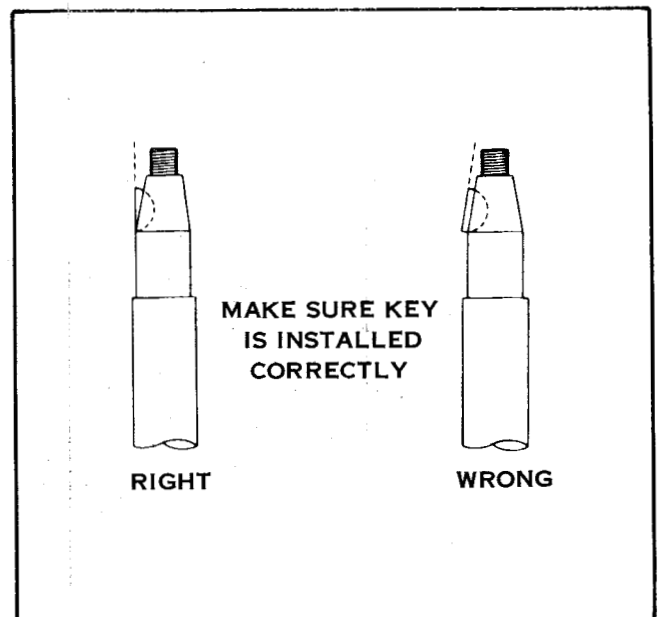
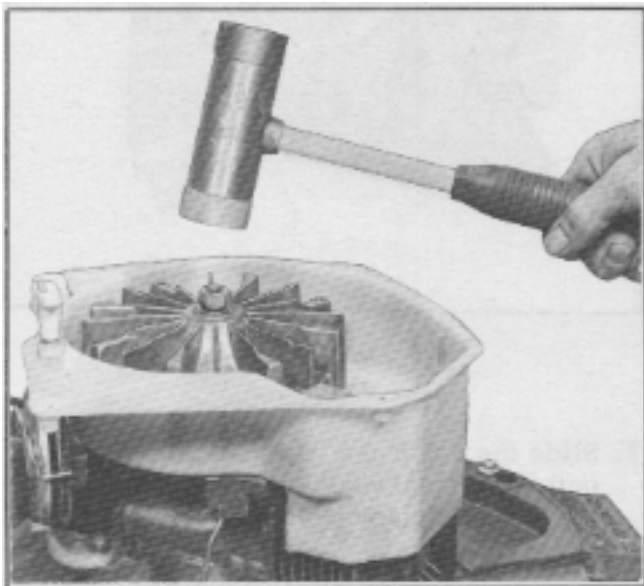
Some "D" 400 series engines are equipped with a variable governor, with operating speeds of 2500 RPM (LIGHT) up to 3200 RPM (NORMAL). This is done by moving the control lever. This movement of the variable governor control lever changes the tension on the governor spring which regulates the governed speed of the engine.

Those "D" 400 series engines without the variable governor control operate at a fixed speed of 3200 RPM. The governor adjustment for fixed speed engines is the same as variable speed engines.



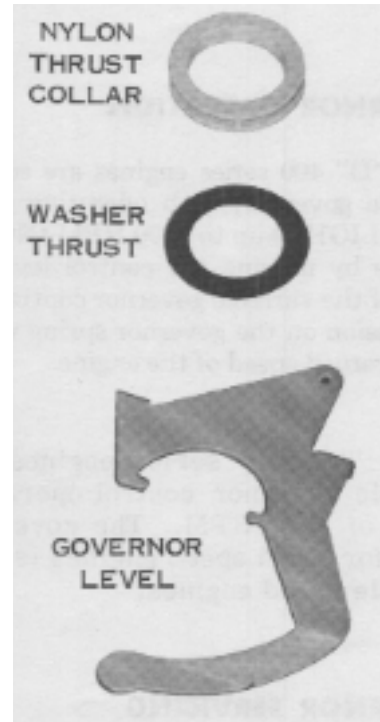
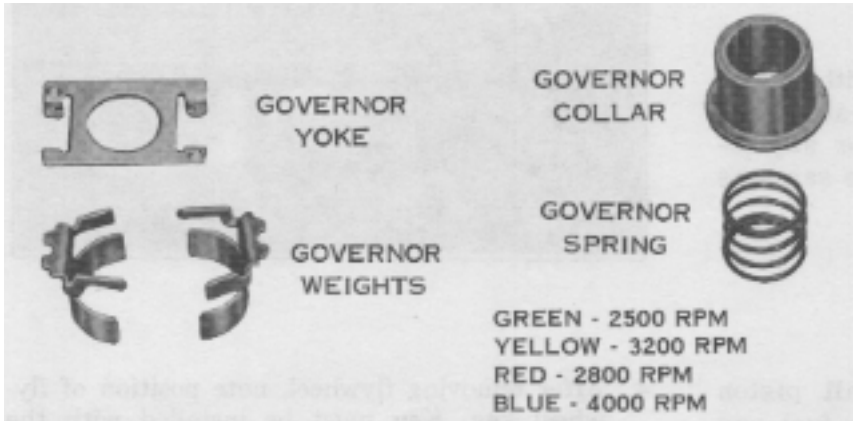
GOVERNOR SERVICING

1. Remove spark plug and install piston stop, part no. 677389. Remove fuel and primer hoses from carburetor. Remove shroud mounting screws and remove shroud from engine.
2. Using a box end wrench, loosen and remove flywheel nut.
3. To loosen flywheel use a soft hammer. Strike top of thick flywheel fin while lifting on opposite side with your hand.
4. After removing flywheel, note position of flywheel key. Key must be installed with the straight edge in a vertical (straight up and down) position. It should not be installed with straight edge parallel to the crankshaft taper. Remove key with a pair of side cutters or dikes. Remove air baffle assembly.



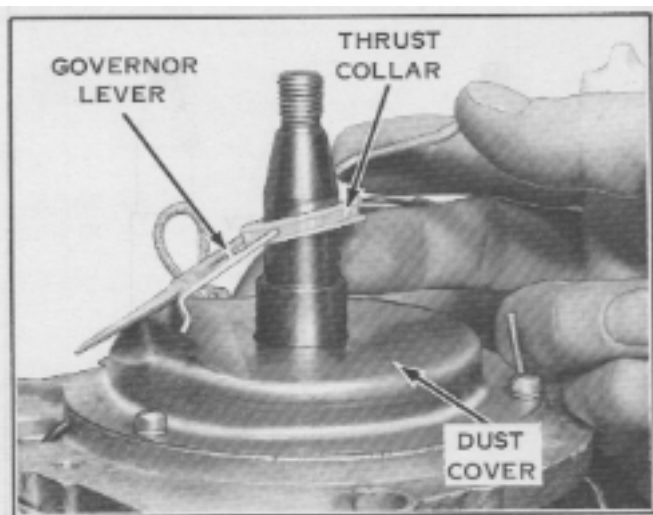
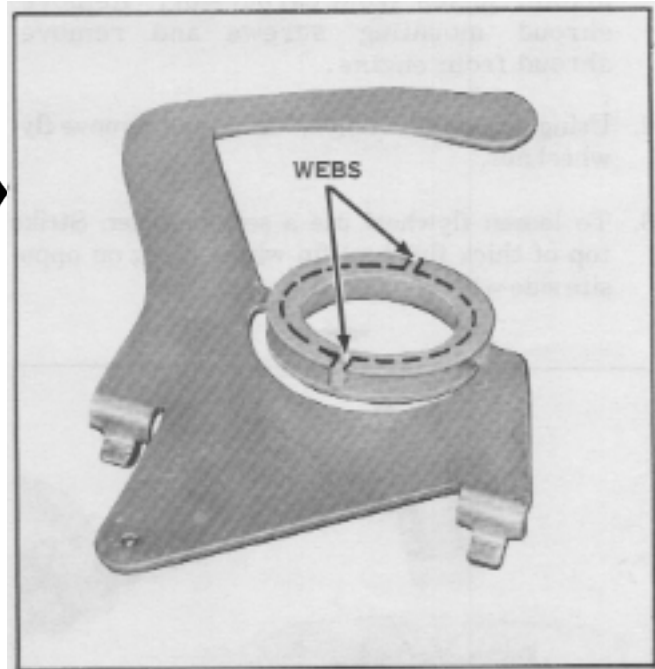
D-400 SERIES GOVERNOR

- Remove variable speed spring from governor lever and remove governor assembly. Examine governor spring. They are color coded for identification. Green - 2500 RPM, yellow - 3200 RPM, Red - 2800 RPM, and Blue - 4000 RPM. DO NOT interchange springs. If replacement is necessary, refer to parts book of engine being repaired.



GOVERNOR REASSEMBLY

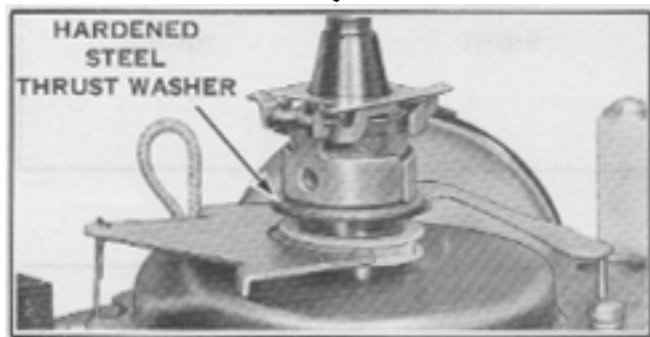
- When reassembling the "D" 400 series governor notice that there is a groove around the outside diameter of the nylon thrust collar. The two lugs on the governor lever are inserted into this groove. Also, the groove in this thrust collar contains two webs. One of these webs must be placed within the lugs on the governor lever.



- Slide the governor lever and thrust collar onto the crankshaft and hook the ends of the governor lever into the two slots on the dust cover.

D-400 SERIES GOVERNOR

- Hook the variable speed spring into the small hole on the governor lever.
- Apply a light coat of Lawn-Boy "A" grease or equivalent to both sides of the hardened steel thrust washer and on the top of the governor collar. Position thrust washer on top of nylon thrust collar. Install governor spring, collar, weights and yoke. Prior to installing governor collar examine for "grooves" or excessive wear. Replace if necessary.



NOTE

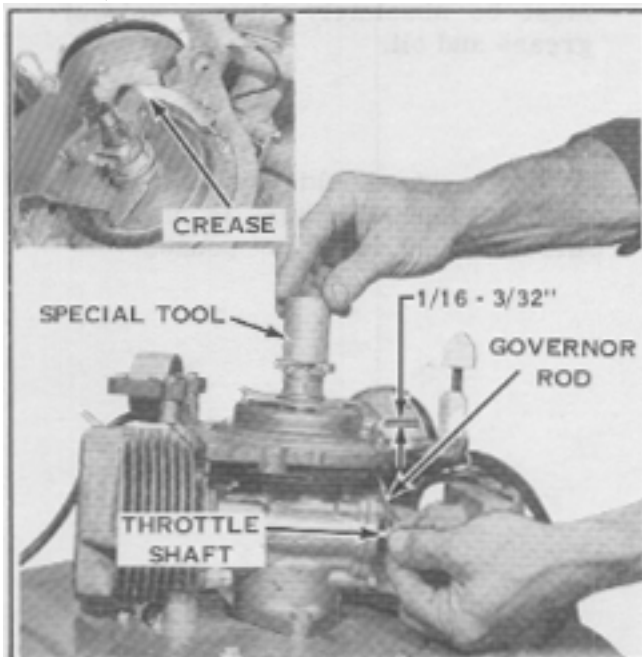
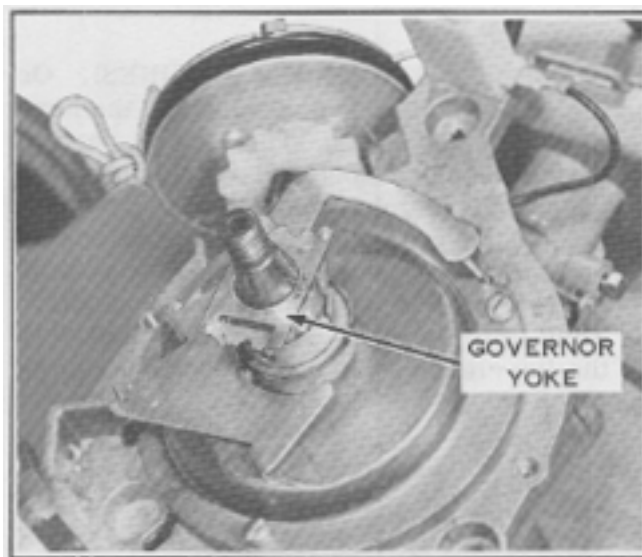
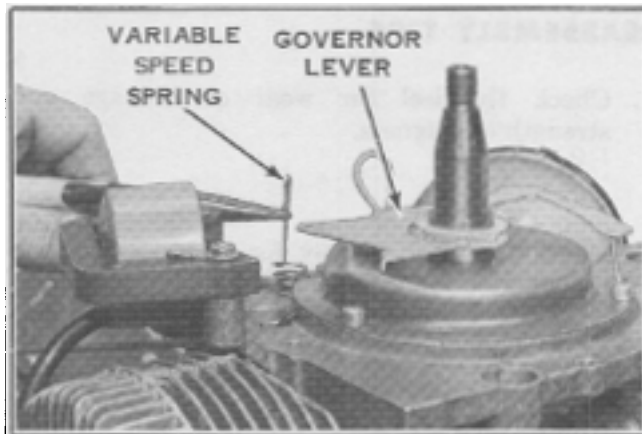
The governor yoke has two "dimples" (see arrows). These dimples are used to drive the governor yoke. Install as shown.

GOVERNOR ADJUSTMENT

Special tool part #604541 should be used for checking the governor adjustment on "D" series engines. With the governor assembly in place slip the gauge onto the crankshaft and hold down firmly. Holding the gauge in place, depress the throttle shaft to the closed throttle position. If the governor is properly adjusted there should be approximately $1/8"$ - $3/16"$ between the top of the governor rod and the bottom of the governor lever. To make any necessary adjustments simply bend the governor lever up or down with a pair of pliers to obtain the proper clearance.

NOTE

The governor lever is creased diagonally to simplify adjustment - bend lever along crease.



D-400 SERIES GOVERNOR

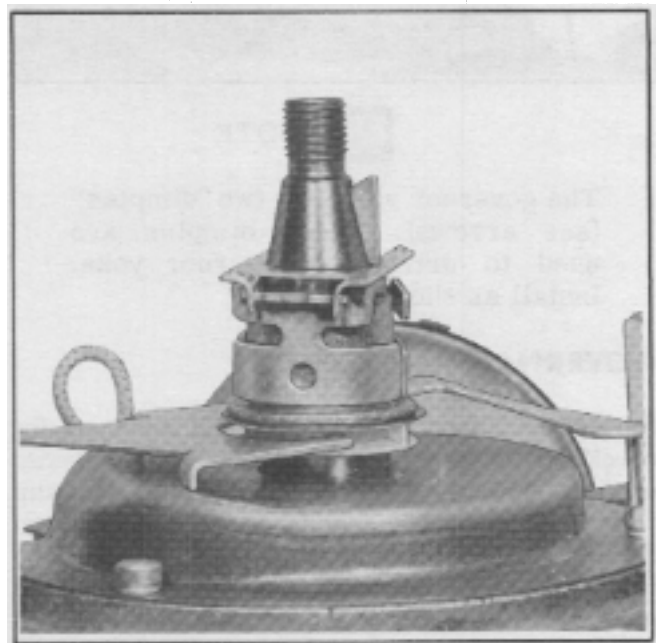
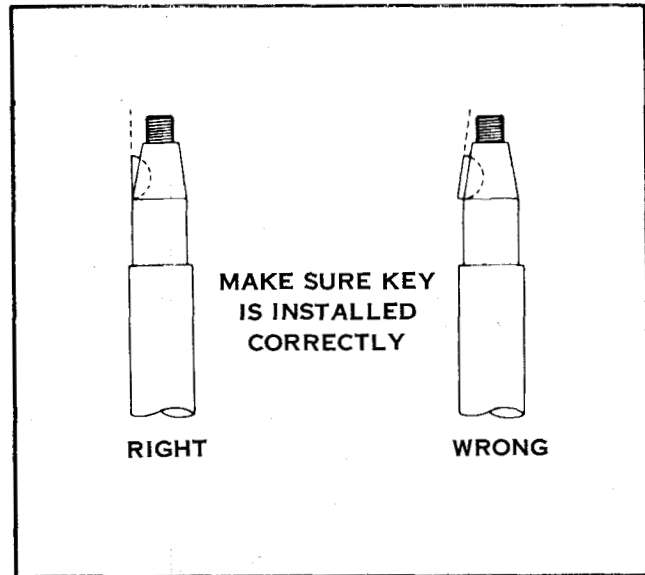
REASSEMBLY TIPS

1. Check flywheel for wear or damage and strength of magnets.
2. Check flywheel keyway for distortion and/or cracks. Key must be installed with the straight edge in a vertical (straight up and down) position. It should not be installed with straight edge parallel to the crankshaft taper.
3. (EARLY D-400 SERIES ENGINES). On the inside of the flywheel next to the keyway there is a lug. This lug is part of the flywheel casting and helps drive the governor. Before installing a flywheel, rotate the governor assembly so one of the longer sides of the governor yoke is next to the keyway in the crankshaft. Then the flywheel can be installed with the lug clearing the governor.

 NOTE

Flywheel hub and crankshaft taper must be absolutely clean - void of grease and oil.

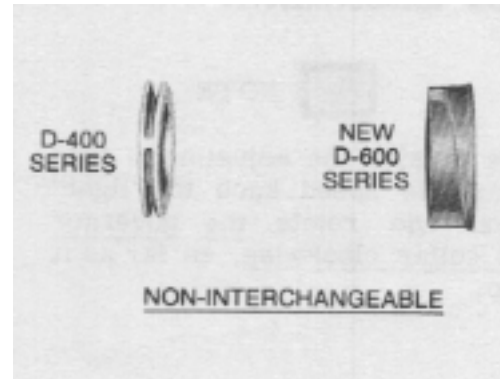
4. Flywheel nut should always be torqued properly when flywheel is re-installed. Correct torque is 30 foot pounds.



D-600 SERIES GOVERNOR

GOVERNOR OPERATION

The governor on the D-600 series engine is serviced in the same manner as that on the D-400 series engine. Refer to page 5-1 for disassembly procedure. An important difference is in the governor thrust collar. The thrust collar at the left is the one used on the D-400 series engine and the one at the right is the new one used on the new D-600 series engine. THEY ARE NOT INTERCHANGEABLE.

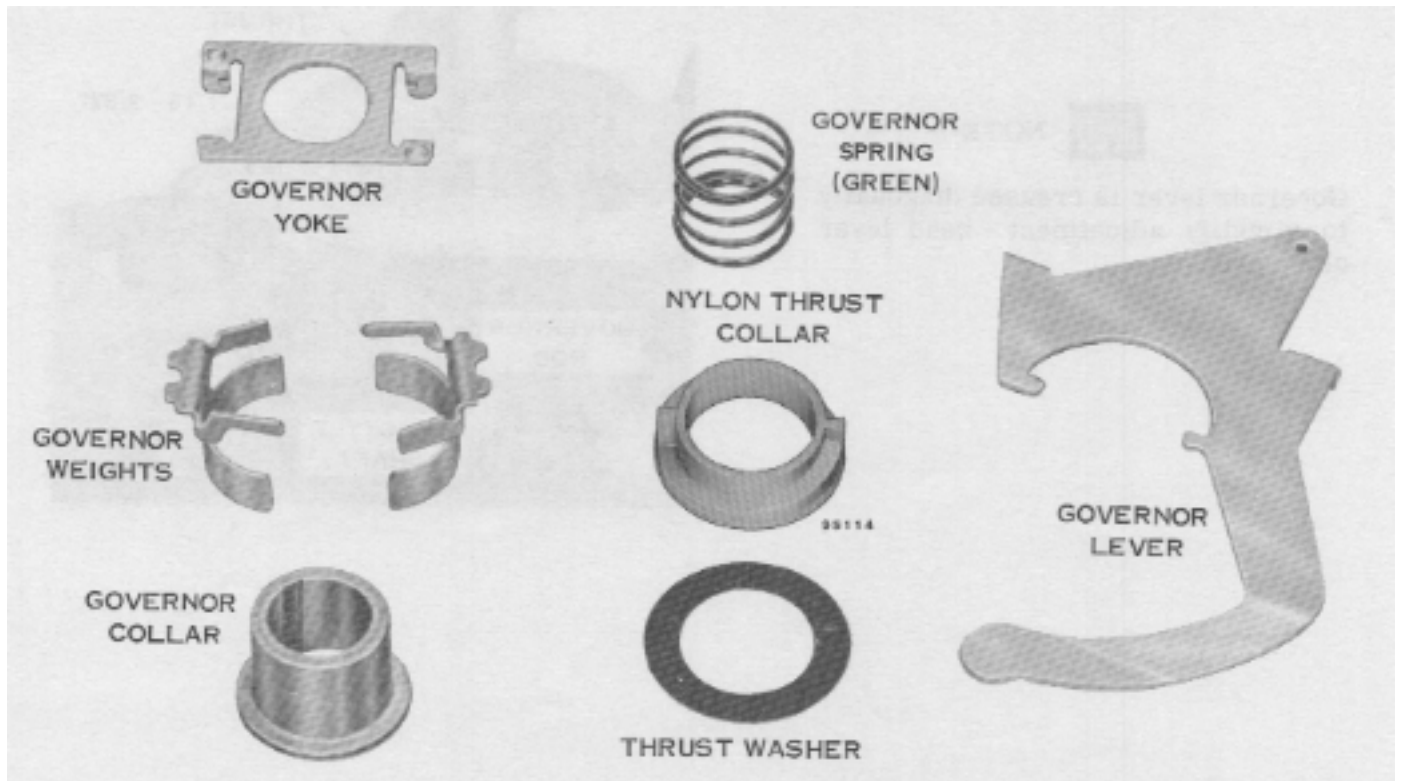


SAFETY WARNING

THE D-600 SERIES ENGINE WILL RUN IN REVERSE IF THE OLD (D-400) GOVERNOR IS USED, I.E., IF PRE-IGNITION OCCURRED, STARTING THE ENGINE IN REVERSE. THE NEW (D-600) THRUST COLLAR IS DESIGNED TO PREVENT THIS BY IMMEDIATELY SHUTTING THE FUEL SUPPLY OFF.

to page 5-2. When reinstalling them, a light coat of Lawn-Boy "A" grease should be applied to top of governor thrust collar. Never stretch a governor spring; it controls the speed of your engine. Also, put a thin coat of Lawn-Boy "A" grease on both sides of thrust washer. Before reinstalling assembly; always check governor collar for wear and/or burrs. Surging could result if it is damaged.

Here is an exploded view of governor assembly. Reassembly is same as D-400 series engines. Refer



D-600 SERIES GOVERNOR

GOVERNOR ADJUSTMENT



NOTE

Before making the adjustment, turn the variable speed knob to "light" position and rotate the governor thrust collar clockwise, as far as it will go.

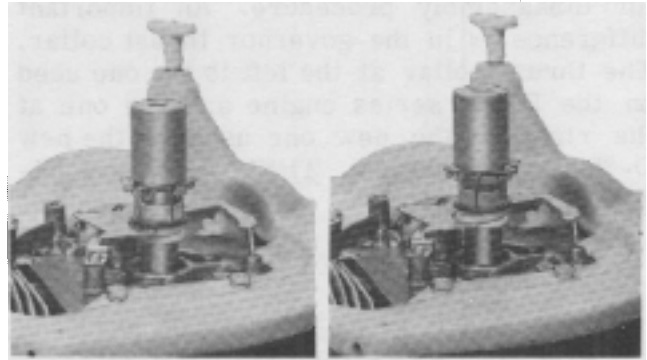
With governor assembly in place, slip gauge (special tool #604541) onto crankshaft and hold down firmly. Holding gauge in place, depress throttle shaft to closed throttle position. If governor is properly adjusted there should be approximately 1/8" - 3/16" between the top of governor rod and bottom of governor lever. To make any necessary adjustments simply bend governor lever up or down with a pair of pliers to obtain proper clearance.



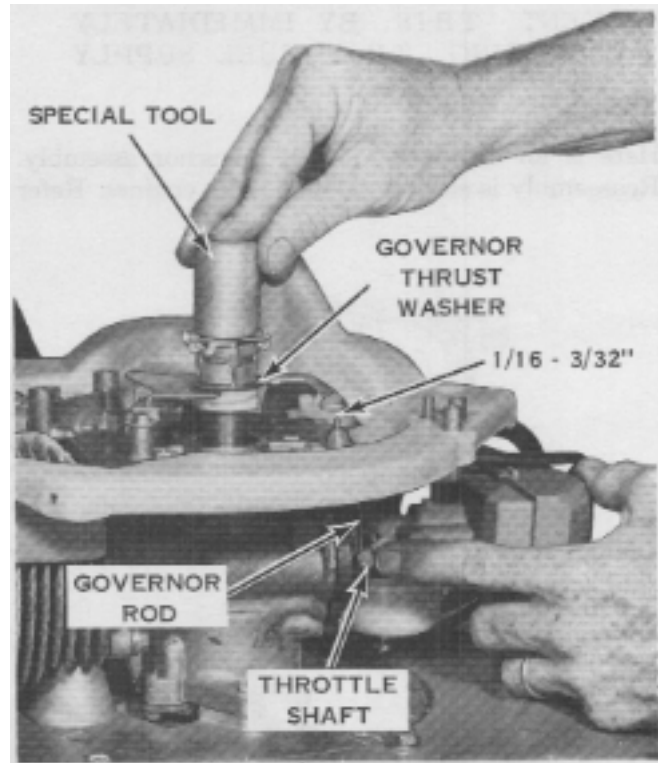
NOTE

Governor lever is creased diagonally to simplify adjustment - bend lever along crease.

RIGHT
GOVERNOR THRUST COLLAR
ROTATED CLOCKWISE



WRONG
GOVERNOR THRUST COLLAR
ROTATED COUNTERCLOCKWISE

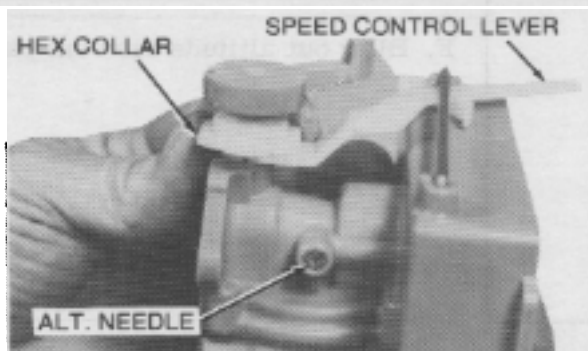
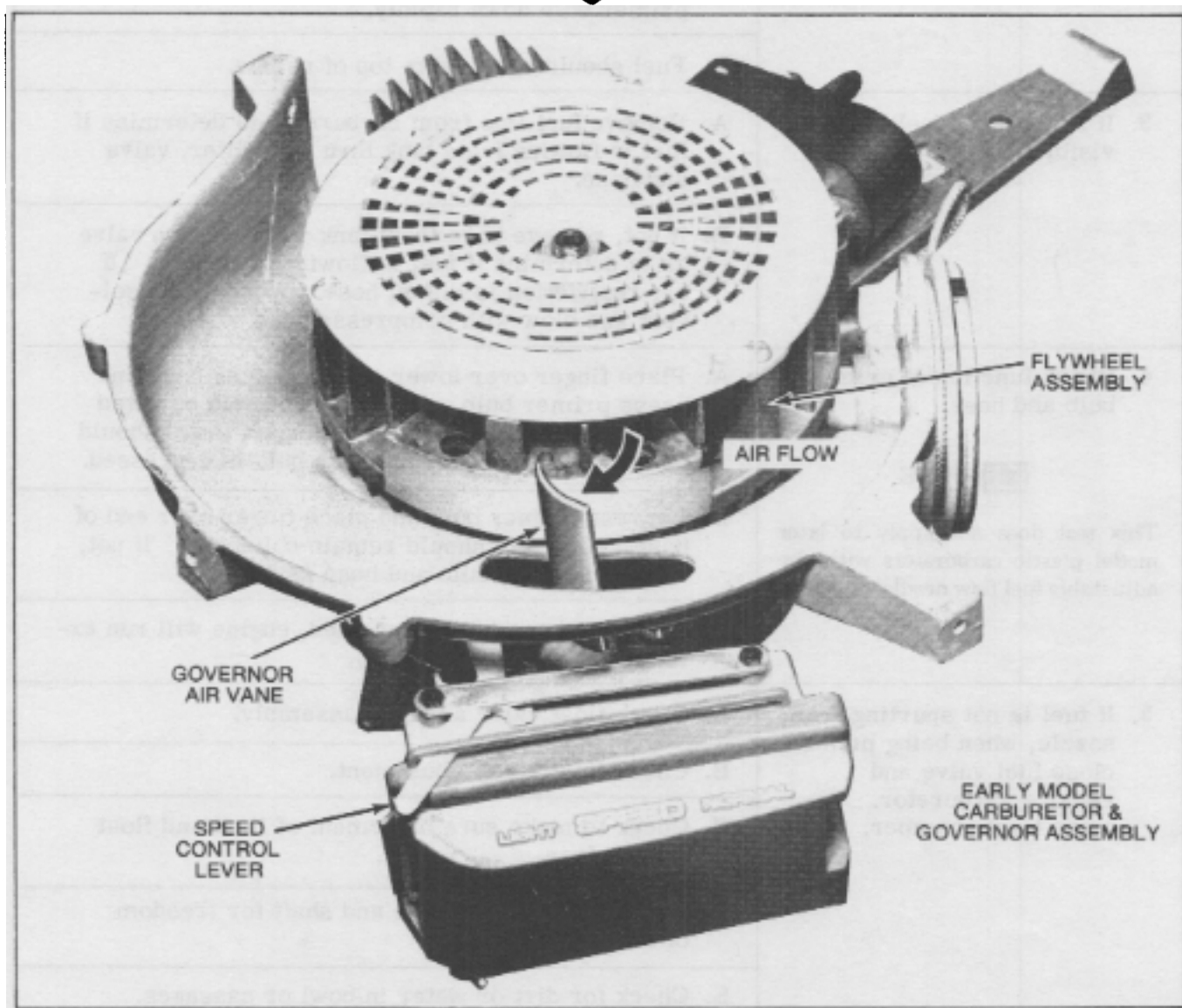


"F" SERIES (Cont.) F100 SERIES GOVERNOR

GOVERNOR ASSEMBLY AND OPERATION (EARLY MODELS BEFORE 1981) (HEX SHAPED GOVERNOR COLLAR)

The governor air vane assembly is an integral component of the carburetor. The governor air vane (part of the throttle shaft) extends through a "tunnel" in the shroud mounting base. As the flywheel rotates an air flow is created against the air vane which opens or closes the throttle shaft.

As mowing conditions change the governor air vane responds instantly to engine running demands. The function of the governor air vane is to control engine speed. An altitude adjustment needle regulates the right amount of fuel with the correct amount of incoming air.



"F" SERIES (Cont.) F100 SERIES GOVERNOR

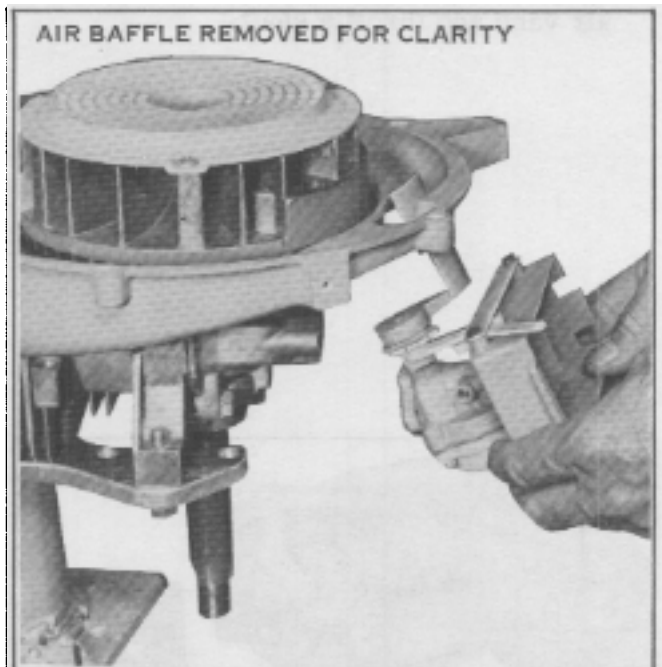
REMOVING AIR VANE ASSEMBLY (EARLY MODELS) (HEX SHAPED GOVERNOR COLLAR)

1. Remove two carburetor mounting screws and remove carburetor and air vane assembly as shown. Special care **MUST BE** taken when removing carburetor to prevent damaging air vane assembly.

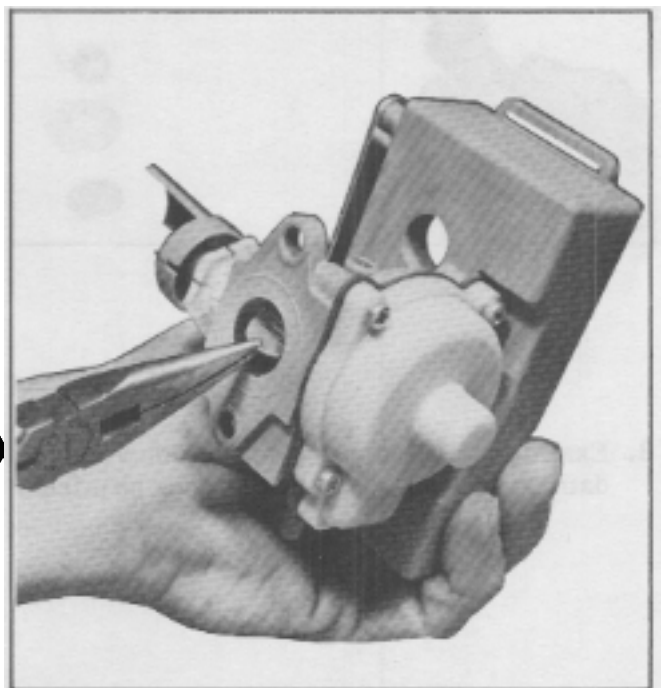


SAFETY WARNING

USE CARE WHEN REMOVING CARBURETOR AND AIR VANE ASSEMBLY FROM ENGINE. DAMAGE TO AIR VANE WILL CREATE AN ENGINE OVERSPEED CONDITION.

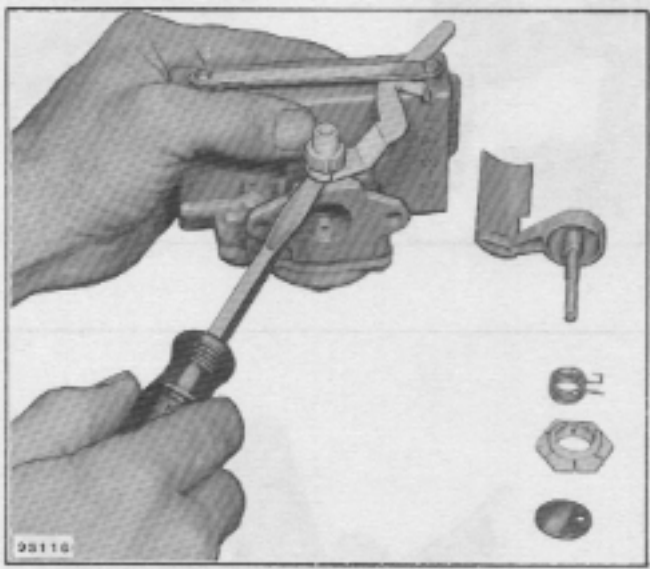
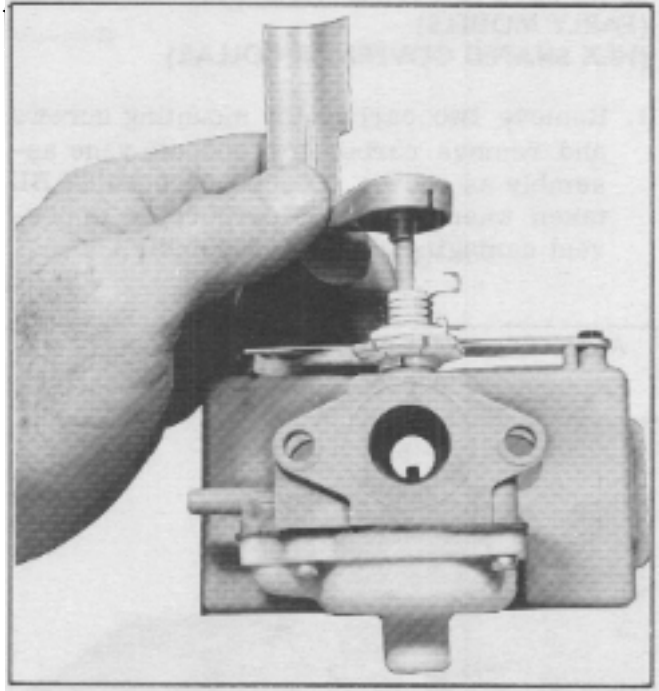


2. Release governor spring tension by gently raising hex shaped governor adjusting collar until collar is above ribs on speed control lever. Rotate adjusting collar clockwise until two ends of governor spring are aligned. Lower adjusting collar back onto speed control lever.
3. Using needle nose pliers remove throttle disc from throttle shaft as shown. Note position of throttle disc so during reassembly disc is installed correctly. Examine throttle disc for excessive wear.



**"F" SERIES (Cont.)
F100 SERIES GOVERNOR
(EARLY MODELS)
(HEX SHAPED GOVERNOR COLLAR)**

4. Lift air vane and throttle shaft slightly and unhook upper end of governor spring from air vane hub as shown. Remove air vane and throttle shaft.

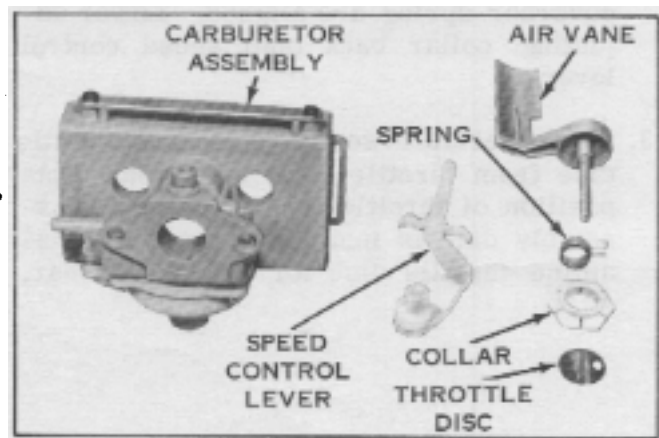


5. Carefully remove governor spring from governor adjusting collar.
6. Remove governor adjusting collar.
7. Using a wide bit screw driver, as shown, GENTLY pry upwards on hub of speed control lever until speed control lever is free of retaining lug on carburetor. Remove speed control lever.

NOTE

USE CAUTION WHEN PRYING UPWARDS ON THE LEVER TO PREVENT DAMAGING THE SPEED CONTROL LEVER.

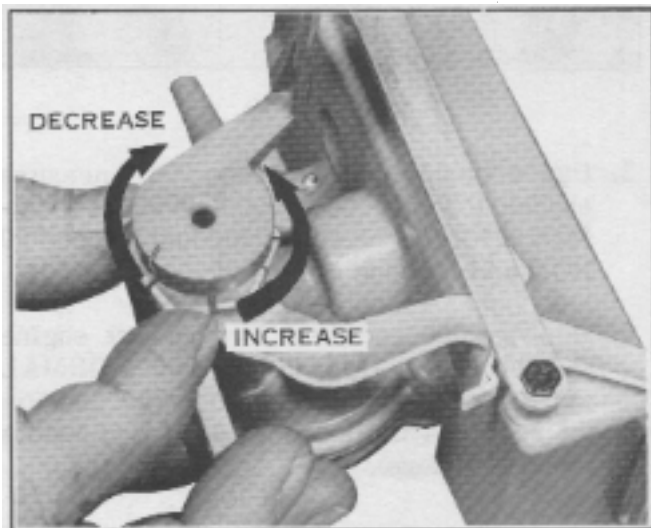
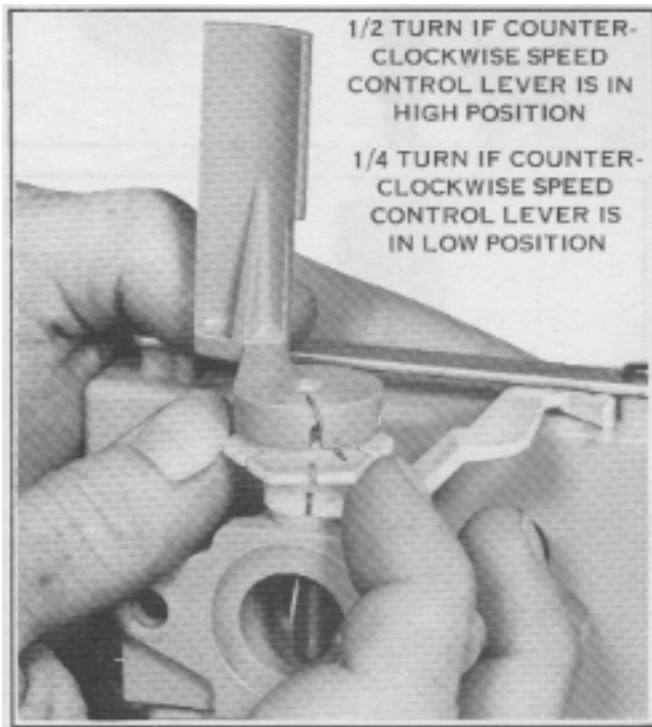
8. Examine all components removed for damage or wear and replace as required.



"F" SERIES (Cont.) F100 SERIES GOVERNOR

REASSEMBLY GOVERNOR ASSEMBLY (EARLY MODELS) (HEX SHAPED GOVERNOR COLLAR)

1. Assemble speed control lever to carburetor. The hub of the lever is retained by a lug or tab on the carburetor; press down when installing lever until hub "snaps" into position.
2. Install governor adjusting collar to speed control lever with spring slot facing you.
3. Insert straight end of governor spring into slot of adjusting collar.
4. Insert air vane and throttle shaft into carburetor. Using needle nose pliers insert throttle disc into throttle shaft with flat edge of disc facing up, and small hole in disc facing air filter and two raised dimples in disc facing you. Rotate air vane and throttle shaft assembly. Assembly should move freely.
5. Preset governor spring tension by raising upward on governor adjusting collar as shown and rotate collar 1/2 turn (with speed control lever in HIGH SPEED position or 1/4 turn if speed control lever is in LOW SPEED position) COUNTERCLOCKWISE as illustrated. Lower adjustment collar onto speed control lever.



NOTE

THE SPEED CONTROL LEVER CONTAINS SPLINES. EACH SPLINE REPRESENTS 50-75 RPM. ROTATING ADJUSTING COLLAR COUNTERCLOCKWISE INCREASES SPRING TENSION AND ENGINE RPM. ROTATING ADJUSTING COLLAR CLOCKWISE DECREASES SPRING TENSION AND ENGINE RPM.

"F" SERIES (Cont.) F100 SERIES GOVERNOR (EARLY MODELS)

6. Insert air vane through slot in shroud mounting base and secure carburetor assembly to engine. Exercise care when inserting air vane assembly so not to damage the air vane.



SAFETY WARNING

DO NOT SUBSTITUTE ELECTRIC START SHROUD BASE ON MANUAL START MODELS. THIS MAY ALLOW GOVERNOR AIR VANE TO OVERSPEED ENGINE. ENGINE SPEED ABOVE 3300 R.P.M. EXCEEDS SAFETY CERTIFICATION FOR THROWN OBJECTS. ANY FOREIGN OBJECT STRUCK BY THE BLADE CAN BECOME A DANGEROUS THROWN OBJECT THAT CAN CAUSE SERIOUS INJURY. ENGINE SPEED IN EXCESS OF 3300 R.P.M. WILL ALSO SHORTEN ENGINE LIFE. GOVERNOR ADJUSTMENT SHOULD NOT EXCEED 3300 R.P.M.

GOVERNOR ADJUSTMENT

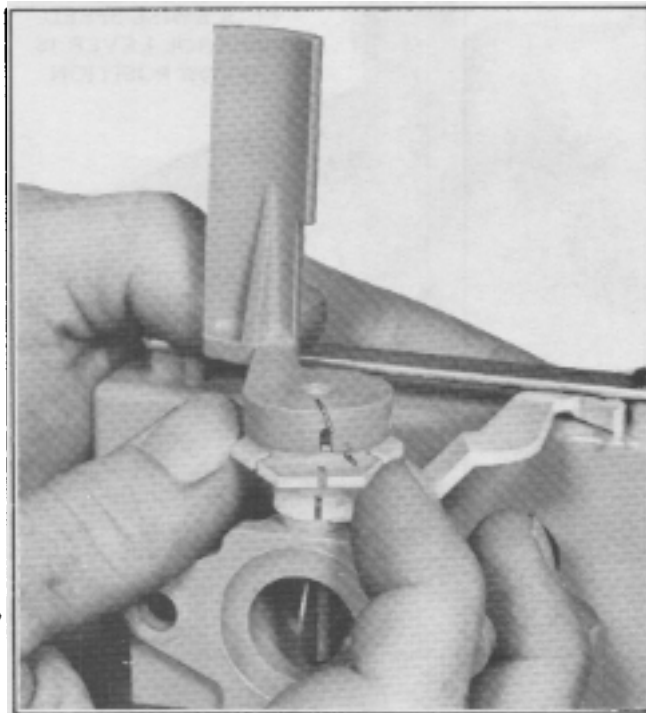
Engine speed (R.P.M.) is controlled by the governor spring tension. All mowers are run and tested at the factory, however, if the governor requires adjustment proceed as follows.

1. Grasp the hex shaped adjusting collar and gently raise collar upwards until collar is above splines on speed control lever as shown.
2. Rotate adjusting collar COUNTER-CLOCKWISE to increase spring tension (increase engine R.P.M.). Rotating collar CLOCKWISE decreases spring tension (decreasing engine R.P.M.). Reinstall adjusting collar to speed control lever by pushing collar down in the locked position.



NOTE

Each spline on the speed control lever represents 50-75 R.P.M.



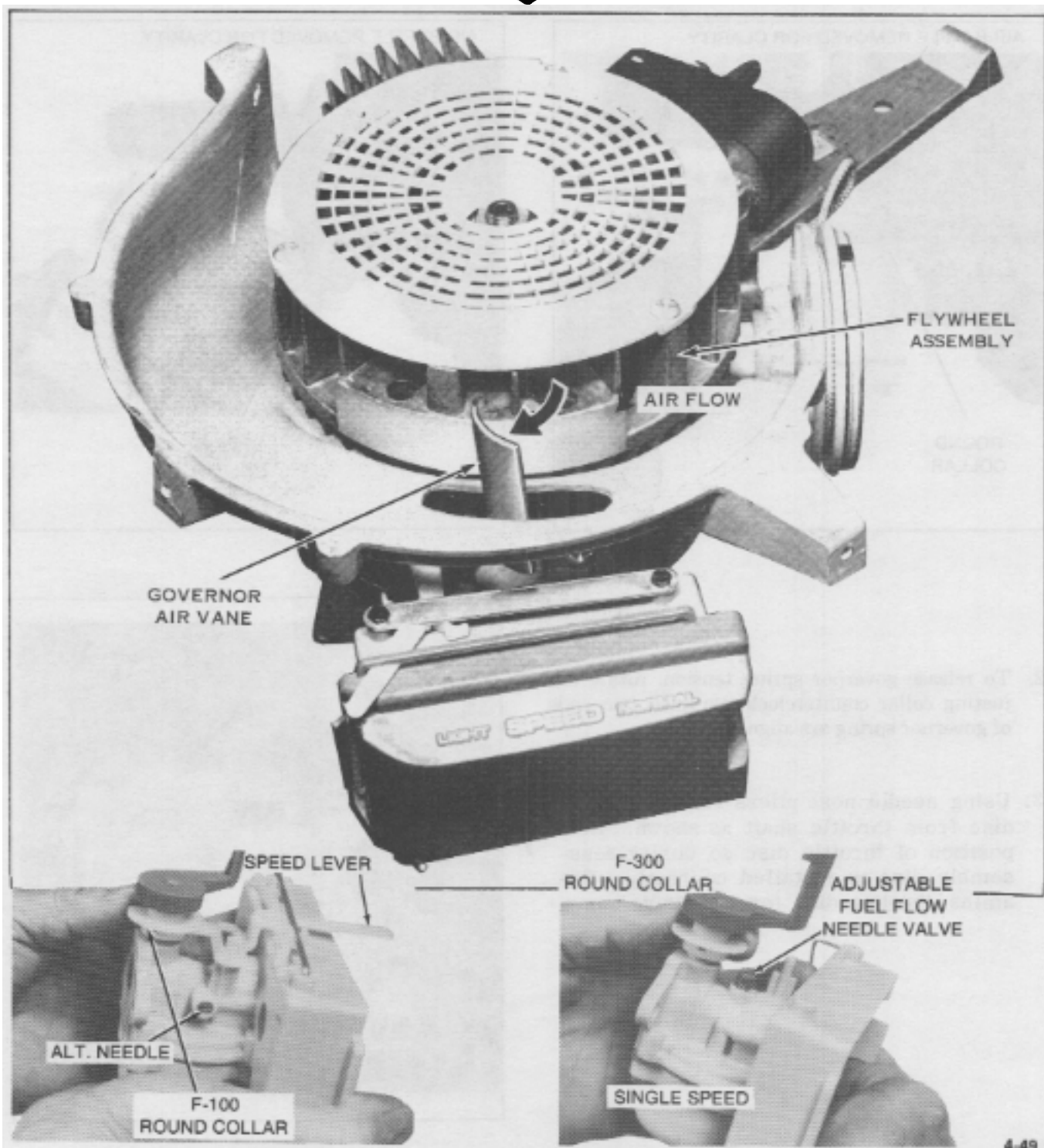
3. Use a tachometer to accurately measure engine R.P.M. Correct R.P.M. is 2400-2600 LIGHT speed setting and 3100-3300 NORMAL setting.
4. Run engine and test for correct engine R.P.M. in both LIGHT and NORMAL settings. Adjust governor spring tension as required until engine R.P.M. is within specified range.

"F" SERIES (Cont.) F100 SERIES GOVERNOR

GOVERNOR ASSEMBLY AND OPERATION (ROUND GOVERNOR COLLAR)

The governor air vane assembly is an integral component of the carburetor. The governor air vane (part of the throttle shaft) extends through a "tunnel" in the shroud mounting base. As the flywheel rotates an air flow is created against the air vane which opens or closes the throttle shaft.

As mowing conditions change the governor air vane responds instantly to engine running demands. The function of the governor air vane is to control engine speed. An altitude adjustment needle regulates the right amount of fuel with the correct amount of incoming air.



"F" SERIES (Cont.) F100 SERIES GOVERNOR (DISASSEMBLY)

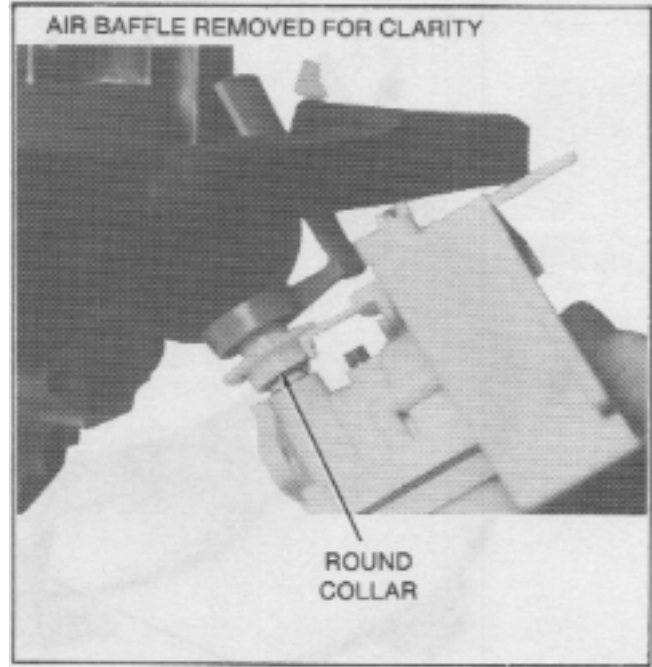
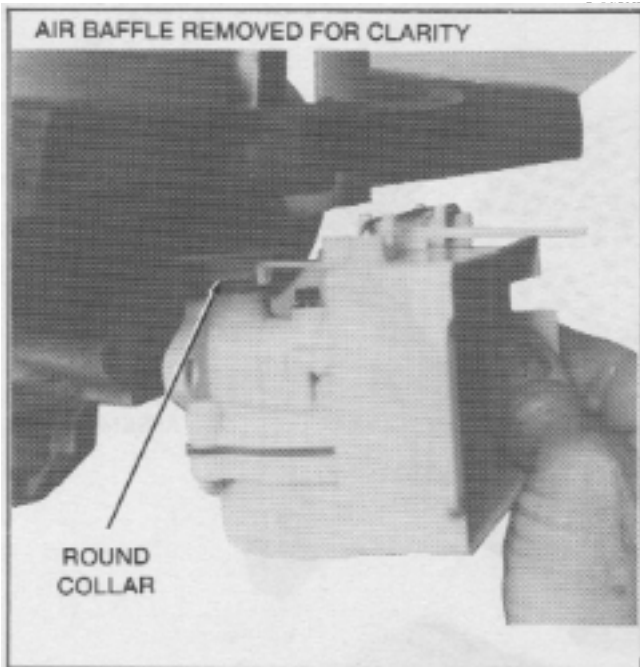
REMOVING AIR VANE ASSEMBLY (ROUND GOVERNOR COLLAR)

1. Remove two carburetor mounting screws and remove carburetor and air vane assembly as shown. Special care **MUST BE** taken when removing carburetor to prevent damaging air vane assembly.

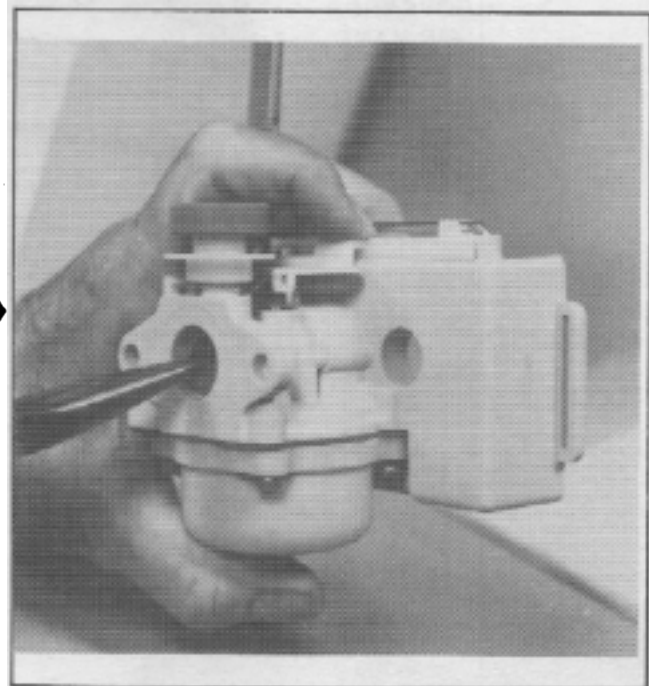


SAFETY WARNING

USE CARE WHEN REMOVING CARBURETOR AND AIR VANE ASSEMBLY FROM ENGINE. DAMAGE TO AIR VANE WILL CREATE AN ENGINE OVERSPEED CONDITION.



2. To release governor spring tension, rotate adjusting collar counterclockwise until two ends of governor spring are aligned.
3. Using needle nose pliers remove throttle disc from throttle shaft as shown. Note position of throttle disc so during reassembly disc is installed correctly. Examine throttle disc for excessive wear.




"F" SERIES (Cont.)

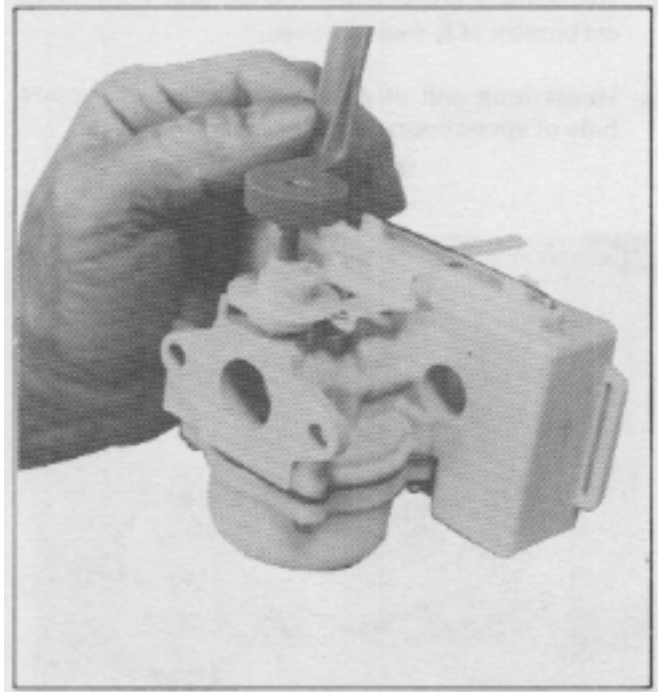
F100 SERIES GOVERNOR (DISASSEMBLY — CONT.)

(ROUND GOVERNOR COLLAR)

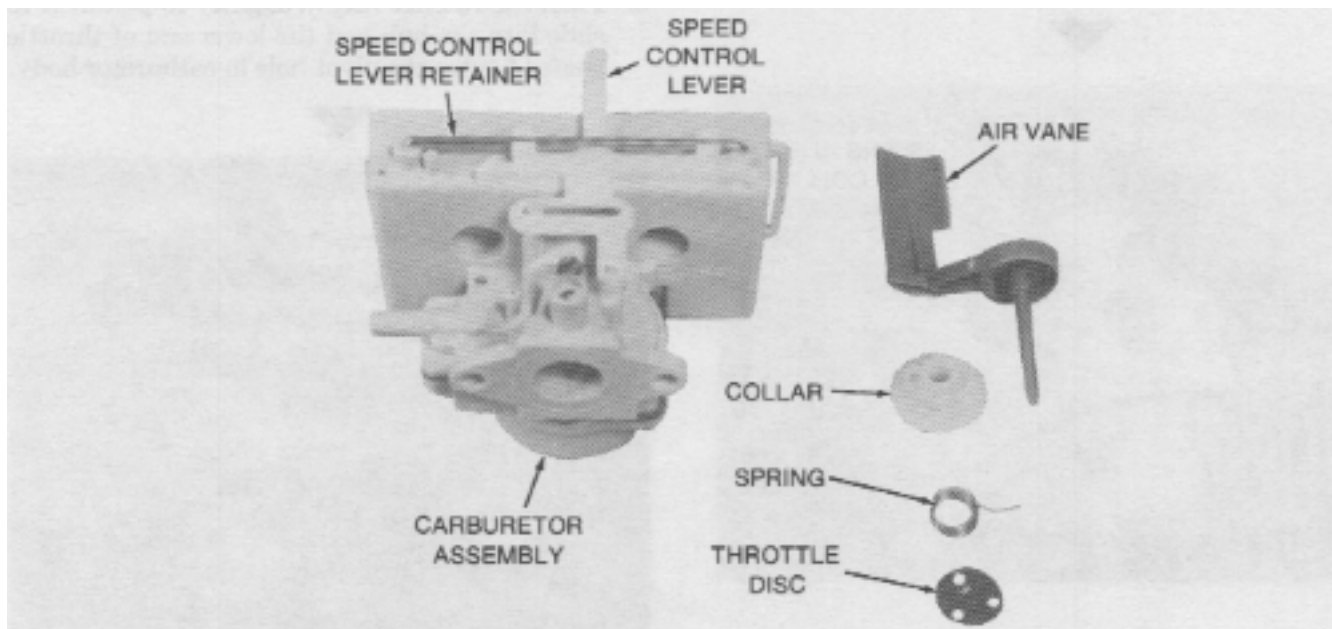
- Slide (lift) the complete governor assembly from the carburetor body.

 **NOTE**

Do not damage or distort the governor spring during this disassembly.



- Carefully remove governor spring from governor adjusting collar.
- Remove governor adjusting collar from the hub of air vane.
- To remove or replace the speed control lever, it is necessary to first remove retainer from the carburetor body. Carefully pry it out of the holes without damaging it or the carburetor body.
- Examine all components removed for damage or wear and replace as required.



"F" SERIES (Cont.)

F100 SERIES GOVERNOR

(ASSEMBLY)

REASSEMBLY GOVERNOR ASSEMBLY F100 SERIES (ROUND GOVERNOR COLLAR)

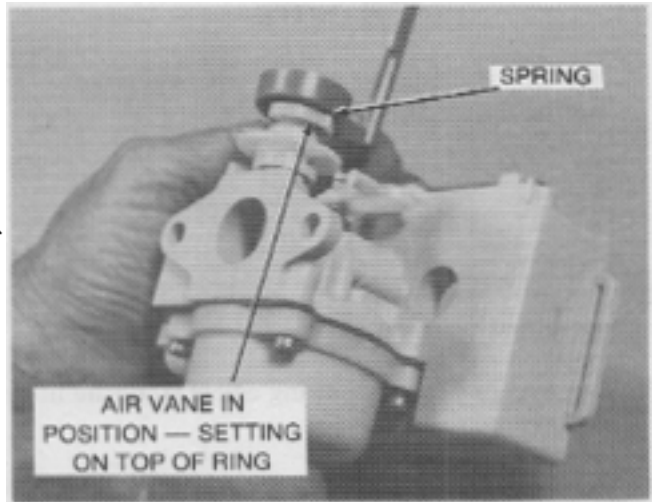
1. Reassemble speed control lever and retainer to carburetor if it was removed.
2. Insert long end of governor spring into square hole of speed control lever.



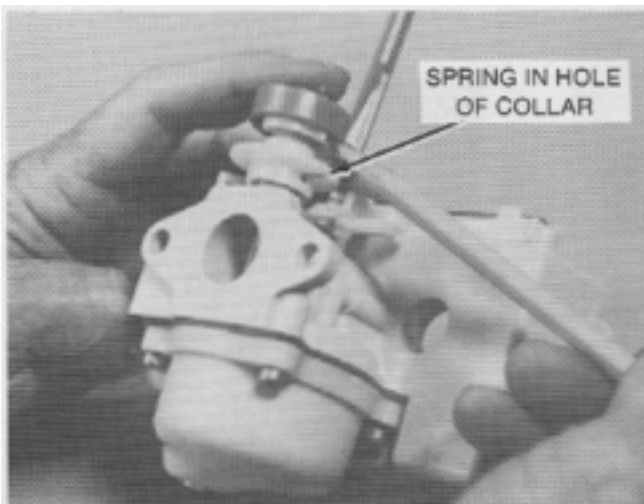
4. Assemble air vane and throttle shaft into carburetor with the air vane facing towards the front and coming to rest on top of ratchet ring of governor collar.

 NOTE

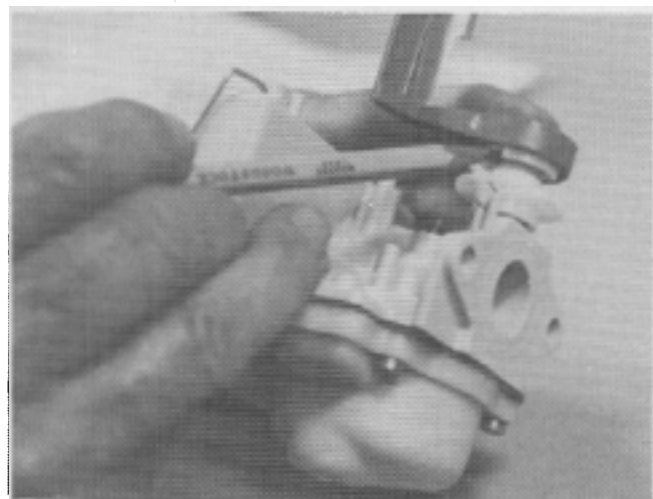
Do not force the ratchet ring into the governor hub.



3. Assemble speed control collar onto governor spring with the short end of spring inserted into small square hole under flange of collar.



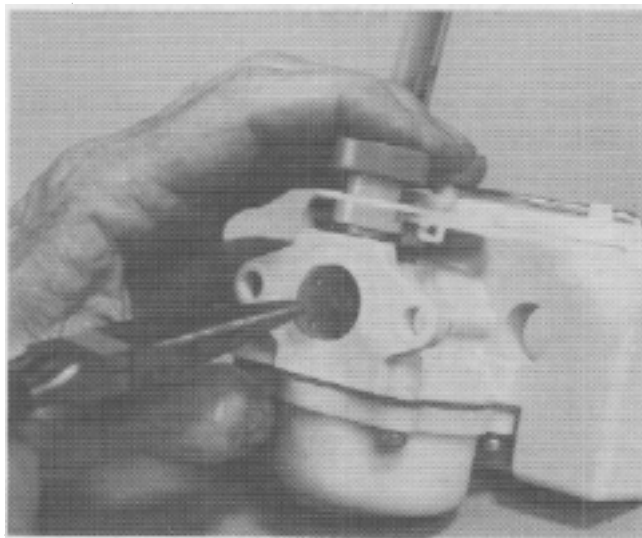
5. Place your finger on top of hub to hold it stationary.
6. Push the ratchet ring in slightly to permit it to slide into the hub and the lower end of throttle shaft to enter the pivot hole in carburetor body.



"F" SERIES (Cont.) F100 SERIES GOVERNOR

THROTTLE SHAFT AND DISC VALVE INSTALLATION (ROUND GOVERNOR COLLAR)

1. Insert throttle shaft into carburetor body with the notch in the air vane hub facing you. Gently attach governor spring to air vane hub.
2. Using needle nose pliers insert throttle disc into throttle shaft. Flat edge on throttle disc must be installed upwards facing the air vane as shown. The small hole in the throttle disc must be installed facing the front of the carburetor as shown. Insert throttle disc until two half moon slots are touching throttle shaft as shown.
3. Rotate air vane and check movement of throttle disc. Check for binding and/or wear in carburetor throat.



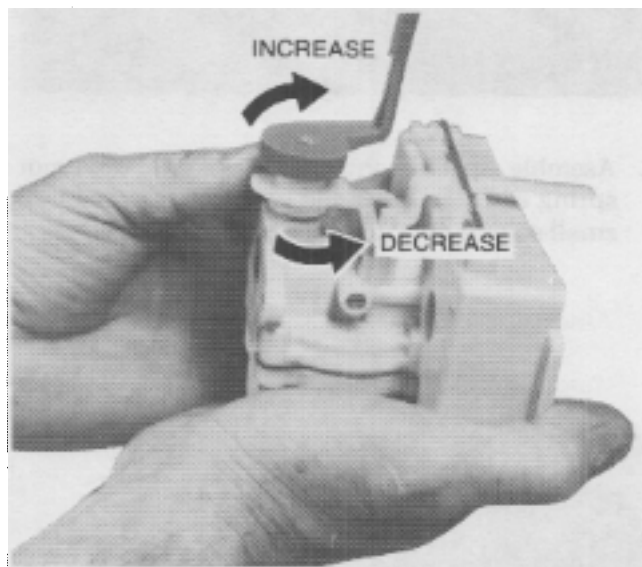
GOVERNOR ADJUSTMENT

Engine speed (R.P.M.) is controlled by the governor spring tension. All mowers are run and tested at the factory, however, if the governor requires adjustment proceed as follows:

1. Rotate adjusting collar **CLOCKWISE** to increase spring tension (increase engine R.P.M.) Rotating collar **COUNTERCLOCKWISE** decreases spring tension (decreasing engine R.P.M.).

NOTE

Each click on the speed control collar represents approximately 50-75 R.P.M.



NOTE

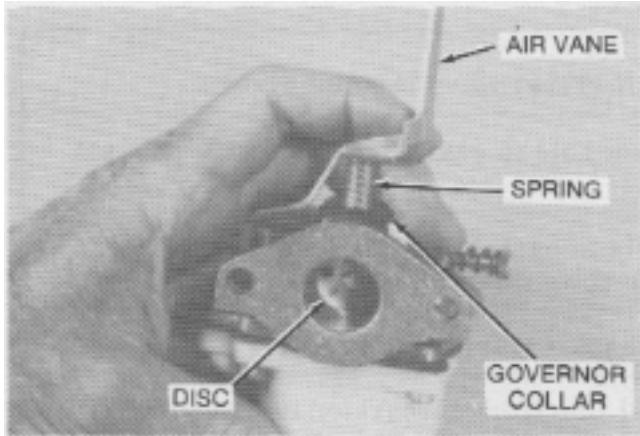
Always use a tachometer to accurately measure engine R.P.M. Correct R.P.M. is 2400-2600 LIGHT speed setting and 3100-3300 NORMAL setting.

2. Run engine and test for correct engine R.P.M. in both LIGHT and NORMAL settings. Adjust governor spring tension as required until engine R.P.M. is within specified range.

"F" SERIES (Cont.)

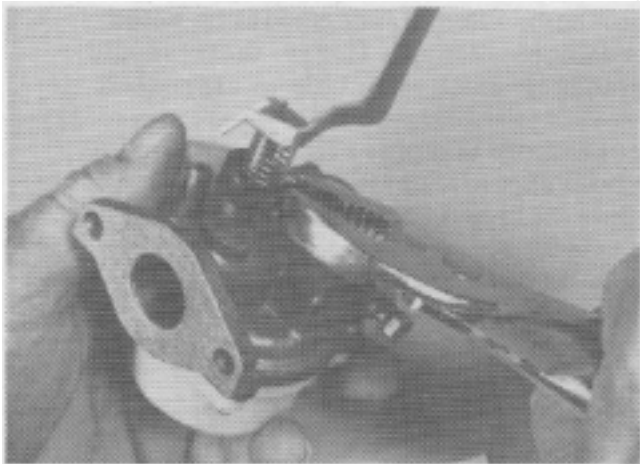
F200 SERIES GOVERNOR COMMERCIAL CARBURETOR

GOVERNOR

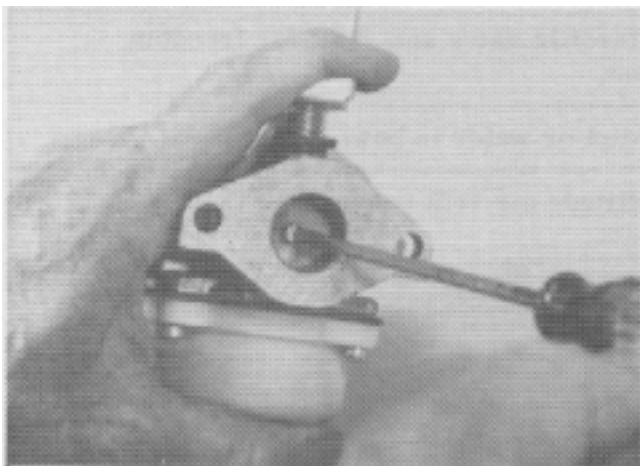


GOVERNOR DISASSEMBLY

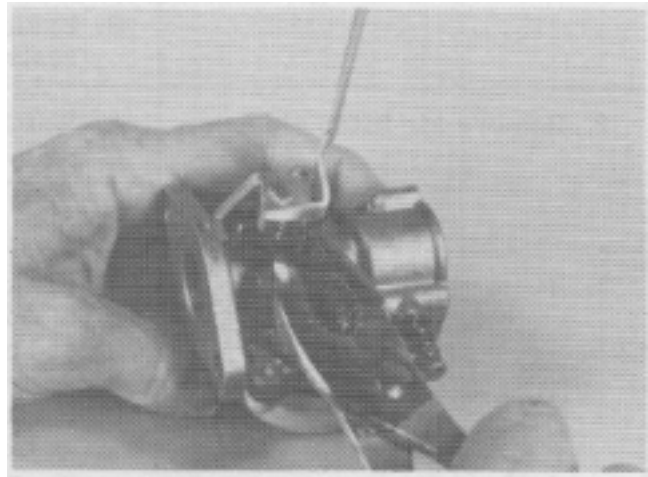
1. Using a pair of pliers, carefully squeeze the ends of the governor spring clamp together and slide (turn) it clockwise approximately 1/3 turn. This releases the tension of governor springs.



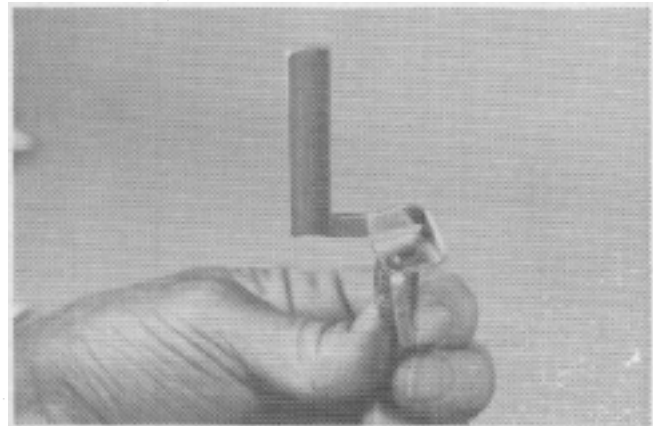
2. Remove the throttle disc screw and disc.



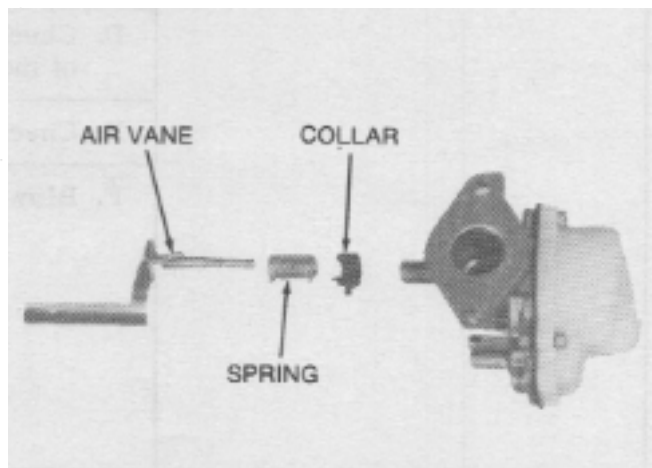
3. Using the pliers again, squeeze the clamp and slide the governor assembly out of the carburetor body.



4. Unhook and remove the governor spring from air vane and throttle shaft.



5. Inspect all parts for wear or damage. Replace parts if necessary.

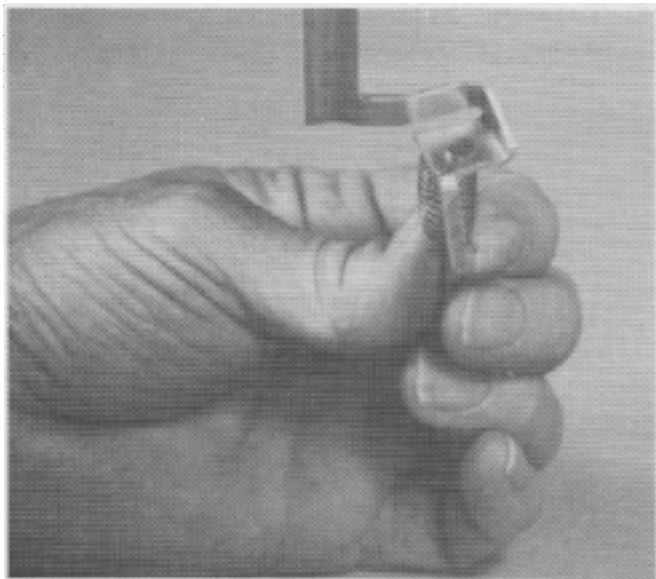


"F" SERIES (Cont.)

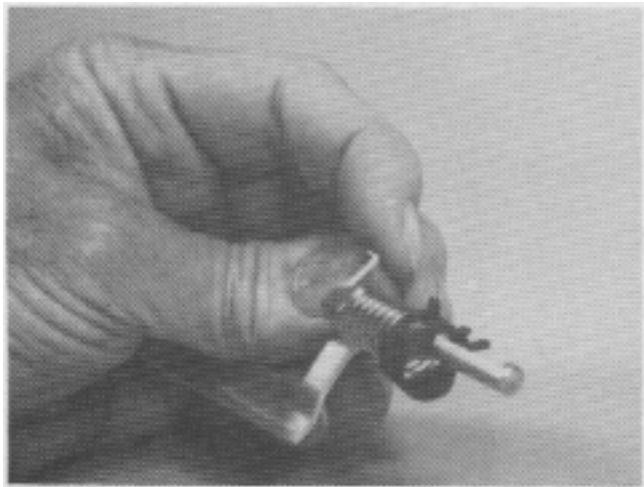
F200 SERIES GOVERNOR COMMERCIAL CARBURETOR

GOVERNOR REASSEMBLY

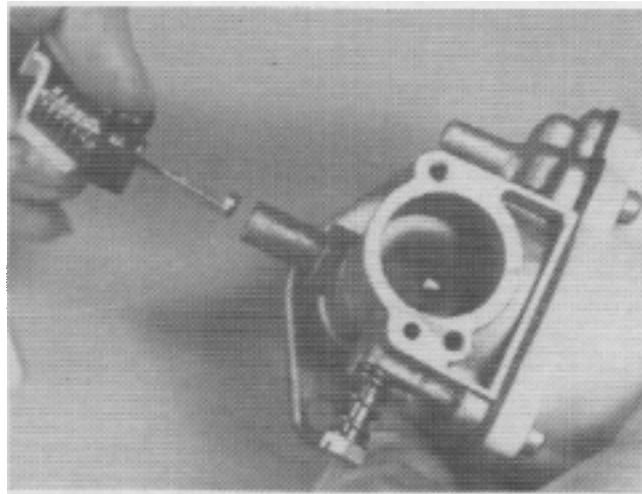
1. Pre-assemble governor spring onto the air vane and throttle shaft with the hook end at the top.



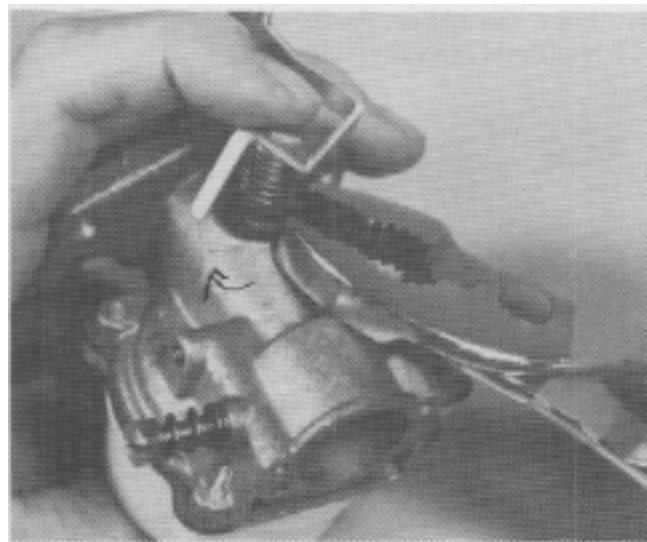
2. Slide the clamp onto the shaft. Place the straight end of governor spring in slot of clamp.



3. Slide the assembly into the carburetor.



4. Squeeze the clamp to open and slide it down onto the hub of carburetor.

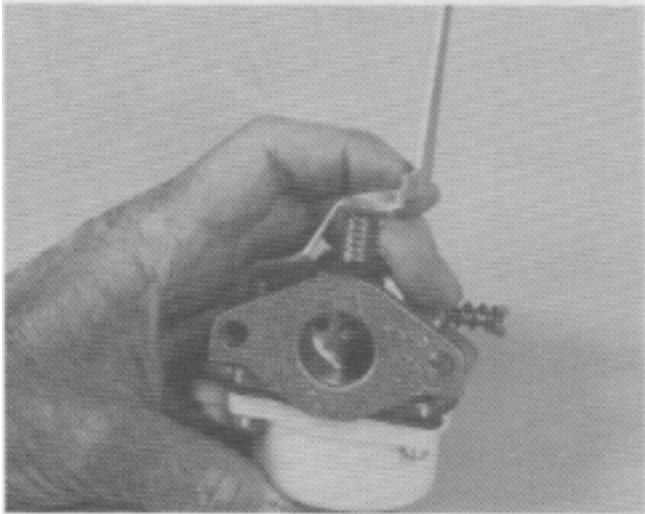


NOTE

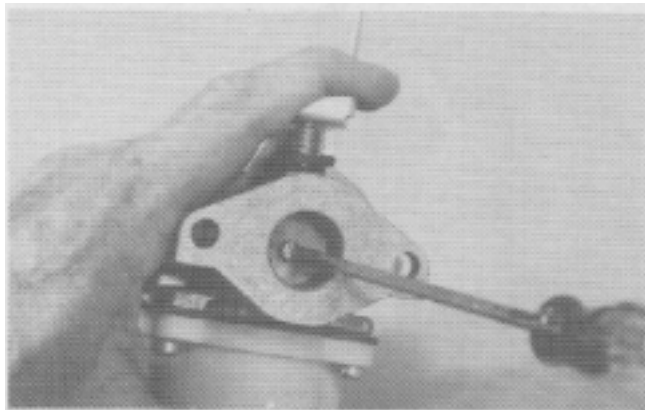
Do not apply tension to governor spring.

"F" SERIES (Cont.) F200 SERIES GOVERNOR COMMERCIAL CARBURETOR

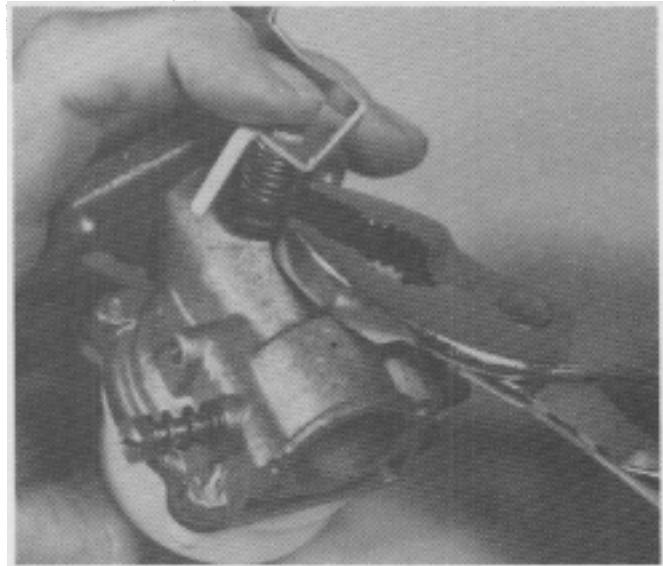
5. Note the hole located in one side of throttle disc. Always assemble the disc with the hole located on the left side of the barrel as you face the back of the carburetor.



6. Place the disc on the flat surface of the throttle shaft and assemble the screw.



7. Tighten the screw to 3-5 inch lbs. Move air vane and throttle shaft to check freedom of movement. If interference is noted, loosen and reposition the disc.
8. To pre-set the governor spring tension, slide the clamp counterclockwise approximately 1/3 turn.



9. The final adjustment of the governor is made when running the engine.

NOTE

Adjust governor to run engine 3100-3300
R.P.M.

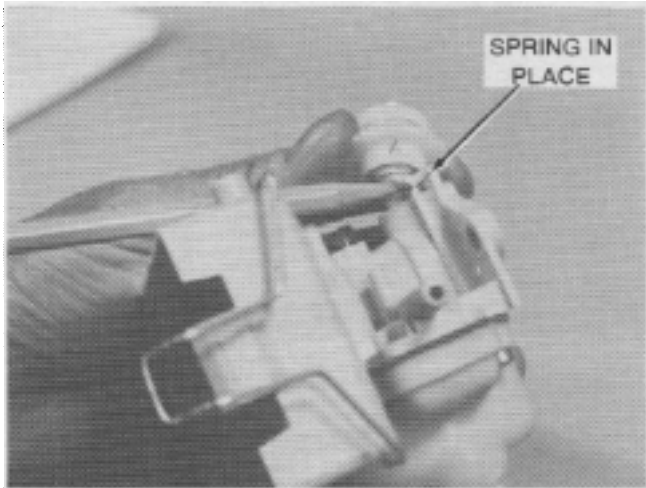
"F" SERIES (Cont.)

F300 SERIES GOVERNOR

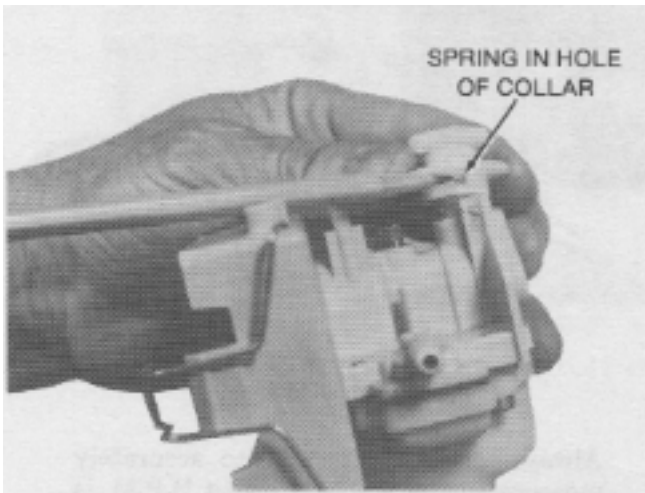
(SINGLE SPEED)
(ASSEMBLY)

REASSEMBLING GOVERNOR ASSEMBLY F300 SERIES (ROUND GOVERNOR COLLAR)


1. Insert long end of governor spring into square hole located in rib of carburetor body.



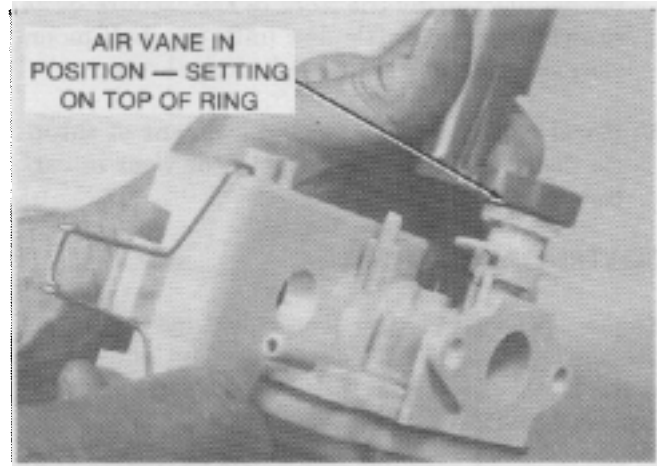
2. Assemble speed control collar onto governor spring with the short end of spring inserted into small square hole under flange of collar.



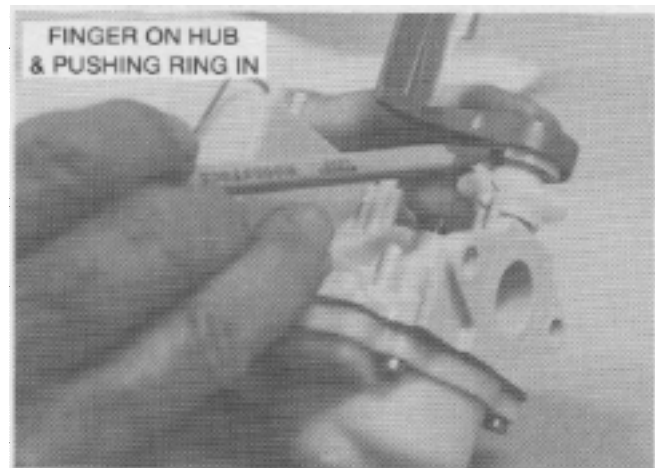
3. Assemble air vane and throttle shaft into carburetor with the air vane facing towards the front and coming to rest on top of ratchet ring of governor collar.

 NOTE

Do not force the ratchet ring into the governor hub.



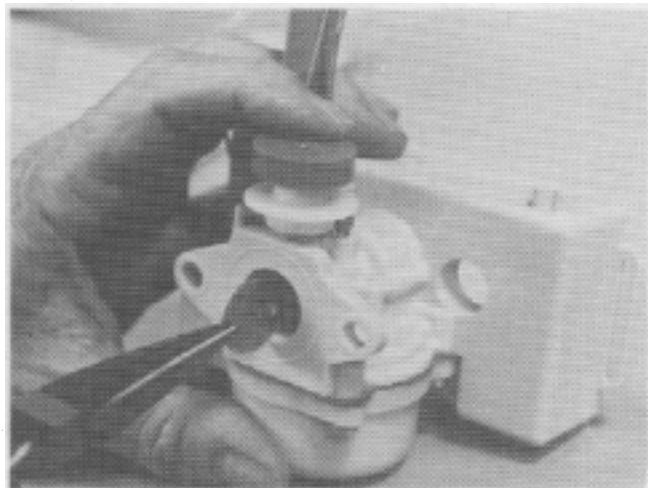
4. Place your finger on top of hub to hold it stationary.
5. Push the ratchet ring in slightly to permit it to slide into the hub and the lower end of throttle shaft to enter the pivot hole in carburetor body.



“F” SERIES (Cont.)
F300 SERIES GOVERNOR
(ROUND GOVERNOR COLLAR)
(ASSEMBLY — CON'T.)

THROTTLE SHAFT AND DISC VALVE INSTALLATION

1. Insert throttle shaft into carburetor body with the notch in the air vane hub facing you. Gently attach governor spring to air vane hub.
2. Using needle nose pliers insert throttle disc into throttle shaft. Flat edge on throttle disc must be installed upwards facing the air vane as shown. The small hole in the throttle disc must be installed facing the front of the carburetor as shown. Insert throttle disc until two half moon slots are touching throttle shaft as shown.
3. Rotate air vane and check movement of throttle disc. Check for binding and/or wear in carburetor throat.

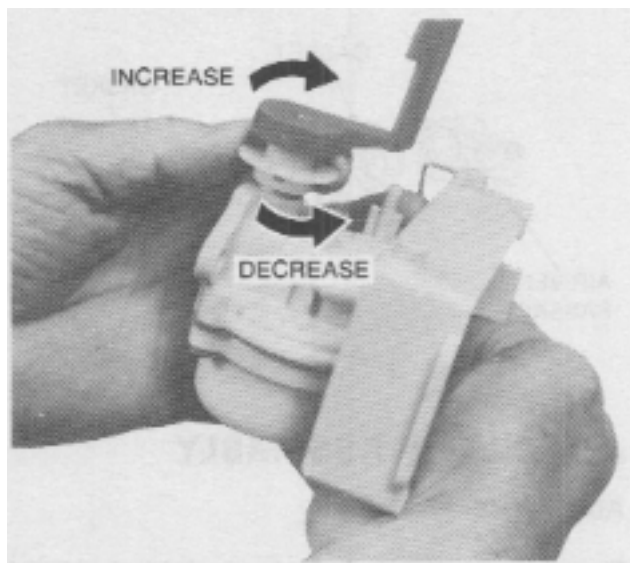


PRESETTING AND ADJUSTING GOVERNOR

Preset governor spring tension by adjusting collar as shown and rotating collar 1/3 turn **CLOCKWISE** as illustrated.

Engine speed (R.P.M.) is controlled by the governor spring tension. All mowers are run and tested at the factory, however, if the governor requires adjustment proceed as follows:

1. Rotate adjusting collar **CLOCKWISE** to increase spring tension (increase engine R.P.M.). Rotating collar **COUNTERCLOCKWISE** decreases spring tension (decreasing engine R.P.M.)



 **NOTE**

Each click on the speed control collar represents approximately 50-75 R.P.M.

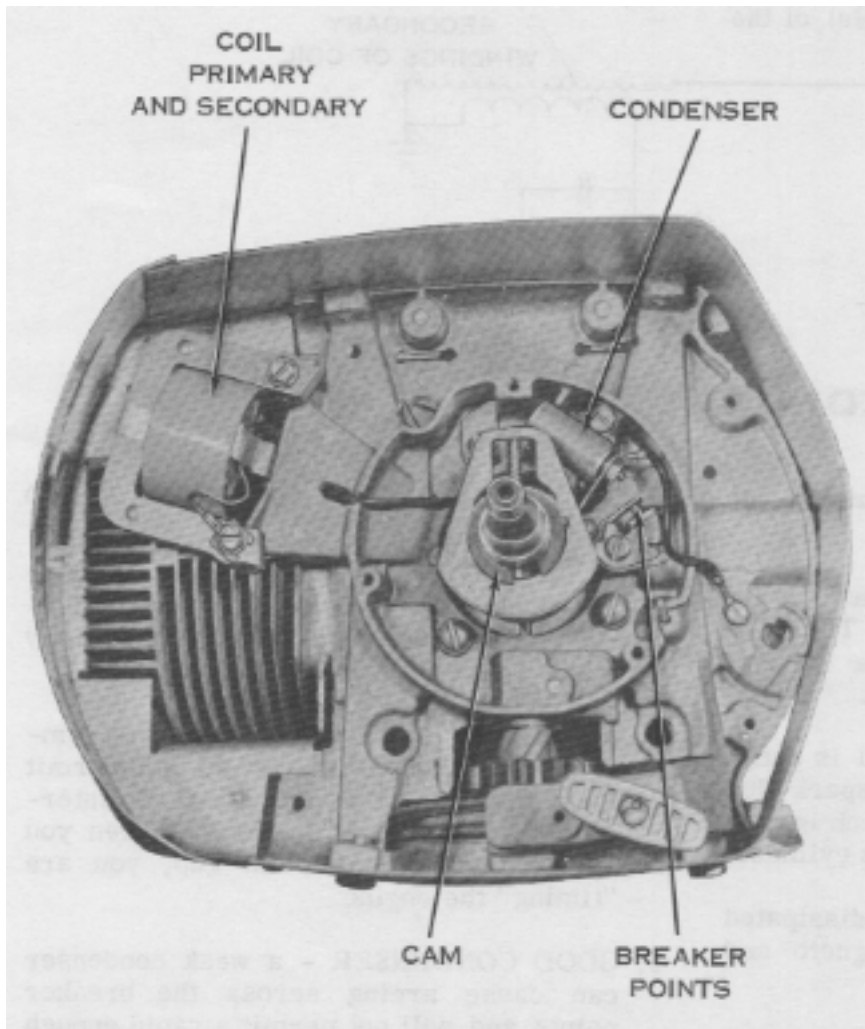
 **NOTE**

Always use a tachometer to accurately measure engine R.P.M. Correct R.P.M. is 3100-3300 **NORMAL** setting.

2. Run engine and test for correct engine R.P.M. in both **LIGHT** and **NORMAL** settings. Adjust governor spring tension as required until engine R.P.M. is within specified range.

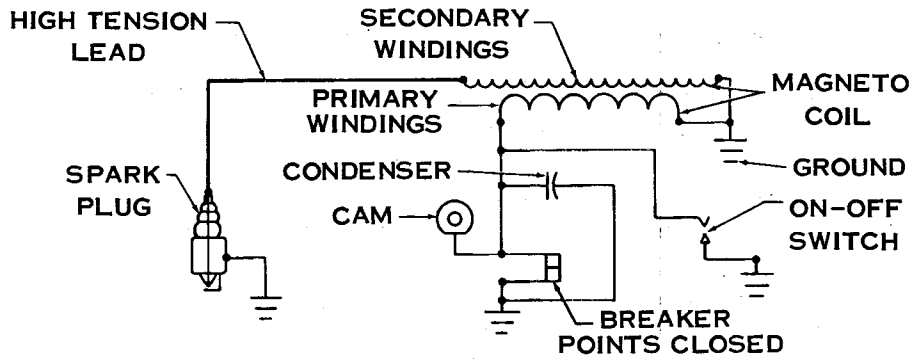
PRINCIPLES OF MAGNETO OPERATION -- D-400 SERIES

The two questions most commonly asked about a magneto are first, exactly what does it do in the engine, and second, just how does it do it. The magneto is solely for IGNITION. It provides a current of sufficiently high voltage (up to 17,000 volts in a Lawn-Boy engine) to cause a spark to jump the gap between the spark plug electrodes and ignite the compressed fuel vapor at exactly the moment when the piston reaches near the top of the compression stroke. And how does it accomplish this? Following the complete cycle of the production of a spark at the plug is about the simplest way to explain it.



PERMANENT MAGNETS (cast into the flywheel) revolve around the rest of the magneto as the flywheel rotates. Magnetic flux around the magnets passes through the coil winding in the **PRIMARY COIL**. This will induce a flow of current through the primary coil. The crankshaft also is rotating as the flywheel rotates. A **CAM** on the crankshaft opens and closes **BREAKER POINTS**. These breaker points, when closed, completes the circuit of the primary coil. When the cam opens these breaker points, the circuit of the primary coil is broken and the current ceases to flow. A **CONDENSER** connected across the points prevents arcing and burning of the points. The condenser also absorbs (drains) current remaining in the primary circuit. A **SECONDARY COIL** is wrapped around the primary coil. The rapidly collapsing current in the primary coil induces a flow of current in the secondary coil of extremely high voltage. The more rapid the collapse, the higher the voltage. The secondary coil is connected directly to the **SPARK PLUG** through the **HIGH TENSION LEAD**. It is the current with high voltage from the secondary coil which jumps the gap between the spark plug electrodes, causing the spark which ignites the fuel vapor in the combustion chamber. In a one-cylinder engine, this cycle is completed once for every rotation of the crankshaft.

IGNITION WIRING DIAGRAMS - D-400 SERIES

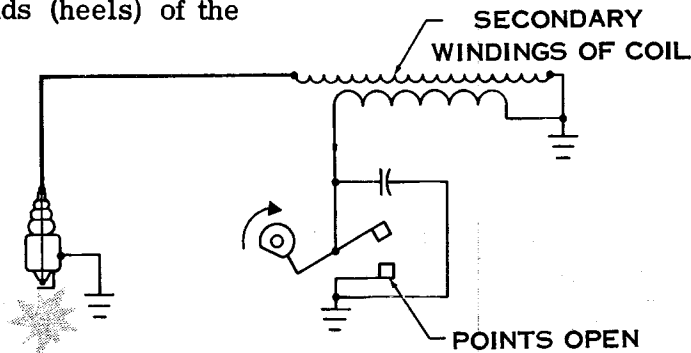


PRIMARY CIRCUIT

PRIMARY CIRCUIT

Current flow in the primary circuit is obtained from the flow of magnetic flux lines through the lamination assembly as the magnet sweeps past the ends (heels) of the coil laminations.

The circuit is completed through the closed breaker points and grounding.



SECONDARY CIRCUIT

SECONDARY CIRCUIT

The secondary coil is wound around the primary coil.

When the breaker points open, the current in the primary coil collapses. The collapsing magnetic field induces a flow of current through the secondary coil.

The current in the secondary coil is sufficient to jump the gap between the spark plug electrodes, causing the spark which ignites the compressed fuel mixture in the cylinder.

The secondary current is then dissipated through grounding at the magneto and grounding at the plug.

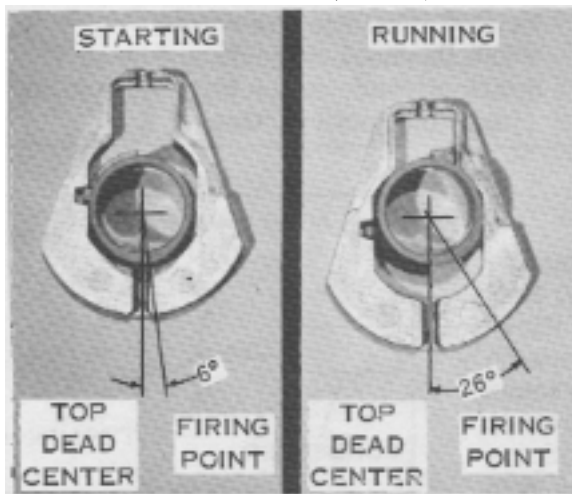
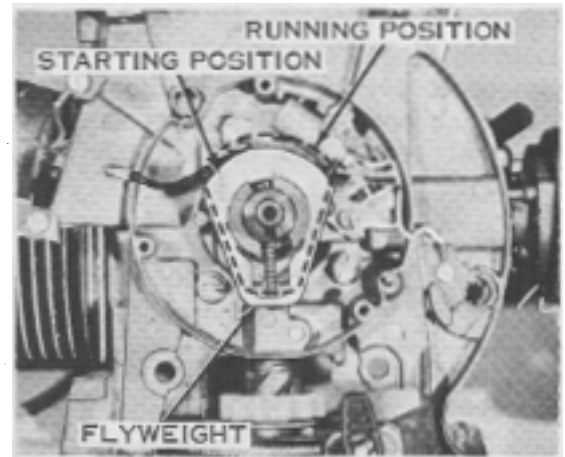
THIS COMPLETE CYCLE OCCURS ONCE EVERY TIME THE FLYWHEEL ROTATES AROUND THE MAGNETO, OR ABOUT 3,000 TIMES A MINUTE IN THE LAWN-BOY ENGINE.

KNOWING THE PART EACH COMPONENT PLAYS IN PRODUCING IGNITION, IT'S

EASY TO SEE WHY IT IS NECESSARY TO HAVE:

1. **CLEAN POINTS** - dirty, pitted or corroded points will retard the flow of current in the primary coil because they make a poor electrical connection.
2. **PROPERLY ADJUSTED POINTS** - improperly adjusted points do not permit them to open at the right instant to interrupt the current at its peak. When you adjust the breaker point gap, you are "timing" the engine.
3. **GOOD CONDENSER** - a weak condenser can cause arcing across the breaker points and will not permit a rapid enough collapse of the flux in the primary coil to induce enough voltage in the secondary coil for a good spark.
4. **CLEAN AND PROPERLY GAPPED SPARK PLUG** - a dirty or improperly gapped plug cannot provide a good spark for ignition.

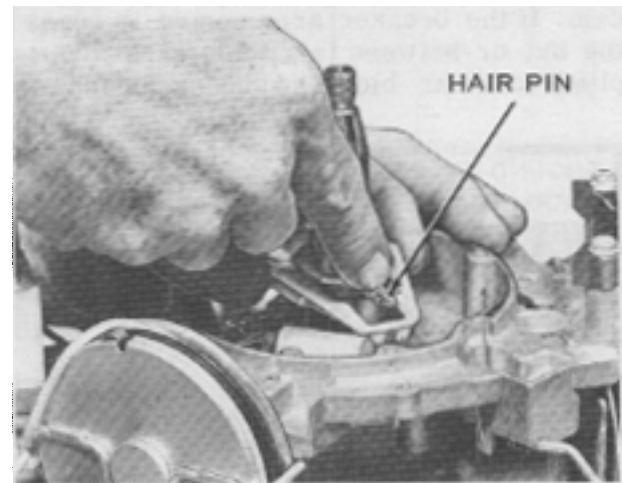
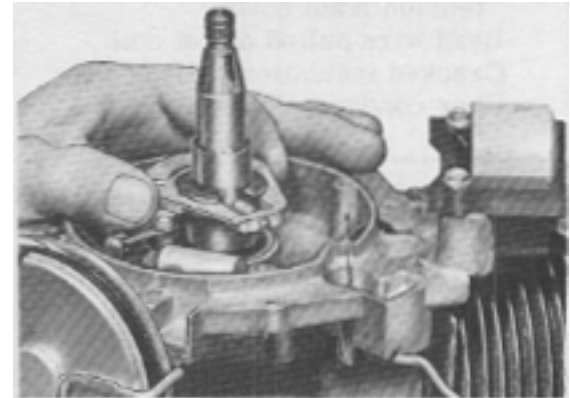
"D" 400 series engines have a twin spark ignition system. This system provides two different spark timings, one for starting and one for running. For starting, the spark-advance flyweight holds the cam in a position so that the igniting spark occurs at 6° of crankshaft rotation before the piston reaches the top of its upward travel. When the engine reaches approximately 1000 RPM, centrifugal force moves the flyweight out, rotating the cam to a position so that the igniting spark now occurs at 26° of crankshaft rotation before the piston reaches the top of its upward travel.



Push small end of spark advance flyweight toward crankshaft. Hold tension of spring against crankshaft and return flyweight to original position. Allow smaller end of flyweight to drop down. Remove pin and spring.

Note: In reassembly, make sure the smaller end of the flyweight is on the key-way side of the crankshaft.

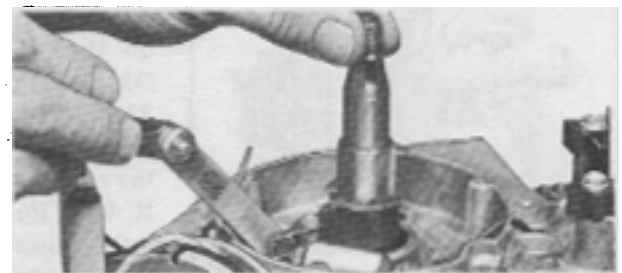
The assembly of the spark advance is correct when the small hair pin is horizontal to the flyweight and the spring loaded rod moves freely.



MAGNETO ADJUSTMENTS

BREAKER POINT ADJUSTMENT

To check or adjust point gap, place spark advance cam only on crankshaft. Check and adjust points as described. See Breaker Point Adjustment on page 6-5.



D-400 SERIES IGNITION SYSTEM

COIL HEEL ADJUSTMENT

The air gap between the coil heels and the flywheel magnets is .010 inch. To check this gap or to reinstall a coil insert a strip of .010 inch non-metallic shim stock between the coil heels and the flywheel magnets. ▶

NOTE

Use Lawn-Boy Air Gap Gauge Part No. 604659.



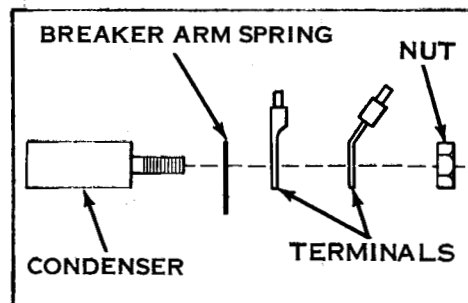
IGNITION PROBLEMS

Bad spark plug
Terminal missing from spark plug (high tension lead) cover
Lead wire pulled out of coil
Cracked insulation on lead wire
Poor condenser or coil

Burned or pitted breaker points
Worn breaker point fiber rubbing block
Poor connections
Frayed insulation on wires
Weak flywheel magnets
Spark advance assembly damaged or installed incorrectly

BREAKER POINT SPRING, TERMINALS ASSEMBLY SEQUENCE

The correct assembly sequence on the condenser terminal is breaker arm spring next to condenser body, then the 2 terminal connectors secured by a nut. See illustration. Correct assembly provides the proper tension (pressure) on the breaker arm wear block and breaker cam. If the breaker arm spring is reassembled next to the nut or between terminals excessive pressure is applied to wear block resulting in incorrect point gap.

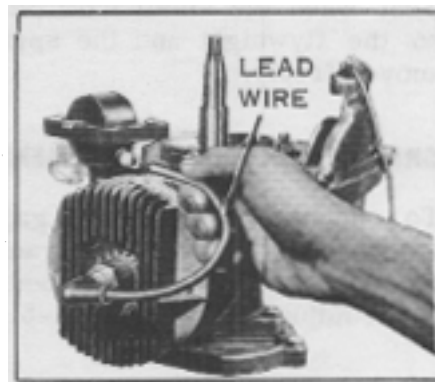
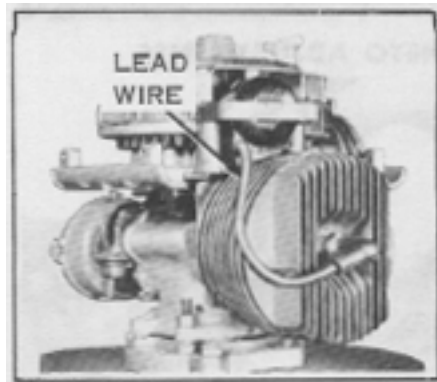


SHUT-OFF GROUND WIRE

When trouble shooting magneto problems make sure the shut-off ground wire terminals DO NOT touch the armature plate. If this happens, the electrical system will be permanently grounded. Also, the shut-off switch may become inoperative if dirt and grime collects between the shut-off switch screw and the shut-off blade. Insulation on ground wire should also be examined.

ASSEMBLY TIPS

When inserting the high tension lead wire, coat the end of the insulated portion with OMC Adhesive "M" Part No. 318535 for a water-proof connection. Twist lead wire into threaded coil casing as far as it will go. On early models only, bend clamp to secure high tension lead to coil.



MAGNETO ADJUSTMENTS

BREAKER POINT ADJUSTMENT

D-400 SERIES

To check point gap .020, rotate crankshaft until wear block is centered on lobe of cam. **MOVE CRANKSHAFT TOWARD CARBURETOR AND HOLD IN THAT POSITION.** Loosen breaker base screw, and place gauge between points. Pivot breaker base until gap is correct. Retighten breaker base screw and recheck gap to make sure breaker base has not shifted. Check breaker points every 40-50 hours for wear or pitted condition. Replace as required.



NOTE

When setting the breaker points, the top of the crankshaft should be held toward the carburetor to eliminate the effect of tolerance accumulations and wear. Remember, the feeler gauge must be clean. After correct setting, the breaker base screw must be secured tightly.

CONDENSER

It is not necessary to replace a condenser every time the breaker points are replaced. Usually, the risk of condenser failure decreases as the condenser is used, and most condensers will last the life of the engine. However, if the condenser is thought to be the cause of an ignition problem, it must be checked for capacity, shortage or leakage and resistance.

The condenser should be heated to approximately 100 DEG. F. before testing. This will eliminate the possibility of the condenser checking okay when cold, but failing under normal operating conditions. For example, a leak will show up much better at high temperatures.

NOTE

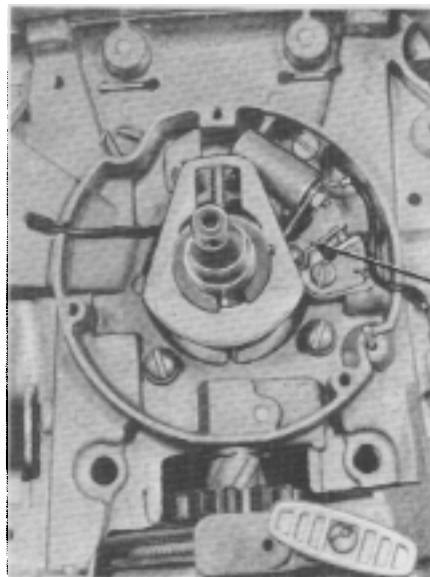
Do Not Over Heat. The expansion may crack some of the insulation. A simple method of heating a condenser is holding it in your hand for a few minutes or placing it in an oven with a thermometer control.

The condenser clamp is the ground connection for the condenser and therefore, must be secured tightly.

BURNED OR PITTED BREAKER POINTS - Always replace badly burned or pitted points. Do not file points.

WORN BREAKER POINT FIBER WEAR BLOCK - Sometimes the fiber wear block which contacts the cam can wear down enough so that the breaker arm is shorted through the crankshaft. If this has happened, replace the breaker points. On later model Lawn-Boy engines, part of the breaker arm has been cut away to minimize the possibility of shorting.

POOR CONNECTIONS - Check wires for good connections, especially at condenser.



BREAKER POINT ARM

COIL

The magneto coil is seldom the cause of ignition trouble. Therefore, other possible causes should be checked thoroughly before the coil is examined. A simple method of testing the coil is by checking the spark gap on the spark plug or through the use of a spark plug tester. Ignition spark must be

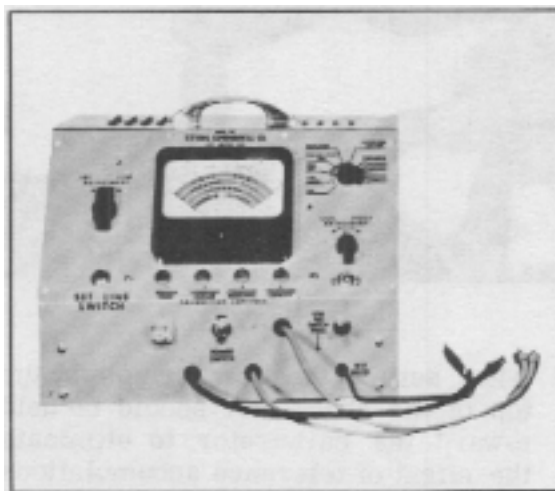
of sharp blue color and should jump at least 1/4-3/8 inches to ground consistently. This method of coil checking is not fool-proof and therefore, an approved coil tester is recommended in many cases. With this equipment a primary and secondary continuity check can be made as well as coil output and polarity.

IGNITION TESTING EQUIPMENT

IGNITION TESTING

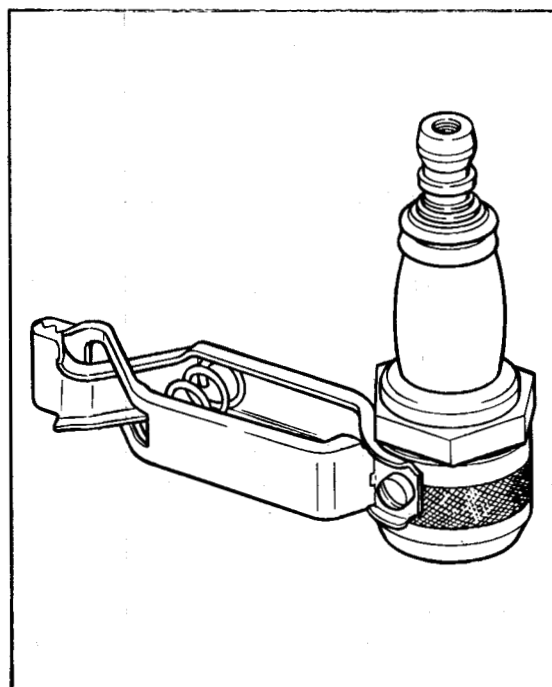
Every servicing dealer should have a test unit on hand for checking coils and condensers. There are several good makes on the market.

The following test data covers only coils and condensers. The Lawn-Boy Capacitor Discharge (solid-state) Module cannot be checked with conventional test equipment. Voltage applied to it will most likely result in damage. Therefore, the best way to check it is to use a standard test spark plug and observe for sufficient spark, or compare it to a CD Module which is known to be good.



TEST SPARK PLUG

A simple but effective means for checking ignition spark may be obtained using Special Tool Part No. 426814.



SPARK PLUG -- D-400 AND D-600 SERIES

There are many different types of spark plugs intended for various applications and therefore, it is extremely important that the correct plug be used in an engine and torqued correctly. Correct torque is 12 to 15 ft lbs.

LAWN-BOY recommends the use of the Champion CJ-14 spark plug because of its ability to supply, continuously, a hot spark for uninterrupted combustion.

Plugs should be cleaned and gapped every 25 hours of operation.

SPARK PLUG ANALYSIS

Normal



Few combustion deposits present on plug. Electrodes not burned or eroded. Insulator tip color, brown to light tan. Insulator dry - providing engine was not excessively choked prior to plug removal.

ANALYSIS: Ignition and carburetor in good condition. Plug is correct heat range - clean and replace, or install new Champions of same heat range.

Wet Fouling



Insulator tip black. Damp oily film over firing end. Carbon layer over entire nose. Electrodes not worn.

ANALYSIS: (one or combination) Carburetor adjustment too rich. Weak ignition outputs. Air filter badly clogged. Wrong fuel mix (too much oil). Plug too cold for type of work. Hi-speed carburetor adjustment not set with engine under full cutting load.

NOTE

Prior to installing a new plug always check plug gap. Plug gap is no longer pre-set at factory.

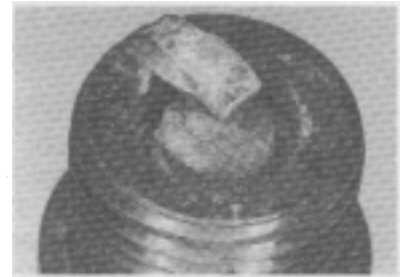
The correct gap for LAWN-BOY engines is:

D-400 SERIES025" D-600 SERIES035"

NOTE

DO NOT CLEAN PLUG IN SAND BLASTER.

Oxide Fouling



Electrodes not worn (may be covered with deposits). Insulator nose choked, splattered, or "peppered" with ash-like deposits. In extreme cases, deposits are thrown against and adhere to the side electrode. Flying deposits may also wedge between the electrodes momentarily or permanently shorting out the plug.

ANALYSIS: Excessive combustion chamber deposits. Clogged exhaust ports or muffler. Use of non-recommended oils. Wrong fuel mix.

Overheated



Electrodes burned. Insulator tip color, light grey or chalk white.

ANALYSIS: (one or combination) Carbon clogged exhaust ports or muffler. Dirty or clogged cylinder fins. Lean carburetor setting. Dull blade or heavy cutting causing engine overloading. Wrong spark plug heat range (too hot).

D-600 SERIES SOLID STATE IGNITION

HOW SOLID STATE IGNITION WORKS

Solid state is a broad term applied to any engine's ignition system which uses electronic devices such as diodes, transistors, silicon controlled rectifiers or other semi-conductors in place of one or more standard ignition components.

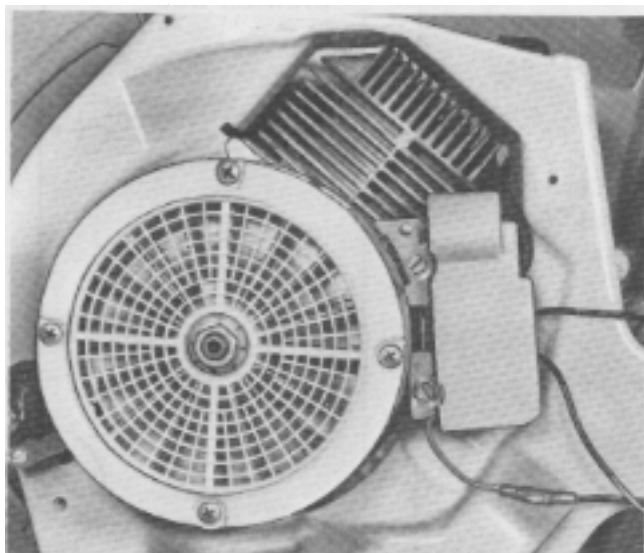
Electronic components are extremely small, have no moving parts, require no mechanical adjustments, are not subjected to wear, as with mechanical devices, deliver uniform performance throughout component life and under adverse operating conditions, and can be hermetically sealed, thus unaffected by dust, dirt, oil or moisture.

The C-D (Capacitor Discharge) system is breakerless, with an electronic component replacing the mechanical points and related accessories (breaker cam, spark advance assy., etc.). The flywheel contains permanent magnets, but there are no other moving mechanical parts.

Main difference between solid state and conventional ignition is the substitution of electronic components and circuitry for mechanical devices.

This is the solid state pack. It replaces conventional breaker points, condenser, coil, breaker cam and spark advance assembly.

The C-D (Capacitor Discharge) module can be tested very simply by using Lawn-Boy test spark



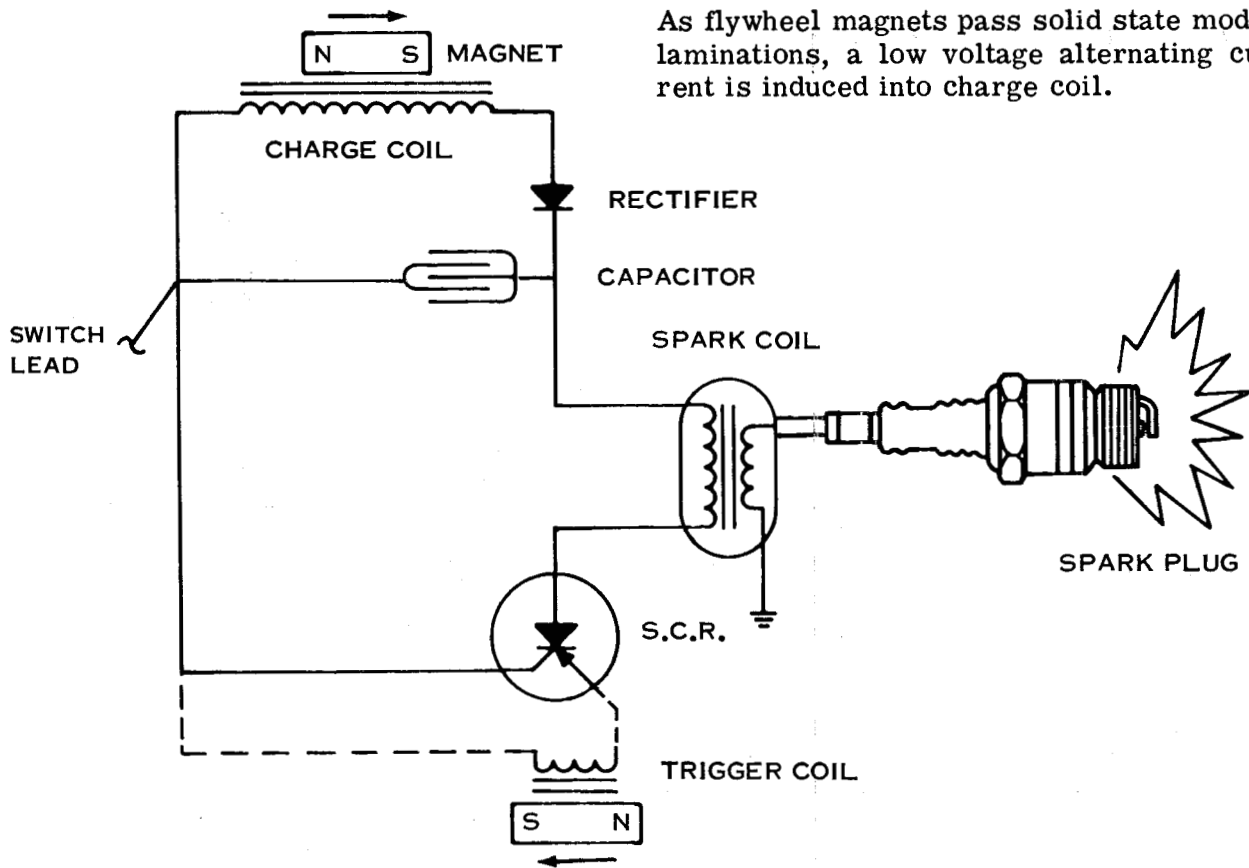
plug #426814, to see if it is producing a spark. If it is not, fault may be with switch, switch lead, flywheel, or air gap may be incorrect. Outside of these considerations there is no trouble shooting necessary. Again, only trouble shooting procedure for C-D (Capacitor Discharge) module is to check to see if it is producing a good spark. When making this check be sure the ON-OFF switch is in the "ON" position. If no spark is visible, disconnect the switch lead from the switch and again check for spark. No spark indicates a defective C-D (Capacitor Discharge) module, if a spark is present it indicates a defective switch.

NOTE

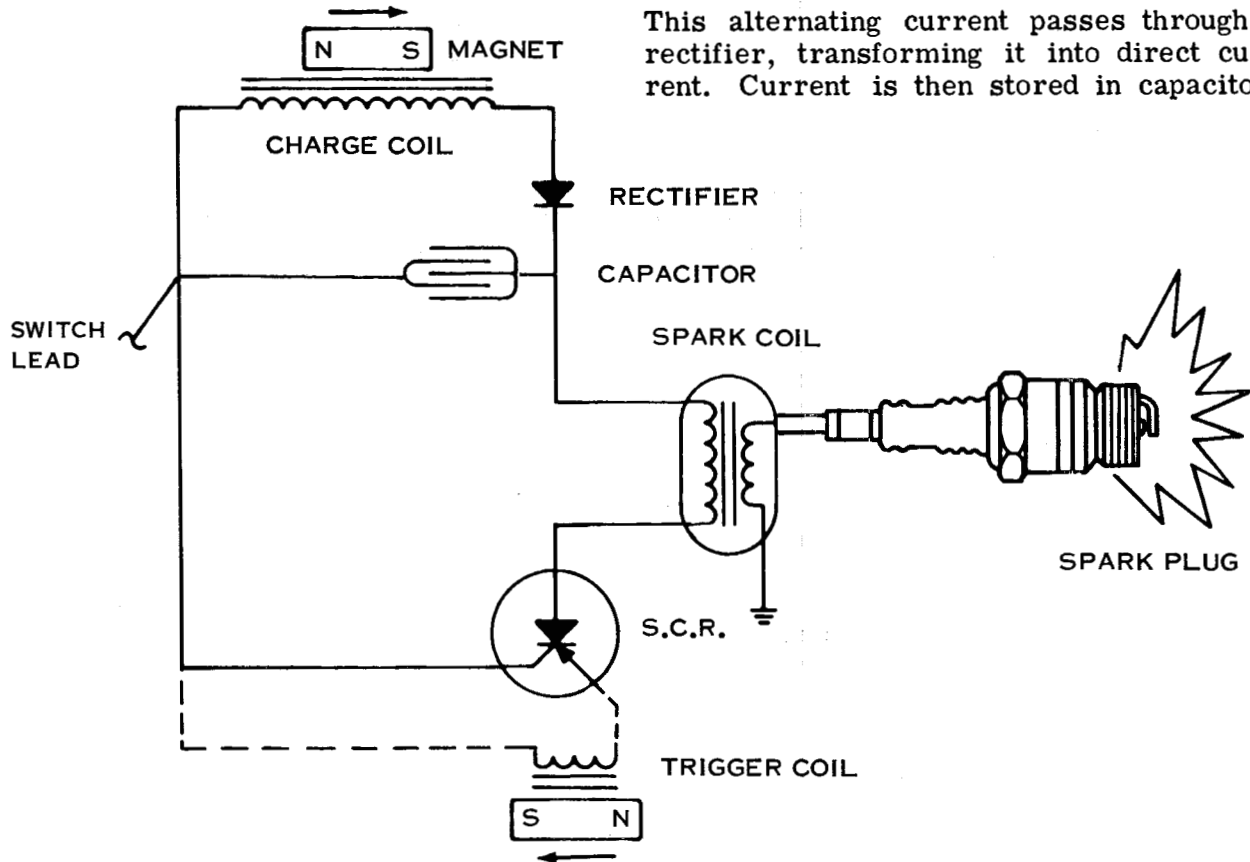
The ignition switch is most vulnerable part of ignition system. Solid state module is dust and moisture proof. Ignition switch can be affected by moisture. It is definitely not advisable to clean engine with a pressurized water hose.

D-600 SERIES (cont'd)

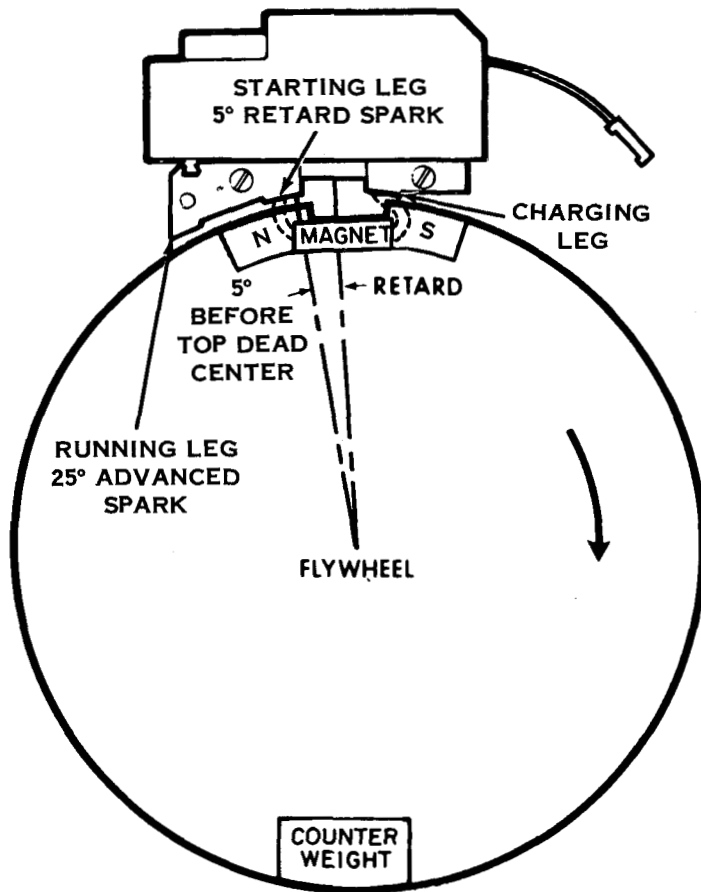
As flywheel magnets pass solid state module laminations, a low voltage alternating current is induced into charge coil.



This alternating current passes through a rectifier, transforming it into direct current. Current is then stored in capacitor.

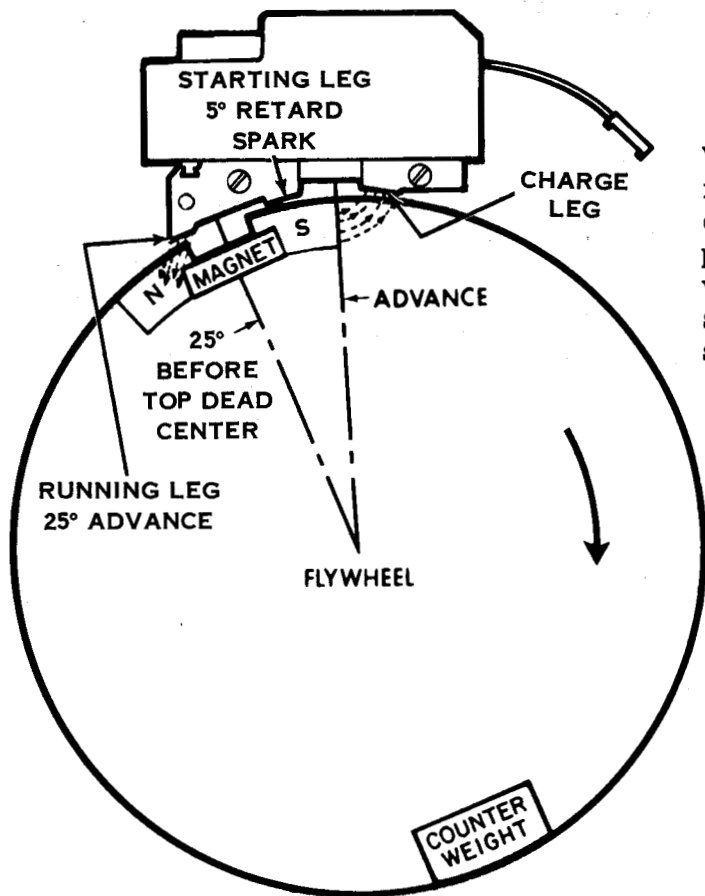


D-600 SERIES (cont'd)

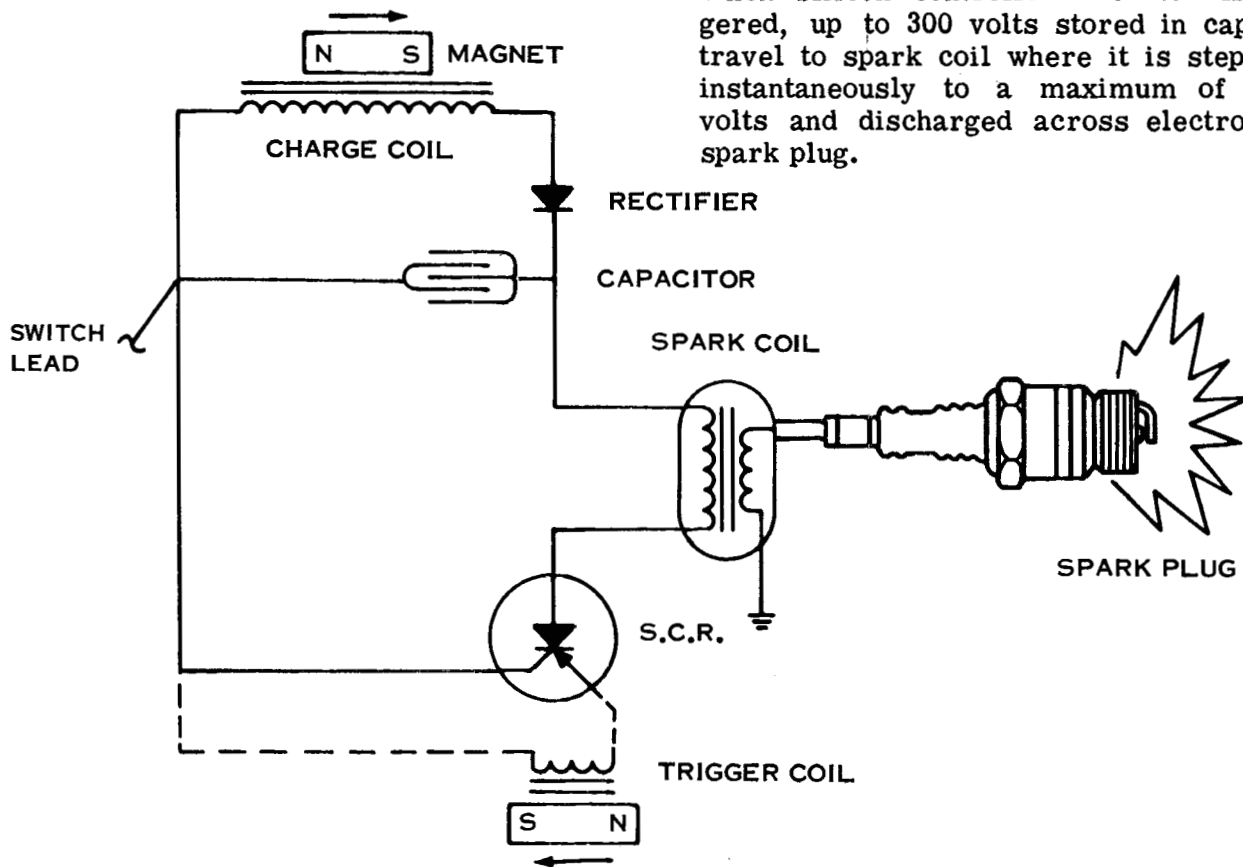


Flywheel magnets rotate approximately 350° until they pass laminations, inducing a small electrical charge into trigger coil. At starting speeds, this charge has proper magnitude to turn on silicon controlled rectifier (solid state switch) at retarded position for easy starting. This is illustrated as 5° or retard firing position.

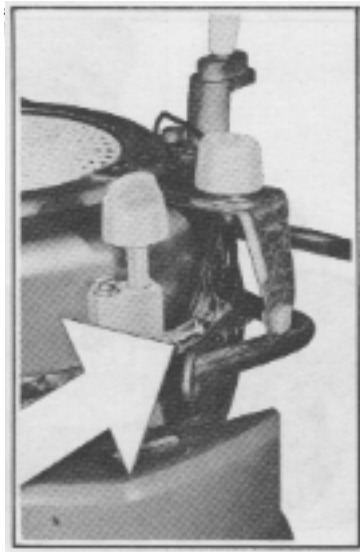
D-600 SERIES (cont'd)



When engine reaches approximately 800 revolutions per minute, advance firing commences. Flywheel magnets travel approximately 330°, at which time enough voltage is induced into trigger coil to fire silicon controlled rectifier (solid state switch). See advanced firing position - 25°.



When silicon controlled rectifier is triggered, up to 300 volts stored in capacitor travel to spark coil where it is stepped up instantaneously to a maximum of 30,000 volts and discharged across electrodes of spark plug.

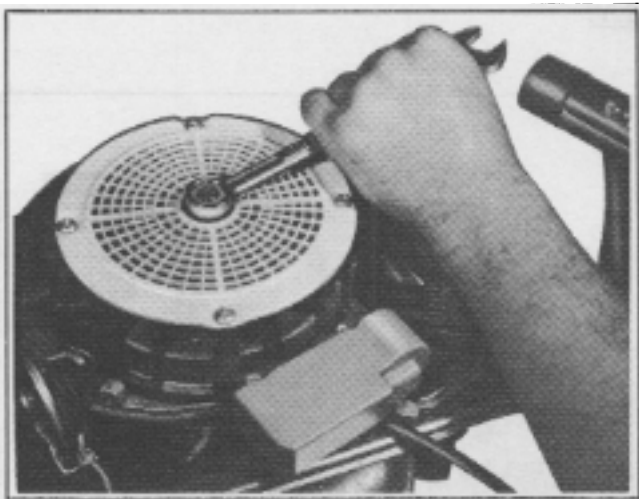
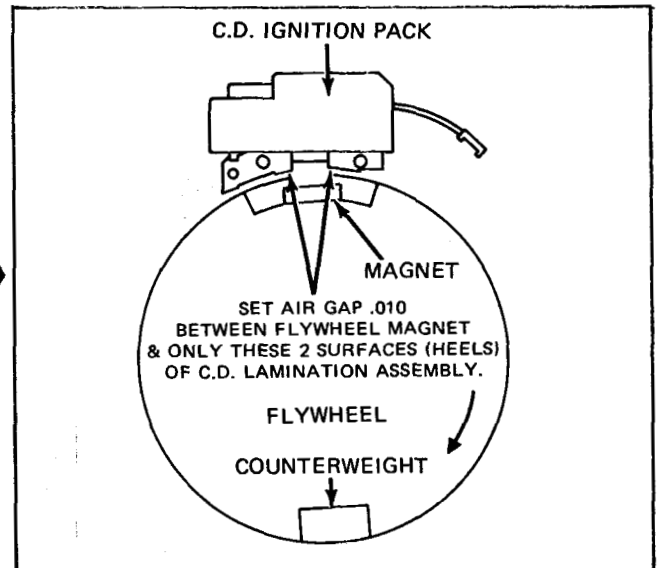


1. Flywheel and solid state module pack can be exposed very easily by removing shroud, fuel hoses and air baffle from armature plate. Remove kill switch lead from ignition switch.
2. Clearance is obtained by rotating the flywheel until flywheel magnets are adjacent to the solid state pack as illustrated. CORRECT AIR GAP IS .010.

NOTE

Use Lawn-Boy Air Gap Gauge Part No. 604659.

3. Insert non-metallic gauge between C-D pack laminations and magnets (magnets will pull the C-D pack in tightly). Two screws securing module are then tightened. The .010 gap is set between two inside legs of laminations and magnets. Outer ends of laminations will be further from the flywheel since curvature of laminations does not conform to that of flywheel.



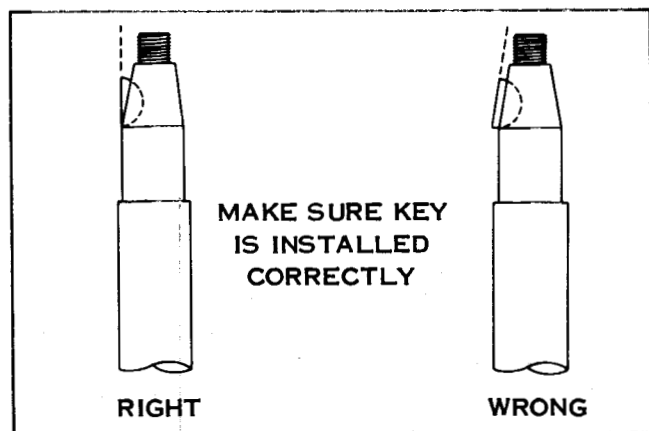
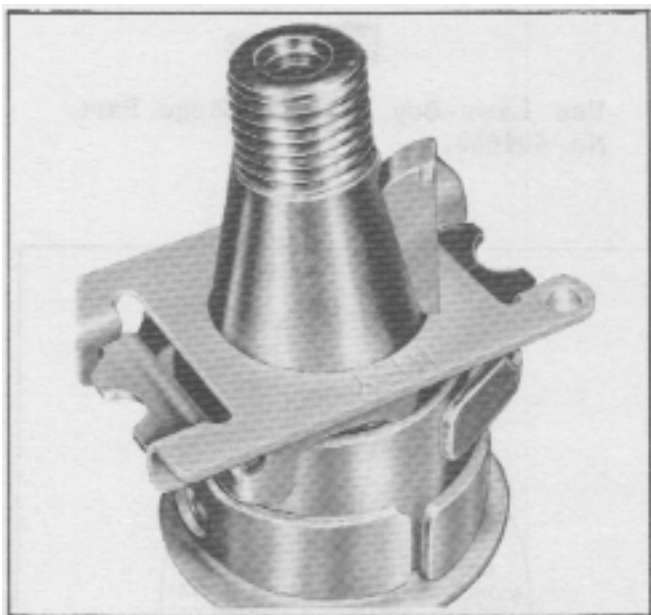
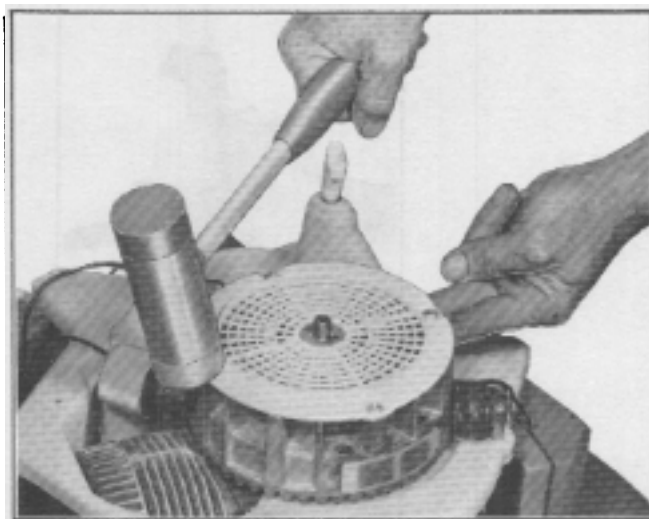
FLYWHEEL REPLACEMENT

1. Remove spark plug and install Piston Stop Part No. 677389. Remove shroud, fuel hoses and air baffle from armature plate.

SAFETY WARNING

If engine has been running allow 10 seconds, before removing spark plug lead wire. This will allow charge in C-D pack to lead off.

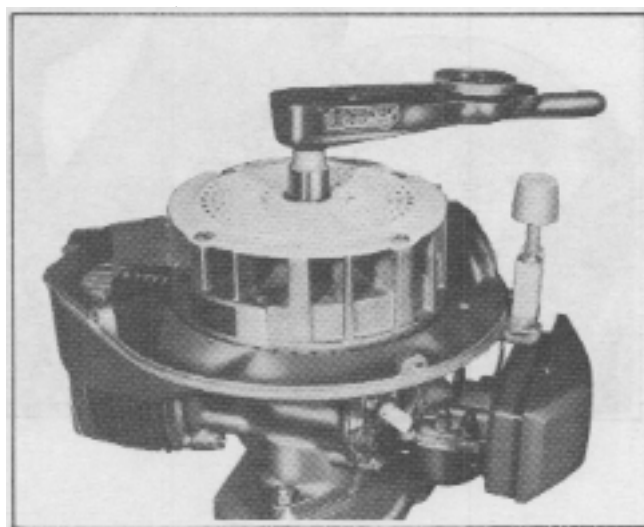
2. Using a box end wrench remove flywheel nut. If necessary, use a soft headed (leather or plastic) hammer to loosen nut.
3. Place fingers under flywheel screen and apply upward pressure. At the same time, strike opposite side of flywheel at screen retaining screw with a soft headed hammer to break flywheel loose as shown.



NOTE

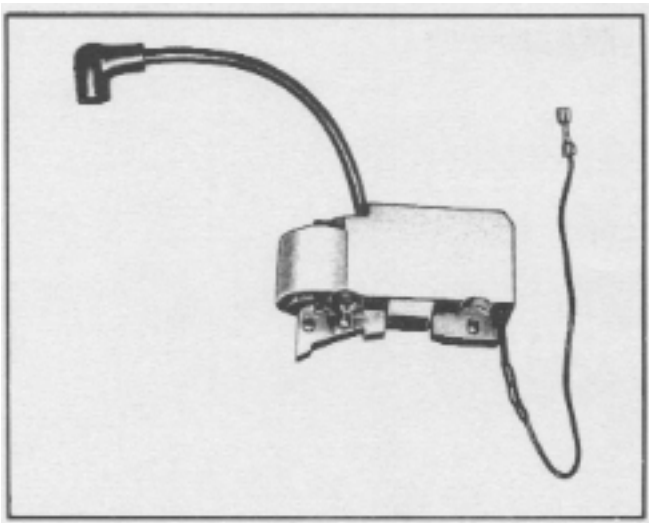
D-600 FLYWHEEL IS USED ON SOME BUT NOT ALL D-400 SERIES ENGINES. CHECK PARTS LISTS CAREFULLY.

4. Remove flywheel. After removing flywheel, note position of flywheel key. Key must be installed with the straight edge in a vertical (straight up and down) position. It should not be installed with straight edge parallel to the crankshaft taper. Remove key with a pair of side cutters or dikes.
5. Check flywheel for wear and strength of flywheel magnets. Check keyway for distortion and/or cracks.
6. Flywheel nut should always be torqued properly when flywheel is re-installed. Correct torque is 30 foot pounds. Flywheel hub and crankshaft taper must be absolutely clean - void of grease and oil.

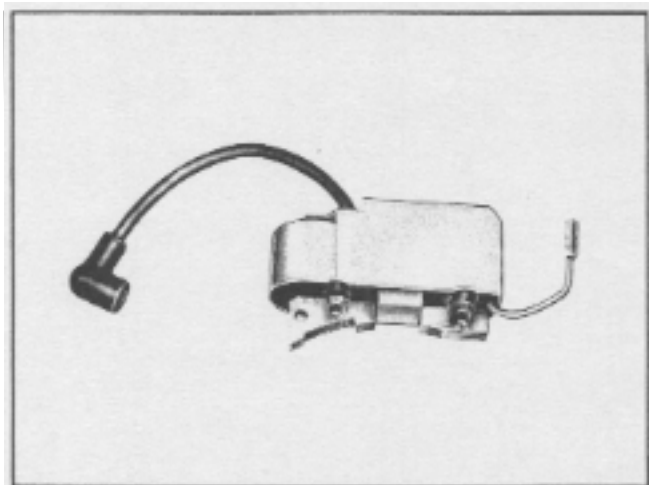


C-D PACKS

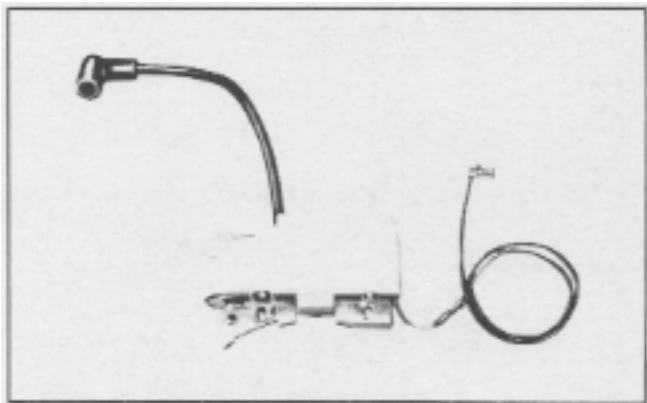
D-600 SERIES



PART NO. 681542 - MANUAL START

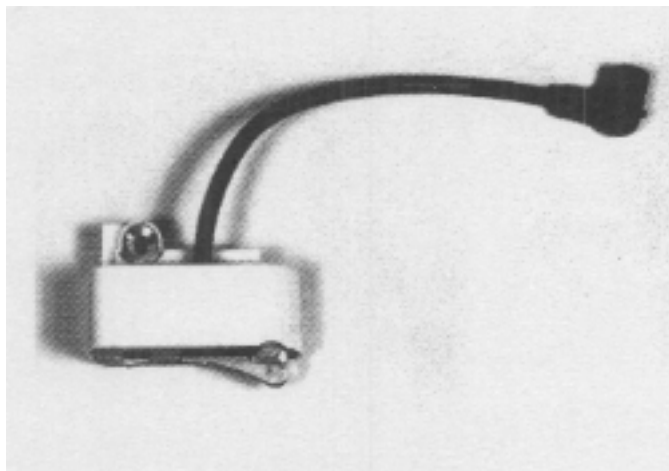


PART NO. 681544 - ELECTRIC START - SELF CHARGING



PART NO. 681546 - ELECTRIC START

F-SERIES

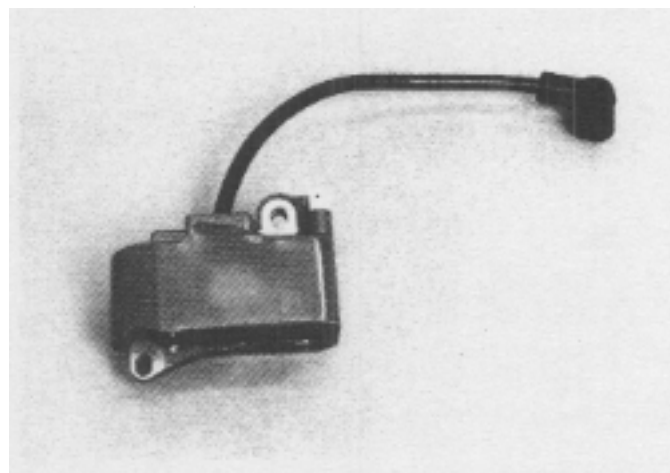


F SERIES C-D PACK

CLOSED TO RUN TYPE SYSTEM USED ON 1978 THRU 1982 MODELS.

NOTE

These "F" Series C-D modules are not interchangeable with D-600 Series C-D modules.



PART NO. 683215 - GRAY

USED ON 1983 AND LATER COMPLIANT LAWN MOWERS.

OPEN TO RUN TYPE SYSTEM USED ON ALL COMPLIANT MOWERS.

SPARK PLUG -- D-400 AND D-600 SERIES

There are many different types of spark plugs intended for various applications and therefore, it is extremely important that the correct plug be used in an engine and torqued correctly. Correct torque is 12 to 15 ft lbs.

LAWN-BOY recommends the use of the Champion CJ-14 spark plug because of its ability to supply, continuously, a hot spark for uninterrupted combustion.

Plugs should be cleaned and gapped every 25 hours of operation.

SPARK PLUG ANALYSIS

Normal



Few combustion deposits present on plug. Electrodes not burned or eroded. Insulator tip color, brown to light tan. Insulator dry - providing engine was not excessively choked prior to plug removal.

ANALYSIS: Ignition and carburetor in good condition. Plug is correct heat range - clean and replace, or install new Champions of same heat range.

Wet Fouling



Insulator tip black. Damp oily film over firing end. Carbon layer over entire nose. Electrodes not worn.

ANALYSIS: (one or combination) Carburetor adjustment too rich. Weak ignition outputs. Air filter badly clogged. Wrong fuel mix (too much oil). Plug too cold for type of work. Hi-speed carburetor adjustment not set with engine under full cutting load.

NOTE

Prior to installing a new plug always check plug gap. Plug gap is no longer pre-set at factory.

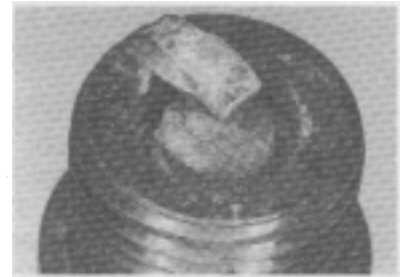
The correct gap for LAWN-BOY engines is:

D-400 SERIES025" D-600 SERIES035"

NOTE

DO NOT CLEAN PLUG IN SAND BLASTER.

Oxide Fouling



Electrodes not worn (may be covered with deposits). Insulator nose choked, splattered, or "peppered" with ash-like deposits. In extreme cases, deposits are thrown against and adhere to the side electrode. Flying deposits may also wedge between the electrodes momentarily or permanently shorting out the plug.

ANALYSIS: Excessive combustion chamber deposits. Clogged exhaust ports or muffler. Use of non-recommended oils. Wrong fuel mix.

Overheated



Electrodes burned. Insulator tip color, light grey or chalk white.

ANALYSIS: (one or combination) Carbon clogged exhaust ports or muffler. Dirty or clogged cylinder fins. Lean carburetor setting. Dull blade or heavy cutting causing engine overloading. Wrong spark plug heat range (too hot).

"F" SERIES SOLID STATE IGNITION

 NOTE

Recommended spark plug is Champion CJ-14. Spark plug gap is .035. Tighten to 12-15 ft. lbs.

HOW SOLID STATE IGNITION WORKS

Solid state is a broad term applied to any engine's ignition system which uses electronic devices such as diodes, transistors, silicon controlled rectifiers or other semi-conductors in place of one or more standard ignition components.

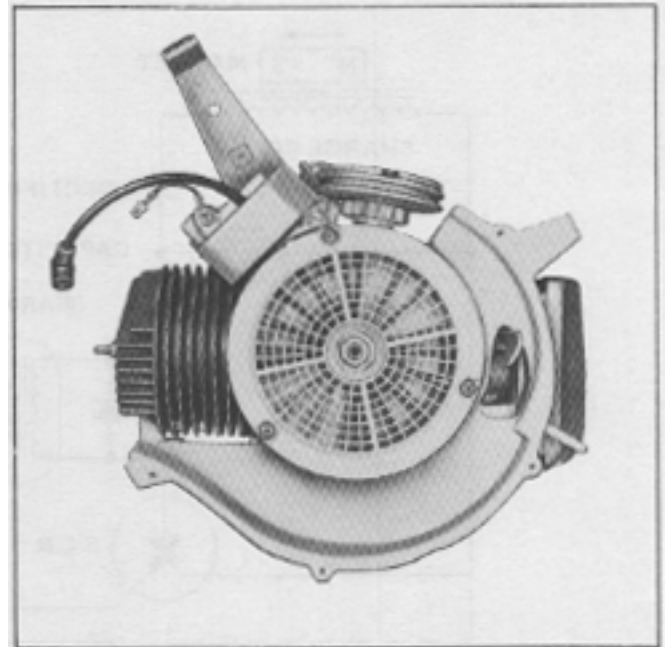
Electronic components are extremely small, have no moving parts, require no mechanical adjustments, are not subjected to wear, as with mechanical devices, deliver uniform performance throughout component life and under adverse operating conditions, and can be hermetically sealed, thus unaffected by dust, dirt, oil or moisture.

The C-D (Capacitor Discharge) system is breakerless, with an electronic component replacing the mechanical points and related accessories (breaker cam, spark advance assy., etc.). The flywheel contains permanent magnets, but there are no other moving mechanical parts.

Main difference between solid state and conventional ignition is the substitution of electronic components and circuitry for mechanical devices.

This is the solid state pack. It replaces conventional breaker points, condenser, coil, breaker cam and spark advance assembly.

The C-D (Capacitor Discharge) module can be tested very simply by using Lawn-Boy test spark plug #426814, to see if it is producing a spark. If it



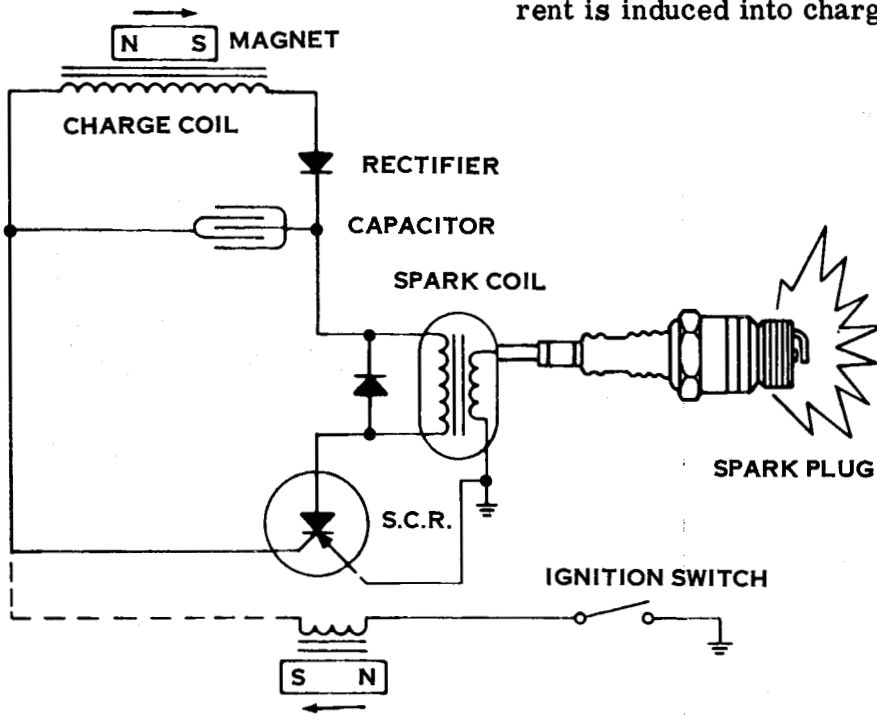
is not, fault may be with switch, switch lead, flywheel, or air gap may be incorrect. Outside of these considerations there is no trouble shooting necessary. Again, only trouble shooting procedure for C-D (Capacitor Discharge) module is to check to see if it is producing a good spark. When making this check be sure the ON-OFF switch is in the "ON" position. Pull the starter rope, if no spark is visible, disconnect the switch lead from the C.D. pack, connect jumper wire from C.D. pack terminal to ground, and again check for spark. No spark indicates a defective C-D (Capacitor Discharge) module, if a spark is present it indicates a defective switch.

 NOTE

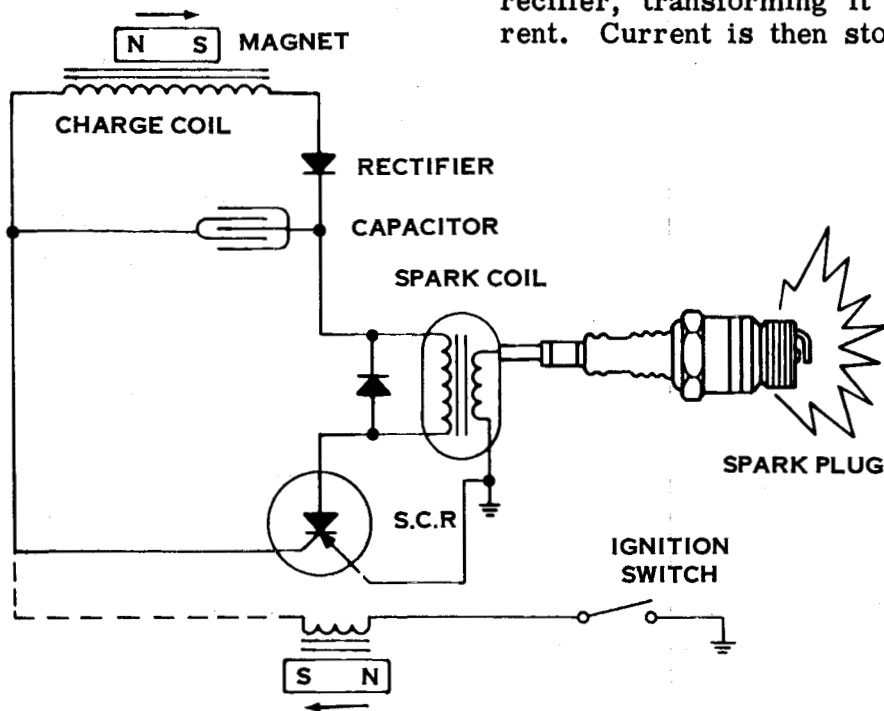
The ignition switch is most vulnerable part of ignition system. Solid state module is dust and moisture proof. Ignition switch can be affected by moisture. It is definitely not advisable to clean engine with a pressurized water hose.

"F" SERIES (Cont.)

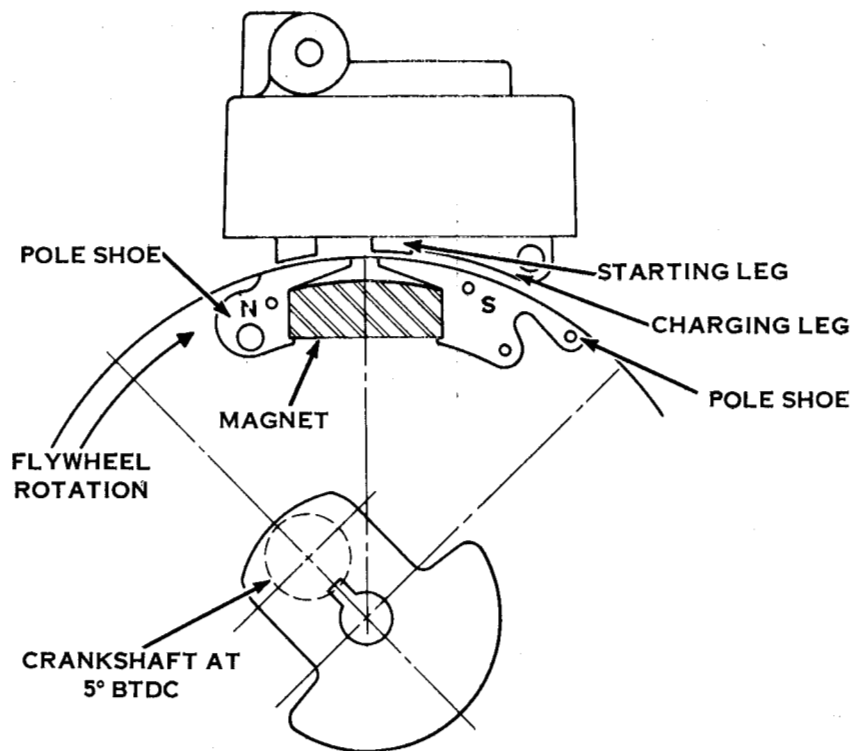
As flywheel magnets pass solid state module laminations, a low voltage alternating current is induced into charge coil.



This alternating current passes through a recifier, transforming it into direct current. Current is then stored in capacitor.



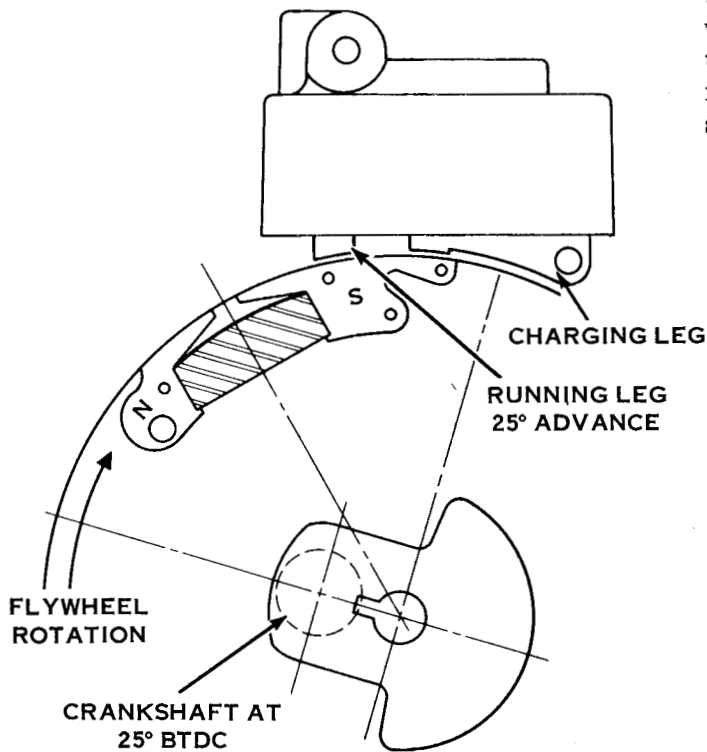
"F" SERIES (Cont.)



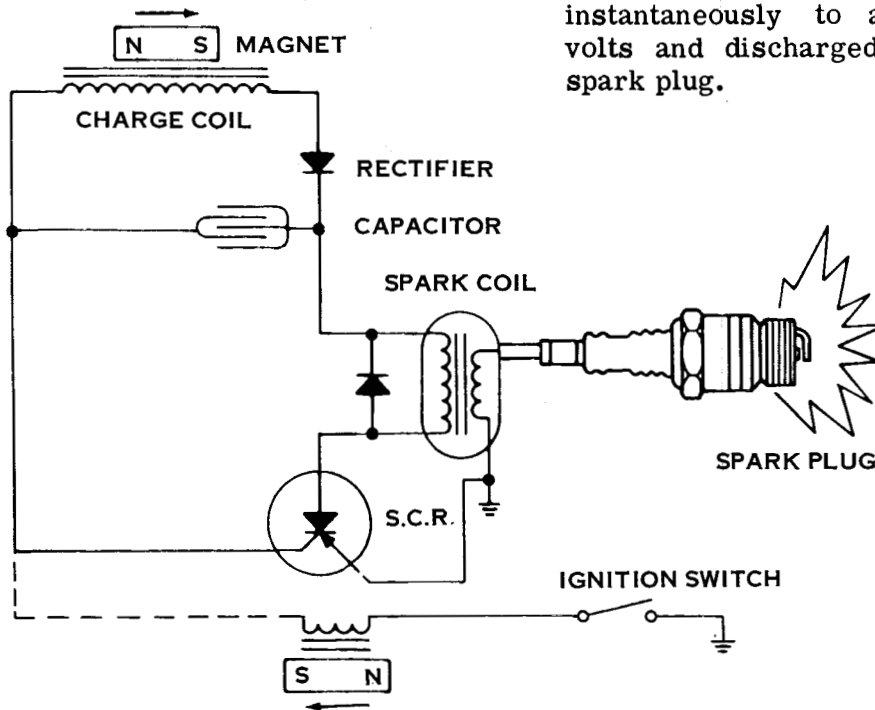
Flywheel magnets rotate approximately 355° until they pass laminations, inducing a small electrical charge into trigger coil. At starting speeds, this charge has proper magnitude to turn on the silicon controlled rectifier (solid state switch) at retarded position for easy starting. This is illustrated as 5° - 6° or retard firing position.

"F" SERIES (Cont.)

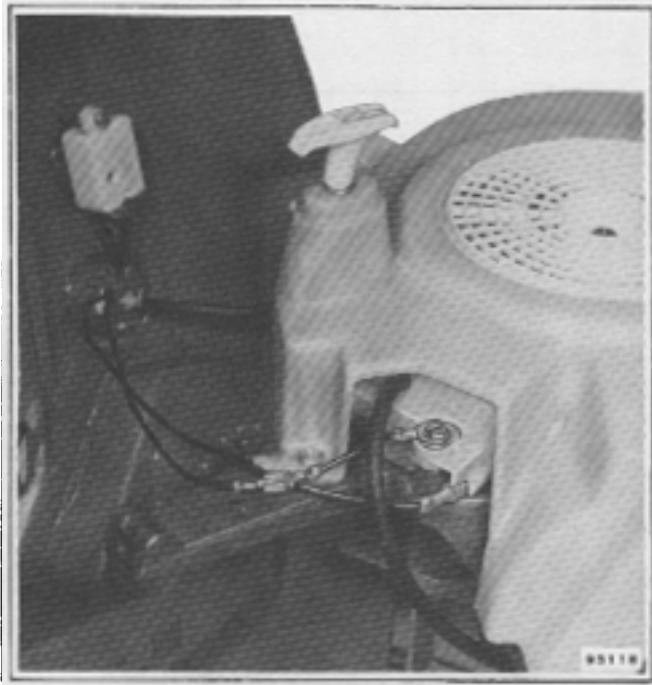
When engine reaches approximately 800 revolutions per minute, advance firing commences. Flywheel magnets travel approximately 335°, at which time enough voltage is induced to trigger coil to fire the silicon controlled rectifier (solid state switch). See advanced firing position - 24°-27°.



When the silicon controlled rectifier is triggered, up to 300 volts stored in capacitor travel to spark coil where it is stepped up instantaneously to a maximum of 30,000 volts and discharged across electrodes of spark plug.



"F" SERIES (Cont.)

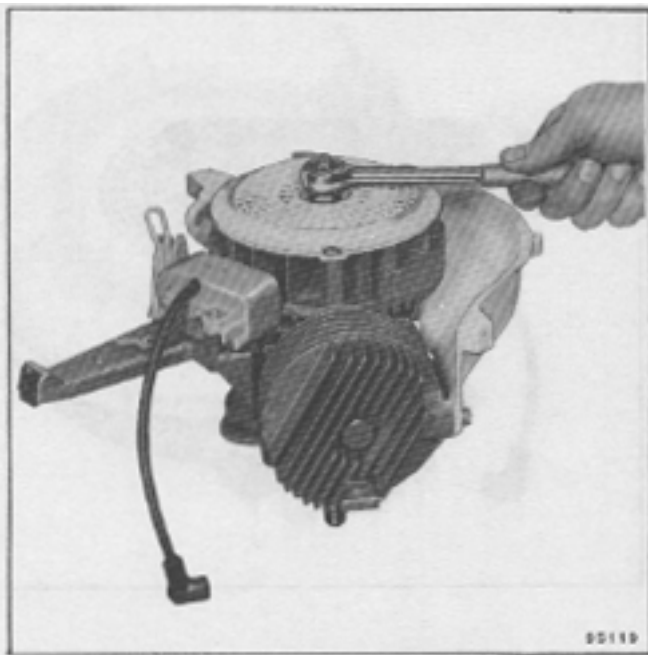
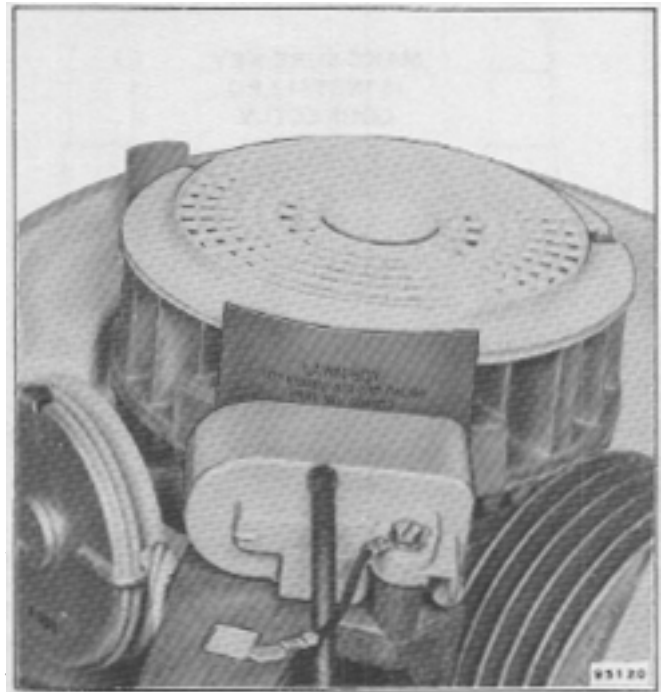


1. Flywheel and solid state module pack can be exposed very easily by removing shroud, fuel hoses and air baffle from shroud base. Remove kill switch lead from ignition switch.
2. Clearance is obtained by rotating the flywheel until flywheel magnets are adjacent to the solid state pack as illustrated. CORRECT AIR GAP IS .010.



Use Lawn-Boy Air Gap Gauge Part No. 604659.

3. Insert non-metallic gauge between C-D pack laminations and magnets (magnets will pull the C-D pack in tightly). Two screws securing module are then tightened. The .010 gap is set between two square legs of laminations and magnets. The charging leg of the lamination will be further from the flywheel since curvature of laminations does not conform to that of flywheel.

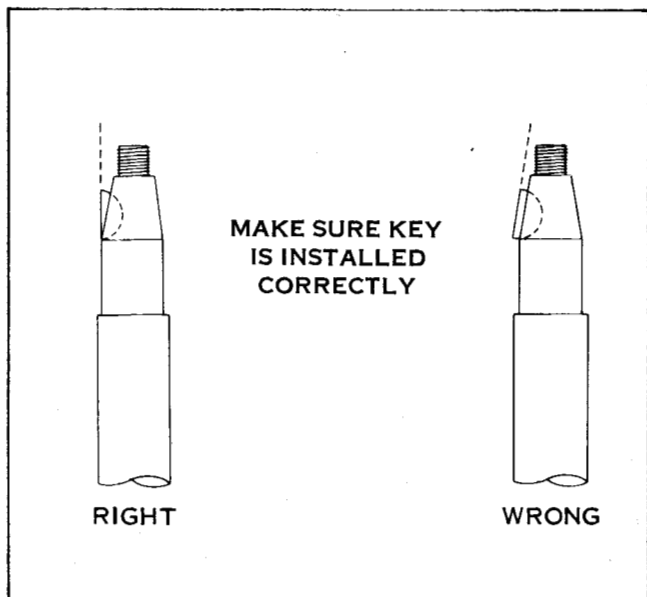
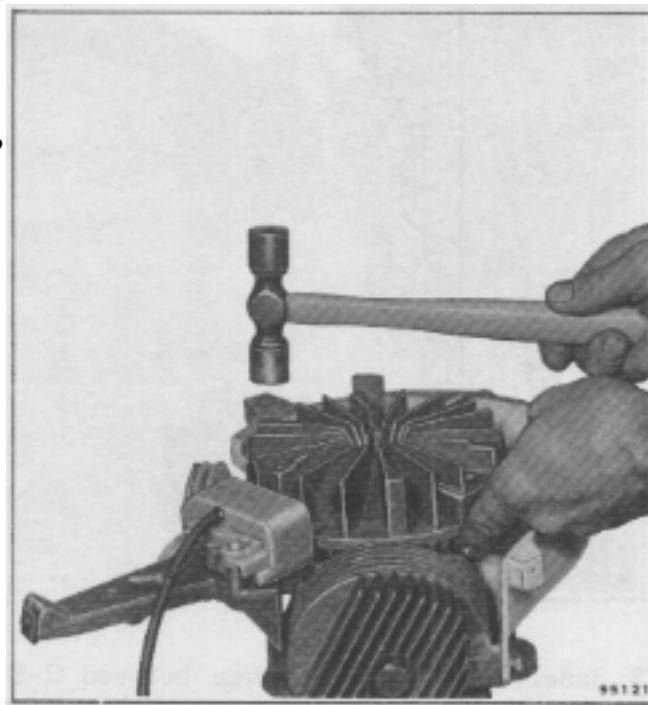


FLYWHEEL REPLACEMENT

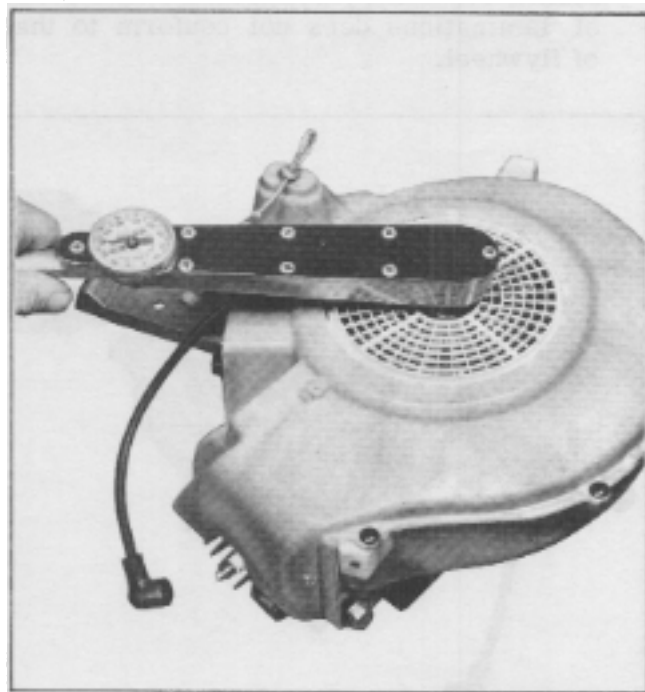
1. Remove spark plug and install Piston Stop Part No. 677389. Remove shroud, fuel hoses and air baffle from shroud base.
2. Using a socket wrench, remove flywheel nut. Remove flywheel screen.

"F" SERIES (Cont.)

3. Place fingers under flywheel screen and apply upward pressure. At the same time, strike wide fin of flywheel with a soft headed hammer to break flywheel loose as shown.



4. Remove flywheel. After removing flywheel, note position of flywheel key. Key must be installed with the straight edge in a vertical (straight up and down) position. It should not be installed with straight edge parallel to the crankshaft taper. Remove key with a pair of side cutters or dikes.
5. Check flywheel for wear and strength of flywheel magnets. Check keyway for distortion and/or cracks.
6. Flywheel nut should always be torqued properly when flywheel is reinstalled. Correct torque is 375 - 400 inch pounds (31 - 33 ft. lbs.). Flywheel hub and crankshaft taper must be absolutely clean - void of grease and oil.



"F" SERIES (Cont.)

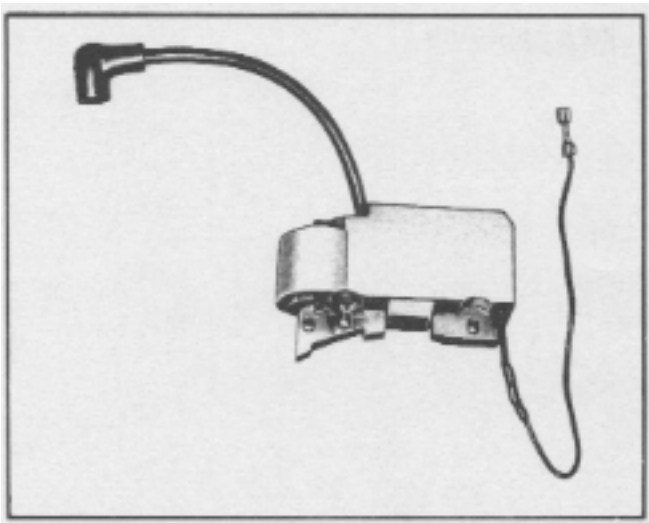
TROUBLE SHOOTING THE "F" ENGINE IGNITION SYSTEM

Mis-firing, no fire, engine dying, or surging may sometimes be traced to the ignition system. If normal trouble shooting procedures fail to eliminate these symptoms, then the ignition system should be checked using the following guidelines; it is possible that a defective switch or improper C.D. module ground could also cause these problems.

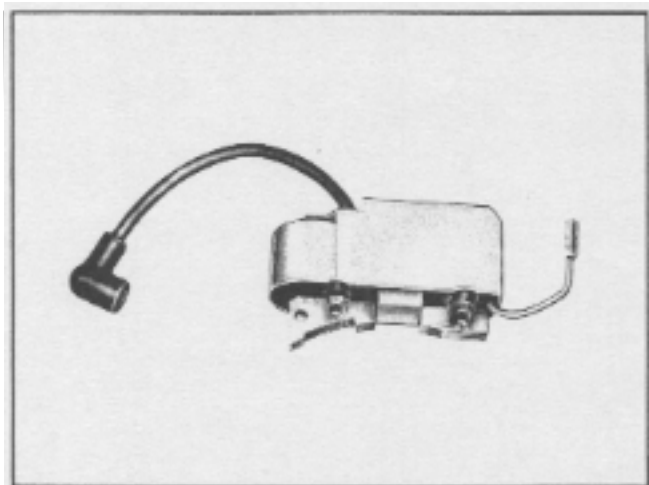
1. Attach the Test Plug Part No. 426814 to the high tension lead and ground plug to a cylinder fin. The "F" engine C.D. pack must be grounded to run.
2. Attach a 6 inch jumper wire (18 ga. or larger) to the lower terminal of the C.D. module. (This is the terminal molded into the plastic casing of the C.D. pack). Ground the other end to the cylinder fin.
3. Do not loop existing C.D. pack ground wire to this terminal.
3. If good spark is evident when cranked, C.D. module is operating properly. Remove jumper from cylinder fin and ground it to the end of the C.D. pack ground lead pig tail at the outer end. If good spark is still evident when cranked, then the switch is possibly defective and should be replaced.
4. If no spark is evident when attaching test lead to C.D. pack ground wire, or if engine fires intermittently, remove C.D. pack. Look for a bad connection or a broken ground lead. Clean both sides of the C.D. pack mounting bosses with sandpaper or a scraper.
5. Also check for secure attachment of the high tension lead. This lead should be secured with OMC Adhesive "M" Part No. 318535 or G.E. Silicon Sealant.

C-D PACKS

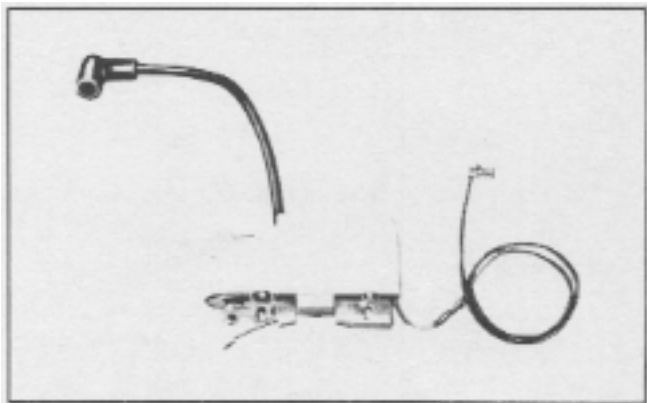
D-600 SERIES



PART NO. 681542 - MANUAL START

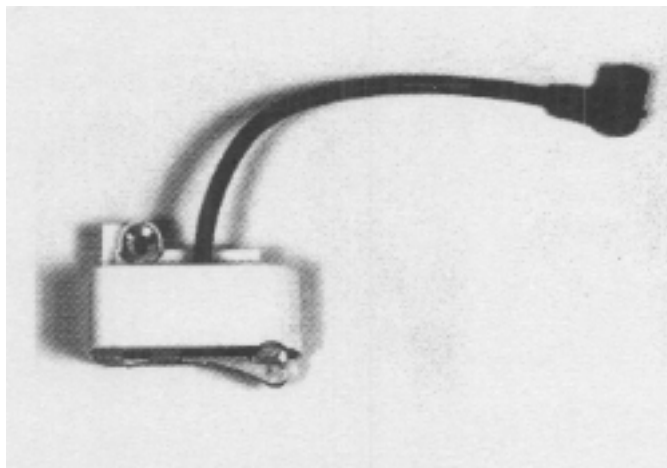


**PART NO. 681544 - ELECTRIC START -
SELF CHARGING**



PART NO. 681546 - ELECTRIC START

F-SERIES

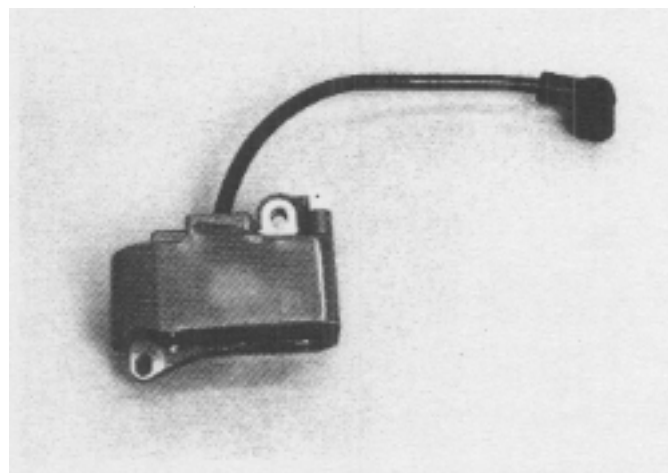


F SERIES C-D PACK

**CLOSED TO RUN TYPE SYSTEM USED ON 1978
THRU 1982 MODELS.**

NOTE

These "F" Series C-D modules are not interchangeable with D-600 Series C-D modules.



PART NO. 683215 - GRAY

**USED ON 1983 AND LATER COMPLIANT LAWN
MOWERS.**

**OPEN TO RUN TYPE SYSTEM USED ON ALL
COMPLIANT MOWERS.**

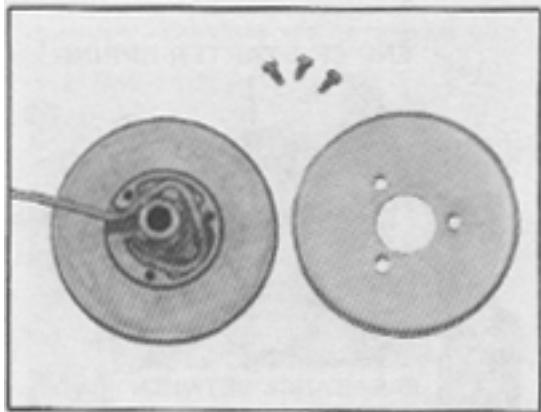
⚠ SAFETY WARNING

WEAR SAFETY GLASSES WHEN REPAIRING STARTER.

REMOVING STARTER ASSEMBLY

To remove the complete starter assembly on D-400 series engines proceed as follows:

1. Remove engine shroud, primer and fuel hoses.
2. Remove starter rope handle and let rope gradually recoil through the hole in the top of the armature plate.
3. Remove starter mounting bolt on the underneath side of armature plate and take out complete starter assembly. Hold the assembly together, so that the recoil spring isn't accidentally released.

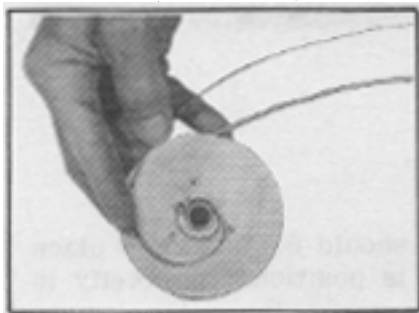


REPLACING STARTER CORD

To replace starter cord remove the complete starter assembly. Remove retainer ring on the end of the shaft. Remove the nylon starter pinion gear. Note that the pinion gear mounts on the worm gear with the grooved side toward the pulley. Remove three screws holding the pulley plate to pulley. Fit new starter rope into the grooves on pulley as illustrated. Replace pulley plate and tighten three screws down securely. Hold the starter assembly so that the worm gear points toward you, and wind rope clockwise on pulley.

NOTE

NEVER LUBRICATE WORM GEAR OR PINION - KEEP CLEAN AND DRY.

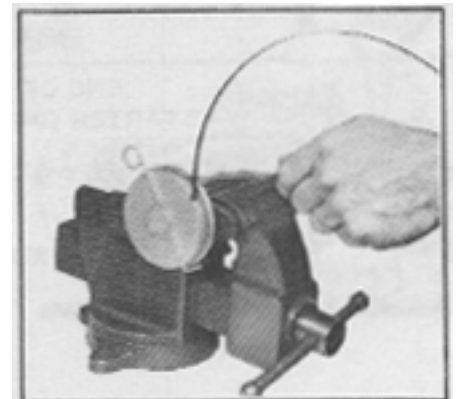


REPLACING STARTER SPRING

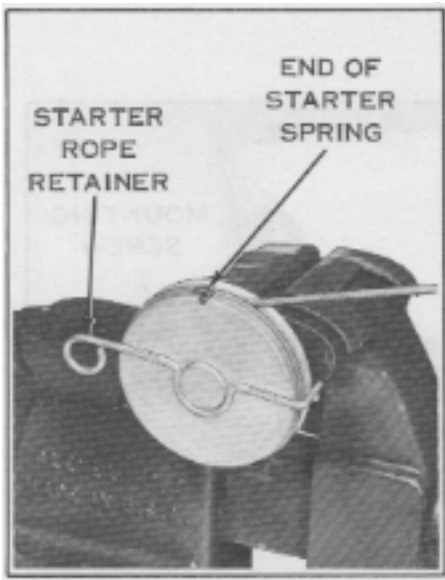
To install starter spring in D-400 series starter position curled end of the spring on the starter pulley as shown. Place cover over the pulley so that the spring is guided through the slot in the cover.

To rewind the spring proceed as follows:

1. Clamp the starter shaft in a vise using wooden blocks to prevent damage to the shaft.
2. Wind the starter rope on the pulley and pull the rope to turn pulley. The turning pulley will draw the spring into the cover.
3. Rewind the rope and repeat operation until end of spring is hooked into the slot.



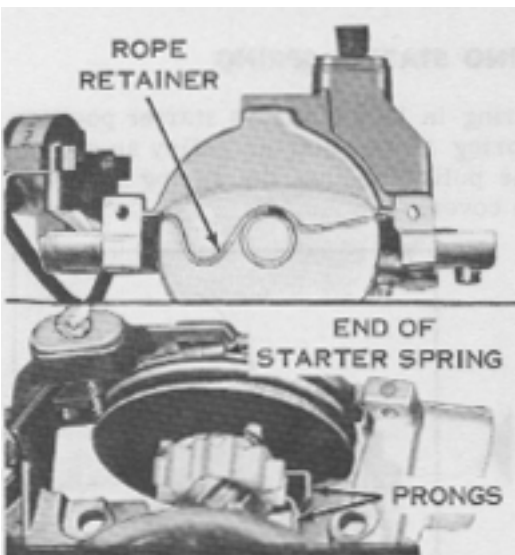
D-400 SERIES STARTER



REINSTALLING STARTER ASSEMBLY

To reinstall complete starter assembly, place starter rope retainer on outside of starter cup and insert starter into the armature plate with the protruding end of the starter spring pointed to the top.

Check to make sure the end of the starter spring is positioned in the cut-out at the top of the armature plate. Also one of the prongs on the starter pinion spring should be above the armature plate ledge and the other prong below it.

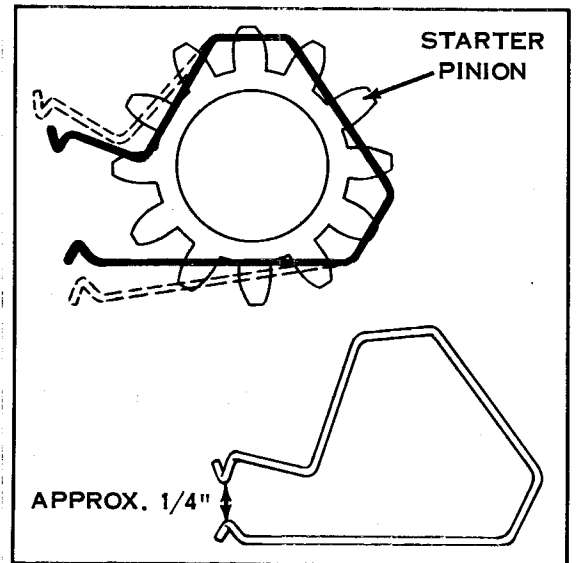


The starter rope retainer should be locked in place as shown when the starter is positioned correctly in the armature plate.

With the starter assembly in position install mounting bolt and tighten securely. Completely wind rope around starter pulley and place 1/2 - 1-1/2 extra turns on the rope for proper tension. Thread rope through hole in armature plate and reinstall starter handle.

D-400 SERIES STARTER

When installing a new starter pinion spring it should be stretched only far enough to allow it to snap into the groove of the nylon starter pinion. A distorted spring will not grip the pinion properly and the pinion will not engage the teeth on the flywheel when the starter rope is pulled. The prongs of the starter pinion should be approximately 1/4" or less apart when the spring is off the starter pinion.

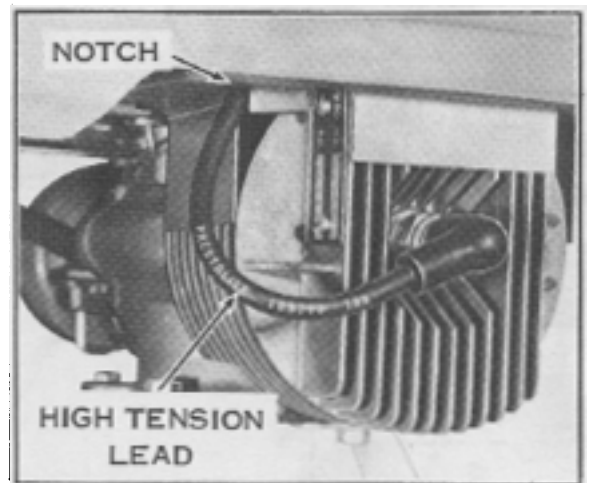


ROPE BREAKAGE

Rope breakage "or cutting" can normally be attributed to rough surfaces inside armature plate hole. Use old piece of rope with grinding compound or other abrasive to smooth sharp surfaces. A brass ferrule is installed on later models, which eliminates any flash, machining, or porosity problems.

SHROUD INSTALLATION

The high tension lead comes from the coil - between the cylinder and shroud - to the spark plug. When installing the shroud on engine, position the high tension lead into the notch in the shroud shield. If the lead wire is not positioned in this notch it can be damaged by jamming it between the shroud shield and cylinder fin.



D-600 SERIES STARTER

SAFETY WARNING

WEAR SAFETY GLASSES WHEN REPAIRING STARTER.

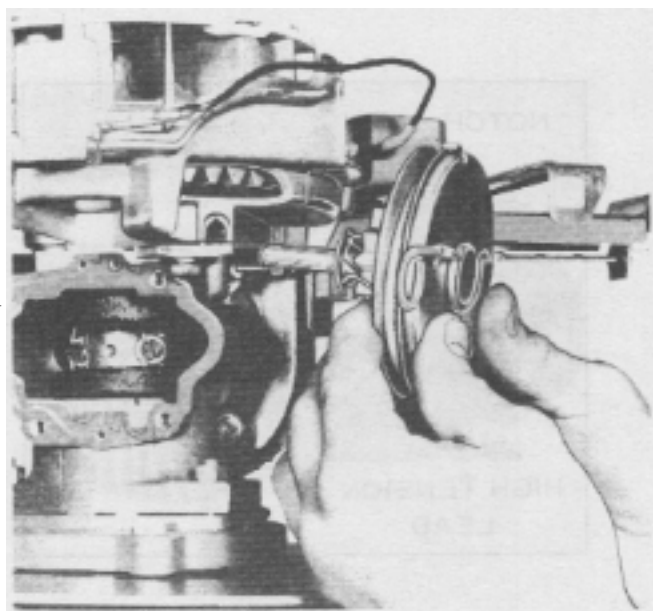
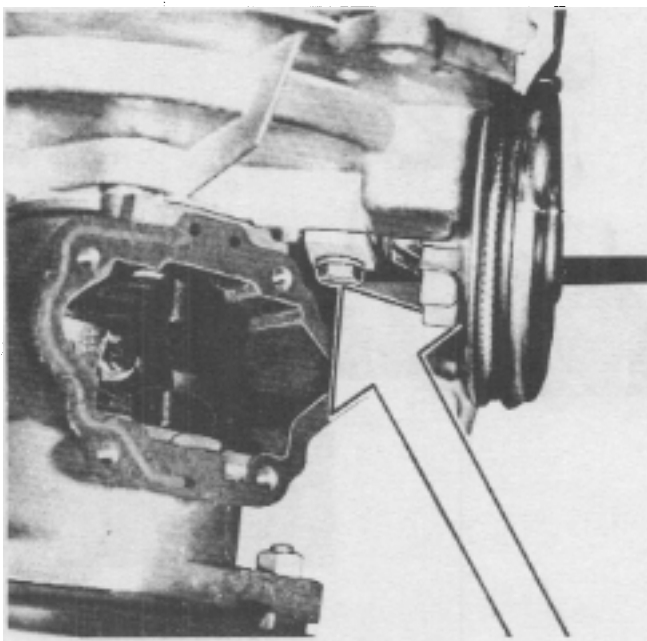
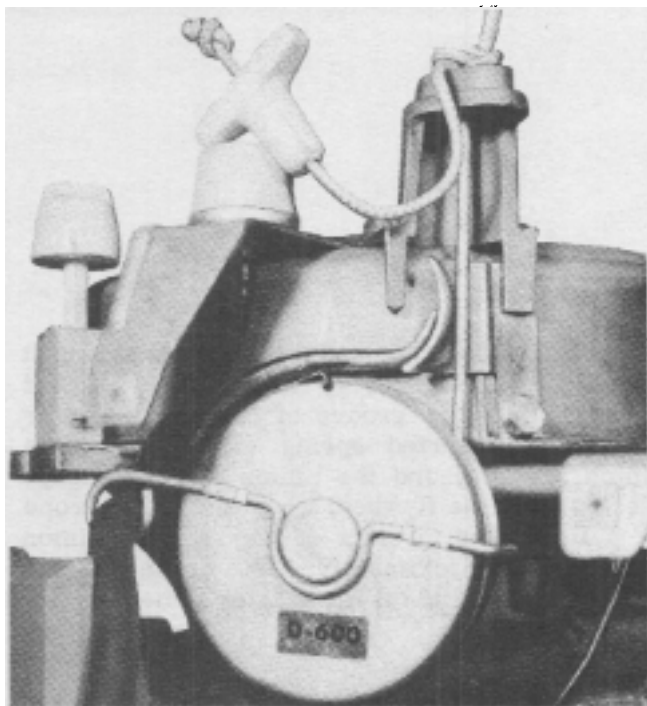
REMOVING STARTER ASSEMBLY

To disassemble starter, pull starter rope out about two feet and tie a slip knot next to rope guide hole. Untie knot securing starter handle. This may require use of two pair of pliers. If you have to cut rope, fuse end to eliminate fraying. Remove starter handle. Pull slip knot out of rope and allow rope to rewind on pulley.

To loosen 7/16 inch screw securing starter assembly to armature plate, carburetor and reed plate assembly must be removed from crankcase. This is necessary because of closeness between this screw and reed plate.

NOTE

Keep dirt out of open crankcase.



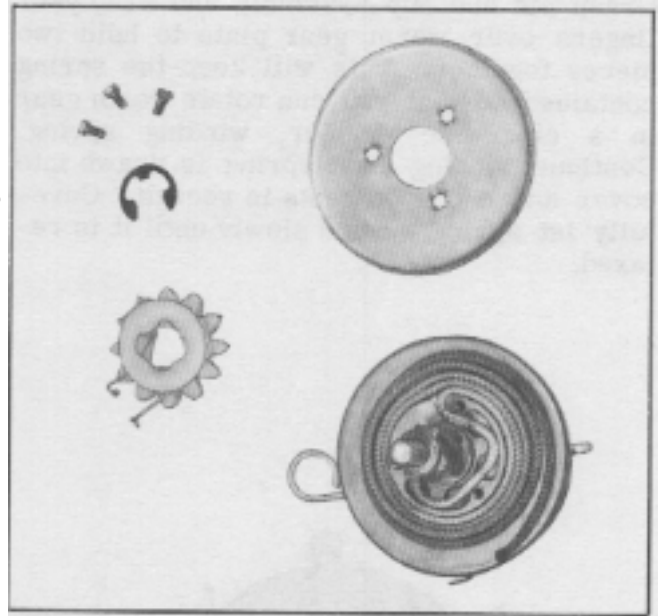
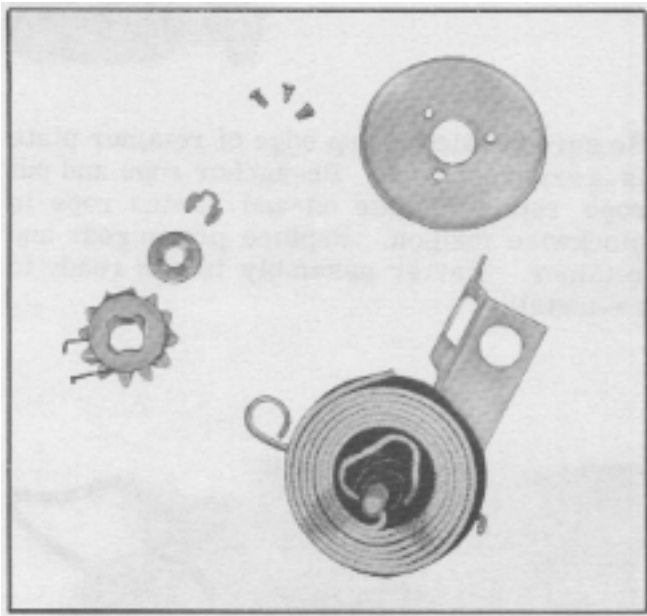
Remove starter assembly from armature plate by grasping it between thumb and fingers of both hands. Hold starter assembly firmly together to keep spring loaded pin and cup assembly from separating from starter pulley. Starter spring is loaded and; potentially harmful if released. Set starter assembly on bench, flat side down.

With starter assembly on bench, flat side down, remove retainer ring with a screwdriver. Remove pinion gear from worm gear.

 **NOTE**

Never lubricate worm gear - keep it clean and dry.

Remove three self tapping screws from starter pulley and remove retainer plate.

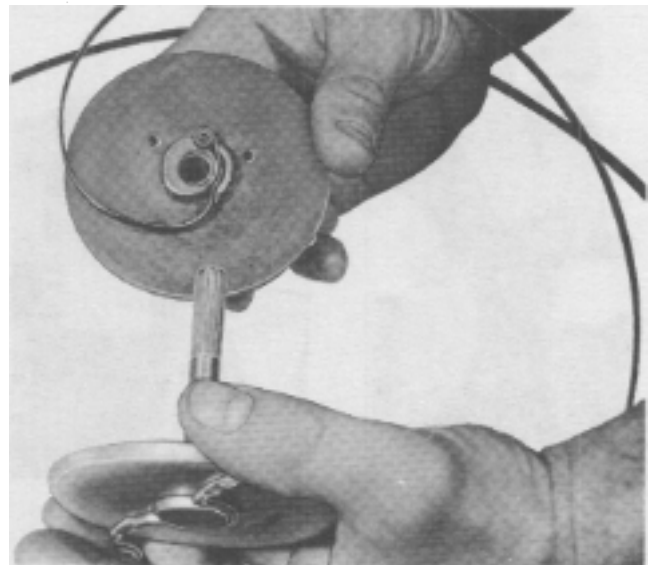
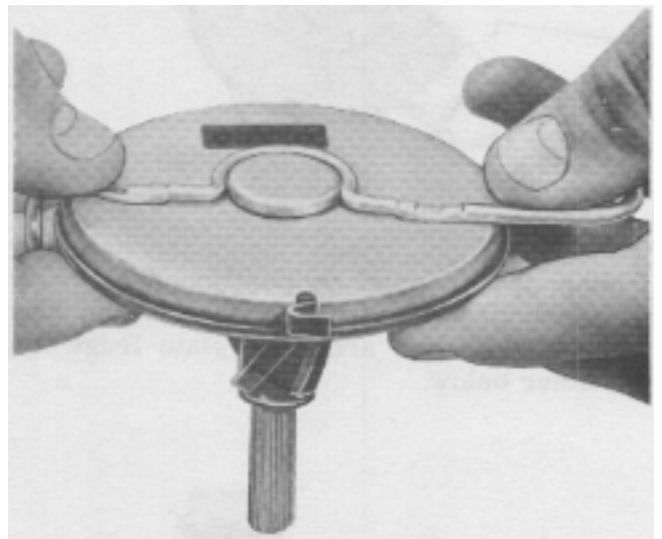


 **SAFETY WARNING**

There is still tension on starter spring. To remove tension, hold two halves together, pointing shaft downward. Now drop assembly on floor (shaft pointing downward). Halves will separate and release spring.

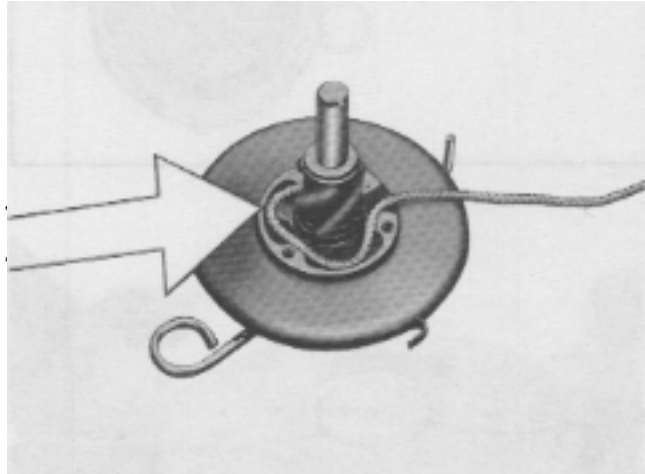
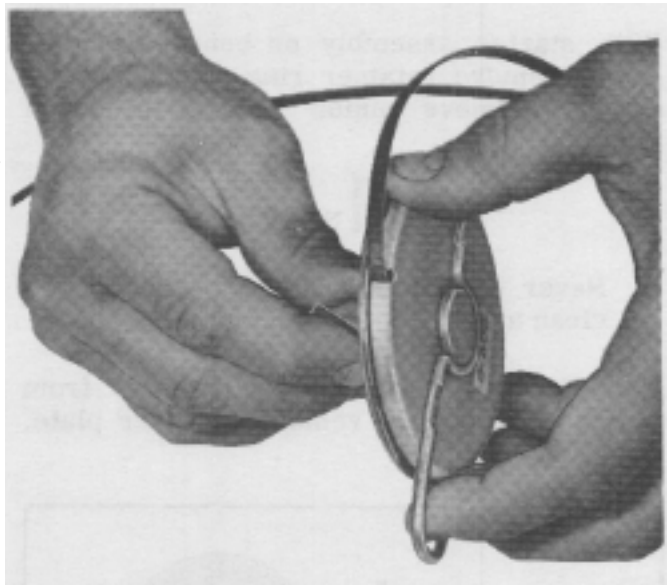
Examine starter spring carefully for bent or weakened areas. Spring steel is quite brittle and is damaged easily if bent or twisted. A light coating of grease must be applied before re-installing.

Re-anchor spring in anchoring channel of worm gear plate and push pin of pin and cup assembly through the worm gear plate opening. Make sure the spring is guided through slot opening in cover.



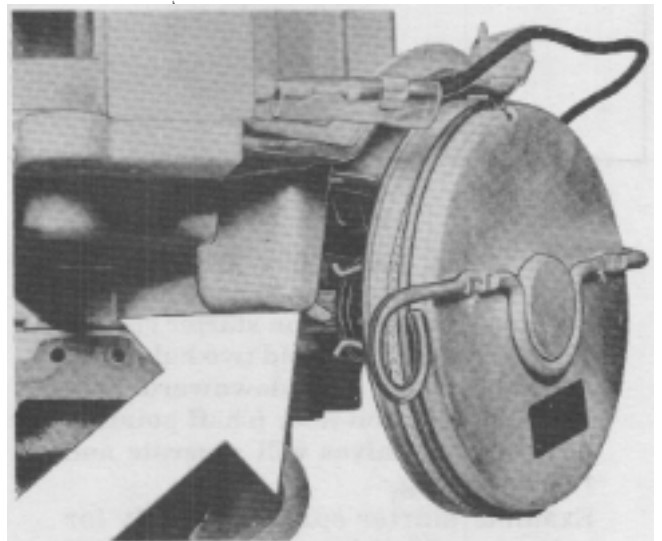
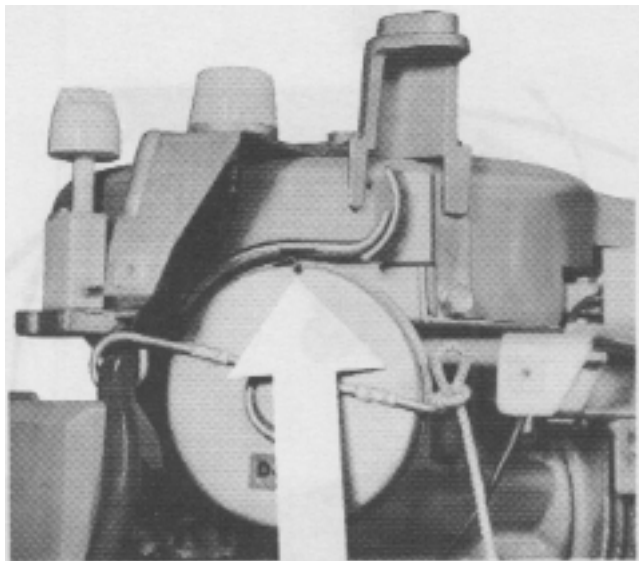
D-600 SERIES STARTER

Grasp pin and cup assembly and wrap your fingers over worm gear plate to hold two pieces together. This will keep the spring contained so that you can rotate worm gear in a clockwise manner, winding spring. Continue winding until spring is drawn into cover and end hook rests in recess. Carefully let spring unwind slowly until it is relaxed.



Pinion spring must be positioned properly during starter assembly installation, one prong goes above armature plate ledge and the other below.

Be sure beveled sharp edge of retainer plate is away from rope. Re-anchor rope and put rope retainer plate on and rewind rope in clockwise fashion. Replace pinion gear and retainer. Starter assembly is now ready to re-install.



Before tightening screw securing starter assembly make sure that spring end hook faces up and locates in die casted recess in armature plate. Push starter assembly in as far as possible then back out approximately $1/32''$ to provide clearance between starter worm gear and magneto plate casting.

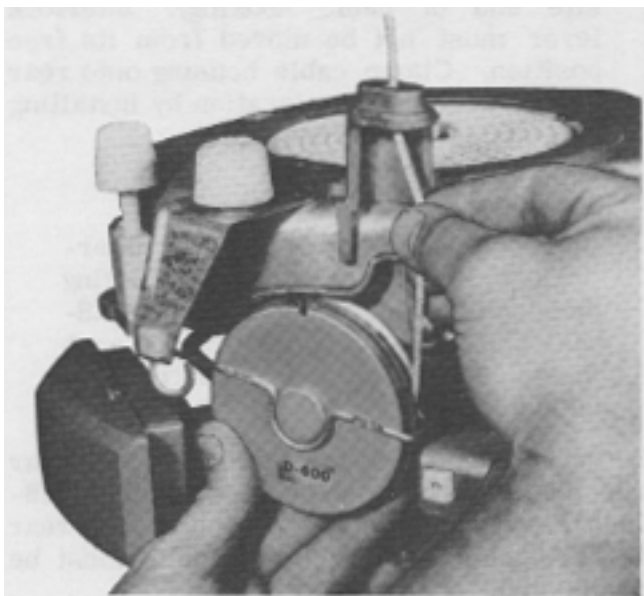
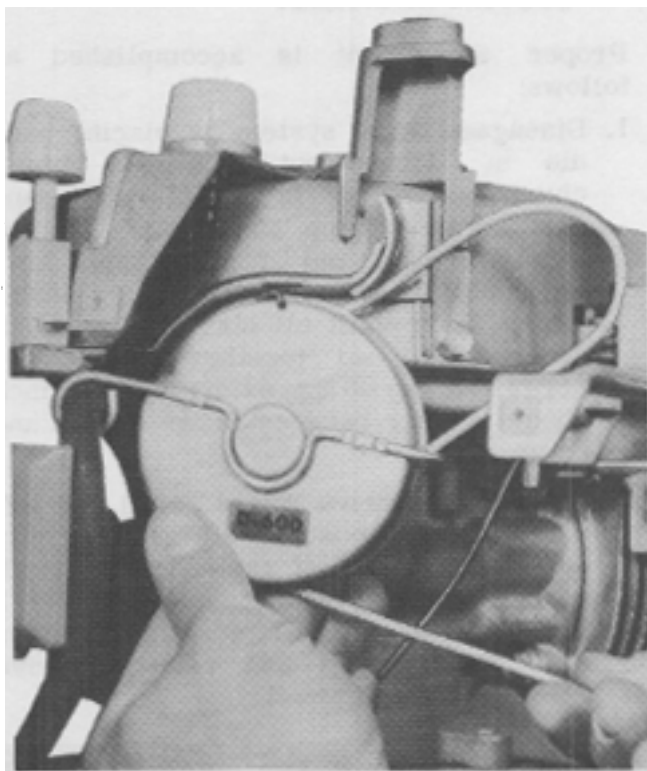
NOTE

On 1975 and 1976 D-600 Series engines, the magneto plate was redesigned. An "Azdel" (type of fiberglass) shroud mounting base was added to reduce engine noises.

A dimple in the shroud mounting base located above the hose bracket is used to position the starter assembly.

Before tightening the starter assembly clamping screw, pivot the starter assembly clockwise until top of hose bracket is contacting the bottom of this dimple. Top of the hose bracket should be no more than .020 inch below the dimple. On all 1972 thru 1974, and early production 1975 model D-600 Series engines, slide the starter assembly all the way in, then back it out approximately 1/32" before tightening the starter clamp screw.

Mark a spot on starter pulley and pull enough rope out so that mark rotates approximately two full turns. Grasp starter pulley and spring housing firmly to keep pulley from returning to its relaxed position and wind excess rope around starter pulley.



Thread starter rope up through rope guide opening and pull approximately one and one half foot of rope through and tie a knot in it again so that it will not slip back through the rope guide opening. Now, re-install starter handle and remove slip knot and allow starter to rewind till handle seats.

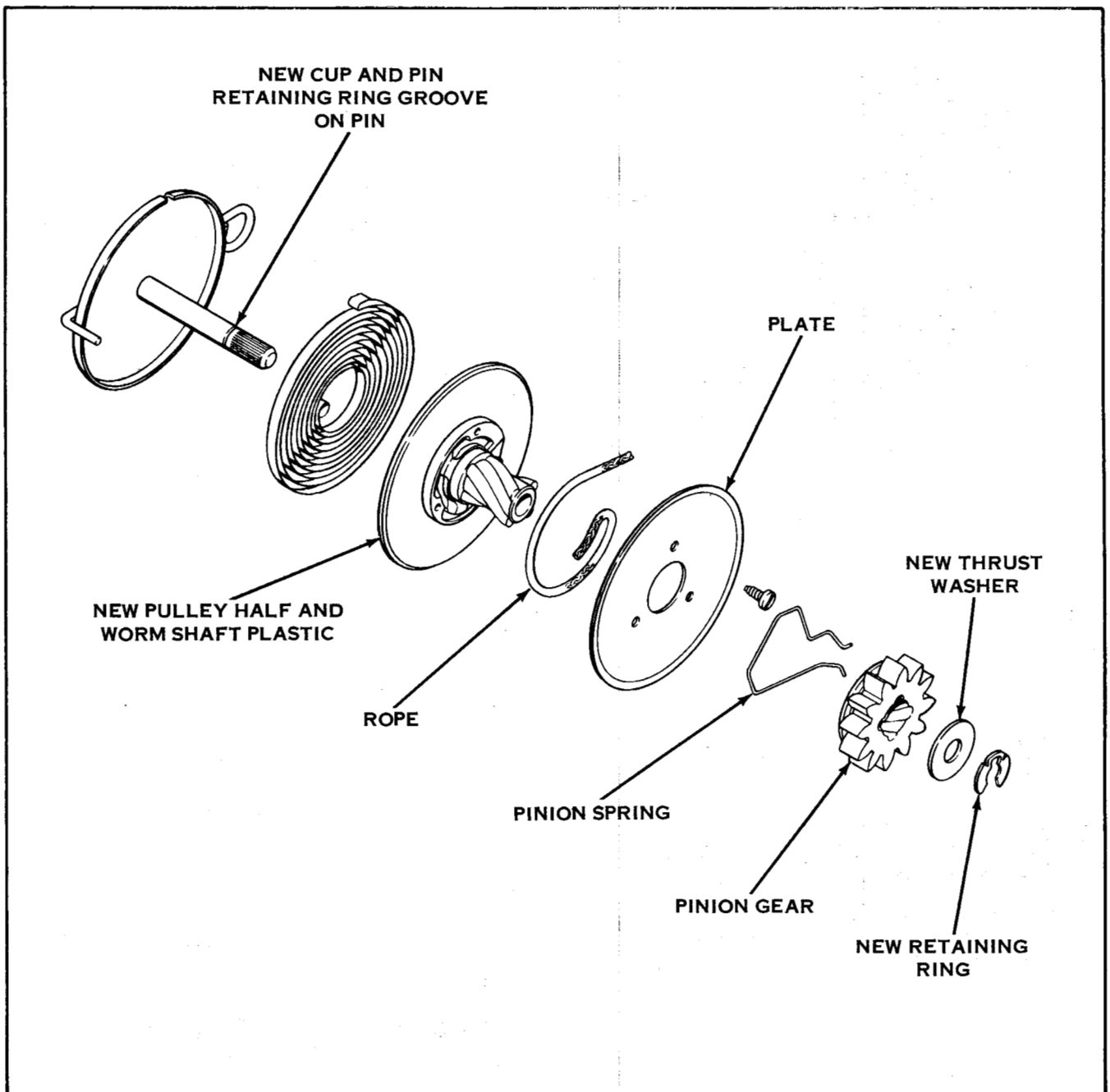
D-600 SERIES STARTER

STARTER ASSEMBLY - 1976 MODELS

A new starter assembly was introduced on 1976 models and will be furnished as a service replacement.

This assembly includes a new cup and pin and a plastic pulley half and worm shaft. The pinion gear retaining ring is located on the starter pin and secures the entire assembly.

Repair procedures are identical to the preceding information on D-400 and D-600 series starters. It is necessary to allow .020-.030 clearance between the worm shaft and armature plate when reinstalling the starter.



D-400 & D-600 SERIES STARTER

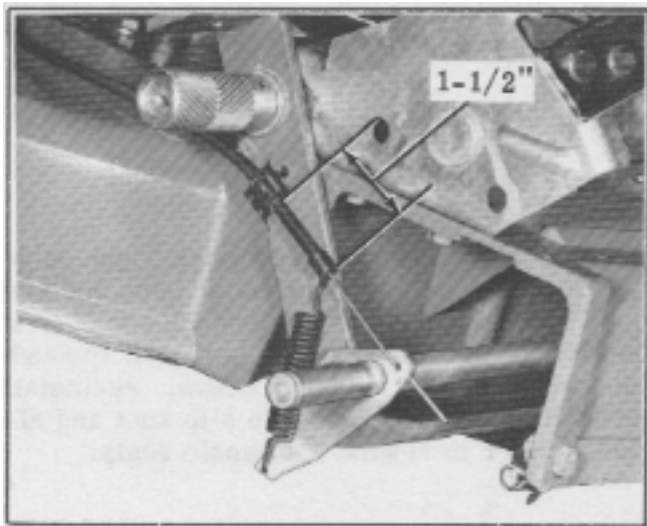
STARTER INTERLOCK 1975 AND LATER SELF-PROPELLED MODELS

SAFETY WARNING

THE STARTER INTERLOCK ON SELF-PROPELLED MODELS IS A SAFETY FEATURE FOR 1975 AND LATER MODELS. THIS SYSTEM PREVENTS STARTING OF THE ENGINE WITH THE MOWER DRIVE SYSTEM ENGAGED. MISADJUSTMENT OF THE INTERLOCK CAN ELIMINATE THE SAFETY FEATURE AND MAKE IT POSSIBLE TO START THE ENGINE WITH DRIVE SYSTEM ENGAGED.

Proper adjustment is accomplished as follows:

1. Disengage drive system by placing handle in "locked out" position. Adjust clutch control rod in the following manner: Loosen clamp screw and with the handle in "lock out" position, pull down on upper clutch rod and up on lower clutch lever until all slack is removed. Secure the two together with clamp screw. A gap of approximately 3/16 inch should appear between drive rollers and tires.
2. Remove left drive roller guard and left rear wheel. Loosen cable retainer clip and position end of cable housing (with rubber grommet installed on cable) 1-1/2 inches from nearest edge of retainer clip. Secure clip and reinstall drive roller guard and wheel.



3. Place mower handle in "drive" position. Loosen cable housing retainer clip on starter bracket. Place cable housing in groove on starter bracket. Move cable housing forward or backward in groove until eyelet of inner wire and flat washer contact surface of black interlock lever. Interlock lever must NOT be moved from its free position. Clamp cable housing onto starter bracket at this location by using cable retainer clip.



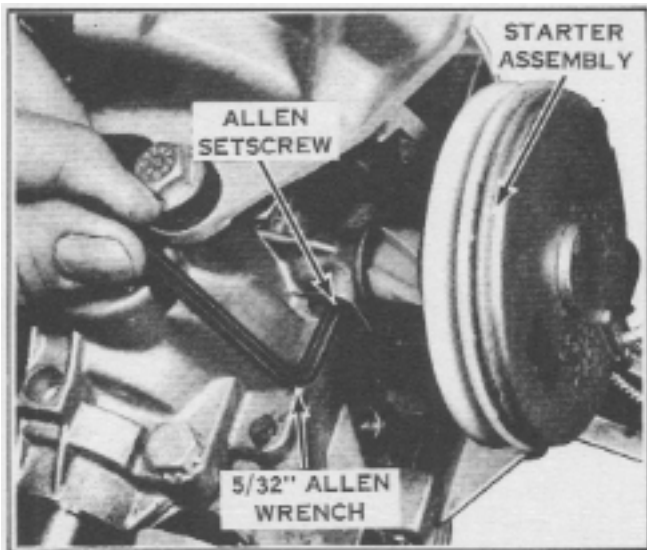
4. Check to be certain mower will NOT start (both manual and electric systems) with the handle in "drive" position. Both systems should operate in "neutral" handle position.
5. If further adjustment is required, repeat Step 2. Remove cable retainer clip at rear axle bracket and place mower handle in "drive" position. Move cable housing forward or backward until eyelet of inner wire and flat washer contact surface of black interlock lever (opposite end of cable housing). Interlock lever must not be moved from its free position. Clamp cable housing onto rear axle bracket at this location by installing retainer clip. Repeat Step 4.

NOTE

It is not necessary to readjust interlock system each time the cutting height is changed but it IS NECESSARY to adjust the control rod each time. See Step 1 for control rod adjustment.

If the clutch lever is adjusted at the rear axle bracket, in order to provide the 3/16-inch gap between the drive roller and rear wheel, then the interlock system must be readjusted.

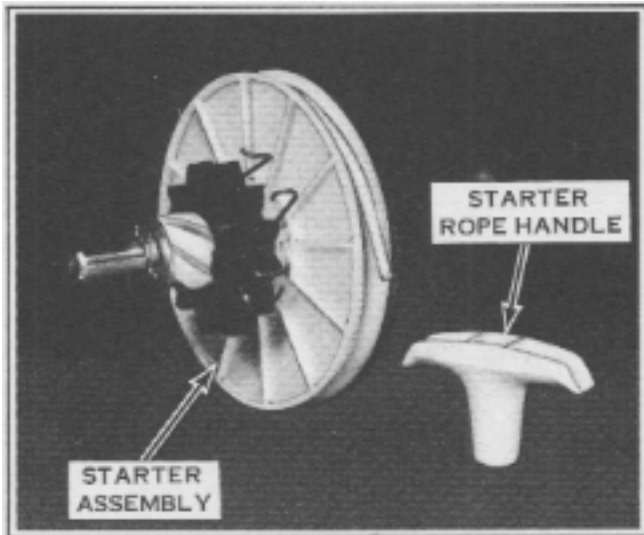
"F" SERIES STARTER—



REMOVING STARTER ASSEMBLY

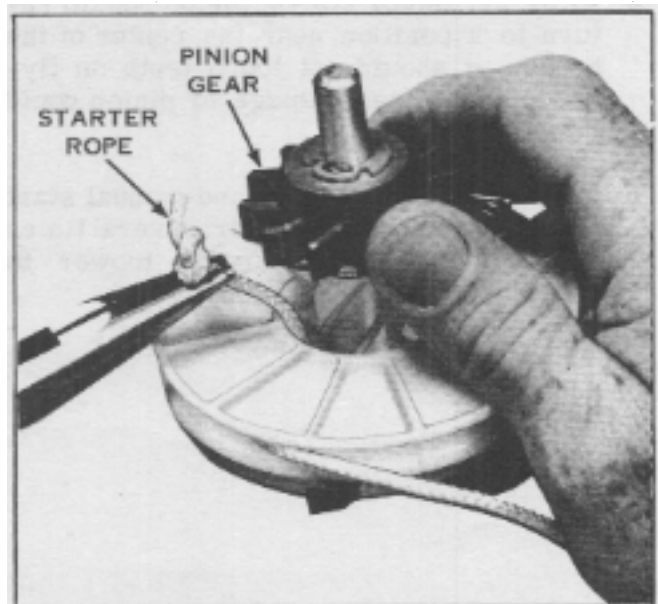
To remove the complete starter assembly on "F" series engines proceed as follows:

1. Remove engine shroud, primer and fuel hoses. Disconnect switch leads.
2. Remove starter rope handle and allow rope to gradually recoil through hole in top of the air baffle.
3. Using an Allen wrench loosen the socket set-screw securing starter shaft to engine and remove starter assembly.

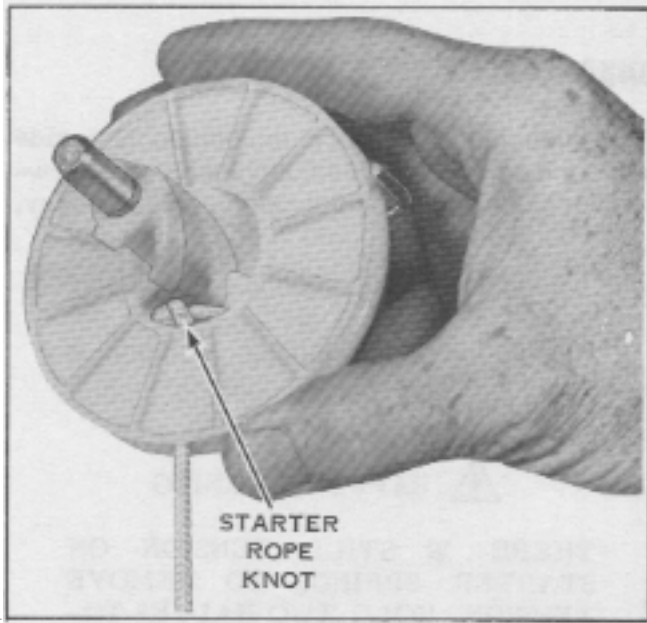


REPLACING STARTER ROPE

Unwind starter rope, rotate pinion gear out against washer and retaining ring. Pull knotted end of rope out using needle nose pliers as shown and untie or cut knot off.

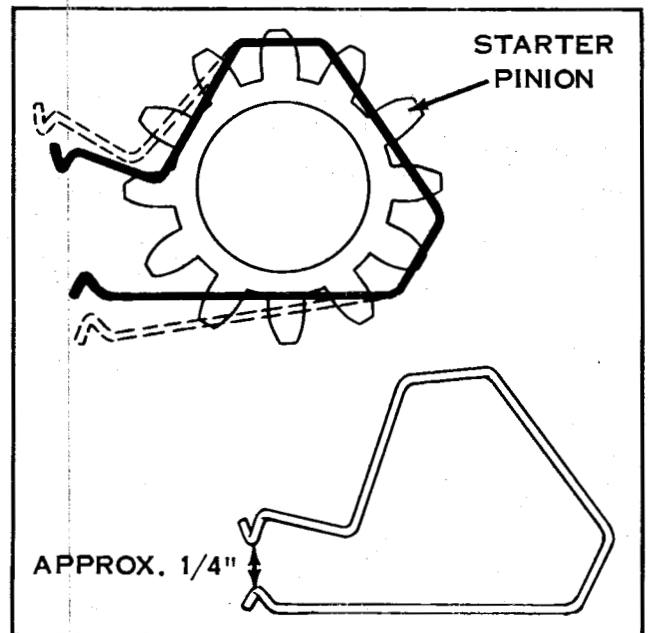


"F" SERIES STARTER



Thread new rope through hole, tie overhand knot, pull knot down into the recessed cavity. Wind rope clockwise with the pinion facing you. Pigtail on knot must be tucked into cavity as shown.

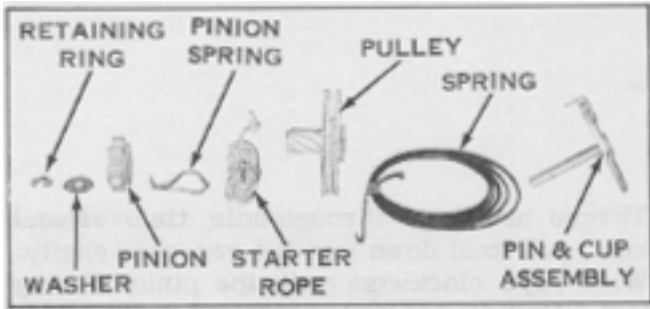
When installing a new starter pinion spring it should be stretched only far enough to allow it to snap into the groove of the nylon starter pinion. A distorted spring will not grip the pinion properly and will possibly jump off and become lost. The prongs of the starter pinion should be approximately 1/4" or less apart when the spring is off the starter pinion.



ROPE BREAKAGE

Rope breakage or "cutting" can normally be attributed to rough surfaces, sharp nicks or edges inside rope guide hole or pulley. Use old piece of rope with grinding compound or other abrasive to smooth sharp surfaces.

"F" SERIES STARTER



DISASSEMBLY OF STARTER

With starter assembly on bench, flat side down, remove retainer ring with a screwdriver. Remove pinion gear from pulley.



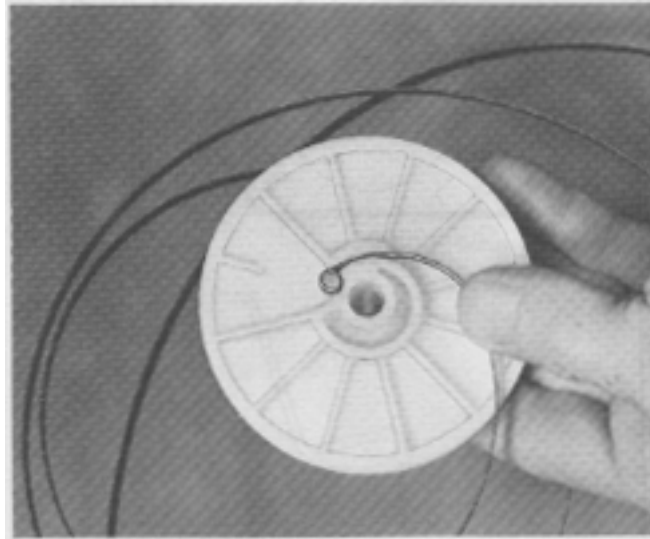
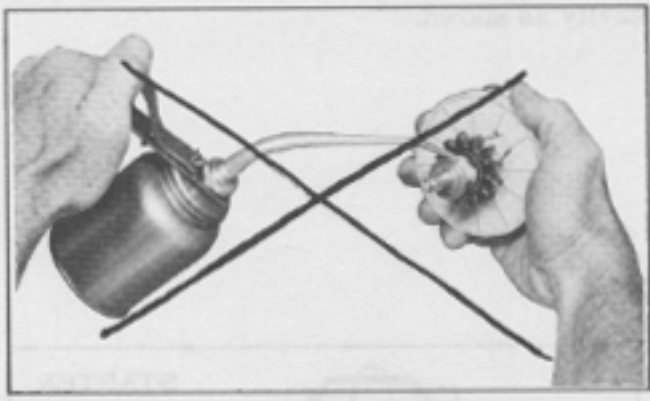
NOTE

Never lubricate pulley - keep it clean and dry.



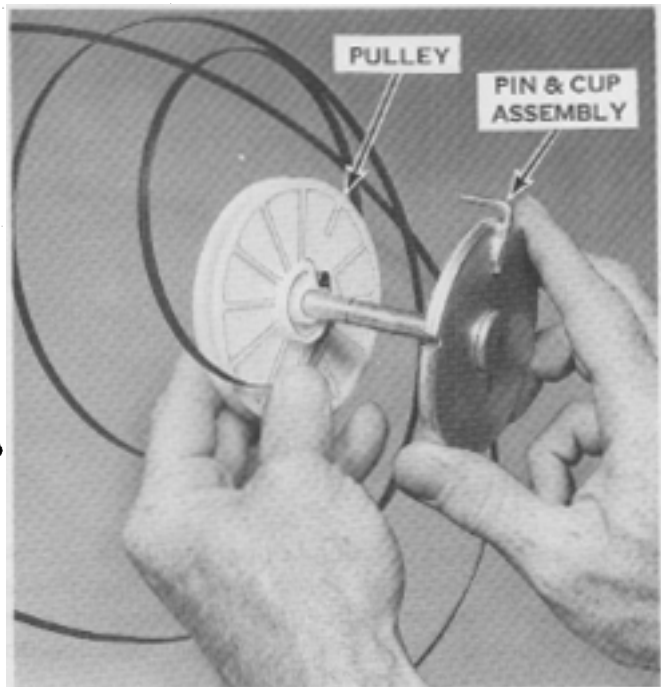
SAFETY WARNING

THERE IS STILL TENSION ON STARTER SPRING. TO REMOVE TENSION, HOLD TWO HALVES TOGETHER, POINTING SHAFT DOWNWARD. NOW DROP ASSEMBLY ON FLOOR (SHAFT POINTING DOWNWARD). HALVES WILL SEPARATE AND RELEASE SPRING.



Examine starter spring carefully for bent or weakened areas. Spring steel is quite brittle and is damaged easily if bent or twisted. A light coating of Lawn-Boy - "A" grease must be applied before reinstalling.

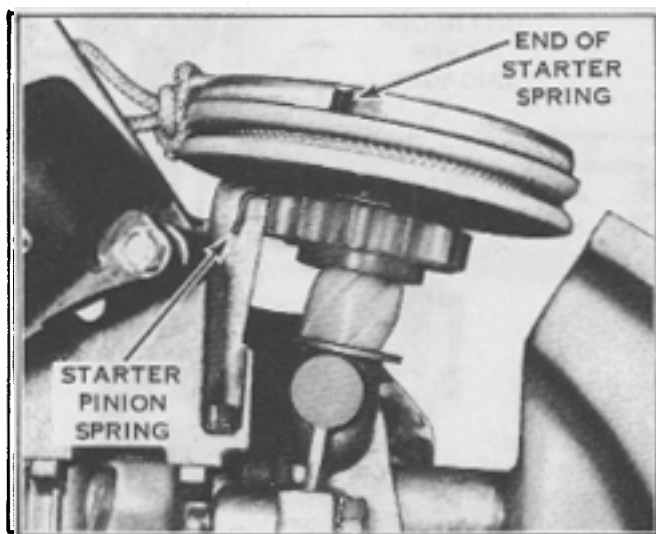
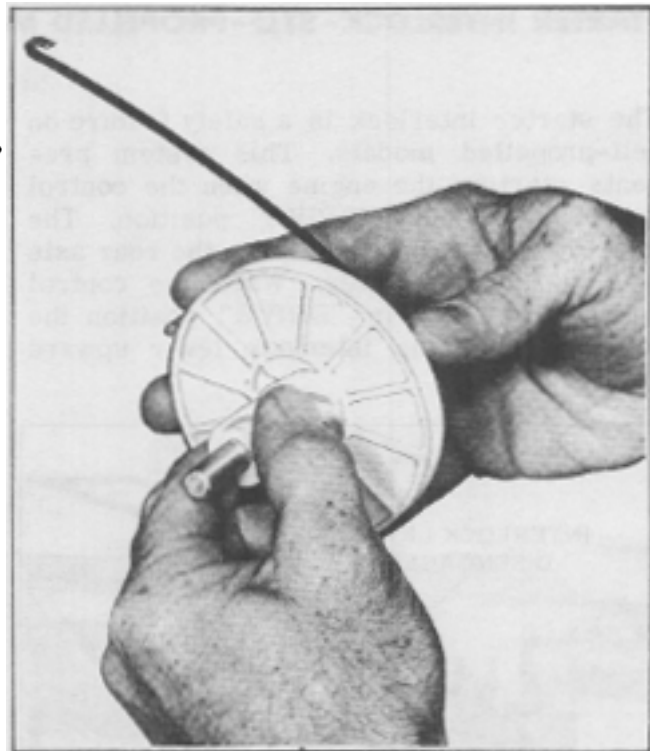
Reassemble spring in anchoring channel of pulley and push pin of pin and cup assembly through the pulley opening. Make sure the spring is guided into the slot in cover.



"F" SERIES STARTER

Grasp pin and cup assembly and wrap your fingers over starter pulley to hold two pieces together. This will keep the spring contained so that you can rotate pulley in a clockwise manner, winding spring. Continue winding until spring is drawn into cover and hook rests in slot. Carefully let spring unwind slowly until it is relaxed.

Be sure ends of starter pinion spring are hooked on the die cast spring guide of the C.D. bracket.



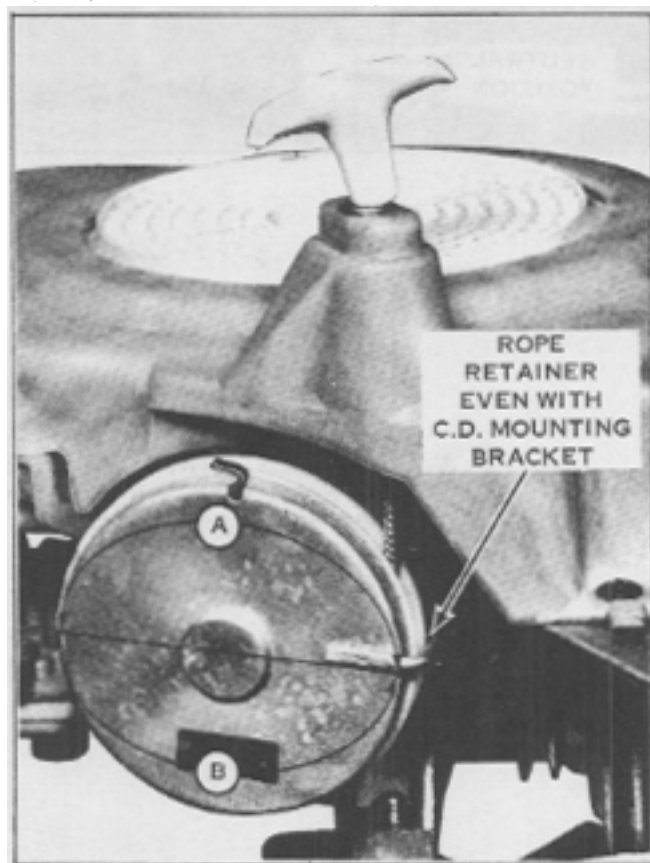
Check to make sure rope retainer is even with C.D. mounting bracket as shown. Securely tighten socket setscrew.

CORRECT STARTER SPRING PRELOAD

If the end of the rope is in segment (A), wrap rope by the rope retainer one time.

If the end of the rope is in segment (B) wrap rope by the rope retainer twice.

When starter rope is pulled all the way out, the pulley must still turn before bottoming of the recoil spring occurs. Otherwise, recoil spring life will be reduced.

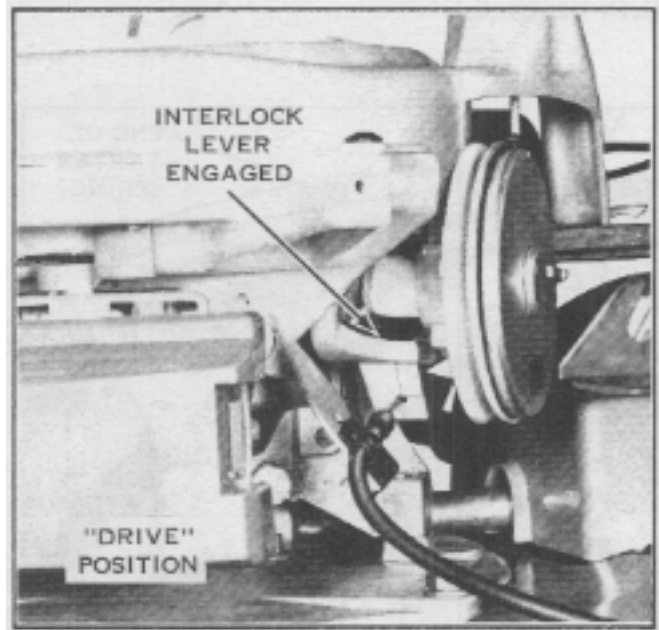
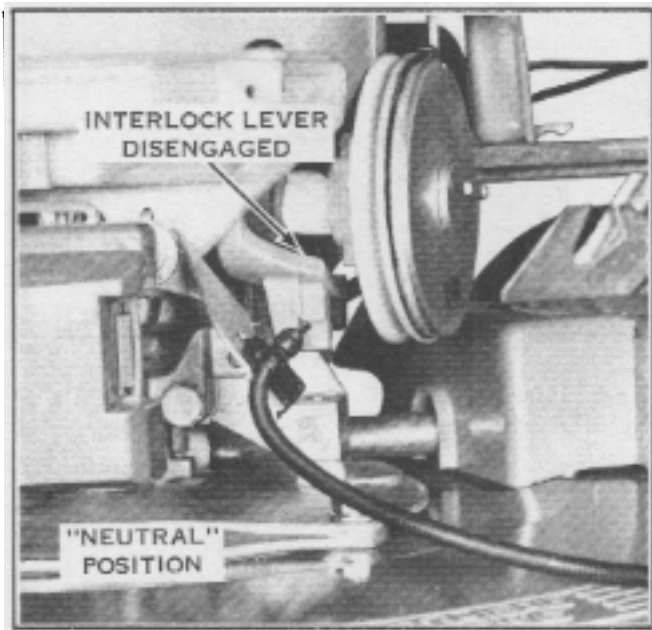


"F" SERIES STARTER

STARTER INTERLOCK - SELF-PROPELLED MODELS

The starter interlock is a safety feature on self-propelled models. This system prevents starting the engine when the control handle is in the "DRIVE" position. The interlock cable is attached to the rear axle and an interlock lever. When the control handle is placed in "DRIVE" position the cable rotates the interlock lever upward

into a position that prevents the starter pinion from engaging the flywheel. When the control handle is placed in "NEUTRAL" position, the interlock cable moves the interlock lever downward, allowing the starter pinion to engage flywheel as shown. This permits starting the engine with the control handle in the "NEUTRAL" position only.



SAFETY WARNING

A MISADJUSTMENT OF THE INTERLOCK SYSTEM COULD ALLOW STARTING OF THE ENGINE WITH CONTROL HANDLE IN THE "DRIVE" POSITION - THUS CAUSING A POTENTIAL INJURY SITUATION FOR OPERATOR OR OTHERS. PROPER ADJUSTMENT IS AS FOLLOWS:



"F" SERIES STARTER

1. Place control handle in "NEUTRAL" position. Adjust clutch control rod by loosening clamp and pulling up on lower clutch lever and down on upper clutch rod

until a gap of 3/16" appears between the drive rollers and the rear wheels. Tighten clamp as tight as possible with hand pressure.

SAFETY WARNING

IMPROPER TIGHTENING OF CLUTCH ROD AND LEVER CONNECTION MAY RESULT IN OPERATOR LOSING CONTROL OF THE MOWER.

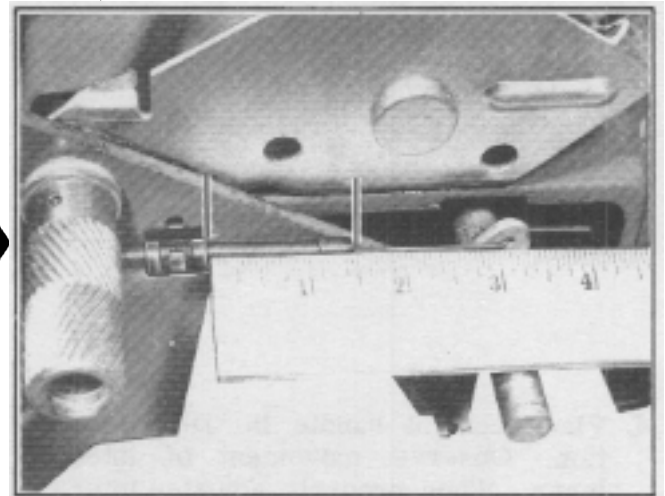
2. Remove left drive roller guard and left rear wheel. Loosen cable retainer clip and position end of cable housing (with rubber grommet installed on cable) 1-1/2 inches from nearest edge of retainer clip as shown. Secure clip and reinstall drive roller guard and wheel.



NOTE

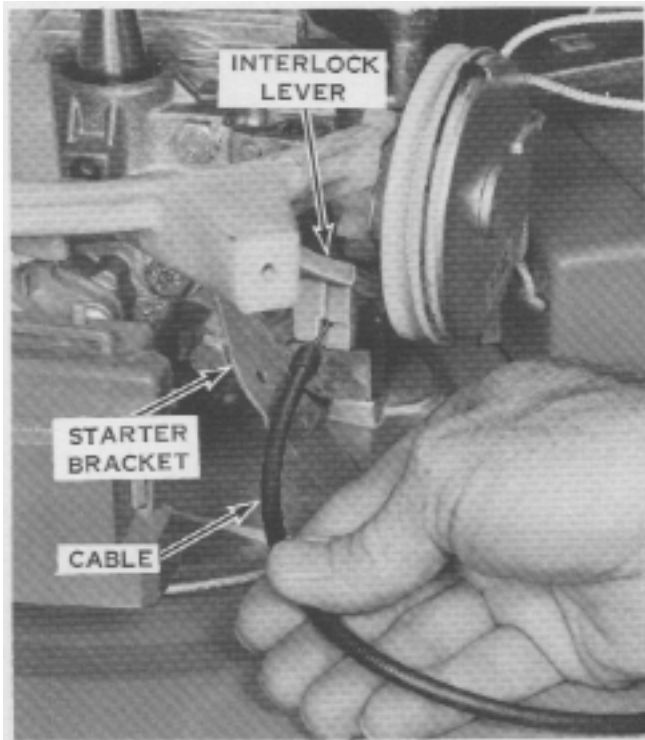
Check felt wheel washers and replace if necessary.

Do not lubricate the felt washers.

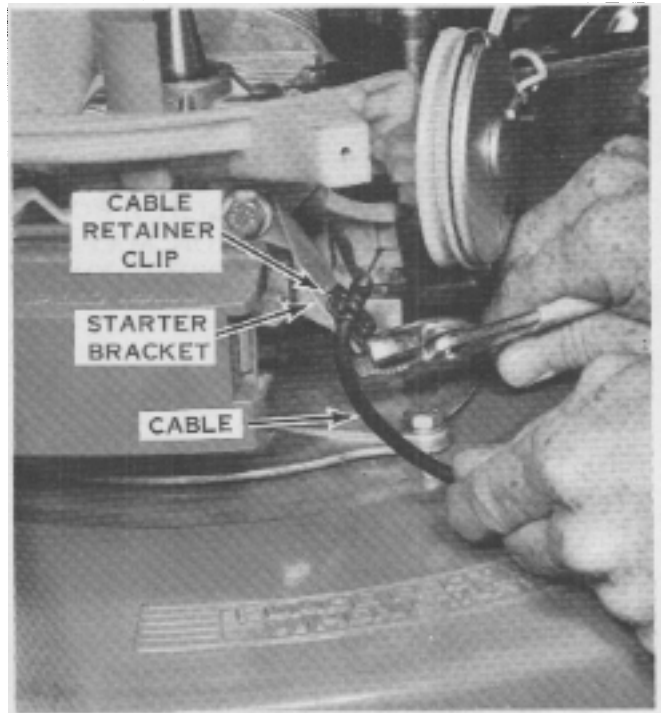


"F" SERIES STARTER

3. Place control handle in "NEUTRAL" position. Observe movement of interlock lever. The lever should be in a position that allows the starter pinion to engage the flywheel when the starter handle is pulled. There should be approximately .090 inch between interlock lever and



starter pinion. To adjust, remove spring clip and position interlock cable as shown to allow necessary movement of starter pinion. Hold interlock cable in position, DO NOT allow cable to move, and secure interlock cable to starter bracket with spring clip as shown.



4. Place control handle in "DRIVE" position. Observe movement of interlock lever. When properly adjusted interlock lever will move upward preventing starter pinion from engaging flywheel.

To adjust, remove spring clip and position cable so interlock lever prevents starter pinion from engaging flywheel. Secure cable with spring clip.

"F" SERIES STARTER

5. Check movement of interlock lever in "NEUTRAL" and "DRIVE" position. Check to be certain mower will start with control handle locked in "NEUTRAL" position

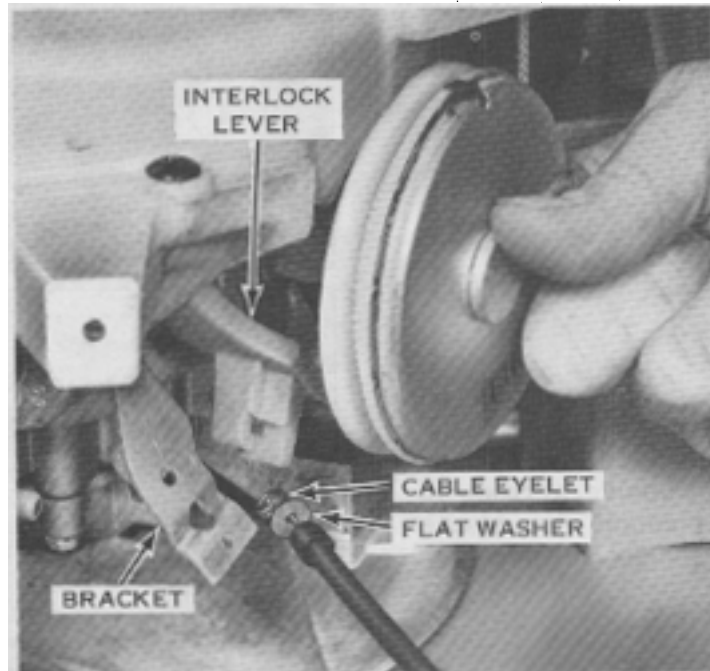
ONLY. Mower should NOT start with control handle out of neutral position. If additional adjustment is required repeat steps 3 and 4.

SAFETY WARNING

Check interlock operation whenever drive roller engagement or rear axle adjustment is changed. It is NOT necessary to check interlock adjustment when cutting height or handle height has been changed. Clutch control rod will require adjustment when handle height is changed.

6. To replace interlock cable, remove left side drive roller cover and rear wheel. Remove spring clip securing the cable to the deck and remove cable from rear axle. The interlock lever is designed with a "quick disconnect" feature that allows the cable assembly to be easily removed. Remove spring clip securing cable to starter bracket. Rotate cable approximately 45° counterclockwise and remove cable from in-

terlock lever as shown. Reverse procedure when installing new cable. The washer located on the end of the cable must be installed next to the cable loop to secure cable to interlock lever. DO NOT lubricate interlock lever. DO NOT lubricate interlock cable if cable movement is restricted or cable assembly damaged — replace cable.



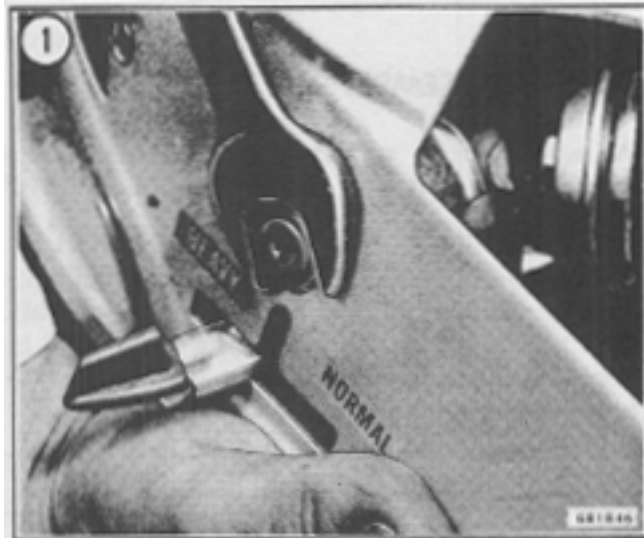
ELECTRIC START SERVICING D-400 SERIES

ENGINE TEAR DOWN

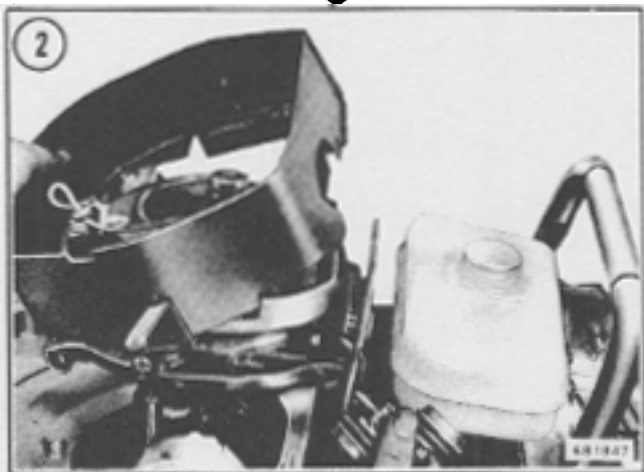
Disconnect high tension lead from spark plug.
Disconnect and remove battery.
Remove belt cover and V-belt
Remove key switch nut, push switch through shroud and lay on mower housing.
Remove starter handle, fuel cap, and shroud mounting screws. Remove shroud.

Remove fuel tank and baffle assembly.

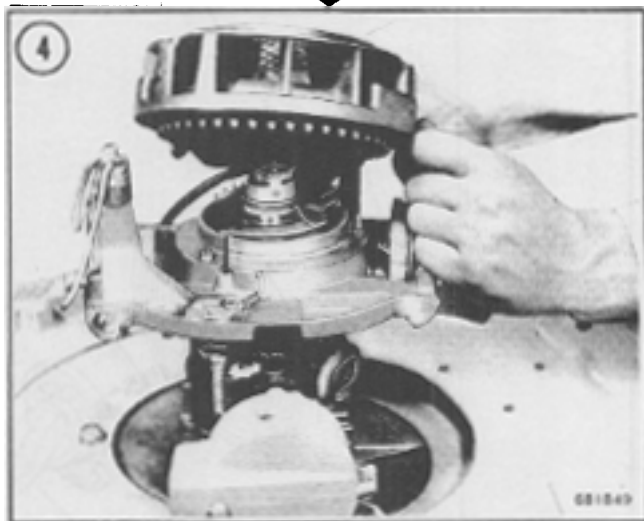
NOTE: On self-propelled models the pulley assembly is secured by the two fuel tank bracket mountings screws.



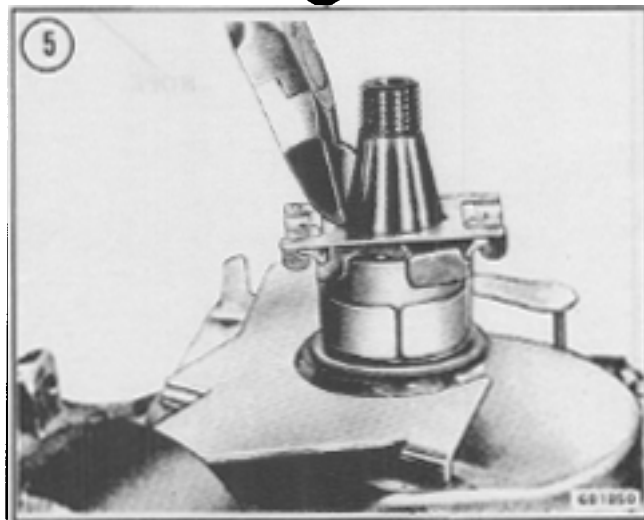
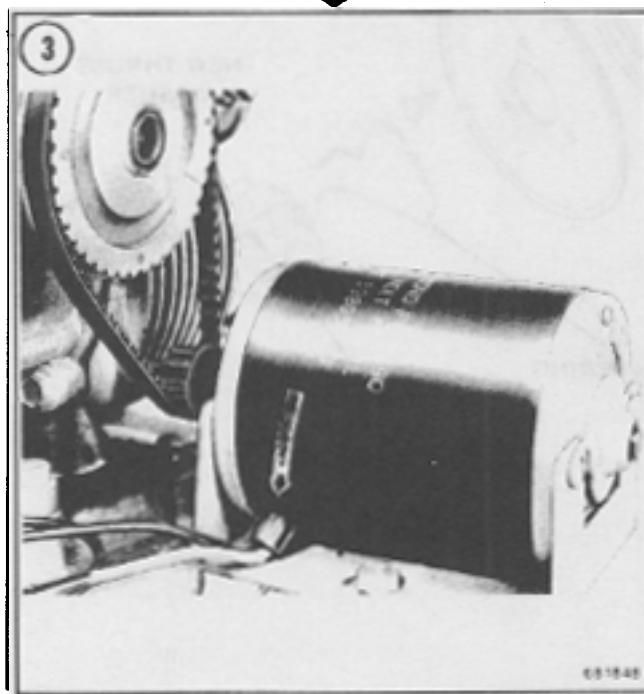
Remove flywheel nut. Use a rubber mallet to loosen flywheel and remove flywheel.



Remove starter motor bracket mounting bolts, slide off starter belt and remove starter motor and key switch as an assembly.



Remove flywheel key. Note: Use a pair of side cutter pliers to roll key out of crankshaft keyway.



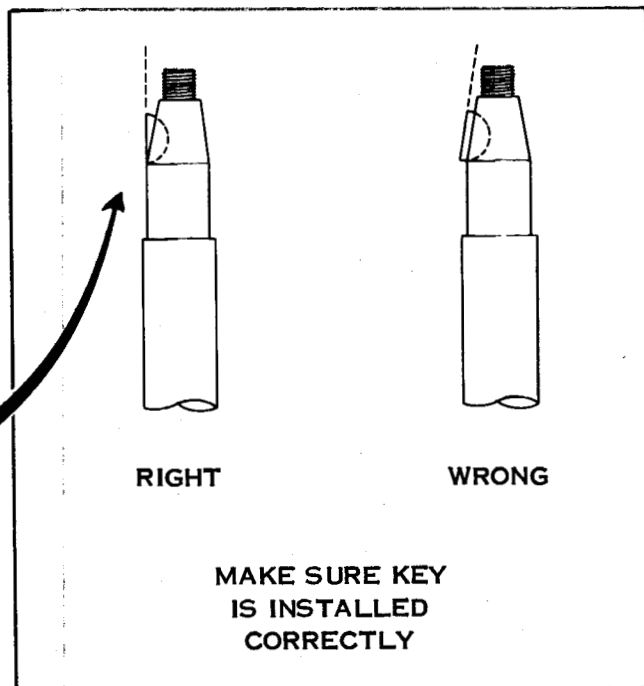
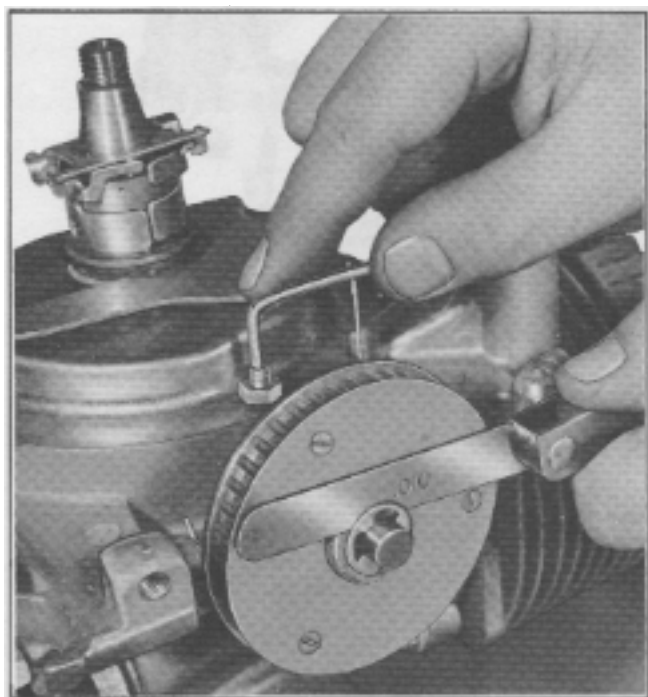
REASSEMBLY TIPS D-400 SERIES

Use all new gaskets.

Tighten screws, nuts and bolts - Refer to Section 16 torque chart.

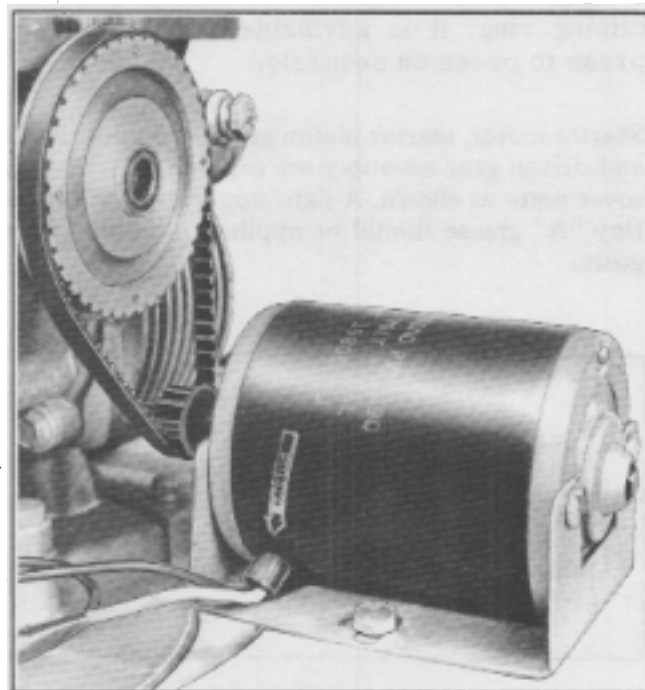
Check governor for correct engine RPM adjustment during reassembly. It will take more time to adjust after assembly is completed.

Position key in key way before installing flywheel.



CHECK STARTER END PLAY

There must be a small amount of "end play" between starter and the outside "E" ring. To set correct end play, loosen the set screw, push the starter and shaft against the magneto plate, insert a .010 feeler gauge between "E" ring and starter. Securely tighten set screw.



STARTER BELT TENSION

Proper belt tension is one eighth inch movement with one and one half pounds of pressure.

Loosen 3 mounting bolts and nuts and move starter motor until proper tension of 1 - 1-1/2 lbs pressure with .156/.125 deflection at center between pulleys is achieved.

Tighten bolts and nuts securely.

ELECTRIC START SERVICING D-600 SERIES

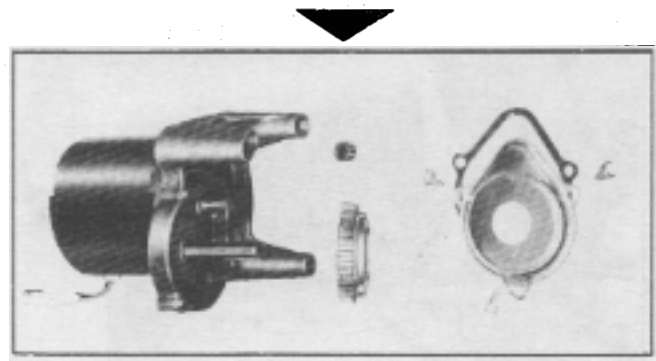
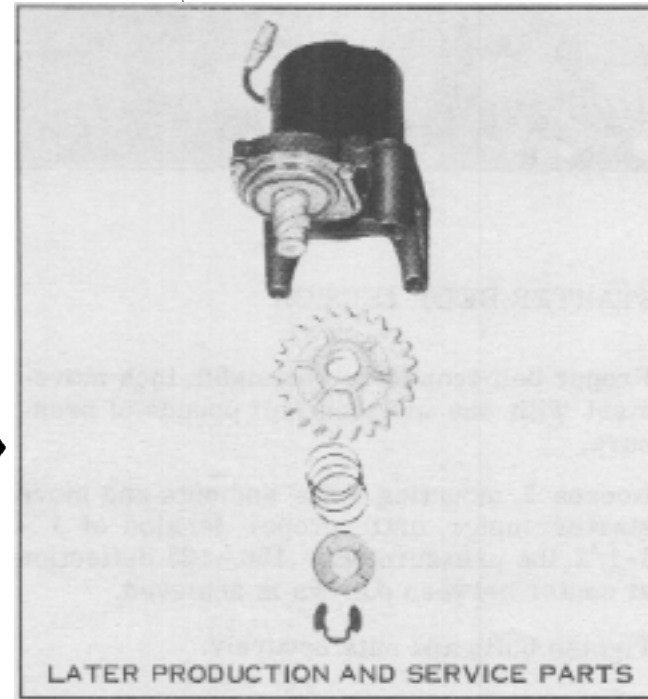
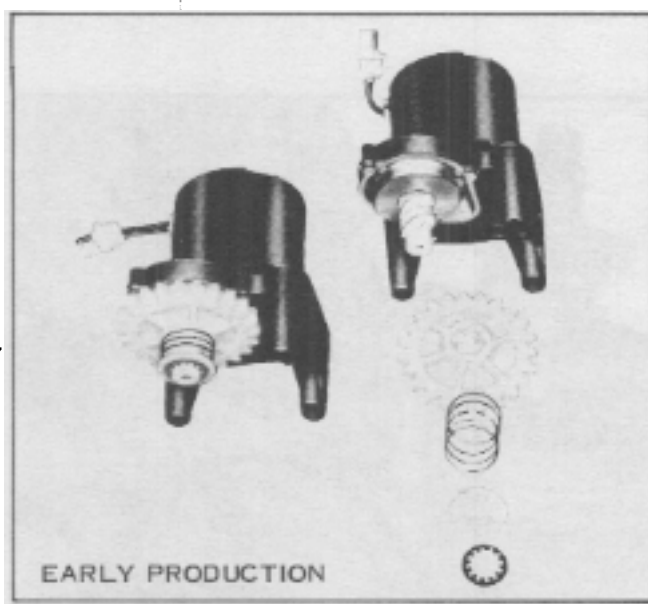
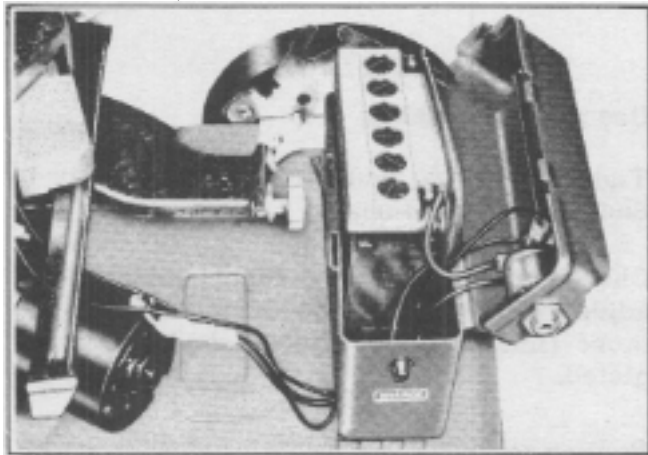
The D-600 Series starter assembly, including starter pinion gear is attached directly to crankcase. There is no belt drive involved. The battery is a new compact type, capable of 400 starts without recharging. Starter motor has a no-load speed of 3800 RPM's, is capable of producing high starting torque needed for starting cold engines or in starting a unit while in heavy grass. Ignition switch (key type) is mounted in battery case cover. It is a true ignition switch, cannot be started manually if key is in off position. Battery charger jack is also mounted in battery case. During winter storage period, it is of utmost importance to check water level and fill if necessary. The battery should be charged once monthly to prevent lead plates from sulfating. Use only the charger (400 MA) that was supplied with mower.

There are three mounting holes in the starter casting as shown. One hole at lower left hand side is the pivot leg, while two other holes are over sized so that an adjustment can be made to enable pinion gear to mesh properly with teeth in flywheel.

To replace pinion spring or gear, metal retaining ring is removed from end of worm gear shaft. No lubrication is recommended on worm gear or pinion gear.

NOTE: When re-installing new retaining ring, it is advisable to use an arbor press to press on securely.

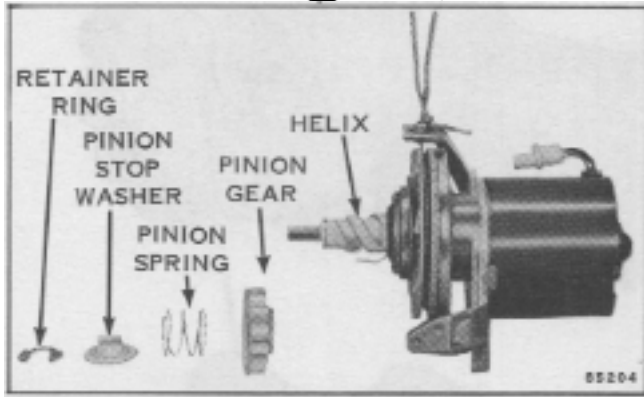
Starter motor, starter pinion gear, worm gear shaft and driven gear assembly are exposed by removing cover plate as shown. A light application of Lawn-Boy "A" grease should be applied to metal driven gears.



"F" SERIES STARTER

STARTER DISASSEMBLY

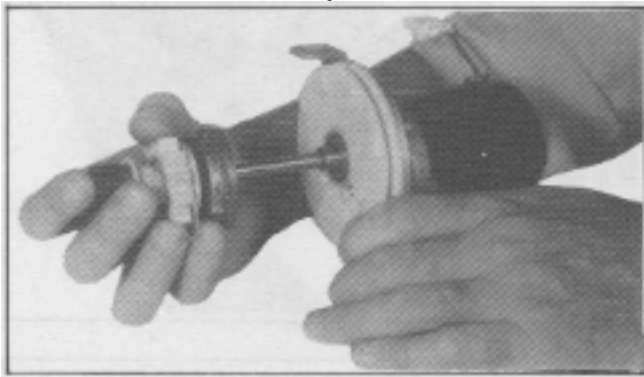
Remove retainer ring, pinion stop washer, pinion spring and pinion gear from helix.



SAFETY WARNING

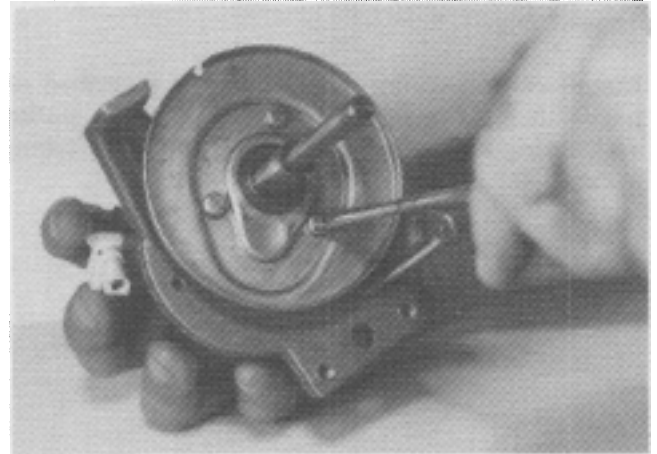
TO PREVENT STARTER SPRING FROM UNWINDING HOLD PULLEY TIGHT AGAINST SPRING AND CUP.

Remove clutch assembly.



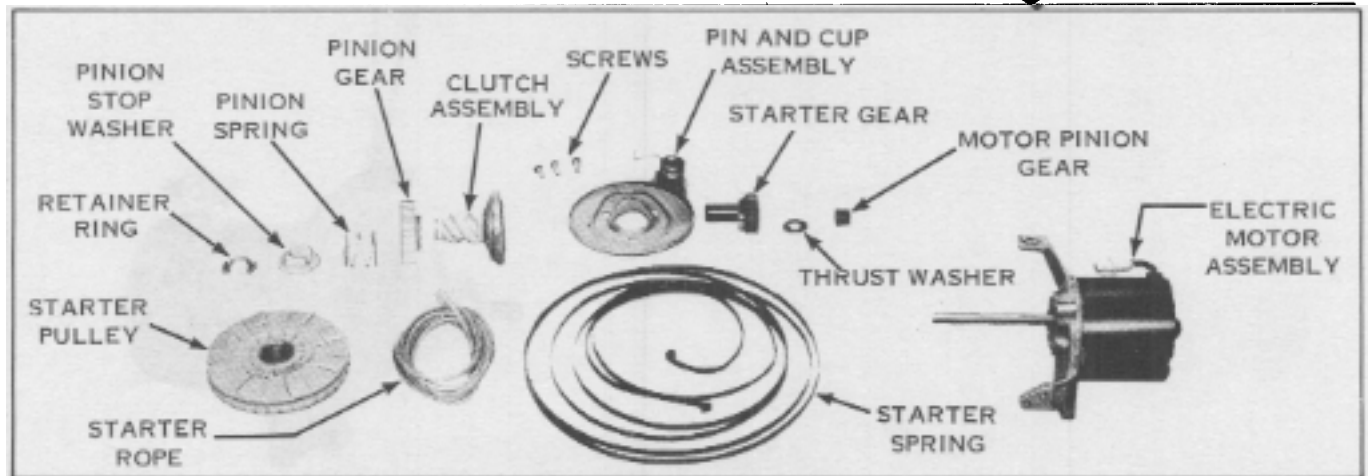
Remove starter pulley and spring. **USE CAUTION WHEN REMOVING SPRING.**

Remove three screws holding the cup assembly to the starter motor. Remove cup. Remove motor pinion, starter gear and thrust washer.



Remove retaining ring securing drag spring and drag roller to bracket. Remove roller and spring. When reinstalling drag spring place hook in end of spring through hole located in bracket, this correctly positions drag spring allowing correct pinion engagement when mower is manually started.

Check all of the parts removed for any damage or wear. Examine rewind spring carefully for bent or weakened areas. Spring steel is quite brittle and is damaged easily if bent or twisted. A light coating of Lawn-Boy - "A" grease must be applied before reinstalling. Replace any of the parts that are worn or damaged.



"F" SERIES STARTER

STARTER ASSEMBLY

Install motor pinion gear onto short (small) motor shaft.

Install thrust washer onto long motor shaft. Install large gear onto motor shaft. Lubricate both gears with Lawn-Boy - "A" grease. Assemble cup to motor securing it with three cap screws removed in disassembly.

Install rewind spring onto pulley as described on page 7-3 for the manual starter. Position pulley and spring on motor bracket pin locating spring in cup.



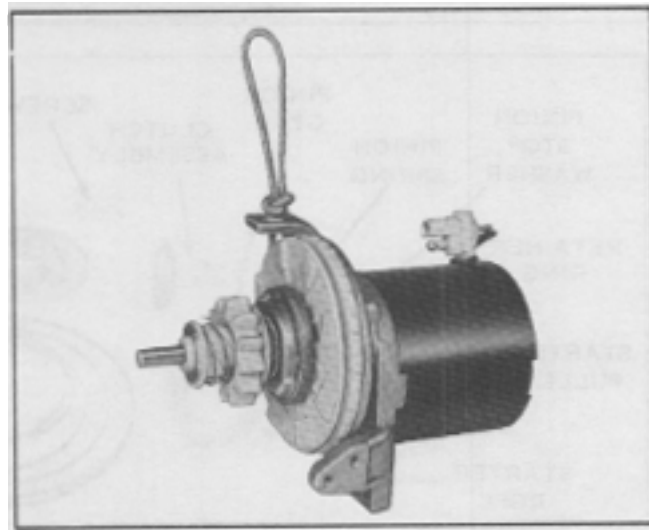
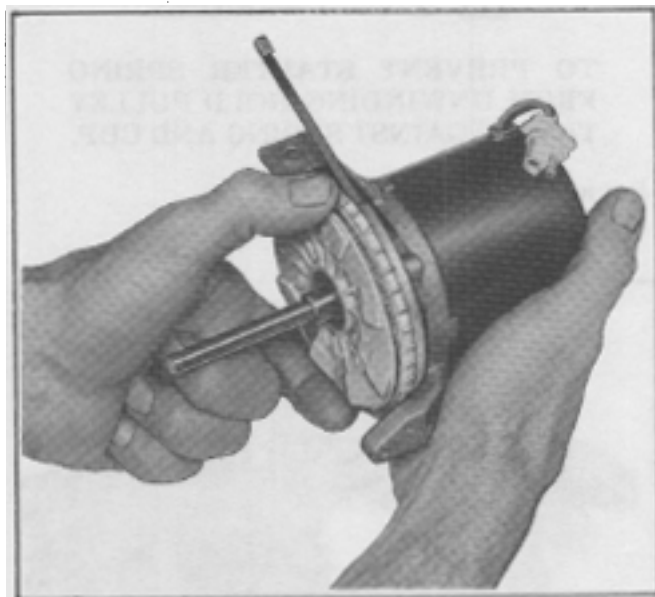
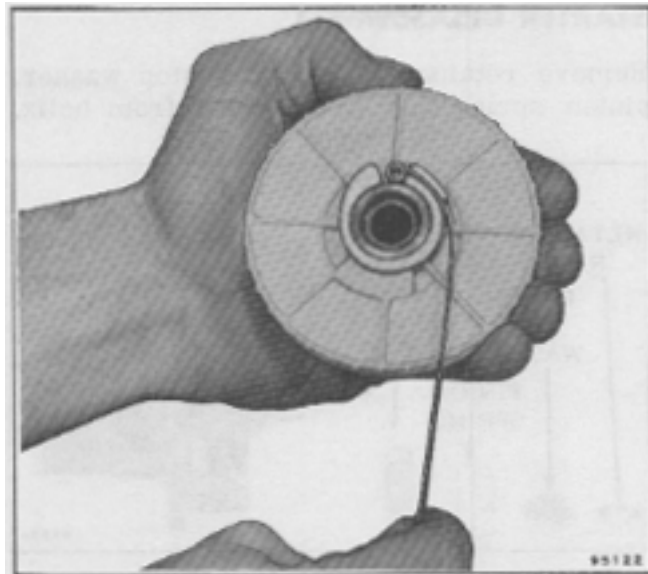
NOTE

Do not attempt to rewind spring at this time.


Install clutch assembly, pinion, pinion spring, stop washer and retaining ring.

With motor shaft facing you, turn starter pulley clockwise pulling rewind spring into cup. Wind rope into pulley clockwise.

Place 1/2 - 1-1/2 turns tension clockwise on rewind spring. Tie a slip knot in rope permitting it to stop behind rope retainer.



Assemble starter on Engine.

 NOTE:

Be sure to place .020-.030 gap between end of helix (worm gear) and crankcase.

Reconnect all leads -- starter motor, alternator, key switch cable and battery.

Check starter operation electrically.

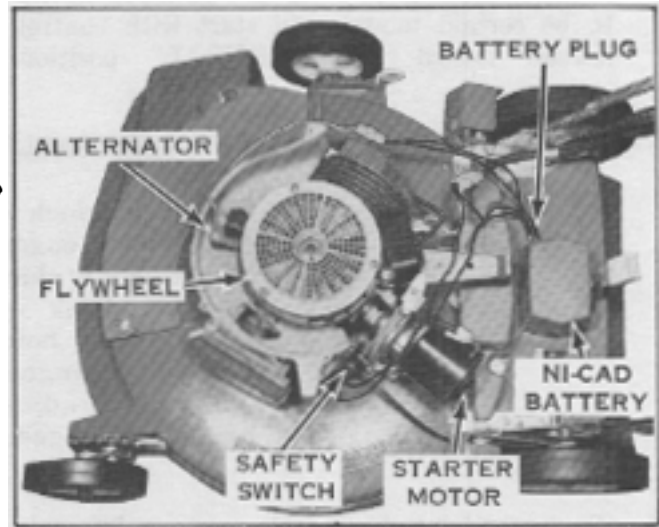
TROUBLE SHOOTING THE "F" ENGINE ELECTRIC STARTER

1. The pinion gear on the electric start models of the "F" engine is activated by inertia. Manual starter engagement is accomplished by a typical pull through of the starter rope.
2. If starter engages manually, but not electrically (starter motor running), there may be a failure of the metal gears inside gear housing. (Replace broken gear as a set.) Gear Part Numbers are 608034 and 610255.
3. If electric motor does not turn at all, check for electrical malfunction or for proper interlock adjustment.
4. After the motor starts, pinion should return to a position near the center of the helix---it should not touch teeth on flywheel, otherwise damage to pinion could occur.
5. Exercise electric start and manual start (actually starting the motor) several times each way before returning mower to service.

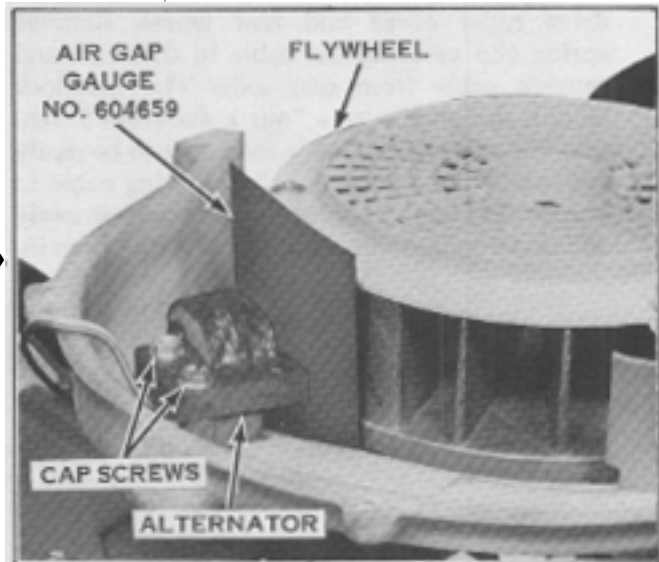
"F" SERIES STARTER

ELECTRIC STARTER REMOVAL

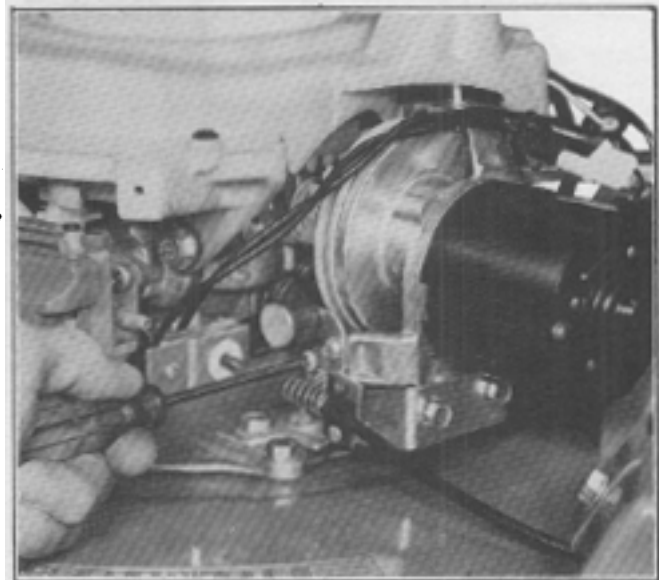
Remove shroud and air baffle.



Set the alternator air gap. The correct air gap is .010". Position the air gap gauge, part no. 604659, in the gap between the alternator and flywheel. Loosen two cap screws securing the alternator. Rotate flywheel; when flywheel magnets are adjacent to the alternator they will pull it in tightly. Secure alternator with the two cap screws. Do not push or pull alternator or flywheel when adjusting.



Disconnect leads from battery, starter motor and alternator. Remove screws securing interlock mechanism to starter frame.



"F" SERIES STARTER

Loosen set screw holding starter motor shaft to crankcase cover.

Remove hex cap screws securing starter motor bracket to muffler plate.



Additional allen wrench clearance can be gained by removing carburetor.

Remove hex cap screws securing starter motor bracket to starter frame.



Do not try to move starter laterally to either the right or left. It is possible to bend the starter motor shaft.

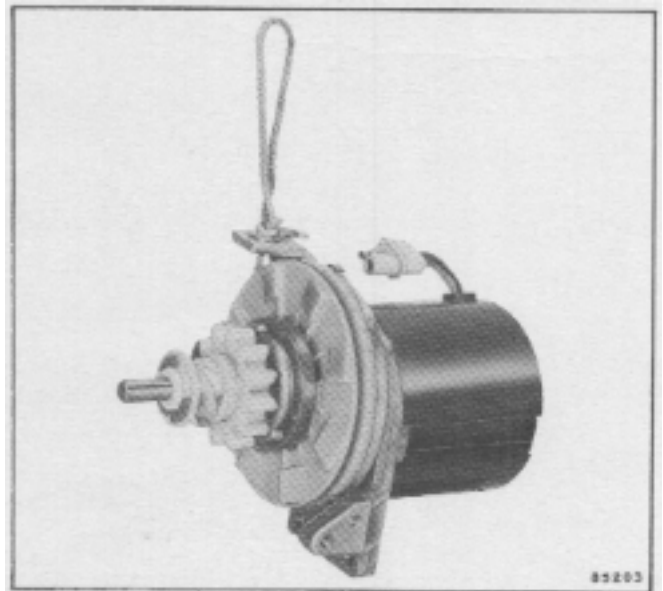
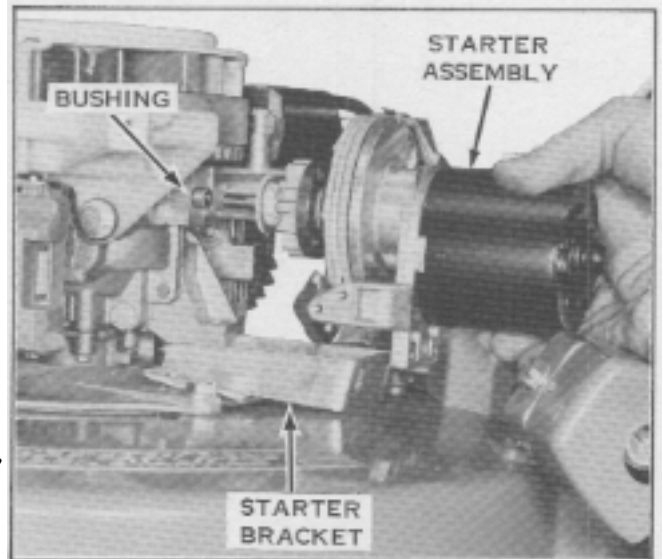
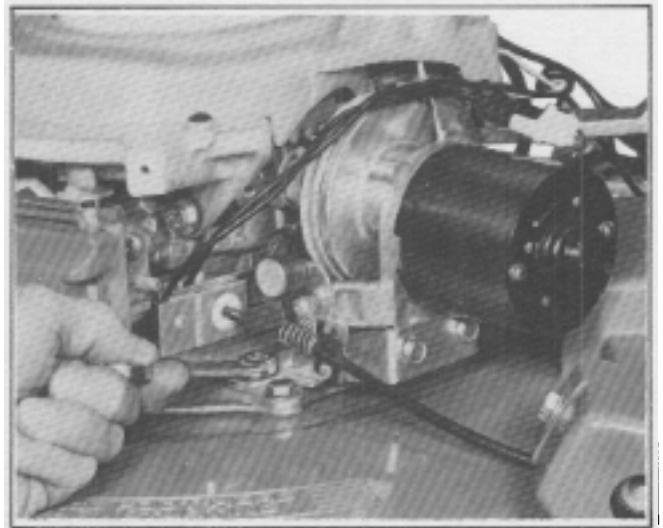
Carefully slide starter motor and bracket straight out from engine and lift out.



The starter motor shaft locates and operates in a loose bushing located in the crankcase casting. This bushing is loose fit into the crankcase. This bushing can slide out and become lost when removing the starter. Check this bushing for wear and damage while the starter is out.

SAFETY WARNING

WITH THE STARTER ASSEMBLY REMOVED, IT IS POSSIBLE FOR CLUTCH AND ROPE PULLEY ASSEMBLIES TO SLIDE OUT PERMITTING STARTER SPRING TO BE RELEASED ACCIDENTLY. HANDLE WITH CARE AND FOLLOW DISASSEMBLY PROCEDURES CLOSELY.



SECTION 8 - POWERHEAD

ENGINE TEAR DOWN AND REASSEMBLY TIPS D-400 SERIES

Refer to Section 14 for special "D" engine tools needed for tear down and reassembly.

NOTE

Keep assemblies intact whenever possible in tear down. Observe assembly tips. Refer to Torque Reference Guide Section 16 for correct torque settings during assembly.

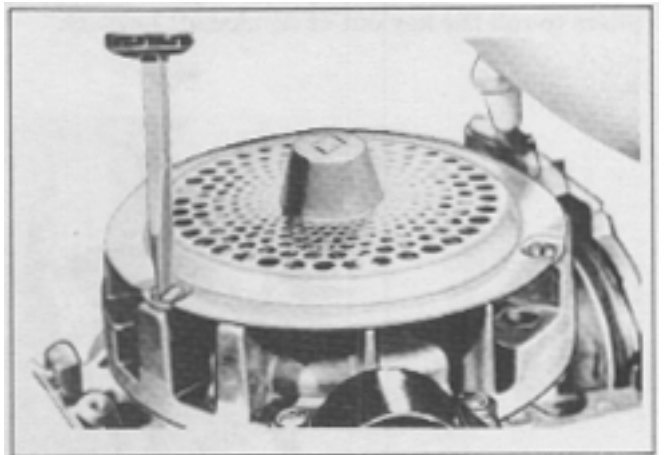
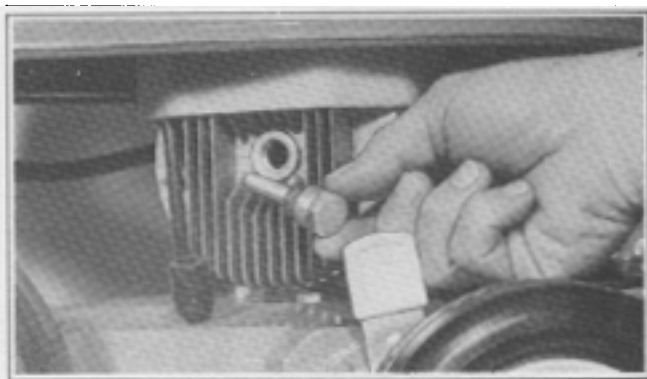
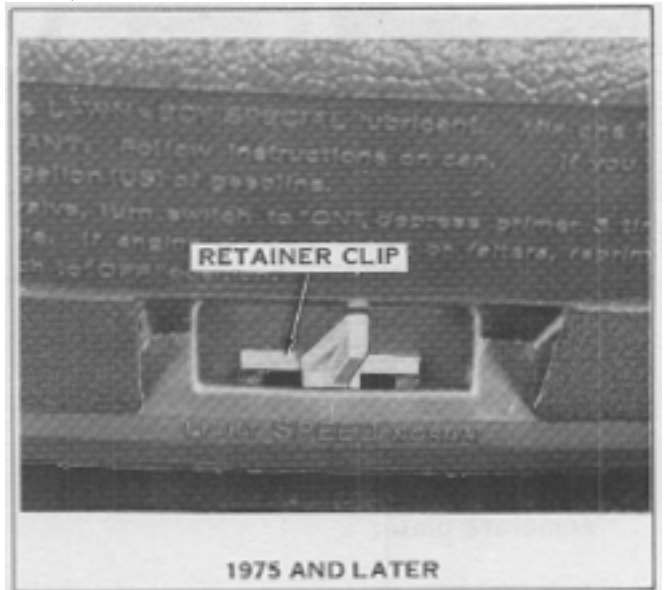
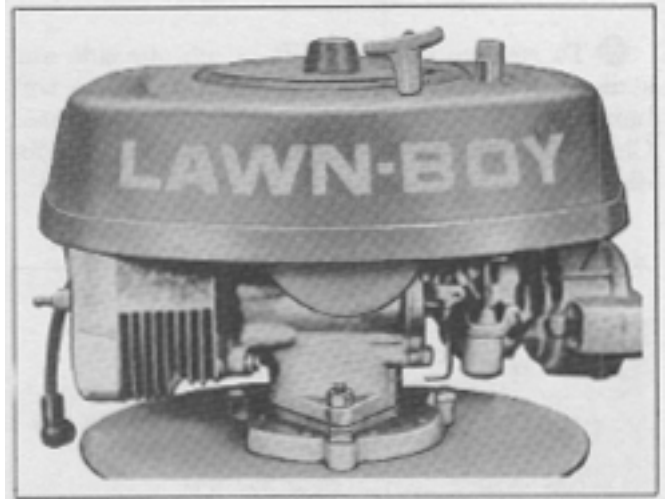
SAFETY WARNING

Disconnect high tension lead from spark plug to prevent accidental starting of engine.

① 1974 AND EARLIER: Disconnect gas line from carburetor and remove complete engine shroud, gas tank, gas tank bracket, primer bar and air baffle. Replace shroud screws in the same location from which they were removed.

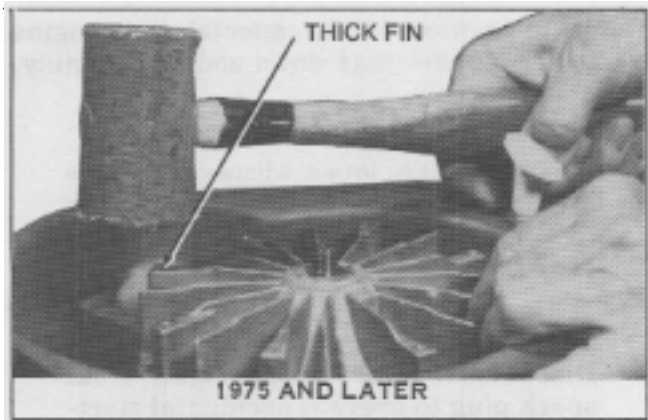
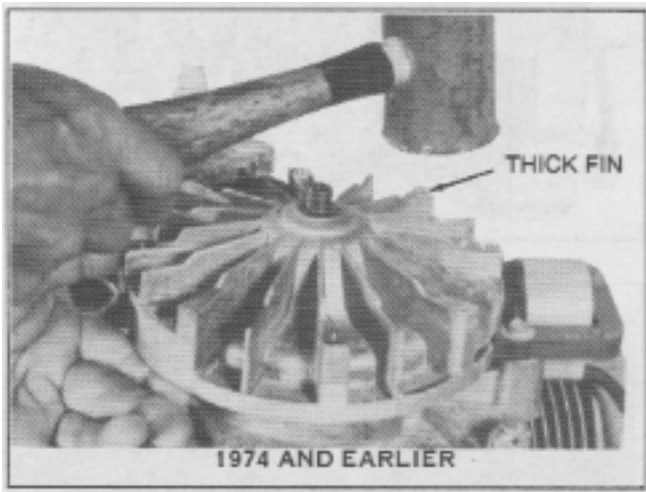
① 1975 AND LATER: Remove engine shroud mounting screws. Remove the retainer clip from the speed control opening in the rear of the shroud. Carefully lift the shroud and disconnect the fuel line and primer hose from the shroud and fuel tank assembly. Tilt the shroud to maneuver the speed control knob through shroud opening and remove shroud.

② Remove spark plug and install special piston stop tool No. 677389. This stop will allow easy removal of flywheel nut. Remove flywheel screen and flywheel nut.



ENGINE TEAR DOWN AND REASSEMBLY TIPS D-400 SERIES

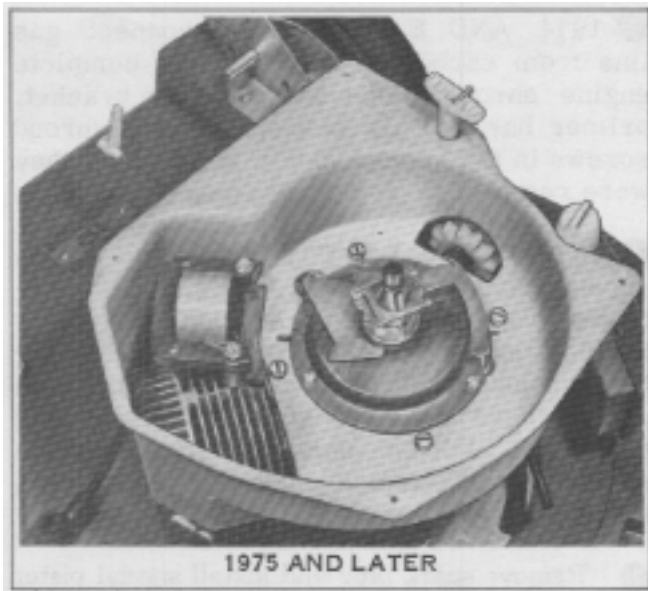
3 To remove flywheel; lift up on one side and strike top of thick fin on opposite side with soft hammer (plastic or rawhide). Remove flywheel. Check flywheel for damaged fins and keyway for distortion, cracks or damage. Replace if damaged.



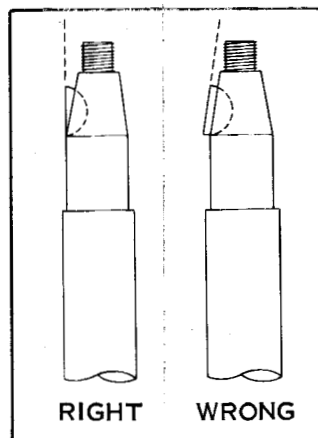
4 Remove four screws securing air baffle to armature plate and remove air baffle.

NOTE

1975 and later models are equipped with a plastic air baffle. Exercise care when removing assembly from armature plate.



5 Remove flywheel key. Use a pair of diagonal pliers to roll the key out of crankshaft keyway.



NOTE

Correct installation of key is important.

ENGINE TEAR DOWN AND REASSEMBLY TIPS D-400 SERIES

6 Lift governor yoke, weights and collar off as an assembly. Set aside carefully. Refer to Section 5 for adjustment and servicing.

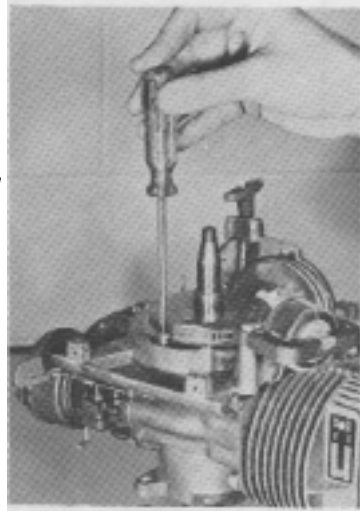
 **NOTE**

Reinstall governor assembly with word "KEY" on yoke under crankshaft keyway.

7 Remove governor spring and steel thrust washer. Refer to Section 5 for lubrication of thrust washer.

8 Unhook variable speed spring from governor lever. Lift up on governor lever to disengage prongs from slots in dust cover. Remove governor lever and nylon thrust collar. Refer to Section 5 for proper installation of thrust collar.

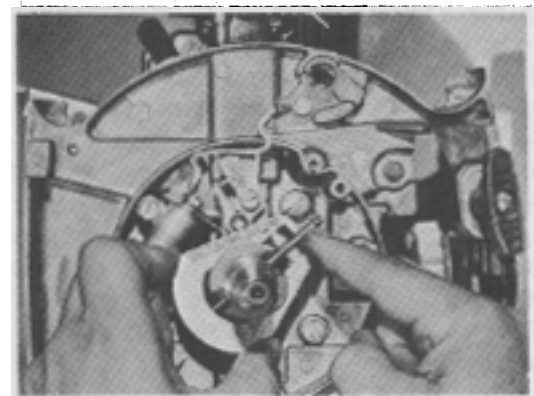
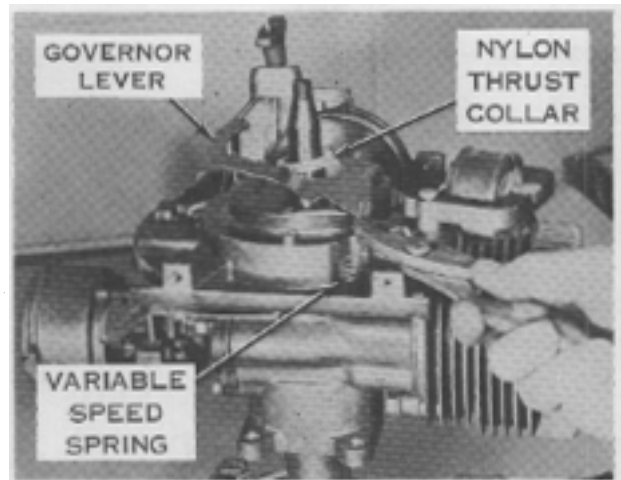
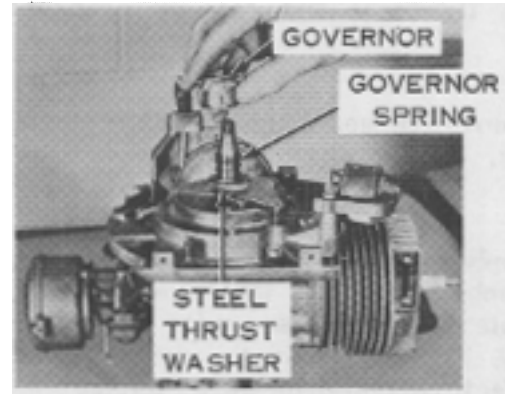
9 Remove dust cover by taking out three screws.



10 Push small end of spark advance flyweight toward crankshaft. Hold tension of spring against crankshaft and return flyweight to original position. Allow smaller end of flyweight to drop down. Remove pin and spring.

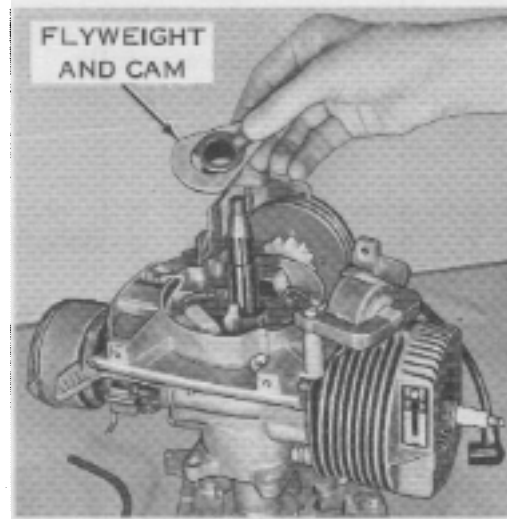
REASSEMBLY TIP

Install flyweight with words "SHAFT KEYWAY THIS END" (smaller end) toward crankshaft keyway. Reinstall pin and spring properly - clip on end must be installed horizontally under flange in narrow end of flyweight.



ENGINE TEAR DOWN AND REASSEMBLY TIPS D-400 SERIES

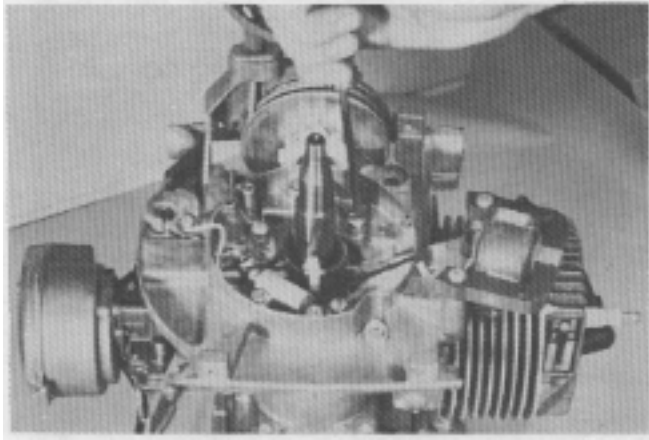
11 Slide flyweight and cam off crankshaft.



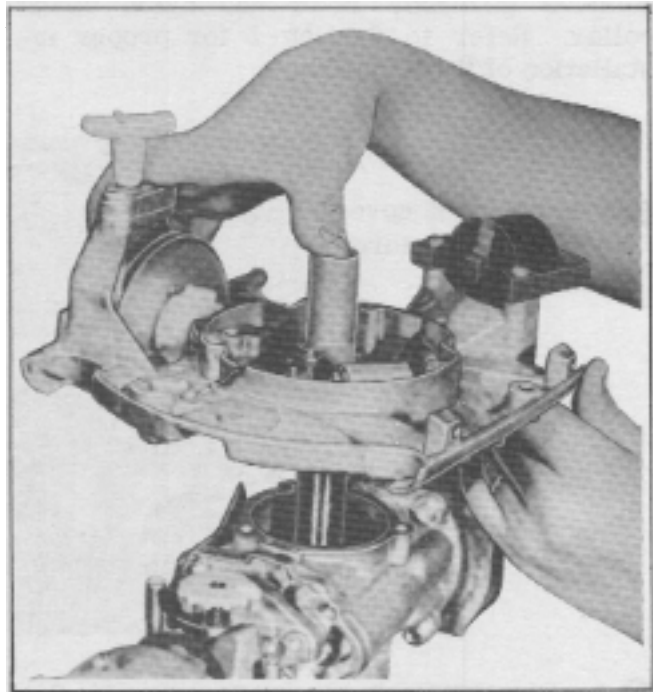
12 Remove three magneto plate mounting screws.

NOTE

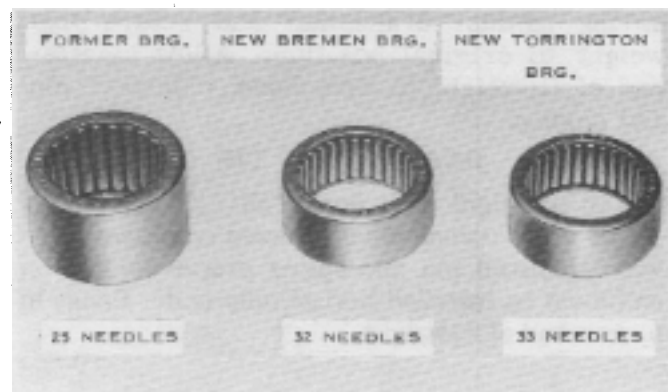
Apply Lawn-Boy nut and screw lock part number 682301 to threads of magneto plate mounting screws prior to reassembly. Tighten screws to correct torque, refer to Section 16 for correct torque.



13 Needle bearings in magneto plates of some models are not retained. To hold them in place during removal, and also to protect the main bearing seal, insert crankshaft guide tool, part number 602887 as shown. Remove armature plate.

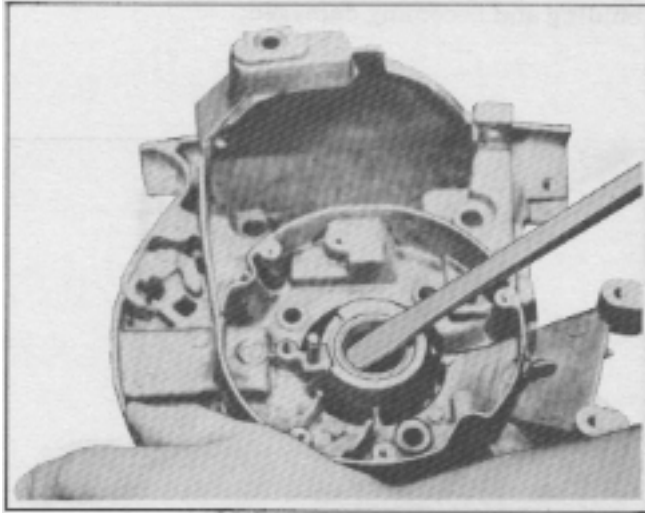


14 A bearing containing 25 needles (largest bearing pictured) was used through 1969 production. A different magneto plate and bearing assembly was built for 1970 production and subsequent units. Refer to parts catalog for correct replacements. These magneto plate bearings contain 33 loose needles if manufactured by Torrington and 32 loose needles if manufactured by Bremen. All bearings must be installed with lettering facing head of installing tool. Bearing removal tool, part number 605082 and installer tool, part number 605081 in the "D" engine tool kit will work with both style magneto plates.

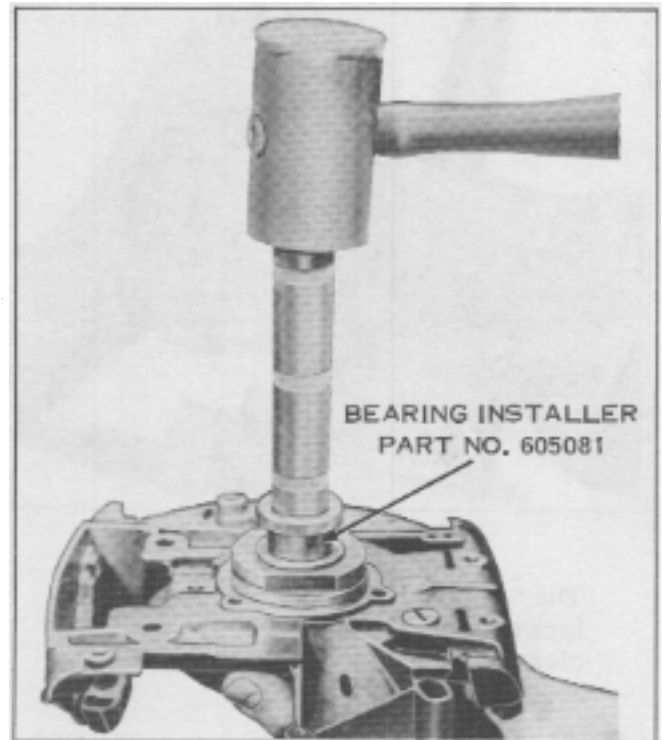


ENGINE TEAR DOWN AND REASSEMBLY TIPS D-400 SERIES

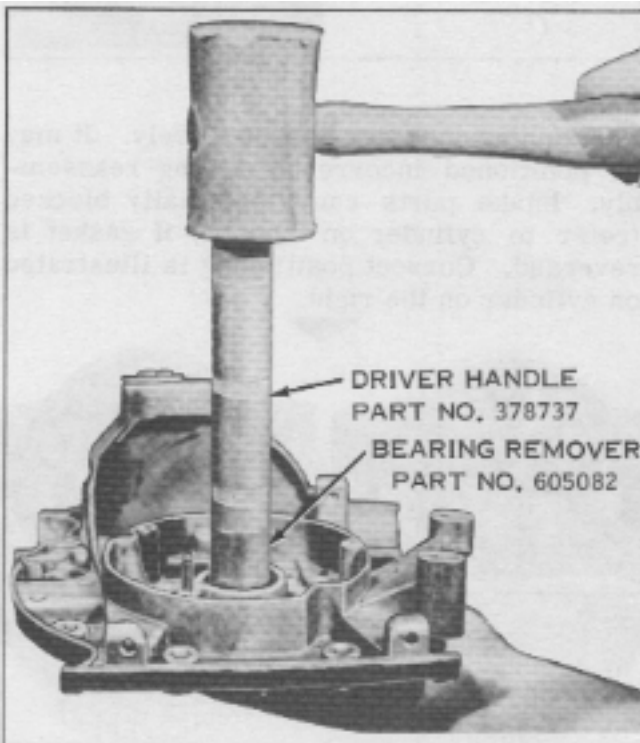
15 To replace bearing, remove seal. Insert blade end of screwdriver under seal and pry up. Do not damage the magneto plate casting.



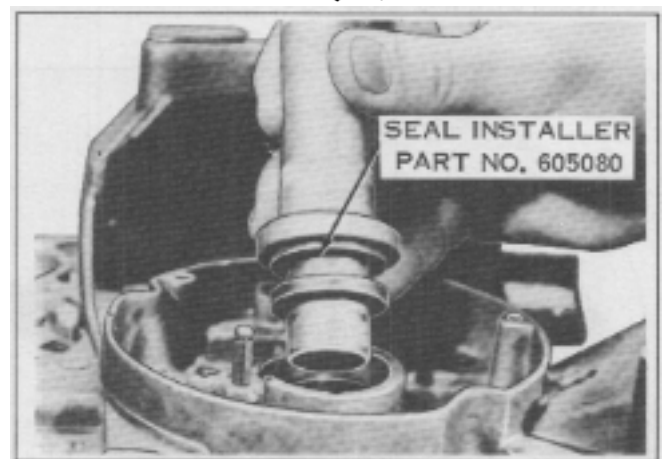
17 Install bearing by inserting bearing on installer tool with lettering facing head of tool. Drive bearing in, holding plate in hand, until tool bottoms on plate, recessing bearing slightly.



16 Insert bearing removal tool Part No. 605082 and drive bearing out with soft headed hammer. If magneto plate is resting on hard surface, plate may become damaged; therefore, hold plate in palm of hand.



18 After magneto plate has been reassembled on short block, lubricate the new seal and slide it into place on the crankshaft. Place seal installer Part No. 608976 on seal. Drive it in until tool bottoms on top of plate.

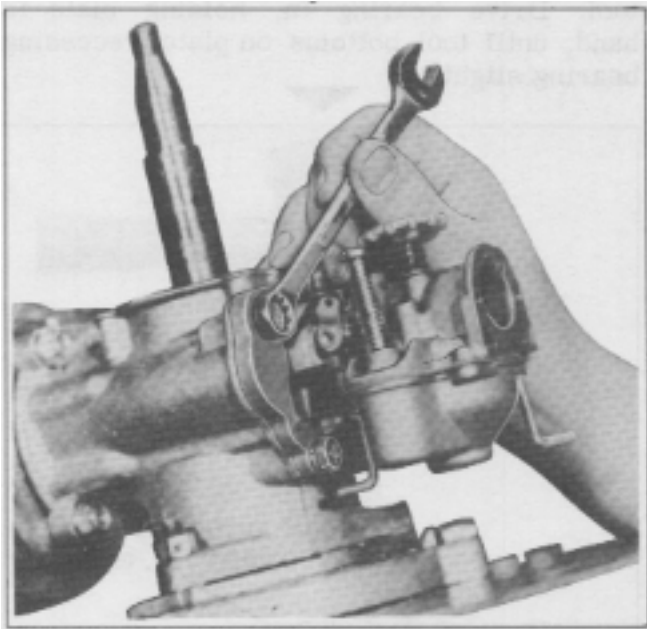


NOTE

Always replace seal - never reuse.

ENGINE TEAR DOWN AND REASSEMBLY TIPS D-400 SERIES

①9 Remove carburetor and reed plate assembly complete by removing four (4) screws securing reed plate to crankcase.



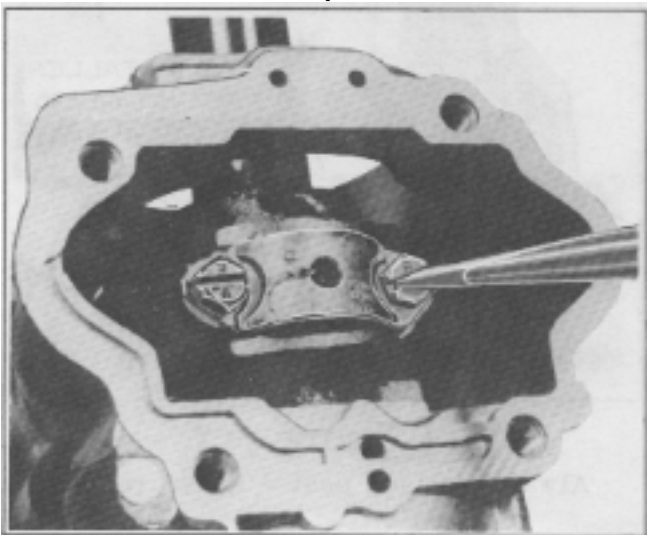
 NOTE

The upper left hand screw has no lockwasher. This is to provide clearance between throttle arm and head of screw.

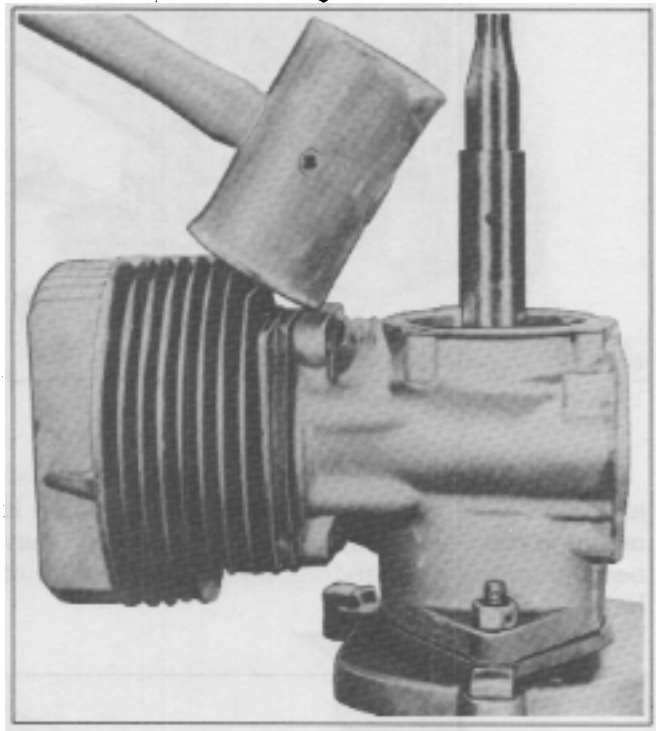
②0 Use a large screwdriver or a socket to loosen (do not remove) the connecting rod screws. Lock tabs have to be bent away from screws first.

 NOTE

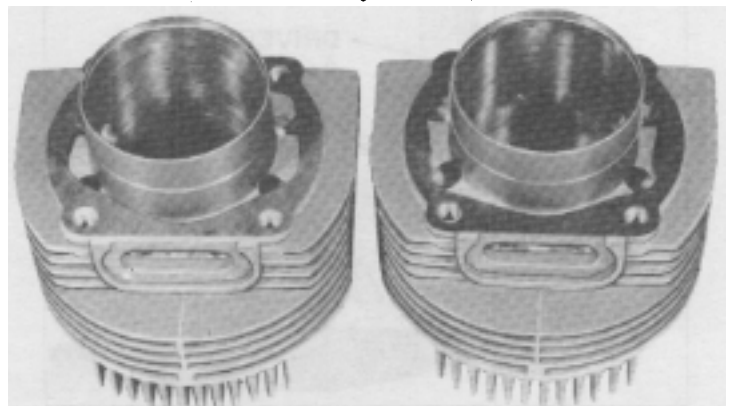
Do not reuse lock tabs. Always replace them with new ones.



②1 Remove four (4) 3/8 inch hex head screws securing cylinder to crankcase. Hit cylinder head sharply with soft headed hammer (plastic or leather) - a steel hammer will damage the casting. Remove cylinder by pulling away from piston quickly. This prevents the piston and rings from binding and becoming damaged.



②2 Examine cylinder gasket closely. It may be positioned incorrectly during reassembly. Intake ports can be partially blocked (refer to cylinder on the left) if gasket is reversed. Correct positioning is illustrated on cylinder on the right.



INCORRECT

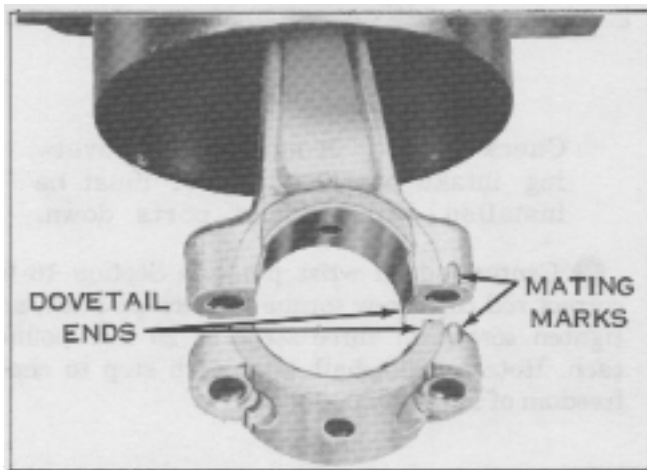
CORRECT

ENGINE TEAR DOWN AND REASSEMBLY TIPS D-400 SERIES

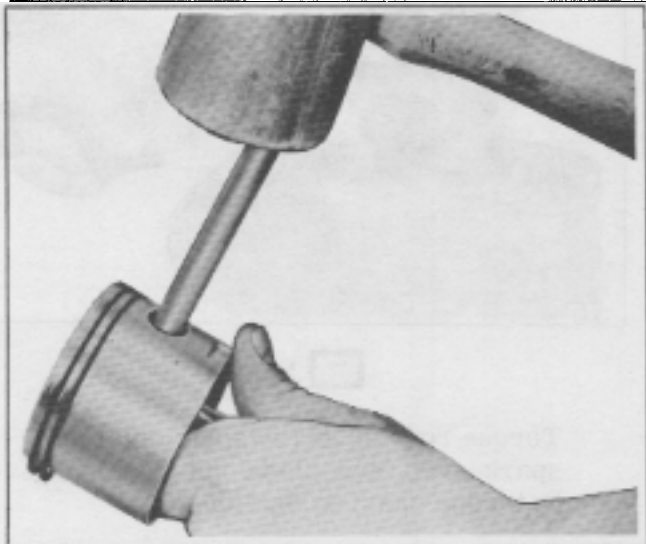
Correct cylinder for D-400 series engine is shown at right. Cylinder at left (ribs cast in letter "H" form) to be used only on D-600 series engine. If used on D-400 engine, failure will occur.

Position crankcase so piston dome is facing up. Crankshaft should be rotated until journal is at lowest position. Remove rod cap, allowing needle bearings to fall out. Needles should be counted. There must be 33. New lock tabs should be installed on rod cap screws for reassembly.

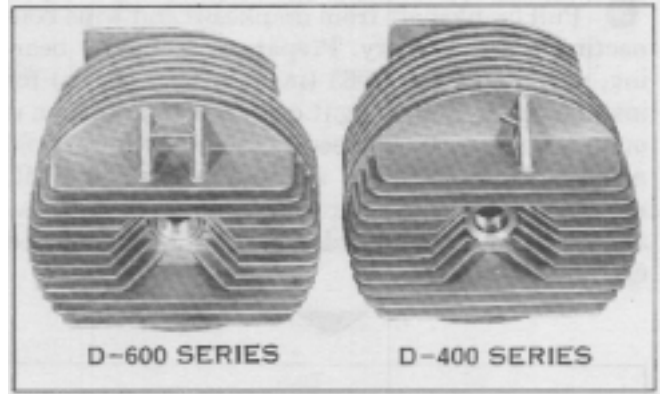
Remove piston and rod assembly. Note mating marks on rod and cap, and the dovetail ends of the bearing liners. These parts must be mated for reassembly. Liners must be centrally located in rod and cap.



25 Remove wrist pin retainer rings and drive wrist pin out.

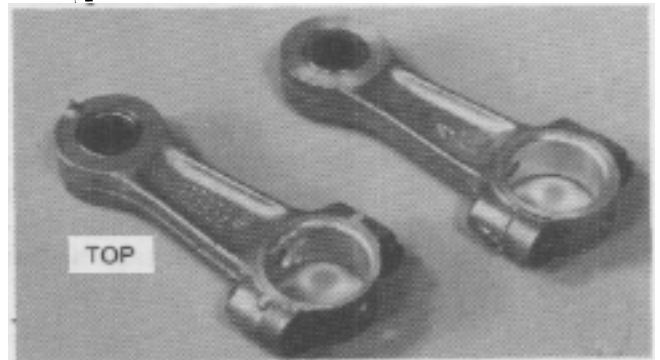


SERVICE BULLETIN REFERENCES



NOTE

Engines produced prior to 1970 contained three-ring piston - those produced after contained two-rings on piston. The two-ring piston and rod assembly contains 27 loose needles in wrist pin end of rod. The three-ring piston and rod contains a bronze bearing in wrist pin end of rod. Care must be taken in removing wrist pin so that loose needles are not misplaced or lost. A 7/16" diameter x 3/4" dowel rod may be inserted to prevent this. This is of utmost importance, since the needle bearing assembly is not available as a service replacement.



When reassembling connecting rod in piston, the spacer lug is positioned up towards "top" of piston.

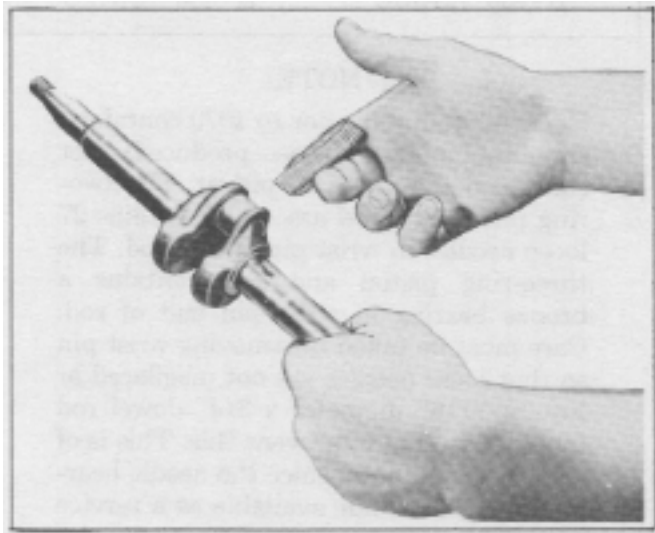
NOTE

When replacing retainer rings, opening must face piston dome or towards bottom of piston skirt. This will eliminate retainer rings from popping out during operation. Retainer has beveled side and flat side. When installed, flat side must face outside of piston.

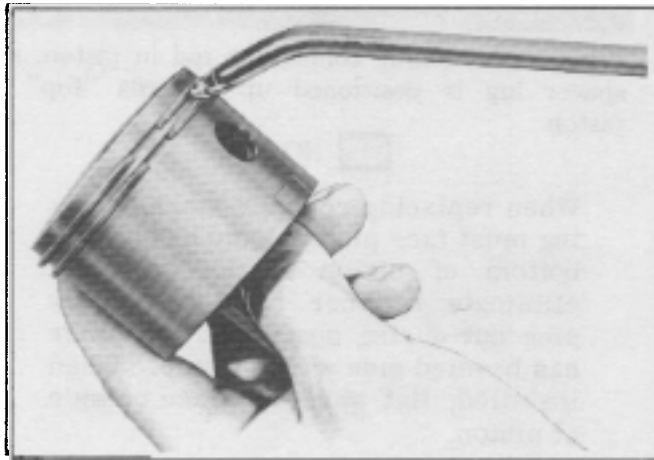
The word "TOP" is diecast in the skirt of the piston; when installed in cylinder, it must face up.

ENGINE TEAR DOWN AND REASSEMBLY TIPS D-400 SERIES

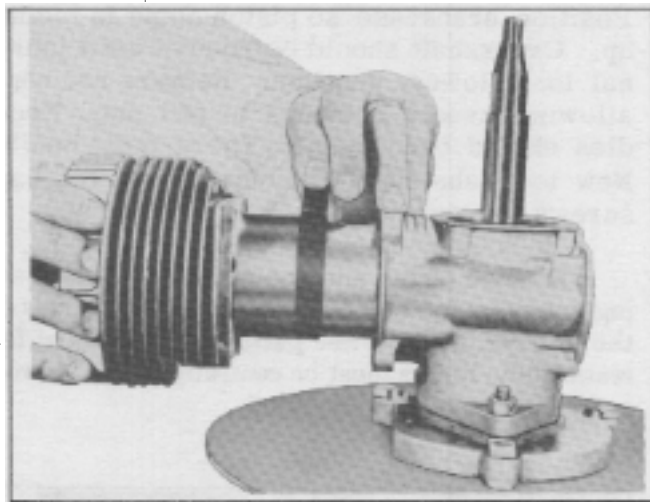
26 Pull crankshaft from crankcase and wipe connecting rod-throw dry. Prepare strip needle bearing, part number 677963 (includes 33 needles) for installation by removing it carefully and position it on index finger. Wrap needles around throw. If old needles are re-installed, apply a coating of OMC needle bearing grease part number 378642 or equivalent on rod cap and rod. Place 17 needles on rod cap and 16 on rod.



27 Install crankshaft in crankcase. Apply oil to piston, rings, wrist pin, and cylinder sleeve. Place rod on crankshaft journal and install rod cap. Tighten rod cap screws finger tight, i.e., just enough to retain needle bearings. Do not bend lock tabs at this point.



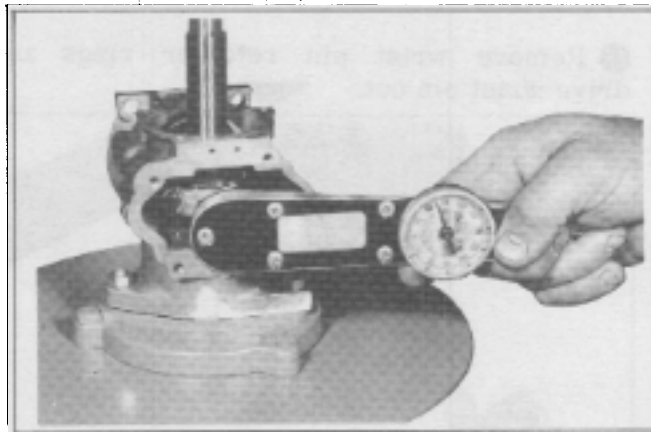
28 Install ring compressor, part number 610510 over head of piston and compress rings. Place cylinder over piston head. Maintain pressure on ring compressor until rings enter cylinder.



NOTE

Check gasket. It must not be covering intake ports. Cylinder must be installed with exhaust ports down.

29 Center rod on wrist pin. See Section 16 for correct rod cap screw torque (60 inch-pounds), and tighten screws in three steps of 20 inch-pounds each. Rotate crankshaft after each step to check freedom of assembly.



NOTE

Torque rod cap screws, flywheel nut, spark plug, and blade nut according to torque chart in Section 16.

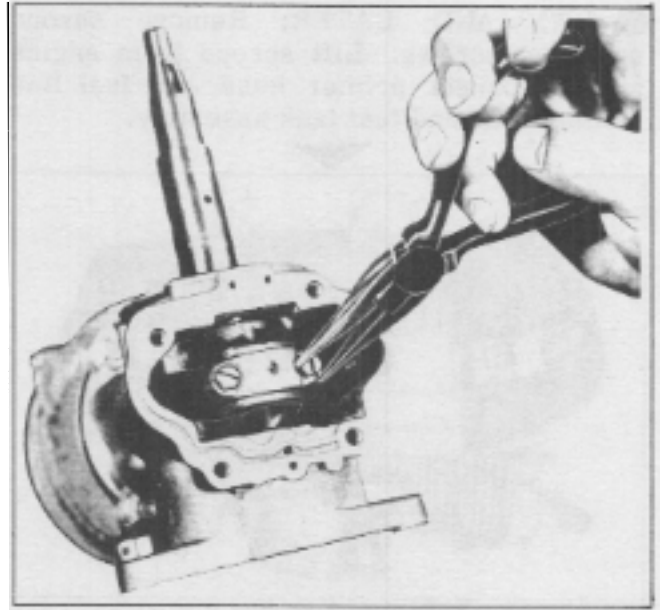
ENGINE TEAR DOWN AND REASSEMBLY TIPS D-400 SERIES

30 Bend lock tabs up against screw heads. If tabs do not fit flush against side of screw head, do not turn screw - merely form tab around corner.



NOTE

Apply a generous amount of oil to the needle bearing and rotate the crankshaft several times to work the oil into the bearing.



ENGINE TEAR DOWN AND REASSEMBLY TIPS D-600 SERIES



SAFETY WARNING

BEFORE PROCEEDING WITH DISASSEMBLY, ALWAYS DISCONNECT SPARK PLUG LEAD TO PREVENT ACCIDENTAL STARTING OF ENGINE. ALSO DRAIN ALL FUEL FROM TANK INTO AN APPROVED SAFETY CONTAINER AND STORE IN A WELL VENTED AREA.



NOTE

Keep assemblies intact whenever possible in tear down. Observe assembly tips. Refer to Torque Reference Guide (Section 16) for correct torque requirements during reassembly.

1 1974 AND EARLIER: Place fuel shut off valve in "OFF" position. Disconnect fuel and primer hoses from carburetor. Remove seven screws securing shroud and gas tank assembly and remove shroud.



ENGINE TEAR-DOWN AND REASSEMBLY TIPS UTILITY MODELS

Refer to Section 14 for special "D" engine tools needed for tear-down and reassembly.

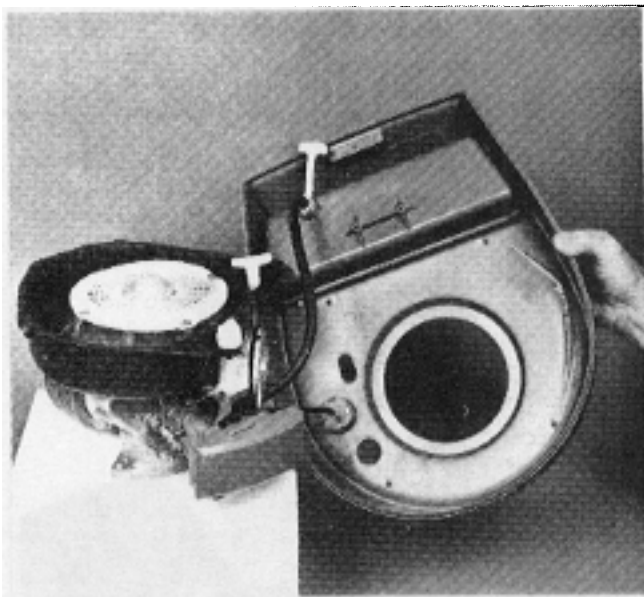
▲ SAFETY WARNING

BEFORE PROCEEDING WITH DISASSEMBLY, DISCONNECT SPARK PLUG LEAD TO PREVENT ACCIDENTAL STARTING OF ENGINE. ALSO DRAIN ALL FUEL FROM TANK INTO AN APPROVED SAFETY CONTAINER AND STORE IN A WELL VENTED AREA.

☐ NOTE

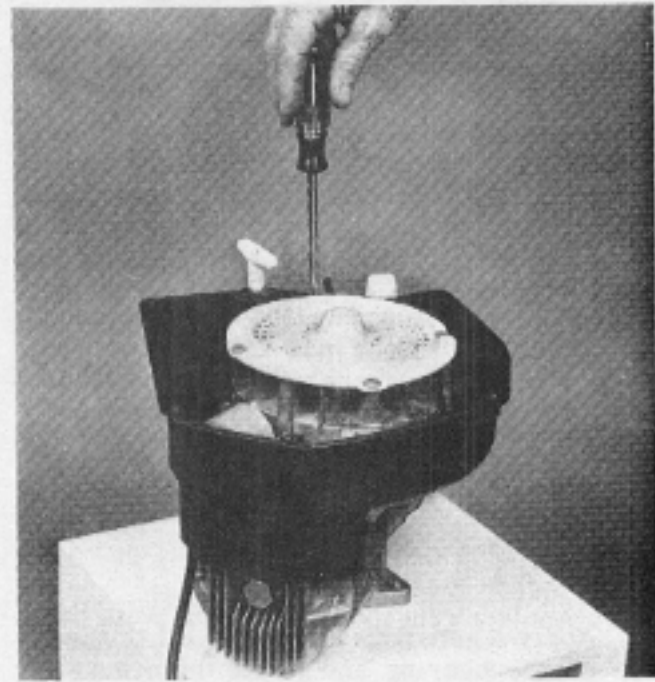
Keep assemblies intact whenever possible in tear-down. Observe assembly tips. Refer to Torque Reference Guide Section 16 for correct torque settings during reassembly.

① Remove four (4) engine shroud mounting screws. Carefully lift the shroud and disconnect the fuel line and primer hose from the shroud and fuel tank assembly. Tilt shroud to remove.



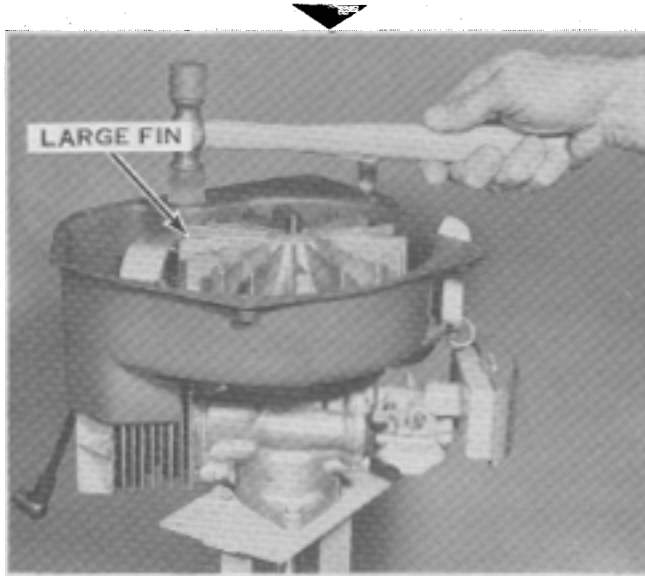
② Remove spark plug and install special piston stop tool part no. 677389. This will allow easy removal of flywheel nut. Remove flywheel screen. Screen must be removed to expose flywheel nut. Remove flywheel nut.

CAUTION: NEVER RUN OR TEST A LAWN-BOY ENGINE WITHOUT THE AIR BAFFLE OR SHROUD IN PLACE. A PISTON SEIZURE WILL OCCUR.

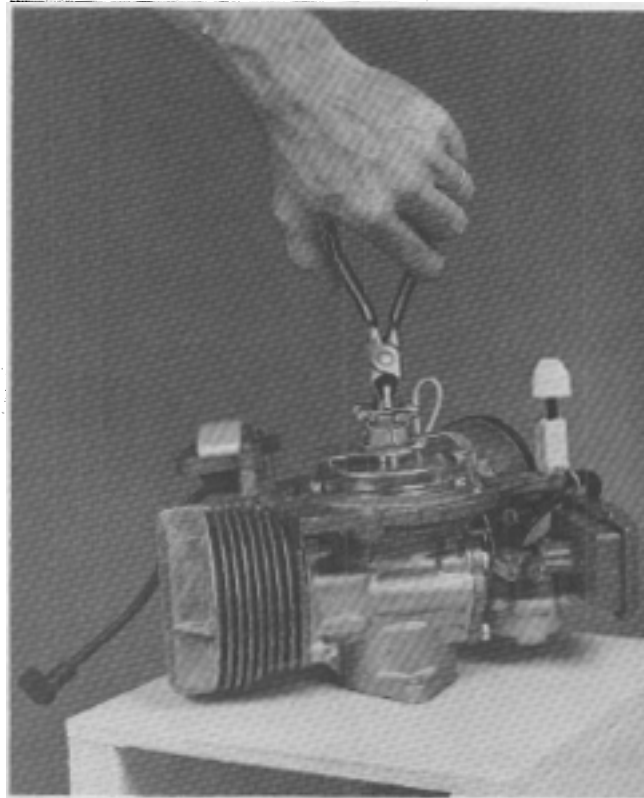


ENGINE TEAR-DOWN AND REASSEMBLY TIPS UTILITY MODELS

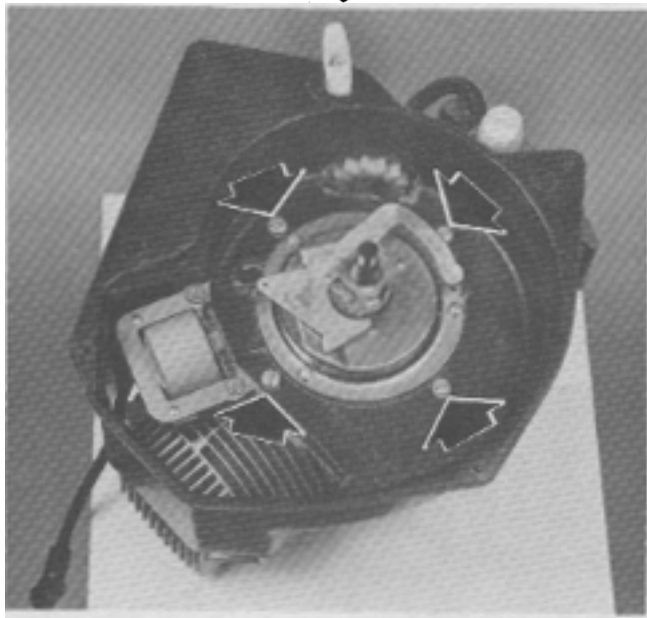
③ To remove flywheel; use a soft headed (plastic or rawhide) hammer and strike flywheel wide fins to loosen flywheel. Remove flywheel. Check flywheel for broken fins, damage or cracks.



⑤ Remove flywheel key. Use a pair of diagonal pliers to roll the key out of crankshaft keyway.

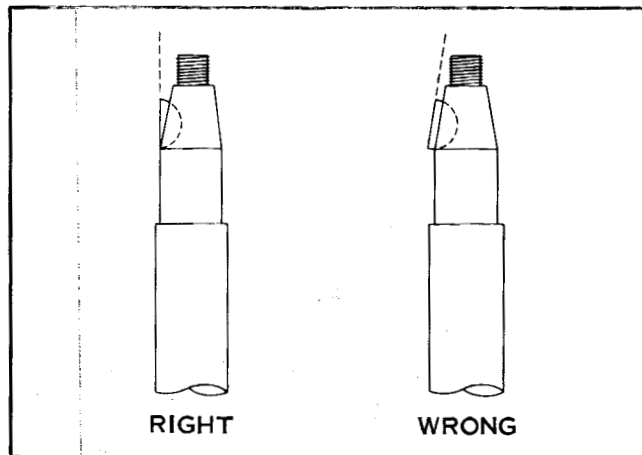


④ Remove four screws securing air baffle to armature plate and remove air baffle.



 NOTE

Utility models are equipped with a plastic air baffle. Exercise care when removing assembly from armature plate.



 NOTE

Correct installation of key is important.

ENGINE TEAR-DOWN AND REASSEMBLY TIPS UTILITY MODELS

6 Lift governor yoke, weights and collar off as an assembly. Set aside carefully. Refer to Section 5 for adjustment and servicing.

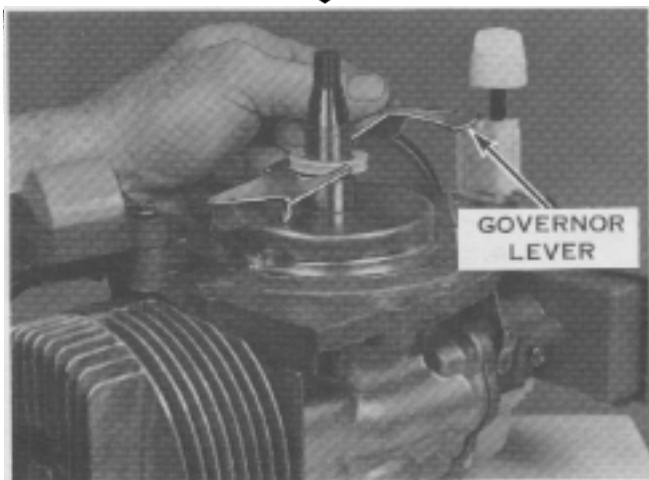


NOTE

Reassembly Tip
Reinstall governor assembly with word "KEY" on yoke under crankshaft keyway.

7 Remove governor spring and steel thrust washer. Refer to Section 5 for lubrication of thrust washer.

8 Lift up on governor lever to disengage prongs from slots in dust cover. Remove governor lever and nylon collar. Refer to Section 5 for proper installation of collar.



9 Remove dust cover by removing three attaching screws.



10 Push small end of spark advance flyweight toward crankshaft. Hold tension of spring against crankshaft and return flyweight to original position. Allow smaller end of flyweight to drop down. Remove pin and spring.



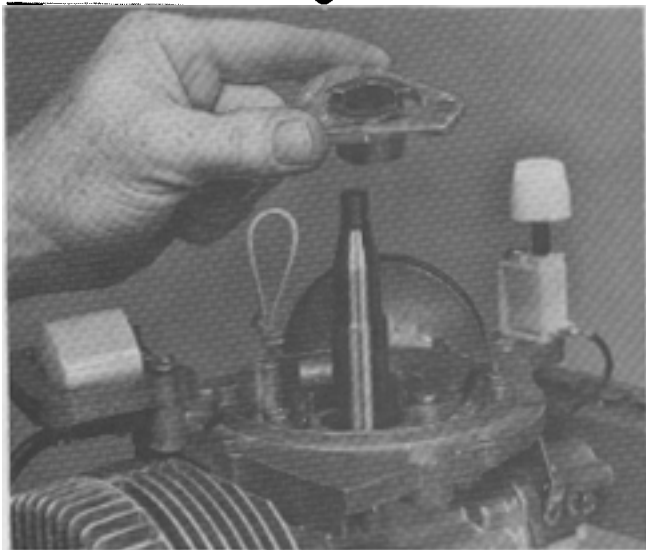
REASSEMBLY TIP

Install flyweight with words "SHAFT KEYWAY THIS END" (smaller end) toward crankshaft keyway. Reinstall pin and spring properly - clip on end must be installed horizontally under flange in narrow end of flyweight.



ENGINE TEAR-DOWN AND REASSEMBLY TIPS UTILITY MODELS

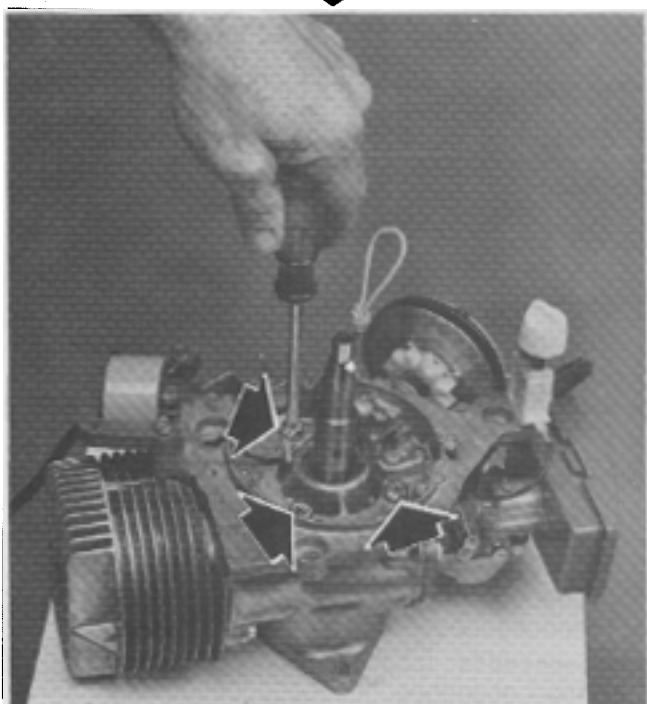
- 11 Slide flyweight and cam off crankshaft.



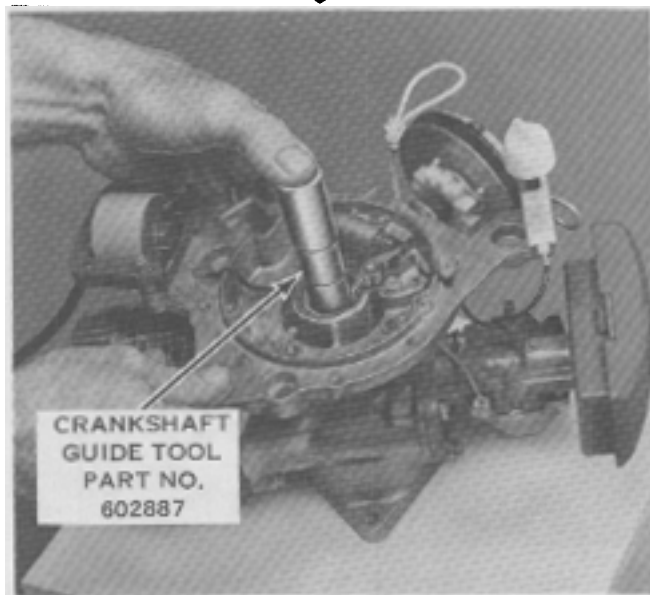
- 12 Remove three (3) magneto plate mounting screws.

 **NOTE**

Apply Lawn-Boy nut and screw lock part no. 682301 to threads of magneto plate mounting screws prior to reassembly. Tighten screws to correct torque, refer to Section 16 for correct torque.



- 13 Needle bearings in magneto plate are not retained. To hold them in place during removal, insert crankshaft guide tool, part no. 602887 as shown. Remove magneto plate.

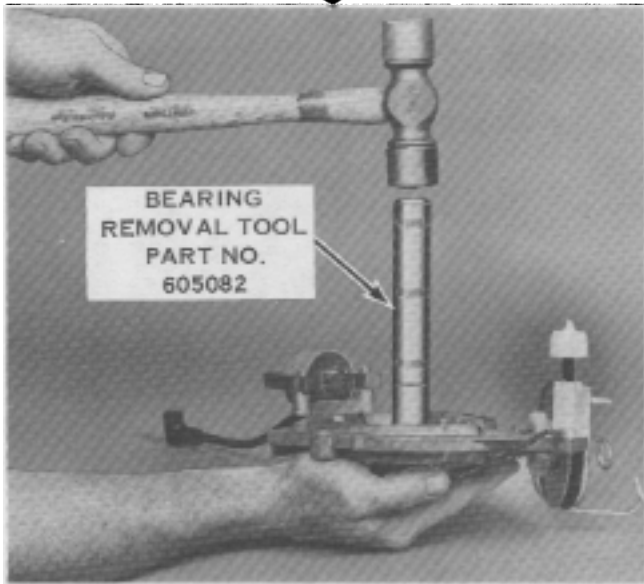


- 14 To replace bearing, remove seal using seal remover tool part no. 681867.

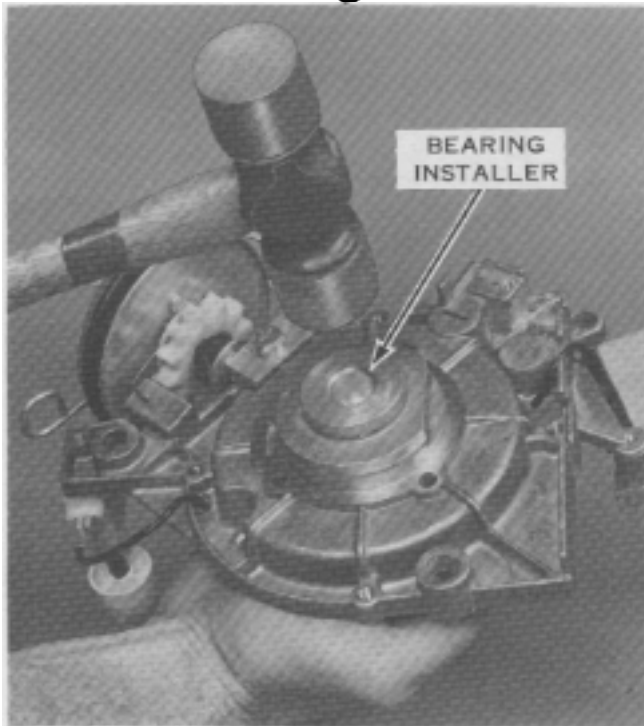


ENGINE TEAR-DOWN AND REASSEMBLY TIPS UTILITY MODELS

15 Insert bearing removal tool part no. 605082 and drive bearing out with soft headed hammer. If magneto plate is resting on hard surface, plate may be damaged; therefore, hold plate in palm of hand.



16 Install bearing by inserting bearing on installer tool with lettering facing head of tool. Drive bearing in, holding plate in hand, until tool bottoms on plate, recessing bearing slightly.



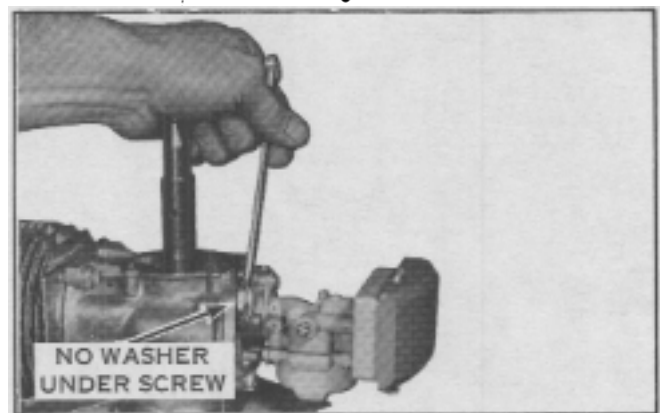
17 After magneto plate has been reassembled on short block, lubricate the new seal and slide it into place on the crankshaft. Place seal installer part no. 608976 on seal. Drive it in until tool bottoms on top of plate.



NOTE

Always replace seal - never reuse old seal.

18 Remove carburetor and reed plate assembly by removing four (4) screws securing reed plate to crankcase.

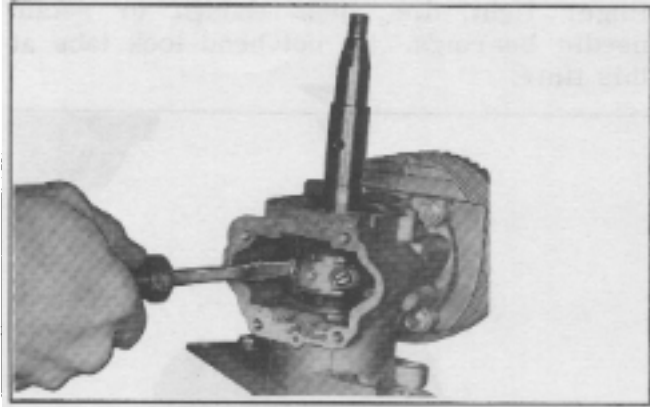


NOTE

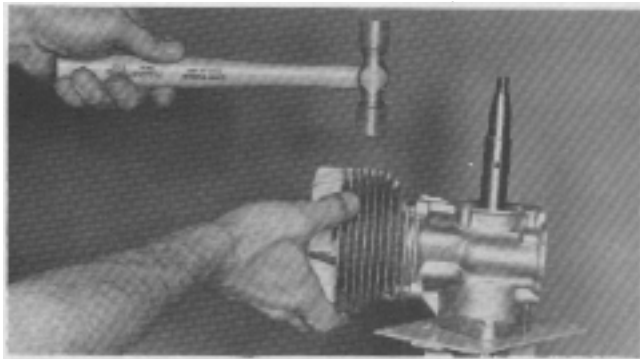
The upper left hand screw has no lockwasher. This is to provide clearance between throttle arm and head of screw.

ENGINE TEAR-DOWN AND REASSEMBLY TIPS UTILITY MODELS

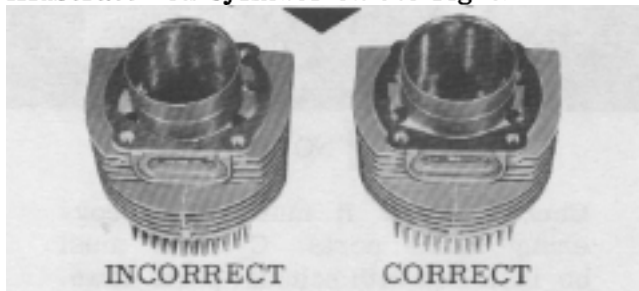
19 Use a large screwdriver or socket to loosen (do not remove) the connecting rod screws. Lock tabs do have to be bent away from screws first.



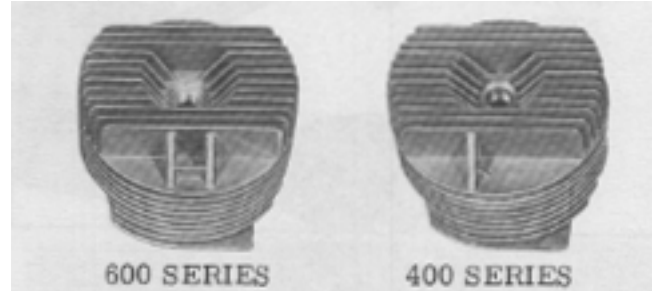
20 Remove four (4) 3/8 inch hex head screws securing cylinder to crankcase. Hit cylinder head sharply with soft headed hammer (plastic or leather) - a steel hammer will damage the casting. Remove cylinder by pulling away from piston quickly. This prevents damage to piston and ring assembly.



21 Examine cylinder gasket closely. It may be positioned incorrectly during reassembly. Intake ports can be partially blocked (refer to cylinder on the left) if gasket is reversed. Correct positioning is illustrated on cylinder on the right.

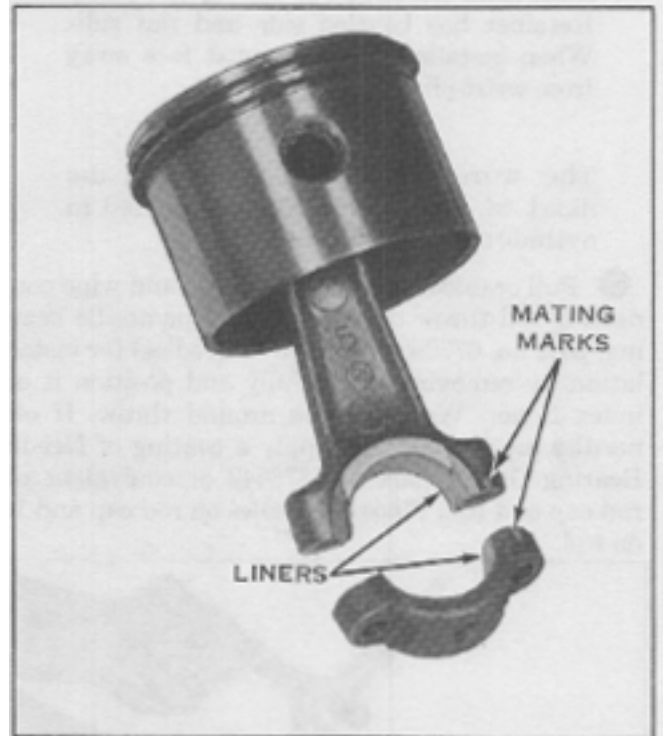


22 Correct cylinder for D-400 series engine is shown at right. Cylinder at left (ribs cast in form of letter "H") to be used only on D-600 series engine. If used on D-400 engine, failure will occur.



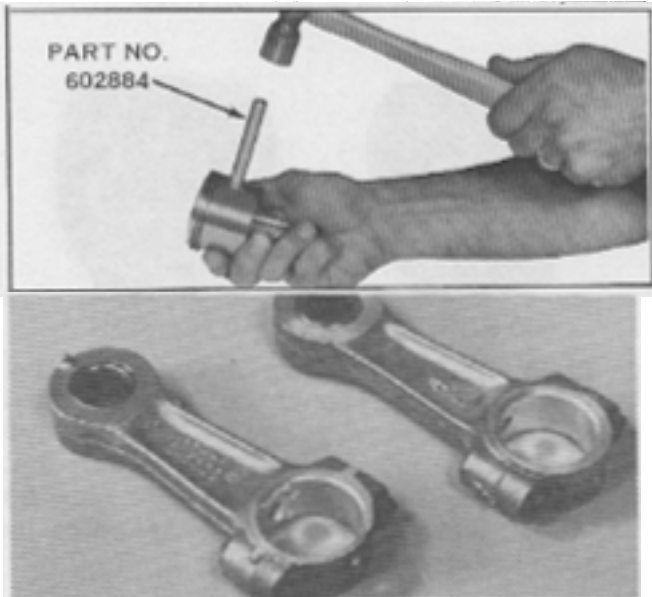
Position crankcase so piston dome is facing up. Crankshaft should be rotated until journal is at lowest position. Remove rod cap, allowing needle bearings to fall out. Needles should be counted. There must be 33. New lock tabs should be installed on rod cap screws for reassembly.

23 Remove piston and rod assembly. Note mating marks on rod and cap, and the dovetail ends of the bearing lines. These parts must be mated for reassembly. Liners must be seated in rod and cap correctly.




ENGINE TEAR-DOWN AND REASSEMBLY TIPS UTILITY MODELS


24 Remove wrist pin retainer rings and drive wrist pin out. To remove wrist pin use special tool part no. 602884.



When reassembling connecting rod in piston, the spacer lug is positioned up towards "top" of piston.

 **NOTE**

When replacing retainer rings, opening must face piston dome or towards bottom of piston skirt. This will eliminate retainer rings from popping out during operating. Retainer has beveled side and flat side. When installed flat side must face away from wrist pin.

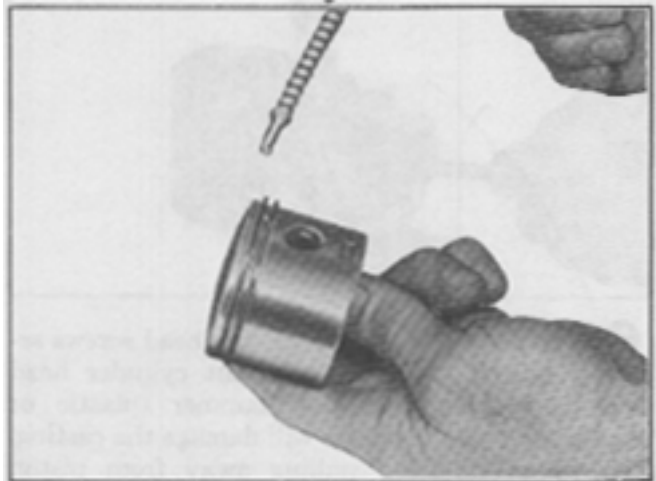
 **NOTE**

The word "TOP" is diecast in the skirt of the piston; when installed in cylinder, it must face up.

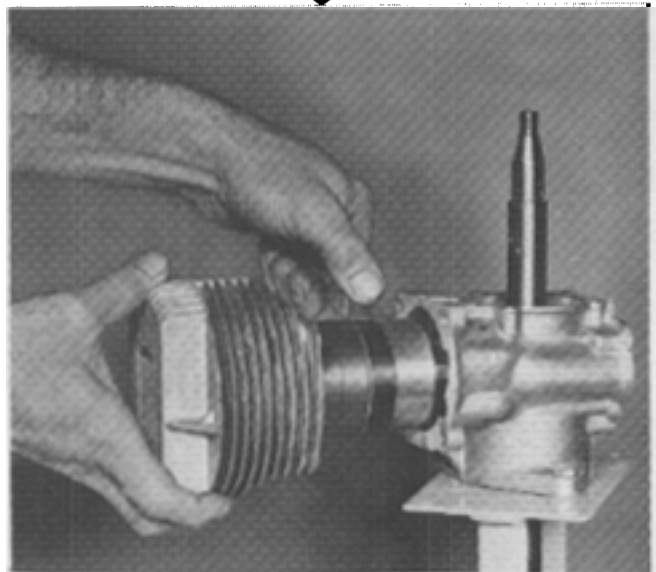
25 Pull crankshaft from crankcase and wipe connecting rod-throw dry. Prepare stripe needle bearing, part no. 677963 (includes 33 needles) for installation by removing it carefully and position it on index finger. Wrap needles around throw. If old needles are re-installed, apply a coating of Needle Bearing Grease part no. 378642 or equivalent on rod cap and rod. Place 17 needles on rod cap and 16 on rod.



26 Install crankshaft in crankcase. Apply oil to piston, rings, wrist pin, and cylinder sleeve. Place rod on crankshaft journal and install rod cap. Tighten rod cap screws finger tight, i.e., just enough to retain needle bearings. Do not bend lock tabs at this time.



Stagger ring gaps (ends) on top of piston approximately 30° apart and install ring compressor, part no. 426020 over head of piston and compress rings. Place cylinder over piston head. Maintain pressure on ring compressor until rings enter cylinder.

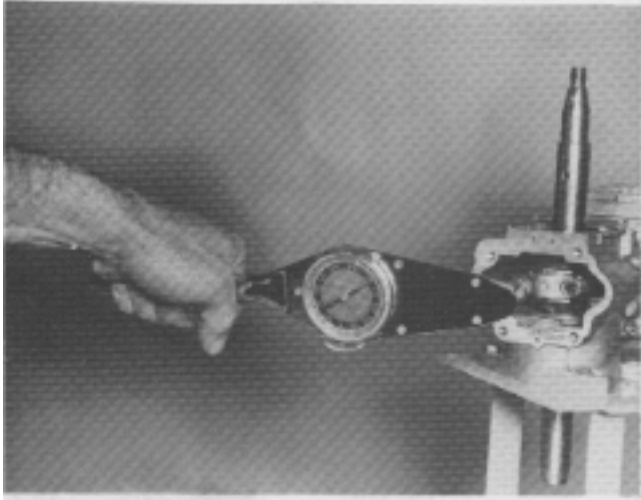



 **NOTE**

Check gasket. It must not be covering intake ports. Cylinder must be installed with exhaust ports down.

ENGINE TEAR-DOWN AND REASSEMBLY TIPS UTILITY MODELS

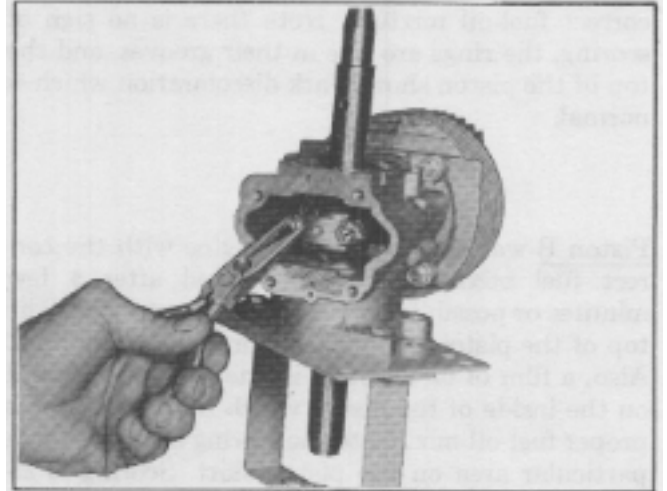
28 Center rod on wrist pin. See Section 16 for correct rod cap screw torque (60 inch-pounds) and tighten in three steps of 20 inch-ounds each. Rotate crankshaft after each step to check freedom of assembly.



 NOTE

Torque rod cap screws, flywheel nut, spark plug and blade nut according to torque specifications in Section 16.

29 Bend lock tabs up against head of each screw. If tabs do not fit flush against head of screw, do not turn screw - merely form tab around corner.



 NOTE

Apply a generous amount of oil to the needle bearing and rotate the crankshaft several times to work the oil into the bearing.

PISTON AND CYLINDER WALLS SCORING

Most instances of piston & cylinder scoring can be traced to lack of oil, use of improper oil - fuel mixture, foreign particles in cylinder, heating caused by plugged cooling fins, or excessive carbon build-up in the cylinder exhaust ports.

Piston A has been used in an engine which has a correct fuel-oil mixture. Note there is no sign of scoring, the rings are free in their grooves, and the top of the piston shows dark discoloration which is normal.

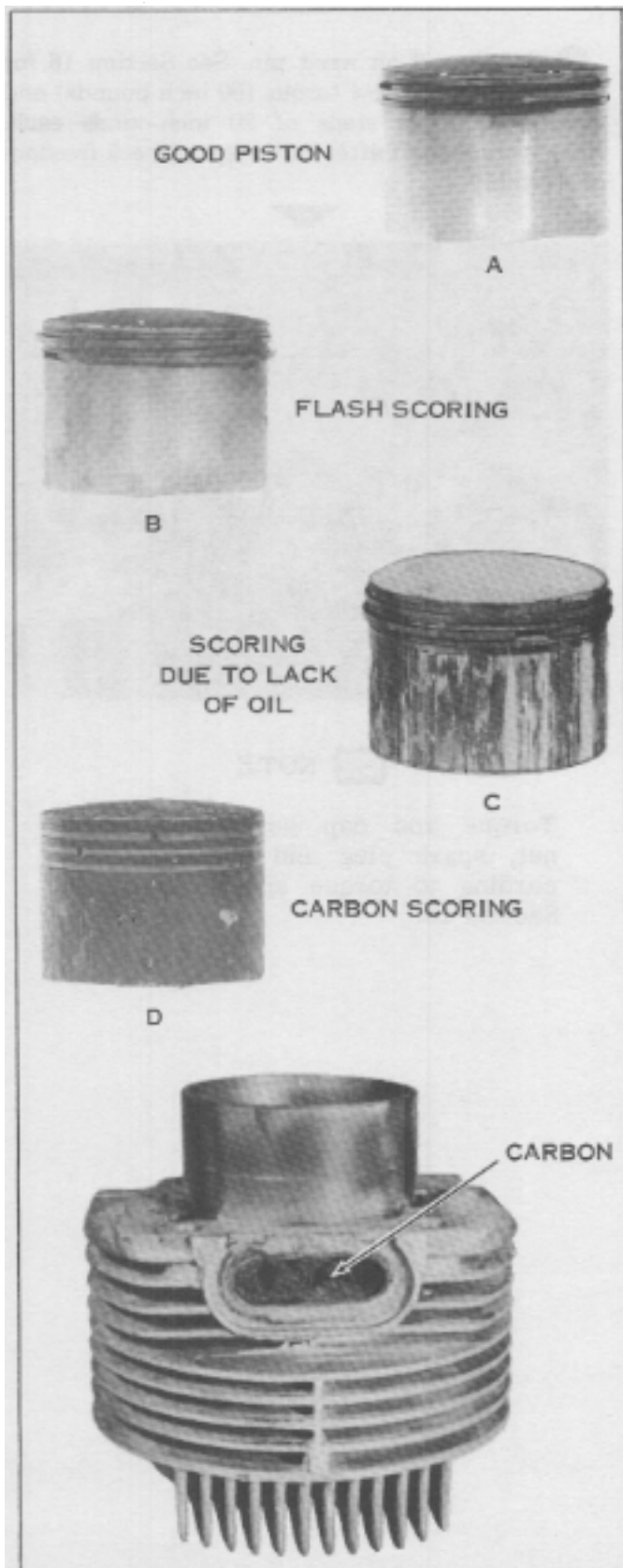
Piston B was also used in an engine with the correct fuel mixture, but was scored after a few minutes or possibly several hours of operation. The top of the piston is dark in color, which is normal. Also, a film of oil is found in the ring grooves and on the inside of the piston which further indicates proper fuel-oil mix. Note the scoring is isolated to a particular area on the piston skirt. Scoring is always adjacent to either the intake or exhaust ports. This resulted from small particles of metal breaking away from an intake or exhaust port. This type of failure is covered by warranty.

Piston C is heavily scored all around the skirt. This piston was run in an engine with a lack of lubrication. The light color on the top of the piston and lack of oil inside the piston and ring grooves indicates lack of oil. This is not covered by warranty.

Lack of lubrication scoring will not always result in light coloration of the piston dome as the engine may have been run for some time with sufficient lubrication and consequently, the piston dome will be dark in color and resemble one which has been operating on proper fuel mix.

Piston D is scored as a result of carbon build-up. Accumulation of carbon and other deposits on the piston skirt. Particles of carbon breaking away from the exhaust ports, lodging between the piston skirt and cylinder results in scoring the piston and/or cylinder. This is not covered by warranty.

In most cases, the rings will be partially or completely frozen within the ring grooves, and the piston will be discolored.



Carbon scoring usually results from the use of a low grade oil or an excessive amount of oil in the mix or a lack of care and maintenance which is owner's responsibility.

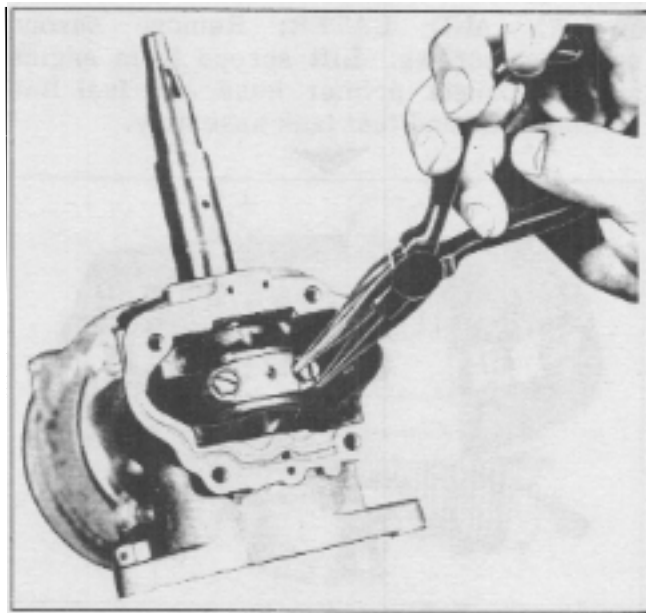
ENGINE TEAR DOWN AND REASSEMBLY TIPS D-400 SERIES

30 Bend lock tabs up against screw heads. If tabs do not fit flush against side of screw head, do not turn screw - merely form tab around corner.



NOTE

Apply a generous amount of oil to the needle bearing and rotate the crankshaft several times to work the oil into the bearing.



ENGINE TEAR DOWN AND REASSEMBLY TIPS D-600 SERIES



SAFETY WARNING

BEFORE PROCEEDING WITH DISASSEMBLY, ALWAYS DISCONNECT SPARK PLUG LEAD TO PREVENT ACCIDENTAL STARTING OF ENGINE. ALSO DRAIN ALL FUEL FROM TANK INTO AN APPROVED SAFETY CONTAINER AND STORE IN A WELL VENTED AREA.



NOTE

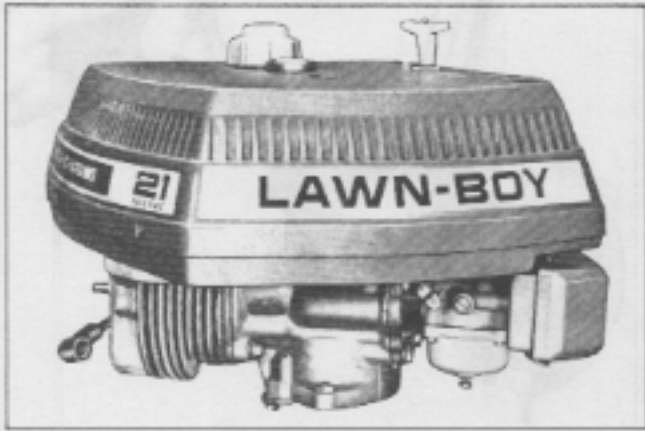
Keep assemblies intact whenever possible in tear down. Observe assembly tips. Refer to Torque Reference Guide (Section 16) for correct torque requirements during reassembly.

1 1974 AND EARLIER: Place fuel shut off valve in "OFF" position. Disconnect fuel and primer hoses from carburetor. Remove seven screws securing shroud and gas tank assembly and remove shroud.

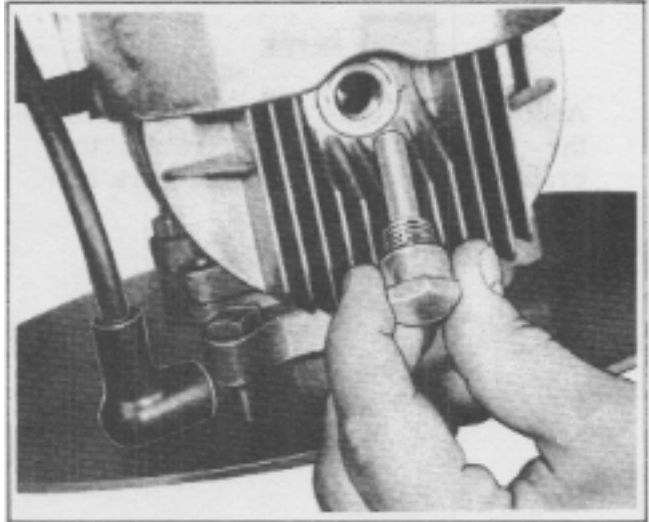


ENGINE TEAR DOWN AND REASSEMBLY TIPS D-600 SERIES

① 1975 AND LATER: Remove shroud mounting screws. Lift shroud from engine and disconnect primer hose and fuel line from shroud and fuel tank assembly.

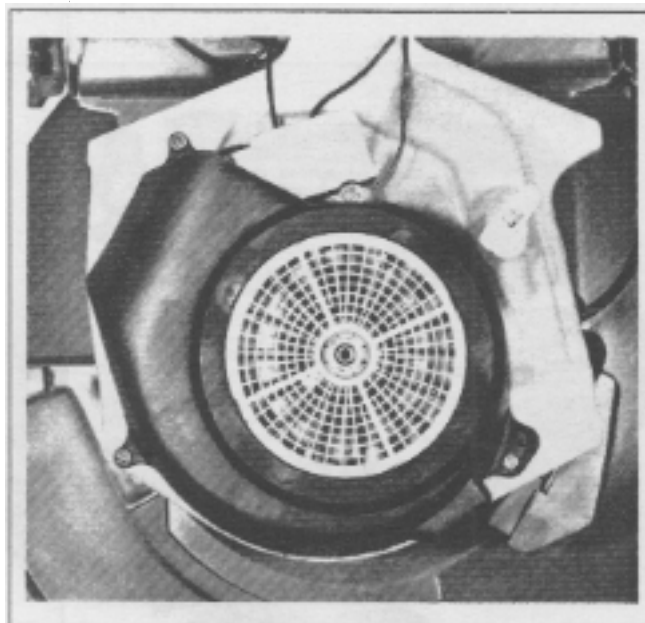


③ Remove spark plug and install piston stop tool no. 677389. This stop will allow easy removal of flywheel nut. Remove flywheel nut.

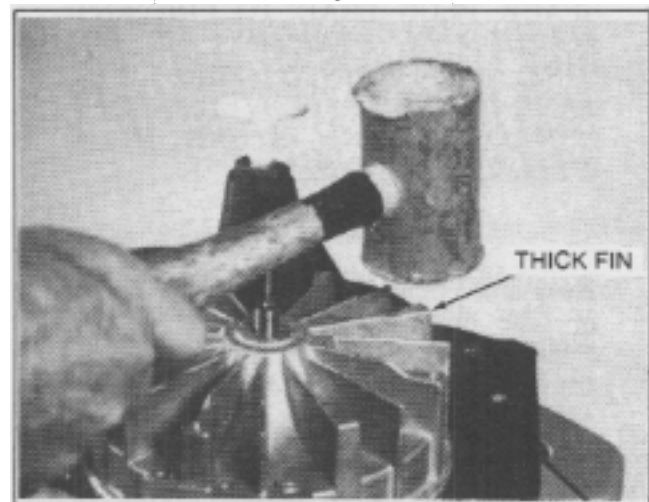


② 1974 AND EARLIER: Remove three screws securing air baffle to armature plate. Disconnect kill switch lead from ignition switch and remove air baffle.

② 1975 AND LATER: Remove two Phillips head screws and the ON-OFF switch mounting screw, disconnect switch wire and remove air baffle.



④ To remove flywheel; first remove flywheel screen. Use a soft headed (plastic or rawhide) hammer and strike top of wide fin of flywheel. At the same time apply upward pressure with your hand at point opposite where hammer strikes. Loosen flywheel as shown. Examine flywheel for wear or damage. Check keyway for distortion or cracking.



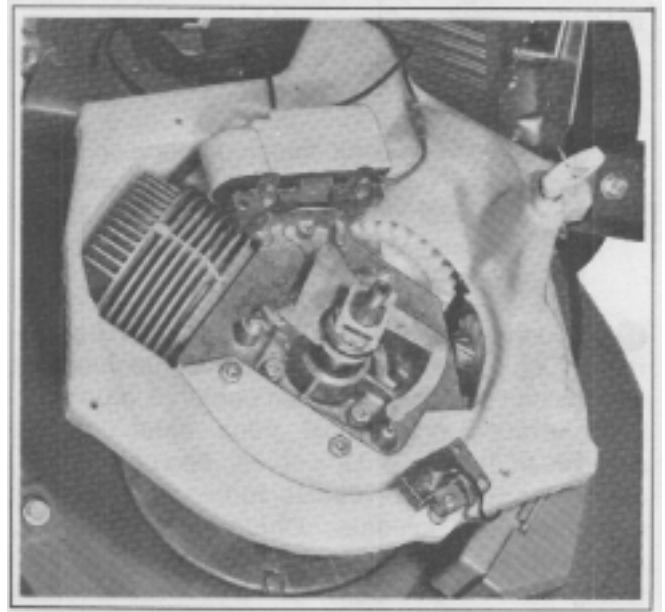
CAUTION: NEVER RUN OR TEST A LAWN-BOY ENGINE WITHOUT THE AIR BAFFLE OR SHROUD IN PLACE. WITHOUT THEM - A PISTON SEIZURE WILL OCCUR.

ENGINE TEAR DOWN AND REASSEMBLY TIPS D-600 SERIES

5 1975 AND LATER: Remove shroud mounting base by removing three 7/16 inch hex head screws. One of these screws is located under C-D module. Remove C-D module to facilitate shroud mounting base removal. On models equipped with alternator remove two alternator mounting screws and remove alternator.

 NOTE

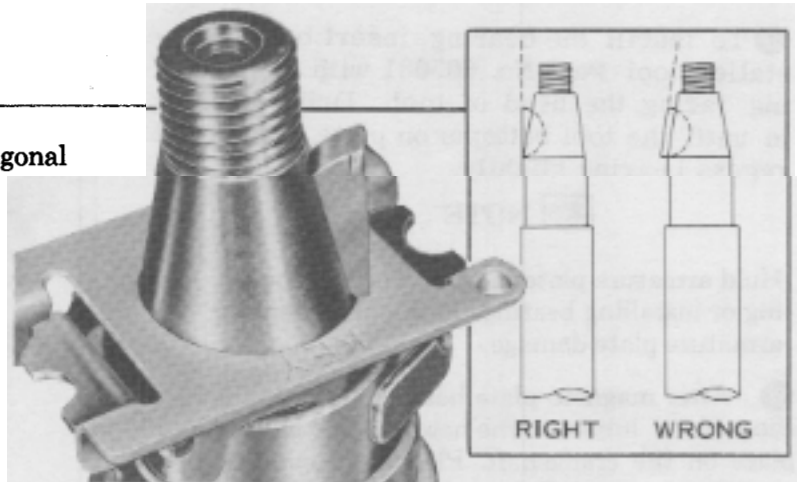
The spark plug lead is routed between the cylinder and shroud mounting base. Use care when removing C-D module to prevent damaging the spark plug lead or rubber connector.



6 Remove flywheel key. Use a pair of diagonal pliers to roll key out of crankshaft keyway.

 NOTE

Correct installation of key is important. If installed incorrectly, possible cracking of flywheel hub may occur.



7 Lift governor yoke, weights and collar off as an assembly. Set aside carefully. Refer to Section 5 for adjustment and servicing.

 NOTE

Reinstall governor assembly with word "KEY" on yoke facing crankshaft keyway.

9 Unhook variable speed spring from governor lever. Lift up on governor lever to disengage prongs from slots in bracket. Remove governor lever and nylon governor collar.

 NOTE

Refer to Section 5 for proper installation of governor collar.

8 Remove governor spring and steel thrust washer. Refer to Section 5 for lubrication of thrust washer.

10 Remove three magneto plate mounting screws.

ENGINE TEAR DOWN AND REASSEMBLY TIPS D-600 SERIES

⑪ Install crankshaft guide tool, Part No. 602887 on top of crankshaft. This will retain the loose needle bearings in the magneto plate. Remove magneto plate and bearing assembly.

NOTE

When reassembling magneto plate, coat threads of mounting screws with Lawn-Boy nut and screw lock part no. 682301 and tighten securely. Refer to Section 16 for correct torque.

⑫ To replace bearing, insert bearing removal tool Part No. 605082 in top of bearing and drive it out with a soft headed hammer. Hold plate in palm of your hand. If the needle bearings fall out of bearing race, count them and reinstall in bearing race by using a heavy grease. Check bearing name, stamped on bearing. If Torrington, it has thirty-three needles; if Bremen, it has thirty-two needles.

⑬ To install the bearing, insert bearing installer tool Part No. 605081 with the lettering facing the head of tool. Drive bearing in until the tool bottoms on plate. This will recess bearing slightly.

NOTE

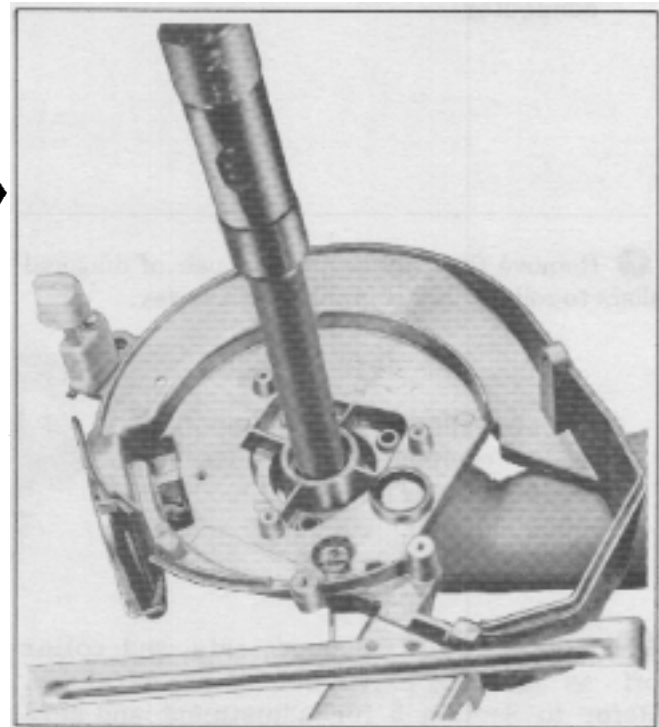
Hold armature plate in hand when removing or installing bearing. This will prevent armature plate damage.

⑭ After magneto plate has been reassembled on short block, lubricate the new seal and slide it into place on the crankshaft. Place seal installer part no. 608976 on seal. Drive it in until tool bottoms on top of plate.



NOTE

Always replace seal - never reuse old seal.

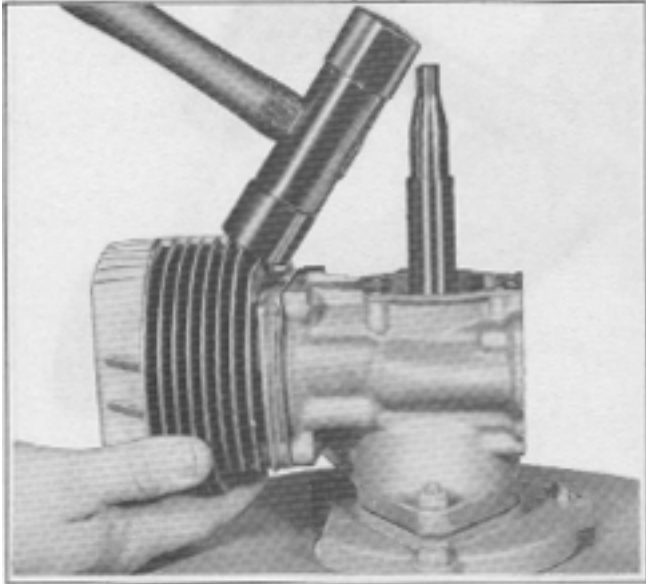


⑮ Remove carburetor and reed plate assembly complete by removing four screws securing reed plate to crankcase.

⑯ Use a large screwdriver or socket to loosen connecting rod screws. Do not remove them.

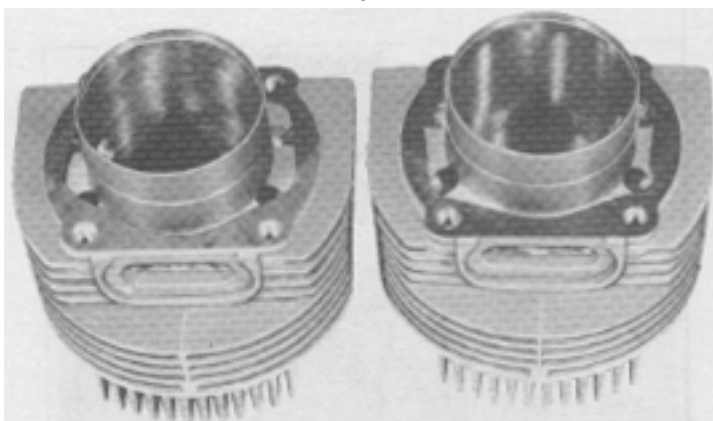
ENGINE TEAR DOWN AND REASSEMBLY TIPS D-600 SERIES

17 Remove four 3/8 inch hex head screws securing the cylinder to crankcase. Hit the cylinder head sharply with a soft headed hammer - do not use a steel hammer because it will easily damage the casting.



18 Remove cylinder by pulling it away from piston quickly. This prevents damage to piston and rings.

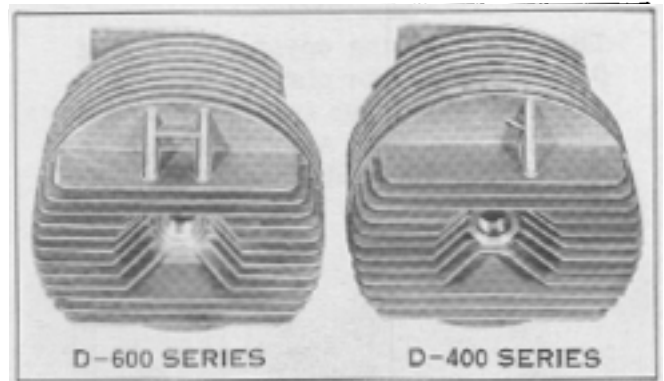
19 Examine cylinder gasket closely. It may be positioned incorrectly during reassembly. That is, intake ports (see cylinder to the left) can be partially blocked if gasket is reversed. Correct positioning is illustrated on cylinder to right.



INCORRECT

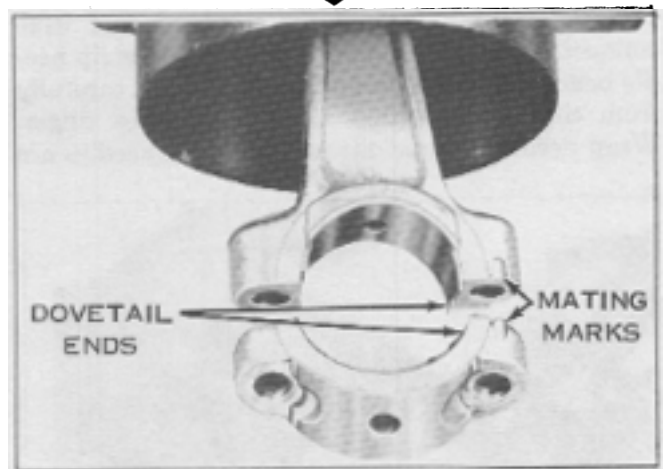
CORRECT

20 The D-600 series C-D engine uses a high compression cylinder which cannot be interchanged with cylinder on the D-400 engine. If new D-600 cylinder is installed on D-400 engine it is very likely that piston seizure would occur because of excessive heat. The new D-600 cylinder is pictured at left and can be easily identified by the ribs cast in form of letter "H" in cylinder.



21 The crankshaft should now be rotated until rod cap is at lowest position. The rod cap may now be removed, allowing the needle bearings to fall out. Needles should be counted. There must be 33. Examine them carefully to make sure they are not worn or damaged or have flat spots.

22 Remove piston and rod assembly. Note mating marks on the rod and cap and the dovetail ends of the bearing liners. These parts must be mated accordingly for reassembly. Liners must be centrally located in rod and cap.

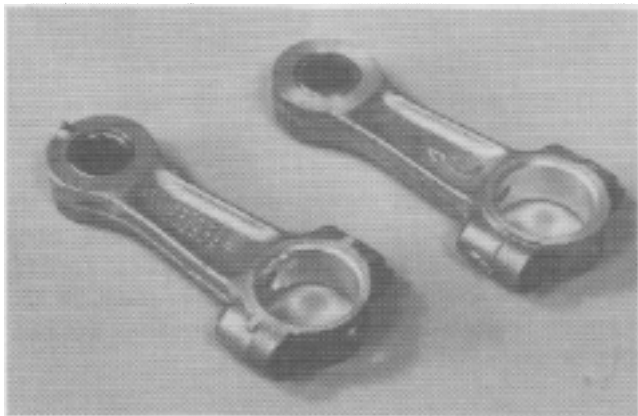


ENGINE TEAR DOWN AND REASSEMBLY TIPS D-600 SERIES

23 Remove wrist pin retainer rings and drive wrist pin out. The connecting rod contains 27 loose needles and care must be taken in removing the wrist pin so that loose needles are not lost. A 7/16 inch diameter by 3/4 inch dowel rod may be inserted to prevent this. Bearing replacements are not available. Must be purchased as part of rod and bearing assembly.

NOTE

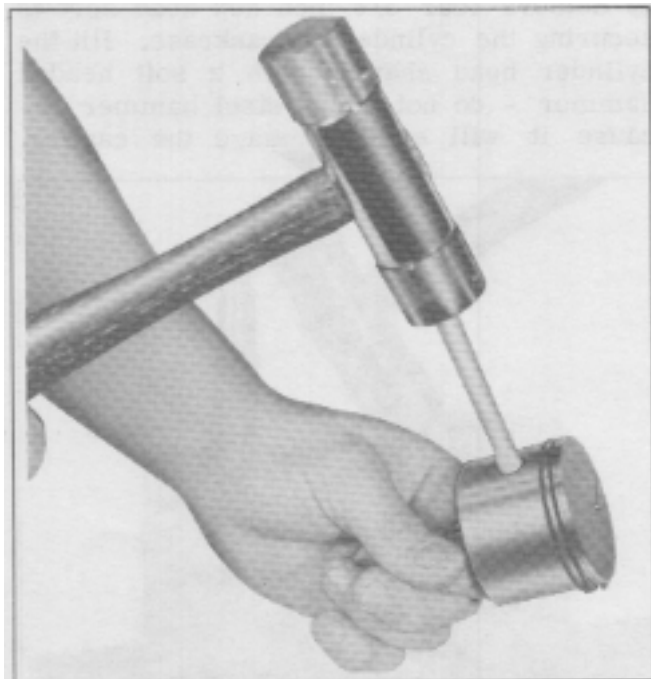
The retainer ring opening must face the piston dome or piston skirt. This will eliminate rings from popping out during operation. Also, retainer has a beveled side and flat side. When installed, flat side should face away from wrist pin.



24 The word "TOP" is diecast in skirt of piston; when installed in cylinder, it must face up.

The strip bearing shown, no. 677963, is rod-journal bearing. It includes 33 individual needles.

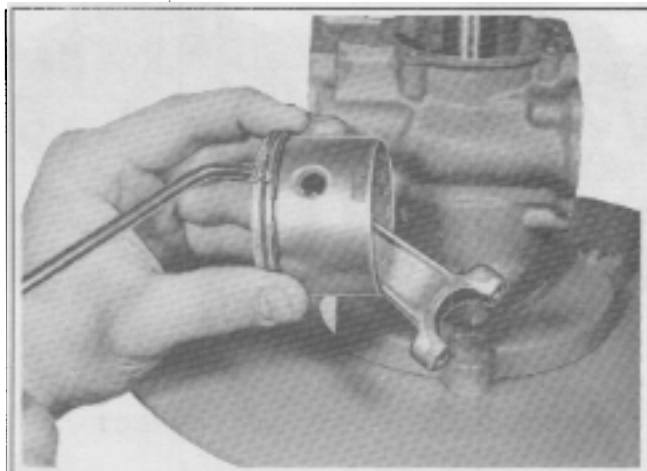
Pull the crankshaft from the crankcase and wipe connecting rod throw dry. Now, prepare strip needle bearing for installation by removing it carefully from card and position it on your index finger. Wrap needles around throw. If the old needles are



reinstalled, apply a coating of OMC needle bearing grease part no. 378642 or equivalent on the rod cap and rod. Place 17 needles on rod cap and 16 on rod.

When reassembling connecting rod in piston, the spacer lug is positioned up towards "top" of piston.

25 Install crankshaft in crankcase. Reinstall thrust washer in crankcase of early models self propelled engine. On later models this thrust washer was die cast in crankcase. Apply oil to piston rings, wrist pin, and cylinder sleeve. Now gently place rod on crankshaft journal and install rod cap. Install new lock tabs on rod cap screws and install screws and tighten just enough to retain needle bearings. Do not bend lock tabs at this time.

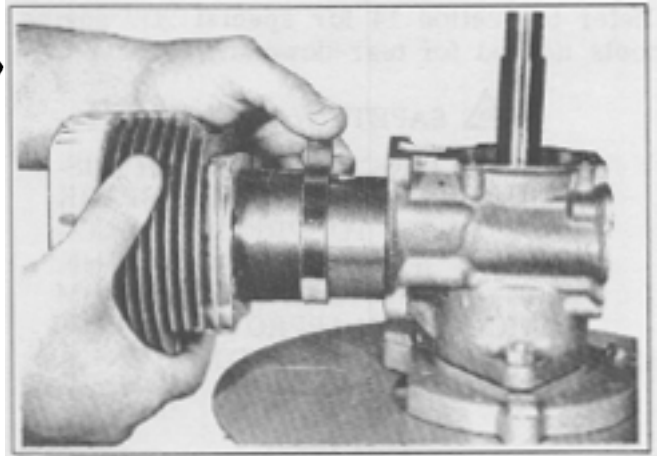


ENGINE TEAR DOWN AND REASSEMBLY TIPS D-600 SERIES

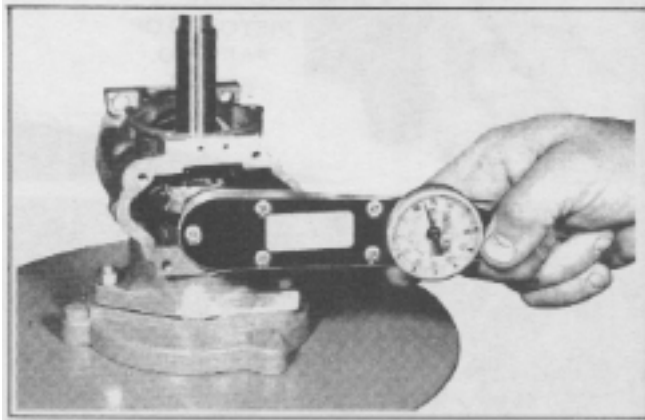
26 Stagger ring gaps (ends) over top of piston and install ring compressor, no 610510, over head of piston and compress rings. Place cylinder over piston head. Maintain pressure on ring compressor until rings enter cylinder.


 NOTE

Check gasket. It must not cover intake ports. Also, cylinder must be installed with exhaust ports down.



27 Center rod on wrist pin. Consult Chapter 16 for correct rod cap screw torque - 60 inch-pounds, and tighten in three steps of 20 inch-pounds each. Rotate crankshaft after each step to check freedom of assembly.



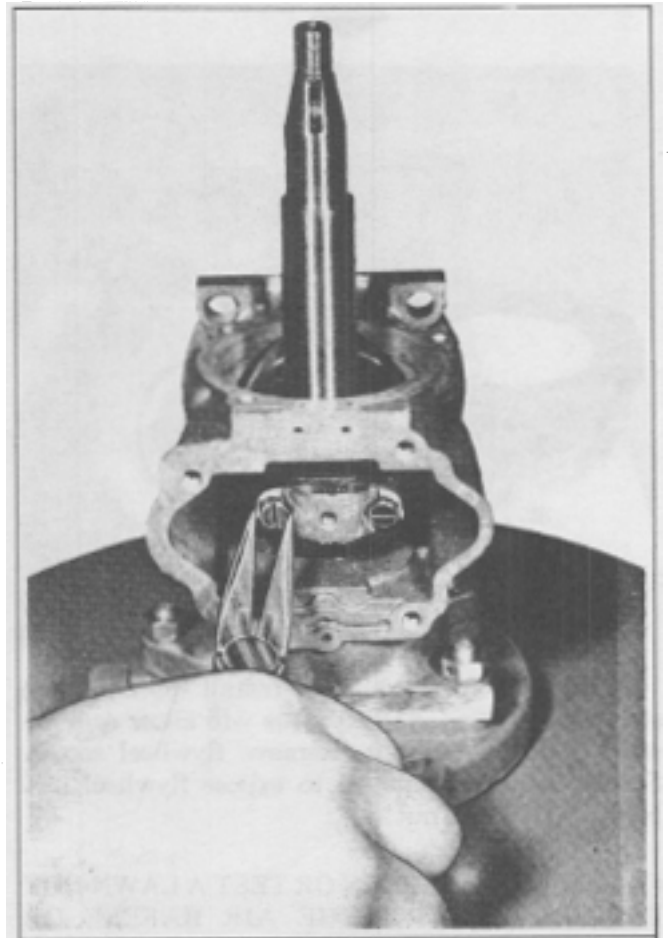
 NOTE

The rod cap screws, flywheel nut, spark plug, and blade nut must be torqued according to torque chart. See Chapter 16 for correct torque.

 NOTE

Apply a generous amount of oil to the needle bearing and rotate the crankshaft several times to work the oil into the bearing.

28 Bend lock tabs up against head of each screw. If tabs do not fit flush against side of screw head, do not turn screw, form tab around corner.



PISTON AND CYLINDER WALLS SCORING

Most instances of piston & cylinder scoring can be traced to lack of oil, use of improper oil - fuel mixture, foreign particles in cylinder, heating caused by plugged cooling fins, or excessive carbon build-up in the cylinder exhaust ports.

Piston A has been used in an engine which has a correct fuel-oil mixture. Note there is no sign of scoring, the rings are free in their grooves, and the top of the piston shows dark discoloration which is normal.

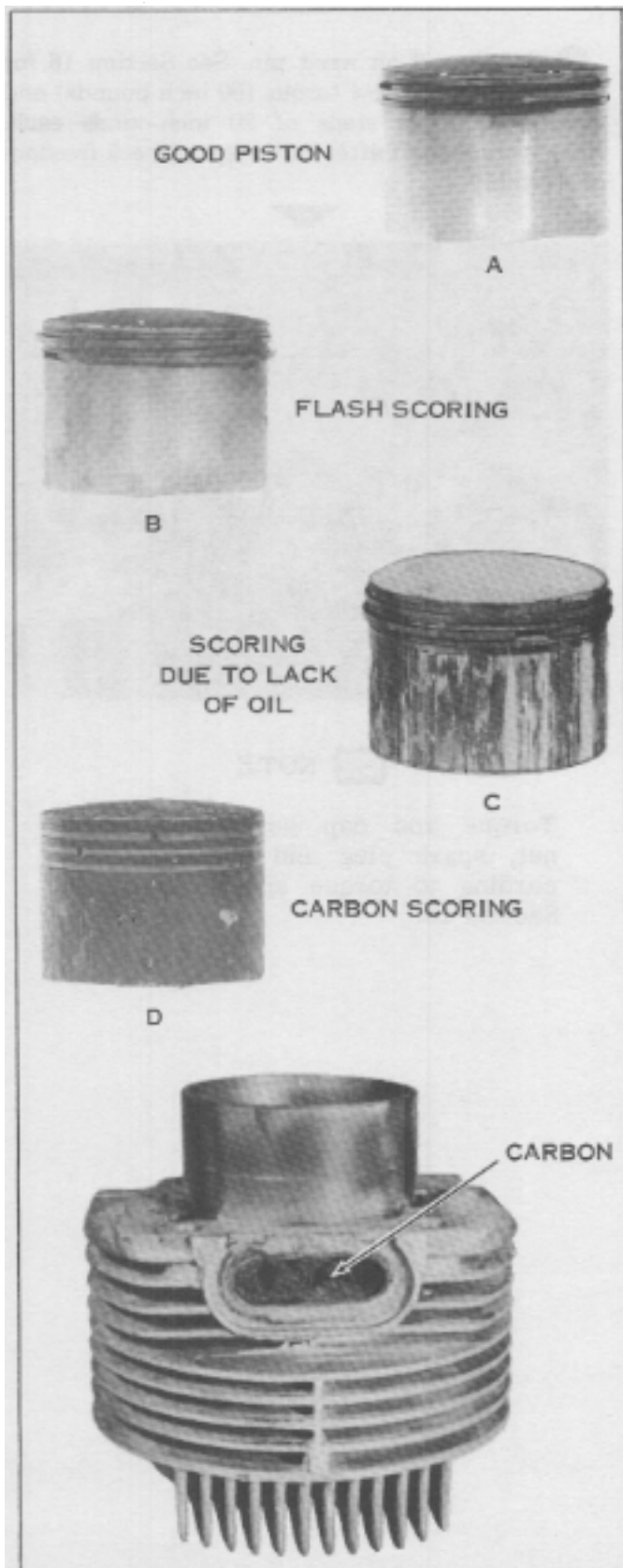
Piston B was also used in an engine with the correct fuel mixture, but was scored after a few minutes or possibly several hours of operation. The top of the piston is dark in color, which is normal. Also, a film of oil is found in the ring grooves and on the inside of the piston which further indicates proper fuel-oil mix. Note the scoring is isolated to a particular area on the piston skirt. Scoring is always adjacent to either the intake or exhaust ports. This resulted from small particles of metal breaking away from an intake or exhaust port. This type of failure is covered by warranty.

Piston C is heavily scored all around the skirt. This piston was run in an engine with a lack of lubrication. The light color on the top of the piston and lack of oil inside the piston and ring grooves indicates lack of oil. This is not covered by warranty.

Lack of lubrication scoring will not always result in light coloration of the piston dome as the engine may have been run for some time with sufficient lubrication and consequently, the piston dome will be dark in color and resemble one which has been operating on proper fuel mix.

Piston D is scored as a result of carbon build-up. Accumulation of carbon and other deposits on the piston skirt. Particles of carbon breaking away from the exhaust ports, lodging between the piston skirt and cylinder results in scoring the piston and/or cylinder. This is not covered by warranty.

In most cases, the rings will be partially or completely frozen within the ring grooves, and the piston will be discolored.



Carbon scoring usually results from the use of a low grade oil or an excessive amount of oil in the mix or a lack of care and maintenance which is owner's responsibility.

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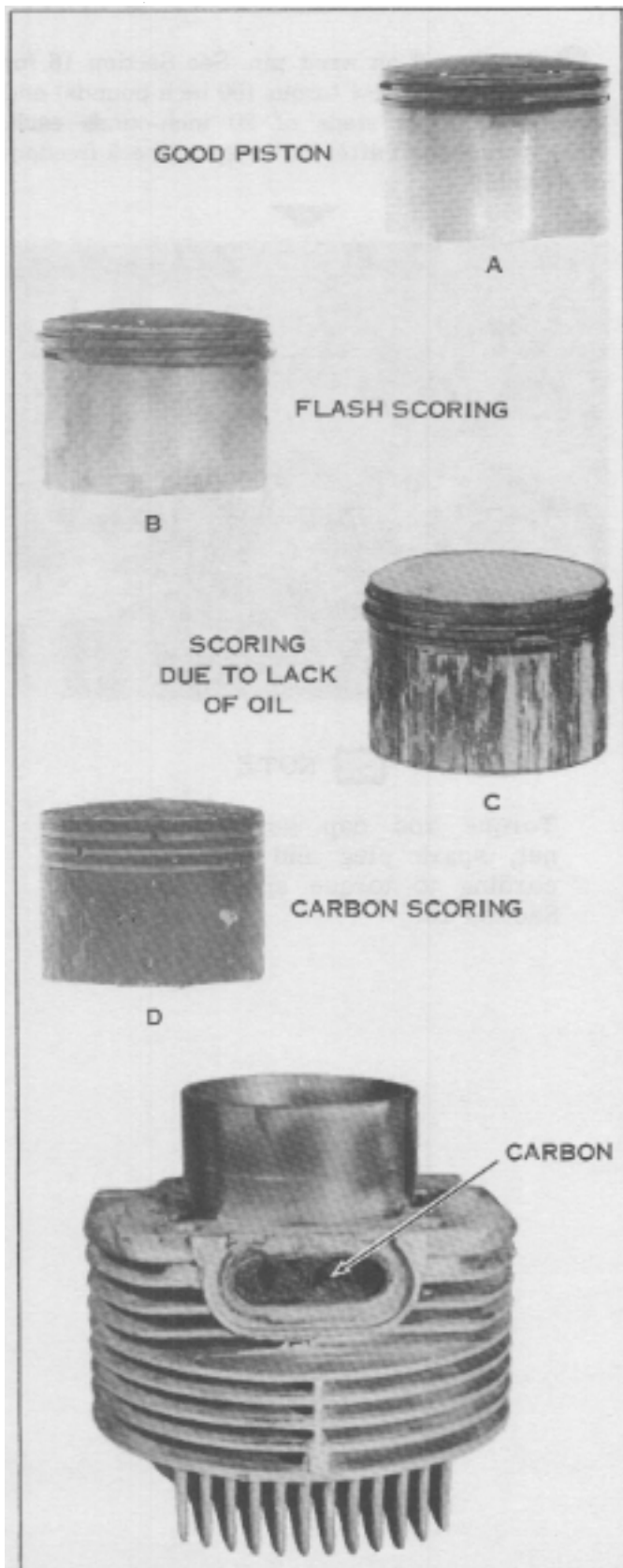
Piston B was also used in an engine with the correct fuel mixture, but was scored after a few minutes or possibly several hours of operation. The top of the piston is dark in color, which is normal. Also, a film of oil is found in the ring grooves and on the inside of the piston which further indicates proper fuel-oil mix. Note the scoring is isolated to a particular area on the piston skirt. Scoring is always adjacent to either the intake or exhaust ports. This resulted from small particles of metal breaking away from an intake or exhaust port. This type of failure is covered by warranty.

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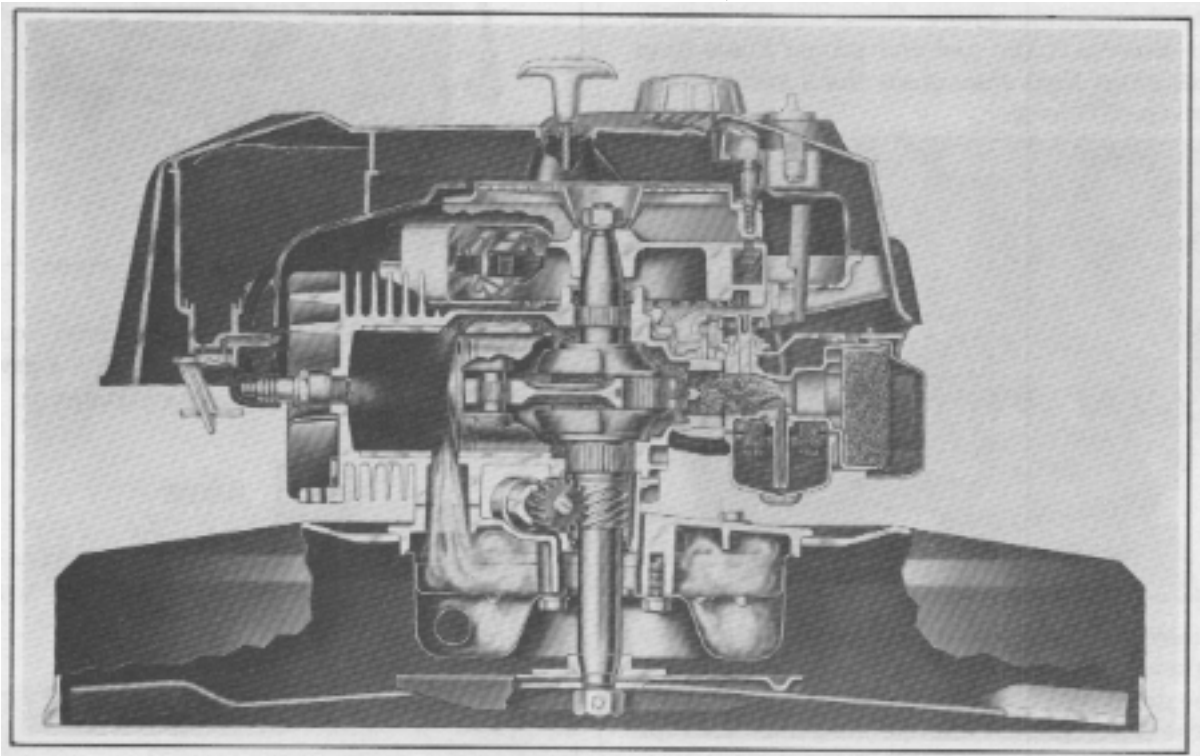
In most cases, the rings will be partially or completely frozen within the ring grooves, and the piston will be discolored.



Carbon scoring usually results from the use of a low grade oil or an excessive amount of oil in the mix or a lack of care and maintenance which is owner's responsibility.

SECTION 8 - POWERHEAD

ENGINE TEAR DOWN AND REASSEMBLY TIPS "F" SERIES



ENGINE TEAR DOWN AND REASSEMBLY TIPS "F" SERIES

⚠ SAFETY WARNING
BEFORE PROCEEDING WITH DISASSEMBLY, DISCONNECT SPARK PLUG LEAD TO PREVENT ACCIDENTAL STARTING OF ENGINE. ALSO DRAIN ALL FUEL FROM TANK INTO AN APPROVED SAFETY CONTAINER AND STORE IN A WELL VENTED AREA.

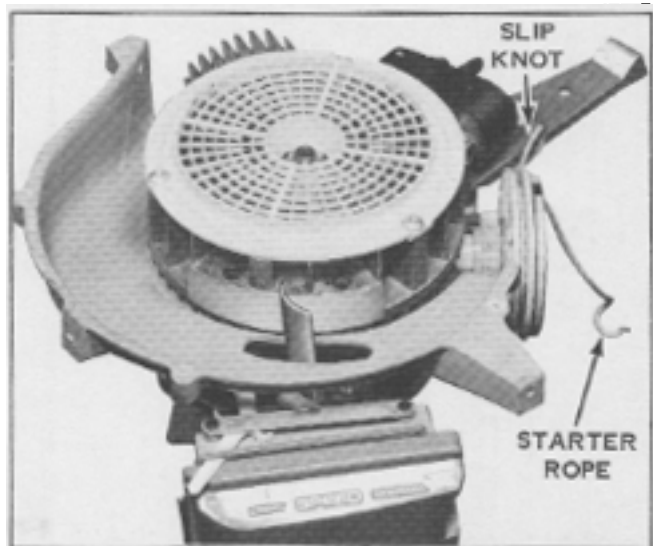
■ NOTE

Keep assemblies intact whenever possible in tear down. Observe assembly tips. Refer to Torque Reference Guide (Section 16) for correct torque settings during reassembly.

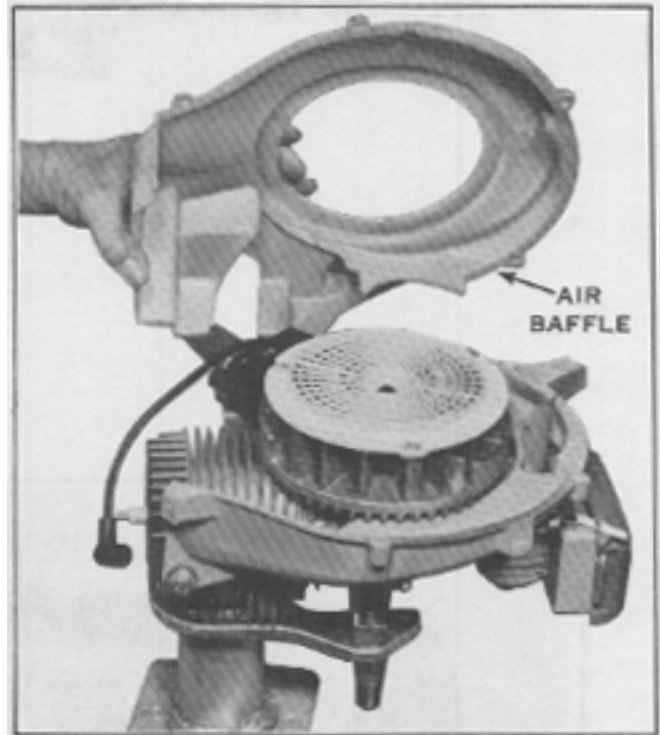
1. Move fuel valve to the "OFF" position. Remove shroud mounting screws. Raise shroud slightly and disconnect the fuel and primer hoses from carburetor. Next disconnect the 2 switch leads from the CD pack.



2. Remove starter pull handle. Hold starter pulley to prevent release of spring tension. Pull starter rope down and out of air baffle. Tie a slip knot in the rope, then let knot go in against the rope retainer.



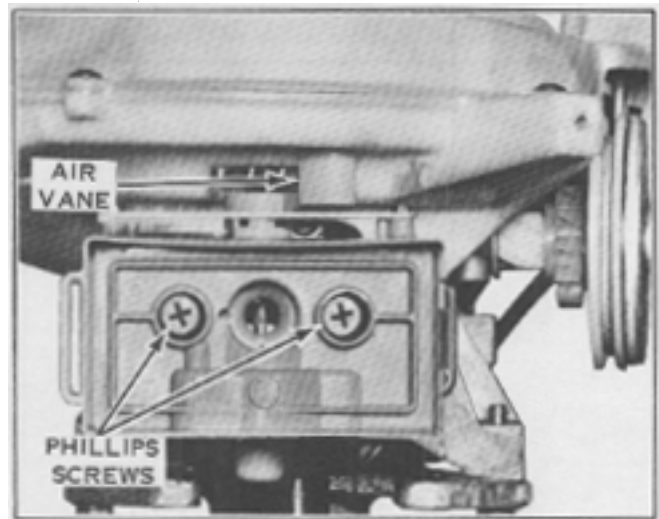
3. Remove five Phillips screws securing air baffle. Remove air baffle.



4. Remove carburetor air cleaner cover and the filter element. Remove two Phillips screws securing carburetor and remove carburetor.

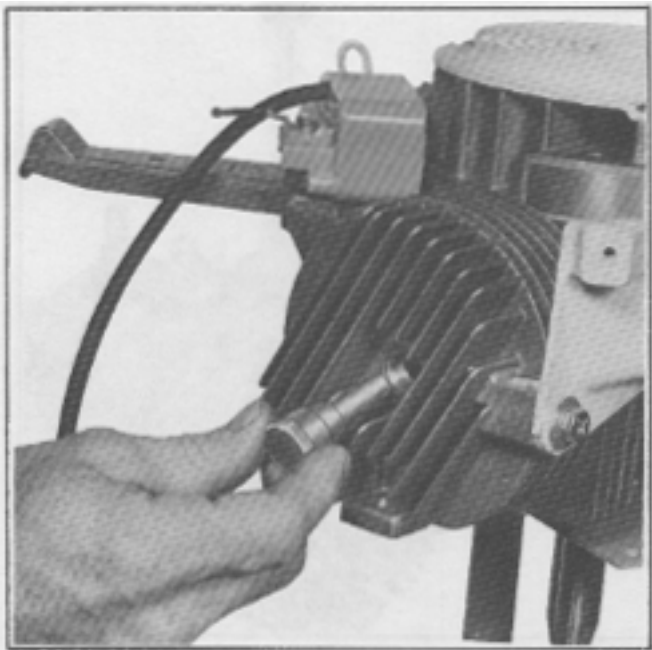
■ NOTE

When removing carburetor be careful not to damage the governor air vane assembly.

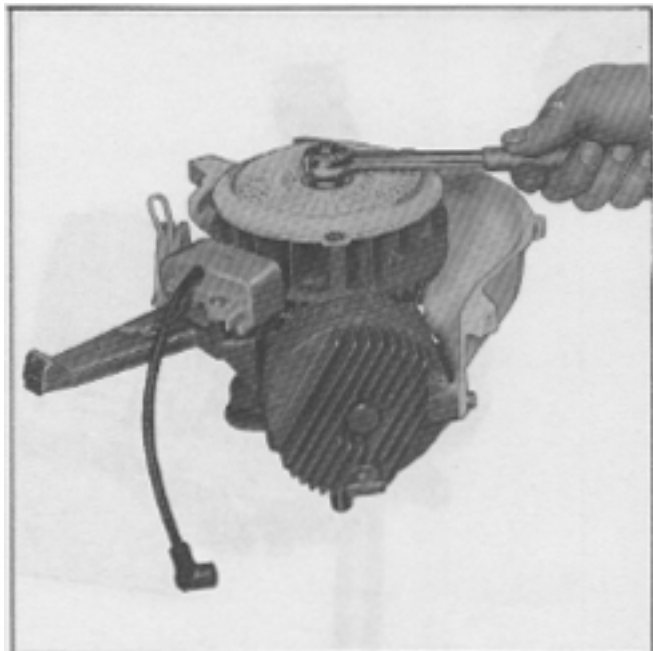


ENGINE TEAR DOWN AND REASSEMBLY TIPS "F" SERIES

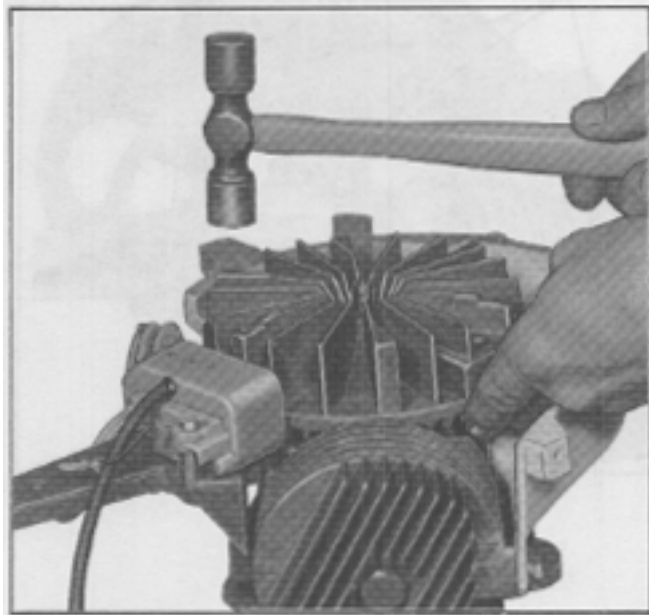
5. Remove spark plug. Install piston stop tool no. 677389. Rotate flywheel counter clockwise until piston comes up against the stop. This stop will allow easy removal of flywheel nut.



6. With a 11/16" socket wrench remove flywheel nut. Remove flywheel screen.



7. To remove flywheel; use a soft headed (plastic or rawhide) hammer and strike the top of a thick flywheel fin. At the same time apply upward pressure with your hand at point opposite where hammer strikes. Loosen flywheel as shown. Examine flywheel for damage. Check keyway and hub for distortion or cracking.

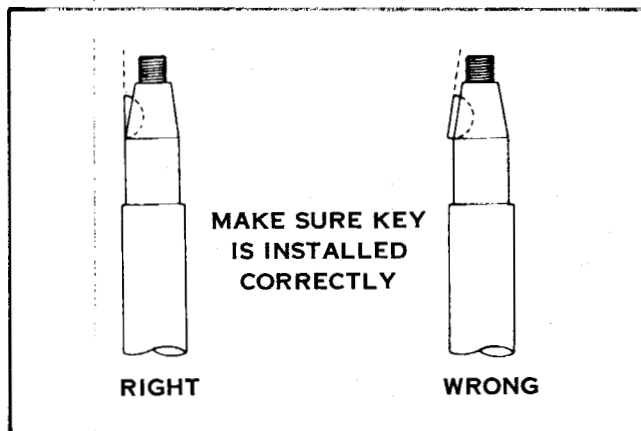


8. Remove flywheel key. Use a pair of diagonal pliers to roll key out of crankshaft keyway.



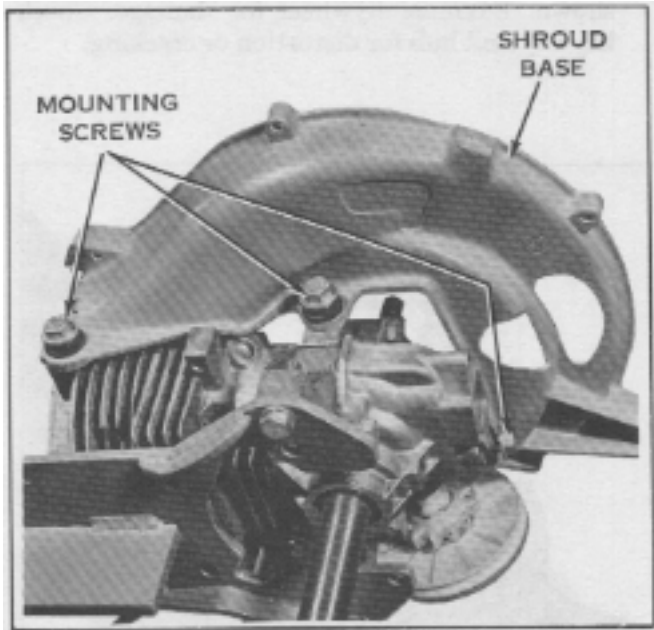
NOTE

Correct installation of key is important.

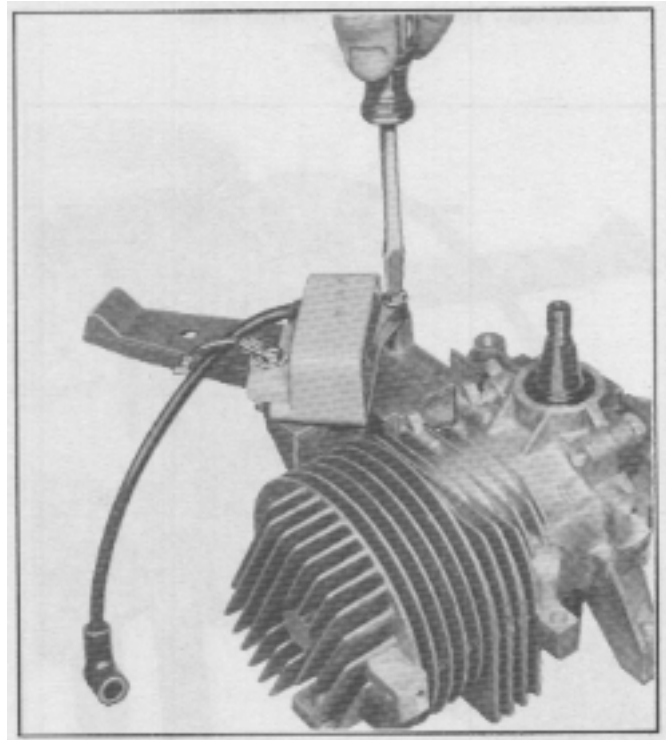


ENGINE TEAR DOWN AND REASSEMBLY TIPS "F" SERIES

9. Remove shroud base.



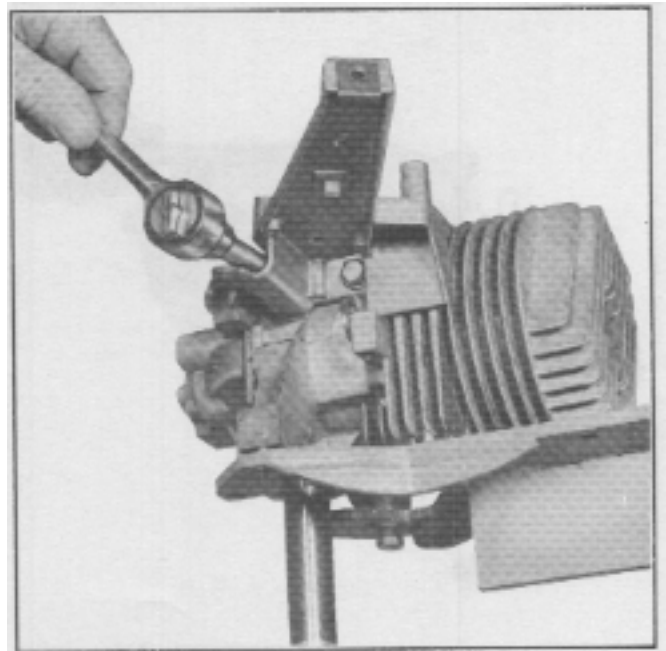
11. Remove the CD module.



10. With an Allen wrench loosen the socket set screw securing the starter. Remove the starter.

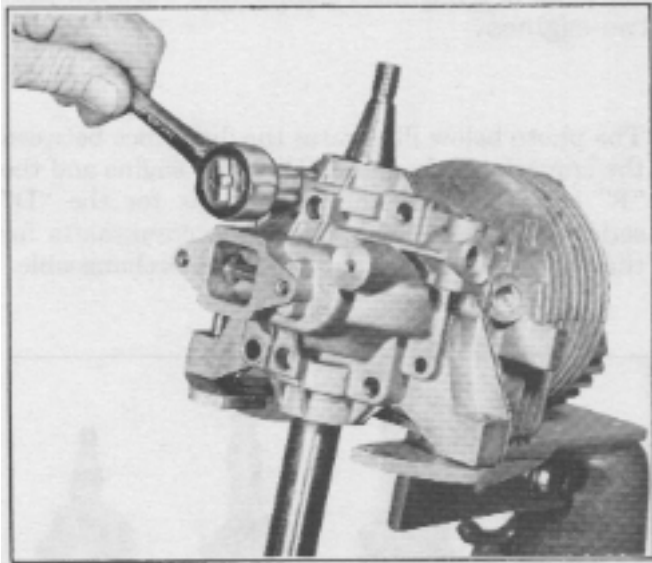


12. Use a socket wrench to remove the two cap screws securing the CD mounting bracket. Remove the CD mounting bracket.

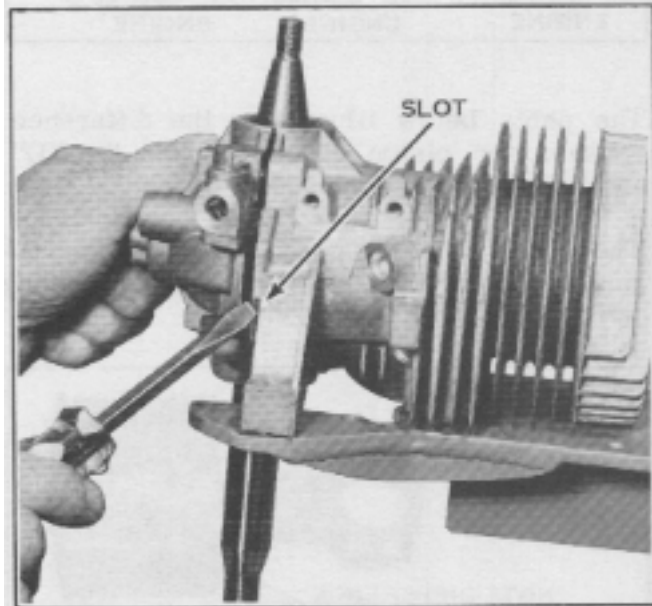


ENGINE TEAR DOWN AND REASSEMBLY TIPS "F" SERIES

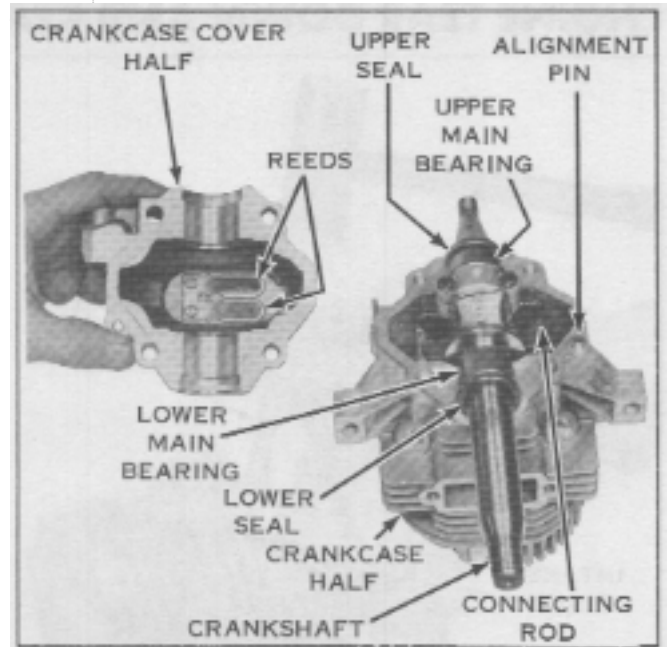
13. Using a 1/2" socket wrench remove the four capscrews holding the crankcase halves together.



14. Turn short block so the side with the alignment pin faces you. Place a wide bit screwdriver in the slot next to the pin. Carefully split the crankcase by twisting the screwdriver bit.



15. Remove connecting rod capscrews, lock plates and rod cap. Discard the lock plates, never reuse them. Remove connecting rod needle bearings. Count them, there should be 33 needles. If they are to be reused, inspect for damage, wear, scoring, overheating, etc.



16. Remove crankshaft, bearing and seal assemblies from crankcase. Remove bearings and seals from crankshaft. Discard seals, never reuse them.

Inspect main bearings for damage, wear, freedom of movement etc. Replace if questionable.

17. Remove piston and connecting rod assembly from cylinder.



NOTE

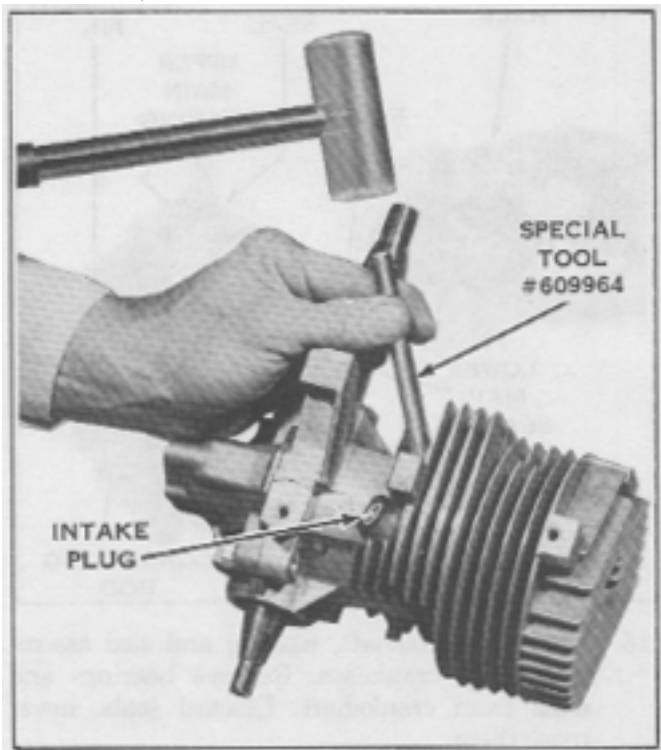
The top ring can fall off the piston during handling.

Remove both rings and inspect for wear damage or sticking. Always replace if they are questionable.

Thoroughly clean crankcase sealing surfaces with Lawn-Boy Engine Tuner Part No. 610738.

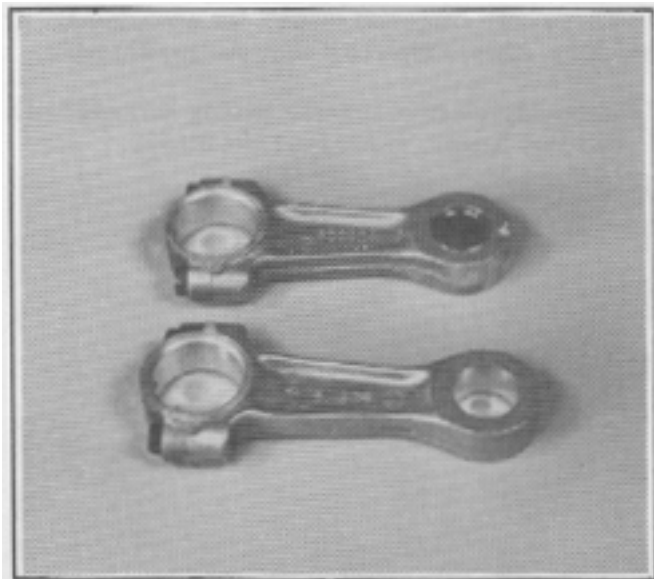


ENGINE TEAR DOWN AND REASSEMBLY TIPS "F" SERIES



NOTE

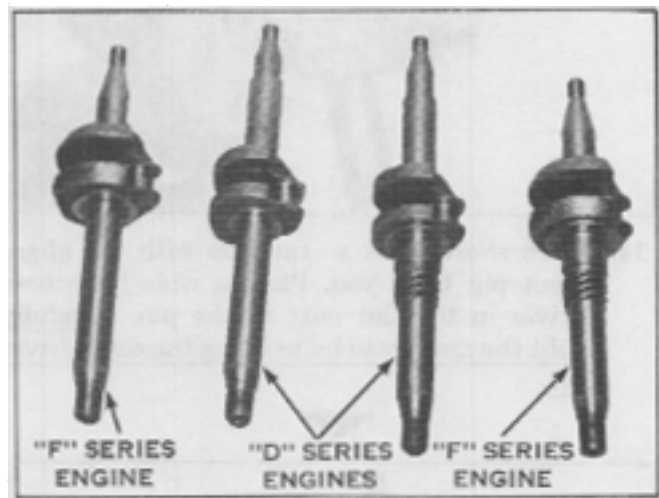
The intake plugs do not have to be removed. If removed, apply Lawn-Boy nut and screw lock Part No. 682301 to the outside surface of them. Use special tool #609964 to reinstall them.



The photo above illustrates the difference between the connecting rods from the "D"

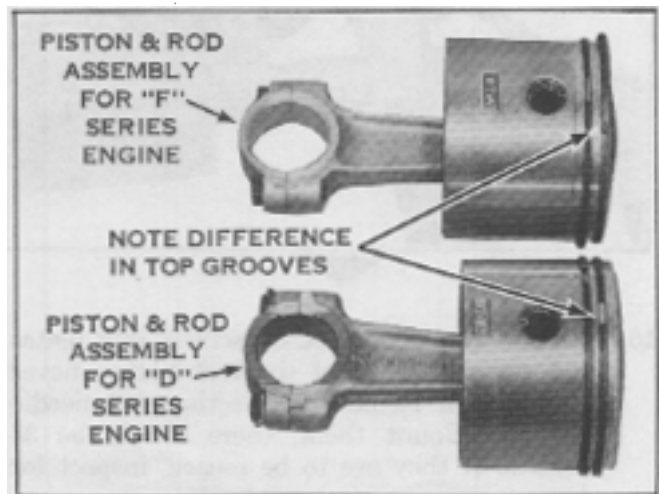
and "F" series engines. Note that the "D" series rod is slightly shorter than the "F" series connecting rod. These connecting rods are not interchangeable between the two engines.

The photo below illustrates the difference between the crankshafts from the "D" series engine and the "F" series engine. The crankshafts for the "D" series engine are longer than the crankshafts for the "F" series engines and are not interchangeable.



The photo below illustrates the difference between the piston and rings for the "D" and "F" series engines.

The ring grooves in the piston for the "F" series engine are closer to the top of the piston. The top ring



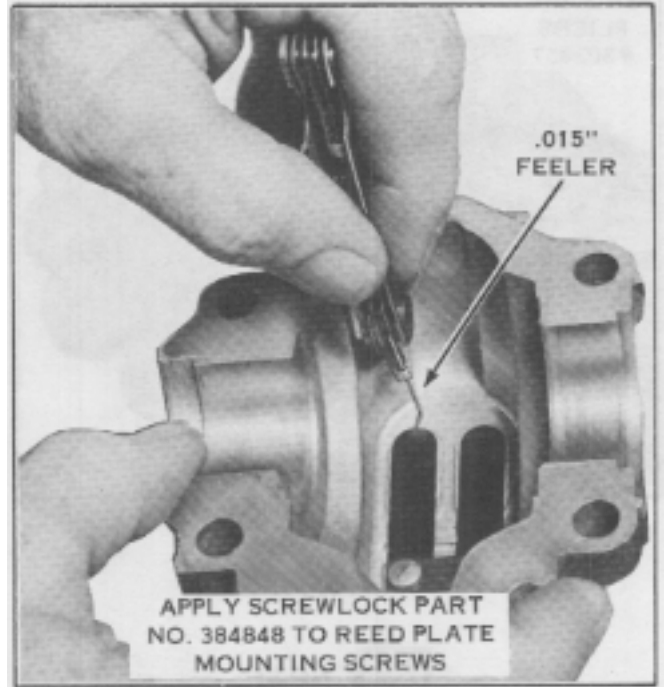
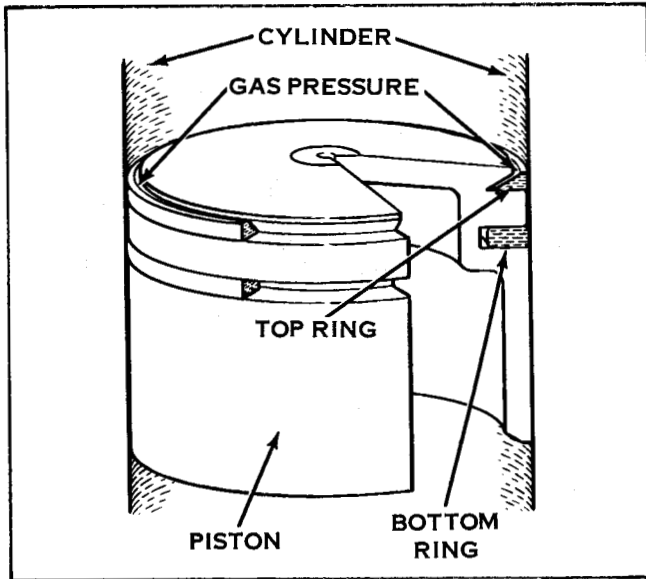
ENGINE TEAR DOWN AND REASSEMBLY TIPS "F" SERIES

groove in the "F" series piston is narrower than the top groove in the "D" series piston. The piston and ring assemblies are not interchangeable.

Check for excessive clearance between reed tip and reed seat. Maximum allowed clearance .015 inch. Use an "L" shaped wire type feeler gauge to check this clearance.

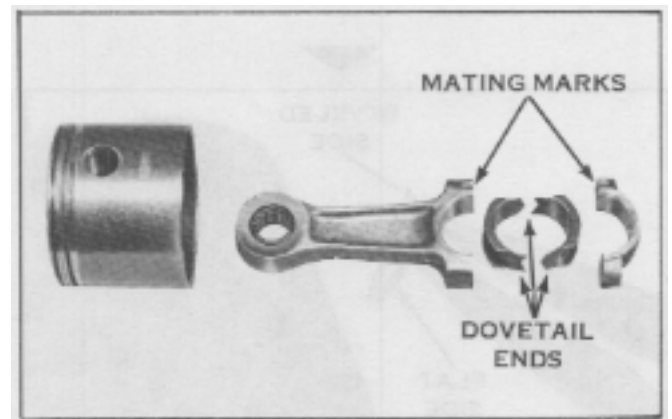
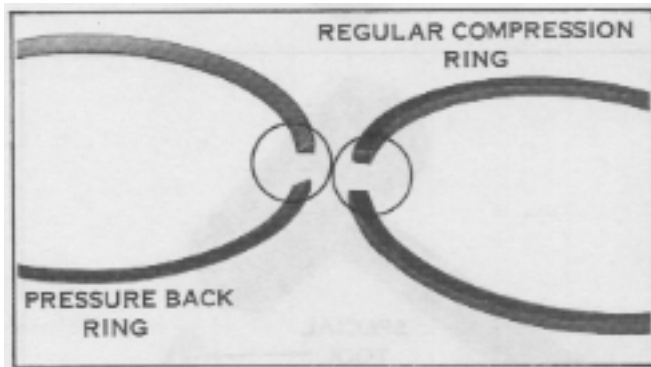
The illustration below shows the principal of the pressure back top ring.

Reeds must be installed with rough edge away from seat.



The illustration below compares the pressure back ring with a regular compression ring.

In the reassembly of the connecting rod and cap, the mating marks have to be together. Also the dovetail ends of the liners have to be mated as shown below.



CHECKING REED ASSEMBLY

Exercise care in handling reeds, so as not to distort them. Bent or distorted reeds must be replaced.

 NOTE

DO NOT USE COMPRESSED AIR TO CLEAN REED VALVES.

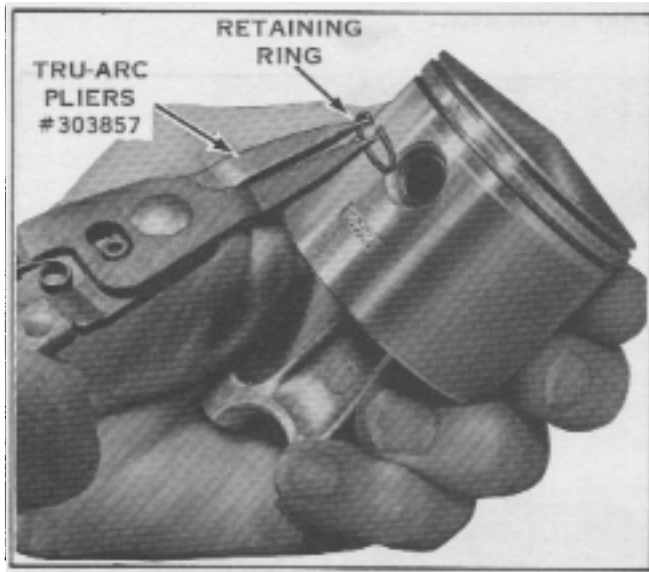
 NOTE

If the connecting rod or liners are not assembled correctly, an engine failure will occur.

ENGINE TEAR DOWN AND REASSEMBLY TIPS "F" SERIES

With a pair of compression type pliers #303857 remove the wrist pin retaining rings.

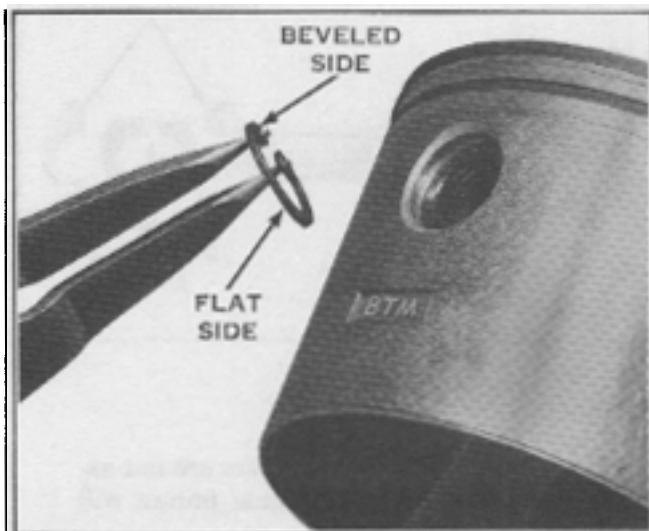
The retainer ring opening should face the piston dome or bottom of skirt. This will help to eliminate rings from popping out during operation.



NOTE

The retainer rings have a beveled side and a flat side. When installed, the flat side should face away from wrist pin.

Using special tool #602884 drive wrist pin out.



ENGINE TEAR DOWN AND REASSEMBLY TIPS "F" SERIES

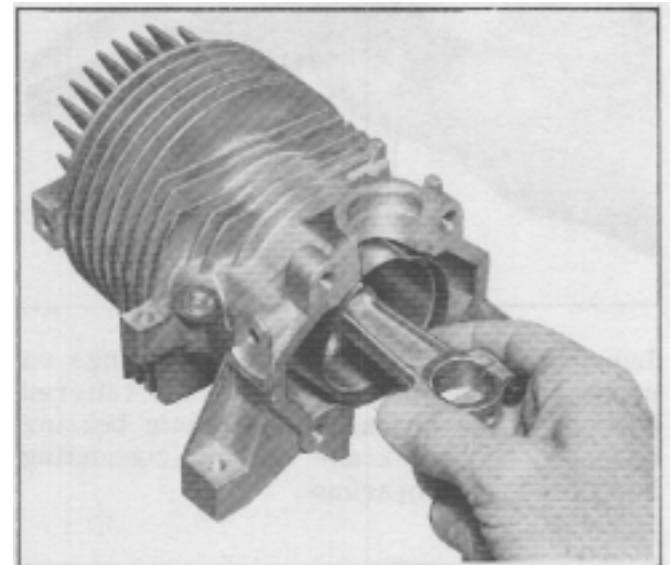
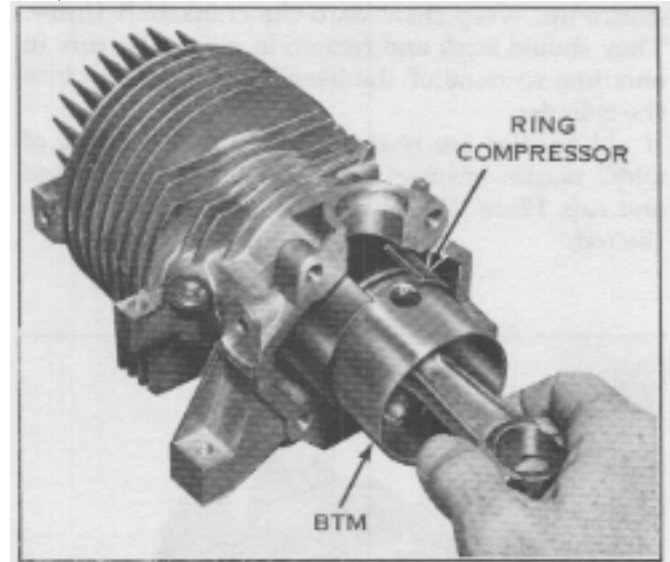
Check piston, wrist pin, connecting rod, bearings etc. for wear and damage. Replace any worn, damaged or questionable parts.

Apply oil to piston rings, wrist pin and cylinder sleeve. Carefully slide piston and rings into cylinder.

Reassemble piston, wrist pin and connecting rod by reversing disassembly procedure.

Install the piston rings onto the piston. The ring with the bevel must be installed in the top groove with the bevel to the top of the piston.

Stagger ring gaps (ends) as shown. Assemble special ring compressor tool part #609967 in crankcase.



 NOTE

Top ring can come off piston during handling.

Install piston stop part #677389 in cylinder. This will prevent piston and ring assembly from going too deep into cylinder.

NOTE

If piston goes too deep into cylinder the top ring can drop off of the end of cylinder sleeve and become impossible to remove without damage occurring.

 NOTE

The word "BTM" is diecast in the skirt of the piston; when installed in cylinder, it must face down towards exhaust ports.

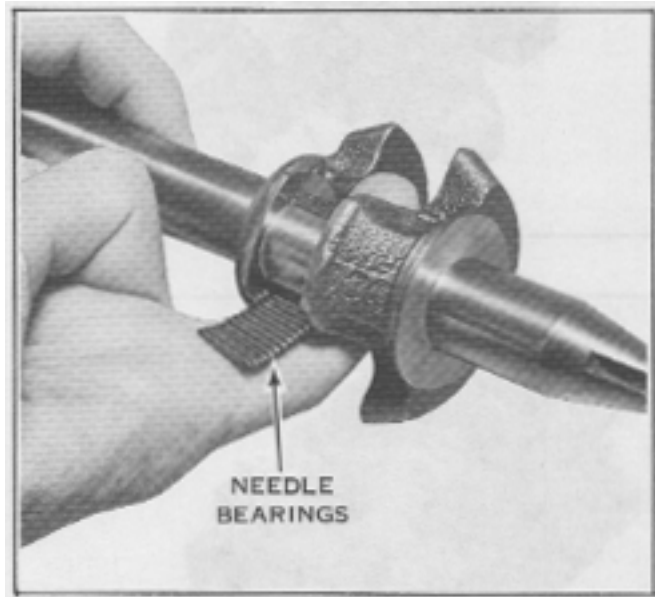
Install liners into the connecting rod and cap. Make sure the dovetail matches up.

Wipe the connecting rod throw of crankshaft dry. Replacement needle bearings part #677963 (33 needles) are attached to a card. They are secured to


ENGINE TEAR DOWN AND REASSEMBLY TIPS "F" SERIES

the card with clear plastic. To remove them, use a knife to cut the plastic along each side and across each end. Carefully peel the plastic from the strip without disturbing the bearings. They are stuck together with a substance on the lower side. Pick the strip up and lay on your index finger with the substance up. Wrap them onto the crankshaft throw. They should stick and remain in place. Use care in handling so none of the bearings fall off and into the cylinder.

If old needles are re-installed, apply a coating of OMC needle bearing assembly grease on the rod and cap. Place 17 needles in the rod cap and 16 in the rod.



Lubricate and assemble main bearings on upper and lower crankshaft journals, lettered end out. Lay crankshaft and main bearing assembly in crankcase guiding connecting rod over needle bearings.

 NOTE

DO NOT DISTURB NEEDLE BEARINGS. Install connecting rod caps. Align the assembly marks on the connecting rod and cap. Install lock plates and cap screws on connecting rod. Hold lock plates with square tabs out and tighten screws finger tight.

Torque connecting rod screws to 20 inch pounds. Check if crankshaft turns freely or if there is any grinding noise from the needle bearings.

If crankshaft movement is okay, tighten them to 40 inch pounds torque. Rotate crankshaft again to check freedom of assembly. If okay, tighten to 60 inch pounds. Bend lock tabs up against heads of screws.



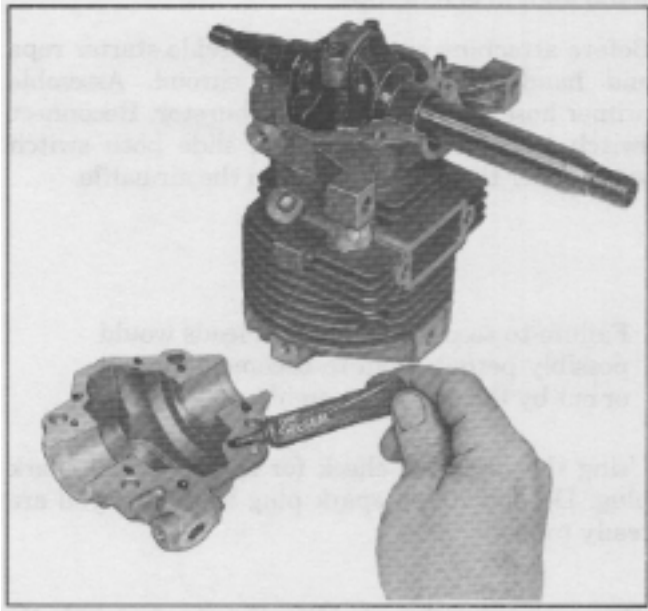
Lubricate wrist pin, main and connecting rod bearings with oil. Position both main bearings.

 NOTE

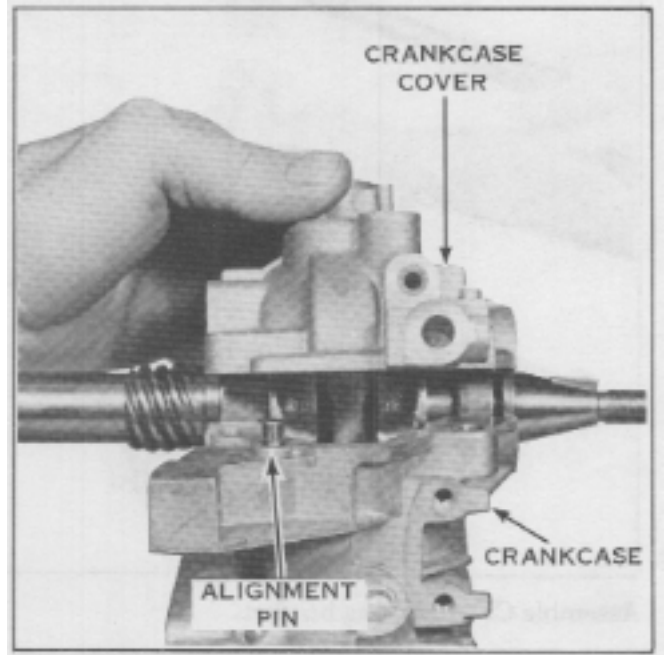
Be sure dowels on bearings are positioned in notches of cylinder and crankcase.

ENGINE TEAR DOWN AND REASSEMBLY TIPS "F" SERIES

Apply a few drops of Lawn-Boy gasket maker #682302 to crankcase cover sealing surface.



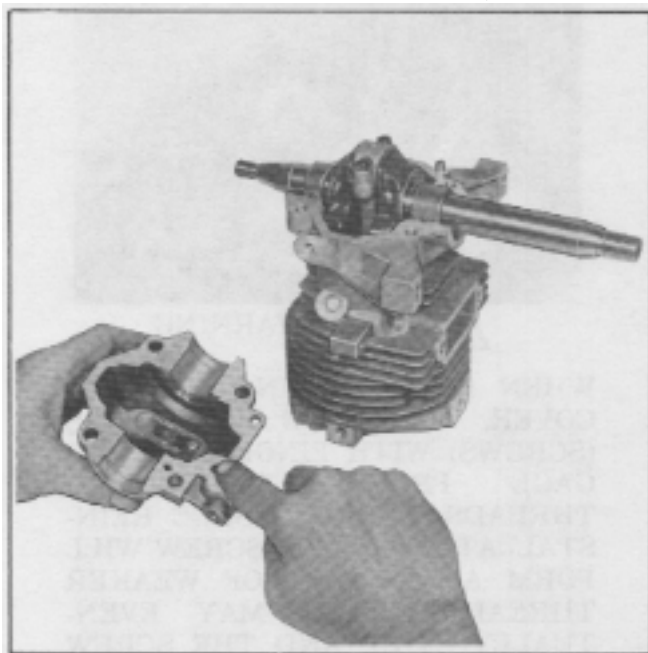
Position alignment hole in crankcase cover over alignment pin in crankcase. Install crankcase cover.



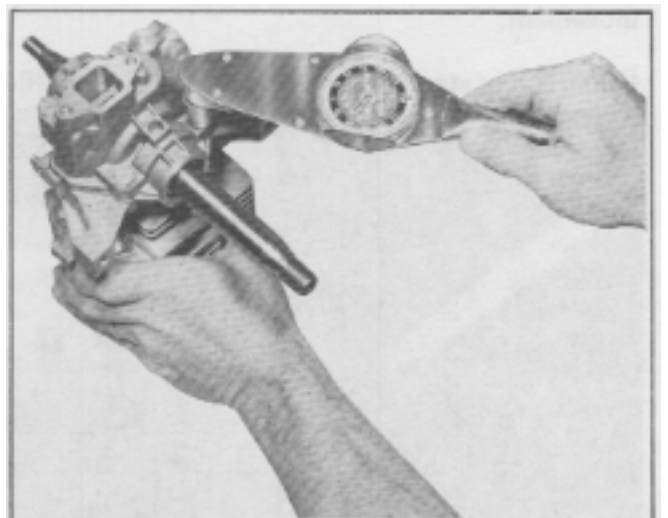
Smooth sealant over entire surface with your finger. Final appearance of applied sealant should be very (paper) thin.

 NOTE

KEEP BEARINGS AND SEALS FREE OF SEALANT.

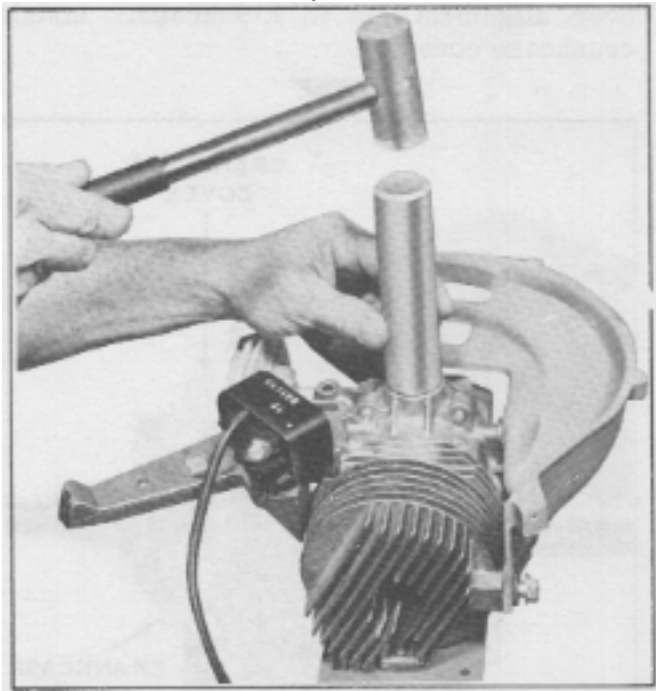


Tighten cap screws finger tight. Alternately torque cap screws to 60 inch pounds. Rotate crankshaft to check freedom of assembly. Complete torquing of cap screws to 100 to 120 inch pounds. Check for freedom.



ENGINE TEAR DOWN AND REASSEMBLY TIPS "F" SERIES

Install upper and lower crankshaft seals using special tool part #608976.



Assemble CD mounting bracket.

Install starter assembly. Tighten ALLEN set screw.

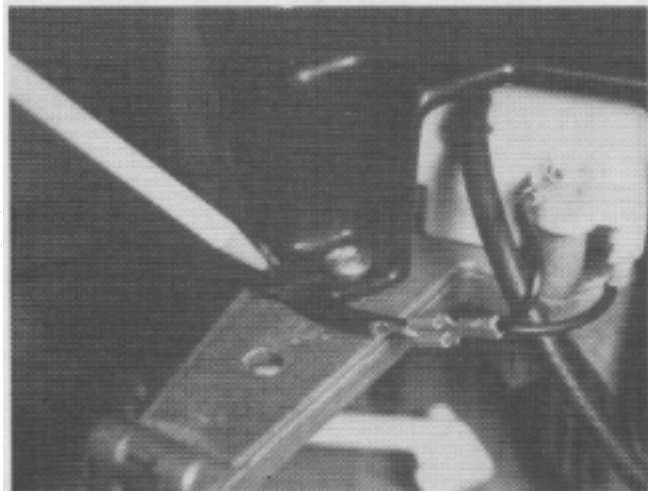
Install shroud mounting base.

Thoroughly clean crankshaft taper and flywheel hub. Check key for burrs and install in crankshaft. Refer to page 8-3 for correct positioning. Install flywheel lockwasher and nut. Torque flywheel nut 31 to 33 foot pounds.

Install CD pack and set air gap .010 inch.

Install carburetor and check freedom of air vane movement.

Guide end of starter rope through hole in air baffle.



Install air baffle and recheck freedom of air vane. If interference occurs, reposition air baffle and/or shroud mounting base.

Assemble starter pull handle on rope. Tie an overhand knot in end of rope.

Before attaching engine shroud, guide starter rope and handle through hole in shroud. Assemble primer hose and fuel line to carburetor. Reconnect switch leads to CD Pack and slide both switch leads under the retaining clip on the air baffle.

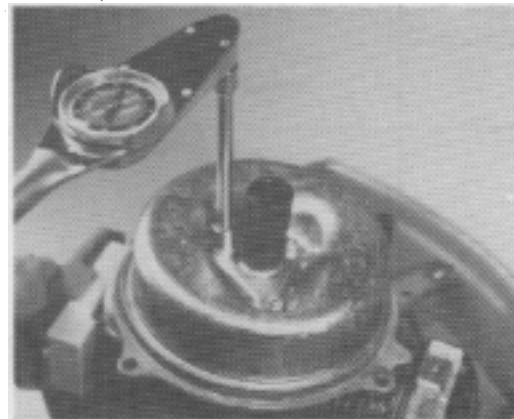
NOTE

Failure to secure these switch leads would possibly permit them to become damaged or cut by the starter assembly.

Using the test plug check for spark. Install spark plug. Do not attach spark plug lead until you are ready to test.

Remove engine from holding fixture. Assemble the muffler plate to the engine using a new exhaust gasket. The two (2) short screws located in holes near exhaust outlet and 2 long ones in other holes. Refer to Section 16 for torque requirements.

Reinstall muffler and crankshaft support to mower. Use special tool part no. 609968 to correctly align crankshaft support.



⚠ SAFETY WARNING

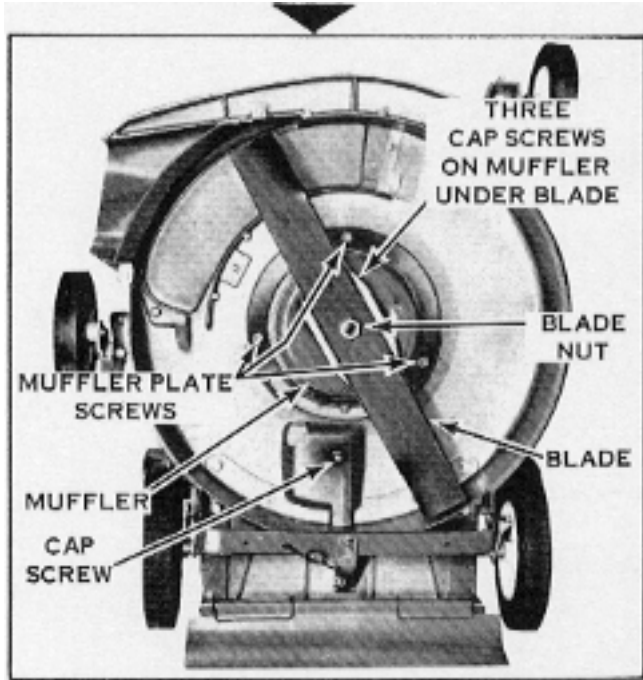
WHEN REASSEMBLING MUFFLER COVER, ASSEMBLE FASTENERS (SCREWS) WITH FINGERS TO ENGAGE PREVIOUSLY FORMED THREADS. DO NOT FORCE REINSTALLATION AS THE SCREW WILL FORM A NEW SET OF WEAKER THREADS WHICH MAY EVENTUALLY STRIP AND THE SCREW MAY BECOME A THROWN OBJECT. TORQUE TO 140-170 INCH LBS.

ENGINE TEAR DOWN AND REASSEMBLY TIPS "F" SERIES

NOTE:

OMC Ultra-Loc part no. 388517 or Loctite #271 should be applied to threads of all fasteners (screws, nuts) located under blade housing.

Reinstall adapter hub, blade stiffener (washer on 20" and 21" models), blade and blade nut. Torque blade nut to 50 ft. lbs. Replace spark plug and re-connect high-tension lead.



For testing, move the unit to a well ventilated area. Place fuel in tank, open valve, prime the carburetor (one or two strokes), and start the engine. Permit it to run and warm up (3 to 5 minutes) before making adjustments. At high speed (normal) it should run between 3100-3300 R.P.M. Adjust the governor if necessary to obtain the correct engine speed. Refer to Section 4 for governor adjusting.

⚠ SAFETY WARNING

DO NOT PERMIT IT TO OPERATE ABOVE 3300 R.P.M. HIGH ENGINE SPEED (BLADE SPEED) INCREASES POTENTIAL HAZARD OF THROWN FOREIGN OBJECTS WHEN STRUCK BY CUTTING BLADE.

HANDLE HEIGHT

The handle height can be adjusted to a high or low position. This is determined by which set of holes in the lower handle are used to attach the handle to the handle bracket.



NOTE

Self-propelled models: Loosen and separate clutch control rod before attempting to change handle height position.



SAFETY WARNING

REPLACE LOCK PINS AFTER ADJUSTMENT AND MAKE SURE BOTH SIDES OF LOWER HANDLE CONTACTS HANDLE BRACKET UPSTOP. A LOOSE HANDLE, OR IMPROPER FUNCTION OF THE UPSTOP MAY CAUSE LOSS OF OPERATOR CONTROL.

CUTTING HEIGHT



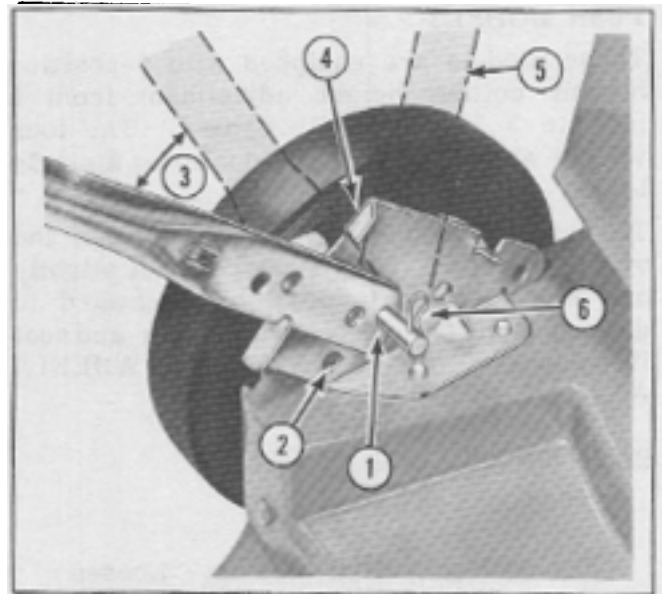
SAFETY WARNING

DO NOT ATTEMPT TO ADJUST CUTTING OR HANDLE HEIGHT WITH ENGINE RUNNING BECAUSE OF POSSIBLE CONTACT WITH ROTATING BLADE.

COMMERCIAL MODELS (EARLY MODELS)

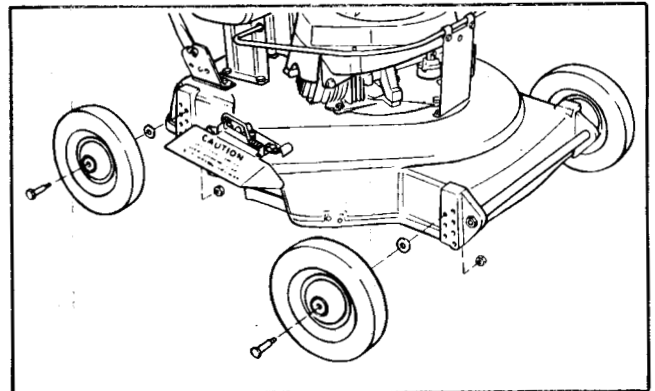
All four wheels are adjustable. With a range of cutting heights in 1/2 inch steps from 1 to 4 inches. To adjust, remove wheel bolts and reinsert in the proper height holes. Be sure when adjusting height of cut to install all wheel axle bolts at same height.

Tighten mounting wheel bolt and nut securely.



LEFT HANDLE BRACKET ILLUSTRATED

1. Low Handle Hole
2. High Handle Hole
3. Normal Operating Position
4. Handle Bracket Upstop
5. Storage Position
6. Lock Pin

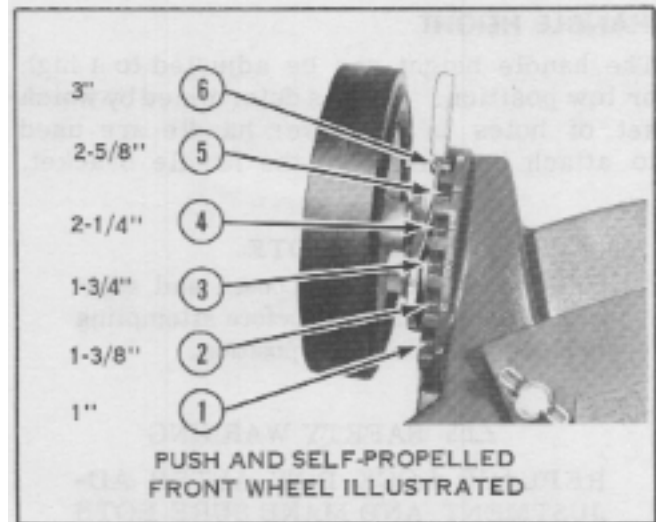


ADJUSTMENTS (CONT)

PUSH MODELS

These models are equipped with 6-position instant cutting height adjustment from 1 inch to 3 inches as illustrated. The four wheels are adjusted individually by a single lever.

To change cutting height, simply pull the wheel adjusting lever toward wheel slightly and move either forward or backward to desired position. Release the lever and seat it securely in notch. **SET ALL WHEELS AT SAME HEIGHT.**



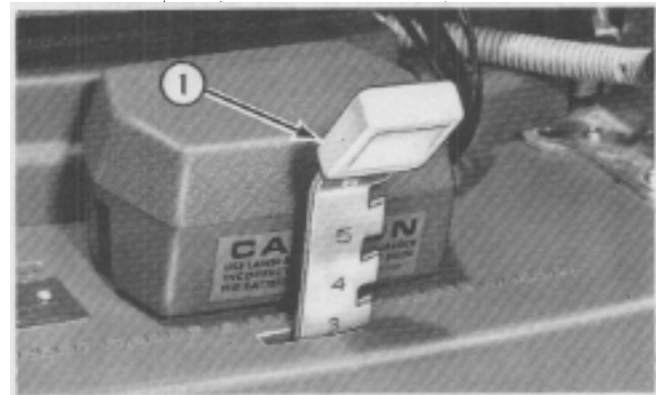
SELF-PROPELLED MODELS



NOTE

For self-propelled models: Loosen clutch control rod before attempting to adjust rear wheel height.

The front wheels are adjusted individually (See PUSH MODELS) while the rear wheels are controlled by an adjustment lever with numbers corresponding to the front wheels. **SET ALL WHEELS AT SAME HEIGHT.**



SAFETY WARNING

SELF-PROPELLED MODELS. WHEN WHEEL OR HANDLE HEIGHT IS CHANGED, THE CLUTCH CONTROL ROD MUST BE READJUSTED FOR PROPER OPERATION OF THE INTERLOCK ASSEMBLY.

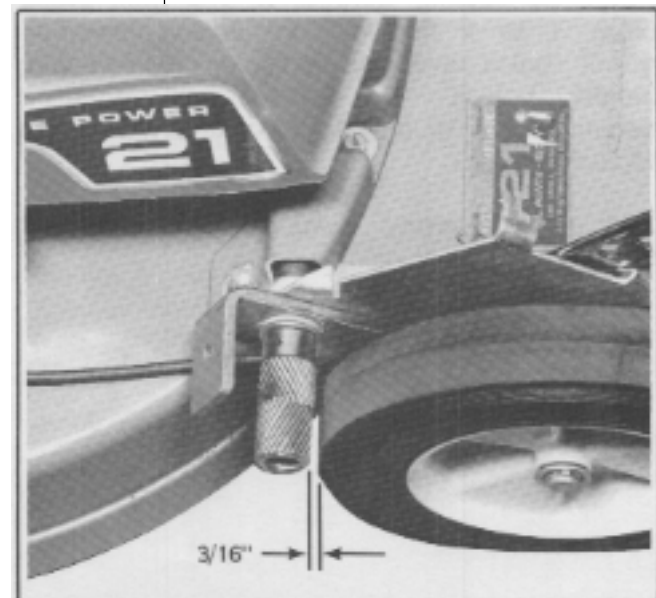
CLUTCH CONTROL ROD-SELF-PROPELLED MODELS (REFER TO SECTION 10)

With handle in "locked-out" position, pull down on upper clutch rod and up on lower clutch lever, until all slack is removed. A gap of $3/16$ " should appear between drive rollers and tires. Secure the two together with clamp screw as tight as possible with hand pressure.



SAFETY WARNING

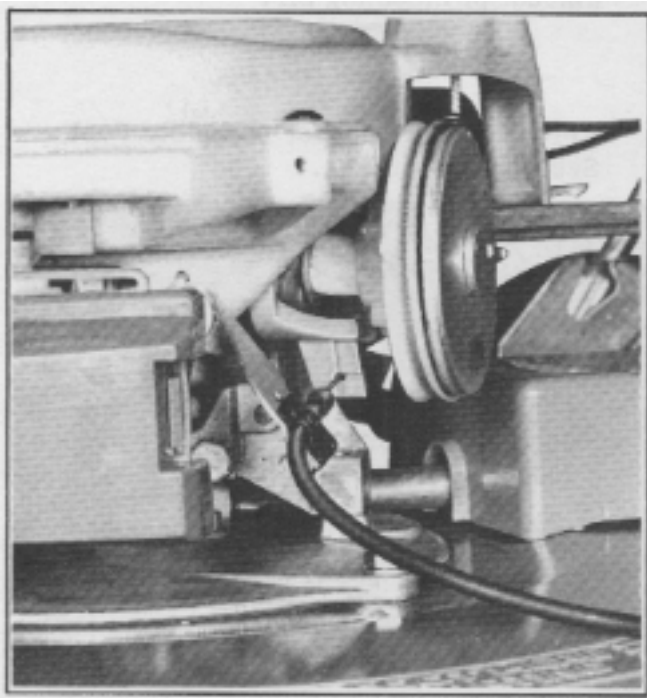
IMPROPER TIGHTENING OF CLUTCH ROD AND LEVER CONNECTION MAY RESULT IN OPERATOR LOSS OF DRIVE CONTROL MECHANISM.



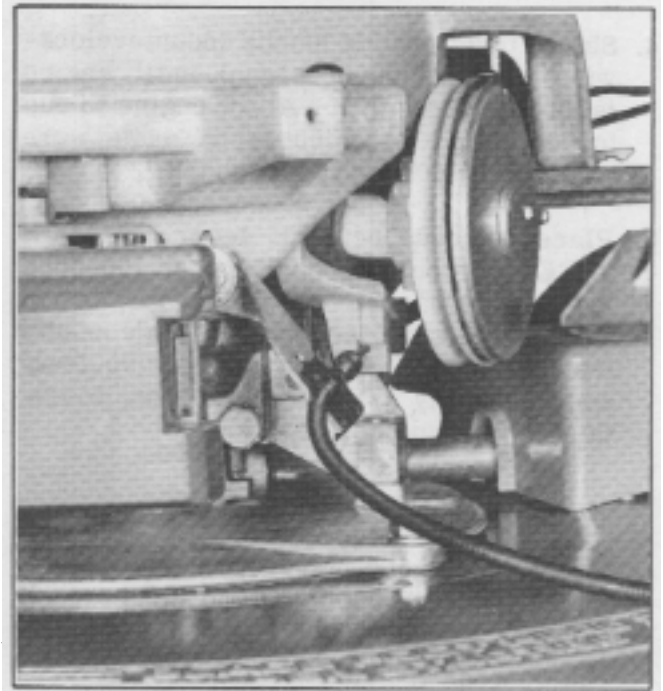
STARTER INTERLOCK - SELF - PROPELLED MODELS

The starter interlock is a safety feature on self-propelled models. This system prevents starting the engine when the control handle is in the "DRIVE" position. The interlock cable is attached to the rear axle and an interlock lever. When the control handle is placed in "DRIVE" position the cable rotates the interlock lever upward into a position

that prevents the starter pinion from engaging the flywheel. When the control handle is placed in "NEUTRAL" position the interlock cable pulls the interlock lever downward, allowing the starter pinion to engage flywheel as shown. This permits starting the engine with the control handle in the "NEUTRAL" position only.



"DRIVE" POSITION



"NEUTRAL" POSITION

NOTE

Misadjustment of the interlock system will eliminate the safety feature it was designed for and may prevent starting the engine with control handle in "DRIVE" position causing possible injury to operator.

For detailed adjustment procedure refer to Section 7.


ADJUSTMENTS (CONT)

ALTITUDE NEEDLE ADJUSTMENT

All carburetors require a final adjustment of the altitude needle prior to putting the mower into service.

To adjust, proceed as follows:

1. Pre-set altitude needle 1/2 turn from seat.
2. Start engine and allow to run for 3 to 5 minutes to warm up.
3. Place speed control lever in LOW SPEED running position (2400-2600 R.P.M.)
4. Slowly turn altitude needle (counterclockwise-rich: clockwise-lean) until engine is running smoothly. Allow engine to run for one or two minutes to make sure adjustment is not too lean.
5. Place speed control lever in HIGH SPEED running position (3100-3300 R.P.M.) Observe engine operation. If not running smoothly, turn altitude needle (counterclockwise-rich: clockwise-lean) approximately 1/8 turn at a time to obtain proper engine operation.

 **NOTE**

Never operate the mower with the altitude needle adjusted to less than 1/4 turn from the seat. This will permit a lean mixture (fuel and air) to enter the engine resulting in higher than normal operating temperatures thus causing a scoring condition of the piston, rings and cylinder.

6. After carburetor adjustment is completed, shut off engine. IMMEDIATELY attempt to restart engine. DO NOT PRIME A HOT ENGINE. It should start within 2 pulls on starter handle. Check starting engine at both HIGH and LOW speed settings. If difficult to restart, turn altitude needle 1/8 turn counter clockwise to richen fuel mixture to obtain easy restarting.



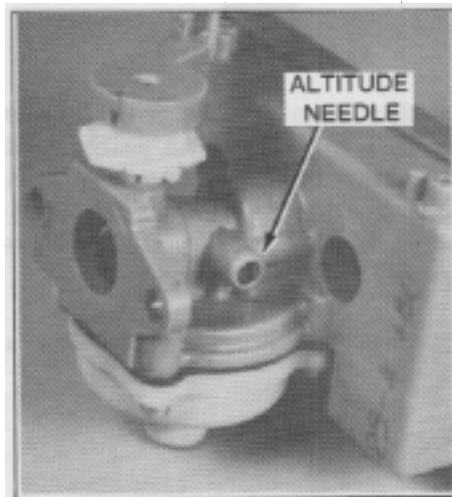
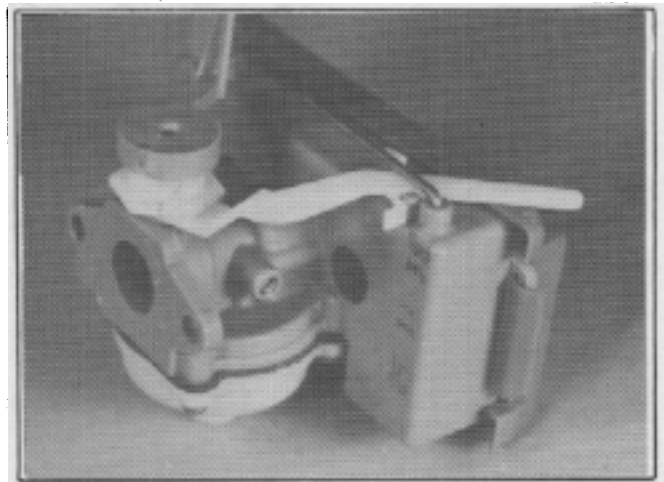
NOTE

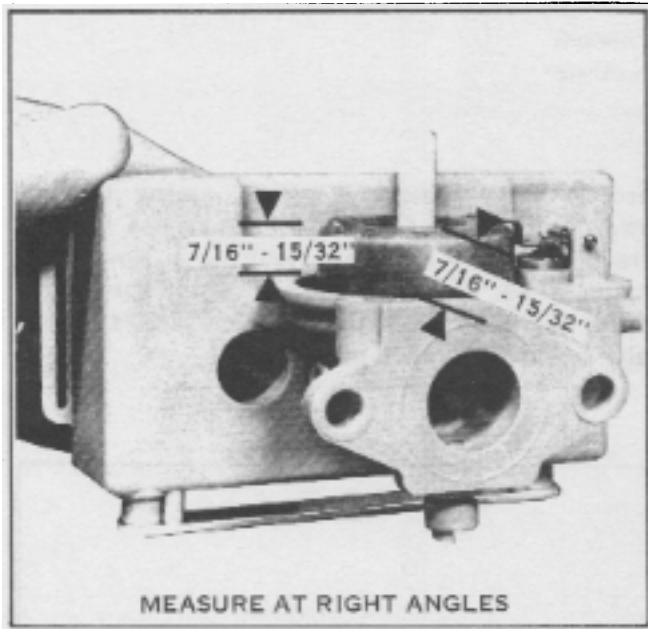
The governor will control the amount of fuel entering the engine. The purpose of the atmospheric pressure adjusting needle is to mix the right amount of fuel with the correct amount of incoming air.



NOTE

Refer to Section 4 for complete Fuel System information.

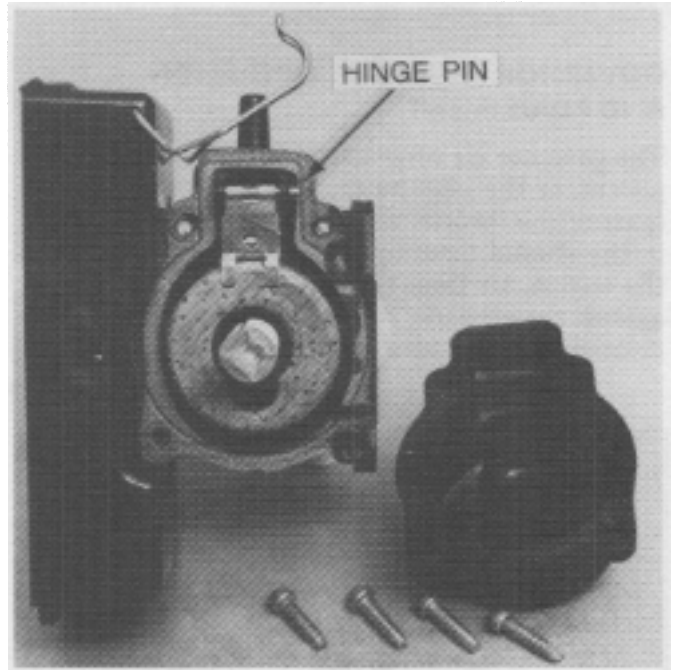




FLOAT ADJUSTMENT

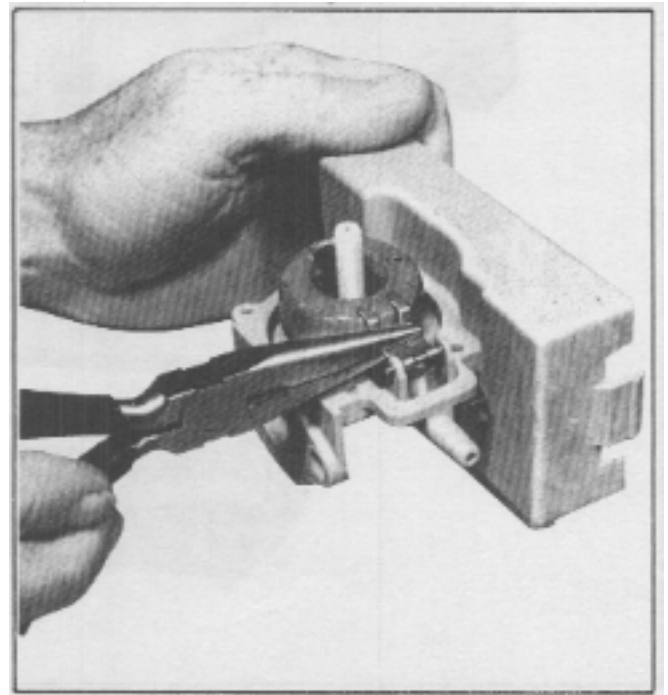
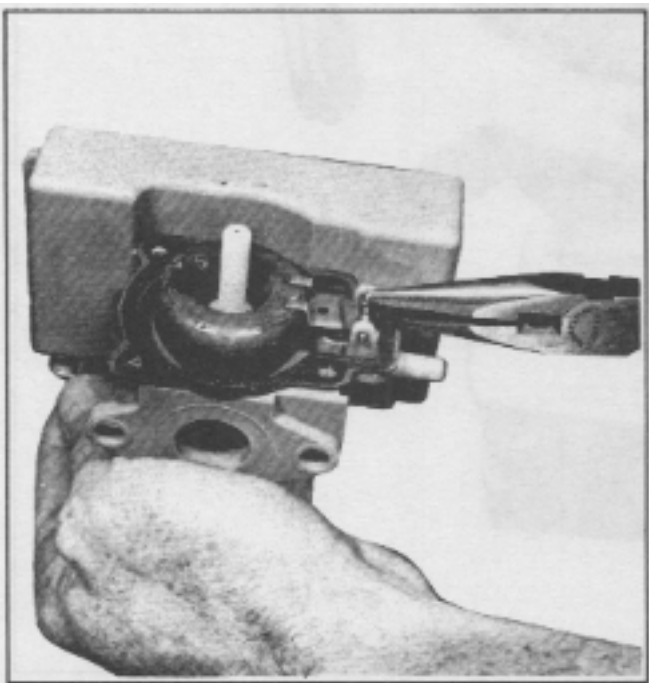
FLOAT SETTING

Remove float bowl and gasket. Invert carburetor. With float arm resting on float valve needle, the top of float should be $7/16$ - $15/32$ inch above edge of carburetor body as shown. Obtain measurements at two points at right angles to each other. Check hinge on float arm to be sure it is secured to pin. Use needle nose pliers and tighten hinge as shown.



Before securing (clamping) the float hinge on the pin, be sure the hinge is centered on the pin and the pin is centered in the carburetor. If not centered, it is possible for the float to stick resulting in carburetor flooding.

If adjustment is required; using needle nose pliers bend float arm as shown. DO NOT bend float arm by applying pressure to float.

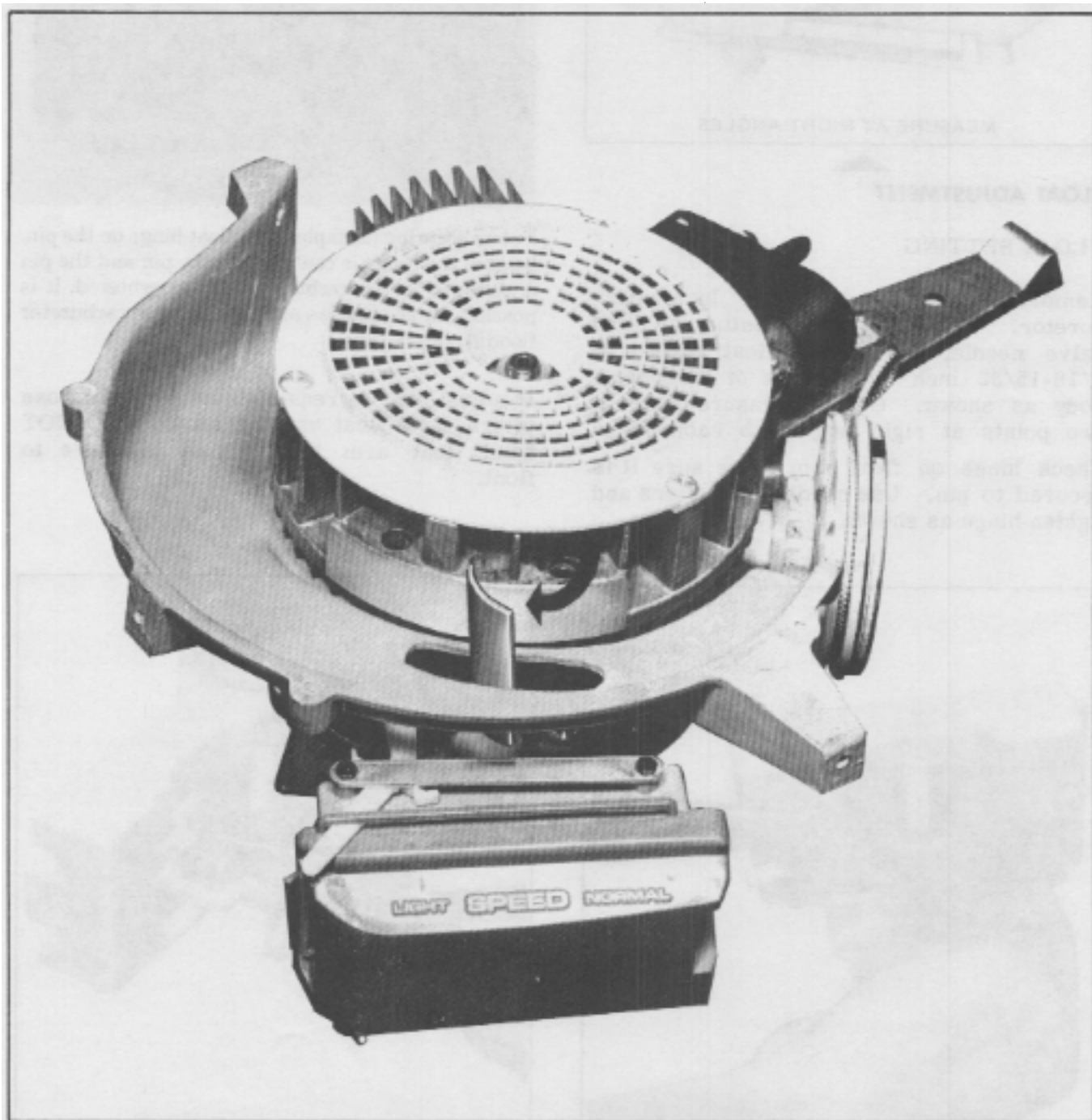


ADJUSTMENTS (CONT)

GOVERNOR ASSEMBLY, OPERATION AND ADJUSTMENT

The governor air vane assembly is an integral component of the carburetor. The governor air vane (part of the throttle shaft) extends into a "tunnel" in the shroud mounting base. In the operation of the engine, air from the fins of the flywheel flows against the air vane. An increase of air velocity (increased engine speed) moves the air vane and

throttle valve assembly against spring tension towards the closing position. Movement in this direction reduces fuel flow resulting in slowing of engine speed. With reduction of engine speed, the spring tension moves the air vane and throttle valve towards the open position.



ADJUSTMENTS (CONT)

SAFETY WARNING

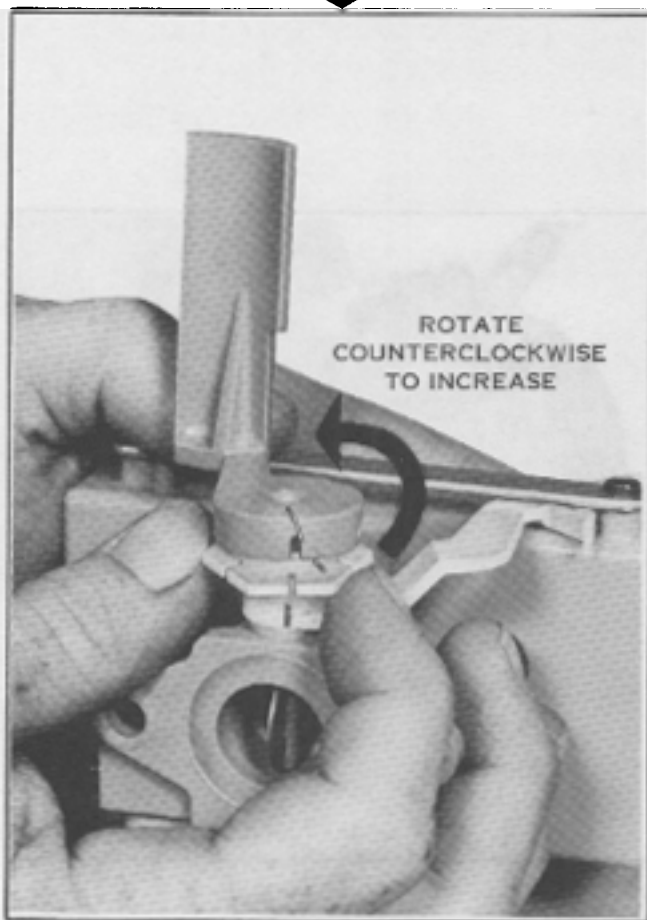
GOVERNOR ADJUSTMENT SHOULD NOT EXCEED 3300 R.P.M. EXCESSIVE ENGINE SPEED WILL LOOSEN OTHER MOWER COMPONENTS, WHICH MAY BECOME THROWN OBJECTS.

Engine speed (R.P.M.) is controlled by the governor spring tension. All mowers are run and tested at the factory, however, if the governor requires adjustment proceed as follows.

1. Grasp the hex shaped adjusting collar and gently raise collar upwards until collar is above splines on speed control lever as shown.
2. Rotate adjusting collar counterclockwise to increase spring tension (increase engine R.P.M.). Rotating collar clockwise decreases spring tension (decreasing engine R.P.M.). Reinstall adjusting collar to speed control lever.

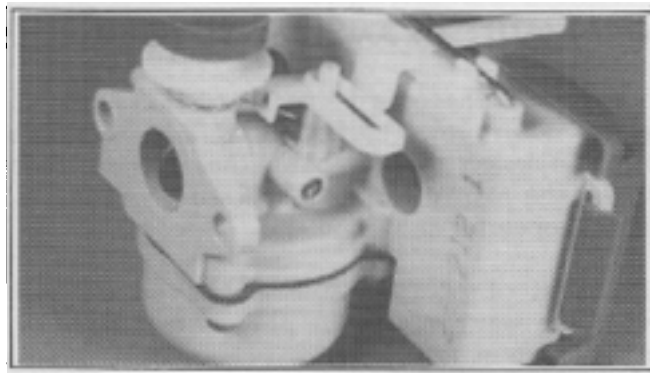
NOTE

Each spline on the speed control lever represents 50-75 R.P.M.



SERVICE BULLETIN REFERENCES

3. Use a tachometer to accurately measure engine R.P.M. Correct R.P.M. is 2400-2600 LIGHT speed setting and 3100-3300 NORMAL setting.
4. Run engine and test for correct engine R.P.M. in both LIGHT and NORMAL settings. Adjust governor spring tension as required until engine R.P.M. is within specified range.



NOTE

Each click of governor collar represents approximately 50-75 R.P.M.

1. Rotate adjusting collar clockwise to increase spring tension (increase engine R.P.M.). Rotating collar counterclockwise decreases spring tension (decreasing engine R.P.M.)
2. Same as No. 3 above.
3. Same as No. 4 above.

ENGINE SURGING

Engine surging will result if governor air vane movement is limited or restricted. When carburetor and air vane assembly are secured to engine check air vane movement within "cut out" area of shroud mounting base. Air vane should move freely through the full throttle range without rubbing or binding within the "cut out" area of the shroud mounting base. If binding occurs, loosen shroud mounting bolts and relocate shroud mounting base until resistance is eliminated.

Check air vane movement with air baffle secured to shroud mounting base. The air baffle must be correctly installed to allow the governor air vane to move freely within the air baffle "tunnel." With air baffle secured check movement of air vane. Air vane must not rub or bind against air baffle, if this occurs, loosen shroud mounting base bolts and raise shroud mounting base as required until necessary clearance is obtained. Tighten bolts securely.

SAFETY FEATURES

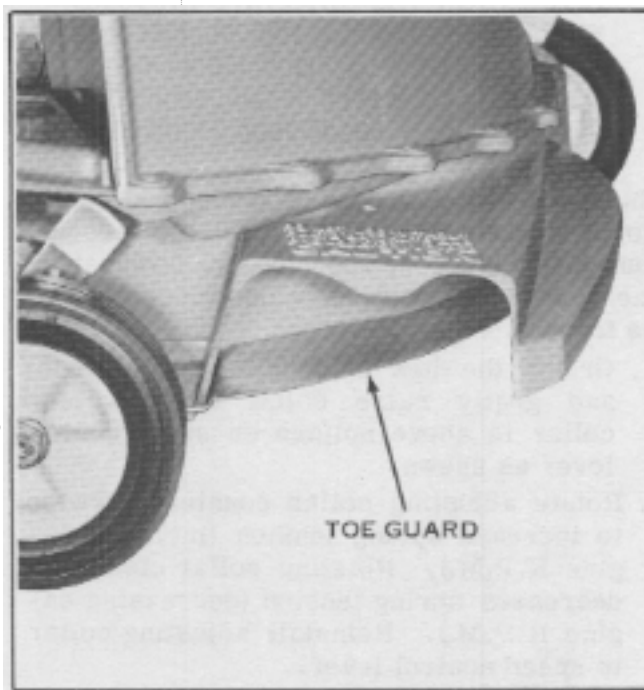
SAFETY RELATED

Refer to SAFETY page located in front of this manual and follow all recommended safety warnings.

CHUTE DEFLECTOR AND TRAILING SHIELD

The chute deflector is designed to deflect a thrown object downward. The flexible trailing shield also helps to deflect thrown objects that may exit from under the rear of the mower possibly causing injury to operator or bystander.

Removal of ANY safety related feature will void the warranty. The person removing or altering a safety feature becomes the manufacturer and assumes responsibility should an injury or accident occur.



SAFETY WARNING

WHEN REPLACEMENT PARTS ARE REQUIRED, USE GENUINE OMC PARTS OR PARTS WITH EQUIVALENT CHARACTERISTICS INCLUDING TYPE, STRENGTH, AND MATERIAL. FAILURE TO DO SO MAY RESULT IN PRODUCT MALFUNCTION AND POSSIBLE INJURY TO THE OPERATOR AND/OR BYSTANDERS.

CHECK THE MOWER BEFORE USE

SAFETY WARNING

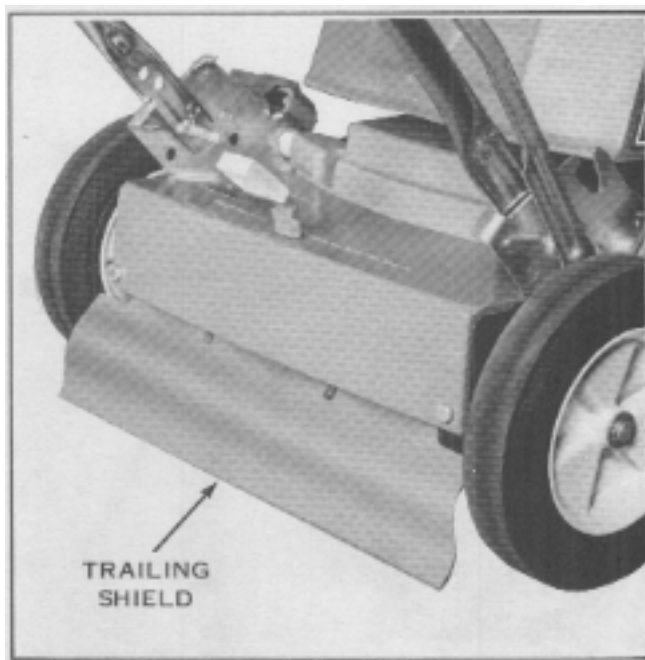
TO PREVENT ACCIDENTAL STARTING OF MOWER, DISCONNECT SPARK PLUG LEAD BEFORE CHECKING THESE FASTENERS.

Check all nuts, bolts and fasteners for tightness, especially the blade nut (torque blade nut to 50 ft. lbs.). Disconnect spark plug lead before check.

Keep all guards in place at all times.

Keep either cover plate or grass catcher chute with bag in place and secure at all times.

Check grass or leaf bags for wear or deterioration. Replace bag if necessary. Use only Lawn-Boy original replacement bags.



SAFETY FEATURES (CONT)

INSTALLING GRASS CATCHER ASSEMBLY OR CHUTE COVER PLATE

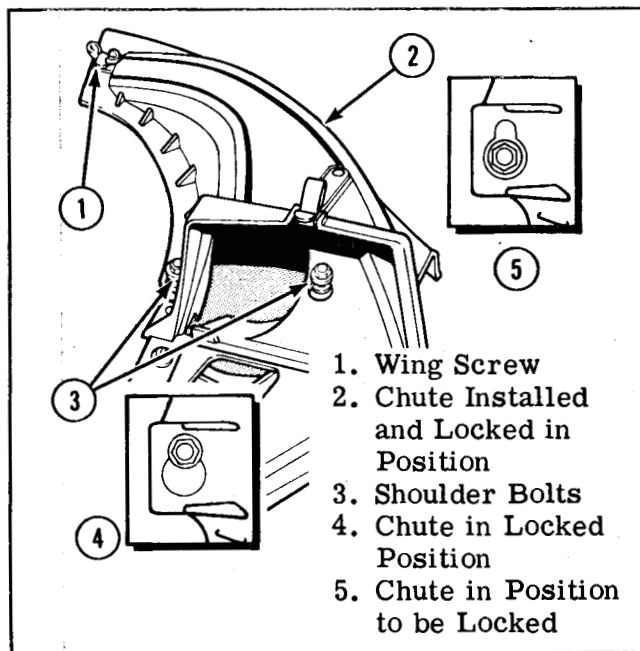
SAFETY WARNING

DO NOT OPERATE MOWER WITHOUT EITHER CHUTE COVER PLATE OR CHUTE AND BAG (WITH ZIPPER CLOSED) LOCKED IN PLACE. THESE PROVIDE PROTECTION AGAINST OBJECTS BEING THROWN BY THE BLADE THRU THE CHUTE OPENING, OR EXPOSURE TO THE ROTATING BLADE.

Both the chute assembly and the cover plate are secure to mower housing in the same manner.

There is a slotted hole in the engine side of chute, ③, and one on inside of chute opening ③. Place the chute (or cover) down into the deck opening so the two shoulder bolts mounted in the deck protrude thru these holes.

Slide the installed part clockwise with bolt head over slot portion of the two holes ④. A third hole is located in the end of the installed part ①. Secure part in place by threading the screw supplied, thru hole in end of part, into mower deck.



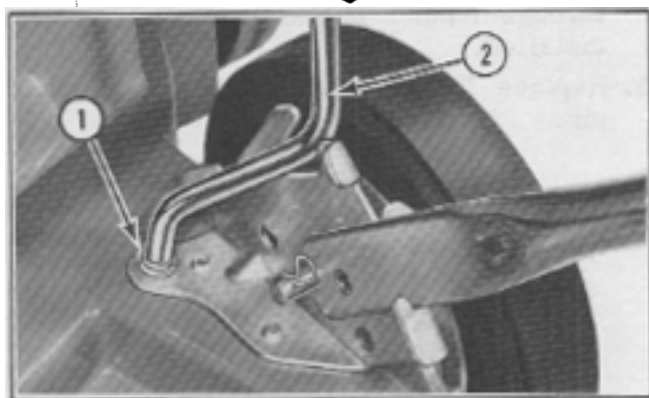
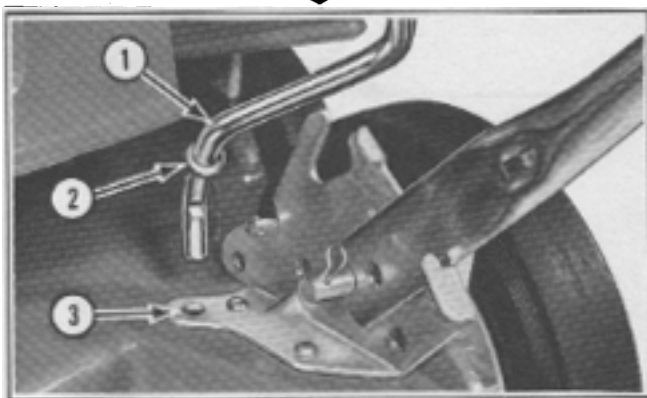
NOTE

If it is not desired to use the bag and chute, they may be removed and the chute cover placed over housing opening. With engine shut off, and spark plug lead disconnected, remove the wing screw and slide the chute out of the housing. Install cover in housing opening and secure with wing screw.

INSTALLING BAG SUPPORT ROD

1. While standing behind the mower, insert lower end of bag support rod thru hole in right handle bracket.

2. Rotate rod until it nests in slot on top of handle bracket. Flange on rod will seat on handle bracket.



SAFETY FEATURES (CONT)

INSTALLING GRASS CATCHER BAG

1. Insert bottom (wide portion) of bag frame between the vertical wall of the support shelf and the two retaining lugs at the bottom of the chute opening.



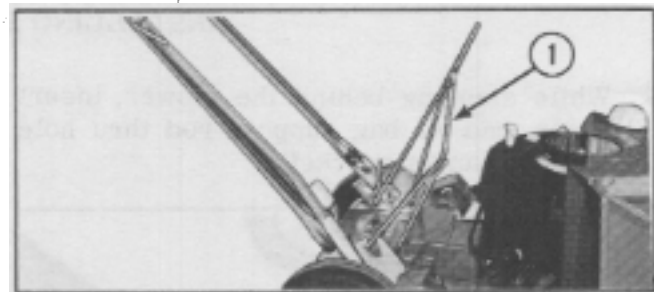
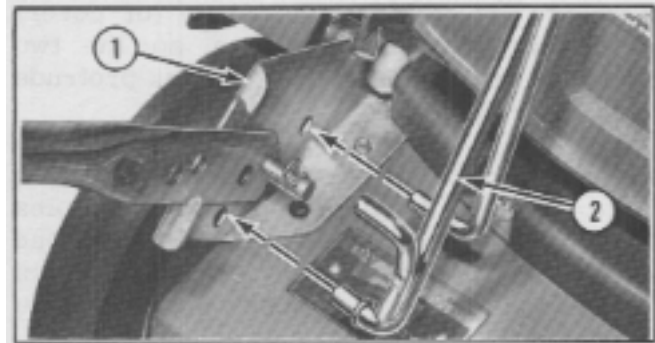
2. Depress spring latch at top of chute and slip bag frame onto latch. Be certain latch enters hole in bag.
3. Attach the grass bag to the hook at the end of the rod by using one of the three positions provided. Use whichever position pulls the top of the bag TAUT.



INSTALLING REAR GRASS BAG ASSEMBLY

FRONT HANGER ASSEMBLY INSTALLATION

1. Remove lock pin from handle pin in left hand handle bracket.
2. Hold front hanger with legs down, horizontal bar across, and the bent leg toward the right.
3. Locate the two open holes in each handle mounting bracket. The outward ends of the front hanger fit into the handle bracket holes.
4. Install front hanger (one side first) into the handle bracket holes. Squeeze in the other side, and snap into the other handle bracket. Oversqueezing will deform the hanger. The short rod ends will project through handle brackets when properly installed.
5. Replace lock pin in left handle bracket pin.



SAFETY WARNING

MAKE SURE LOCK PIN IS REPLACED AFTER ADJUSTMENT, AND THE LOWER HANDLE CONTACTS HANDLE UPSTOPS. A LOOSE HANDLE OR IMPROPER FUNCTION OF THE UPSTOP MAY CAUSE LOSS OF OPERATOR CONTROL.



SAFETY WARNING

DO NOT USE BAG WITHOUT PLASTIC DEFLECTOR INSTALLED IN BAG SLEEVE. THE DEFLECTOR PROVIDES PROTECTION AGAINST OBJECTS BEING THROWN THROUGH THE BAG SLEEVE MATERIAL.

SAFETY FEATURES (CONT)

INSTALLING GRASS CATCHER BAG

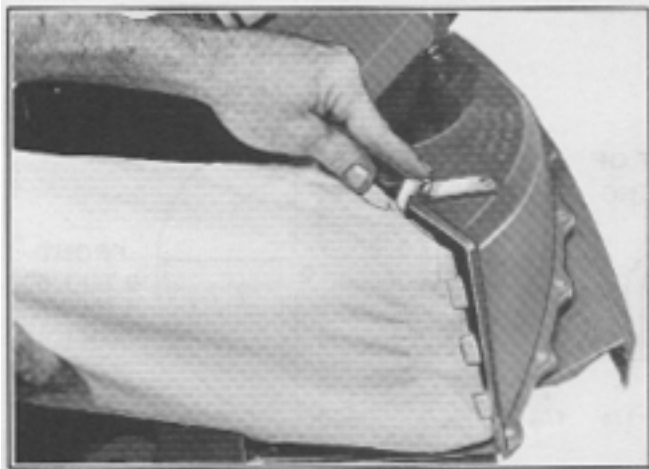
 NOTE

For easy attachment of the grass bag, follow the assembly steps in sequence.

1. Insert bottom (wide portion) of bag frame between the vertical wall of the support shelf and the two retaining lugs at the bottom of the chute opening.



2. Depress spring latch at top of chute and slip bag frame onto latch. Be certain latch enters hole in bag.



3. Hang front plastic hanger over front hanger bar.
4. Hook rear plastic hanger over rear hanger bar.

 NOTE

If bag is too tight: 1. Remove rear hanger bar from hanger clips. 2. Loosen bolts. 3. Slide hanger clips down to rear notch in hanger clip. 4. Reassemble rear hanger bar and tighten wing nuts. 5. Hook rear plastic hanger on bag over hanger bar.

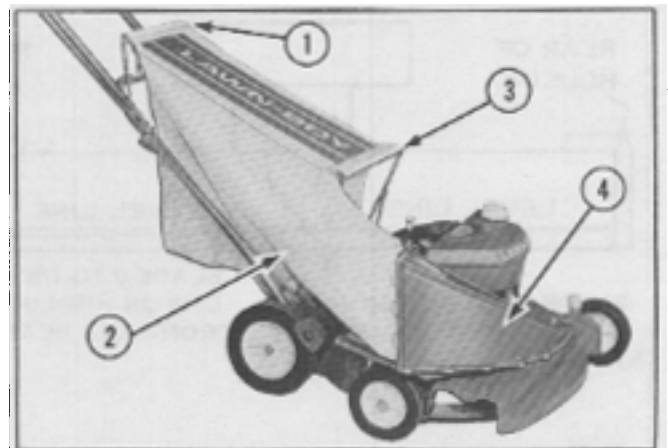
If bag fits loosely: 1. Remove rear hanger bar from hanger clips. 2. Loosen bolts. 3. Slide clips rearward into the front notch. 4. Reassemble rear hanger bar, and tighten wing nuts. 5. Hook rear plastic hanger on bag over hanger bar.

 NOTE

For best results when using rear catcher, set engine speed control lever at "NORMAL" position.

 SAFETY WARNING

TO PREVENT INJURIES, ALWAYS SHUT OFF ENGINE AND DISCONNECT SPARK PLUG WIRE BEFORE CLEANING A CLOGGED CHUTE, BAG TUNNEL, OR MOWER HOUSING. DO NOT INSERT HANDS, STICKS, OR OTHER OBJECTS IN GRASS CHUTE WHILE BLADE IS TURNING.



1. Rear Plastic Hanger
2. Sleeve Side of Bag
3. Front Plastic Hanger
4. Chute

BLADE, BLADE HOUSING

UNEVEN CUTTING

Uneven cutting can be attributed to a warped housing, individual wheels not set at same cutting height, incorrect blade tracking, bent blade or blade stiffener, or bent crankshaft. Blades out-of-balance can also cause uneven cutting.

Blade cuts high on one side - low on other, grass is cut uneven. Warped housings very seldom occur, check all items above.



NOTE

All four wheels must be at the same height to assure operator of even cut.

INCORRECT BLADE TRACKING

Swirl, arc, or half-moon cuts on smooth level lawns can be caused by the blade being too high, or too low on front or rear area of the housing. Also check UNEVEN CUTTING above. The blade should be tipped down no more than 1/8" from a level position at any place checked.

To check the blade track:

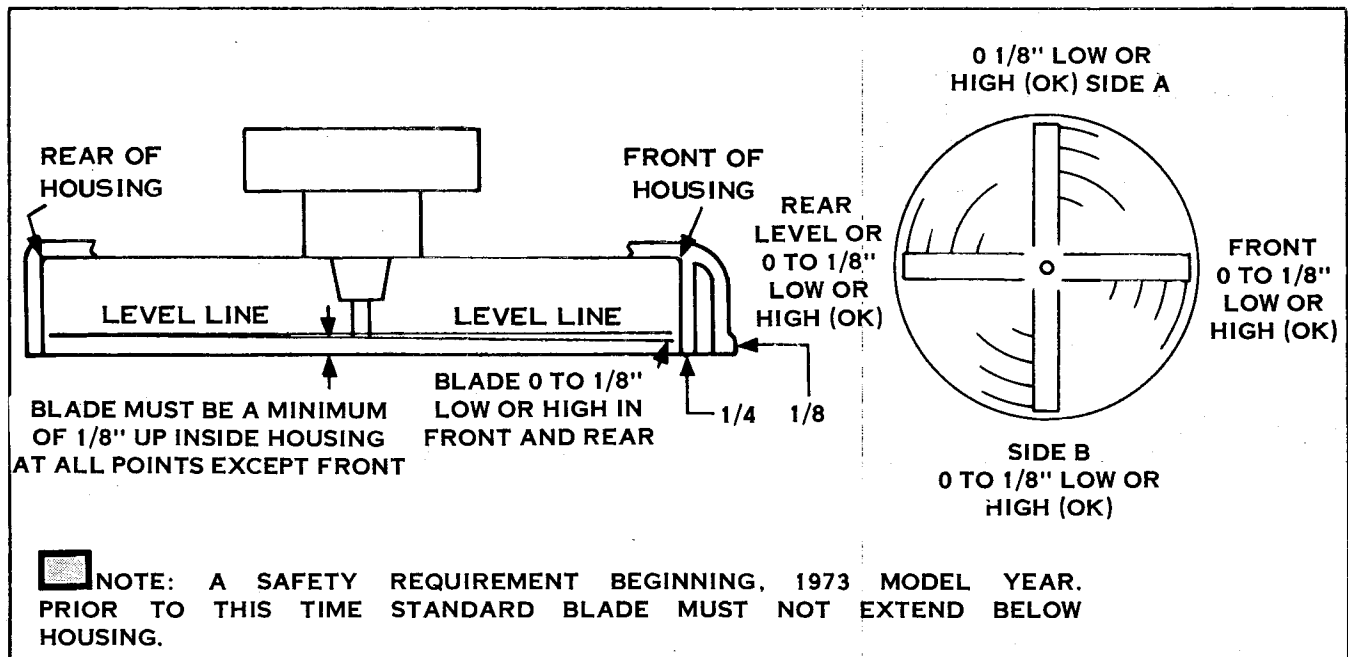


SAFETY WARNING

WHEN SERVICING BLADE, ALWAYS DISCONNECT SPARK PLUG LEAD TO PREVENT ACCIDENTALLY STARTING MOWER.

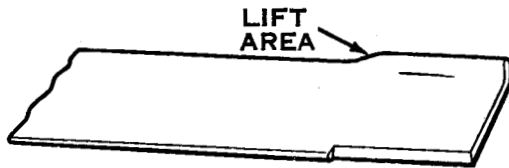
1. Place the mower on a flat, level surface, making sure all wheels are set at the same height. (The self-propelled mower must have the drive rollers engaging the tires and be in the drive position.)
2. Measure the distance between the level surface and one end of the blade in four 90 degree positions—front, side, rear, side. Zero to 1/8" low or high from a level condition at front, rear, side "A" and side "B" is acceptable.
3. Shim spacers No. 602913 (.010), No. 602914 (.020) or No. 604563 (.025) can be used between the mower housing and muffler plate to bring the blade back to the proper track. A .025 shim adjusts the end of the blade approximately 1/8". The blade stiffener and blade must always be straight and in balance.

Re-tighten the blade nut to 50 ft. lbs. Replace blade nut if removed or installed more than four (4) times.



MOWER BLADES

The blade should be checked periodically for the following conditions:



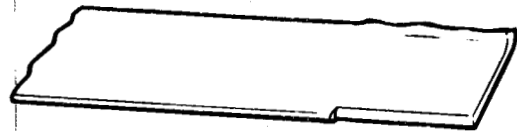
This is a good blade
Plenty of lift



Twisted blade will cut very
ragged.



A dull blade will cut ragged and
deprive the engine of power.



A blade with no lift will not
discharge grass - won't cut
grass evenly.

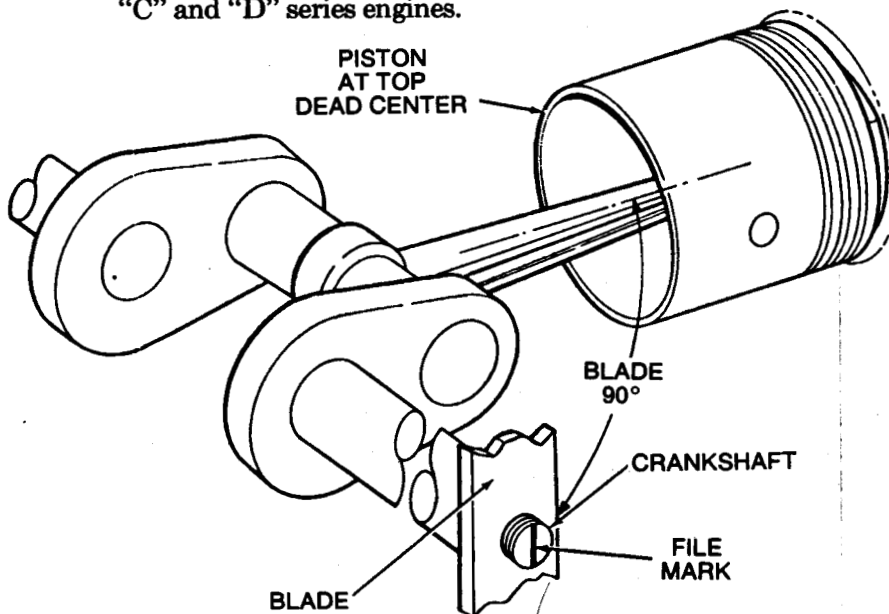
ALWAYS REPLACE BLADES THAT ARE QUESTIONABLE. VIBRATION FROM AN OUT OF BALANCE BLADE OR BENT STIFFENER CAN CAUSE SEVERE ENGINE DAMAGE AND OPERATOR FATIGUE.

If excess vibration exists with blade & stiffener balanced and knowing engine is not damaged, align blade with the piston, follow steps listed below.

1. Take the spark plug out of the cylinder.
2. Loosen the blade, stiffener and adapter on the shaft so that they turn easily by hand.
3. With the piston at the top of the cylinder, mount the blade perpendicular to the piston (at a 90° angle).
4. File mark the crankshaft end in line with the blade.
5. Mount the blade in direction of file mark thereafter.
6. Always tighten the blade nut to 50 ft. lbs.

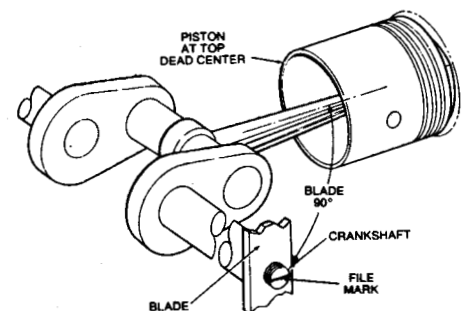
NOTE

"C" and "D" series engines.



NOTE: F SERIES ENGINES

Excessive vibration can be reduced by aligning the blade parallel WITH the piston at top dead center.

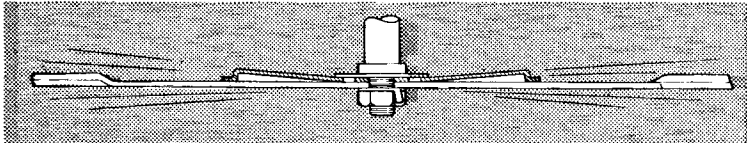
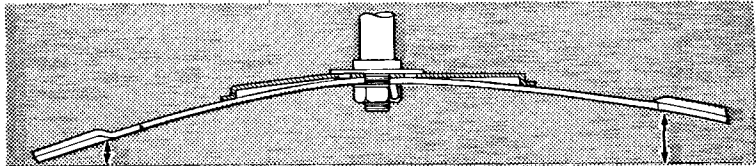


Turn file mark and blade 90°.

BLADE, BLADE HOUSING

BLADE STIFFENERS OR COLLARS

Bent Stiffener, Collar Assembly -- CAN COCK BLADE AT AN ANGLE -- cause ragged cut - vibration.

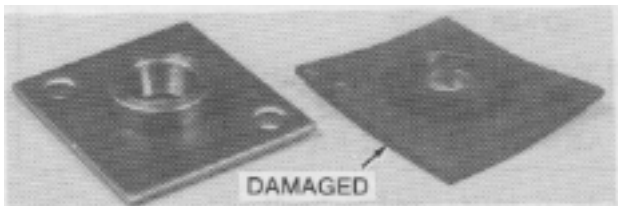
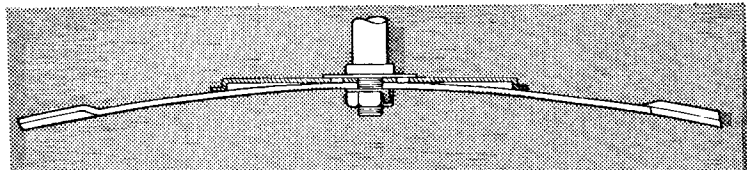


Blade with weak Stiffener (or none at all).

FLOPS - Causes poor cut.

Good Stiffener holds blade rigid . . .

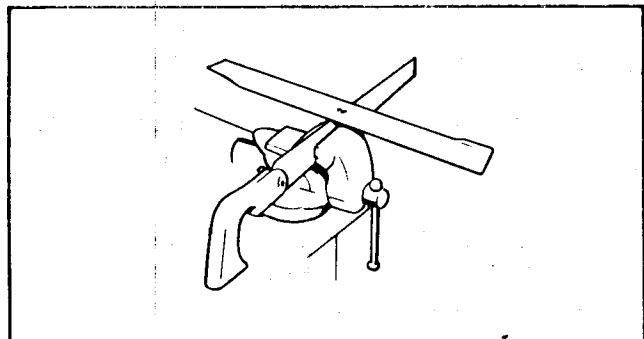
ALWAYS REPLACE WEAK STIFFENERS.



A blade collar that was damaged and bent when being removed from crankshaft should always be replaced. If not replaced, a vibration in the mower and a rough, uneven or ragged cutting may result.

KEEP BLADE SHARP AND BALANCED

Always keep blade sharp and properly balanced. To check balance, place blade on saw as illustrated. Mounting hole must be centered on saw. If necessary, grind off heavy end of blade until proper balance is attained.

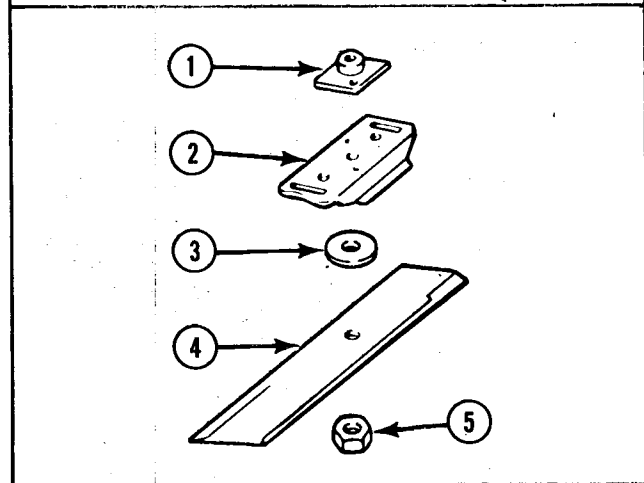


⚠ SAFETY WARNING

TO PREVENT POSSIBLE EYE INJURY WHEN GRINDING, ALWAYS WEAR PROPER EYE PROTECTION.

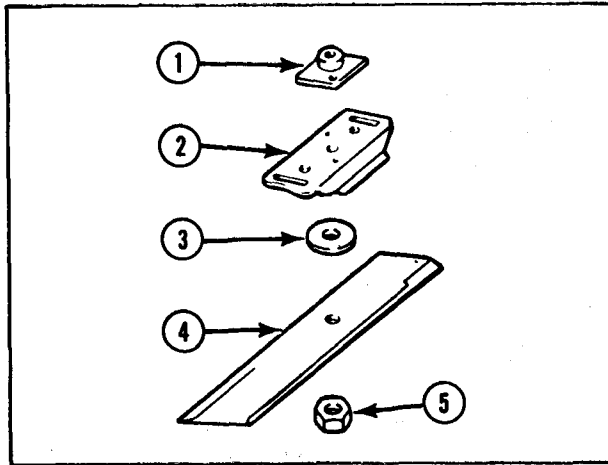
⚠ SAFETY WARNING

ALWAYS USE ORIGINAL EQUIPMENT REPLACEMENT BLADE TO INSURE COMPLIANCE WITH SAFETY SPECIFICATIONS. WHEN REINSTALLING BLADE, BE SURE PARTS ARE REPLACED IN THE SEQUENCE IN WHICH THEY WERE REMOVED. ALWAYS REPLACE BLADE WITH CURVED EDGE UP (TOWARD HOUSING).

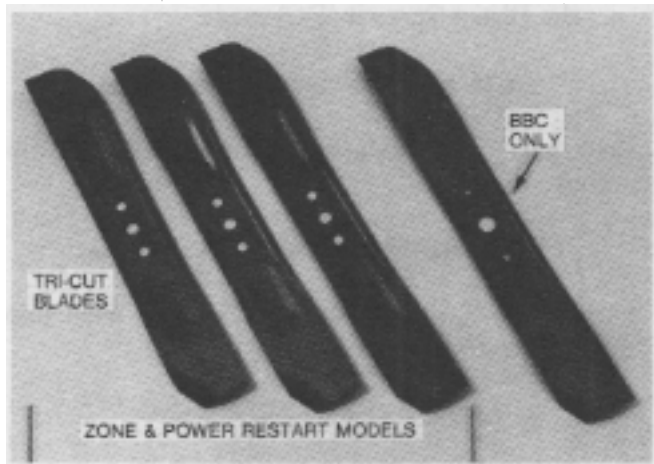


- | | |
|--|----------|
| 1. Collar | 4. Blade |
| 2. Stiffener | 5. Nut |
| 3. Washer (20 and 21 inch models only) | |

BLADES



1. Collar
2. Stiffener
3. Washer (20 and 21 inch models only)
4. Blade
5. Nut



BBC TRI-CUT BLADE

Until 1983 the blade cutting assembly illustrated here was used on Lawn-Boy mowers. A new TRI-CUT blade with a built in stiffener now replaces all blades on 19", 20" and 21" mowers manufactured in 1959 through 1982. The new TRI-CUT blade eliminates the use of the stiffener and washer. The collar is still required.

ZONE AND POWER RESTART

The 19", 20" and 21" TRI-CUT Blades are used on zone and power restart models only.

The collar remains on the crankshaft if it is not bent or damaged. The two lugs of the collar locate in the outside holes of the blade to drive it.

BLADE NUT TORQUE IS 45-50 FT. LBS. ON ZONE AND POWER RESTART MODELS.

BBC MODELS ONLY

Only one TRI-CUT blade is used on the blade brake, clutch model mowers. The distance between the outside holes is greater and will not fit other models with the collar.

BLADE BOLT TORQUE ON BBC MODELS IS 28-31 FT. LBS.

BLADE, BLADE HOUSING



BROKEN OR CRACKED HOUSING

Housing breakage is never covered under warranty except when a definite flaw is found in the metal. However, broken housings can be welded.

NOTE

For welding of the aluminum or magnesium housings, an experienced welder is recommended.

A Heliarc Welder using alternating current (AC) will weld both aluminum and magnesium housings.

NOTE

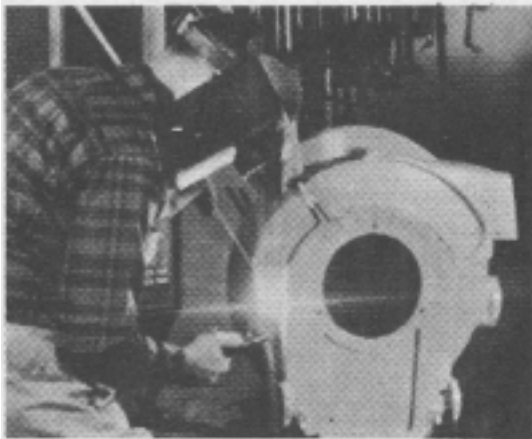
Do not attempt to weld these housings in the Direct Current (DC) mode.

To Weld Aluminum Housings

Use the Heliarc Welder in AC mode with 40-43 aluminum rod.

To Weld Magnesium Housings

Use the Heliarc Welder in AC mode with pure magnesium rod.



SAFETY WARNING

WELDING MAGNESIUM HOUSINGS WITH AN ACETYLENE TORCH IS NOT RECOMMENDED. A POSSIBILITY OF A FIRE AND/OR AN EXPLOSION WILL EXIST.

NOTE

All magnesium decks have the word "MAGNESIUM" cast-in place on the left side near "PLACE FOOT HERE WHEN STARTING."

TROUBLE SHOOTING BLADE, BLADE HOUSING

CAUSE	COMPLAINT						
	ROUGH OR RAGGED CUTTING	CUTS UNEVEN	CUTS HIGH IN MIDDLE OR ONE SIDE	LACK OF POWER			
Blade dull, nicked, out of balance	X	X		X			
Blade bent		X	X				
Weak blade stiffener		X					
Blade fastener loose		X					
Unequal wheel heights		X					
Mower housing bent or warped		X					
Muffler plate warped/not straight		X					
Blade/spacer washer missing (20 & 21" only)			X				
Insufficient engine speed	X			X			
Insufficient blade tip speed	X			X			
Cutting wet grass	X			X			
Grass too long				X			
Rough & uneven turf		X					
Forward travel too fast for cutting conditions	X		X	X			
Erratic mowing habits							
a. Fast and slow movements of mower (jerky operation)		X					
b. Bouncing of handle, etc.		X					

ROTARY MOWER BLADE TIP SPEED

RPM	21" BLADE		19" BLADE		18" BLADE	
	<u>Ft. Per Min</u>	<u>Miles Per Hour</u>	<u>Ft. Per Min</u>	<u>M.P.H.</u>	<u>Ft. Per Min</u>	<u>M.P.H.</u>
3487	18,997	215	17,299	195		
3400	18,523	210	16,799	189	15,844	180
*3300	17,978	204	16,305	185	15,378	175
*3200	17,434	198	15,811	180	14,912	168
*3100	16,889	191	15,317	174	14,446	164
3000	16,344	185	14,823	168	13,980	159
2900	15,799	179	14,329	163		
2800	15,254	173	13,835	157		
2700	14,710	167	13,341	152		
*2600	14,165	160	12,847	146	12,116	138
*2500	13,620	154	12,353	140	**11,650	132
*2400	13,075	148	**11,858	133	**11,184	127

*Minimum & Maximum Speeds Recommended For Operation Of Lawn-Boy Mowers

**NOTE: Blade Tip Speed Below 12,000 F.P.M. Will Not Bag Grass Satisfactorily

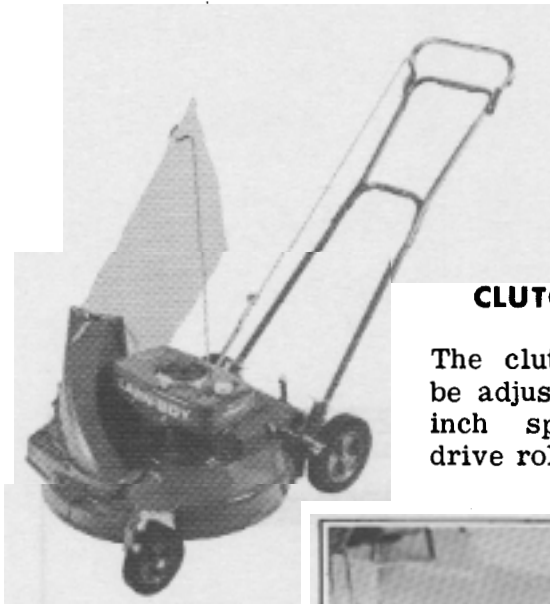


SAFETY WARNING:

TO MINIMIZE THE HAZARD POTENTIAL OF POSSIBLE FOREIGN, OBJECTS STRUCK BY THE CUTTING BLADE, BLADE TIP SPEED SHOULD NEVER EXCEED 19,000 FEET PER MINUTE.

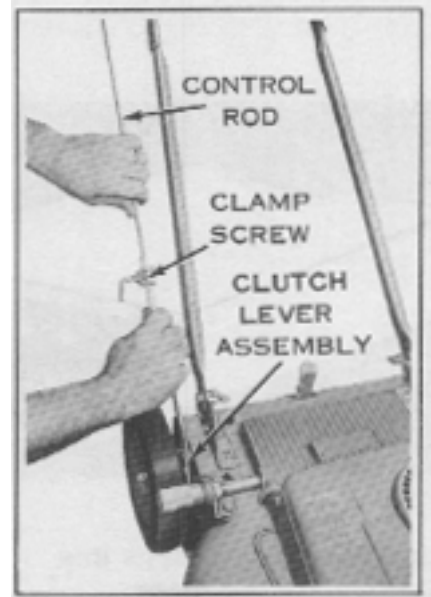
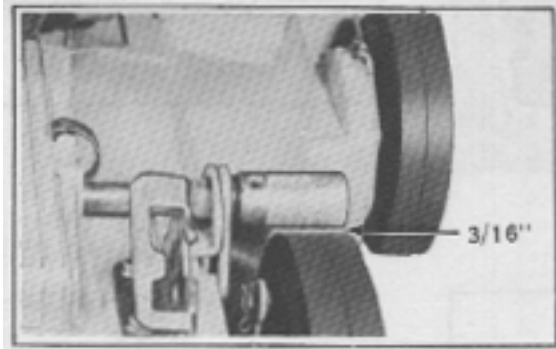
FEDERAL SAFETY STANDARDS DOES NOT PERMIT BLADE TIP SPEED TO EXCEED 19000 FEET PER MINUTE.

SELF-PROPELLED LOWER BELT DRIVE SERVICING



CLUTCH ADJUSTMENT

The clutch control rod must be adjusted to provide a 3/16 inch spacing between the drive rollers and rear wheels.

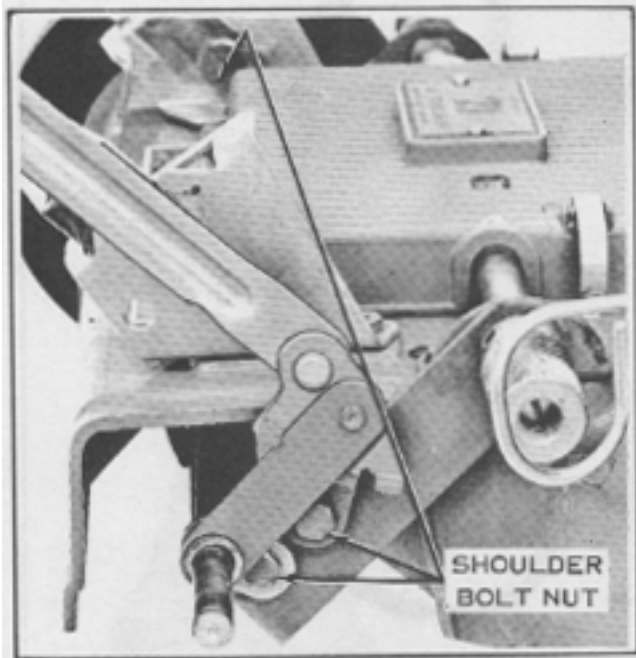


NOTE

Whenever wheel height or handle height is changed, clutch control rod and lever must be readjusted. Loosen clamp, lock drive unit in out-of-drive position. Pull up clutch control lever and down on control rod as far as possible and tighten clamp securely.

SAFETY WARNING:

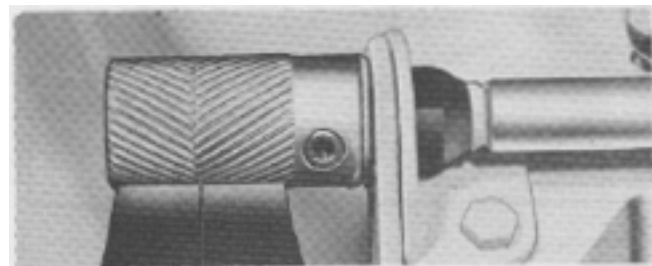
IMPROPER TIGHTENING OF CLUTCH ROD AND LEVER CONNECTION COULD RESULT IN LOSING CONTROL OF THE MOWER.

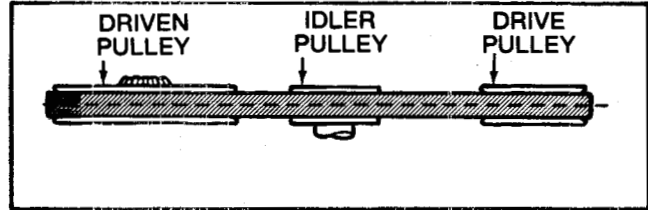
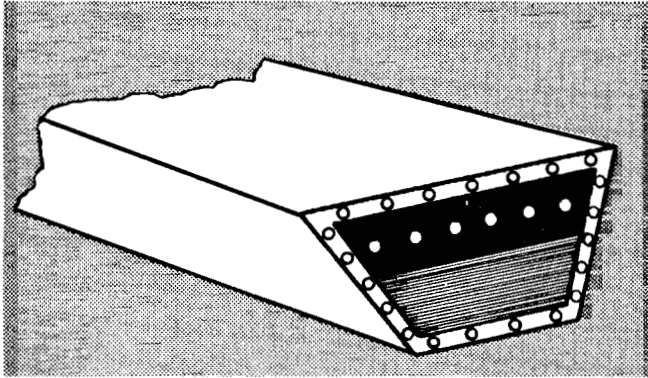


This adjustment is performed by placing lower end of control rod into groove of clutch control lever assembly. Pull up clutch control lever and down on control rod as far as possible and tighten clamp screw securely. This procedure should provide the required 3/16 inch spacing. However, if it cannot be attained remove right rear wheel and loosen shoulder bolt and adjust axle accordingly.

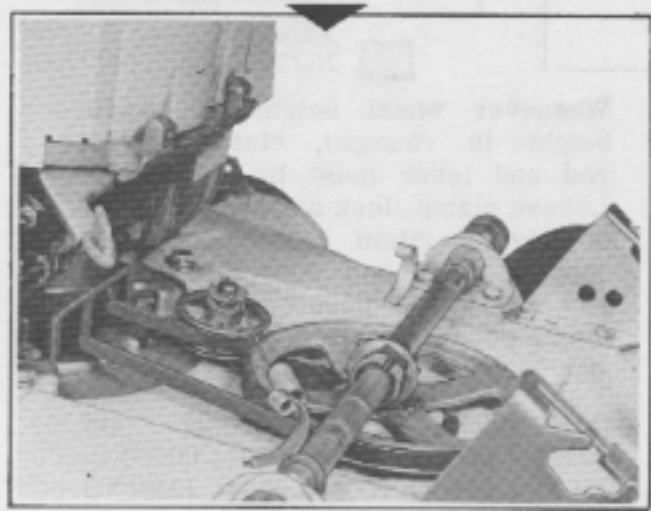
DRIVE ROLLER INSTALLATION

The drive rollers must be properly installed to utilize the self-cleaning feature. Proper installation is with the vee pointing toward the wheel.

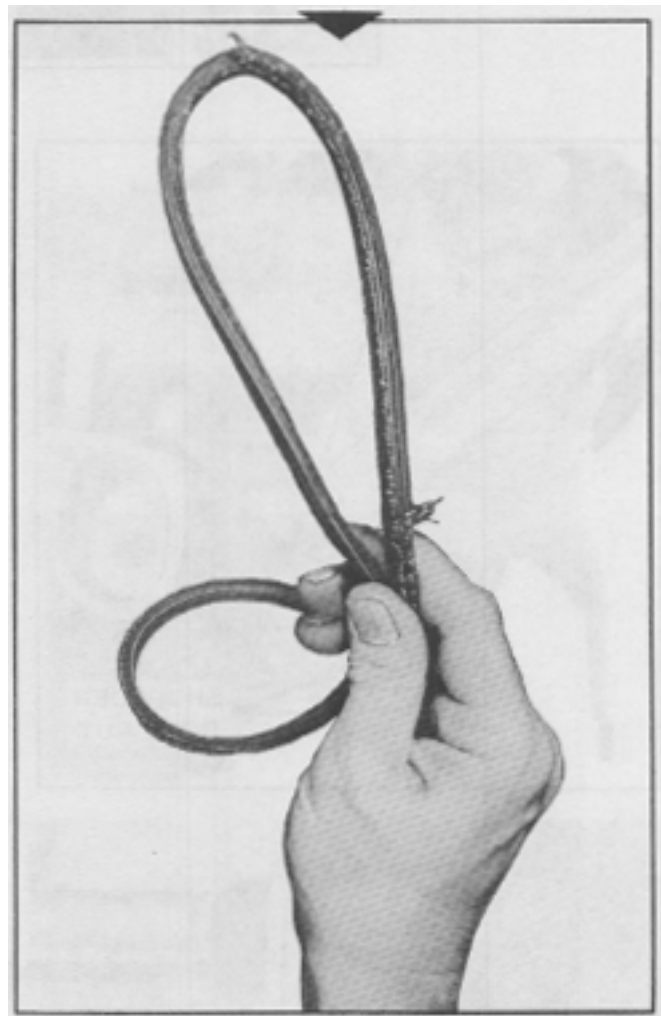




A highriding belt such as this

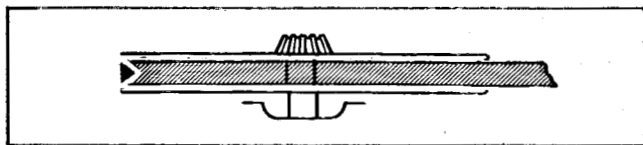


Can result in this



DRIVEN PULLEY

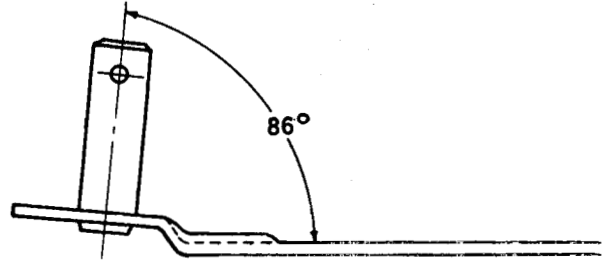
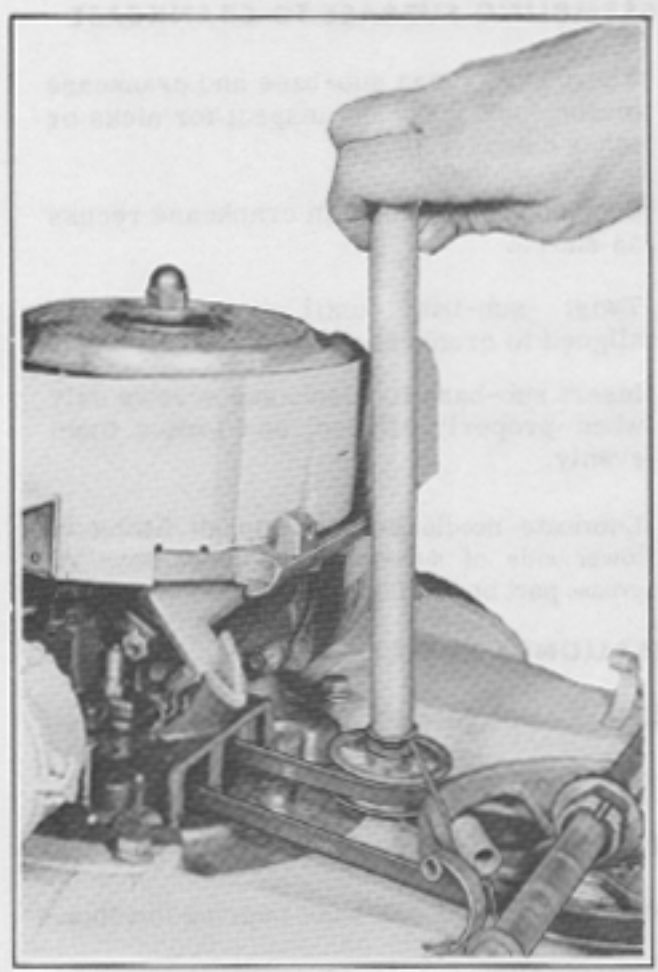
Idler Pin can be bent either way **SLIGHTLY** to change angle of pulley so V-Belt will ride in center of pulley. Refer to page 10-3. If pulley is cocked either way V-Belt will wear quickly and fail.



SELF-PROPELLED LOWER BELT DRIVE SERVICING

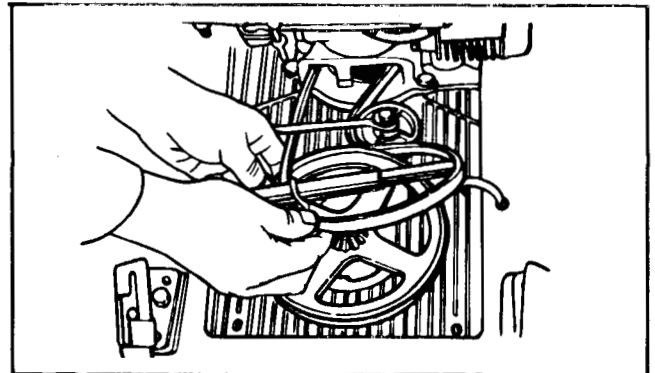
IDLER PULLEY PIN

Controls Idler Pulley angle.
Can be bent either way to make Pulley perpendicular to Belt back.
86° is setting at factory.



TO REMOVE OR CHANGE BELT

Remove Right Roller.
Pull Drive Shaft to the left.
Remove Belt.
Remove Engine from Housing.



Slide a piece of pipe over idler pulley pin, and bend in the appropriate direction until belt locates in the center of the pulley.

TO REMOVE ENGINE FROM HOUSING

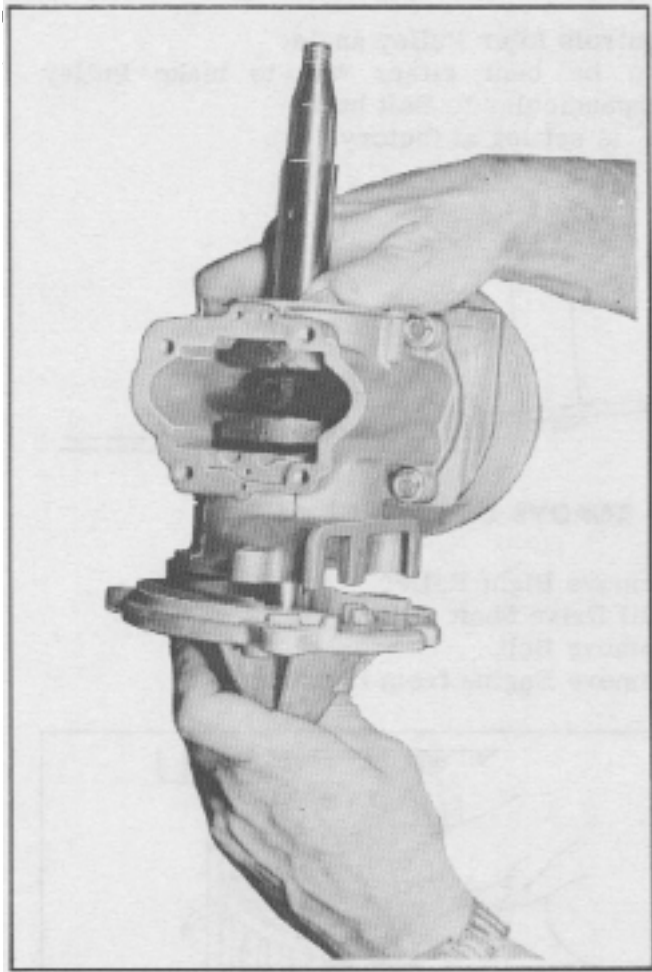
ALWAYS leave sub-base attached to engine until it is removed from housing.

ALWAYS replace sub-base on engine - then put on mower housing.

THIS assures BEARING ALIGNMENT.



SELF-PROPELLED LOWER BELT DRIVE SERVICING



ASSEMBLING SUBBASE TO CRANKCASE

1. Thoroughly clean sub-base and crankcase mating surfaces, and inspect for nicks or other damage.
2. Seat sub-base flange in crankcase recess as shown.
3. Twist sub-base until it is properly aligned to crankcase.
4. Insert sub-base to crankcase screws only when properly aligned, and torque them evenly.
5. Lubricate needle bearing through fitting on lower side of sub-base. Use Lawn-Boy "A" grease part no. 610726.

MISALIGNED PULLEY

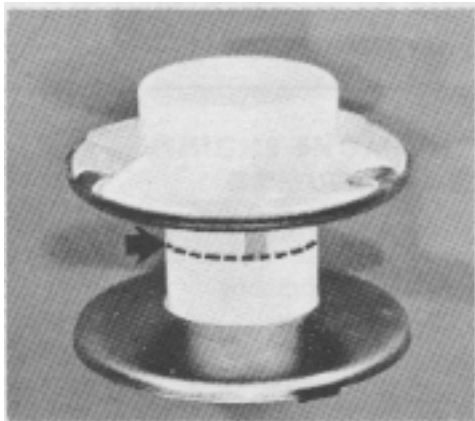
WILL CAUSE HEAT - RUIN the bearing.

Grease bearing every 25 hours.

MELTED PULLEY

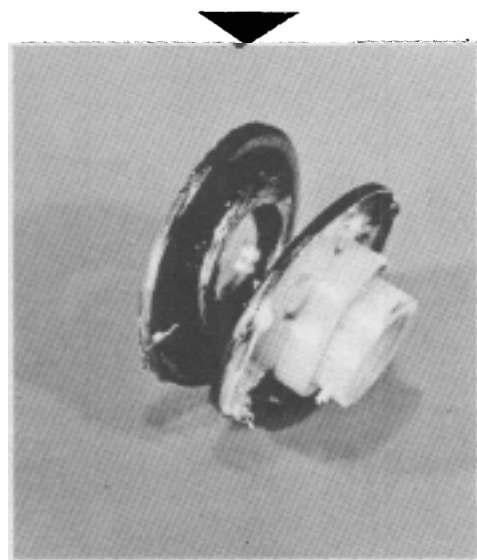
Heat from ruined sub-base bearing did this.

(A stuck sliding half of pulley can cause same results. V-belt will create heat from friction.)



VARIABLE DRIVE PULLEY

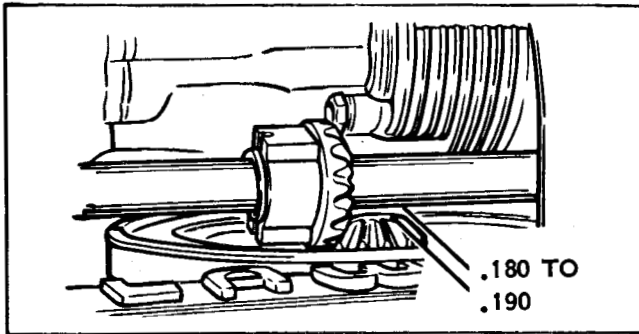
The sliding half of the pulley must move freely. Use a light FILM of Lawn-Boy "A" grease part no. 610726 on male portion of fixed pulley.



SELF-PROPELLED LOWER BELT DRIVE SERVICING

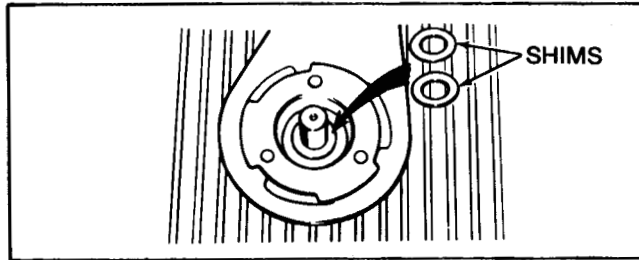
NOTE

Most gear failures result from improper gear mesh which can be prevented by making these two adjustments.



GEAR MESH-VERTICAL

It is very important to closely hold the .180 to .190 clearance between the driveshaft gear and drive gear. Assemble new parts to the mower and measure the clearance by inserting a feeler gauge between bottom of the driveshaft and the top of the teeth in the drivegear. Install shims as required to obtain proper clearance.



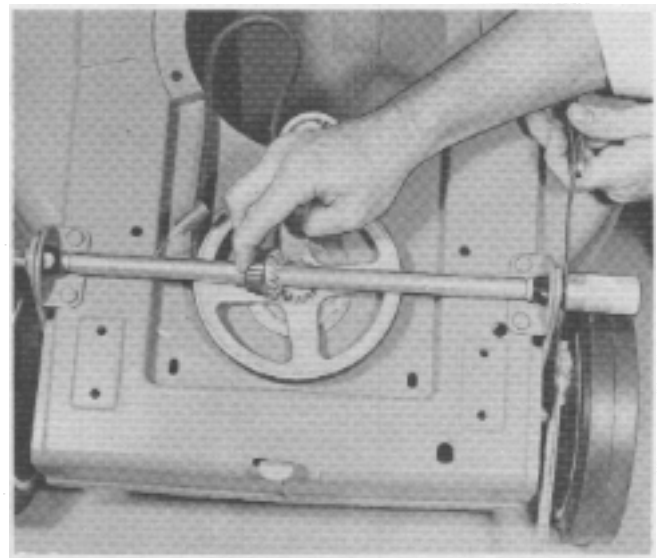
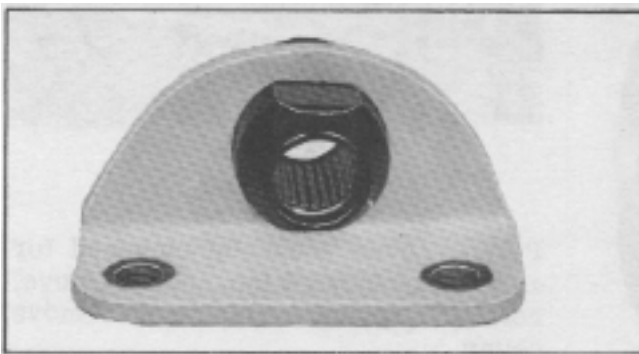
SHIMS FOR VERTICAL CLEARANCE

Use .010, .020, and .025 shims to test. Add or remove shims to obtain clearance.

- .010 Shim Part No. 602913
- .020 Shim Part No. 602914
- .025 Shim Part No. 604563

GEAR CLEARANCE-HORIZONTAL

To adjust gear clearance of the driveshaft, loosen the left hand drive roller set screw or remove the drive roller entirely. Pull the driveshaft to the right as far as possible, and hold it there. Insert a .010 feeler gauge between the right hand roller and the nylon bushing and bearing assembly. Hold the drive roller against the feeler gauge and tighten the set screw of the right hand roller, making sure the screw engages the flat on the shaft. Tighten the left hand drive roller set screw, with the drive roller butted against the bushing and bearing assembly. This will provide .010 clearance at the bevel gear teeth.



BUSHING AND BEARING INSTALLATION

When assembling bushing and bearing assemblies, be sure flat side of bushing is up.

SELF-PROPELLED LOWER BELT DRIVE SERVICING

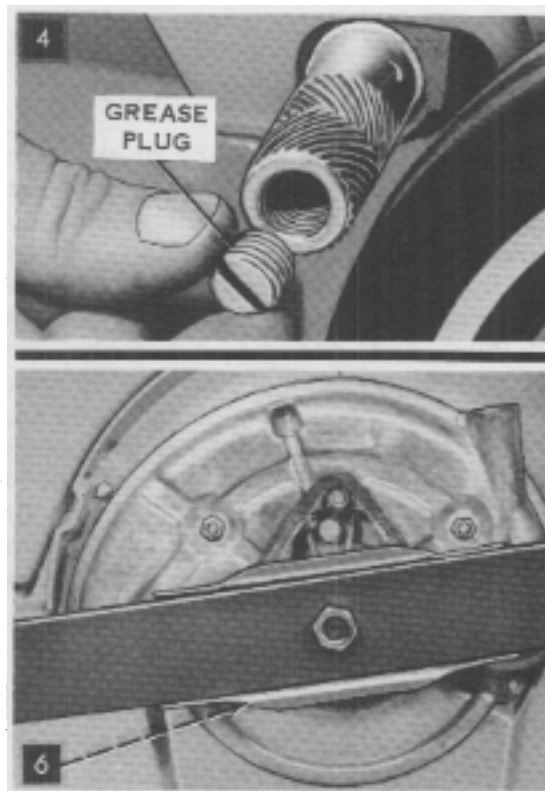
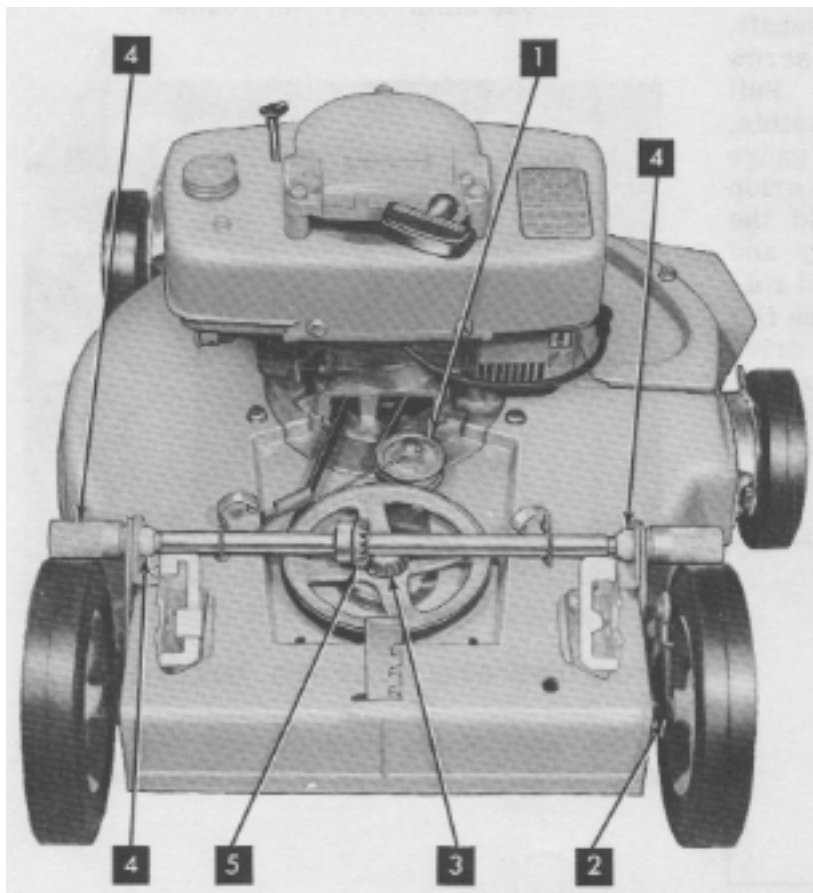
LUBRICATION

Hours of Operation	Lubrication Points	Lubricant
10 hours	1 Idler Pulley Bearing	Light Machine Oil
As Req'd.	2 Clutch Linkage	Light Machine Oil
10 hours	3 Driven Pulley Bearing (See Note)	Light Machine Oil
10 hours	4 Drive Shaft Needle Bearings (See Note)	Lawn-Boy "A" Grease
10 hours	5 Gears	Lawn-Boy "A" Grease
10 hours	6 Apply three to four "shots" of grease at zerk fitting in sub-base beneath housing. Use grease gun.	

3 Driven Pulley Bearing: Apply three to four "squirts" of oil at top of pulley bearing.

4 Drive Shaft Needle Bearings: Unscrew grease plug from end of each drive shaft

roller and apply grease in bearing grease reservoir. Replace plug and tighten until snug, repeat this process until grease appears at points A.



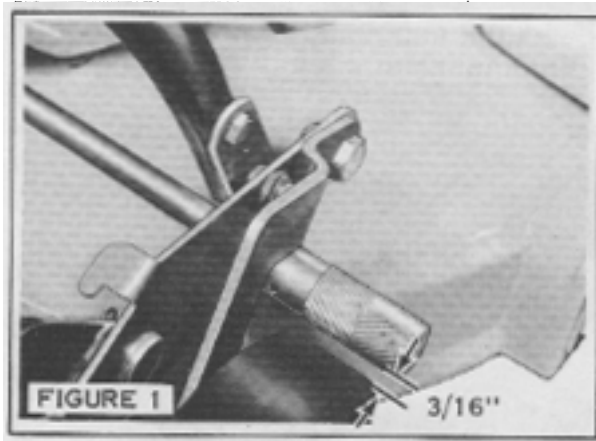
NOTE

Pulley cover must be removed for complete lubrication. To remove, release spring clips and remove cover.

SELF-PROPELLED UPPER BELT DRIVE SERVICING

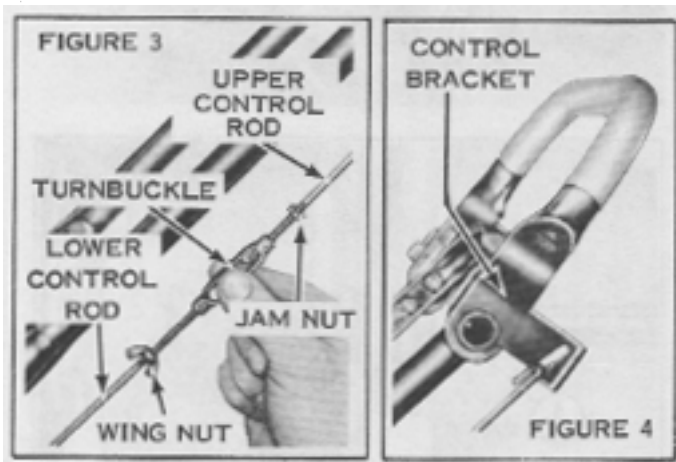
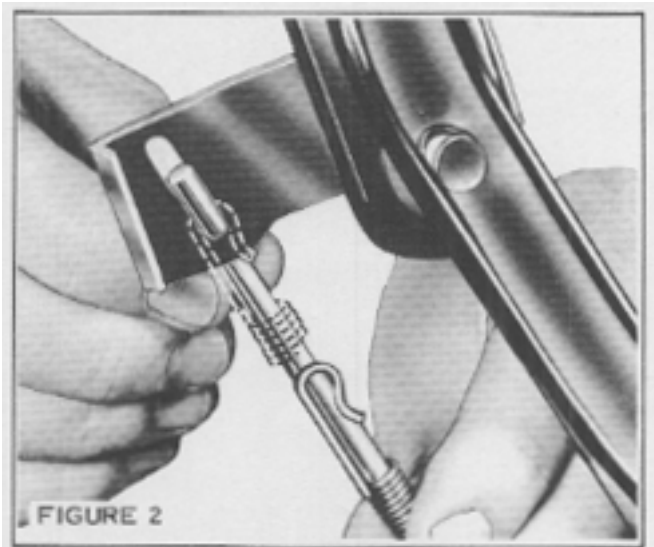
CLUTCH CONTROL ROD ADJUSTMENT

Proper control rod adjustment exists when there is 3/16" clearance between the drive rollers and rear wheels with control handle in OUT OF DRIVE position. See Figure 1.



TO ADJUST:

1. Place all wheels at same cutting height.
2. Place control handle in OUT OF DRIVE position.
3. **EARLIER MODELS** (See Figure 2)
Remove spring clip. Remove upper control rod from control handle. Loosen wing nut and locknut from turnbuckle as shown in Figure 3. Turn upper control rod into or out of turnbuckle until 3/16" dimension (see Figure 1) is achieved with upper control rod reinstalled on control handle in the OUT OF DRIVE position.

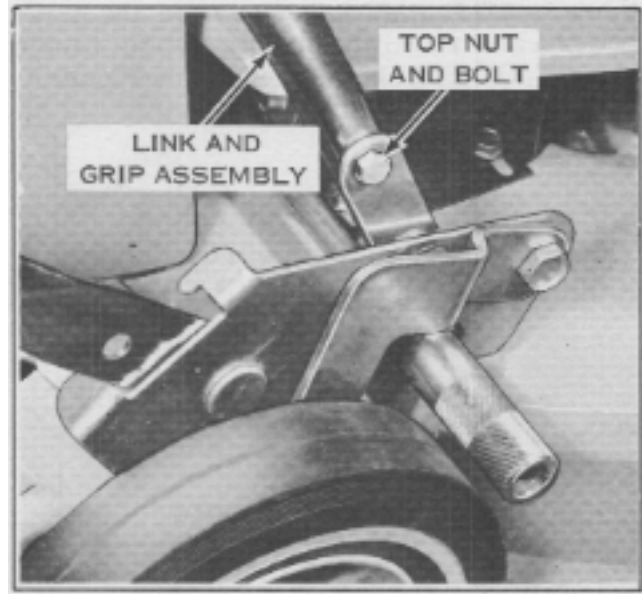


3. **LATER MODELS** (See Figure 4)
Loosen wing nut and locknut from turnbuckle as shown in Figure 3. Adjust turnbuckle until the 3/16" dimension is obtained. See Figure 1.
4. Secure turnbuckle with wingnut and locknut.

SELF-PROPELLED SERVICING (UPPER BELT DRIVE)

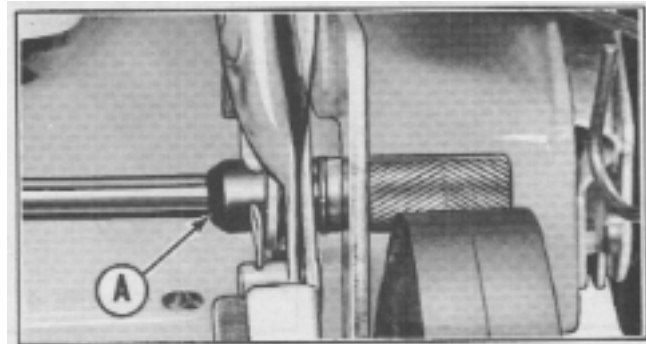
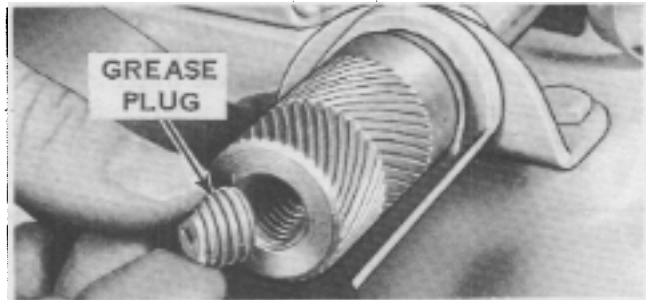
DRIVE ROLLERS

Both drive rollers must engage the mower wheels at the same time. To adjust, loosen top nut and bolt on right side of link and grip assembly and move drive shaft in or out until rollers are equal distance from the wheels. Tighten nut and bolt securely.



LUBRICATION

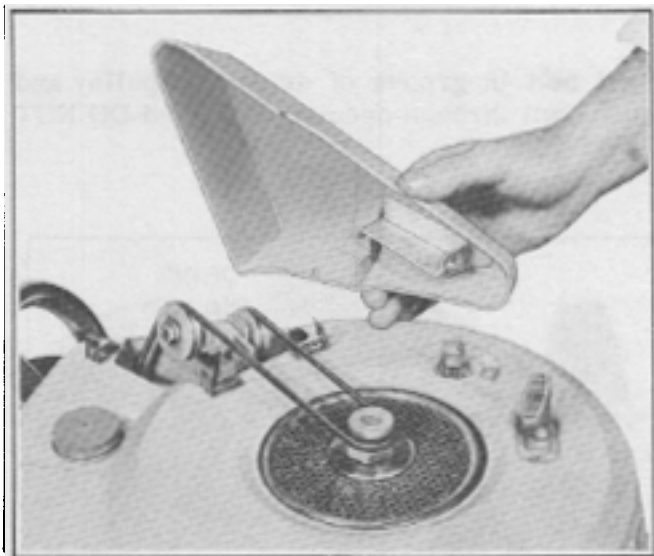
Drive shaft needle bearings: Unscrew grease plug from end of each drive shaft roller and apply grease in bearing grease reservoir. Replace plug and tighten until grease appears at point A on both bearing assemblies.



SELF-PROPELLED UPPER BELT DRIVE SERVICING

NEW BELT INSTALLATION

Remove three screws and remove belt cover.



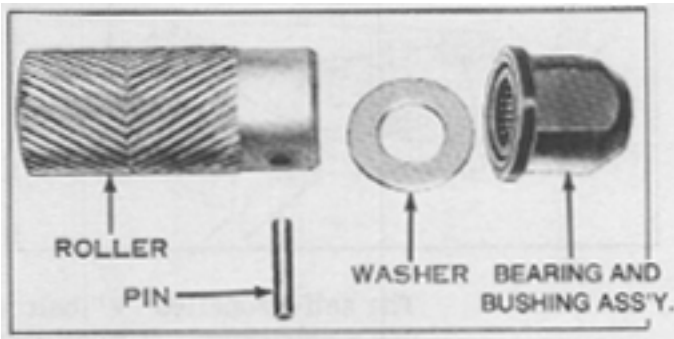
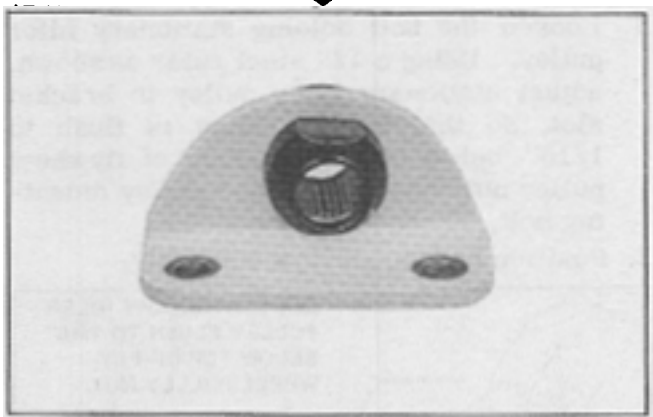
Drive the pin from the left drive roller. Remove roller, washer, bearing and bushing assembly.

NOTE

The bushing has a flat surface that matches the flat surface of the bracket. When re-assembling, the flat surfaces must match.

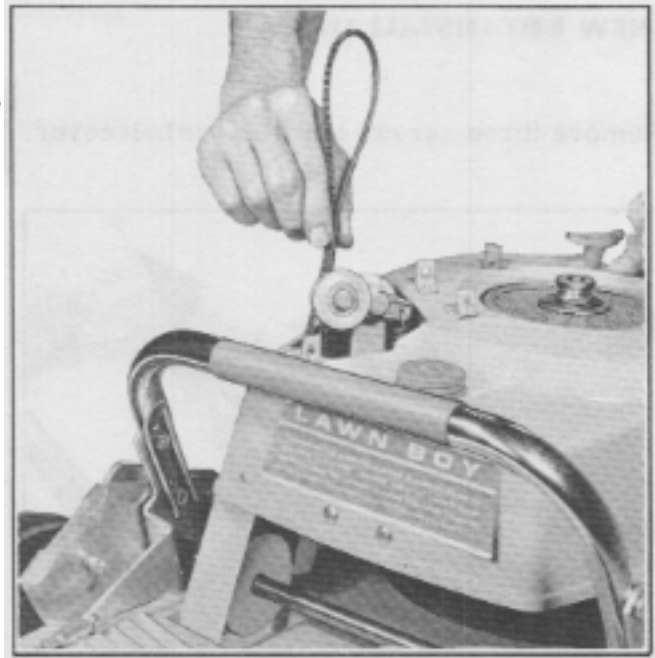
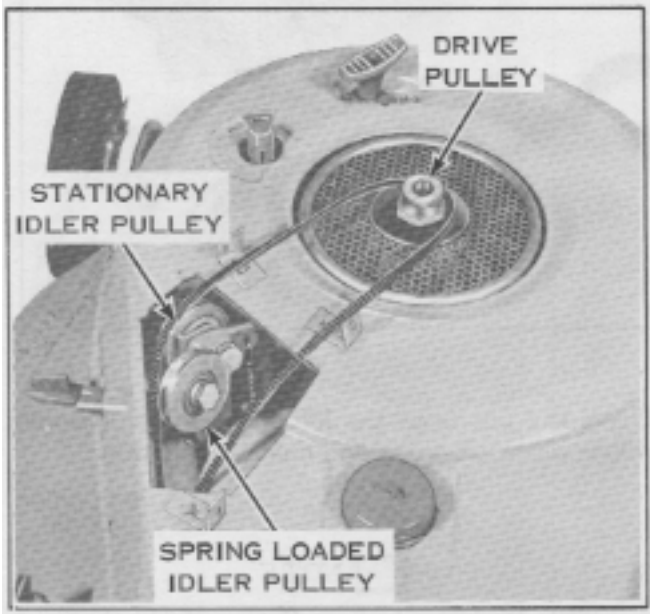


Slide belt through opening in bracket and under drive shaft. DO NOT twist belt.



SELF-PROPELLED UPPER BELT DRIVE SERVICING

Seat belt in groove of driveshaft pulley and push belt through opening in shroud DO NOT TWIST BELT.



Place belt over stationary pulley and around flywheel pulley.

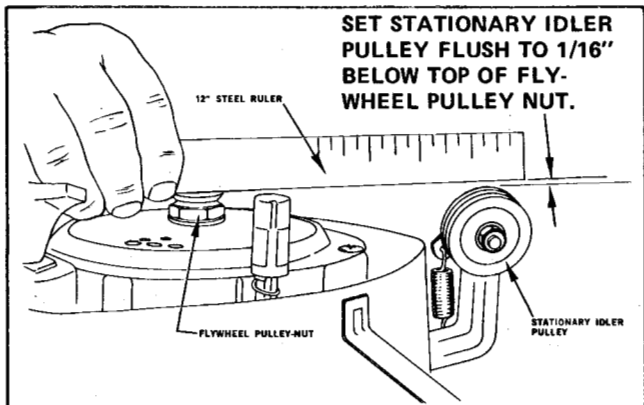
Depress idler pulley and slide belt in place.

Attach belt cover.

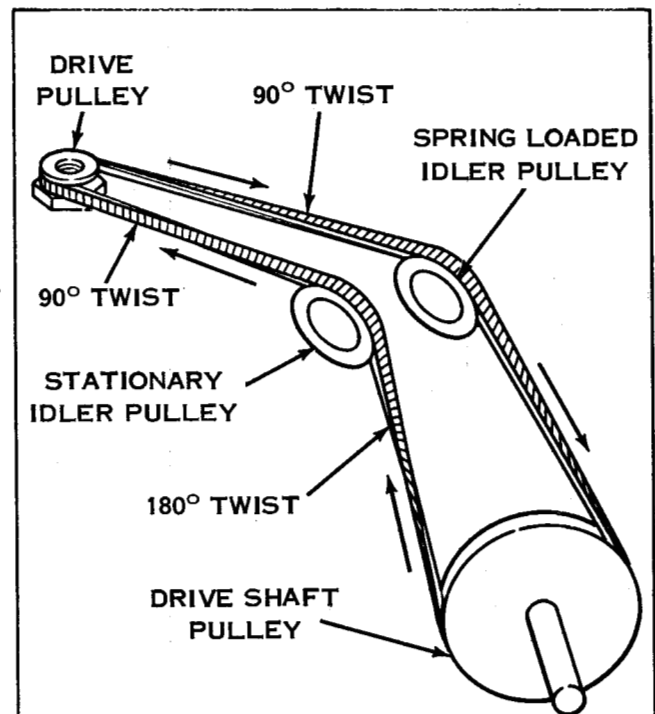
CORRECT BELT TENSION

To set belt tension:

1. Loosen the bolt holding stationary idler pulley. Using a 12" steel ruler as shown, adjust stationary idler pulley in bracket slot, so that top of pulley is flush to 1/16" below the top surface of flywheel pulley nut. Retighten idler pulley mounting bolt.
2. Position belt on pulleys correctly.



CORRECT BELT INSTALLATION




The self-propelled "V" belt is a SPECIAL BELT. Don't use a substitute. It won't work as well - or as long.

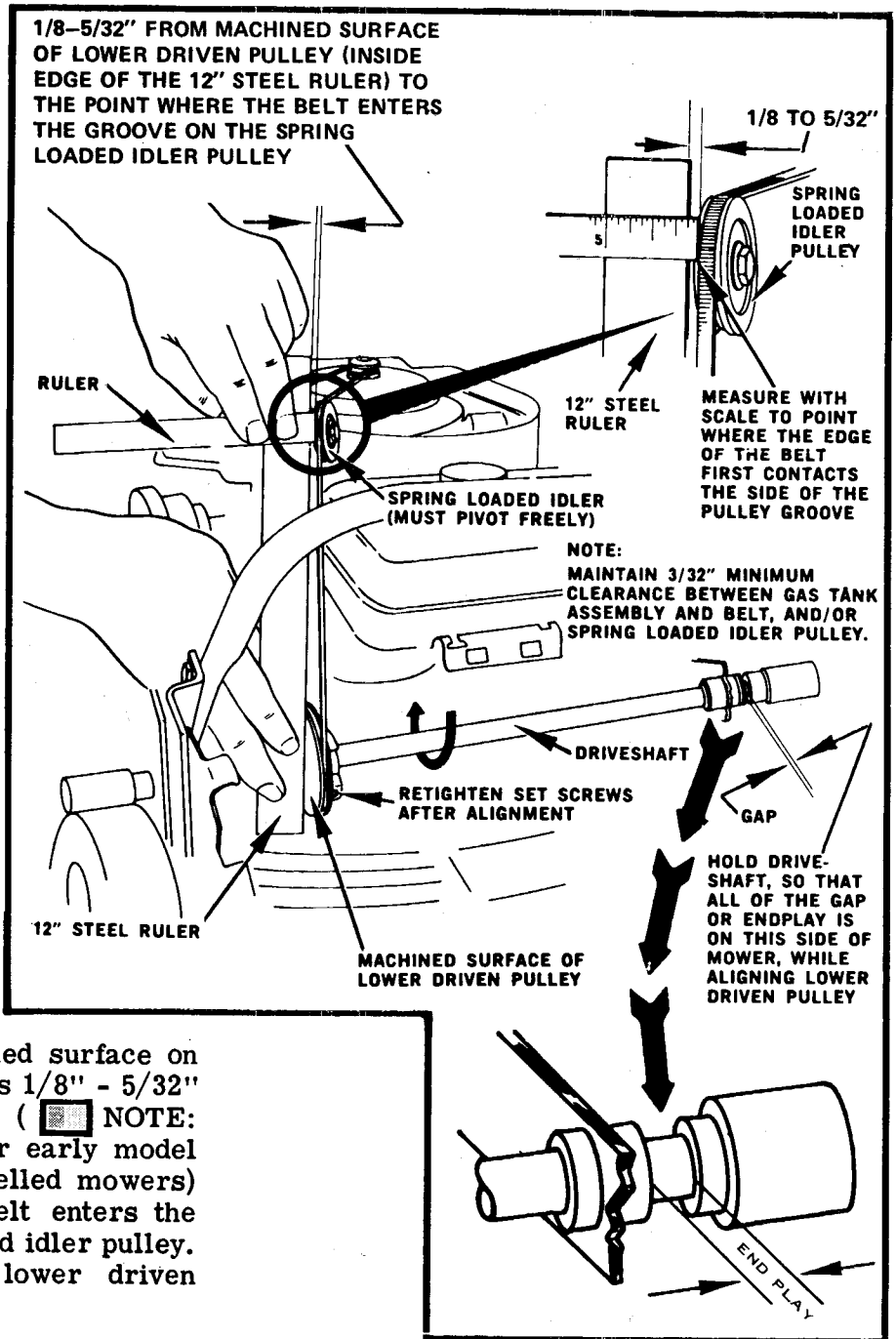
SELF-PROPELLED UPPER BELT DRIVE SERVICING

BELT ALIGNMENT

ALIGNMENT PROCEDURE

See "  NOTE" NEXT PAGE REGARDING OLDER MOWERS.

1. Remove spark plug lead. Place control handle in Out-of-Drive position.
2. Set belt tension. Refer to page 10-10.
3. Examine driven pulley. If only one set screw is found and pulley cannot be secured properly, replace with double set screw driven pulley #679411.
4. Hold driveshaft so that all of the end play appears on the right side as shown in illustration. If excessive end play exists, refer to page 10-12 for correction.
5. Using a 12" steel rule, adjust the lower driven pulley so that the machined surface on the left side of the pulley is $1/8'' - 5/32''$ from the edge of the belt ( NOTE: See note on next page for early model upper belt drive self-propelled mowers) at the point where the belt enters the groove on the spring loaded idler pulley. Tighten set screws on lower driven pulley securely.



6. Put mower IN-GEAR, raise handle to highest position. Maintain a minimum of $3/32''$ clearance between belt and tank flange. Also, check for adequate clearance between movable idler pulley and top of tank. If necessary, loosen fuel tank mounting brackets and slide tank away from belt and/or pulley. Retighten bracket.

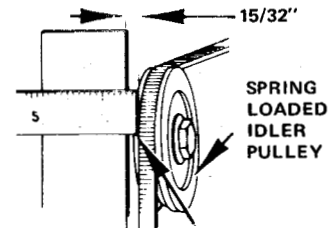
SELF-PROPELLED UPPER BELT DRIVE SERVICING

NOTE:

EARLY PRODUCTION MOWERS

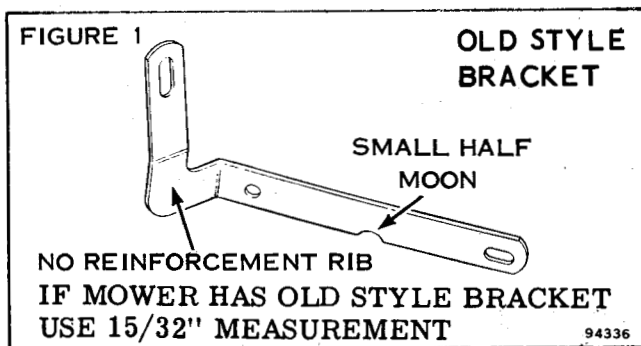
The alignment procedure for early production upper belt drive self-propelled mowers specifies a measurement of 15/32" from machined surface of lower driven pulley to the point where the belt enters the groove on the spring loaded idler pulley.

15/32" FROM MACHINED SURFACE OF LOWER DRIVEN PULLEY (INSIDE EDGE OF THE 12" STEEL RULER) TO THE POINT WHERE THE BELT ENTERS THE GROOVE ON THE SPRING LOADED IDLER PULLEY

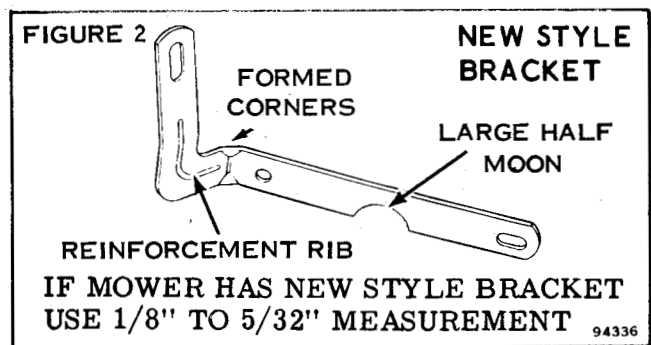


To determine early production mowers observe the bracket that mounts the stationary and movable idler pulleys. See Figures 1 and 2.

THIS BRACKET USED ON EARLY PRODUCTION MOWERS



THIS BRACKET USED ON LATER PRODUCTION MOWERS

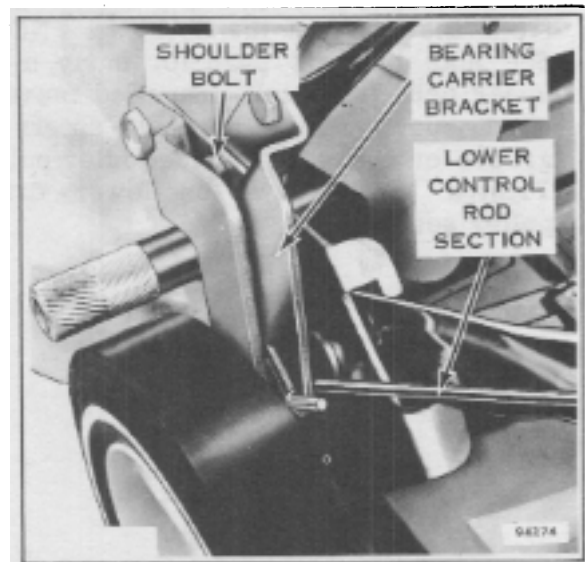


FOR IDLER BRACKET AND PULLEY ASSEMBLY REPLACEMENT
USE PART NO. 681075 FOR ALL TOP BELT DRIVE MODELS

DRIVESHAFT END PLAY

There should only be sufficient end play in the driveshaft to allow the clutch assembly to pivot freely. To eliminate excessive end play proceed as follows: - Applies particularly to 1968-1969 models.

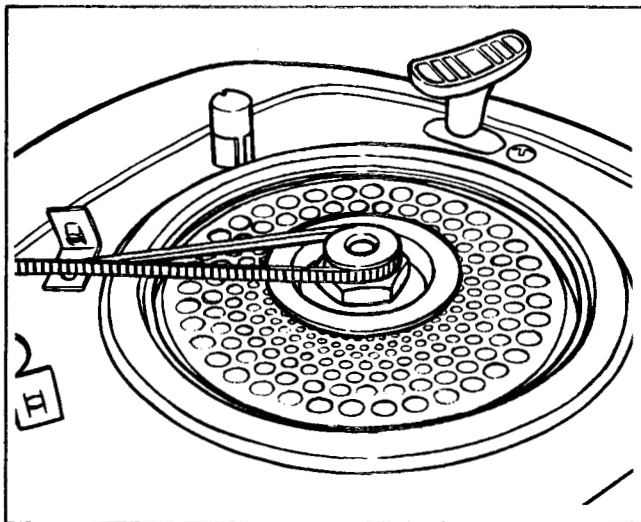
1. Remove the shoulder bolt and wave washers. See Illustration.
2. Reinstall shoulder bolt using sufficient spacers (plain or solid washers) until .012-.015 end play is obtained; or install replacement shoulder bolt P/N 606672. It is not necessary to replace wave washers removed in step 1.
3. Re-check belt for proper alignment.



SELF-PROPELLED UPPER BELT DRIVE SERVICING

SERVICE CHECK LIST FOR UPPER BELT DRIVE SELF-PROPELLED MOWERS

1. Check all parts on drive system. Replace any part that is worn, cracked or broken.
2. Spring-loaded idler arm must operate freely to follow engagement and disengagement.
3. Grommet no. 311015 must be intact and without wear. Sand and other abrasive material will shorten its life substantially.
4. Check pulleys for wear, cracks or damage in "V" groove. Replace if necessary.
5. Belt must be free of oil and grease.
6. Make sure clutch control rod is properly adjusted for smooth operation. Check that brackets are secure on deck.
7. Check drive rollers for equal engagement to rear wheels. Three-sixteenths inch clearance recommended with drive disengaged. Is driveshaft bowed?
8. Check end-play on driveshaft. See page 10-12 paragraph 2. Use spacer washers if needed. This applies especially to early production models; i.e. 1968-1969.
9. Align lower driven pulley. Tighten set screws. Keep pulley well in deck clean. If necessary,



install new drive pulley Part No. 679411 which includes 2 set screws.

10. Check belt shield to shroud. If it interferes with belt, bend slightly to eliminate belt contact. Check belt cover for pulley interference.
11. Pulley bracket. Make sure the correct bracket and pulley assembly is installed. Models up to and including 8229 and 8229E use replacement Part No. 678772. Models from 8229A, 8229B, 8229C, 8229D, 8229F and 8229EA use replacement Part No. 681075.
12. Correct tracking of belt from lower driven pulley to stationary idler pulley and idler pulley to upper drive pulley nut.
13. Belt and belt tension: Replace worn or thrown belt (could be cracked or stretched).
14. Lubrication: Lube driveshaft bearings. Drive bearings may wear shaft and cock lower drive pulley.
15. Vibration: Excessive vibration may throw loose belt. Reduce vibration by balancing blade and blade stiffener. Reinstall blade at 90° to piston with piston at top dead center.
16. If belt appears too long, check length. Correct length should be 35-1/2 inches \pm 1/16 inch.
17. If all above points are correct, check operator and educate on correct operation. The cause may be twigs, pine needles, bushes, etc., getting into the drive system and throwing belt. Also, educate customer on proper clutching. Slip clutching, etc., can result in belt throwing.
18. If shrub or tree branches are causing belt to jump from flywheel nut pulley, a new improved belt cover, Part No. 681010, may be installed to prevent this.

D-600 SERIES GEAR DRIVE SELF-PROPELLED

GROUND SPEED SELECTION.

Combinations of the various drive roller sizes and transmission gear ratios are available to change the ground speed.

Refer to the following specifications and information to obtain the desired ground speed.

Drive Rollers

.88" Dia. — 607657 — L.H. Drive Roller

.88" Dia. — 607658 — R.H. Drive Roller

1.00" Dia. — 610844 — L.H. Drive Roller

1.00" Dia. — 610845 — R.H. Drive Roller

1.12" Dia. — 610440 — L.H. Drive Roller

1.12" Dia. — 610441 — R.H. Drive Roller

Transmissions

15 Tooth — 607663 — Gear — Drive

15 Tooth — 607664 — Gear — Driven

16 Tooth — 610687 — Gear — Driven

14 Tooth — 610688 — Gear — Drive

	<u>Ratio</u>	<u>Driver Roller</u>	<u>Speed MPH</u>
3200 RPM —	15:15	.88	2.7
3200 RPM —	14:16	.88	2.4
3200 RPM —	14:16	1.00	2.8
3200 RPM —	14:16	1.12	3.1

14:16 - Gear ratio transmission will fit all 679699 (metal) and plastic gear cases.

NOTE:

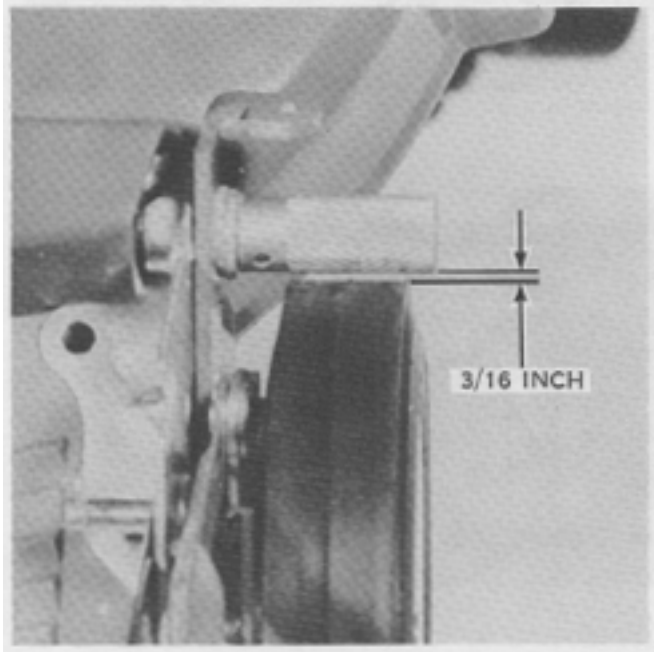
To change ground speed on mowers manufactured prior to 1980, it would be necessary to replace the axle bracket part number 608934 with part number 610500 bracket. This includes all D-600 series, 1978 and 1979 "F" series.

NOTE:

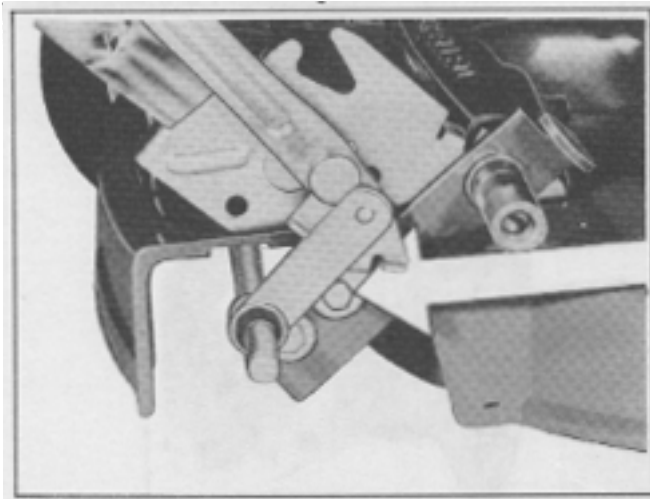
Do not use the 1.00" and 1.12" diameter drive rollers with a 15:15 ratio transmission. Ground speed would be excessive with poor cutting results.

CLUTCH ADJUSTMENT

The clutch control rod and lever must be adjusted to provide a 3/16 inch space between the drive rollers and rear wheels.

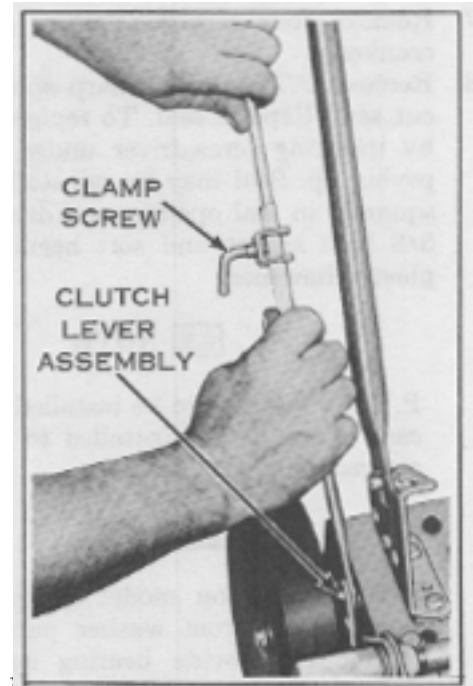


Place mower in "OUT-OF-DRIVE" position. Adjustment is performed by placing lower end of control rod into groove of clutch control lever assembly. Pull up clutch control lever and down on control rod as far as possible and tighten clamp screw securely. This procedure should provide the required 3/16 inch spacing. However, if it cannot be attained, remove right rear wheel and loosen shoulder bolt and adjust axle accordingly.



▲ SAFETY WARNING:

IMPROPER TIGHTENING OF CLUTCH ROD AND LEVER CONNECTION MAY RESULT IN OPERATOR LOSS OF DRIVE CONTROL MECHANISM.



■ NOTE

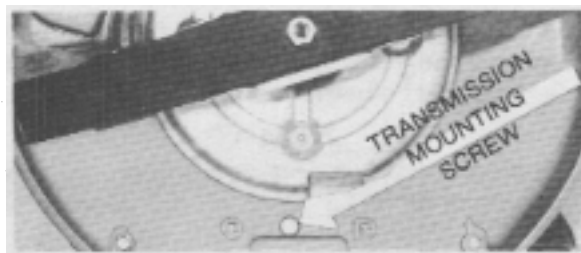
Whenever wheel height or handle height is changed, clutch control rod and lever must be readjusted. Loosen clamp, lock drive unit in out-of-drive position. Pull up clutch control lever and down on control rod as far as possible and tighten clamp securely.

D-600 SERIES GEAR DRIVE SELF PROPELLED SERVICING

REPAIR OR REPLACE GEARS, SHAFT, THRUST WASHER AND/ OR SEAL

NOTE

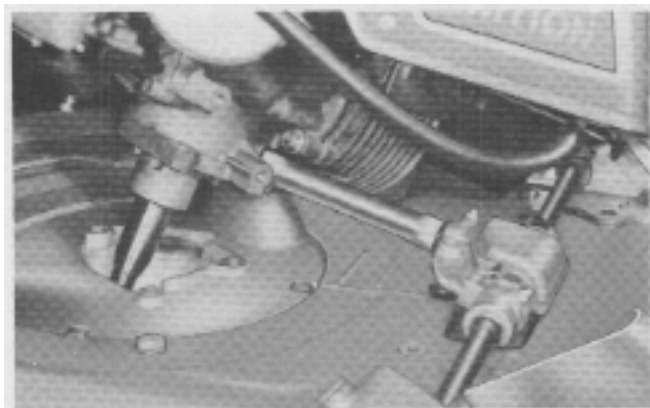
Remove spark plug lead. On electric start models disconnect and remove battery.



1. Remove transmission gear cover.
2. Remove blade, blade stiffener, and adapter.
3. Remove muffler — (4 nuts).
4. Remove transmission mounting screw from underside of deck as shown.
5. Remove nuts from three engine mounting bolts.
6. Remove engine from mower housing.

NOTE

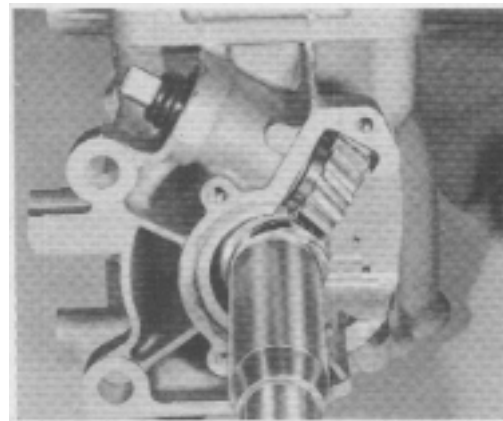
Do not remove stub drive shaft (P.T.O.) from crankcase.



7. Remove four screws securing gear cover to crankcase.
8. Remove P.T.O shaft. Sharp spline edges may cut seal. Replace seal. To replace seal, remove by inserting screwdriver under one side and prying up. Seal may be reinstalled by placing squarely in seal opening and driving in with a 5/8 inch socket and soft headed (leather or plastic) hammer.

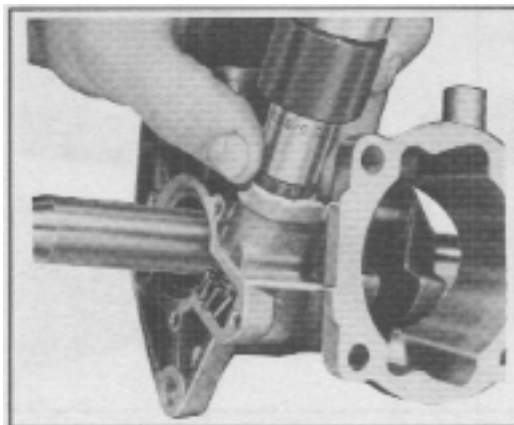
NOTE

P.T.O. shaft should be installed in crankcase before seal is installed to safeguard against damage to seal.



NOTE

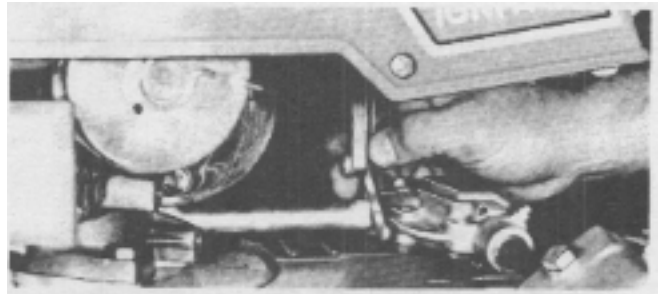
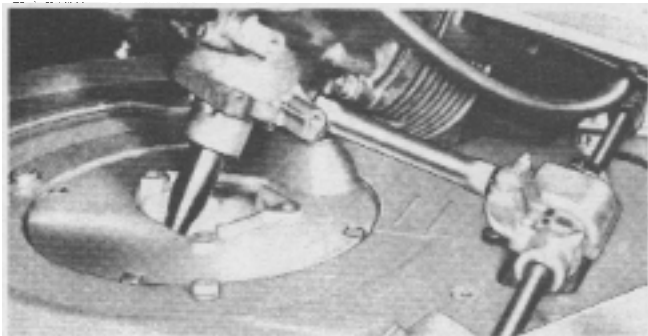
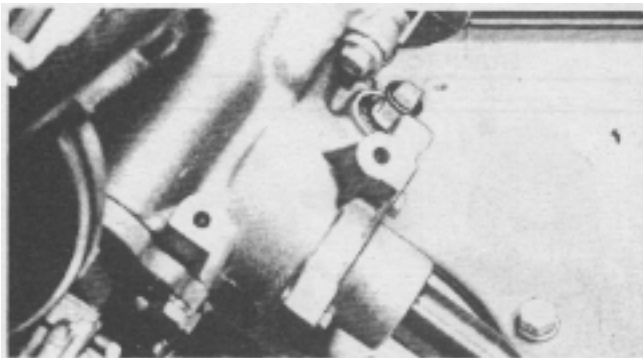
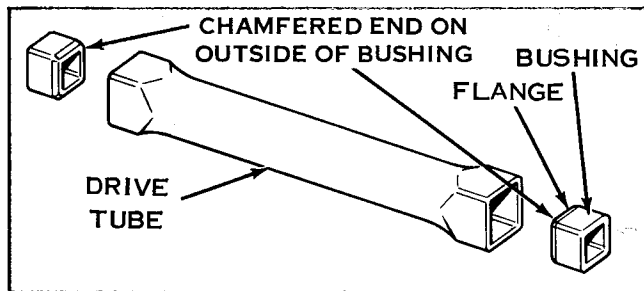
Early production model crankcase contains loose thrust washer part number 608363 to provide bearing surface for downward thrust of crankshaft. When reinstalling, locate hole in thrust washer over stationary pin in crankcase. Later production models will have thrust washer cast in crankcase.



D-600 SERIES GEAR DRIVE SELF PROPELLED SERVICING

DRIVE TUBE END PLAY

1. Using a feeler gauge check for excessive end play as shown. If end play measurement is .035 to .135, no "O" ring is required. If measurement is .136 to .235, add one "O" ring to transmission drive shaft as shown. If measurement is .236 or higher, add one "O" ring to transmission drive shaft and one "O" ring to engine drive shaft as shown. Replacement part no. for "O" ring is 303067.
2. Check position of bushings in drive tube. They must be installed with chamfered end inserted in drive tube as illustrated. Always replace worn bushings.
3. A sintered metal bushing must always be installed in end next to engine.

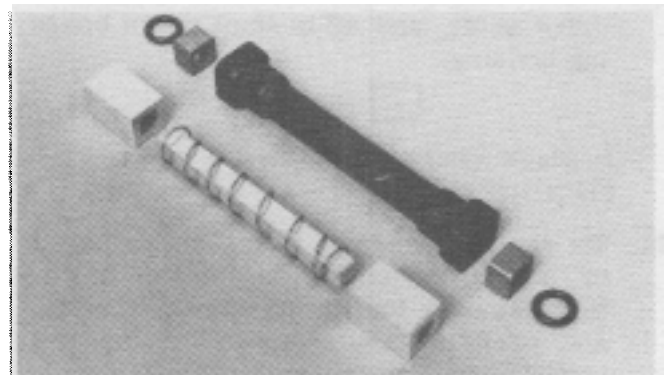


REPAIR OR REPLACE TRANSMISSION

1. Remove transmission gear cover.
2. Remove blade, blade stiffener, and adapter.
3. Remove muffler (4 nuts).
4. Remove transmission mounting screw from underside of deck.
5. Remove nuts from three engine mounting bolts.
6. Remove engine from mower housing carefully to avoid pulling driven shaft from lower drive unit.

NOTE

If drive shaft is removed from crankcase, the drive gear will drop off end of shaft. If shaft is removed, it will be necessary to remove gear cover, replace the seal, cover gasket and reassemble gear and shaft.



NOTE


If a failure of the drive tube or bushings occurs on any gear driven self-propelled mower, it is to be replaced with the new spring loaded assembly shown here. Also remove and discard all "O" rings used with the old tube. Refer to the parts book and master parts price list for the part numbers.

D-600 SERIES GEAR DRIVE SELF PROPELLED SERVICING

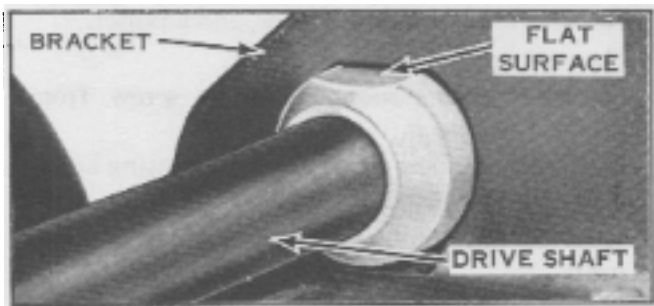
7. Remove both drive rollers. Slide bearing and bushing assemblies off each end of shaft.

 **NOTE**

When reinstalling drive rollers place one washer between bearing and bushing assemblies and drive roller on each end. This will provide correct end play of .062 inch or less. If end play exceeds this, install additional washer, part no. 603037, between right bushing and bearing and drive roller.

 **NOTE**

The bushing has a flat surface that matches the flat surface of the bracket. When re-assembling, flat surfaces must match.



8. Remove two "C" clamps securing top and bottom gear covers.
9. Remove drive shaft and transmission assembly complete.
10. Drive roll pin out of bevel gear and drive shaft, and slide shaft out of bearing housing.

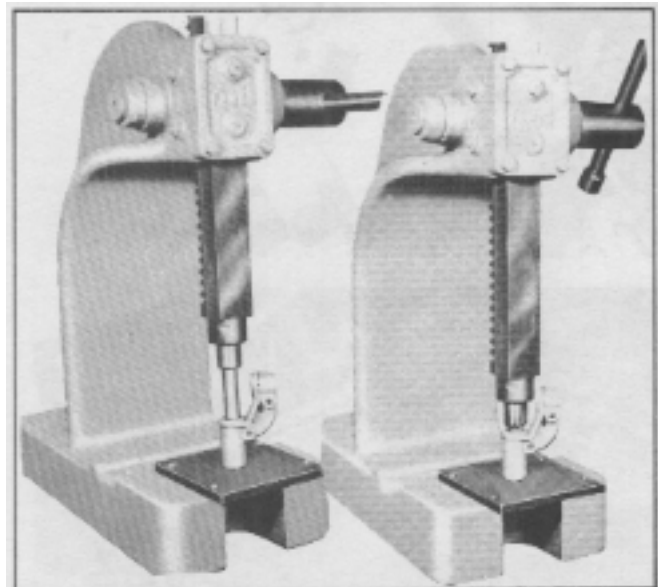
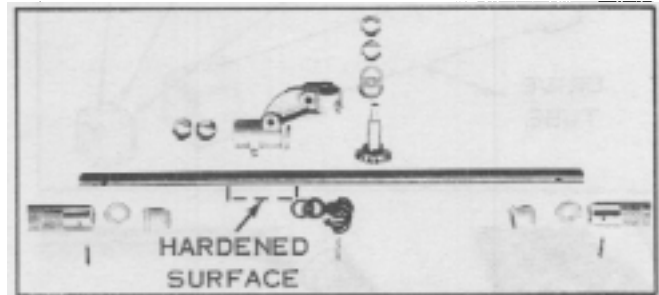
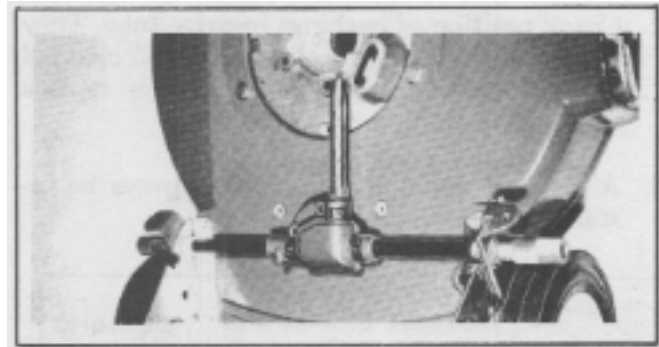
 **NOTE**

Replace gears in sets. Do not replace individually.

11. To replace bearing, press out damaged or worn bearing with special Lawn-Boy removal tool, part number 608361, and press in replacement with special installer tool, part number 608360.

 **NOTE**

Do not drive bearings in or out with hammer. They must be removed and replaced using arbor press as illustrated.



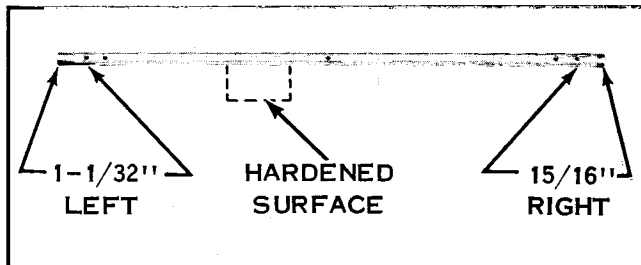
GEAR DRIVE SELF PROPELLED SERVICING

NOTE

In servicing the drive shaft, there is one very important consideration; there is a left and a right-hand side. The reason for this is that the bearing surface side (left of center) is hardened to prevent wear.

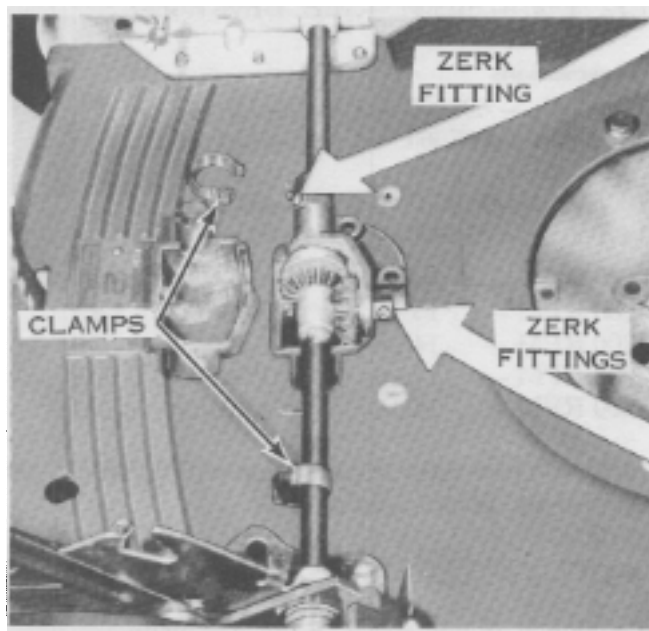
When facing the rear of the mower (operator's position), measure the distance from end of shaft to the first hole. A measurement of 1-1/32" inch is the left end. The other end will measure 1-5/16" inch to the first hole as illustrated.

pin hole to the end of the shaft. As illustrated, the measurement on the left-hand side is 1-1/32 inch as opposed to 15/16 inch on the right-hand side.

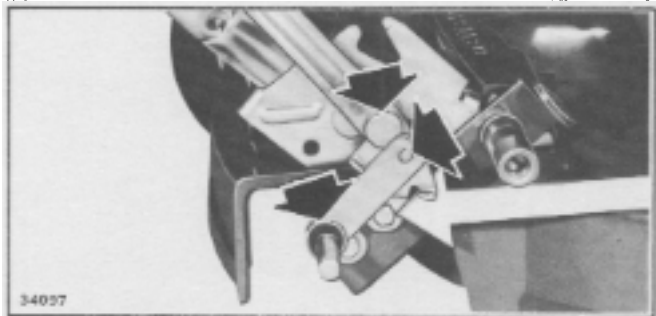


LUBRICATION

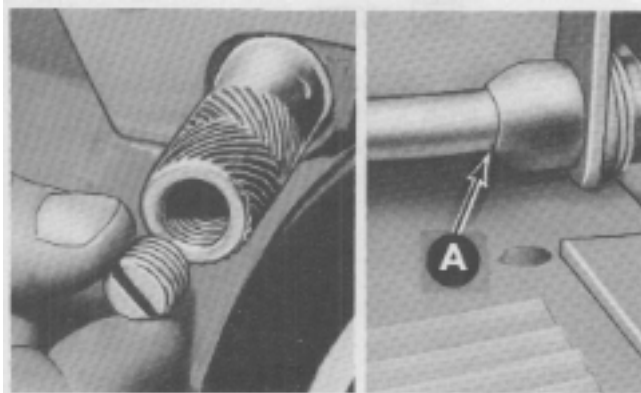
25 hours	DRIVE GEAR BEARINGS —Remove cover on rear of mower housing (secured by two screws). Remove inner top cover to expose gears (secured by two clamps). Apply grease through each zerk fitting until grease appears at the inside end of bracket. USE LAWN-BOY "A" GREASE.
25 hours	DRIVE GEARS —Wipe a liberal amount of lubricant on all surfaces of teeth on both gears. USE LAWN-BOY "A" GREASE.
25 hours	DRIVE ROLLER BEARINGS —Unscrew plug from end of each drive roller. Fill exposed cavity with LAWN-BOY "A" GREASE. Replace plug and tighten until snug. Repeat procedure until lubricant appears on drive shaft at Point A.



TOP COVER REMOVED FOR ILLUSTRATION



AS REQUIRED: APPLY SEVERAL DROPS OF LIGHT MACHINE OIL ON CLUTCH ASSEMBLY.



"F" SERIES GEAR DRIVE SELF-PROPELLED

GROUND SPEED SELECTION

Combinations of the various drive roller sizes and transmission gear ratios are available to change the ground speed.

Refer to the following specifications and information to obtain the desired ground speed.

Drive Rollers

- .88" Dia. — 607657 — L.H. Drive Roller
- .88" Dia. — 607658 — R.H. Drive Roller
- 1.00" Dia. — 610844 — L.H. Drive Roller
- 1.00" Dia. — 610845 — R.H. Drive Roller
- 1.12" Dia. — 610440 — L.H. Drive Roller
- 1.12" Dia. — 610441 — R.H. Drive Roller

Transmissions

- 15 Tooth — 607663 — Gear — Drive
- 15 Tooth — 607664 — Gear — Driven
- 16 Tooth — 610687 — Gear — Driven
- 14 Tooth — 610688 — Gear — Drive

	Ratio	Drive Roller	Speed MPH
3200 RPM —	15:15	.88	2.7
3200 RPM —	14:16	.88	2.4
3200 RPM —	14:16	1.00	2.8
3200 RPM —	14:16	1.12	3.1

14:16 — Gear ratio transmission will fit all 679699 (metal) and plastic gear cases.

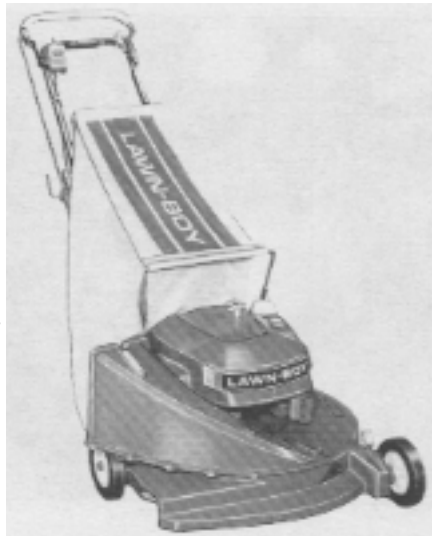
NOTE

To change ground speed on mowers manufactured prior to 1980, it would be necessary to replace the axle bracket part number 608934 with part number 610500 bracket. This includes all D-600 series, 1978 and 1979 "F" series.

NOTE

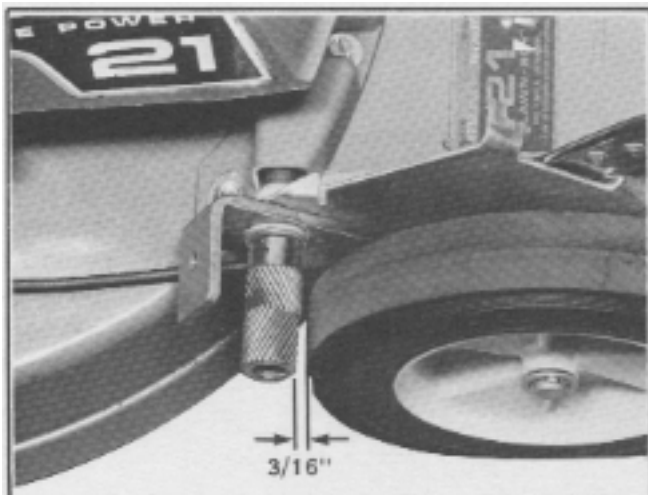
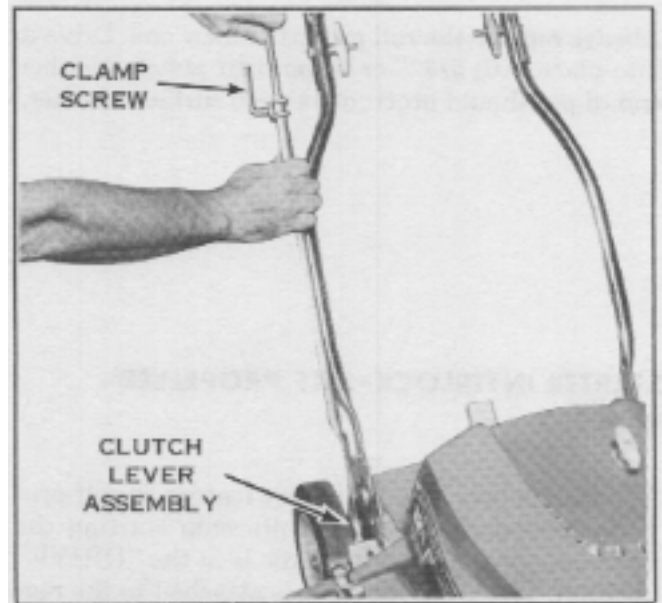
Do not use the 1.00" and 1.12" diameter drive rollers with a 15:15 ratio transmission. Ground speed would be excessive with poor cutting results.

"F" SERIES GEAR DRIVE SELF PROPELLED SERVICING



CLUTCH ADJUSTMENT

The clutch control rod must be adjusted to provide a $3/16$ inch space between the drive rollers and rear wheels.



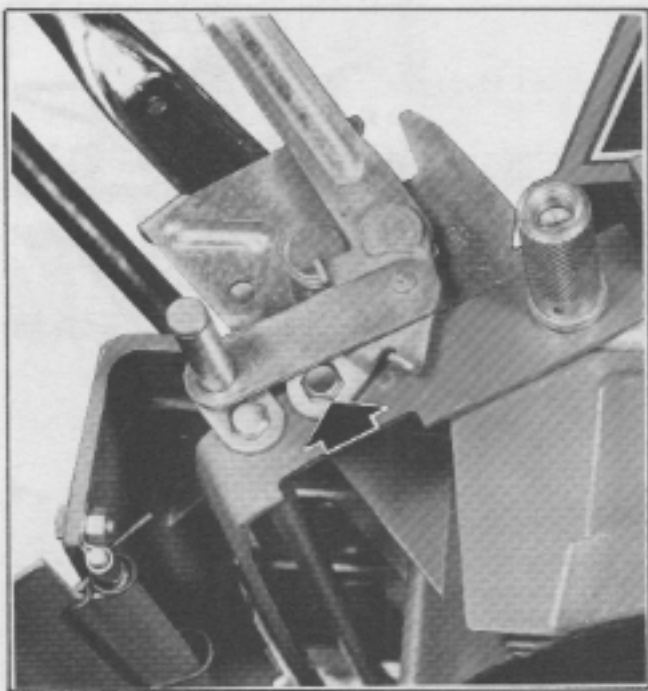
Place mower in "OUT-OF-DRIVE" position. Adjustment is performed by placing lower end of control rod into groove of clutch control lever assembly. Pull up clutch control lever and down on control rod as far as possible and tighten clamp screw securely. This procedure should provide the required $3/16$ inch spacing. However, if it cannot be attained, remove right rear wheel and loosen shoulder bolt and adjust axle accordingly.

SAFETY WARNING

IMPROPER TIGHTENING OF CLUTCH ROD AND LEVER CONNECTION MAY RESULT IN OPERATOR LOSS OF DRIVE CONTROL MECHANISM.

NOTE

Whenever wheel height or handle height is changed, clutch control rod and lever must be readjusted. Loosen clamp, lock drive unit in out-of-drive position. Pull up clutch control lever and down on control rod as far as possible and tighten clamp securely.



"F" SERIES GEAR DRIVE SELF PROPELLED SERVICING

DRIVE ROLLER INSTALLATION

The drive rollers must be properly installed to utilize the self-cleaning feature. Proper installation is with the vee pointing toward the wheel.

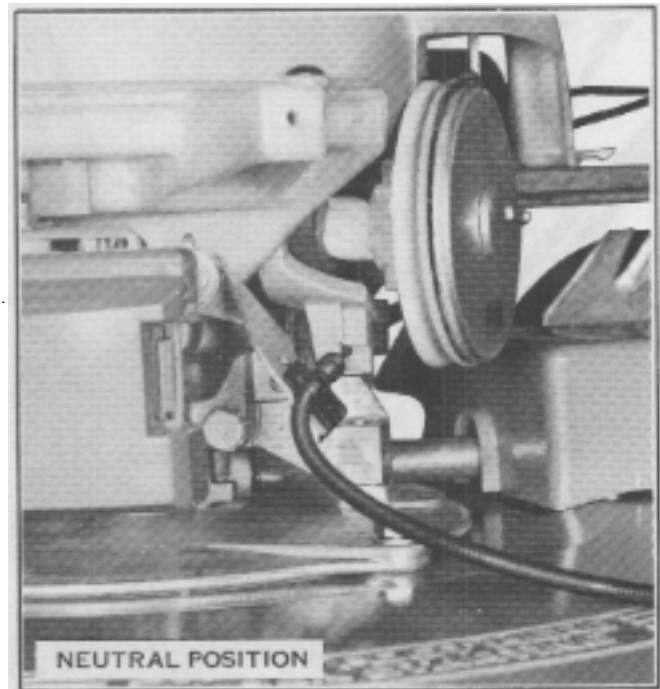
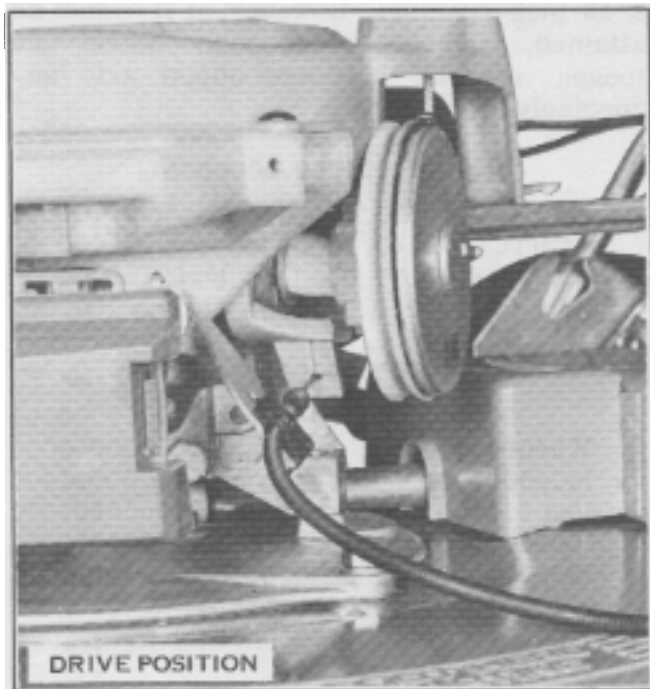
Always replace the roll pin with a new one. Drive it into place with 5/32" or larger drift punch. Neither end of pin should protrude beyond surface of roller.



STARTER INTERLOCK-SELF PROPELLED MODELS

The starter interlock is a safety feature on self-propelled models. This system prevents starting the engine when the control handle is in the "DRIVE" position. The interlock cable is attached to the rear axle and an interlock lever. When the control handle is placed in "DRIVE" position the cable rotates the interlock lever upwards into a position

that prevents the starter pinion from engaging the flywheel. When the control handle is placed in "NEUTRAL" position the interlock cable pulls the interlock lever downward, allowing the starter pinion to engage flywheel as shown. This permits starting the engine with the control handle in the "NEUTRAL" position only.



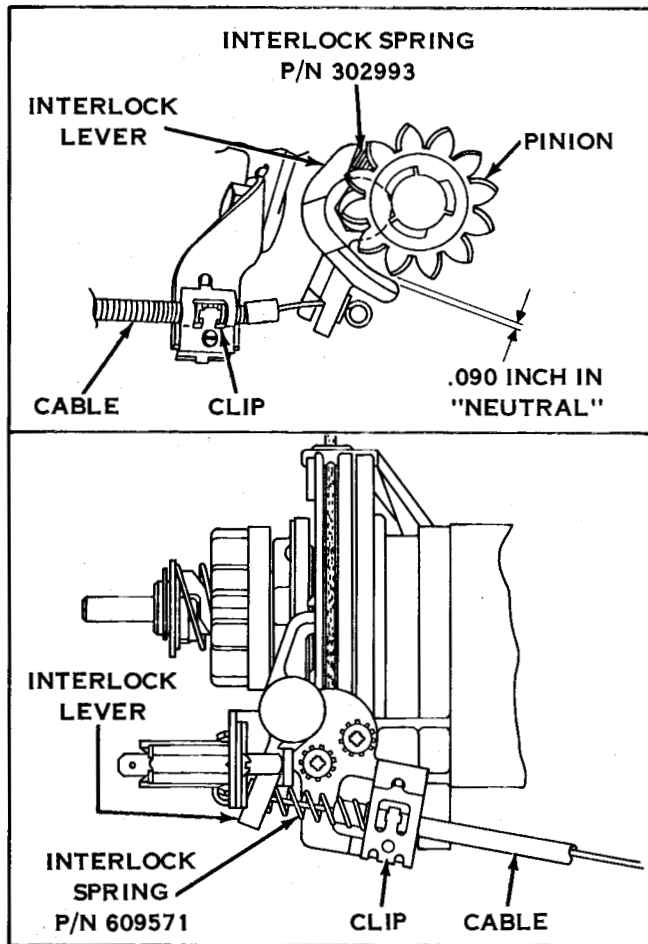
"F" SERIES GEAR DRIVE SELF PROPELLED SERVICING

SAFETY WARNING

INTERLOCK OPERATING SPRING MUST BE IN PLACE ON BOTH THE ELECTRIC AND MANUAL START MODELS TO PREVENT STARTING OF ENGINE WHILE IN DRIVE POSITION.

NOTE

Do not replace spring with other than original equipment to assure correct operation.

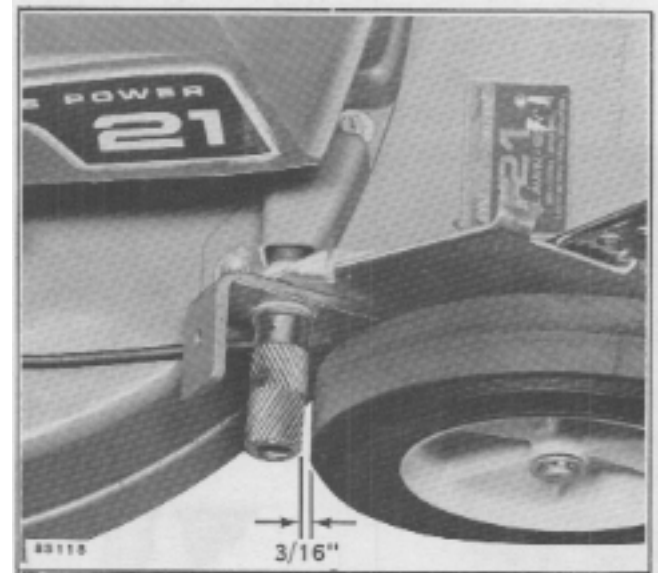
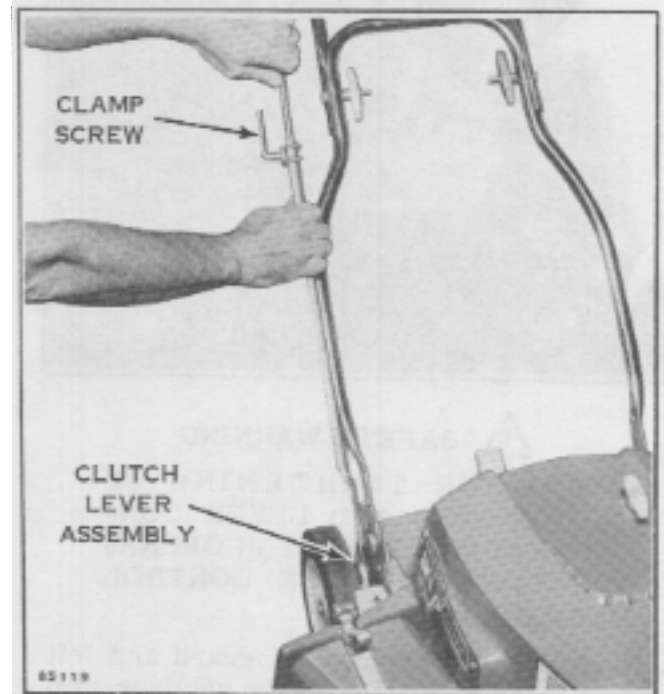


NOTE

Misadjustment of the interlock system will eliminate the safety feature it was designed for and may permit starting the engine with control handle in "DRIVE" position causing possible injury to operator.

Proper adjustment is accomplished as follows:

1. Place control handle in "NEUTRAL" position. Adjust clutch control rod by loosening clamp and pulling up on lower lower clutch lever and down on upper clutch rod until a gap of $3/16$ " appears between the drive rollers and the rear wheels. Tighten clamp as tight as possible with hand pressure.



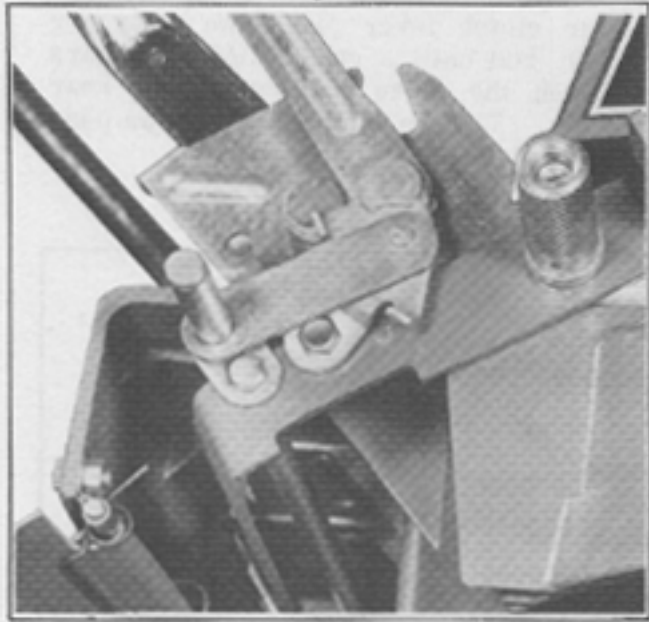
"F" SERIES GEAR DRIVE SELF PROPELLED SERVICING

This procedure should provide the required 3/16 inch spacing. However, if it cannot be attained, remove right rear wheel and loosen shoulder bolt and adjust axle accordingly.



NOTE

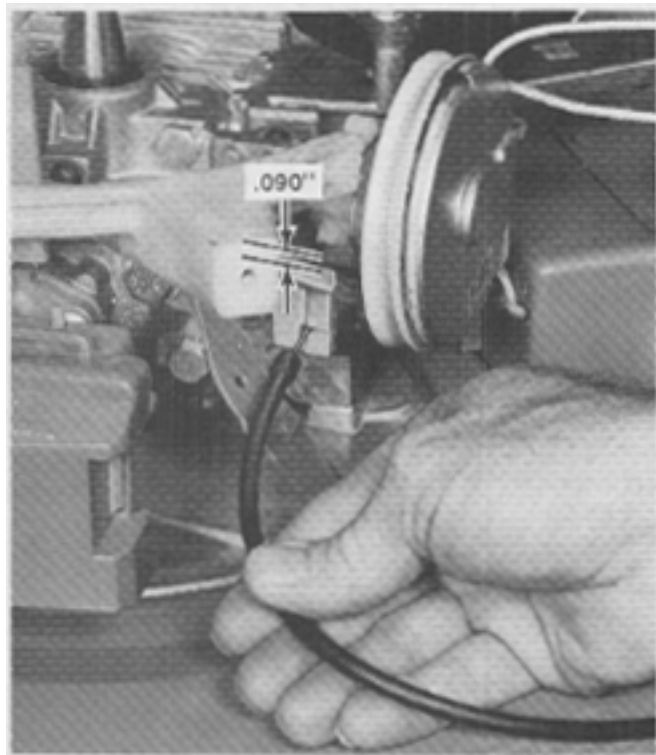
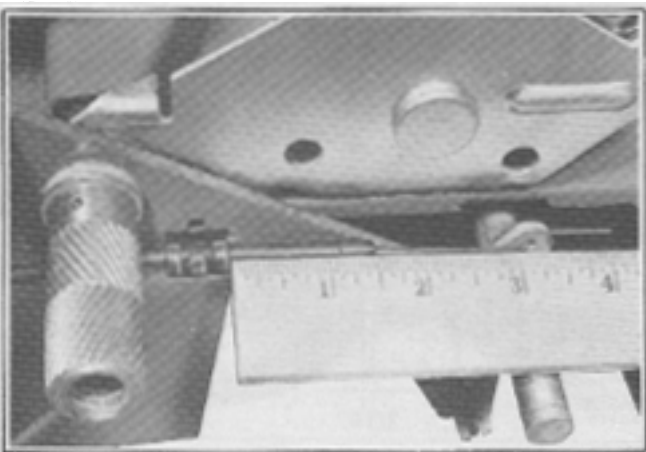
Check felt wheel washers and replace if necessary. Do not lubricate wheel and axle assembly.



SAFETY WARNING

IMPROPER TIGHTENING OF CLUTCH ROD AND LEVER CONNECTION MAY RESULT IN OPERATOR LOSS OF DRIVE CONTROL MECHANISM.

2. Remove left drive roller guard and left rear wheel. Loosen cable retainer clip and position end of cable housing (with rubber grommet installed on cable) 1-1/2 inches from nearest edge of retainer clip as shown. Secure clip and reinstall drive roller guard and wheel.



NOTE

If .090" measurement between starter pinion and interlock lever can not be obtained using procedure #3 above then remove cable clip from rear axle bracket and position cable until .090" clearance is obtained. Secure cable to rear axle bracket and clip with pliers.

"F" SERIES GEAR DRIVE SELF PROPELLED SERVICING

3. **ELECTRIC START MODELS:** Place control handle in "NEUTRAL" position. Observe movement of interlock lever when manual starter handle is pulled and when key is turned to "START" position. The interlock lever should be in a position that allows the starter pinion to engage the flywheel. To adjust; remove spring clip and position interlock cable to allow necessary movement of starter pinion. Hold interlock cable in position, **DO NOT** allow cable to move, and secure interlock cable with spring clip with a pair of pliers.

NOTE

If necessary clearance can not be obtained by using above procedure then remove cable clip from rear cable clip from rear axle bracket and position cable until clearance is obtained. Secure cable to rear axle bracket with clip.

4. Place control handle in "DRIVE" position. Observe movement of interlock lever. When properly adjusted interlock lever will move upward preventing starter pinion from engaging flywheel. To adjust; remove spring clip and position cable so interlock lever prevents starter pinion from engaging flywheel. Secure cable with spring clip.

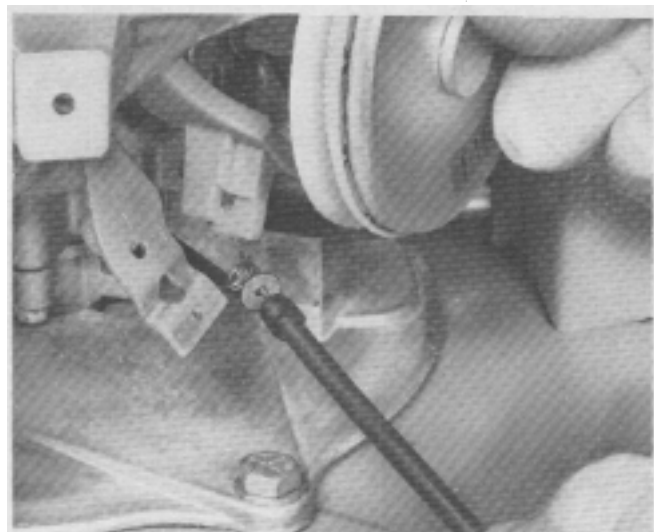


5. Check movement of interlock lever in "NEUTRAL" and "DRIVE" position. Check to be certain mower will start with control handle locked in "NEUTRAL" position **ONLY**. Mower should **NOT** start with control handle locked in "DRIVE" position. If additional adjustment is required repeat steps 3 & 4.

SAFETY WARNING

Check interlock operation whenever drive roller engagement or rear axle adjustment is changed. It is NOT necessary to check interlock adjustment when cutting height or handle height has been changed. Clutch control rod will require adjustment when handle or cutting height is changed.

6. To replace interlock cable; remove left side drive roller cover and rear wheel. Remove spring clip securing the cable to the deck and remove cable from rear axle. The interlock lever is designed with a "quick disconnect" feature that allows the cable to be easily removed. Remove spring clip securing cable to starter bracket. Rotate cable approximately 45° counterclockwise and remove cable from interlock lever as shown. Reverse procedure when installing new cable. The washer located on the end of the cable must be installed next to the cable loop to secure cable to interlock lever. **DO NOT** lubricate interlock cable if cable movement is restricted or cable damaged - replace cable. For adjusting procedure follow steps 1, 2 and 3.

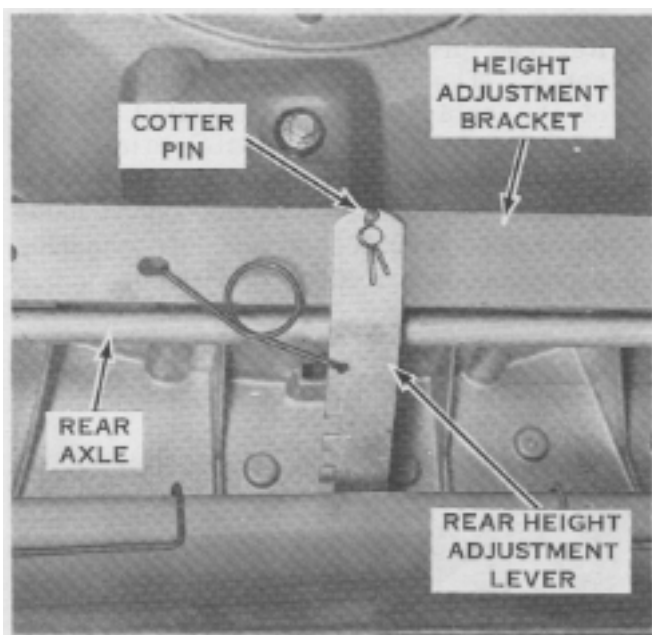
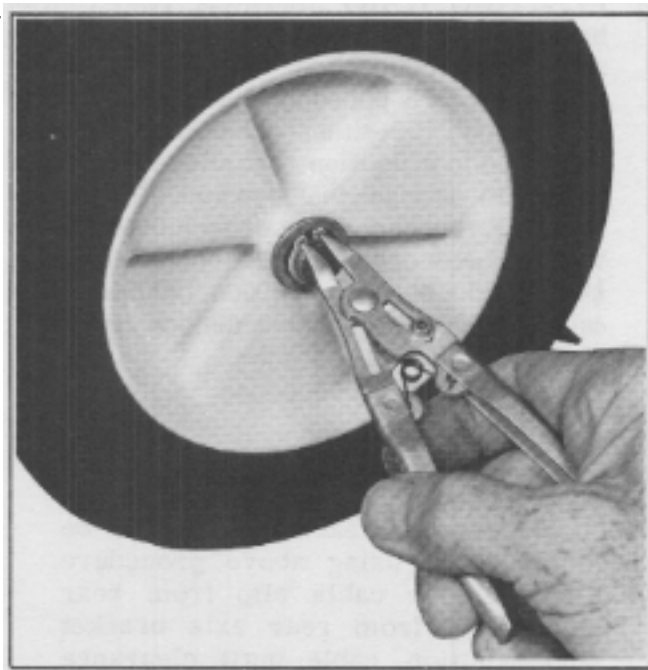


"F" SERIES GEAR DRIVE SELF PROPELLED SERVICING

To remove the rear wheels remove retainer ring with expansion pliers #603596.

SAFETY WARNING

DO NOT OVER EXTEND (STRESS) RETAINING RING WHILE REMOVING OR INSTALLING. WHEN INSTALLING RETAINING RING POSITION THE SIDE WITH THE ROUND OR BEVELED EDGES IN TOWARDS THE WHEEL. MAKE CERTAIN RETAINING RING IS NESTED IN GROOVE OF AXLE. LOSS OF WHEEL MAY ALLOW BLADE TO CONTACT GROUND SURFACE AND PICK UP OBJECTS THAT MAY BE THROWN BY THE BLADE.

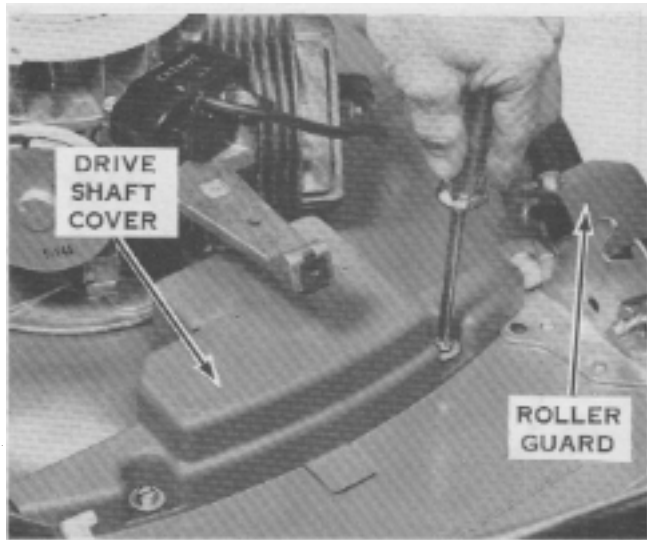


The rear wheels are adjusted with one lever at the rear of mower deck.

SAFETY WARNING

MAKE SURE COTTER PIN AND ALL REAR HEIGHT ADJUSTMENT COMPONENTS ARE IN PLACE. LOSS OF COTTER PIN MAY CAUSE REAR OF MOWER TO DROP PERMITTING BLADE TO PICK UP OBJECTS THAT MAY BE THROWN.

"F" SERIES GEAR DRIVE SELF PROPELLED SERVICING

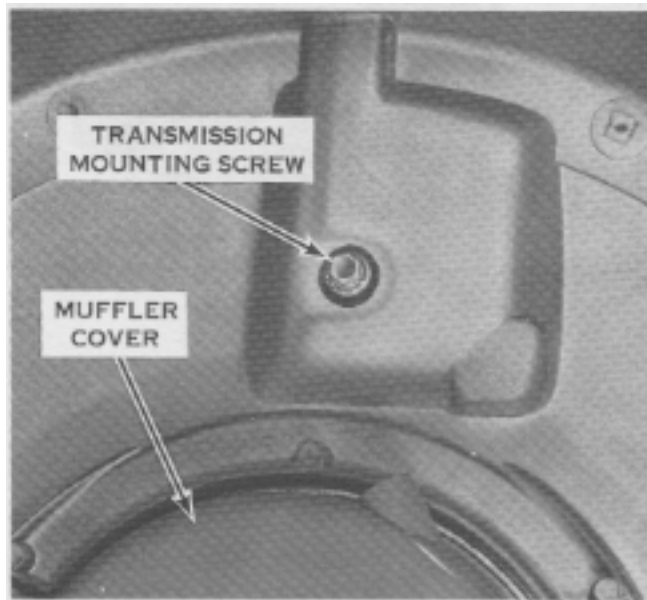


REPAIR OR REPLACE DRIVEN GEAR, SHAFT, THRUST WASHER AND/OR SEAL

NOTE

Remove spark plug lead. Electric start models remove battery and disconnect starter lead wires.

1. Remove blade, blade stiffener, and adapter.
2. Remove muffler.
3. Remove transmission mounting screw from underside of deck as shown.
4. Remove engine mounting fasteners.



NOTE

When reinstalling transmission mounting screw torque to 70 inch pounds.

5. Remove drive shaft cover.

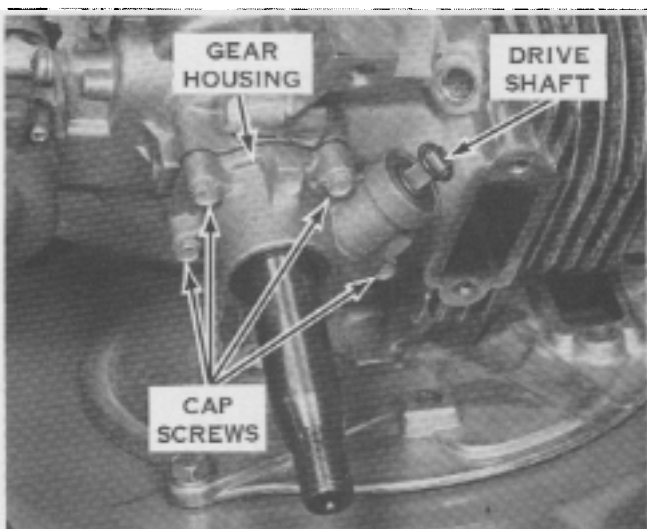
SAFETY WARNING

DRIVE SHAFT COVER AND ROLLER GUARDS MUST BE IN PLACE AT ALL TIMES TO PREVENT OPERATOR EXPOSURE TO ROTATING PARTS.

6. Remove engine from mower housing.

NOTE

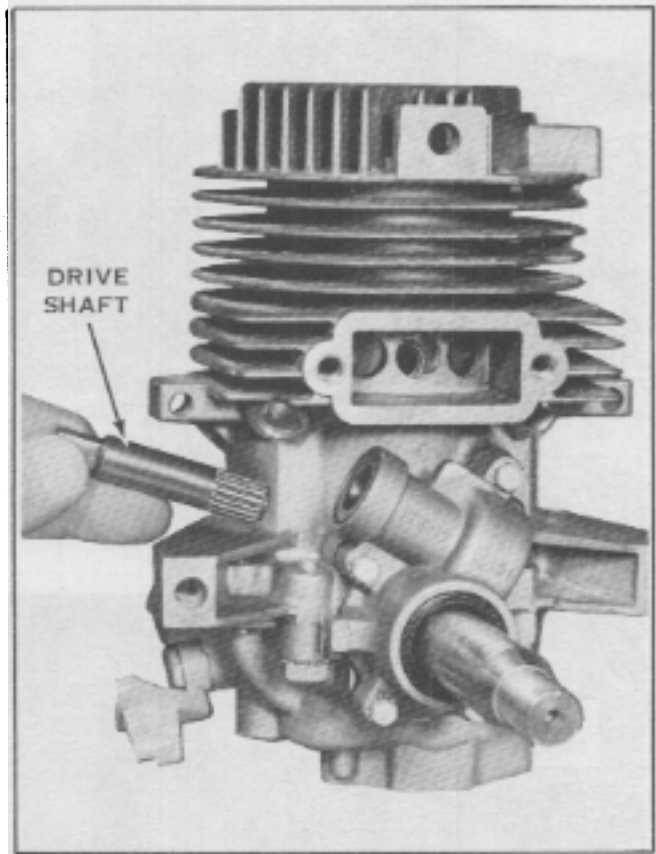
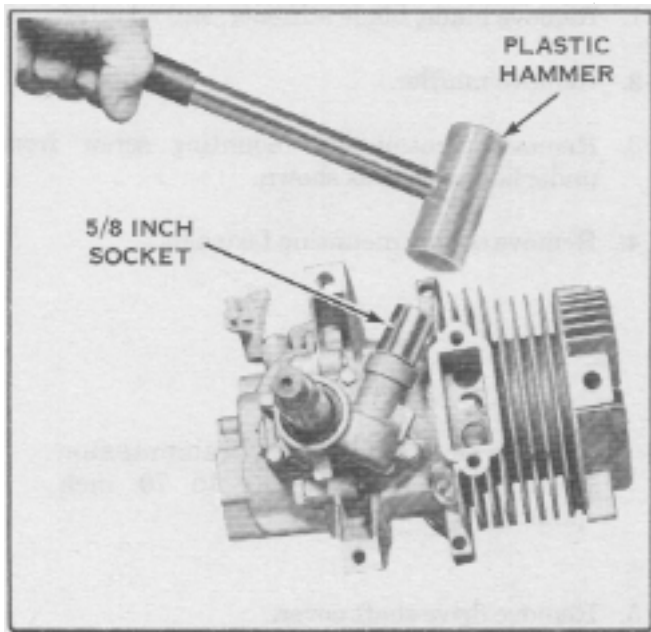
Do not remove shaft from crankcase gear housing.



7. Loosen four screws securing gear cover assembly to crankcase. **DO NOT** remove the four screws at this time.

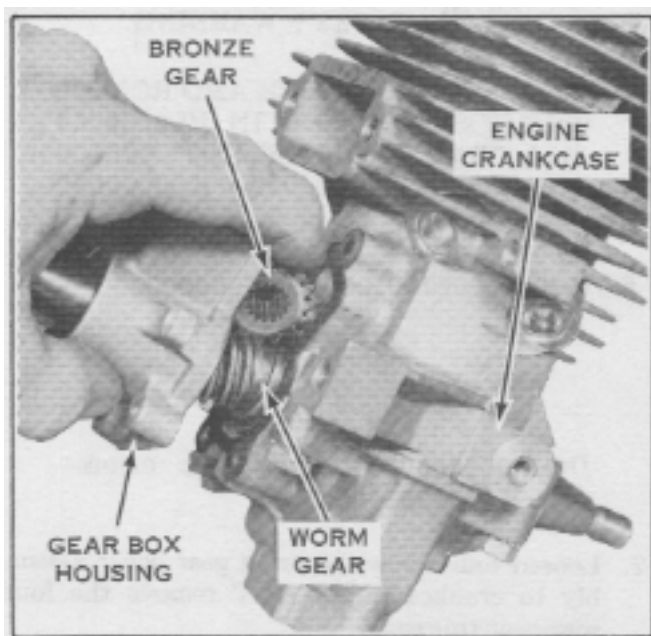
"F" SERIES GEAR DRIVE SELF PROPELLED SERVICING

8. Carefully remove driveshaft from gear box assembly. Sharp spline edges will cut seal. Always replace seal. To replace seal, remove by inserting screwdriver under one side and prying up. Seal may be reinstated by placing squarely on seal seat and tamping in by using 5/8 inch socket and soft headed (leather or plastic) hammer.



NOTE

Driven shaft should be installed in lower unit before seal is installed to safeguard against damage to seal.

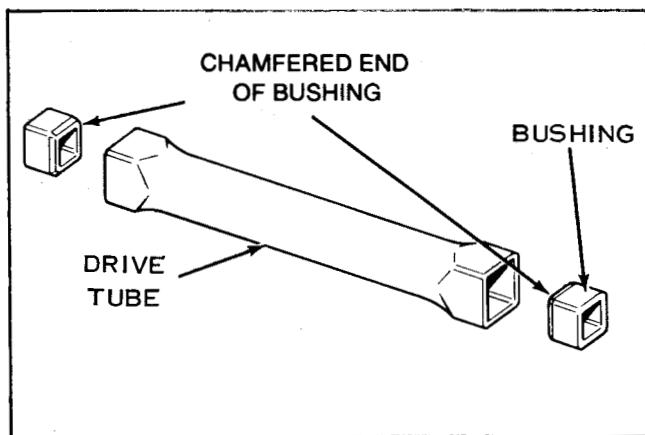
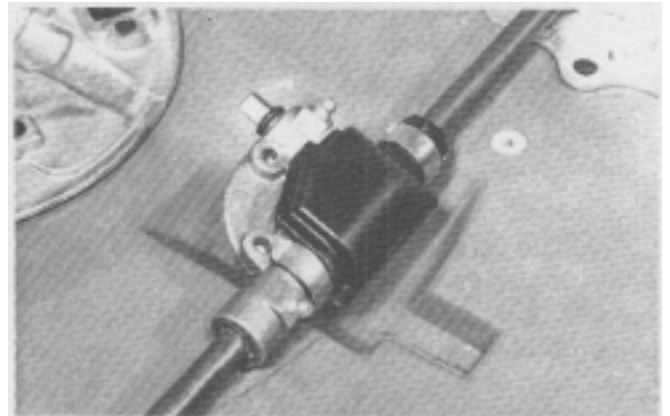
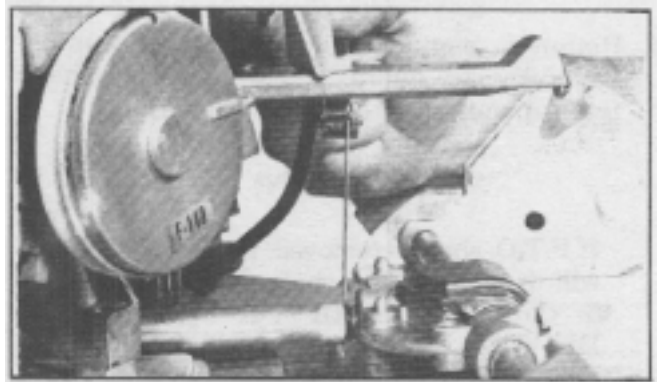


9. Remove four screws and remove gear cover assembly from engine. Remove bronze gear and thrust washer. Inspect for wear and/or damage. Also inspect spiral gear of crankshaft for wear and damage. Replace any part that is questionable.

"F" SERIES GEAR DRIVE SELF PROPELLED SERVICING

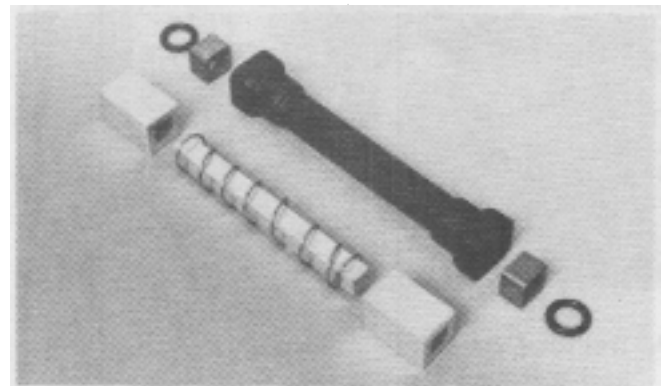
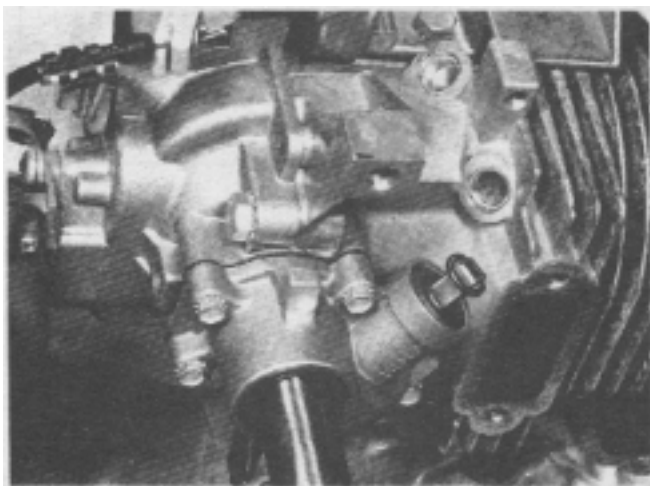
DRIVE TUBE END PLAY

1. Using a feeler gauge check for excessive end play as shown. If end play measurement is .035 to .135, no "O" ring required. If measurement is .136 to .235, add one "O" ring to transmission driver gearshaft as shown. If measurement is .236 or higher, add one "O" ring to transmission driven gearshaft and one "O" ring to engine driveshaft as shown. Replacement part no. for "O" ring is 303067.
2. Check position of bushings in drive tube. They must be installed with chamfered end inserted in drive tube as illustrated. Always replace worn bushings.
3. A sintered metal bushing must be installed on end next to engine.



REPAIR OR REPLACE TRANSMISSION

1. Remove transmission cover plate and drive roller covers.
2. Remove blade, blade stiffener, and adapter.
3. Remove muffler.
4. Remove transmission mounting screw from underside of deck.
5. Remove engine mounting bolts.



NOTE

If a failure of the drive tube or bushings occurs on any gear driven self-propelled mower, it is to be replaced with the new spring loaded assembly shown here. Also remove and discard all "O" rings used with the old tube. Refer to the parts book and master parts price list for the part numbers.

"F" SERIES GEAR DRIVE SELF PROPELLED SERVICING

6. Remove engine from mower housing carefully to avoid pulling P.T.O. shaft from lower crankcase gear housing.

NOTE

If P.T.O. shaft is removed, the driven gear will drop off end of shaft. Refer to steps 6 thru 9, **REPAIR OR REPLACE DRIVEN GEAR, SHAFT, THRUST WASHER AND/OR SEAL.**



7. Remove drive rollers and drive shaft roller bearings.



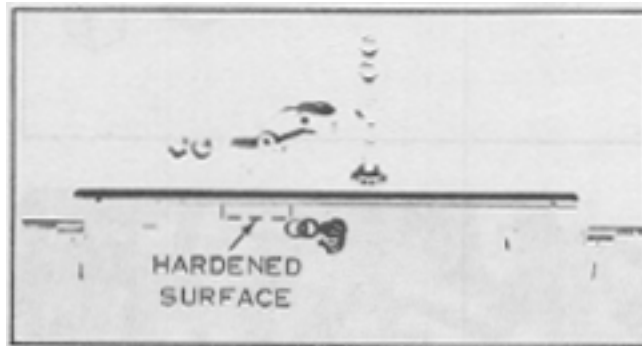
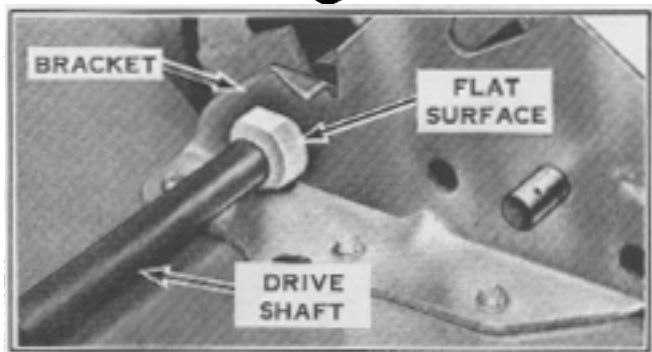
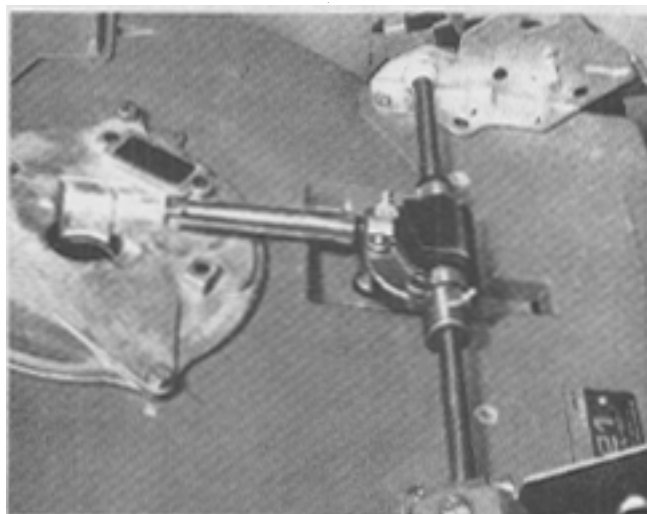
NOTE

When reinstalling drive rollers place one washer between roller bearing and drive roller on both sides. This will provide correct end play of .062 inch or less. If end play exceeds this, install additional washer, part no. 603037, between right roller bearing and drive roller.



NOTE

The sleeve has a flat surface that matches the flat surface of the bracket. When re-assembling, flat surfaces must match.



8. Remove two "C" clamps securing top and bottom gear covers.
9. Remove drive shaft and transmission assembly complete.

10. Drive roll pin out of bevel gear and drive shaft, and slide shaft out of bearing housing.



NOTE

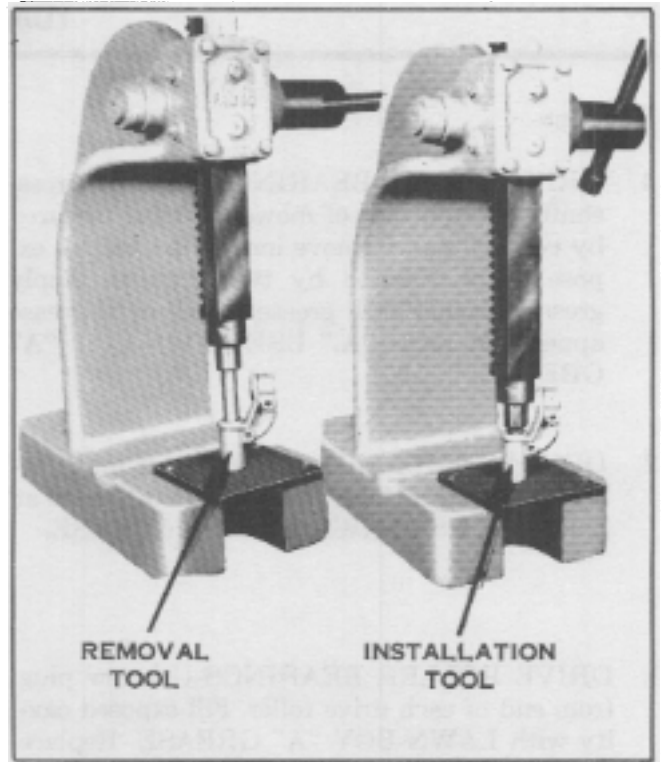
Replace gears in sets. Do not replace individually.

"F" SERIES GEAR DRIVE SELF PROPELLED SERVICING

11. To replace bearing, press out damaged or worn bearing with special Lawn-Boy removal tool, part number 608361, and press in replacement with special installer tool, part number 608360.

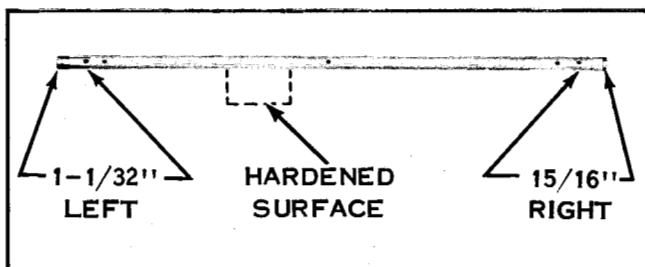
 NOTE

Do not drive bearings in or out with a hammer. They must be removed or replaced using arbor press as illustrated.



 NOTE

In servicing the drive shaft, there is one very important consideration; there is a left and a right-hand side. The reason for this is that the bearing surface side (left of center) is hardened to prevent wear.



When facing the rear of the mower (operator's position) measure the distance from end of shaft to the first hole. A measurement of $1-1/32$ inch is the left end. The other end will measure $1-5/16$ inch to the first hole as illustrated.

"F" SERIES GEAR DRIVE SELF PROPELLED SERVICING

LUBRICATION

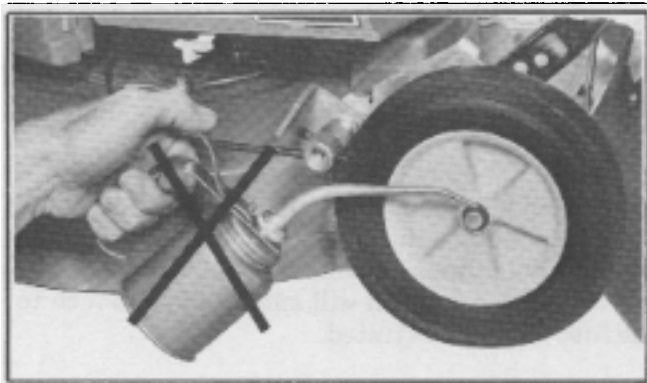
25 Hours

1. **DRIVE GEAR BEARINGS**-Remove cross-shaft cover on rear of mower housing (secured by two screws). Remove inner top cover to expose gears (secured by two clamps). Apply grease through each grease fitting until grease appears at point "A." USE LAWN-BOY "A" GREASE.
2. **DRIVE GEARS**-Apply a liberal amount of lubricant on all surfaces of teeth on both gears at point "B." USE LAWN-BOY "A" GREASE.
3. **DRIVE ROLLER BEARINGS**-Unscrew plug from end of each drive roller. Fill exposed cavity with LAWN-BOY "A" GREASE. Replace plug and tighten until snug. Point "C." Repeat procedure until lubricant appears on cross-shaft at Point "D."



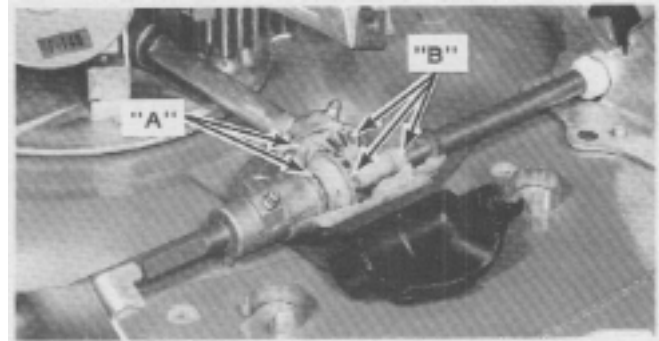
NOTE

Do not lubricate the wheels or axle bolts. The lubricant can accumulate dirt and debris accelerating wear.

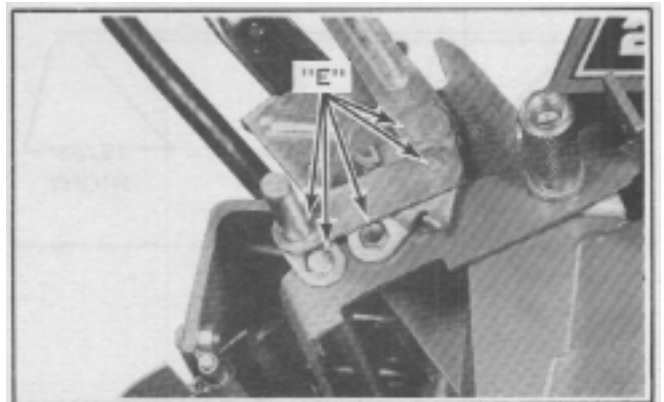
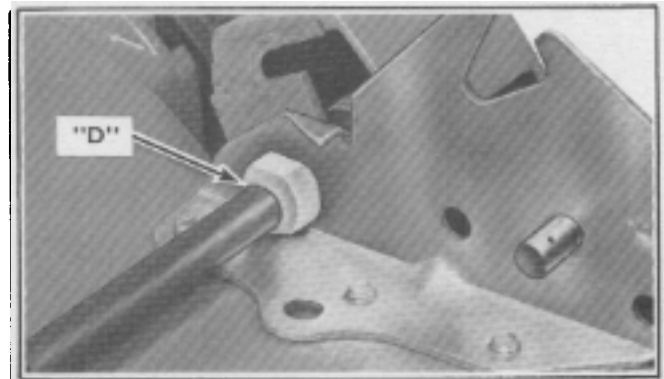
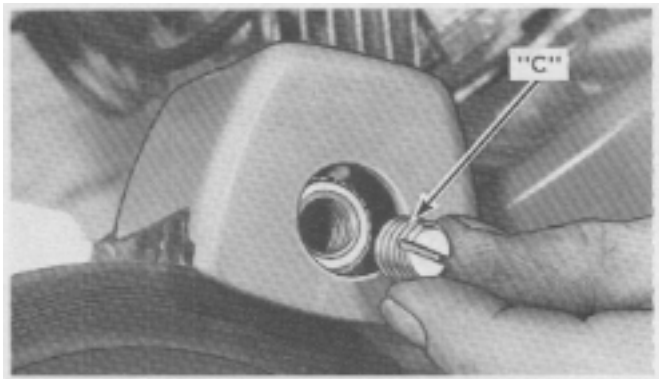


AS REQUIRED

4. **CLUTCH LINKAGE**-Apply several drops of light machine oil on clutch at Point "E" as shown.



TOP COVER REMOVED FOR ILLUSTRATION



UTILITY MODELS SELF-PROPELLED BELT DRIVE SERVICING

Adjustments and servicing of the utility self-propelled mowers are very different from all previous models of self-propelled mowers.

SAFETY WARNING

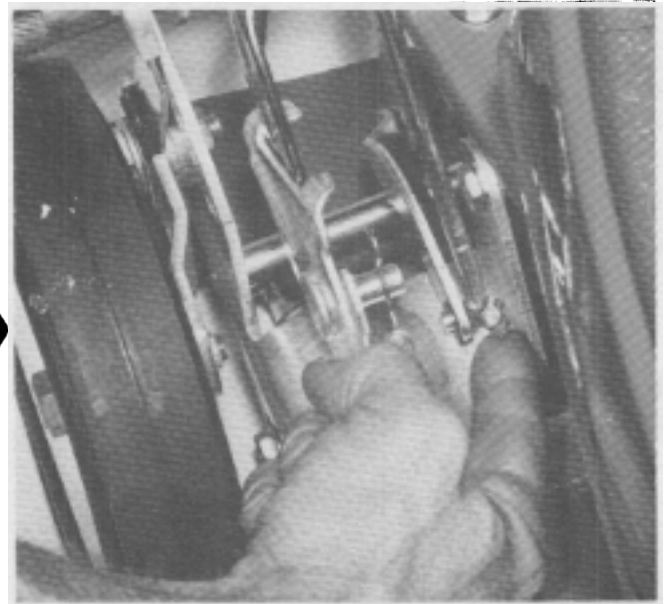
BEFORE ANY ADJUSTMENTS OR REPAIRS ARE ATTEMPTED, DISCONNECT AND REMOVE SPARK PLUG TO PREVENT STARTING.



95064

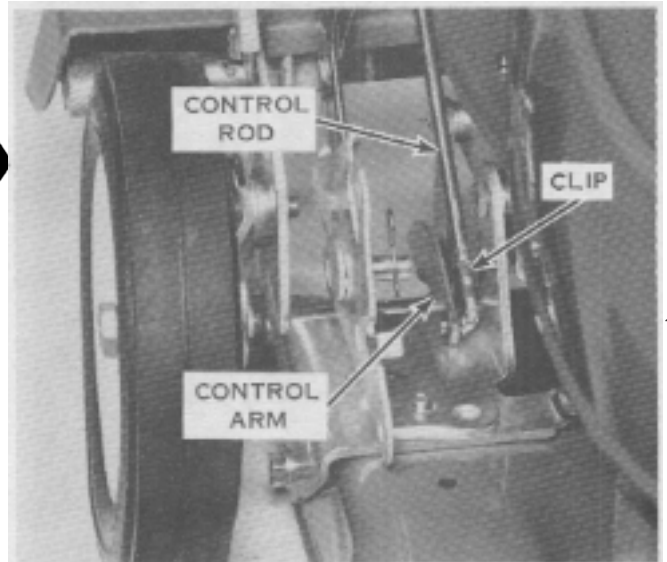
INSTALLING CONTROL ROD

1. Place retainer clip on clutch arm with long side of clip on the inside of clutch arm.
2. Align hole in clip with hole in arm and assemble lower end of the control rod in hole.
3. Turn (swivel) long end of clip up and snap into position on lower control rod as shown.



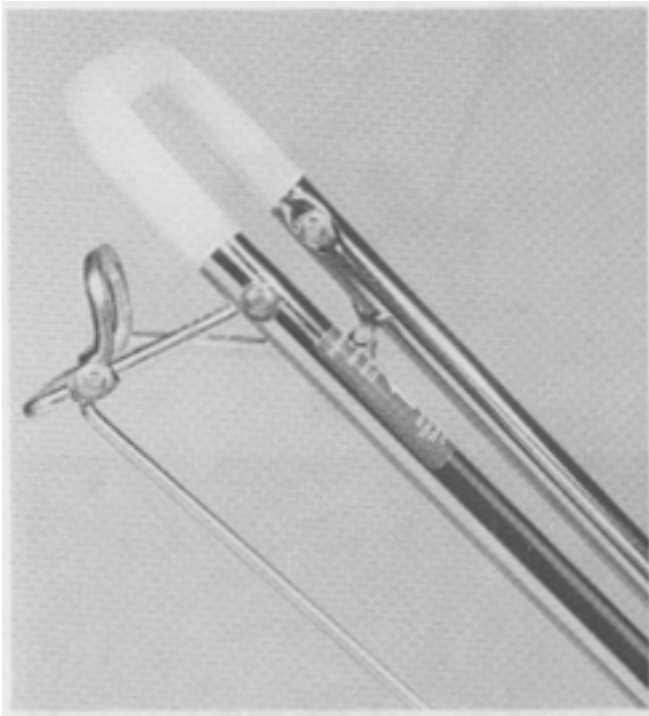
SAFETY WARNING

THE LOWER SELF PROPEL CONTROL ROD MUST BE ASSEMBLED TO CLUTCH ARM AS SHOWN. IF NOT THE SELF PROPEL MECHANISM WILL NOT RETURN TO NEUTRAL WHEN THE CONTROL LEVER IS RELEASED FROM THE ENGAGED POSITION.

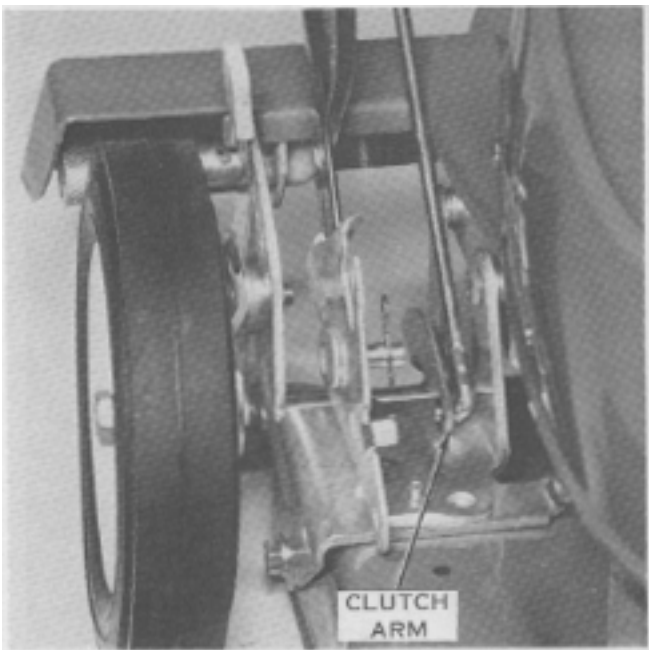


UTILITY MODELS SELF-PROPELLED BELT DRIVE SERVICING

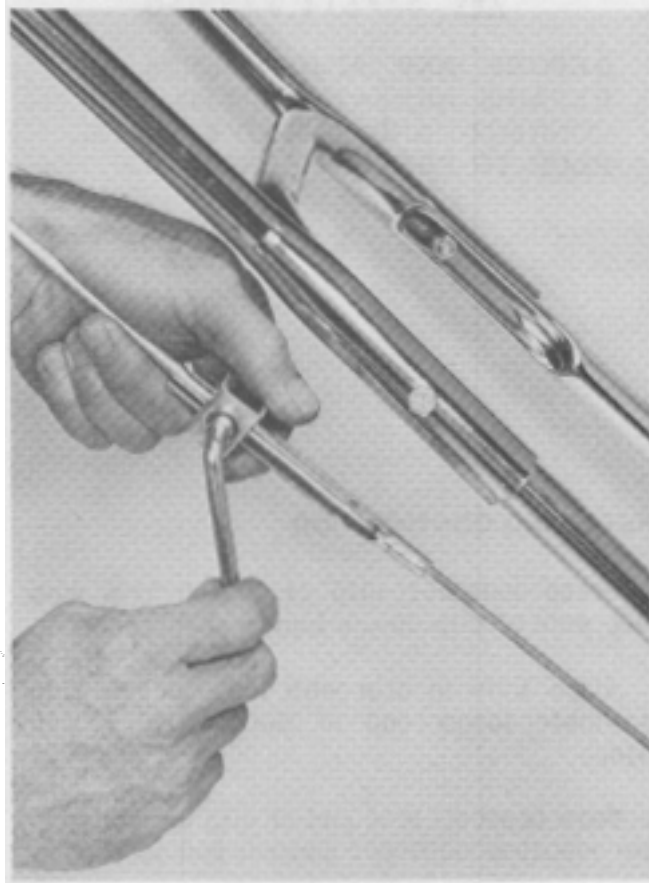
4. With the control handle in "neutral" (free) position as shown.



5. With the clutch arm resting on the handle and wheel bracket as shown.



6. Secure upper and lower control rods together with the clamp screw as shown. This screw should be tightened securely by hand.



SAFETY WARNING

IMPROPER TIGHTENING OF CLAMP SCREW ON CONTROL ROD MAY RESULT IN OPERATOR LOSS OF DRIVE CONTROL MECHANISM.

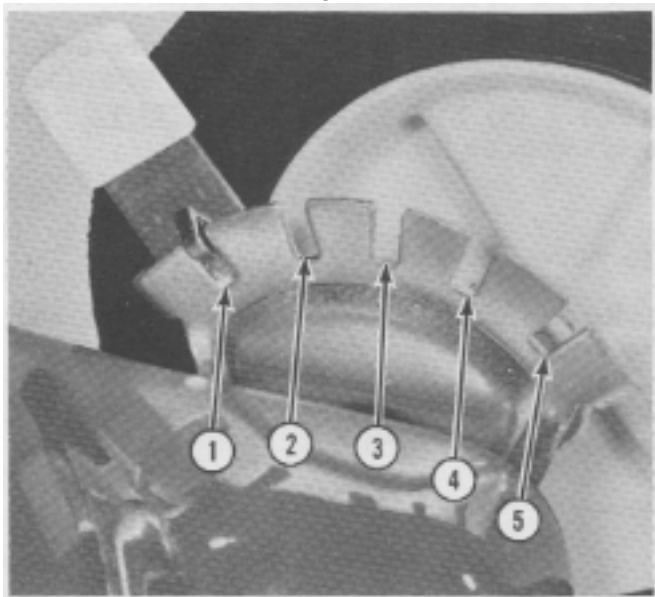
NOTE

To put mower in motion, pull upward on control handle and hold in drive position. To stop forward motion of mower, release control handle. Mower drive mechanism functions only when the control handle is held in "DRIVE" position.

UTILITY MODELS SELF-PROPELLED BELT DRIVE SERVICING

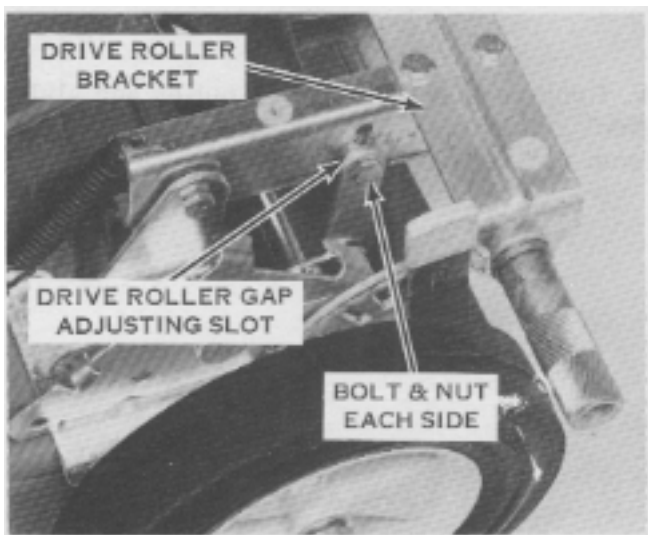
DRIVE ROLLER ADJUSTMENT

1. With the control handle in "Neutral", place both rear wheel height adjusters in #1 (lowest) cutting position as shown. A gap of 3/16" should appear between the drive rollers and tires.



2. Loosen bolt and nut located in drive roller gap adjusting slot on each side of drive roller bracket.

3. Move the drive roller bracket up or down to obtain the necessary 3/16" drive roller gap. Hold bracket in position and tighten both bolts and nuts securely.

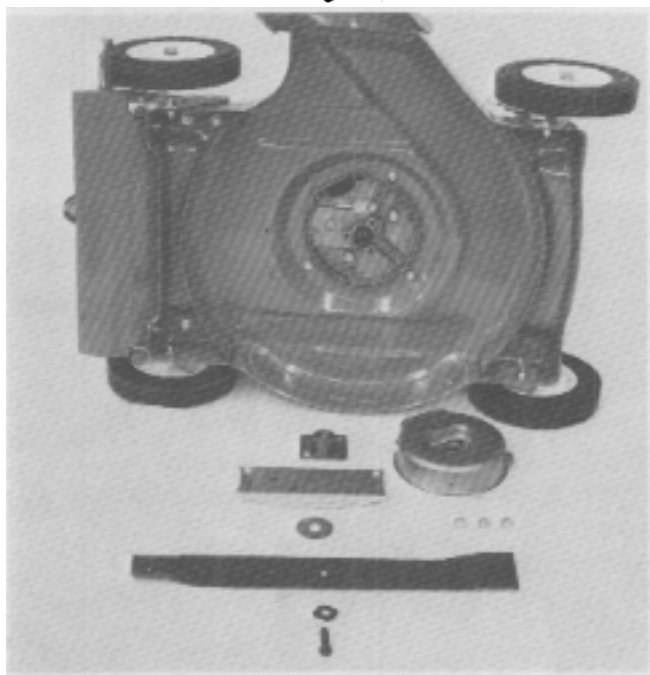


ENGINE REMOVAL OR REPLACEMENT

⚠ SAFETY WARNING

TO PREVENT STARTING OF ENGINE, DISCONNECT AND REMOVE SPARK PLUG PRIOR TO REMOVING THE ENGINE.

1. Remove blade bolt, washer, blade stiffener, collar and three bolts securing muffler and remove muffler.



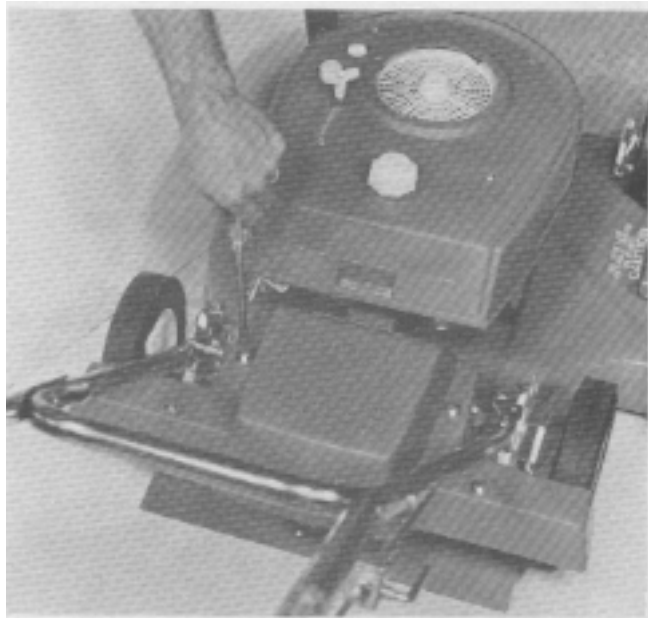
2. Remove three bolts securing engine to muffler plate and remove engine.

NOTE

Do not remove muffler plate from housing when removing engine.



UTILITY MODELS SELF-PROPELLED BELT DRIVE SERVICING



V BELT REMOVAL OR REPLACEMENT

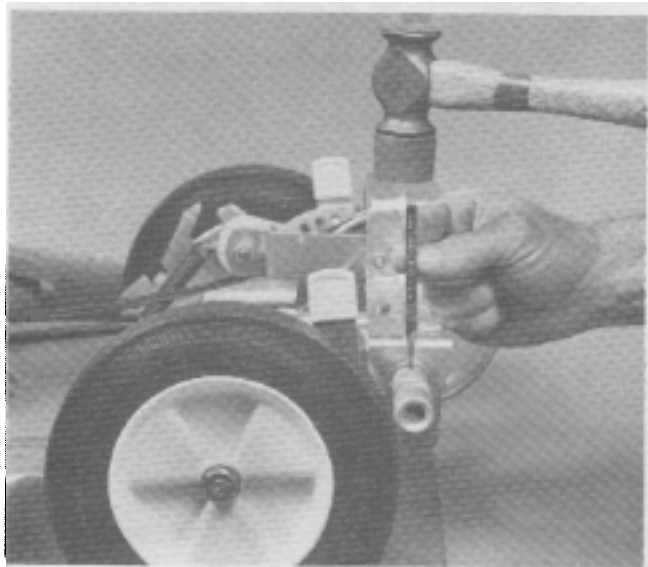
⚠ SAFETY WARNING

TO PREVENT STARTING ENGINE,
DISCONNECT SPARK PLUG LEAD
AND REMOVE SPARK PLUG.

The "V" belt used on the utility self-propelled model mowers is a SPECIAL BELT. DO NOT USE A SUBSTITUTE. It won't work as WELL or as LONG.

To remove the belt:

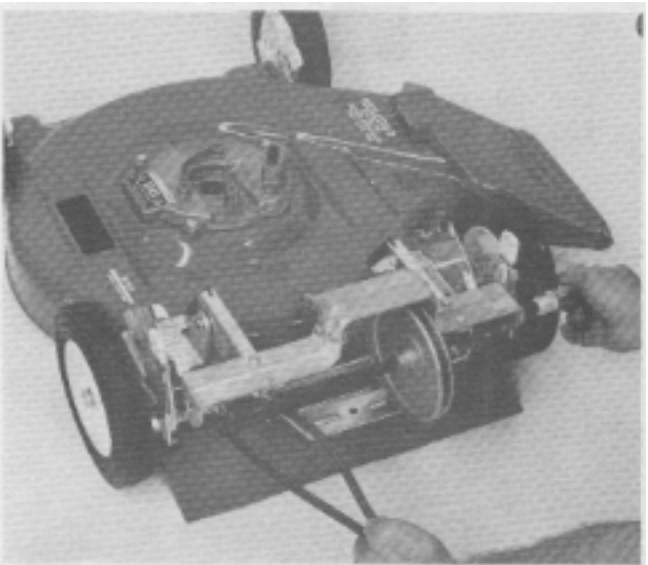
1. Remove four belt guard cover screws and remove cover.
2. Remove engine and remove drive belt from drive pulley.



⚠ SAFETY WARNING

DO NOT OPERATE MOWER WITH
BELT GUARD REMOVED.

3. Remove roll pin from left hand drive roller and remove roller.

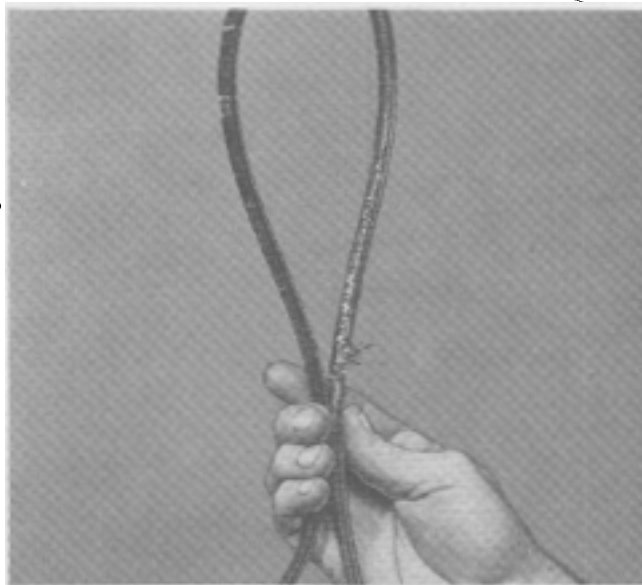


4. Remove belt from driven pulley and slide shaft assembly to the right. Remove belt from mower as shown.



NOTE

After the belt has been removed, examine for broken, cracked or misaligned pulleys. The condition and the wear pattern of the belt will provide clues for the above possibilities. Replace damaged or worn pulleys.



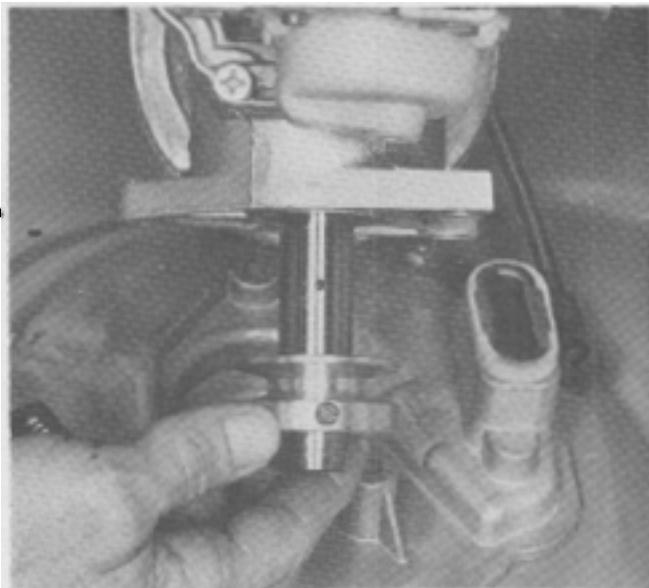
5. The crankshaft pulley (drive pulley) is secured to the crankshaft with a SPECIAL slotted set screw. The end of this screw locates in a hole in the crankshaft. The correct position and tightness is very IMPORTANT. If not tightened securely, damage to the pulley, crankshaft and premature wear of the drive belt will result.



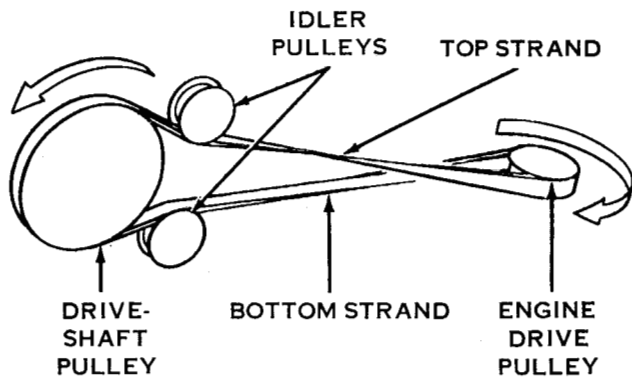
NOTE

Apply OMC Ultra Lock part no. 388517 to threads of set screw prior to installation.

6. When reinstalling pulley to crankshaft, the side of the pulley with set screw is the lower side. If assembled upside down (set screw on top) misalignment and interference of pulley operation will result. Always check pulley for damage. Replace if necessary.



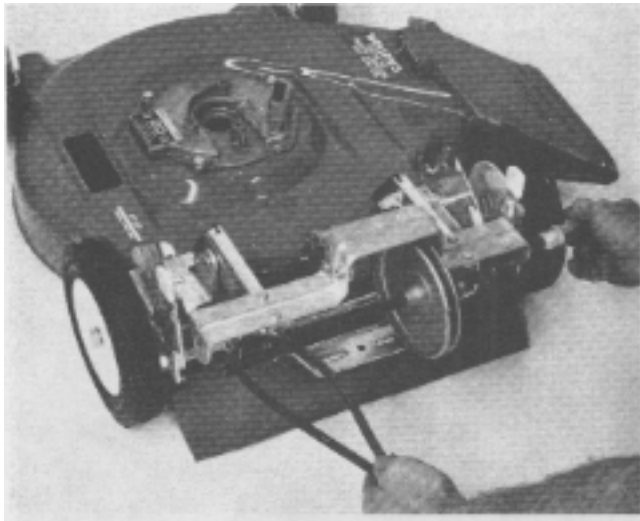
UTILITY MODELS SELF-PROPELLED BELT DRIVE SERVICING



INSTALL BELT AS SHOWN
FOR PROPER PULLEY ROTATION

SAFETY WARNING

INCORRECT DRIVE BELT INSTALLATION MAY ALLOW MOWER TO OPERATE IN REVERSE DIRECTION CAUSING INJURY TO THE OPERATOR OR BYSTANDERS. ASSEMBLE DRIVE BELT AS SHOWN.



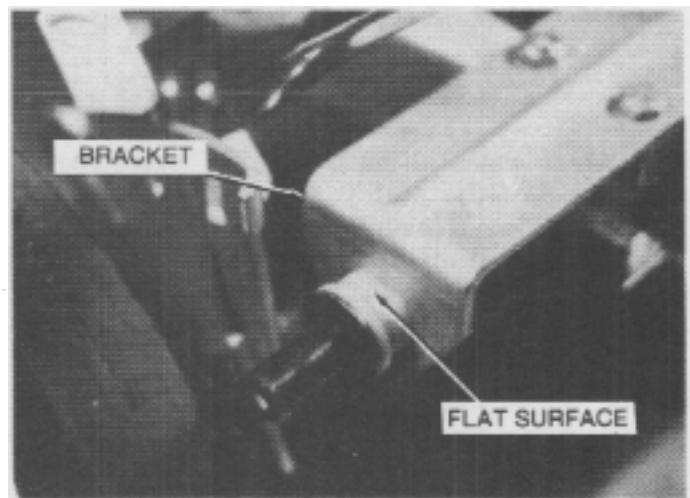
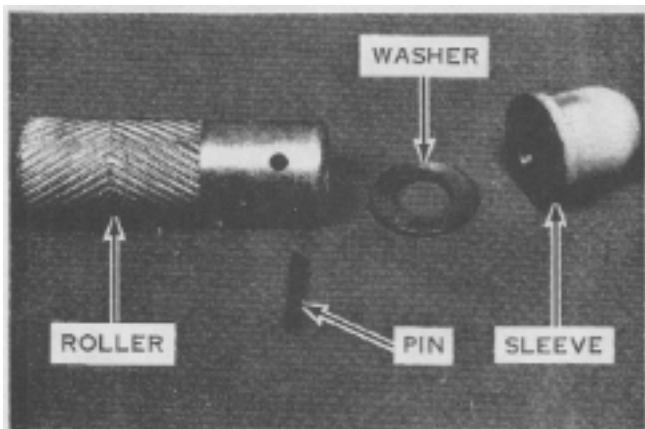
7. Place belt over left end of drive shaft as shown. Do not assemble on driveshaft pulley.

9. BUSHING AND BEARING INSTALLATIONS.

NOTE

The sleeve has a flat surface that matches the flat surface of the bracket. When re-assembling, the flat surfaces must match.

8. Check the condition of the driveshaft, bronze bearings, and sleeve. If signs of damage or wear appear, replace them.

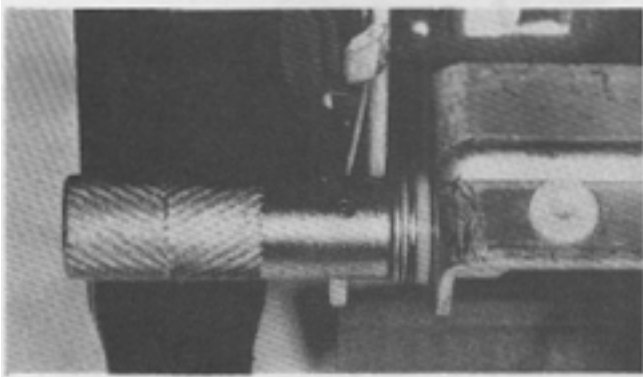


UTILITY MODELS SELF-PROPELLED BELT DRIVE SERVICING

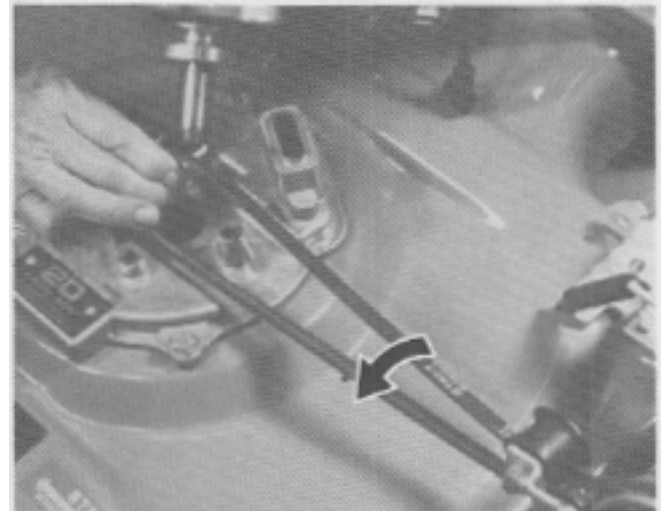
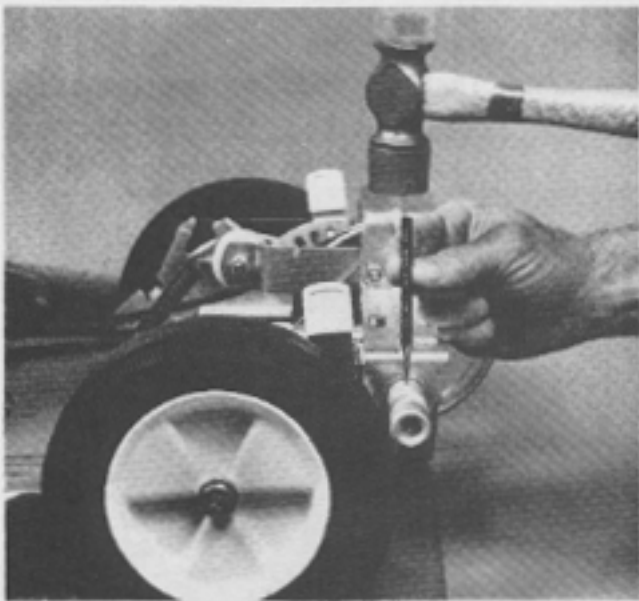
INSTALL BELT AS SHOWN
FOR PROPER PULLEY ROTATION

10. Reassemble the drive shaft into the bearing and slide it to the left as far as possible. Assemble the washer and drive roller on the drive shaft.

11. The drive rollers must be properly installed to utilize the self-cleaning feature. Proper installation is with the vee pointing toward the wheel.

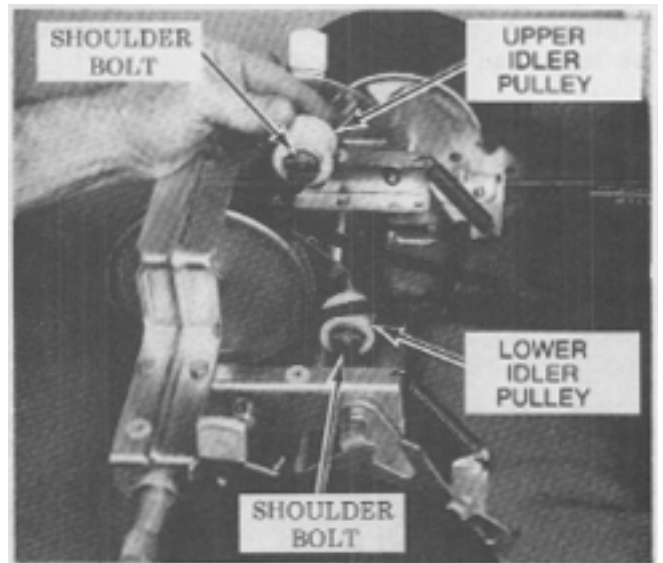


12. Using a new roll pin, assemble the drive roller to the drive shaft. Use a 5/32" or larger drift punch, drive the roll pin into place, flush with the outer surface. Neither end should protrude beyond the roller surface.



13. As you face the front of the mower, twist the forward end of the belt 1/4 turn counter clockwise and assemble on the engine drive pulley. Assemble engine on muffler plate and secure with three bolts.

14. Release spring tension on idler pulleys and assemble belt on drive shaft pulley. Reassemble idler pulley spring and rotate the belt several revolutions. Check to make sure the belt is centered on the pulleys and **TURNING IN RIGHT DIRECTION**. Note direction of arrow on large pulley in illustration above. Check and adjust belt tension if necessary. Refer to **BELT TENSION ADJUSTMENT**.



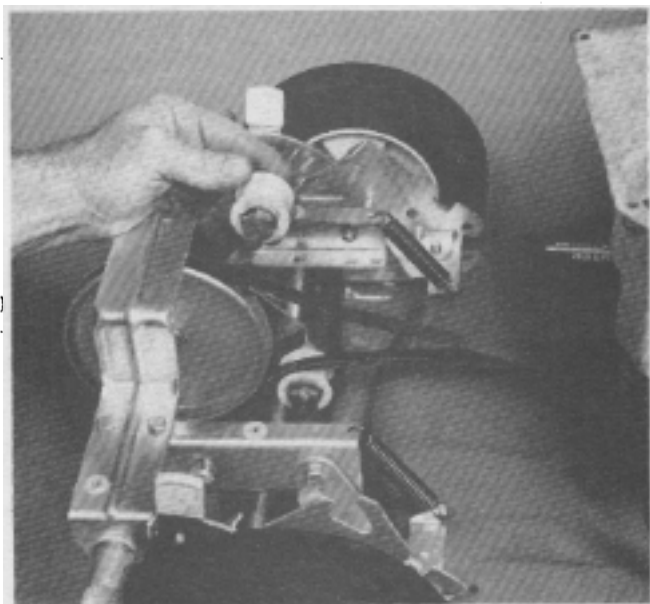
NOTE

When replacing either of the belt idler assemblies, use idler kit part no. 682374 for the top and kit part no. 682564 on the bottom.

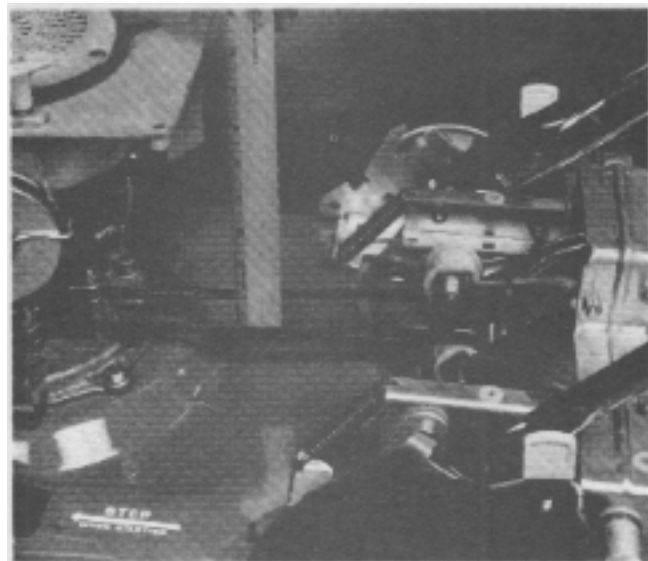
UTILITY MODELS SELF-PROPELLED BELT DRIVE SERVICING

BELT TENSION ADJUSTMENT

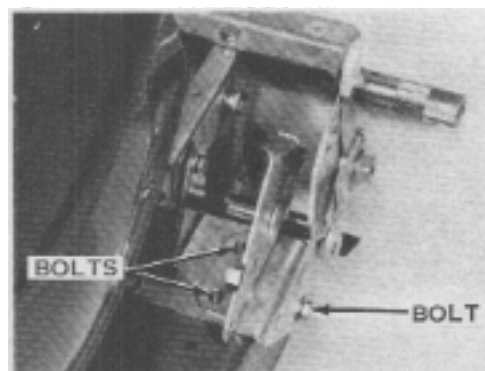
1. Check drive belt installation. Drive belt must be installed between idler pulleys as shown.



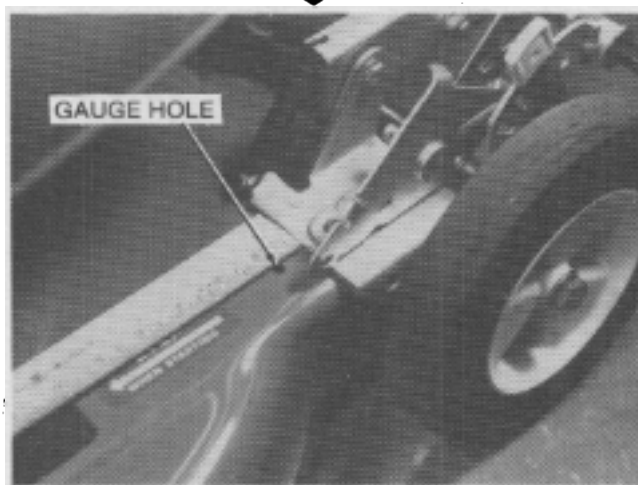
2. Drive belt should be checked to insure that proper tension exists in order to prevent premature belt failure. Lift floating idler from the upper strand of "V" belt. Belt will then become loose. Set floating idler onto "V" belt and check clearance between the two strands of the "V" belt. The distance between the two strands should not be less than 1/2" as shown.



3. To adjust belt tension; loosen four handle bracket mounting screws (two on each bracket) and two screws (one on each side) located on the sides of rear height adjuster bracket as shown. Slide entire self-propelling mechanism in direction necessary to obtain the proper "V" belt tension.



4. Care should be taken to insure that both sides of the self-propelling mechanism are positioned equally on the mower housing. This can be accomplished by measuring the distance from the front edge on the height adjuster brackets to the 1/4" diameter gage holes located directly in front of these brackets as shown. This distance must be the same for both sides. Before tightening screws make sure the distance between the strands of the "V" belt is not less than 1/2". Tighten the four handle bracket screws and the two side screws securely. Reassemble belt guard to self-propel mechanism using screws previously removed.



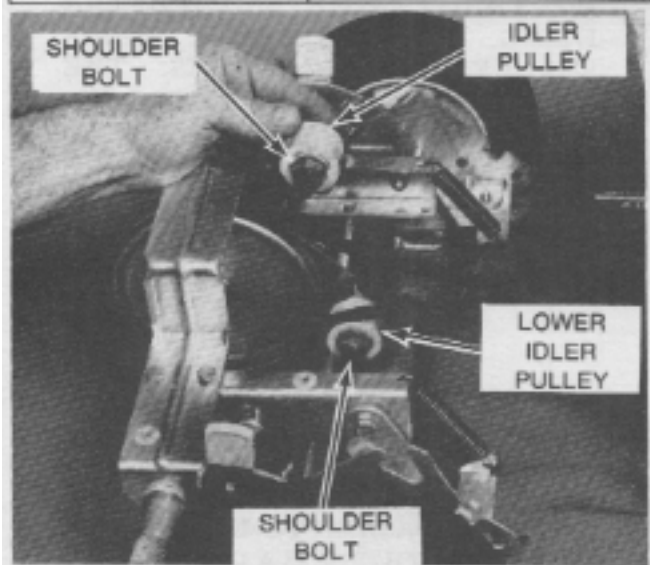
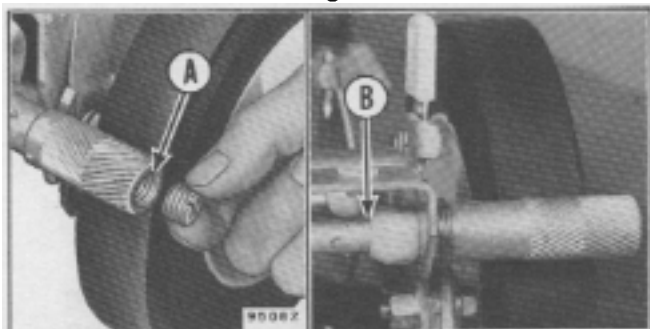
⚠ SAFETY WARNING
DO NOT OPERATE MOWER WITH
BELT GUARD REMOVED.

UTILITY MODELS SELF-PROPELLED BELT DRIVE SERVICING

LUBRICATION

10 HOURS

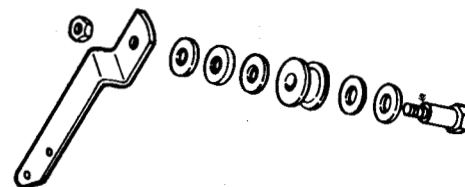
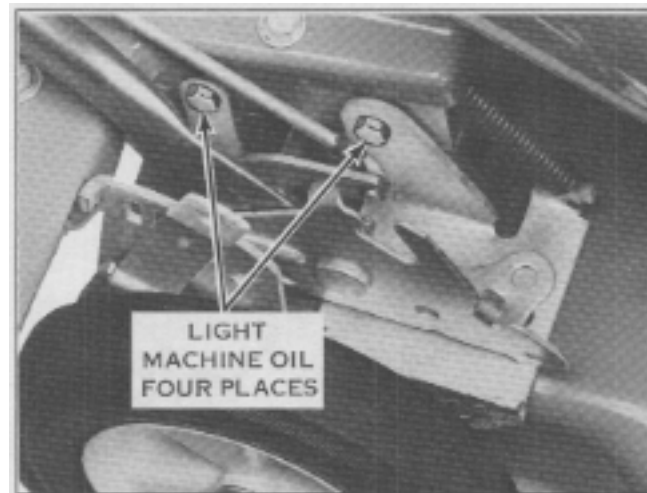
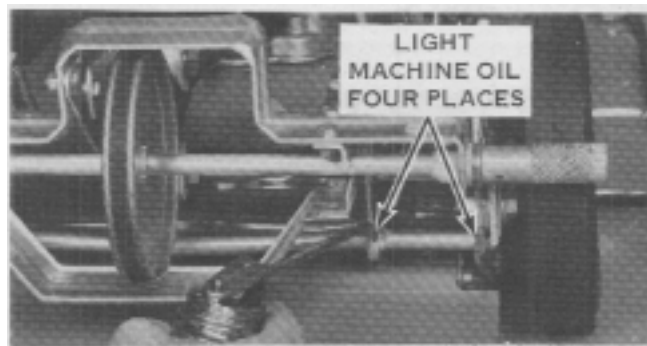
1. **DRIVE ROLLER BEARINGS**—Disassemble rotating shaft cover from self-propel mechanism by removing four screws. Unscrew plug from end of each drive roller (Point "A"). Fill exposed cavity with LAWN-BOY "A" GREASE, PART NO. 610721 OR EQUIVALENT. Replace plug and tighten until snug. Repeat procedure until lubricant appears on cross-shaft at Point "B". Reassemble rotating shaft cover to self-propel assembly.



FLOATING IDLER PULLEY—Do not immerse the idler pulley in solvent. Use a rag containing solvent, clean the hole in the idler pulley and the shoulder bolt thoroughly. Using a small amount of LAWN-BOY A GREASE or EQUIVALENT, re-lubricate the shoulder bolt and remount idler pulley assembly in the same order it was originally.

AS REQUIRED

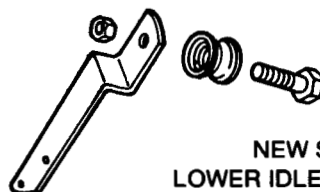
1. **CLUTCH LINKAGE**—Apply several drops of light machine oil on clutch mechanism at all pivoting points.



OLD STYLE
LOWER IDLER ASSEMBLY

PLASTIC BOLT-PULLEY-ARM-NUT

The lower idler pulley on 8600 and 8601 models were plastic. It should not be lubricated after being removed and cleaned up. Never immerse plastic pulleys in solvent. Use a rag containing solvent to clean. If damaged and/or worn, replace with kit part no. 682564.

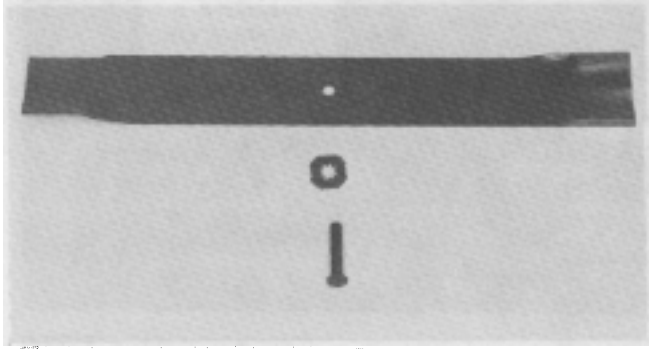


NEW STYLE
LOWER IDLER ASSEMBLY
BOLT-PULLEY-ARM-NUT
PART #682564

LOWER IDLER PULLEY — Permanently lubricated. No lubrication required.

UTILITY MODELS 4500, 4501, 8600, 8601

BLADE SERVICING



BLADE ASSEMBLY

A totally new and different method of retaining the blade is used on the 20" utility model mowers.

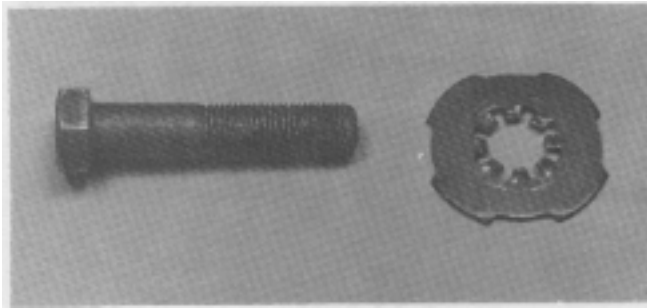
The blade bolt, part no. 609960, is special with a **SPECIFIC HARDNESS AND STRENGTH**. The blade lockwasher, part no. 605339, is also special.



NOTE

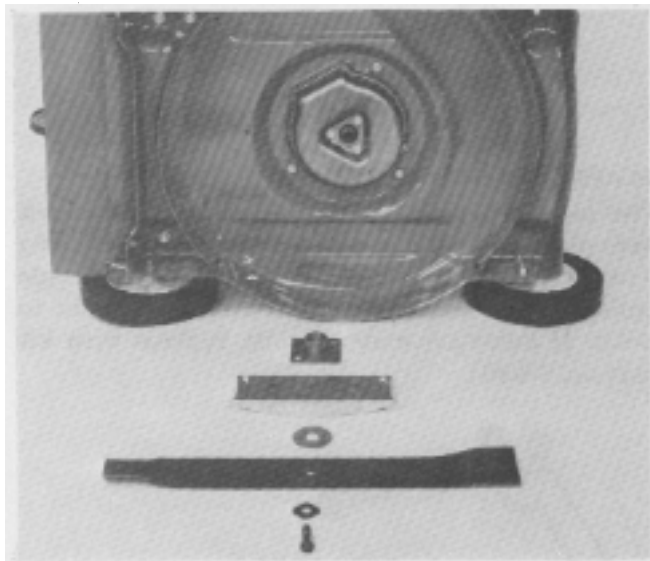
TORQUE BLADE BOLT TO
30-32 FT. LBS.

The lockwasher must be installed with cupped surface and triangular points mounted toward the blade.



SAFETY WARNING

THE LOCKWASHER AND BLADE BOLT MUST BE REPLACED AFTER BEING REMOVED AND REINSTALLED FOUR (4) TIMES. THE LOCKING FEATURE OF THE LOCKWASHER AND BLADE BOLT WILL HAVE DECREASED AND BLADE COULD LOOSEN IF REPLACEMENT IS NOT MADE.



SAFETY WARNING

DO NOT USE ANY OTHER TYPE BOLT OR WASHER TO RETAIN THE BLADE AS THERE IS A POSSIBILITY OF EITHER OF THEM BREAKING OR FAILING DURING OPERATION. A FAILURE OF EITHER PART MAY POSSIBLY RESULT IN AN INJURY.

UTILITY MODELS 8602 AND LATER SELF-PROPELLED SERVICING

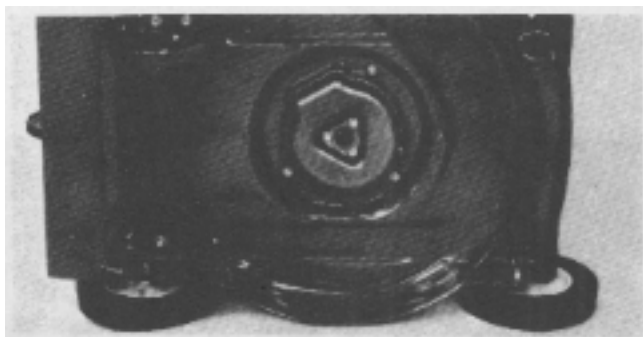
On 4502, 8602 and later models of Utility mowers, a blade nut has replaced the blade bolt previously used on earlier models.

SAFETY WARNING

THE BLADE NUT MUST BE REPLACED AFTER BEING REMOVED AND REINSTALLED FOUR (4) TIMES. THE LOCKING FEATURE OF THE BLADE NUT WILL HAVE DECREASED AND BLADE COULD LOOSEN IF REPLACEMENT IS NOT MADE.

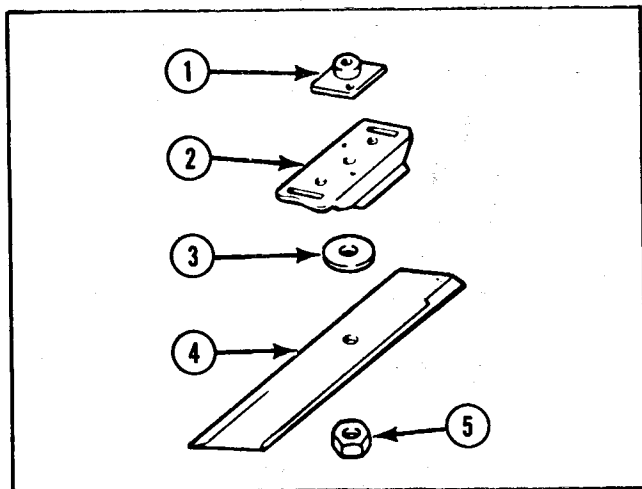
Before assembling collar on crankshaft, check to be sure it did not get bent or distorted when being removed. If so, replace it. Do not use, because, it will cause vibration.

If the blade nut is to be re-used, clean the threads thoroughly. Also clean threads on crank shaft. Apply OMC Ultra-Lock Part No. 388517 on the threads.



NOTE

When installing blade after sharpening and balance, torque blade nut to 45-50 ft. lbs.



- | | |
|--|----------|
| 1. Collar | 4. Blade |
| 2. Stiffener | 5. Nut |
| 3. Washer (20 and 21 inch models only) | |



A blade collar that was damaged and bent when being removed from crankshaft should always be replaced. If not replaced, a vibration in the mower and a rough, uneven or ragged cutting may result.

KEEP BLADE SHARP AND BALANCED

SAFETY WARNING

ALWAYS USE ORIGINAL EQUIPMENT REPLACEMENT BLADE AND ATTACHMENT HARDWARE TO INSURE COMPLIANCE WITH SAFETY SPECIFICATIONS. WHEN REINSTALLING BLADE, BE SURE PARTS ARE REPLACED IN THE SAME SEQUENCE IN WHICH THEY WERE REMOVED. ALWAYS REPLACE BLADE WITH CURVED EDGE UP (TOWARD HOUSING).

SCAMP AND UTILITY MODELS SELF-PROPELLED BELT DRIVE SERVICING

4502, 4503, 8602, 8603
WITH "F" SERIES ENGINES


Adjustments and servicing of the Scamp and Utility self-propelled mowers are very different from all previous models of self-propelled mowers.

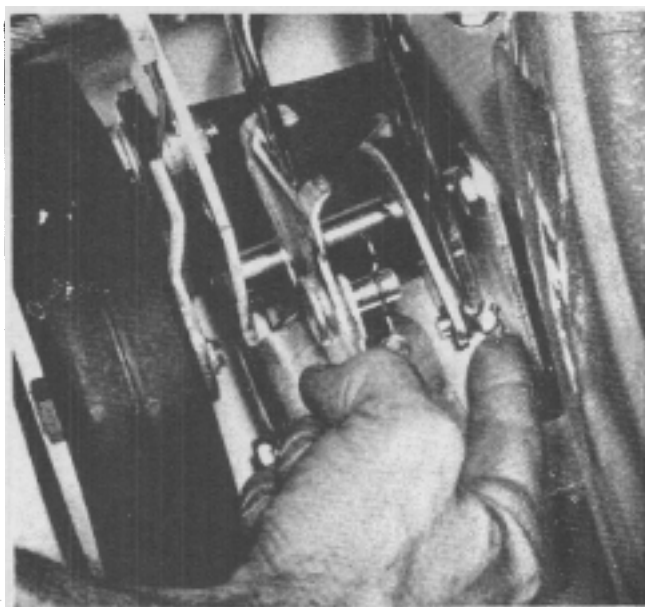
 SAFETY WARNING

BEFORE ANY ADJUSTMENTS OR REPAIRS ARE ATTEMPTED, DISCONNECT AND REMOVE SPARK PLUG TO PREVENT STARTING.




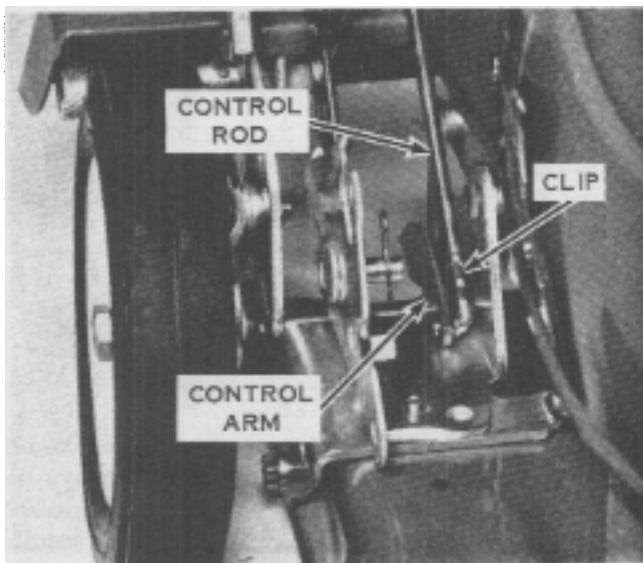
INSTALLING CONTROL ROD

1. Place retainer clip on clutch arm with long side of clip on the inside of clutch arm.
2. Align hole in clip with hole in arm and assemble lower end of the control rod in hole. 
3. Turn (swivel) long end of clip up and snap into position on lower control rod as shown.



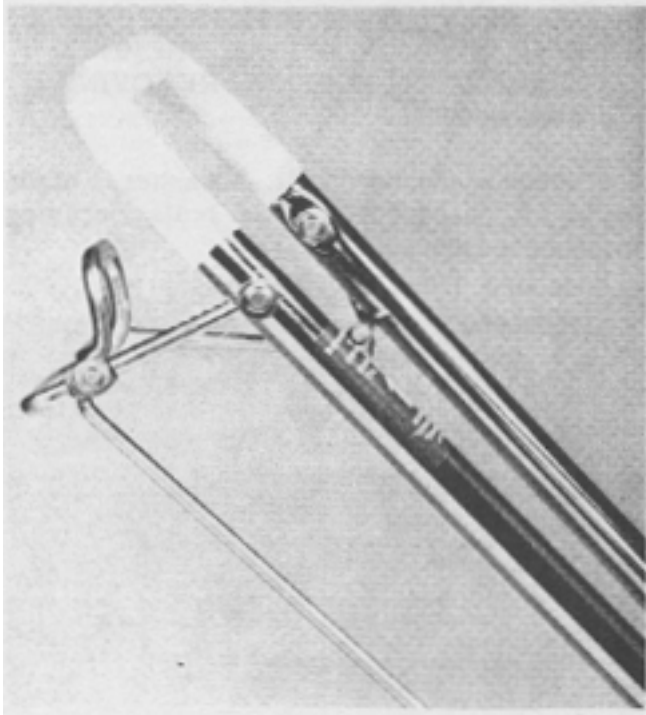
 SAFETY WARNING

THE LOWER SELF PROPEL CONTROL ROD MUST BE ASSEMBLED TO CLUTCH ARM AS SHOWN. IF NOT THE SELF PROPEL MECHANISM WILL NOT RETURN TO NEUTRAL WHEN THE CONTROL LEVER IS RELEASED FROM THE ENGAGED POSITION. 

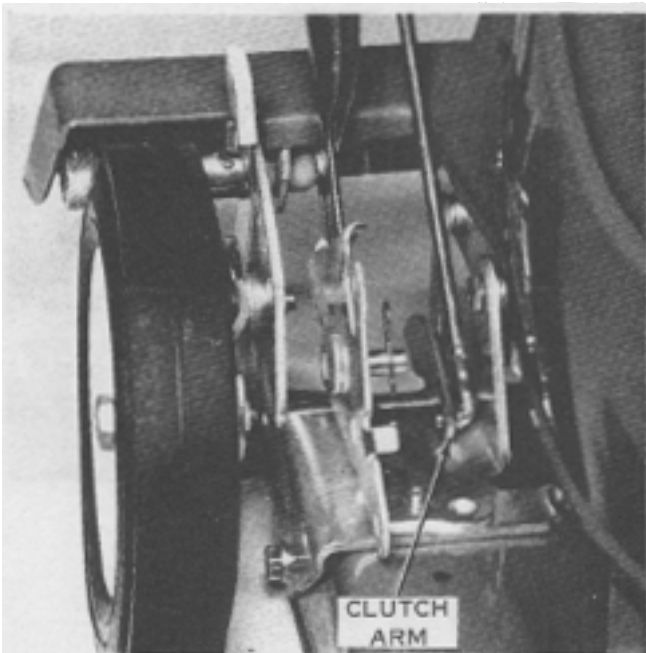


SCAMP AND UTILITY MODELS SELF-PROPELLED BELT DRIVE SERVICING

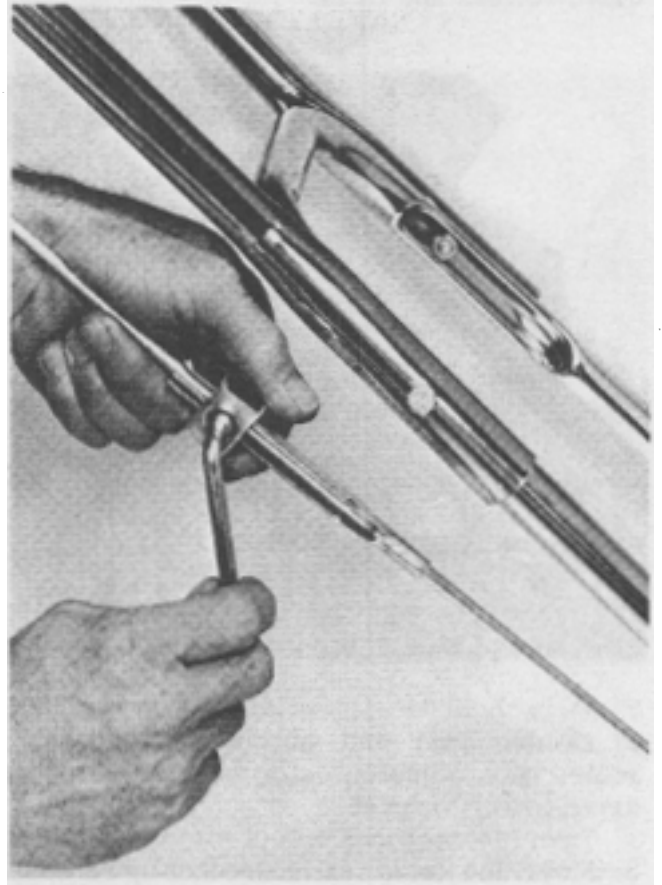
4. With the control handle in "neutral" (free) position as shown.



5. With the clutch arm resting on the handle and wheel bracket as shown.



6. Secure upper and lower control rods together with the clamp screw as shown. This screw should be tightened securely by hand.



SAFETY WARNING

IMPROPER TIGHTENING OF CLAMP SCREW ON CONTROL ROD MAY RESULT IN OPERATOR LOSS OF DRIVE CONTROL MECHANISM.

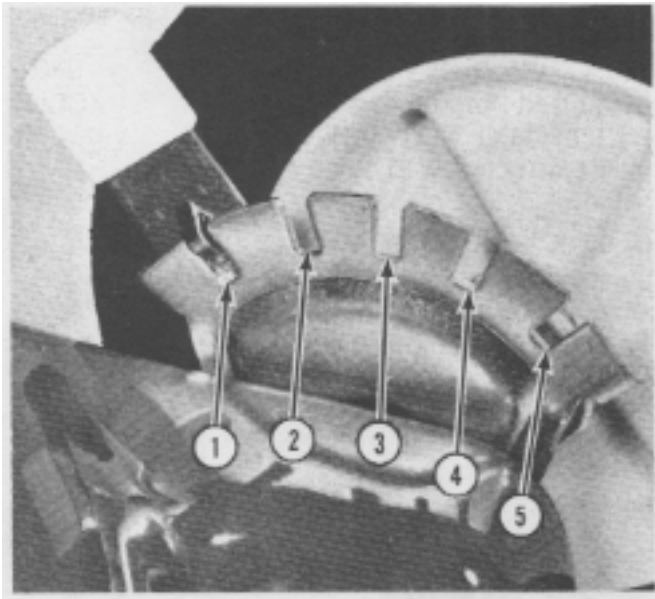
NOTE

To put mower in motion, pull upward on control handle and hold in drive position. To stop forward motion of mower, release control handle. Mower drive mechanism functions only when the control handle is held in "DRIVE" position.

SCAMP AND UTILITY MODELS SELF-PROPELLED BELT DRIVE SERVICING

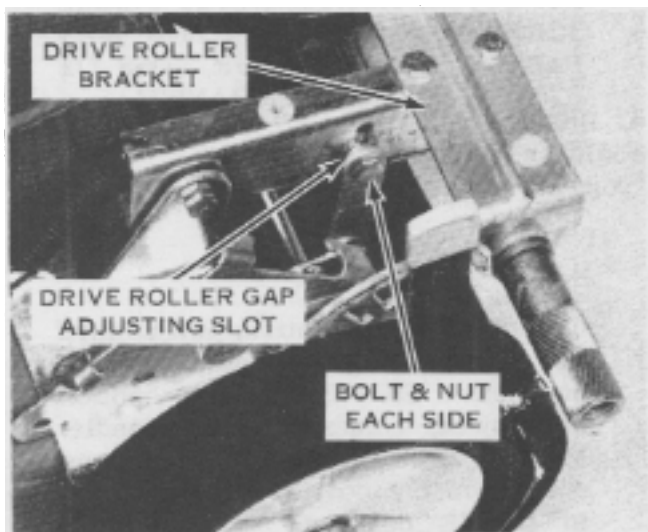
DRIVE ROLLER ADJUSTMENT

1. With the control handle in "Neutral", place both rear wheel height adjusters in #1 (lowest) cutting position as shown. A gap of 3/16" should appear between the drive rollers and tires.



2. Loosen bolt and nut located in drive roller gap adjusting slot on each side of drive roller bracket.

3. Move the drive roller bracket up or down to obtain the necessary 3/16" drive roller gap. Hold bracket in position and tighten both bolts and nuts securely.



ENGINE REMOVAL OR REPLACEMENT

⚠ SAFETY WARNING

TO PREVENT STARTING OF ENGINE, DISCONNECT AND REMOVE SPARK PLUG PRIOR TO REMOVING THE ENGINE.

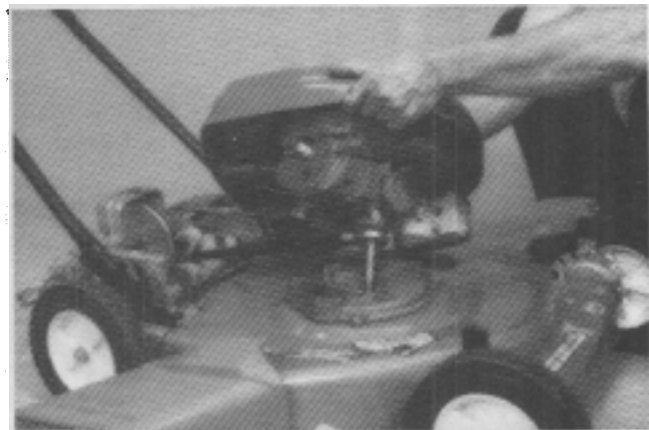
1. Remove blade bolt, washer, blade stiffener, collar and three bolts securing muffler and remove muffler.



2. Remove three bolts securing engine to muffler plate and remove engine.

NOTE

Do not remove muffler plate from housing when removing engine.



SCAMP AND UTILITY MODELS SELF-PROPELLED BELT DRIVE SERVICING

V BELT REMOVAL OR REPLACEMENT

SAFETY WARNING

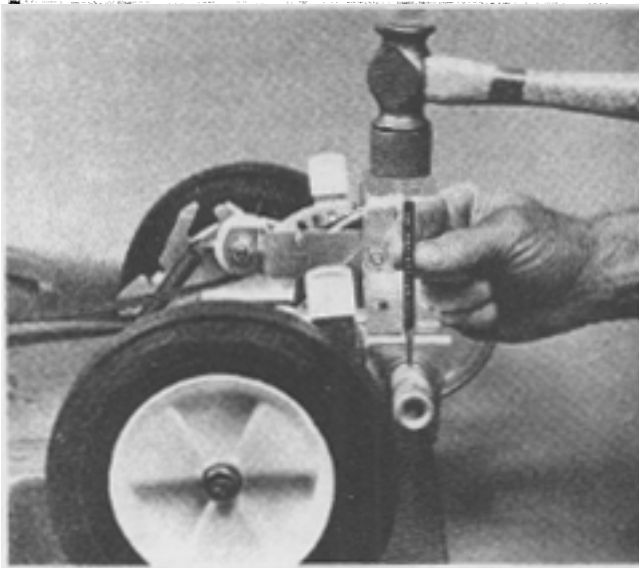
TO PREVENT STARTING ENGINE,
DISCONNECT SPARK PLUG LEAD
AND REMOVE SPARK PLUG.

The "V" belt used on the utility self-propelled model mowers is a **SPECIAL BELT**. DO NOT USE A SUBSTITUTE. It won't work as **WELL** or as **LONG**.



To remove the belt:

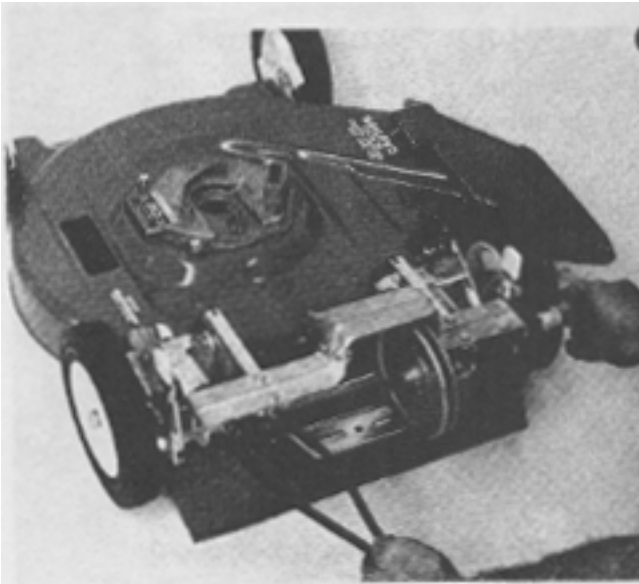
1. Remove four belt guard cover screws and remove cover.
2. Remove engine and remove drive belt from drive pulley.



SAFETY WARNING

DO NOT OPERATE MOWER WITH
BELT GUARD REMOVED.

3. Remove roll pin from left hand drive roller and remove roller.



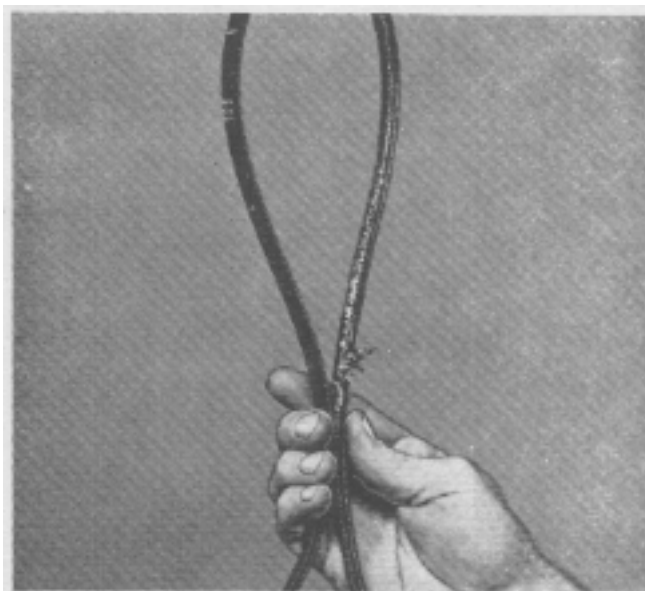
4. Remove belt from driven pulley and slide shaft assembly to the right. Remove belt from mower as shown.

SCAMP AND UTILITY MODELS SELF-PROPELLED BELT DRIVE SERVICING



NOTE

After the belt has been removed, examine for broken, cracked or misaligned pulleys. The condition and the wear pattern of the belt will provide clues for the above possibilities. Replace damaged or worn pulleys.



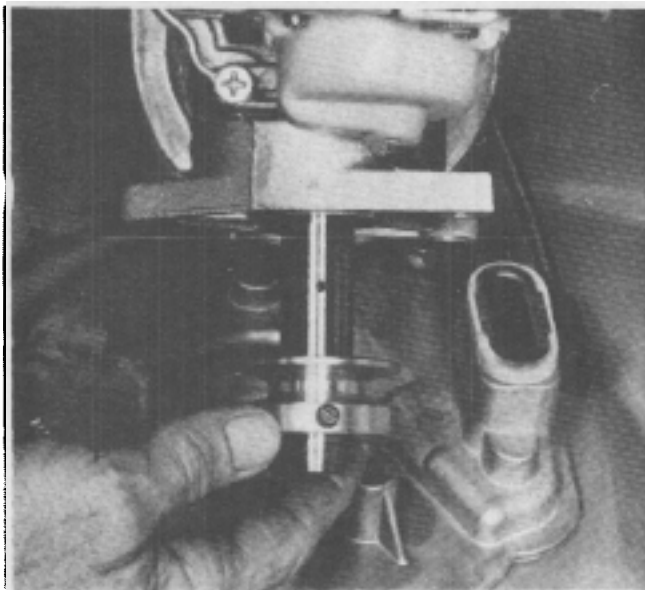
5. The crankshaft pulley (drive pulley) is secured to the crankshaft with a **SPECIAL** slotted set screw. The end of this screw locates in a hole in the crankshaft. The correct position and tightness is very **IMPORTANT**. If not tightened securely, damage to the pulley, crankshaft and premature wear of the drive belt will result.



NOTE

Apply OMC Ultra-Lock (part no. 388517) to threads of set screw prior to installation.

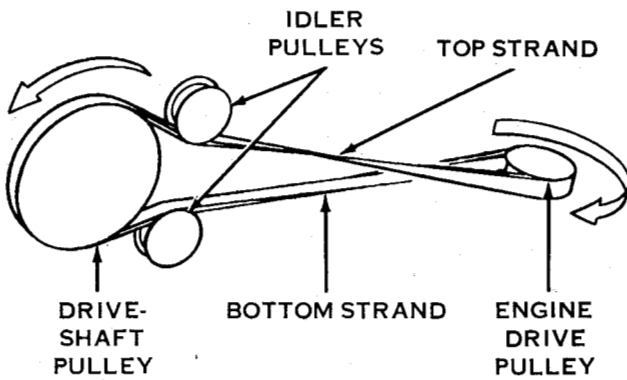
6. When reinstalling pulley to crankshaft, the side of the pulley with set screw is the lower side. If assembled upside down (set screw on top) misalignment and interference of pulley operation will result. Always check pulley for damage. Replace if necessary.



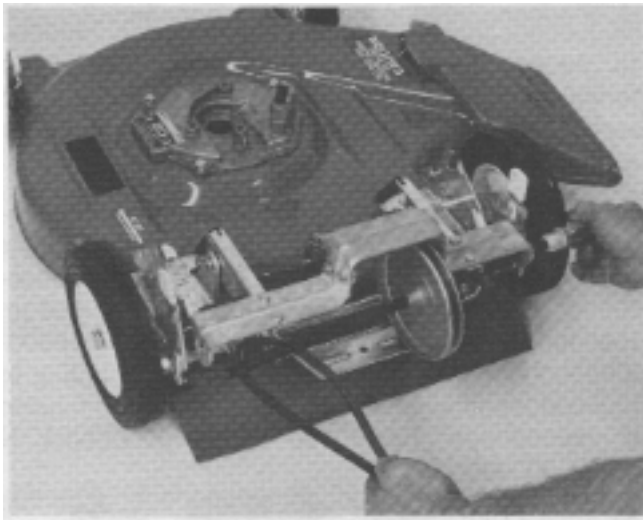
SCAMP AND UTILITY MODELS SELF-PROPELLED BELT DRIVE SERVICING

SAFETY WARNING

INCORRECT DRIVE BELT INSTALLATION MAY ALLOW MOWER TO OPERATE IN REVERSE DIRECTION CAUSING INJURY TO THE OPERATOR OR BYSTANDERS. ASSEMBLE DRIVE BELT AS SHOWN.



INSTALL BELT AS SHOWN
FOR PROPER PULLEY ROTATION



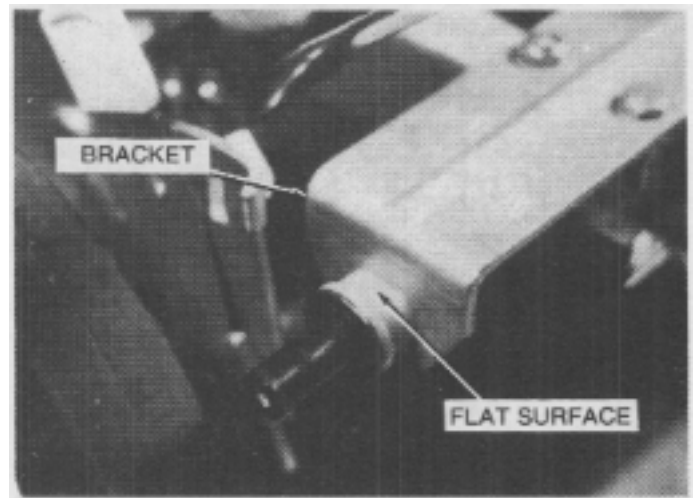
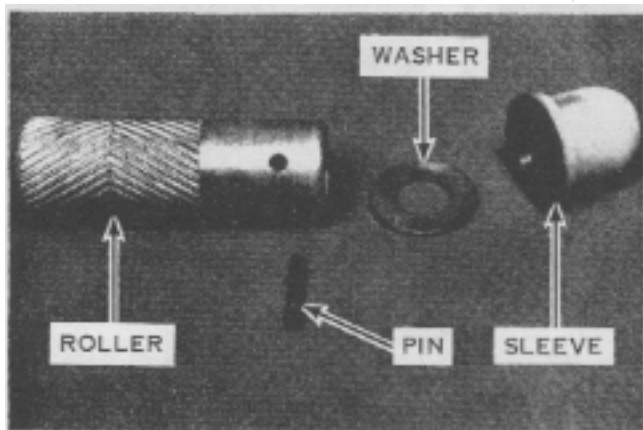
7. Place belt over left end of drive shaft as shown. Do not assemble on driveshaft pulley.

9. BUSHING AND BEARING INSTALLATIONS.

NOTE

The sleeve has a flat surface that matches the flat surface of the bracket. When re-assembling, the flat surfaces must match.

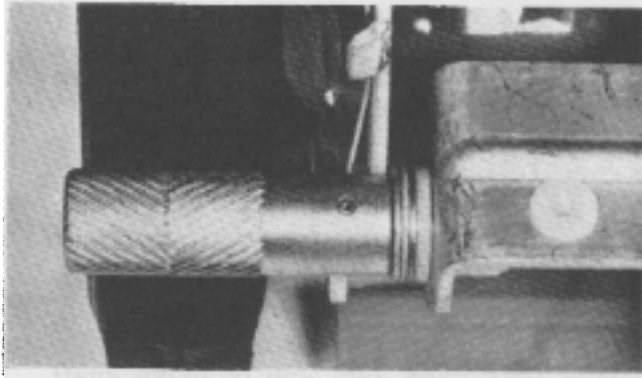
8. Check the condition of the driveshaft, bronze bearings, and sleeve. If signs of damage or wear appear, replace them.



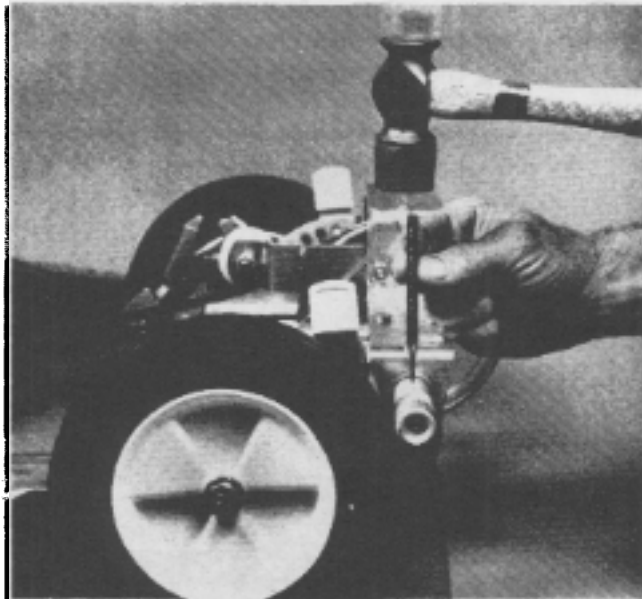
SCAMP AND UTILITY MODELS SELF-PROPELLED BELT DRIVE SERVICING

10. Reassemble the drive shaft into the bearing and slide it to the left as far as possible. Assemble the washer and drive roller on the drive shaft.

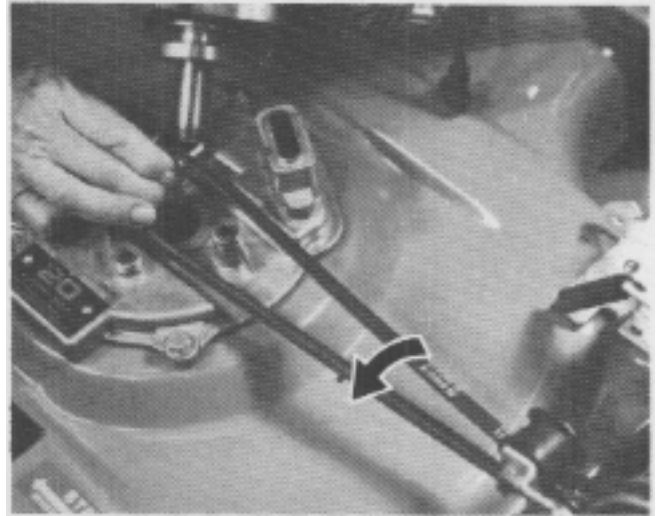
11. The drive rollers must be properly installed to utilize the self-cleaning feature. Proper installation is with the vee pointing toward the wheel.



12. Using a new roll pin, assemble the drive roller to the drive shaft. Use a 5/32" or larger drift punch, drive the roll pin into place, flush with the outer surface. Neither end should protrude beyond the roller surface.

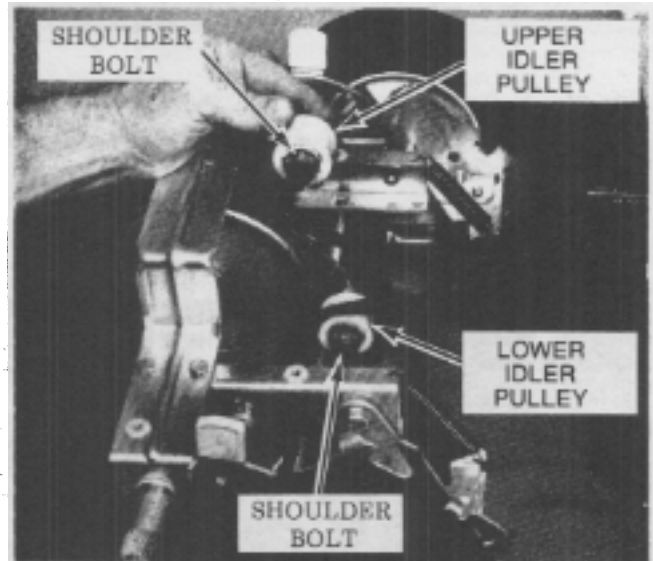


INSTALL BELT AS SHOWN
FOR PROPER PULLEY ROTATION



13. As you face the front of the mower, twist the forward end of the belt 1/4 turn counter clockwise and assemble on the engine drive pulley. Assemble engine on muffler plate and secure with three bolts.

14. Release spring tension on idler pulleys and assemble belt on drive shaft pulley. Reassemble idler pulley spring and rotate the belt several revolutions. Check to make sure the belt is centered on the pulleys and **TURNING IN RIGHT DIRECTION**. Note direction of arrow on large pulley in illustration above. Check and adjust belt tension if necessary. Refer to **BELT TENSION ADJUSTMENT**.



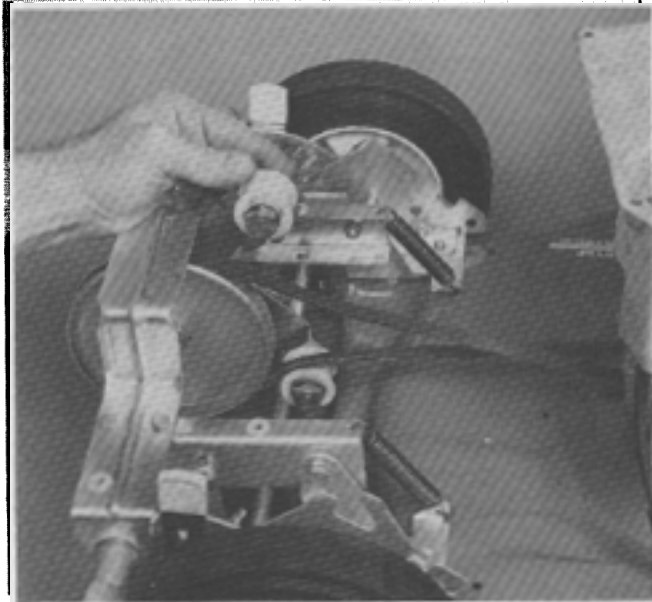
NOTE

When replacing either of the belt idler assemblies, use idler kit part no. 682374 for the top and kit part no. 682564 on the bottom.

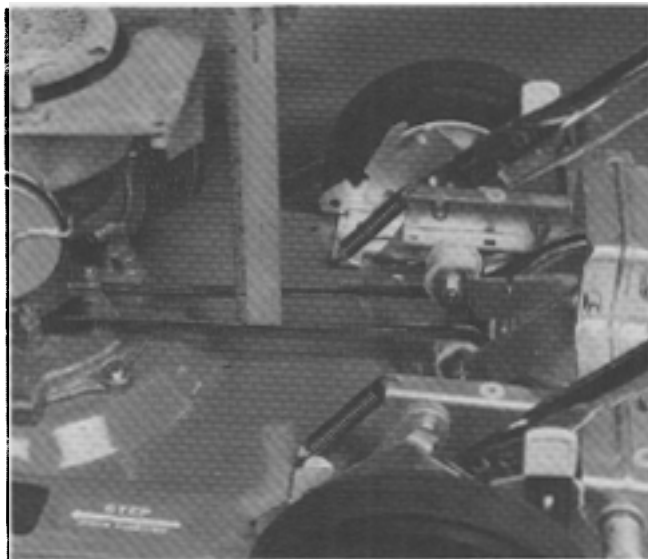
SCAMP AND UTILITY MODELS SELF-PROPELLED BELT DRIVE SERVICING

BELT TENSION ADJUSTMENT

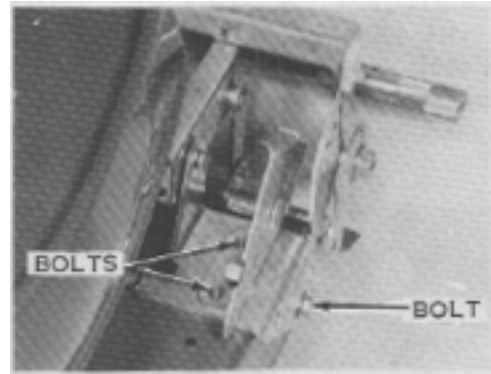
1. Check drive belt installation. Drive belt must be installed between idler pulleys as shown.



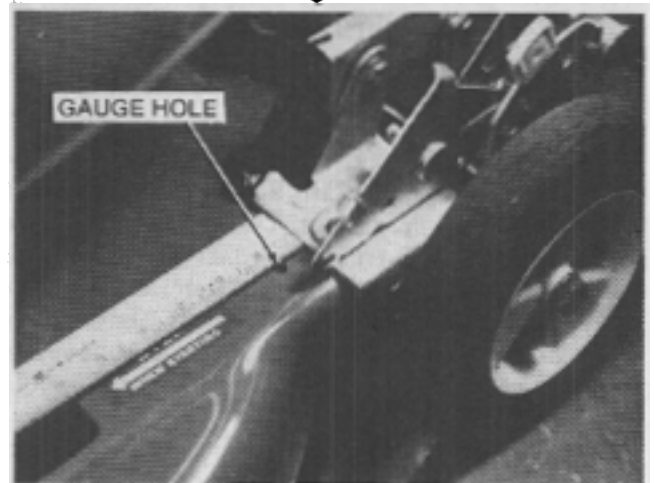
2. Drive belt should be checked to insure that proper tension exists in order to prevent premature belt failure. Lift floating idler from the upper strand of "V" belt. Belt will then become loose. Set floating idler onto "V" belt and check clearance between the two strands of the "V" belt. The distance between the two strands should not be less than 1/2" as shown.



3. To adjust belt tension; loosen four handle bracket mounting screws (two on each bracket) and two screws (one on each side) located on the sides of rear height adjuster bracket as shown. Slide entire self-propelling mechanism in direction necessary to obtain the proper "V" belt tension.



4. Care should be taken to insure that both sides of the self-propelling mechanism are positioned equally on the mower housing. This can be accomplished by measuring the distance from the front edge on the height adjuster brackets to the 1/4" diameter gage holes located directly in front of these brackets as shown. This distance must be the same for both sides. Before tightening screws make sure the distance between the strands of the "V" belt is not less than 1/2". Tighten the four handle bracket screws and the two side screws securely. Reassemble belt guard to self-propel mechanism using screws previously removed.



SAFETY WARNING

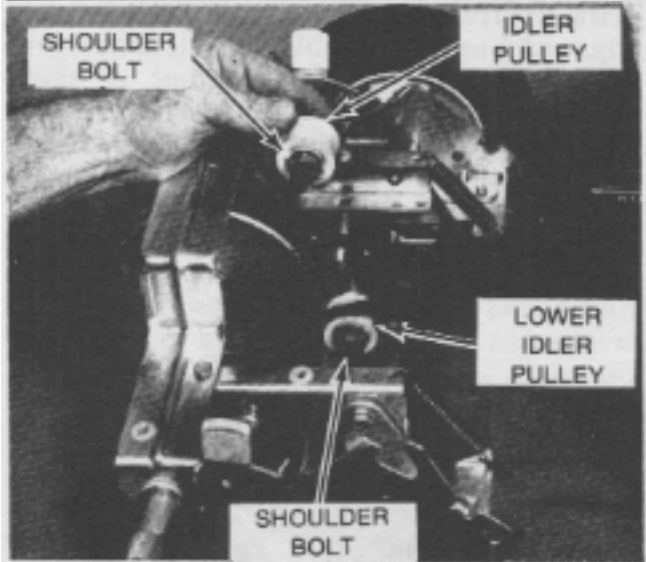
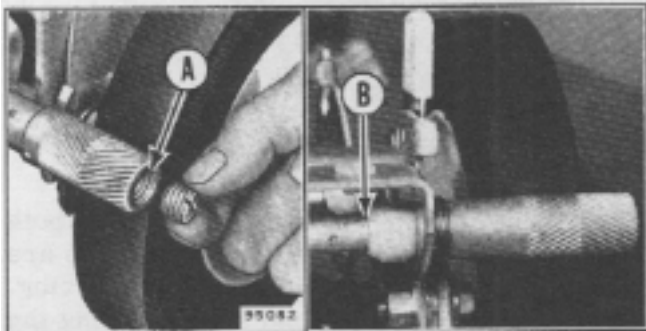
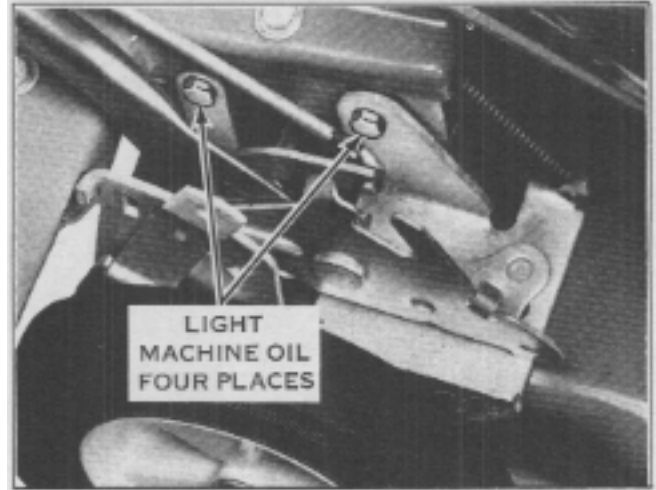
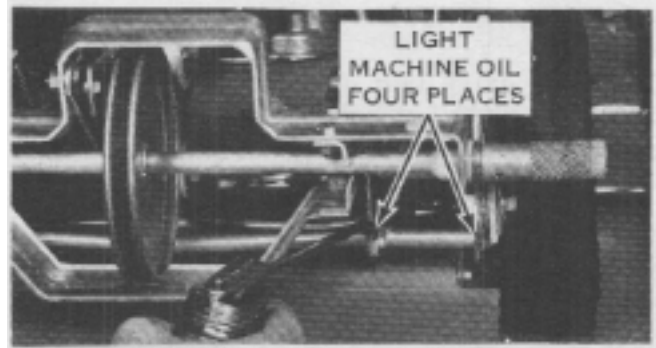
**DO NOT OPERATE MOWER WITH
BELT GUARD REMOVED.**

SCAMP AND UTILITY MODELS SELF-PROPELLED BELT DRIVE SERVICING

LUBRICATION

10 HOURS

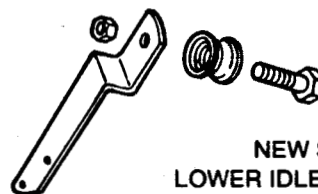
1. **DRIVE ROLLER BEARINGS**—Disassemble rotating shaft cover from self-propel mechanism by removing four screws. Unscrew plug from end of each drive roller (Point "A"). Fill exposed cavity with LAWN-BOY "A" GREASE, PART NO. 610721 OR EQUIVALENT. Replace plug and tighten until snug. Repeat procedure until lubricant appears on cross-shaft at Point "B". Reassemble rotating shaft cover to self-propel assembly.



FLOATING IDLER PULLEY—Do not immerse the idler pulley in solvent. Use a rag containing solvent, clean the hole in the idler pulley and the shoulder bolt thoroughly. Using a small amount of LAWN-BOY A GREASE or EQUIVALENT, re-lubricate the shoulder bolt and remount idler pulley assembly in the same order it was originally.

AS REQUIRED

1. **CLUTCH LINKAGE**—Apply several drops of light machine oil on clutch mechanism at all pivoting points.



NEW STYLE
LOWER IDLER ASSEMBLY
BOLT-PULLEY-ARM-NUT
PART #682564

LOWER IDLER PULLEY — Permanently lubricated. No lubrication required.

UTILITY MODELS 4502 AND 8602 SCAMP MODELS 4503 AND 8603 SELF-PROPELLED SERVICING

On 4502, 4503, 8602, 8603 models of Utility and Scamp mowers, a blade nut has replaced the blade bolt previously used on earlier models.

▲ SAFETY WARNING

THE BLADE NUT MUST BE REPLACED AFTER BEING REMOVED AND REINSTALLED FOUR (4) TIMES. THE LOCKING FEATURE OF THE BLADE NUT WILL HAVE DECREASED AND BLADE COULD LOOSEN IF REPLACEMENT IS NOT MADE.

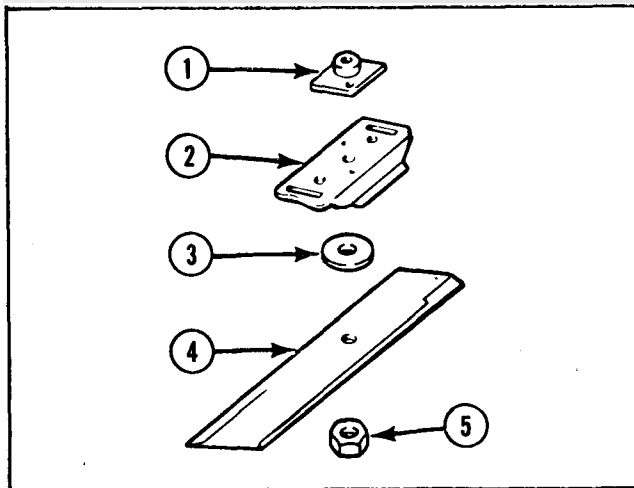


Before assembling collar on crankshaft, check to be sure it did not get bent or distorted when being removed. If so, replace it. Do not use, because, it will cause vibration.

If the blade nut is to be re-used, clean the threads thoroughly. Also clean threads on crank shaft. Apply OMC Ultra-Lock Part No. 388517 on the threads.

■ NOTE

When installing blade after sharpening and balance, torque blade nut to 45-50 ft. lbs.



- | | |
|--|----------|
| 1. Collar | 4. Blade |
| 2. Stiffener | 5. Nut |
| 3. Washer (20 and 21 inch models only) | |

▲ SAFETY WARNING

ALWAYS USE ORIGINAL EQUIPMENT REPLACEMENT BLADE AND ATTACHMENT HARDWARE TO INSURE COMPLIANCE WITH SAFETY SPECIFICATIONS. WHEN REINSTALLING BLADE, BE SURE PARTS ARE REPLACED IN THE SAME SEQUENCE IN WHICH THEY WERE REMOVED. ALWAYS REPLACE BLADE WITH CURVED EDGE UP (TOWARD HOUSING).



A blade collar that was damaged and bent when being removed from crankshaft should always be replaced. If not replaced, a vibration in the mower and a rough, uneven or ragged cutting may result.

KEEP BLADE SHARP AND BALANCED

REVISED 1983

10-53

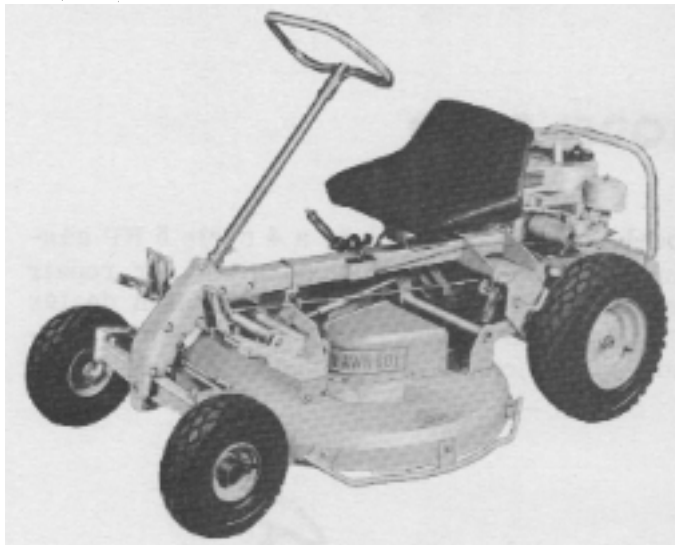
CONTENTS OF RIDING MOWER SECTION

MODELS 9300, 9301

Models 9300 and 9301 are powered by a 4 cycle 6 HP gasoline engine. For engine servicing or repair, contact your local Briggs and Stratton dealer or the Briggs and Stratton Corporation, Milwaukee, Wisconsin.



MODEL 9301 ILLUSTRATED



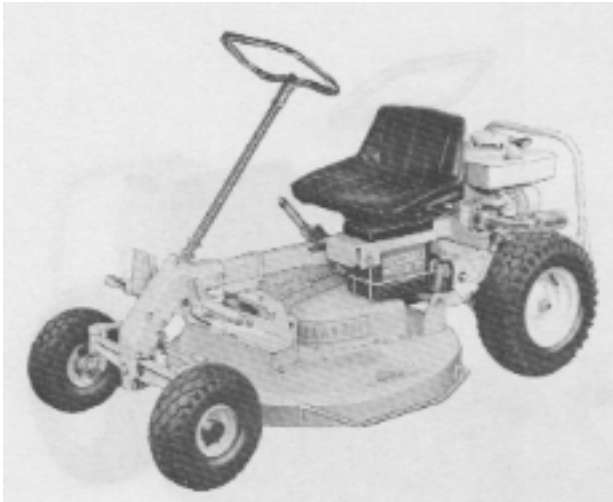
MODEL 9302

Model 9302 is powered by a 4 cycle 7 HP gasoline engine. For engine servicing or repair, contact your local Briggs and Stratton dealer or the Briggs and Stratton Corporation, Milwaukee, Wisconsin.

MODEL 9302E

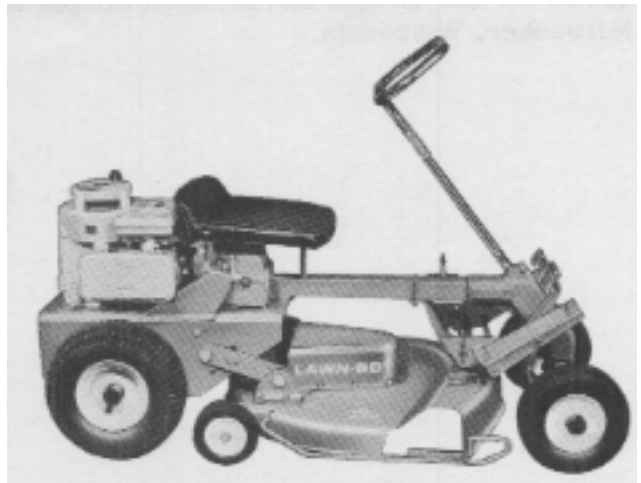
Model 9302E is powered by a 4 cycle 7 HP gasoline engine. For engine servicing or repair, contact your local Tecumseh dealer or the Lauson-Power Products Division, Grafton, Wisconsin.





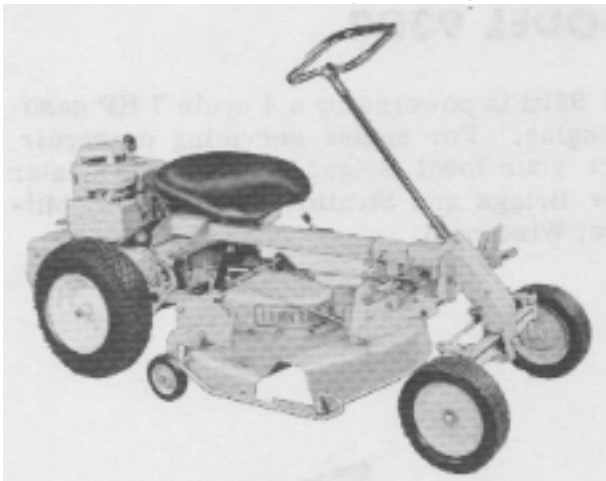
MODEL 9303E

Model 9303E is powered by a 4 cycle 7 HP gasoline engine. For engine servicing or repair, contact your local Tecumseh dealer or the Lauson-Power Products Division, Grafton, Wisconsin.



MODEL 9500

Model 9500 is powered by a 4 cycle 5 HP gasoline engine. For engine servicing or repair, contact your local Briggs and Stratton dealer or the Briggs and Stratton Corporation, Milwaukee, Wisconsin.

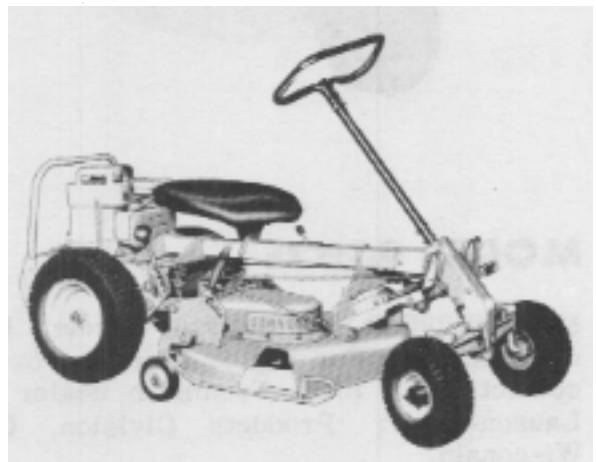


MODEL 9600

Model 9600 is powered by a 4 cycle 5 HP gasoline engine. For engine servicing or repair contact your local Briggs and Stratton dealer or the Briggs and Stratton Corporation, Milwaukee, Wisconsin.

MODEL 9601

Model 9601 is powered by a 4 cycle 5 HP gasoline engine. For engine servicing or repair, contact your local Briggs and Stratton dealer or the Briggs and Stratton Corporation, Milwaukee, Wisconsin.



CONTENTS OF RIDING MOWER SECTION

MODELS 9328

9328E

9328ES

9368

9368E

9368ES



Models 9328, 9328E, 9328ES, 9368, 9368E and 9368ES compact riders are propelled by a geared transmission with three forward speeds and reverse. Maximum speed in first gear is: 2.6 MPH, second gear 4.0 MPH, third gear 5.9 MPH and reverse gear 2.6 MPH.

The 32 or 36 inch floating pan may be adjusted to 5 different cutting positions between 1-3/8 inches and 2-7/8 inches. The front wheels are semi-pneumatic while the rear tires are fully pneumatic and maintain 16-18 pounds air pressure.

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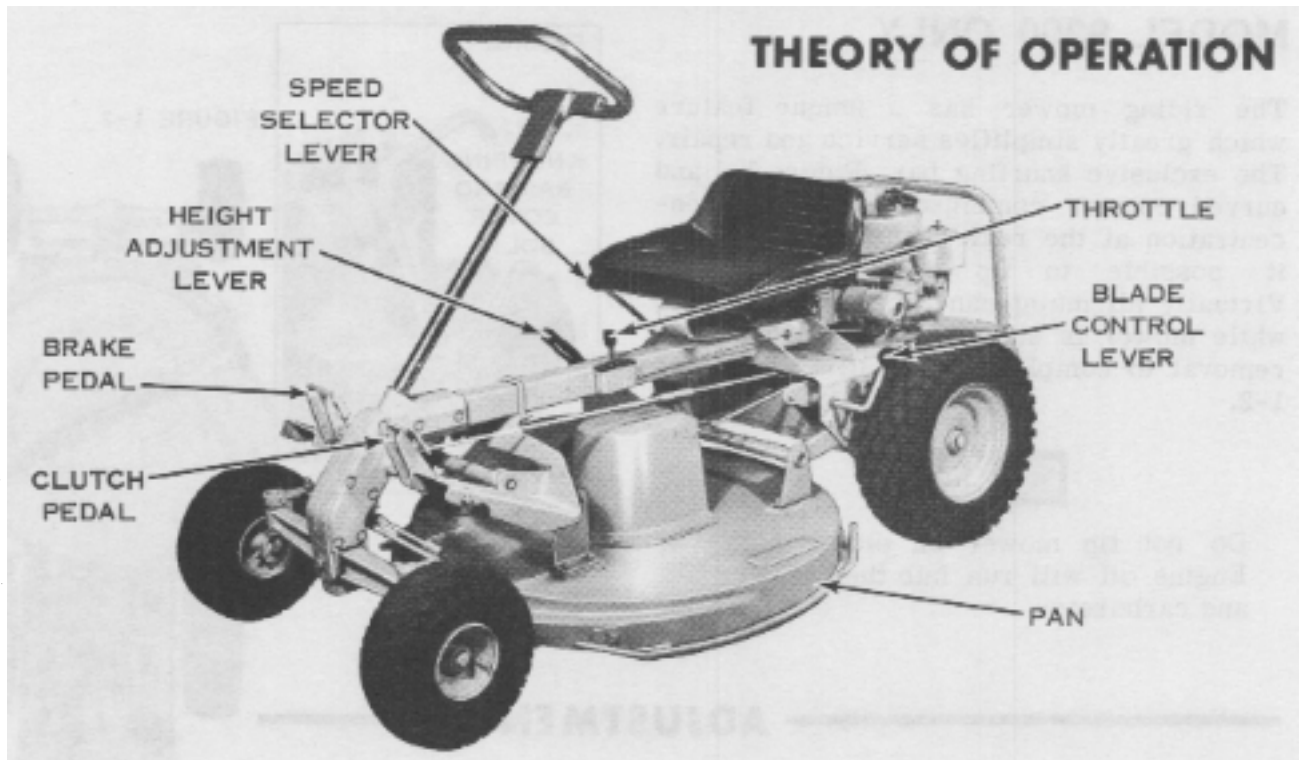
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CHAPTER I MODEL 9300 ONLY

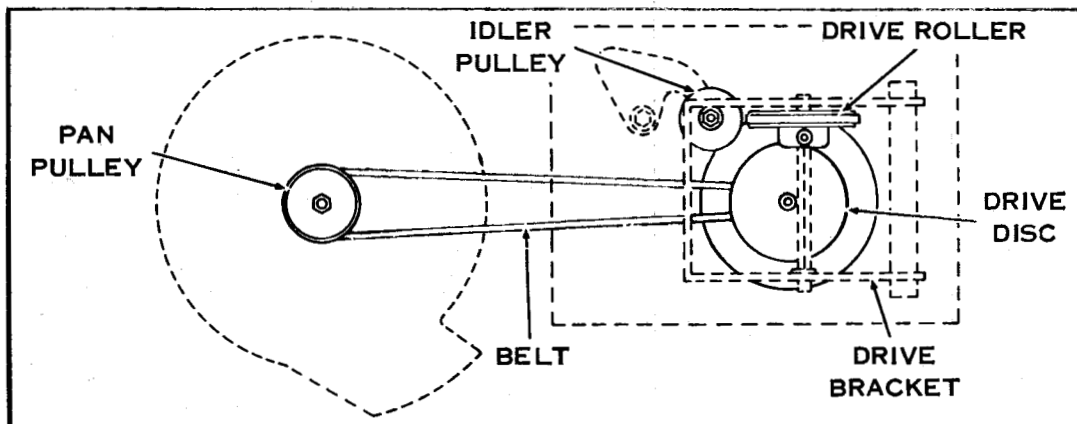


The Riding Mower is powered by a 4 cycle gasoline engine. Power to drive the rear wheels is derived from a rubber tired roller driven by a disc attached to the engine crankshaft, and transmitted by chain to the rear wheels. Mower travel speed is controlled by the speed selector which is linked to the drive roller. As the speed selector is shifted, the drive roller is moved across the face of the drive disc, thus varying the drive roller RPM.

The blade is belt driven from a pulley on the crankshaft. Blade speed is controlled by engine RPM, NOT MOWER TRAVEL SPEED. The blade control lever is a posi-

tive engagement over-center type of control. An idler pulley linked to this control applies tension to the belt when the lever is in the "down" position and removes tension when the lever is moved to the "UP" position. The blade brake is applied when the blade control lever is in the "up" position.

Brake and clutch foot pedals used for emergency stopping and uphill starts are located adjacent to the steering column. The throttle is located on the main frame midway between the steering column and operator's seat. The height adjusting lever on the pan provides five different cutting heights from 1-1/2 inches to 3-1/2 inches. The mower pan is free floating which prevents scalping.

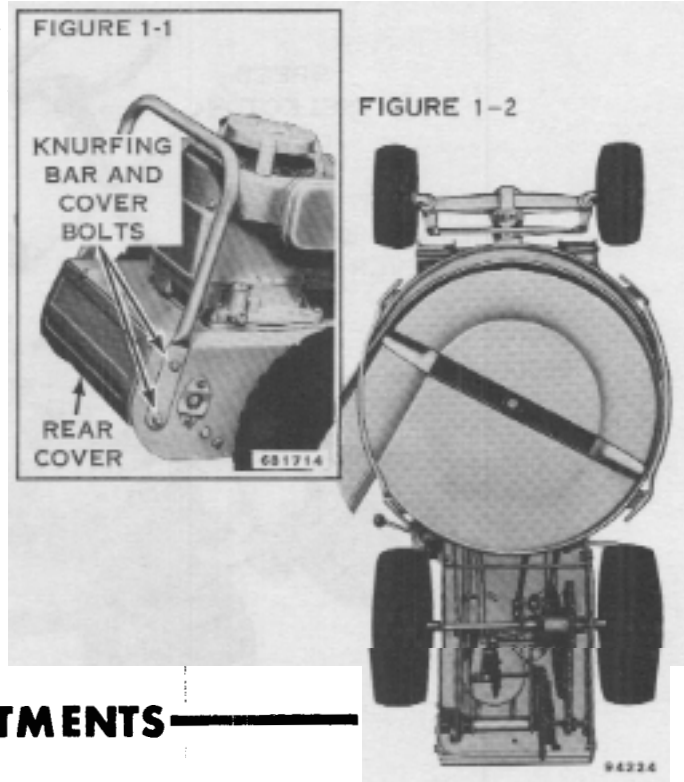


MODEL 9300 ONLY

The riding mower has a unique feature which greatly simplifies service and repair. The exclusive knurping bar, Figure 1-1 and curved contour combined with weight concentration at the rear of the mower, makes it possible to tip the mower on end. Virtually all maintenance can be performed while mower is standing on end, from blade removal to complete overhaul. See Figure 1-2.

 **NOTE**

Do not tip mower on either side. Engine oil will run into the cylinder and carburetor.



ADJUSTMENTS

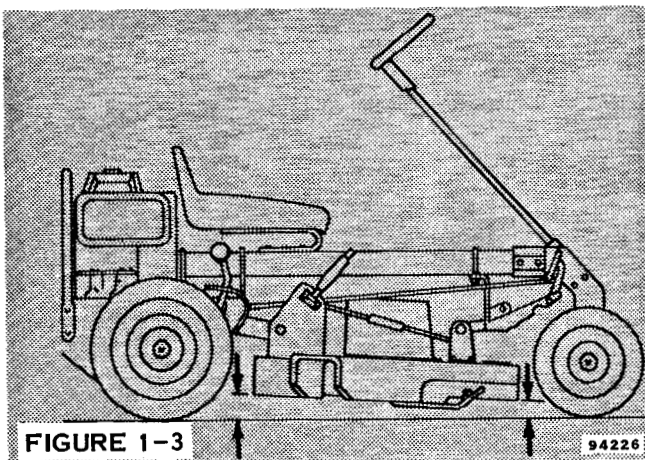
PAN TILT

Correct pan tilt:

Measure the distance from the ground to the top of the cutout at the front of the pan, and from the ground to the bottom edge at the rear of the pan. The measurement at the rear of the pan must be 1/8 inch less than the front measurement. This will provide a 1/4 inch tilt to the pan and prevent double cutting. See Figure 1-3.

 **NOTE**

Always adjust pan tilt on a flat level surface.

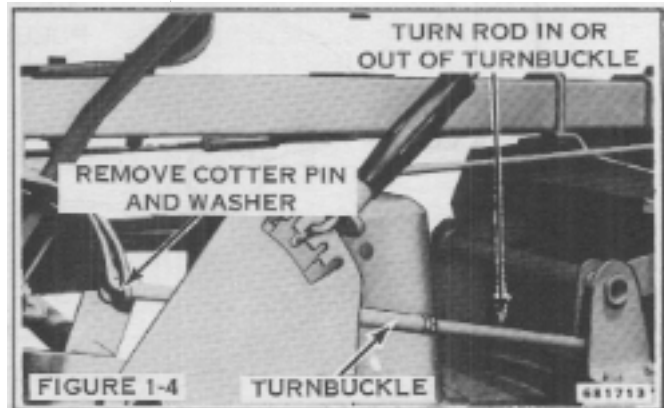


To adjust tilt:

1. Remove cotter pin and washer from one end of adjusting rod.
2. Loosen locknut and turn rod in or out of the turnbuckle as required to obtain the proper pan tilt. See Figure 1-4.
3. Install the rod in the bracket and secure with cotter pin and washer.

 **NOTE**

Pan tilt adjustment can be made with height adjusting lever in any of the five positions.



BLADE BRAKE ADJUSTMENT

1. Shut off engine by placing throttle control lever in STOP position.
2. Place blade control lever in OFF position.
3. Place speed selector in NEUTRAL.
4. Be certain blade attaching nut is secure.
5. Loosen both front and rear locknuts.
6. Restart engine. Set throttle control "FAST" position.
7. The front adjustment nut should be just snug against the stop, loosen or tighten as required to obtain blade stoppage in not less than 6 or more than 10 seconds with engine operating at 3600 RPM. See Figure 1-5.



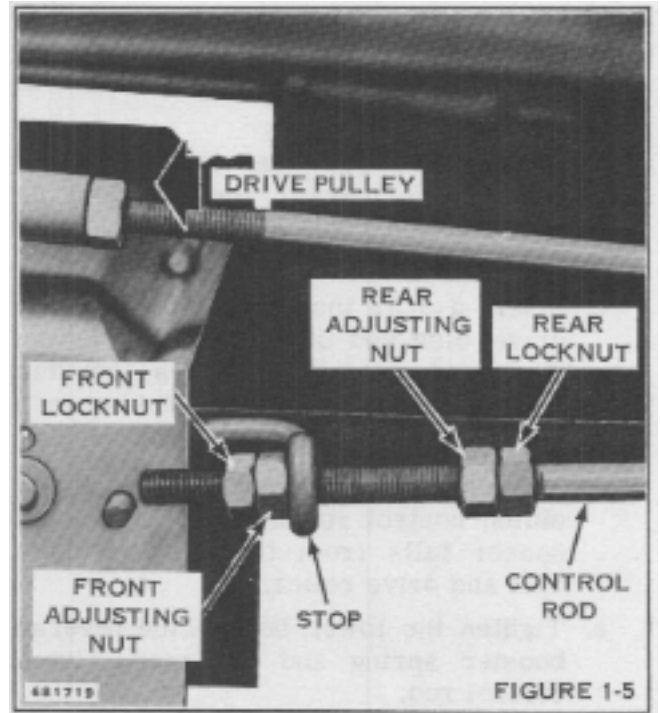
SAFETY WARNING

BLADE STOPPAGE CHECK SHOULD BE MADE VISUALLY BY OBSERVING DRIVE PULLEY. DO NOT PLACE HANDS UNDER HOUSING.

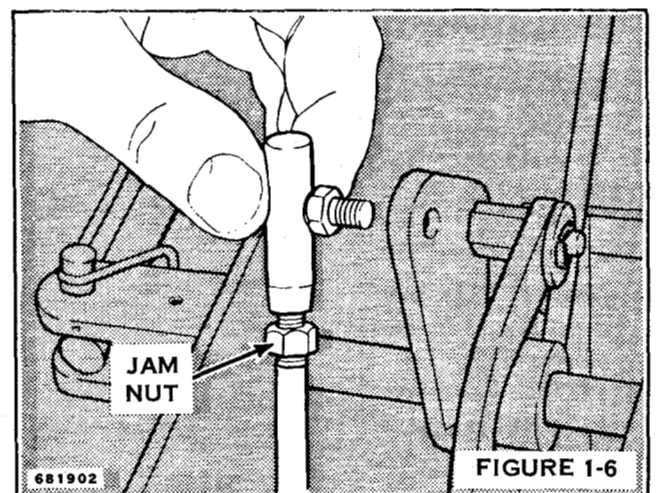
8. When proper adjustment is obtained securely tighten front locknut.
9. Place blade control lever in RUN position.
10. Loosen rear adjustment nut on blade control rod and then tighten it until it just makes contact with the stop, then tighten one turn more. Securely tighten rear locknut. See Figure 1-5.

SPEED SELECTOR LEVER

1. Drive Roller Travel.
 - a. Place the speed selector lever in "neutral" and loosen the jam nut on the speed control rod.
 - b. Remove the nut securing ball stud to the bell arm assembly. See Figure 1-6.



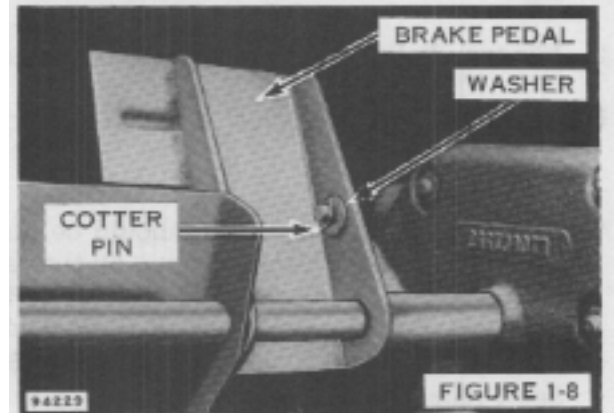
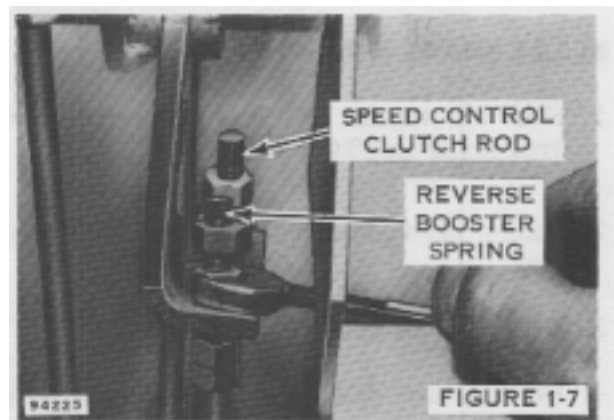
- c. Turn the ball joint onto the rod to lengthen travel - off the rod to shorten travel. Proper adjustment should place the drive disc exactly over the center of the drive plate $\pm 1/16$ " when speed selector lever is in the "neutral" position.
- d. When proper adjustment is reached, attach ball joint to the bell arm assembly and tighten nut securely. Tighten jam nut against the ball socket.



MODEL 9300 ONLY

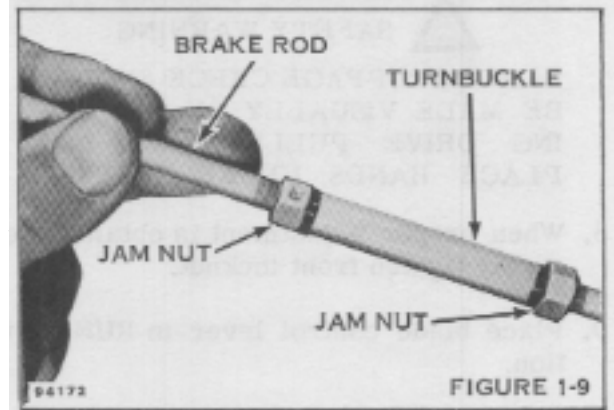
2. Drive Bracket Travel.

- a. Place the speed selector lever in neutral position.
- b. Loosen the upper and lower nuts on the reverse booster spring and on the speed clutch control rod. See Figure 1-7.
- c. Insert a $\frac{3}{32}$ inch spacer between the drive disc and drive roller. Tighten the upper nut on the reverse booster spring until the spacer is held between the disc and roller.
- d. Tighten the upper nut on the speed clutch control rod until the $\frac{3}{32}$ inch spacer falls from between the drive disc and drive roller.
- e. Tighten the lower nuts on the reverse booster spring and the speed clutch control rod.



BRAKE ADJUSTMENT

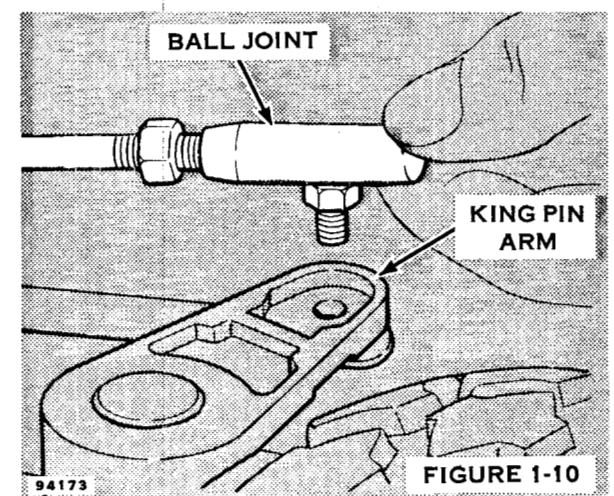
1. Remove the cotter pin and washer from the brake rod at the foot pedal. See Figure 1-8.
2. Loosen the jam nuts at the turnbuckle, and turn the front brake rod into or out of the turnbuckle. See Figure 1-9. Proper adjustment is obtained when slight pressure on the pedal encounters resistance after $\frac{1}{2}$ inch pedal travel.
3. Tighten the jam nuts at the turnbuckle and reassemble the brake rod to the foot pedal.



STEERING WHEEL ALIGNMENT

If the steering wheel does not line up properly with the front wheels, it can be aligned as follows:

1. Remove the nut securing ball joint to king pin arm. See Figure 1-10.
2. Loosen the jam nut at the ball joint socket and turn the ball joint onto or off the rod until the steering wheel is aligned with the front wheels.
3. Assemble the ball joint to the king pin arm and tighten the jam nut.



MODEL 9300 ONLY TIRES AND WHEELS

TIRES

The tires should be inspected for cuts, abrasions and other damage whenever mower is serviced. Make sure the tires are inflated to the recommended pressure. Front tire pressure is 15-17 lbs. Rear tire pressure is 22-25 lbs. Check tires with a tire pressure gauge. DO NOT over-inflate tires.

Unless you are properly equipped to repair the tires, it is recommended that repair be accomplished by a service station or tire shop equipped to handle tires of this size.

FRONT WHEEL REMOVAL

To remove front wheels, insert a screwdriver in the "E" shaped retaining ring and pry the ring off the spindle.

⚠ SAFETY WARNING

CUP YOUR HAND AROUND THE RING TO PREVENT LOSS OF IT OR POSSIBLY INJURING YOU OR A BYSTANDER.

See Figure 1-11. Slide the wheel off the spindle.

Inspect the spindle and wheel bushing for signs of wear. Replace bushings if they are badly worn. See LUBRICATION SPECIFICATIONS on Page 11-21.

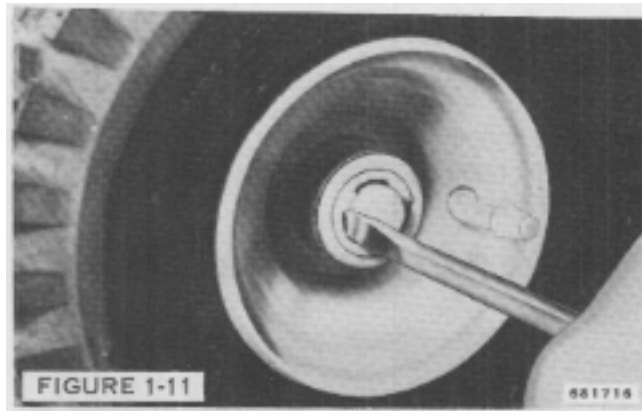


FIGURE 1-11

881716

REAR WHEEL REMOVAL

To remove the rear wheels, tip the mower up on end. Remove the nuts and washers holding the wheels on the axles. See Figure 1-12. Use a hard rubber or rawhide mallet and drive the wheel off the axle. Turn the wheel while striking it so it is driven off evenly.

The rear wheels are keyed to the axles and require considerable force to drive them off the axle.

⚠ SAFETY WARNING

WHEN STANDING MOWER ON END, ALWAYS ANCHOR IT TO PREVENT FROM TIPPING OR FALLING. ALSO PLACE THROTTLE IN "STOP" POSITION AND DISCONNECT SPARK PLUG LEAD.

📌 NOTE

Axles may be equipped with Woodruff Keys (HALF MOON) or Straight Keys. See Figures 1-13 and 1-14.

Whenever the rear wheels are removed, examine the keys and the keyslots in the axle and wheel. If key is worn, it should be replaced. If the keyslot in the axle or wheel becomes damaged or excessively worn the worn part must be replaced.

Prior to replacing rear wheels apply a thin coat of Lawn-Boy "A" grease for easy removal at a later time.

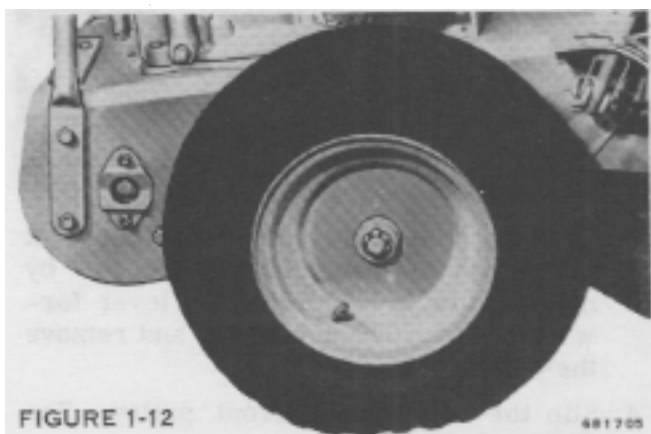


FIGURE 1-12

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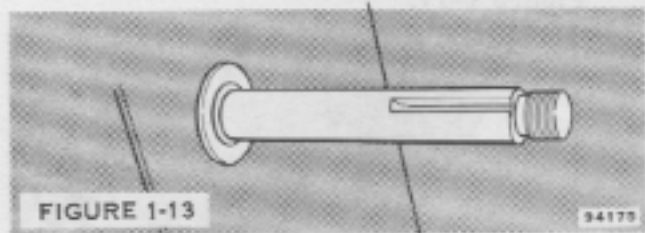


FIGURE 1-13

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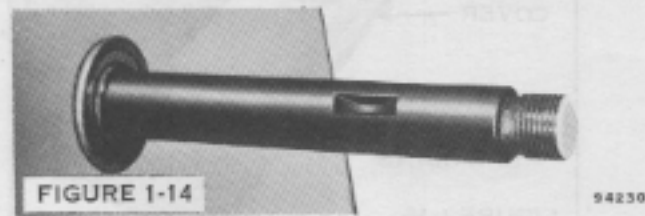


FIGURE 1-14

94230

MODEL 9300 ONLY

RIDING MOWER V-BELT

The riding mower V-belt is a special belt selected for strength and durability. Don't use a substitute - it will not last as long nor work as well. Frayed or worn belts should always be replaced.



SAFETY WARNING

ALWAYS PLACE THROTTLE CONTROL IN "STOP" POSITION AND DISCONNECT SPARK PLUG LEAD BEFORE INSPECTING OR REPAIRING THE MOWER.

TO REMOVE OR CHANGE BELT

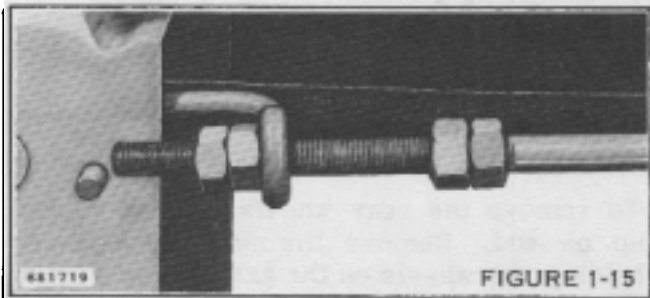


FIGURE 1-15

2. Insert a screwdriver or wrench under the belt retaining rod, and apply pressure until rod slips out of notch in the belt cover. Remove the rod from the housing. See Figure 1-16.

1. Place blade control lever in "off" position, and remove the two front nuts from blade control rod. See Figure 1-15.

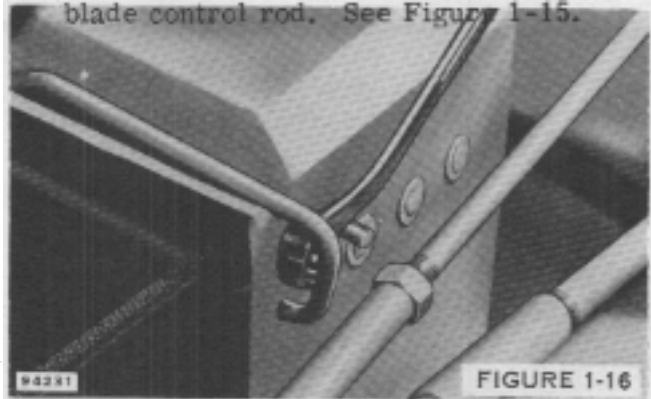


FIGURE 1-16

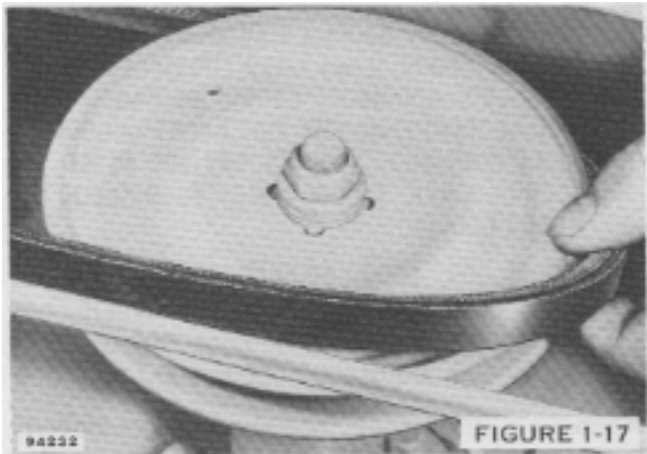


FIGURE 1-17

3. Remove the bolts securing the belt cover to the pan. Lower the pan by moving the height adjusting lever forward to the lowest setting, and remove the belt cover.

4. Slip the belt off the front pulley. See Figure 1-17.

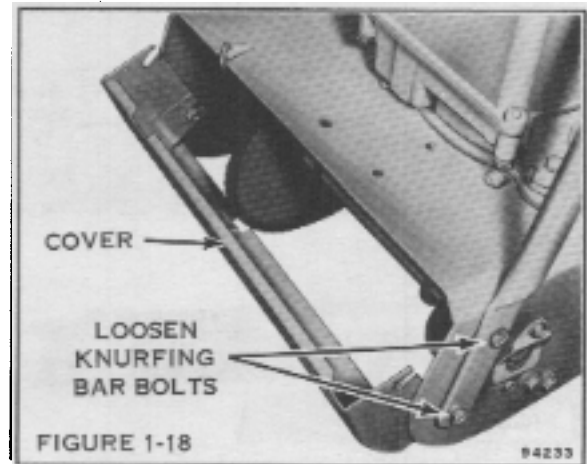


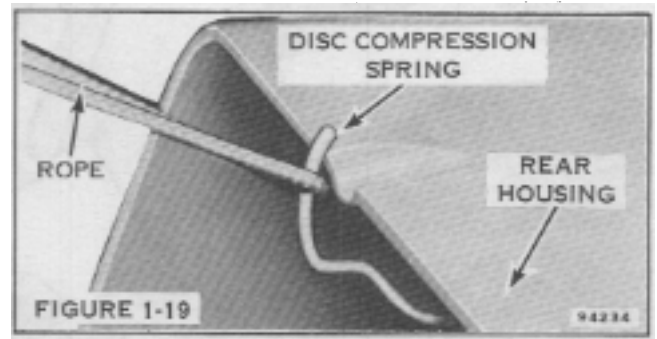
FIGURE 1-18

5. Loosen (DO NOT REMOVE) the bolts securing the knurping bar and rear cover to the rear housing.

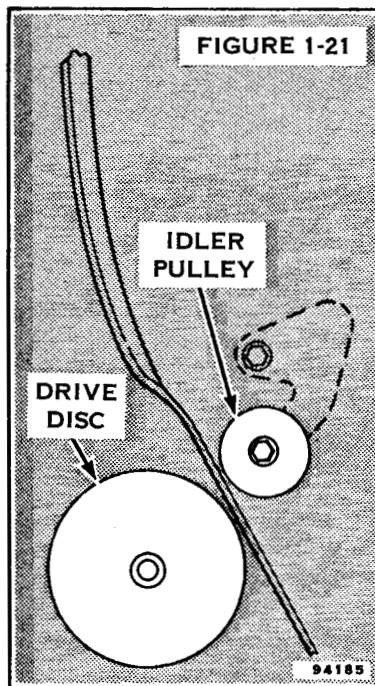
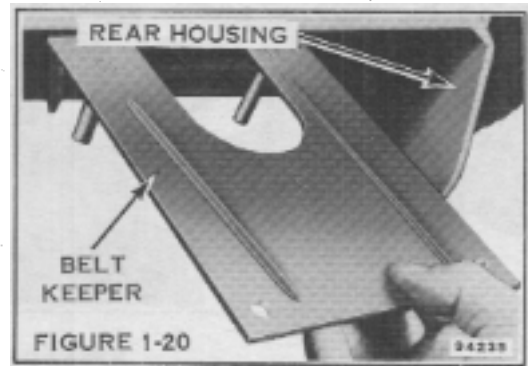
6. Swing the rear cover down and remove it. Retighten the knurping bar bolts. See Figure 1-18.

MODEL 9300 ONLY

7. Slip a length of rope through the eye of the disc compression spring and free the spring as shown in Figure 1-19.



8. Remove the bolts securing the belt keeper housing and slide the belt keeper out of the rear. See Figure 1-20.



9. Stand the mower up on end.

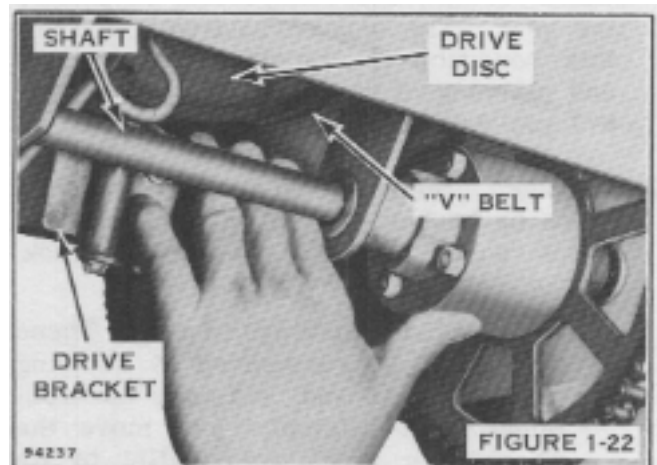
SAFETY WARNING

WHEN STANDING MOWER ON END, ALWAYS ANCHOR IT TO PREVENT FROM TIPPING OR FALLING. ALSO PLACE THROTTLE IN "STOP" POSITION AND DISCONNECT SPARK PLUG LEAD.

10. Twist the belt so the flat sides can pass between the idler pulley and the drive disc. See Figure 1-21.

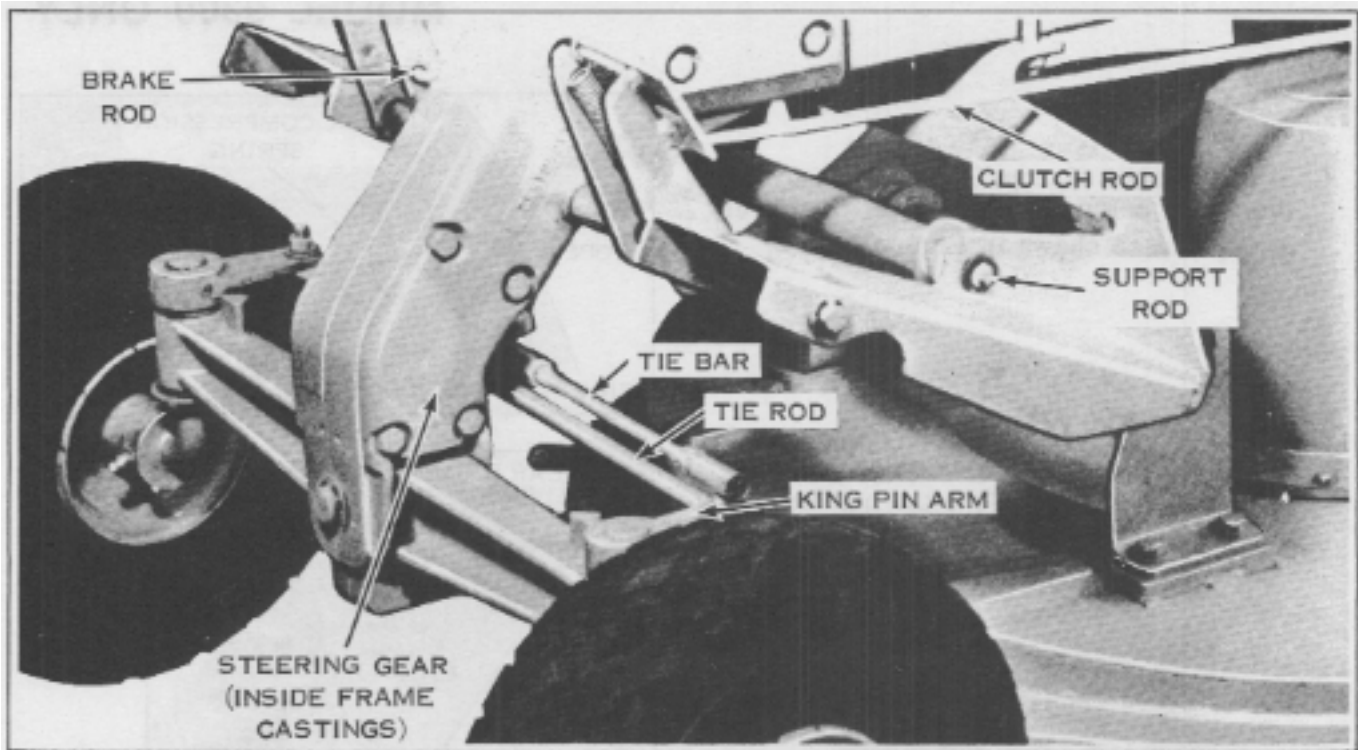
11. Move the speed selector lever to the 3rd speed position. This will move the drive roller toward the outside of the drive disc. Slide belt between the drive disc and drive roller.

12. If belt will not pass between the disc and roller, pull outward on the drive bracket as shown in Figure 1-22.



Reverse the procedure to install new belt and adjust blade brake.

MODEL 9300 ONLY



STEERING PROBLEMS

The steering system on the riding mower is a geared system. A pinion on the steering shaft meshes with a rack on the pitman arm. The pitman arm in turn is linked to the left side spindle, and a tie rod connects the wheels.


Most steering problems can be traced to one of the following conditions.

1. **Dirt Build-up in Steering Gear.** This condition occurs because the frame castings are not sealed. Over a period of time, dust, dirt, grass clippings and other debris can accumulate in the steering gear. The only corrective action for this condition is complete disassembly and cleaning of the steering gear. Refer to topic Steering Gear Disassembly.
2. **Damaged Steering Gear Components.** Worn or broken steering components can cause hard or erratic steering. Look for:
 - a. **Worn spindle bushings in axle.** These can easily be recognized by standing the mower on end, grasping the front wheel, and attempting to move the wheel in a direction parallel to its

axis. If there is no movement, bushings are satisfactory. If there is excessive movement, the bushings must be replaced. Refer to topic Steering Gear Disassembly.

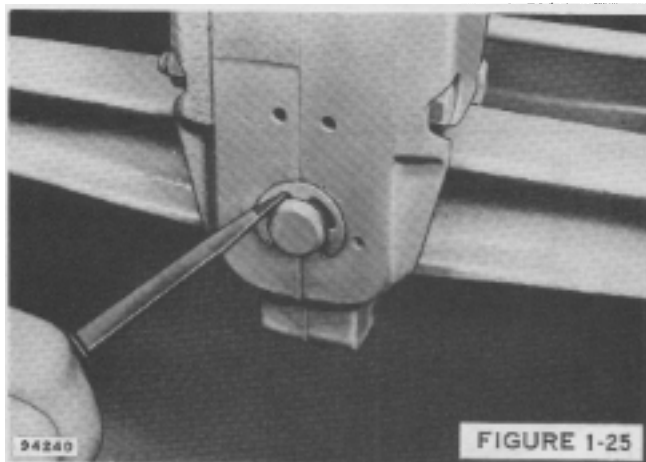
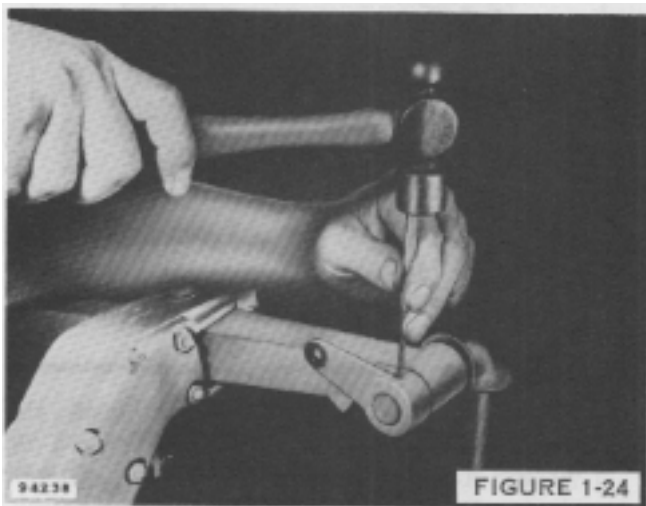
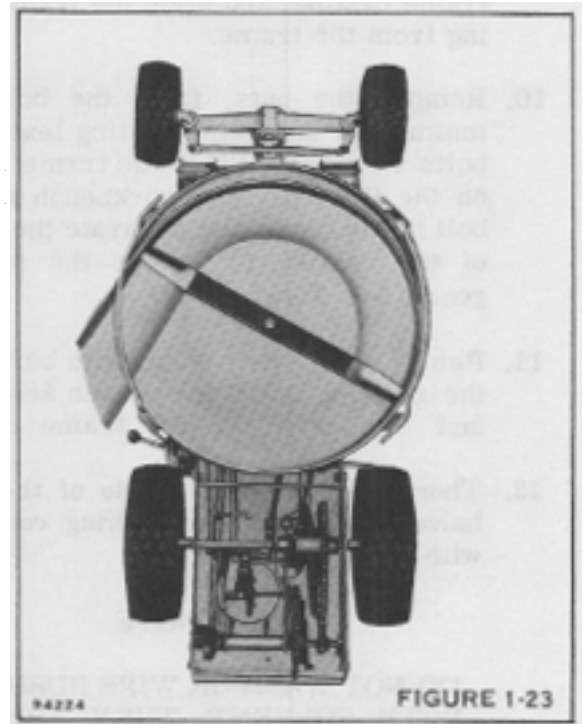
- b. **Worn Wheel Bushings in Wheels.** This condition will result in individual wheel wobble when the mower is in motion. To check, stand the mower on end, grasp the front wheel, and attempt to tilt it back and forth on the axle. If the wheel bushing is worn, it must be replaced.
- c. **Bent Tie Rod.** A bent tie rod will cause toe-out of the wheels. Check the tie rod for straightness. If bent, remove it and straighten in a vise or replace it.
- d. **Worn or Broken Teeth on Steering Gear or Pitman Arm Rack.** Gear wear or damage can only be checked by disassembling the steering gear and visually inspecting the gears.

STEERING GEAR DISASSEMBLY

 SAFETY WARNING

WHEN STANDING MOWER ON END, ALWAYS ANCHOR IT TO PREVENT FROM TIPPING OR FALLING. ALSO PLACE THROTTLE IN "STOP" POSITION AND DISCONNECT SPARK PLUG LEAD.

1. Stand the mower on end, Figure 1-23, and remove the front wheels by prying out the E rings and sliding the wheels off the spindles.
2. Disconnect the clutch and brake rods at the foot pedals.
3. Remove the steering wheel by removing the two nuts and bolts securing it to the lower shaft.
4. Remove the "U" bolt holding the foot rest to the frame.



5. Remove the E shaped retaining ring from one end of the pedal and foot rest support and carefully drive the support out of the foot rest pedal, and frame casting.
6. Disconnect the tie bar and tie rod at each king pin arm.
7. Drive out roll pin from one king pin arm and spindle, as shown in Figure 1-24 and remove the king pin arm and spindle.
8. Pry out the E shaped ring from one end of the pin securing the axle to the main frame castings, Figure 1-25, loosen nuts on bolts holding castings together, slip pin out, Figure 1-26, and slide the axle out of the frame castings.

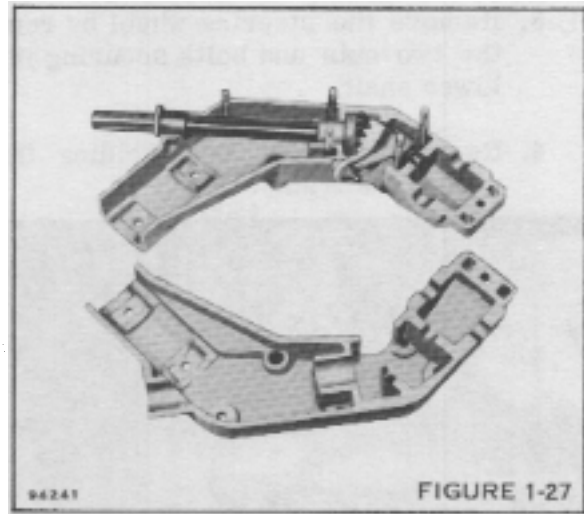
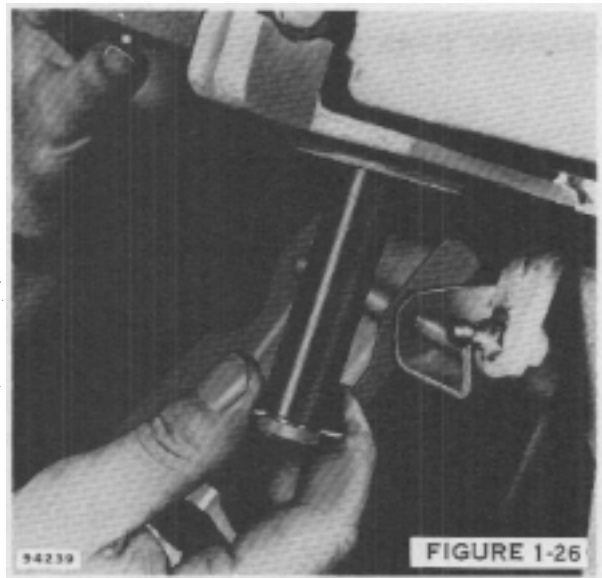
MODEL 9300 ONLY

9. Remove the two rear bolts through the frame casting, and slide the frame casting from the frame.
10. Remove the nuts, from the bolts remaining in the frame casting leaving the bolts in place. Place the frame casting on the floor or on a workbench with the bolt heads down, and separate the halves of the casting to expose the steering gear. See Figure 1-27.
11. Remove the lower shaft with bushing on the shaft, and lift the pitman arm, shaft and washer from the frame casting.
12. Thoroughly clean the inside of the casting halves, and wash the steering components with a suitable solvent.

 NOTE

DO NOT WASH OR WIPE BUSHINGS WITH SOLVENT. THEY ARE OIL IMPREGNATED AND WILL LOSE LUBRICANT.

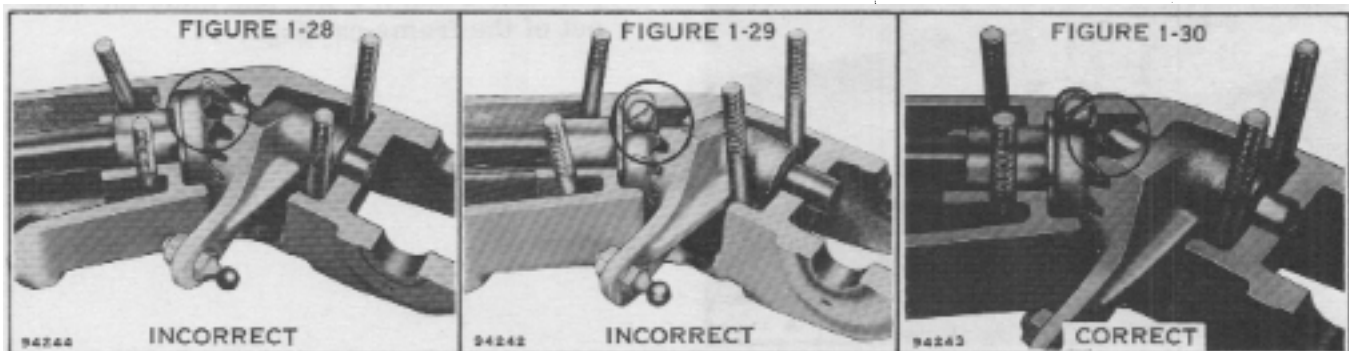
13. Examine the steering gear and pitman arm for chipped, cracked, or excessively worn teeth, and replace parts if necessary. Inspect all steering system bushings, pins, etc. for signs of wear.



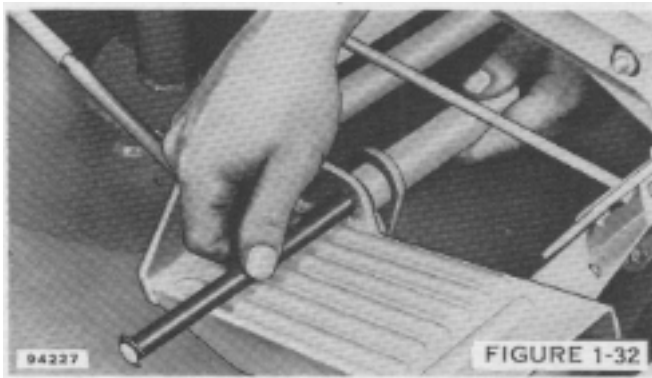
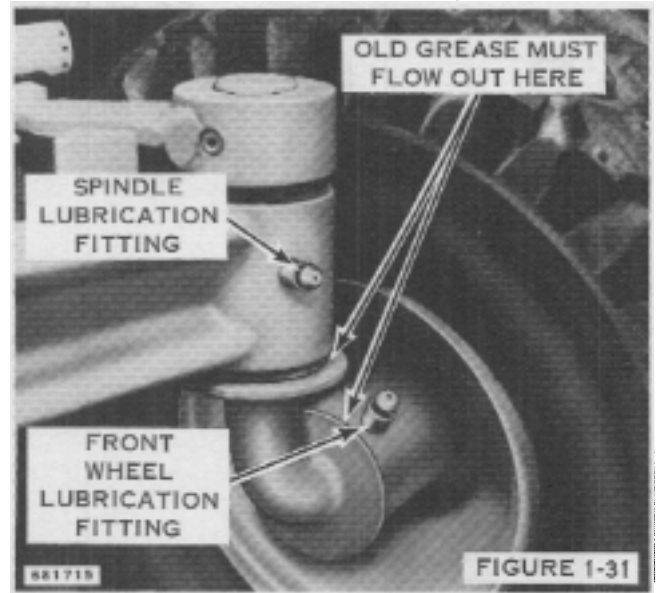
REASSEMBLY

1. Install the steering lower shaft and pitman arm in the bottom casting half. **MAKE SURE THE STEERING GEAR AND PITMAN ARM ARE IN PROPER MESH.** There is only one correct method of installation. The tooth clos-

est to the head of the screw must be inside the first tooth of the pitman arm. See Figures 1-28, 1-29 and 1-30. Otherwise the mower will not turn equal distance in both directions.

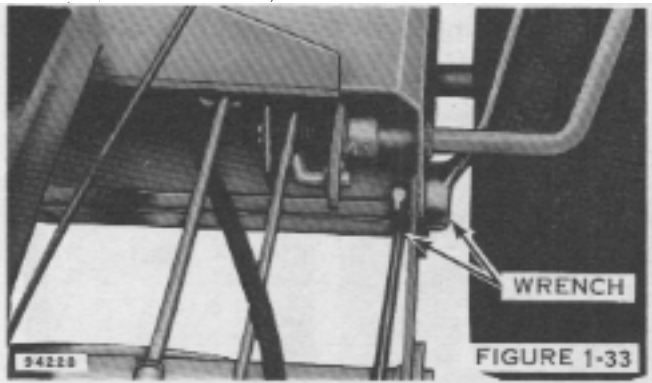


2. Once the steering gear and pitman arm are properly meshed, apply a liberal coating of Lawn-Boy "A" grease to them.
3. Reassemble the rest of the steering components in the reverse order of disassembly. Test it by turning the wheel to make sure it is operating properly.
4. Grease the front wheel spindles when mower is completely assembled, using a grease gun. See Figure 1-31.



MOWER PAN REMOVAL

1. Remove belt as described under Riding Mower V-Belt section. To remove mower pan, pry E ring out of the support rod and slide rod out of pan suspension bar as shown in Figure 1-32.
2. Remove the two pivot bolts securing pan to the rear housing as shown in Figure 1-33 and allow the pan to drop to the floor.
3. To replace spindle, remove blade and three bolts securing spindle housing to pan. Remove two bolts attaching support bars to spindle and lift spindle from pan.

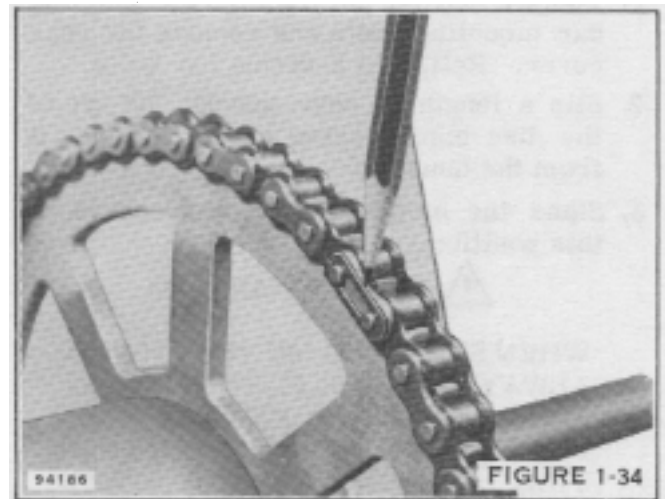


DRIVE CHAINS

Two drive chains transmit power from the drive roller wheel to the rear wheels. An occasional light coating of oil on the chains will keep them in operating condition for years.

If it becomes necessary to remove a chain, locate the master link, Figure 1-34, pry the retaining spring out of the chain link grooves, and remove the master link.

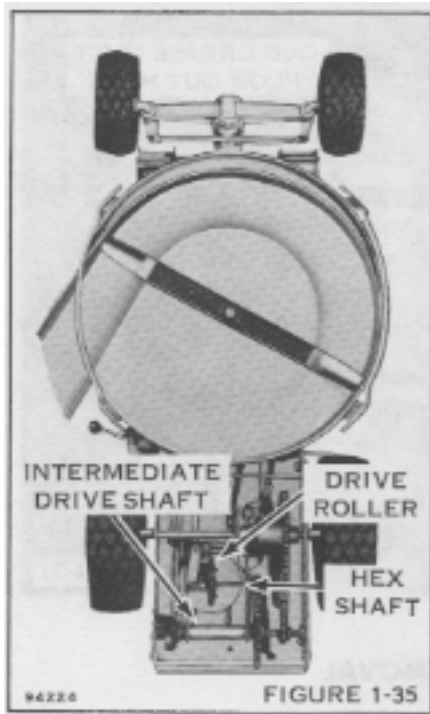
When installing a master link, make sure the split end of the retaining spring is facing away from the direction of travel of the chain.



MODEL 9300 ONLY

DRIVE BRACKET

The drive bracket contains the drive roller, hex shaft, and intermediate drive shaft. These components transmit power from the engine to the rear wheels. See Figure 1-35.



It is not necessary to remove the drive bracket from the mower to service the drive roller. However, the drive bracket must be removed for intermediate shaft service.

Drive Roller Service. Periodic inspection of the rubber roller and regularly scheduled lubrication of the felt oiler pad on the drive roller are the only regular maintenance operations on the drive roller.

The rubber portion of the drive roller may crack, chip or wear, but will be satisfactory as long as there are no large pieces broken out. Whenever the mower is serviced it is a good idea to check the drive roller for damage or excessive wear.

Several times a year loosen the screws mounting the drive roller to the bearing block and add a small amount of petroleum jelly to the felt oiler pad. See Figure 1-36.

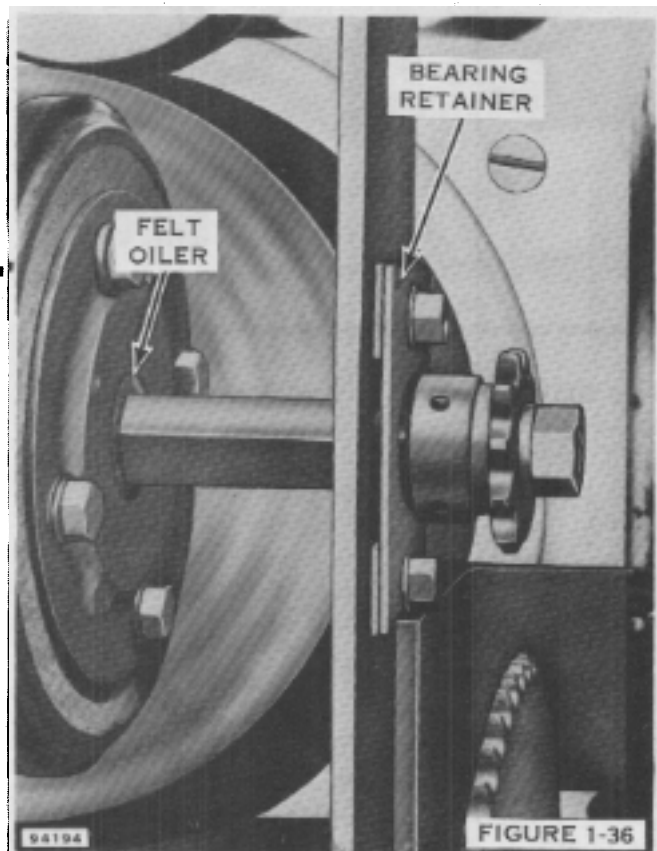
This will provide sufficient lubrication for smooth movement of the drive roller on the hexagonal shaft.

DRIVE ROLLER REPLACEMENT

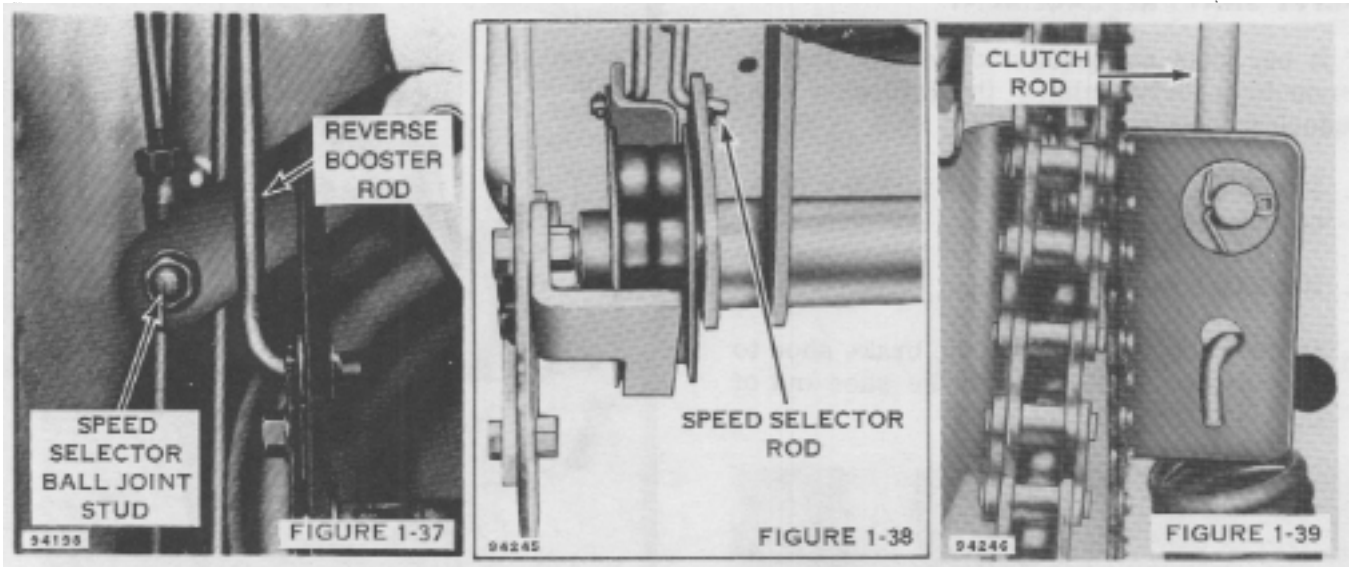
1. Loosen, but do not remove the knurging bar mounting bolts and remove the rear cover. Retighten knurging bar bolts.
2. Slip a length of rope through the eye of the disc compression spring and free it from the housing.
3. Stand the mower on end and secure in this position.

SAFETY WARNING

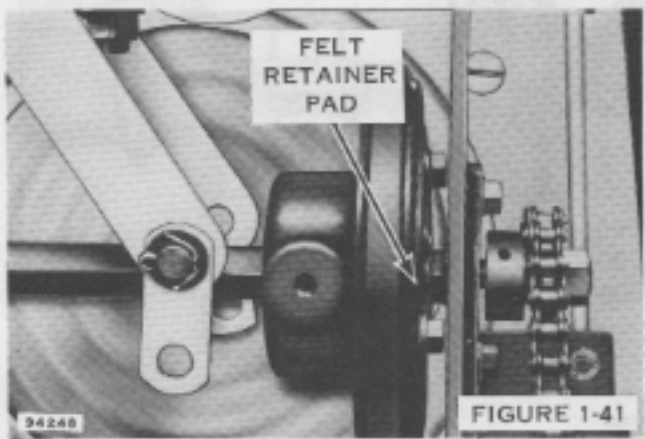
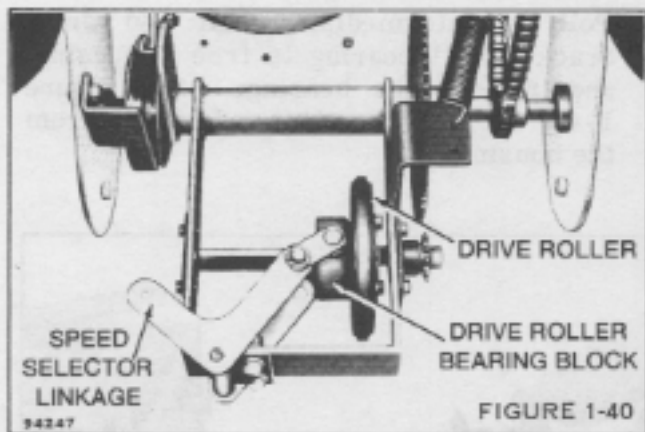
WHEN STANDING MOWER ON END, ALWAYS ANCHOR IT TO PREVENT FROM TIPPING OR FALLING. ALSO PLACE THROTTLE IN "STOP" POSITION AND DISCONNECT SPARK PLUG LEAD.



MODEL 9300 ONLY



4. Disconnect the speed selector, reverse booster and clutch rods from the drive bracket. See Figures 1-37, 1-38 and 1-39.



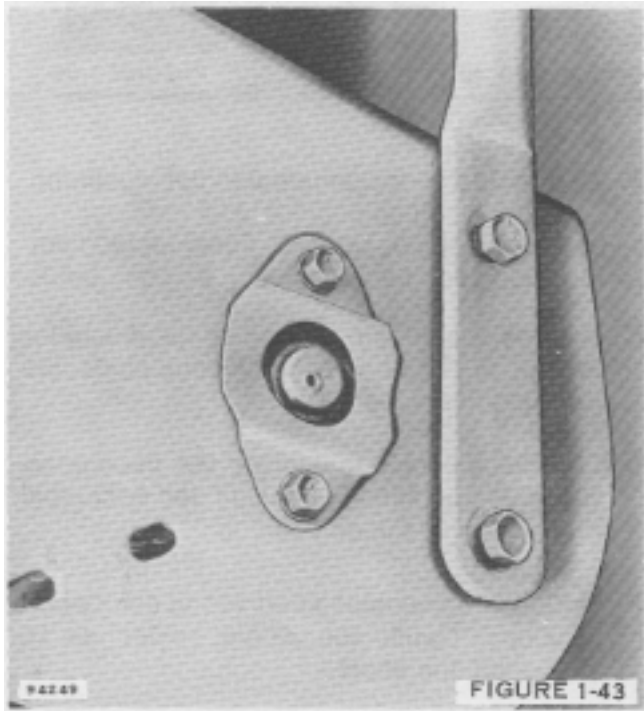
5. Remove the intermediate drive chain.
6. Swing the drive bracket down away from the housing as shown in Figure 1-40.
7. Remove the bolts securing the speed selector linkage to the drive roller bearing block. See Figure 1-40 and 1-41.
8. Remove the bolts mounting the bearing retainer at the sprocket end of the hexagonal shaft. Refer to Figure 1-36.
9. Pull the hexagonal shaft out of the drive bracket. Catch the drive roller as it slides off the shaft.
10. Remove the screws holding the drive roller to the bearing block and separate the drive roller, felt oiler pad and pad retainer.
11. Wash felt retainer pad in solvent and allow to dry. Rub a small amount of petroleum jelly into pad. See Figure 1-41.
12. Assemble new roller, the felt oiler pad and pad retainer to the bearing block.
13. Install parts in reverse order of removal, and adjust clutch and speed selector.

MODEL 9300 ONLY

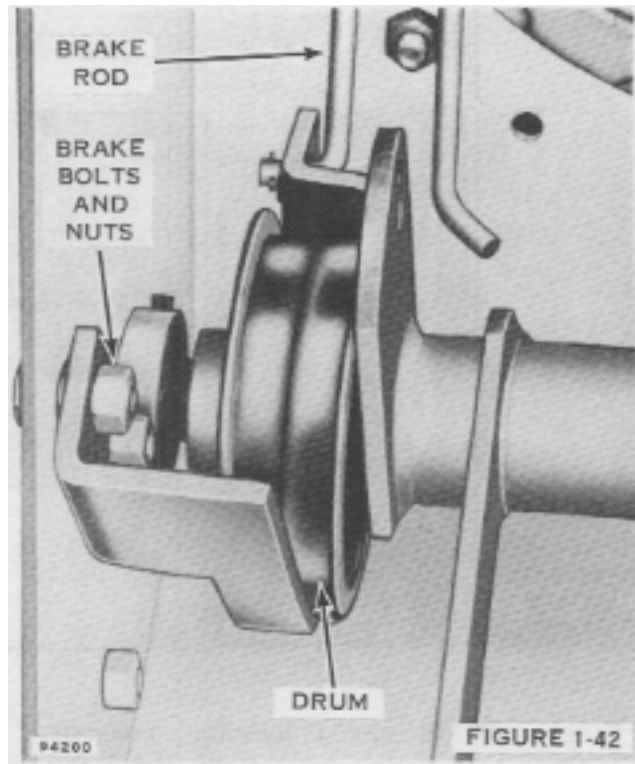
INTERMEDIATE DRIVE SHAFT REPLACEMENT

If it becomes necessary to replace the intermediate drive shaft, the following procedure should be used.

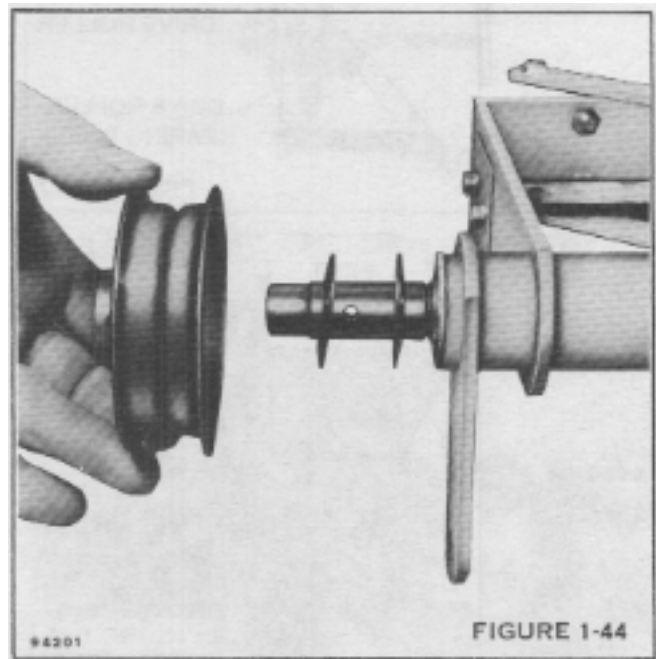
1. Perform steps 1 through 5 under drive roller replacement.
2. Remove final drive chain.
3. Remove bolts mounting the brake shoe to the housing and swing brake shoe out of the way. See Figure 1-42.



6. Drive out the roll pin securing the brake drum to the shaft. Remove the drum and bellville washers. See Figure 1-44. Pull the intermediate shaft out of the drive bracket.
7. Replace any defective parts and reinstall in reverse order of removal. Make sure the concave surfaces of the bellville washers are facing each other when installing brake drum. Adjust the clutch, speed selector, and brake, if necessary.



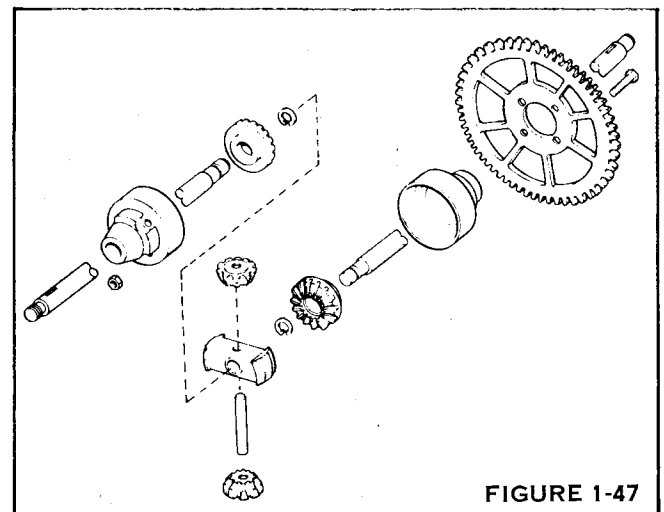
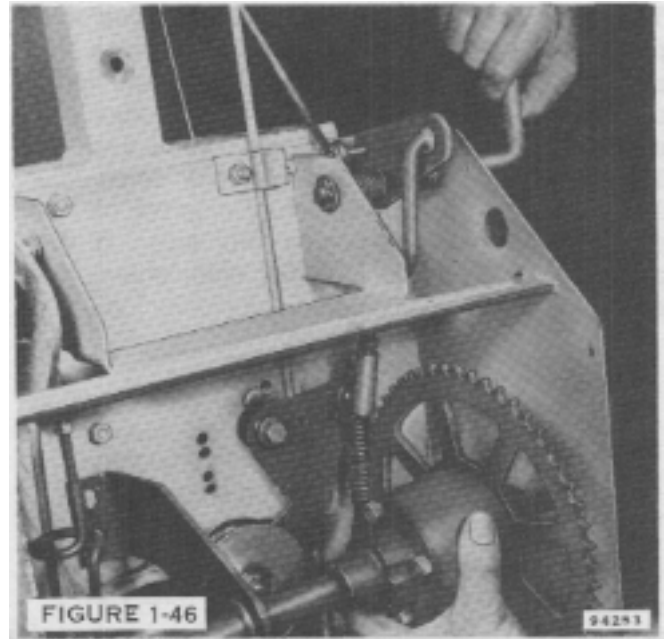
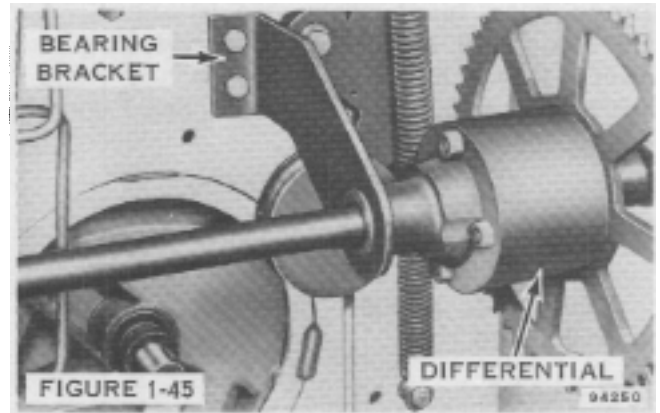
4. Remove bearing retainer from sprocket end of intermediate shaft.
5. Pull on intermediate shaft and drive bracket until bearing is free of housing, and remove the bearing. See Figure 1-43. Remove the shaft and bracket from the housing.



DIFFERENTIAL

To remove the differential:

1. With mower in horizontal position, loosen but do not remove, the knurling bar mounting bolts, and remove the back cover.
2. Remove the bolts securing the belt keeper to the rear housing, and remove the belt keeper. Retighten knurling bar bolts.
3. Thread a length of rope through the eye of the disc compression spring and release the spring from the housing.
4. Stand the mower up on end and perform steps 4 through 6 under the topic DRIVE ROLLER REPLACEMENT.
5. Remove the screw securing the drive disc to the engine crankshaft, and pull the disc off the crankshaft. DO NOT LOSE THE KEY. Pull the belt forward after disc is free of the crankshaft.
6. Remove the bolts securing the center bearing bracket to the housing. See Figure 1-45.
7. Remove the final drive chain.
8. Remove the rear wheels as described in the topic TIRES AND WHEELS.
9. Move the differential end of the drive shaft away from the housing. This will free the bearing at the opposite end of the shaft. Continue moving the shaft until the differential end of the shaft clears the housing. As the shaft is moved, slide the center bearing bracket toward the differential.
If interference with the blade control lever spring is encountered, move the lever until the spring can be cleared. See Figure 1-46.
10. Free the opposite end of the drive shaft from the housing. Slide center bearing bracket off the shaft.
11. Remove the four bolts securing the differential to the sprocket. Slide the sprocket off the shaft to expose the internal differential parts. See Figure 1-47. The parts may be washed in a mild solvent, dry thoroughly and apply a minimum of three ounces of Lawn-Boy "A" grease when reassembling.



12. Install the differential in reverse order of removal. When installing drive disc make sure belt is seated on the pulley before tightening down disc.

MODEL 9300 ONLY

BLADE

Always keep blade sharp and balanced. A bent blade will cause vibration and loss of power. Check balance and grind heavy end until proper balance is attained. See Figure 1-48.

SAFETY WARNING

DISCONNECT THE SPARK PLUG WIRE AND PLACE THE BLADE CONTROL LEVER IN THE "OFF" POSITION.

BENT BLADE

Tilt the mower up on the knurring bar and place a straightedge (yardstick) across the bottom of the pan. Rotate the blade until one end is aligned with the straightedge and measure the gap between the blade and the straightedge. Rotate the blade until the other end is under the same point of the straightedge and measure this gap. If the gaps are not within 1/4" of each other, the blade should be replaced.

SAFETY WARNING

WHEN INSTALLING BLADE, MAKE SURE THE WASHER IS OVER THE SHOULDER ON THE SHAFT AND THE CONCAVE SIDE IS FACING THE BLADE. SEE FIGURE 1-49. TIGHTEN BLADE NUT SECURELY.

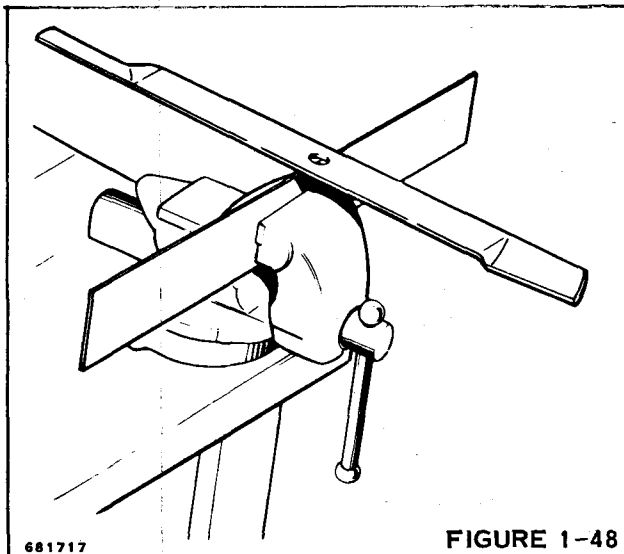


FIGURE 1-48

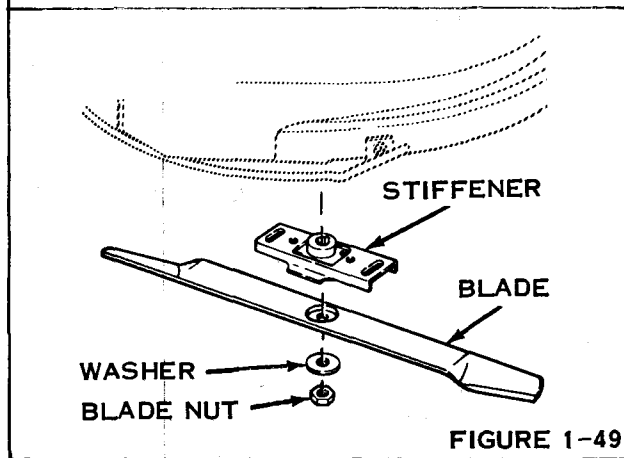


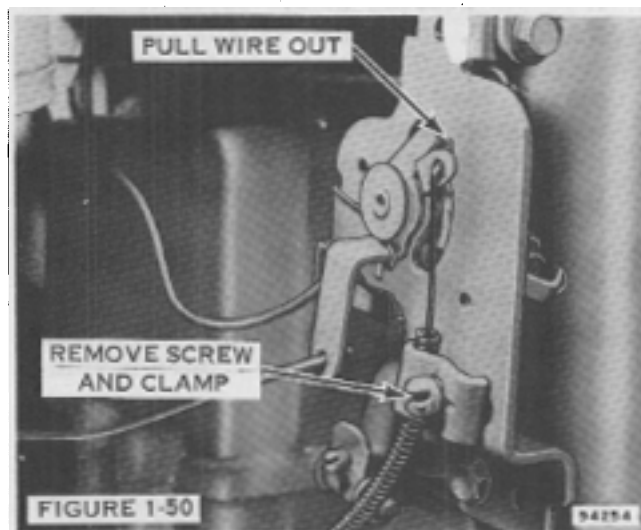
FIGURE 1-49

ENGINE

The Riding Mower is powered by a 6 HP Briggs and Stratton engine. For information on the engine specs, adjustment data and maintenance procedures, refer to the manufacturer's service literature included with the owner manual.

Engine Removal. If it ever becomes necessary to remove the engine from the mower, use the following steps.

1. Remove the blade drive belt as described in **BELT REPLACEMENT**.
2. Disconnect the throttle linkage at the engine. See Figure 1-50.
3. Remove the four bolts and nuts securing the engine to the rear housing, and lift the engine off the mower.



4. Install the engine in reverse order of removal. Adjust the throttle linkage as described in manufacturer's literature included with owner manual.

CHAPTER II

MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

SECTION I TROUBLESHOOTING

STEERING PROBLEMS

PROBLEM	CAUSE	REMEDY
Hard Steering	Low Tire Pressure	Check Pressure - Chapter II - Section 1
	Lack of Lubricant	Lubricate - Chapter II - Section 1
	Bearings and/or Bushings worn	Steering Disassembly and Inspection - Chapter II - Section 2
	Tie Rods Bent	Straighten or Replace - Chapter II - Section 2
	Steering Gear Broken	Disassembly and Replacement Chapter II - Section 2

MOWER PAN AND BLADE PROBLEMS

PROBLEM	CAUSE	REMEDY
Blade Won't Turn	Belt Off Pulleys	Replace - Chapter II - Section 3
	Belt Damaged	Replace - Chapter II - Section 3
	Blade Nut Loose	Tighten - Chapter II - Section 1 - Refer to Spec. Sheet -- Torque
Blade Won't Disengage	Blade Brake Not Working	Check Blade Brake Tension Chapter II - Section 3
Blade Leaves Swirl Marks in Lawn	Pan Unlevel	Correct Pan Level - Chapter II - Section 3
	Blade Unlevel or Bent	Correct Pan Level - Chapter II - Section 3

MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

MOWER PAN AND BLADE Cont.

PROBLEM	CAUSE	REMEDY
Belt Comes Off (Rear)	Belt Keeper Loose	Tighten - Chapter II - Section 3
	Broken Belt	Replace - Chapter II - Section 3
	*Top Idler Pulley Broken or Bent	Replace - Chapter II - Section 3
	*Intermediate Shaft Loose	Tighten - Chapter II - Section 3
	Rear Idler Spring Broken	Replace - Chapter II - Section 3
	Rear Idler Arm Broken	Replace - Chapter II - Section 3
Belt Comes Off (Front)	Broken Belt	Replace - Chapter II - Section 3
	*Bottom Idler Pulley Broken or Bent	Replace - Chapter II - Section 3
	*Intermediate Shaft Loose	Tighten - Chapter II - Section 3
	Idler Arm Broken or Bent	Replace - Chapter II - Section 3
	Belt Pulley Bent or Broken	Replace - Chapter II - Section 3

*Diagram shown only.

DRIVE PROBLEMS

PROBLEM	CAUSE	REMEDY
Mower Will Not Propel	Improper drive adjustment	Adjust - Chapter II - Section 4
	Drive Disc Polished	Score - Chapter II - Section 4
	Drive Disc Broken	Repair or Replace, Chapter II - Section 4

MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

DRIVE PROBLEMS Cont.

PROBLEM	CAUSE	REMEDY
Mower Will Not Propel Cont.	Rubber Drive Roller Worn or Damaged	Replace - Chapter II - Section 4
	Chain Loose	Adjust - Chapter II - Section 4
	Chain Broken	Repair or Replace, Chapter II - Section 4
	Transmission Rod(s) Bent	Repair or Replace, Chapter II - Section 4
	Differential Broken	Repair or Replace, Chapter II - Section 4
	Sprocket Worn or Broken	Replace - Chapter II - Section 4
	Will Not Drive In Reverse	Check Reverse Booster Spring - or Disc. Compression Spring - Chapter II - Section 4
	Clutch Pedal Must Be Pulled Back for More Drive	Disc Compression Spring Adjust - Chapter II - Section 4

The following check list will assist in locating the problem source.

FUEL PROBLEMS

FUEL TROUBLE SHOOTING

TROUBLES	CAUSES	REMEDIES
Engine will not start	a. Fuel tank empty	a. Fill tank
	b. Water in fuel	b. Drain fuel from tank and carburetor and replace with fresh fuel
	c. Old fuel in tank forms gum to plug up fuel line	c. Empty out old fuel and clean out fuel line
	d. Shut-off valve closed	d. Open valve

MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

FUEL PROBLEMS Cont.

TROUBLES	CAUSES	REMEDIES
Engine slows down and stops	a. Vent hole in fuel tank cap plugged	a. Unplug hole
	b. Fuel line or strainer clogged	b. Clean out fuel line or strainer
	c. Fuel tank runs dry	c. Refill tank

IGNITION PROBLEMS

SPARK PLUG TROUBLE CHART

PLUG CONDITION	CAUSES	RECOMMENDATION
Black carbon or sooty deposit	a. Breaker points dirty or out of adjustment	a. Clean and adjust gap
	b. Weak condenser	b. Check and replace if weak
	c. Incorrect plug	c. Install correct plug
Pitted or burned points, white, light tan or blistered deposits. Rapid wear of points	a. Incorrect plug	a. Install correct plug
Cracked or broken plug	a. Careless installation of plug	a. Replace plug
Cracked or broken insulator on lower end of plug	a. Center electrode strained when regapping plug	a. Replace plug
Widening of gap	a. Normal wear	a. Clean and regap

MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

SPECIFICATIONS

LUBRICATION SPECIFICATIONS

Grease For Front Axle & King Pin Spindle.....	Lawn-Boy "A" Grease or Multiple Purpose, Automotive Grease
Front Wheel Bearings.....	Lawn-Boy "A" Grease or Multiple Purpose, Automotive Grease
Differential.....	Lawn-Boy "A" Grease or Multiple Purpose, Automotive Grease
Hexshaft - Drive Roller.....	#30 Weight Oil

BOLT AND NUT TORQUES

King Pin to Tie Rod Nuts	135 inch pounds
Steering Casting Bolts	135 inch pounds
Steering Gear Set Screw	135 inch pounds
Engine Mounting Bolts	135 inch pounds
Engine Pulley Bolt	250 inch pounds
Drive Disc Screws	90 inch pounds
Belt Pulley Nut	250 inch pounds
Blade Nut	600 inch pounds
Drive Roller Nuts	90 inch pounds
Hexshaft Bearing Retainer Plate Screws	35 inch pounds
Wheel Bearing Bolts	175 inch pounds
Differential Bolts	135 inch pounds
Wheel Nuts	Adjustable

ENGINE SPECIFICATIONS

	26"	30"
Idle r.p.m.	1,750	1,750
Operating r.p.m.	3,650	3,650
Oil Requirements	SAE 10W/30	SAE 10W/30
Gas Tank Capacity	2 Qt.	2 Qt.
Spark Plugs #'s	Champion CJ-8 . . or Autolite A7N	Champion CJ-8 or Autolite A7N

MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

TIRE SPECIFICATIONS

	26"	30"
Front Size	4.10/3.50x4	10x5/4.50-4
Pressure	15-17 P.S.I.	15-17 P.S.I.
Rear Size	480/400x8	16x5.50-8
Pressure	22-25 P.S.I.	22-25 P.S.I.

BATTERY SPECIFICATIONS

Capacity Electrolyte	Approximately 2 quarts
Ampere Hour	24
Charging Rate	3 amp

SECTION 2

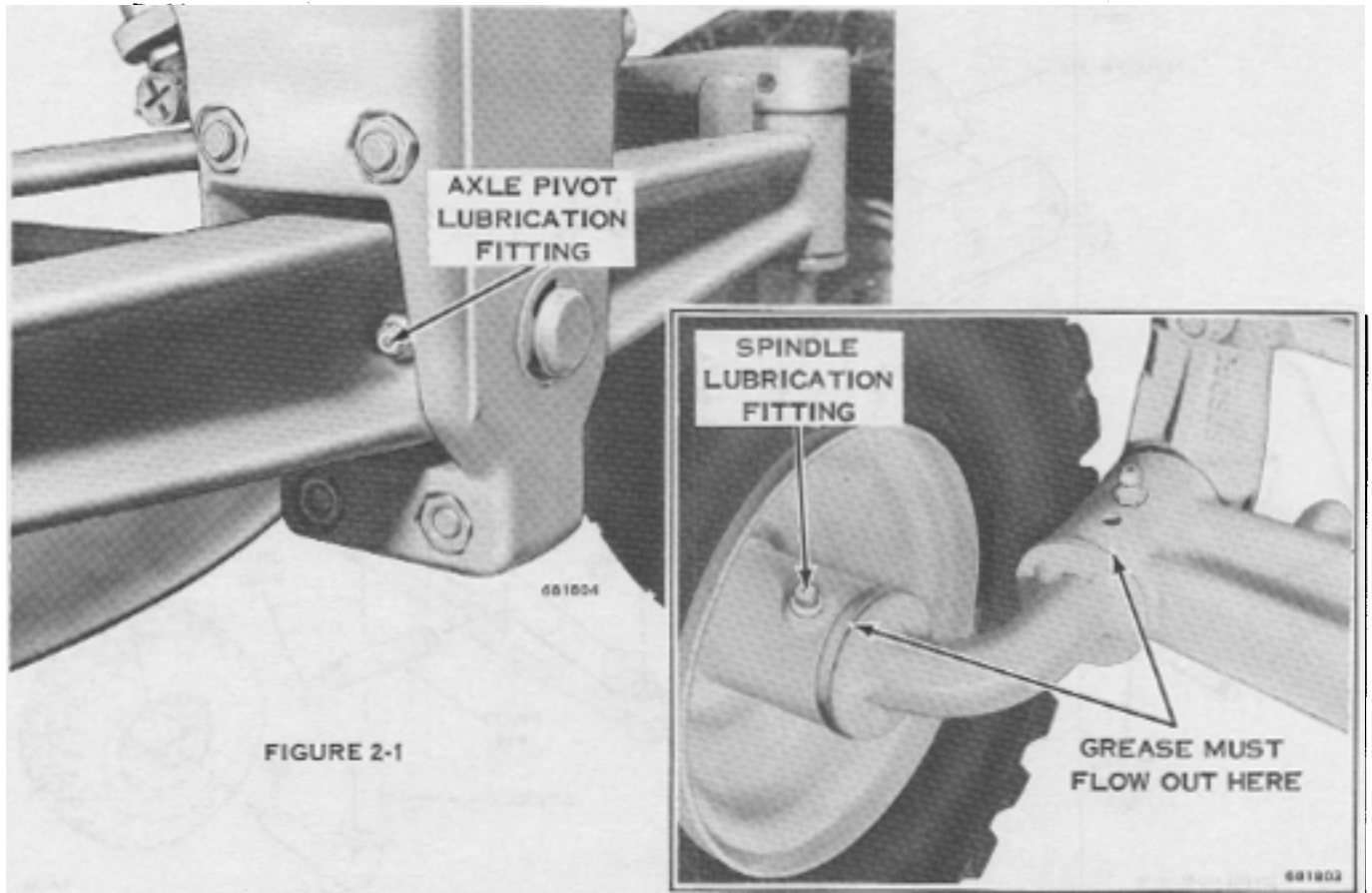
HOW TO REPAIR AND REPLACE

STEERING

To insure trouble-free operation, use a grease gun and apply a good quality automotive chassis lubricant to the five zerk fittings. (Figure 2-1). Or Lawn-Boy "A" grease.

A positive type steering system is employed. The steering arm is keyed to the steering shaft and secured with a setscrew. The steering gear is linked to the left side spindle and king pin arm. A tie rod connects the wheels.

As you disassemble the front end, watch for bent or mis-shaped rods, dry bearings, bearings or bushings which are damaged, and shafts which are gouged or grooved.



MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

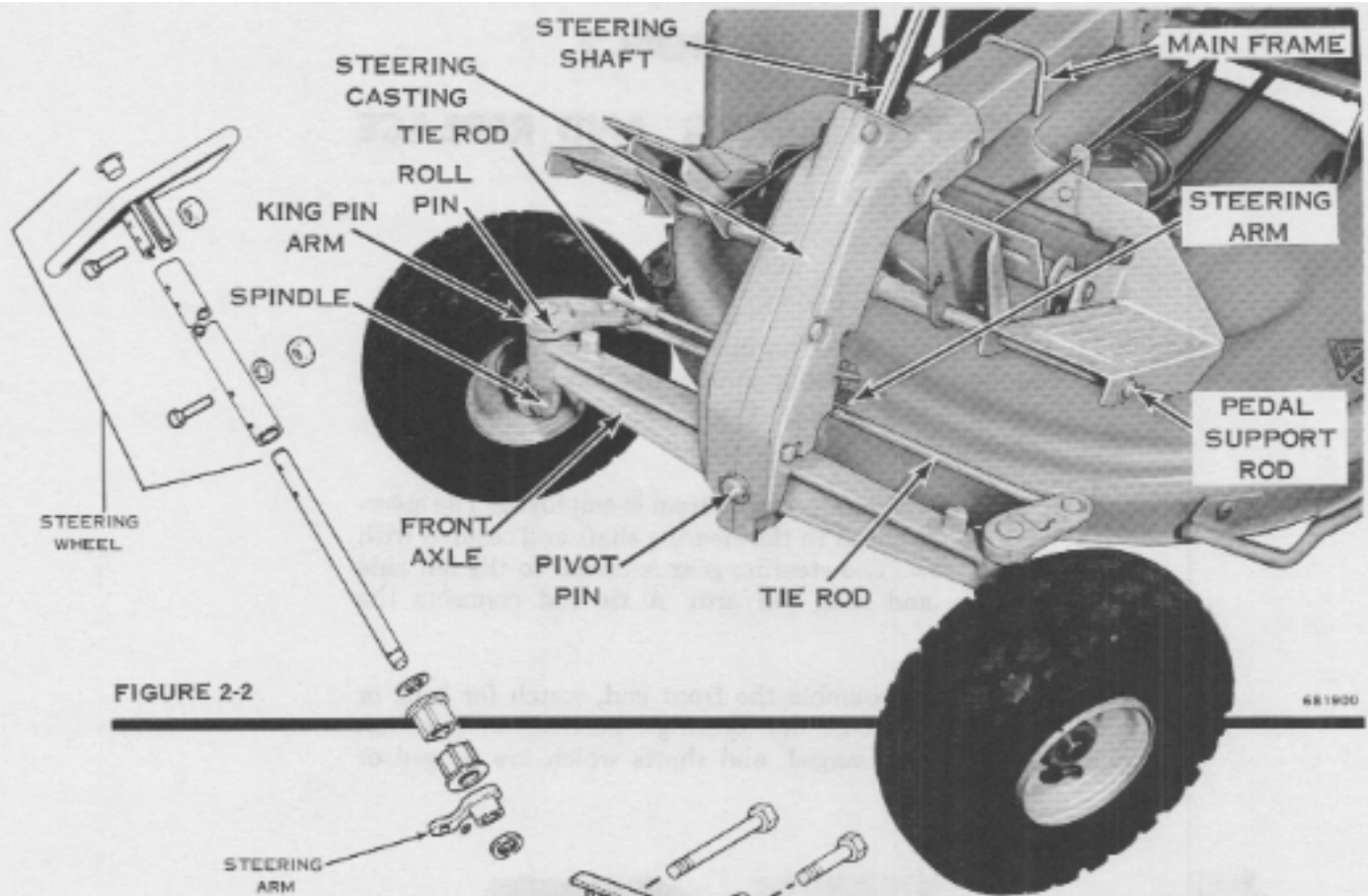


FIGURE 2-2

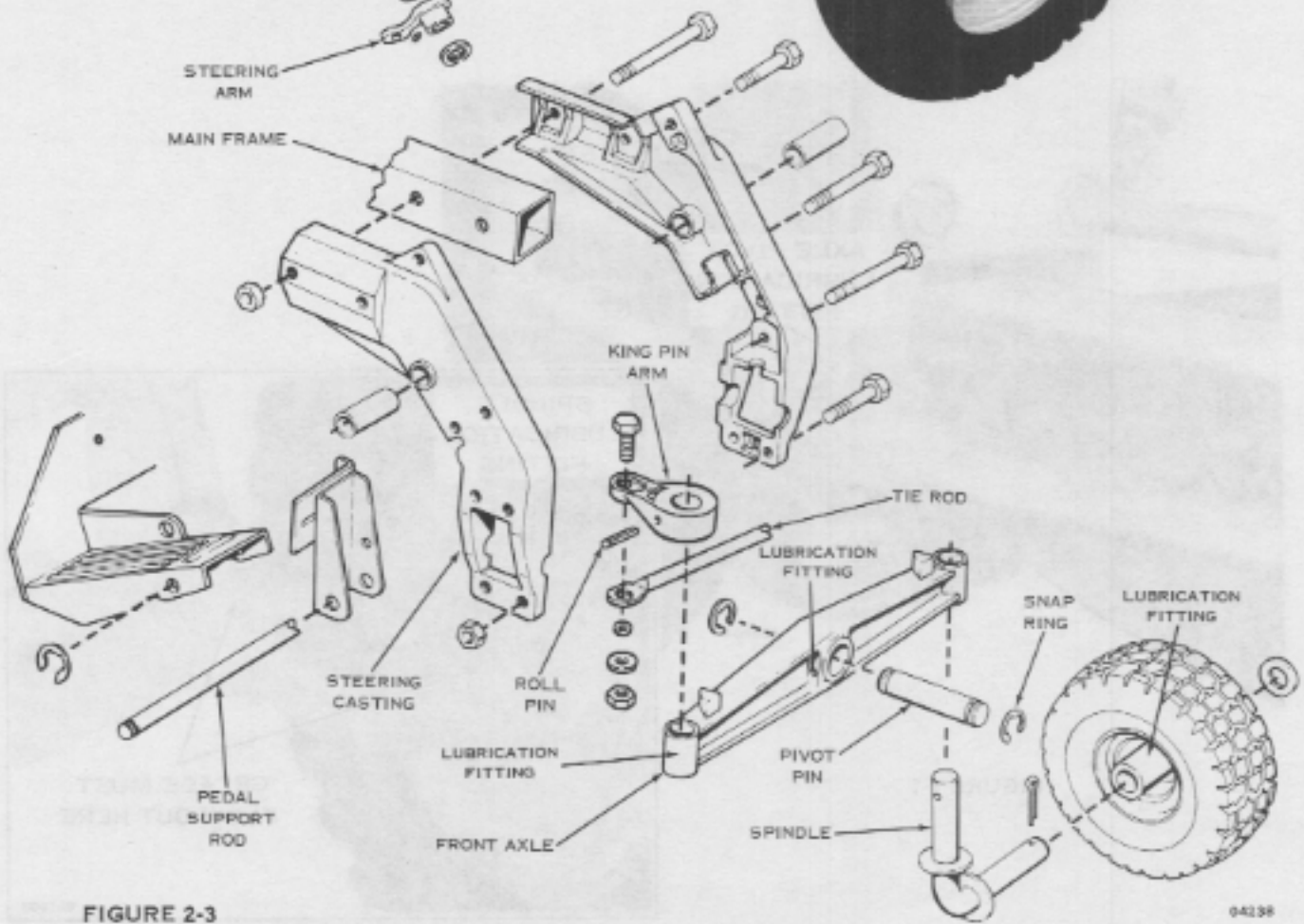
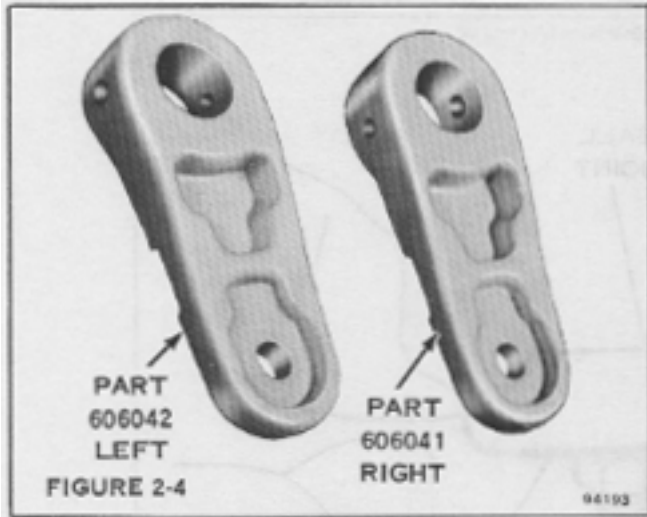


FIGURE 2-3

MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

STEERING DISASSEMBLY



SPINDLE AND/OR KING PIN REMOVAL

Disconnect the spark plug lead. Remove the battery, (electric start models only.) Stand mower on tilt (knurfling) bar.

Remove front wheel. Remove tie rods from king pin arm. Drive out roll pin. Remove spindle from steering casting. See Figures 2-3 and 2-4.



NOTE

King pin arms are not identical (Figure 2-4). Care should be taken to reinstall them properly.

FRONT AXLE REMOVAL

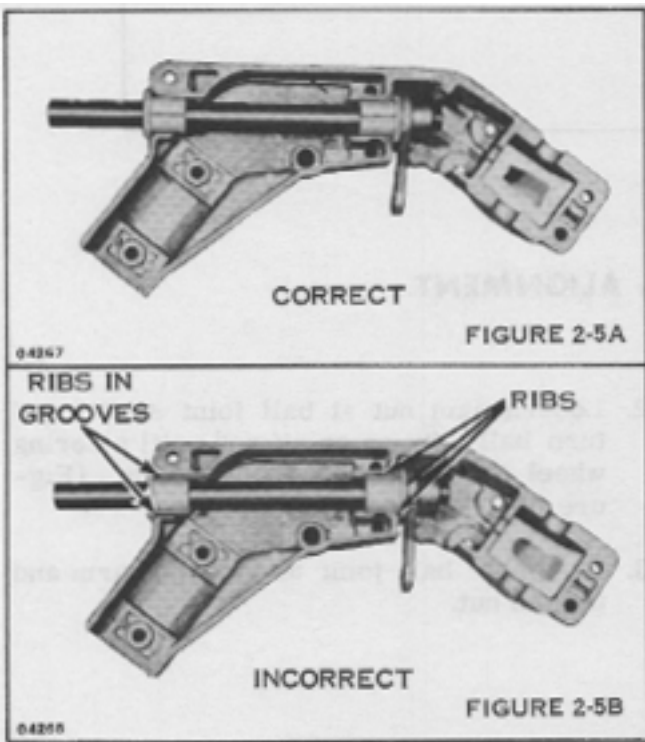
Disconnect the spark plug lead. Remove the battery (electric start models only.) Stand mower on tilt (knurfling) bar. Remove spindle and king pin. (See spindle and/or king pin removal above.)

Remove snap ring from pivot pin. Drive pivot pin from steering casting and axle. Remove axle.

STEERING CASTING REMOVAL

Disconnect spark plug lead. Remove battery, (electric start models only.) Stand mower on tilt (knurfling) bar. Remove front axle.

Remove steering wheel and pedal support rod. Remove two bolts securing steering casting to main frame casting. Remove steering casting from main frame.

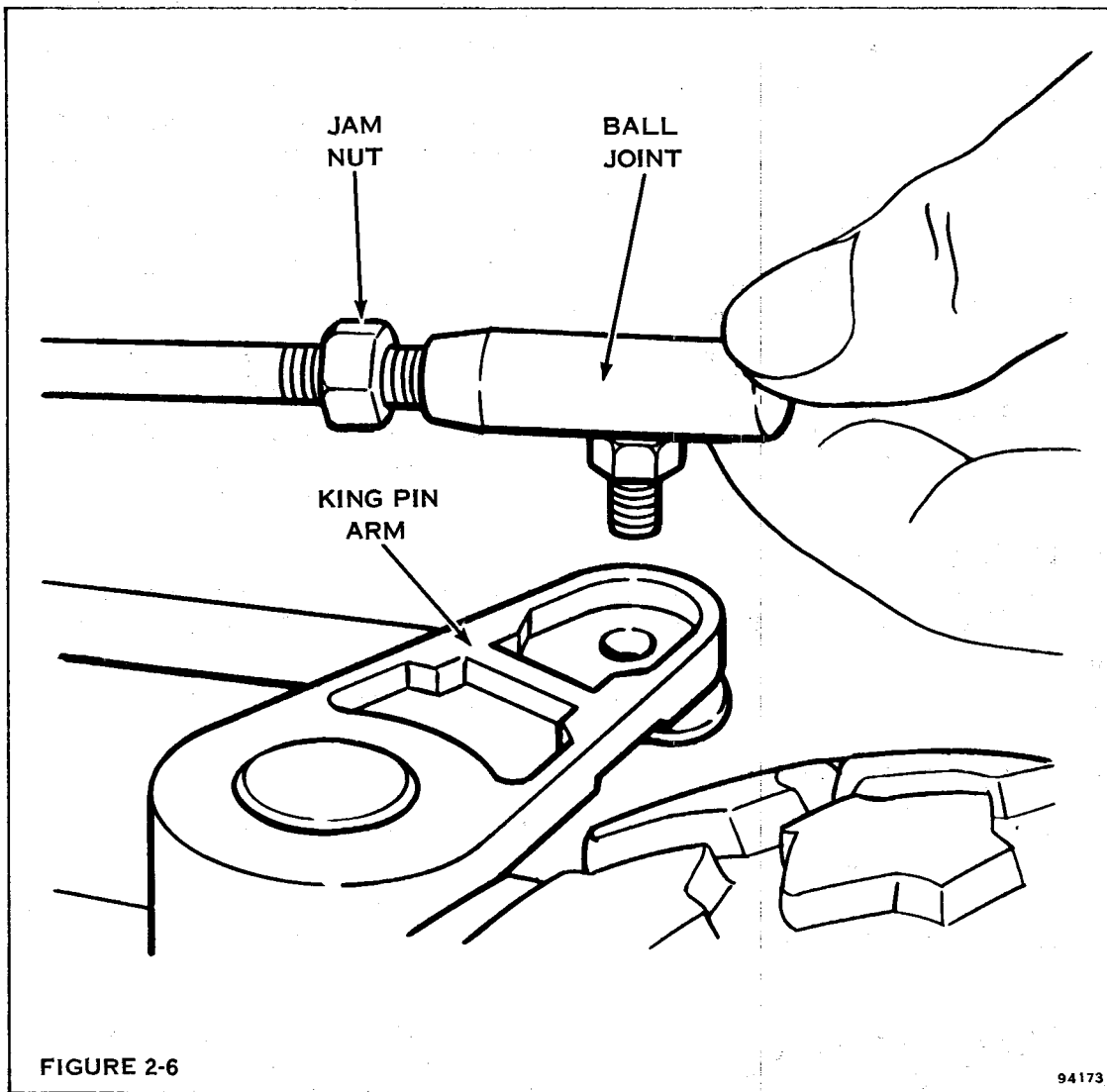


IMPORTANT NOTE: Later model bushings contain two ridges which match the grooves in the frame castings. During reassembly the bushings **MUST BE** placed in the same position they were removed to prevent binding of the steering shaft. See Figures 2-5A and 2-5B. Loosen the setscrew on the pitman arm. Using expansion pliers remove the retaining ring and remove pitman arm.

STEERING CASTING DISASSEMBLY

Disconnect spark plug lead. Remove battery, (electric start models only.) Stand mower on tilt (knurfling) bar. Remove steering casting.

Remove all bolts holding casting together. Casting halves can then be separated (Figure 2-5). Pull steering shaft from casting. Note plastic bushings are ribbed for placement in casting--do not clean with solvent. The steering gear is held to the steering shaft with a retainer ring and a setscrew.



STEERING WHEEL ALIGNMENT

If steering wheel does not line up properly with front wheels, it can be aligned as follows:

1. Remove nut securing ball joint to king pin arm.
2. Loosen jam nut at ball joint socket and turn ball joint on or off rod until steering wheel is aligned with front wheels. (Figure 2-6.)
3. Assemble ball joint to king pin arm and tighten nut.

MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

SECTION 3

ADJUSTMENTS

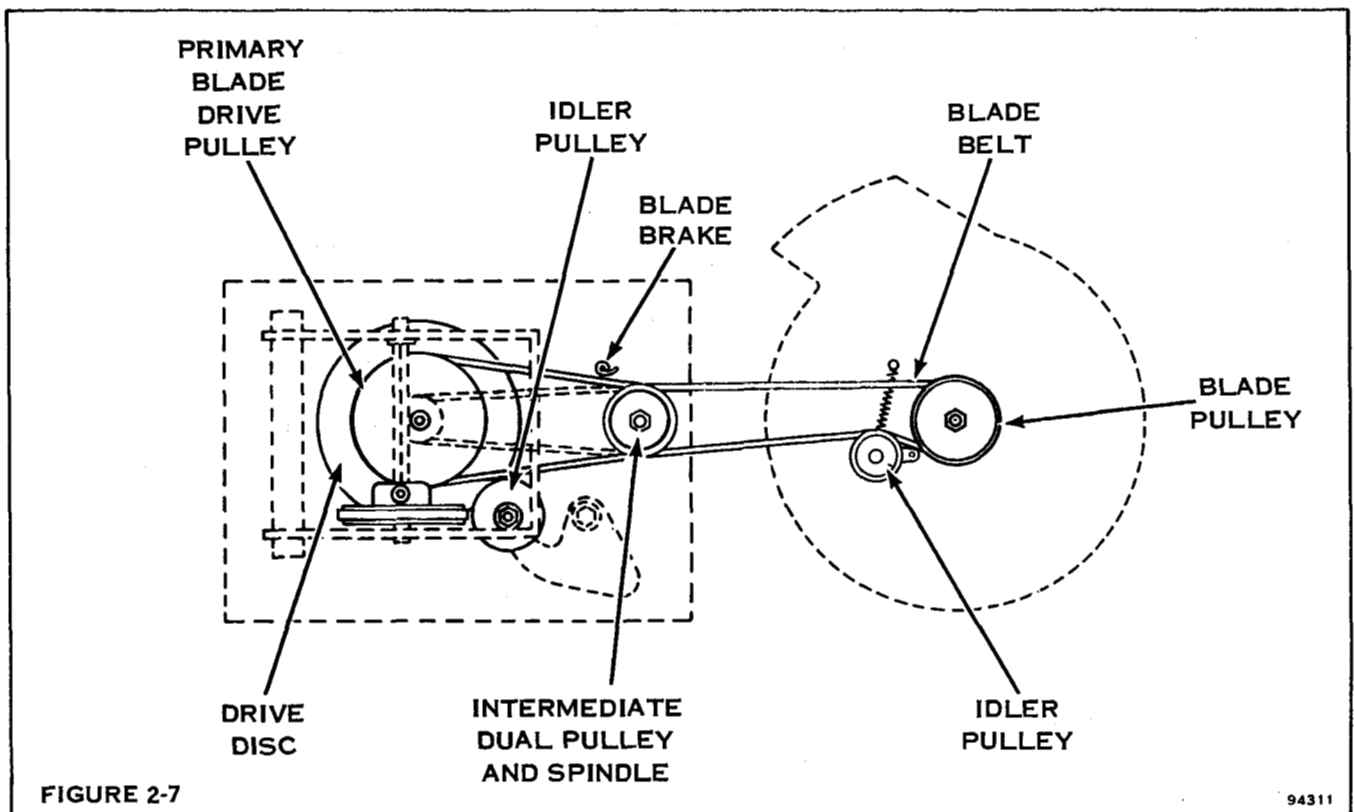
POWER FOR DRIVING THE MOWER BLADE

To effect transmission of motive power to the cutting blade, two V-belts are used.

The primary drive pulley which is located above the drive disc is keyed to the engine crankshaft. A short V-belt runs from this primary pulley to the upper pulley on the intermediate spindle. A longer V-belt connects the lower pulley on the intermediate spindle to the blade pulley on the blade shaft, driving the cutting blade.

Two idler pulleys are used in the blade drive system as illustrated below. A blade brake applied to the short belt (rear) stops the blade. The brake is applied by the control lever.

As the mower pan is disassembled, examine rods and suspension assembly for damage or distortion, for bent or misshapened rods, bearings or bushings which are damaged or worn, dry bearings, and shafts which are gouged or ringed.



MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

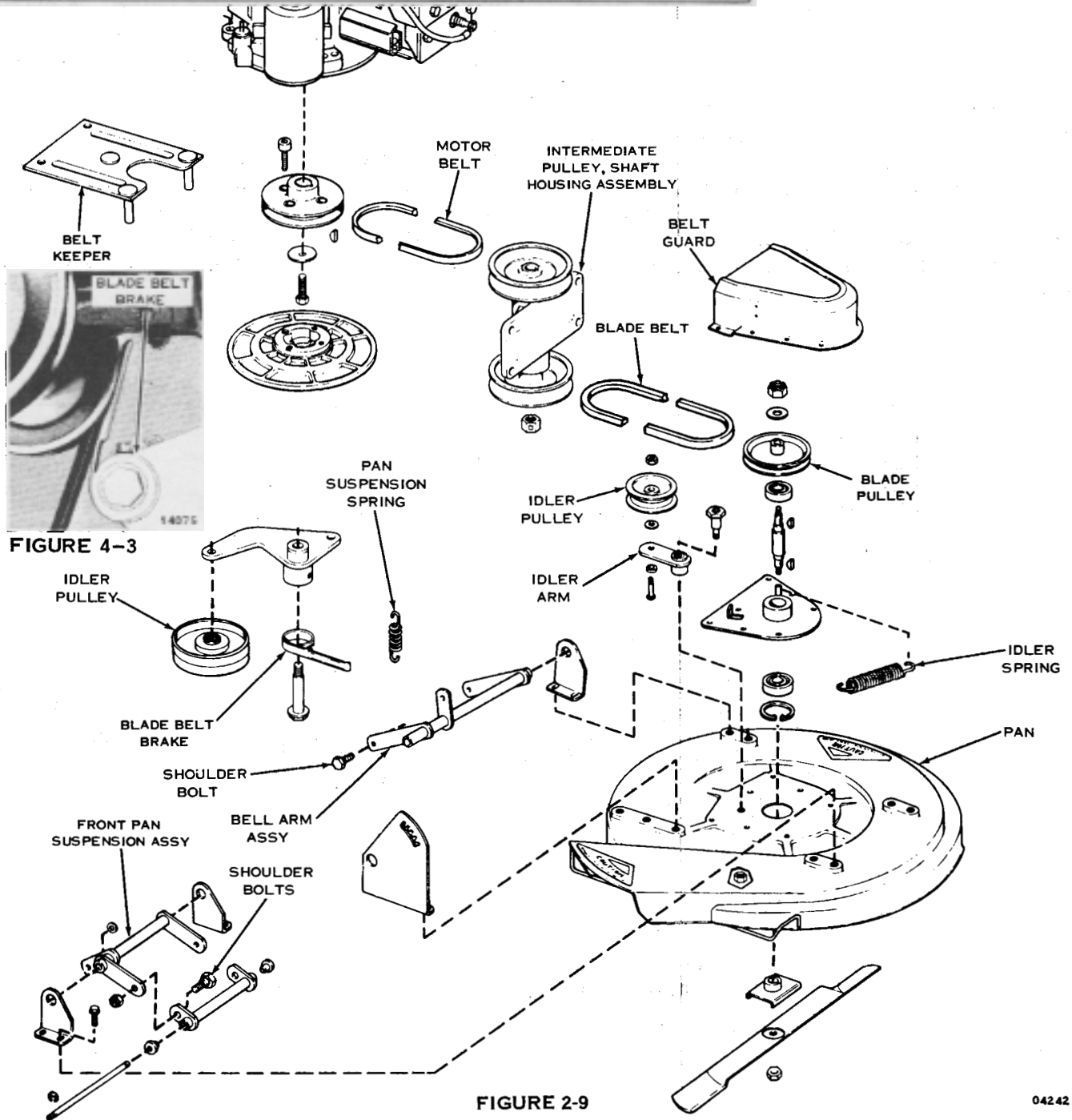
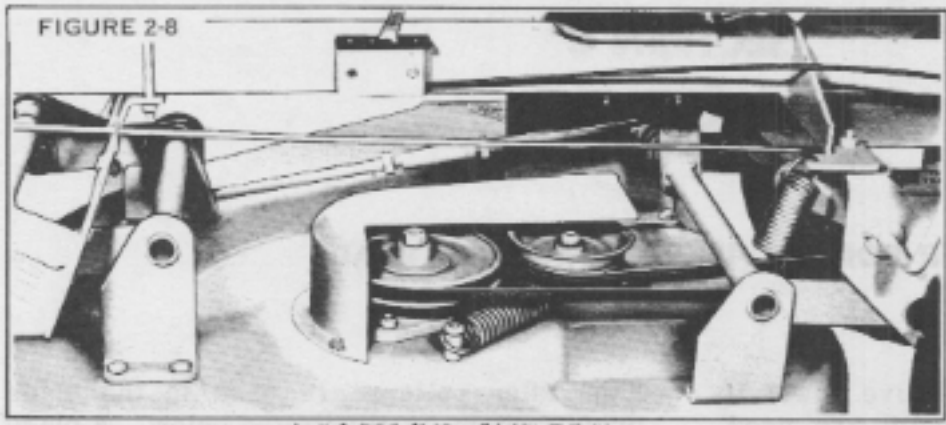


FIGURE 2-9

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MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

MOWER PAN DISASSEMBLY

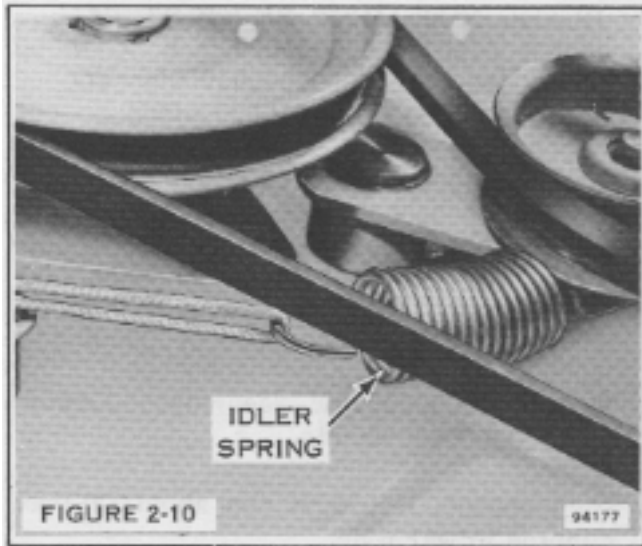
PAN REMOVAL

Remove belt, and bell arm shoulder bolts. Remove front pan suspension bar shoulder bolts. Pan can now be removed from mower.

FRONT BELT REMOVAL

Disconnect spark plug lead.

Remove belt guard; remove idler spring (Figure 2-10).



NOTE

Use a rope as shown on Figure 2-10 when removing idler spring.

REAR BELT REMOVAL

Disconnect spark plug lead. Remove battery, (electric start models only). Remove rear cover. Remove belt keeper (Figure 2-11); tighten tilt (knurfing) bar bolts. Stand mower on tilt (knurfing) bar.

Remove belt.

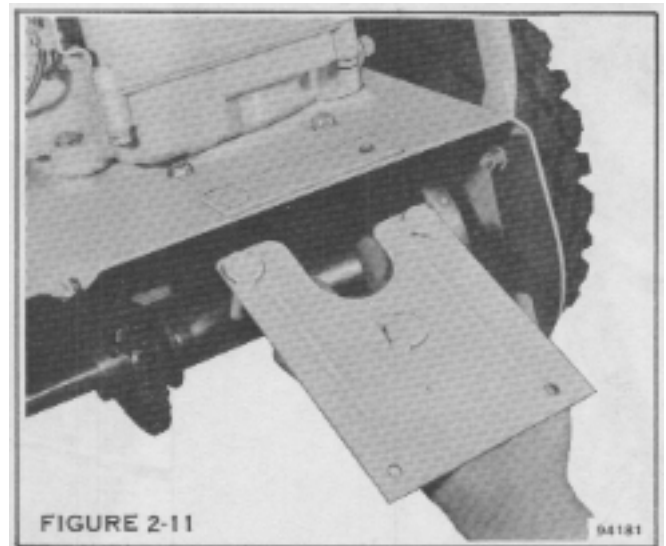
Reassemble in reverse order of disassembly.

SAFETY WARNING

SECURE TO WALL TO PREVENT THE MOWER FROM TIPPING OR FALLING.

Roll belt off the top intermediate pulley. Pull belt between drive disc and drive roller.

Reassemble in reverse order of disassembly.



IDLER ARM REMOVAL

Remove belt. Remove belt pulley. Remove and replace idler arm. (See Figure 2-9.)

MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

BLADE BRAKE ADJUSTMENT

When the blade control lever is placed in the "off" position, an adjustable leaf spring connected to the bell arm and hub assembly is forced against the drive belt preventing the blade from rotating.

The blade brake leaf spring should be adjusted to obtain blade stoppage in not less than (4) four or more than (6) six seconds with engine operating at 3600 RPM.

To obtain proper blade brake tension:

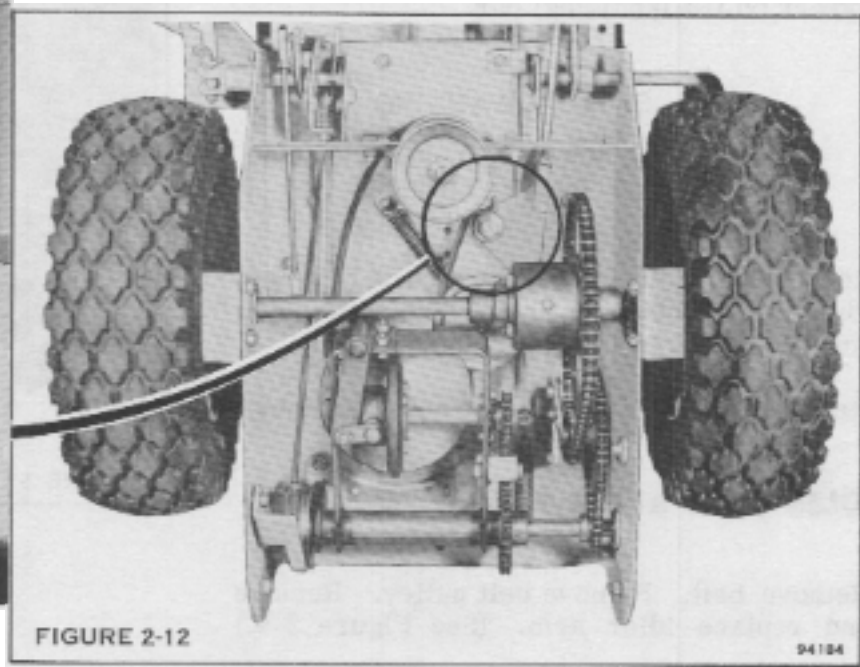
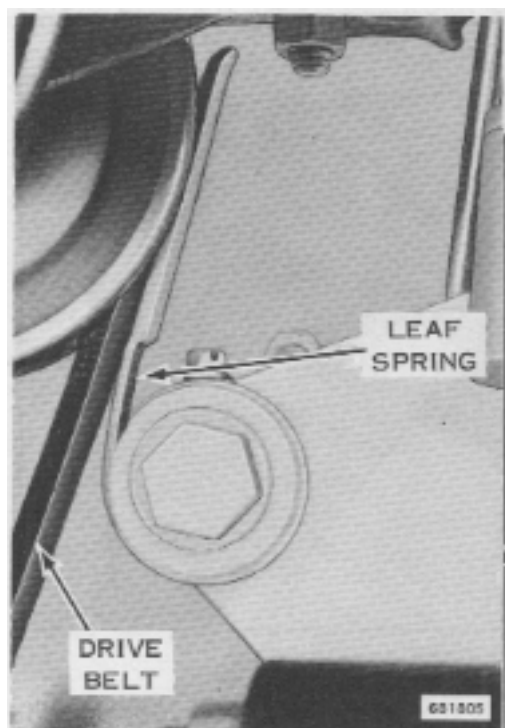
Disconnect spark plug lead. Remove battery, (electric start models only.)

Stand mower on tilt (knurring) bar.

SAFETY WARNING

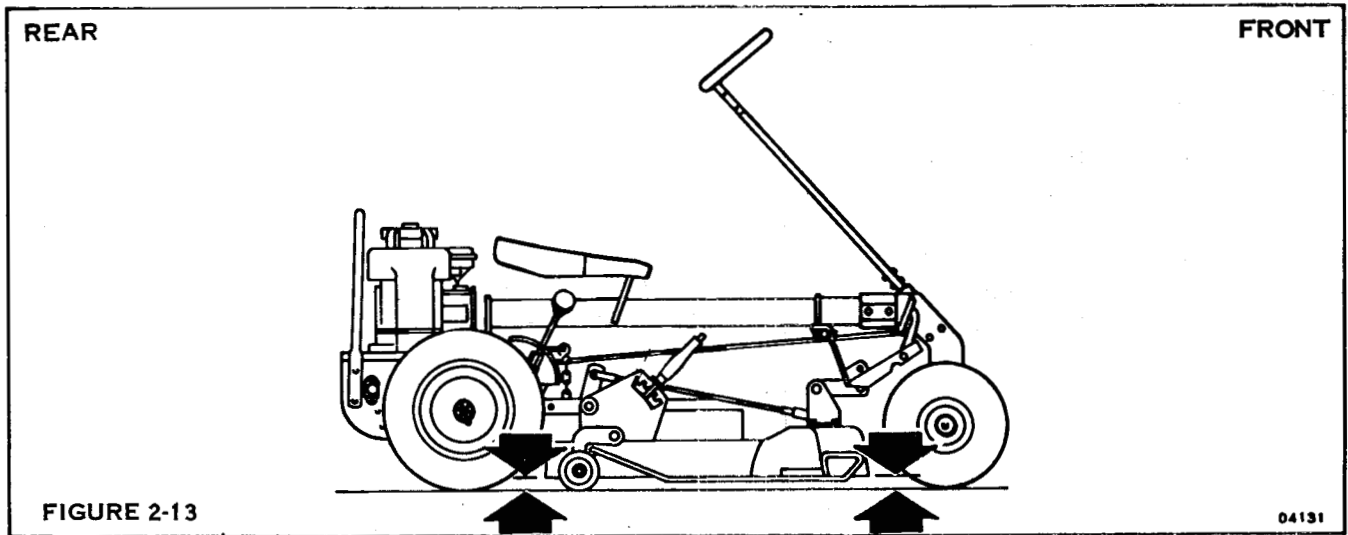
BLADE NUT MUST BE TIGHT BEFORE ADJUSTING BLADE BRAKE TENSION. SECURE MOWER TO PREVENT TIPPING OR FALLING.

1. Use a right angle screwdriver to loosen the lock screw on the blade brake leaf spring. See Figure 2-12.
2. Move the spring in or out until desired position is obtained.
3. Tighten lock screw securely. Lower mower back on wheels.
4. Start engine, letting it run about (2) two minutes to warm up.
5. Place blade control lever in "off" position. Check blade stoppage by visually observing drive pulley. **DO NOT** place hands under the housing.

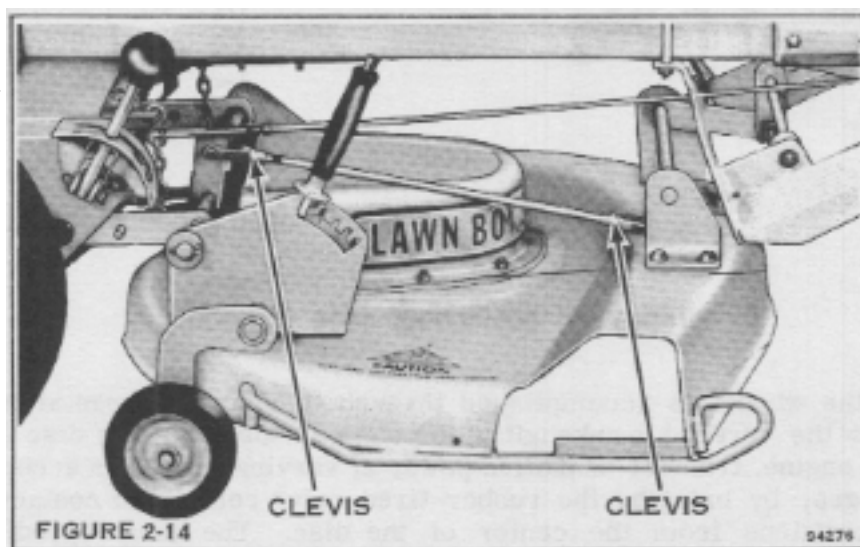


MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

PAN TILT ADJUSTMENT - 26" & 30" MODELS



1. Locate the mower on a flat level surface such as a driveway, sidewalk, garage floor, etc.
2. Place the height adjustment lever in the middle setting.
3. Rotate the blade until the cutting edge is facing the front of the mower and measure the distance from the ground to the tip of the cutting edge of the blade. See Figure 2-13.
4. Rotate the blade 180° and measure (front, rear of pan) the distance from the ground to the tip of the cutting edge of the blade. See Figure 2-13.
5. The mower pan tilt is correct if the measurement obtained in step 4 is 1/4 inch higher than the measurement obtained in step 3.
6. The pan tilt may be adjusted by removing the cotter pin on one end of the tilt adjust rod, loosen the jam nut on the clevis and turn the rod in or out of the clevis until the required tilt is reached. Secure clevis with jam nut. See Figure 2-14.
7. See page 11-54 and check for bent blade.



SECTION 4

THEORY OF OPERATION

INTRODUCTION

The Lawn-Boy Riding Mower is powered by a vertical shaft four-cycle gasoline engine mounted on the rear of the machine. The vertical crankshaft of the engine drives both the wheels and the cutting blade, with the speed of the forward motion determined by the Speed Selector Lever which provides three forward speeds, a reverse, and a neutral position. The speed of the cutting blade on the mower is determined by the revolutions per minute of the engine. The throttle allows varying speeds of the engine up to a maximum of 3600 rpm.

Because of the selective controls of the Rider, it is possible to drive the machine without the cutting blade rotating, to drive the wheels slowly while the cutting blade and engine are at full 3600 rpm for maximum cutting in heavy growth, and to regulate from the driver's seat many combinations of speed and cutting heights.

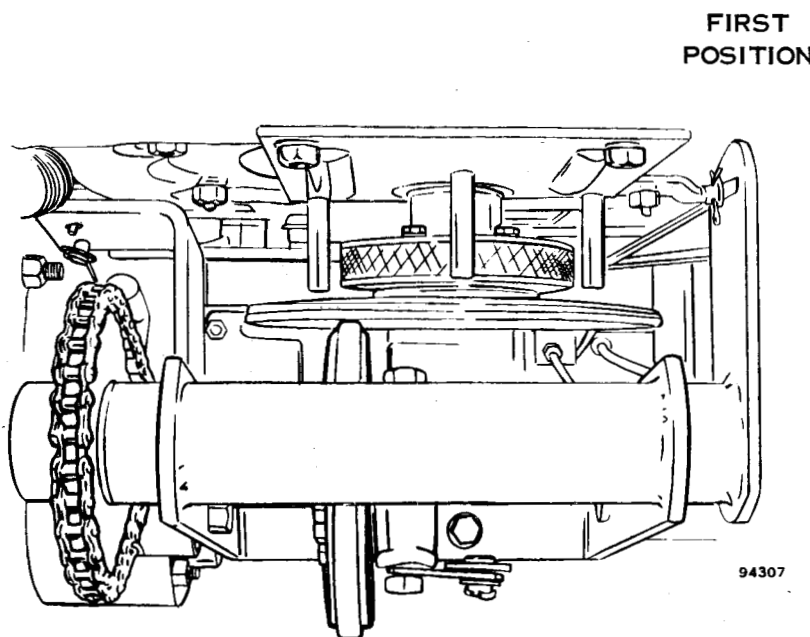
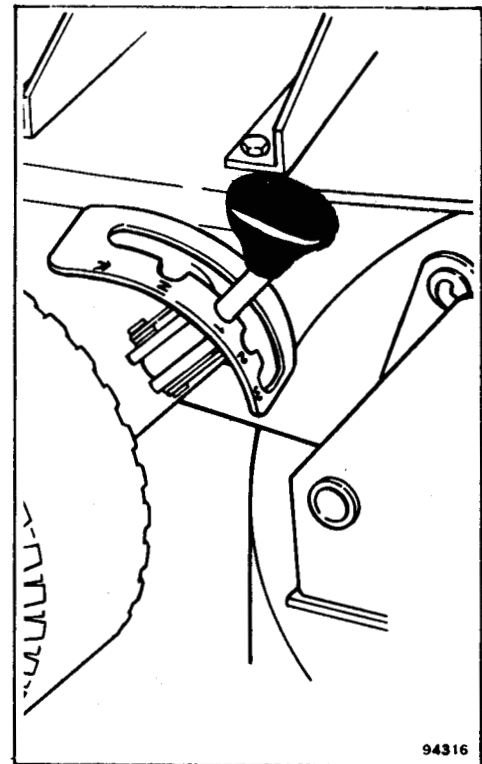


FIGURE 2-15



POWER FOR DRIVING THE WHEELS

The driving of the wheels is accomplished through the use of a large aluminum drive disc which is keyed to the vertical crankshaft of the engine. Because this disc always rotates at the speed of the engine, transfer of motive power at varying speeds is accomplished through the use of linkages, by bringing the rubber-tired drive roller into contact with the disc at three different positions from the center of the disc. The linear speed of any point on a wheel is highest when the point is at the rim and slowest at the hub. The first position

MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

shown, Figure 2-15, is nearest the center and is the slowest speed, or First. The second position shown, Figure 2-16, produces a higher speed, or Second, and the third position, Figure 2-17, near the rim of the disc produces the highest speed, or Third. In third position, the Rider will travel at approximately 6 mph. It is also characteristic of a rotating disc to transmit power in either direction, depending upon which side of the disc is brought into contact with the drive roller. The drive roller is shown, Figure 2-18, in contact with the disc on the opposite side of center. Note that the drive roller is quite close to the center for low-speed, safe backing. In neutral position, Figure 2-19, the drive roller is not in contact with the drive disc.

SECOND
POSITION

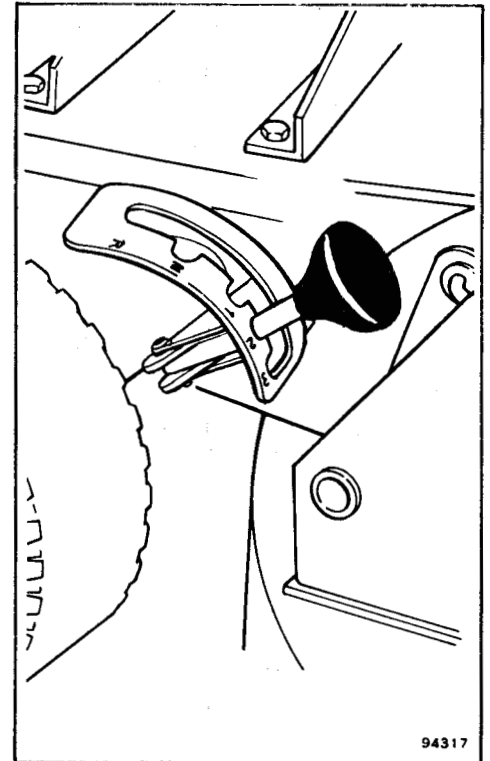
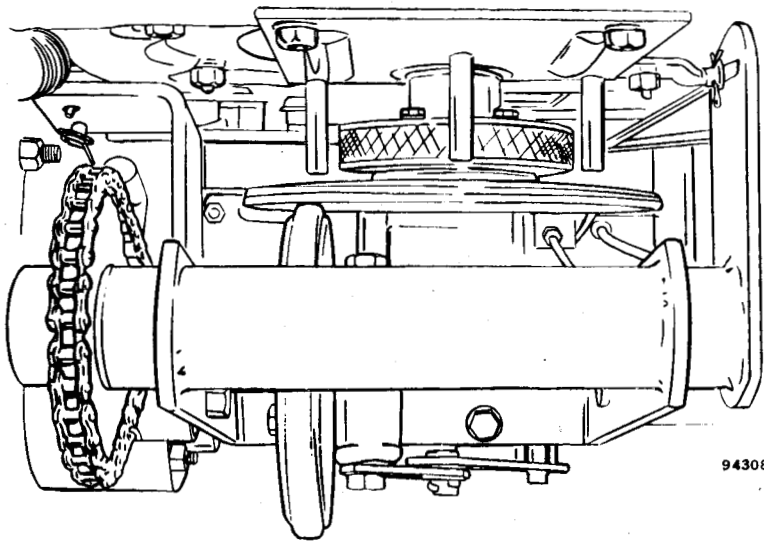


FIGURE 2-16

The use of the large aluminum driving disc and the rubber-tired drive roller offer an advantage in that power can be transmitted to the wheel and speeds changed without the use of a clutch. The drive roller slides smoothly across the face of the turning disc, making it easy to start, change speeds, or go into reverse without clutching. The Rider does, however, provide a clutch to prevent engine choking out during sudden stops when it is not possible to shift the speed selector, and when parking the machine and shifting into gear when the engine is not running. Depressing the clutch lifts the drive roller from contact with the disc and prevents damage to the drive roller as it passes across the motionless driving disc.

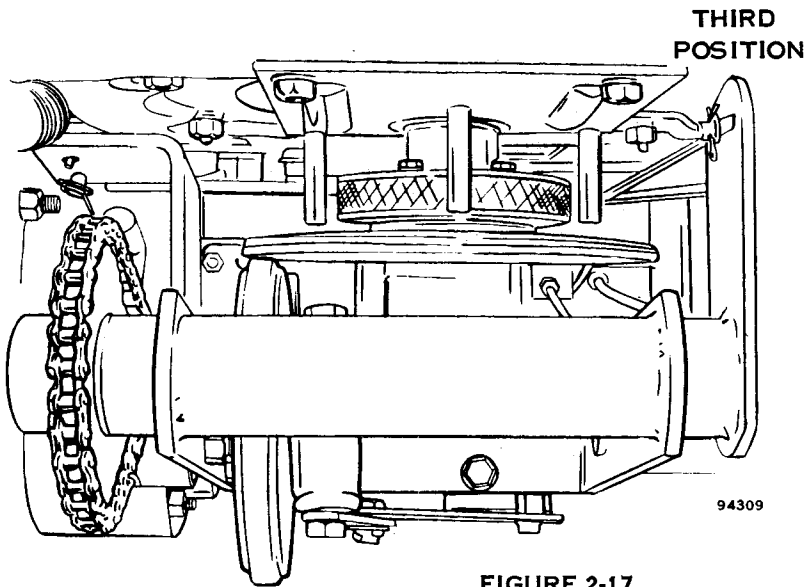
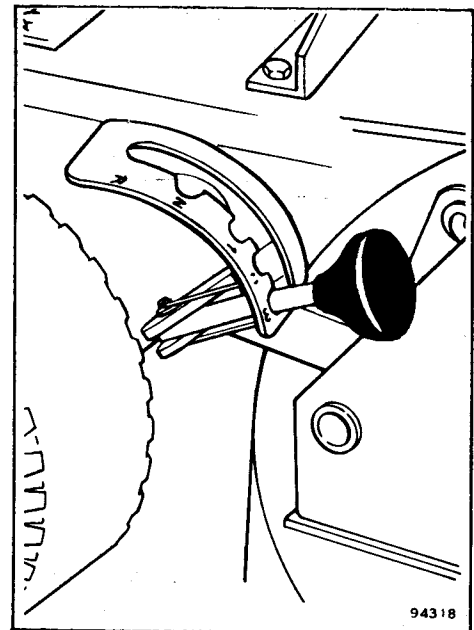


FIGURE 2-17



Inherent in the driving system of disc and drive roller making sudden contact is a tendency to lurch or buck when the machine is started from a dead stop. To make smoother starts possible, a series of sprockets and chains transmits the motive power from the drive roller to the wheels. In Figure 2-20 is shown the smooth transmission of power as the sprocket on the drive roller shaft turns a primary chain connected to the sprocket on the intermediate

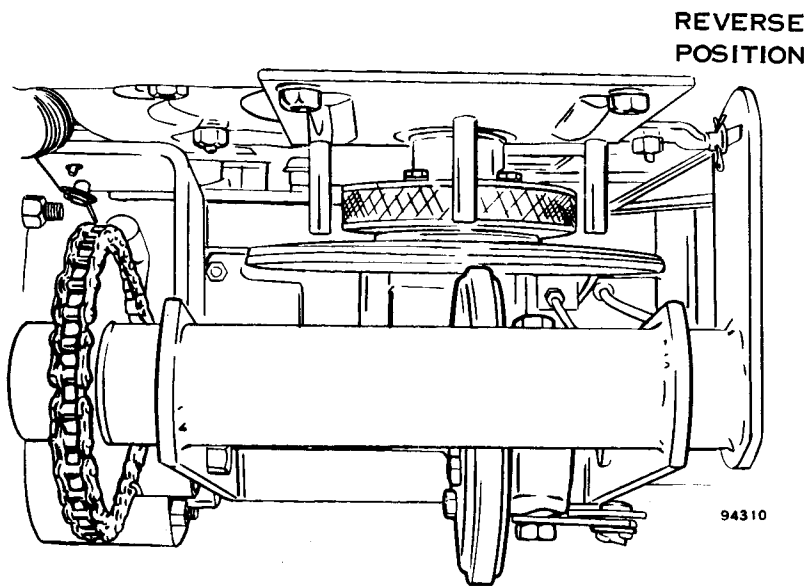
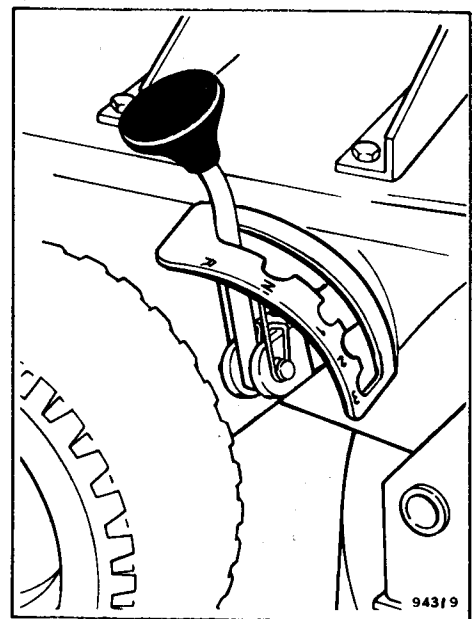


FIGURE 2-18



MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

driveshaft. The sprocket on that shaft, in turn drives an intermediate chain which drives a sprocket on the final drive spindle. The dual sprocket on the final drive spindle drives a final drive chain on the big sprocket mounted on the wheel axle to move the wheels. This combination of sprockets and chains reduces starting torque and absorbs the shock and lurching of starting.

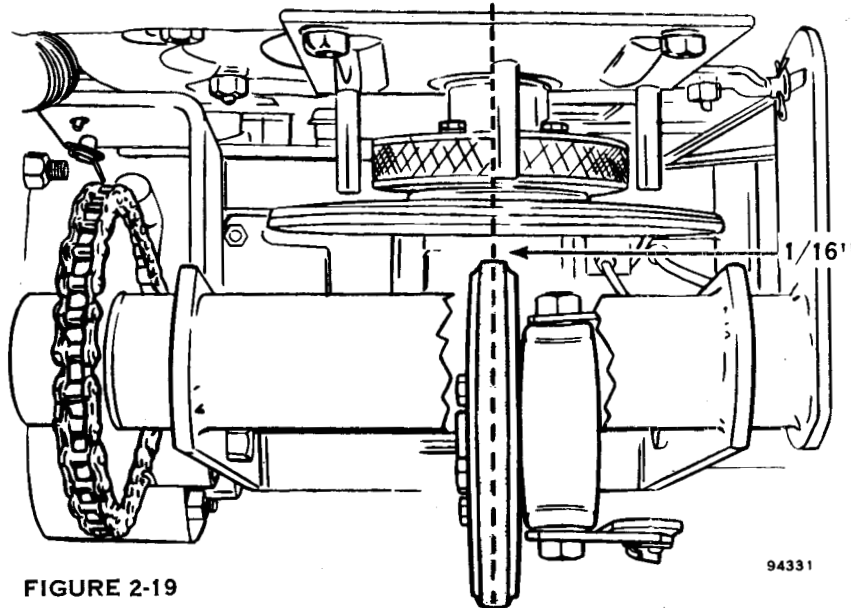
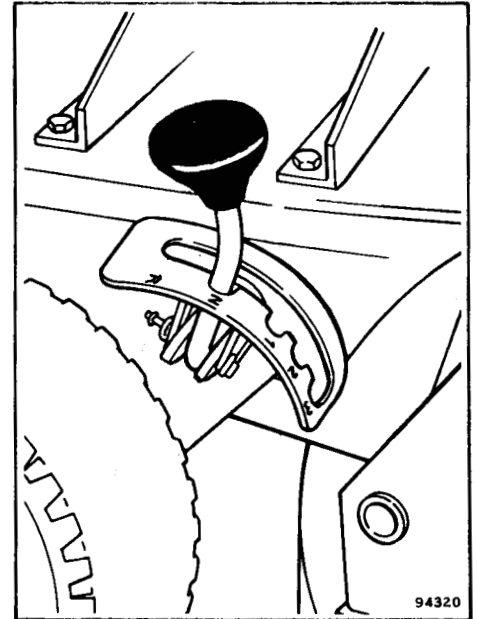


FIGURE 2-19

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94320

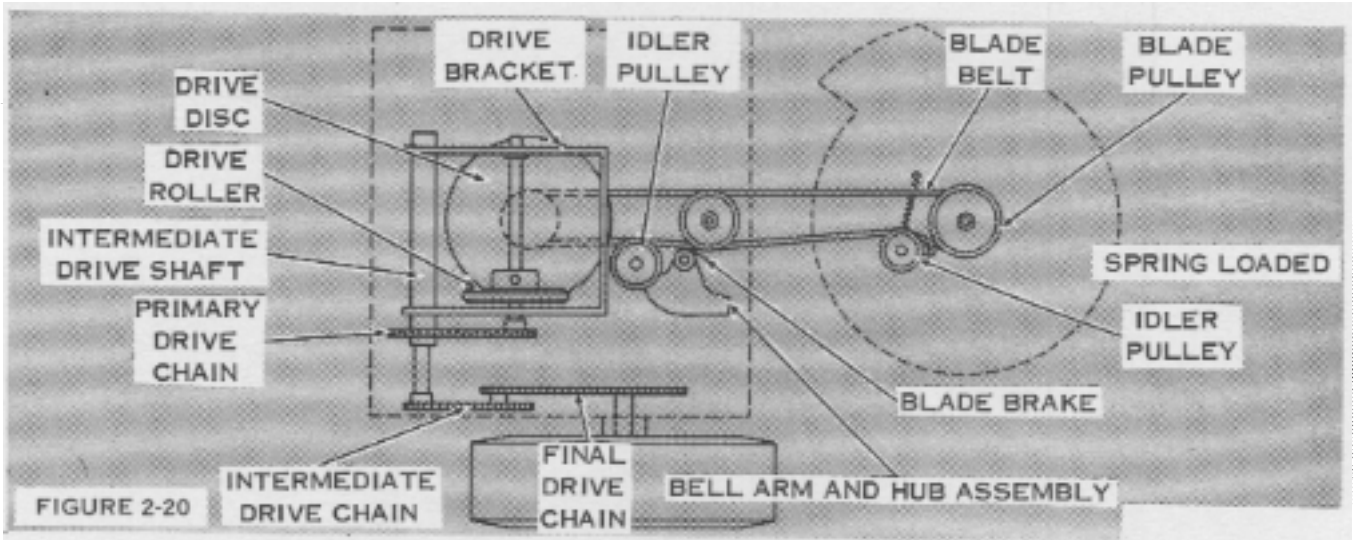


FIGURE 2-20

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MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

To eliminate drive roller slippage and to assure smooth starts, a system of two disc compression springs is employed. When the speed selector lever is placed in gear, the primary disc compression spring creates initial drive roller pressure against the drive disc. Momentarily, the drive roller is allowed to slip, eliminating quick "jumpy" starts. The secondary disc compression spring then goes into effect supplying additional disc pressure to propel the unit. (See Figure 2-21.)

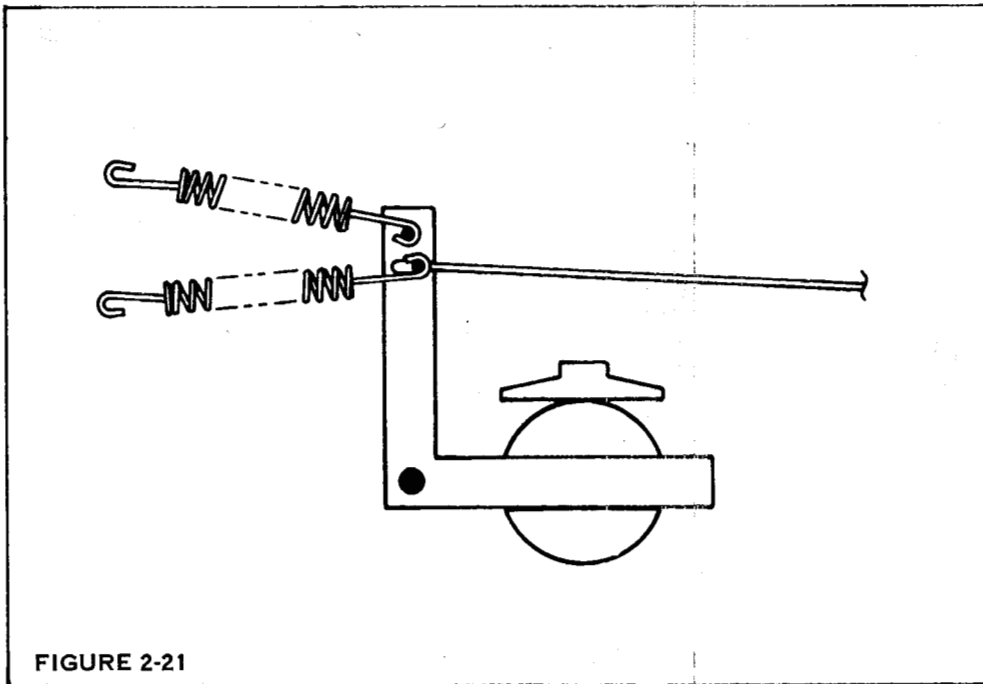


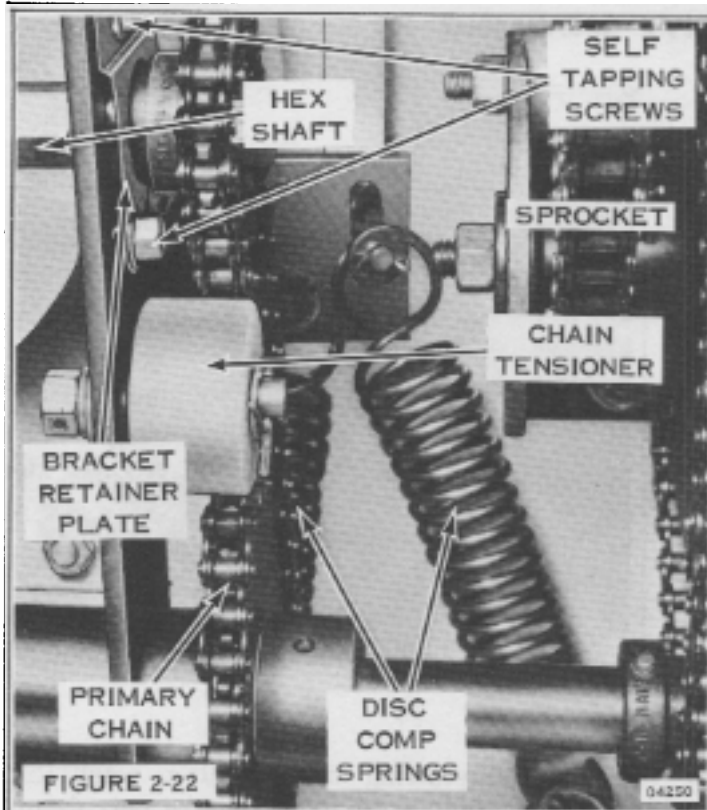
FIGURE 2-21



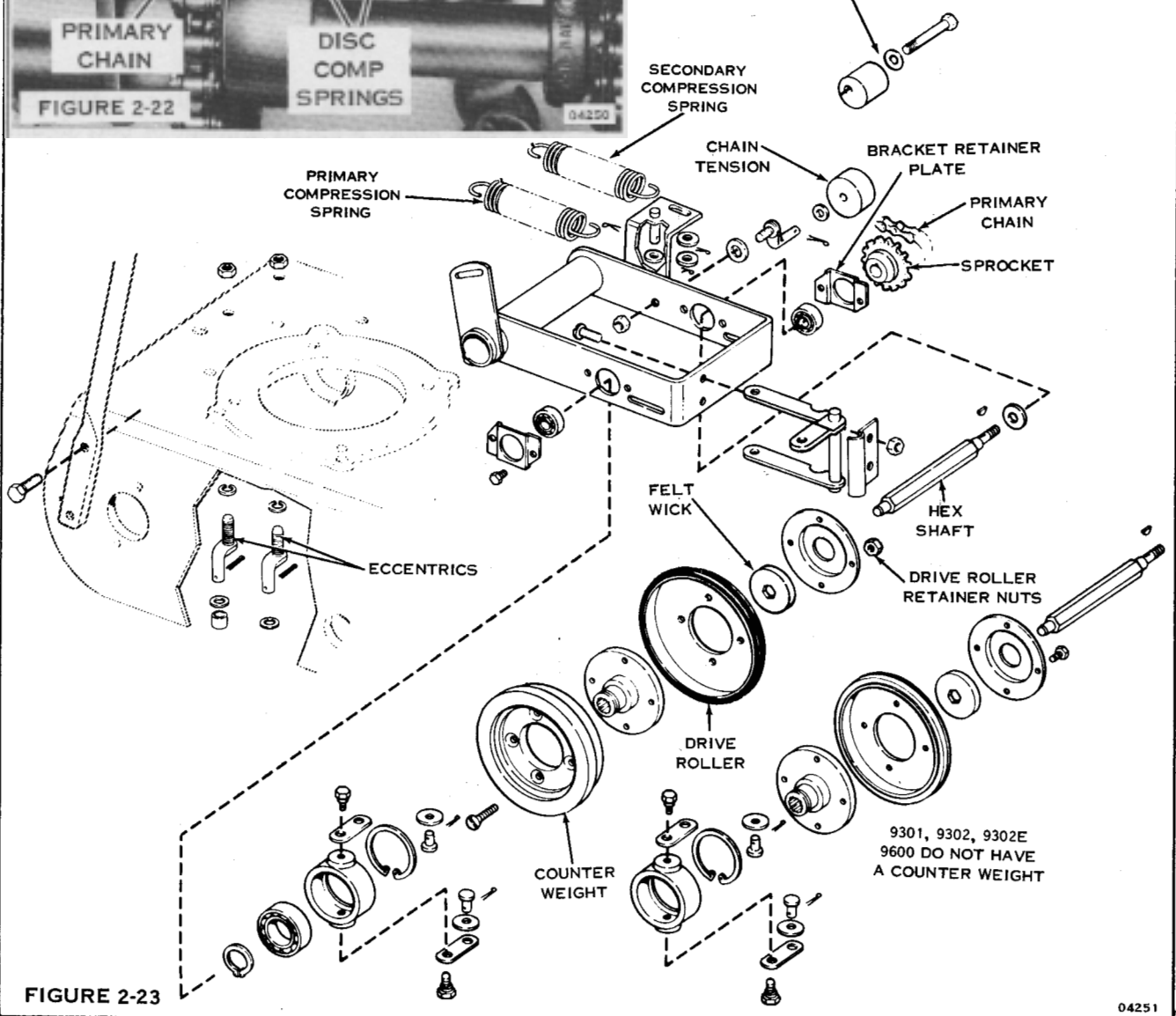
NOTE

9301, 9302, 9302E, 9600 have a single disc compression spring; 5 inch roller. Theory is the same.

MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY



NOTE
9303, 9303E, 9601
CHAIN TENSIONER



PRIMARY DRIVE SERVICING

DISC COMPRESSION SPRING REMOVAL

Disconnect spark plug lead; remove battery, (electric start models only). Remove rear cover.

Remove both disc compression springs.

Models 9301, 9302, 9302E, and 9600 have single disc compression spring.



NOTE

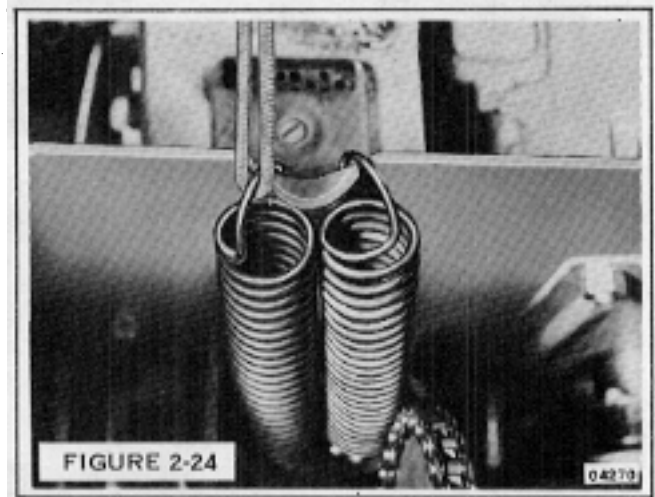
The springs are not identical--tag one as inside; the other as outside. Remove the springs with a rope. (See Figure 2-24.)

RUBBER DRIVE ROLLER SERVICE

Disconnect spark plug lead; remove battery, (electric start models only,) stand mower on tilt (knurring) bar.

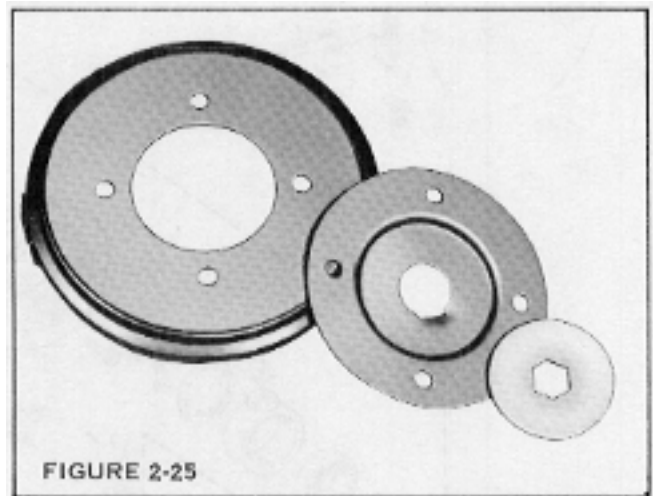
Remove chain tensioner on primary drive chain. (See Figure 2-22.) There will be enough slack to lift the chain off the hexshaft sprocket.

Place speed selector in reverse. Remove four nuts securing drive roller to roller hub. Remove the two screws securing hexshaft bearing retainer plate and remove hexshaft and bearing.



Before reinstalling drive roller, wash felt wick and apply a small amount of petroleum jelly to it (Figure 2-25.) Periodic inspection of the rubber roller and periodic lubrication of the felt oiler pad on the drive roller are the only regular maintenance operations on the drive roller. The rubber portion of the drive roller may crack, chip, or wear, but will be satisfactory as long as there are no large pieces broken out.

After reassembly, adjust the drive roller. See Drive Roller Adjustment.



DRIVE ASSEMBLY ADJUSTMENTS

DRIVE ROLLER TRAVEL - HORIZONTAL

Disconnect spark plug lead; remove battery, (electric start models only,) stand mower on tilt (knurling) bar.

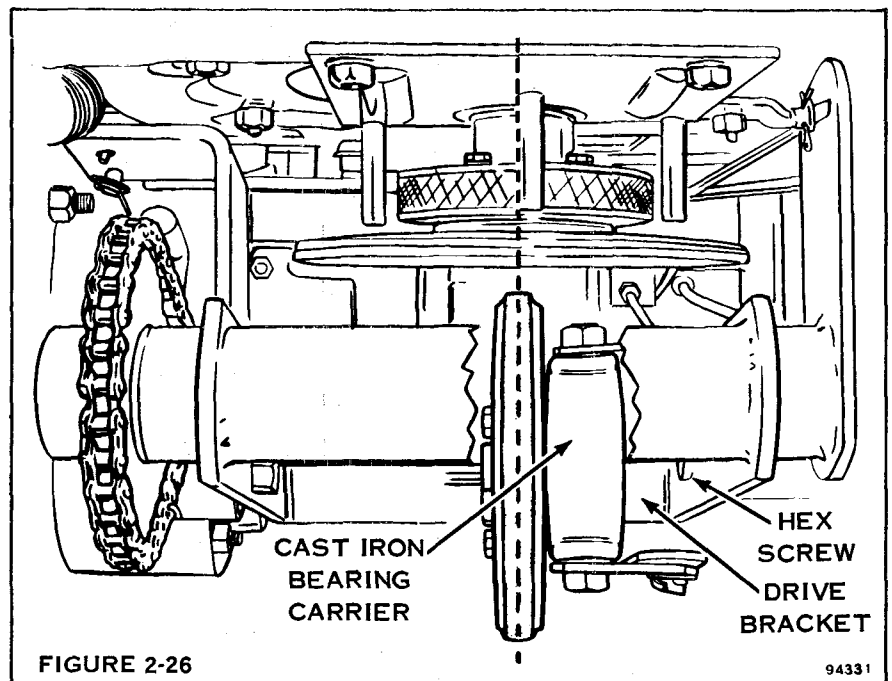
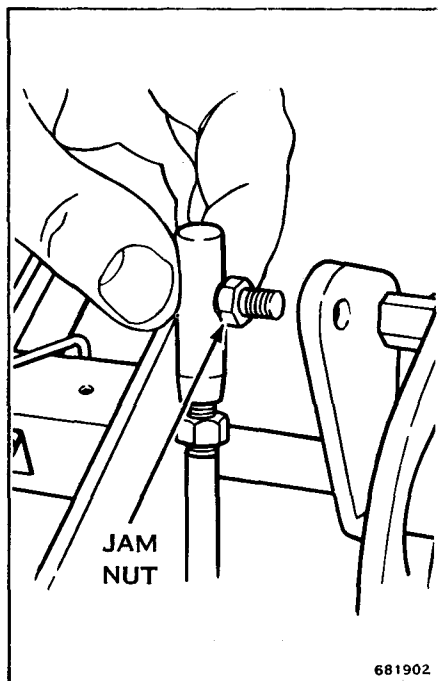
The cast iron bearing carrier of the drive roller assembly must be in contact with the extended threaded ends of the screws holding the hex shaft bearing retainers to the drive bracket with the shift lever placed in the full reverse position (Figure 2-26.) This will allow the drive roller to move across the face of the drive disc as the operator shifts through the three forward speeds or reverse. The drive roller must be readjusted whenever a new roller is installed. To obtain the correct adjustment proceed as follows:

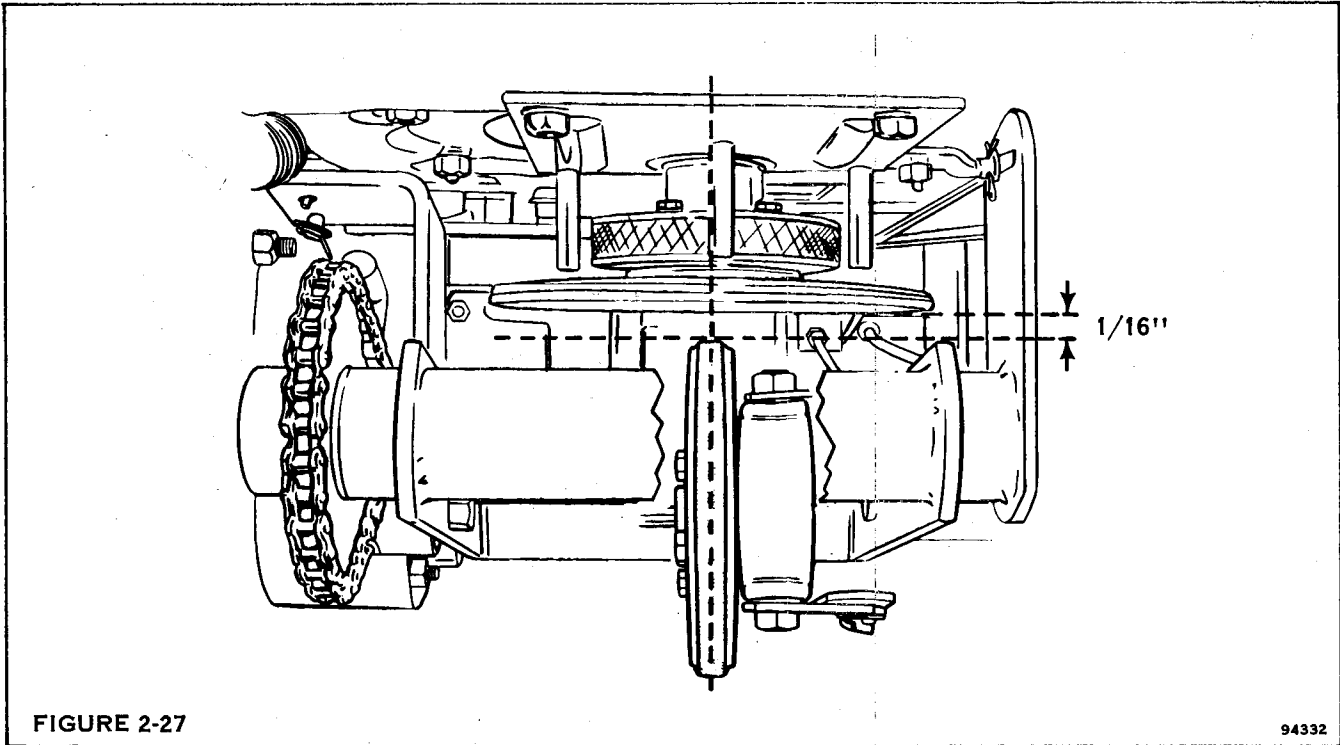
1. Place speed selector lever in "reverse." Loosen jam nut on speed control rod. (Figure 2-26.)
2. Remove nut securing ball joint stud to bell arm assembly.

3. Turn ball joint onto the rod to lengthen travel--off rod to shorten travel (Figure 2-26.) Proper adjustment does not necessarily put the drive roller on center line of drive disc when shift lever is in neutral.
4. When proper adjustment is made, attach ball joint to the bell arm assembly and tighten nut securely. Tighten jam nut up against the ball socket.
5. This is necessary to retain correct rear speed.

 **NOTE**

Inspect the drive disc closely. If the surface is polished the rubber drive roller will slip. Remove polish finish by rubbing in a circular pattern with sand paper or emery cloth.





**DRIVE ROLLER ADJUSTMENT-
VERTICAL ALIGNMENT**

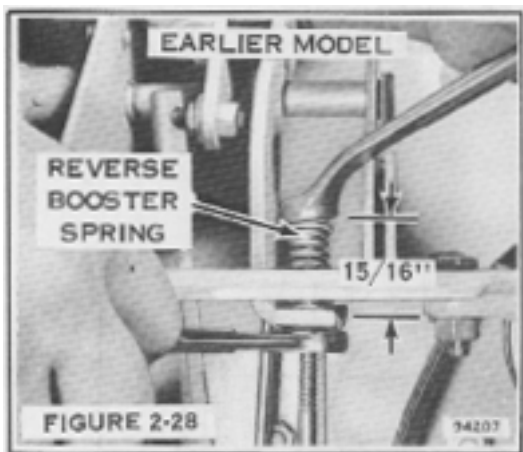
When the speed selector lever is placed in neutral position, the drive roller disengages from the drive disc by use of various linkages. Proper clearance between drive disc and drive roller is 1/16 inch with speed selector lever in neutral. See Figure 2-27. This assures the operator of a positive neutral position and performs a secondary braking action by halting the chain movement to the rear wheels.

To obtain the proper 1/16 inch clearance proceed as follows:

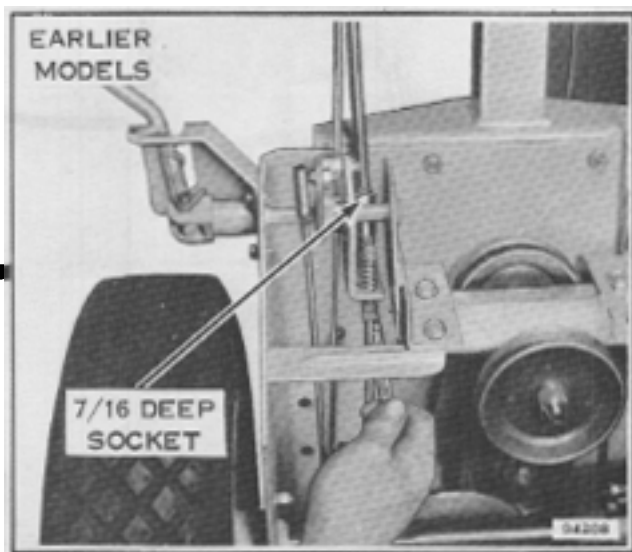
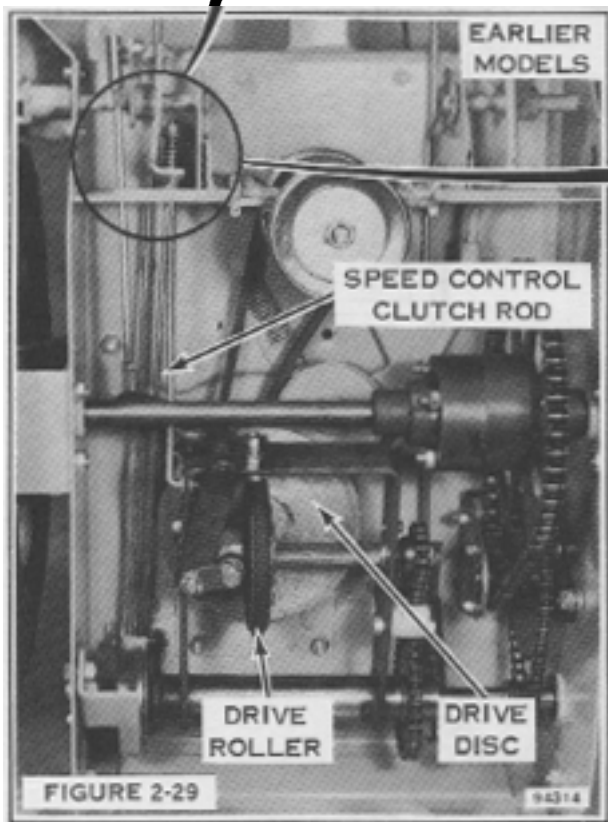
1. Place speed selector lever in neutral position.
2. Stand mower on knurping bar to make adjustment.

See page 11-41 for steps 3, 4, and 5 for models 9301, 9302, 9302E, 9600.
See page 11-42 for steps 3, 4, and 5 for models 9303, 9303E, 9601.

MODELS 9301, 9302, 9302E, 9600 ONLY



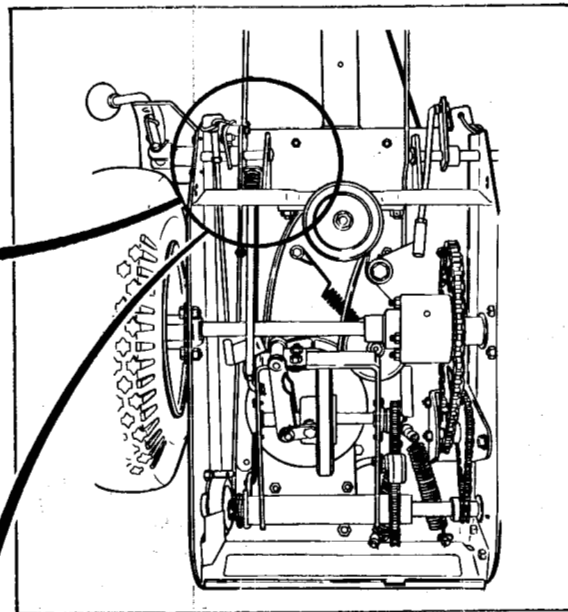
3. Tighten upper reverse booster spring nut until spring is compressed to 15/16 inches. See Figures 2-28 and 2-29.



4. Tighten or loosen upper nut on speed control clutch rod to obtain 1/16 inch clearance between drive roller and disc.
5. Tighten remaining jam nuts.

MODELS 9303, 9303E, 9601 ONLY

3. Tighten upper reverse booster spring nut until spring is compressed 1 1/2". See Figure 2-30.
4. Tighten or loosen upper nut on speed control clutch rod to obtain 1/16 inch clearance between roller and disc.
5. Tighten remaining jam nuts.



LATER
MODELS

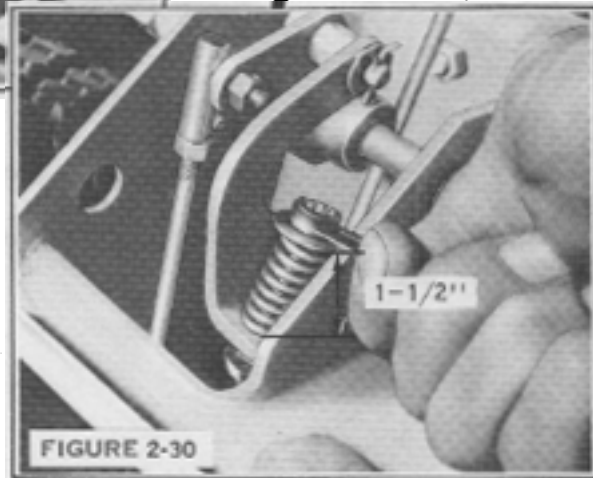


FIGURE 2-30

MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

DRIVE ROLLER ADJUSTMENT - SPRING TENSION

A. Primary (inside) Disc Compression Spring Adjustment

1. Place mower in horizontal position and remove rear cover.
2. Place speed selector lever in second gear. Do not depress clutch pedal.
3. Remove secondary (outside) spring.
4. Attach spring scale to hex shaft. While pulling downward on scale, rotate primary (inside) adjustable eccentric until spring scale reads 4 to 5

lbs., pressure and the drive roller breaks contact with the drive disc. See Figure 2-31.

5. Replace secondary disc compression spring.

B. Secondary (Outside) Disc Compression Spring Adjustment (Figure 2-32).

1. Attach spring scale to hex shaft. While pulling downward on scale rotate secondary (outside) adjustable eccentric until the spring scale reads

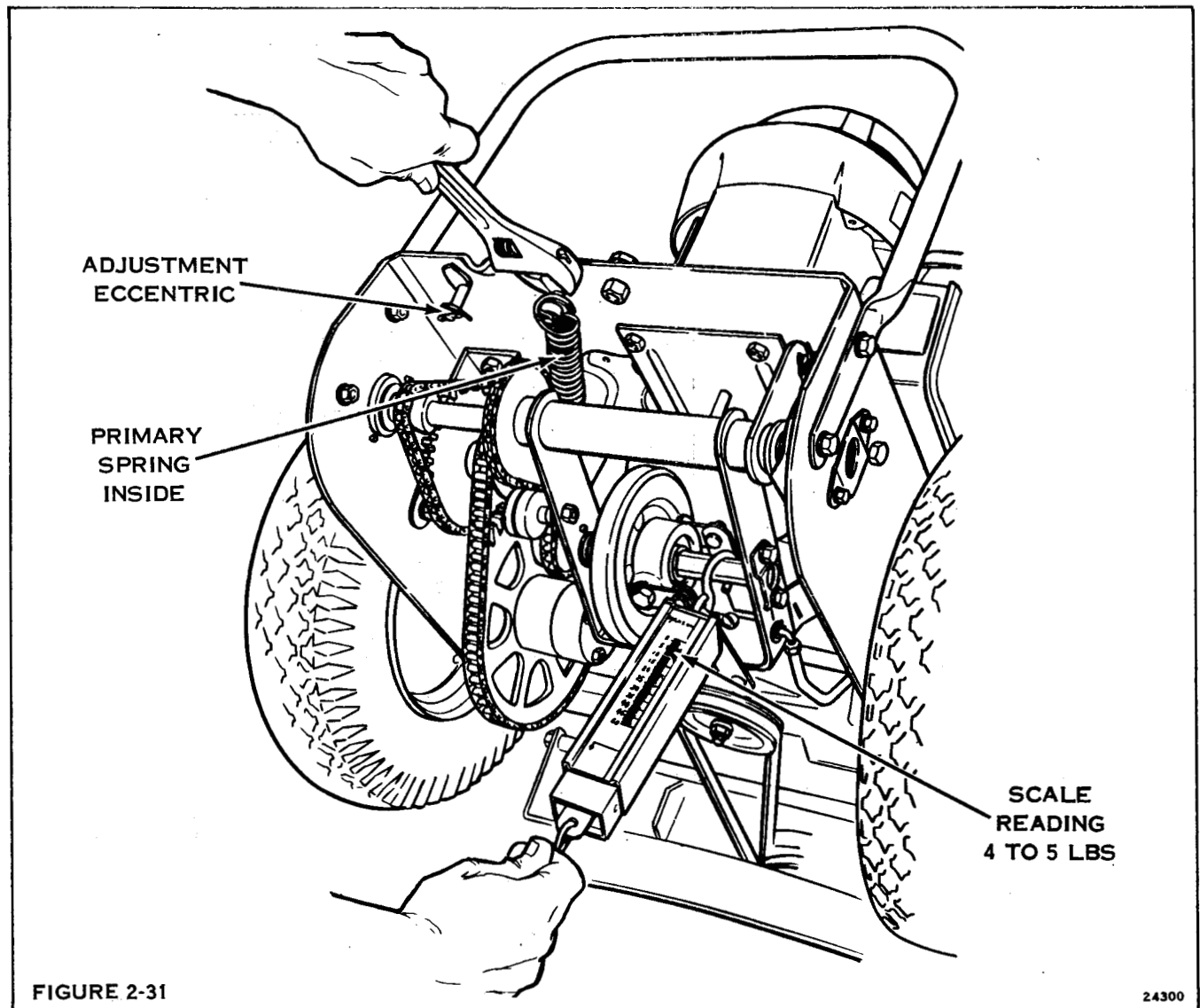


FIGURE 2-31

24300

MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

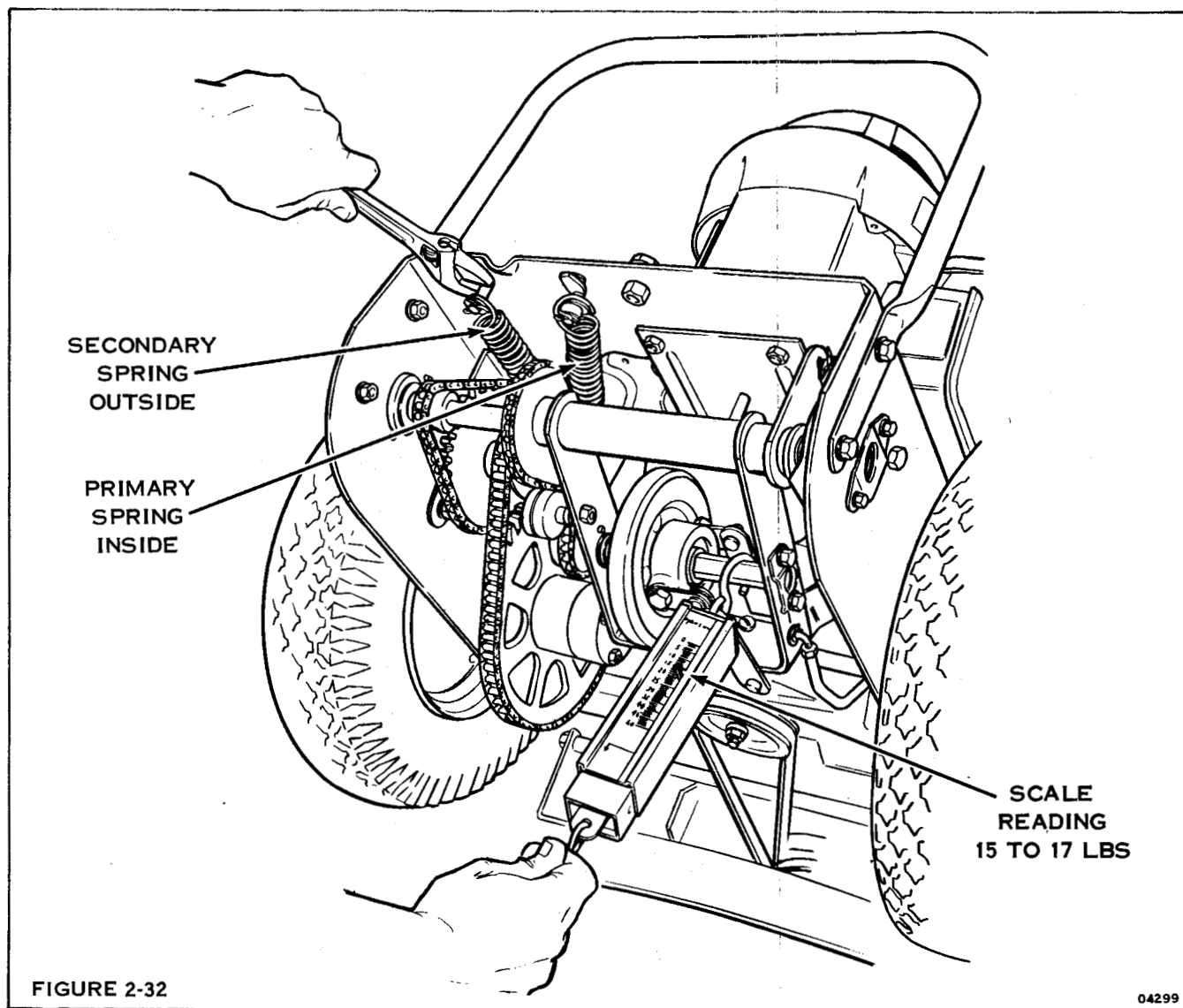
15 to 17 lbs., pressure and the drive roller breaks contact with the drive disc.

2. Place speed selector lever in neutral position and re-check the 1/16 inch clearance between drive disc and drive roller.



NOTE

If drive roller slippage is observed, slightly increase the spring tension on the secondary (outside) spring. If quick "jumpy" starts are observed, decrease spring tension on the primary (inside) spring.



MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY

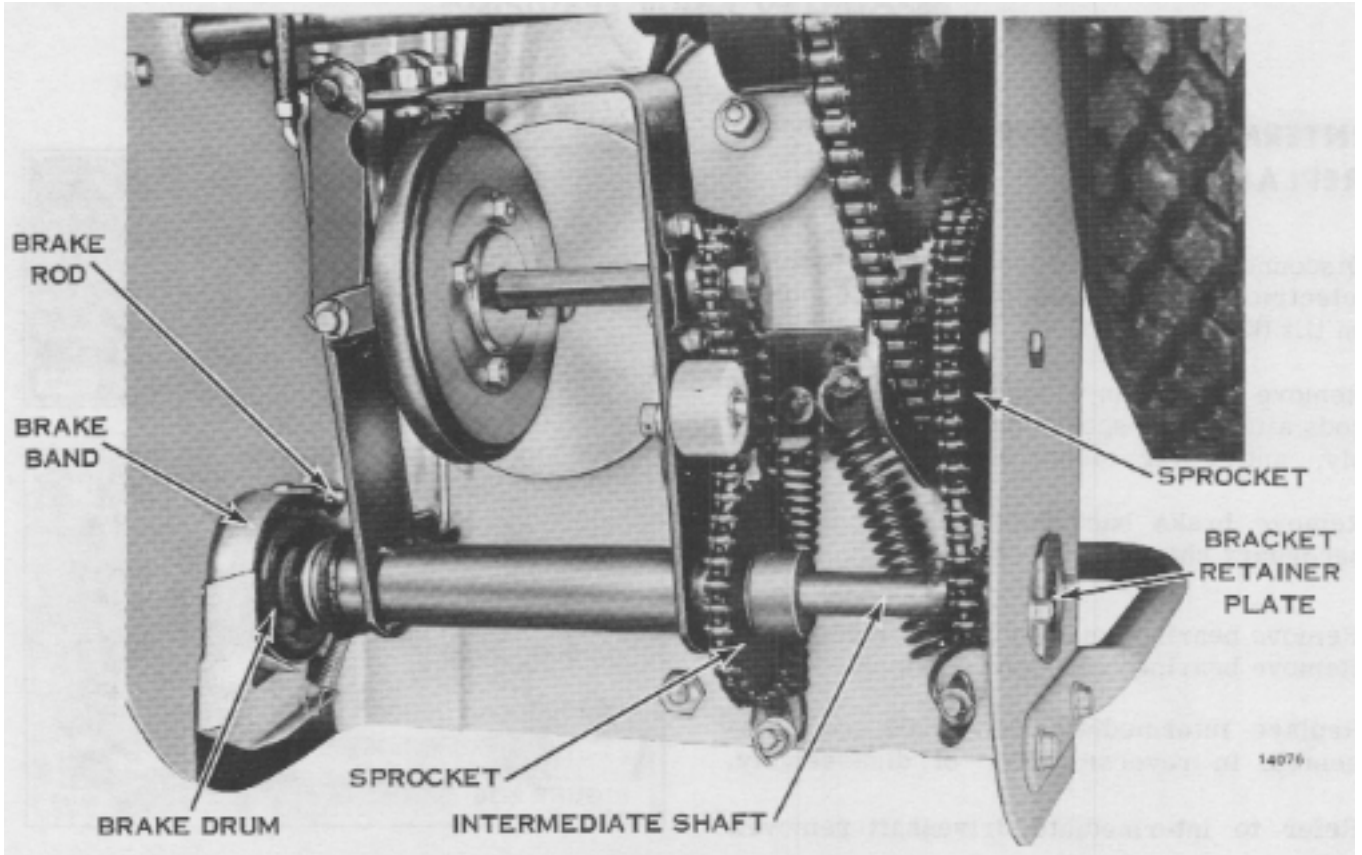


FIGURE 2-33

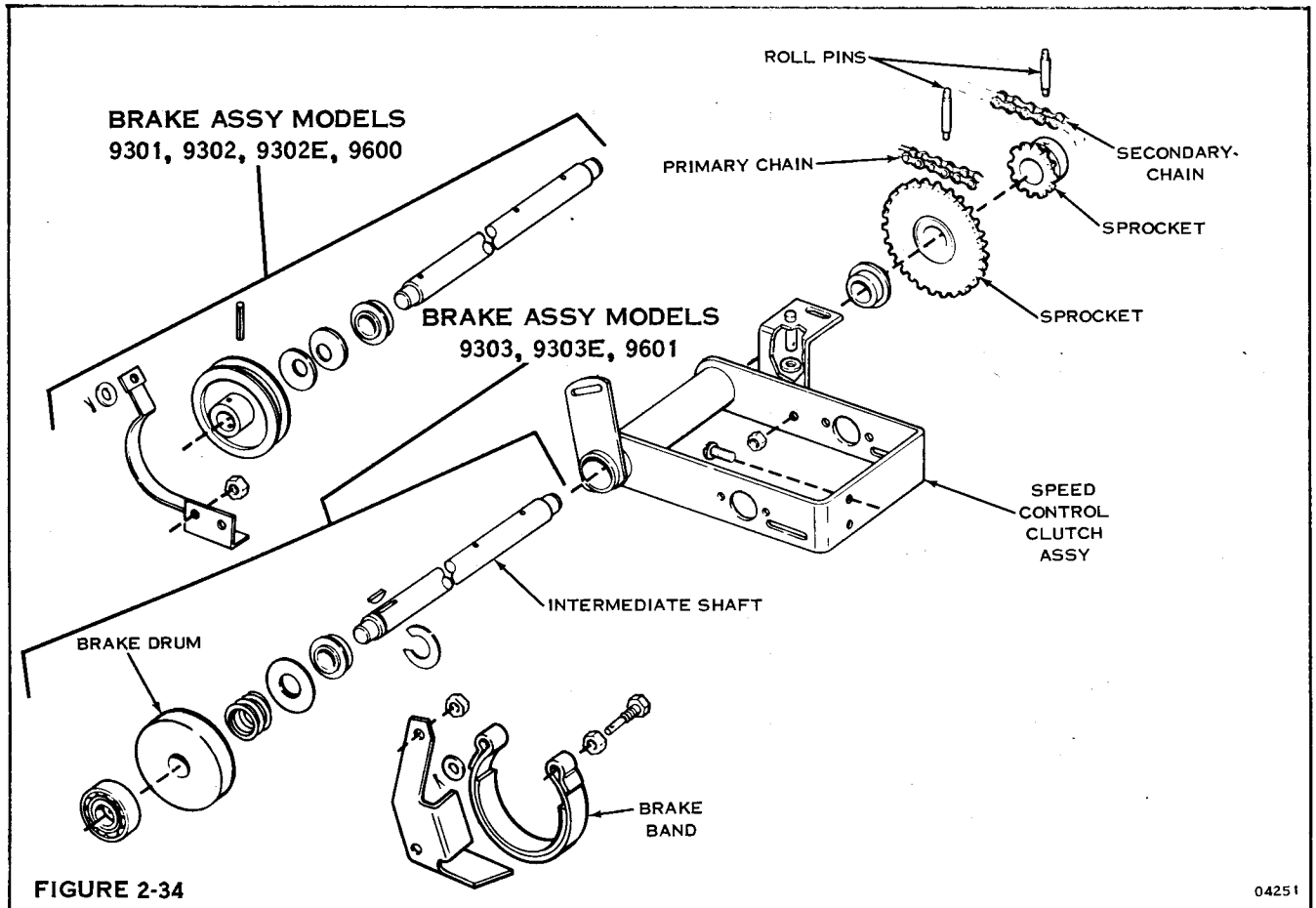


FIGURE 2-34

04251

SECONDARY DRIVE SERVICING

INTERMEDIATE DRIVESHAFT REPLACEMENT

Disconnect spark plug lead; remove battery, (electric start models only,) stand mower on tilt (knurfing) bar.

Remove disc compression springs and all rods attached to speed control clutch assembly, and lower clutch assembly to floor.

Remove brake band from chasis. Remove secondary chain (Figure 2-35.)

Remove bearing retainer plates from chasis. Remove bearings and driveshaft.

Replace intermediate driveshaft and reassemble in reverse order of disassembly.

Refer to intermediate driveshaft removal.

Sprockets are secured to shaft with drive pins. Remove drive pins.

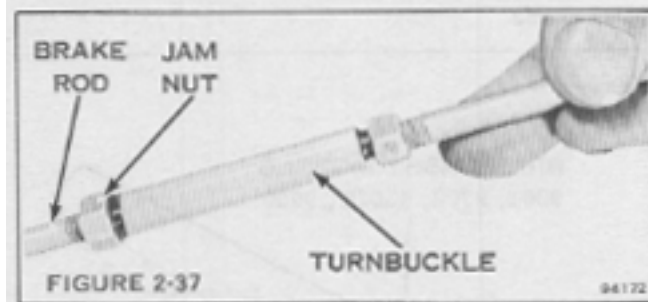
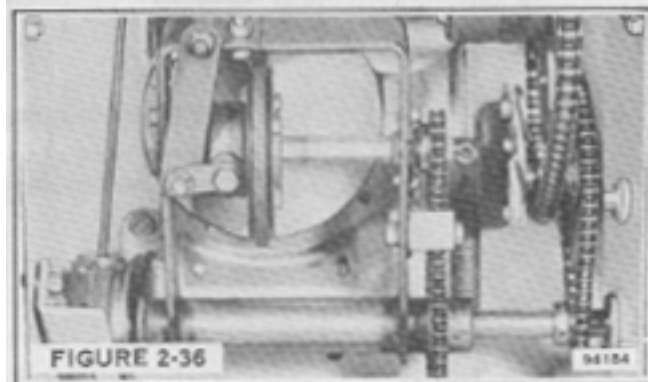
CHAIN ADJUSTMENT ON PRIMARY AND FINAL DRIVE ONLY

Disconnect spark plug lead; remove battery (electric start models only) stand mower on tilt (knurfing) bar.

Loosen nylon chain guide eccentric nut slightly and rotate into or away from chain to attain proper chain tension. Correct chain tension is 1/4 inch deflection with light thumb pressure.

WHEEL BRAKE ADJUSTMENT

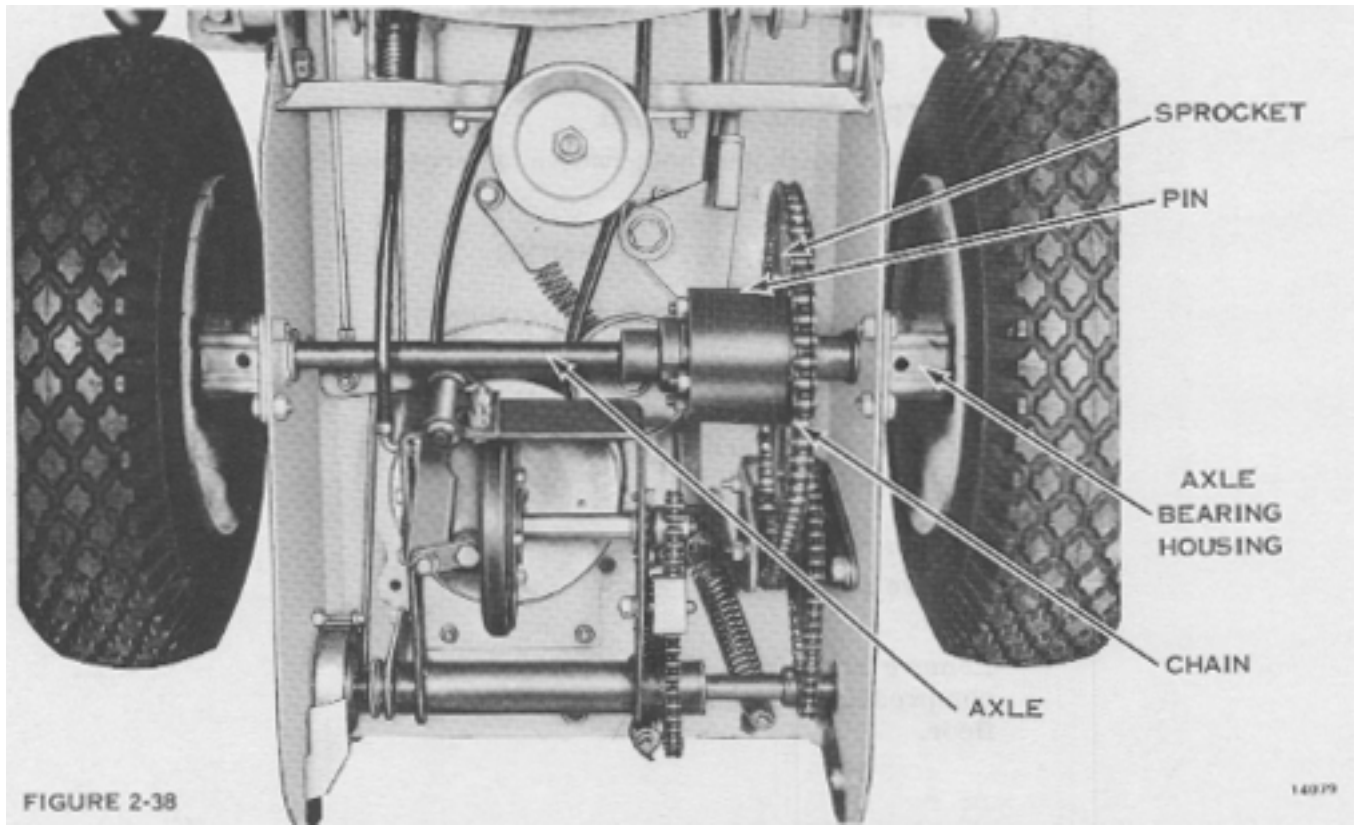
The friction type brake system consists of a foot pedal, brake rod, brake and drum assembly. As foot brake is depressed, a reinforced band on brake assembly is forced against the drum. This action brakes the intermediate drive, thus stopping wheel rotation. To prevent damage to the drive roller, the clutch and brake must be applied



simultaneously when making a stop. To adjust brake proceed as follows:

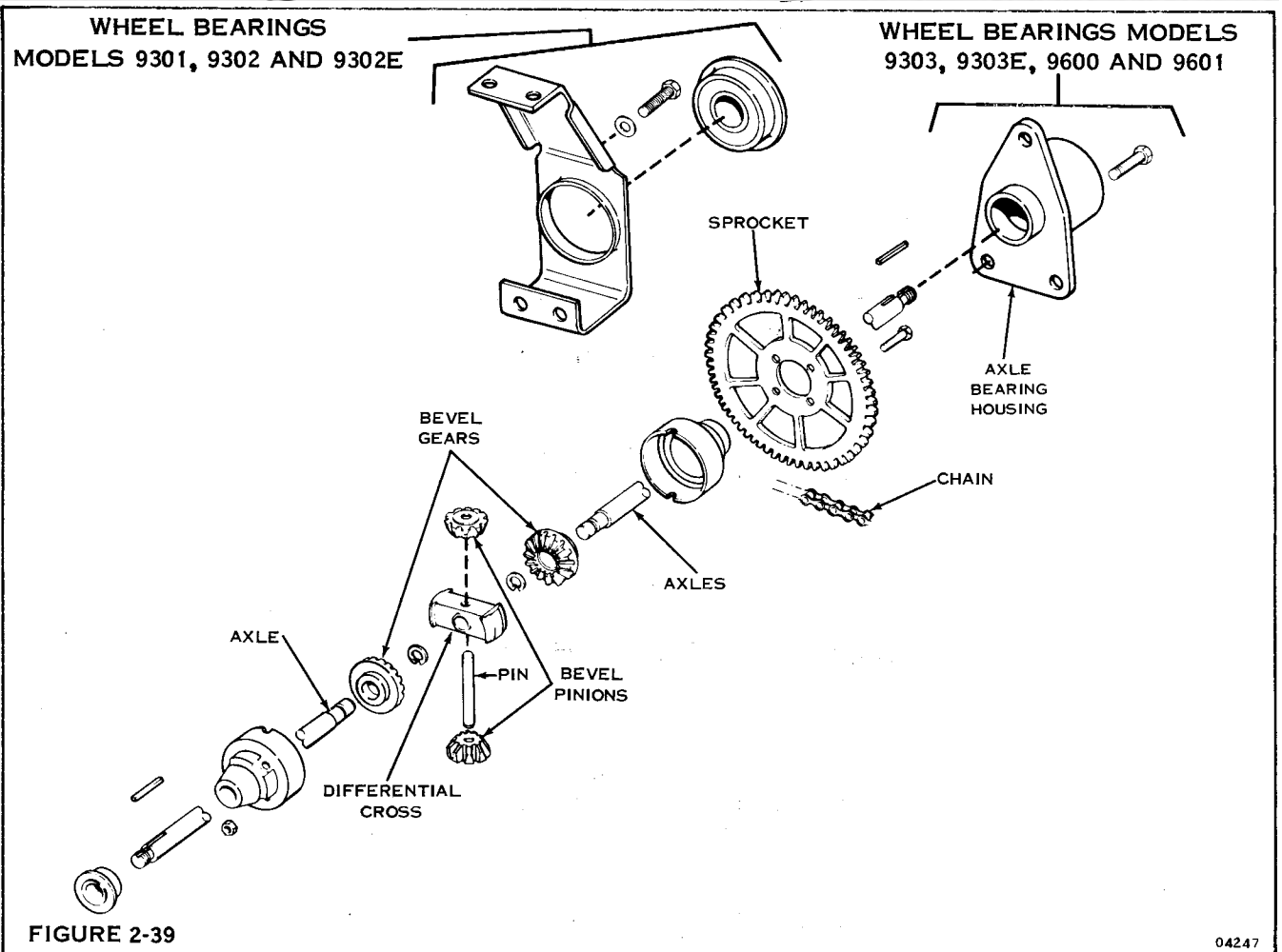
1. Remove cotter pin and washers from the brake rod at foot pedal. (Figure 2-36) and remove rod.
2. Loosen jam nuts at turnbuckle. See (Figure 2-37). Screw brake rod in or out of turnbuckle for proper adjustment which is obtained when slight pressure on the pedal encounters resistance after 1/2 inch pedal travel.
3. Tighten jam nuts at turnbuckle and reassemble brake rod to the foot pedal.

MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY



**WHEEL BEARINGS
MODELS 9301, 9302 AND 9302E**

**WHEEL BEARINGS MODELS
9303, 9303E, 9600 AND 9601**



FINAL DRIVE DISASSEMBLY

DIFFERENTIAL REMOVAL

Disconnect spark plug lead; remove battery (electric start models only).



WHEN STANDING MOWER ON END, ALWAYS ANCHOR IT TO PREVENT FROM TIPPING OR FALLING. ALSO PLACE THROTTLE IN "STOP" POSITION AND DISCONNECT SPARK PLUG LEAD.

Stand mower on tilt (knurfling) bar.

Remove rear belt.

Remove rods from carrier bracket and disc compression springs. Lower bracket to floor.

Remove chain, rear wheels and axle bearings.

Place blade control lever in "on" position and slide differential out.

 NOTE

Be careful not to mar the drive disc with the differential sprocket teeth when removing the differential.

Reassemble in reverse order of disassembly. After reassembly place blade control lever in off position.

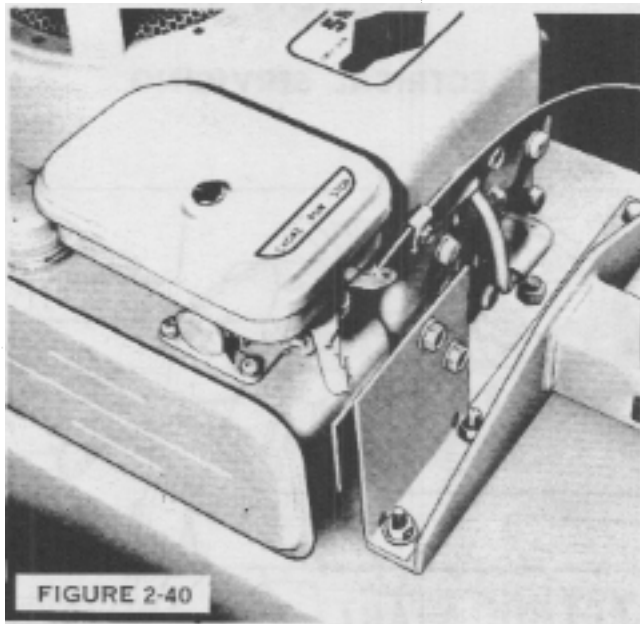
DIFFERENTIAL DISASSEMBLY

Remove differential. (See above.)

Remove four bolts holding differential and sprocket together. Differential halves can then be separated. Inspect parts, etc., (Figure 2-39).

When reassembling, pack differential with 3 ounces of Lawn-Boy "A" grease.

MODELS 9301, 9302, 9302E, 9303E, 9600, 9601 ONLY



ENGINE REMOVAL

Disconnect spark plug lead and throttle linkage. Remove rear drive belt.

For Model 9601 also remove 2 cylinder head bolts attached to support mounting plate (Figure 2-40.)

Remove engine mounting bolts and lift engine from mounting frame.



NOTE

Do not tip engine on its side without removing oil and fuel.

DRIVE DISC REMOVAL

Remove engine. Remove four allen head screws securing disc to drive pulley.

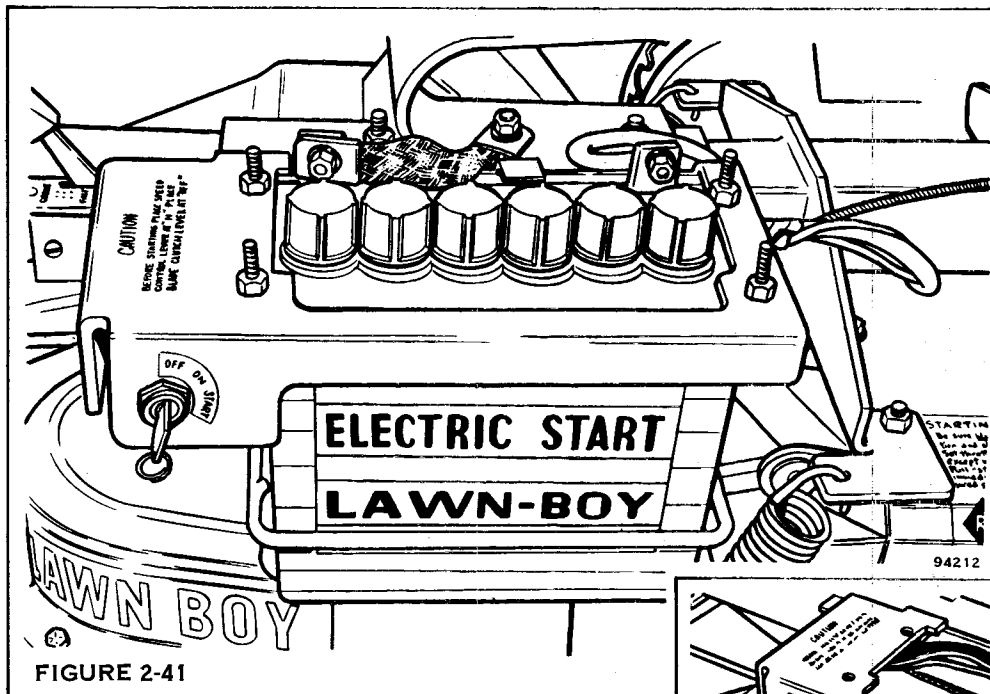
DRIVE PULLEY REMOVAL

Remove engine and drive disc. Remove single bolt securing drive pulley to keyed crankshaft and remove pulley.

MODELS 9302E, 9303E ONLY

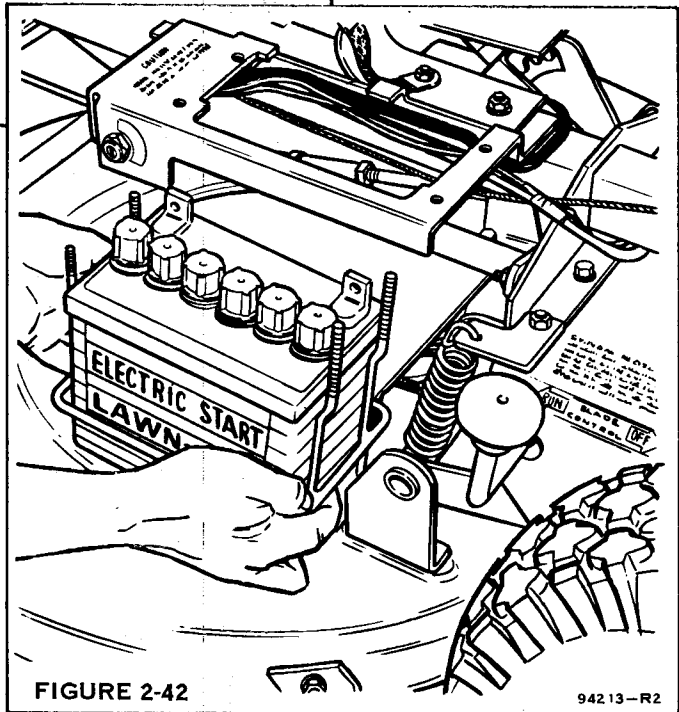
SECTION 5

ELECTRICAL SERVICING



Follow these procedures to remove battery.

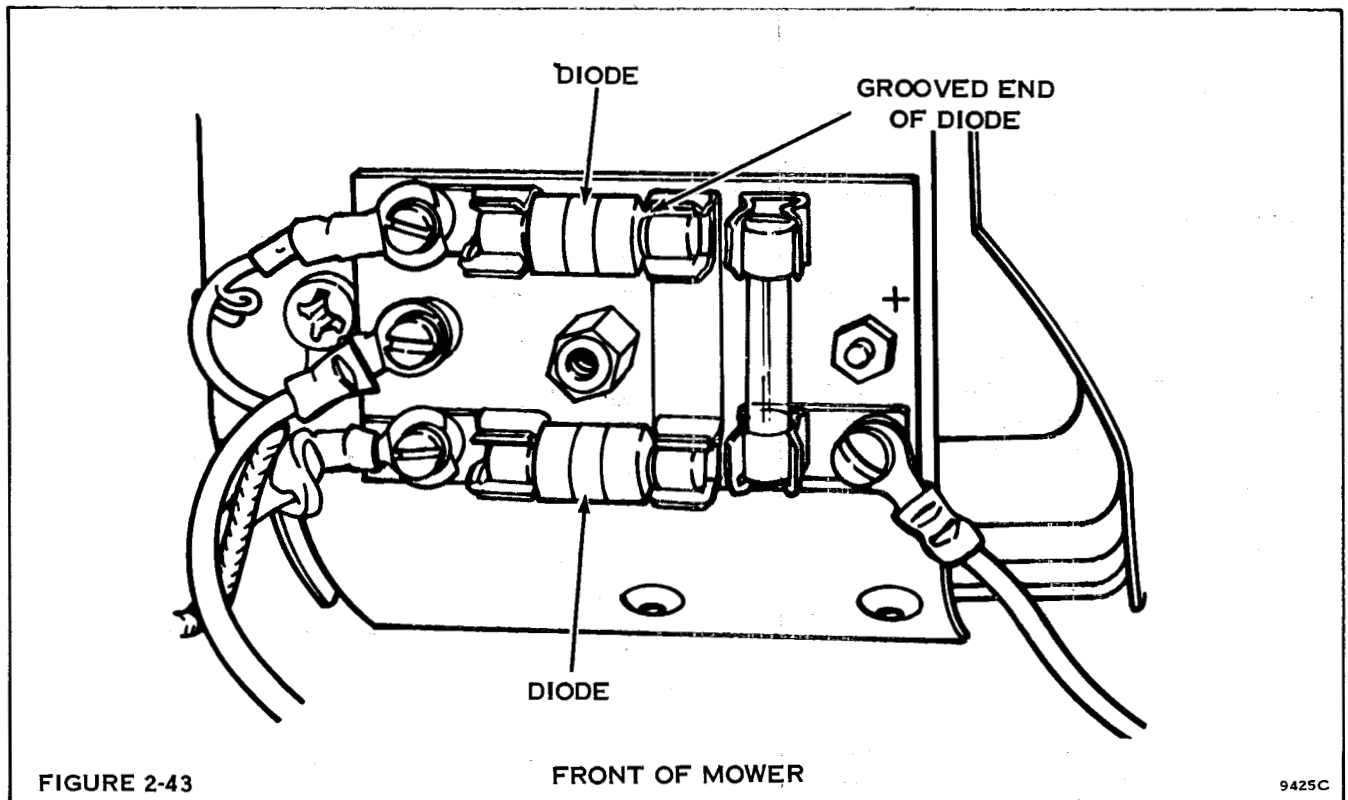
1. Remove two wing screws and remove battery cover.
2. Disconnect battery leads.
3. Remove four nuts securing battery carrier to battery frame and remove battery. See Figure 2-41.



SAFETY WARNING

DO NOT ALLOW BATTERY TERMINALS TO MAKE CONTACT WITH THE BATTERY FRAME. THIS COULD RESULT IN FIRE OR PERSONAL INJURY (BURNS). SEE FIGURE 2-42.

MODELS 9302E, 9303E ONLY



INSTALLING NEW DIODES

1. Remove diode cover.
2. Insert new diodes into spring clips. **DO NOT FORCE.** The groove in the one end of the diode matches a ridge in the clip. See Figure 2-43.

INSTALLING REPLACEMENT FUSE

AG AMP 250 Volt Fuse is inserted into clip receptacle in vertical position - either end up.



SAFETY WARNING
TO PREVENT SPARKS OR PERSONAL INJURY (BURNS) REMOVE DIODES IF MOWER IS TO BE OPERATED WITH BATTERY REMOVED OR BATTERY LEADS DISCONNECTED.

SECTION 6

PREVENTIVE MAINTENANCE

To obtain peak performance and long life from the engine the air cleaner must be serviced regularly. Under normal conditions an air cleaner should be serviced every 10 hours of operation, oftener, if under dusty condition. To service air cleaner, pour old oil from bowl. Wash element thoroughly in solvent and dry. Clean bowl and refill with same type of oil used in crankcase. See engine Owner's Manual.

CRANKCASE OIL

Check oil level - See Owners' Manual.

BLADE CARE

A blade will naturally become dull with use. It can be quickly sharpened with a few strokes of a file or sharpening stone. **SHARPEN ONLY THE CUTTING EDGE.** A blade that is not straight or properly balanced can cause engine vibration; loss of engine power. Excessive vibration can lead to engine (usually crankshaft) damage if allowed to continue. Imbalance can be caused by uneven wear or impact damage. Minor imbalance can usually be corrected by grinding or filing the heavy end; if not, the blade should be replaced.

LUBRICATION

A. Lubricate front wheel bearings with Automotive Chassis Lubricant or Lawn-Boy "A" Grease. Using conventional grease gun apply lubricant until grease is observed at end of the bearing surface.

B. Lubricate friction points whenever needed. All bushings are oil impregnated and do not require oil. All ball bearings are sealed with lubricant and therefore do not require periodic lubrication.

TIRES

Recommended pressure for front wheels on Models 9601, 9303, 9303E is 15-17 lbs. Rear pressure for the same models is 22-25 lbs.

BATTERY

Check battery fluid level every 10 hours of operation.

Add distilled water to fill ring.

Check battery for state of charge. When specific gravity of battery falls below 12.25, recharge battery.

In storage; Battery should be charged fully once per month.



SAFETY WARNING

DO NOT CHARGE AT A RATE EXCEEDING 4 AMPS.

DO NOT allow tools to make contact with the battery terminals when installing or servicing battery.

Remove diodes if mower engine is to be operated with battery removed or battery leads disconnected.

DO NOT tip mower up on tilt (knurled) bar without removing battery.

DO NOT operate mower with battery cover removed.

DIFFERENTIAL

Check differential every 50 hours. Fill to 3 ounce capacity with multi-purpose automotive grease.

FRICITION DRIVE

Check rubber drive roller - drive disc clearance every 30 hours.

BLADE

 SAFETY WARNING

DISCONNECT THE SPARK PLUG WIRE AND PLACE THE BLADE CONTROL LEVER IN THE "OFF" POSITION.

Always keep blade sharp and balanced. A bent blade will cause vibration and loss of power. See Figure 2-44. Check balance and grind heavy end until proper balance is attained.

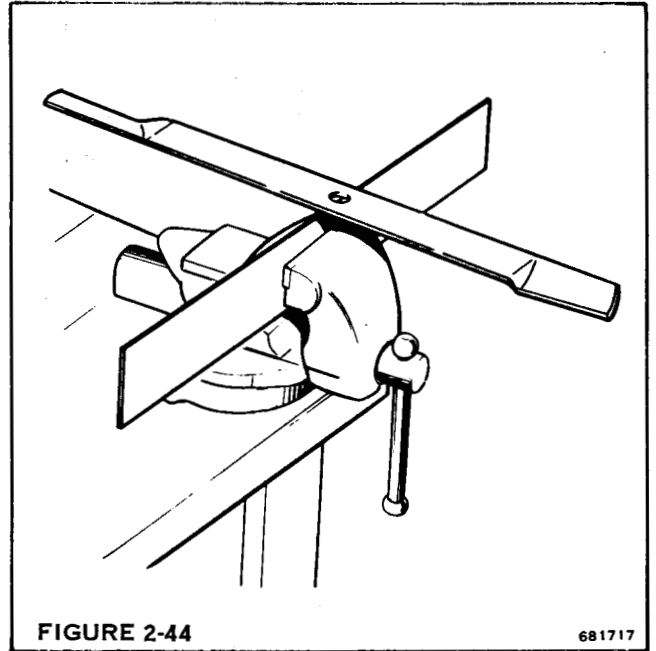


FIGURE 2-44

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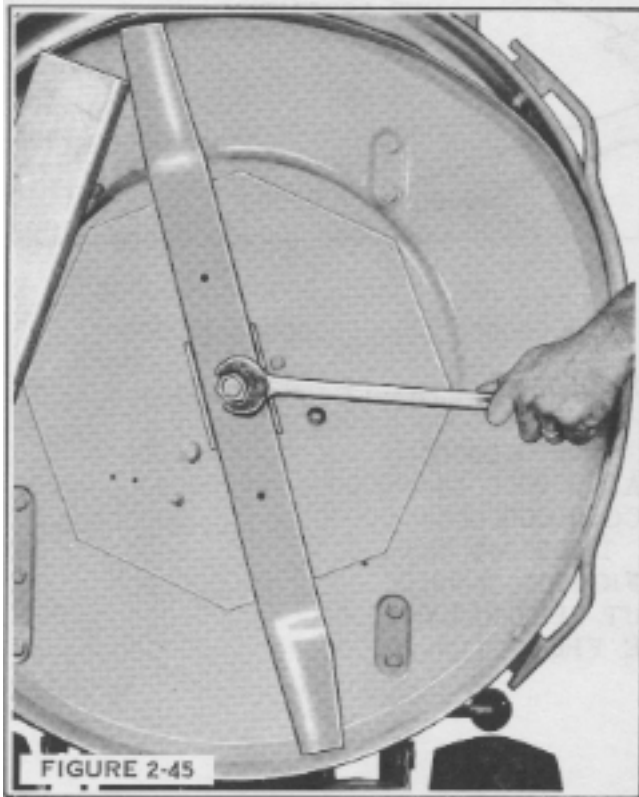


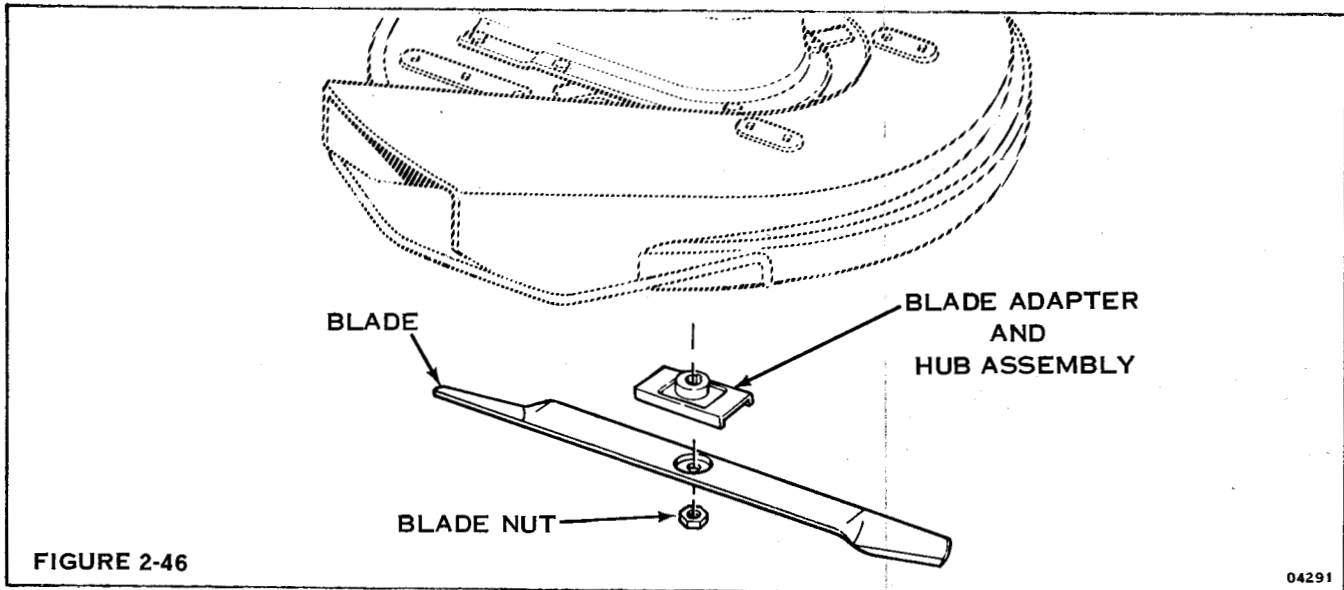
FIGURE 2-45

BLADE REMOVAL

1. Disconnect spark plug.
2. Lift mower on end.
3. Block blade with a piece of 2 x 4 to prevent it's turning. Figure 2-45.
4. Remove blade nut.
5. Retorque blade nut to 50 ft. lbs.

BENT BLADE

Tilt the mower up on the knurring bar and place a straightedge (yardstick) across the bottom of the pan. Rotate the blade until one end is aligned with the straightedge and measure the gap between the blade and the straightedge. Rotate the blade until the other end is under the same point of the straightedge and measure this gap. If the gaps are not within 1/4" of each other, the blade, blade spindle, blade adaptor or deck may be damaged or distorted. Remove blade and place on flat surface. If blade tips are not within 1/4" replace.



⚠ SAFETY WARNING

WHEN INSTALLING THE BLADE MAKE SURE ALL PARTS ARE INSTALLED IN THE CORRECT SEQUENCE IN WHICH THEY WERE REMOVED. SEE FIGURE 2-46. TIGHTEN BLADE NUT SECURELY TO PREVENT BLADE FROM COMING LOOSE.

CHAPTER III

MODELS 9500, 9501 ONLY

SECTION 1

INTRODUCTION

Models 9500 and 9501 Lawn-Boy compact riders are propelled by a conventional, geared transmission with two forward speeds and one reverse. The maximum speed in second gear is 3.6 mph. In first gear and reverse the maximum speed attained is 2.2 mph.

A 5 h.p. recoil start Briggs and Stratton 4 cycle engine with a maximum rpm range of from 3400 rpm to 3600 rpm powers the Mower. For service see an authorized Briggs and Stratton dealer.

A unique feature is the aircraft-type steering which offers ease and comfort to the operator.

The 26 inch floating pan may be adjusted to 5 different cutting positions between 1-1/2 inches and 3-1/2 inches. The front wheels are semi-pneumatic while the rear tires are fully pneumatic and maintain 30-35 pounds air pressure.

The front axle is full floating and the main frame is of tube type to provide maximum strength.

The overall length is 55-1/2" and 28-3/16" wide.

MODELS 9500, 9501 ONLY

SECTION 2

SPECIFICATIONS

ENGINE

Idle rpm	1800 rpm's
Operating rpm	3400 - 3600 rpm's maximum
Oil requirement	SAE 30 Wt. service MS
Crankcase capacity	2 pints
Spark plug	Champion CJ8-Autolite A7N

TIRE SPECIFICATIONS

Front size	10 x 3.50 semi-pneumatic
Rear size13 x 5.00-6
Pressure	30-35 PSI

SECTION 3 LUBRICATION

LAWN-BOY "A" GREASE OR EQUIVALENT

1. Lubricate both front wheels at zerk fittings.
2. Lubricate rear axle bearings at zerk fittings (2 places).

SAE #30 OIL

1. All six pivot points in the mower pan suspension linkage.
2. Rod end and ball joints.
3. Mower engagement lever pivot.
4. Transmission clutch mechanism.
5. Blade clutch mechanism.
6. Axle - pan wheels.



NOTE

Care must be taken not to allow oil to come in contact with brake band lining at transmission or friction material on blade stop.

PETROLEUM JELLY

1. Felt washers - rear wheels - liberally coat.

LAWN-BOY "A" GREASE

1. Bell arms - Foot pedal - liberally coat i.d. of boss on frame castings and rod-foot rest.
2. Pivot pin front axle - fill reservoir.
3. Pivot pin on bell arm and pin assembly - transmission clutch idler - liberally coat pin.

MODELS 9500, 9501 ONLY

4. Front axle king pin bores - fill reservoirs (2 places).

TRANSMISSION

12 oz. of Shell "Darina Ax" grease or equivalent evenly distributed within transmission and on camplate.

DIFFERENTIAL

.75 to 1.25 ounces of Shell Expro 71030 grease or equivalent. The thrusting area of each gear and shaft bearing surfaces should be greased.

SECTION 4

HARDWARE TORQUES

Torque to values given for thread size unless listed separately.

THREAD SIZE

10 - 32
1/4 - 20
5/16 - 18
5/16 - 24
3/8 - 16
3/8 - 24

TORQUE

35 to 38 inch lbs.
63 to 75 inch lbs.
142 to 170 inch lbs.
142 to 170 inch lbs.
190 to 225 inch lbs.
235 to 280 inch lbs.

DESCRIPTION

Screw - chain guard
Screw - mower pan brackets to pan
Nut - "U" bolt to frame
Nut - Trans idler pulley to idler arm
Bolt - Seat
Nut - Mower wheel axle to pan bracket
Nut - wheel spindle to axle
Nut - pivot - mower pan suspension
Nut - blade
Screw - transmission case halves
Screw - transmission cover plate
Screw - transmission shift forks

TORQUE

45 to 59 inch lbs.
91 to 119 inch lbs.
91 to 119 inch lbs.
149 to 195 inch lbs.
355 to 465 inch lbs.
355 to 465 inch lbs.
195 to 255 inch lbs.
372 to 487 inch lbs.
459 to 600 inch lbs.
70 to 80 inch lbs.
20 to 25 inch lbs.
35 to 45 inch lbs.

MODELS 9500, 9501 ONLY

SECTION 5

TROUBLESHOOTING

STEERING

PROBLEM	CAUSE	REMEDY
Hard steering	Lack of lubricant Bearings and/or bushings worn Tie rods bent Steering arm broken	Lubrication - Section 3 Steering disassembly and inspection - Section 6 Straighten or replace - Section 6 Disassembly and replacement - Section 6

BLADE HOUSING AND BLADE

Blade won't turn	Belt off pulleys Belt damaged Blade nut loose Seized bearings Blade adapter broken	Replace - Section 7 Replace - Section 7 Tighten - Section 7 Refer to Spec. Sheet -- Torque
Blade won't disengage	Blade brake not working Blade control mechanism broken	Check blade brake spring
Blade leaves swirl marks in lawn	Housing unlevel Blade unlevel or bent	Correct housing level - Section 7 Replace blade - Section 7
Blade belt comes off (Rear)	Belt keeper loose Broken belt Top idler pulley broken or bent Pulley shaft loose Rear idler spring broken Rear idler arm broken or bent	Adjust and tighten Replace Replace Tighten Replace Replace
Blade belt comes off (Front)	Broken belt Bottom idler pulley broken or bent Intermediate pulley shaft loose Idler arm broken or bent Engine belt pulley bent or broken	Replace Replace Tighten Replace Replace

MODELS 9500, 9501 ONLY

DRIVE PROBLEMS

PROBLEM	CAUSE	REMEDY
Mower will not propel	Chain loose Chain broken Differential broken Sprocket worn or broken Drive belt broken or damaged Transmission won't shift	Adjust Repair or replace Repair or replace - Section 10 Replace - Section 8 Replace - Section 8 Repair - Section 8

FUEL TROUBLE

Engine will not start	a. Fuel tank empty b. Water in fuel c. Old fuel in tank gums up tank, fuel line and carburetor d. Shut-off valve closed	a. Fill tank b. Drain fuel from tank and carburetor and replace with fresh fuel c. Empty out old fuel and clean all parts involved d. Open valve
Engine slows down and stops	a. Vent hole in fuel tank cap plugged b. Fuel line or strainer clogged c. Fuel tank runs dry	a. Unplug hole b. Clean out fuel line or strainer c. Refill tank

SPARK PLUG TROUBLE

Black carbon or sooty deposit	a. Breaker points dirty or out of adjustment b. Weak condenser c. Incorrect plug	a. Clean and adjust gap b. Check and replace if weak c. Install correct plug
Pitted or burned electrodes, white, light tan or blistered deposits. Rapid wear of electrode	a. Incorrect plug	a. Install correct plug
Cracked or broken plug	a. Careless installation of plug	a. Replace plug
Cracked or broken insulator on lower end of plug	a. Center electrode strained when re-gapping plug	a. Replace plug
Widening of gap	a. Normal wear	a. Clean and regap

MODEL 9500 ONLY

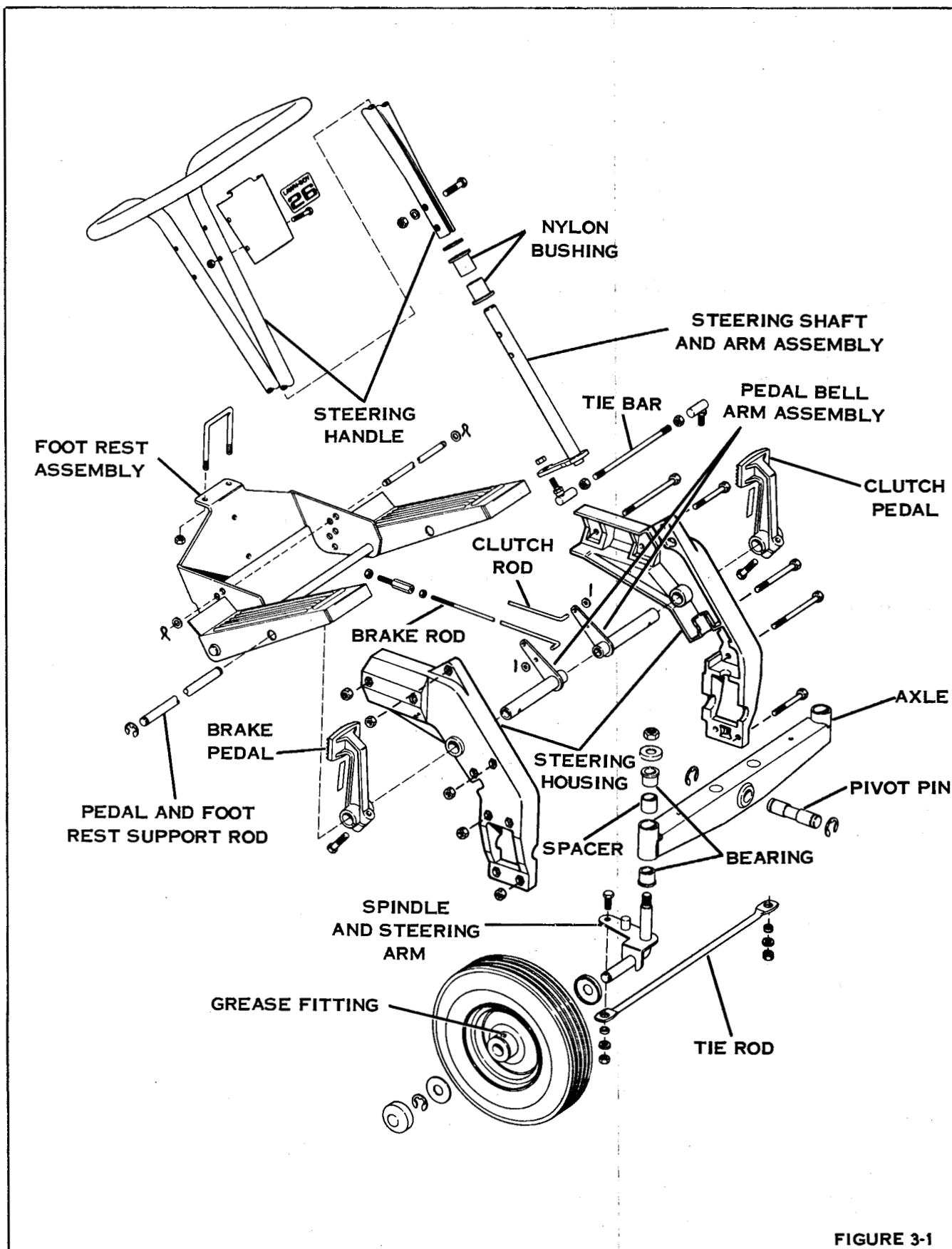
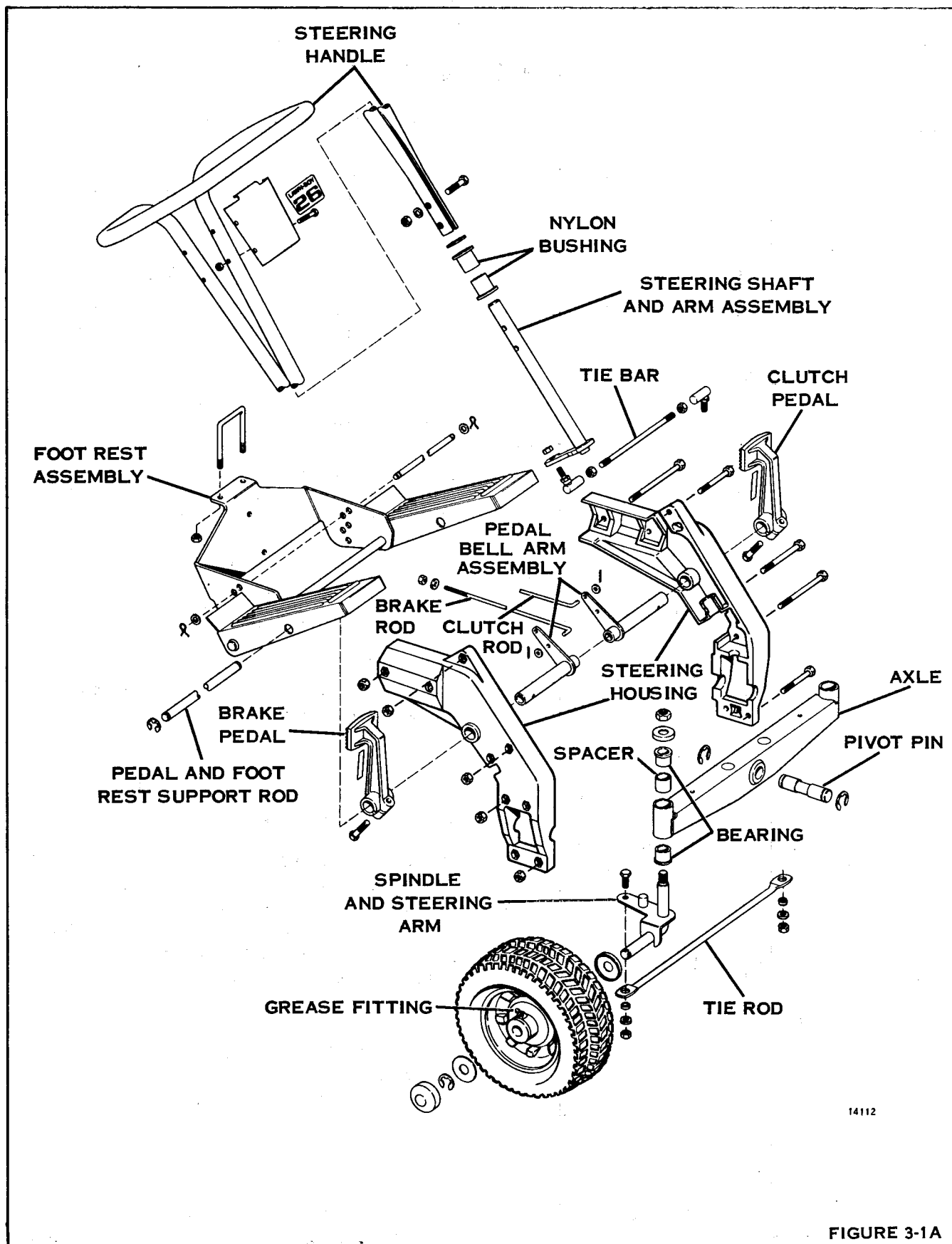


FIGURE 3-1

MODEL 9501 ONLY



14112

FIGURE 3-1A

MODELS 9500, 9501 ONLY

SECTION 6

FRONT END

STEERING

The steering is positive type. The steering shaft controls front wheel movement thru a steering arm, tie bar and tie rod.

 NOTE

During disassembly examine all parts for excessive wear or damage.

SPINDLE AND STEERING ARM REMOVAL

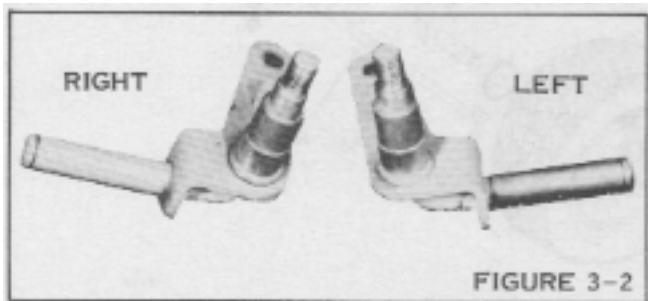
Disconnect the spark plug lead; raise the front of the mower up resting it vertically on the rear cover and engine.

 SAFETY WARNING

SECURE TO WALL OR OTHER FIXED OBJECT TO PREVENT TIPPING OR FALLING.

Remove the wheel and disconnect tie rod from the steering arm. Remove the steering arm spindle nut on top of axle and pull spindle and steering arm from axle housing.

Remove the upper and lower bearing and spacer, and examine for wear. Apply a coating of Lawn-Boy "A" grease or Lubriplate 630AA lubricant before reinstalling. Reassemble in reverse order.



 NOTE

The left and right hand spindle and steering arms are not interchangeable.

FRONT AXLE REMOVAL

Disconnect spark plug lead; raise the front of the mower up resting vertically on the rear cover plate and engine.

 SAFETY WARNING

SECURE TO WALL OR OTHER FIXED OBJECT TO PREVENT TIPPING OR FALLING.

Remove the wheels and spindle and steering arm assemblies.

Remove axle pivot pin retaining ring and pull pin from steering housing and slide axle out of steering housing.

Reassemble in reverse order.

 NOTE

Apply a liberal amount of Lawn-Boy "A" grease or Lubriplate 630AA lubricant to pivot pin and other friction points.

STEERING CASTING & STEERING SHAFT REMOVAL

Remove the front axle and steering handle, detach the steering tie bar ball joint from the steering arm, disconnect brake and clutch rod linkage at rear of unit. Remove pedal and foot rest support rod retainer ring from either side and drive rod out of foot rests, pedals and steering housing.

Remove the two (2) bolts securing the steering housing to the main frame and pull steering housing and control rods away from main frame.

Remove the nuts from the bolts remaining in the steering housing, leaving the bolts in place. Place the frame casting on the floor or work bench with the bolt heads down and separate halves of the housing to expose

MODELS 9500, 9501 ONLY

the steering shaft and arm assembly, nylon bushings and the two pedal bell arm assemblies.

Thoroughly clean the inside of the housing halves with a suitable solvent. Do not wash or wipe nylon bushings with solvent. Apply Lawn-Boy "A" grease or Lubriplate 630AA lubricant to nylon bushings before reinstalling.

 **NOTE**

The nylon bushings include 2 ribs. When reinstalling, these ribs must be located in matching grooves in the steering casting halves. Figure 3-3.

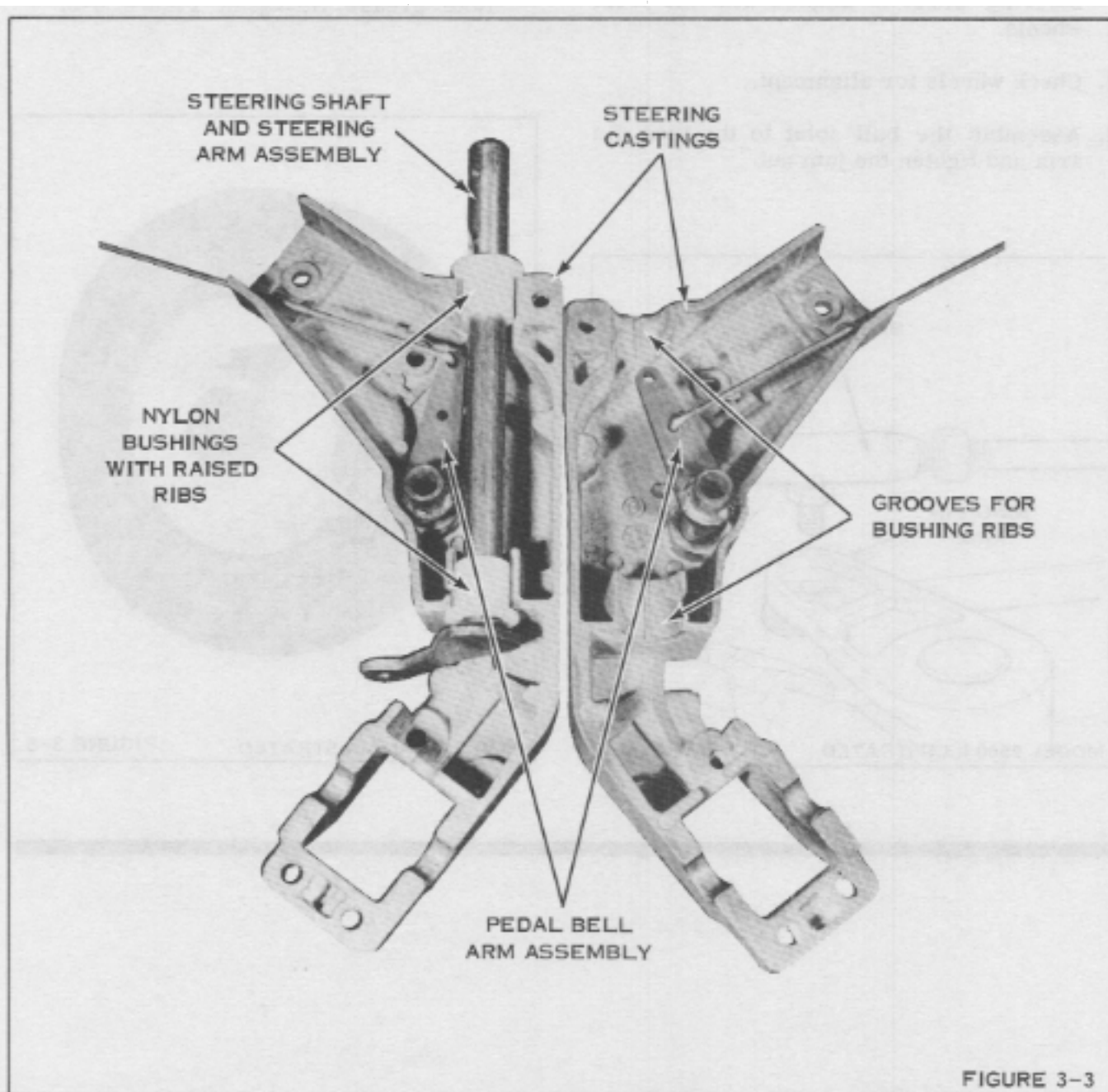


FIGURE 3-3

MODELS 9500, 9501 ONLY

STEERING WHEEL ALIGNMENT

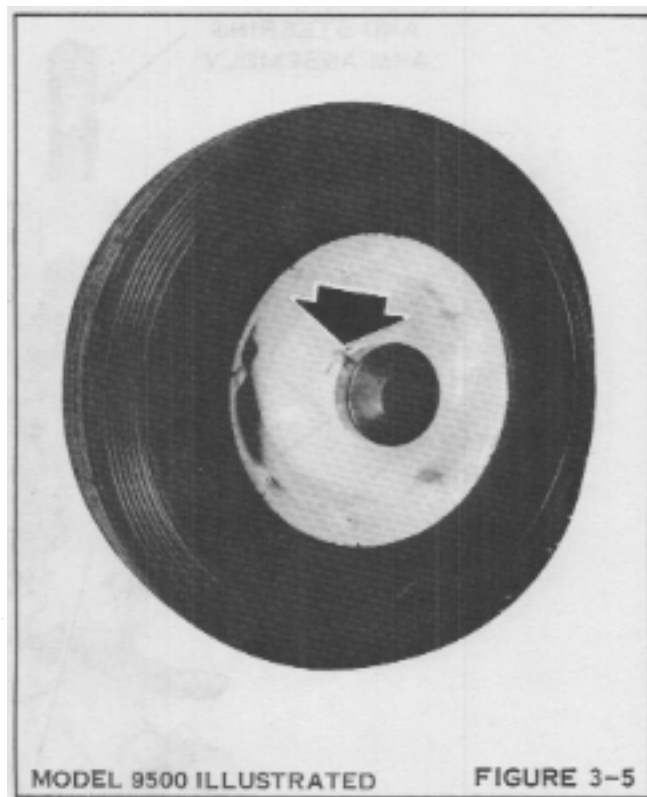
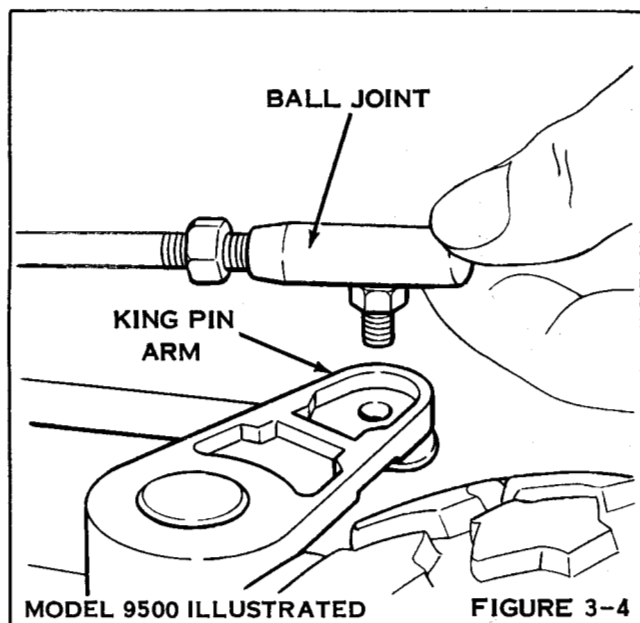
If the steering wheel does not line up properly with the front wheels, it can be aligned as follows:

1. Remove the nut securing ball joint to king pin arm.
2. Loosen the jam nut at the ball joint socket and turn the ball joint onto or off the rod, see Figure 3-4, until the steering wheel is aligned with the front wheels.
3. Check wheels for alignment.
4. Assemble the ball joint to the king pin arm and tighten the jam nut.

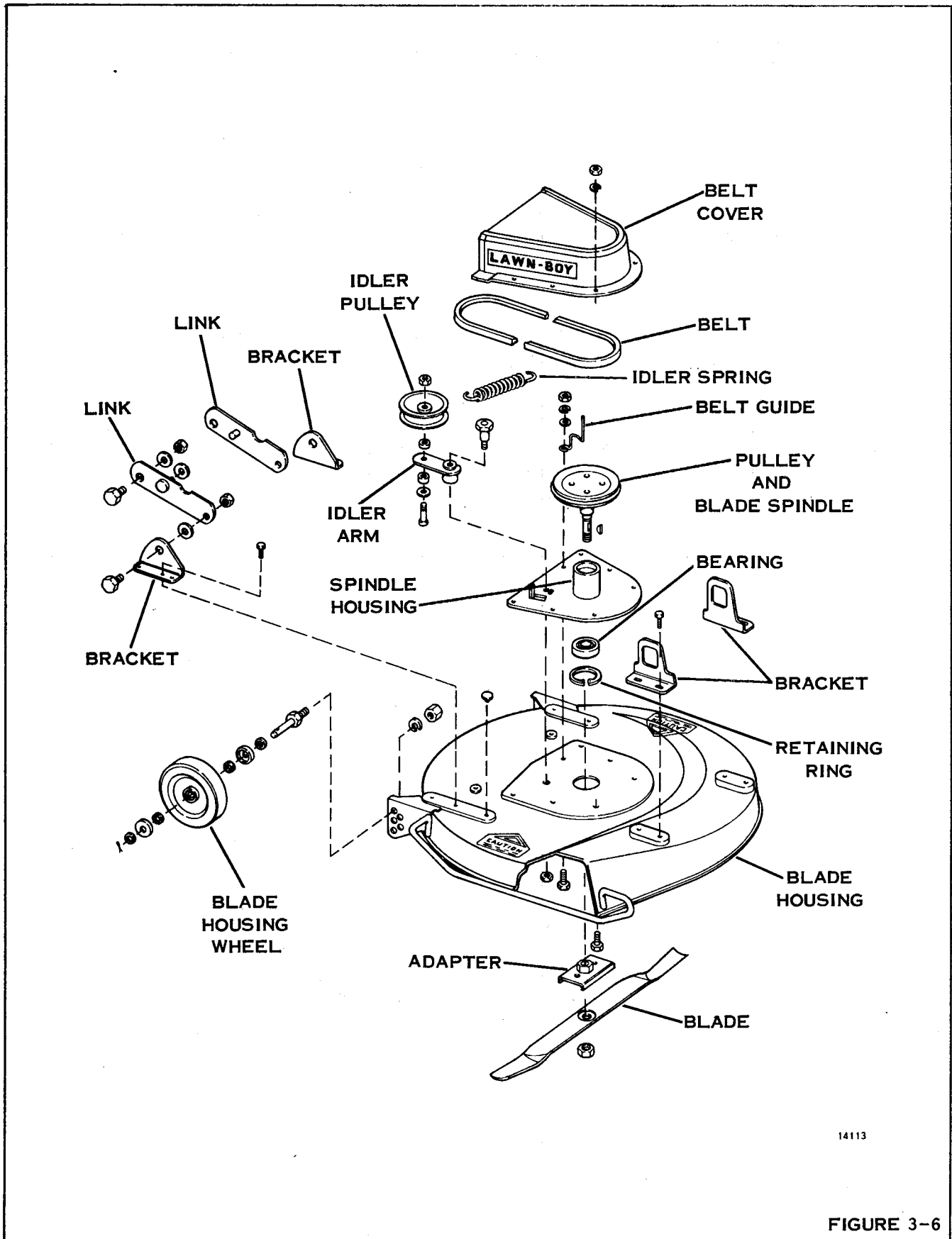
NOTE

During assembly all moving parts and friction points such as bearings, bushings, and bolt threads should be lubricated with Lawn-Boy "A" grease or Lubriplate 620AA lubricant.

The front wheel bearing and axle must be lubricated every 25-30 hours of operation with either of the above mentioned lubricants. Note grease fitting in Figure 3-5.



MODELS 9500, 9501 ONLY



14113

FIGURE 3-6

MODELS 9500, 9501 ONLY

SECTION 7

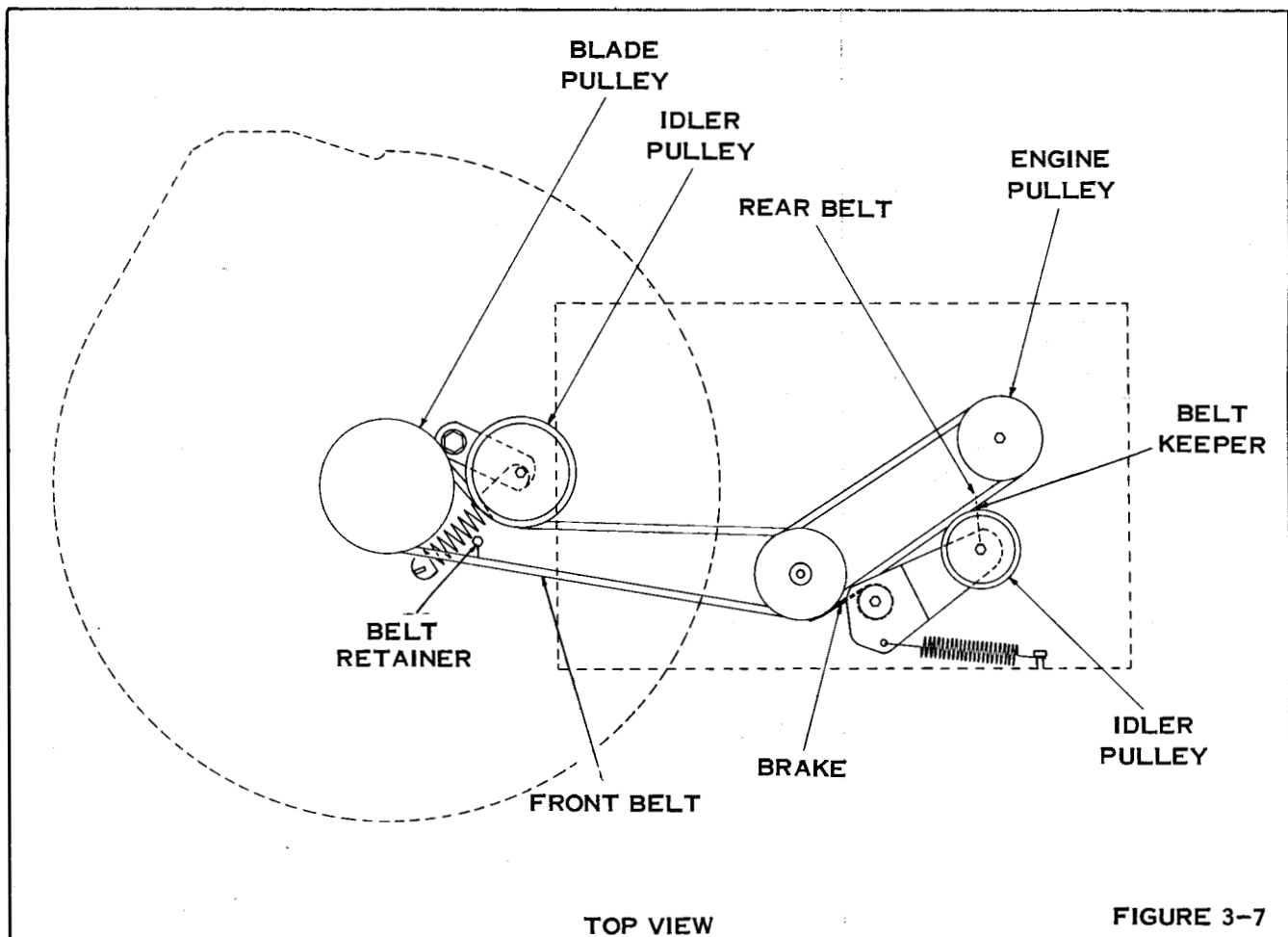
BLADE DRIVE & BLADE HOUSING ASSY.

The cutting blade is driven by a system of V belts and pulleys.

The primary drive pulley is keyed to the engine crankshaft. A short 31-3/4 inch V belt runs from the primary pulley to the top pulley of the intermediate pulley and spindle assembly. The blade spindle pulley is in turn powered by a longer 48-3/8 inch belt driven by the bottom pulley of the intermediate pulley and spindle assembly. These are specially designed belts for these specific applications. Standard "V" belts will not give satisfactory life.

Two idler pulleys are used in the blade drive system. One is located under the belt cover adjacent to the blade drive pulley; it is always engaged with the V belt.

The other idler is a part of a combination rear blade drive belt idler and blade brake assembly. It is located adjacent to the top pulley of the intermediate pulley and spindle assembly. It is actuated by the blade engagement lever. When it is in "on" position the idler pulley is engaged with the belt. When it is in "off" position a blade brake engages with the top pulley of the intermediate pulley assembly stopping the cutting blade within six (6) seconds.

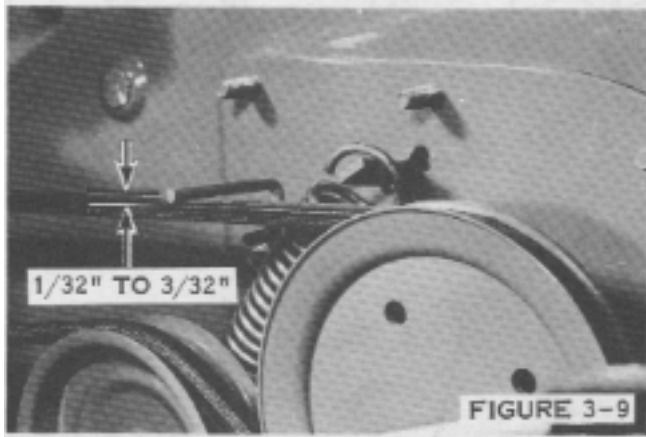
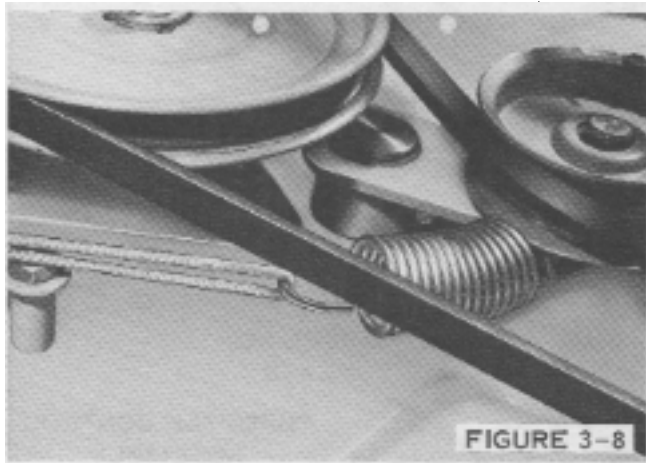


MODELS 9500, 9501 ONLY

BELT REPLACEMENT

FRONT BELT

Disconnect the spark plug lead and remove the belt cover. Slip a length of rope thru the eye of the belt idler spring and pull spring off hook to release tension. See Figure 3-8.



NOTE

After installation of belt, pin on belt keeper assembly must be positioned as pictured in Figure 3-9.

Belt may now be removed. Replace in reverse order.

REAR BELT

Disconnect spark plug lead; raise the front of the mower up resting it vertically on the rear cover and engine.

⚠ SAFETY WARNING

SECURE TO WALL OR OTHER FIXED OBJECT TO PREVENT TIPPING OR FALLING.

Disconnect primary (rear) belt idler spring; loosen the belt keeper and roll the belt off the pulley system. Replace in reverse order.

BLADE HOUSING REMOVAL

Remove the front blade belt and remove retainer clip from either side of front pan support rod and slide rod out. Remove shoulder bolts from rear pan, link arms at pan and slide mower housing out from under mower chassis. Reassemble in reverse order.

BLADE PULLEY SPINDLE TO BEARING REMOVAL

Remove blade housing, blade, and blade adapter. Remove woodruff key from blade spindle and drive threaded end of spindle with a soft headed hammer (rubber or plastic) out of the spindle housing. Reassemble in reverse order. To remove spindle bearing, remove bearing retaining ring inside lower end of spindle housing.

BLADE HOUSING HEIGHT (CUTTING) ADJUSTMENT

The cutting blade may be set at five different heights, from 1-1/2 to 3-1/2 inches. To adjust, simply position the front pan support rod in the desired hole in the adjustment plate. The rear adjustment is made similarly by placing the rear wheel axle in the desired position in the adjustment plate.

MODEL 9500 ONLY

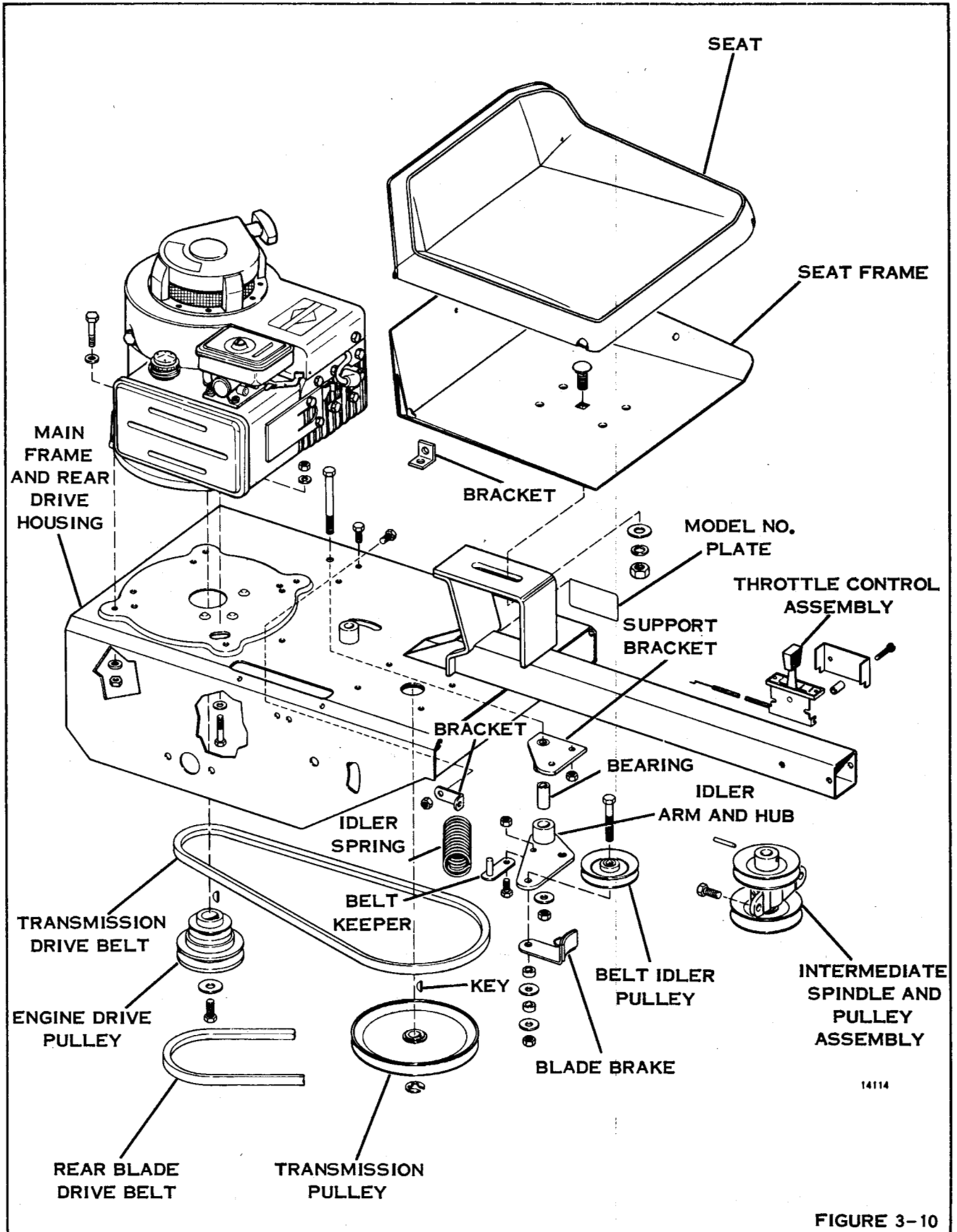
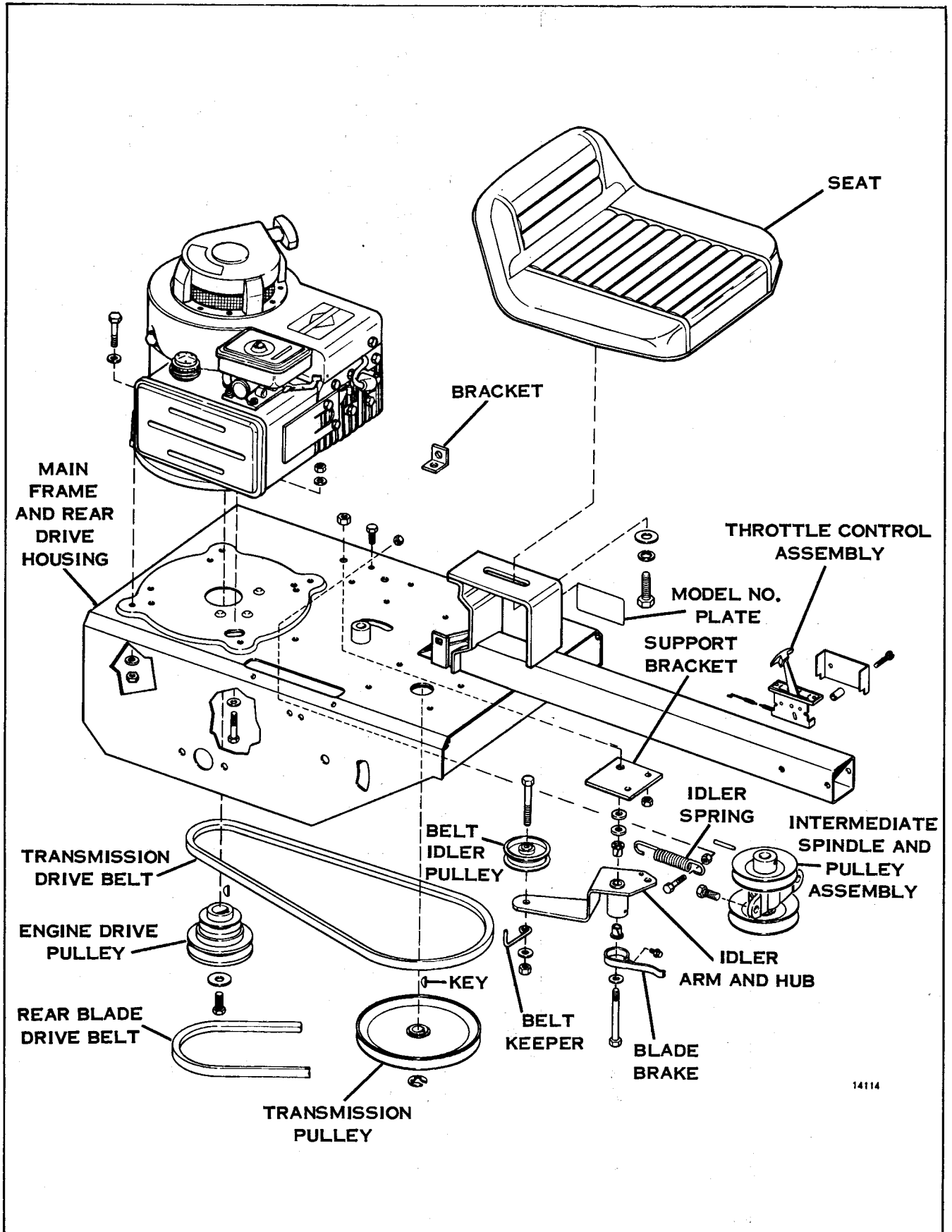


FIGURE 3-10

MODEL 9501 ONLY



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MODELS 9500, 9501 ONLY

SECTION 8 TRANSMISSION

TRANSMISSION DRIVE BELT REPLACEMENT

Secure the clutch pedal with rope as illustrated in Figure 3-11. Disconnect the spark plug lead and raise the unit vertically and rest on rear cover and engine.

 SAFETY WARNING

SECURE TO WALL OR OTHER
FIXED OBJECT TO PREVENT TIP-
PING OR FALLING.

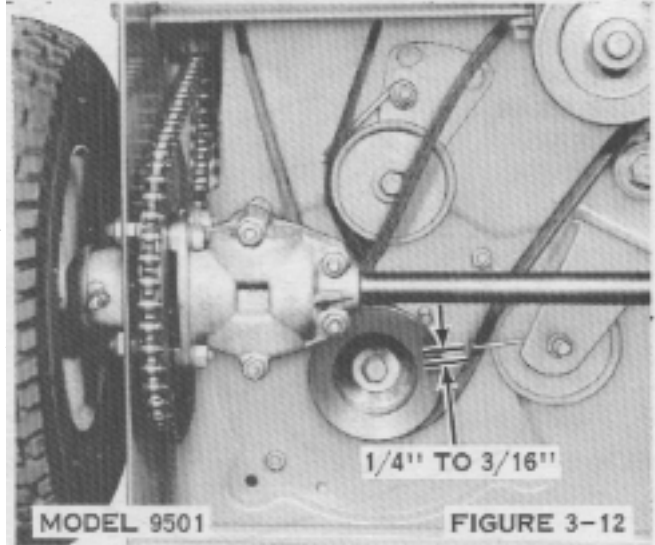
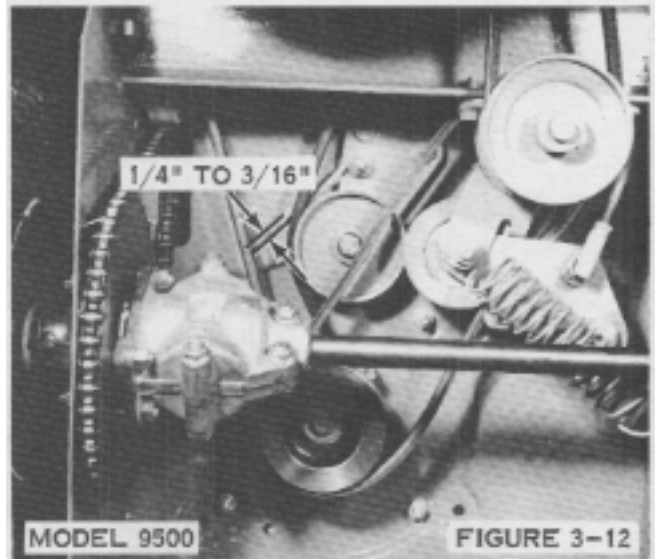
Remove the rear blade belt (bottom drive pulley). See Rear Belt Replacement. Transmission belt may now be rolled off pulleys.

 NOTE

This belt is 44 inches in length.

TRANSMISSION BELT IDLER ADJUSTMENT

With the clutch pedal depressed, adjust the belt keeper so there is 1/4" to 3/16" as shown in Figure 3-12.



TRANSMISSION PULLEY REPAIR OR REPLACEMENT

Remove transmission belt and retaining ring from transmission shaft. The pulley is keyed to the shaft. Carefully work pulley off shaft. Inspect key before reinstalling pulley and retaining ring.

INTERMEDIATE SPINDLE & PULLEY ASSEMBLY

This assembly may not be dismantled. If damage has occurred to the shaft, pulleys or housing, the entire assembly must be replaced. To replace, remove the two housing screws.

MODELS 9500, 9501 ONLY

REAR BLADE DRIVE BELT PULLEY IDLER & BRAKE ASSEMBLY MODEL 9500 ONLY

To repair or replace; stand mower on end secure to wall or other fixed object. Remove the rear belt and idler spring. Disconnect blade engagement linkage rod and remove nut securing idler pulley arm.

To remove idler pulley and or brake assembly, remove idler pulley bolt from idler arm.

When reinstalling, brake shoe must be aligned with pulley. Keep shoe free of dirt and oil. Refer to Blade Adjustment for brake adjustment.

After installation of rear blade drive belt, pin on belt keeper (afixed to idler pulley arm) assembly must be positioned against edge of idler arm and secured in place.

REAR BLADE DRIVE BELT IDLER PULLEY BELT RETAINER ADJUSTMENT MODEL 9501 ONLY

Belt retainer should be flush to 1/32 inch from belt when blade control lever is placed in "OFF" position. To adjust loosen nut on idler pulley and move retainer until proper clearance is achieved. Tighten nut securely.

BLADE BRAKE ADJUSTMENT MODEL 9500 ONLY

The cutting blade must stop in not less than 3 or more than 6 seconds when the blade engagement arm is placed in "off" position.

To adjust the blade brake:

1. Detach the blade engagement rod from the brake and idler pulley bell arm. This is done by unscrewing the 5/16" nut between the ball joint and bell arm.
2. Loosen the lock nut securing the ball joint to the brake rod.
3. Screw the ball joint in a clockwise manner to shorten the travel of the rod and counterclockwise to lengthen the travel until the desired length is attained for proper braking.

BLADE BRAKE ADJUSTMENT MODEL 9501 ONLY

The cutting blade must stop in not less than 3 or more than 6 seconds when the blade engagement arm is placed in "off" position.

To adjust the blade brake:

1. Place blade clutch control in "OFF" position.

2. Loosen screw and slide blade brake to end of slot. Tighten screw securely.

3. Brake must ride in center of belt. Adjust as required.

BLADE CLUTCH IDLER-ADJUSTMENT MODEL 9500 ONLY

Remove idler spring. Adjust length of control rod and ball joint to enable end of control rod to slip freely into hole in bell arm on blade control assembly, when ball joint is installed on idler arm and control rod is resting on frame. Shorten length of control rod and ball joint assembly one complete turn of ball joint. Assemble spring and secure cotter pin and nut. Re-check for proper adjustment.

BLADE CLUTCH IDLER ADJUSTMENT MODEL 9501 ONLY

To adjust:

Remove cotter pin and washer securing rod to control assembly. Loosen jam nut and remove rod from ball joint. Thread rod into ball joint nine (9) revolutions and secure rod to ball joint with jam nut. Reassemble rod to control assembly, secure using washer and cotter pin previously removed. Blade clutch idler is now properly adjusted.

THROTTLE CONTROL ADJUSTMENT MODELS 9500, 9501 ONLY

1. Loosen cable retaining clip on engine.
2. Place throttle lever in "Fast" position.
3. Place speed control arm on engine in fastest possible position without engaging choke.
4. Tighten cable retaining clip.
5. Check to insure engine kill switch is engaged when throttle control lever is placed in "Stop" position.
6. Check to insure choke on engine is in full choke position when throttle control lever is not quite at full end of "choke" position.

ENGINE REMOVAL MODELS 9500, 9501 ONLY

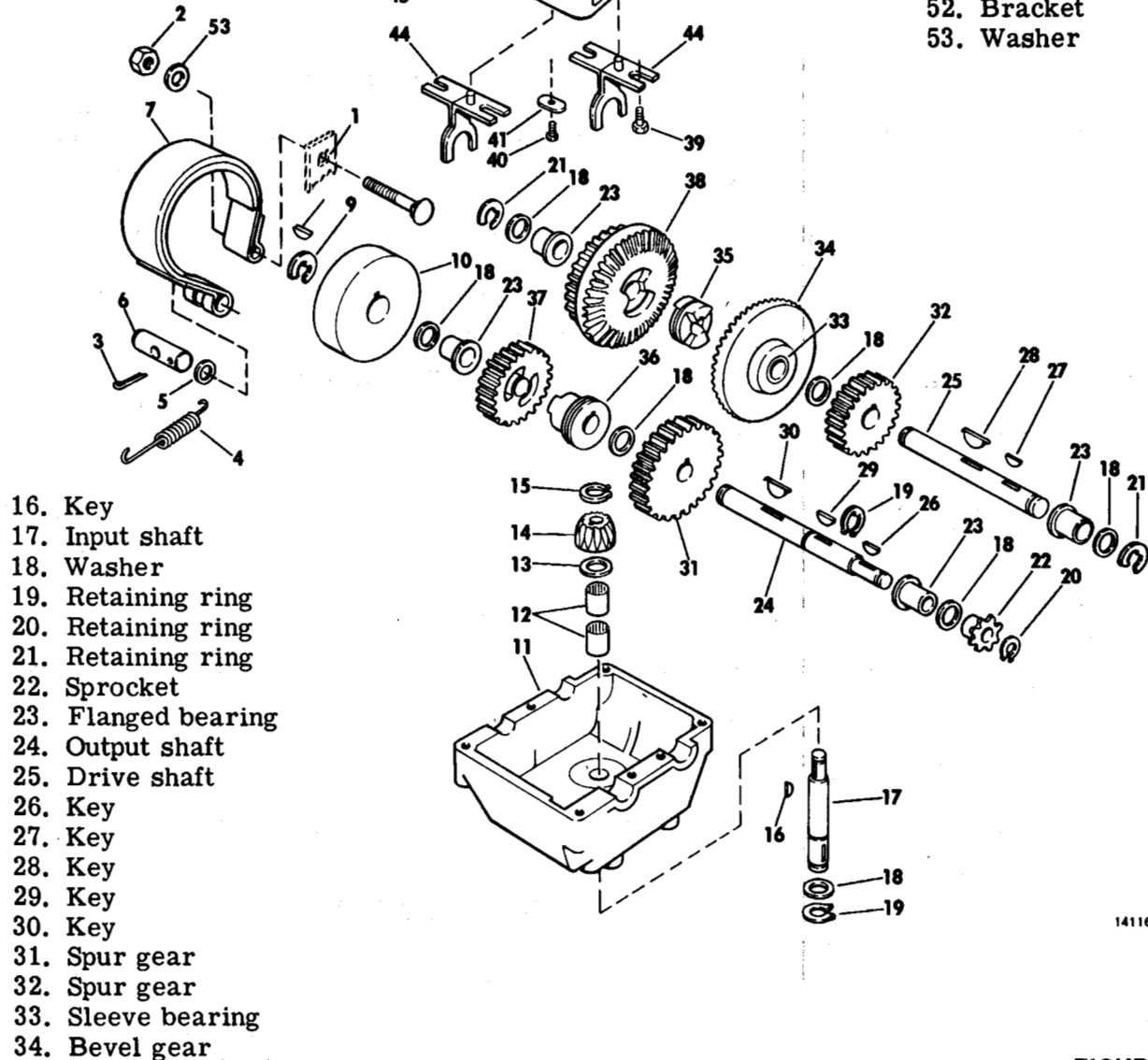
Disconnect spark plug and throttle linkage. Detach brake pull back spring and remove rear blade belt and transmission drive belt. Remove drive pulley and woodruff key and remove the four engine mounting bolts.

MODEL 9501 ONLY

TRANSMISSION DISASSEMBLY SEQUENCE

1. Bolt
2. Nut
3. Cotter pin
4. Brake spring
5. Washer
6. Brake band pin
7. Brake band
8. Key
9. Retainer
10. Brake drum
11. Lower housing
12. Needle bearing
13. Thrust washer
14. Bevel pinion
15. Retaining ring

35. Clutch collar
36. Clutch collar
37. Spur gear
38. Gear
39. Shoulder screw
40. Screw
41. Cover plate detent
42. Detent spring
43. Detent ball
44. Shifter fork
45. Upper housing
46. Bolt
47. Cam plate
48. Nylon slide
49. Shift lever
50. Shifter knob
51. Tap cover plate
52. Bracket
53. Washer



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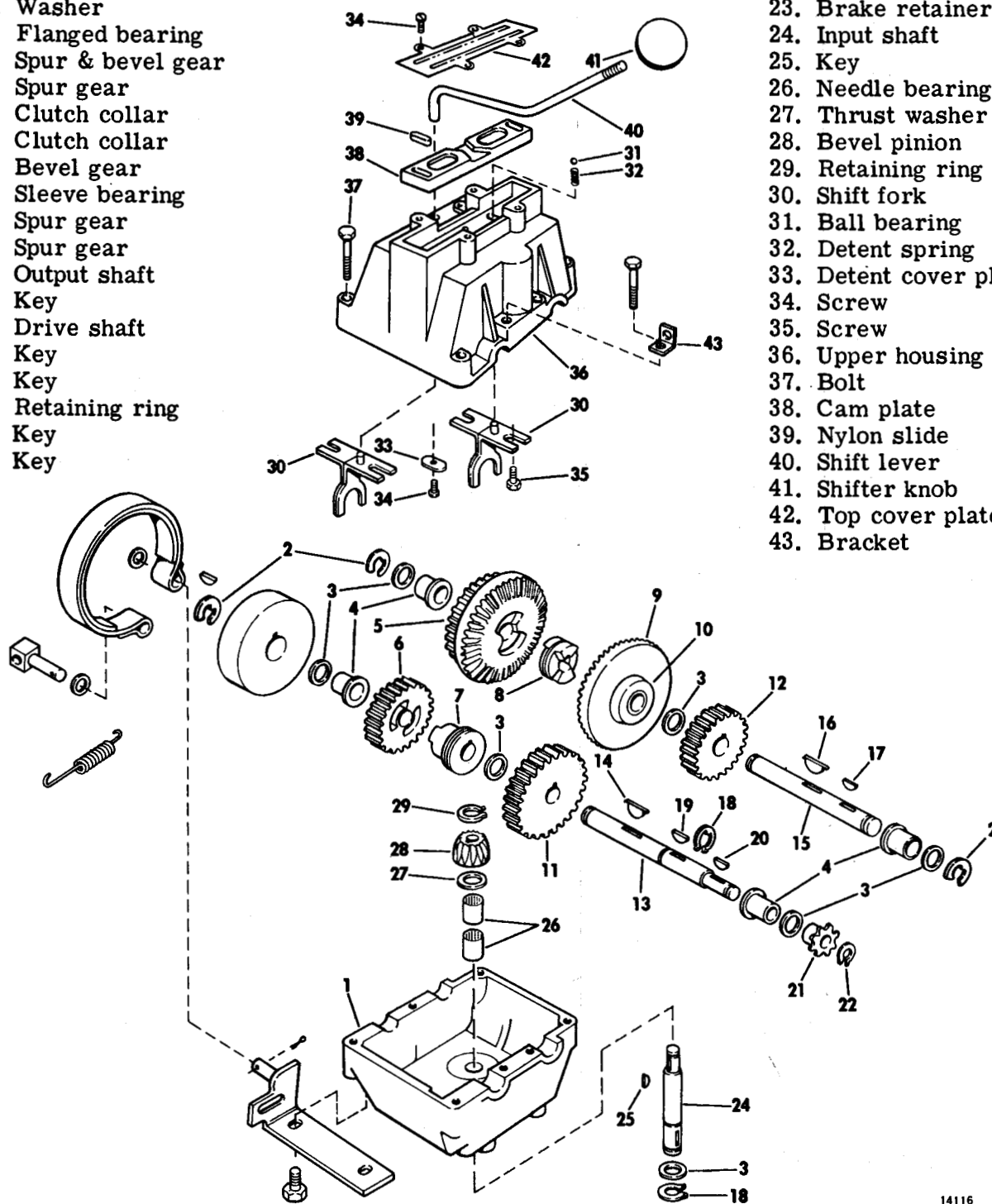
FIGURE 3-13

MODEL 9500 ONLY

TRANSMISSION DISASSEMBLY SEQUENCE

1. Lower housing
2. Retainer
3. Washer
4. Flanged bearing
5. Spur & bevel gear
6. Spur gear
7. Clutch collar
8. Clutch collar
9. Bevel gear
10. Sleeve bearing
11. Spur gear
12. Spur gear
13. Output shaft
14. Key
15. Drive shaft
16. Key
17. Key
18. Retaining ring
19. Key
20. Key

21. Sprocket
22. Retaining ring
23. Brake retainer
24. Input shaft
25. Key
26. Needle bearing
27. Thrust washer
28. Bevel pinion
29. Retaining ring
30. Shift fork
31. Ball bearing
32. Detent spring
33. Detent cover plate
34. Screw
35. Screw
36. Upper housing
37. Bolt
38. Cam plate
39. Nylon slide
40. Shift lever
41. Shifter knob
42. Top cover plate
43. Bracket



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FIGURE 3-13A

MODELS 9500, 9501 ONLY

TRANSMISSION DISASSEMBLY

GENERAL

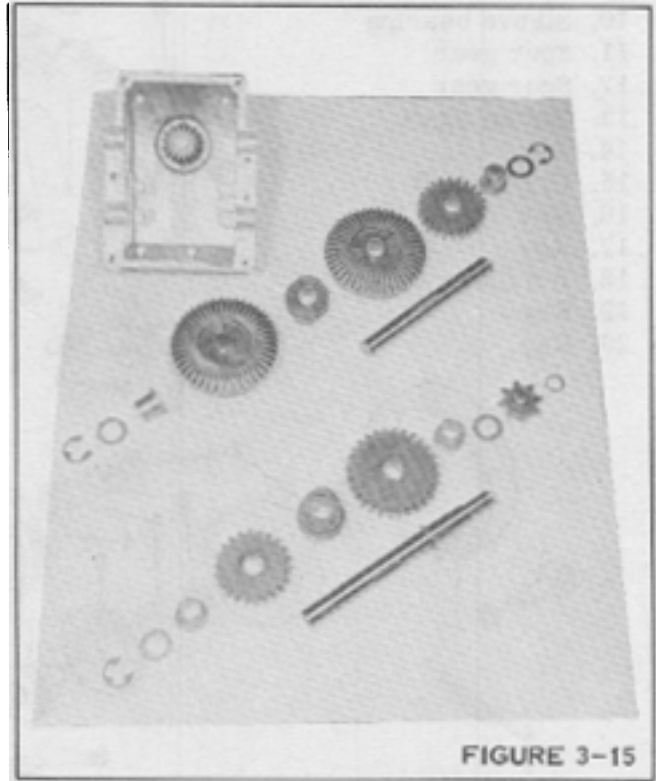
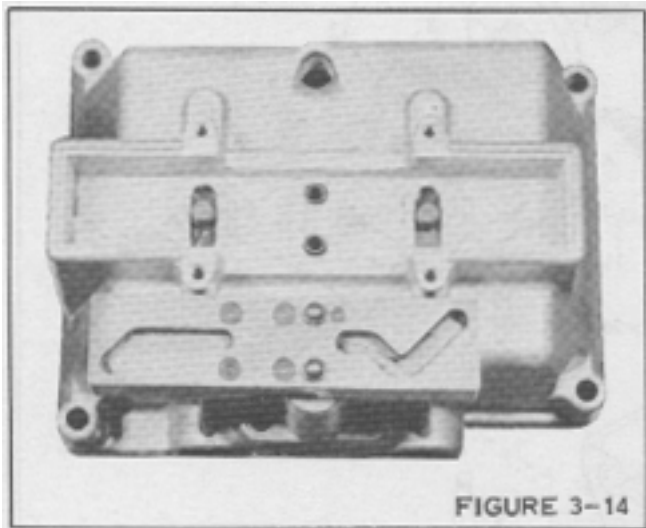
For illustration purposes, we have shown the transmission removed completely from the mower. Any repairs, except replacing the lower transmission housing, can be made while the assembly is mounted on the mower.

SHIFT HANDLE REMOVAL

If the shift handle "snaps" from one shift position to another, this assembly is operating properly and it is not necessary to disassemble or remove it to make repairs internally on the transmission.

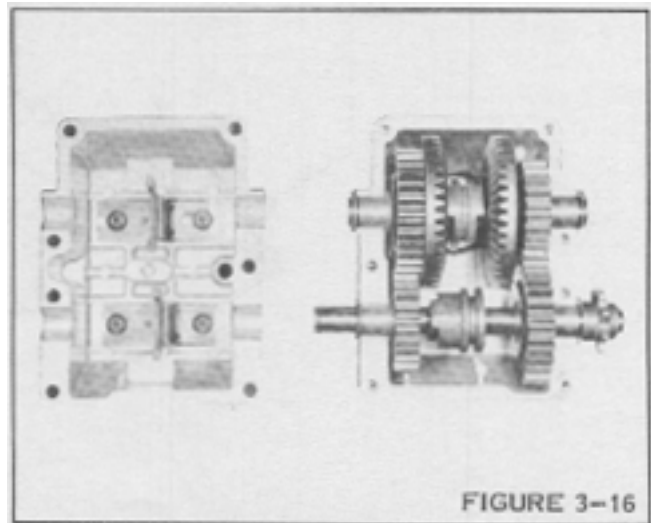
See Figures 3-13 and 3-13A for disassembly sequence. Note top and bottom of the cam plate location of springs (2) and ball bearings (2). These parts must be reassembled exactly or the shift mechanism will not function properly. Also see Figure 3-14.

See Figures 3-13 and 3-13A. Remove the seven screws securing the top housing and shift handle assembly to the lower housing. The top housing assembly can be lifted clear. The complete gear trains are now exposed for removal and inspection or replacement. Also see Figures 3-15 and 3-16.



TRANSMISSION GEARBOX

Remove the transmission drive chain cover. Locate the connecting link in the drive chain and remove. See Figure 3-17. Remove cotter pin securing brake shoe to brake drum.



MODELS 9500, 9501 ONLY

1. All parts should be washed clean with a grease solvent such as Stoddards, or kerosene. All excess solvent should then be blown off the parts so that they are dry. Use Shell Co. "Darina AX" grease for relubrication of transmission.
2. Check external sprocket to insure that sprocket is not broken or that key is not sheared.
3. Lift shaft assemblies out of lower housing. Inspect all parts for damage and replace damaged parts. Clutch collars must slide freely.
4. Check lower housing for damage and replace if necessary. The input shaft assembly should not be removed from the lower housing unless a part replacement is necessary. Check the input shaft needle bearings for excessive wear. This can be accomplished by rotating the input shaft and feeling the clearance. The clearance should be minimal for proper operation.
5. Relubricate lower housing by evenly distributing six (6) ounces of lubrication. Care should be taken to completely lubricate the pinion gear and thrust washer underneath the gear.
6. Replace shaft assemblies in lower housing taking care to install the locking tabs on the flange bearings in the cavities provided in the housing. Relubricate shaft assemblies by evenly distributing six (6) ounces of lubrication throughout the complete gear train.
7. Lubricate shifter cam plate with grease.
8. Replace upper housing onto lower housing and bolt securely into place.

SECTION 9 WHEEL BRAKE

GENERAL

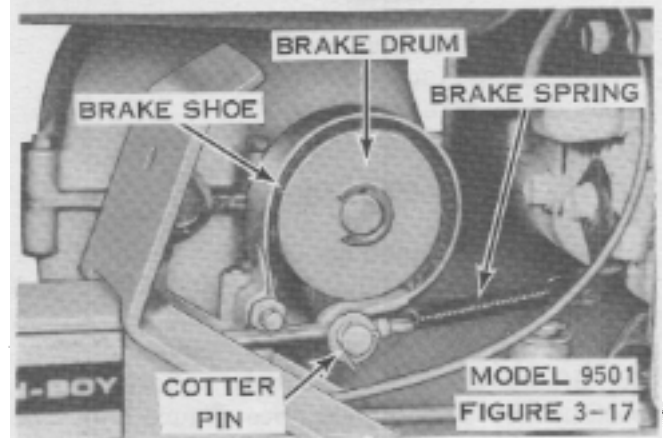
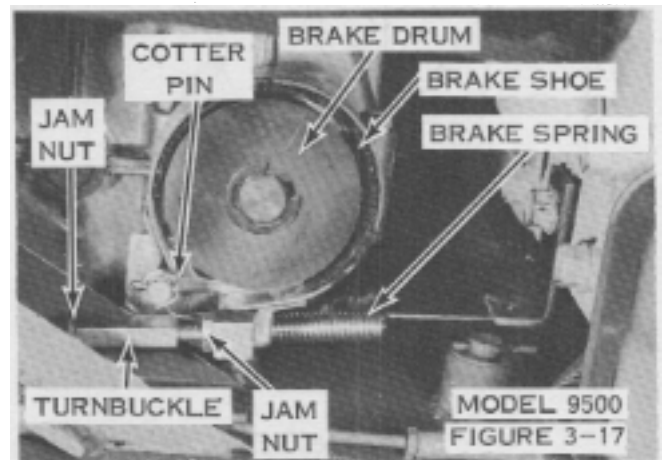
This model mower is braked thru the transmission. The transmission driveshaft has a sprocket (drive chain) on one end and a brake drum on the other end. See Figure 3-17. A spring loaded brake shoe wraps around the drum and is actuated by the brake pedal.

BRAKE ADJUSTMENT MODEL 9500 ONLY

Proper brake adjustment will allow the brake drum to turn freely while machine is moving. When the brake pedal is pushed, the brake shoe will tighten on the drum and stop the mower. See Figure 3-17. Adjustment is made by lengthening or shortening the rod from the brake pedal to the brake shoe. This is accomplished with the turnbuckle. Loosen the two jam nuts prior to adjustment. Re-secure them after proper brake adjustment is achieved.

BRAKE ADJUSTMENT MODEL 9501 ONLY

Proper brake adjustment will allow the brake drum to turn freely while mower is moving. When the brake pedal is depressed the brake shoe will tighten on the drum and stop the mower. Adjustment is achieved



MODELS 9500, 9501 ONLY

with the brake pedal pulled back against stop. Adjust brake band assembly using the brake band mounting screw and jam nuts on brake rod until there is approximately 1/64-1/32 inch clearance be-

tween brake drum and brake band lining as shown in Figure 3-17. Tighten jam nuts and mounting screw securely. See Figure 3-17.

SECTION 10

DIFFERENTIAL

REMOVING DIFFERENTIAL DRIVE SPROCKET

Remove the spark plug lead. Stand mower on end, resting on engine. Secure mower so it will not tip during repairs. Locate and remove the master link on drive chain. See Figure 3-18. Remove chain, see Figure 3-19. Remove the rear wheels and bearing assemblies (2). Slide the differential out of the chassis. The sprocket can now be removed or the differential disassembled for further repair or replacement.

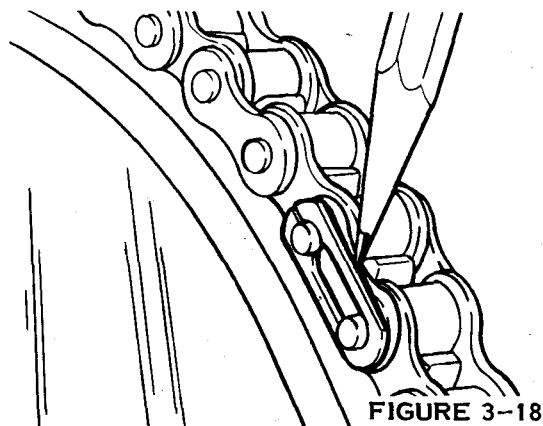


FIGURE 3-18

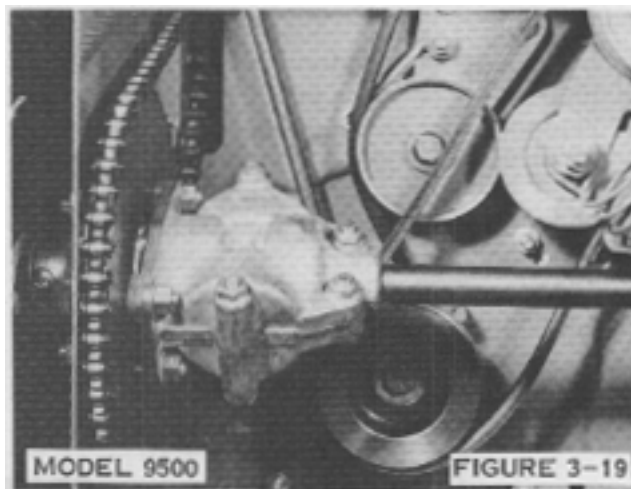


NOTE

When reinstalling master link, open end must face toward front of unit on chain slack side.

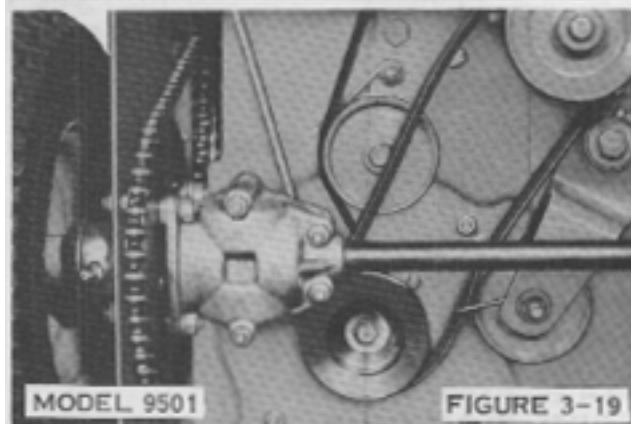
DIFFERENTIAL REPAIR

Follow the instructions under REMOVING DIFFERENTIAL DRIVE SPROCKET and remove the drive sprocket. Remove all screws securing the differential casting halves together. The differential parts can now be removed for inspection and replacement. See Figure 3-21. All



MODEL 9500

FIGURE 3-19



MODEL 9501

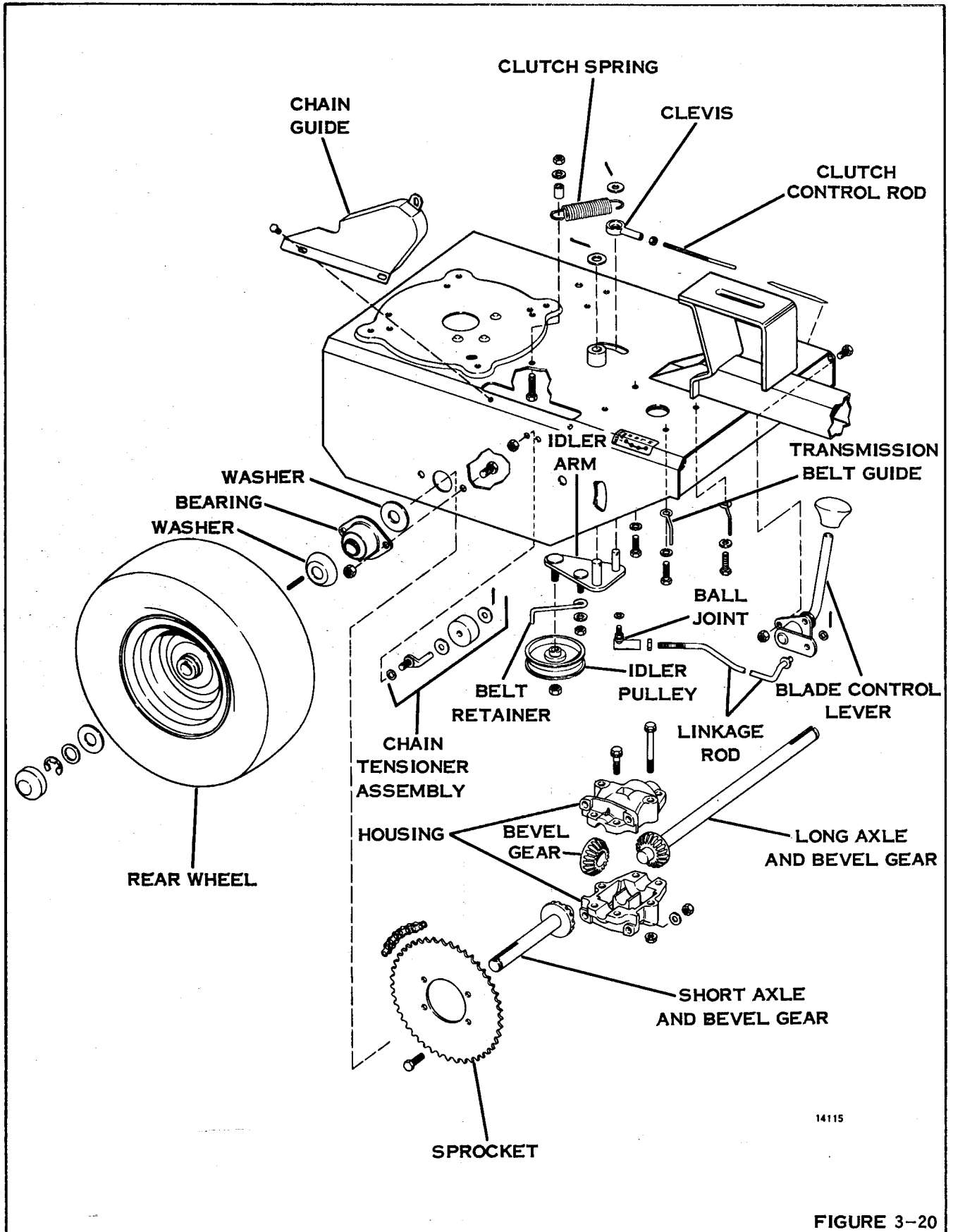
FIGURE 3-19

parts should be thoroughly washed with a suitable solvent. The axle and gear assemblies must be replaced as a unit as the gears are permanently secured to their respective axles. Care should be taken not to damage the mating surfaces of the casting halves as there is no gasket used to seal the assembly.

LUBRICATING DIFFERENTIAL

Prior to reassembly or lubrication, all parts should be cleaned as stated under DIFFERENTIAL REPAIR. Pack the differential with a good grade of packing lubricant, i.e. Lawn-Boy "A" grease or automotive chassis grease.

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FIGURE 3-20

MODEL 9501 ONLY

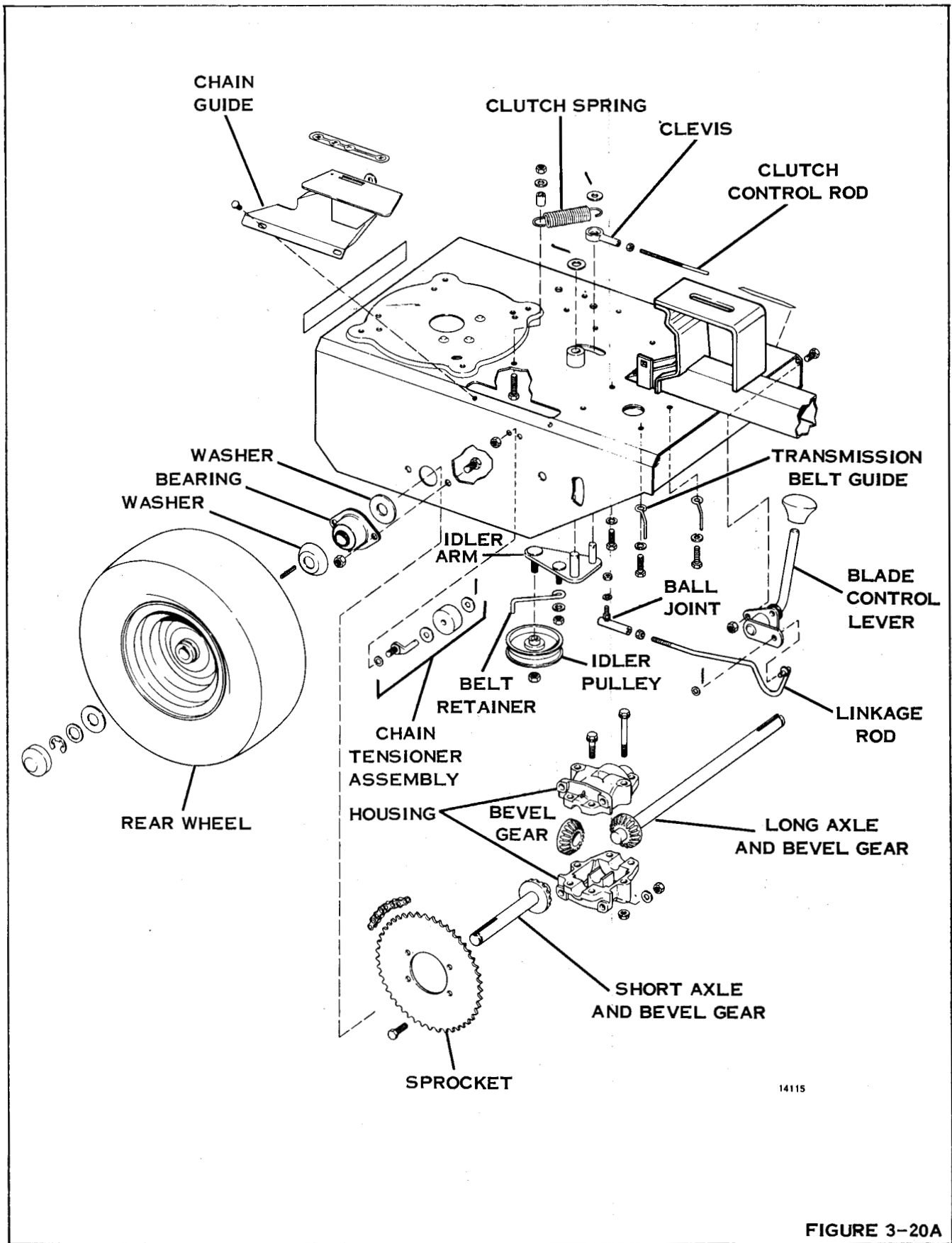
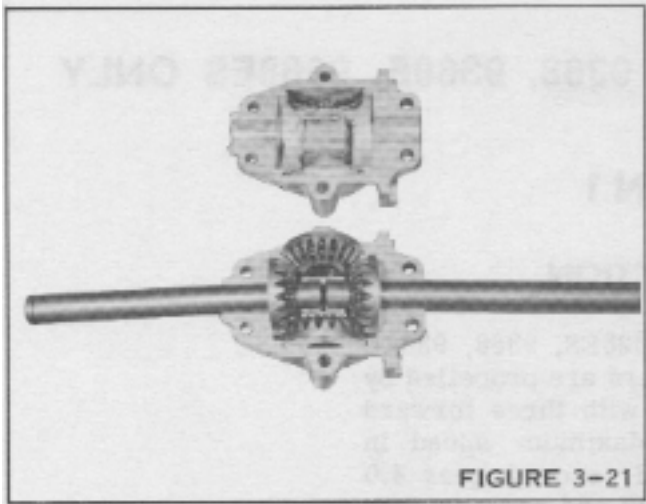


FIGURE 3-20A

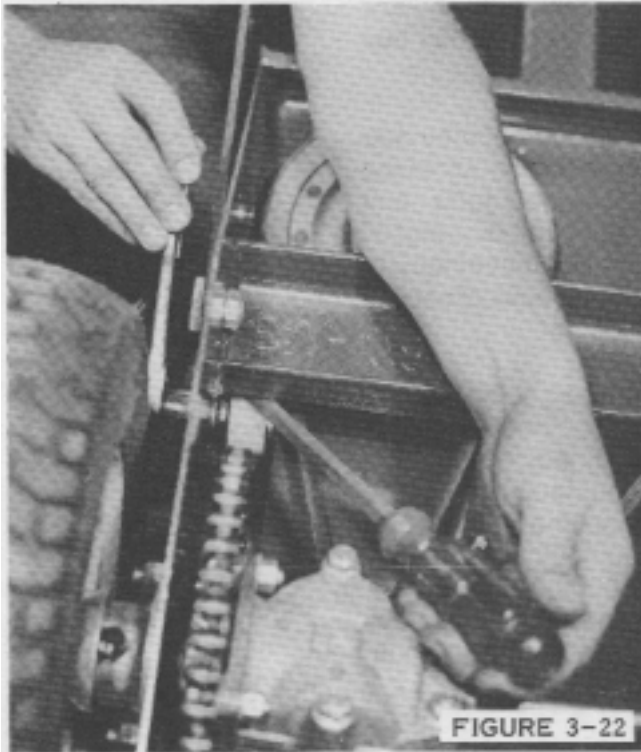
MODELS 9500, 9501 ONLY



1. Remove spark plug lead. Stand mower on end resting on engine. Secure mower so it will not tilt or fall.
2. Loosen the nut on the chain tensioner.
3. Use a screwdriver to apply tension to the chain. Tighten to 3/32 inch maximum chain slack.

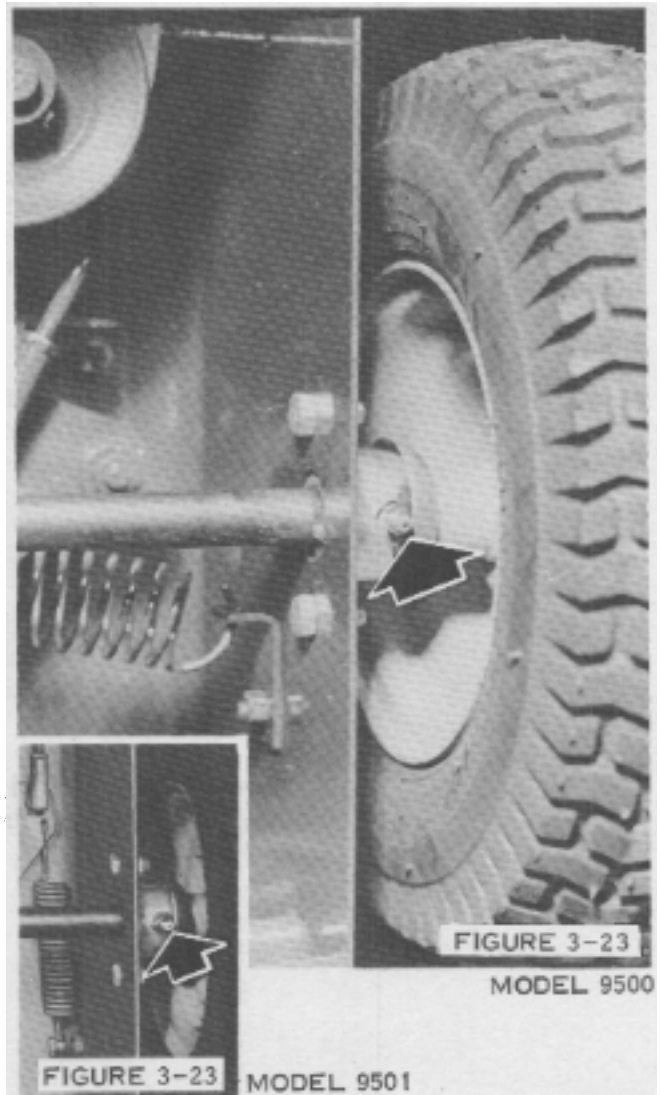
REAR WHEEL BEARING & AXLE LUBRICATION

The rear wheel bearing should be lubricated every 25-30 hours of operation with Lawn-Boy Type A lubricant or a good automotive type chassis grease. See Figure 3-23.



DRIVE CHAIN TENSION

The chain tensioner is located under the chassis support bar. See Figure 3-22. Occasionally this may have to be tightened to maintain correct chain tension.



CHAPTER IV

MODELS 9328, 9328E, 9328ES, 9368, 9368E, 9368ES ONLY

SECTION 1

INTRODUCTION

Models 9328, 9328E, 9328ES, 9368, 9368E and 9368ES compact riders are propelled by a geared transmission with three forward speeds and reverse. Maximum speed in first gear is: 2.6 MPH, second gear 4.0 MPH, third gear 5.9 MPH and reverse gear 2.6 MPH.

An 8 H.P. recoil or electric start Briggs and Stratton four cycle engine with a maximum rpm range of from 3400 to 3600 rpm powers the mower. For engine service see an authorized Briggs and Stratton Dealer.

A unique feature is the gear-type steering which gives the operator positive steering control, reduces feed-back of jolts and jerks. Geared steering with short coupled frame allows outstanding maneuverability for fast convenient mowing around obstructions.

The 32 or 36 inch floating pan may be adjusted to 5 different cutting positions between 1-3/8 inches and 2-7/8 inches. The front wheels are semi-pneumatic while the rear tires are fully pneumatic and maintain 16-18 pounds air pressure.

A Service and Parking brake is included to provide sure, instant stops. The parking brake lock assures the owner of safe storage and starting.

Overall length is 54.5 inches. Width of 36 inch models is 41 inches. Width of 32 inch models is 35 inches.

MODELS 9328, 9328E, 9328ES, 9368, 9368E, 9368ES ONLY

SECTION 2 SPECIFICATIONS

ENGINE

Idle rpm	1800 rpm's
Operating rpm	3400 - 3600 rpm's maximum
Oil requirement	SAE 30 Wt. service MS
Crankcase capacity	2-1/2 pints
Spark plug	Champion CJ8-Autolite A7N

TIRE SPECIFICATIONS

Front size	10.25 x 3.50 semi-pneumatic
Rear size	13 x 5.00-6 pneumatic
Pressure	16-18 PSI

SECTION 3 LUBRICATION

LAWN-BOY "A" GREASE, MULTIPLE-PURPOSE AUTOMOTIVE CHASSIS GREASE, MOBIL OIL COMPANY NO. 130204 OR EQUIVALENT:

1. Lubricate rear axle bearings at grease fittings.
2. Lubricate blade shaft housings at grease fittings.
3. Lubricate blade pulley spindle assembly of 32" rider at grease fitting.
4. Front axles at wheel and at axle mounting bushings.
5. Steering gears.

SAE #30 OIL

1. All pivot points other than specified above.

SHELL EXPRO 71030 GREASE OR EQUIVALENT:

1. Transmission: 10.5 oz. evenly distributed. Grease thrust area of each gear and shaft bearing surfaces of casting.
2. Differential: 1.5 oz. Grease thrust area of each gear and shaft bearing surfaces of casting.

**SECTION 4
HARDWARE TORQUES**

Torque to values given for thread size unless listed separately.

THREAD SIZE	TORQUE - INCH POUNDS
10 - 16	25 to 30 inch lbs.
1/4 - 20	63 to 75 inch lbs.
5/16 - 18	142 to 170 inch lbs.
3/8 - 16	190 to 225 inch lbs.

DESCRIPTION	TORQUE - INCH POUNDS
608002 Screw - Blade to Adaptor	190-250 inch pounds
608013 Screw - Adaptor to Shaft	190-250 inch pounds
603773 Nut - Transmission Idler Pulley	149-195 inch pounds
603781 Nut - Pan Idler Pulley	149-195 inch pounds
607995 Screw - Pulley to Engine (8 HP)	268-350 inch pounds
----- Spark Plug	150-180 inch pounds

SECTION 5

TROUBLESHOOTING

STEERING

PROBLEM	CAUSE	REMEDY
Hard steering	Lack of lubricant Gears and/or bushings worn Tie rods bent Steering shaft or arm broken	Lubrication - Section 3 Steering disassembly and inspection - Section 6 Straighten or replace - Section 6 Disassembly and replacement - Section 6

BLADE HOUSING AND BLADE

Blade won't turn	Belt off pulleys Belt damaged Blade nut loose Seized bearings	Replace - Section 7 Replace - Section 7 Tighten - Section 7 Refer to Spec. Sheet -- Torque
Blade leaves swirl marks in lawn	Housing unlevel Blade unlevel or bent	Correct housing level - Section 7 Replace blade - Section 7

MODELS 9328, 9328E, 9328ES, 9368, 9368E, 9368ES ONLY

BLADE HOUSING AND BLADE (CONT)

PROBLEM	CAUSE	REMEDY
Blade belt comes off (Rear)	Belt keeper loose	Adjust and tighten
	Broken belt	Replace
	Belt pulleys loose	Tighten
Blade belt comes off (Front)	Broken belt	Replace
	Pulleys damaged or loose	Tighten or replace
	Idler pulley broken or bent	Tighten
	Idler spring disconnected or distorted	Replace

DRIVE PROBLEMS

Mower will not propel	Chain loose	Adjust
	Chain broken	Repair or replace
	Differential broken	Repair or replace - Section 9
	Sprocket worn or broken	Replace - Section 8
	Drive belt broken or damaged	Replace - Section 8
	Transmission won't shift	Repair - Section 8

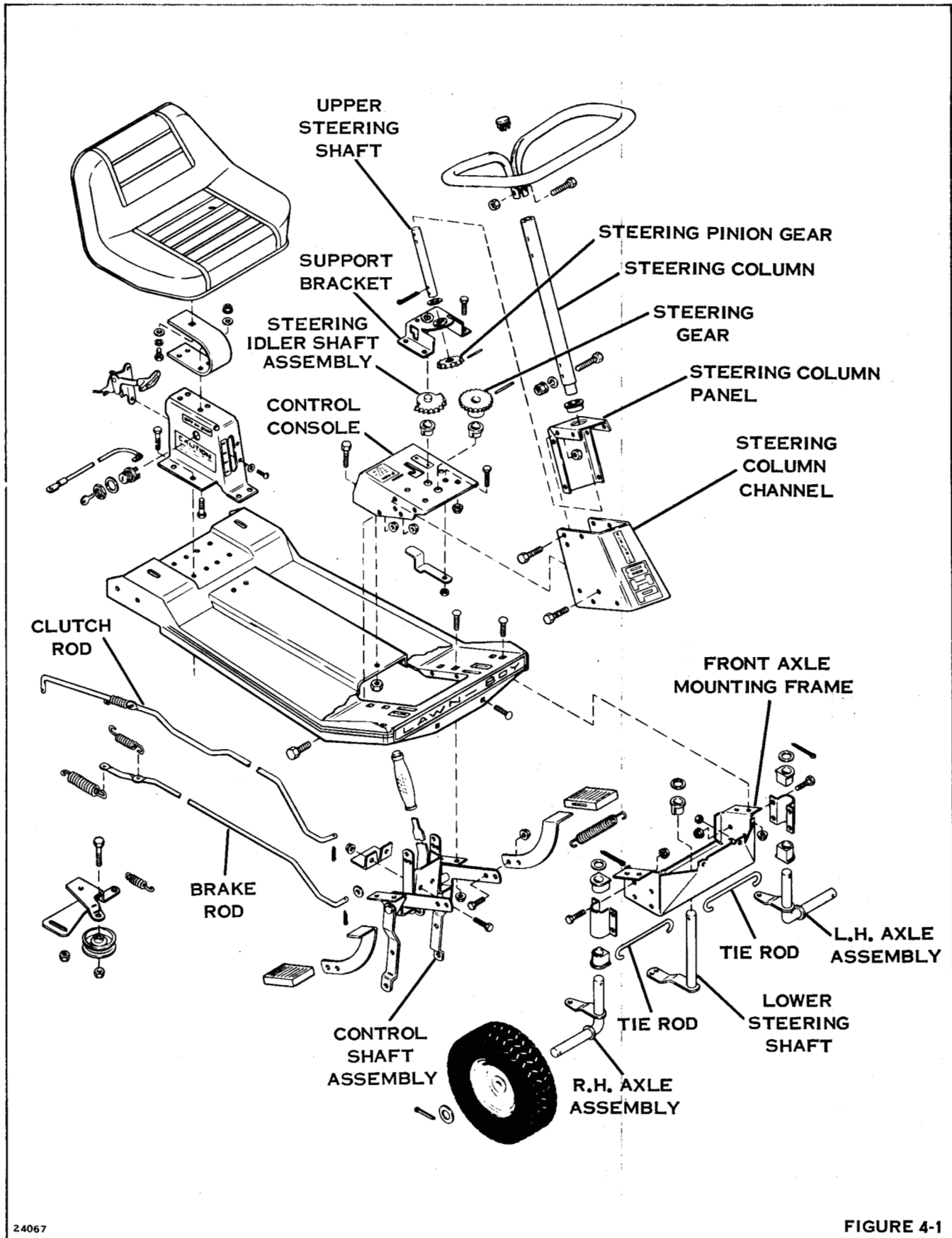
FUEL TROUBLE

PROBLEM	CAUSE	REMEDY
Engine will not start	a. Fuel tank empty b. Water in fuel c. Old fuel in tank gums up tank, fuel line and carburetor d. Shut-off valve closed	a. Fill tank b. Drain fuel from tank and carburetor and replace with fresh fuel c. Empty out old fuel and clean all parts involved d. Open valve
Engine slows down and stops	a. Vent hole in fuel tank cap plugged b. Fuel line or strainer clogged c. Fuel tank runs dry	a. Unplug hole b. Clean out fuel line or strainer c. Refill tank

SPARK PLUG TROUBLE

PLUG CONDITION	CAUSE	RECOMMENDATION
Black carbon or sooty deposit	a. Breaker points dirty or out of adjustment b. Weak condenser c. Incorrect plug	a. Clean and adjust gap b. Check and replace if weak c. Install correct plug
Pitted or burned electrodes, white, light tan or blistered deposits. Rapid wear of electrode	a. Incorrect plug	a. Install correct plug
Cracked or broken plug	a. Careless installation of plug	a. Replace plug
Cracked or broken insulator on lower end of plug	a. Center electrode strained when regapping plug	a. Replace plug
Widening of gap	a. Normal wear	a. Clean and regap

MODELS 9328, 9328E, 9328ES, 9368, 9368E, 9368ES ONLY



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FIGURE 4-1

MODELS 9328, 9328E, 9328ES, 9368, 9368E, 9368ES ONLY

SECTION 6

FRONT END

STEERING

The steering is a positive gear type system. The steering shaft pinion gear engages the idler shaft gear which drives the steering gear. The steering gear is attached to the lower steering shaft. Two tie rods connect front axle assemblies allowing the wheels to turn in the desired direction.

STEERING DISASSEMBLY

1. Remove 2 screws securing steering column to upper steering shaft and remove steering column.
2. Remove lower 3 screws, as shown, on each side of steering column channel and remove channel.
3. Remove cotter pin and bushing from steering column.
4. Remove four screws securing steering support bracket to frame and remove bracket.
5. Using a punch, remove roll pin securing pinion gear to steering shaft and remove gear.

NOTE

When re-installing pinion gear install with bevel side up.

6. Remove roll pin securing steering gear to lower steering shaft and remove steering gear and steering idler shaft gear assembly.

NOTE

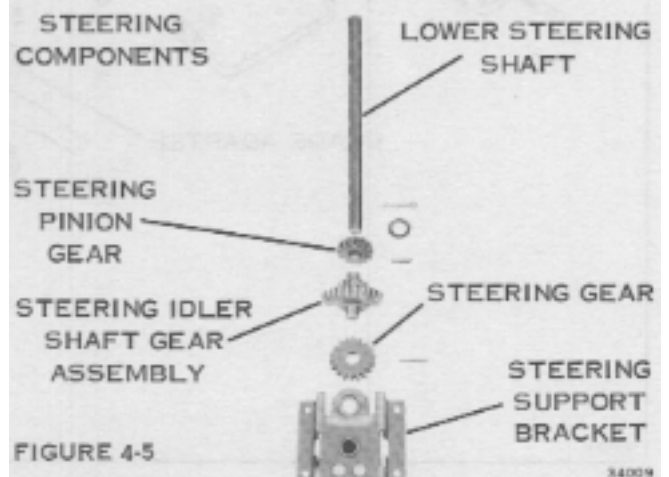
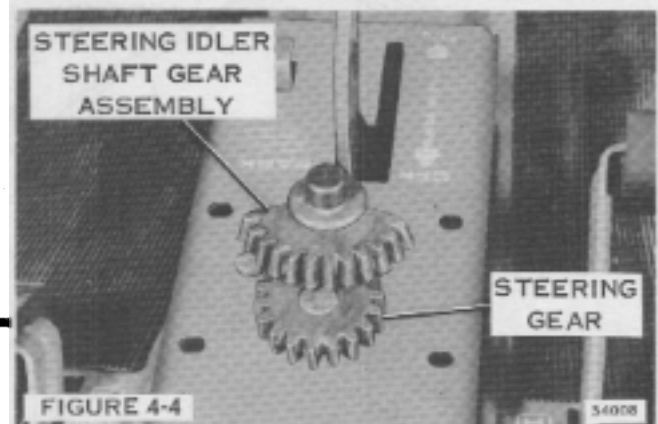
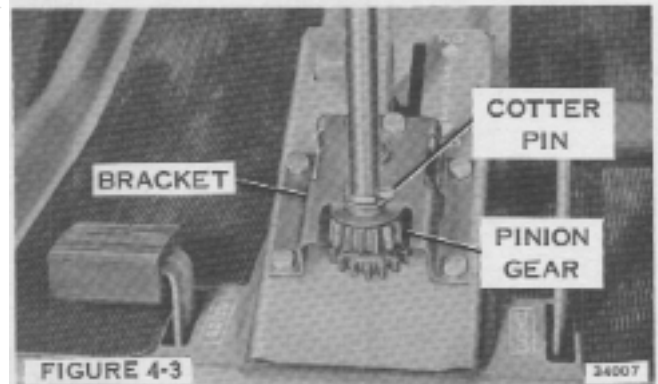
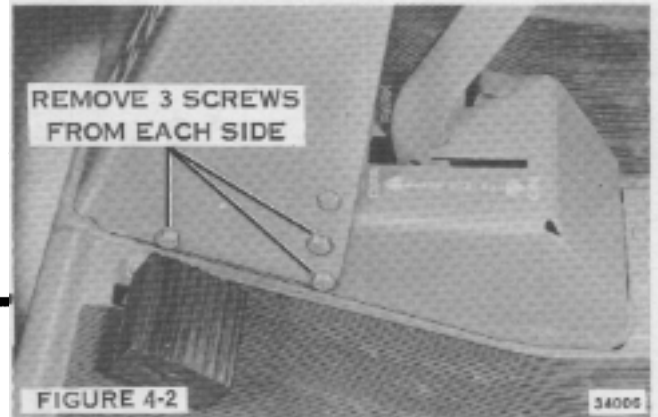
When reinstalling steering idler gear install gear assembly as shown to allow full turning radius.

7. Inspect all gears, shafts, roll pins for wear etc. Replace as required. During reassembly apply a light coat of Lawn-Boy "A" grease or equivalent.

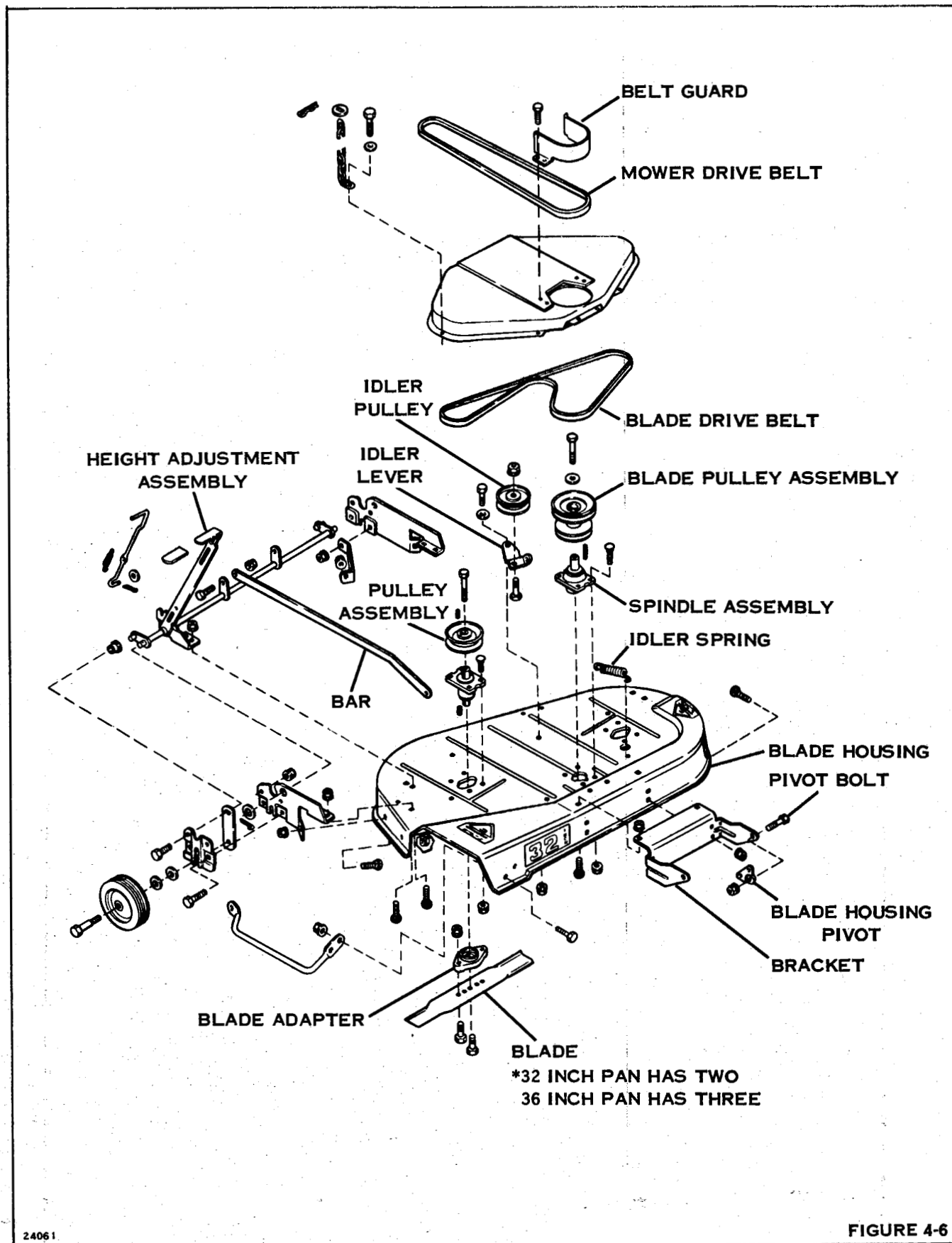
NOTE

Front wheels must be facing in straight ahead position. Install upper steering shaft in steering support bracket with the steering column holes perpendicular to mower.

8. Reinstall steering components in reverse order of disassembly.



MODELS 9328, 9328E, 9328ES, 9368, 9368E, 9368ES ONLY



24061

FIGURE 4-6

MODELS 9328, 9328E, 9328ES, 9368, 9368E, 9368ES ONLY

SECTION 7

BLADE DRIVE & BLADE HOUSING ASSY.

The cutting blade is driven by a system of V belts and pulleys.

The primary drive belt is attached to the engine sheave assembly and the transmission pulley. An idler pulley applies tension to the drive belt when the clutch pedal is released. Mower speed is controlled by the three speed transmission. The secondary blade drive belt is attached to the engine sheave assembly and the blade pulley assembly. The blade automatically stops when disengaged within 15 seconds. The blade drive belt is attached to the blade pulley assembly which is held under constant tension by the use of a spring attached to an idler pulley lever assembly.

BELT REPLACEMENT

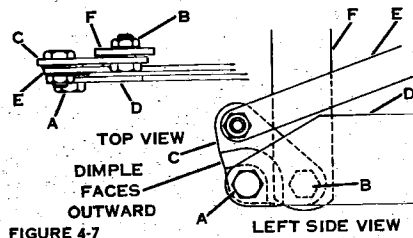
SAFETY WARNING

ALWAYS MAKE SURE IGNITION KEY IS IN "OFF" POSITION AND SPARK PLUG LEAD DISCONNECTED BEFORE INSPECTING AND REPAIRING THE MOWER.

- Slide blade housing under mower and install new belt on blade housing pulley, and replace belt keeper. Reassemble mower pan to mower frame. Refer to illustration "B" for correct assembly.

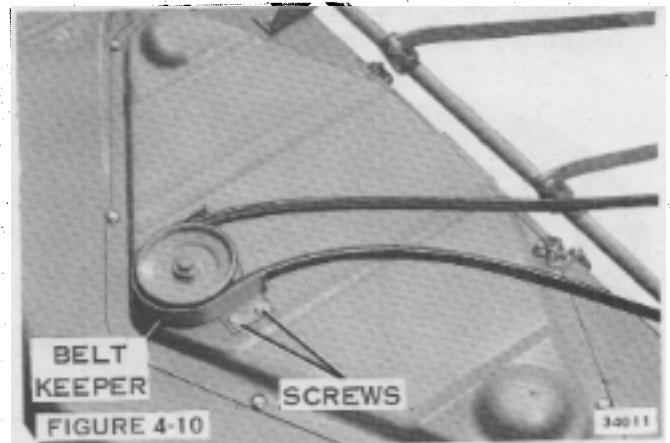
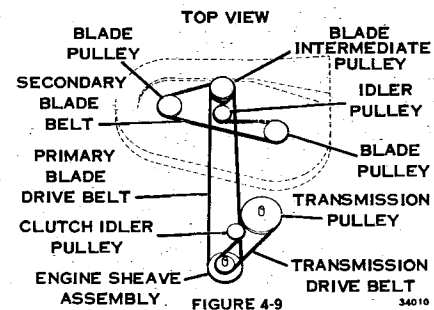
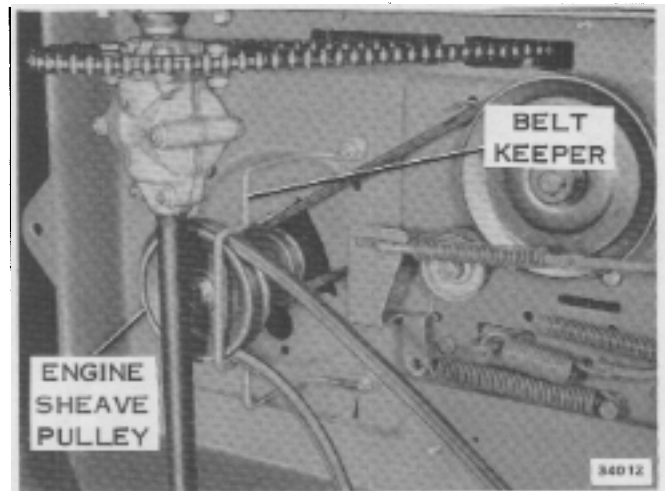
PRIMARY BLADE DRIVE BELT

- Place blade control clutch lever in disengage position. Remove spark plug lead from spark plug.
- Raise rear of mower approximately 24 inches, apply parking brake and block front wheels so unit cannot roll. Remove belt keeper.
- Remove hair pin clips from mower pan chains.
- Place cutting height adjustment control in highest position. Remove two pivot bolts "A" from triangular bracket as illustrated. (One on each side of unit.) **CAUTION:** Exercise care when removing second bolt, pan will drop to floor. Remove two pivot bolts "B" as illustrated and slide blade housing from mower.



Remove four bolts securing belt keeper to mower housing as illustrated, and remove belt from mower pan pulley.

Install new belt on engine sheave pulley and secure belt keeper screws.



MODELS 9328, 9328E, 9328ES, 9368, 9368E, 9368ES ONLY

FINAL BLADE DRIVE BELT REPLACEMENT

1. Follow steps 1 thru 5 under PRIMARY BLADE DRIVE BELT REPLACEMENT.
2. Remove 8 screws securing belt cover and remove belt cover.

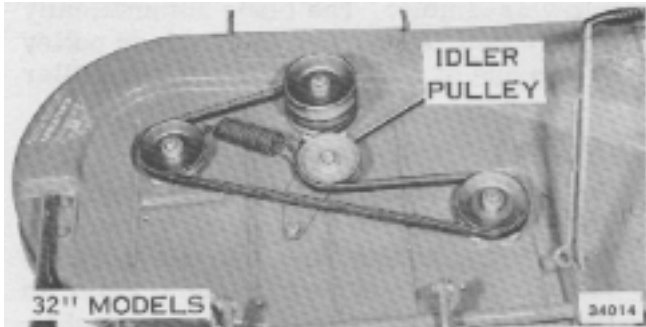


FIGURE 4-11

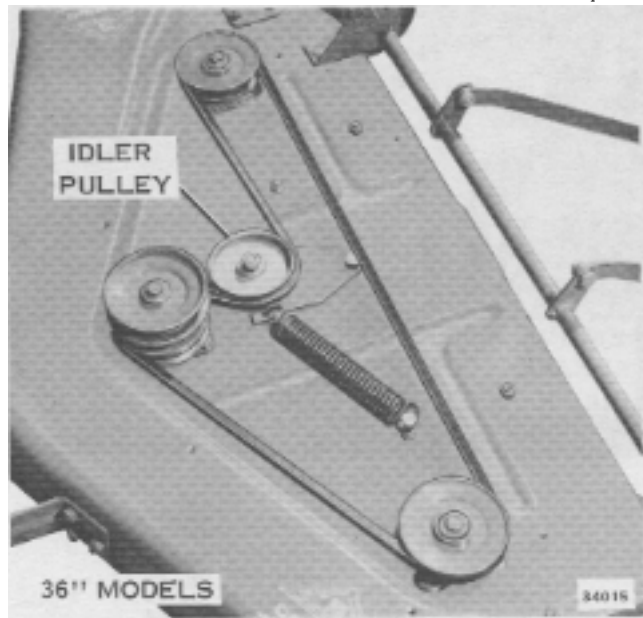
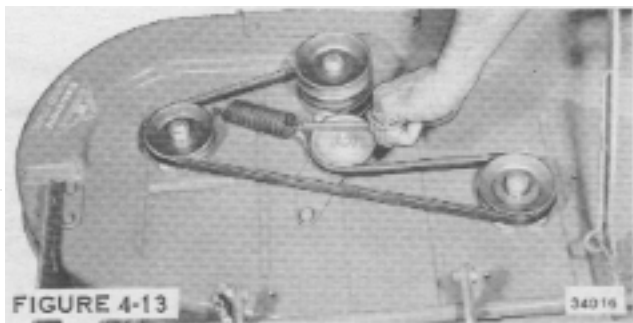


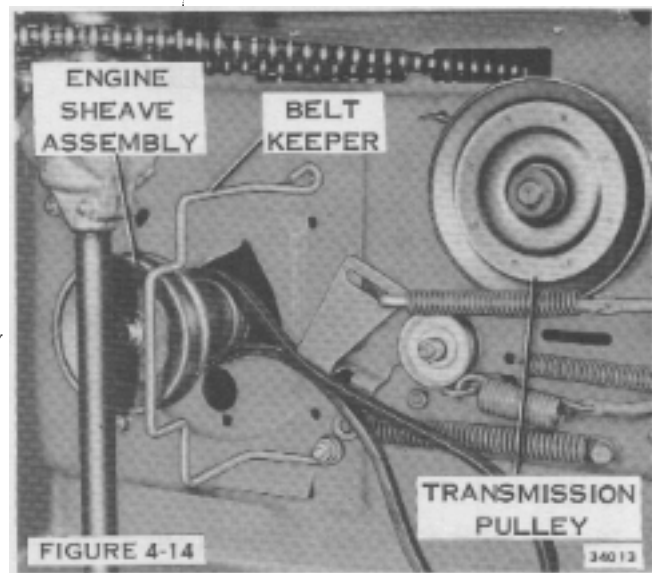
FIGURE 4-12

3. Using a piece of rope remove idler spring as shown and remove worn belt.
4. Replace belt, attach idler spring and re-assemble mower pan to mower frame.



TRANSMISSION DRIVE BELT REPLACEMENT

1. Follow steps 1 and 2 under PRIMARY BLADE DRIVE BELT REPLACEMENT.
2. Depress clutch pedal to take tension off transmission drive belt and remove belt from transmission pulley.
3. Remove belt keeper.
4. Remove belt.
5. Install new belt by reversing procedure.



CUTTING HEIGHT ADJUSTMENT

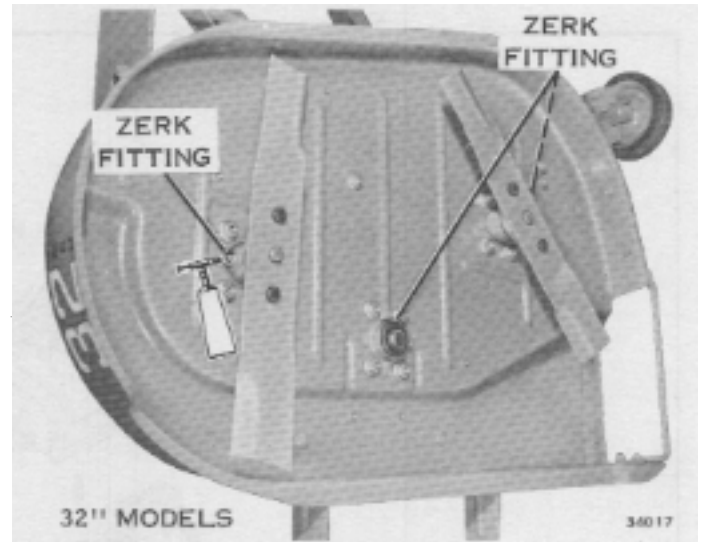
Mower pan may be set at five different cutting heights - from 1.38 inches to 2.88 inches. It is adjusted automatically to these five positions by pulling up the release latch on height adjustment lever, and shifting the lever to desired position. Latch is then released locking pan in that position.

MODELS 9328, 9328E, 9328ES, 9368, 9368E, 9368ES ONLY

LUBRICATION OF BLADE SHAFT HOUSING ASSEMBLY

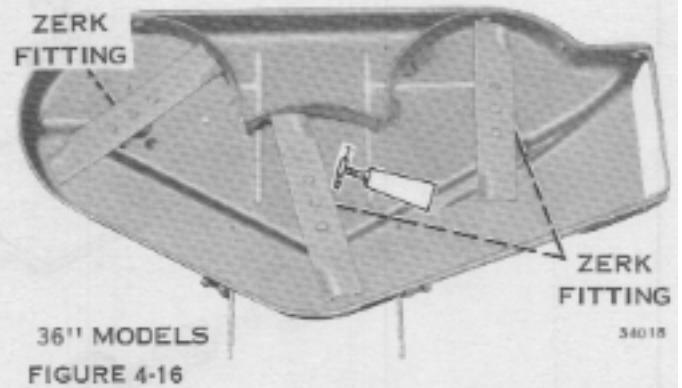
32 INCH MODELS

1. Use a grease gun and apply grease to three (3) zerk fittings located on spindle housing. Apply grease until grease appears at bearing housing. Refer to lubrication section.



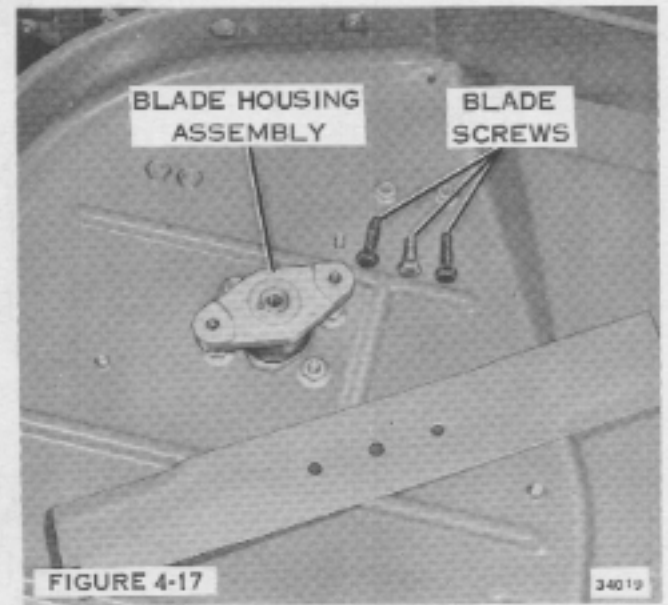
36 INCH MODELS

1. Use a grease gun and apply grease to three (3) zerk fittings located on spindle housings. Apply grease until grease appears at bearing housing. Refer to lubrication section.



BLADE SERVICING

1. Remove three mounting screws from blade housing assembly and remove blade. Re-torque blade to correct torque.
2. If blade is sharpened it should be balanced.
3. Replace blade if bent or distorted or if badly worn.



MODELS 9328, 9328E, 9328ES, 9368, 9368E, 9368ES ONLY

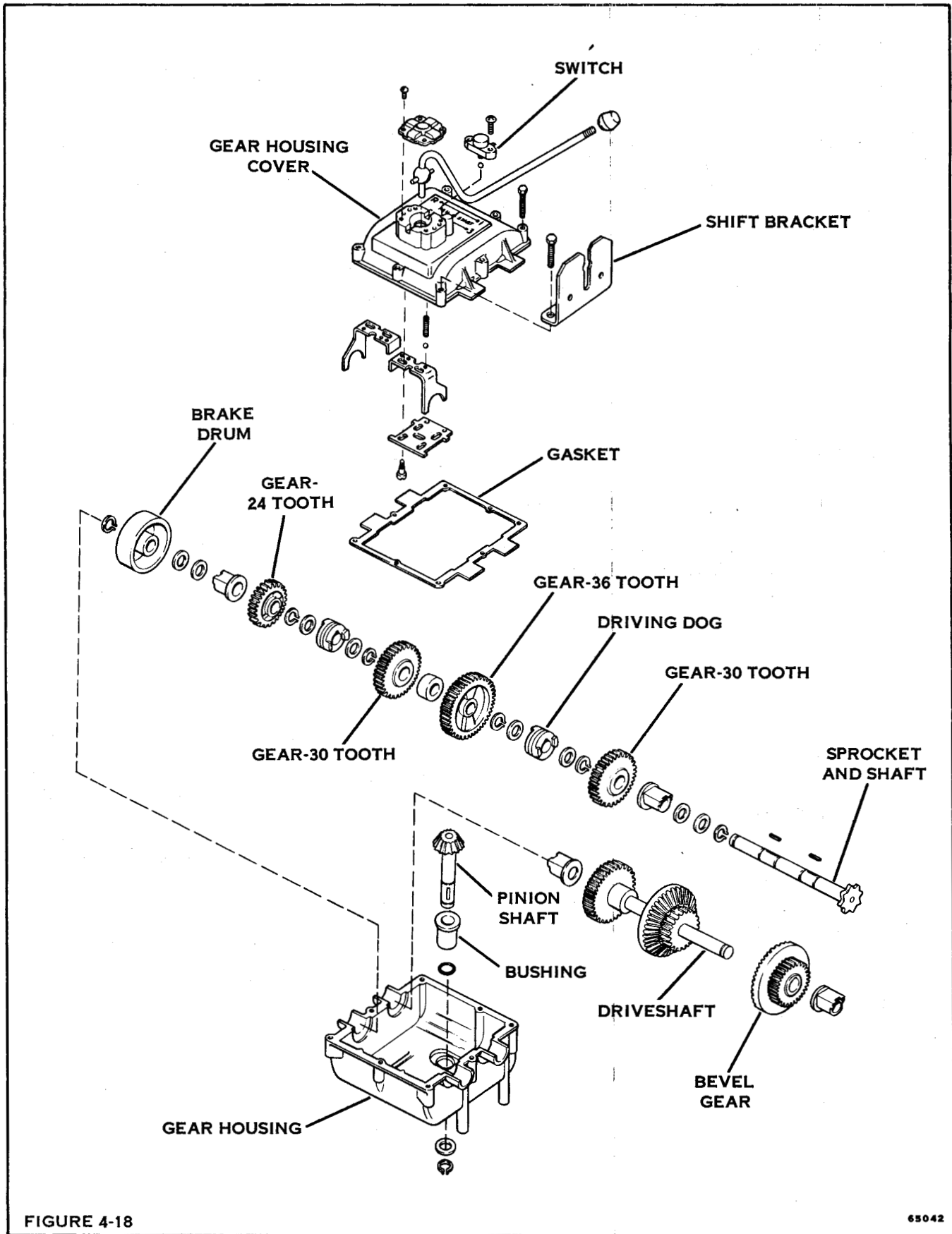


FIGURE 4-18

65042

SECTION 8 TRANSMISSION

TRANSMISSION REPAIR OR REPLACEMENT

 SAFETY WARNING

ALWAYS MAKE SURE IGNITION KEY IS IN "OFF" POSITION AND SPARK PLUG LEAD DISCONNECTED BEFORE INSPECTING AND REPAIRING THE MOWER.

1. Remove seat from seat spring. Remove battery from electric start models. Remove throttle control cable from engine.
2. Remove drive chain. (Refer to CHAIN REPLACEMENT.)
3. Remove brake drum from transmission drive shaft by removing retaining ring from end of shaft.
4. Remove nine (9) screws securing transmission cover plate, and remove cover plate to expose gear train.
5. Remove gear and axle assemblies and repair or replace gears as required.

TRANSMISSION LUBRICATION

Refer to LUBRICATION.

MOWER BRAKE

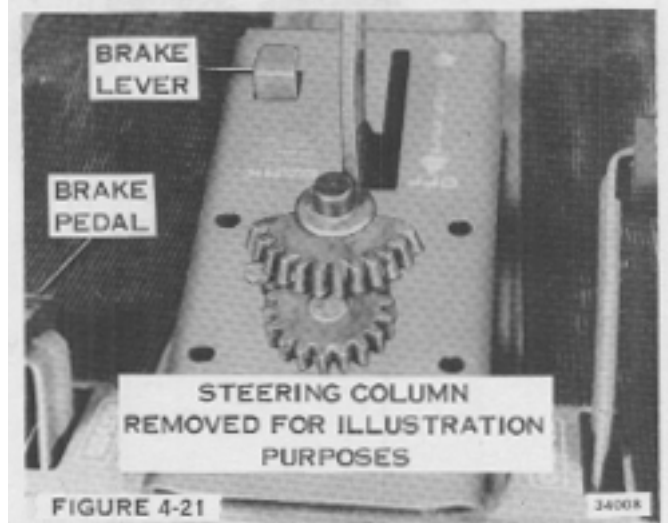
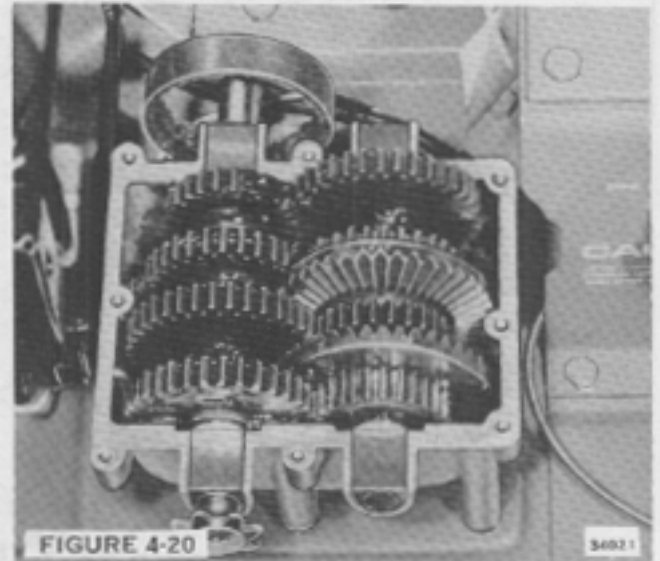
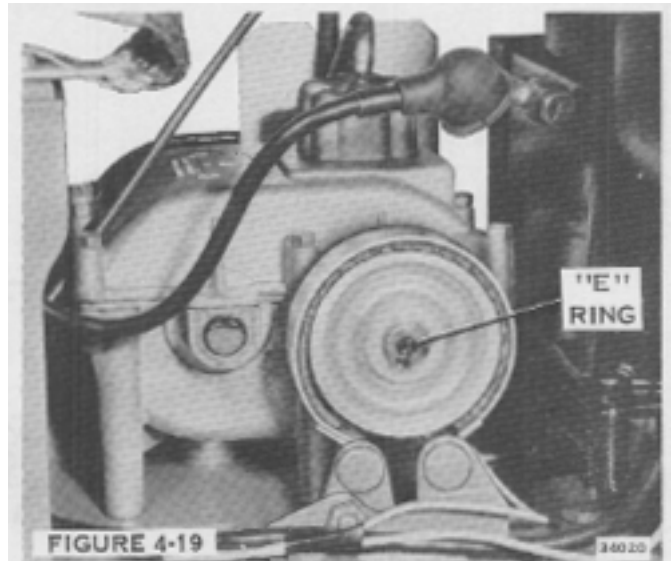
The mower is stopped by applying foot pressure to both clutch pedal and brake foot pedal, which activates a transmission brake shoe. Stopping action occurs through the transmission, not the mower wheels. This brake is self-adjusting - no adjustment necessary. If no brake action is apparent, check linkage, springs and brake shoe for wear. Repair or replace as required.

PARKING BRAKE

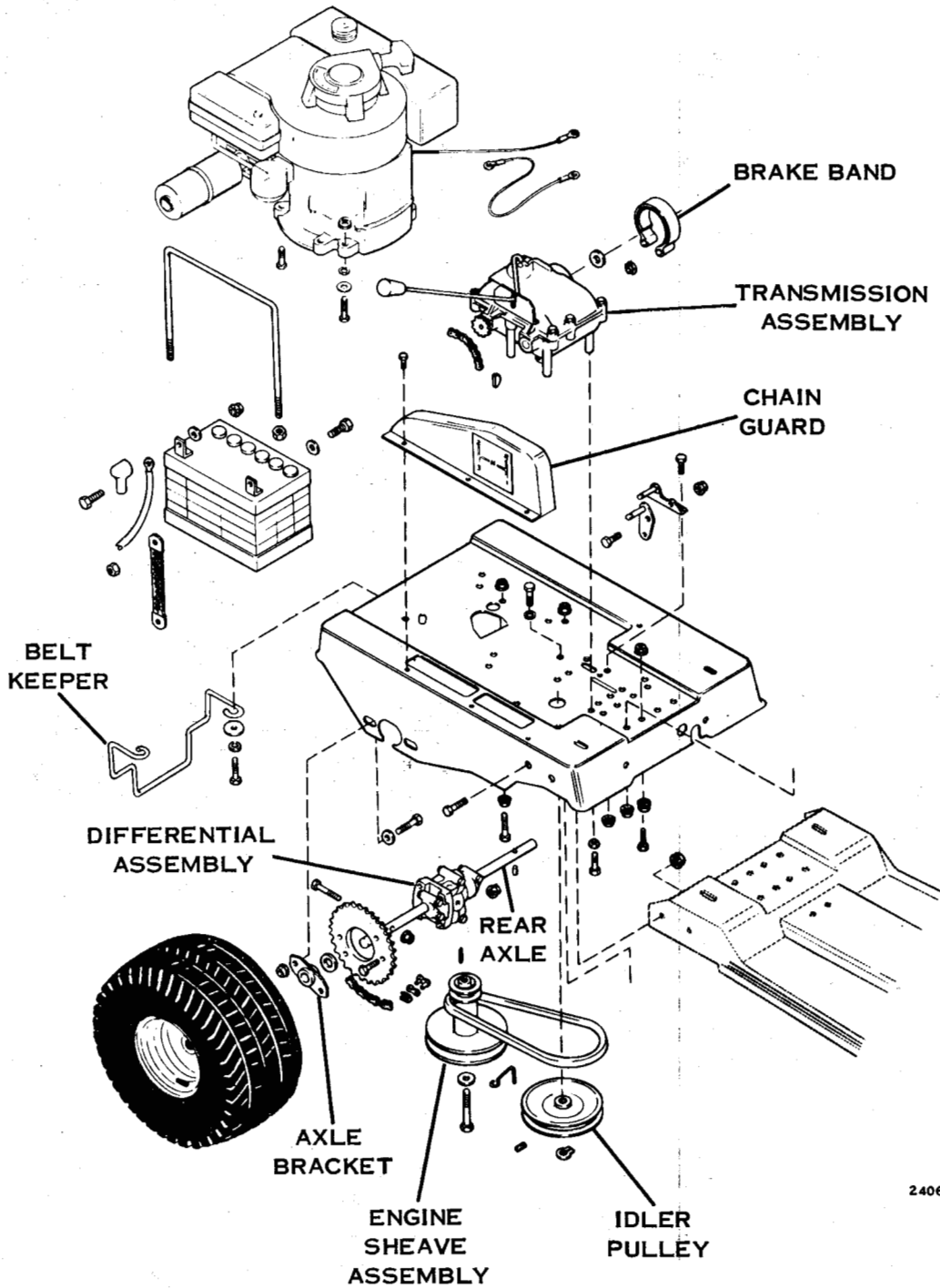
The mower is equipped with a foot-operated parking brake. A separate brake lever on the center console engages the parking brake after the brake pedal is depressed. To release, depress foot brake.

CLUTCH

Mower drive clutch is pre-set at the factory, and is self-adjusting; therefore, no adjustment is required. If no clutch action is apparent, check linkage and springs. Repair or replace as required.



MODELS 9328, 9328E, 9328ES, 9368, 9368E, 9368ES ONLY



24068

FIGURE 4-22

24068

MODELS 9328, 9328E, 9328ES, 9368, 9368E, 9368ES ONLY

SECTION 9

DIFFERENTIAL

REPAIR OR REPLACEMENT

1. Raise rear of mower up approximately 24 inches.
2. Remove rear wheels.
3. Remove chain guard. Remove master link from drive chain and remove chain.
4. Remove 4 screws securing rear axle bracket assembly to main frame.
5. Remove rear axle and differential assembly.
6. Repair or replace axle and/or differential assembly as needed.

NOTE

When installing axle and differential assembly to mower frame, the axle must be perpendicular to mower frame. Drive chain must be tight to 3/32 inch maximum slack. To adjust loosen axle bracket assembly mounting bolts and move axle in desired direction. Tighten axle bracket assembly screws securely.

DIFFERENTIAL LUBRICATION

Refer to CHAPTER II SECTION 3.

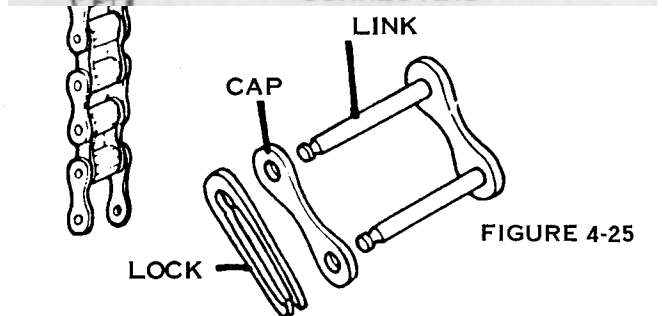
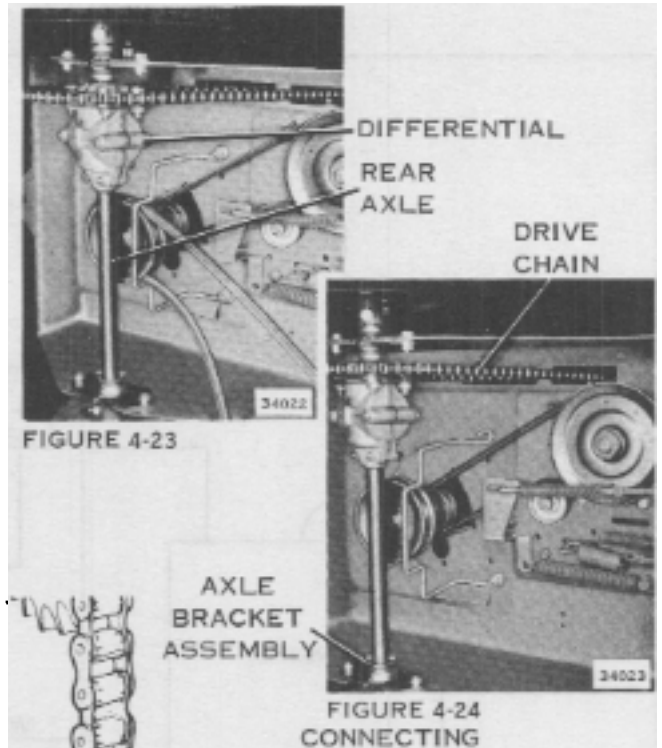
DRIVE CHAIN ADJUSTMENT

1. Loosen two bolts on each side of both rear axle bracket assembly. This will allow slight movement of the axle within the slots of the main frame.
2. Pull axle to rear of unit to create additional tension; pull axle to front of unit to relax tension. CARE must be taken to align differential and axle perpendicular to machine axis.
3. Correction tension should allow 3/32 inch maximum slack with light thumb pressure.
4. Tighten rear axle bracket assembly screws securely.

DRIVE CHAIN REPLACEMENT

1. Remove chain guard, connecting link from chain and remove drive chain. Repair or replace. **IMPORTANT:** Open end of master length clip must face toward front of unit on chain slack side.

Refer to CHAIN ADJUSTMENT for proper tension.



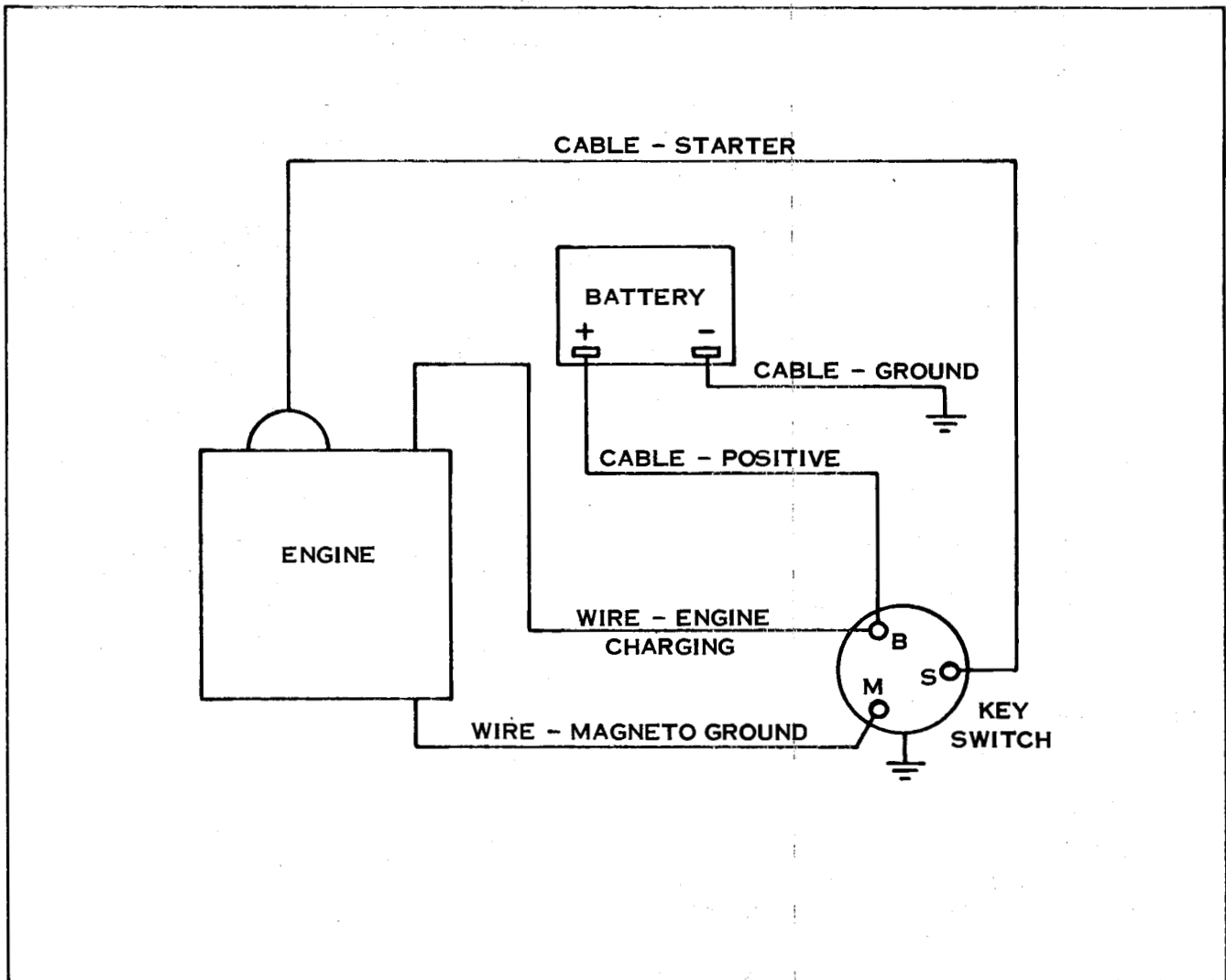
SAFETY WARNING
ALWAYS MAKE SURE IGNITION KEY IS IN "OFF" POSITION AND SPARK PLUG LEAD DISCONNECTED BEFORE INSPECTING AND REPAIRING THE MOWER.

THROTTLE CONTROL ADJUSTMENT

1. Loosen throttle cable retaining clip on engine.
2. Place throttle control lever in fast position, and place speed control arm on engine in fast position, without engaging choke.
4. Check to insure engine kill-switch is engaged when throttle control lever is placed in stop position - manual start models only.
5. Check to insure choke on engine is in full choke position, when throttle control lever is not quite at full end of choke position.

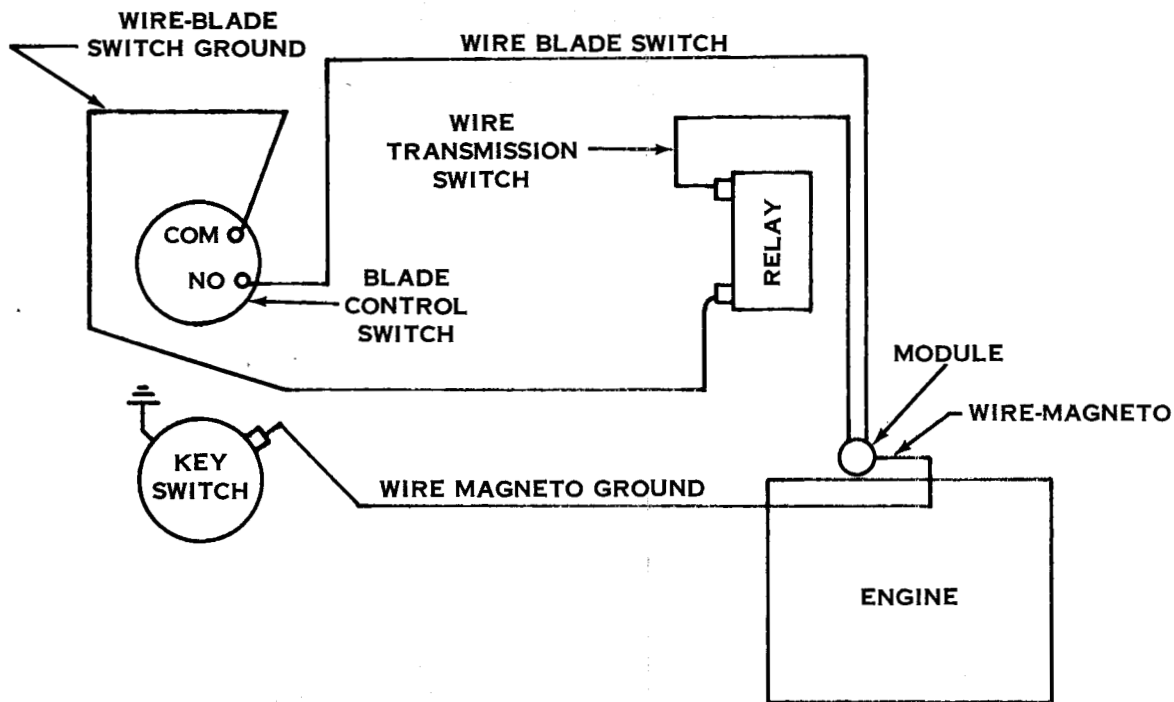
MODELS 9328E, 9328ES, 9368E, 9368ES ONLY
SECTION 10

WIRING DIAGRAM

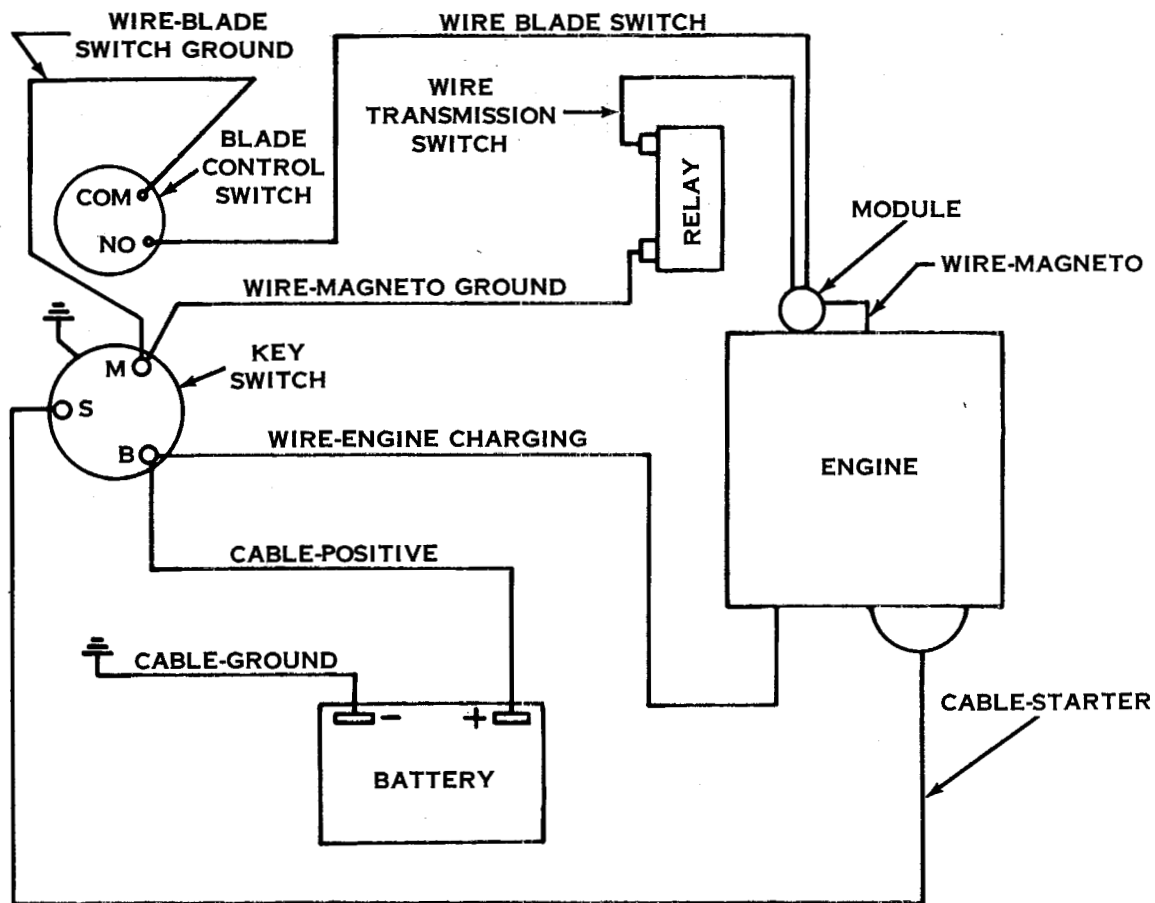


SECTION 10 WIRING DIAGRAM

MODELS 9266, 9329S ONLY



MODELS 9329ES, 9369ES ONLY



CHAPTER V

STORAGE PROCEDURE

ALL MODELS

Grease or lubricate where necessary. See Preventative Maintenance.

Drain gas tank and carburetor bowl. Check oil level in crankcase. Remove spark plug. Squirt a small amount of oil in cylinder and work engine manually to coat cylinder walls.

Electric Start Model: Remove battery, check fluid level, and charge the battery to its capacity. Charge battery fully once per month while in storage.

SECTION 12 - SNOW BLOWERS

PART A MODELS 2680, 2680A, 2680B AND 2650, 2650A, 2650B

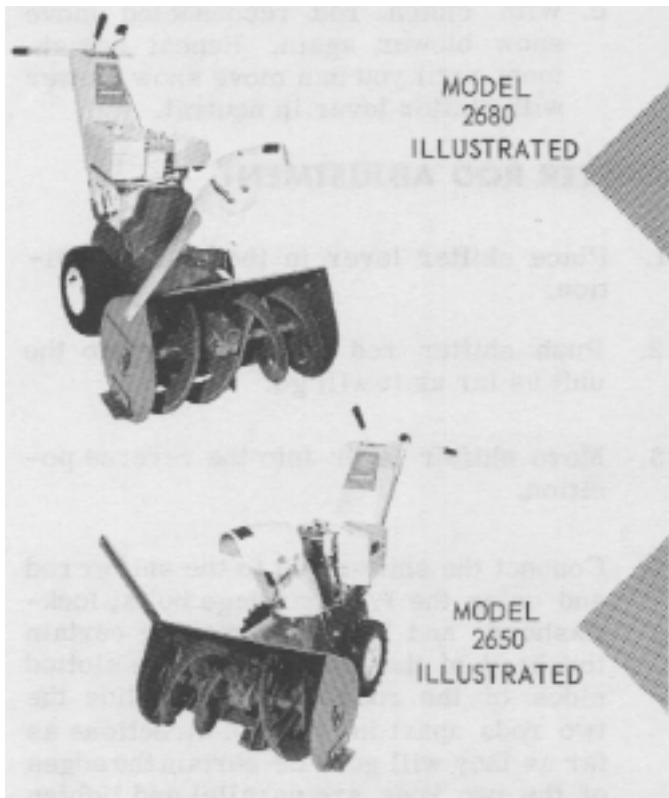
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MODELS 2680, 2680A, 2680B

Powered by a 4 cycle 8 HP gasoline engine. For engine servicing or repair, contact your local Briggs and Stratton dealer or the Briggs and Stratton Corp., Milwaukee, Wisconsin.

MODELS 2650, 2650A, 2650B

Powered by a 4 cycle 5 HP gasoline engine. For engine servicing or repair, contact your local Briggs and Stratton dealer or the Briggs and Stratton Corp., Milwaukee, Wisconsin.

CHAPTER I

ADJUSTMENTS

SAFETY WARNING

DISCONNECT SPARK PLUG WIRE BEFORE SERVICING OR MAKING ADJUSTMENTS.

TRACTION CLUTCH ROD ADJUSTMENT

1. Move shifter lever into the neutral position and push snow blower, it should move.
2. Move shifter lever into any of the forward speeds and push snow blower, it should not move.
3. If unit does not move when shifter lever is in neutral, adjust according to the following instructions.
 - a. Remove clevis pin from clevis on clutch rod. (Fig. 1).
 - b. Turn clevis to lengthen rod if unit won't move with lever in the forward (N) position. (Fig. 2.) Turn clevis to shorten rod if unit won't move when the lever is pulled back against the

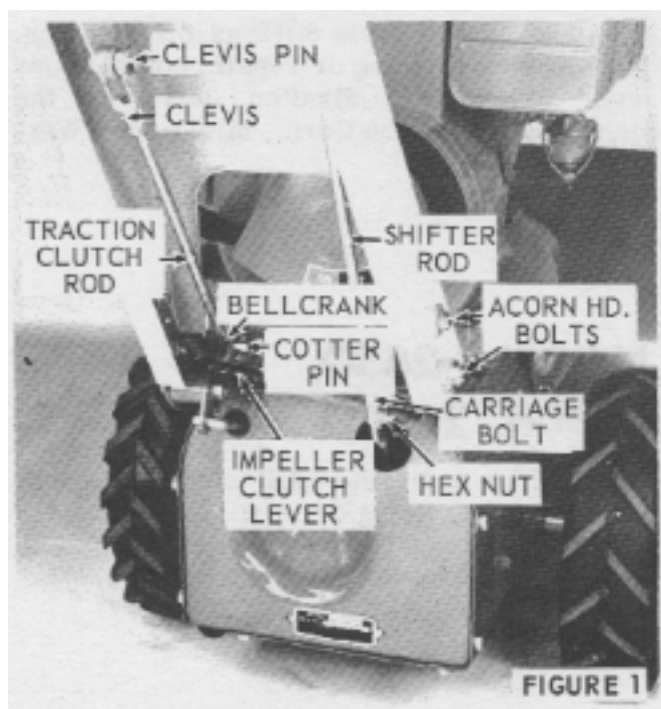


FIGURE 1

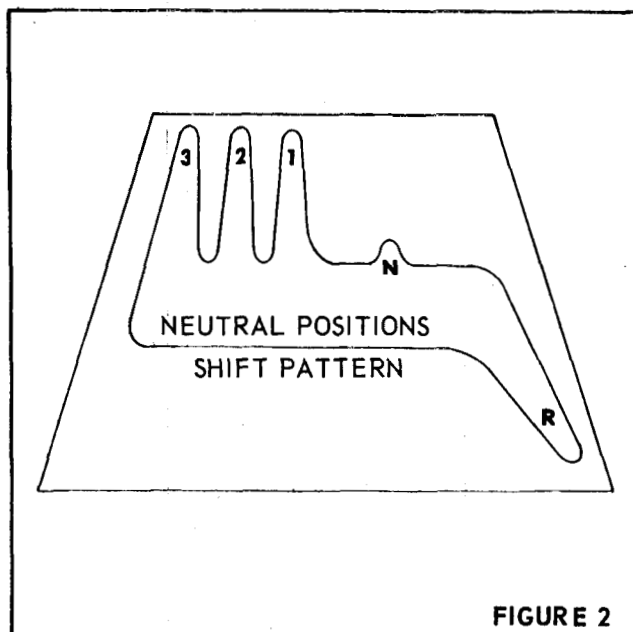


FIGURE 2

back of shifter panel. Pull directly in back of the (N) position and in back of the (3) position. (Fig. 2.)

- c. With clutch rod reconnected move snow blower again. Repeat adjustment until you can move snow blower with shifter lever in neutral.

SHIFTER ROD ADJUSTMENT

1. Place shifter lever in the neutral position.
2. Push shifter rod end (Fig. 1) into the unit as far as it will go.
3. Move shifter lever into the reverse position.
4. Connect the shifter rod to the shifter rod end using the 1/4" carriage bolts, lock-washers, and hex nuts; making certain the head of the bolts are on the slotted sides of the rods. (Fig. 3.) Slide the two rods apart in opposite directions as far as they will go. Be certain the edges of the two rods are parallel and tighten securely.

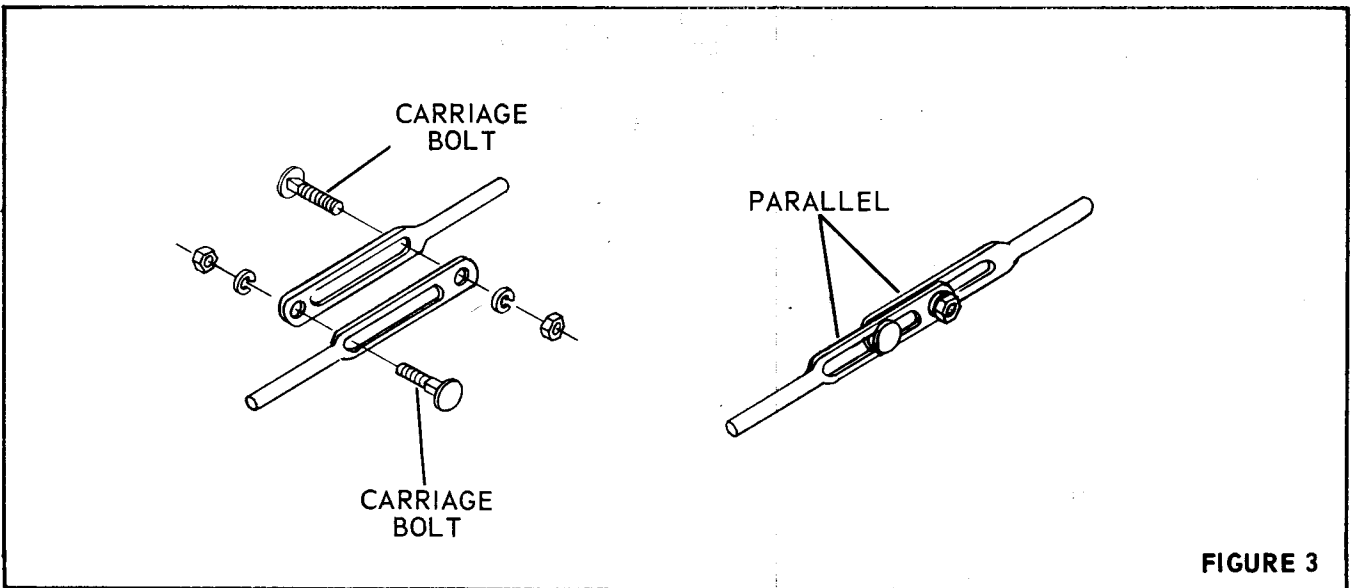


FIGURE 3

SCRAPER BLADE ADJUSTMENT

The scraper blade is adjustable to obtain a level scraping action for clean and smooth snow removal and to compensate for scraper blade wear. To adjust the scraper blade loosen the nuts securing the blade to the auger housing. Move the blade up or down to level position and tighten nuts securely.

SKID ADJUSTMENT

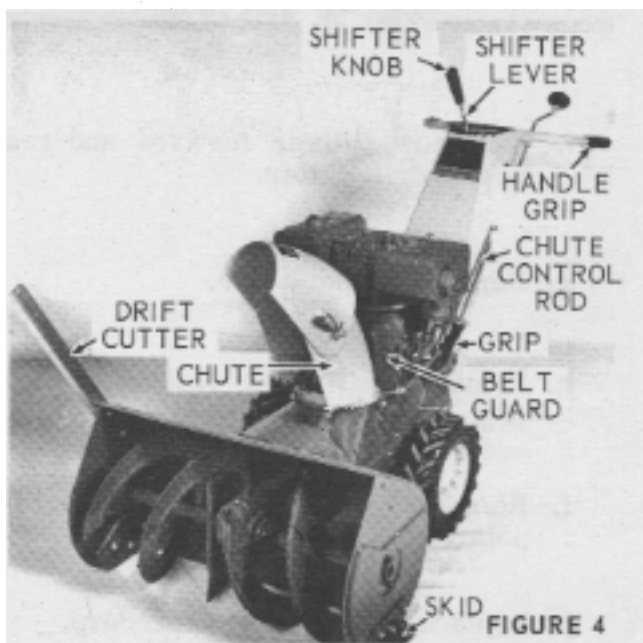
The skids (Fig. 4), mounted on each side of the auger housing, adjust the distance the

scraper blade is raised above the ground surface. When removing snow from a gravel or uneven-surface, it is advisable to keep the scraper blade as high above the surface as possible to prevent possible damage to the auger. On a blacktop or concrete surface, keep the scraper blade as close to the surface as possible. To adjust skids, raise Snow Thrower a few inches off the ground and loosen the nuts securing the skids to the auger housing. Move skids up or down to desired position and tighten nuts securely. Adjust both skids to the same height to keep the auger level.

BELT ADJUSTMENT

Traction Drive and Impeller Drive. No adjustment required. These belts have a spring loaded idler which makes them self-adjusting. Periodically, check idler to be sure it is operating freely and providing tension.

If belts come off pulleys--check for loose or misaligned pulleys; distorted or misaligned idler pulleys. The idlers should hit squarely on the belts. Also, the belt fingers must be 1/16" - 1/8" from belt. Refer to Chap. II, Fig. 5 & 6.



CHAPTER II

BELT REPLACEMENT

The belts on the LAWN-BOY Snow Blower are specifically designed and engineered to provide long service. If belt replacement is required, order by part number to insure you have the right belt. Do not use substitute belts.

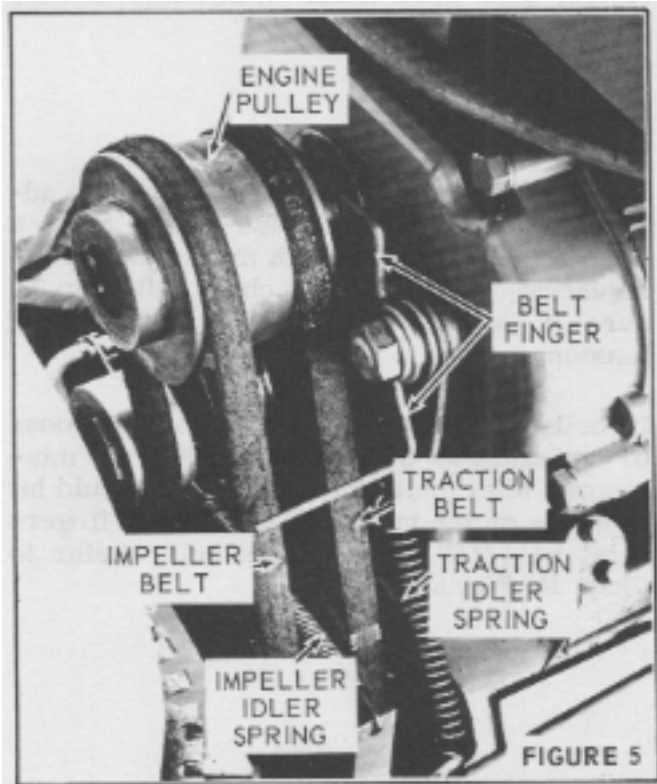
 **NOTE**

Belt fingers (Fig. 5 & Fig. 6) must be adjusted 1/16" - 1/8" from belt.

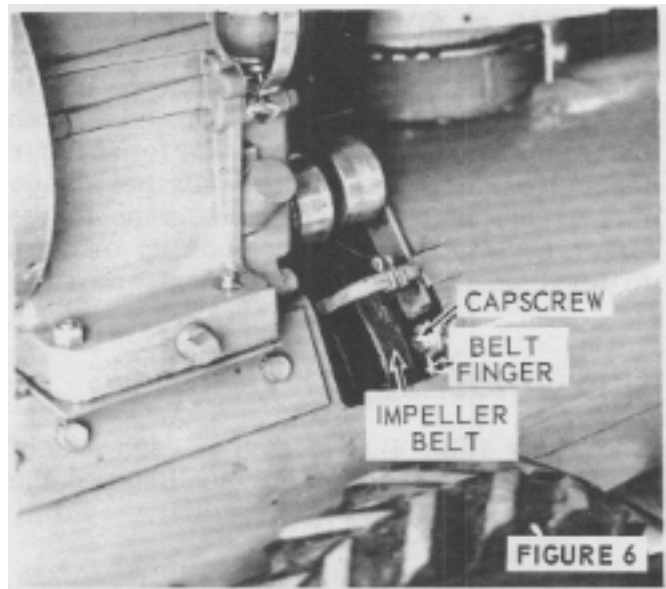
BELT REPLACEMENT

1. Traction Drive Belt

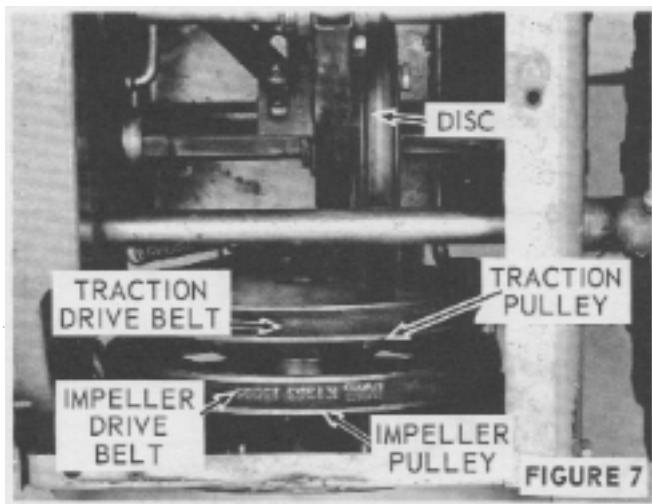
- a. Remove belt guard.
- b. Remove springs from impeller clutch idler and traction idler. (Fig. 5.)



- c. Remove impeller drive belt from engine pulley.
- d. Remove traction belt from engine pulley.
- e. Loosen capscrew on belt finger. (Fig. 6.)



- f. Tip Snow Blower forward and rest unit on drift cutter.
- g. Remove bottom cover.
- h. Remove belt from traction pulley. (Fig. 7.)
- i. Remove by slipping between traction pulley and disc.
- j. Replace by reversing procedure.



2. Impeller Drive Belt

- a. Follow steps A through I of traction belt removal.
- b. Remove impeller belt by slipping between traction pulley and disc.
- c. Replace by reversing procedure.

CHAPTER III

WHEEL DRIVE GEARCASE SERVICING

 SAFETY WARNING

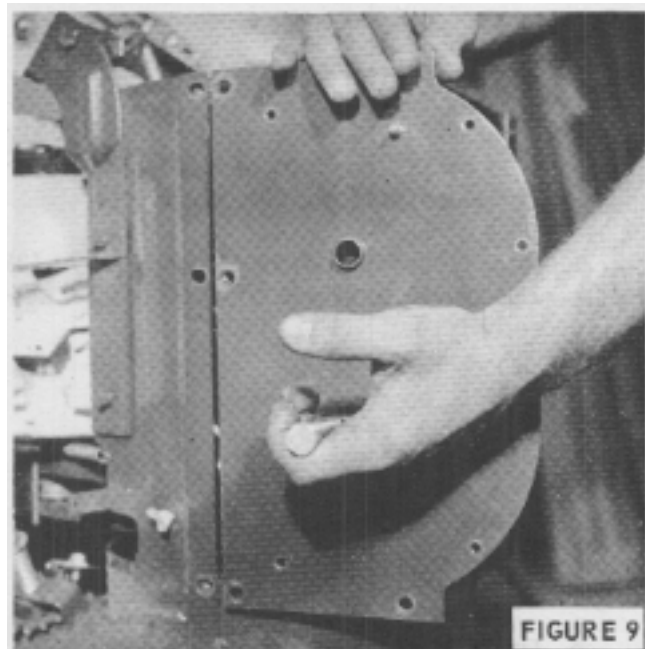
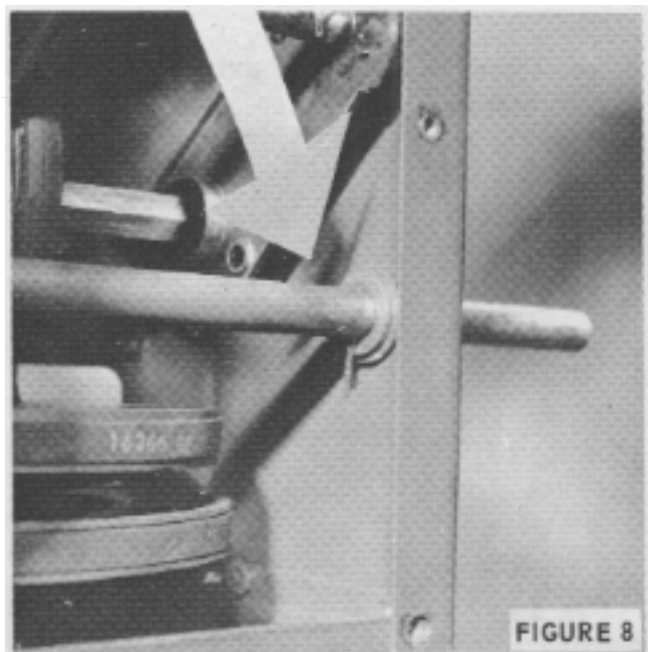
- 1. DISCONNECT SPARK PLUG WIRE BEFORE SERVICING OR MAKING ADJUSTMENTS.
- 2. Drain fuel from tank and tip Snow Blower forward and rest on drift cutting bar.
- 3. Remove wheels. Count spacers for proper replacement.

- 4. Remove bottom cover plate and transmission cover plate. Fig. 10.

 NOTE

To facilitate removal of transmission plate, grasp the end (gear end) of the axle and pull the axle and cover plate away from unit to dislodge end of plate. Fig. 9.

- 5. Remove axle roll pin (Fig. 8).



NOTE

Locate and count spacers and washers for proper replacement.

- 6. Remove gears, gear and axle and interior gearcase housing plate. Fig. 10.

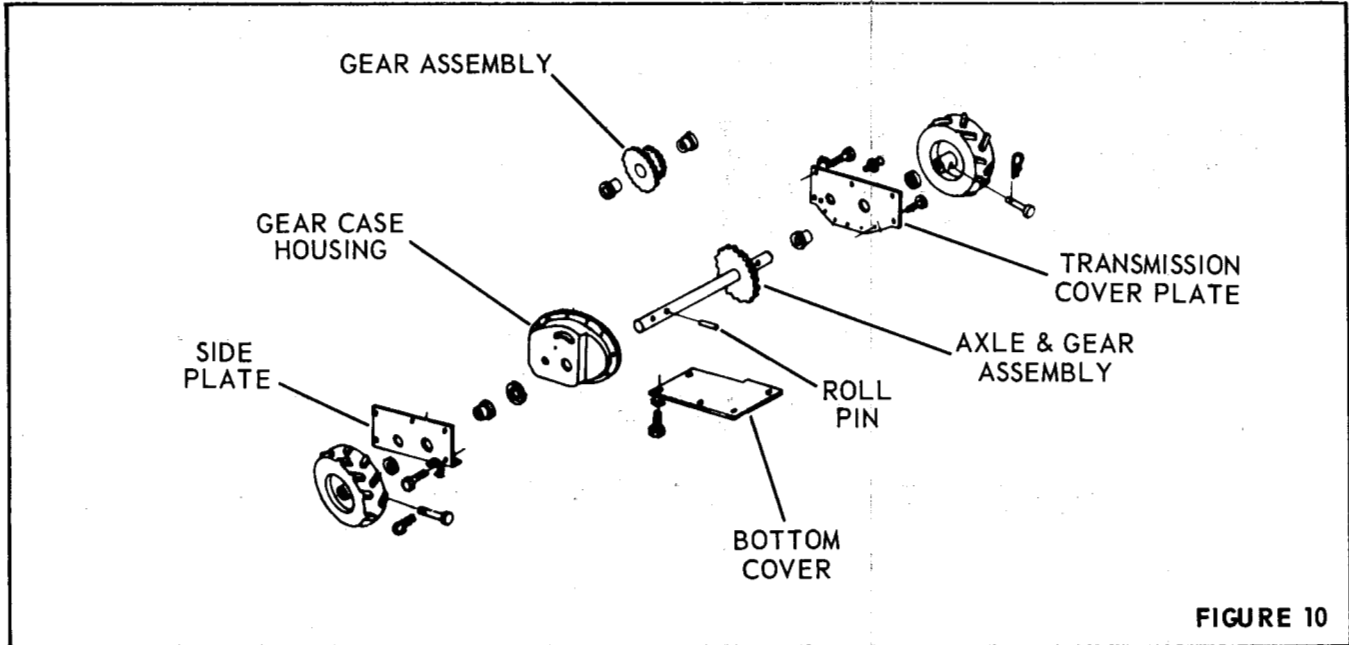


FIGURE 10

CHAPTER IV

TRACTION DRIVE SERVICING

1. Traction Drive Assembly Removal

To remove the traction drive assembly follow steps 1 thru 6 - Chapter III - Gear Case Disassembly; then:

- a. Remove shift control linkage keys (2) and transmission arm (bell crank assembly) nut - Fig. 11.

- c. Remove complete drive assembly - Fig. 13.

NOTE

Note position of spacers and washers, before removal for proper replacement.

- b. Disconnect clutch spring - Fig. 12.

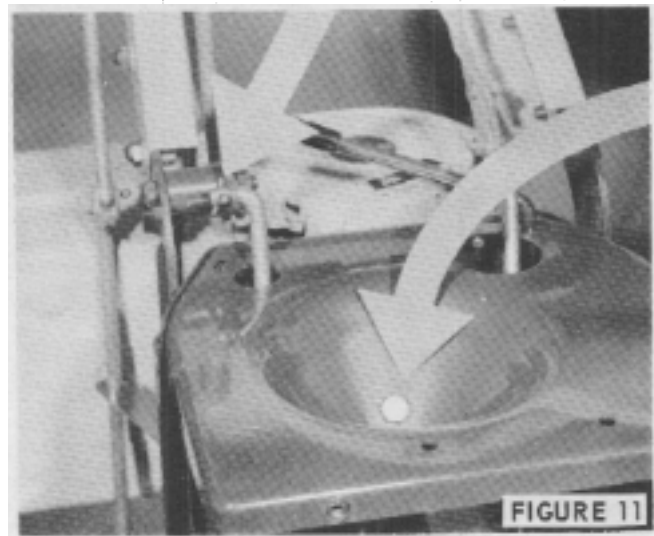
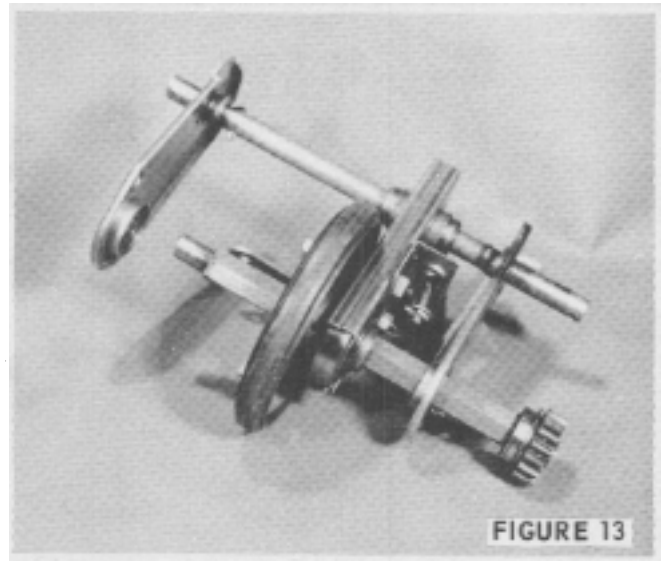
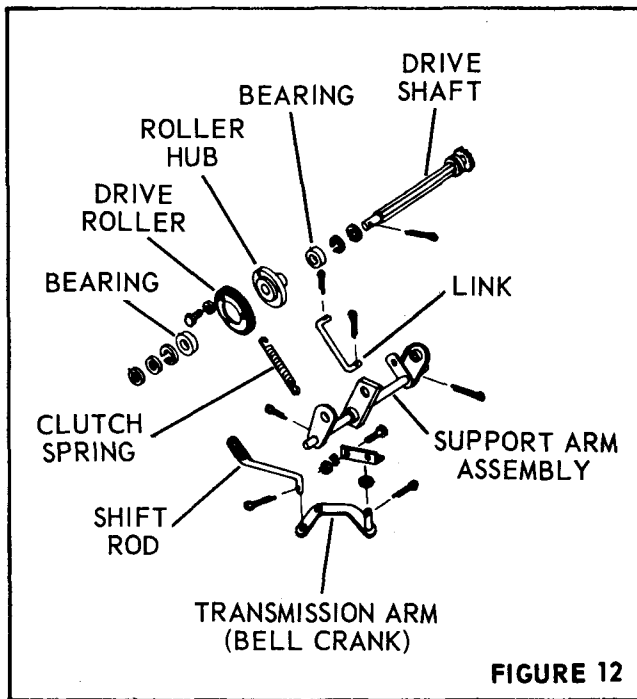


FIGURE 11



2. Drive Roller Replacement

- a. Follow all steps in Traction Drive Assembly Removal.
- b. Drive (use plastic or leather hammer) open end of drive (hex) shaft out of bearings - Fig. 13.

NOTE

End of driveshaft may have to be ground down slightly with file or emery cloth to facilitate removal. When the shaft is driven through the bearing, the bearing at the opposite end (gear end) will dislodge from its retainer.

- c. Remove drive roller from roller hub - Fig. 12.

CHAPTER V

DRIVE DISC PULLEY - IMPELLER PULLEY SERVICING

To repair or replace these items the traction drive assembly must be removed - refer to Chapters III and IV.

1. DRIVE DISC PULLEY REMOVAL

Remove the two (2) belt idler springs, the two (2) belts and the retainer ring on the end of the driven shaft. This will allow removal of the drive disc pulley.

2. IMPELLER PULLEY REMOVAL

The Impeller pulley may be removed after the drive disc pulley by:

- a. Loosen the two (2) set screws and pull pulley out on shaft until it stops at frame housing.
- b. Loosen collar under impeller disc by loosening set screw - See Fig. 15.

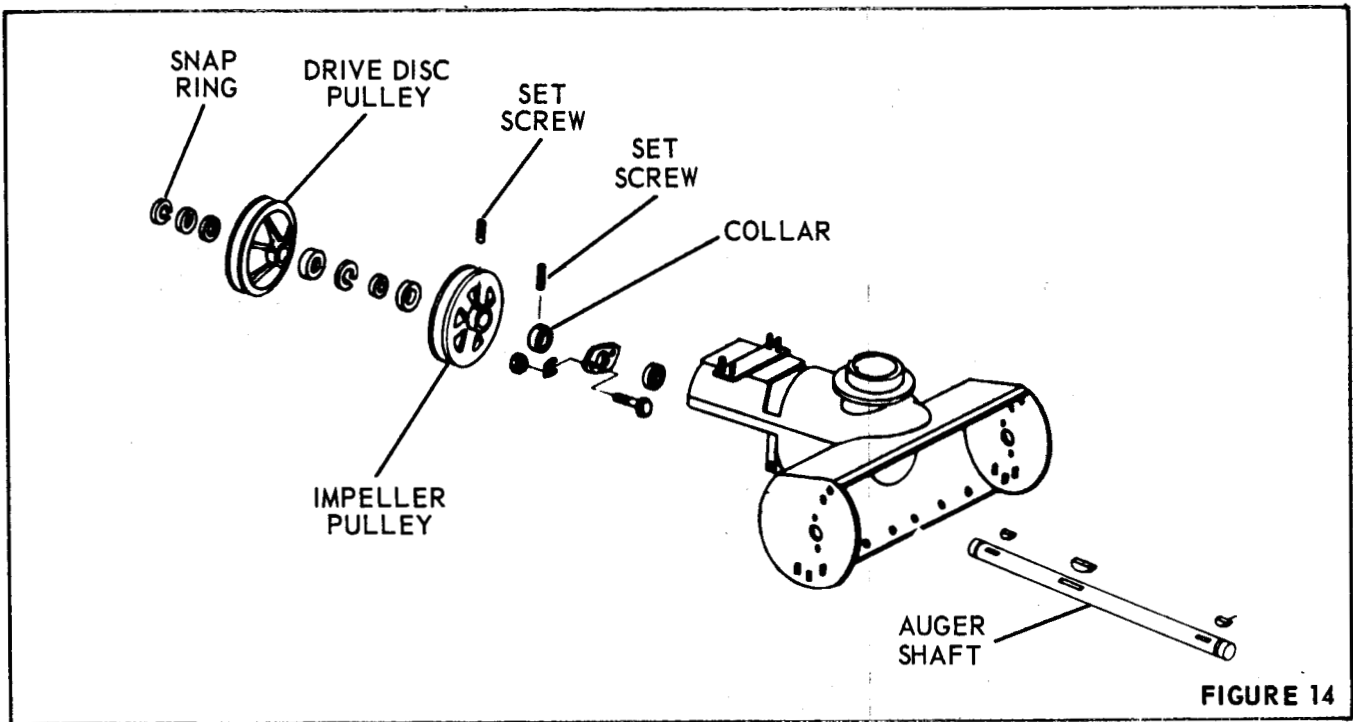


FIGURE 14

NOTE

c. Place unit in "normal" upright position and remove auger bearing grease fittings and auger bearings. Refer to Chap. VI, Fig. 19.

Remove and count spacers for proper alignment.

d. Pull auger, gearcase, impeller and shaft from main frame housing to free impeller drive pulley and collar. See Fig. 16.

e. Augers may be replaced simply by removing the shear pins.

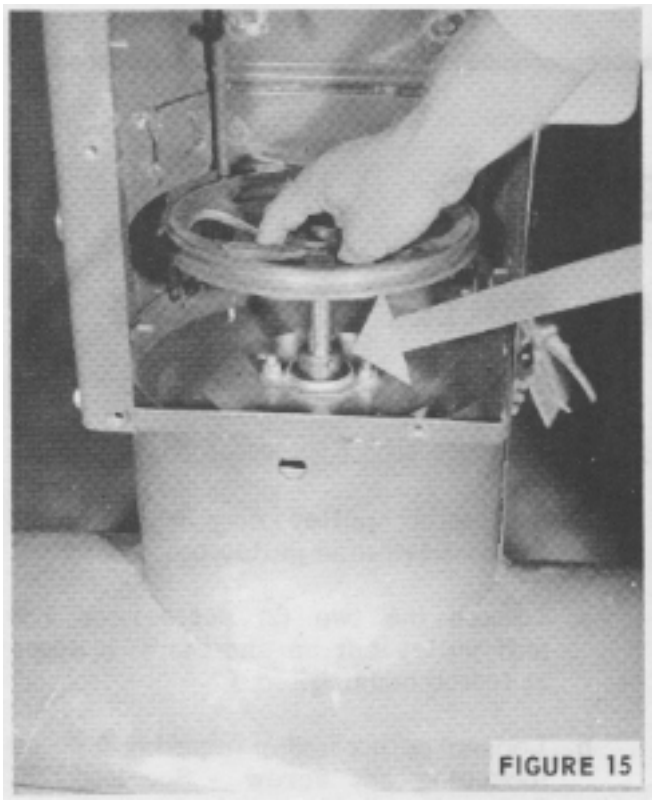


FIGURE 15

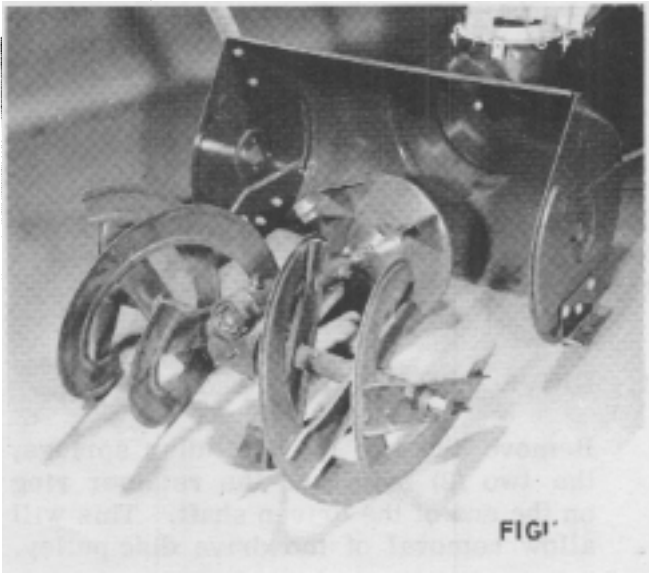


FIG 16

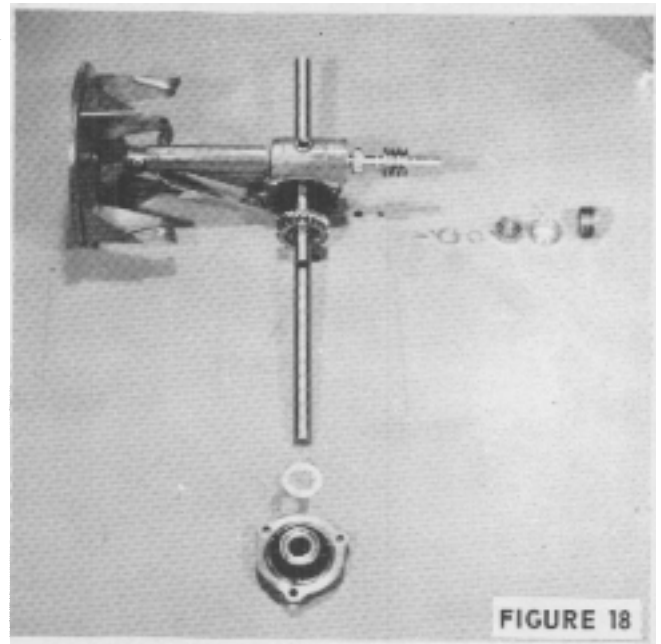
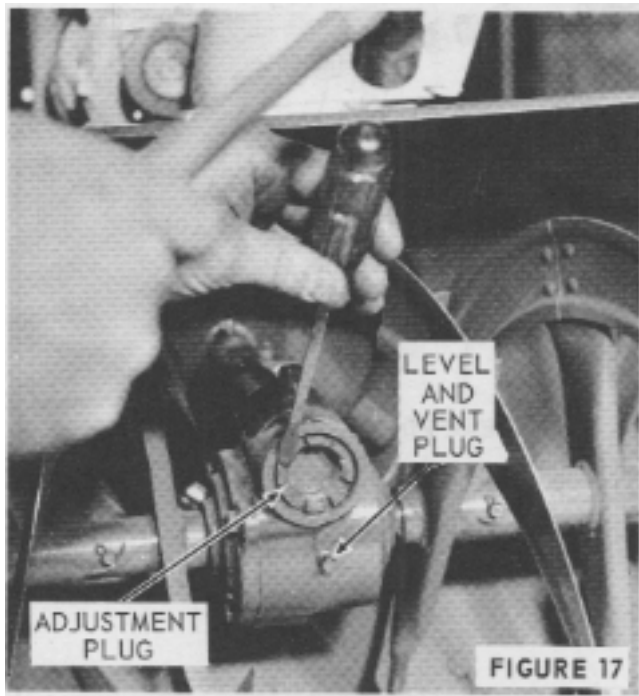
CHAPTER VI

AUGER GEARCASE SERVICING

1. Drain gearcase.
2. Remove gearcase plug - Fig. 17.
3. Remove side cover plate (3 screws) and spacer - Fig. 18.
4. Push gearcase housing towards impeller end of shaft. This will expose the bearing and bearing race at the front end of the shaft.
5. Remove bearing, bearing race, retainer ring and spacer - Fig. 18.
6. Slide auger shaft out of open end of gearcase exposing the bronze bearing - Fig. 18.
7. The main drive shaft may now be pushed forward through the gearcase head exposing the worn gear, spacer and rear bearing - Fig. 18.

 NOTE

When reassembling auger gearcase, the adjustment plug (Fig. 17) should be tightened until snug and back off until cotter key can be installed.



 NOTE

Gearcase must be filled to bottom of level fill plug (Fig. 17) with S.A.E. 30 weight oil. Remove level fill plug to fill.

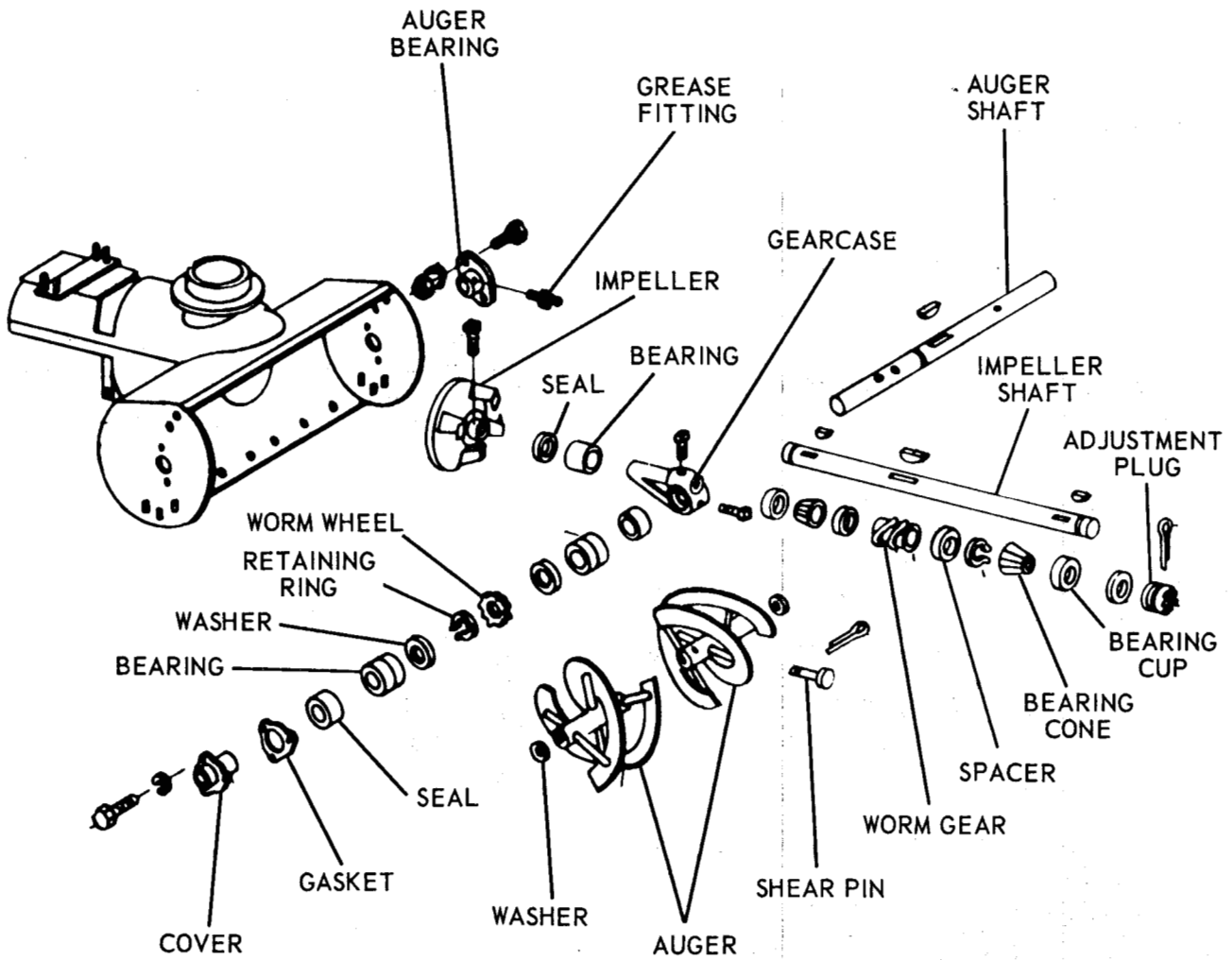


FIGURE 19

CHAPTER VII

LUBRICATION AND MAINTENANCE

SAFETY WARNING

DISCONNECT SPARK PLUG WIRE BEFORE SERVICING OR MAKING ADJUSTMENTS.

DAILY

CHECK OIL

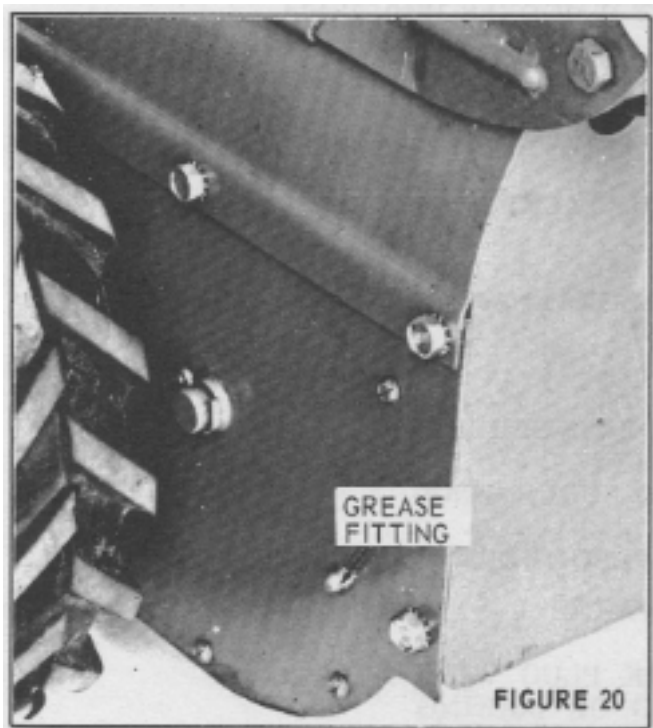
1. Remove dirt from around oil fill before removing. Check engine oil with Snow Blower on level ground and engine stopped. Add oil when needed.
2. Make general visual inspection of Snow Blower for loose or damaged parts. Check nuts and bolts periodically to insure against looseness caused by vibration or rough handling. Damaged parts should be repaired or replaced.

EVERY 10 OPERATING HOURS

1. Grease -- Automotive Wheel Bearing Type.

NOTE

Clean off grease fittings before attaching gun.



- a. Drive Gears--One fitting on left side behind wheel - Fig. 20. Apply a generous amount with pressure type gun.

- b. Auger bearing support--two fittings, one on each end of auger shaft. (Fig. 21.) Grease until grease comes out of bearings. Wipe off excess grease. Grease with pressure type gun.

- c. Snow Chute - Apply grease to control sprocket and chute teeth.

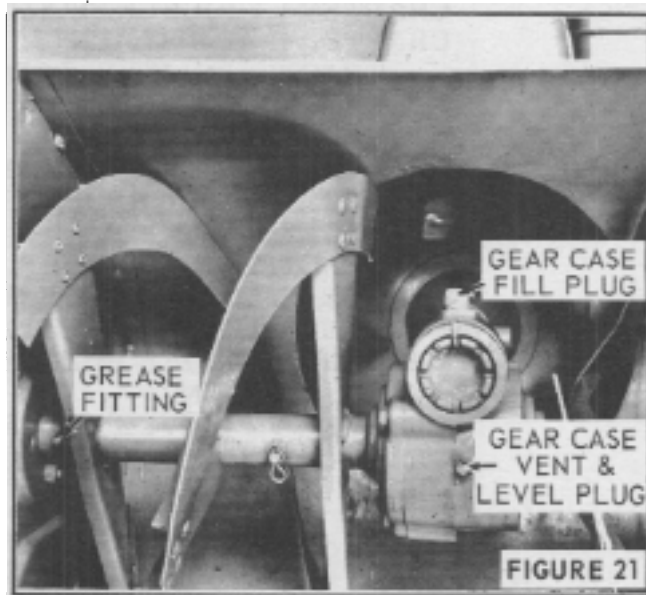
2. Oil--SAE 30

- a. Oil all lever pivot points and linkages.

- b. Idlers.

- c. Axle Bearings. (Hole in top of bearing.)

3. Gear case--Although the gear case is filled at the factory, be sure to check level before first use each season and periodically during the season. Keep it full to bottom of level plug hole with SAE 30 oil. Remove vent plug to fill. (Fig. 21.)



SECTION 12 - SNOW BLOWERS

PART B

MODELS 1840, 1840A

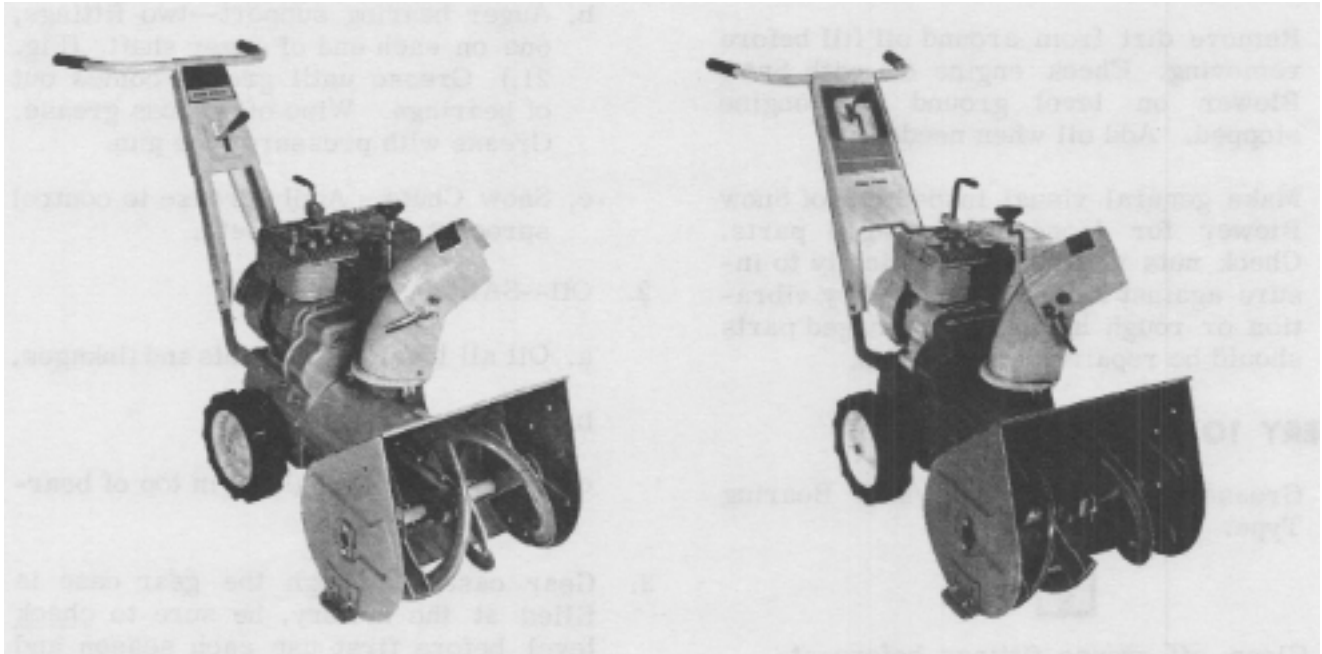


TABLE OF CONTENTS - PART B MODELS 1840, 1840A
SEE PART A FOR MODELS 2680, 2680A, 2650, 2650A, 2650B

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SAFETY WARNING

**DISCONNECT SPARK PLUG WIRE
BEFORE SERVICING OR MAKING
ADJUSTMENTS.**

CHAPTER I TROUBLE SHOOTING

1. Worn or broken belts
 - A. Check pulley alignment
 - B. Belt fingers not set within 1/16 - 1/8 of belt when the drive belt is engaged
 - C. Idlers loose or frozen up due to lack of lubrication
 - D. Substitute belts used
 - E. Loose pulleys
 - F. Loose or broken idler spring
 - G. Belt cover removed from unit
 - H. Auger or impeller jammed
2. Augers won't turn
 - A. Auger shear pins broken

 **Note:** Do not use substitute shear pins. These are special pins that will break when items other than snow are jammed into the augers. Substitute pins may be too hard and damage may result to the augers or auger gear case
 - B. Worn or broken belt
 - C. Internal damage to auger gear case
 - D. Sheared roll pin — auger pulley
3. Unit doesn't move
 - A. Worn or broken belt
 - B. Check traction lever adjustment
 - C. Check friction disk
 - D. Check wheel drive gear case
 - E. Wheel pins broken or missing
 - F. Idler spring off or broken

CHAPTER II ADJUSTMENTS

CLUTCH ROD

Place shift lever in the neutral (N) position. Attach lower end of control rod into center hole of shift arm and secure with spring clip (Fig. 1). Try pushing Snow Thrower forward and backward. Wheels should turn. Pull shift lever back into the reverse (R) position and put shift lever into the forward (F) position to see if these positions are approximately the same distance from the neutral (N) position. If they are, no further adjustment should be required. If reverse is further away from neutral than forward,



Fig. 1

SERVICE BULLETIN REFERENCES

ward, move lower end of control rod down one hole in shift arm. If forward is further away from neutral than reverse, move lower end of control rod up one hole in shift arm.

Place shift lever in the neutral (N) position and start engine. Keep hands and feet away from auger and chute, and be certain the auger clutch is in the "off" position. Try forward and reverse positions to make sure the traction shift lever is properly adjusted when your Snow Thrower is running; if not, adjust again according to the instructions above. With shift lever in forward position unit should move ahead; with shift lever in reverse position unit should back up; and with shift lever in neutral position unit should show no signs of moving in either direction. Stop engine before removing lower end of control rod from shift arm or when making any other adjustment.

SKID ADJUSTMENT

The skids (Fig. 2), mounted on each side of the auger housing, adjust the distance the scraper blade is raised above the ground surface. When removing snow from a gravel or uneven surface, it is advisable to keep the scraper blade as high above the surface as possible to prevent possible damage to the auger. On a blacktop or concrete surface, keep the scraper blade as close to the surface as possible. To adjust skids, raise Snow Thrower a few inches off the ground and loosen the nuts securing the skids to the auger housing. Move skids up or down to desired position and tighten nuts securely. Adjust both skids to the same height to keep the auger level.

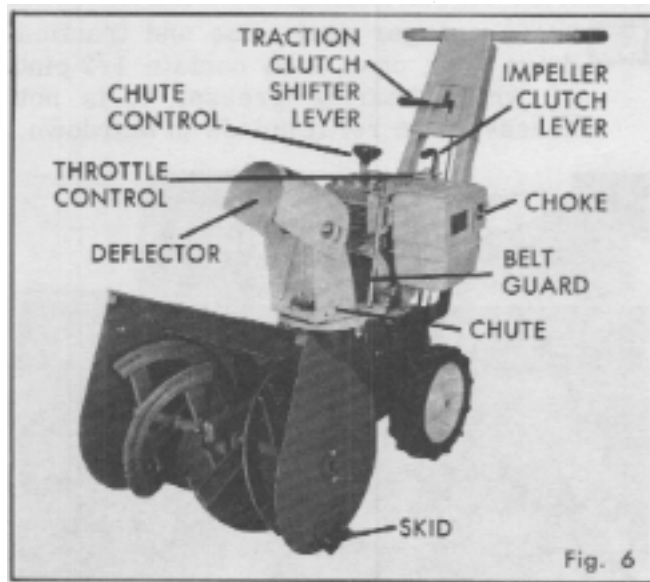


Fig. 6

BELT ADJUSTMENT

Traction Drive and Impeller Drive. No adjustment required. These belts have a spring loaded idler which makes them self-adjusting. Periodically check idler to be sure it is operating freely and providing tension.

If belts come off from pulleys — make sure that the pulleys are not loose and that the idler is not distorted. Idler should hit squarely on the belts.

With drive engaged, belt fingers should be within 1/16" to 1/8" of belts.

DAILY

1. Check oil. Remove dirt from around oil fill before removing. Check engine oil with Snow Thrower on level ground and engine stopped. Add oil when needed.
2. Make general visual inspection of Snow Thrower for loose or damaged parts. Check nuts and bolts periodically to insure against looseness caused by vibration or rough handling. Damaged parts should be repaired or replaced.

10 OPERATING HOURS

1. Grease — Automotive wheel bearing type.

NOTE: Clean off grease fittings before attaching gun.

- A. Auger Bearing Support — Two fittings, one on each end of auger shaft (Fig. 3). Grease until the grease comes out of bearings. Wipe off excess grease. Grease with pressure type gun.
- B. Snow Chute — Coat underside of ring. (It is not necessary to remove chute.)
- C. Idlers — Fill groove and coat outside of shaft with grease. Remove idlers by taking snap ring and washer off idler arms and sliding the idler off the shaft.

2. Oil — SAE 30

- A. Oil all lever pivot points and linkages.
- B. Axle bearings (hole in top of bearing).

NOTE: Auger gear case and traction drive gear case each contain 1/2 pint of wheel bearing grease. It is not necessary to refill unless in teardown.

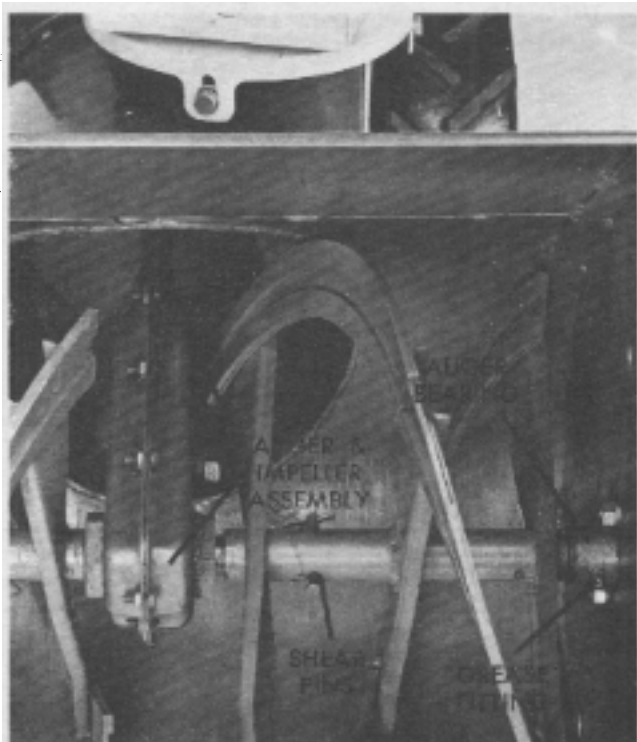


Fig. 3

BELT REPLACEMENT

The belts on this Snow Thrower are specifically designed and engineered to provide long service. If belt replacement is required, order by part number to insure you have the right belt that will provide the life and service required. Do not use substitute belts.

AUGER DRIVE BELT

1. Remove belt guard (Fig. 2).
2. Remove belt guide (Fig. 4).
3. Remove impeller idler spring (Fig. 4).
4. Remove auger belt from engine pulley (Fig. 4).
5. Push belt down (off from bottom groove in auger pulley) so that it rests on the auger housing.
6. Remove auger bearing from both ends of auger shaft (Fig. 3).
7. Pull out entire auger and impeller assembly (Fig. 3).
8. Remove old belt and replace with new one.
9. Reverse the above procedure to reassemble.

TRACTION DRIVE BELT

1. Follow steps 1 through 7 of auger drive belt replacement.
2. Remove traction drive idler spring (Fig. 4).
3. Remove old belt and replace with new one (Fig. 4).
4. Reverse procedure to reassemble Snow Thrower.

NOTE: Be sure to have the new belt resting in bottom auger housing before sliding auger and impeller assembly back in.

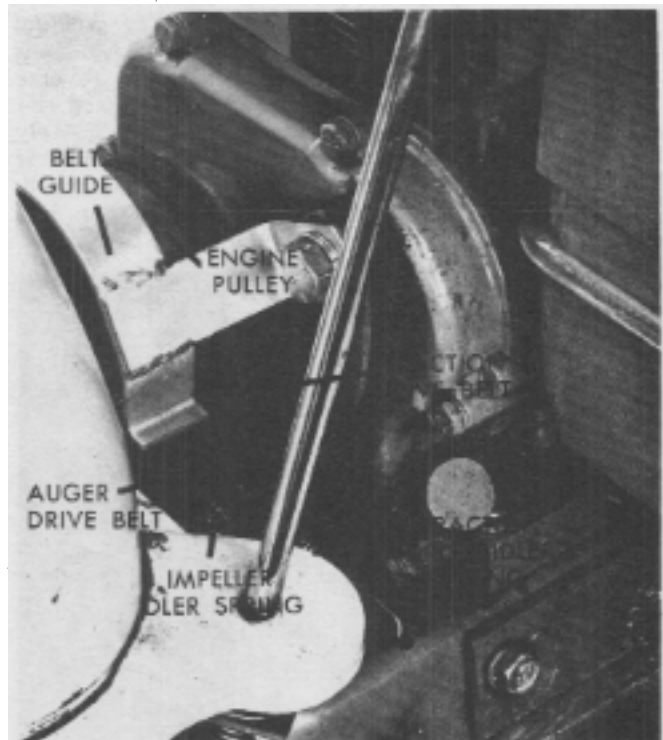


Fig. 4

CHAPTER V

WHEEL DRIVE GEAR CASE SERVICING AND FRICTION DISK REPLACEMENT

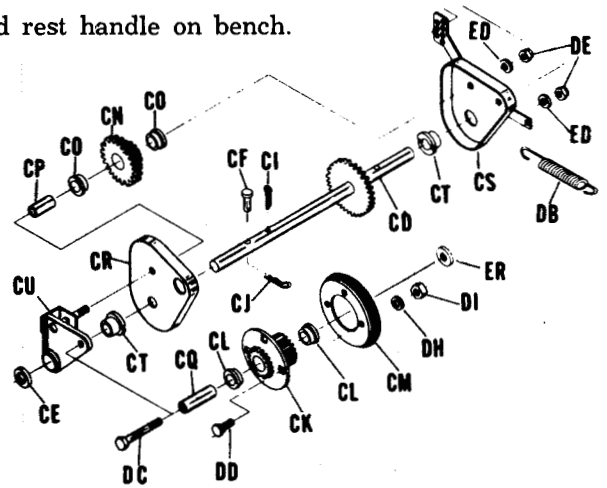
1. Disconnect spark plug lead.
2. Drain fuel from tank and tip Snow Thrower forward and rest handle on bench.
3. Remove wheels.
4. Remove bottom cover plate.
5. Remove bolts holding both side plates to unit.
6. Pull left-hand side plate loose so traction arm spring can be released.
7. Complete unit can now be removed for servicing.
8. Gear and Friction Disk Replacement:
 - A. Remove hex. lock nuts on left-hand side of gear case cover.



NOTE:

Locate and count spacers and washers for proper replacement.

9. Gear case can now be opened up for servicing and friction disk can be replaced.

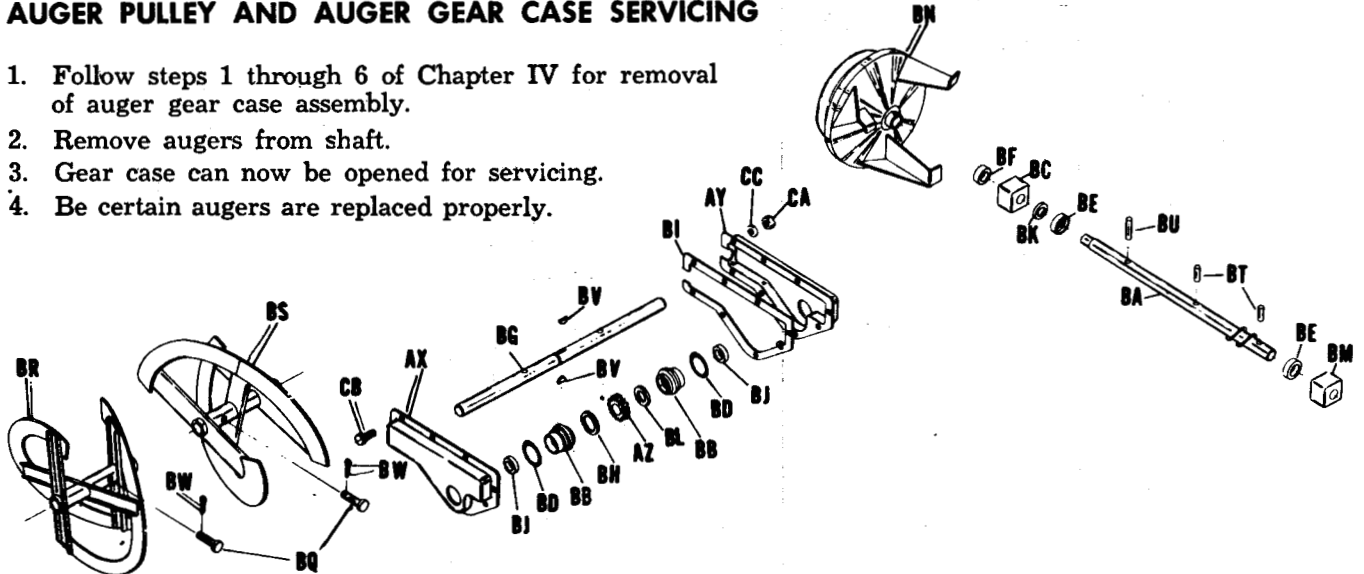


REF. LET. ARE THE SAME IN OWNER'S MANUAL AS IN SERVICE MANUAL.

CHAPTER VI

AUGER PULLEY AND AUGER GEAR CASE SERVICING

1. Follow steps 1 through 6 of Chapter IV for removal of auger gear case assembly.
2. Remove augers from shaft.
3. Gear case can now be opened for servicing.
4. Be certain augers are replaced properly.



REF. LET. ARE THE SAME IN OWNER'S MANUAL AS IN SERVICE MANUAL.

CHAPTER VII

DRIVE PULLEY SERVICING

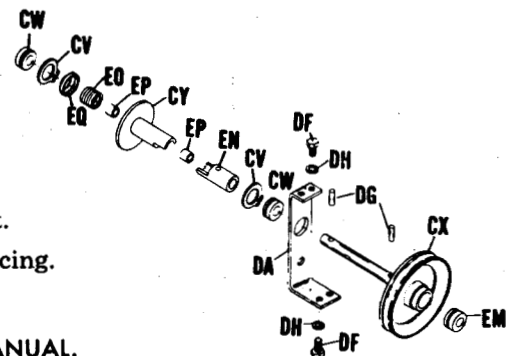
1. Follow steps 1 through 3 of Auger Belt Replacement, Chapter IV.
2. Follow step 2 of Traction Belt Replacement, Chapter IV.
3. Loosen or remove engine.
4. Follow steps 1 through 7 of Chapter V for removal of wheel drive gear case and axle.
5. Remove bolts holding back plate assembly to main frame.
6. Remove bolts holding bearing support to main frame.



NOTE:

Locate and count spacers and washers for proper replacement.

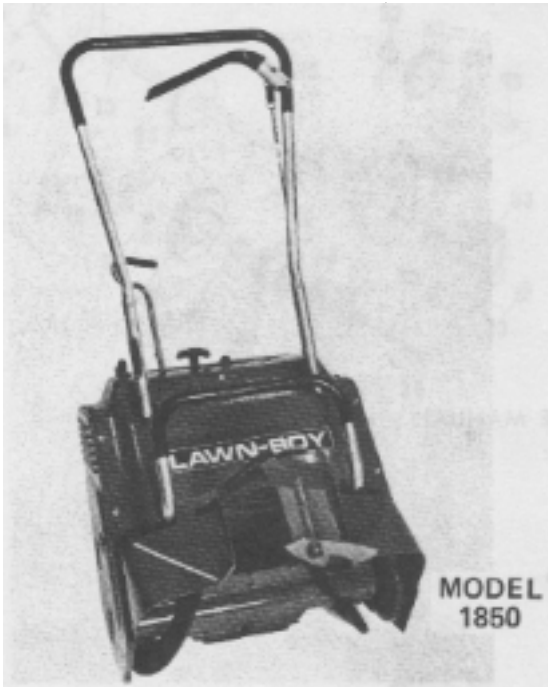
7. Complete drive pulley assembly can now be removed for servicing.



REF. LET. ARE THE SAME IN OWNER'S MANUAL AS IN SERVICE MANUAL.

SERVICE BULLETIN REFERENCES

SECTION 12 - SNOW THROWERS PART C MODEL 1850



CHAPTER I ADJUSTMENTS

CLUTCH CONTROL

The clutch control cable must be properly adjusted to obtain maximum performance. Too little tension will allow the belt to slip resulting in premature wear. Too much tension will render the brake tab inoperative. Attach the clutch spring to the clutch cable assembly (See Figure 1) such that most of the slack is removed from the cable in the neutral position. Leave only enough slack to allow the brake tab (See Figure 2) to contact the drive belt firmly. (It may be necessary to tighten the clutch after several hours running time to compensate for belt stretching and wear.)

Be certain to adjust the idler pulley and brake tab so that they are in alignment with the center of the belt travel. This is done by removing the idler arm and bending the ends to obtain the proper angle.

DISCHARGE CHUTE AND DEFLECTOR

In order to maintain proper detent pressure it may be necessary to adjust the pivot assembly (See Figure 3). Increased pressure is obtained by adding additional 7/16" washers to the deflector control shaft. A more positive adjustment may be made by removing the deflector pivot assembly and bending the detent arm toward the deflector shaft.



Note: Excessive pressure may make the deflector handle difficult to operate.

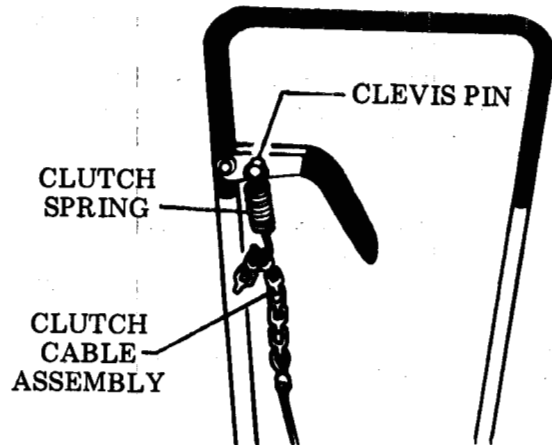


FIGURE 1

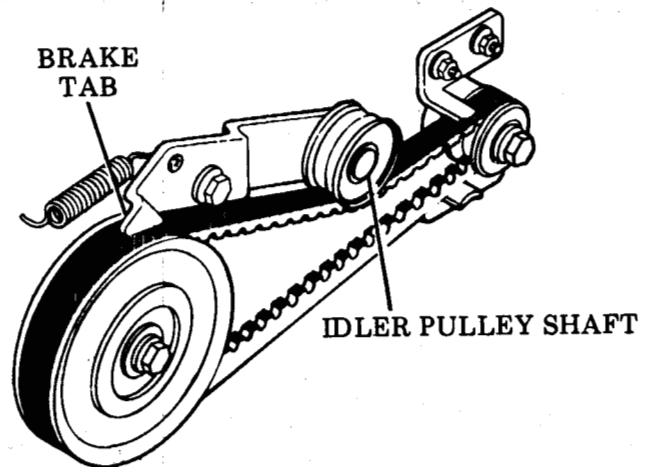


FIGURE 2

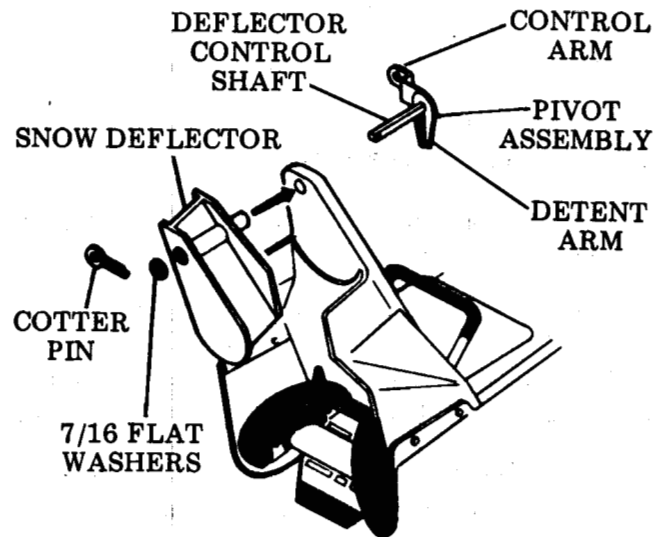


FIGURE 3

CHAPTER II LUBRICATION AND MAINTENANCE

AUGER SUPPORT BEARING

The auger support bearing should be lubricated every 10 hours. Use SAE #30 oil to lubricate the felt plug in the center of this bearing. Add oil until it appears at the hole (See Figure 3).

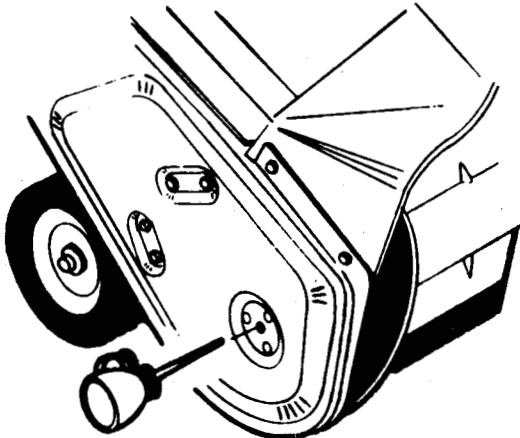
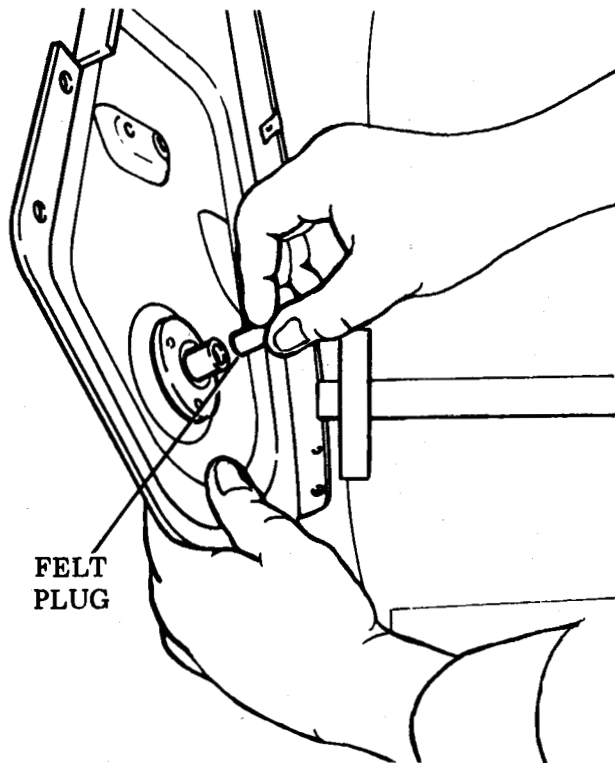


FIGURE 3

Note: Do not force the spout of the oil can into the oil hole! This will push the felt plug out of the bearing and into the center cavity of the impeller shaft, resulting in a lack of lubrication at the bearing surface.



FELT PLUG

FIGURE 4

If the felt plug is dislodged, it must be replaced by removing the right side plate and support shaft assembly. (See Figure 4) the plug should be flush with the inner end of the stub shaft bearing.

IDLER PULLEY SHAFT

The idler pulley shaft should be lubricated every 10 hours. Remove the belt cover plate (left side), exposing the idler arm and belt mechanisms. Remove the idler pulley (See Figure 5) to clean the shaft and pulley surfaces. Lubricate the shaft with several drops of SAE #30 oil, being sure not to get oil on the belt or outer pulley surfaces. Replace the cover.

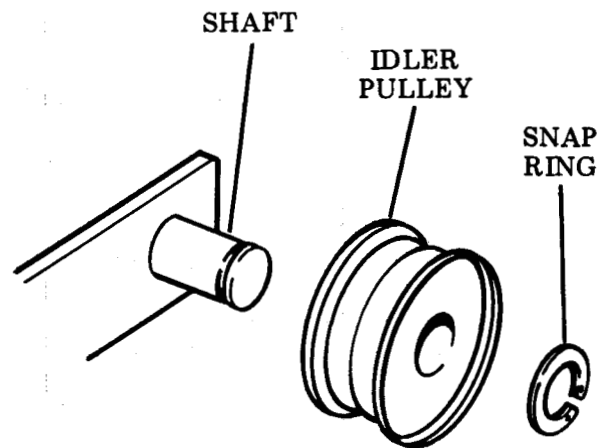


FIGURE 5

CHAPTER III BELT REPLACEMENT

BELT REMOVAL

Remove belt cover plate (left side) to gain access to belt and idler mechanism. With the clutch lever in the neutral position, slip the belt off the engine pulley. Engage clutch handle to lift brake tab from auger pulley. Slip belt off auger pulley.

NEW BELT FINGER (610009)
(MOUNT PARALLEL TO BELT)
IN THE ENGAGED POSITION

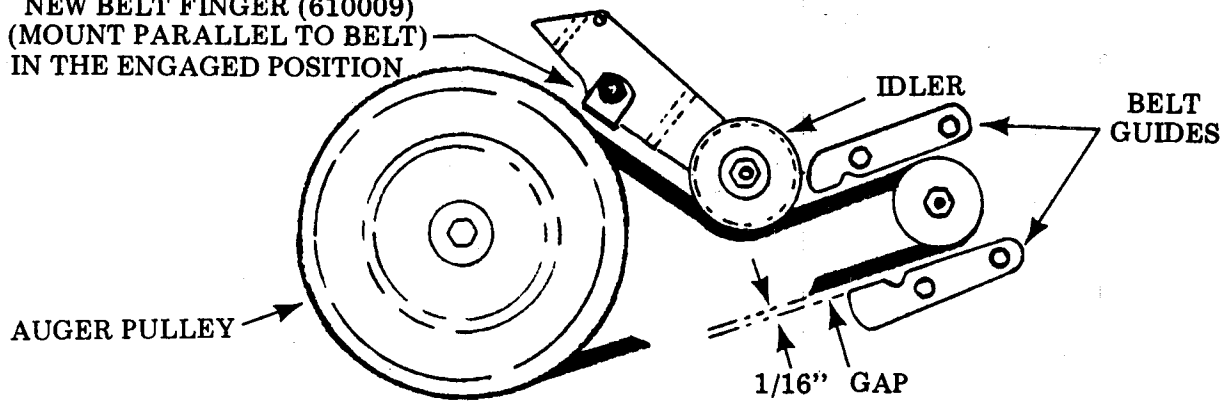



FIGURE 6

BELT REPLACEMENT

Lift the brake tab from the auger pulley using the clutch control handle. Install the belt over the auger pulley. Release the clutch handle and slide the belt over the engine pulley. (See Figure 6.)

 Note: The belt must be installed under the belt guides. Failure to do so will result in very early belt failure.

BELT GUIDE ADJUSTMENT

Adjust the upper and lower belt guides to provide 1/16" clearance between the belt and the guide in the engaged position. Some adjustment is possible by loosening the nuts securing the belt guides. Extreme adjustment may be made by bending the belt guides; however, a severely stretched belt should be replaced.

BELT KEEPER KIT (Service Letter 79-119)

If the unit has shown a tendency to throw belts off the auger pulley, adjust the idler pulley and brake tab as described in Chapter I. A belt keeper kit (OMC Part No. 610409) can be installed. It should be installed in place of the pivot washer with the tab parallel to the belt in the engaged position. (See Figure 6).

CHAPTER IV CONTROL MECHANISMS

DEFLECTOR CONTROL

The deflector control is serviced by replacement of the outer handle or the inner linkage. Be certain to route the inner shaft between the switch leads and the primer hose.

CHOKE CONTROL CABLE


The choke control cable is retained at the rear engine mounting bolt and at the rear engine compartment cover. The choke must be adjusted to

provide full choke when pulled out and no choke when pushed in. Adjustment is accomplished by rotating the choke cable clamp under the rear engine mounting bolt. Do not slide the choke cable clamp up or down the cable.

Adjust the cable in the fully open position with the upper section of the cable parallel to the main tubular handles. (See Figure 7.)

GOVERNOR

The governor is designed to operate at a fixed speed, 4000 rpm, with the auger disengaged. Refer to SECTION 5 for adjusting instructions.

 **SAFETY WARNING: DO NOT ADJUST GOVERNOR TO A HIGHER ENGINE SPEED.**

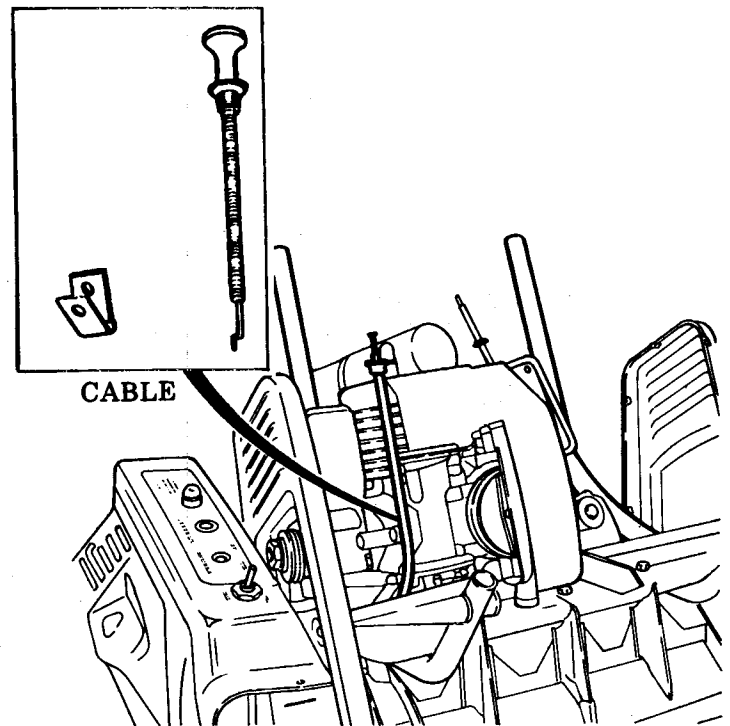


FIGURE 7

CARBURETOR

The carburetor is a diaphragm-type incorporating an internal fuel pump. This pump is actuated by the alternating vacuum-pressure in the crankcase. The carburetor is serviced by a diaphragm kit (Part No. 681990) and a carburetor repair kit (Part No. 681989).

There are three adjustments which must be made whenever the carburetor is serviced.

① Diaphragm metering lever: (See Figure 8.) This lever is to be adjusted flush with the outer rim of the carburetor body casting. The lever is spring loaded. Be extremely careful not to stretch or distort this spring during disassembly and reassembly. Be certain that the lever return spring is seated in the recess in the carburetor body.

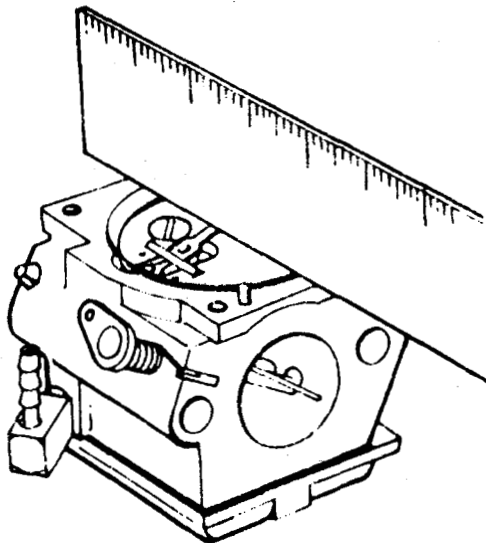


FIGURE 8

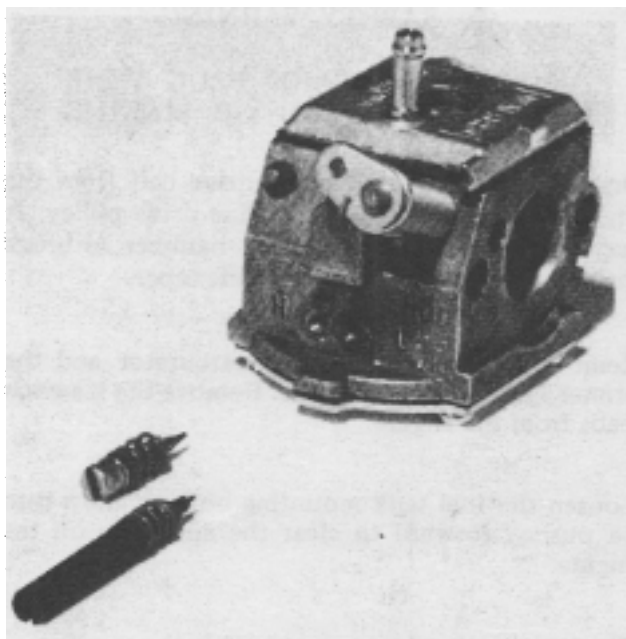


FIGURE 9


CARBURETOR ADJUSTMENT


The pre-setting adjustment is one (1) turn off the seat for high speed (short) needle valve. (Figure 2). The low speed (long) needle valve (Figure 2) requires 1¼ turns off the seat.

With unit running, the high speed (short) needle valve should be adjusted for maximum RPM and smooth running.

With the engine running at operating temperature, manually push the governor rod to slow the engine RPM to approximately 2,000 RPM. Releasing the governor rod should cause the engine to smoothly accelerate in RPM. If the engine stalls or hesitates in acceleration, it is set too lean.

If set too lean, the high speed needle valve should be opened approximately ½ turn at a time to correct this condition. Re-check acceleration between each adjustment until proper performance is obtained.

 Note: Do not over-tighten the needle valves! This may cause damage to the needle tip as well as the seat.

 Note: Whenever the carburetor is removed, be certain to check for proper choke operation.

CARBURETION PROBLEMS THAT YOU MAY EXPERIENCE.

- a. Starts cold, but exhibits erratic running over a period of time. Carburetor adjustment requirements vary as the unit runs.
- b. Starts cold and continues to run richer the longer it runs and cannot be corrected with a carburetor adjustment. May die rich.

During continued product testing, we have learned that the check valve in the primer fitting at the crankcase could be defective and allow "bleeding" of fuel directly into the transfer passage during operation. This results in a very "rich" condition and poor snow removal performance. Use an "easy-out" to remove the inner sleeve in the fitting. The spring and ball check can then be removed. Check valve number 487923 should then be installed as close to the primer as possible. The primer hose will need to be modified using "Ty-Rap" or hose clamps to eliminate any air leakage that may occur where the hose connects to the check valve. (Figure 1).

CUT PRIMER HOSE 2.5" FROM
END NEAR PRIMER.
INSERT 487923 CHECK VALVE
(CONE END POINTING TOWARDS NIPPLE)
IN LINE AND SECURE WITH CLAMPS.

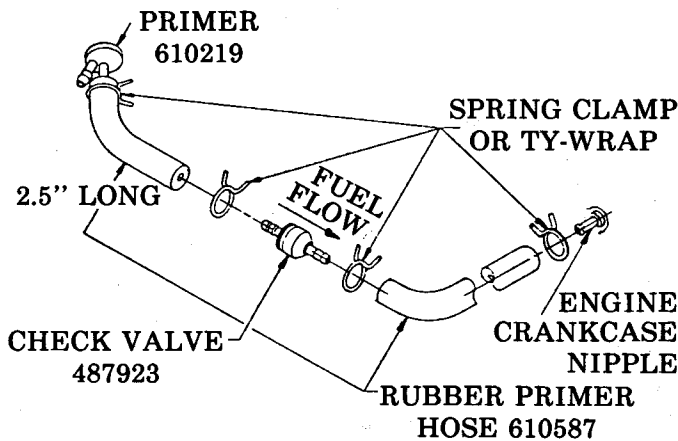


FIGURE 1

CHAPTER V AUGER SERVICING

The auger is serviced by replacement of the flight sections and the impeller tips. Remove all bolts which pass through the rubber sections and loosen all others for ease of servicing. Note that the impeller flight sections have a leading end and a trailing end. Be certain to install the flight sections with the square end pointing in the direction of rotation (See Figure 10).

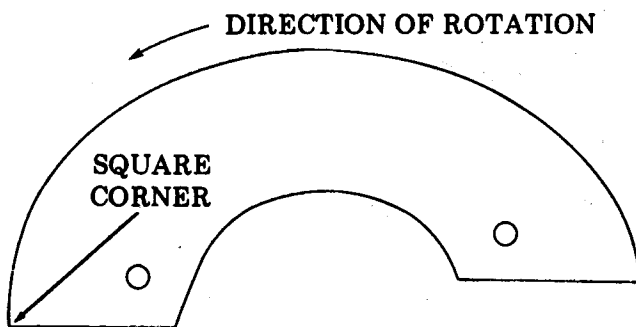


FIGURE 10

AUGER REMOVAL AND REPLACEMENT

The auger is removed by removing all bolts securing the 2 halves together and the 4 self-tapping screws securing the impeller halves to the shaft hubs. Note the position of the halves on disassembly as they will fit together backwards. (See Figure 11.)

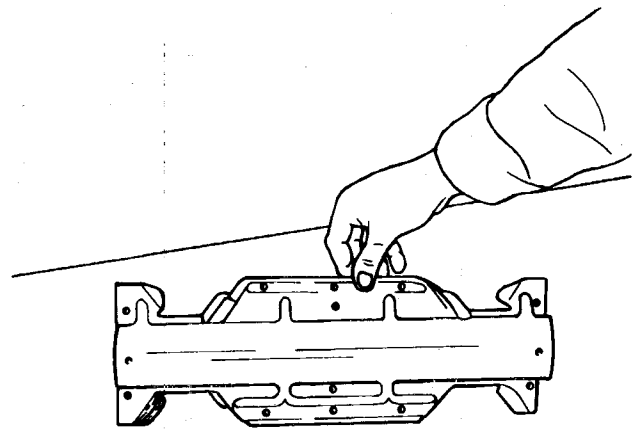


FIGURE 11
(FRONT VIEW)

CHAPTER VI ENGINE REMOVAL AND REPLACEMENT

Remove both front and rear engine compartment covers.

SAFETY WARNING

DISCONNECT SPARK PLUG WIRE BEFORE SERVICING OR MAKING ADJUSTMENTS.

Drain fuel tank. Remove the drive belt from the engine pulley. Remove the engine drive pulley. It may be necessary to use a soft hammer to break the pulley free from the crankshaft taper.

Remove the fuel line at the carburetor and the primer hose at the crankcase. Remove the 2 switch leads from the engine.

Loosen the fuel tank mounting bolts to allow it to be pushed forward to clear the air baffle on the engine.

The engine may be removed with the muffler or separately. To remove the engine with the muffler,

remove the 4 hex nuts (See Figure 12) which secure the belt guides. Remove the screw securing the engine brace to the frame tube (See Figure 13). Pull the engine toward the center of the machine while swinging it backward and out of this frame.

To remove the engine separately, remove the 3 bolts securing the crankcase to the muffler. Swing the engine out in a similar manner.

Upon reassembly, be certain that the exhaust gasket is properly seated and that the choke cable is properly adjusted (refer to CHAPTER IV).

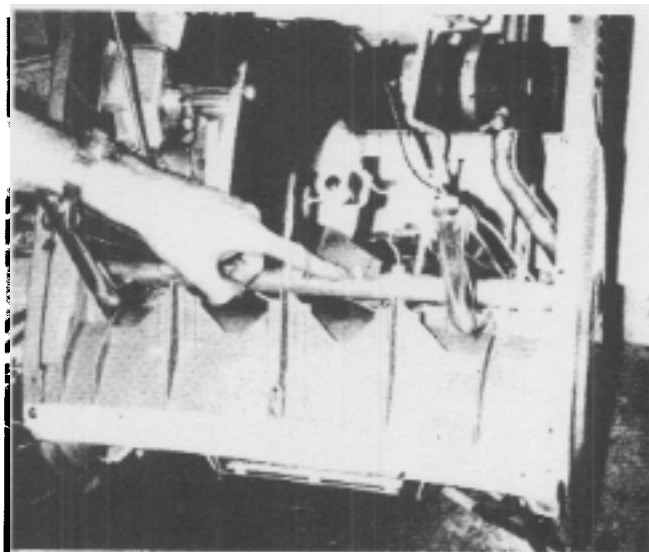


FIGURE 13

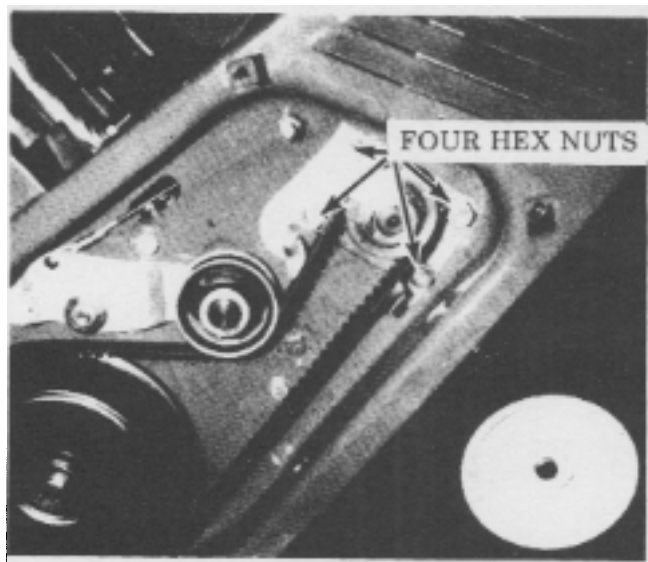
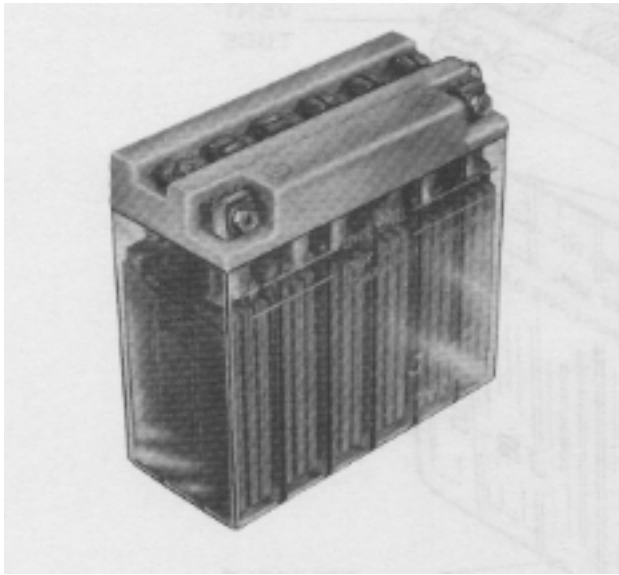


FIGURE 12

THEORY OF OPERATION



A battery produces an electric current by chemical action. A battery consists of one or more units called "cells." Cells may be divided into two classes: primary and secondary (storage).

Cells used in flashlights, hearing aids, and portable radios are primary cells. They produce an electric current because of materials used in their construction. When all the chemical energy has been converted into electrical energy, the cell can no longer be used until new materials are added.

Secondary, or storage, cells have reversible actions known as "charge" and "discharge." A storage cell must first be charged by sending a current through the positive terminal from an outside source. On discharge, current passes through the cell in an opposite direction. When the cell provides a current, or discharges, it simply reverses the chemical reaction that takes place during the charging period. An electric current (charge current) replaces the lost chemical energy before the cycle can start again.

The lead-acid battery used in Lawn-Boy mowers consists of six cells. (Figure 1.) The atoms in the electrolyte are neutral because they have an equal number of positive and negative charges. When electrolyte is dissolved in water, it splits into positive and negative ions. Positive ions have a deficiency of electrons. Negative ions have an excess of electrons. The positive plate is now attacked by the electrolyte (sulfuric acid) which picks up some electrons. The electrolyte acts as a carrier for these electrons to the negative plate and from there through the rest of the circuit.

During the charging process the chain reaction is reversed and electrons move through the electrolyte to the positive plate.

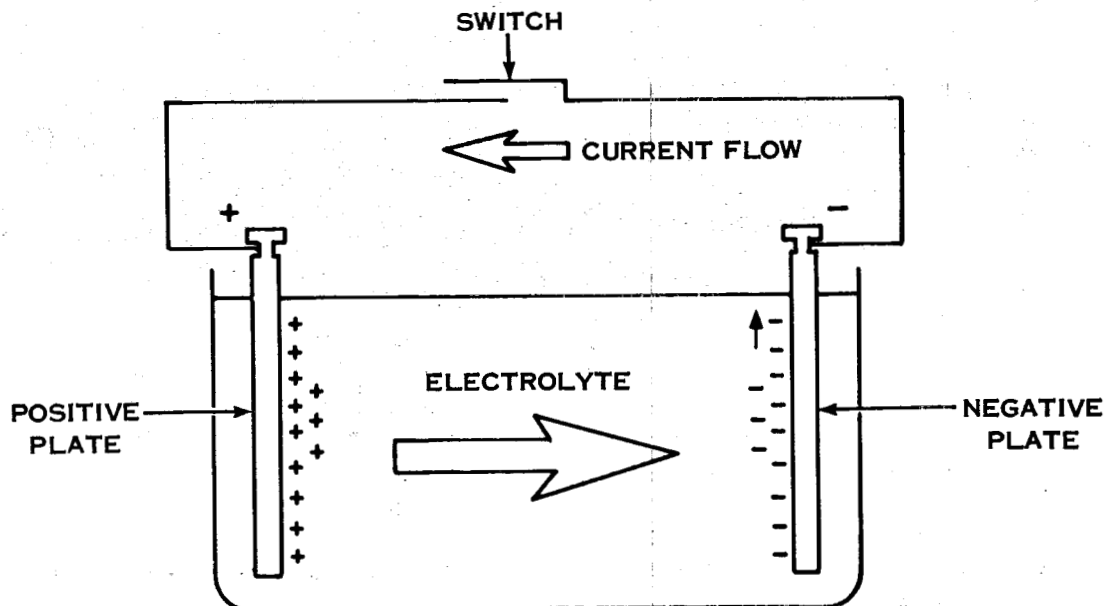


FIGURE 1

BATTERY SERVICE

BATTERY STRUCTURE

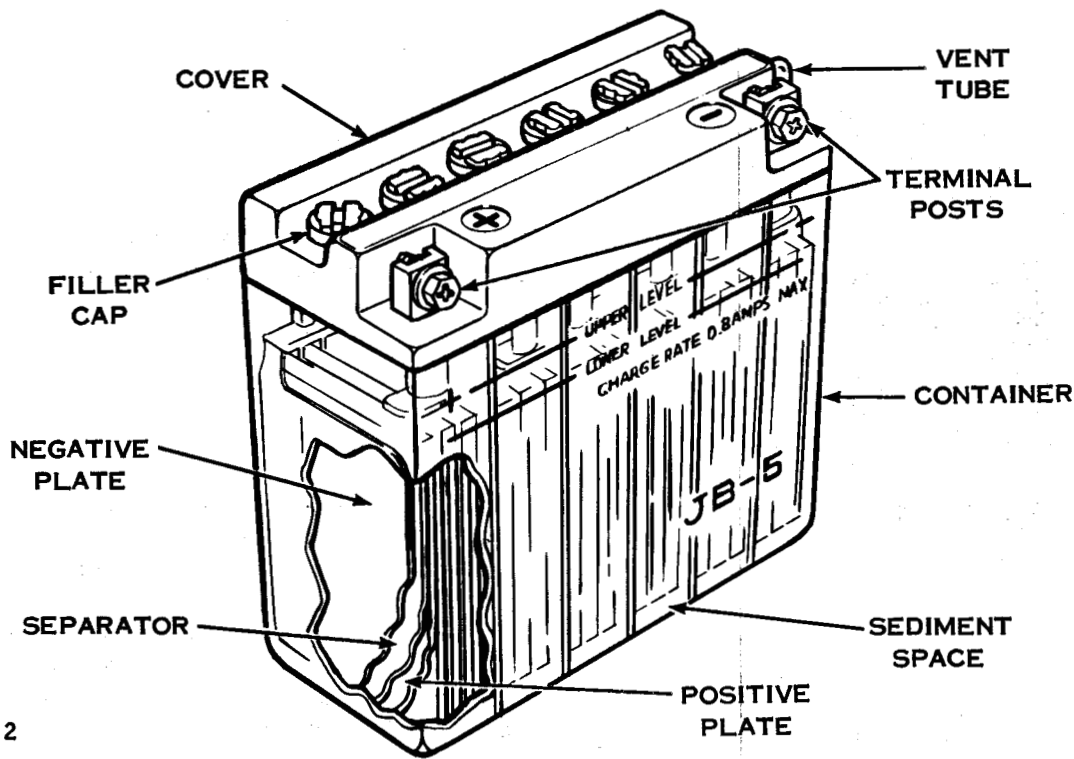


FIGURE 2

The main parts of a battery are illustrated in figure 2.

BATTERY

The negative plate consists of a grid framework filled with a porous mass of lead. This spongy form of lead allows electrolyte to penetrate the negative plates freely for the life of the battery.

The positive plates are made up of a grid framework which is filled with a lead peroxide material.

No positive plate may touch a negative plate or all plates in the cell will lose their stored energy. Therefore thin sheets of non-conducting material called separators are placed between the plates.

The lead and lead peroxide plates are referred to as the "active" materials of the battery. These materials cannot become active until they are covered by a diluted solution of sulfuric acid called "electrolyte." Sulfuric acid acts as a carrier for the electric current within the battery.

The battery container and cover are both made of a durable plastic and are inactive to the corrosive electrolyte.

Filler plugs are designed to baffle gases, prevent loss of acid due to vibration and for filling cells to their proper level.

MAINTENANCE AND SERVICE CHECKS

Maintenance

NOTE

Maintenance checks should be made regularly to assure good performance of the battery.

Maintenance checks should be made regularly to assure good performance of the battery.

1. Check fluid level in each cell and add mineral free water if necessary.
2. Check terminals for dirt and grease. If dirty or greasy remove cable clamps and clean terminals.
3. Check voltage of battery. If battery is no longer strong enough to start mower or it is a hard starting mower, recharge battery.

BATTERY SERVICE

- To recharge battery, insert plug into charger jack. Plug trickle charger into 110 volt AC outlet, allowing battery to charge approximately ten hours.



NOTE

Do not charge for longer than 48 hours, as extended charge times will cause electrolyte to evaporate leaving a dry and damaged battery. Allow battery to stand for some time after filling before placing on charge.

- When charging battery use only the LAWN-BOY charger supplied with the mower. Do not charge at a rate exceeding 1 amp.

Servicing

Specific Gravity of Battery

When using a hydrometer that shows specific gravity, the following specific gravity numbers (when measured at 80°F (26.7°C)) indicate the approximate battery charge condition.

State of Charge	Specific Gravity Reading
Fully Charged	1.265
75% Charged	1.225
50% Charged	1.190
25% Charged	1.155
Discharged	1.120

- Remove caps from battery using screw-driver.
- Place hydrometer (part no. 681007) (see figure 3) into each cell. Squeeze bulb on top of hydrometer and release slowly.
- Number of balls floating indicates condition of battery. If any cell reads two balls or less floating, recharge battery for 10 hours.

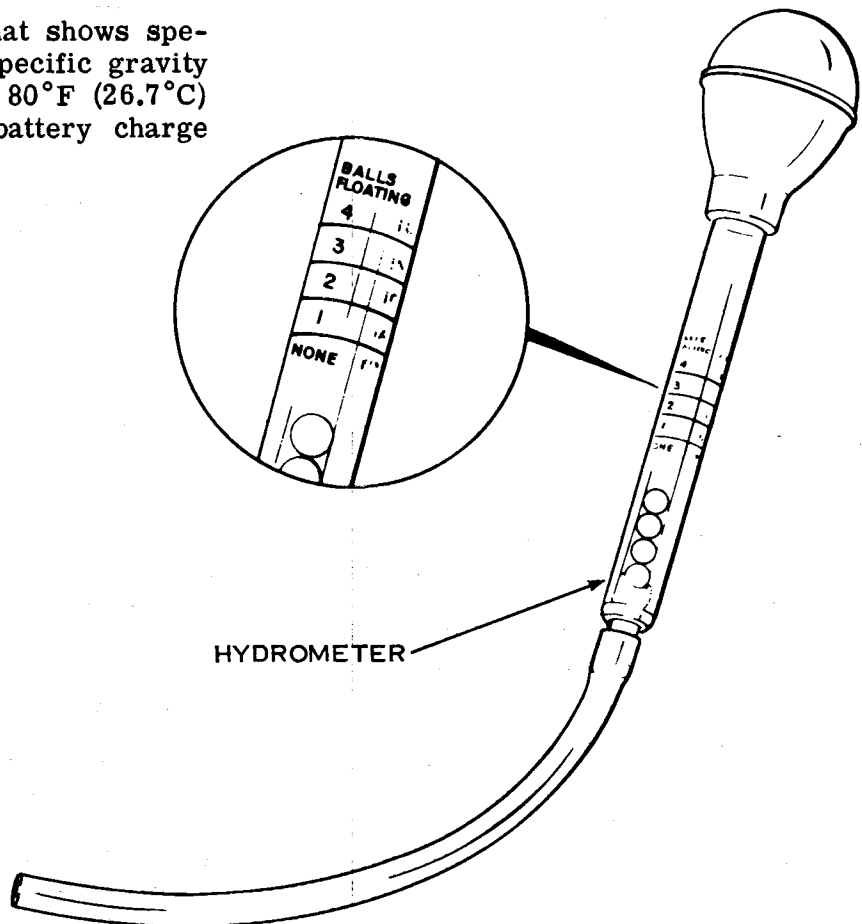


FIGURE 3

BATTERY SERVICE



NOTE

For accuracy, the liquid level of the cells should be at normal height when a hydrometer reading is taken. Hydrometer readings should never be taken immediately after water has been added to battery or immediately after charging. Let stand for 20 minutes. Specific gravity of fully charged battery should be 1.265 with 80°F. (26.7°C) electrolyte temperature.



SAFETY WARNING

Battery electrolyte is an acidic solution and should be handled with care. If electrolyte is spilled or splashed on any part of the body, immediately flush the exposed area with liberal amounts of water and obtain medical aid as soon as possible.

BATTERY CORROSION

The overflow of electrolyte causes many problems. Corrosion begins to form on the battery terminals and in battery box. Corrosion is a good conductor, causing a drain on battery even when mower is not in use.

1. Corroded batteries, terminals and frames should be cleaned with a solution of four tablespoons of baking soda to a gallon of water.
2. Brush on the soda-water solution with a brush and flush clean with fresh water.
3. Coat terminal connections with petroleum jelly after reassembly to retard corrosion.



SAFETY WARNING

Do not use pressure gun greases on connections as some contain graphite, which conducts electricity, and others will deteriorate battery sealer.

AGING BATTERIES

As batteries age, they progressively lose their ability to reach their rated full charge voltage and specific gravity. The first indication would be high water usage.

1. When this happens, charging time should be decreased from 10 hours to 8 hours, from 8 hours to 6 hours, etc., until battery's useful life has been spent.
2. When specific gravity readings, taken at one hour intervals, remain the same, the battery has all the charge it is capable of accepting.
3. If the level of voltage is too low for normal operation of mower, replace battery.

TESTING BATTERY FOR SERVICEABILITY

INSTRUMENTS

Testing a battery for serviceability requires the use of instruments of unquestioned accuracy.

A Hydrometer should be graduated to read from 1.160 to 1.320 in graduations of .005 specific gravity. The graduated markings should be not less than 1/16" (1.6 mm) apart and accurate to within .002 Sp. Gr. The graduated portion of the stem should be about 2 inches (50.8 mm) long. Clearance between float and barrel, at smallest diameter, should be a minimum of 1/8 inch (3.2 mm) around all sides.

A battery Thermometer should be of the mercury-in-glass type, have a scale reading as high as 125°F. (51.6°C), and be designed for not over a 1-inch (25 mm) bulb immersion. A suitable dairy-type thermometer may prove satisfactory for the purpose.

Shop electrical meters for battery testing should be accurate within 2 percent over the entire scale range. Laboratory meters should be accurate within 1/2 of 1 percent over the entire scale range and should be of the permanent magnet moving coil type,

BATTERY SERVICE

the voltmeter preferably being shielded from external magnetic fields.

A good Voltmeter should have a 3-volt scale in .02-volt divisions and be accurate to within 1% over full scale for measuring cell voltage and/or a scale covering 15 volts in .1-volt divisions for testing overall battery voltage. The resistance of a good voltmeter is at least 20,000 ohms per volt. A portable type D.C. voltmeter of at least 20,000 ohms per volt sensitivity, accurate to at least 1% and having a range of 150/15/3 volts would be satisfactory for accurate test work.

A portable type D.C. Ammeter accurate to at least 1 percent, with scale range of 50/25/10 amperes and used with an external 500 ampere shunt to obtain a 500 ampere range, would be satisfactory for accurate test work.

OPEN-CIRCUIT VOLTAGE BATTERY TESTERS

The open-circuit voltage of a battery will vary slightly with the specific gravity of the electrolyte in the individual cell. A sensitive voltmeter can therefore be provided with a scale which indicates equivalent specific gravity or state of charge and can be used as a sort of "electrical hydrometer" under certain conditions. Such instruments must have a separate scale calibrated for each separate fully-charged gravity, or a correction factor must be used if the cells are adjusted to any other fully-charged gravity. For example, such O.C.V. meters, in order to be reliable, must either be used only on batteries and/or cells whose fully-charged gravity is that for which the instrument is calibrated, or be used with a correction factor of .01 volt equals .010 specific gravity.

Example: 1.265 Sp. Gr. = 2.10 Volts/Cell =
6.3 Volts/6-Volt
Battery

= 12.6 Volts/12-
Volt Battery

No temperature correction factor has to be applied to the gravities indicated by O.C.V. meters. However, the instruments cannot be used on batteries and/or cells which have just come off charge, as the gases held on the plates cause the instrument to give a falsely high reading. The instruments are useful for testing batteries in stock. Letting batteries stand on open circuit for several hours after charging will dissipate the gases from the plates and enable correct readings to be obtained.

HIGH-RATE DISCHARGE EQUIPMENT

High-rate discharge equipment is available in a variety of forms. Most of these work on the principle of discharging the battery through a fixed resistance, for about 15 seconds, and measuring the battery and/or cell voltages while discharging a high rate to determine the cranking ability of the battery.

The tester meter must have 2% accuracy over the entire scale range(s). The tester should be capable of discharging the battery as a unit and measuring voltage as the criterion for passing or failing the battery.

BATTERY TESTING CHART

A step-by-step procedure based on hydrometer and voltmeter readings is shown in the "Battery Testing Chart". This chart will be helpful in rendering correct battery service.

BATTERY SERVICE

BATTERY TESTING CHART

HYDROMETER TEST (80°F.) (26.7°C) (See Note "A" Below)	STATE OF CHARGE OR BATTERY CONDITION	CORRECTION OR REMEDY
(1) 1.215 Sp. Gr. or higher	(1) Probably good.	(1) No correction required if variation among cells is not over .050 Sp. Gr. Make a thorough check of the electrical system for short circuits, loose connections, corroded terminals, etc.
(2) Less than 1.215 Sp. Gr.	(2) Questionable.	(2) Battery should be recharged. After recharge repeat step No. 1. (See note "B.")
(3) Cells showing more than 50 points (.050 Sp. Gr.) variation in gravity.	(3) A. Short circuit in low cell. B. Loss of electrolyte by leakage or excessive overcharge. C. Improper addition of acid or contaminates. D. Natural or premature failure. E. Cracked box partition.	(3) Try to recharge battery (See note "B.") If .050 Sp. Gr. variation persists battery should be replaced. If battery accepts recharge and variation does not persist, repeat step No. 1.
(4) Battery or cells showing more than 1/2 charge.	(4) Probably good.	(4) Apply remedy given for No. 1 above.
(5) Battery showing less than 1/2 charge or cells showing less than 1/2 charge but not more than .05 volt variation.	(5) Questionable.	(5) Apply remedy given for No. 2 above.
(6) If cell connectors are accessible, cells showing more than .05 volt variation.	(6) See No. 3 above.	(6) Apply remedy given for No. 3 above.

NOTE: A - For batteries having normal fully-charged specific gravity of 1.265 or above at 80°F. (26.7°C), the electrolyte level should be 1/4" to 1/2" (6 to 13 mm) above separators. Do not take readings soon after adding water, but charge until solution is mixed. Hydrometer readings should be corrected for temperature if temperatures are very far from 80°F. (26.7°C).

NOTE: B - For batteries with special fully-charged gravity and/or extra electrolyte space - consult manufacturer's recommendations.

For proper charging procedures refer to "Charging Storage Batteries," and consult charging equipment manufacturer's specifications.

BATTERY REPLACEMENT AND STORAGE

Battery Replacement

The dry charged battery is a battery containing charged plates in a dry condition.

NOTE

Electrolyte and battery both are to be at room temperature (70°F to 80°F).

1. Fill battery with electrolyte (sulfuric acid and water) of 1.260 - 1.265 specific gravity. Battery is now approximately 75% fully charged. A fully charged battery should indicate 12.0 - 12.5 volts on a voltmeter.
2. After filling, charge battery for four hours using trickle charger. This will bring battery to full capacity.

SAFETY WARNING

Prior to filling battery with electrolyte, cut off sealed end of vent hose. Battery must vent. Lack of venting may cause battery to explode.

Battery Storage

NOTE

When a customer has persistent battery trouble, suggest the following steps.

1. Before storage, battery should be thoroughly cleaned and brought up to full charge.
2. After charging, electrolyte level should be checked and brought up to the proper level by adding mineral free water.
3. Battery should be checked and brought up to full charge at no less than 30-day intervals.
4. Batteries should be kept in a cool, dry storage area. The cooler the temperature the less the self-discharge will be.

A fully charged wet battery, in good condition, can be stored at a temperature between +50°F and -10°F for a period of 4 to 5 months without damage. After this period it should be recharged for 8 to 10 hours. If storage temperature is above 50°F battery will need recharging every 30 days, and if temperature is above 100°F battery will need recharging every 15 days in order to maintain proper chemical balance.

BATTERY FAILURES

BATTERIES

Figure 1 shows a good plate assembly. Figures 2 and 3 show the lead paste washed away from the grids. The paste is soft. Overcharging is one of the things that produces corrosion of positive grids and excessive gassing, which loosens active material in the plates, particularly the positive plates.

The loosened material will collect on the bottom as a fine brown sediment. Overcharging also causes excess loss of water and excessive gassing.

Figure 4 shows the paste extruding and shorting to an adjoining plate.



FIGURE 1



FIGURE 2



FIGURE 3

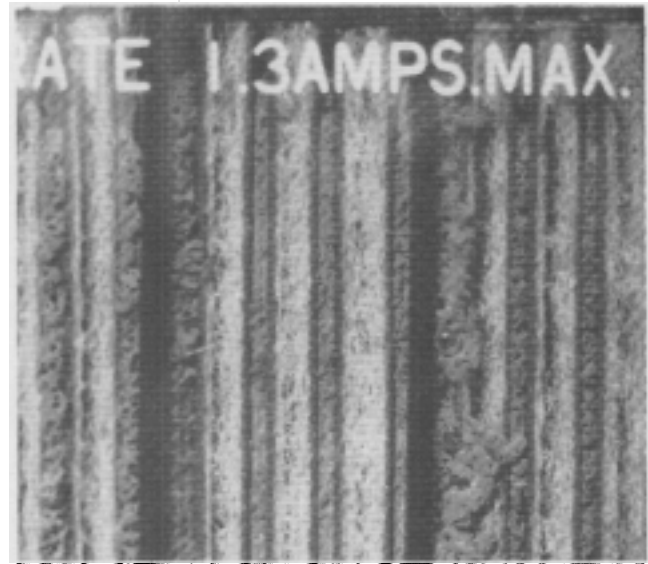


FIGURE 4

BATTERY FAILURES

Figure 5 shows the plates warped and part of a grid cracked and broken away.

Insufficient charging is one of the most common causes of buckling of the plates. Figure 5 shows some buckling (plates are curved). The lead sulfate occupies more space than the original material, and an excessive amount of it strains the plates.

Figure 6 shows a sulfated plate. Note the light colored corrosion. This material is lead sulfate. Large crystals or crusts of lead sulfate may form on the plates as a result of neglect or misuse. The excessive sulfation is difficult to reduce, and is injurious to the plates.

Sulfation can be the result of:

1. Allowing the battery to stand in a discharged condition for a considerable time.
2. Filling the cells with electrolyte when water should have been used.
3. Operating the battery at excessive temperature (above 120°F).
4. Persistent undercharging.

The sediment deposited in the bottom is usually a fine white powder. This is principally lead sulfate.

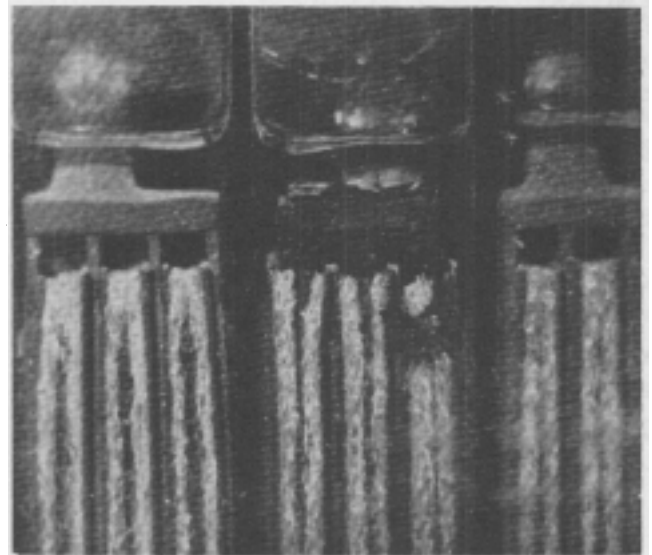


FIGURE 5

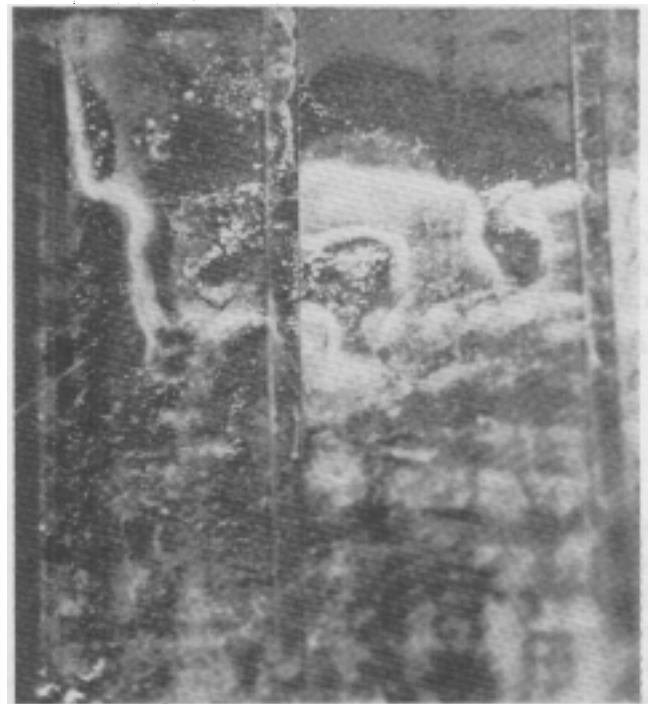


FIGURE 6

BATTERY SERVICING D-400 SERIES

BATTERY

The battery is a 12 volt, DRY CHARGED battery designed specifically for Lawn-Boy mowers.

PREPARING A BATTERY FOR SERVICE

Remove fill plugs and add 19-1/2 ounces of electrolyte to upper level marks: Fill each cell to an equal level. Models equipped with a charger jack and plug require that the battery be installed on the mower before charging the battery.

Allow battery to stand for 15 minutes before attaching trickle charger.

DO NOT CHARGE AT A RATE EXCEEDING 1 AMP.



NOTE

Connect the trickle charger to the battery before plugging it into a 110 volt outlet. Connect the plug to the charger jack (located in engine shroud on earlier models and in battery box on later models) before plugging the trickle charger into a 110 volt outlet.

Allow approximately 10 hours to obtain a complete charge.

Add necessary fluid to maintain fluid level mark at the UPPER LEVEL MARKS.

ASSEMBLING BATTERY TO MOWER



SAFETY WARNING

DO NOT ALLOW BATTERY TERMINALS TO MAKE CONTACT WITH BATTERY COVER SUPPORT RODS.

With battery terminals facing the engine, insert battery into battery mounting bracket. Important: The battery must be mounted with the battery terminals facing the engine or the battery cover cannot be installed correctly. Do not operate without battery cover in place.

With the battery inserted in the mounting bracket, insert battery overflow hose through drain hole in the mower housing. Cut off excess length allowing 1 inch of hose to extend below the drain hole.



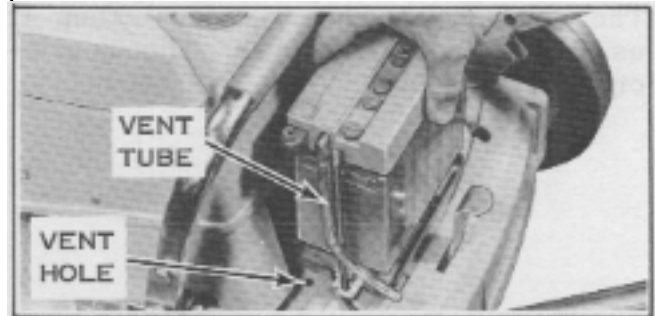
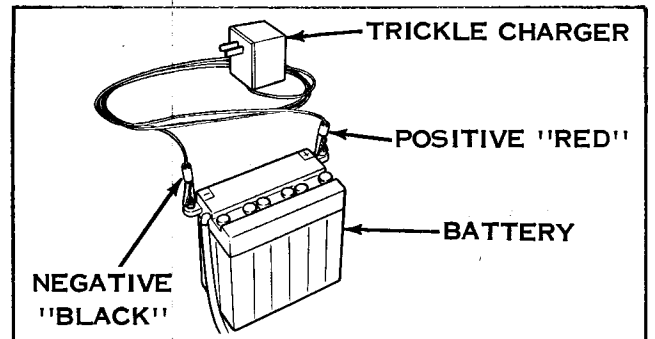
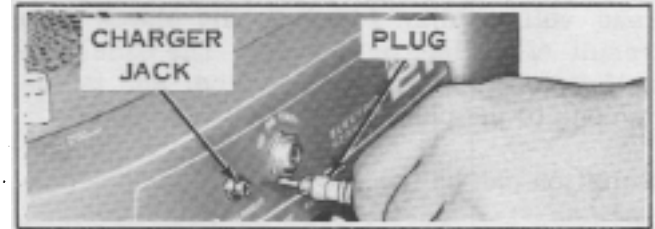
NOTE

If vent hole is located on the right side of the battery, route overflow hose between the engine and the battery. Insert thru the drain hole. Allowing 1 inch of hose to extend below mower housing. Cut hose as required.

Connect battery leads to correct terminals: red to red (+, positive), black to black (-, negative).

Install the battery hold down strap (flat side down).

Secure battery cover with acorn nuts and washers furnished in the hardware package.



Place rear wheel adjustment lever in number 1 position. If lever rubs against battery cover, loosen battery bracket mounting bolts and move bracket until proper clearance is achieved.

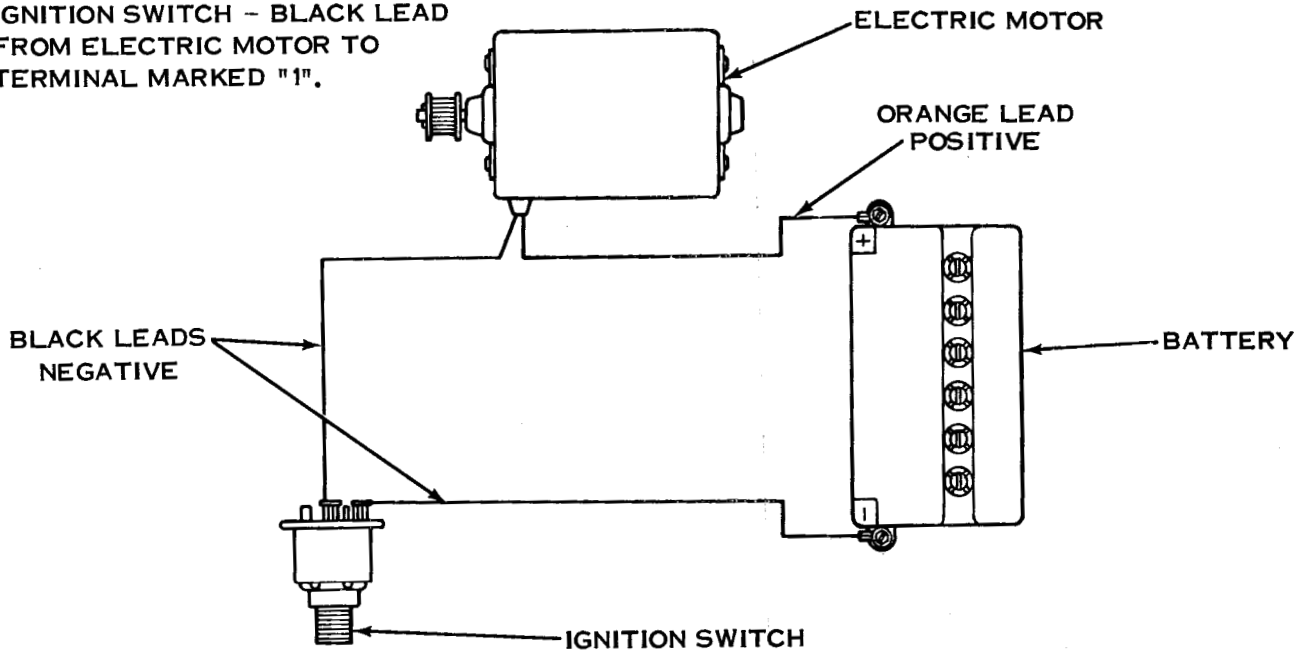


BATTERY SERVICING D-400 SERIES

WIRING DIAGRAMS — LEAD ACID BATTERY

WIRING DIAGRAM-TWO POST SWITCH

BLACK LEAD FROM BATTERY TO TERMINAL MARKED "B" ON IGNITION SWITCH - BLACK LEAD FROM ELECTRIC MOTOR TO TERMINAL MARKED "1".



WIRING DIAGRAM - FOUR POST SWITCH

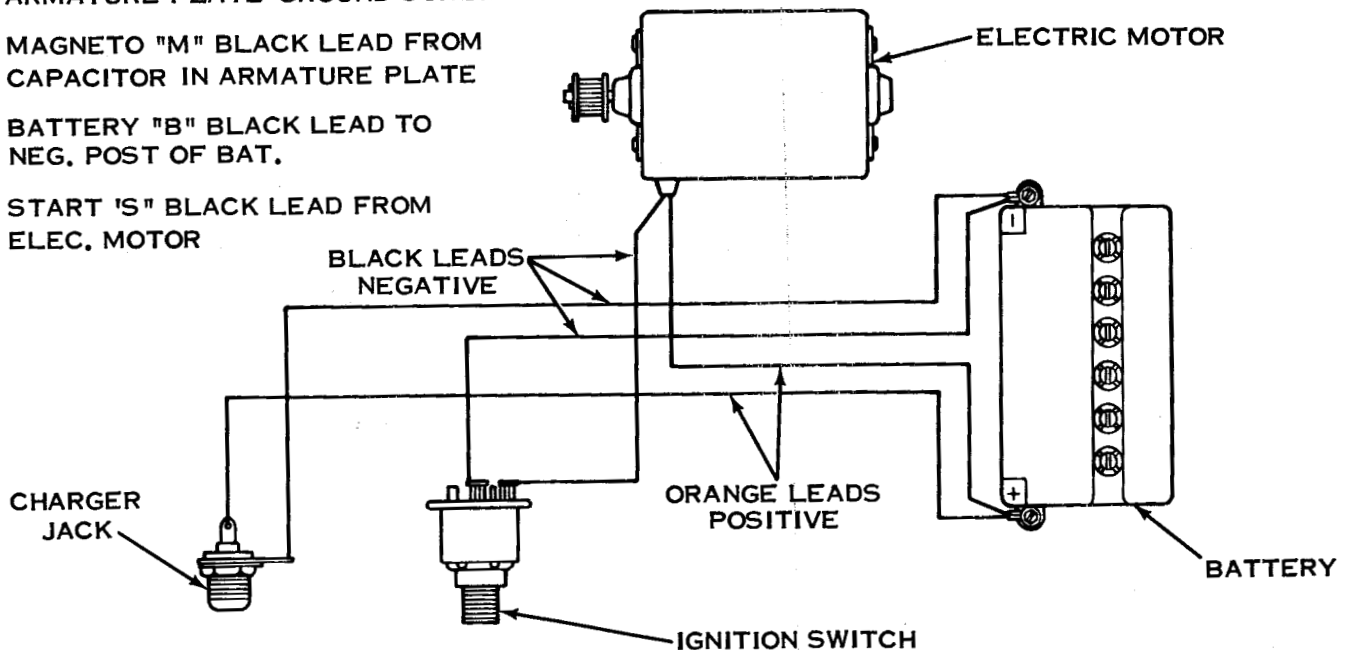
WIRE LEADS ATTACHED TO SWITCH AS FOLLOWS:

GROUND "G" BLACK LEAD FROM ARMATURE PLATE GROUND SCREW

MAGNETO "M" BLACK LEAD FROM CAPACITOR IN ARMATURE PLATE

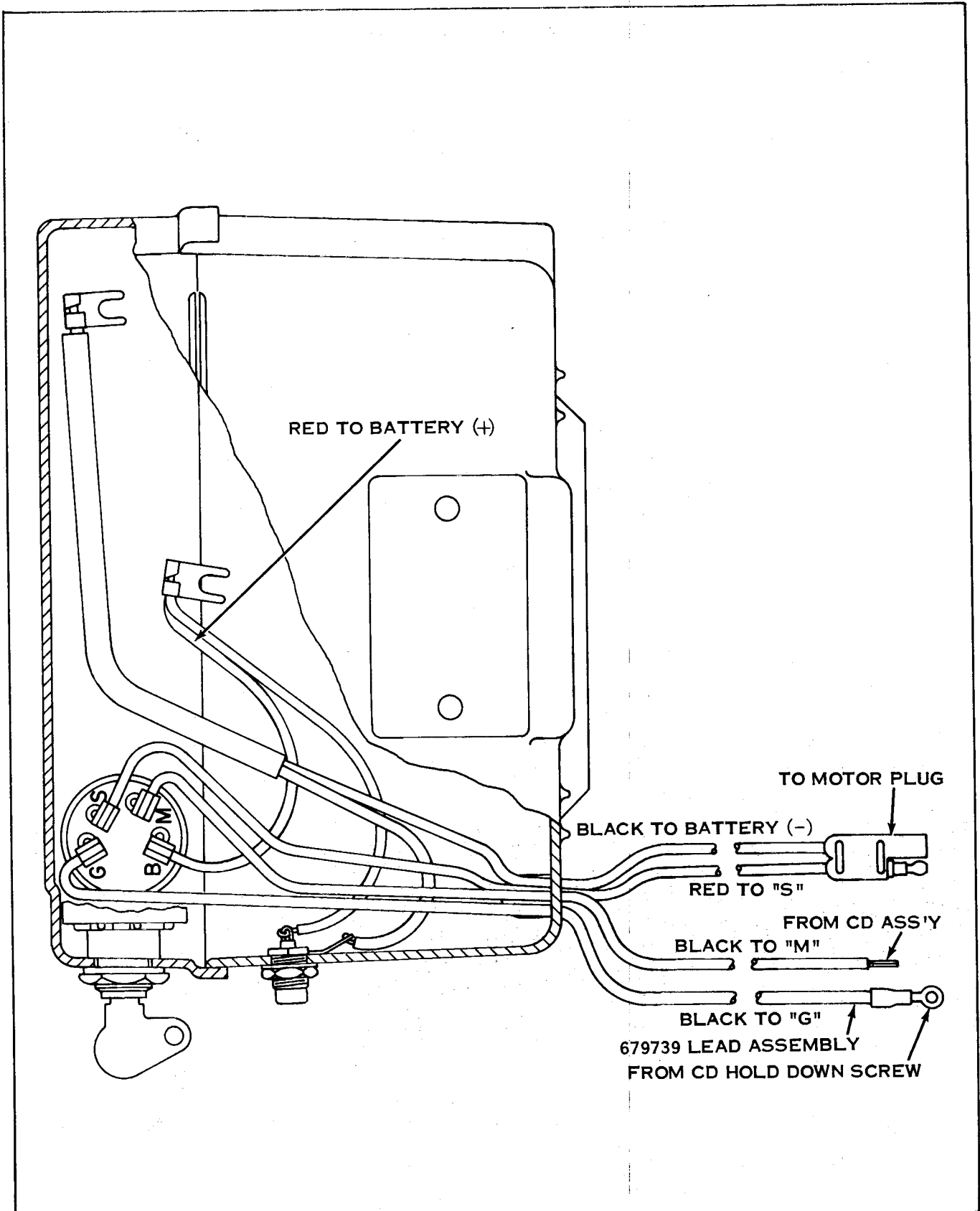
BATTERY "B" BLACK LEAD TO NEG. POST OF BAT.

START "S" BLACK LEAD FROM ELEC. MOTOR



BATTERY SERVICING D-600 SERIES

8330E-8231E-8232E WIRING DIAGRAM — LEAD ACID BATTERY



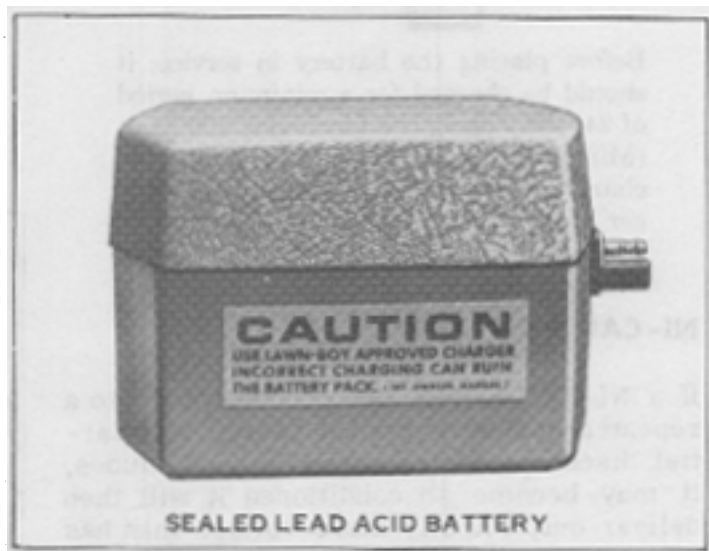
BATTERIES

SERVICING — CARE — MAINTENANCE



The Nickel-Cadmium (NI-CAD) battery Part Number 681359 is a 12 volt dry cell type with 1 (A.H.) ampere, hour capacity. This battery was first introduced on the self-charging (alternator) electric start models in 1975. Refer to pages 13-14 and 13-15 for NI-CAD battery service information.

In 1980 the Sealed Lead Acid (S.L.A.) 12 volt battery Part Number 682869 replaced the NI-CAD battery. The S.L.A. battery has 2.5 (A.H.) ampere hour capacity which provides more cranking power. The service care and maintenance requirements of this battery are different than the NI-CAD. Refer to pages 13-16 and 13-17 for this information.



NICKEL - CADMIUM BATTERY SERVICING

NICKEL - CADMIUM BATTERY PACK

SAFETY WARNING

DO NOT REMOVE THE NI-CAD BATTERIES FROM THE BATTERY PACK. THE BATTERY WILL ARC ACROSS METAL SURFACES CAUSING INJURY OR FIRE. (EXAMPLE: RINGS, WATCHES AND METAL TABLES.)

The NI-CAD battery pack consists of five sticks of two batteries each for a total of ten batteries connected together as shown.

The battery pack is shipped from the factory in an uncharged condition.

SAFETY WARNING

TO PREVENT DAMAGE TO THE BATTERIES, USE ONLY THE LAWN-BOY 100 M.A. (MILLIAMPER) TRICKLE CHARGER WHEN CHARGING BATTERY PACK.

IF PROPER CHARGER IS NOT USED, DAMAGE MAY OCCUR TO THE BATTERY OR IT MAY EXPLODE CAUSING INJURY TO YOU OR OTHERS.

NOTE:

Before placing the battery in service, it should be charged for a minimum period of 24 hours using the Lawn-Boy 100 M.A. (Milliamp) charger provided. Connect the charger to the battery — then plug charger into 115 volt outlet. Voltage must be 12.3 volts or higher after completion of this procedure.

NI-CAD BATTERY MEMORY

If a NI-CAD battery has been subjected to a repeated series of partial charge and partial discharge cycles of similar magnitudes, it may become so conditioned it will then deliver only slightly more voltage than has been required of it during the preceding repetitive cycles.

Thus, if the repetitive discharge cycles were short, it may appear as though the



battery capacity has been shortened.

Sometimes this conditioning is referred to as having a "memory." In order to remove this memory and return the battery to near the original capacity, it must be deep discharged and then recharged.

If a NI-CAD battery is suspicious of this condition, it may be deep discharged by connecting a 12-volt automotive light bulb across the terminals and leaving it burn until the light goes out. It then can be recharged using the Lawn-Boy 100 M.A. trickle charger. Charge overnight for 12 hours. Do not apply a "quick" charge to the battery.


BATTERY MAINTENANCE

We recommend the following steps to maintain proper performance from the battery:



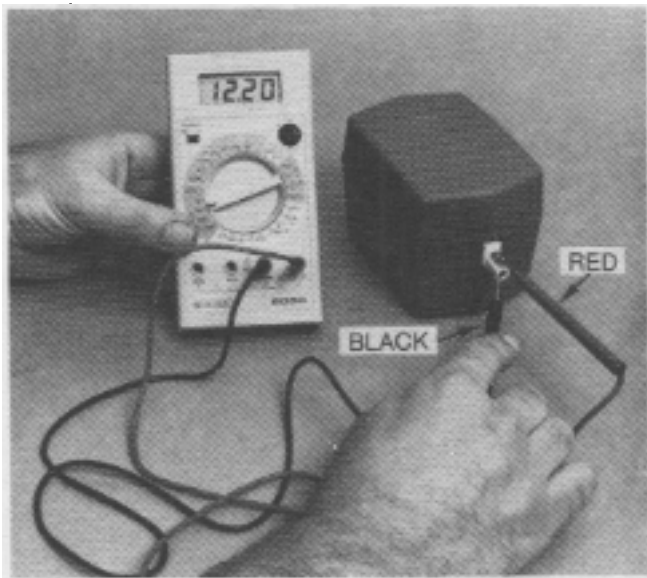
NICKEL-CADMIUM BATTERY SERVICING

1. When necessary, charge battery overnight 10 to 12 hours using the Lawn-Boy 100 M.A. (milliamp) trickle charger provided. Do not apply a "quick" charge to the battery.

 SAFETY WARNING

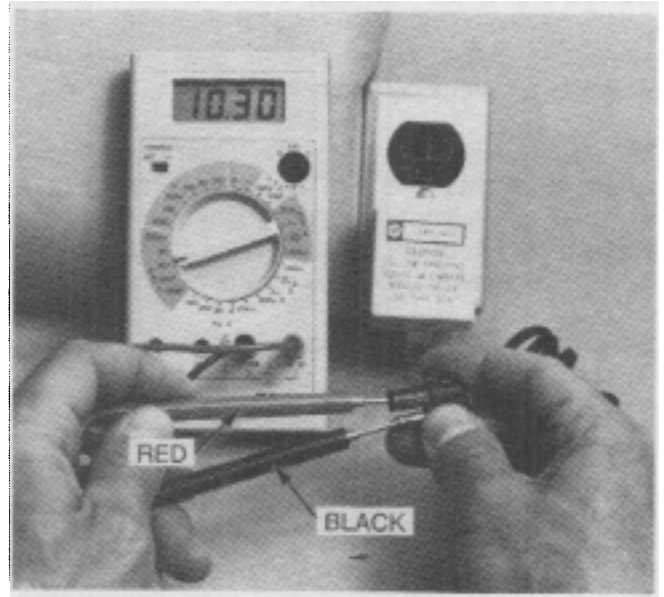
IF A PROPER CHARGER IS NOT USED THE BATTERIES WILL BE DAMAGED.

2. The battery does not require charging other than when it will not start the mower.
3. The battery and box assembly may be removed from the mower when it is to be charged.
4. No special storage precautions are necessary.
5. It is not necessary to keep the battery on charge when the mower is not in use.
6. After extended periods of storage (over winter months) it may be necessary to charge the battery before electric starts can be accomplished.




12V 100 M.A. (Milliamp) Charger (681369): Testing Procedures

Connect the V.O.M. as shown; be sure the polarity is correct. Plug in the charger to a 120V outlet. The meter reading should be between 8V to 12V DC.



12 Volt Nickel-Cadmium Battery Testing Procedures.

 NOTE

Battery has to be out of service and disconnected from the charger for a minimum of 24 hours before testing.

1. Check battery voltage before charging.
2. Charge battery for a minimum of 24 hours.
3. Disconnect charger and let battery set for a minimum of 24 hours.

Battery Voltage must be 12.3 volts or higher after completion of this procedures.

SEALED LEAD ACID (S.L.A.) BATTERY WARRANTY

Open circuit voltage (O.C.V.) of all batteries received on warranty claims will be checked. If they register 11.0 volts or more when received and can be recharged, the warranty claim will be rejected and returned with the battery. If possible, battery should be placed on an electric start mower and checked for cranking ability.

Before returning a battery to the factory with a warranty claim because it "won't hold or take a charge," or "will not crank the engine," please refer to Section 13, pages 16 and 17 of the Lawn-Boy Service Manual for the testing procedures.

Step 1 - Check battery voltage with a volt meter before charging.

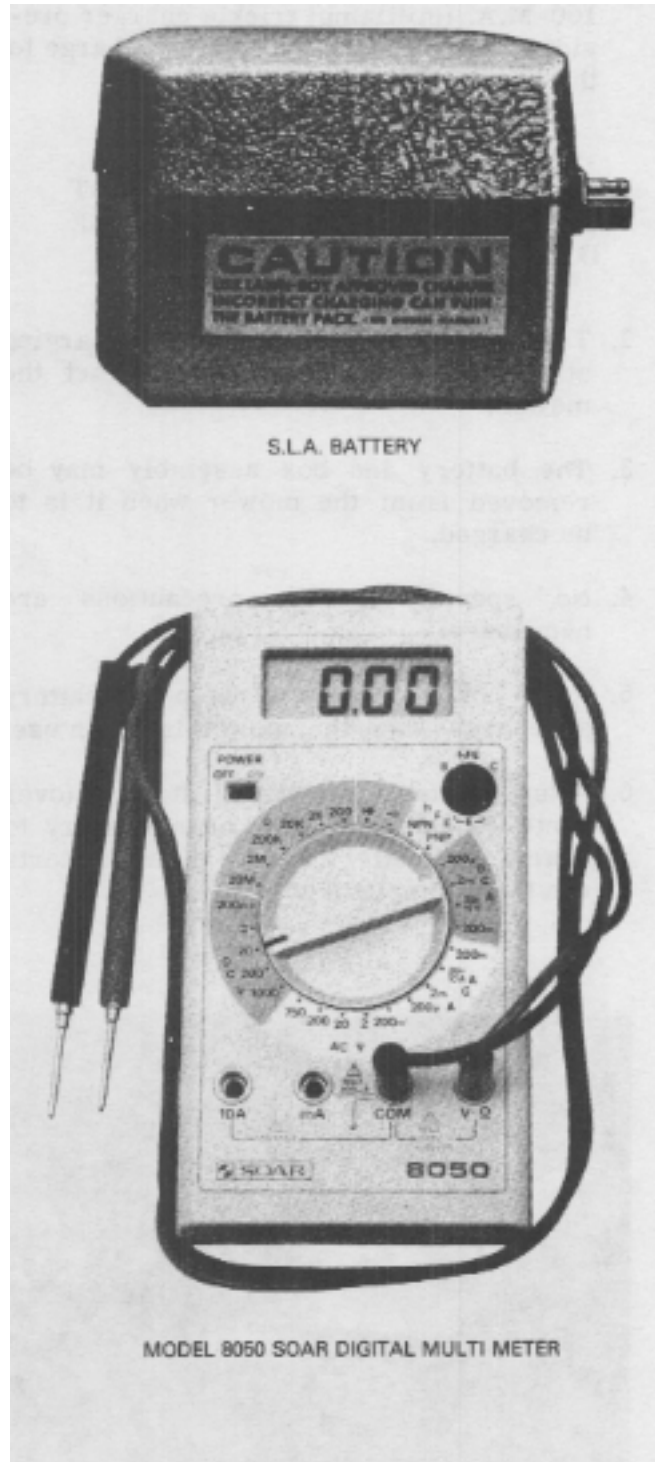
Step 2 - If the meter indicates an open circuit voltage (O.C.V.) of 11.0 volts or more, connect it to the Lawn-Boy charger for a period of 24 to 48 hours.

Step 3 - Disconnect charger and let battery set for a minimum of 24 hours.

If battery voltage is 12.3 volts or higher after completion of this procedure, it should be returned to the customer for continued use. If possible, place it on an electric start mower and check for cranking ability.

If possible, the customer's battery charger should be checked. It should produce between 8 and 12 volts on a volt meter.

The Digital Multi Meter illustrated is available from the Lawn-Boy Service Department. It will check AC and DC voltage, AC and DC current, resistance, check diodes, amperes and continuity.



SEALED LEAD ACID (S.L.A.) BATTERY SERVICING

SEALED LEAD ACID BATTERY PACK

SAFETY WARNING

DO NOT REMOVE THE SEALED LEAD ACID BATTERIES FROM THE BATTERY PACK. THE BATTERY WILL ARC ACROSS METAL SURFACES CAUSING INJURY OR FIRE. (EXAMPLE: RINGS, WATCHES AND METAL TABLES.)

The S.L.A. battery pack consists of six sealed cells connected together. Each cell contains electrolyte which is an acid solution. They are spill proof.

NOTE:

The S.L.A. battery will have a low charge when shipped from the factory.

NOTE

Before placing the battery in service, it should be charged for a minimum period of 24 hours (Do not exceed 48 hrs.) using the Lawn-Boy 100 M.A. (Milliamp) charger provided. Connect the charger to the battery — then plug charger into 115 volt outlet. Voltage must be 12.3 volts or higher after completion of this procedure.

SAFETY WARNING

TO PREVENT DAMAGE TO THE BATTERIES, USE ONLY THE LAWN-BOY 100 M.A. (MILLIAMP) TRICKLE CHARGER WHEN CHARGING BATTERY PACK.

IF PROPER CHARGER IS NOT USED, DAMAGE MAY OCCUR TO THE BATTERY OR IT MAY EXPLODE CAUSING INJURY TO YOU OR OTHERS.



SEALED LEAD ACID BATTERY MAINTENANCE

Occasional charging may be required during the mowing season if battery will not start the mower. If battery failure occurs, attach Lawn-Boy trickle charger supplied with mower, and charge for 10-12 hours.

NOTE

NEVER LEAVE THE S.L.A. BATTERY ON CHARGER FOR MORE THAN 48 HOURS AS DAMAGE MAY RESULT.

S.L.A. BATTERY STORAGE

NEVER STORE THE BATTERY IN A "RUN-DOWN" CONDITION. STORE BATTERY FULLY CHARGED (12-14 VOLTS) IN A COOL AREA. CHARGE BATTERY EVERY 1-2 MONTHS FOR A PERIOD OF 10-12 HOURS DURING STORAGE.

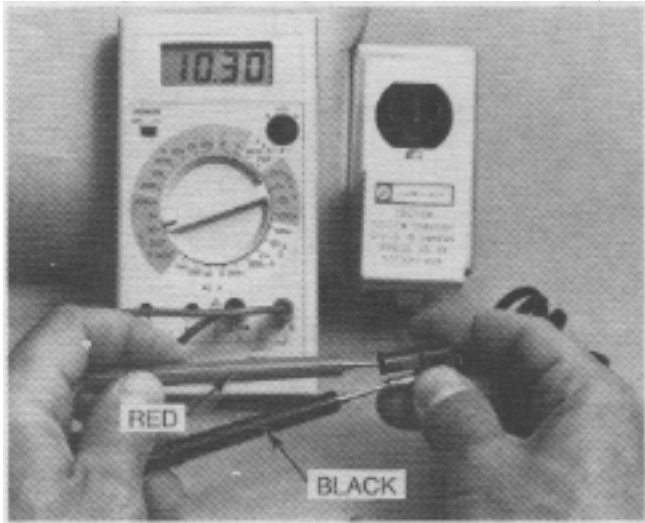
NOTE

Never place battery on cement surfaces during storage ie: garage or basement floor. Store battery on a wooden surface.

SEALED LEAD ACID (S.L.A.) BATTERY SERVICING

12V 100 M.A. (milliamp) Charger (681369): Testing Procedures

Connect the V.O.M. (Volt-Ohm-Milliammeter) as shown; be sure the polarity is correct. Plug in the charger to a 115V outlet. The meter reading should be between 8V to 12V DC.

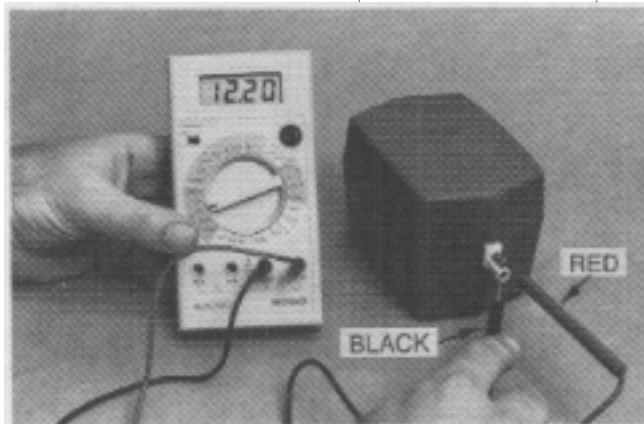


12 Volt S.L.A. Battery Testing Procedures

Note: Battery has to be out of service and disconnected from the charger for a minimum of 24 hours before testing.

1. Check battery voltage before charging.
2. Charge battery for a minimum of 24 hours, but not more than 48 hours.
3. Disconnect charger and let battery set for a minimum of 24 hours.

Battery Voltage must be 12.3 volts or higher after completion of this procedure.

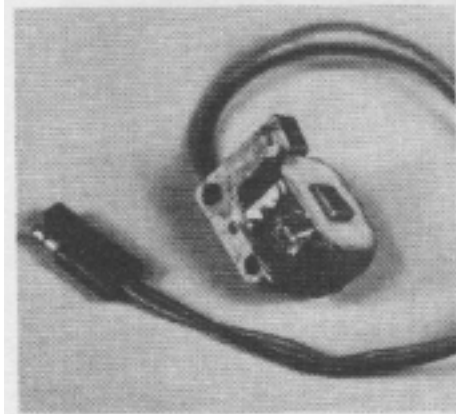


ALTERNATOR IDENTIFICATION

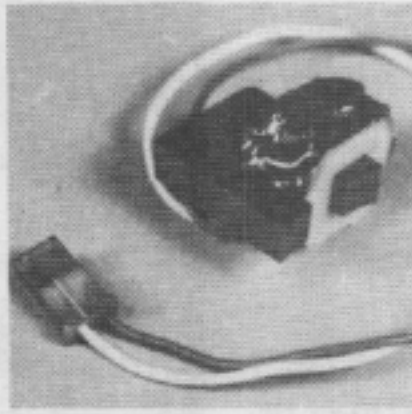
ALTERNATORS

Six different alternator assemblies will be found on the electric start Lawn-Boy mower since 1975. The first was introduced on the 8233AE models with the D-600 series engines.

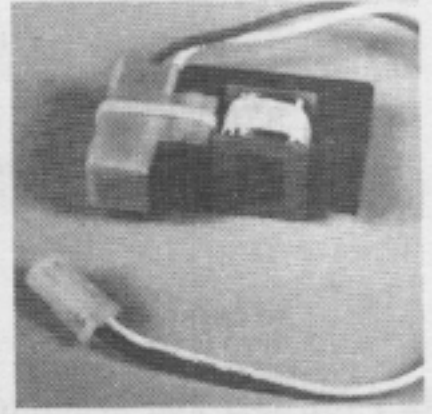
Testing procedures of all alternators are the same. Output specifications will vary between early and later models.



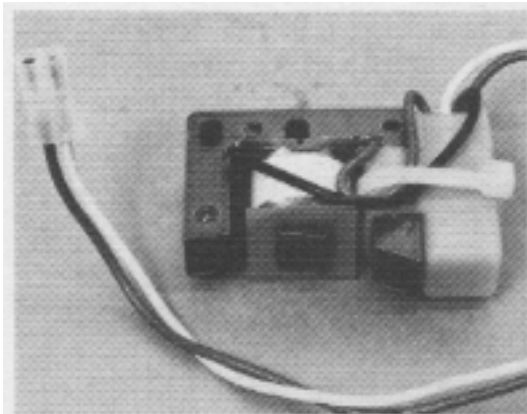
**PART NO. 681362
D-600 SERIES
ALTERNATOR
RUBBER CONNECTOR
PLUG
1975-76-77**



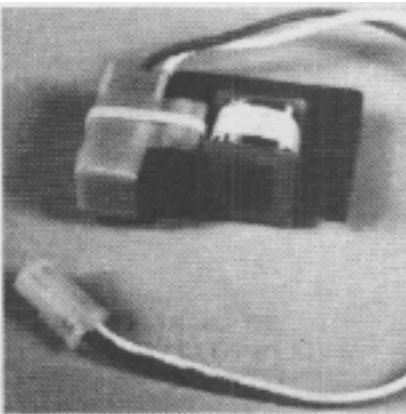
**PART NO. 681563
F-100 SERIES
EARLY MODEL
ALTERNATOR
PLASTIC CONNECTOR
PLUG
1978-79-80-81**



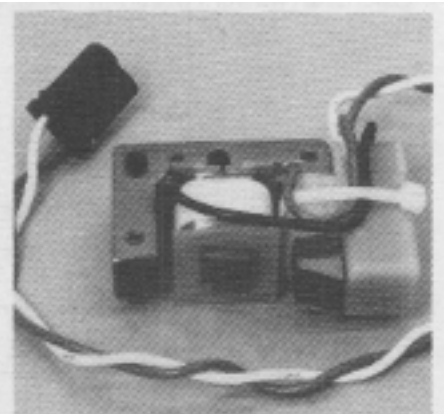
**PART NO. 682529
F-100 SERIES
LATER MODEL
ALTERNATOR
1982 AND LATER**



**PART NO. 683095
F-100 SERIES
(LATE MODELS)
SUPERCEDES 682529
WITH WHITE CONNECTOR
1981-82**



**PART NO. 682719
1983 COMPLIANCE MODELS**



**PART NO. 683092
1984 GRAY COLORED
SUPERCEDES 682719
WITH BLACK CONNECTOR
GRAY COLORED**

 **NOTE**

See page 13-21 for information and specifications on alternators used on 1983 and later models.

ALTERNATOR TESTING

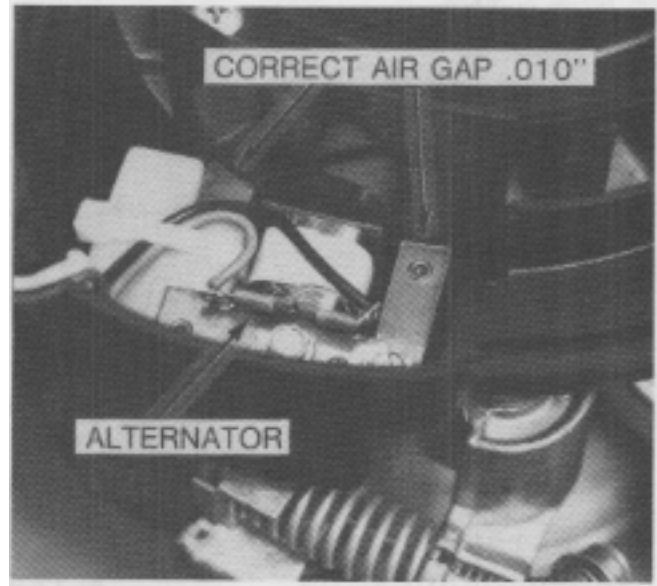
ALTERNATOR TESTING PROCEDURES

NOTE

To check output of all alternators, a milliammeter with a capacity of 500 M.A. (milliamps) is required for testing.

1. Before testing output of the alternators, check the air gap and readjust to .010 if necessary.

SEE PAGE 13-21 FOR SPECIFICATIONS OF EACH ALTERNATOR.

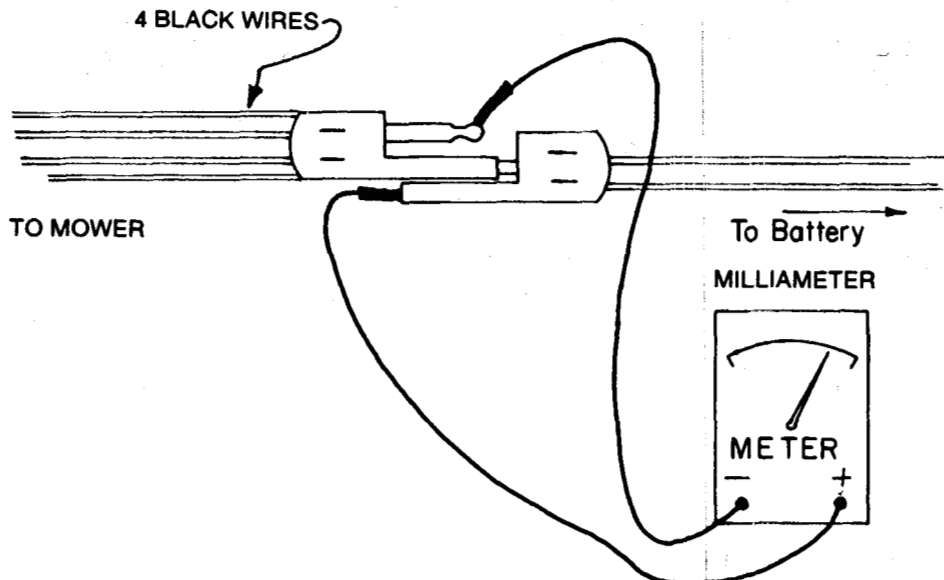


2. To check output of the alternator accurately, it is necessary to run the engine between 3100 and 3300 R.P.M. Readjust the governor if necessary.
3. Before attaching milliammeter leads start the engine. Run at high speed 3100-3300 R.P.M.

4. With the engine running disconnect the plug from the battery. Reverse the plugs and reconnect as shown. Attach meter leads. Be sure polarity is correct.

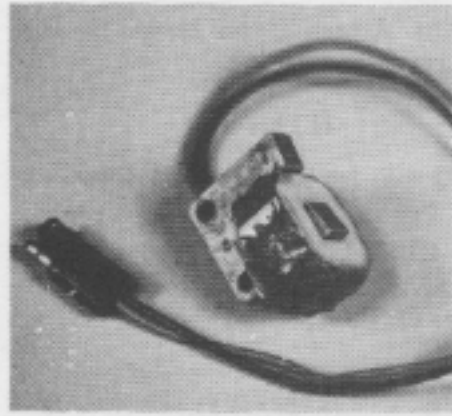
NOTE

With meter leads attached **DO NOT STOP AND THEN RE-START ENGINE ELECTRICALLY.** If the starter is activated irreparable damage to meter will occur.



ALTERNATOR TESTING

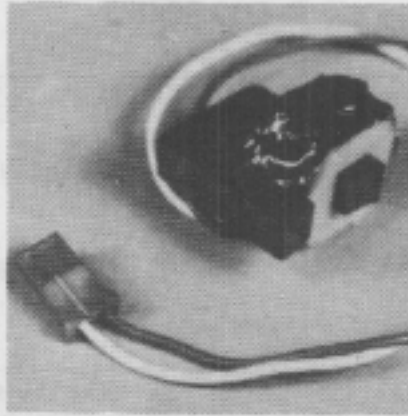
5. Milliampere (M.A.) output specifications for each alternator is:



D-600 Series
Part No. 681362

70-120 M.A.

1.2-1.5 volts



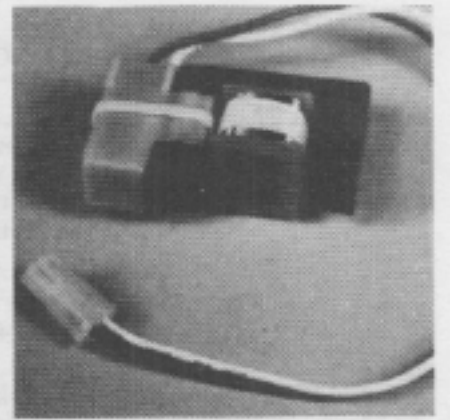
F-100 Series
(Early Models)
Part No. 681653

Millimeter readings should be between:

70-120 M.A.

Volt meter readings should be between:

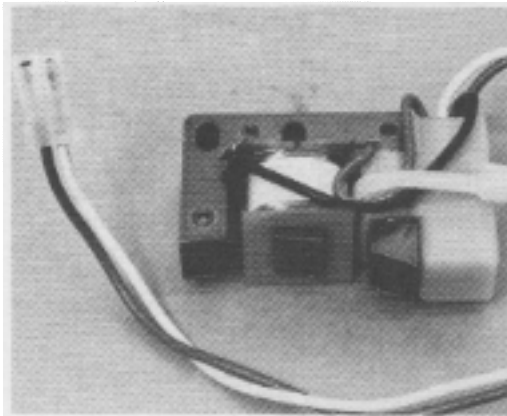
1.2-1.5 volts



F-100 Series
(Late Models)
Part No. 682529

200-450 M.A.

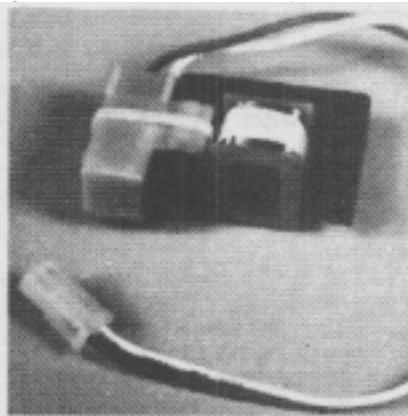
140-160 volts



F-100 Series
(Late Models)
Part No. 683095
(Supersedes 682529)
With White Connector

200-450 M.A.

18-32 volts



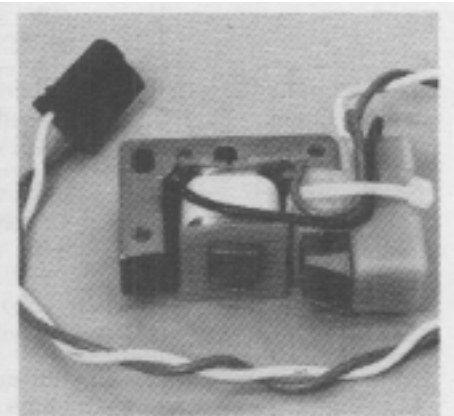
1983 Compliance Models
Part No. 682719

Millimeter readings should be between:

200-450 M.A.

Volt meter readings should be between:

140-160 volts



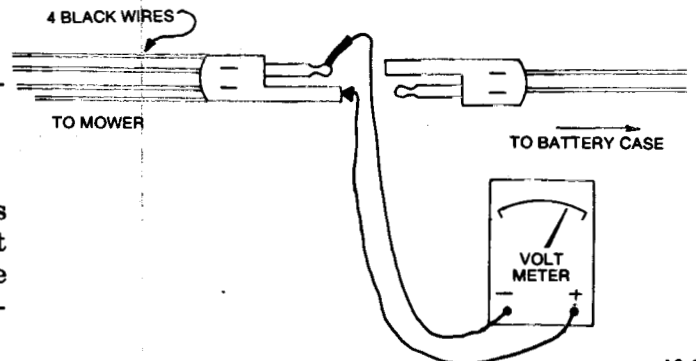
1984 Gray Colored
Part No. 683092
Supersedes 682719
With Black Connector

200-450 M.A.

18-32 volts

6. To check voltage output for the alternator proceed as follows. Start and run engine at 3200 RPM.

7. With engine running, disconnect wiring harness plug from battery. Connect leads from volt meter to connector plug as shown. Be sure polarity is correct. Refer to the voltage requirements listed above for each alternator.



TROUBLE SHOOTING THE ALTERNATOR PART NO. 681362 CHARGING SYSTEM

MODEL 8233AE, 8234AE & 8235AE D-600 SERIES

STARTER DOES NOT TURN ENGINE:

BATTERY RUN DOWN	BATTERY VOLTAGE BELOW 10 VOLTS
Alternator Not Charging	<p>Battery run down. The resistance on the pins of plug "H" should read LOW with V.O.M. leads in one direction and HIGH with leads reversed. (Meter on RX 1). This checks for bad diodes. A low resistance or high resistance in both directions indicates defective diodes.</p> <p>The output voltage of plug "E" with the engine running on: Normal (high) speed 1.2 to 1.5 Volts (Using a 20,000 ohms per volt meter)</p>
Ground Wire "M" Open or Loose	<p>Check resistance at plug "E". With the self-propelled handle in neutral, and the key switch in the 'START' position, and plugs "G" & "H" disconnected, the circuit reads:</p> <p style="text-align: center;">A GOOD CIRCUIT READS SHORTED A BAD CIRCUIT READS HIGH RESISTANCE (METER ON RX 1)</p>
Key Switch Defective	Key switch in the 'START' position. A good switch reads SHORTED on terminals 2 & 3. A bad switch will read 1 or more ohms. (Meter on RX 1)
Starter Motor Defective	Check voltage at starter plug "A" when key switch is in 'START' position. Voltage is to be above 10 volts. The resistance between the terminals on plug "B" should read approximately .3 ohms resistance for a good motor. (Meter on RX 1) Turn motor for lowest reading.
Self-propelled Interlock Switch Open	When the self-propelled handle is in neutral, the interlock switch should be closed. A good switch reads SHORTED on the pins of plug "D". (Meter on RX 1)
Short Circuit	<p>Battery run down. The resistance on pins of plug "E" (with all other plugs connected, self-propelled in neutral, and key switch in "off" position) should read as follows:</p> <p style="padding-left: 20px;">With volt-ohmmeter on RX 1 the low reading will be between 15 ohms and 20 ohms. With the volt-ohmmeter on its highest setting, the high reading will be MEG ohms.</p>
Alternator Diodes Leaking	<p>Battery run down. Disconnect plugs "A", "C" and "J". Connect a 20,000 ohms per volt — volt meter as follows:</p> <p style="padding-left: 20px;">Use 15 volt D.C. scale (Min.). Disconnect plug "E". Reconnect plug "E" so that the male pin of plug "E" and the female of plug "F" are not connected. Connect the positive lead of the volt meter to the male pin of plug "E". Connect the negative lead of the volt meter to the female (—) of plug "F". The meter should read zero. A reading of more than one volt indicates excessive leakage which could run the battery down during storage.</p>

ENGINE STOPS WHEN KEY SWITCH IS IN 'RUN' POSITION:

Key Switch Defective	Key in 'RUN' position, the resistance between terminals 1 & 2 on plug "K" reads less than 1 MEG ohm.
----------------------	--

ENGINE DOES NOT STOP IN KEY IN 'OFF' POSITION:

Key Switch Defective	Key on 'OFF' position, the resistance between terminals 1 & 2 on plug "K" reads INFINITE resistance. (Meter on RX 100)
Ground Lead "M" Open at Ground	Check terminal 2 on plug "J" to engine. If the resistance reads INFINITE the ground is bad. (Meter on RX 100)
Connection at "L" Open	Lead disconnected.

ELECTRIC START SERVICING D-600 SERIES WIRING DIAGRAM — NICKEL CADMIUM BATTERY

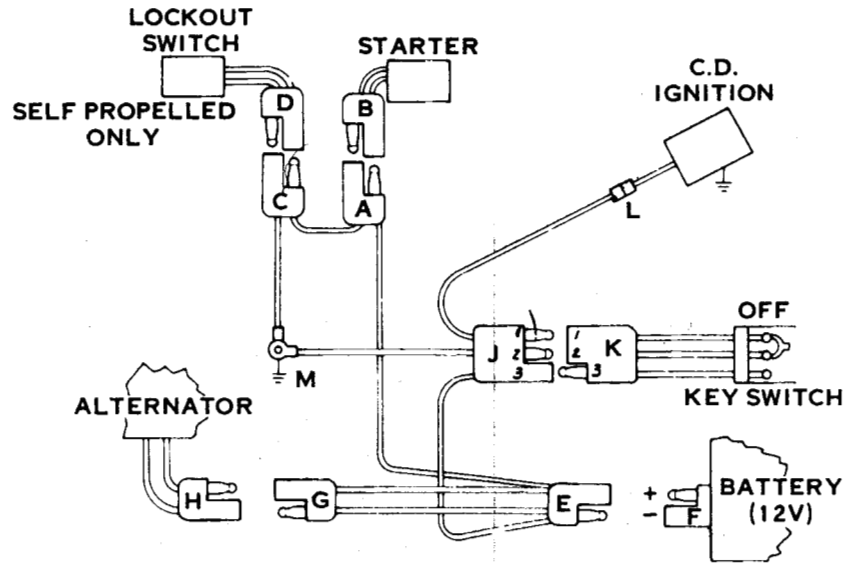


FIGURE 1 - KEY IN "OFF" POSITION

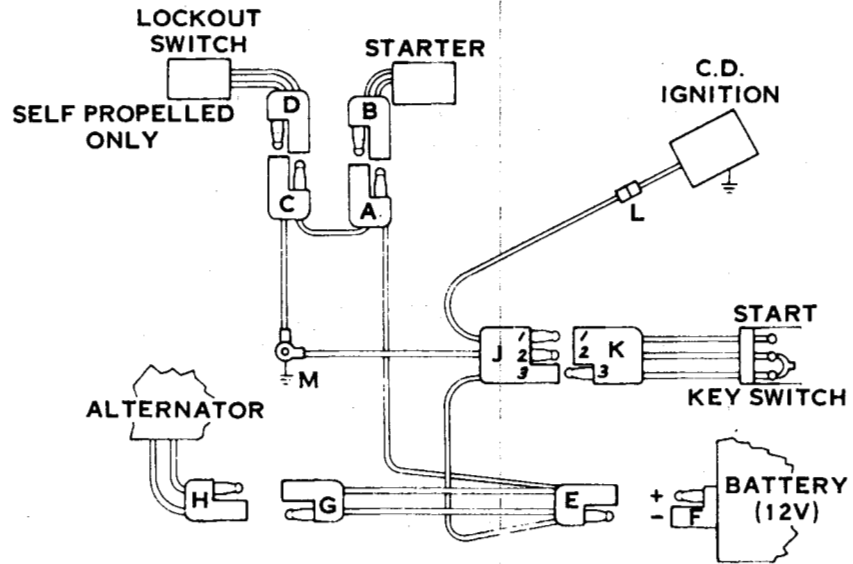


FIGURE 2 - KEY IN "START" POSITION

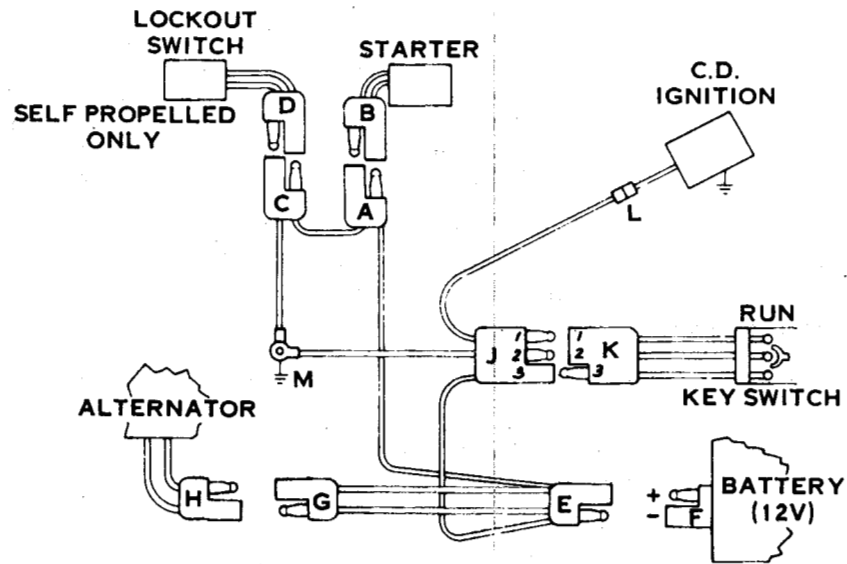


FIGURE 3 - KEY IN "RUN" POSITION

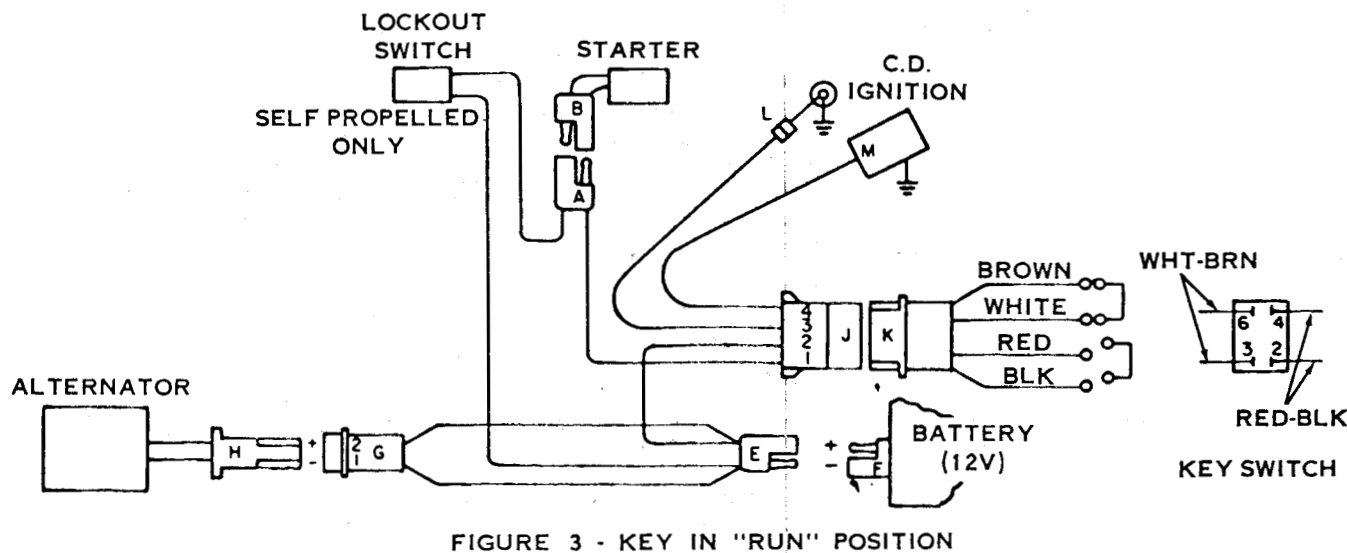
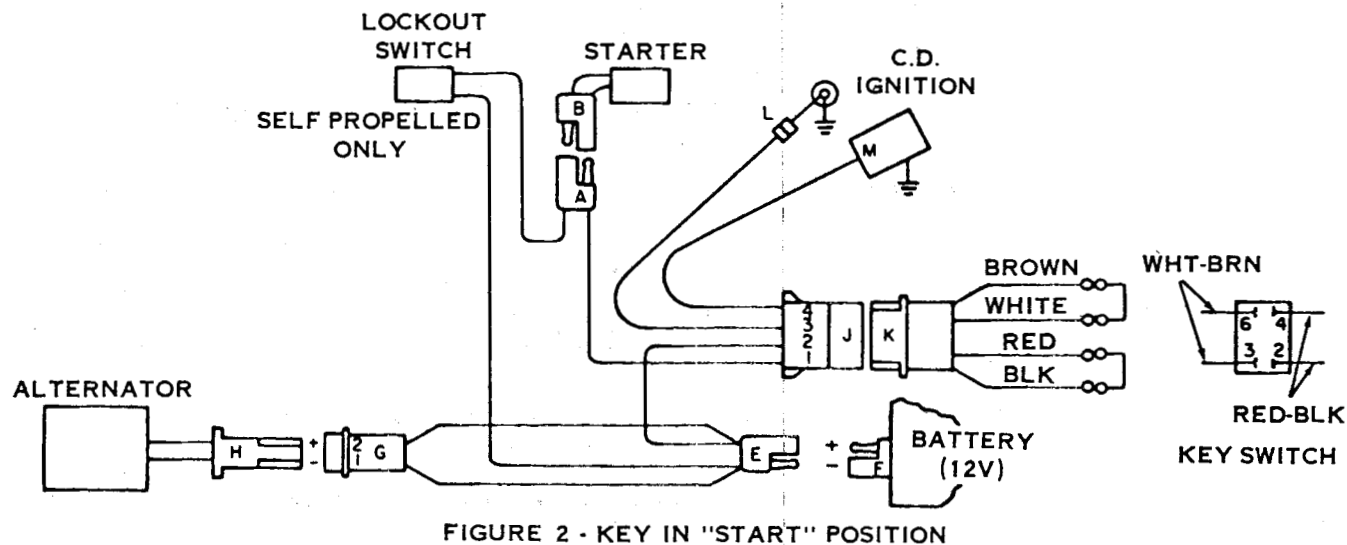
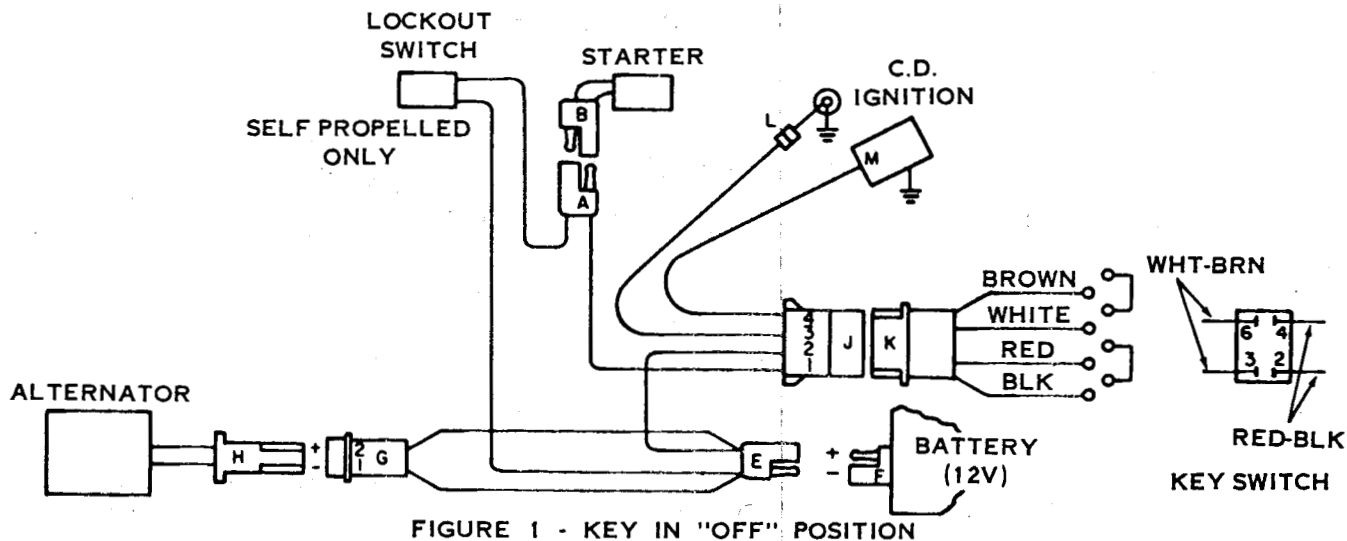
TROUBLE SHOOTING THE EARLY MODEL F-100 SERIES ALTERNATOR CHARGING SYSTEM

PART NO. 681653

STARTER DOES NOT TURN ENGINE:

BATTERY RUN DOWN	REFER TO BATTERY TEST PROCEDURES
Alternator or Charger Not Charging	<p>Battery run down. The resistance on the pins of plug "H" should read LOW with V.O.M. leads in one direction and HIGH with leads reversed. (Meter on RX 1). This checks for bad diodes. A low resistance or high resistance in both directions indicates defective diodes.</p> <p>The output voltage of plug "E" with the engine running on: High speed 1.2 to 1.5 Volts (Using a 20,000 ohms per volt meter)</p>
Ground Wire "M" Open or Loose	<p>Check resistance at plug "E". With the self-propelled handle in neutral, and the key switch in the 'START' position, and plugs "G" & "H" disconnected, the circuit reads:</p> <p style="margin-left: 20px;">A GOOD CIRCUIT READS SHORTED A BAD CIRCUIT READS HIGH RESISTANCE (METER ON RX 1)</p>
Key Switch Defective	<p>Key switch in the 'START' position. A good switch reads SHORTED on terminals 2 & 3. A bad switch will read 1 or more ohms. (Meter on RX 1)</p>
Starter Motor Defective	<p>Check voltage at starter plug "A" when key switch is in 'START' position. Voltage is to be above 10 volts. The resistance between the terminals on plug "B" should read approximately .3 ohms resistance for a good motor. (Meter on RX 1) Turn motor for lowest reading.</p>
Self-propelled Interlock Switch Open	<p>When the self-propelled handle is in neutral, the interlock switch should be closed. A good switch reads SHORTED on the pins of plug "D". (Meter on RX 1)</p>
Short Circuit	<p>Battery run down. The resistance on pins of plug "E" (with all other plugs connected, self-propelled in neutral, and key switch in "off" position) should read as follows:</p> <p style="margin-left: 20px;">With volt-ohmmeter on RX 1 the low reading will be between 15 ohms and 20 ohms. With the volt-ohmmeter on its highest setting, the high reading will be MEG ohms.</p>
Alternator Diodes Leaking	<p>Battery run down. Disconnect plugs "A", "C" and "J". Connect a 20,000 ohms per volt — volt meter as follows:</p> <p style="margin-left: 20px;">Use 15 volt D.C. scale (Min.). Disconnect plug "E". Reconnect plug "E" so that the male pin of plug "E" and the female of plug "F" are not connected. Connect the positive lead of the volt meter to the male pin of plug "E". Connect the negative lead of the volt meter to the female (-) of plug "F". The meter should read zero. A reading of more than one volt indicates excessive leakage which could run the battery down during storage.</p>
ENGINE STOPS WHEN KEY SWITCH IS IN 'RUN' POSITION:	
Key Switch Defective	<p>Key in 'RUN' position, the resistance between terminals 1 & 2 on plug "K" reads less than 1 MEG ohm.</p>
ENGINE DOES NOT STOP WITH KEY IN 'OFF' POSITION:	
Key Switch Defective	<p>Key in 'OFF' position, the resistance between terminals 1 & 2 on plug "K" reads less than 1 MEG ohm.</p>
Ground Lead "M" Open at Ground	<p>Check terminal 2 on plug "J" to engine. If the resistance reads INFINITE the ground is bad. (Meter on RX 100)</p>
Connection at "L" Open	<p>Lead disconnected.</p>

STARTER WIRING DIAGRAM F-100 SERIES (EARLY MODELS) (USING 681653 ALTERNATOR) (LOW OUTPUT)



**TROUBLE SHOOTING THE LATER MODEL F-100 SERIES
HIGH OUTPUT ALTERNATOR CHARGING SYSTEM
PART NO. 682529**

STARTER DOES NOT TURN ENGINE:

BATTERY RUN DOWN	REFER TO BATTERY TEST PROCEDURES
Alternator or Charger Not Charging	Battery run down. The resistance on the pins of plug "H" should read LOW with V.O.M. leads in one direction and HIGH with leads reversed. (Meter on RX 1). This checks for bad diodes. A low resistance or high resistance in both directions indicates defective diodes. The output voltage of plug "E" with the engine running on: High speed 140 Volts — 160 Volts (Using a 20,000 ohms per volt meter)
Ground Wire "M" Open or Loose	Check resistance at plug "E". With the self-propelled handle in neutral, and the key switch in the 'START' position, and plugs "G" & "H" disconnected, the circuit reads: A GOOD CIRCUIT READS SHORTED A BAD CIRCUIT READS HIGH RESISTANCE (METER ON RX 1)
Key Switch Defective	Key switch in the 'START' position. A good switch reads SHORTED on terminals 2 & 3. A bad switch will read 1 or more ohms. (Meter on RX 1)
Starter Motor Defective	Check voltage at starter plug "A" when key switch is in 'START' position. Voltage is to be above 10 volts. The resistance between the terminals on plug "B" should read approximately .3 ohms resistance for a good motor. (Meter on RX 1) Turn motor for lowest reading.
Self-propelled Interlock Switch Open	When the self-propelled handle is in neutral, the interlock switch should be closed. A good switch reads SHORTED on the pins of plug "D". (Meter on RX 1)
Short Circuit	Battery run down. The resistance on pins of plug "E" (with all other plugs connected, self-propelled in neutral, and key switch in "off" position) should read as follows: With volt-ohmmeter on RX 1 the low reading will be between 15 ohms and 20 ohms. With the volt-ohmmeter on its highest setting, the high reading will be MEG ohms.
Alternator Diodes Leaking	Battery run down. Disconnect plugs "A", "C" and "J". Connect a 20,000 ohms per volt — volt meter as follows: Use 15 volt D.C. scale (Min.). Disconnect plug "E". Reconnect plug "E" so that the male pin of plug "E" and the female of plug "F" are not connected. Connect the positive lead of the volt meter to the male pin of plug "E". Connect the negative lead of the volt meter to the female (—) of plug "F". The meter should read zero. A reading of more than one volt indicates excessive leakage which could run the battery down during storage.

ENGINE STOPS WHEN KEY SWITCH IS IN 'RUN' POSITION:

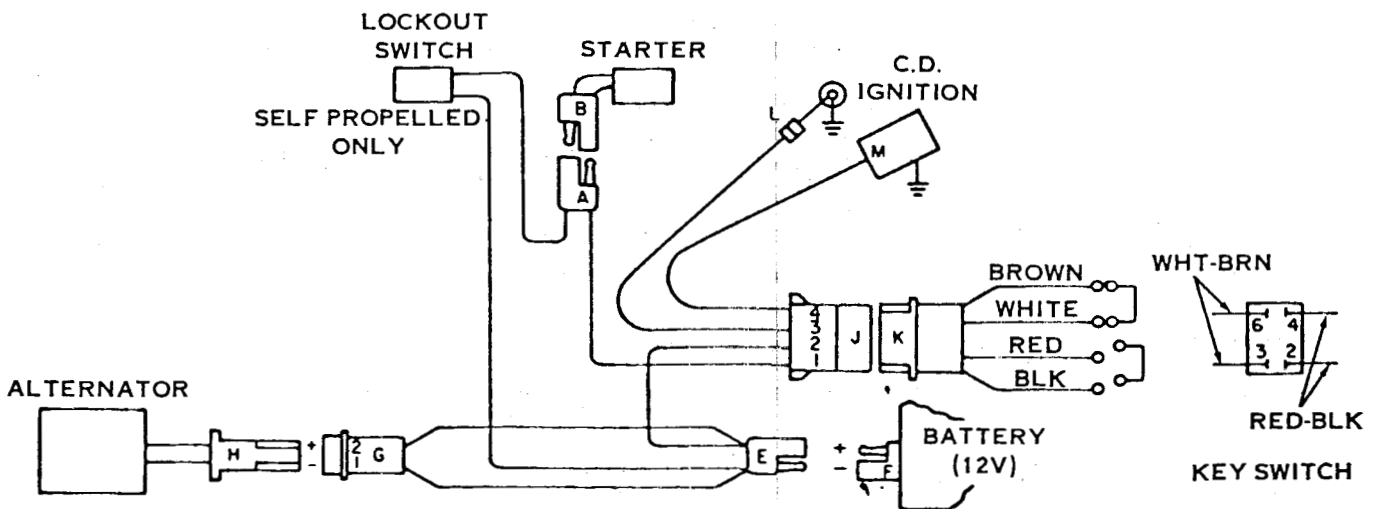
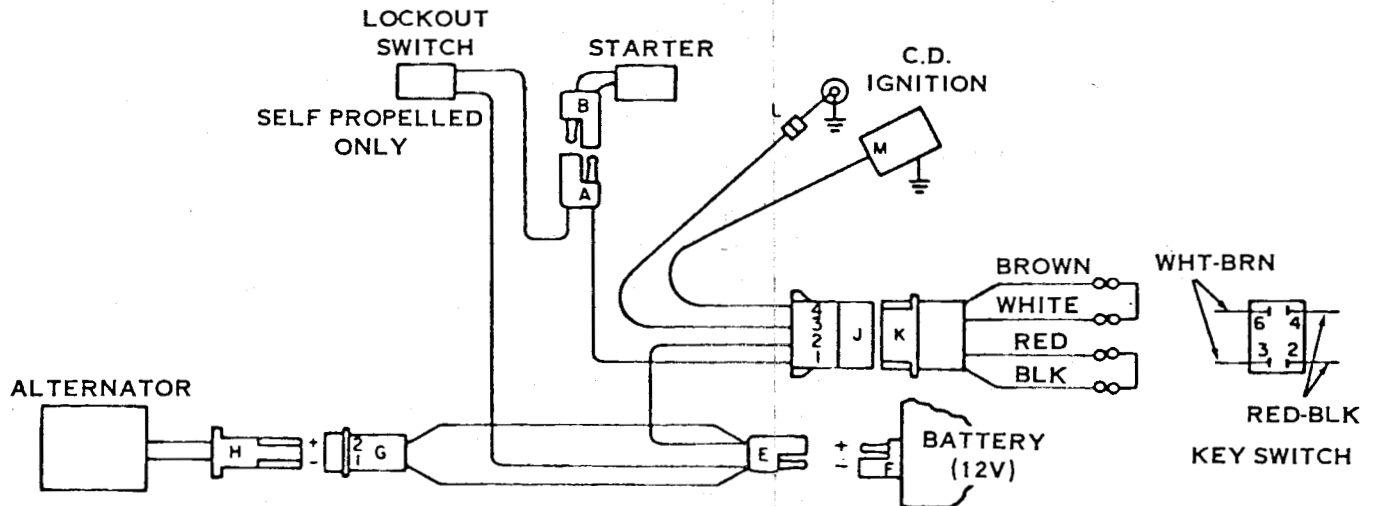
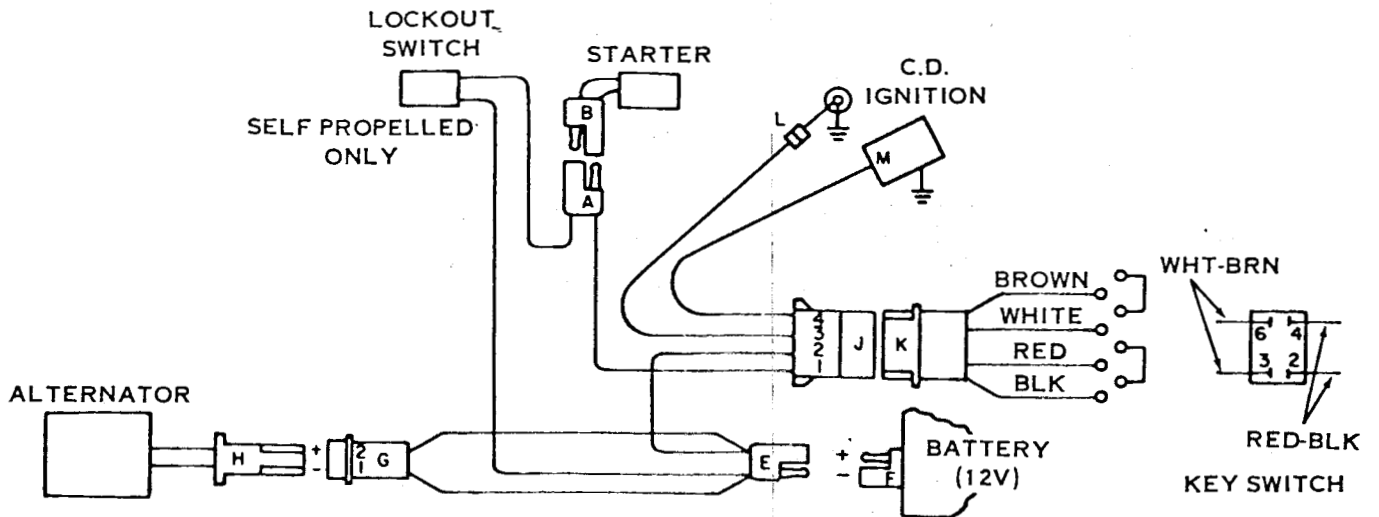
Key Switch Defective	Key in 'RUN' position, the resistance between terminals 1 & 2 on plug "K" reads less than 1 MEG ohm.
----------------------	--

ENGINE DOES NOT STOP WITH KEY IN 'OFF' POSITION:

Key Switch Defective	Key on 'OFF' position, the resistance between terminals 1 & 2 on plug "K" reads INFINITE resistance. (Meter on RX 100)
Ground Lead "M" Open at Ground	Check terminal 2 on plug "J" to engine. If the resistance reads INFINITE the ground is bad. (Meter on RX 100)
Connection at "L" Open	Lead disconnected.

STARTER WIRING DIAGRAM

F-100 SERIES (LATER MODELS THRU 1982) (USING 682529 ALTERNATORS) (HIGH OUTPUT)



**TROUBLE SHOOTING THE MODEL F-100 SERIES ALTERNATOR CHARGING SYSTEM
PART NO. 683095
WITH WHITE CONNECTOR**

STARTER DOES NOT TURN ENGINE:

BATTERY RUN DOWN	REFER TO BATTERY TEST PROCEDURES
Alternator or Charger Not Charging	Battery run down. The resistance on the pins of plug "H" should read LOW with V.O.M. leads in one direction and HIGH with leads reversed. (Meter on RX 1). This checks for bad diodes. A low resistance or high resistance in both directions indicates defective diodes. The output voltage of plug "E" with the engine running on: High speed 18 Volts — 32 Volts (Using a 20,000 ohms per volt meter)
Ground Wire "M" Open or Loose	Check resistance at plug "E". With the self-propelled handle in neutral, and the key switch in the 'START' position, and plugs "G" & "H" disconnected, the circuit reads: A GOOD CIRCUIT READS SHORTED A BAD CIRCUIT READS HIGH RESISTANCE (METER ON RX 1)
Key Switch Defective	Key switch in the 'START' position. A good switch reads SHORTED on terminals 2 & 3. A bad switch will read 1 or more ohms. (Meter on RX 1)
Starter Motor Defective	Check voltage at starter plug "A" when key switch is in 'START' position. Voltage is to be above 10 volts. The resistance between the terminals on plug "B" should read approximately .3 ohms resistance for a good motor. (Meter on RX 1) Turn motor for lowest reading.
Self-propelled Interlock Switch Open	When the self-propelled handle is in neutral, the interlock switch should be closed. A good switch reads SHORTED on the pins of plug "D". (Meter on RX 1)
Short Circuit	Battery run down. The resistance on pins of plug "E" (with all other plugs connected, self-propelled in neutral, and key switch in "off" position) should read as follows: With volt-ohmmeter on RX 1 the low reading will be between 15 ohms and 20 ohms. With the volt-ohmmeter on its highest setting, the high reading will be MEG ohms.
Alternator Diodes Leaking	Battery run down. Disconnect plugs "A", "C" and "J". Connect a 20,000 ohms per volt — volt meter as follows: Use 15 volt D.C. scale (Min.). Disconnect plug "E". Reconnect plug "E" so that the male pin of plug "E" and the female of plug "F" are not connected. Connect the positive lead of the volt meter to the male pin of plug "E". Connect the negative lead of the volt meter to the female (-) of plug "F". The meter should read zero. A reading of more than one volt indicates excessive leakage which could run the battery down during storage.

ENGINE STOPS WHEN KEY SWITCH IS IN 'RUN' POSITION:

Key Switch Defective	Key in 'RUN' position, the resistance between terminals 1 & 2 on plug "K" reads less than 1 MEG ohm.
----------------------	--

ENGINE DOES NOT STOP WITH KEY IN 'OFF' POSITION:

Key Switch Defective	Key on 'OFF' position, the resistance between terminals 1 & 2 on plug "K" reads INFINITE resistance. (Meter on RX 100)
Ground Lead "M" Open at Ground	Check terminal 2 on plug "J" to engine. If the resistance reads INFINITE the ground is bad. (Meter on RX 100)
Connection at "L" Open	Lead disconnected.

STARTER WIRING DIAGRAM

F-100 SERIES WITH ALTERNATOR PART NO. 683095 WITH WHITE CONNECTOR

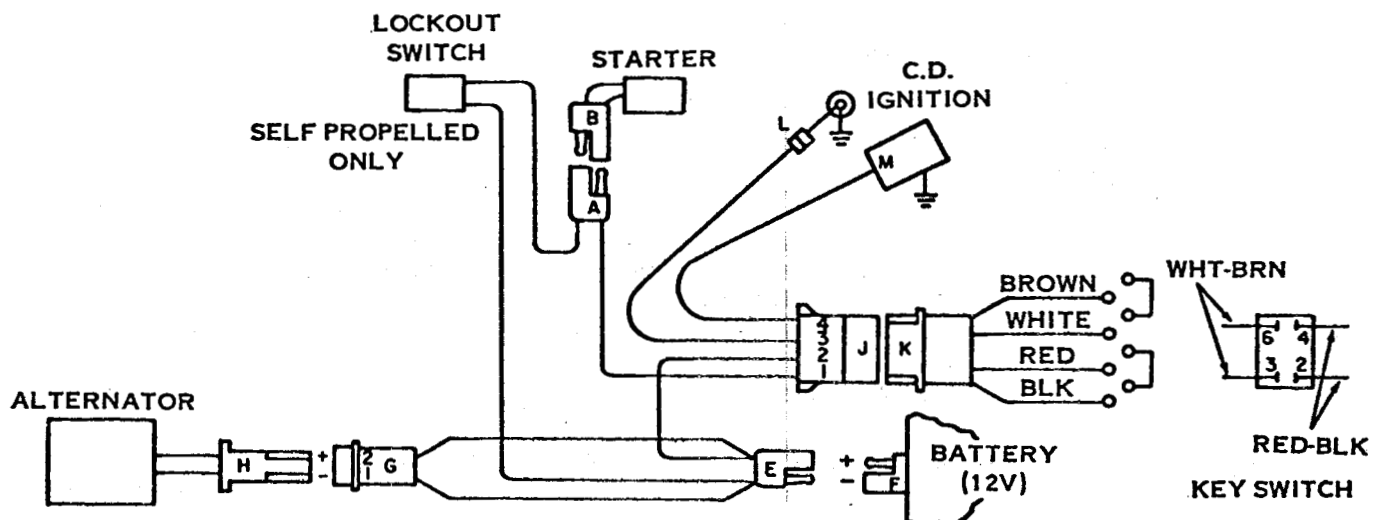


FIGURE 1 - KEY IN "OFF" POSITION

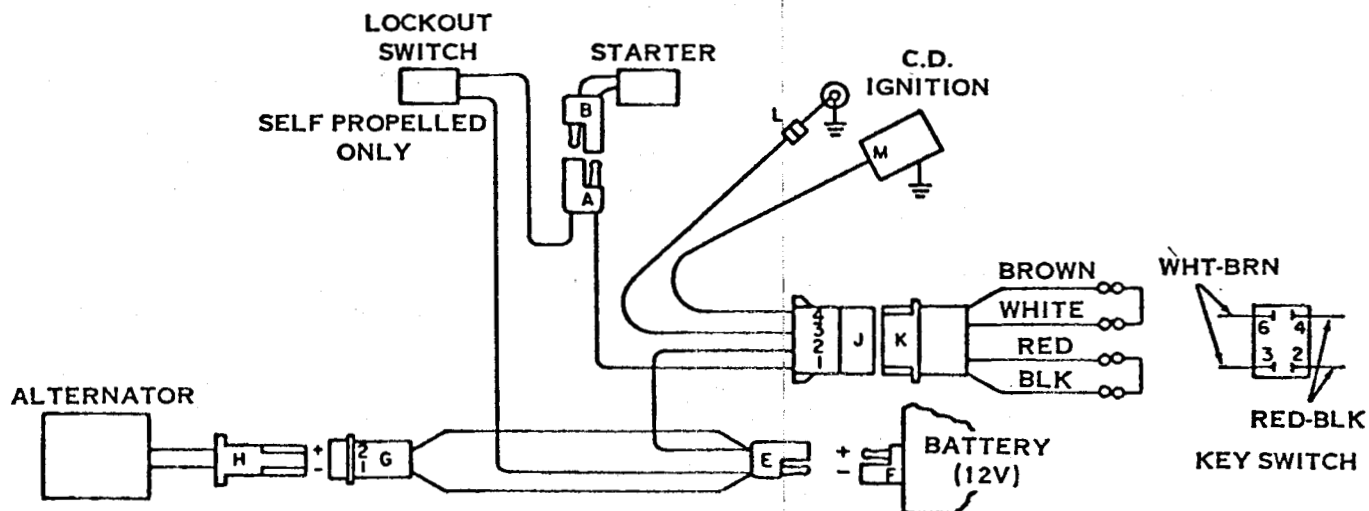


FIGURE 2 - KEY IN "START" POSITION

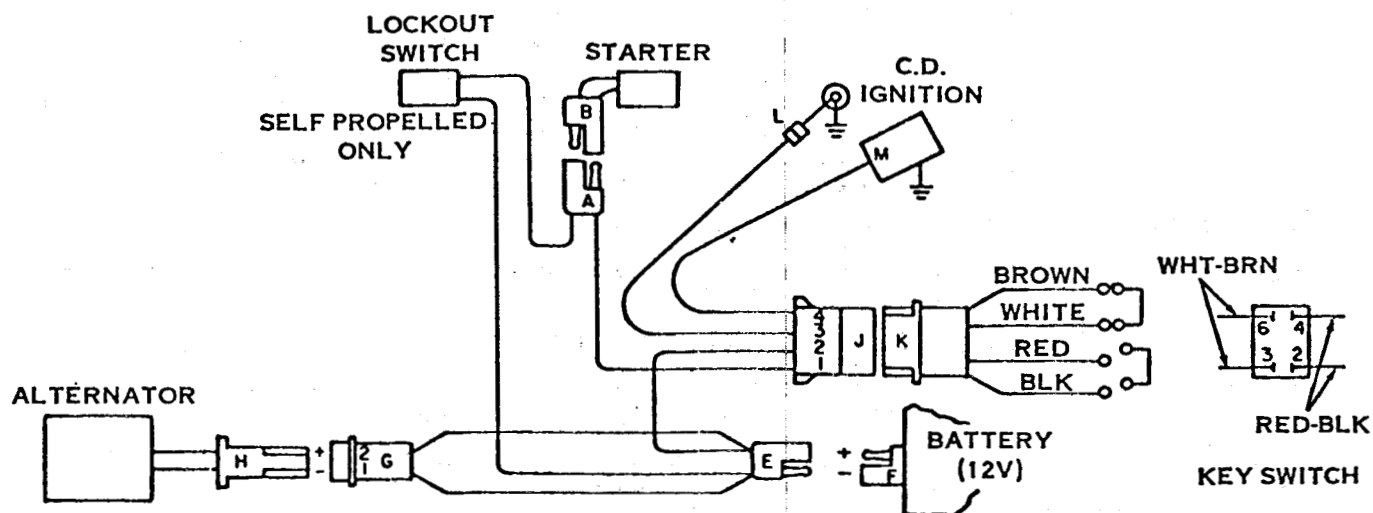


FIGURE 3 - KEY IN "RUN" POSITION

**TROUBLE SHOOTING THE MODEL F-100 SERIES ALTERNATOR CHARGING SYSTEM
PART NO. 683092
WITH BLACK CONNECTOR**

STARTER DOES NOT TURN ENGINE:

BATTERY RUN DOWN	REFER TO BATTERY TEST PROCEDURES
Alternator or Charger Not Charging	<p>Battery run down. The resistance on the pins of plug "H" should read LOW with V.O.M. leads in one direction and HIGH with leads reversed. (Meter on RX 1). This checks for bad diodes. A low resistance or high resistance in both directions indicates defective diodes.</p> <p>The output voltage of plug "E" with the engine running on: High speed 18 Volts — 32 Volts (Using a 20,000 ohms per volt meter)</p>
Ground Wire "M" Open or Loose	<p>Check resistance at plug "E". With the self-propelled handle in neutral, and the key switch in the 'START' position, and plugs "G" & "H" disconnected, the circuit reads:</p> <p align="center">A GOOD CIRCUIT READS SHORTED A BAD CIRCUIT READS HIGH RESISTANCE (METER ON RX 1)</p>
Key Switch Defective	<p>Key switch in the 'START' position. A good switch reads SHORTED on terminals 2 & 3. A bad switch will read 1 or more ohms. (Meter on RX 1)</p>
Starter Motor Defective	<p>Check voltage at starter plug "A" when key switch is in 'START' position. Voltage is to be above 10 volts. The resistance between the terminals on plug "B" should read approximately .3 ohms resistance for a good motor. (Meter on RX 1) Turn motor for lowest reading.</p>
Self-propelled Interlock Switch Open	<p>When the self-propelled handle is in neutral, the interlock switch should be closed. A good switch reads SHORTED on the pins of plug "D". (Meter on RX 1)</p>
Short Circuit	<p>Battery run down. The resistance on pins of plug "E" (with all other plugs connected, self-propelled in neutral, and key switch in "off" position) should read as follows:</p> <p>With volt-ohmmeter on RX 1 the low reading will be between 15 ohms and 20 ohms. With the volt-ohmmeter on its highest setting, the high reading will be MEG ohms.</p>
Alternator Diodes Leaking	<p>Battery run down. Disconnect plugs "A", "C" and "J". Connect a 20,000 ohms per volt — volt meter as follows:</p> <p>Use 15 volt D.C. scale (Min.). Disconnect plug "E". Reconnect plug "E" so that the male pin of plug "E" and the female of plug "F" are not connected. Connect the positive lead of the volt meter to the male pin of plug "E". Connect the negative lead of the volt meter to the female (—) of plug "F". The meter should read zero. A reading of more than one volt indicates excessive leakage which could run the battery down during storage.</p>

ENGINE STOPS WHEN KEY SWITCH IS IN 'RUN' POSITION:

Key Switch Defective	Key in 'RUN' position, the resistance between terminals 1 & 2 on plug "K" reads less than 1 MEG ohm.
----------------------	--

ENGINE DOES NOT STOP WITH KEY IN 'OFF' POSITION:

Key Switch Defective	Key on 'OFF' position, the resistance between terminals 1 & 2 on plug "K" reads INFINITE resistance. (Meter on RX 100)
Ground Lead "M" Open at Ground	Check terminal 2 on plug "J" to engine. If the resistance reads INFINITE the ground is bad. (Meter on RX 100)
Connection at "L" Open	Lead disconnected.

STARTER WIRING DIAGRAM

F-100 SERIES WITH ALTERNATOR PART NO. 683092 WITH BLACK CONNECTOR

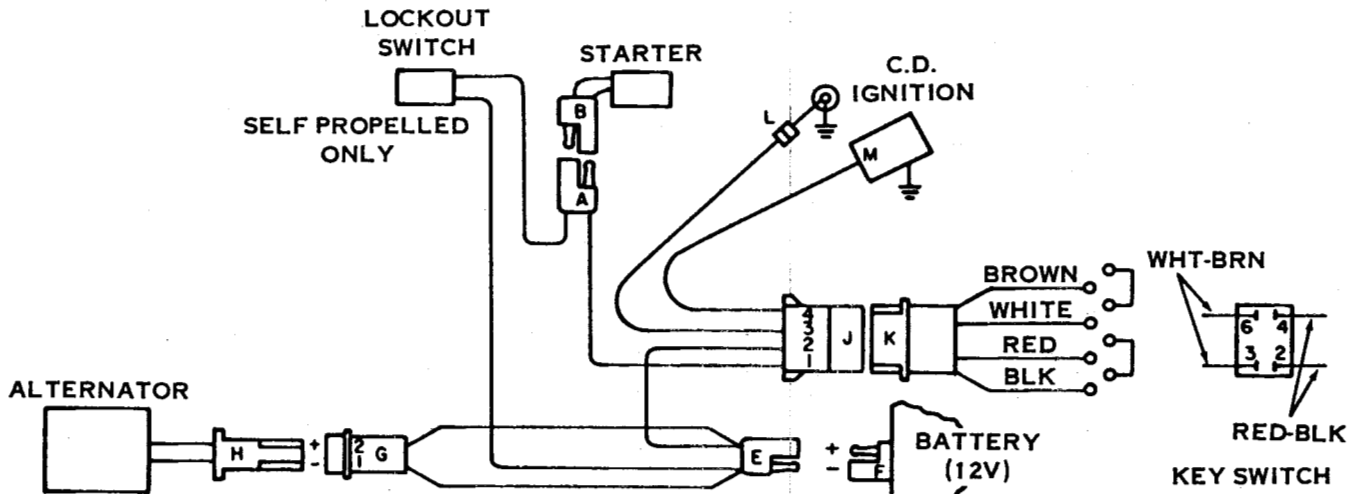


FIGURE 1 - KEY IN "OFF" POSITION

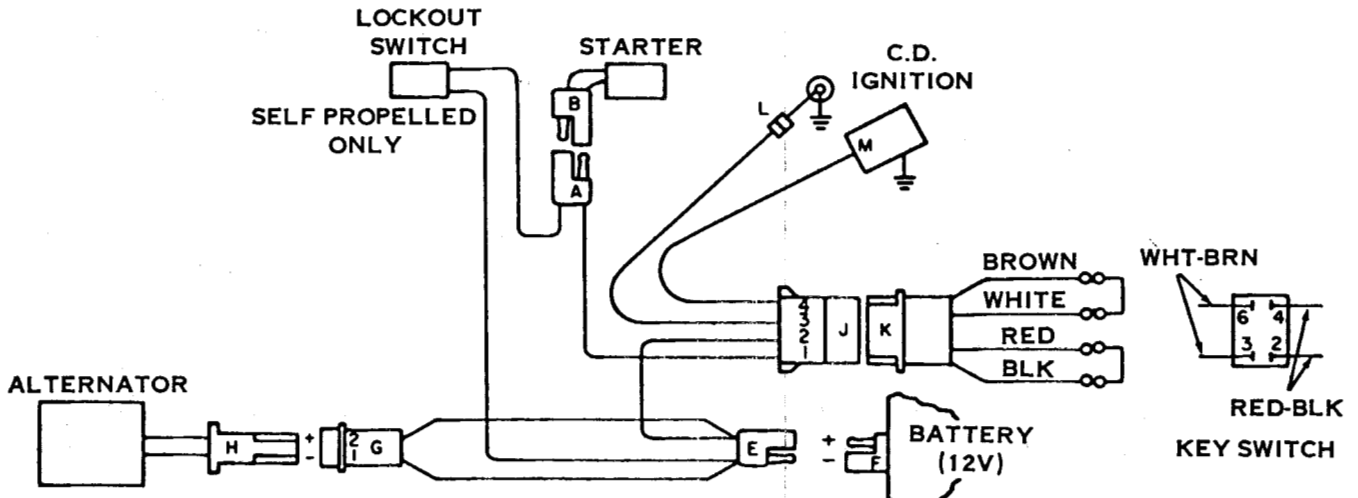


FIGURE 2 - KEY IN "START" POSITION

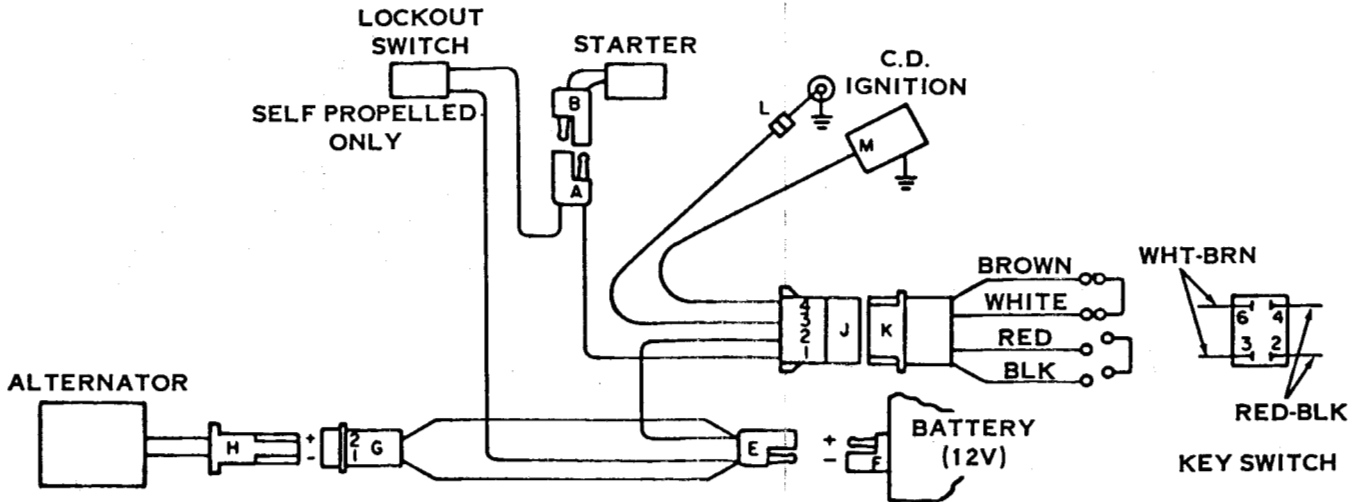


FIGURE 3 - KEY IN "RUN" POSITION

CORDLESS ELECTRIC SERVICING MODELS 5800, 5801, 5802

PREPARING BATTERY FOR SERVICE

The Power Pack contains three twelve-volt lead-acid batteries connected in series to provide thirty-six volts of power to electric motor. Each battery has a nine ampere hour rating. The battery is shipped from the factory in a dry-charged condition. Prior to filling battery with electrolyte, cut vent hose so approximately 4-1/2 inches remain on the battery.

Remove battery filler caps and slowly fill each cell equally (six per battery) with electrolyte. Observe electrolyte level - fluid must be equal in all cells and between two yellow lines on battery case. Total electrolyte capacity in each battery is approximately 19-1/2 fluid ozs. **DO NOT OVER-FILL** battery or acid will drain out during charging period, damaging power pack and batteries. Reinstall filler caps.

NOTE

AFTER BATTERY IS FILLED WITH ELECTROLYTE IT IS 75% CHARGED AND SHOULD BE HANDLED WITH CARE. DO NOT SHORT TERMINALS.

SAFETY WARNING

ELECTROLYTE CONTAINS SULFURIC ACID. IT CAN CAUSE SEVERE BURNS AND DAMAGE TO SKIN, CLOTHING, ETC. IF ELECTROLYTE IS SPILLED, FLUSH CONTAMINATED AREA IMMEDIATELY AND THOROUGHLY WITH WATER.

CHARGING BATTERIES

Place each battery in power pack and connect wiring as shown on decal inside top cover of power pack. Check for loose screws, cleanliness of power pack, and make certain vent hoses are not kinked or pinched.

SAFETY WARNING

BATTERIES COULD RUPTURE DURING CHARGING CYCLE IF VENT SYSTEMS ARE BLOCKED.

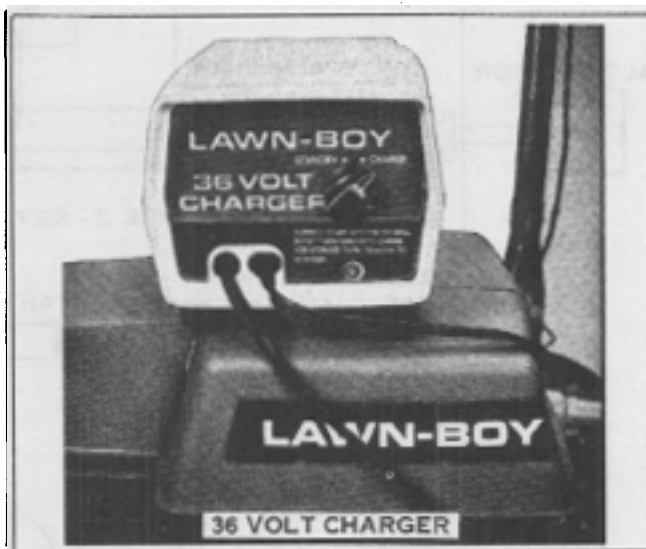
Close power pack cover and secure top with two screws. Attach Lawn-Boy 36 volt battery charger to power pack.

NOTE

The Lawn-Boy 36 volt battery charger is designed to charge all three batteries in the power pack at the same time. **DO NOT USE IT TO CHARGE OTHER BATTERIES OR TO INDIVIDUALLY CHARGE A BATTERY.**

Set timer on charger in stand-by position. Plug charger into 115 V wall outlet.

Charger has a built in timer. Turn charger ON by turning timer knob clockwise until arrow points to CHARGE. **DO NOT GO BEYOND WHITE DOT.** This sets time for a full twelve hour charge. On the control panel a red INDICATOR LIGHT will come on indicating that batteries are receiving charge. The INDICATOR LIGHT will become very dim when fully charged. Once the charger has completed timed 12 hour charge cycle, it automatically sets itself to maintain a small trickle charge to "float" batteries in a fully charged condition.



SAFETY WARNING

Always disconnect charger from 115 V wall outlet before connecting or disconnecting charger from battery pack.

CORDLESS ELECTRIC SERVICING MODELS 5800, 5801, 5802

CHECKING BATTERY PACK

A fully charged battery pack should indicate between 36 - 38.5 volts on a voltmeter. If the reading obtained is less than 36 volts - check each battery individually. A fully charged battery should register 12 - 12.5 volts with a specific gravity of 1.260 - 1.280.

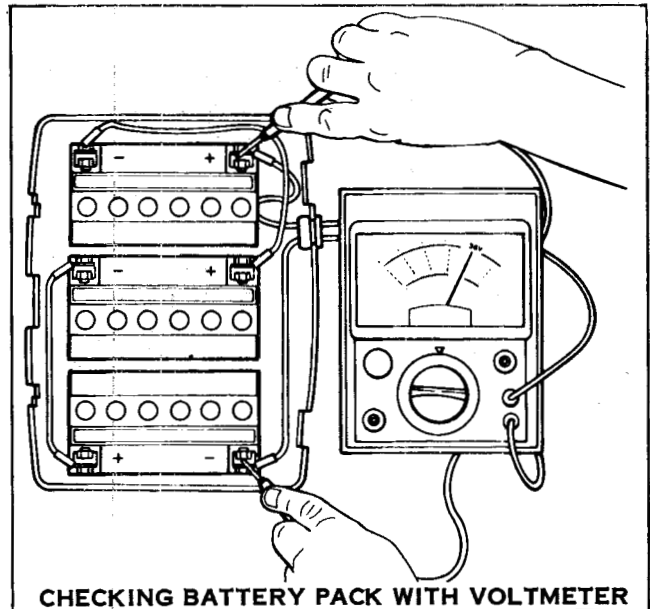
If one battery registers LESS than the other two, and batteries are less than six months old, replace battery.

NOTE

If a new battery is installed with two older and weaker batteries, the older batteries will "drag" the new one down, resulting in shortened battery life.

NOTE

See pages 13-1 thru 13-9 for additional information concerning lead acid batteries.



tioning properly a reading between 36 - 50 volts will be obtained.

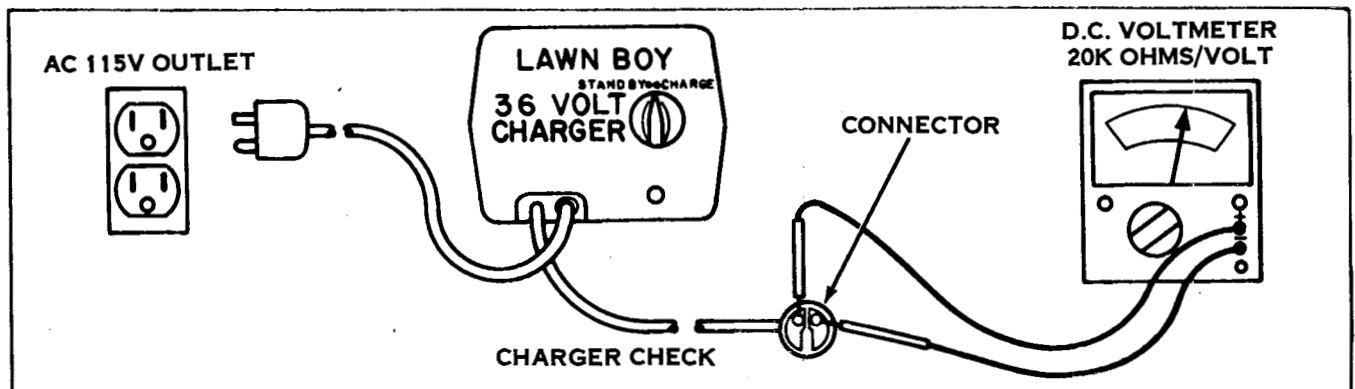
When the charger is connected to the battery pack, the red light on the panel should be very bright, then become dim or go out when it reaches the stand-by position. If the red light DOES NOT come on when turned to the charge position and you know there is 115V power at the outlet - the charger is defective. If the light is still bright when placed in the stand-by position - the charger is not functioning properly and will boil the batteries dry. If the timer knob does not move clockwise from the charge position, the batteries will boil dry.

If the red light goes dim (or out) quickly (after turning charger on) this indicates a fully charged battery pack and the dimming of the light shows that the charger circuitry is properly controlling charge rate.

CHECKING LAWN-BOY CHARGER

The Lawn-Boy cordless mower charger is a demand-type charger with a built in-timer. Placing the timer knob in "charge" position allows for a full twelve hour charging period. Once the charger has completed the timed cycle, it automatically allows a small trickle charge to maintain batteries in a fully charged condition.

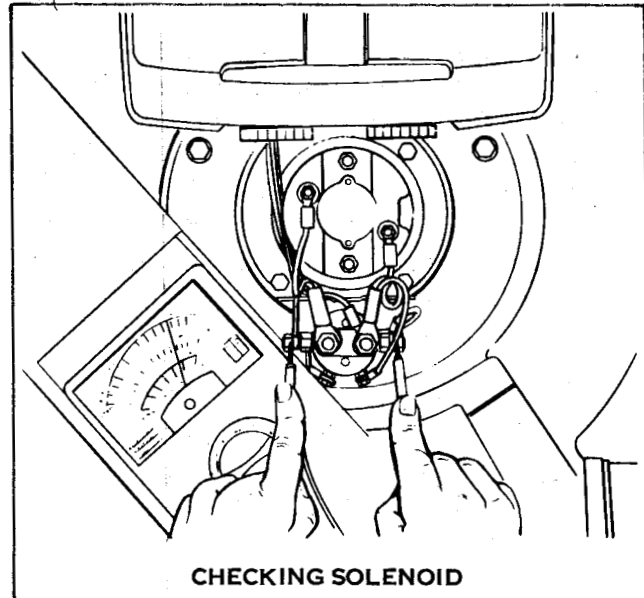
To determine if charger is functioning properly, plug into a 115 V outlet. Place voltmeter on 50 V scale and check output at connector. If meter indicator moves in wrong direction, reverse the voltmeter leads in the connector. If charger is func-



CORDLESS ELECTRIC SERVICING MODELS 5800, 5801, 5802

SOLENOID

The solenoid controls high amperage current used to operate motor and blade braking circuit. It requires 24 volts to activate solenoid. To check solenoid, start motor, turn key to "OFF" position. If blade does not stop rotating within four seconds, solenoid is defective - replace solenoid. To check solenoid resistance connect an ohmmeter across the terminals. The reading obtained should be between 130 - 140 ohms. If reading is not within specified range, replace solenoid.



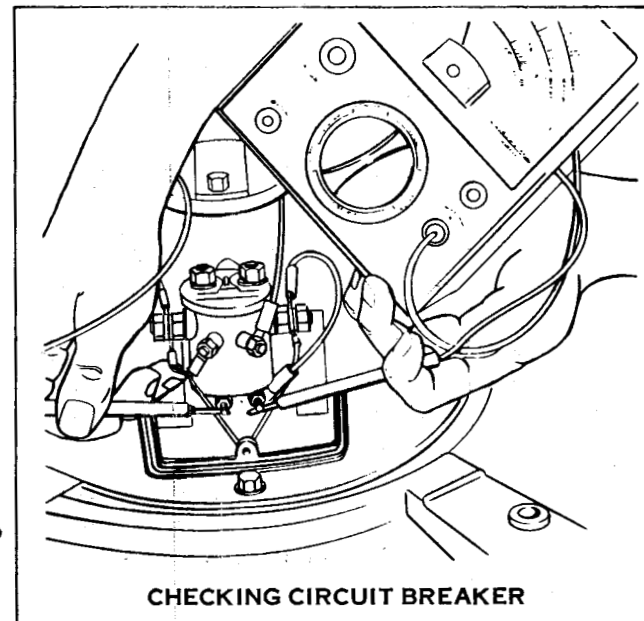
CIRCUIT BREAKER

A 20 amp circuit breaker protects the motor against a locked rotor condition, preventing motor from burning out.

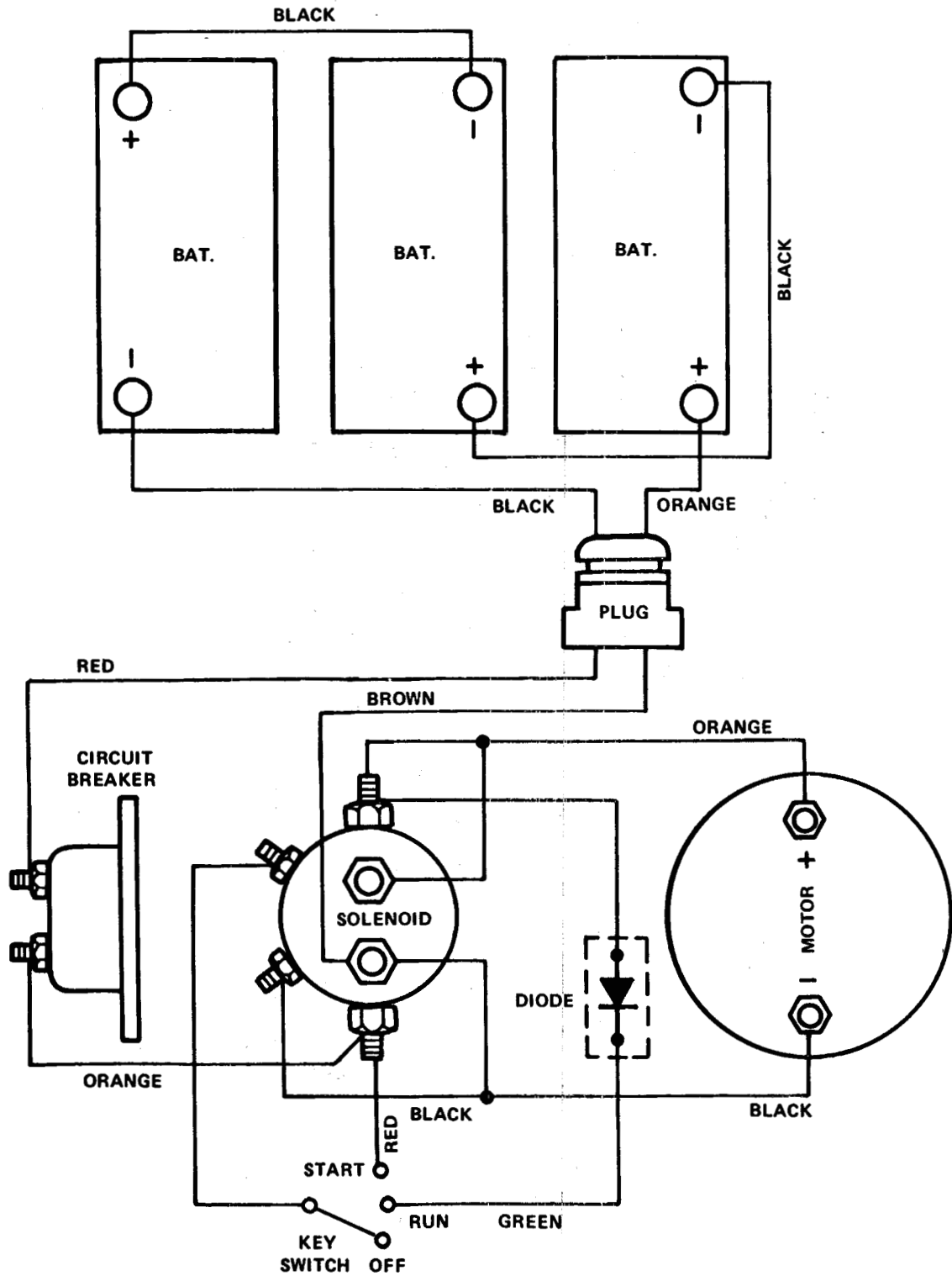
 NOTE

On model 5800 the circuit breaker is located under the solenoid. On models 5801 and 5802 the circuit breaker is located in the battery box.

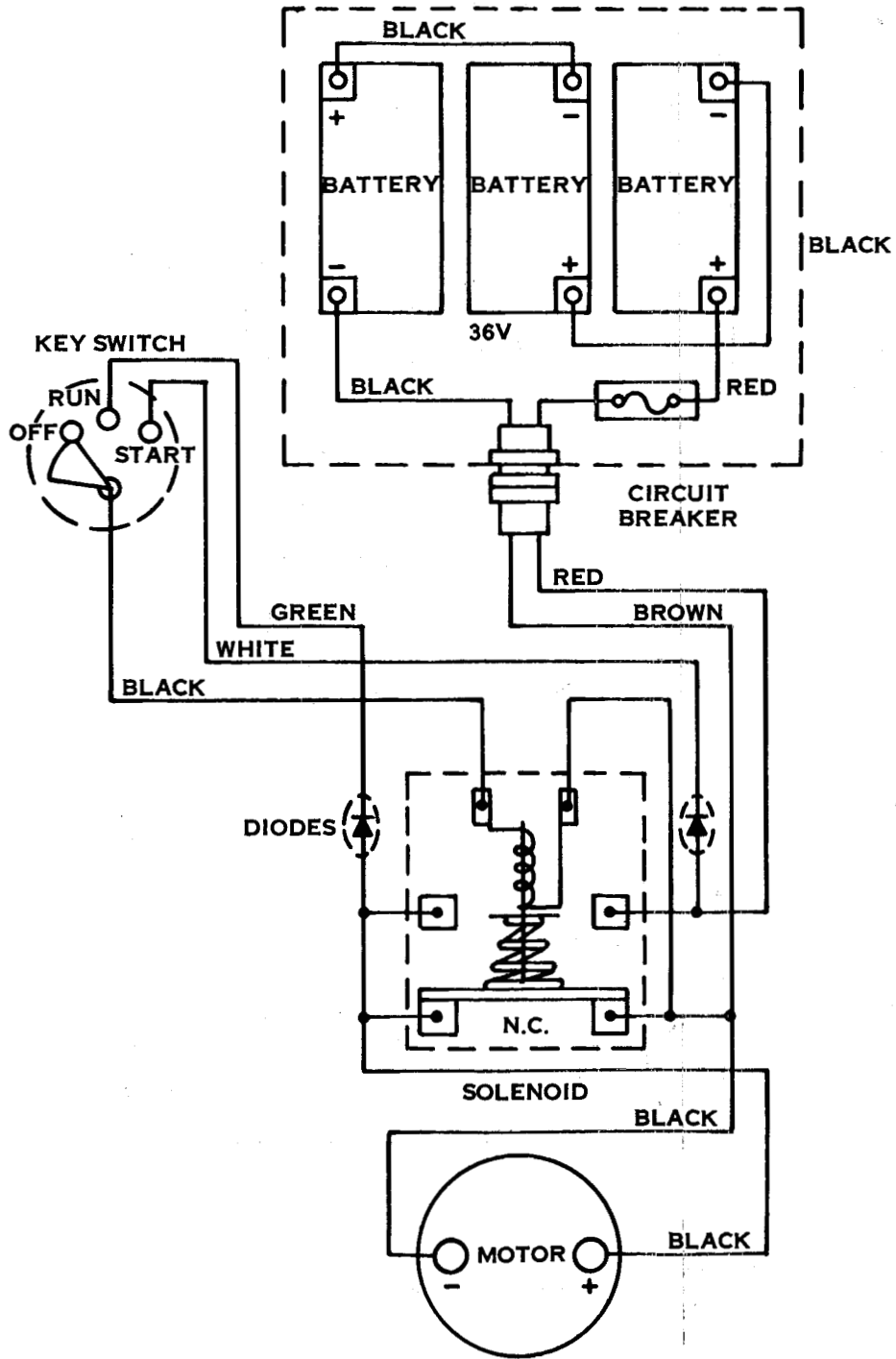
To check resistance, set ohmmeter on RX1 scale, and connect leads across circuit breaker. The reading obtained should be zero. High readings indicate an open condition. Replace circuit breaker as required.



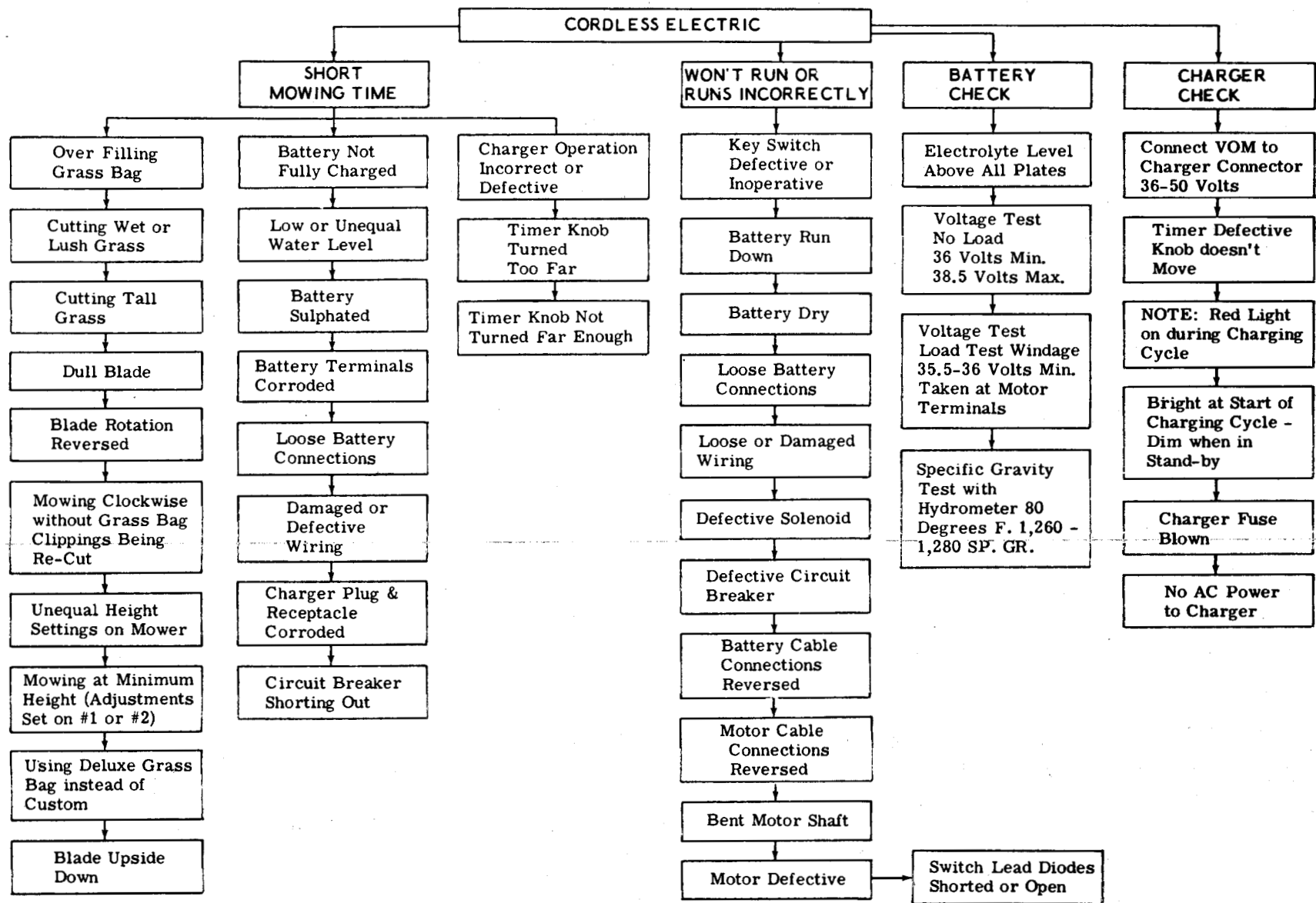
WIRING DIAGRAM MODEL 5800



WIRING DIAGRAM MODELS 5801-5802



LAWN-BOY TROUBLE SHOOTING CHECK CHART



110 VOLT ELECTRIC MOTOR SERVICING

The electric motor used on Lawn-Boy electric mowers is specially designed for mower usage. It is a high-torque D-C motor working off of full wave rectified A-C. It is totally enclosed, fan-cooled, and is equipped with sealed ball bearings.

A magnetically activated brake, integral with the frame, serves to bring the combined mass of the armature and mower blade to a stop when power is turned off. When power is on, diodes rectify A-C to D-C which is fed to the field winding. The resulting magnetic field attracts the brake disc, moving it away from the brake surface on the armature fan and allowing the armature to rotate. Springs automatically apply the brake when power is turned off and the magnetic field collapses.

Servicing of the motor is limited to replacement of certain worn parts and assemblies. Support the motor on the motor end bell (1, figure one). To gain access to the brushes, remove screws (6) and pull off top end bell (7).

To remove the armature (8), invert the motor and pull off the end bell. Carefully pull armature out of stator assembly (19). If defective, pull bearing (8) off armature using a bearing puller. Remove screw (4) and plate (3) to gain access to bearing (2).

Always replace worn brushes as a set with the two in the repair kit. Items 16, 17, and 18 are available as a kit should the brake disc require replacement. See Parts Catalog for part numbers.

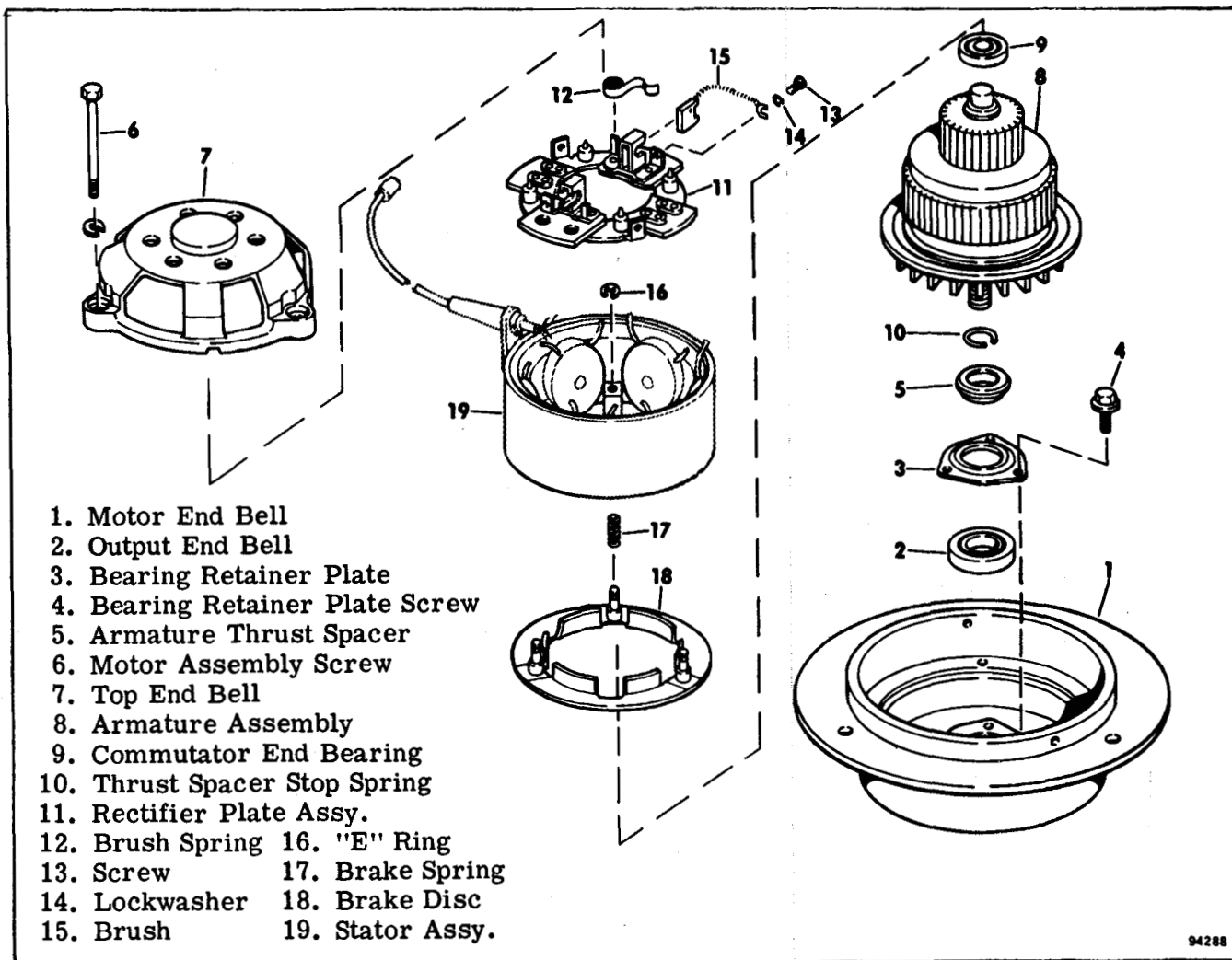



Figure 1. Electric Motor Exploded View

110 VOLT ELECTRIC MOTOR SERVICING

A. BRUSH LENGTH

If brush length is less than 0.65", replace them. Otherwise, commutator surface will become burned and rough.

B. HOW TO CHECK . . .

-  NOTE: 1) Use ohmmeter. Never use megger, or diode will be destroyed.
2) As for Diode Test, change prod test leads of ohmmeter each other which means (+) test lead is connected to (-) terminal of ohmmeter and (-) lead to (+) terminal.
3) Lift brushes so as not to touch comutator.

I Diode Test

- 1) Place test (+) lead on A terminal, and (-) lead on C & D diode plate respectively.
- 2) Place test (-) lead on A terminal, and (+) lead on C & D diode plate respectively.
- 3) Place test (+) lead on B terminal, and (-) lead on C & D diode plate respectively.
- 4) Place test (-) lead on B terminal, and (+) lead on C & D diode plate respectively.

If diode is conductive in one direction for each item, it is normal.

If diode is non-conductive in both directions for each item, it is open.

If diode is conductive in both directions for each item, it is shorted.

II Testing Shunt Field Winding for Open Circuit

If resistance between C & D is about 123 ohms, shunt field winding is normal.

III Testing Shunt Field Wiring for Ground

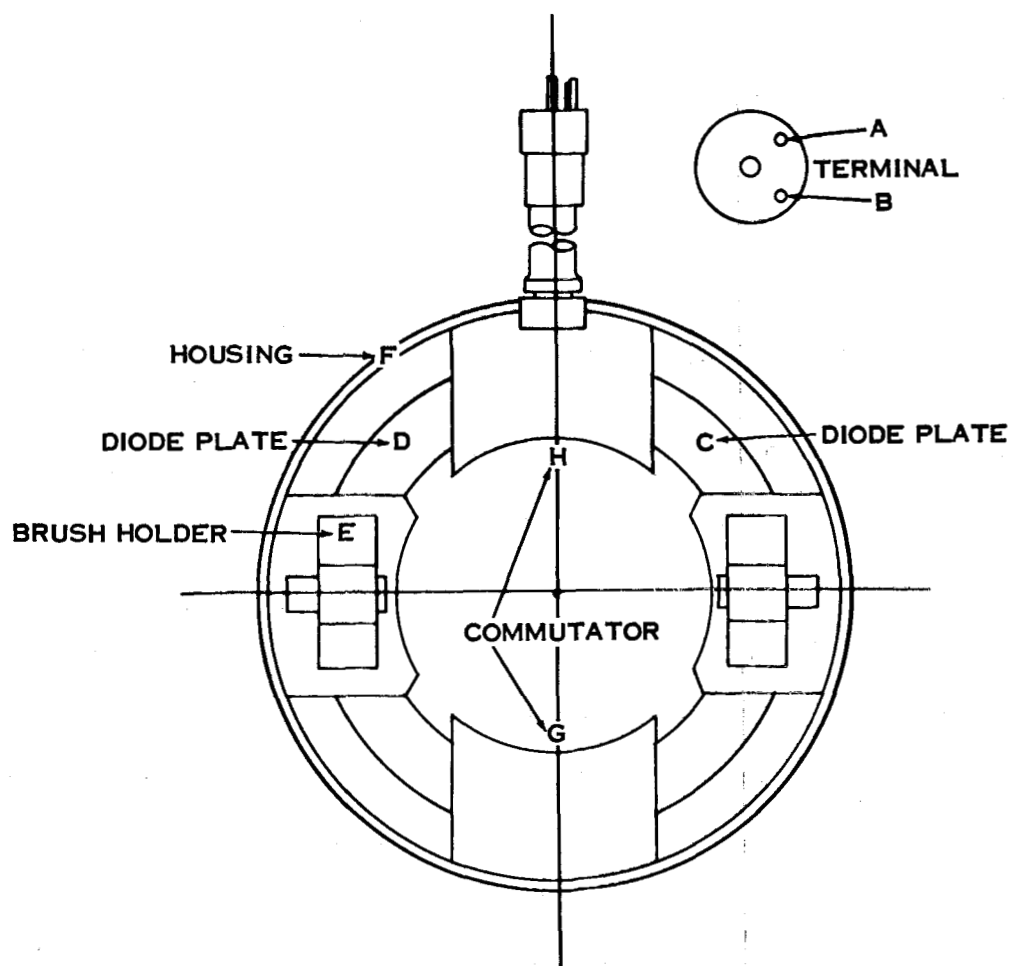
Place prod test lead on E, and another lead on C and D diode plate respectively.

If test shows infinite resistance, shunt field winding is normal.

IV Testing Series Field Winding for Open Circuit

If resistance between D and E is about 0.2 ohm at 68°F, series field winding is normal.

110 VOLT ELECTRIC MOTOR SERVICING



V Testing Series Field Winding for Ground

If resistance between E and F is infinite, series field winding is normal.

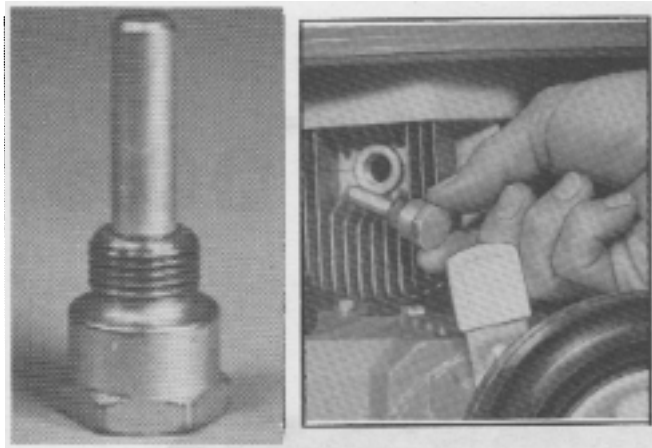
VI Testing Armature Winding for Open Circuit

If resistance between G & H is about 0.5 ohm at 68°F, armature winding is normal.

VII Testing Armature Winding for Ground

If resistance between G and armature shaft is infinite, armature winding is normal.

SECTION 14 - TOOLS - SPECIAL ITEMS



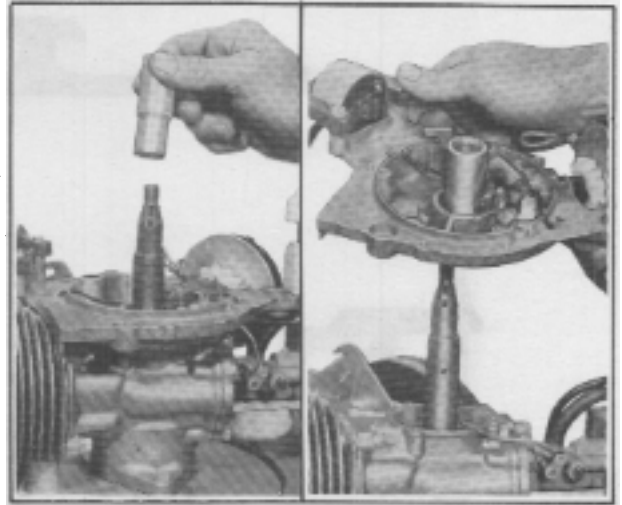
PISTON STOP

USED ON ALL MODELS OF LAWN-BOY ENGINES.

PART NO. 426814

Used to hold flywheel in place while loosening or tightening flywheel nut.

Remove spark pug and install piston stop. Screw finger-tight in spark plug opening.



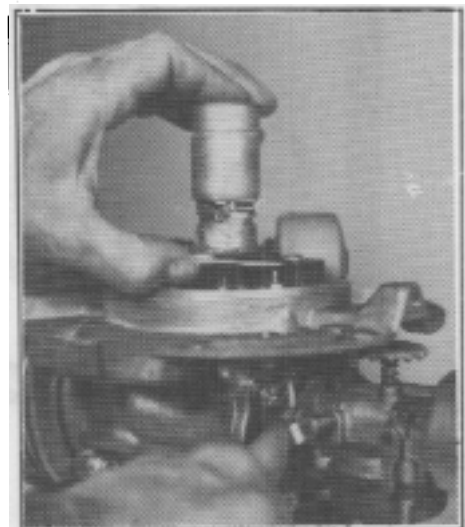
"D" SERIES

GOVERNOR ADJUSTING GAUGE

USED ON D-400, D-500 AND D-600 SERIES ENGINES.

PART NO. 604541

Used to adjust governor lever on "D" Series Engines only.



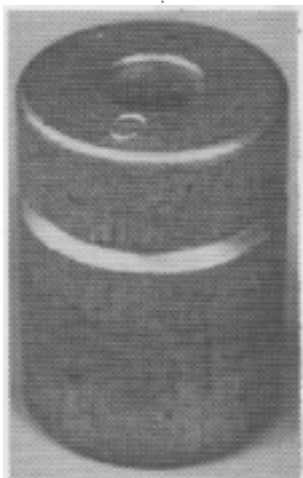
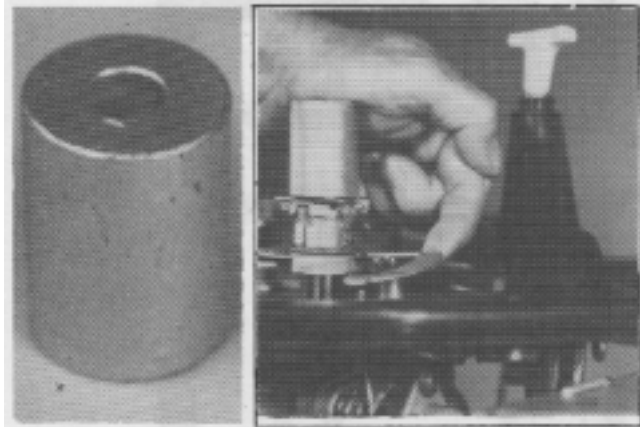
CRANKSHAFT GUIDE

USED ON LAWN-BOY MODEL "C" — D-400, D-500, D-600 SERIES ENGINES.

PART NO. 602887

Shown used to remove the armature plate and bearing assembly. Hold loose needles in bearing race on "D" Series Engines.

Shown used to reassemble the armature plate and bearing. Protects oil seals on both "C" and "D" Series Engines.



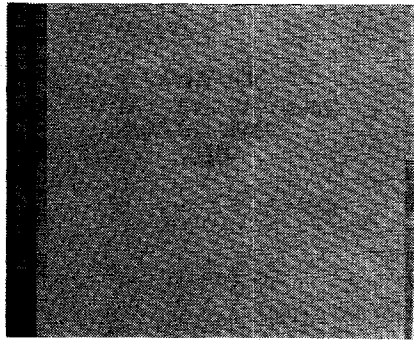
"C" SERIES

GOVERNOR ADJUSTING GAUGE

PART NO. 602885

Used to adjust governor lever on "C" Series Engines only.

SECTION 14 - TOOLS - SPECIAL ITEMS

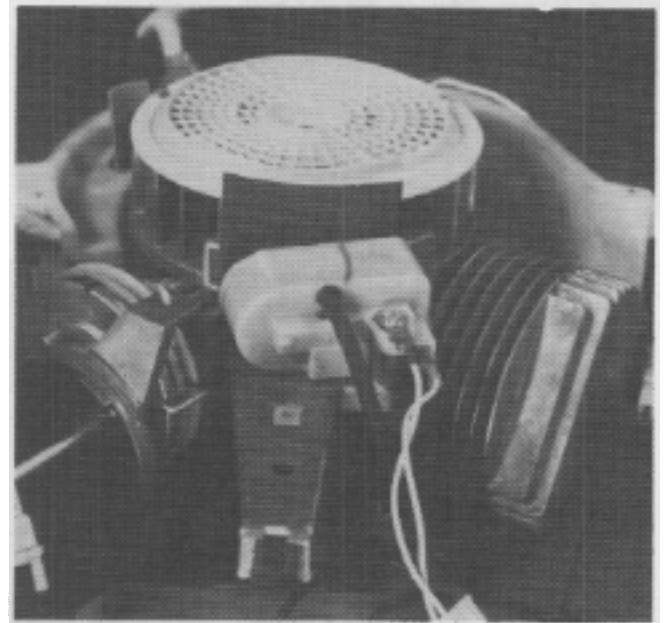
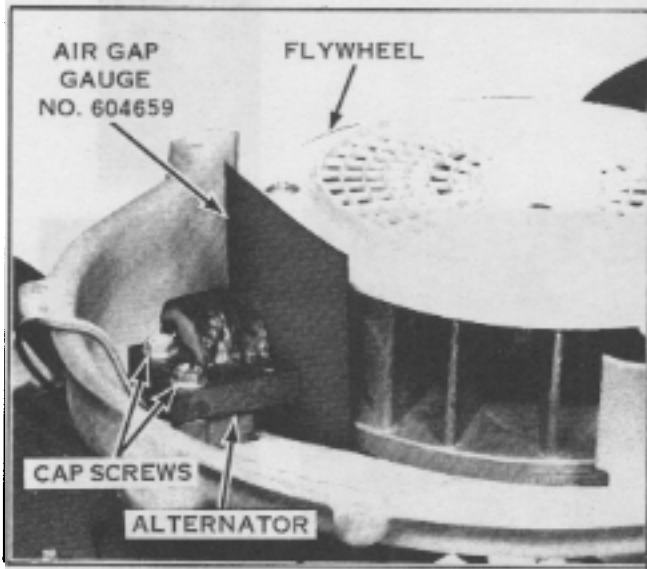


AIR GAP GAUGE

USED ON "D" AND "F" SERIES ENGINES

PART NO. 604659

.010 thick gauge to adjust air gap between flywheel magnet and heels of laminations on ignition coils, C.D. pack and alternator assemblies.



TEST PLUG

PART NO. 426814

USED ON ALL LAWN-BOY ENGINES.

Remove spark plug from engine. Used to check function and output of ignition systems.

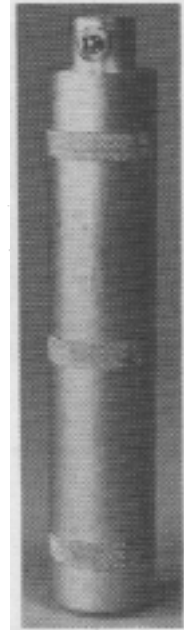
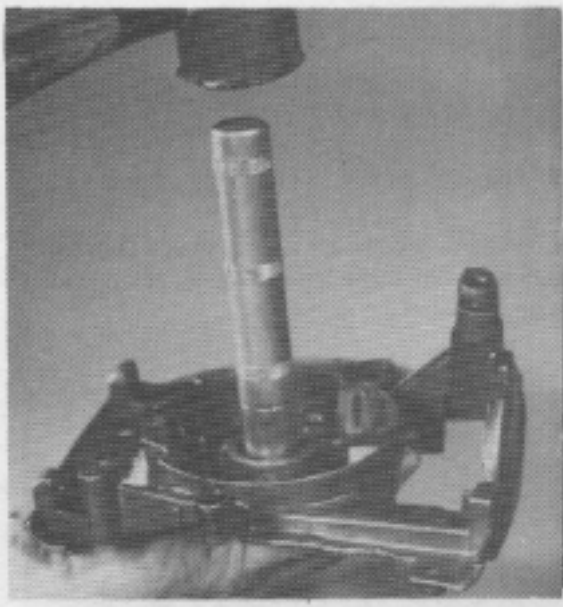


SECTION 14 - TOOLS - SPECIAL ITEMS

TOOL DRIVER HANDLE

PART NO. 378737

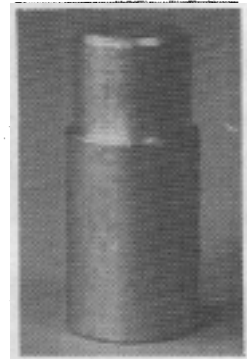
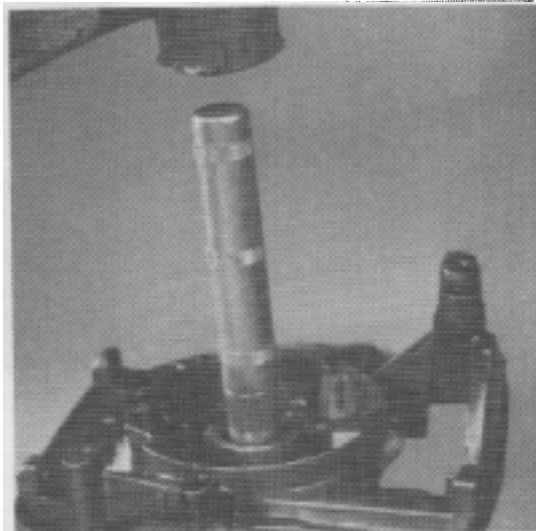
Used with tools 605081, and 605082.



BEARING REMOVER

USED ON D-400 AND D-600 SERIES ENGINES.

Used with Driver, Part No. 378737 and soft hammer to drive old bearing out from the top towards bottom of the armature plate.

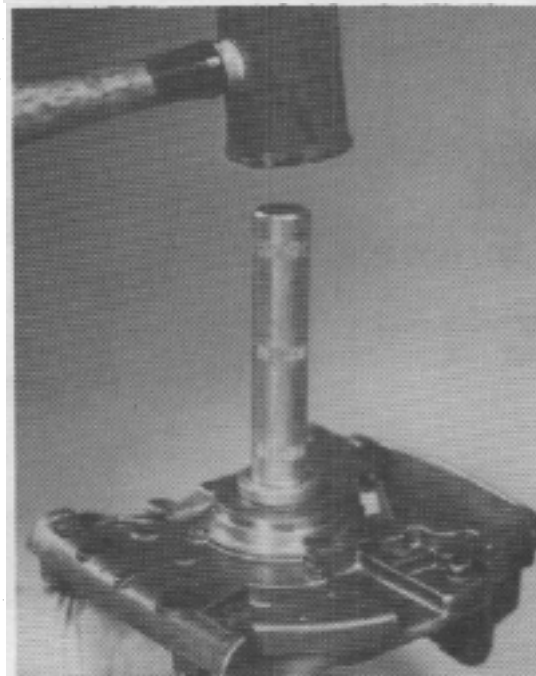


BEARING INTALLER

USED ON D-400 AND D-600 SERIES ENGINES.

PART NO. 605081

Use with Driver, Part No. 378737 and soft hammer to install new bearing in armature plate. Drive from bottom towards top of armature plate until Bearing Installer bottoms on armature plate face. Always drive bearing into plate with "lettered" end of bearing cage positioned against head of tool.



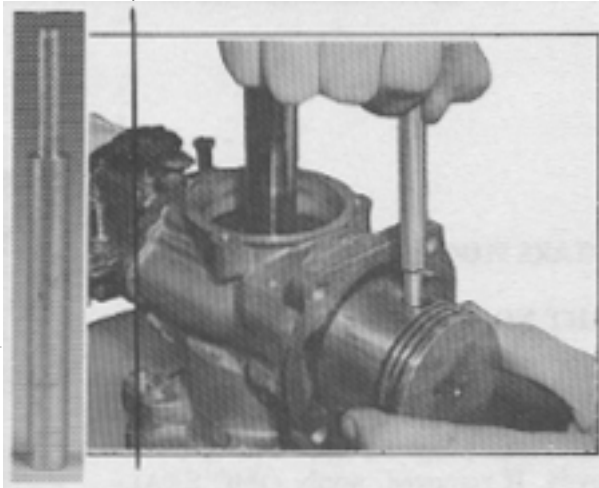
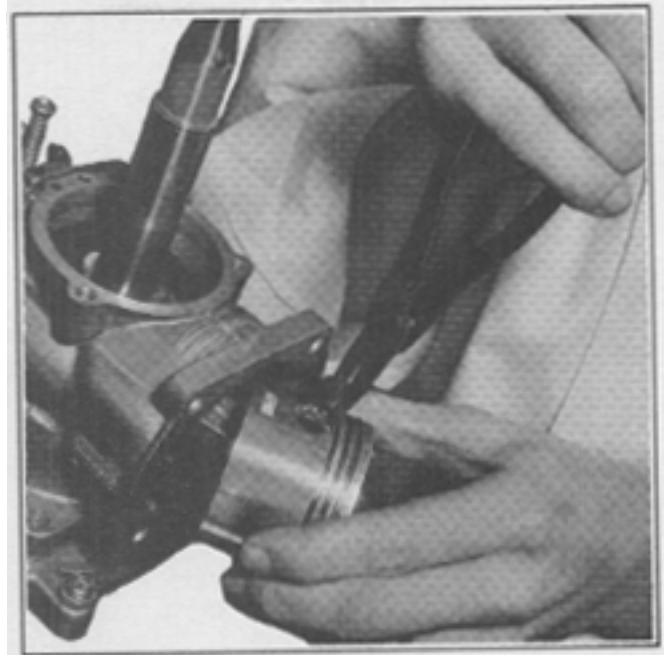
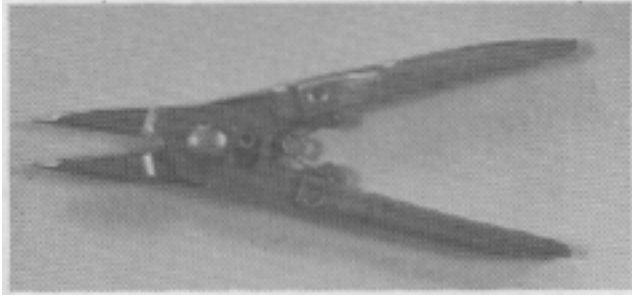
SECTION 14 - TOOLS - SPECIAL ITEMS

COMPRESSION PLIERS

PART NO. 303857

USED ON ALL LAWN-BOY ENGINES.

To remove the wrist pin retaining rings from pistons.

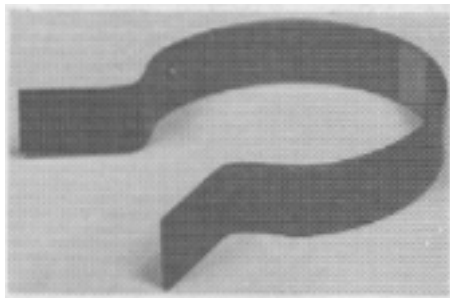


WRIST PIN TOOL

PART NO. 602884

USED ON ALL LAWN-BOY ENGINES.

Used to remove and assemble wrist pins in pistons.



RING COMPRESSOR

USED ON C AND D SERIES ENGINES

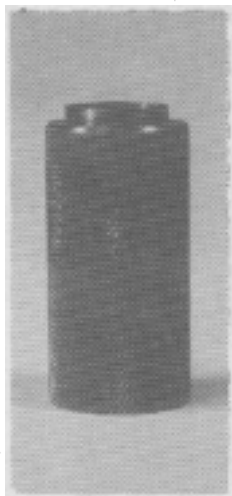
PART NO. 426020

Stagger ring and gaps, liberally coat cylinder walls, piston skirt and rings with oil and clamp rings with Ring Compressor. Slipping cylinder over rings while they are being held in this manner eliminates ring breakage and damage to piston, and cylinder.



SECTION 14 - TOOLS - SPECIAL ITEMS

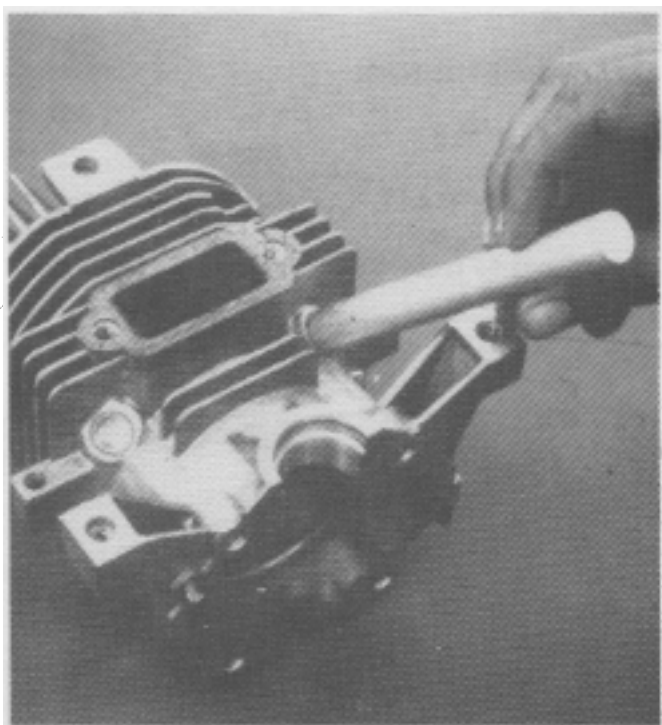
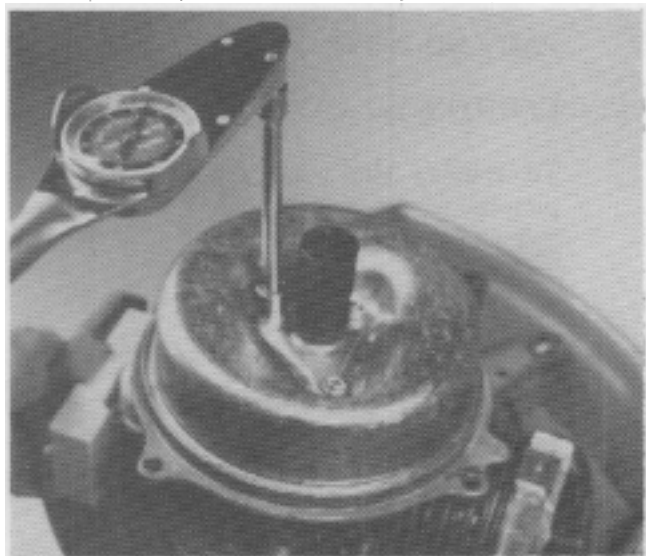
NOTE: "F" Series only.



CRANKSHAFT SUPPORT GAUGE

PART NO. 609968

"F" Series Only — Correctly positions crankshaft support to crankshaft cover during reassembly.

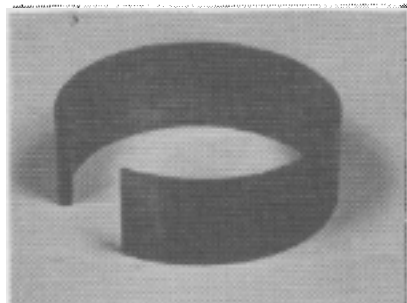
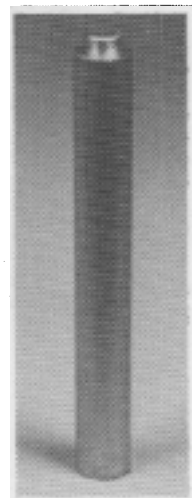


INTAKE PLUG INSTALLER

PART NO. 609964

"F" Series Only

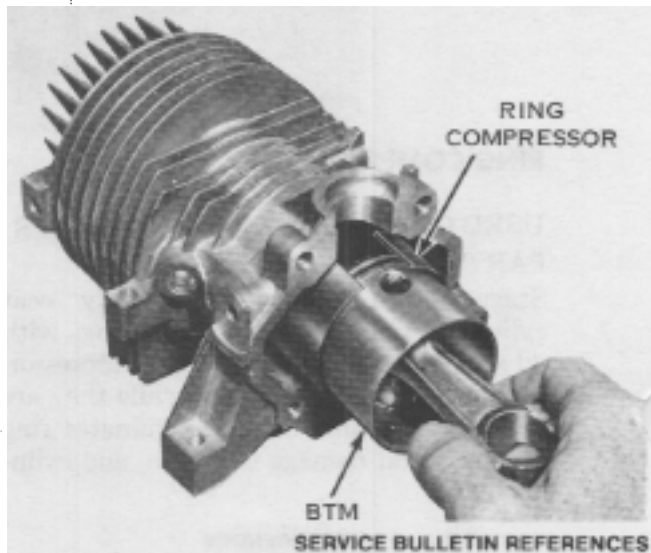
The intake plugs do not have to be removed. If removed, apply OMC SEALANT PART #609790 and use tool #609964 when reinstalling.



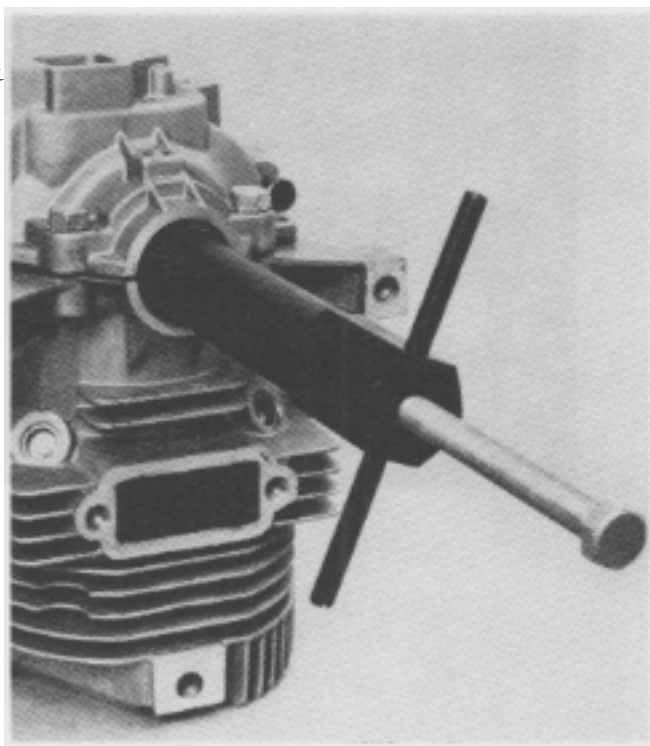
RING COMPRESSOR

PART NO. 609967

"F" Series Only — Allows for easy installation of piston into cylinder without damaging piston or rings.



SECTION 14 - TOOLS - SPECIAL ITEMS

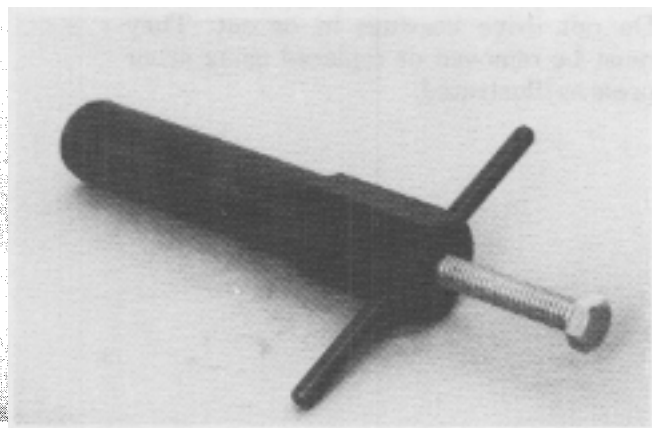


SEAL REMOVER

PART NO. 681867

USED ON ALL "C", "D", AND "F" SERIES LAWN-BOY ENGINES.

Used to remove upper and lower main bearing seals.

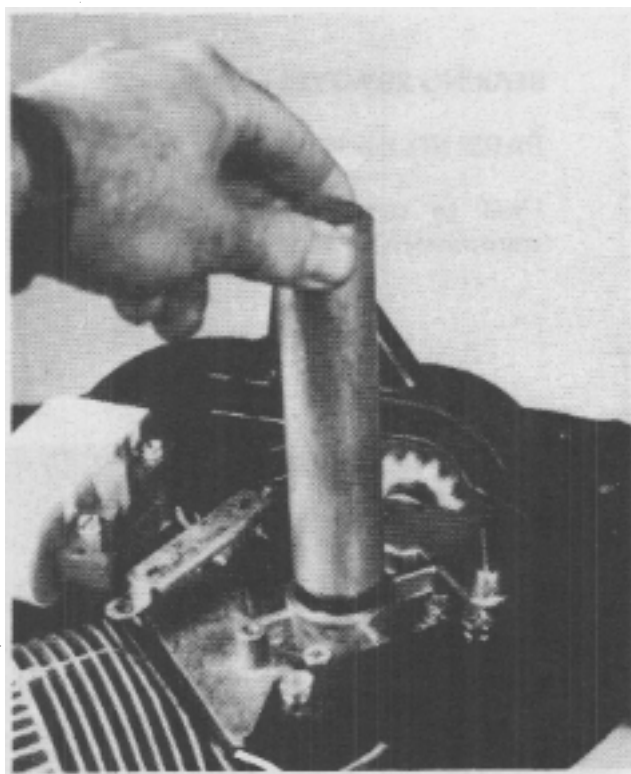


SEAL INSTALLER

PART NO. 608976


USED ON ALL "C", "D" AND "F" SERIES LAWN-BOY ENGINES.

Used to install upper and lower main bearing seals.

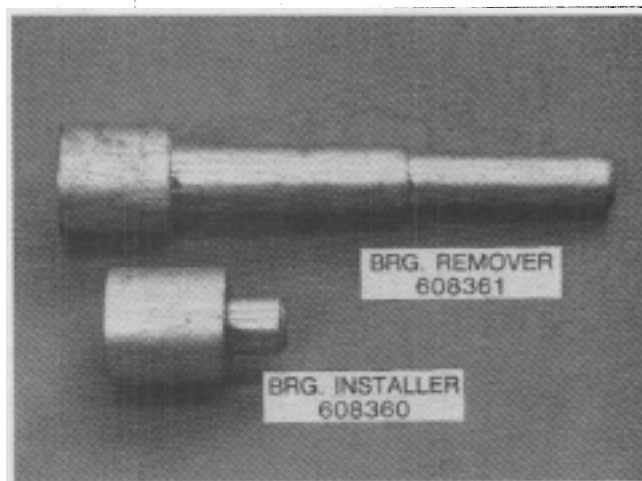


SECTION 14 - TOOLS - SPECIAL ITEMS

To replace bearing, press out damaged or worn bearing with special Lawn-Boy removal tool, part number 608361, and press in replacement with special installer tool, part number 608360.

 **NOTE**

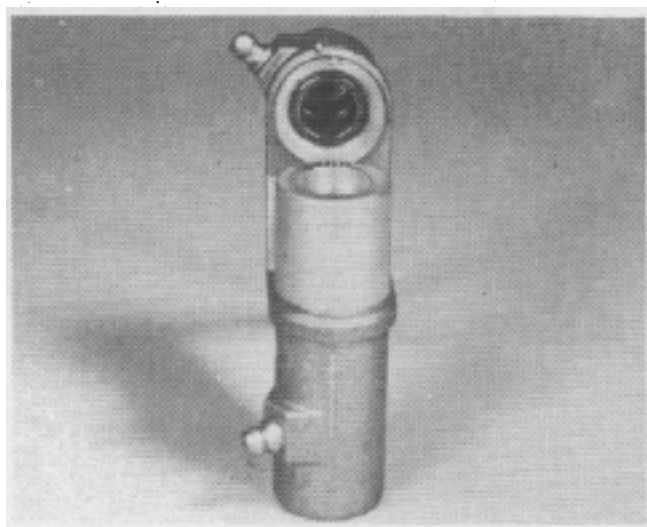
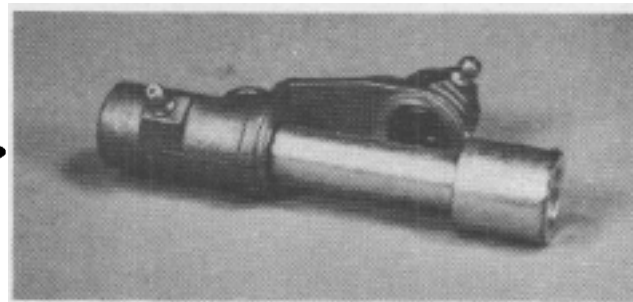
Do not drive bearings in or out. They must be removed or replaced using arbor press as illustrated.



BEARING REMOVER

PART NO. 608361

Used to remove bearings from diecast transmission housings on gear drive models.

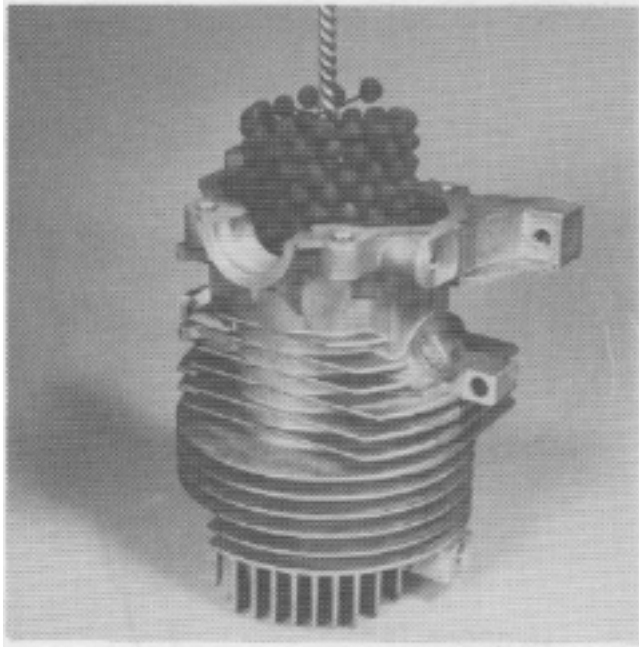


BEARING INSTALLER

PART NO. 608360

Used to install bearings in diecast transmission housings.

SECTION 14 - TOOLS - SPECIAL ITEMS



FLEX HONE

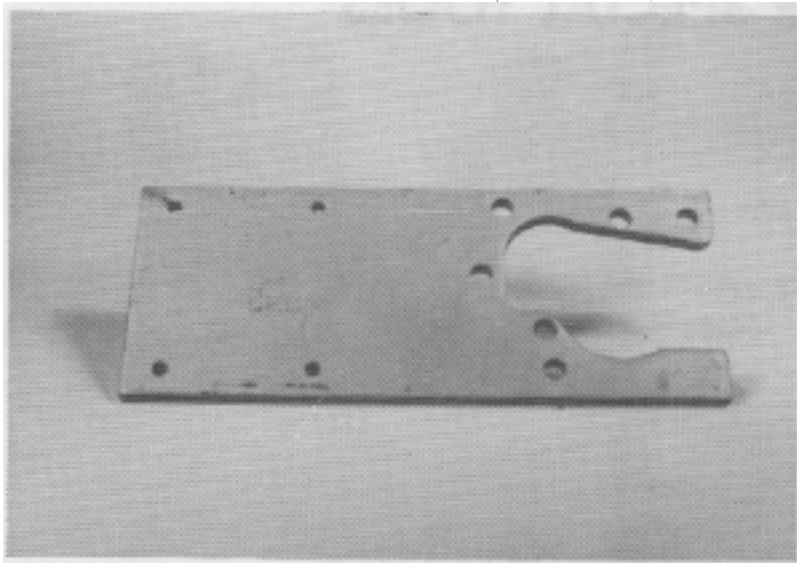
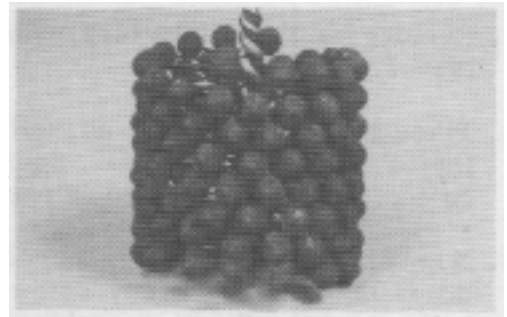
PART NO. 609765

USED ON "C", "D" AND "F" SERIES
LAWN-BOY ENGINES.

Used to break the glaze on cylinder walls.

NOTE:

For use in slow speed and reversible drill
for 5-7 strokes in each direction. USE
WITH OIL.



UNIVERSAL ENGINE HOLDING FIXTURE

PART NO. 681865

Special engine holding fixture
for C, D, and F Series Lawn-
Boy engines.

SECTION 14 - TOOLS - SPECIAL ITEMS

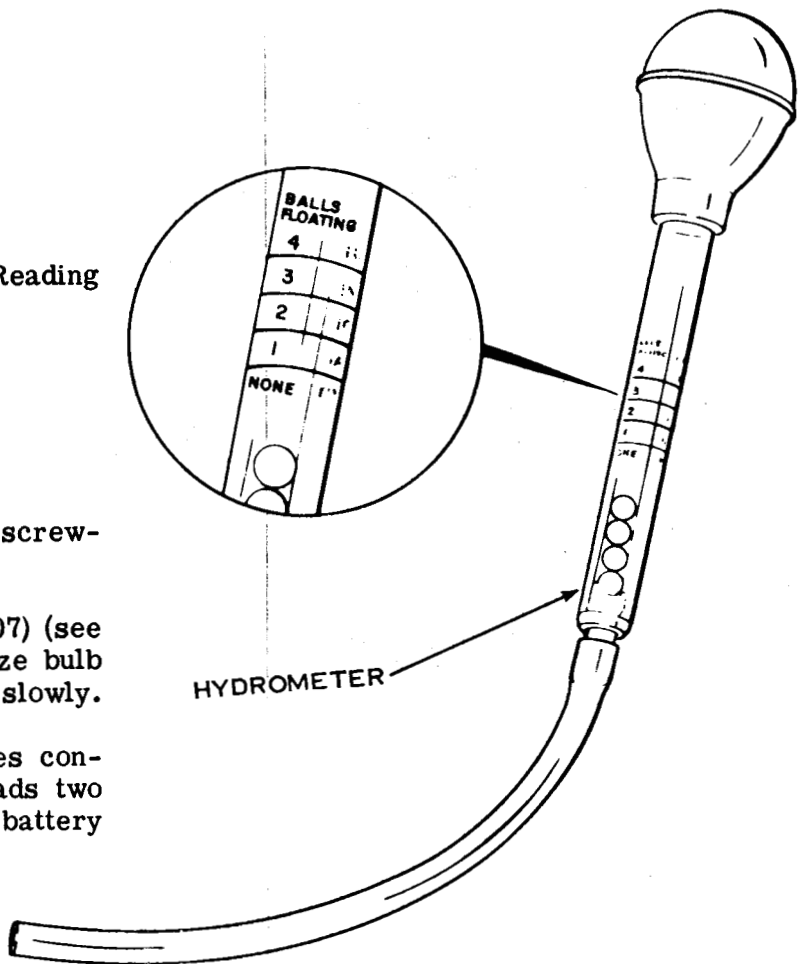
HYDROMETER (BATTERY TESTER)

FOR ALL LAWN-BOY WET CELL BATTERIES

PART NO. 681007

State of Charge	Specific Gravity Reading
Fully Charged	1.265
75% Charged	1.225
50% Charged	1.190
25% Charged	1.155
Discharged	1.120


1. Remove caps from battery using screw-driver.
2. Place hydrometer (part no. 681007) (see figure 3) into each cell. Squeeze bulb on top of hydrometer and release slowly.
3. Number of balls floating indicates condition of battery. If any cell reads two balls or less floating, recharge battery for 10 hours.

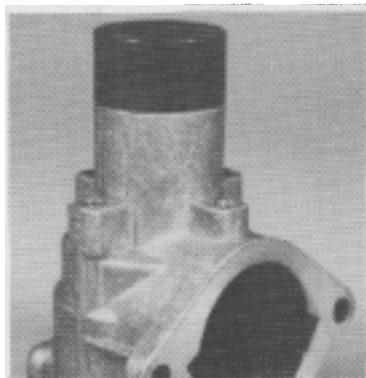
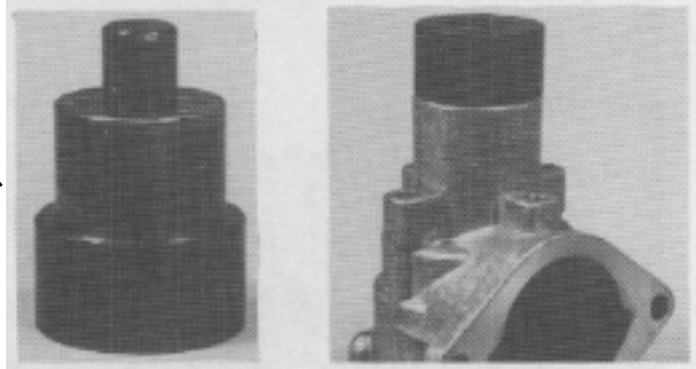


TRIMMER SPECIAL TOOLS

SEAL DRIVER

PART NO. 610569

Used to install main bearing. Seal in trimmer crankcase. 



BEARING DRIVER

PART NO. 610568 

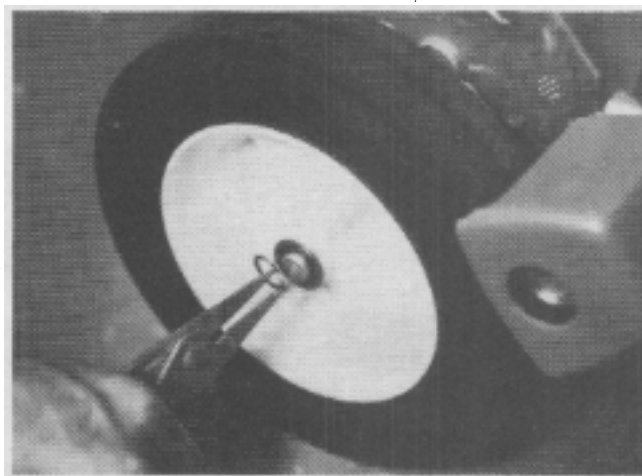
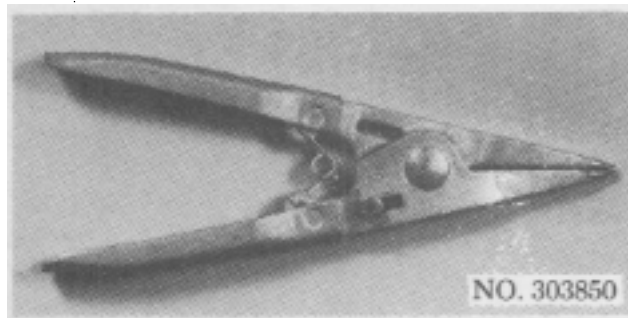
Used to install outer bearing in trimmer crankcase.

SECTION 14 - TOOLS - SPECIAL ITEMS

EXPANSION PLIERS

303850

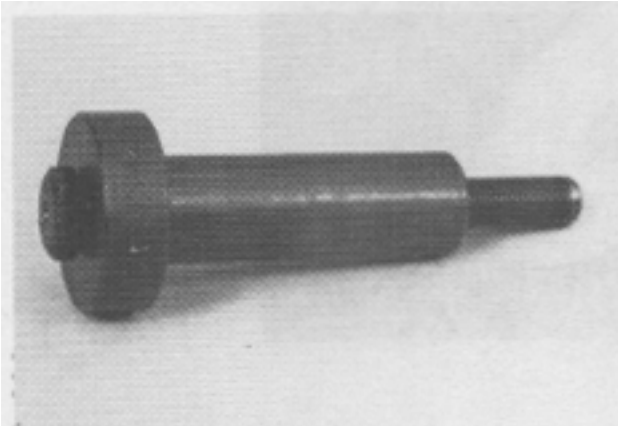
For assembly and disassembly of external retaining rings.



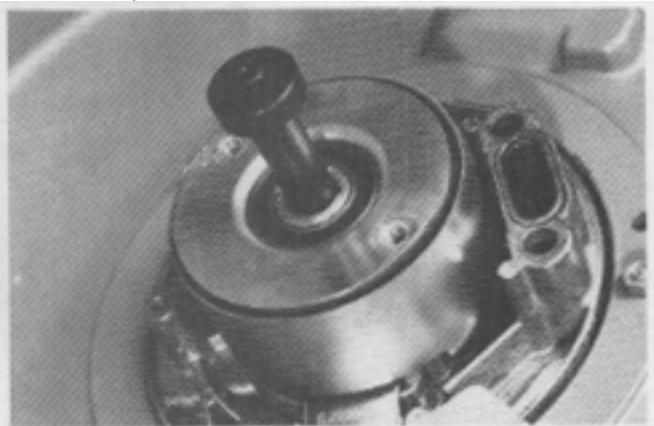
COMPLIANT MOWER SERVICE TOOLS



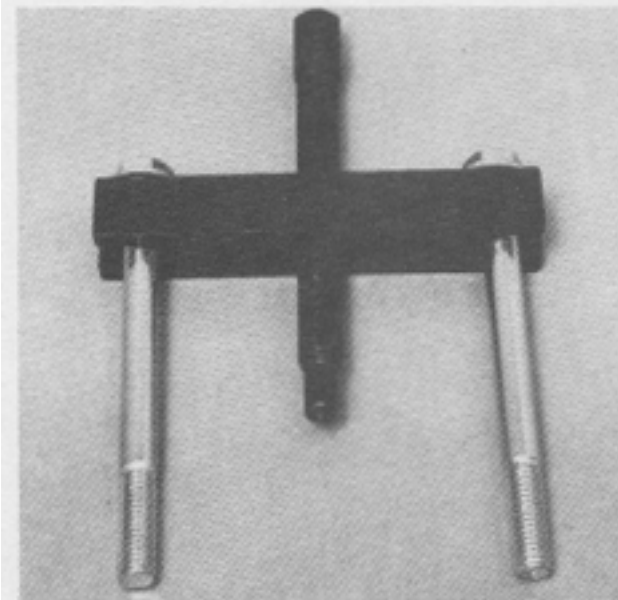
PART NO. 683055



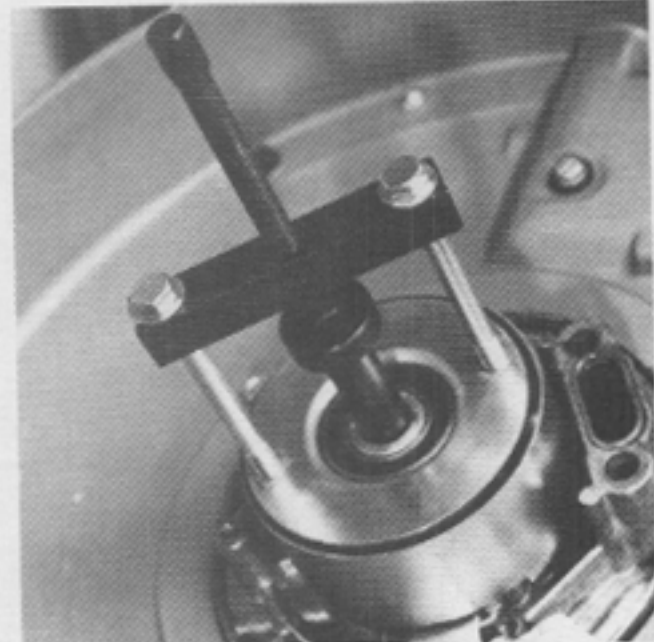
611592 CLUTCH REMOVAL TOOL



USED TO RETAIN BRAKE CLUTCH ASSEMBLY.

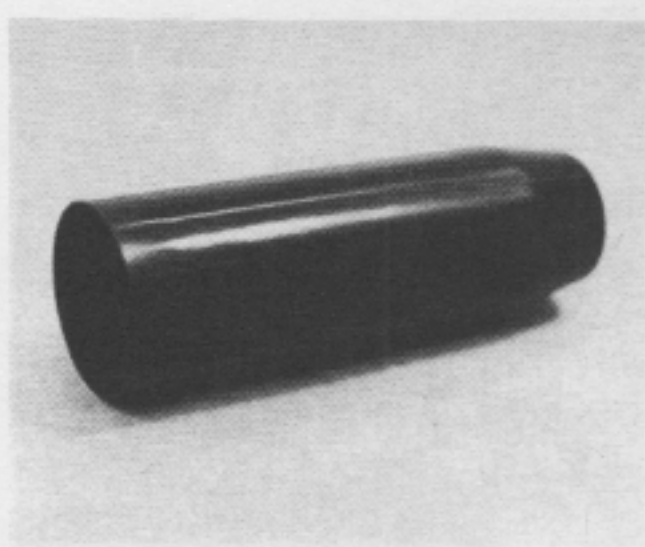


683242 CLUTCH PULLER

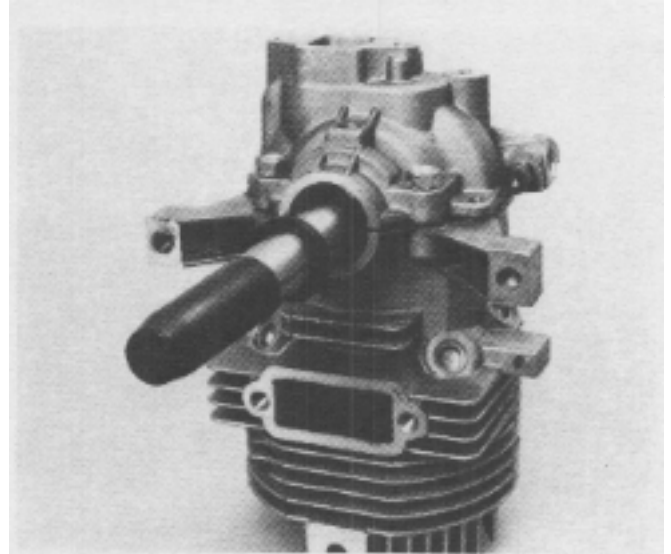


USED TO PULL BRAKE CLUTCH ASSEMBLY.

COMPLIANT MOWER SERVICE TOOLS



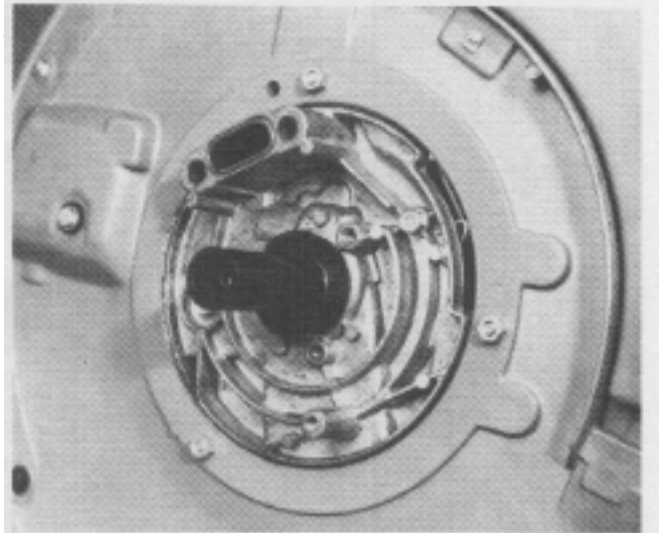
611918 SEAL PROTECTOR



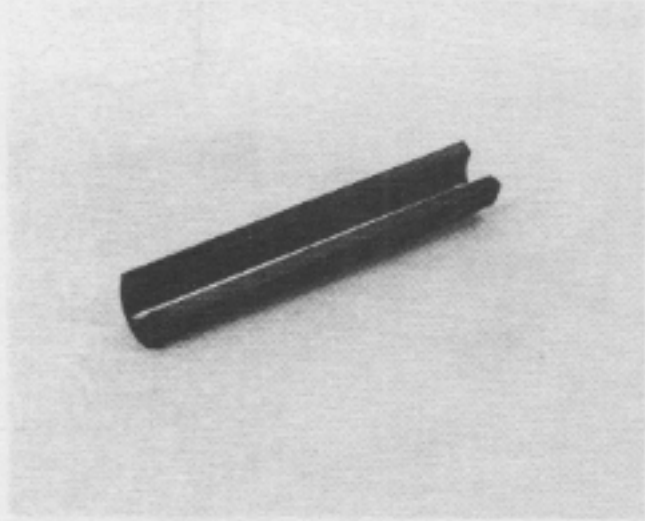
USED TO PROTECT SEALS DURING INSTALLATION



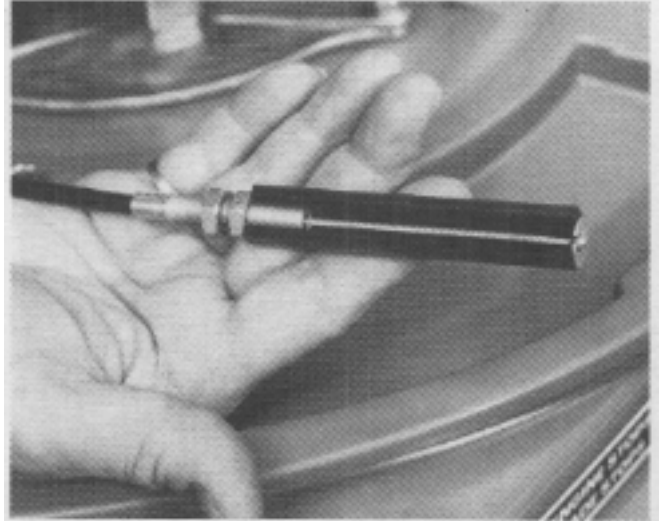
611591 MOUNTING PLATE LOCATOR



USED TO ALIGN ENGINE ON MOUNTING PLATE

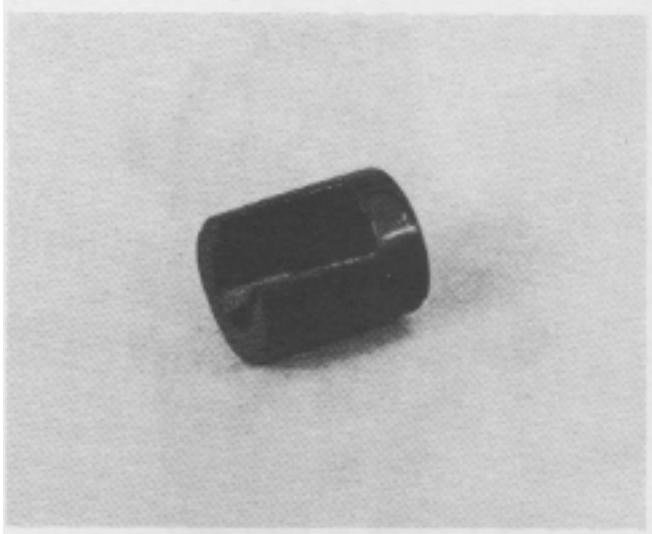


611703
CONTROL CABLE GAUGE

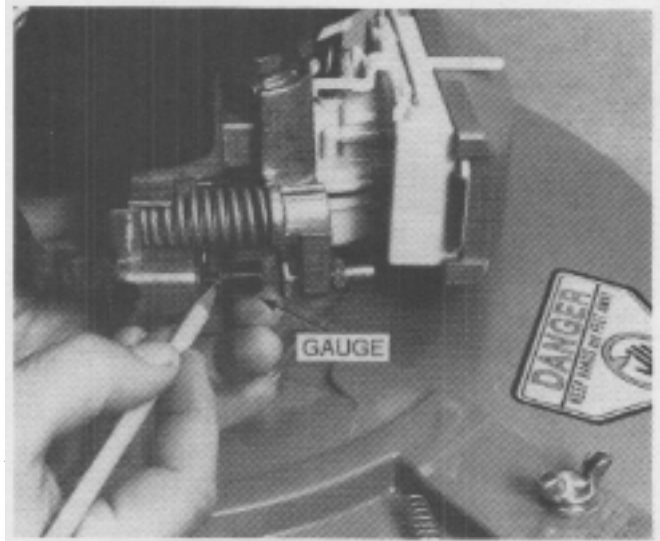


USED TO ADJUST CONTROL CABLE

COMPLIANT MOWER SERVICE TOOLS

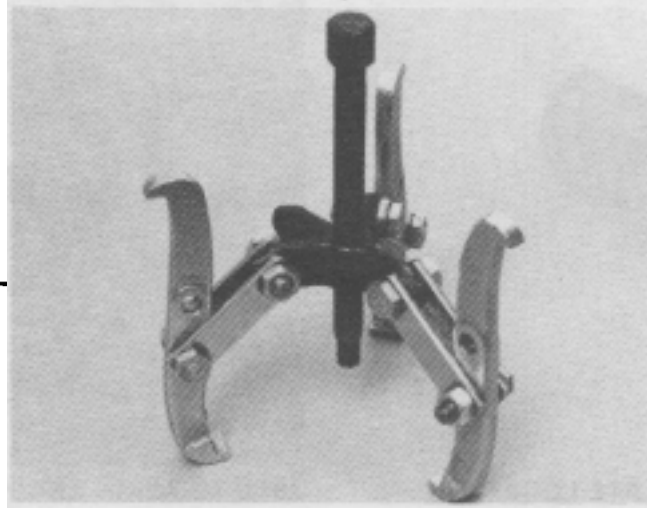


611702 BRAKE SWITCH ADJUSTING GAUGE

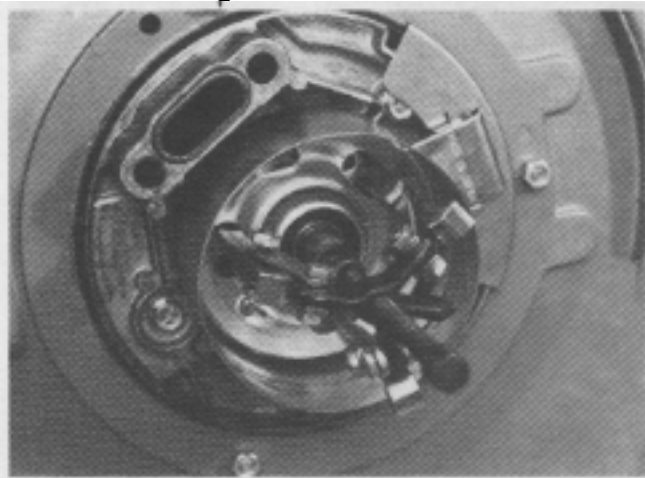


USED TO ADJUST BRAKE SWITCH

**3-JAW PULLER AVAILABLE FROM
OWATONNA TOOL CO., OWATONNA MN.**

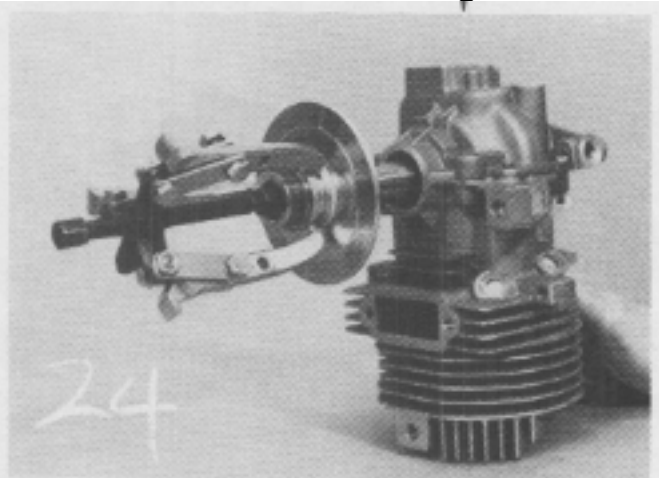


OTC NO. STD-80



Used to remove bearing, ramp and arm assembly from crankshaft.

14-14



Used to remove clutch plate from crankshaft if "BBC" assembly separates.

REVISED 1983

SERVICE BULLETIN REFERENCES

SERVICE SHOP AIDS - SECTION 14



384884

Loc Quic Primer is used to clean and degrease threads on fasteners before applying adhesives on screws, bolts, nuts, etc.

Ultra Lok is an adhesive used on all fasteners under the deck.



388517



384848

Screw-Loc is an adhesive used on fasteners above the deck.

For complete removal and cleaning of old sealant and gaskets.

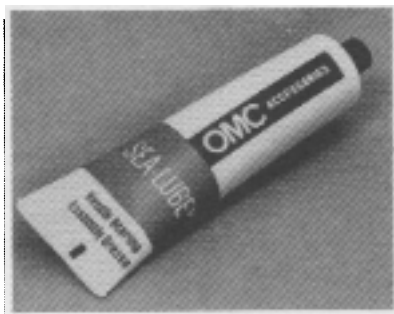


390928



SAFETY WARNING

Will burn if it comes into contact with skin.



378642

Special grease to hold individual needle bearings in place during assembly of connecting rod onto crankshaft. It provides sufficient lubrication of the bearings during initial start up after overhauling.

Crankcase sealant to seal "F" series crankcases completely to prevent possible leaks. 50 cc's will seal many crankcases coming in for repair. It will not harden and set up while in the tube with the cap on.



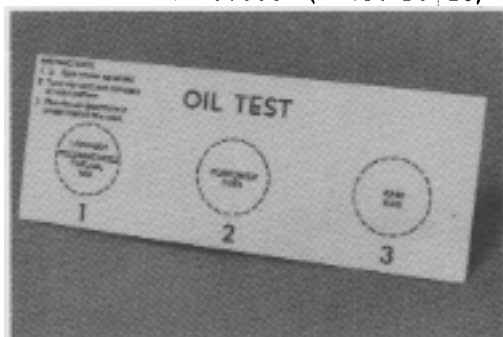
609790
50 cc's



610377
6 cc's

Same as above except in a smaller tube.

**LAWN-BOY OIL TEST CARDS
PART NO. E00064 (PKG. OF 10)**



Easy to use when demonstrating to customer the proper fuel/lubricant mixture.

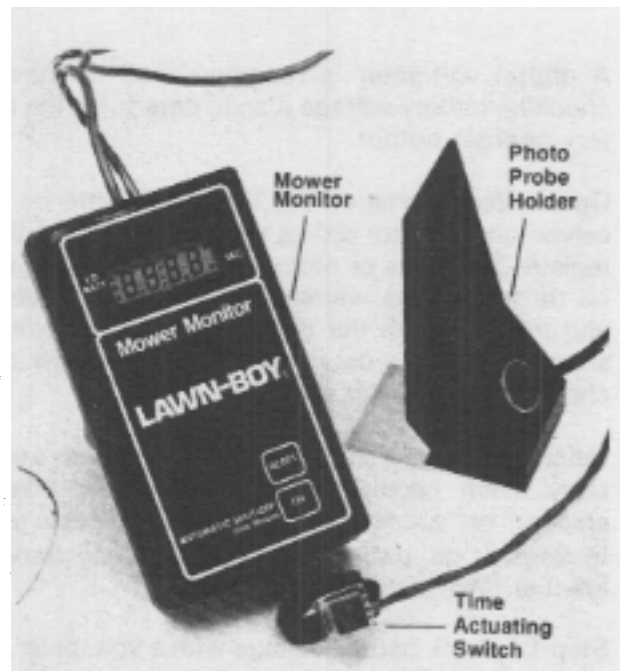
Occasionally it is necessary to provide visual evidence that an insufficient amount of lubricant was mixed in the fuel. Using this card will help to determine if the mixture was or was not correct.

TEST PROCEDURES: Determine what kind of oil and gas the customer was using. It then becomes necessary to correctly mix the same kind of oil and gas in the recommended ratio. (32:1 or 16:1)

Place a sample of the customer's mixture in #2 circle and a sample of the correct mixture in #3 circle. Place a sample of straight gasoline in #1 circle. Gasoline evaporates very quickly. When gasoline in #1 has evaporated, it will also have evaporated from #2 and #3. The circle with the darkest appearance will have more oil than the other. This test should be made in the presence of the customer to eliminate doubts of the results.

Use as an aid for selling Lawn-Boy Lubricant.

LAWN-BOY MOWER MONITOR



Blade r.p.m.

3200

Large easy to read LCD shows blade RPM and blade stoppage time.

0.9

Blade stop time



ET-301 Mower Monitor on compliant mower checking blade stoppage time.

The ET-301 Monitor Tester is a highly accurate diagnostic instrument used to check blade stoppage time and blade r.p.m. on 1983 compliant mowers. This battery powered, hand held unit is easy to use. Special tools and additional mower support fixtures are not needed. Simply place photo probe holder alongside the mower deck, attach actuating switch to handle assembly and start mower. The ET-301 can also be used to check shaft or fan speeds, pulley speeds and electric start engine cranking speeds. Unit comes complete with batteries, reflective tape and detailed operating instructions.

Lawn-Boy mower monitors can be used with 2-cycle and 4-cycle powered mowers—manual restart, electric restart and blade brake clutch systems.

LAWN-BOY MOWER MONITORS ARE SOLD AND SERVICED BY THE OWATONNA TOOL COMPANY.
ALL ORDER FORMS ARE TO BE ACCUMULATED BY LAWN-BOY DISTRIBUTORS FOR MAILING TO LAWN-BOY.

A digital voltmeter is recommended for use in checking battery voltage also to determine the battery charger output.

Open circuit voltage (O.C.V.) of all batteries received on warranty claims will be checked. If they register 11.0 volts or more when received and can be recharged, the warranty claim will be rejected and returned with the battery. If possible, battery should be placed on an electric start mower and checked for cranking ability.

Before returning a battery to the factory with a warranty claim because it "won't hold or take a charge," or "will not crank the engine," please refer to Section 13, page 18 of the Lawn-Boy Service Manual for the testing procedures.

Step 1 - Check battery voltage with a volt meter before charging.



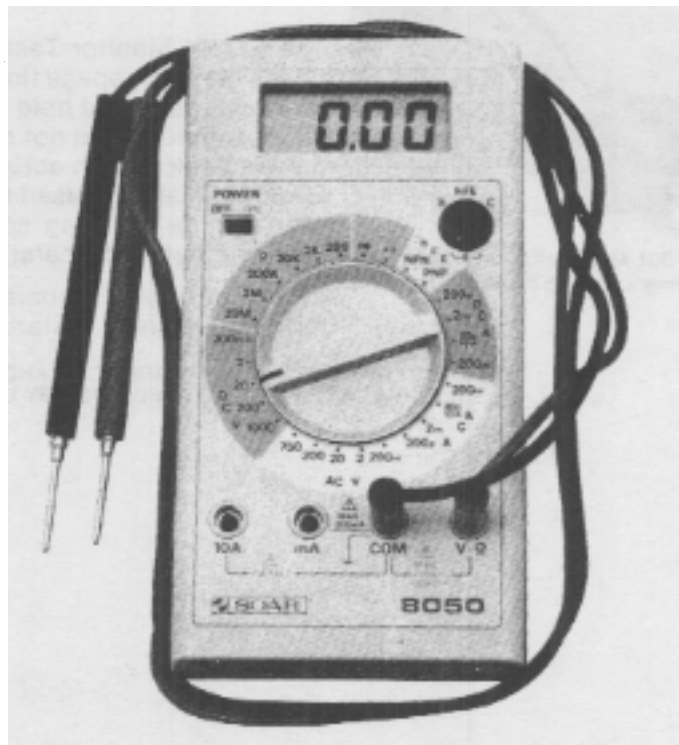
Step 2 - If the meter indicates an open circuit voltage (O.C.V.) of 11.0 volts or more, connect it to the Lawn-Boy charger for a period of 24 to 48 hours.

Step 3 - Disconnect charger and let battery set for a minimum of 24 hours.

If battery voltage is 12.3 volts or higher after completion of this procedure, it should be returned to the customer for continued use. If possible, place it on an electric start mower and check for cranking ability.

If possible, the customer's battery charger should be checked. It should produce between 8 and 12 volts on a volt meter.

The Digital Multi Meter illustrated is available from the Lawn-Boy Service Department. It will check AC and DC voltage, AC and DC current, resistance, check diodes, amperes and continuity.



MODEL 8050 SOAR DIGITAL MULTI METER

LAWN-BOY PRODUCTS QUICK REFERENCE CHART

YEAR	MODEL NO.	SIZE OF CUT	ENGINE MAKE	MODEL	H. P.	R. P. M.	PUSH OR SELF PROPELLED	NO. BLADE	LEAF MULCHER	COLOR
1954	8FH13	18 in.	Iron Horse	A-12	1-1/2	3200	Push	602165	-	Red & Green
1954	8SH13	18 in.	Iron Horse	A-12	1-1/2	3200	Push	602165	-	Red & Green
1954	8TH13	18 in.	Iron Horse	A-12	1-1/2	3200	Push	602165	No	Red
1954	7TE12	17 in.	Packard Electric		1/3	3450	Push	602478	No	Red & Green
1954	1RB30	21 in.	Briggs & Stratton	6B-H	2	3600	Push	602111	-	Red & Green
1955	8FH14	18 in.	Iron Horse	A-13	1-1/2	3200	Push	602165	-	Green & Autumn Rust
1955	8FE20	18 in.	Packard Electric		1/3	3450	Push	602165	L3200	Green & Autumn Rust
1955	8S20	18 in.	Iron Horse	A-13	1-1/2	3200	Push	602165	-	Green & Autumn Rust
1955	8F20	18 in.	Lawn-Boy	C-10	2	3200	Push	602752	L3200	Green & Autumn Rust
1955	1F20	21 in.	Lawn-Boy	C-10	2	3200	Push	603703	L7050	Green & Autumn Rust
1955	1FB20	21 in.	Briggs & Stratton	6B-H	2	3600	Push	603703	L7050	Green & Autumn Rust
1956	1000	18 in.	Packard Electric		1/3	3450	Push	602165	L3200	Green & Autumn Rust
1956	3000	18 in.	Iron Horse	A-13	1-1/2	3200	Push	602165	-	Green & Autumn Rust
1956	5000	18 in.	Lawn-Boy	C-12	2	3200	Push	602752	L3200	Green & Autumn Rust
1956	7000	21 in.	Lawn-Boy	C-12	2	3200	Push	603703	L7050	Green & Autumn Rust
1957	1000	18 in.	Packard Electric		1/3	3450	Push	602165	L3200	Green & Autumn Rust
1957	3100	18 in.	Lawn-Boy	C-20	1.85	3200	Push	602752	L3200	Green & Autumn Rust
1957	5100	18 in.	Lawn-Boy	C-12	2	3200	Push	602752	L5262	Green & Autumn Rust
1957	7100	21 in.	Lawn-Boy	C-12	2	3200	Push	603703	L7282	Green & Autumn Rust
1957	6100	18 in.	Lawn-Boy	C-40	2-1/2	3200	Self Prop.	603752	L5262	Green & Autumn Rust
1957	8100	21 in.	Lawn-Boy	C-40	2-1/2	3200	Self Prop.	603703	L7282	Green & Autumn Rust
1958	1200	18 in.	Packard Electric		1/3	3450	Push	602165	L3200	Gold & Off White
1958	2200	18 in.	Briggs & Stratton	6B-H	2	Throttle Control	Push	603315	L3200	Gold & Off White
1958	4200	21 in.	Briggs & Stratton	6B-H	2	Throttle Control	Push	603316	L7050	Gold & Off White
1958	3200 & 3200A	18 in.	Lawn-Boy	C-21	1.85	3200	Push	602752	L3200	Gold & Off White
1958	5100X	18 in.	Lawn-Boy	C-12	2	3200	Push	602752	L5262	Gold & Off White
1958	7100X	21 in.	Lawn-Boy	C-12	2	3200	Push	603703	L7282	Gold & Off White
1958	5200	18 in.	Lawn-Boy	C-13	2-1/2	3200	Push	602752	L5262	Gold & Off White
1958	7200	21 in.	Lawn-Boy	C-13	2-1/2	3200	Push	603703	L7282	Gold & Off White
1958	6200	18 in.	Lawn-Boy	C-41	2-1/2	3200	Self-Prop.	602752	L5262	Gold & Off White
1958	8200	21 in.	Lawn-Boy	C-41	2-1/2	3200	Self-Prop.	603703	L7282	Gold & Off White
1958	9200	* 1	Lawn-Boy	C-50	2-1/2	3200	Self-Prop	-	-	Gold & Off White
1959	1200-1210	18 in.	Packard or G.E.		1/3	3450	Push	602165	L3200	Gold & Off White
1959	2210	18 in.	Briggs & Stratton	8-BHS	2-1/2	Throttle Control	Push	603315	L3200	Gold & Off White
1959	4210	21 in.	Briggs & Stratton	8-BHS	2-1/2	Throttle Control	Push	603316	L7050	Gold & Off White
1959	3210	18 in.	Lawn-Boy	C-22	1.85	2800	Push	602752	L3200	Gold & Off White
1959	3050	18 in.	Lawn-Boy	C-70	2	2800	Push	602752	L3200	Gold & Off White
1959	7050	21 in.	Lawn-Boy	C-70	2	2800	Push	603703	L7050	Gold & Off White
1959	5210	18 in.	Lawn-Boy	C-14	2-1/2	2800	Push	602752	L5262	Gold & Off White
1959	7210	21 in.	Lawn-Boy	C-14	2-1/2	2800	Push	603703	L7282	Gold & Off White
1959	6210	18 in.	Lawn-Boy	C-41	2-1/2	3200	Push	602752	L5262	Gold & Off White
1959	8210	21 in.	Lawn-Boy	C-41	2-1/2	3200	Push	603703	L7282	Gold & Off White
1959	5250	19 in.	Lawn-Boy	C-60	2-1/2	2800	Push	603409	L5250	Gold & Off-White
1959	9210	*1	Lawn-Boy	C-50	2-1/2	3200	Self-Prop.	-	-	Gold & Off-White

LAWN-BOY PRODUCTS QUICK REFERENCE CHART (CONTINUED)

YEAR	MODEL NO.	SIZE OF CUT	ENGINE MAKE	MODEL	H. P.	R. P. M.	PUSH OR SELF PROPELLED	NO. BLADE	LEAF MULCHER	COLOR
1959	SB-12	*3	Lawn-Boy	C-12AA	2-1/2	4000	Push	-	-	Gold & Off-White
1959	RT1-LB	*5	Briggs & Stratton	80302	3	Throttle Control	Push	-	-	Gold & Off-White
1959	TMS-1LB	*6	Clinton	B-1290	3-1/2	Throttle Control	Self-Prop.	-	-	Gold & Off-White
1959	1041	18 in.	Briggs & Stratton	80102	2-1/2	Throttle Control	Self-Prop.	-	No	Gold & Off-White
1959	1051	21 in.	Briggs & Stratton	80102	2-1/2	Throttle Control	Self-Prop.	-	No	Gold & Off-White
1959	19H	21 in.	Iron Horse	C-75	2	2800	Push	603703	No	Red & Ivory
1959	89H	18 in.	Iron Horse	C-75	2	2800	Push	603539	No	Red & Ivory
1959	19B	21 in.	Briggs & Stratton	8BHS	2-1/2	Throttle Control	Push	603316	No	Red & Ivory
1960	3050	18 in.	Lawn-Boy	C-70	2	3200	Push	602752	L3200	Gold & Off-White
1960	5210	18 in.	Lawn-Boy	C-14	2-1/2	3200	Push	602752	L5262	Gold & Off-White
1960	7210	21 in.	Lawn-Boy	C-14	2-1/2	3200	Push	603703	L7282	Gold & Off-White
1960	5250	19 in.	Lawn-Boy	C-60	2-1/2	2800	Push	603409	L5250	Gold & Off-White
1960	7250	21 in.	Lawn-Boy	C-15	2-1/2	3200	Push	603703	-	Gold & Off-White
1960	8210	21 in.	Lawn-Boy	C-41	2-1/2	3200	Self-Prop.	603703	L7282	Gold & Off-White
1960	9210	*1	Lawn-Boy	C-50	2-1/2	3200	Self-Prop.	-	-	Gold & Off-White
1960	ET-1	*2	Lawn-Boy	C-71	2	3200	Push	603687	-	Gold & Off-White
1960	SB-13	*3	Lawn-Boy	C-12AA	2-1/2	4000	Push	-	-	Gold & Off-White
1960	LVT-1	*4	Lawn-Boy	C-80	2-1/2	2800	Push	-	-	Gold & Off-White
1960	LRT-3	*5	Briggs & Stratton	80302	3	Throttle Control	Push	-	-	Gold & Off-White
1960	LPT	*6	Clinton	B-1290	3-1/2	Throttle Control	Self-Prop.	-	-	Gold & Off-White
1960	19H	21"	Iron Horse	C-75	2	2800	Push	603703	L7050	Green & White
1960	89H	18"	Iron Horse	C-75	2	2800	Push	603539	No	Green & White
1960	18PL	18"	Iron Horse	C-14M	2-1/2	3200	Push	602752	L3200	Green & White
1960	21PL	21"	Iron Horse	C-14M	2-1/2	3200	Push	603703	L7050	Green & White
1960	21SPL	21"	Iron Horse	C-41M	2-1/2	3200	Self Prop.	603703	L7282	Green & White
1960	15SRL	*3	Iron Horse	C-12AAM	2-1/2	4000	Push	-	-	Green & White
1960	MVT	*4	Iron Horse	C-80M	2-1/2	2800	Push	-	-	Green & White
1961	3050	18 in.	Lawn-Boy	C-70	2	3200	Push	602752	L3200	Gold & Off-White
1961	5210, 5210A	18 in.	Lawn-Boy	C-14, C-17	2-1/2	3200	Push	602752	L5262	Gold & Off-White
1961	7210, 7210A	21 in.	Lawn-Boy	C-14, C-17	2-1/2	3200	Push	603703	L7282	Gold & Off-White
1961	5250	19 in.	Lawn-Boy	C-60	2-1/2	2800	Push	603409	L5250	Gold & Off-White
1961	7250	21 in.	Lawn-Boy	C-15, 16	2-1/2	3200	Push	603703	No	Gold & Off-White
1961	8210, 8210A	21 in.	Lawn-Boy	C-41, 42	2-1/2	3200	Self-Prop.	603703	L7282	Gold & Off-White
1961	9210	*1	Lawn-Boy	C-50	2-1/2	3200	Self-Prop.	-	-	Gold & Off-White
1961	1010	*2	Lawn-Boy	C-71	2	2800	Push	603687	-	Gold & Off-White
1961	SB-13, 1816	*3	Lawn-Boy	C-12AA	2-1/2	4000	Push	-	-	Gold & Off-White
1961	1116	*7	Lawn-Boy	C-72	2	2800	Push	-	-	Gold & Off-White
1961	LVT-1	*4	Lawn-Boy	C-80	2-1/2	2800	Push	-	-	Gold & Off-White
1961	LRT-3	*5	Briggs & Stratton	80302	3	Throttle Control	Push	-	-	Gold & Off-White
1961	LPT	*6	Clinton	B-1290	3-1/2	Throttle Control	Self-Prop.	-	-	Gold & Off-White
1961	M-70BC	*8	Briggs & Stratton	706018	7	Throttle Control	Self-Prop.	-	-	Green & White

*1 Loafer Riding Unit

*2 Edger Trimmer

*3 Snow-Boy Snow Blower

*4 Gardener (Tiller)

*5 Master Gardener (Tiller)

*6 Professional Gardener (Tractor and Tiller)

*7 Hobby Gardener

*8 Tractor Tiller

LAWN-BOY PRODUCT QUICK REFERENCE CHART

YEAR	MODEL NO.	SIZE OF CUT	ENGINE MAKE	MODEL	H.P.	R.P.M.	PUSH OR SELF PROPELLED	NO. BLADE	LEAF MULCHER	COLOR
1962	3051	18 in.	Lawn-Boy	C-73	2	3200	Push	602752	L3200	Daisy Yellow
1962	5230	19 in.	Lawn-Boy	C-17	3	3200	Push	603409	No	Lime Green
1962	5250A, 5251	19 in.	Lawn-Boy	C-61	2-1/2	2800	Push	603409	L5250	Marine Blue or Gold & Off-White
1962	7251	21 in.	Lawn-Boy	C-18	3-1/2	3200	Push	603703	No	Lime Green
1962	8220	21 in.	Lawn-Boy	C-43	3-1/2	3200	Self-Prop.	603703	No	Lime Green
1962	4300	24 in.	Lawn-Boy	C-18	3-1/2	3200	-	604169	No	Patio Blue
1962	9211	*1	Lawn-Boy	C-51	2-1/2	3200	Self-Prop.	-	-	Patio Blue
1962	1817	*3	Lawn-Boy	C-17AA	3	4000	Push	-	-	Flame Red
1962	1010	*2	Lawn-Boy	C-71	2	3200	Push	603687	-	Gold & Off-White
1962	1116	*7	Lawn-Boy	C-72	2	2800	Push	-	-	Terra Cotta or Gold & Off-White
1962	2010	*4	Lawn-Boy	C-81	2-1/2	3200	Push	-	-	Gold & Off-White
1962	2020	*5	Briggs & Stratton	81202	3	Throttle Control	Push	-	-	Gold & Off-White
1963	3052	18 in.	Lawn-Boy	C-76	2-1/2	3200	Push	602752	L3200	Buttercup Yellow
1963	5231	19 in.	Lawn-Boy	D-400	3-1/2	2500 to 3200	Push	603409	No	Lime Green
1963	7252	21 in.	Lawn-Boy	D-400	3-1/2	2500 to 3200	Push	603703	No	Lime Green
1963	8221	21 in.	Lawn-Boy	D-440	3-1/2	2500 to 3200	Self-Prop.	603703	No	Lime Green
1963	4301	24 in.	Lawn-Boy	D-400	3-1/2	2500 to 3200	-	604169	No	Patio Blue
1963	9212	*1	Lawn-Boy	D-450	3-1/2	2500 to 3200	Self-Prop.	-	-	Patio Blue
1963	1818	*3	Lawn-Boy	*9	3-1/2	4000	Push	-	-	Flame Red
1963	1011	*2	Lawn-Boy	C-74	3	3200	Push	603687	-	Terra Cotta
1963	1116	*7	Lawn-Boy	C-72	2	2800	Push	-	-	Gold & Off-White
1963	2010	*4	Lawn-Boy	C-81	2-1/2	3200	Push	-	-	Gold & Off-White
1963	2020	*5	Briggs & Stratton	81202	3	Throttle Control	Push	-	-	Bimini Blue & White
1964	3052	18 in.	Lawn-Boy	C-76	2-1/2	3200	Push	602752	L3200	Buttercup Yellow
1964	5232	19 in.	Lawn-Boy	D-401	3-1/2	Variable	Push	603409	No	Green - Blue Trim White Wheels
1964	7214	21 in.	Lawn-Boy	D-401	3-1/2	Variable	Push	603703	No	Green - Blue Trim White Wheels
1964	7253	21 in.	Lawn-Boy	D-401	3-1/2	Variable	Push	603703	No	Green - Blue Trim White Wheels
1964	8222	21 in.	Lawn-Boy	D-441	3-1/2	Variable	Self-Prop.	603703	No	Green - Blue Trim White Wheels
1964	4301A	24 in.	Lawn-Boy	D-401	3-1/2	Variable	-	604169	No	Blue - Blue Trim White Wheels
1964	6250	21 in.	Lawn-Boy	C-19	3-1/2	3200	Push	-	No	Gray - Red Trim White Wheels
1964	1819	*3	Lawn-Boy	C-18AA	3-1/2	4000	Push	-	-	Red - Black Trim White Wheels
1964	1920	*10	Lawn-Boy	C-18AA	3-1/2	4000	Self-Prop.	-	-	Red - Black Trim White Wheels

LAWN-BOY PRODUCT QUICK REFERENCE CHART (CONTINUED)

YEAR	MODEL NO.	SIZE OF CUT	ENGINE MAKE	MODEL	H.P.	R.P.M.	PUSH OR SELF PROPELLED	NO. BLADE	LEAF MULCHER	COLOR
1964	9212A	*1	Lawn-Boy	D-451	3-1/2	Variable	Self-Prop.	-	-	Blue - Blue Trim White Wheels
1964	9274	21 in.	Lawn-Boy	D-451	3-1/2	Variable	Self-Prop.	603703	No	Blue - Blue Trim White Wheels
1964	9244	24 in.	Lawn-Boy	D-451	3-1/2	Variable	Self-Prop.	604169	No	Blue - Blue Trim White Wheels
1964	1011	*2	Lawn-Boy	C-74	2-1/2	3200	Push	603687	-	Terra Cotta
1964	1116	*7	Lawn-Boy	C-72	2	2800	Push	-	-	Gold
1964	2010	*4	Lawn-Boy	C-81	2-1/2	3200	Push	-	-	Gold
1964	2020	*5	Briggs & Stratton	B581202	3	Throttle Control	Push	-	-	Bimini Blue
1965	3052	18 in.	Lawn-Boy	C-76	2-1/2	3200	Push	602572	L3200	Buttercup Yellow
1965	5233	19 in.	Lawn-Boy	D-402	3-1/2	Variable	Push	603409	No	Bermuda Sand
1965	7215	21 in.	Lawn-Boy	D-402	3-1/2	Variable	Push	603703	No	Bermuda Sand
1965	7254	21 in.	Lawn-Boy	D-402	3-1/2	Variable	Push	603703	No	Bermuda Sand
1965	7254-WB	21 in.	Lawn-Boy	D-402	3-1/2	Variable	Push	603703	No	Lawn Green
1965	8223	21 in.	Lawn-Boy	D-442	3-1/2	Variable	Self-Prop.	603703	No	Bermuda Sand
1965	4302	24 in.	Lawn-Boy	D-402	3-1/2	Variable	-	604169	No	Lawn Green
1965	6251	21 in.	Lawn-Boy	C-19	3-1/2	3200	Push	603703	No	Bermuda Sand
1965	9213	*1	Lawn-Boy	D-452	3-1/2	Variable	Self-Prop.	-	-	Bermuda Sand
1965	9245	21 in.	Lawn-Boy	D-452	3-1/2	Variable	Self-Prop.	-	No	Bermuda Sand
			Lawn-Boy	D-402	3-1/2	Variable	Self-Prop.	-	No	Bermuda Sand
1965	9275	24 in.	Lawn-Boy	D-452	3-1/2	Variable	Self-Prop.	-	No	Lawn Green
			Lawn-Boy	D-402	3-1/2	Variable	Self-Prop.	-	No	Lawn Green
1965	2010	*4	Lawn-Boy	C-81	2-1/2	3200	Push	-	-	Gold & Off-White
		17 in.								
1965	2021	*5	Briggs & Stratton	B&S	3	Throttle Control	Push	-	-	Bermuda Sand
		16 in.								
1965	1012	*2	Lawn-Boy	C-74	2-1/2	3200	Push	-	-	Bermuda Sand
		10 in.								
1965	1820	*3	Lawn-Boy	C-19AA or C-18AAR	3-1/2	4000	Push	-	-	Bermuda Blue
		15 in.								
1965	1921	*3	Lawn-Boy	C-19AA or C-18AAR	3-1/2	4000	Self-Prop.	-	-	Bermuda Blue
		20 in.								
1966	3053	18 in.	Lawn-Boy	D-430	3-1/2	3200	Push	602752	No	Bermuda Sand
1966	5234	19 in.	Lawn-Boy	D-403	3-1/2	Variable	Push	603409	No	Spring Green
1966	7255	21 in.	Lawn-Boy	D-403	3-1/2	Variable	Push	603703	No	Spring Green
1966	7216	21 in.	Lawn-Boy	D-403	3-1/2	Variable	Push	603703	No	Spring Green
1966	7001	21 in.	Lawn-Boy	C-18	3-1/2	Variable	Push	603703	No	Yellow Green
1966	8224	21 in.	Lawn-Boy	D-443	3-1/2	Variable	Self-Prop.	603703	No	Green
1966	8001	21 in.	Lawn-Boy	C-43	3-1/2	3200	Self-Prop.	603703	No	Yellow Green
1966	6252	21 in.	Lawn-Boy	C-19	3-1/2	3200	No	603703	No	Orange & Beige

*1 Looper Riding Unit

*2 Edger Trimmer

*3 Snow-Boy Snow Blower

*4 Gardner (Tiller)

*5 Master Gardner (Tiller)

*6 Professional Gardner
(Tractor and Tiller)

*7 Hobby Gardner

*8 Tractor Tiller

*9 C-18AA Engine Now Used.
(D-470 Engine Obsolete.)*10 All Model 1920's recalled.
Convert to Model 1921.

LAWN-BOY PRODUCT QUICK REFERENCE CHART (CONTINUED)

YEAR	MODEL NO.	SIZE OF CUT	ENGINE MAKE		H P	RPM	PUSH OR SELF PROPELLED	NO BLADE	LEAF MULCHER	COLOR
1967	3054	18 in.	Lawn-Boy	D-430	3-1/2	3200	Push	602752	No	Beige
1967	5235	19 in.	Lawn-Boy	D-404	3-1/2	Variable	Push	603409		Beige
1967	7217	21 in.	Lawn-Boy	D-404	3-1/2	Variable	Push	603703		Beige
1967	7256	21 in.	Lawn-Boy	D-404	3-1/2	Variable	Push	603703		Beige
1967	8225	21 in.	Lawn-Boy	D-444	3-1/2	Variable	Self-prop.	603703		Beige
1967	8226	21 in.	Lawn-Boy	D-444	3-1/2	Variable	Self-prop.	603703		Beige
1967	6252	21 in.	Lawn-Boy	C-19	3-1/2	3200	Push	603703		Beige
1967	3001	18 in.	Lawn-Boy	C-77	2-1/2	3200	Push	602752		Yellow
1967	3002	18 in.	Lawn-Boy	C-78	2-1/2	3200	Push	602752		Yellow
1967	5001	19 in.	Lawn-Boy	C-18	3-1/2	3200	Push	603409		Yellow-green
1967	7001	21 in.	Lawn-Boy	C-18	3-1/2	3200	Push	603703		Yellow-green
1967	8001	21 in.	Lawn-Boy	C-43	3-1/2	3200	Self-prop.	603703		Yellow-green
1967	8002	21 in.	Lawn-Boy	C-43	3-1/2	3200	Self-prop.	603703		Yellow-green
1967	1013	*1	Lawn-Boy	D-460	2-1/2	Variable	Push			Beige
		7 in.								
1967	2021	*2	Briggs-Stratton	B & S	3	Throttle Control	Push			Beige
		16 in.								
1967	1600	16	Thor	Electric			Push	605335		Beige
1968	8226	21 in.	Lawn-Boy	D-445	3-1/2	Variable	Self-prop.	603703	No	Spring-green
1968	8226E	21 in.	Lawn-Boy	D-445E	3-1/2	Variable	Self-prop.	603703		Spring-green
1968	8227	21 in.	Lawn-Boy	D-446	3-1/2	Variable	Self-prop.	603703		Spring-green
1968	8227E	21 in.	Lawn-Boy	D-446E	3-1/2	Variable	Self-prop.	603703		Spring-green
1968	7218	21 in.	Lawn-Boy	D-405	3-1/2	Variable	Push	603703		Spring-green
1968	7257	21 in.	Lawn-Boy	D-405	3-1/2	Variable	Push	603703		Spring-green
1968	7257E	21 in.	Lawn-Boy	D-405E	3-1/2	Variable	Push	603703		Spring-green
1968	7219	21 in.	Lawn-Boy	D-406	3-1/2	Variable	Push	603703		Spring-green
1968	7258E	21 in.	Lawn-Boy	D-406E	3-1/2	Variable	Push	603703		Spring-green
1968	5236	19 in.	Lawn-Boy	D-405	3-1/2	Variable	Push	603409		Spring-green
1968	5237	19 in.	Lawn-Boy	D-406	3-1/2	Variable	Push	603409		Spring-green
1968	7002	21 in.	Lawn-Boy	C-18	3-1/2	3200	Push	603703		Yellow-green
1968	8003	21 in.	Lawn-Boy	C-43	3-1/2	3200	Self-prop.	603703		Yellow-green
1968	5002	19 in.	Lawn-Boy	C-18	3-1/2	3200	Push	603409		Yellow-green
1968	7010	21 in.	Lawn-Boy	D-430	3-1/2	3200	Push	603703		Gold
1968	1013	*1	Lawn-Boy	D-460	2-1/2	Variable	Push			Beige
		7 in.								
1968	9300	30 in.	Briggs-Stratton	B & S	6	Throttle Control	Rider	605660		Yellow-green
1968	9301	30 in.	Briggs-Stratton	B & S	6	Throttle Control	Rider	605660		Yellow-green

*1. Edger Trimmer

*2. Rotary Tiller

LAWN-BOY PRODUCT QUICK REFERENCE CHART (CONTINUED)

YEAR	MODEL NO.	SIZE OF CUT	ENGINE MAKE	MODEL	H.P.	R.P.M.	PUSH OR SELF-PROPELLED	NO. BLADE	GRASS CATCHER	COLOR
1969	8228	21 in.	Lawn-Boy	D-447	3-1/2	Variable	Self-Propelled	603703	Yes	Beige
1969	8228E	21 in.	Lawn-Boy	D-447E	3-1/2	Variable	Self-Propelled	603703	Yes	Beige
1969	7220	21 in.	Lawn-Boy	D-407	3-1/2	Variable	Push	603703	No	Beige
1969	7259	21 in.	Lawn-Boy	D-407	3-1/2	Variable	Push	603703	Yes	Beige
1969	7259E	21 in.	Lawn-Boy	D-407E	3-1/2	Variable	Push	603703	Yes	Beige
1969	5238	19 in.	Lawn-Boy	D-407	3-1/2	Variable	Push	603409	No	Beige
1969	7003	21 in.	Lawn-Boy	C-18	3-1/2	3200	Push	603703	Yes	Yellow-Green
1969	7011	21 in.	Lawn-Boy	D-431	3-1/2	Variable	Push	603703	No	Yellow-Green
1969	8004	21 in.	Lawn-Boy	C-44	3-1/2	3200	Self-Propelled	603703	Yes	Yellow-Green
1969	5003	19 in.	Lawn-Boy	C-18	3-1/2	3200	Push	603409	No	Yellow-Green
1969	3055	18 in.	Lawn-Boy	D-430	3-1/2	3200	Push	602752	No	Beige
1969	6275	21 in.	Lawn-Boy	D-475	3-1/2	3200	Push	603702	No	Orange & Beige
1969	1014	*9 in.	Lawn-Boy	D-461	2-1/2	Variable	Push	603687	No	Beige
1969	5500	19 in.	Lawn-Boy	Electric	-	-	Push	603409	No	Beige
1969	7500	21 in.	Lawn-Boy	Electric	-	-	Push	603703	No	Beige
1969	9302E	30 in.	Lauson	Lauson	7	Throttle Control	Rider	605660	No	Beige & Green
1969	9600	26 in.	Briggs & Stratton	B & S	5	Throttle Control	Rider	606510	No	Beige & Green

* Edger Trimmer

LAWN-BOY PRODUCT QUICK REFERENCE CHART (CONTINUED)

YEAR	MODEL NO.	SIZE OF CUT	ENGINE MAKE	MODEL	H. P.	R. P. M.	PUSH OR SELF-PROPELLED	NO. BLADE	GRASS CATCHER	COLOR
1970/71	8229	21 in.	Lawn-Boy	D-448	3-1/2	Variable	Self-Propelled	603703	Yes	Turf Green
1970/71	8229S	21 in.	Lawn-Boy	D-448	3-1/2	Variable	Self-Propelled	603703	Yes	Turf Green
1970/71	8229E	21 in.	Lawn-Boy	D-448E	3-1/2	Variable	Self-Propelled	603703	Yes	Turf Green
1970/71	7221	21 in.	Lawn-Boy	D-408	3-1/2	Variable	Push	603703	No	Turf Green
1970/71	7260	21 in.	Lawn-Boy	D-408	3-1/2	Variable	Push	603703	Yes	Turf Green
1970/71	7260S	21 in.	Lawn-Boy	D-408	3-1/2	Variable	Push	603703	Yes	Turf Green
1970/71	7260E	21 in.	Lawn-Boy	D-408E	3-1/2	Variable	Push	603703	Yes	Turf Green
1970/71	5239	19 in.	Lawn-Boy	D-408	3-1/2	Variable	Push	603409	No	Turf Green
1970/71	5269	19 in.	Lawn-Boy	D-408	3-1/2	Variable	Push	603409	Yes	Turf Green
1970/71	5269S	19 in.	Lawn-Boy	D-408	3-1/2	Variable	Push	603409	Yes	Turf Green
1970/71	7004	21 in.	Lawn-Boy	C-18B	3-1/2	3200	Push	603703	Yes	Turf Green
1970/71	8005	21 in.	Lawn-Boy	C-45	3-1/2	3200	Self-Propelled	603703	Yes	Turf Green
1970/71	5004	19 in.	Lawn-Boy	C-18B	3-1/2	3200	Push	603409	No	Turf Green
1970/71	3056	18 in.	Lawn-Boy	D-432	3-1/2	3200	Push	602752	No	Turf Green
1970/71	3003	18 in.	Lawn-Boy	C-79	3-1/2	3200	Push	602752	No	Yellow
1970/71	6275	21 in.	Lawn-Boy	D-476	3-1/2	3200	Push	603703	No	Orange & Beige
1970/71	6252	21 in.	Lawn-Boy	C-19B	3-1/2	3200	Push	603703	No	Orange & Beige
1970/71	1015	*9 in.	Lawn-Boy	D-462	2-1/2	Variable	Push	603687	No	Turf Green
1970/71	7012	21 in.	Lawn-Boy	D-432	3-1/2	3200	Push	603703	No	Yellow-Green
1970/71	5500	19 in.	Lawn-Boy	Electric	-	-	Push	603409	No	Beige
1970/71	7500	21 in.	Lawn-Boy	Electric	-	-	Push	603703	No	Beige
1970/71	9302	30 in.	Briggs & Stratton	B & S	6	Throttle Control	Rider	605660	No	Beige & Green
1970/71	9601	26 in.	Briggs & Stratton	B & S	5	Throttle Control	Rider	606510	No	Green
1970/71	9302E	30 in.	Lauson	Lauson	7	Throttle Control	Rider	605660	No	Beige & Green
1970/71	9303E	30 in.	Lauson	Lauson	7	Throttle Control	Rider	605660	No	Green
1971	5020	19 in.	Lawn-Boy	D-432	3-1/2	3200	Push	603409	No	Turf Green
1971	7020	21 in.	Lawn-Boy	D-432	3-1/2	3200	Push	603703	No	Turf Green
1971	7080	21 in.	Lawn-Boy	D-432	3-1/2	3200	Push	603703	Yes	Turf Green
1971	8020	21 in.	Lawn-Boy	D-420	3-1/2	3200	Self-Propelled	603703	Yes	Turf Green
1971	2650	†26 in.	Briggs & Stratton	B & S	5	Throttle Control	Self-Propelled		No	Green & White
1971	2680	†26 in.	Briggs & Stratton	B & S	8	Throttle Control	Self-Propelled		No	Green & White
1971	9500	26 in.	Briggs & Stratton	B & S	5	Throttle Control	Rider	606510	No	Green-Beige

*Edger Trimmer

†Snow Blower

LAWN-BOY PRODUCT QUICK REFERENCE CHART (CONTINUED)

YEAR	MODEL NO.	SIZE OF CUT	ENGINE MAKE	MODEL	H.P.	R.P.M.	PUSH OR SELF-PROPELLED	NO. BLADE	GRASS CATCHER	COLOR
1972	8230E	21 in.	Lawn-Boy	D-640E	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1972	8230	21 in.	Lawn-Boy	D-640	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1972	8229A	21 in.	Lawn-Boy	D-448	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1972	8229B	21 in.	Lawn-Boy	D-448	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1972	7261E	21 in.	Lawn-Boy	D-600E	3-1/2	Variable	Push	603703	Yes	Turf-Green
1972	7261	21 in.	Lawn-Boy	D-600	3-1/2	Variable	Push	603703	Yes	Turf-Green
1972	7222	21 in.	Lawn-Boy	D-600	3-1/2	Variable	Push	603703	No	Turf-Green
1972	5270	19 in.	Lawn-Boy	D-600	3-1/2	Variable	Push	603409	Yes	Turf-Green
1972	5240	19 in.	Lawn-Boy	D-600	3-1/2	Variable	Push	603409	No	Turf-Green
1972	7260A	21 in.	Lawn-Boy	D-408	3-1/2	Variable	Push	603703	Yes	Turf-Green
1972	5269A	19 in.	Lawn-Boy	D-408	3-1/2	Variable	Push	603409	Yes	Turf-Green
1972	5239A	19 in.	Lawn-Boy	D-408	3-1/2	Variable	Push	603409	No	Turf-Green
1972	7064	21 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603703	Yes	Turf-Green
1972	7081	21 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603703	Yes	Turf-Green
1972	7021	21 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603703	No	Turf-Green
1972	5080	19 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603409	Yes	Turf-Green
1972	5021	19 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603409	No	Turf-Green
1972	8021	21 in.	Lawn-Boy	D-420	3-1/2	3200	Self-Propelled	603703	Yes	Turf-Green
1972	6253	21 in.	Lawn-Boy	D-476	3-1/2	3200	Push	603703	No	Orange & Beige
1972	6275	21 in.	Lawn-Boy	D-476	3-1/2	3200	Push	603703	No	Orange & Beige
1972	5500	19 in.	Lawn-Boy	Electric	-	-	Push	603409	No	Beige
1972	7500	21 in.	Lawn-Boy	Electric	-	-	Push	603703	No	Beige
1972	3057	18 in.	Lawn-Boy	D-433	3-1/2	3200	Push	602752	No	Turf-Green
1972	1015	*9 in.	Lawn-Boy	D-462	2-1/2	Variable	Push	603687	No	Turf-Green
1972	1840	†18 in.	Briggs & Stratton	B & S	4	Throttle-Control	Self-Propelled	-	-	Green & White
1972	2650A	†26 in.	Briggs & Stratton	B & S	5	Throttle-Control	Self-Propelled	-	-	Green & White
1972	2680A	†26 in.	Briggs & Stratton	B & S	8	Throttle-Control	Self-Propelled	-	-	Green & White
1972	9501	26 in.	Briggs & Stratton	B & S	5	Throttle-Control	Rider	606510	-	Green
1972	9328	32 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1972	9328E	32 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1972	9328ES	32 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1972	9368	36 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1972	9368E	36 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1972	9368ES	36 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green

*Edger-Trimmer

†Snow-Blower

LAWN-BOY PRODUCT QUICK REFERENCE CHART (CONTINUED)

YEAR	MODEL NO.	SIZE OF CUT	ENGINE MAKE	MODEL	H. P.	R. P. M.	PUSH OR SELF-PROPELLED	NO. BLADE	GRASS CATCHER	COLOR
1973	8231E	21 in.	Lawn-Boy	D-640E	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1973	8231	21 in.	Lawn-Boy	D-640	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1973	8229C	21 in.	Lawn-Boy	D-448	3-1/2	3200	Self-Propelled	603703	Yes	Turf-Green
1973	7262E	21 in.	Lawn-Boy	D-600E	3-1/2	Variable	Push	603703	Yes	Turf-Green
1973	7262	21 in.	Lawn-Boy	D-600	3-1/2	Variable	Push	603703	Yes	Turf-Green
1973	7223	21 in.	Lawn-Boy	D-600	3-1/2	Variable	Push	603703	No	Turf-Green
1973	5271	19 in.	Lawn-Boy	D-600	3-1/2	Variable	Push	603409	Yes	Turf-Green
1973	5241	19 in.	Lawn-Boy	D-600	3-1/2	Variable	Push	603409	No	Turf-Green
1973	7260B	21 in.	Lawn-Boy	D-408	3-1/2	Variable	Push	603703	Yes	Turf-Green
1973	5269B	19 in.	Lawn-Boy	D-408	3-1/2	Variable	Push	603409	Yes	Turf-Green
1973	5239B	19 in.	Lawn-Boy	D-408	3-1/2	Variable	Push	603409	No	Turf-Green
1973	7082	21 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603703	Yes	Turf-Green
1973	7022	21 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603703	No	Turf-Green
1973	5081	19 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603409	Yes	Turf-Green
1973	5022	19 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603409	No	Turf-Green
1973	8250	21 in.	Lawn-Boy	D-480	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1973	6254	21 in.	Lawn-Boy	D-476	3-1/2	3200	Push	603703	No	Orange & Beige
1973	6276	21 in.	Lawn-Boy	D-476	3-1/2	3200	Push	603703	No	Orange & Beige
1973	5501	19 in.	Lawn-Boy	Electric	-	-	Push	603409	No	Beige
1973	5800	19 in.	General Electric	900	-	3200	Push	608297	No	Green
1973	3058	18 in.	Lawn-Boy	D-433	3-1/2	3200	Push	602752	No	Turf-Green
1973	1015	*9 in.	Lawn-Boy	D-462	2-1/2	3200	Push	603687	No	Turf-Green
1973	1840A	†18 in.	Briggs & Stratton	B & S	4	Throttle-Control	Self-Propelled	-	-	Green & White
1973	2650B	†26 in.	Briggs & Stratton	B & S	5	Throttle-Control	Self-Propelled	-	-	Green & White
1973	2680B	†26 in.	Briggs & Stratton	B & S	8	Throttle-Control	Self-Propelled	-	-	Green & White
1973	9329	32 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1973	9329E	32 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1973	9329ES	32 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1973	9369	36 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1973	9369E	36 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1973	9369ES	36 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1973	9266	26 in.	Briggs & Stratton	B & S	5	Throttle-Control	Rider	-	-	Green

*Edger-Trimmer

†Snow-Blower

LAWN-BOY PRODUCT QUICK REFERENCE CHART (CONTINUED)

YEAR	MODEL NO.	SIZE OF CUT	ENGINE MAKE	MODEL	H. P.	R. P. M.	PUSH OR SELF-PROPELLED	NO. BLADE	GRASS CATCHER	COLOR
1974	8232E	21 in.	Lawn-Boy	D-640E	3-1/2	Variable	Self-Propelled	603703	Yes	Green & White
1974	8232	21 in.	Lawn-Boy	D-640	3-1/2	Variable	Self-Propelled	603703	Yes	Green & White
1974	8229D	21 in.	Lawn-Boy	D-448	3-1/2	3200	Self-Propelled	603703	Yes	Turf-Green
1974	7263E	21 in.	Lawn-Boy	D-600E	3-1/2	Variable	Push	603703	Yes	Green & White
1974	7263	21 in.	Lawn-Boy	D-600	3-1/2	Variable	Push	603703	Yes	Green & White
1974	7224	21 in.	Lawn-Boy	D-600	3-1/2	Variable	Push	603703	No	Green & White
1974	5272	19 in.	Lawn-Boy	D-600	3-1/2	Variable	Push	603409	Yes	Green & White
1974	5242	19 in.	Lawn-Boy	D-600	3-1/2	Variable	Push	603409	No	Green & White
1974	7260C	21 in.	Lawn-Boy	D-408	3-1/2	Variable	Push	603703	Yes	Turf-Green
1974	5269C	19 in.	Lawn-Boy	D-408	3-1/2	Variable	Push	603409	Yes	Turf-Green
1974	5239C	19 in.	Lawn-Boy	D-408	3-1/2	Variable	Push	603409	No	Turf-Green
1974	7083	21 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603703	Yes	Turf-Green
1974	7023	21 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603703	No	Turf-Green
1974	5063	19 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603409	Yes	Turf-Green
1974	5023	19 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603409	No	Turf-Green
1974	8251	21 in.	Lawn-Boy	D-480	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1974	6254	21 in.	Lawn-Boy	D-476	3-1/2	3200	Push	603703	No	Orange & Beige
1974	6276	21 in.	Lawn-Boy	D-476	3-1/2	3200	Push	603703	No	Orange & Beige
1974	5501	19 in.	Lawn-Boy	Electric	-	-	Push	603409	No	Beige
1974	5801	19 in.	General Electric	900	-	3200	Push	608297	No	Green
1974	1015	*9 in.	Lawn-Boy	WP. M. D-462	2-1/2	3200	Push	603687	No	Turf-Green
1974	1840	†18 in.	Briggs & Stratton	B & S	4	Throttle-Control	Self-Propelled	-	-	Green & White
1974	2650B	†26 in.	Briggs & Stratton	B & S	5	Throttle-Control	Self-Propelled	-	-	Green & White
1974	2680B	†26 in.	Briggs & Stratton	B & S	8	Throttle-Control	Self-Propelled	-	-	Green & White
1974	9329	32 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1974	9329E	32 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1974	9329ES	32 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1974	9369	36 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1974	9369E	36 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1974	9369ES	36 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1974	9266	26 in.	Briggs & Stratton	B & S	5	Throttle-Control	Rider	-	-	Green

*Edger-Trimmer

†Snow-Blower

LAWN-BOY PRODUCT QUICK REFERENCE CHART (CONTINUED)

YEAR	MODEL NO.	SIZE OF CUT	ENGINE MAKE	MODEL	H. P.	R. P. M.	PUSH OR SELF-PROPELLED	NO. BLADE	GRASS CATCHER	COLOR
1975	8233	21 in.	Lawn-Boy	D-601	3-1/2	Variable	Self-Propelled	603703	Yes	Green & White
1975	8229F	21 in.	Lawn-Boy	D-449	3-1/2	3200	Self-Propelled	603703	Yes	Turf-Green
1975	7264	21 in.	Lawn-Boy	D-601	3-1/2	Variable	Push	603703	Yes	Green & White
1975	7225	21 in.	Lawn-Boy	D-601	3-1/2	Variable	Push	603703	No	Green & White
1975	5273	19 in.	Lawn-Boy	D-601	3-1/2	Variable	Push	603409	Yes	Green & White
1975	5243	19 in.	Lawn-Boy	D-601	3-1/2	Variable	Push	603409	No	Green & White
1975	7260D	21 in.	Lawn-Boy	D-409	3-1/2	Variable	Push	603703	Yes	Turf-Green
1975	5269D	19 in.	Lawn-Boy	D-409	3-1/2	Variable	Push	603409	Yes	Turf-Green
1975	5239D	19 in.	Lawn-Boy	D-409	3-1/2	Variable	Push	603409	No	Turf-Green
1975	7084	21 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603703	Yes	Turf-Green
1975	7024	21 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603703	No	Turf-Green
1975	5064	19 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603409	Yes	Turf-Green
1975	5024	19 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603409	No	Turf-Green
1975	8252	21 in.	Lawn-Boy	D-481	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1975	6255	21 in.	Lawn-Boy	D-476	3-1/2	3200	Push	603703	No	Orange & Beige
1975	6277	21 in.	Lawn-Boy	D-476	3-1/2	3200	Push	603703	No	Orange & Beige
1975	5802	19 in.	General Electric	900 WP.M	-	3200	Push	608297	No	Green & White
1975	1840	†18 in.	Briggs & Stratton	B & S	4	Throttle-Control	Self-Propelled	-	-	Green & White
1975	2650B	†26 in.	Briggs & Stratton	B & S	5	Throttle-Control	Self-Propelled	-	-	Green & White
1975	2680B	†26 in.	Briggs & Stratton	B & S	8	Throttle-Control	Self-Propelled	-	-	Green & White
1975	9329S	32 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1975	9329ES	32 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1975	9369ES	32 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1975	9266	26 in.	Briggs & Stratton	B & S	5	Throttle-Control	Rider	-	-	Green

†Snow-Blower

LAWN-BOY PRODUCT QUICK REFERENCE CHART (CONTINUED)

YEAR	MODEL NO.	SIZE OF CUT	ENGINE MAKE	MODEL	H.P.	R.P.M.	PUSH OR SELF-PROPELLED	NO. BLADE	GRASS CATCHER	COLOR
1976	8234	21 in.	Lawn-Boy	D-641	3-1/2	Variable	Self-Propelled	603703	Yes	Green & White
1976	8229G	21 in.	Lawn-Boy	D-449	3-1/2	3200	Self-Propelled	603703	Yes	Turf-Green
1976	7265	21 in.	Lawn-Boy	D-601	3-1/2	Variable	Push	603703	Yes	Green & White
1976	7226	21 in.	Lawn-Boy	D-601	3-1/2	Variable	Push	603703	No	Green & White
1976	5274	19 in.	Lawn-Boy	D-601	3-1/2	Variable	Push	603409	Yes	Green & White
1976	5244	19 in.	Lawn-Boy	D-601	3-1/2	Variable	Push	603409	No	Green & White
1976	7260F	21 in.	Lawn-Boy	D-409	3-1/2	Variable	Push	603703	Yes	Turf-Green
1976	5269F	19 in.	Lawn-Boy	D-409	3-1/2	Variable	Push	603409	Yes	Turf-Green
1976	5239F	19 in.	Lawn-Boy	D-409	3-1/2	Variable	Push	603409	No	Turf-Green
1976	7085	21 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603703	Yes	Turf-Green
1976	7025	21 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603703	No	Turf-Green
1976	5065	19 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603409	Yes	Turf-Green
1976	5025	19 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603409	No	Turf-Green
1976	8253	21 in.	Lawn-Boy	D-481	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1976	6255	21 in.	Lawn-Boy	D-476	3-1/2	3200	Push	603703	No	Orange & Beige
1976	6277	21 in.	Lawn-Boy	D-476	3-1/2	3200	Push	603703	No	Orange & Beige
1976	5802	19 in.	General Electric	900 WP.M.	-	3200	Push	608297	No	Green & White
1976	9329S	32 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1976	9329ES	32 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1976	9369ES	36 in.	Briggs & Stratton	B & S	8	Throttle-Control	Rider	-	-	Green
1976	9266	26 in.	Briggs & Stratton	B & S	5	Throttle-Control	Rider	-	-	Green
1977	5024	19 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603409	No	Turf-Green
1977	5064	19 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603409	Yes	Turf-Green
1977	5245	19 in.	Lawn-Boy	D-601	3-1/2	Variable	Push	603409	No	Turf-Green
1977	5275	19 in.	Lawn-Boy	D-601	3-1/2	Variable	Push	603409	Yes	Turf-Green
1977	5239G	19 in.	Lawn-Boy	D-409	3-1/2	Variable	Push	603409	No	Turf-Green
1977	5269G	19 in.	Lawn-Boy	D-409	3-1/2	Variable	Push	603409	Yes	Turf-Green
1977	7024	21 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603703	Yes	Turf-Green
1977	7084	21 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603703	No	Turf-Green
1977	7221G	21 in.	Lawn-Boy	D-409	3-1/2	Variable	Push	603703	No	Turf-Green
1977	7260G	21 in.	Lawn-Boy	D-409	3-1/2	Variable	Push	603703	Yes	Turf-Green
1977	7227	21 in.	Lawn-Boy	D-601	3-1/2	Variable	Push	603703	No	Turf-Green
1977	7266	21 in.	Lawn-Boy	D-601	3-1/2	Variable	Push	603703	Yes	Turf-Green
1977	6255	21 in.	Lawn-Boy	D-476	3-1/2	3200	Push	603703	No	Orange & Green
1977	6277	21 in.	Lawn-Boy	D-476	3-1/2	3200	Push	603703	No	Orange & Green
1977	8229H	21 in.	Lawn-Boy	D-449	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1977	8235	21 in.	Lawn-Boy	D-641	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1977	8235AE	21 in.	Lawn-Boy	D-641AE	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1977	8255	21 in.	Lawn-Boy	D-481	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1978	5247	19 in.	Lawn-Boy	F-100	3-1/2	Variable	Push	603409	No	Turf-Green
1978	5277	19 in.	Lawn-Boy	F-100	3-1/2	Variable	Push	603409	Yes	Turf-Green
1978	7229	21 in.	Lawn-Boy	F-100	3-1/2	Variable	Push	603703	No	Turf-Green
1978	7268	21 in.	Lawn-Boy	F-100	3-1/2	Variable	Push	603703	Yes	Turf-Green
1978	R7268	21 in.	Lawn-Boy	F-100	3-1/2	Variable	Push	603703	Yes	Turf-Green
1978	8237	21 in.	Lawn-Boy	F-140	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1978	R8237	21 in.	Lawn-Boy	F-140	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1978	8237AE	21 in.	Lawn-Boy	F-140AE	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1978	R8237AE	21 in.	Lawn-Boy	F-140AE	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1978	8270	21 in.	Lawn-Boy	F-140	3-1/2	Variable	Self-Propelled	603703	No	Turf-Green
1978	6257	21 in.	Lawn-Boy	F-200	3-1/2	3200	Push	603703	No	Turf-Green, Black and Orange
1978	6279	21 in.	Lawn-Boy	F-200	3-1/2	3200	Push	603703	No	Turf-Green, Black and Orange

LAWN-BOY PRODUCT QUICK REFERENCE CHART (CONTINUED)

YEAR	MODEL NO.	SIZE OF CUT	ENGINE MAKE	MODEL	H. P.	R. P. M.	PUSH OR SELF-PROPELLED	NO. BLADE	GRASS CATCHER	COLOR
1979	1850	18 in.	Lawn-Boy	D-570	3-1/2	3600-4000	Push	—	—	Turf-Green
1979	4500	20 in.	Lawn-Boy	D-410	3-1/2	3200	Push	610041	No	Turf-Green
1979	4550	21 in.	Lawn-Boy	F-100	3-1/2	Variable	Push	609988	No	Turf-Green
1979	4570	21 in.	Lawn-Boy	F-100	3-1/2	Variable	Push	609988	Yes	Turf-Green
1979	5026	19 in.	Lawn-Boy	F-200	3-1/2	Variable	Push	603409	No	Turf-Green
1979	5065	19 in.	Lawn-Boy	F-200	3-1/2	Variable	Push	603409	Yes	Turf-Green
1979	5247	19 in.	Lawn-Boy	F-100	3-1/2	Variable	Push	603409	No	Turf-Green
1979	5277	19 in.	Lawn-Boy	F-100	3-1/2	Variable	Push	603409	Yes	Turf-Green
1979	6257	21 in.	Lawn-Boy	F-200	3-1/2	Variable	Push	603703	No	Turf-Green, Black and Orange
1979	6279	21 in.	Lawn-Boy	F-200	3-1/2	Variable	Push	603703	No	Turf-Green, Black and Orange
1979	6290	21 in.	Lawn-Boy	F-200	3-1/2	Variable	Push	603703	Yes	Turf-Green, Black and Orange
1979	7025	21 in.	Lawn-Boy	F-200	3-1/2	Variable	Push	603703	Yes	Turf-Green
1979	7086	21 in.	Lawn-Boy	F-200	3-1/2	Variable	Push	603703	No	Turf-Green
1979	7229	21 in.	Lawn-Boy	F-100	3-1/2	Variable	Push	603703	No	Turf-Green
1979	7268	21 in.	Lawn-Boy	F-100	3-1/2	Variable	Push	603703	Yes	Turf-Green
1979	R7268	21 in.	Lawn-Boy	F-100	3-1/2	Variable	Push	603703	Yes	Turf-Green
1979	8237	21 in.	Lawn-Boy	F-140	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1979	R8237	21 in.	Lawn-Boy	F-140	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1979	8238AE	21 in.	Lawn-Boy	F-140AE	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1979	8270	21 in.	Lawn-Boy	F-140	3-1/2	Variable	Self-Propelled	603703	No	Turf-Green
1979	8270AE	21 in.	Lawn-Boy	F-140AE	3-1/2	Variable	Self-Propelled	603703	No	Turf-Green
1979	8310	21 in.	Lawn-Boy	F-240	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1979	R8310	21 in.	Lawn-Boy	F-240	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1979	8350	21 in.	Lawn-Boy	F-240	3-1/2	Variable	Self-Propelled	603703	No	Turf-Green
1979	8600	20 in.	Lawn-Boy	D-410	3-1/2	3200	Self-Propelled	610041	No	Turf-Green
1979	8650	21 in.	Lawn-Boy	F-140M	3-1/2	Variable	Self-Propelled	609988	No	Turf-Green
1979	8670	21 in.	Lawn-Boy	F-140M	3-1/2	Variable	Self-Propelled	609988	Yes	Turf-Green

LAWN-BOY PRODUCT QUICK REFERENCE CHART (CONTINUED)

YEAR	MODEL NO.	SIZE OF CUT	ENGINE MAKE	MODEL	H. P.	R. P. M.	PUSH OR SELF-PROPELLED	NO. BLADE	GRASS CATCHER	COLOR
1980	1851	18 in.	Lawn-Boy	D-571	3-1/2	3600-4000	Push	—	—	Turf-Green, White
1980	1871	18 in.	Lawn-Boy	D-571E	3-1/2	3600-4000	Push	—	—	Turf-Green, White
1980	4501	20 in.	Lawn-Boy	D-410	3-1/2	3200	Push	610041	No	Turf-Green
1980	4551	21 in.	Lawn-Boy	F-101	3-1/2	Variable	Push	609988	No	Dark Turf-Green
1980	4571	21 in.	Lawn-Boy	F-101	3-1/2	Variable	Push	609988	Yes (Rear)	Dark Turf-Green
1980	5247	19 in.	Lawn-Boy	F-101	3-1/2	Variable	Push	603409	No	Turf-Green
1980-82	6259	21 in.	Lawn-Boy	F-201	3-1/2	3200	Push	603703	No	Turf-Green, Black and Orange
1980	6291	21 in.	Lawn-Boy	F-201	3-1/2	3200	Push	603703	Yes	Turf-Green, Black and Orange
1980-82	6300	21 in.	Lawn-Boy	F-201	3-1/2	3200	Push	603703	No	Turf-Green, Black and Orange
1980	6350	21 in.	Lawn-Boy	F-201	3-1/2	3200	Push	603703	Yes	Turf-Green, Black and Orange
1980	R7070	21 in.	Lawn-Boy	F-100	3-1/2	Variable	Push	603703	Yes (Rear)	Yellow-Green
1980	7229	21 in.	Lawn-Boy	F-100	3-1/2	Variable	Push	603703	No	Turf-Green
1980	7268	21 in.	Lawn-Boy	F-100	3-1/2	Variable	Push	603703	Yes	Turf-Green
1980	R7268	21 in.	Lawn-Boy	F-100	3-1/2	Variable	Push	603703	Yes (Rear)	Turf-Green
1980	8070	21 in.	Lawn-Boy	F-140	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green, Yellow
1980	8237	21 in.	Lawn-Boy	F-140	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1980	R8237	21 in.	Lawn-Boy	F-140	3-1/2	Variable	Self-Propelled	603703	Yes (Rear)	Turf-Green
1980	8238AE	21 in.	Lawn-Boy	F-141AE	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1980	R8238AE	21 in.	Lawn-Boy	F-141AE	3-1/2	Variable	Self-Propelled	603703	Yes (Rear)	Turf-Green
1980	8400	21 in.	Lawn-Boy	F-241	3-1/2	3200	Self-Propelled	603703	No	Turf-Green, Black and Orange
1980	8401	21 in.	Lawn-Boy	F-241	3-1/2	3200	Self-Propelled	603703	No	Turf-Green, Black and Orange
1980	8601	20 in.	Lawn-Boy	D-411	3-1/2	3200	Self-Propelled	610041	No	Turf-Green
1980	8651	21 in.	Lawn-Boy	F-140	3-1/2	Variable	Self-Propelled	609988	No	Turf and Dark Green
1980	8671	21 in.	Lawn-Boy	F-140	3-1/2	Variable	Self-Propelled	609988	Yes	Turf and Dark Green

PRIVATE LABEL

YEAR	J.C. PENNEY MODEL NO.	LAWN-BOY MODEL NO.	SIZE OF CUT	ENGINE MAKE	ENGINE MODEL	H. P.	R. P. M.	PUSH OR SELF-PROPELLED	NO. BLADE	COLOR
1980	0292	7087JP	21 in.	Lawn-Boy	F-210	3-1/2	Variable	Push	609988	Turf-Green
1980	0392	8351JP	21 in.	Lawn-Boy	F-250	3-1/2	Variable	Self-Propelled	609988	Turf-Green

LAWN-BOY PRODUCT QUICK REFERENCE CHART (CONTINUED)

YEAR	MODEL NO.	SIZE OF CUT	ENGINE MAKE	MODEL	H.P.	R.P.M.	PUSH OR SELF-PROPELLED	NO. BLADE	GRASS CATCHER	COLOR
1981	1851	18 in.	Lawn-Boy	D-572	3-1/2	3600-4000	Push	—	—	Turf-Green, White
1981	1871	18 in.	Lawn-Boy	D-572E	3-1/2	3600-4000	Push	—	—	Turf-Green, White
1981	4502	20 in.	Lawn-Boy	F-300	3-1/2	3200	Push	521725	No	Turf-Green
1981	4571	21 in.	Lawn-Boy	F-101	3-1/2	Variable	Push	609988	Yes (Rear)	Turf-Dark Green
1981	5247	19 in.	Lawn-Boy	F-101	3-1/2	Variable	Push	603409	No	Turf-Green
1981	6259	21 in.	Lawn-Boy	F-201	3-1/2	3200	Push	603703	No	Turf-Green, Black and Orange
1981	6300	21 in.	Lawn-Boy	F-201	3-1/2	3200	Push	603703	No	Turf-Green, Black and Orange
1981	7071	21 in.	Lawn-Boy	F-101	3-1/2	Variable	Push	603703	Yes	Turf-Green, Yellow
1981	7229	21 in.	Lawn-Boy	F-101	3-1/2	Variable	Push	603703	No	Turf-Green
1981	7268	21 in.	Lawn-Boy	F-101	3-1/2	Variable	Push	603703	Yes	Turf-Green
1981	R7268	21 in.	Lawn-Boy	F-101	3-1/2	Variable	Push	603703	Yes (Rear)	Turf-Green
1981	8071	21 in.	Lawn-Boy	F-141	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green, Yellow
1981	8237	21 in.	Lawn-Boy	F-141	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1981	R8237	21 in.	Lawn-Boy	F-141	3-1/2	Variable	Self-Propelled	603703	Yes (Rear)	Turf-Green
1981	8238AE	21 in.	Lawn-Boy	F142AE	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1981	R8238AE	21 in.	Lawn-Boy	F-142AE	3-1/2	Variable	Self-Propelled	603703	Yes (Rear)	Turf-Green
1981	8401	21 in.	Lawn-Boy	F-241	3-1/2	3200	Self-Propelled	603703	No	Turf-Green, Black and Orange
1981	8602	20 in.	Lawn-Boy	F-340	3-1/2	3200	Self-Propelled	521725	No	Turf-Green
1981	8671	21 in.	Lawn-Boy	F-141	3-1/2	Variable	Self-Propelled	609988	Yes (Rear)	Turf and Dark Green
1981	8671AE	21 in.	Lawn-Boy	F-142AE	3-1/2	Variable	Self-Propelled	609988	Yes (Rear)	Turf and Dark Green

PRIVATE LABEL

YEAR	J.C. PENNEY MODEL NO.	LAWN-BOY MODEL NO.	SIZE OF CUT	ENGINE MAKE	ENGINE MODEL	H.P.	R.P.M.	PUSH OR SELF-PROPELLED	NO. BLADE	COLOR
1981	0292A	7087JP	21 in.	Lawn-Boy	F-211	3-1/2	Variable	Push	609988	Turf-Green
1981	0392A	8351JP	21 in.	Lawn-Boy	F-251	3-1/2	Variable	Self-Propelled	609988	Turf-Green

LAWN-BOY PRODUCT QUICK REFERENCE CHART (CONTINUED)

YEAR	MODEL NO.	SIZE OF CUT	ENGINE MAKE	MODEL	H.P.	R.P.M.	PUSH OR SELF-PROPELLED	NO. BLADE	GRASS CATCHER	COLOR
1982	4502	20 in.	Lawn-Boy	F-300	3-1/2	3200	Push	521725	No	Turf-Green
1982	4571	21 in.	Lawn-Boy	F-101	3-1/2	Variable	Push Mulcher	609988	Yes (Rear)	Dark and Turf Green
1982	5006	19 in.	Lawn-Boy	D-433	3-1/2	3200	Push	603409	No	Turf-Green
1982	5247	19 in.	Lawn-Boy	F-101	3-1/2	Variable	Push	603409	No	Turf-Green
1982	6259	21 in.	Lawn-Boy	F-201	3-1/2	3200	Push	603703	No	Turf-Green, Black and Orange
1982	6300	21 in.	Lawn-Boy	F-201	3-1/2	3200	Push	603703	No	Turf-Green, Black and Orange
1982	7071	21 in.	Lawn-Boy	F-101	3-1/2	Variable	Push	603703	Yes	Turf-Green, Yellow
1982	7229	21 in.	Lawn-Boy	F-101	3-1/2	Variable	Push	603703	No	Turf-Green
1982	7268	21 in.	Lawn-Boy	F-101	3-1/2	Variable	Push	603703	Yes	Turf-Green
1982	R7268	21 in.	Lawn-Boy	F-101	3-1/2	Variable	Push	603703	Yes (Rear)	Turf-Green
1982	8071	21 in.	Lawn-Boy	F-141	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green, Yellow
1982	8237	21 in.	Lawn-Boy	F-141	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1982	R8237	21 in.	Lawn-Boy	F-141	3-1/2	Variable	Self-Propelled	603703	Yes (Rear)	Turf-Green
1982	8238AE	21 in.	Lawn-Boy	F-142AE	3-1/2	Variable	Self-Propelled	603703	Yes	Turf-Green
1982	R8238AE	21 in.	Lawn-Boy	F-142AE	3-1/2	Variable	Self-Propelled	603703	Yes (Rear)	Turf-Green
1982	8401	21 in.	Lawn-Boy	F-241	e-1/2	3200	Self-Propelled	603703	No	Turf-Green, Black and Orange
1982	8602	20 in.	Lawn-Boy	F-340	3-1/2	3200	Self-Propelled	521725	No	Turf-Green
1982	8671	21 in.	Lawn-Boy	F-141	3-1/2	Variable	Self-Propelled	609988	Yes (Rear)	Dark and Turf Green

PRIVATE LABEL

YEAR	J.C. PENNEY MODEL NO.	LAWN-BOY MODEL NO.	SIZE OF CUT	ENGINE MAKE	ENGINE MODEL	H.P.	R.P.M.	PUSH OR SELF-PROPELLED	BLADE PART NO.	COLOR
1982	0292B	7087 JP	21 in.	Lawn-Boy	F-211	3-1/2	Variable	Push	682915	Turf-Green
1982	0392B	8351JP	21 in.	Lawn-Boy	F-251	3-1/2	Variable	Self-Propelled	682915	Turf-Green
1982	0294	6259	21 in.	Lawn-Boy	F-201	3-1/2	3200	Push	682915	Turf Green Black & Orange

1983 COMPLIANCE LAWN-BOY MOWERS

YEAR	MODEL NO.	SIZE OF CUT	ENGINE MODEL	SHORT BLOCK NO.	TYPE OF STARTING	TYPE OF BRAKING	PUSH OR SELF-PROP	PART NO. OF BLADE	GRASS CATCHER	SPARK PLUG	C.D. PACK	FUEL TANK CAPACITY QTS.
1983	4250	20 in.	COMPLETE ENGINES NOT AVAILABLE ON ALL OTHERS	683028	Zone	Flywheel	Push	682911	Rear	679743	683215	1.25
1983	4505	20 in.		683028	Zone	Flywheel	Push	682911	No	679743	683215	1.25
1983	4573	21 in.		683028	Zone	Flywheel	Push	682915	Rear	679743	683215	2.5
1983	4600	20 in.		683028	Zone	Flywheel	Push	682911	Rear	679743	683215	1.8
1983	5249	19 in.		683028	Zone	Flywheel	Push	682909	No	679743	683215	2.5
1983	6261	21 in.		683030	Top of Shroud	BBC	Push	682917	No	679743	683215	5.0
1983	6301	21 in.		683050	Zone	Flywheel	Push	682915	No	679743	683215	5.0
1983	7231	21 in.		683030	Top of Shroud	BBC	Push	682917	No	679743	683215	2.5
1983	7270	21 in.		683030	Top of Shroud	BBC	Push	682917	(Side)	679743	683215	2.5
1983	R7270	21 in.		683030	Top of Shroud	BBC	Push	682917	Rear	679743	683215	2.5
1983	7270AE	21 in.		683028	Power Restart	Flywheel	Push	682915	(Side)	679743	683215	2.5
1983	R7270AE	21 in.		683028	Power Restart	Flywheel	Push	682915	Rear	679743	683215	2.5
1983	8240	21 in.		683031	Top of Shroud	BBC	Self-Prop	682917	(Side)	679743	683215	2.5
1983	R8240	21 in.		683031	Top of Shroud	BBC	Self-Prop	682917	Rear	679743	683215	2.5
1983	8240AE	21 in.		683029	Power Restart	Flywheel	Self-Prop	682915	(Side)	679743	683215	2.5
1983	R8240AE	21 in.		683029	Power Restart	Flywheel	Self-Prop	682915	Rear	679743	683215	2.5
1983	8290	21 in.		683031	Top of Shroud	BBC	Self-Prop	682917	No	679743	683215	2.5
1983	8402	21 in.		683052	Top of Shroud	BBC	Self-Prop	682917	No	679743	683215	5.0
1983	8605	20 in.		683028	Zone	Flywheel	Self-Prop	682915	No	679743	683215	1.25
1983	8673	21 in.		683029	Zone	Flywheel	Self-Prop	682915	Rear	679743	683215	2.5
1983	8673AE	21 in.	683029	Power Restart	Flywheel	Self-Prop	682915	Rear	679743	683215	2.5	

PRIVATE LABEL

1984 COMPLIANCE LAWN-BOY MOWERS (CONTINUED)

YEAR	J.C. PENNEY MODEL NO.	SIZE OF CUT	LAWN-BOY MODEL NO.	SHORT BLOCK NO.	TYPE OF STARTING	TYPE OF BRAKING	PUSH OR SELF-PROP	PART NO. OF BLADE	GRASS CATCHER	SPARK PLUG	C.D. PACK	FUEL TANK CAPACITY QTS.
1983	0296 (811-4092)	21 in.	7231JP	683030	Top of Shroud	BBC	Push	682917	No	679743	682702	1.8
1983	0396 (811-4100)	21 in.	8290	683031	Top of Shroud	BBC	Self-Prop	682917	No	679743	682702	1.8
1983	0297 (811-4068)	21 in.	6261	683030	Top of Shroud	BBC	Push	682917	No	679743	682702	5.0

1984 COMPLIANCE LAWN-BOY MOWERS

YEAR	MODEL NO.	SIZE OF CUT	ENGINE MODEL	SHORT BLOCK NO.	TYPE OF STARTING	TYPE OF BRAKING	PUSH OR SELF-PROP	PART NO. OF BLADE	GRASS CATCHER	SPARK PLUG	C.D. PACK	FUEL TANK CAPACITY QTS.	
1984	4251	20 in.	COMPLETE ENGINES NOT AVAILABLE ON ALL OTHER MODELS	683028	Zone	Flywheel	Push	682911	Rear	679743	683215	1.25	
1984	4506	20 in.		683028	Zone	Flywheel	Push	682911	No	679743	683215	1.25	
1984	4600	20 in.		683028	Zone	Flywheel	Push	682911	Rear	679743	683215	1.8	
1984	5253	19 in.		683028	Zone	Flywheel	Push	682909	No	679743	683215	2.5	
1984	6262	21 in.		683051	683030	Top of Shroud	BBC	Push	682917	No	679743	683215	5.0
1984	6302	21 in.		683050	683028	Zone	Flywheel	Push	682915	No	679743	683215	5.0
1984	7232	21 in.		683030	683030	Top of Shroud	BBC	Push	682917	No	679743	683215	2.5
1984	7271	21 in.		683030	683030	Top of Shroud	BBC	Push	682917	(Side)	679743	683215	2.5
1984	R7271	21 in.		683030	683030	Top of Shroud	BBC	Push	682917	Rear	679743	683215	2.5
1984	7271AE	21 in.		683028	683028	Power Restart	Flywheel	Push	682915	(Side)	679743	683215	2.5
1984	R7271AE	21 in.		683028	683028	Power Restart	Flywheel	Push	682915	Rear	679743	683215	2.5
1984	8125	20 in.		683028	683028	Zone	Flywheel	Self-Prop	682911	Rear	679743	683215	2.5
1984	8241	21 in.		683031	683031	Top of Shroud	BBC	Self-Prop	682917	(Side)	679743	683215	2.5
1984	R8241	21 in.		683031	683031	Top of Shroud	BBC	Self-Prop	682917	Rear	679743	683215	2.5
1984	8241AE	21 in.		683029	683029	Power Restart	Flywheel	Self-Prop	682915	(Side)	679743	683215	2.5
1984	R8241AE	21 in.		683029	683029	Power Restart	Flywheel	Self-Prop	682915	Rear	679743	683215	2.5
1984	8291	21 in.		683031	683031	Top of Shroud	BBC	Self-Prop	682917	No	679743	683215	2.5
1984	8403	21 in.		683052	683031	Top of Shroud	BBC	Self-Prop	682917	No	679743	683215	5.0
1984	8606	20 in.		683028	683028	Zone	Flywheel	Self-Prop	682911	No	679743	683215	1.25
1984	8674	21 in.		683029	683029	Zone	Flywheel	Self-Prop	682915	Rear	679743	683215	2.5
1984	6211	20 in.	683050	683028	Zone	Flywheel	Push	682911	Rear	679743	683215	5.0	

PRIVATE LABEL

1984 COMPLIANCE LAWN-BOY MOWERS (CONTINUED)

YEAR	J.C. PENNEY MODEL NO.	SIZE OF CUT	LAWN-BOY MODEL NO.	SHORT BLOCK NO.	TYPE OF STARTING	TYPE OF BRAKING	PUSH OR SELF-PROP	PART NO. OF BLADE	GRASS CATCHER	SPARK PLUG	C.D. PACK	FUEL TANK CAPACITY QTS.
1984	0259 (811-4480)	20 in.	4250	683028	Zone	Flywheel	Push	682911	Rear	679743	682702	1.25
1984	0250 (811-4472)	20 in.	4505	683028	Zone	Flywheel	Push	682911	No	679743	682702	1.25
1984	0256 (811-4464)	21 in.	7072	683028	Zone	Flywheel	Push	682915	No	679743	682702	1.25
1984	0373 (811-4456)	21 in.	8072	683029	Zone	Flywheel	Self-Prop	682915	No	679743	682702	1.25

ENGINE QUICK REFERENCE CHART

ENGINE MODEL	ENGINE PART NO.	R. P. M.	H. P.	NO. OF RINGS	GASKET SET	CARBURETOR NO.	CARBURETOR REPAIR KIT NO.	SHORT BLOCK	ENGINE REPLACEMENT	SPARK PLUG	BREAKER POINTS	COIL	CONDENSER
A-10		3200	1-1/2	2	677302	MT29A	09134	None	C-20, 21, or 22	679743	580148	580184	510173
A-11		3200	1-1/2	2	677302	678038	677144*	None	C-20, 21, or 22	679743	580148	580148	510173
A-12, 13	677005	3200	1-1/2	2	677302	678038	677144*	None	C-20, 21, or 22	679743	580148	580184	510173
C-10	677235	3200	2	2	677366	677233	677937	677271	C-12, 13, 14, 17, or 18	679743	677254	580184	677299
C-12	677370	3200	2-1/2	2	677366	677233	677271	677937	C-13, 14, 17, or 18	679743	677254	580184	677299
C-12AA	486425	4000	2-1/2	3	677481	486411	677271	677852	*C-12AA, or 17AA - D-470	679743	677254	580184	677299
C-13	677613	3200	2-1/2	3	677481	677233	677271	677937	C-14, 17, or 18	679743	677254	580184	677299
C-14	677656	3200	2-1/2	3	677481	677233	677271	677937	C-14, 17, or 18	679743	677254	580184	677299
C-15	677796	3200	2-1/2	3	677481	677233	677271	677937	C-15, or 16	679743	677254	580184	677299
C-16	677950	3200	3	3	678071	677233	677271	677937	C-16	679743	677254	580184	677299
C-17	677944	3200	3	3	678071	677233	677271	677937	C-17, or 18	679743	677254	580184	677299
C-17AA	486719	4000	3	3	678071	486411	677271	678053	C-17AA - C-19AA	679743	677254	580184	677299
C-18	678066	3200	3-1/2	3	678071	677233	677271	678063	C-18	679743	677254	580184	677299
C-18AA	486847	4000	3-1/2	3	678071	486411	677271	678269	C-19AA	679743	677254	580184	677299
C-18AAAR		4000	3-1/2	3	678071	487352	677271	678269	C-19AA	679743	677254	580184	677299
C-18B	679416	3200	3-1/2	2	678071	677233	None	678063	C-18B	679743	677254	580184	677299
C-19	678245	3200	3-1/2	3	678071	677233	677271	678063	C-19	679743	677254	580184	677299
C-19AA	487336	4000	3-1/2	3	678071	487251	677271	678269	C-19	679743	677254	580184	677299
C-19B	679414	3200	3-1/2	2	678071	677233	None	678063	C-19B	679743	677254	580184	677299
C-20	677335	3200	1.85	2	678071	677396	677271	677937	C-21, or 22	679743	677254	580184	677299
C-21	677614	3200	1.85	2	677481	677396	677271	677937	C-22	679743	677254	580184	677299
C-22	677653	2800	1.85	2	677481	677396	677271	677937	C-22	679743	677254	580184	677299
C-40	677398	3200	2-1/2	2	677481	677233	677271	677938	C-41, 42, or 43 - D-442	679743	677254	580184	677299
C-41	677615	3200	2-1/2	3	677481	677233	677271	677938	C-41, 42, or 43 - D-442	679743	677254	580184	677299
C-42	677951	3200	3	3	678071	677233	677271	677938	C-42, or 43 - D-442	679743	677254	580184	677299
C-43	677996	3200	4	3	678071	677233	677271	678055	C-43 - D-442	679743	677254	580184	677299
C-44	678509	3200	3-1/2	3	678071	677233	None	678055	C-44	679743	677254	678539	677299
C-45	679415	3200	3-1/2	2	678071	677233	None	678055	C-45	679743	677254	580184	677299
C-50	677578	3200	2-1/2	3	677481	677233	677271	677908	C-50, or 51	679743	677254	580184	677299
C-51	677952	3200	2-1/2	3	678071	677233	677271	677908	C-51	679743	677254	580184	677299
C-60	677651	2800	2-1/2	3	677481	677715	677271	678054	C-60, or 61	679743	677254	580184	677299
C-61	677953	2800	2-1/2	3	678071	677715	677271	678054	C-61	679743	677254	580184	677299
C-70	677675	3200	2	2	677481	677396	677271	677908	C-70, 73, C-76	679743	677254	580184	677299
C-71	677802	3200	2	2	677481	677396	677271	677908	C-71	679743	677254	580184	677299
C-72	677907	3200	2	2	677932	677888	677271	677931	C-72	679743	677254	580184	677299
C-73	677987	3200	2	2	678071	677396	677271	677937	C-73, or C-76	679743	677254	580184	677299
C-74	678058	3200	2-1/2	3	678071	677396	677271	677931	C-74	679743	677254	580184	677299
C-76	678143	3200	2-1/2	3	678071	677396	677271	677937	C-76	679743	677254	580184	677299
C-77	678667	3200	2-1/2	3	678071	677396	677271	677937	C-77	679743	677254	580184	677299
C-78	678680	3200	2-1/2	3	678071	677936	677271	678063	C-78	679743	677254	580184	677299
C-79	679418	3200	2-1/2	2	678071	677233	None	678063	C-79	679743	677254	580184	677299
C-80	677810	2800	2-1/2	3	677366	677396	677271	677968	C-80, or 81	679743	677254	580184	677299
C-81	677954	2800	2-1/2	3	677934	673396	677271	677968	C-81	679743	677254	580184	677299
D-400	678110	2500/3200	3-1/2	3	678071	679131	678148	678150	D-402	679743	677254	678111	677299
D-401	678275	2500/3200	3-1/2	3	678071	678285	678148	678271	D-402	679743	677254	678111	677299
D-402	678407	2500/3200	3-1/2	3	678071	678375	678415	678271	D-403	679743	677254	678111	677299
D-403	678508	2500/3200	3-1/2	3	678071	678375	678415	678271	D-403	679743	677254	678111	677299
D-404	678665	2500/3200	3-1/2	3	678071	678375	678415	678271	D-404	679743	677254	678111	677299
D-405	678914	Variable	3-1/2	3	678071	678375	678415	678271	D-405	679743	677254	678111	677299
D-405E	678915	Variable	3-1/2	3	678071	678375	678415	678271	D-405E	679743	677254	678111	677299
D-406	678978	Variable	3-1/2	3	678071	678375	None	678271	D-406	679743	677254	678111	677299
D-406E	678979	Variable	3-1/2	3	678071	678375	None	678271	D-406E	679743	677254	678111	677299
D-407	679177	Variable	3-1/2	3	678071	678375	None	678271	D-407	679743	677254	678539	677299
D-407E	678178	Variable	3-1/2	3	678071	678375	None	678271	D-407E	679743	677254	678539	677299
D-408	679419	Variable	3-1/2	2	678071	678375	None	678271	D-408	679743	677254	678539	677299
D-408E	679420	Variable	3-1/2	2	678071	678375	None	678271	D-408E	679743	677254	678111	677299
D-409	681476	Variable	3-1/2	2	678071	681445	None	681526	D-409	679743	677254	678539	677299
D-410	681982	3200	3-1/2	2	678071	681843	None	681981	D-140	679743	677254	678539	677299
D-411	682241	3200	3-1/2	2	678071	681843	None	681981	D-411	679743	677254	678539	677299
D-420	679686	3200	3-1/2	2	678071	678518	None	678272	D-420	679743	677254	678539	677299

NOTE: Part No. 679743 is spark plug dispenser - contains 20 CJ-14 spark plugs.

ENGINE QUICK REFERENCE CHART (CONTINUED)

ENGINE MODEL	ENGINE PART NO.	R. P. M.	H. P.	NO. OF RINGS	GASKET SET	CARBURETOR NO.	CARBURETOR REPAIR KIT NO.	SHORT BLOCK	ENGINE REPLACEMENT	SPARK PLUG	BREAKER POINTS	COIL	CONDENSER	SOLID STATE PULSE PACK
D-430	678519	3200	3-1/2	3	678071	678518	678686	678271	D-430	679743	677254	678111	677299	None
D-431	679181	Variable	3-1/2	3	678071	678518		678271	D-431	605885	677254	678539	677299	None
D-432	679417	Variable	3-1/2	2	678071	678518	None	678271	D-432	605885	677254	678539	677299	None
D-433	679904	Variable	3-1/2	2	678071	681445	None	681526	D-433	679743	677254	678539	677299	None
D-440	678123	2500/3200	3-1/2	3	678071	678131	678148	678151	D-442	604200	677254	678111	677299	None
D-441	678276	2500/3200	3-1/2	3	678071	678285	678148	678272	D-442	604200	677254	678111	677299	None
D-442	678408	2500/3200	3-1/2	3	678071	678375	678415	678272	D-443	605885	677254	678111	677299	None
D-443	678509	2500/3200	4	3	678071	678375	678415			605885	677254	678111	677299	None
D-444	678666	2500/3200	3-1/2	3	678071	678375	678415	678272	D-444	605885	677254	678111	677299	None
D-445	678916	Variable	3-1/2	3	678071	678375	678415	678271	D-445	605885	677254	678111	677299	None
D-445E	678917	Variable	3-1/2	3	678071	678375	678415	678271	D-445E	605885	677254	678111	677299	None
D-446	678980	Variable	3-1/2	3	678071	678375	None	678271	D-446	605885	677254	678111	677299	None
D-446E	678981	Variable	3-1/2	3	678071	678375	None	678271	D-446E	605885	677254	678111	677299	None
D-447	679179	Variable	3-1/2	3	678071	678375		678271	D-447	605885	677254	678539	677299	None
D-448	679421	Variable	3-1/2	2	678071	678375	None	678271	D-448	679743	677254	678539	677299	None
D-447E	679180	Variable	3-1/2	3	678071	678375		678271	D-447E	605885	677254	678539	677299	None
D-448E	679422	Variable	3-1/2	2	678071	678375	None	678271	D-448E	605885	677254	678111	677299	None
D-449	681477	3200	3-1/2	2	678071	681071	None	681526	D-449	679743	677254	678539	677299	None
D-450	678124	2500/3200	3-1/2	3	678071	678131	678148	678152	D-451	605885	677254	678111	677299	None
D-451	678277	2500/3200	3-1/2	3	678071	678285	678148	678273		605885	677254	678111	677299	None
D-452	678416	2500/3200	3-1/2	3	678071	678375	678415	678273		605885	677254	678111	677299	None
D-460	678644	2500/3200	2-1/2	3	678071	678518	678415	678643	D-460	605885	677254	678111	677299	None
D-461	678644	Variable	2-1/2	3	678071	678518		678643	D-461	605885	677254	678539	677299	None
D-462	679424	Variable	2-1/2	2	678071	678518	None	678643	D-462	679743	677254	678111	677299	None
D-470	678125	Obsolete	Replace with C18AA Engine - obtain from factory											
D-475	Use D-476													
D-476	679423	Variable	3-1/2	2	678071	681071	None	678271	D-476	679743	677254	678539	677299	None
D-480	681100	Variable	3-1/2	2	678071	678375	None	678271	D-480	679743	677254	678539	677299	None
D-481	681478	Variable	3-1/2	2	678071	681445	None	679948	D-481	679743	677254	678539	677299	None
D-570	—	4000	3-1/2	2	—	681946	681989	681988	D-570	679743	677254	678539	677299	None
D-571	—	4000	3-1/2	2	None	682207	681989	681988	D-572	679743	677254	678539	677299	None
D-571E	—	4000	3-1/2	2	None	682207	681989	681988	D-572E	67943	677254	678539	677299	None
D-572	—	4000	3-1/2	2	None	682207	681989	681988	D-572	679743	677254	678539	677299	None
D-572E	—	4000	3-1/2	2	None	682207	681989	681988	D-572E	679743	677254	678539	677299	None
D-570	—	4000	3-1/2	2	—	681946	681989	681988	D-570	679743	677254	678539	677299	None
D-600	679905	Variable	3-1/2	2	678071	679710	None	679907	D-600	679743	None	None	None	679921
D-600E	679928	Variable	3-1/2	2	678071	679710	None	679931	D-600E	679743	None	None	None	679927
D-601	681479	Variable	3-1/2	2	678071	681445	None	679907	D-601	679743	None	None	None	681542
D-640	679885	Variable	3-1/2	2	678071	679710	None	679908	D-640	679743	None	None	None	679921
D-640E	679929	Variable	3-1/2	2	678071	679710	None	679908	D-640E	679743	None	None	None	679927
D-641	681481	Variable	3-1/2	2	678071	681445	None	679908	D-641	679743	None	None	None	681542
D-641AE	681553	Variable	3-1/2	2	678071	681445	None	679908	D-641AE	679743	None	None	None	681544
F-100	681744	Variable	3-1/2	2	681740	681721	None	681742	F-100	679743	None	None	None	682340

For Replacement of Tillotson Carb. on A-10, use Lawn-Boy Carb. #677395 with 677052 Shut-off and 602253 Gas Line.
 *Use 677144 Repair Kit for original 677038 Carb. If Replacement Carb. #677395 has been installed, use 677528 Repair Kit.
 NOTE: Use latest part number for replacement parts.

ENGINE QUICK REFERENCE CHART (CONTINUED)

ENGINE MODEL	ENGINE PART NO.	R. P. M.	H. P.	NO. OF RINGS	GASKET SET	CARBURETOR NO.	CARBURETOR REPAIR KIT NO.	SHORT BLOCK	ENGINE REPLACEMENT	SPARK PLUG	BREAKER POINTS	COIL	CONDENSER	SOLID STATE PULSE PACK
F-101	NOTE 1	Variable	3-1/2	2	None	682568	None	681742		679743	None	None	None	682340
F-140	NOTE 2	Variable	3-1/2	2	681740	681721	None	681743	F-101	679743	None	None	None	682340
F-141	NOTE 2	Variable	3-1/2	2	None	682568	None	681743	F-141	679743	None	None	None	682340
F-140M		Variable	3-1/2	2	—	681721	None	—	F-141	679743	None	None	None	682340
F-140AE	NOTE 3	Variable	3-1/2	2	681740	681721	None	681743	F-140AE	679743	None	None	None	682340
F-141AE	NOTE 3	Variable	3-1/2	2	None	682568	None	681743	F-142AE	679743	None	None	None	682340
F-142AE	NOTE 3	Variable	3-1/2	2	None	682568	None	681743		679743	None	None	None	682340
F-200	681748	Variable	3-1/2	2	681740	681721	None	681742	F-200	679743	None	None	None	682340
F-201	682250	3200	3-1/2	2	None	682121	None	681742	F-201	679743	None	None	None	682340
F-240	681749	Variable	3-1/2	2		681721	None	681743	F-240	679743	None	None	None	682340
F-241	682292	3200	3-1/2	2	None	682121	None	681743	F-241	679743	None	None	None	682340
F-300	682518	3200	3-1/2	2	None	682568	None	682517	F-340	679743	None	None	None	682340
F-340	682518	3200	3-1/2	2	None	682568	None	682517	F-340	679743	None	None	None	682340

*For Replacement of Tillotson Carb. on A-10, use Lawn-Boy Carb. #677395 with 677052 Shut-off and 602253 Gas Line.

*Use 677144 Repair Kit for original 677038 Carb. If Replacement Carb. #677395 has been installed, use 677526 Repair Kit.

*NOTE: Use latest part number for replacement parts.

- NOTE 1 Supreme — Engine Part No. 681744
 Mulcher-R-Catch Engine Part No. 632355
 Promotional Engine Part No. 682353
- NOTE 2 Supreme — Engine Part No. 681745
 Mulcher-R-Catch Engine Part No. 682356
 Promotional Engine Part No. 682354
- NOTE 3 Supreme — Engine Part No. 682086
 Mulcher-R-Catch Engine Part No. 682538

TORQUE REFERENCE

STANDARD TORQUE REQUIREMENTS UNLESS LISTED SPECIFICALLY

THREAD SIZE	TORQUE INCH POUNDS
10-32	35-38
1/4-20	63-75
5/16-18	142-170
5/16-24	142-170
3/8-16	190-225
3/8-24	235-280

CHECK THE MOWER BEFORE USE

Check all nuts, bolts and fasteners for tightness, especially the blade nut (torque blade nut to 50 ft. lbs.). Disconnect spark plug lead before check.

Keep all guards in place at all times.

Keep either cover plate or grass catcher chute with bag in place and secure at all times.

Check grass or leaf bags for wear or deterioration. Replace bag if necessary.

HANDLE FUEL PROPERLY

Gasoline is extremely flammable and highly explosive under certain conditions. Always stop engine, and do not smoke or allow open flames or spark when mixing fuel or refueling.

ENGINE HARDWARE TORQUE

SERIES		DESCRIPTION	TYPE	SIZE	PART NUMBER	ASSEMBLY TORQUE INCH POUNDS	RECHECK TORQUE INCH POUNDS
"C"	"D"						
	X	NUT, Flywheel	3	7/16-20	604273	375/400	320
X		NUT, Flywheel	3	7/16-20	130981	375/400	180
X	X	SCREW, Shroud to armature plate (1964)	5,7	1/4-20	602848	60/75	
	X	SPARK PLUG	8,7	14MM	ALL	150/180	144
	X	SCREW, Flywheel ring	6,7	10-24	309072	20/25	20
X	X	TANK TO SHROUD (1964)	5	1/4-20	132823	63/75	60
X	X	*SCREW, Armature plate to crankcase	5,7,8	1/4-20	306408	63/75	60
	X	SCREW, Dust cover	5,7	10-24	604344	20/25	20
	X	BOLT, Shoulder, variable speed lever	6,7	10-24	604280	20/25	
X	X	SCREW, Lamination mounting	5,7	10-24	510195	20/25	20
	X	SCREW, Starter attachment	5,7	1/4-20	602192	58/63	50
	X	SCREW, Condenser mounting	5,7	10-24	510193	20/25	20
X		SCREW, Condenser mounting	5,7	10-24	602651	20/25	20
X	X	SCREW, Breaker base	5,7	10-24	302812	20/25	20
	X	SCREW, Shut off switch	6	8-18	602625	6/8	6
X	X	SCREW, Starter pulley	6,7	8-32	602821	16/19	15
X	X	NUT, Condenser	3	8-32	133079	10/13	10
X	X	SCREW, Cylinder to crankcase	5,7,8	5/16-18	602657	105/115	90
X	X	SCREW, Reed plate to carburetor	4,8	1/4-28	132492	63/75	60
X	X	NUT, Reed plate to carburetor	1,8	1/4-28	602201	-----	
X	X	SCREW, Reed plate to crankcase	5,7,8	1/4-20	602192	63/75	60
X	X	SCREW, Filter cup to carburetor	5,7,8	8-32	602775	16/19	15
	X	SCREW, Throttle shaft disc	6	2-56	604205	5/7	5
X		SCREW, Choke and throttle disc	6	#2	53X220	3/5	
	X	NOZZLE	5,7	#72	604282	16/19	15
X		NOZZLE	5,7	#72 BRASS	601096	16/19	15
X	X	SCREW, Float chamber	5,7,8	8-32	604336	12/15	10
X		SCREW, Start cap to base	5,7	10-24	304381	20/25	20
X		SCREW, Starter to shroud	4	1/4-20	602840	63/75	60
X		NUT, Starter to shroud	1	1/4-20	603477	-----	
X	X	SCREW, Connecting rod	5,7	12-24	603976	55/65	55
X		SCREW, Tank strap	6	#10	602012	15/30	

TYPE: 1. NUT, Nylok
2. NUT, Conelok
3. NUT, Standard
4. SCREW, for nylok nut

5. SCREW, Standard machine
6. SCREW, Thread cutting
7. THREAD, Die cast
8. JOINT, Gasketed

*APPLY 682301-NUT & SCREW LOCK ADHESIVE.
16-22

SERVICE BULLETIN REFERENCES

REVISED 1983

TORQUE REFERENCE

ENGINE HARDWARE TORQUE (Continued)							
SERIES		DESCRIPTION	TYPE	SIZE	PART NUMBER	ASSEMBLY TORQUE INCH POUNDS	RECHECK TORQUE INCH POUNDS
"C"	"D"						
X		SCREW, Pully to cap	5	1/4-20	306408	63/70	60
X		SCREW, Governor lever	6,7	6-32	604121	10/13	10
X		SCREW, Filter up on C-74	5	10-24	603783	10/15	
X		SCREW, Air filter C-74	5	8-32	602063	16/19	15
X		SCREW, Filter cup C-72	5	10-24	603882	10/15	
X		SCREW, Chamber intake to carburetor C-72	5	8-32	603878	16/19	15
X	X	*SCREW, Reed to reed plate		6-32	303761	10/13	10
X		SCREW, Scraper bracket C-72	4	1/4-20	602848	63/75	60
X		NUT, Scraper bracket to shroud C-72	1	1/4-20	603477	-----	
	X	SCREW, Shroud mounting	5	10-24	604881	25/30 Fr. 10/15 Sd.	
	X	NUT, Shroud mounting, tinnerman	TINN. "U" TYPE		604860	-----	
	X	NUT, Acorn Tank	3	10-24	604975	10/15	10
	X	SCREW, Tank bracket	6	#10	604964	15/30	
	X	SCREW, Baffle L.H.	5	10-24	510193	25/35	
	X	SCREW, Baffle R.H.	5	1/4-20	602848	55/80	
X	X	SEAT, Float valve	5	5/16-24	402110	19/23	18
X		SCREW, H.T. cable clamp	5	10-24	602651	20/25	20
X		SCREW, Shut off switch	6	8-18	602625	6/8	6
X	X	VALVE, Fuel shut off, 1/8-27-NPT					
X		NUT, Flywheel, zinc flywheel	3	7/16-20	130981	190/225	180

HARDWARE TORQUE

19" Deluxe

DESCRIPTION	TYPE	SIZE	ASSEMBLY TORQUE INCH POUNDS	RECHECK TORQUE INCH POUNDS
SCREW, Handle bracket	4	5/16-18	135/165	
SCREW, Handle	4	1/4-28	60/75	
SCREW, Muffler plate	4	5/16-18	142/170	135
SCREW, Engine mounting	4	5/16-18	142/170	135
NUT, Muffler bolt	2	1/4-20	58/63	50
BOLT, Muffler	5,8	1/4-20	58/63	50
BOLT, Wheel	5	3/8-16	200/240	
NUT, Blade	1	5/8-18	525/650	

- | | |
|-------------------------|----------------------------|
| TYPE: 1. NUT, Nylok | 5. SCREW, Standard machine |
| 2. NUT, Conelok | 6. SCREW, Thread cutting |
| 3. NUT, Standard | 7. THREAD, Die cast |
| 4. SCREW, for nylok nut | 8. JOINT, Gasketed |

TORQUE REFERENCE

19"				
DESCRIPTION	TYPE	SIZE	ASSEMBLY TORQUE INCH POUNDS	RECHECK TORQUE INCH POUNDS
SCREW, Handle bracket (Model 5233)	4	1/4-20	60/75	
SCREW, Handle bracket (Model 5230S)	4	5/16-18	135/165	
SCREW, Handle	4	1/4-28	60/75	
SCREW, Muffler to muffler plate	5,8	1/4-20	58/63	50
BOLT, Wheel lever (Model 5233)	4	5/16-18	135/165	
SCREW, Muffler plate to housing	4	5/16-18	142/170	135
SCREW, Crankcase to muffler plate (Model 5233)	4	5/16-18	142/170	135
NUT, Blade	1,8	5/8-18	525/650	
BOLT, Shoulder, wheel	5,7	3/8-16	200/240	
SCREW, Wing, cover chute (Model 5233)	6,8	1/4-20	20/30	

21" Deluxe				
DESCRIPTION	TYPE	SIZE	ASSEMBLY TORQUE INCH POUNDS	RECHECK TORQUE INCH POUNDS
SCREW, Handle bracket	4	1/4-20	60/75	
SCREW, Handle	4	1/4-28	60/75	
SCREW, Wing, cover chute opening to housing	6,8	1/4-20	20/30	
SCREW, Wing, grass chute to housing (Models 7254 and 7254WB)	5	1/4-20	30/40	
SCREW, Wing, grass chute to housing (Models 7254 and 7254WB)	5	1/4-20	30/40	
SCREW, Speed nut to housing	5	1/4-20	30/40	
NUT, Grass chute	3	8-32	15/20	
NUT, Blade	1,8	5/8-18	525/650	
BOLT, Shoulder, wheel	5,7	3/8-16	200/240	
BOLT, Wheel lever	4	5/16-18	135/165	
SCREW, Muffler to muffler plate	5,8	1/4-20	58/63	50
SCREW, Muffler plate to housing	4	5/16-18	142/170	135
SCREW, Crankcase to muffler plate	4	5/16-18	142/170	135
NUT, Mounting bracket screw	1	1/4-28	63/75	60
SCREW, Mounting bracket	4	1/4-28	-----	

- | | |
|-------------------------|----------------------------|
| TYPE: 1. NUT, Nylok | 5. SCREW, Standard machine |
| 2. NUT, Conelok | 6. SCREW, Thread cutting |
| 3. NUT, Standard | 7. THREAD, Die cast |
| 4. SCREW, for nylok nut | 8. JOINT, Gasketed |

SELF-PROPELLED (GEAR DRIVE)

PART NO. ASSEMBLY
TORQUE

SCREW, Transmission to housing
Aluminum bracket to bearing ass'y.

306832 63/75

SCREW, Transmission to housing
plastic bottom gear cover

608291 30/40

TORQUE REFERENCE

Commercial				
DESCRIPTION	TYPE	SIZE	ASSEMBLY TORQUE INCH POUNDS	RECHECK TORQUE INCH POUNDS
SCREW, Handle bracket	4	1/4-20	60/75	
SCREW, Handle	4	1/4-28	60/75	
SCREW, Muffler to muffler plate	5,8	1/4-20	58/63	50
BOLT, Wheel lever	4	5/16-18	135/165	
SCREW, Muffler plate to housing	4	5/16-18	142/170	135
SCREW, Crankcase to muffler plate	4	5/16-18	142/170	135
SCREW, Fuel tank bracket to housing	4	1/4-20	63/75	60
SCREW, Fuel tank strap	5	10-24	16/19	15
BOLT, Shoulder, wheel	7,5	3/8-16	200/240	
SCREW, Wing, cover chute	6	1/4-20	20/30	
SCREW, Housing	6	10-32	25/40	
NUT, Blade	1,8	5/8-18	525/650	
NUT, Name plate, thread cutting				



SAFETY WARNING

When replacement parts are required, use genuine OMC parts or parts with equivalent characteristics including type, strength, and material. Failure to do so may result in product malfunction and possible injury to the operator and/or passengers.



SAFETY WARNING

Apply OMC No. 388517 ULTRA-LOC to all fasteners within the cutting chamber and **MUST** be tightened to specified torque to avoid coming loose, thus becoming a thrown object if hit by the blade.

TORQUE REFERENCE

MODEL 9213		HARDWARE TORQUE		
DESCRIPTION	TYPE	SIZE	ASSEMBLY TORQUE INCH POUNDS	RECHECK TORQUE INCH POUNDS
NUT, Handle bolt	1	1/4-28	63/75	60
NUT, Bracket to handle pivot clamp screw	1	5/16-18	142/170	135
NUT, Bracket to tongue screw	1	1/4-28	63/75	60
NUT, Pin weld head pivot	1	5/16-18	142/170	135
NUT, Foot pedal screw	1	5/15-18	142/170	135
NUT, Mower mounting plate screw	1	1/4-28	63/75	60
NUT, Eye bolt	3	3/8-16	225/190	180
NUT, Wheel, bolt, right	1	5/16-24	142/170	135
NUT, Wheel, left	1	9/16-18	450/550	
SCREW, Guard to housing	5,7	5/16-18	142/170	135
NUT, Brace bar screw	1	5/16-18	142/170	135
NUT, Shroud to draw bar brace screw	1	5/16-18	142/170	135
SCREW, Cap disc	5,7	3/8-24	225/275	
NUT, Shroud frame to transmission plate screw	1	5/16-18	142/170	135
NUT, Seat support to shroud frame screw	3,8	5/16-18	142/170	135
SCREW, Oil filler bracket	6	#10	30/50	
NUT, Seat to cover bolt	3	1/2-13	250/350	
SCREW, Shroud to cover	6	5/16-18	142/170	135
NUT, Arm, clutch to brace, clutch arm screw	1	1/4-28	63/75	60
NUT, Clutch arm to engine mounting plate screw	1	5/16-18	142/170	135
NUT, Clutch adjusting screw	3	3/8-16	200/240	
SCREW, Engine mounting plate to armature plate	6	5/16-18	142/170	135
SCREW, Bearing engine mounting to engine mounting plate	6	#10	15/20	
NUT, Bell crank bolt	1	5/16-18	142/170	135
NUT, Engine mounting screw	1	5/16-18	142/170	135
NUT, Muffler clamp to cylinder screw	2	1/4-20	63/75	60
SCREW, Muffler clamp to cylinder	5	1/4-20	63/75	60
NUT, Muffler clamp screw	2	5/16-18	142/170	135
NUT, Muffler cover to muffler screw	3,8	1/4-20	63/75	60
SCREW, Roller	6,7,8	1/4-20	63/75	60
SCREW, Set drive shaft	5,7	5/16-18	80/100	
SCREW, Pinion gear pin	5,7	5/16-18	142/170	135
SCREW, Transmission plug	5,7	1/4-20	63/75	60
SCREW, Plug, oil drain	7	1/8-27		
		N.P.T.F.		
SCREW, Axle collar	5,7	5/16-24	120/150	
SCREW, Differential lockplate	5,7	5/16-24	120/150	

TYPE:

1. NUT, Nylok	5. SCREW, Standard machine
2. NUT, Conelok	6. SCREW, Thread cutting
3. NUT, Standard	7. THREAD, Die cast
4. SCREW, for nylok nut	8. JOINT, Gasketed

TORQUE REFERENCE

HARDWARE TORQUE				
MODEL 9213 (Continued)				
DESCRIPTION	TYPE	SIZE	ASSEMBLY TORQUE INCH POUNDS	RECHECK TORQUE INCH POUNDS
NUT, Draw bar screw	1	5/16-18	142/170	135
MODEL - Automower				
DESCRIPTION	TYPE	SIZE	ASSEMBLY TORQUE INCH POUNDS	RECHECK TORQUE INCH POUNDS
NUT, Handle screw	1	1/4-28	63/75	60
SCREW, Handle bracket	4	1/4-20	63/75	60
NUT, Handle bar screw	3	10-24	20/25	20
SCREW, Set, roller driveshaft	5	3/8-24	130/160	
SCREW, Wing, grass chute shaft to housing	5	1/4-20	30/40	
SCREW, Wing, grass chute to housing	5	1/4-20	30/40	
SCREW, Speed nut to housing	5	1/4-20	30/40	
SCREW, Wing, cover, chute opening to housing	6,8	1/4-20	20/30	
SCREW, Grass chute	5	8-32		
BOLT, Wheel lever	4	5/16-18	142/170	135
BOLT, Shoulder wheel	5,7	3/8-16	200/240	
NUT, Blade	1,8	5/8-18	525/650	
SCREW, Sub base mounting	4	5/16-18	142/170	135
SCREW, Crankcase to sub base	5,7	5/16-18	142/170	135
NUT, Muffler to muffler plate	2,8	1/4-20	63/75	60
SCREW, Muffler plate to housing	4	5/16-18	142/170	135
BOLT, Shoulder	4	1/4-28	63/75	60
SCREW, Driveshaft bracket	4	1/4-28	63/75	60
TYPE: 1. NUT, Nylok		5. SCREW, Standard machine		
2. NUT, Conelok		6. SCREW, Thread cutting		
3. NUT, Standard		7. THREAD, Die cast		
4. SCREW, for nylok nut		8. JOINT, Gasketed		

TORQUE REFERENCE



SAFETY WARNING

STANDARD TORQUE REQUIREMENTS UNLESS LISTED SPECIFICALLY

THREAD SIZE	TORQUE INCH POUNDS
4-40	5-7
6-32	10-13
8-18	16-19
8-32	16-19
10-16	25-30
10-24	20-25
10-32	35-38
12-24	58-70
1/4-20	63-75
5/16-18	142-170
5/16-24	142-170
3/8-16	190-225
3/8-24	235-280

CHECK THE MOWER BEFORE USE

Check all nuts, bolts and fasteners for tightness, especially the blade nut (torque blade nut to 50 ft. lbs.). Disconnect spark plug lead before check to prevent accidental restarting of mower.

Keep all guards in place at all times.

Keep either cover plate or grass catcher chute with bag in place and secure at all times.

Check grass or leaf bags for wear or deterioration. Replace bag if necessary.

HANDLE FUEL PROPERLY

Gasoline is extremely flammable and highly explosive under certain conditions. Always stop engine, and do not smoke or allow open flames or spark when mixing fuel or refueling.

SERIES "F" EXCLUDING 1983 & LATER BBC MODELS

DESCRIPTION	ASSEMBLY TORQUE INCH POUNDS		RECHECK TORQUE INCH POUNDS
	MAX.	MIN.	
Nut - Flywheel	400	375	320
Seat - Float Valve	23	19	18
**Screw - Reed to Crankcase Cover	13	10	10
Screw - Ignition Bracket to Cyliner	75	63	60
Screw - Crankcase to Cyliner	115	105	90
Screw - Shroud Base to Cyliner Assembly	75	63	60
*Nut - Blade	650	525	500
Screw Set - Starter to Crankcase Cover	95	85	80
Bolt - Wheel	225	190	180
Nut - Shoulder Bolt - Wheel Bracket	225	190	180
Screw - Connecting Rod Cap	65	55	-
*Screw - Muffler Plate to Housing	170	142	135
Screw - Axle Cover Mounting	30	25	20
Screw - Flywheel Screen	25	20	20
*Screw - Handle Bracket to Housing	170	142	135
**Screw - Ignition Pack (C. D.) to Bracket	25	20	20
Spark Plug	180	150	144
*Screw - Cylinder to Muffler Plate	190	150	135
Screw - Roller Guard Mounting	170	142	135
Screw - Plate and Chute Mounting	35	30	30
*Nut - Muffler Plate to Housing	170	142	135
Screw - Float Bowl to Carburetor Body	13	10	6
Screw - Baffle to Shroud Base	13	10	10
Screw - Engine Shroud to Base	13	10	10
Screw - Gearbox to Crankcase Cover	40	30	30
*Screw - Crankcase Support and Muffler Cover to Muffler Plate	170	142	135
Screw - Carburetor to Crankcase	30	25	25
Screw - Switch Box to Shroud	13	10	10
Bolt - Shoulder Lockout Lever to Crankcase	75	63	60
Bolt & Nut - Height to Housing Adjustment	75	63	60
*Screw - Transmission to Housing - Aluminum	70	60	63
*Screw - Transmission to Housing - (Plastic Cover)	40	30	30
*Screw - Muffler to Muffler Plate	190	150	135
*Nozzle - Carburetor	12	8	10
**Screw - Alternator to Bracket	25	20	20



SAFETY WARNING

When replacement parts are required, use genuine OMC parts or parts with equivalent characteristics including type, strength, and material. Failure to do so may result in product malfunction and possible injury to the operator and/or passengers.

*Apply OMC Part #388517 ULTRA-LOC (Loctite #271).

**Apply 384848 Screw-Loc.



SAFETY WARNING

Apply OMC No. 388517 ULTRA-LOC to all fasteners within the cutting chamber and MUST be tightened to specified torque to avoid coming loose, thus becoming a thrown object if hit by the blade.

TORQUE REFERENCE



SAFETY WARNING

STANDARD TORQUE REQUIREMENTS UNLESS LISTED SPECIFICALLY	
THREAD SIZE	TORQUE INCH POUNDS
4-40	5-7
6-32	10-13
8-18	16-19
8-32	16-19
10-16	25-30
10-24	20-25
10-32	35-38
12-24	58-70
1/4-20	63-75
5/16-18	142-170
5/16-24	142-170
3/8-16	190-225
3/8-24	235-280

CHECK THE MOWER BEFORE USE

Check all nuts, bolts and fasteners for tightness, especially the blade nut (torque blade nut to 50 ft. lbs.). Disconnect spark plug lead before check to prevent accidental restarting of mower.

Keep all guards in place at all times.

Keep either cover plate or grass catcher chute with bag in place and secure at all times.

Check grass or leaf bags for wear or deterioration. Replace bag if necessary.

HANDLE FUEL PROPERLY

Gasoline is extremely flammable and highly explosive under certain conditions. Always stop engine, and do not smoke or allow open flames or spark when mixing fuel or refueling.

SERIES "F" COMPLIANT MOWERS (BBC)			
DESCRIPTION	ASSEMBLY TORQUE INCH POUNDS		RECHECK TORQUE INCH POUNDS
	MAX.	MIN.	
Nut - Flywheel Zinc	400	375	320
Seat - Float Valve	23	19	18
**Screw - Reed to Crankcase Cover	13	10	10
Screw - Ignition Bracket to Cyliner	75	63	60
Screw - Crankcase to Cyliner	115	105	90
Screw - Shroud Base to Cyliner Assembly	75	63	60
*Bolt - Blade (2)	380	340	320
*Screw - Clutch Brake Retaining	375	275	250
*Nozzle - Carburetor	12	8	10
Screw - Spring Box Mounting	170	142	135
Bolt - Shoulder - Brake Cable Clevis	75	63	60
Screw Set - Starter to Crankcase Cover	95	85	80
Bolt - Wheel	225	190	180
Nut - Shoulder Bolt - Wheel Bracket	225	190	180
Screw - Connecting Rod Cap	65	55	-
*Screw - Muffler Plate to Housing	170	142	135
Screw - Axle Cover Mounting	30	25	20
Screw - Flywheel Screen	25	20	20
*Screw - Handle Bracket to Housing	170	142	135
**Screw - Ignition Pack (C. D.) to Bracket	25	20	20
Spark Plug	180	150	144
*Screw - Cylinder to Muffler Plate	190	150	135
Screw - Roller Guard Mounting	170	142	135
Screw - Plate and Chute Mounting	35	30	30
*Nut - Muffler Plate to Housing	170	142	135
Screw - Float Bowl to Carburetor Body	13	10	6
Screw - Baffle to Shroud Base	13	10	10
Screw - Engine Shroud to Base	13	10	10
Screw - Gearbox to Crankcase Cover	40	30	30
*Screw - Crankcase Support and Muffler Cover to Muffler Plate	170	142	135
Screw - Carburetor to Crankcase	30	25	25
Screw - Switch Box to Shroud	13	10	10
Bolt - Shoulder Lockout Lever to Crankcase	75	63	60
Bolt & Nut - Height to Housing Adjustment	75	63	60
*Screw - Transmission to Housing - Aluminum	70	60	63
*Screw - Transmission to Housing - (Plastic Cover)	40	30	30
**Screw - Alternator to Bracket	25	20	20



SAFETY WARNING

When replacement parts are required, use genuine OMC parts or parts with equivalent characteristics including type, strength, and material. Failure to do so may result in product malfunction and possible injury to the operator and/or passengers.



SAFETY WARNING

Apply OMC No. 388517 ULTRA-LOC to all fasteners within the cutting chamber and MUST be tightened to specified torque to avoid coming loose, thus becoming a thrown object if hit by the blade.

*Apply OMC Part #388517 ULTRA-LOC (Loctite #271).
**Apply 384848 Screw-Loc.

ENGINE SPECIFICATIONS AND COMPARISONS

MODELS	"F" SERIES	"D-600" SERIES	"D-400" SERIES
Horse Power	3-1/2+ H.P.	3-1/2 H.P.	3-1/2 H.P.
Bore	2.3810-2.3800	2.3750	2.3750
Stroke	1.7502-1.7497	1.500	1.500
Displacement Cu. In.	7.78	6.65	6.65
Displacement CC's	127.51	108.99	108.99
CRANKSHAFT			
Top Journal Both	.8778-.8773	.8742-8737	.8742-8737
Lower Push	.8778-8773	.8742-8737	.8742-8737
Lower Self-Propelled	1.1270-1.1265	---	---
Crank Pin	.7430-.7425	.7430-.7425	.7430-.7425
Wrist Pin Diameter	.5000-4998	.5000-.4998	.5000-.4998
End Play (Crankshaft)	.006-.016	.007-.017	.007-.017
Side Play (Crankshaft) Next to Seals	.0065 max.	.0065 max.	.0065 max.
PISTON			
Diameter (Right Angle Wrist Pin Hole) (Bottom of Skirt)	2.377-2.376	2.3759-2.3749	2.3759-2.3749
Diameter (Parallel Wrist Pin Hole) (Bottom of Skirt)	2.369-2.3725	2.3714-2.3679	2.3714-2.3679
Diameter Wrist Pin Hole	.5005-5001	.5005-.5000	.5005-.5000
Compression Ratio	5.89:1	5.5:1	4.5:1
Compression Min. (Cold)	80 PSI	70 PSI	65 PSI
Compression (Normal) Cold	100-115 PSI	90-105 PSI	70-85 PSI
Compression (Normal) Hot	90-105 PSI	80-95 PSI	60-80 PSI
PISTON RINGS			
Thickness Top	.0690-.0700	.0615-.0625	.0615-.0625
Thickness Bottom	.0615-.0625	.0615-.0625	.0615-.0625
End Gap (In Cylinder) Top	.007-.017	.015-.025	.015-.025
End Gap (In Cylinder) Bottom	.015-.025	.015-.025	.015-.025
CYLINDER			
Diameter (Inside)	2.3810-2.3800	2.3800-2.3810	2.3800-2.3810
BREAKER POINT GAP			
Coil Air Gap	---	---	.020
C.D. Module Air Gap	---	---	.010
Alternator Air Gap	.010	.010	---
SPARK PLUG GAP	.035	.035	.025
Type Spark Plug Champion	CJ-14	CJ-14	CJ-14
Type Spark Plug A-C	CS-49	CS-49	CS-49
Type Spark Plug Autolite	A-11X	A-11X	A-11X
Governor Speed High	3100-3300 RPM	3100-3300 RPM	3100-3300 RPM
Governor Speed Low	2400-2600 RPM	2400-2600 RPM	2400-2600 RPM

ENGINE

1954-77
MODELS

MODELS	A-10, A-11, A-13	C-10, C-12, C-20, C-21, C-22, C-70, C-71, C-72, C-73, C-75	C-13 thru C-17, C-40 thru C-42, C-50, C-51, C-60, C-61, C-80, C-81, C-74, C-76 thru C-78	C-18, C-19, C-19B, C-43, C-44, D-400 thru D-408, D-405E thru D-408E, D-430, D-431, D-440 thru D-448, D-445E thru D-448E, D-450 thru D-452, D-460 thru D-462, D-475, D-480, D-600	D-409, D-433, D-449, D-463, D-476, D-481, D-601, D-601E, D-640, D-641, D-641AE
Horsepower			2.5 (3 H.P.)	3-1/2	3-1/2
Bore	1-3/4 in.	1-15/16 in.	2-1/8 in.	2-3/8 in.	2-3/8 in.
Stroke	1-1/2 in.	1-1/2 in.	1-1/2 in.	1-1/2 in.	1-1/2 in.
Displacement	3.603 cu. in.	4.43 cu. in.	5.22 cu. in.	6.65 cu. in.	6.65 cu. in.
Piston Diameter	1.7470-1.7465	1.9360-1.9355	2.1205-2.1200	2.3720-2.3715	-
Breaker Point Setting	.020	.020	.020	.020	.020
Coil Air Gap	.010	.010†	.010	678103 Flywheel .016	-
C/D Air Gap				.010	.010
Spark Plug	Champion CJ-14 or equivalent. Gap-.025	Champion CJ-14 or equivalent. Gap-.025	Champion CJ-14 or equivalent. Gap-.025	Champion CJ-14 or equivalent. D-400 Series-.025 D-600 Series-.035	Champion CJ-14 or equivalent. D-400 Series-.025 D-600 Series-.035
GOVERNED SPEED — Fuel Mixture	REFER TO SECTION 16 (ENGINE QUICK REFERENCE CHART) FOR RECOMMENDED SPEEDS				
	1 can Lawn-Boy Lubricant per 1 gal. regular gasoline	1 can Lawn-Boy Lubricant per 1 gal. regular gasoline	1 can Lawn-Boy Lubricant per 1 gal. regular gasoline	1972 & Later; 1 can Lawn-Boy Lubricant per 2 gal. regular gasoline	1 can Lawn-Boy Lubricant per 2 gal. regular gasoline
	See Owner-Operator Manual for complete instructions	See Owner-Operator Manual for complete instructions	See Owner-Operator Manual for complete instructions	1971 & Earlier; 1 can Lawn-Boy Lubricant per 1 gal. regular gasoline See Owner-Operator Manual for complete instructions	

CLEARANCES

CRANKSHAFT					
Top Journal	.6692-.6689	.8742-.8737	.8742-.8737	.8742-.8737	.8742-.8737
Crank Pin	.6865-.6860	.7500-.7495 **.7430-.7425	.7500-.7495 *.7430-.7425	.7430-.7425	.7430-.7425
Bottom Journal	.6692-.6689	.8742-.8737	.8742-.8737	.8742-.8737	.8742-.8737
Bottom Journal					#1.1250-1.1245
CONNECTING ROD					
Wrist Pin Hole	.3659-.3654	.4275-.4280	.4908-.4903	.4908-.4903	
Crank Pin Hole	.6880-.6875	.7530-.7525 **.9427-.9422	.7531-.7525 *.9427-.9422	.9427-.9422	.9427-.9422
WRIST PIN					
Diameter (skirt)	.3650-.3642	.4272-.4270	.4900-.4898	.4900-.4898	.5000-.4998
PISTON					
Diameter	1.7470-1.7465	1.9360-1.9355	x2.1205-2.1200	2.3720-2.3715	2.3759-2.3749
Wrist Pin Hole	.3655-.3650	.4275-.4272	x.4900-.4905	.4900-.4905	.5005-.5000
PISTON RINGS					
Diameter	1.740 ± .000	1.9375 ± .000	2.125 ± .000	2.378-2.377	2.378-2.377
End Gap (In Cyl.)	.020 ± .005	.020 ± .005	.020 ± .005	.005-.015	.005-.015
Thickness	.0935-.0930	.093 ± .0005	.098-.088	.0615-.0625	.0615-.0625
CYLINDER					
Inside Diameter	1.751-1.750	1.940-1.941	xx2.126-2.125	xx2.378-2.377	2.3800-2.3810
Sub-Base Bushing	.683-.680	-	-	-	-
SUB-BASE HOUSING					
Sub-Base Bushing	.683-.680	-	-	-	-
CRANKCASE					
Top Bearing	-	.8770-.8762	.8770-.8762	††.8770-.8762	
Bottom Bearing	-	.8805-.8780	.8805-.8780	.8805-.8780	.8805-.8780
ARMATURE PLATE					
Bearing	-	.8770-.8762	.8770-.8762	.8762-.8746	-

*C-16, C-17, and C-42, C-51, C-61, C-81 engines
 **C-73 engine
 †C-71 engine
 ††C-18, C-19, C-19B, C-43, C-44, D-400, D-401 engines

xModel C-77 2.188 piston diameter
 .4900-.4905 wrist pin hole.
 Model C-78 2.438 piston diameter
 .4900-.4905 wrist pin hole.
 xx1967 "D" series and model C-78
 2.380-2.381 cylinder diameter.

#Models D-481,
 D-640 and
 D-641 only

SECTION 17 - "C" ENGINE SERVICING

IGNITION

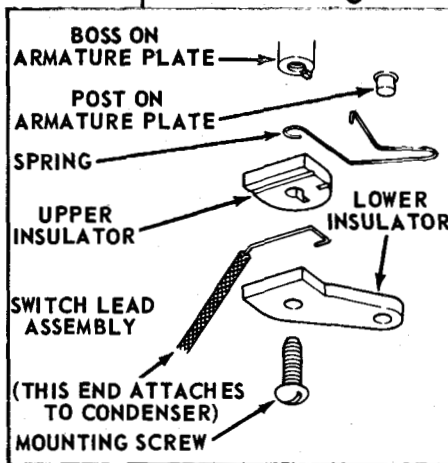
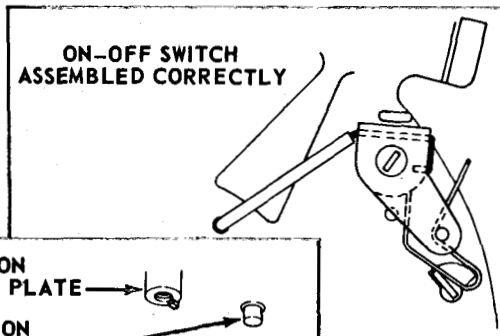
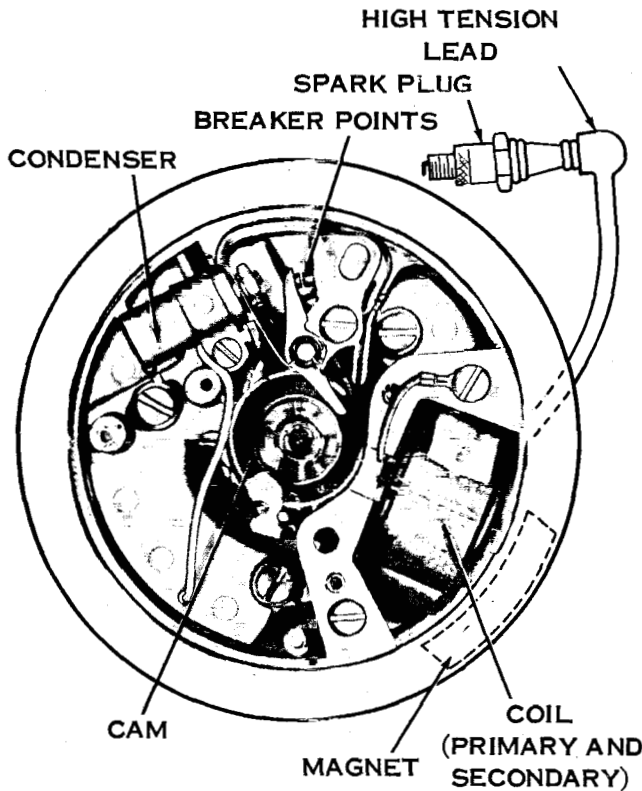
"C" Series Ignition is similar to the D-400 Series Ignition system. Refer to Section 6 for principles of magneto operation.

BREAKER POINT ADJUSTMENT

To check point gap, rotate crankshaft until wear block is centered on lobe of cam. Loosen breaker base screw, and place correct gauge between points, point gap is .020. Pivot breaker base until gap is correct. Retighten breaker base screw and recheck gap to make sure breaker base has not shifted.

NOTE

Always use clean hands and a clean feeler gauge when adjusting points. Oil or dirt will cause points to burn out.



ON-OFF SWITCH ASSEMBLY PROCEDURE

Be sure the shorting wire is assembled to the small fiber plate correctly, and that the spring and choke bar are assembled right. When the choke bar is turned to the OFF position, it must press the spring against the shorting wire.

COIL HEEL ADJUSTMENT

To adjust air gap between coil heels and flywheel magnets; loosen coil mounting screws and place a large bladed screwdriver on ridge of armature plate as illustrated. Move coil until heel touches screwdriver blade and retighten mounting screws securely.

CARBURETION

For general fuel and carburetor information, refer to Section 4, pages 4-1 thru 4-6.

FUEL ADJUSTMENT

For single (main adjustment needle) adjustment, refer to page 4-7.

FLOAT ADJUSTMENT

Refer to page 4-8.

REED SERVICING

Refer to page 4-9.

THROTTLE SHAFT AND DISC SERVICING

Refer to page 4-11.

ENGINE TEAR DOWN

Engine tear down and assembly is easy if done right. Use the right tools, disassemble in correct order, and remove complete assemblies intact where possible. Proceed as follows:

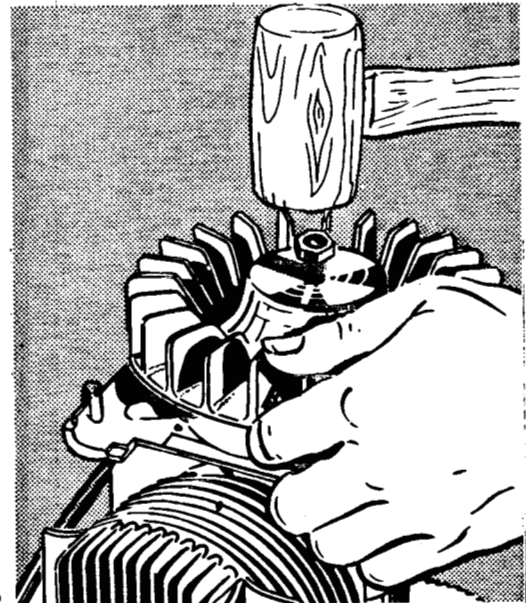
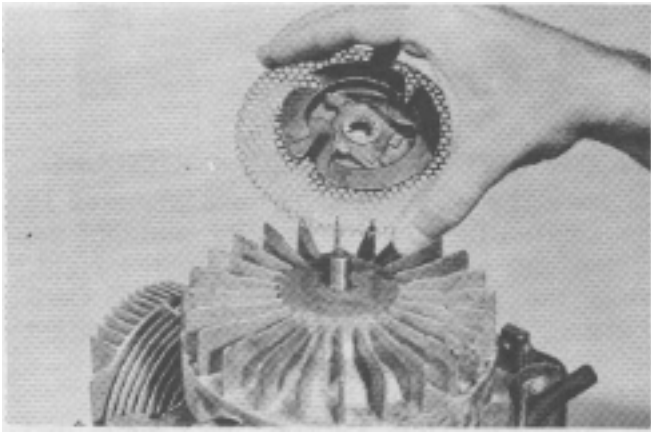
"C" SERIES

1 **TURN FUEL VALVE OFF AND DISCONNECT GAS LINE FROM CARBURETOR, REMOVE CHOKE ROD FROM CHOKE SHAFT, AND REMOVE COMPLETE ENGINE SHROUD, GAS TANK AND RECOIL STARTER AS AN ASSEMBLY.**



2 **REMOVE SPARK PLUG AND INSTALL PISTON STOP PART NO. 677389. REMOVE FLYWHEEL NUT AND WASHER.**

3 **LIFT STARTER PULLEY, PLATE, SCREEN, PIN AND SPRING OFF FLYWHEEL.**

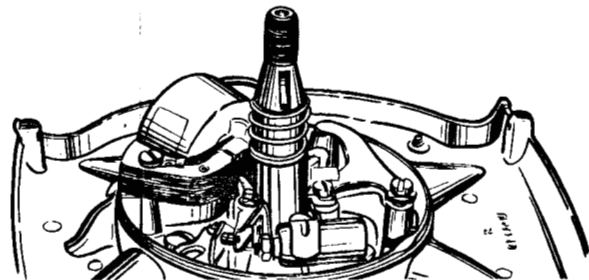


4 **TO REMOVE FLYWHEEL. PLACE NUT ON CRANKSHAFT NEARLY FLUSH WITH TOP OF CRANKSHAFT. LIFT UP ON FLYWHEEL, TAP SHARPLY ON THE NUT WITH A SOFT HAMMER. THE FLYWHEEL SHOULD SNAP LOOSE EASILY. REMOVE FLYWHEEL KEY WITH PAIR OF SIDE CUTTERS OR DIKES.**

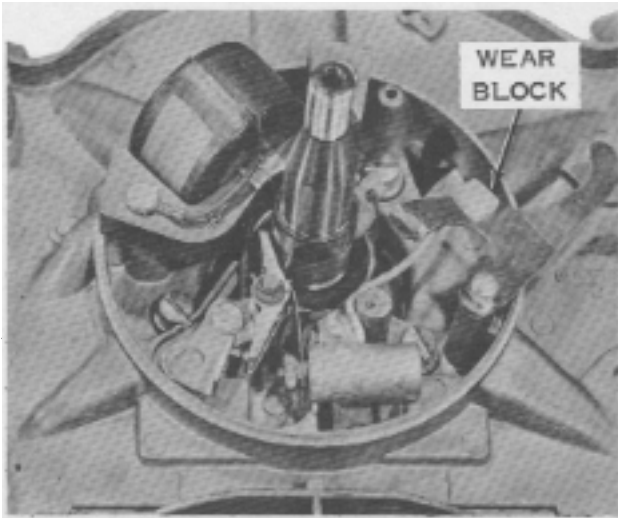


5 **CAREFULLY LIFT GOVERNOR YOKE, FLYWEIGHTS AND COLLAR OFF AS AN ASSEMBLY. SET ASIDE CAREFULLY.**

6 **REMOVE GOVERNOR SPRING.**



ENGINE TEAR DOWN "C" SERIES

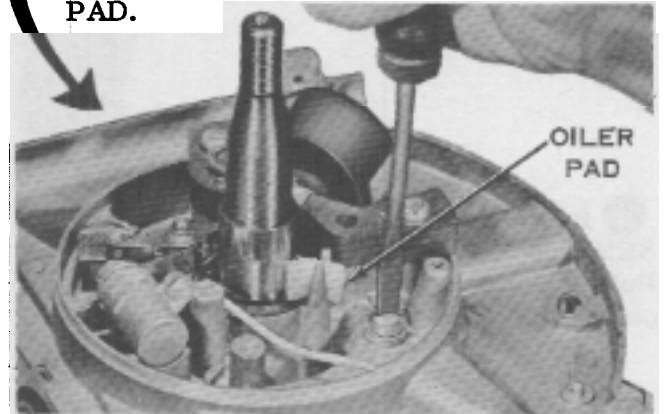


7 REMOVE GOVERNOR LEVER AND WEAR BLOCK ASSEMBLY. EXAMINE WEAR BLOCK. IF WORN ON ONE SIDE TURN OVER. IF BOTH SIDES ARE WORN - REPLACE.

8 REMOVE COMPLETE MAGNETO PLATE BY RELEASING THREE SCREWS.

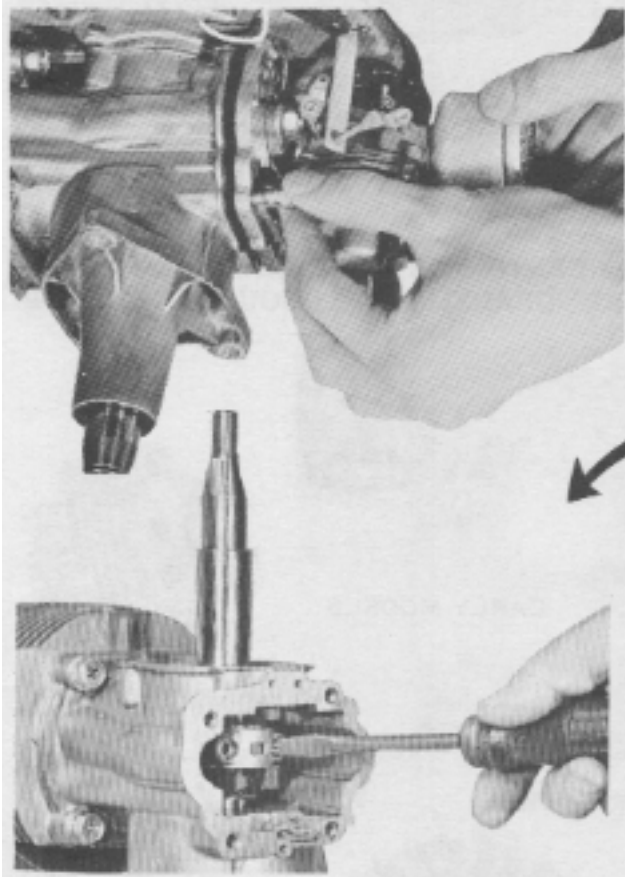
NOTE

APPLY THREE OR FOUR DROPS OF 20 OR 30 WT OIL TO OILER PAD.



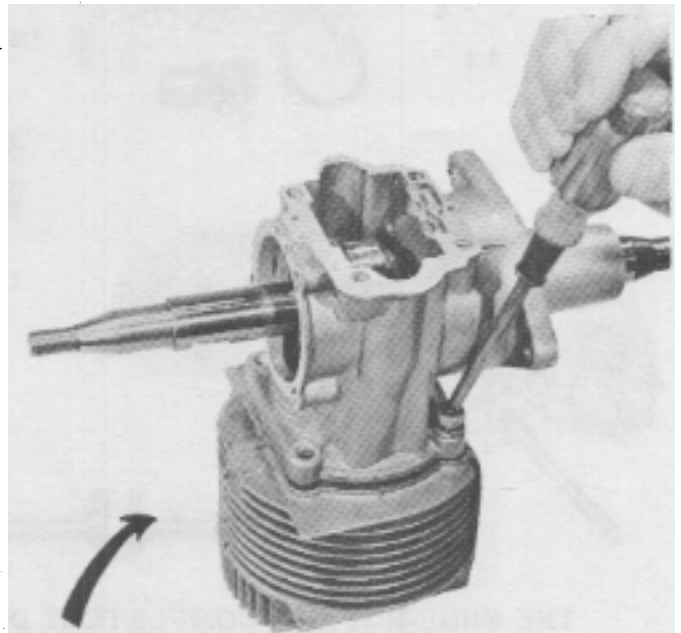
9 REMOVE CARBURETOR AIR FILTER AND REED PLATE ASSEMBLY.

10 REMOVE CONNECTING ROD CAP SCREWS. USE CORRECT SIZE SCREW DRIVER.



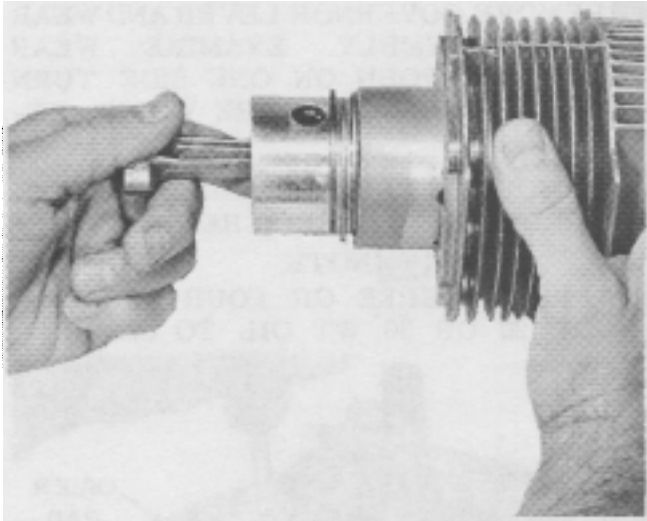
NOTE

CONNECTING ROD BEARING INCLUDES 33 LOOSE NEEDLES. EXAMINE FOR WEAR. RE-INSTALL BY USING HEAVY GREASE. PLACE 17 NEEDLES ON ROD CAP AND 16 ON ROD. VERY EARLY MODEL ENGINES WILL NOT HAVE NEEDLE BEARINGS.



11 REMOVE CYLINDER HEAD BOLTS AND GASKET.

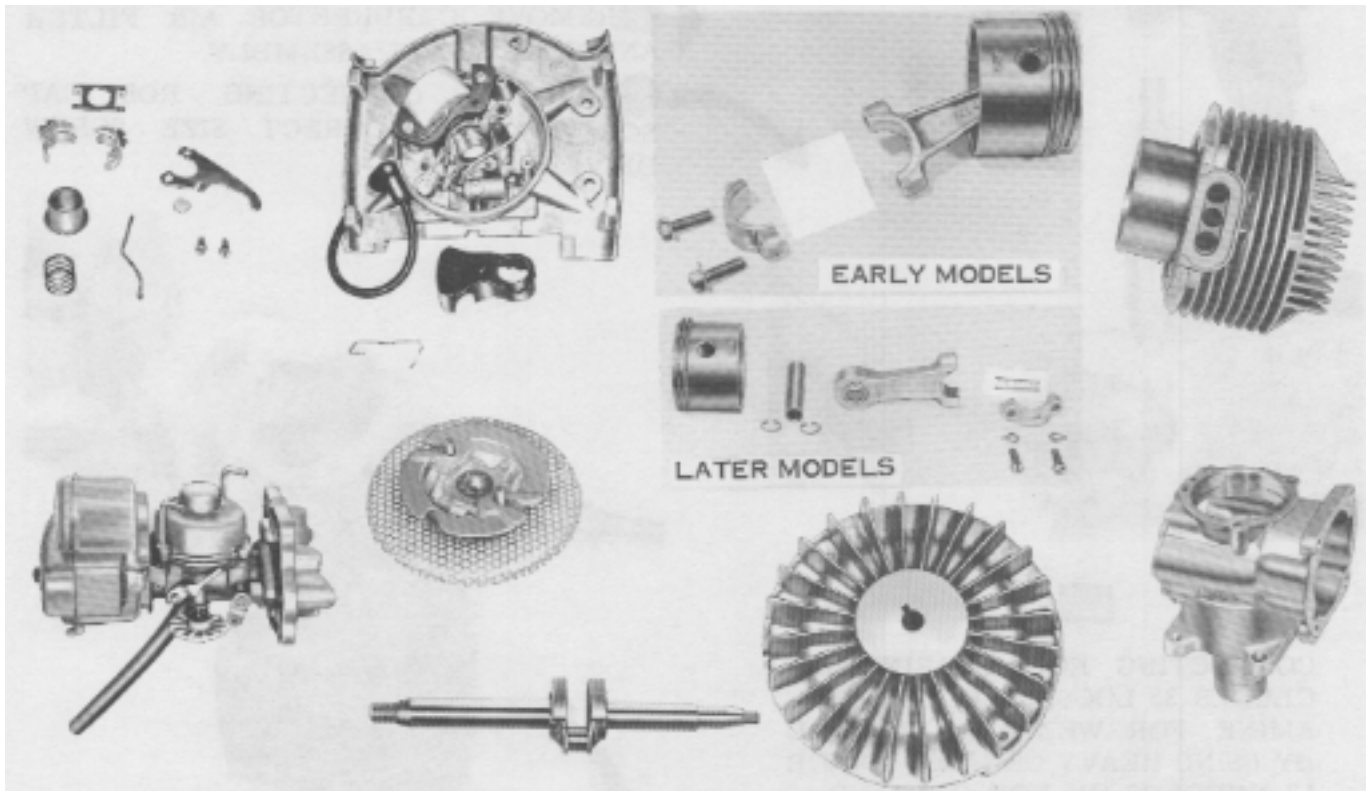
TEAR DOWN "C" SERIES



12 REMOVE PISTON, ROD AND RING ASSEMBLY FROM CYLINDER. **NOTE:** Pull the piston and connecting rod assembly out quickly or the rings may bind or break.



13 REMOVE THE CRANKSHAFT FROM THE CRANKCASE THROUGH THE TOP.



THE ENGINE IS NOW COMPLETELY DISASSEMBLED INTO ITS MAJOR PARTS.

REASSEMBLY TIPS "C" MODEL ENGINES

OIL PISTON AND RINGS
STAGGER RING GAPS
AWAY FROM INTAKE OR
EXHAUST PORTS.



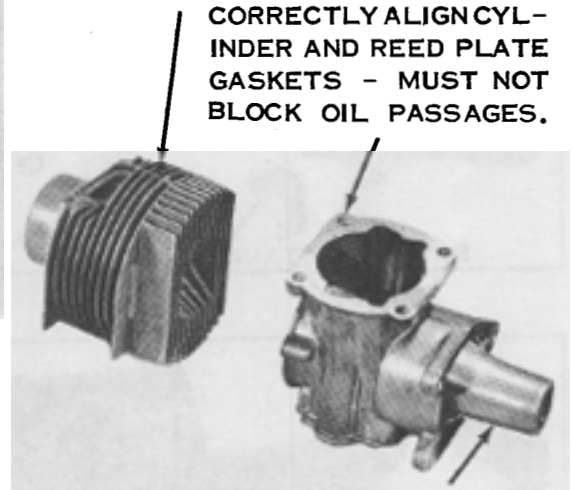
CHECK MAGNETO PLATE
GASKET SIZE - MUST
LIMIT SHAFT END PLAY
TO .007 - .017.



CHECK OIL PASSAGES -
MUST BE CLEAR - FREE
OF DIRT.

OIL CONNECTING ROD
AND THE CRANKSHAFT
BEARINGS.

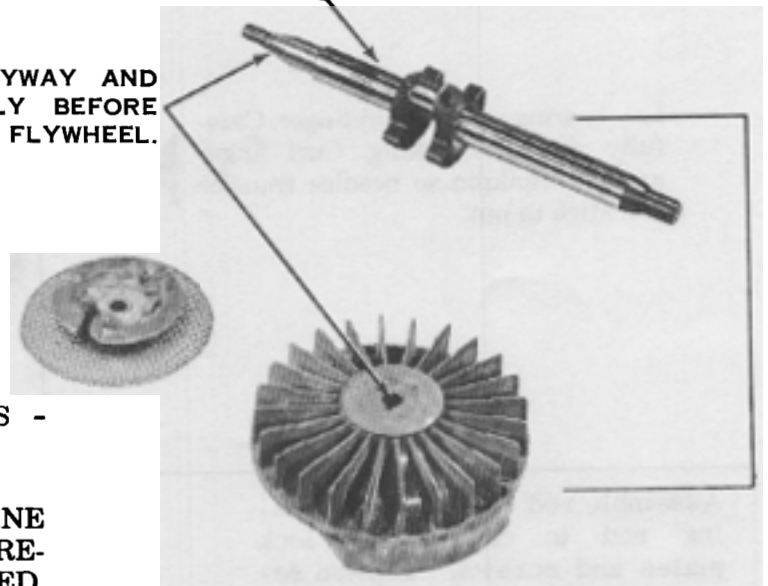
CHECK INTAKE PORTS
ON NEW CYLINDER FOR
BURRS - AVOID SCORES.



CORRECTLY ALIGN CYL-
INDER AND REED PLATE
GASKETS - MUST NOT
BLOCK OIL PASSAGES.

INSERT CRANKSHAFT
CAREFULLY THROUGH
OIL SEALS - TOP AND
BOTTOM - AVOID SEAL
DAMAGE.

POSITION KEYWAY AND
KEY EXACTLY BEFORE
INSTALLING FLYWHEEL.



USE ALL NEW GASKETS.

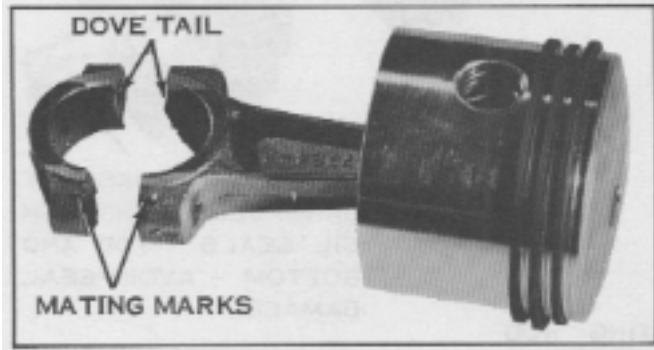
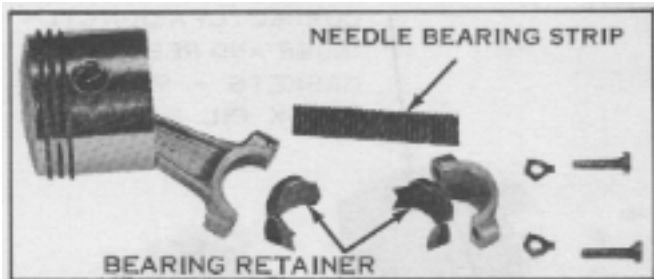
TIGHTEN SCREWS, NUTS AND BOLTS -
refer to torque chart, SECTION 16.

CHECK GOVERNOR FOR CORRECT ENGINE
R.P.M. ADJUSTMENT - TAKES TIME IF RE-
QUIRED AFTER ASSEMBLY COMPLETED.
RECOMMENDED ENGINE SPEED IS 3100-
3300 R.P.M.

⚠ IF ENGINE RUNS ABOVE 3300 R.P.M.
THE BLADE TIP SPEED WILL EXCEED THE
FEDERAL SAFETY STANDARDS OF 19000
FT. PER MINUTE.

ON DRY TYPE AIR FILTER EQUIPPED
ENGINES, REPLACE FILTER ELEMENT ON
ENGINE OVERHAUL.

REPAIRING ENGINES WITH NEEDLE BEARING CON- NECTING ROD ASSEMBLY



Lay bearing strip on forefinger. Carefully peel off backing. Curl finger around crankpin so needles transfer and stick to pin.

Always check needle bearings and retainers on engine overhaul. Before removing connecting rod from crankpin, see if needles can be cocked or separated more than diameter of one needle.

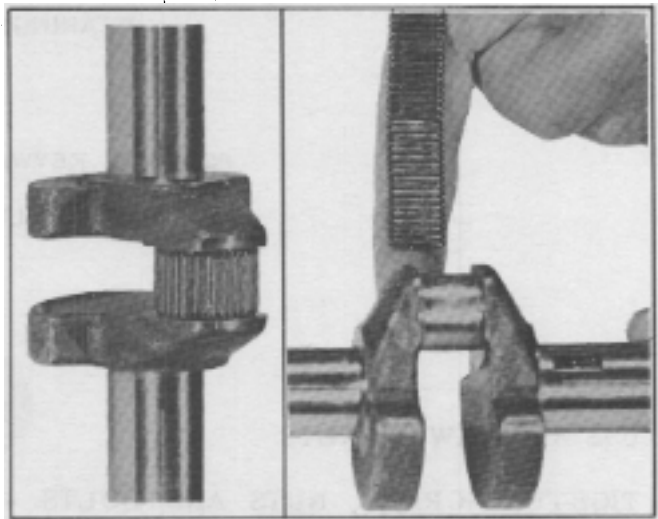
After removal, look for discoloration from heat, scoring or flat spots on needles.

Replace needle bearings and bearing retainers as complete sets only. Needle bearings, pre-coated with grease, are supplied in strips of 33 (one set).

INSTALLATION OF NEEDLE BEARINGS

Press bearing retainers into connecting rod and cap. Be sure dove-tail ends of retainer halves match when mating marks on connecting rod and cap match.

NOTE: Check crankcase for needle bearings that may have dropped inside during disassembly.



Assemble rod to crankpin matching rod to cap. Install lock plates and screws. Tighten securely. Turn connecting rod on crankshaft. Action must be free. Check crankcase for needles that may have dropped out during assembly. Oil after assembly.



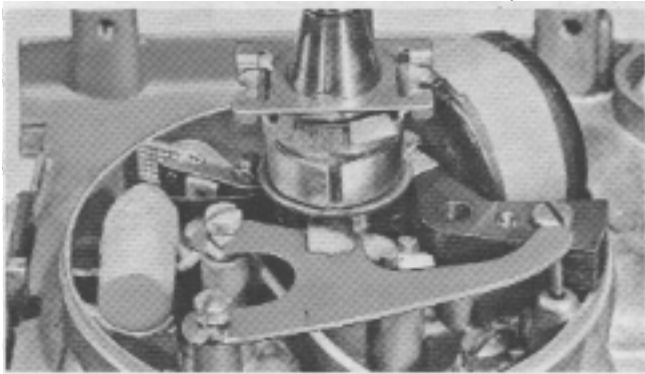
IMPORTANT: Bend ears of lock plates against screws to prevent loosening of the screws.

GOVERNOR OPERATION

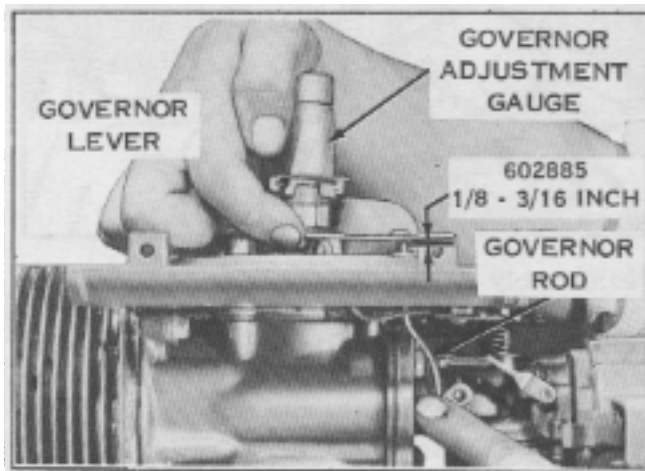
A governor is simply a device which will automatically increase the power output of an engine when an additional load is put on the engine, and decrease the power output when the load is lightened. Different governors are used on the "C" and "D" Series Lawn-Boy engines, though all operate on the same principle. For flywheel removal see page 17-2.

Basically, the governor operates through weights which pivot out from the rotating crankshaft. When the engine is under no load, the crankshaft rotates faster and the centrifugal force swings the weights out.

C SERIES GOVERNOR



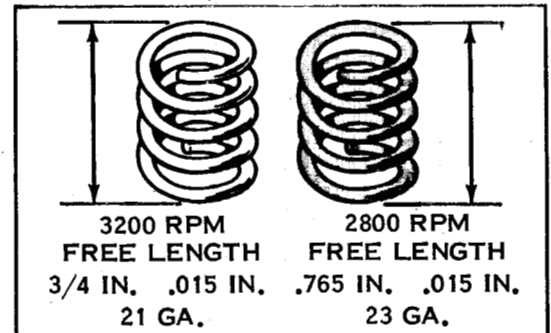
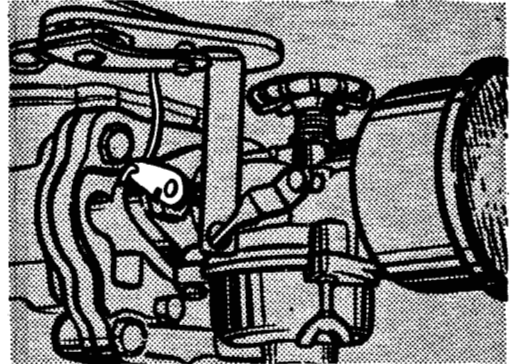
⚠ Engine speed should be 3200 RPM or 2800 RPM. This difference is accomplished with the spring. In other respects the governors are identical. The 2800 RPM spring is color coded (RED); the 3200 RPM spring is uncolored. If spring is distorted, replace. DO NOT ATTEMPT TO ADJUST GOVERNOR BY STRETCHING SPRING.



Under load, the crankshaft rotates slower, and the weights drop in. The weights move a collar up or down on the crankshaft. This collar is linked to the carburetor throttle disc. As the weights drop in, the linkage opens the throttle disc more, causing the engine to pick up speed until it reaches the correct operating RPM's.

The action of the governor is continuous. There should be very little noticeable variation in RPM's of the engines, since any slight increase or decrease in RPM's is immediately transmitted to the carburetor.

C SERIES LINKAGE TO CARBURETOR



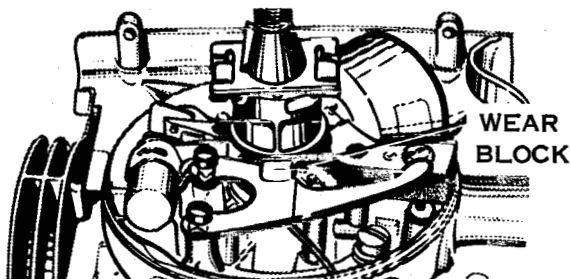
GOVERNOR ADJUSTMENT

Special tool part #602885 must be used for checking the governor adjustment on "C" Series engines. With the governor assembly in place slip the gauge onto the crankshaft and hold down firmly. Holding the gauge in place, depress the throttle shaft to the closed throttle position, and raise the governor lever upward with light pressure. If the governor is properly adjusted, there should be approximately 1/8 - 3/16 inch between the top of the governor rod and the bottom of the governor lever. To make any necessary adjustments simply bend (the governor lever is creased diagonally to simplify adjustment - bend lever along crease) the governor lever up or down with a pair of pliers to obtain the proper clearance.

GOVERNOR SERVICING

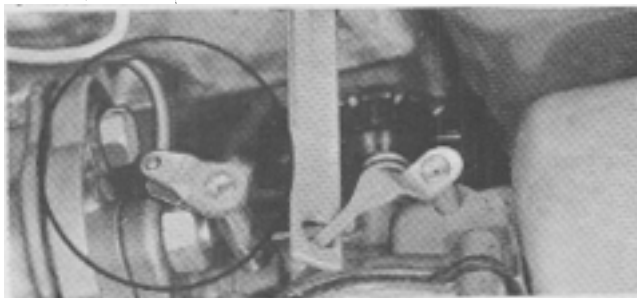
Normally, little trouble is experienced with governors. Often engine surging is blamed on the governor when carburetion is at fault. If the governor is suspected, check the following:

BINDING OF YOKE, WEIGHTS, OR COLLAR. Check for burrs or distortion, or binding of arm at screws.



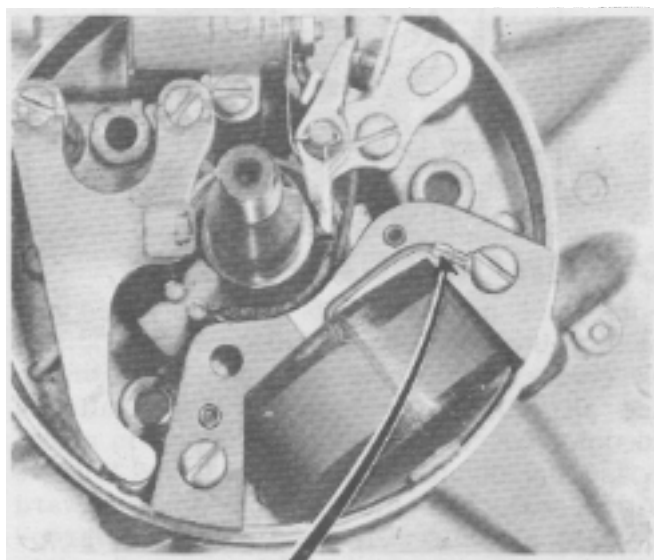
EXCESSIVE WEAR ON WEAR BLOCK. This can be caused by surging, or rough collar surface. A rough collar can be honed smooth. Apply a light film of grease after honing. If the block is worn just from long usage, it can usually be inverted on the lever.

BINDING OF ROD AT CARBURETOR MOUNTING SCREW, MAGNETO PLATE, OR THROTTLE SHAFT LEAF. Check for burrs. There should be no washer under the reed plate mounting screw nearest governor rod.

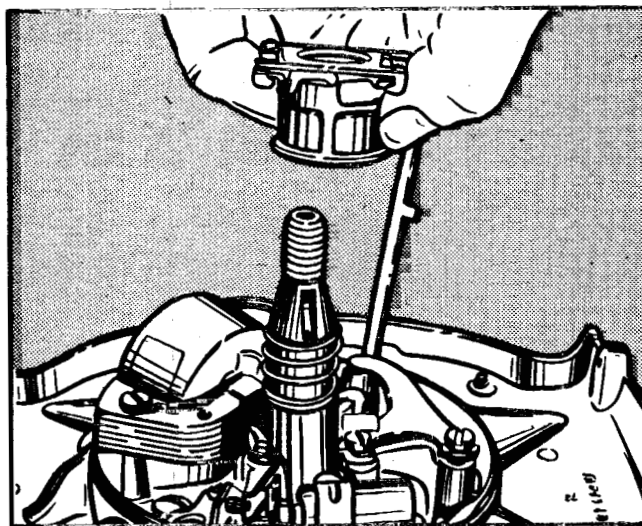


CARBURETOR THROTTLE DISC BINDING IN CARBURETOR THROAT. This is not a governor malfunction, but may give the same symptoms, such as surging. See Carburetor Section.

GOVERNOR REASSEMBLY



In assembly be sure to push the coil wire down below and away from the arc of the weights. Otherwise the movement of the weights could wear through the insulation on the wire.

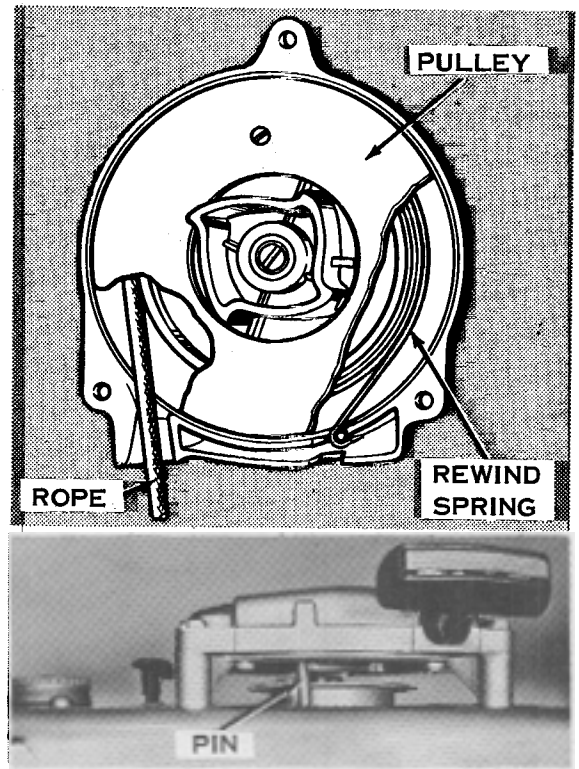


Reassembly of the governor is easier if the spring is placed on the crankshaft, and the yoke, weights and collar assembled separately. Grasp the assembly by the wide sections of the weights and slip over crankshaft and spring.

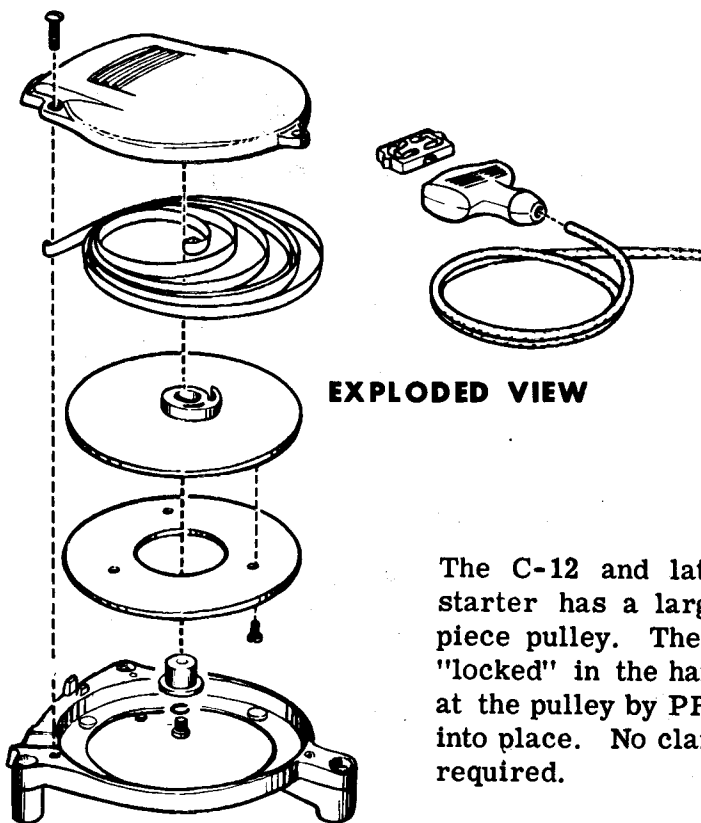
STARTER

PRINCIPLE OF STARTER OPERATION

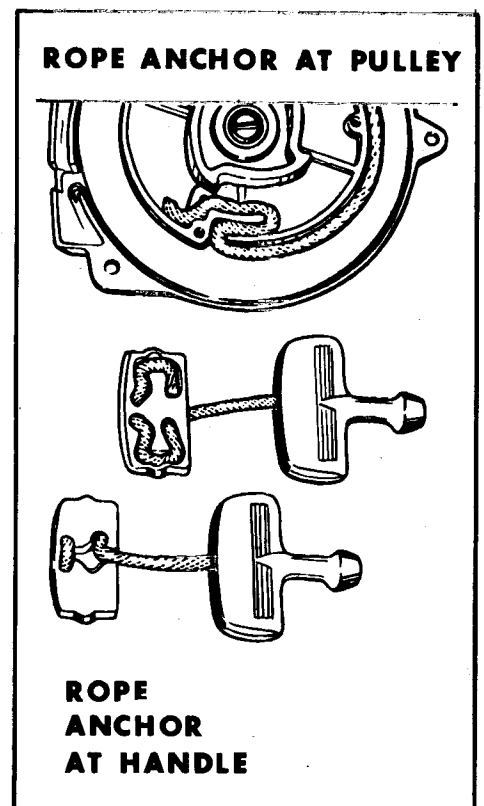
The recoil starter does away with winding a rope around a pulley to start the engine. It consists of a handle attached to a rope, wound around a pulley, and a rewind spring to recoil the rope. A spring loaded pin attached to flywheel engages with starter pulley to turn flywheel and start engine. As soon as the engine starts, centrifugal force moves the pin outward, disengaging it from the starter pulley.



C-12 AND LATER TYPE



The C-12 and later type starter has a larger, two piece pulley. The rope is "locked" in the handle and at the pulley by **PRESSING** into place. No clamps are required.

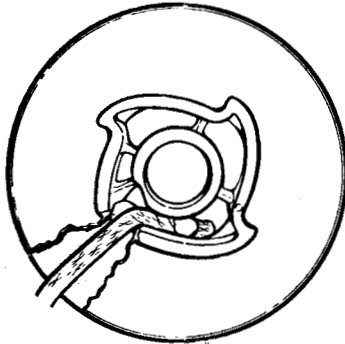


STARTER AND SHROUD

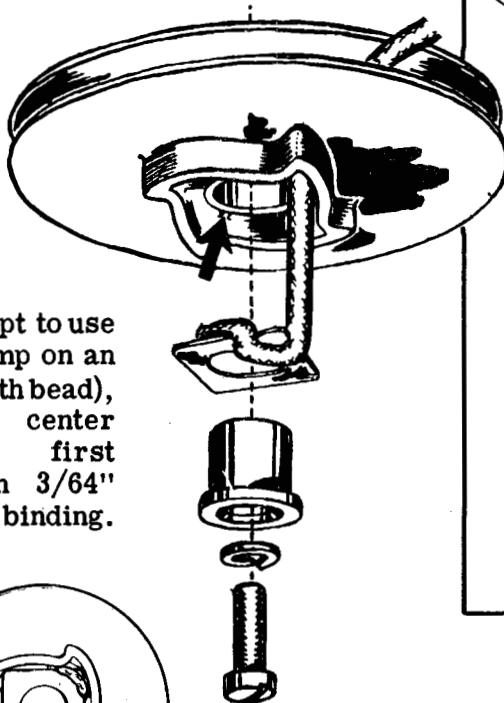
There were two methods of attaching the rope to the pulley; a bead stop and a rope clamp. The rope clamp was an improvement over the bead clamp.

C-10 STARTER

**BEAD STOP
FIRST
METHOD**

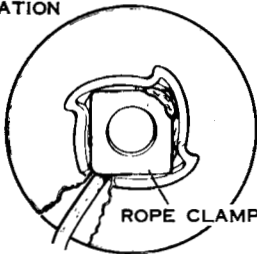


**ROPE CLAMP
SECOND
METHOD**

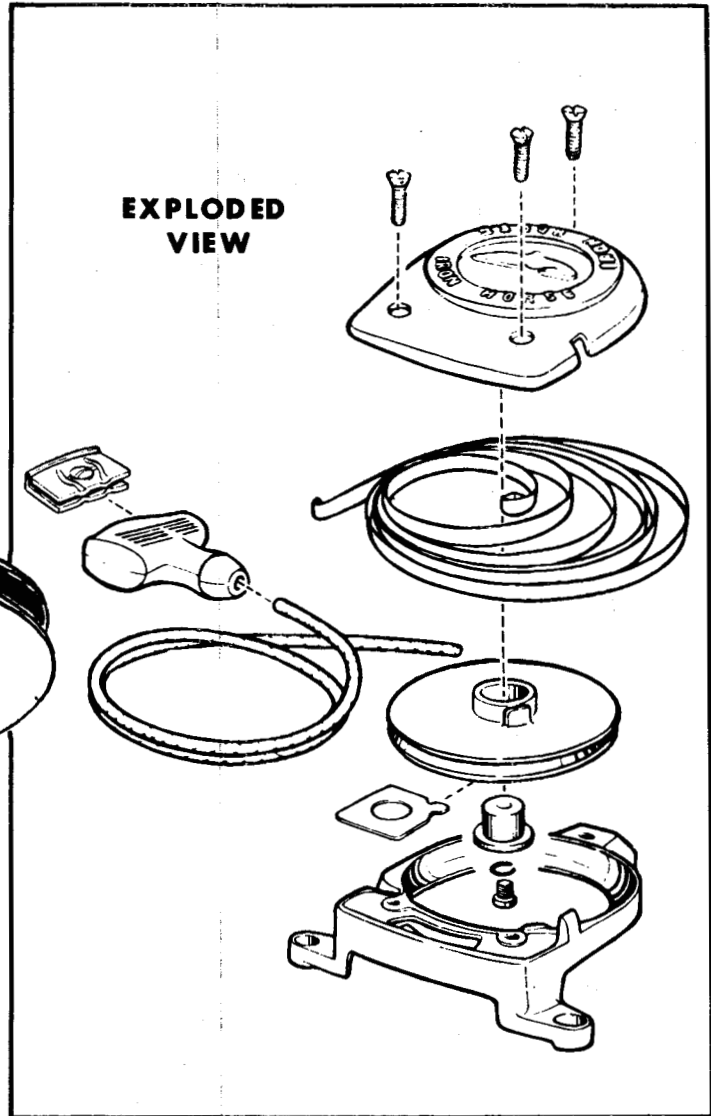


Do not attempt to use the new clamp on an old pulley (with bead), unless the center section is first ground down 3/64" to relieve binding.

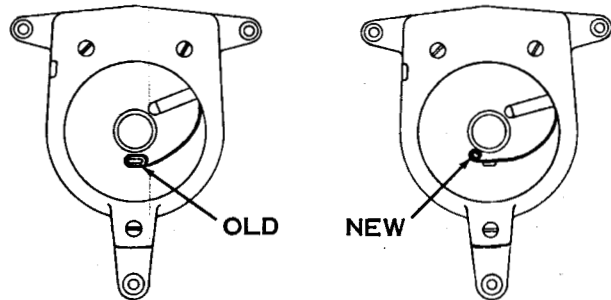
**STARTER ROPE
INSTALLATION**



**EXPLODED
VIEW**



A new spring was also used, with a different method of anchoring on the starter housing. This spring allowed more flexibility under reverse force if the starter handle was allowed to "snap back."



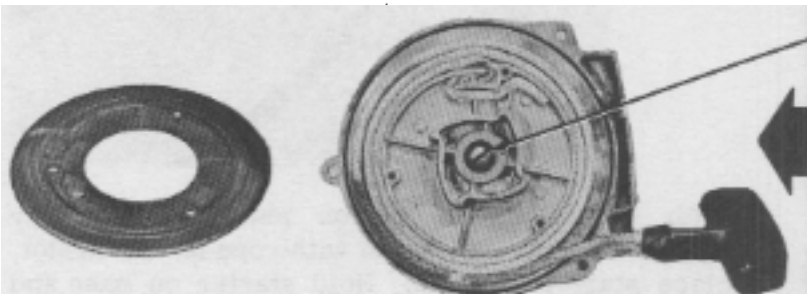
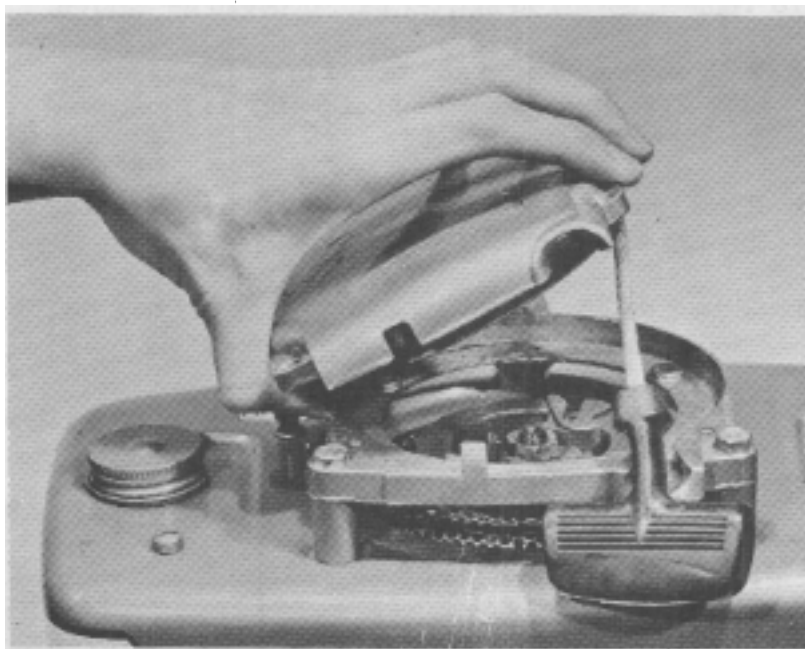
DISASSEMBLY AND ASSEMBLY HINTS

Both types are disassembled and assembled in about the same way, except for anchoring the rope.

On later models it is necessary to remove the shroud before removing the starter. Remove the three screws as shown and lift starter from base.

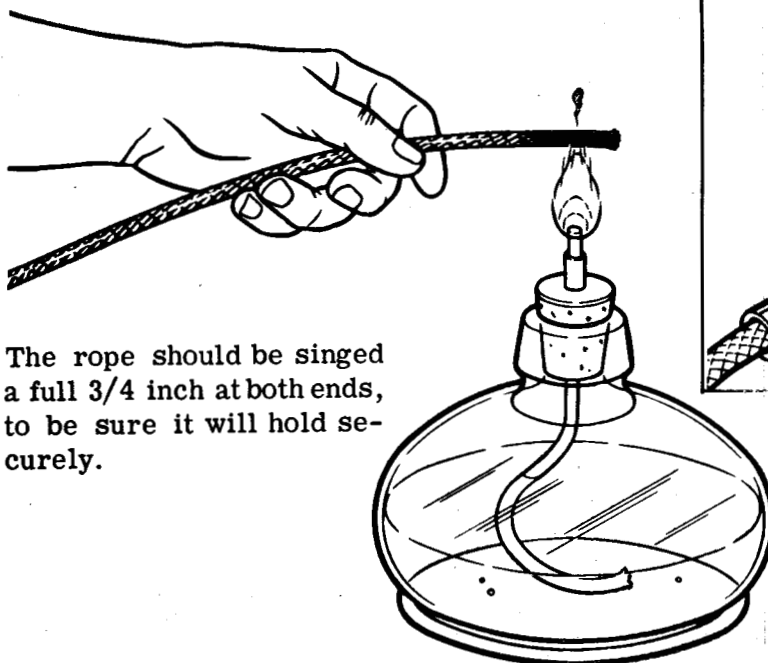
To remove pulley, take out pulley cap screw.

⚠ SAFETY WARNING: WHEN REMOVING PULLEY AND SPRING, BE VERY CAREFUL OF SPRING. THE SPRING IS COILED UNDER TENSION IN THE CAP. LEAVE SPRING IN CAP UNLESS IT IS TO BE REPLACED.

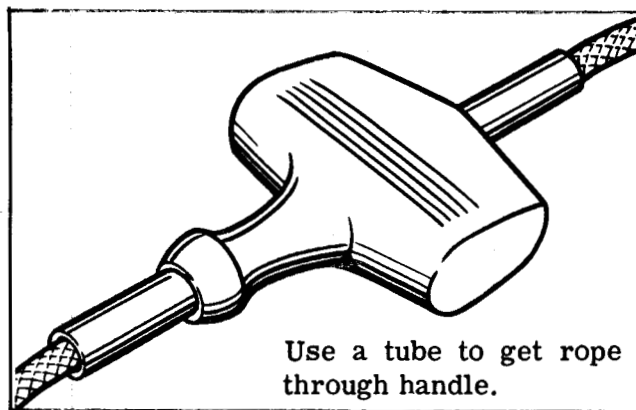


Do not remove screw to replace rope. This will hold spring in place.

On C-12 and later type starters, it is not necessary to remove pulley to replace rope. Just remove the three screws holding the plate on the pulley. Rope can then be pried out of pulley.



The rope should be singed a full 3/4 inch at both ends, to be sure it will hold securely.



Use a tube to get rope through handle.

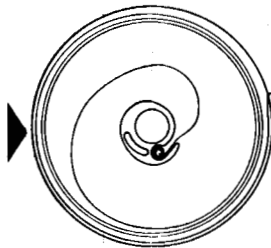


DISASSEMBLY AND ASSEMBLY HINTS

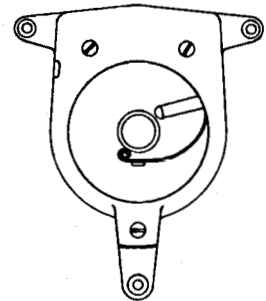
To replace spring in starter cap, proceed as follows:

1. With rope anchored and wound in pulley, place inside loop of spring in hub of pulley as illustrated for each type starter.
2. Place pulley on starter cap so that spring runs through slot in cap.
3. Secure pulley to starter cap with pulley bearing, washer and screw. Tighten screw securely.
4. With a firm grip on the cap, pull rope to turn pulley. The turning pulley will draw the spring into the cap.

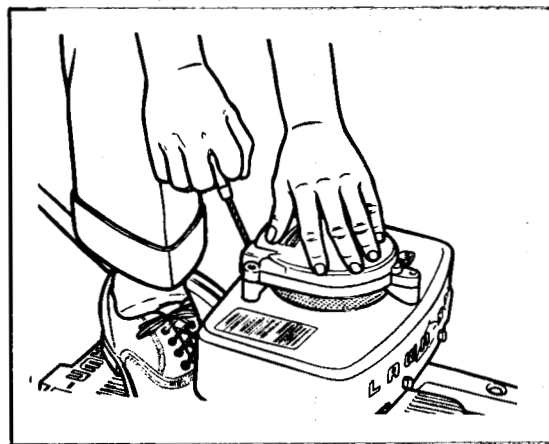
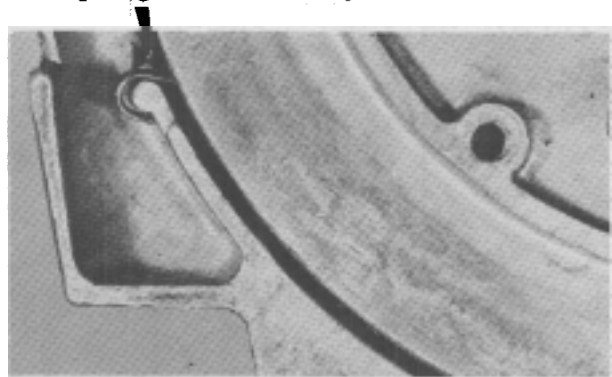
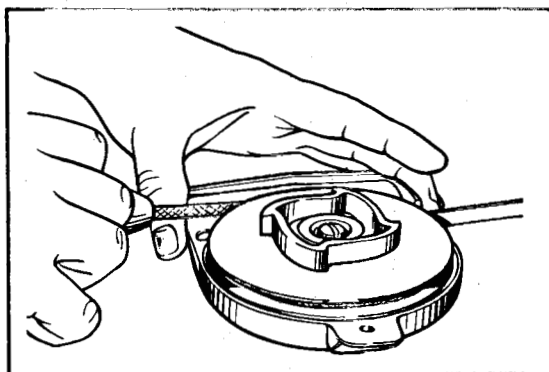
C-12



C-10



5. Rewind rope on pulley and continue until the spring has been fully drawn in.

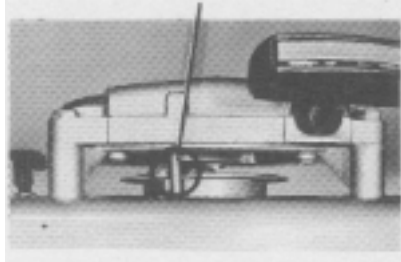


6. With rope fully wound on pulley, turn pulley against spring tension and with rope handle in slot, place starter on base. Hold starter on base and "feel" for proper tension. There must be some tension on spring, otherwise handle will not return all the way to starter when released. **NEVER WIND PULLEY OVER TWO TURNS AFTER TENSION IS FELT ON SPRING.**

7. Replace screws in cap to base.

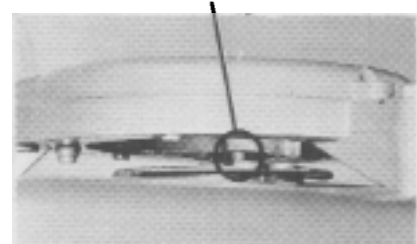
NOTE

RIGHT (OUTSIDE RATCHET)



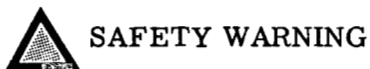
ON ALL STARTERS, MAKE SURE PIN OR PINS ON FLY-WHEEL PULLEYS ARE ON OUTSIDE OF STARTER PULLEY RATCHETS, BEFORE TIGHTENING STARTER TO SHROUD SCREWS.

WRONG (INSIDE RATCHET)



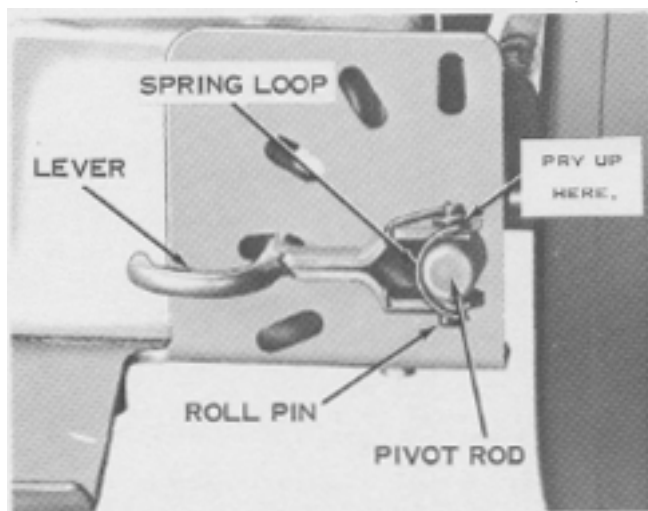
EDGER-TRIMMER SERVICING

REMOVING ENGINE



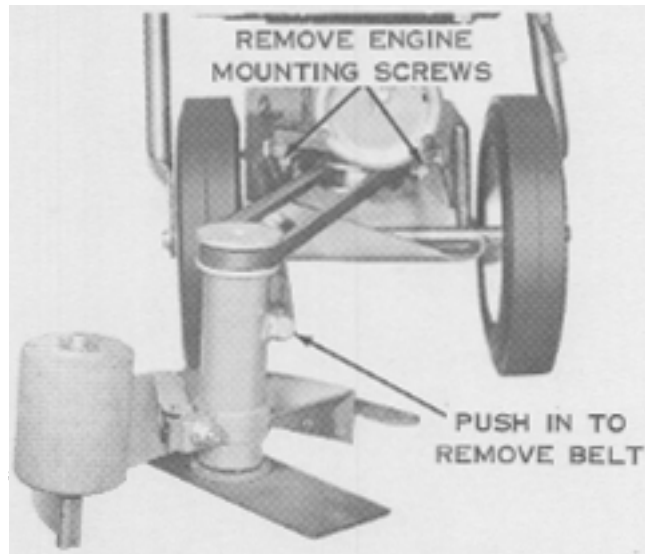
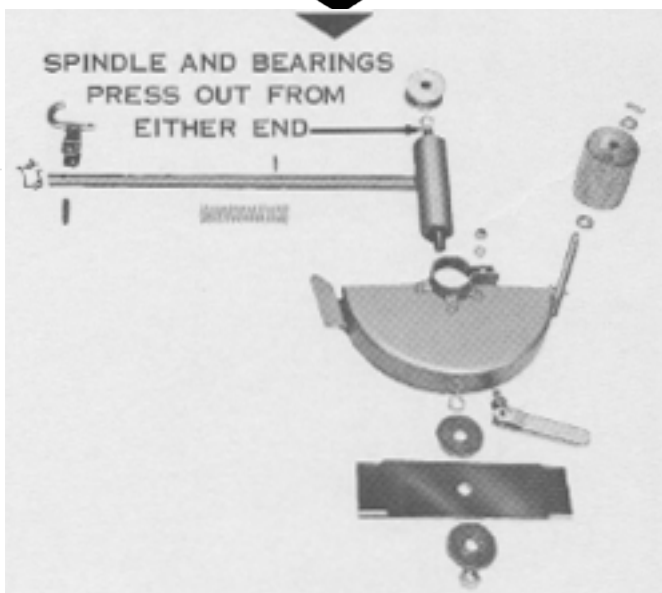
REMOVE SPARK PLUG LEAD AND SPARK PLUG TO PREVENT ACCIDENTALLY STARTING ENGINE.

Turn spindle head to a vertical position. With Edger backed against a solid surface, push spindle pivot rod against spring to remove belt. Remove three engine mounting screws.



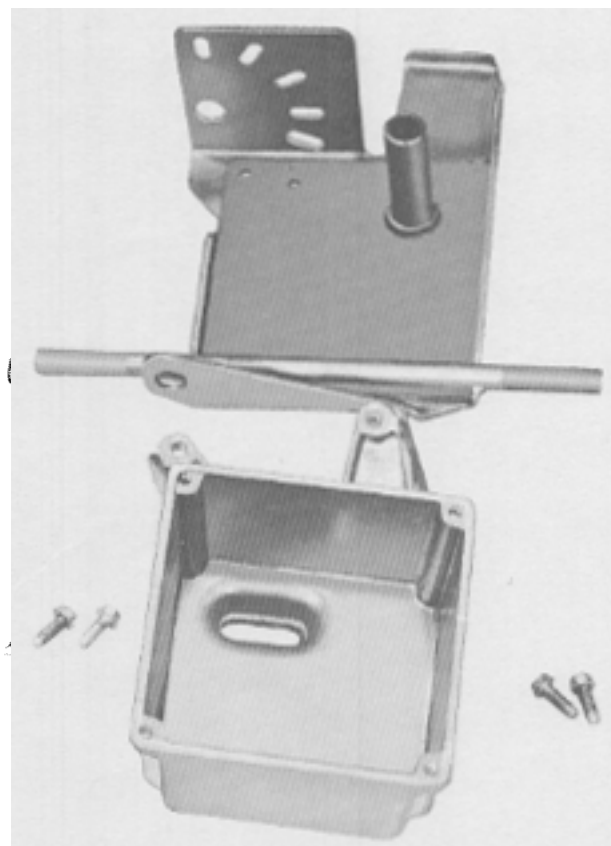
SPINDLE DISASSEMBLY

Remove blade and pulley. Loosen cutter guard clamp lever assembly and remove guard. Press out spindle shaft and bearings from either end.



REMOVING SPINDLE PIVOT ROD

Slip lock lever spring loop off end of pivot rod. Pry one side of spring off of lock lever roll pin. Drive out pin to release pivot rod.



CLEANING MUFFLER

Remove four muffer screws. Muffer separates completely from axle and muffer plate assembly.

PRE-OPERATION CHECK & FUEL

Be sure to read this section carefully before attempting to operate this unit.

1. Fill fuel tank with oil and gas mixture as indicated on red fuel tag located on trimmer.
2. Always make sure gasoline cap is tightened securely before attempting to start engine.

READ CAREFULLY

LAWN-BOY 2 CYCLE OIL IS RECOMMENDED FOR THIS LAWN-BOY TRIMMER

Lawn-Boy 2 cycle oil is formulated specifically for high performance, two cycle engines. Special additives promote thorough mixing and ready combustion. This give the engine the benefits of clean, fresh, lubrication every revolution of the crankshaft.

Thoroughly mix contents of one 8-oz. Lawn-Boy 2 cycle oil can with two U.S. gallons of regular grade automotive gasoline. Do not mix directly in engine fuel tank. If you use two-cycle oil other than Lawn-Boy 2 cycle oil, a mixture of 6 oz. oil to 1 gal. gasoline is recommended.

Do not use a synthetic base oil for lubrication in Lawn-Boy Gasoline Trimmers.



NOTE:

Remember to pay strict attention to the fuel mixing instructions. **DO NOT USE NO-LEAD FUEL OR GASOHOL. NOT FOLLOWING CORRECT MIXING PROCEDURES CAN CAUSE AN ENGINE TO SEIZE OR OTHER DAMAGE.**



**SAFETY
WARNING**

Gasoline is extremely flammable and highly explosive under certain conditions. Always stop engine, and do not smoke or allow open flame or spark when refueling.

Fig. 9—Fuel decal located on trimmer.

LAWN-BOY 2 CYCLE OIL MIXING RATIO		
8 oz.	to	2 gallons
Lawn-Boy 2 cycle oil		regular gas



TRIMMER SPECIFICATIONS

Manufacturer — Piston Power Products

ENGINE	MODEL 3100	MODEL 3130	MODEL 3160	MODEL 1300	MODEL 1330	MODEL 1360
Displacement	31 cc's 1.9 CI	31 cc's 1.9 CI	31 cc's 1.9 CI	31 cc's 1.9 CI	31 cc's 1.9 CI	31 cc's 1.9 CI
Type	2-cycle Air cooled	2-cycle Air cooled	2-cycle Air cooled	2-cycle Air cooled	2-cycle Air cooled	2-cycle Air cooled
Bore	1.37 in.	1.37 in.	1.37 in.	1.37 in.	1.37 in.	1.37 in.
Stroke	1.25 in.	1.25 in.	1.25 in.	1.25 in.	1.25 in.	1.25 in.
Operating RPM	7000 RPM	6500 RPM	6500 RPM	7000 RPM	6500 RPM	6500 RPM
Ignition	Electronic	Electronic	Electronic	Electronic	Electronic	Electronic
Lubrication	Fuel/Oil Mixture	Fuel/Oil Mixture	Fuel/Oil Mixture	Fuel/Oil Mixture	Fuel/Oil Mixture	Fuel/Oil Mixture
Fuel Mix Ratio	32:1* * 8 oz. Lawn-Boy Oil — 2 gallons regular gasoline (32:1) 20:1** ** 12 oz. 2-cycle Oil — 2 gallons regular gasoline (20:1)	32:1* * 8 oz. Lawn-Boy Oil — 2 gallons regular gasoline (32:1) 20:1** ** 12 oz. 2-cycle Oil — 2 gallons regular gasoline (20:1)	32:1* * 8 oz. Lawn-Boy Oil — 2 gallons regular gasoline (32:1) 20:1** ** 12 oz. 2-cycle Oil — 2 gallons regular gasoline (20:1)	32:1* * 8 oz. Lawn-Boy Oil — 2 gallons regular gasoline (32:1) 20:1** ** 12 oz. 2-cycle Oil — 2 gallons regular gasoline (20:1)	32:1* * 8 oz. Lawn-Boy Oil — 2 gallons regular gasoline (32:1) 20:1** ** 12 oz. 2-cycle Oil — 2 gallons regular gasoline (20:1)	32:1* * 8 oz. Lawn-Boy Oil — 2 gallons regular gasoline (32:1) 20:1** ** 12 oz. 2-cycle Oil — 2 gallons regular gasoline (20:1)
Carburetor	Diaphragm, all position	Diaphragm, all position	Diaphragm, all position	Diaphragm, all position	Diaphragm, all position	Diaphragm, all position
Ignition Switch	Toggle	Toggle	Toggle	Toggle	Toggle	Toggle
Starter	Auto rewind	Auto rewind	Auto rewind	Auto rewind	Auto rewind	Auto rewind
Muffler	Baffled with guard	Baffled with guard	Baffled with guard	Baffled with guard	Baffled with guard	Baffled with guard
Throttle	Manual spring return	Manual spring return	Manual spring return	Manual spring return	Manual spring return	Manual spring return
Fuel tank capacity	14 oz.	14 oz.	18 oz.	14 oz.	14 oz.	18 oz.
Bearings	Needle & ball	Needle & ball	Needle & ball	Needle & ball	Needle & ball	Needle & ball
Crankshaft	Cantilevered	Cantilevered	Cantilevered	Cantilevered	Cantilevered	Cantilevered
Connecting Rod	Stamped	Stamped	Stamped	Stamped	Stamped	Stamped
Spark plug—Champion	DJ8J	DJ8J	DJ8J	DJ8J	DJ8J	DJ8J
Spark plug gap	.025	.025	.025	.025	.025	.025
C.D. module air gap	.010	.010	.010	.010	.010	.010
Piston ring end gap	.025 max.	.025 max.	.025 max.	.025 max.	.025 max.	.025 max.
Piston side ring clearance (groove wear)	.005 max.	.005 max.	.005 max.	.005 max.	.005 max.	.005 max.
Compression	avg. 120 lbs. min. 90 lbs.	avg. 120 lbs. min. 90 lbs.	avg. 120 lbs. min. 90 lbs.	avg. 120 lbs. min. 90 lbs.	avg. 120 lbs. min. 90 lbs.	avg. 120 lbs. min. 90 lbs.
Piston ring width	.052 min.	.052 min.	.052 min.	.052 min.	.052 min.	.052 min.
DRIVESHAFT/CUTTING HEAD						
Type of drive	Direct	Clutch	Clutch	Direct	Clutch	Clutch
Driveshaft hsg.	Alum. tube	Alum. tube	Alum. tube	Alum. tube	Alum. tube	Alum. tube
Driveshaft	Chrome Vanadium 1/4"	Chrome Vanadium 1/4"	Chrome Vanadium 1/4"	Chrome Vanadium 1/4"	Chrome Vanadium 1/4"	Chrome Vanadium 1/4"
Operators control	Adjustable	Adjustable	Adjustable	Adjustable	Adjustable	Adjustable
Throttle	Fingertip (trigger)	Fingertip (trigger)	Fingertip (trigger)	Fingertip (trigger)	Fingertip (trigger)	Fingertip (trigger)
Shoulder strap/ harness	Accessory	Quick snap	Quick snap	Accessory	Quick snap	Quick snap
Cutting head	Bump head releaser	Bump head releaser	Bump head releaser	Bump head releaser	Bump head releaser	Bump head releaser
Cutting head size	3"	4"	4"	3"	4"	4"
Cutting line dia.	.080 dia.	.105 dia.	.105 dia.	.080 dia.	.105 dia.	.105 dia.
Cutting path	16"	16"	16"	16"	16"	16"
Operating weight	9.5 lbs.	10.5 lbs.	11 lbs.	9.5 lbs.	10.5 lbs.	11 lbs.

TRIMMER SPECIFICATIONS Continued

ENGINE	MODEL SSI	MODEL SSII	MODEL 1400	MODEL 1460
Displacement	31 cc's 1.9 CI	31 cc's 1.9 CI	31 cc's 1.9 CI	31 cc's 1.9 CI
Type	2-cycle Air cooled	2-cycle Air cooled	2-cycle Air cooled	2-cycle Air cooled
Bore	1.37 in.	1.37 in.	1.37 in.	1.37 in.
Stroke	1.25 in.	1.25 in.	1.25 in.	1.25 in.
Operating RPM	7000 RPM	7000 RPM	7000 with string fully extended	7000 with string fully extended
Ignition	Electronic Fuel/Oil	Electronic Fuel/Oil	Electronic Fuel/Oil	Electronic Fuel/Oil
Lubrication	Mixture 32:1*	Mixture 32:1*	Mixture 32:1*	Mixture 32:1*
Fuel Mix Ratio	20:1**	20:1**	*8 oz. Lawn-Boy Oil — 2 gallons regular gasoline (32:1) 20:1** **12 oz. 2-cycle Oil — 2 gallons regular gasoline (20:1)	20:1**
Carburetor	Diaphragm, all position	Diaphragm, all position	Diaphragm, all position	Diaphragm, all position
Ignition Switch	Slide	Slide	Rocker	Rocker
Starter	Auto rewind	Auto rewind	Auto rewind	Auto rewind
Muffler	Baffled with guard	Baffled with guard	Baffled with guard	Not interchangeable with other models
Throttle	Manual spring return	Manual spring return	Manual spring return	Manual spring return
Fuel tank capacity	20 oz.	20 oz.	18 oz.	18 oz.
Bearings	Needle & ball	Needle & ball	Needle & ball	Needle & Ball
Crankshaft	Cantilevered	Cantilevered	Cantilevered	Cantilevered
Connecting Rod	Stamped	Stamped	Stamped	Stamped
Spark plug—Champion	DJ8J	DJ8J	Champion DJ8J	Champion DJ8J
Spark plug gap	.025	.025	.025	.025
C.D. module air gap	.010	.010	.010	.010
Piston ring end gap	Dowel pin	Dowel pin	.025 max.	.025 max.
Piston side ring clearance (groove wear)	.005 max.	.005 max.	.005 max.	.005 max.
Compression	avg. 120 lbs. min. 90 lbs.	avg. 120 lbs. min. 90 lbs.	avg. 120 lbs. min. 90 lbs.	avg. 120 lbs. min. 90 lbs.
Piston ring width	.052 min.	.052 min.	.052	.052
DRIVESHAFT/CUTTING HEAD				
Type of drive	Direct	Clutch	Direct	Direct
Driveshaft hsg.	Alum. tube	Alum. tube	2 Pc. steel tube	1 pc. steel tube
Driveshaft	Chrome	Chrome	High torque chrome	High torque chrome
Operators control	Vanadium 1/4"	Vanadium 1/4"	Vanadium 1/4"	Vanadium 1/4"
Throttle	Adjustable Fingertip (trigger)	Adjustable Fingertip (trigger)	Adjustable "D" hdlc Fingertip (trigger)	Tubular "J" handle Fingertip (trigger)
Shoulder strap/ harness	Accessory	Accessory	Accessory kit available	Std
Cutting head	Bump head releaser	Bump head releaser	Bump head line releaser	Combination bump head twin line and 8 tooth brush blade
Cutting head size	3"	4"	3"	4"
Cutting line dia.	.080 dia.	.105 dia.	.080 dia. twin line	.080 dia. twin line
Cutting path	16"	16"	15"	16"
Operating weight	11 lbs.	12 lbs.	10.5 lbs. approx.	12 lbs. with blade 12.8 lbs. with string cutting attachment

CARBURETOR
Low speed
mixture adj.
Metering lever

WALBRO
One 1-1/2 turn from seat
(initially)
.060-.070 Below
carburetor body (metering
cover gasket surface)

TILLOTSON
1 turn from seat
Flush with carburetor
metering chamber floor

Idle speed

2 turns after contact
with lever

3 turns after contact
with lever

TROUBLE SHOOTING

POSSIBLE CAUSE AND CHECK

POSSIBLE REMEDY

STARTER ROPE WILL NOT REWIND

Broken Starter Spring/Not enough Preload

Replace Starter Spring
Adjust tension per decal

STARTER DOES NOT ENGAGE FLYWHEEL

Broken Pawl Spring
Broken Pawls or Pins

Replace flywheel assembly

ENGINE DIFFICULT OR WILL NOT START

Fuel Tank empty
Solid State weak. CHECK: Remove Spark Plug, reattach Plug Wire, hold Plug against engine and pull starter rope (a strong white spark should jump across plug points — weak Solid State produces a short red spark)
Solid State grounded. CHECK: Wire from Solid State to "ON-OFF" Switch for bare spots.
Carburetor misadjusted
Engine flooded
Engine is severely vapor locked

Fill Fuel Tank
Replace C.D. Pack

Wrap Wire with electrical tape or replace

Readjust Carburetor
Follow Starting Procedure WITHOUT USING CHOKE

ALLOW TO COOL COMPLETELY
Readjust Carburetor
Replace

Broken Reed Valve

CARBURETOR FLOODS

Carburetor misadjusted
Damaged Carburetor Diaphragm
Leaking Gasket
Leaking Inlet Needle Seat

Readjust Carburetor
Rebuild Carburetor with new kit.
Rebuild Carburetor with new kit.
Rebuild Carburetor with new kit.

ENGINE WILL NOT IDLE

Carburetor misadjusted
Carburetor Diaphragm leaking
Carburetor Inlet Seat Gasket leaking
Crankshaft seals leaking
Cylinder scored or compression low
Reeds leaking or broken
Head bound with grass

Readjust Carburetor
Replace Diaphragm
Replace Gasket
Replace seals
Replace cylinder, piston and rings
Replace reed valve
Clean until free of grass

ENGINE BACKFIRES OR MISFIRES

Fuel Mix improper or contaminated
Spark Plug fouled
Solid State intermittently shorting. CHECK: loose or bare wires or loose assemblies
Defective Reed Assembly

Drain tank and refill with freshly mixed fuel
Replace Spark Plug
Tighten assemblies, wrap wires

Replace

HEAD WILL NOT TURN WHEN THROTTLE LEVER IS SQUEEZED

Shaft broken
Head Bound with grass

Replace shaft
Clean until free

ENGINE WILL NOT ACCELERATE

Carburetor misadjusted
Dirty Air Filter
Spark Plug fouled or Solid State weak
Carbon build-up
Carburetor Diaphragm Cover loose or Diaphragm Gasket leaking
Broken Reed Valve

Readjust Carburetor
Clean Air Filter or replace
Replace Spark Plug and regap or replace C.D. pack if we
Clean Exhaust Port and Muffler
Tighten all screws
Replace

ENGINE LACKS POWER OR DIES IN THE CUT

Dirty Air Filter
Carbon build-up
Low compression. CHECK: Compression pressure tests below 90 PSI or lessened engine resistance to pulling starter rope

Clean Air Filter or replace
Clean Exhaust Port and Muffler, page 18-6
Overhaul and rebuild engine

HEAD WILL NOT ADVANCE LINE

Out of Line
Bump Knob Bound Up
Indexing Teeth Worn or Burred
Head Dirty
Line Welded

Refill with Genuine Monoflail® Cutting Line
Replace
Replace
Clean
Disassemble, remove welded section and rewind line per instructions
Manually index until 4" or more of line shows outside the head

Not Enough Line Exposed

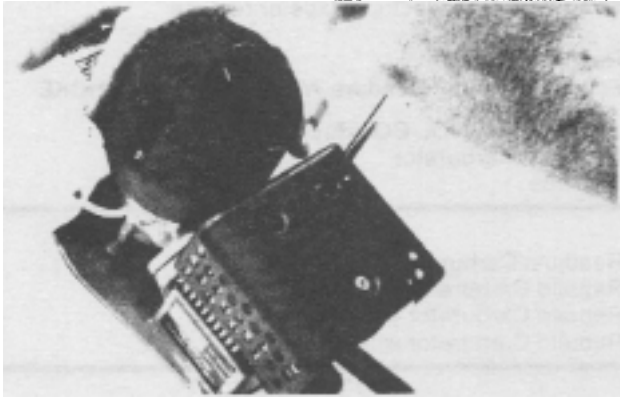
MODELS 3100, 3130, 3160, 1300, 1330, 1360 EXHAUST SYSTEM

WALBRO CARBURETOR "WA" SERIES

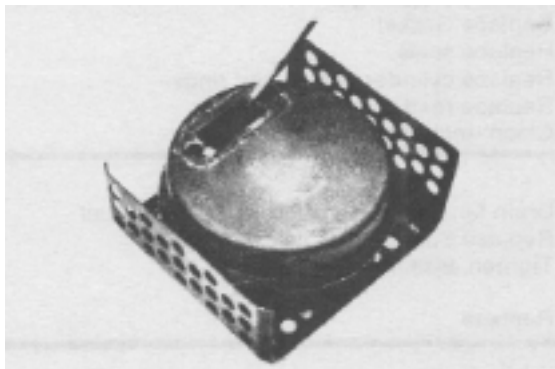
MUFFLER REMOVAL

NOTE

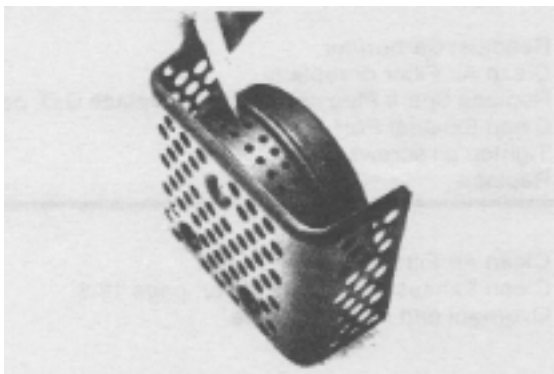
The muffler assembly should be removed periodically to inspect for excessive carbon build-up. Excess carbon deposits around the exhaust ports or exhaust exit holes will cause engine to perform in a sluggish manner.



1. Remove two muffler mounting bolts.



2. Check port area on muffler assembly for excessive carbon deposits.



3. Exhaust exit holes in muffler should be free from carbon build-up. Use small wire to clean this area when necessary.

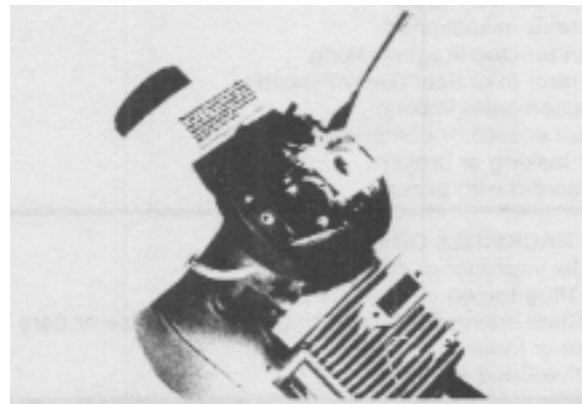
NOTE

Always use new gaskets when reinstalling muffler.

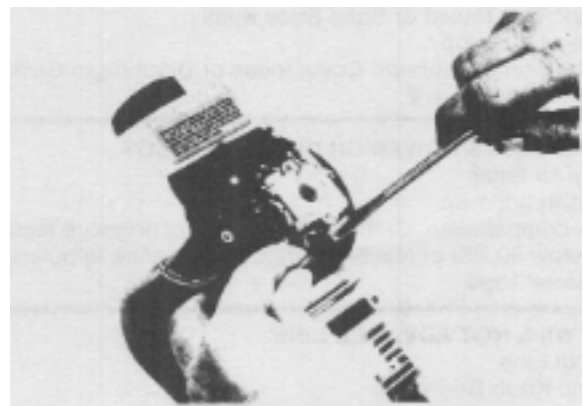
CARBURETOR REMOVAL



1. Remove carburetor cover mounting screws.



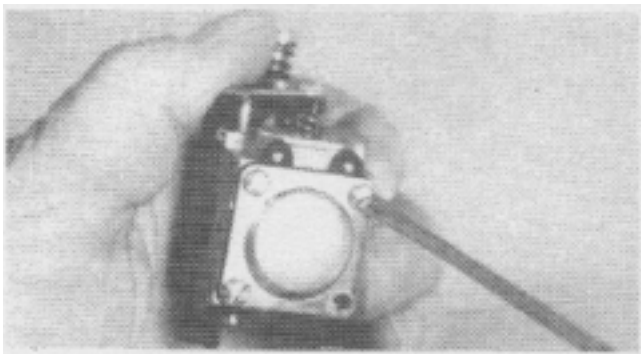
2. Remove carburetor mounting screws.



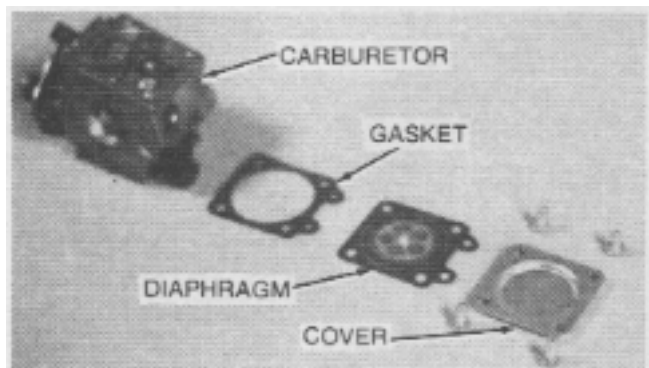
3. Disconnect fuel line from carburetor fuel inlet. Disconnect throttle wire from throttle lever.

WALBRO CARBURETOR "WA" SERIES DISASSEMBLY

SERVICE AND REPAIR PROCEDURES



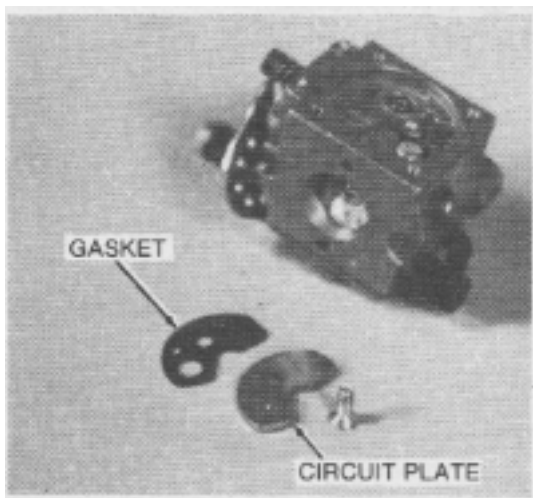
1. Remove fuel metering cover.




2. Remove metering cover, diaphragm and gasket.

 **NOTE**

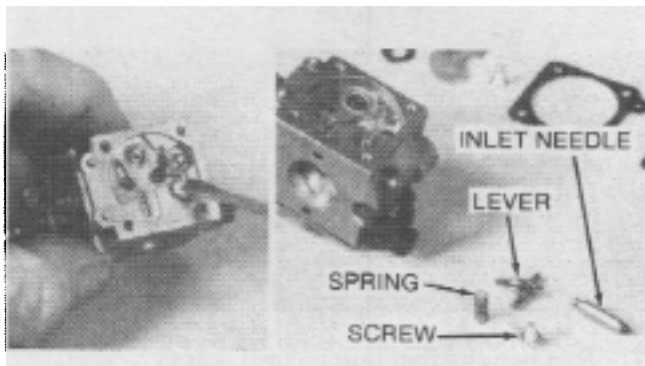
The gasket and diaphragm should always be replaced.



3. Remove the screw, circuit plate and gasket.

 **NOTE**

Replace this gasket.



4. The inlet lever is under spring tension. Remove inlet lever spring very carefully to prevent the loss of the spring or other parts.

 **NOTE**

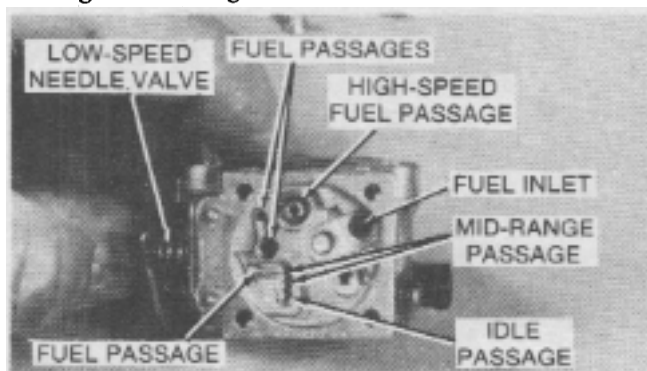
Do not stretch the spring.



5. Remove needle valve. Check for wear or damage. Replace if necessary.

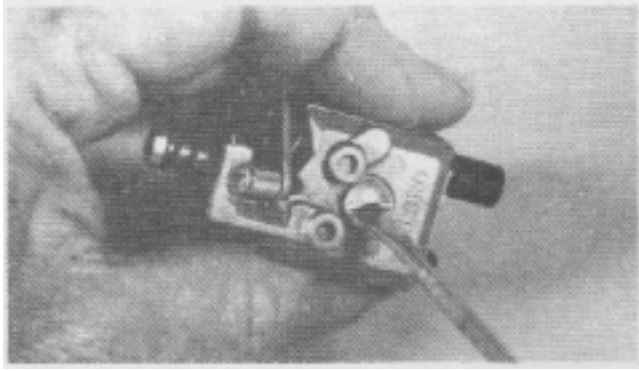
 **NOTE**

Never use drill bits or wire to clean passages as damage will result.

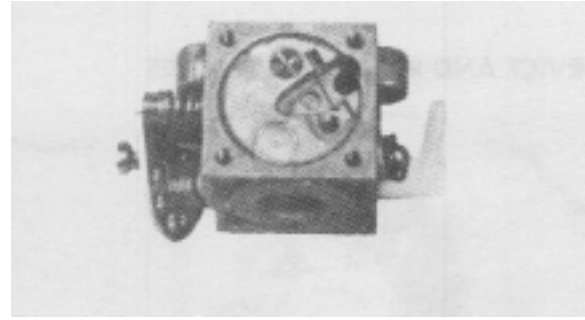


6. Correct procedure to clean this carburetor is wash in solvent and blow all passages with compressed air.

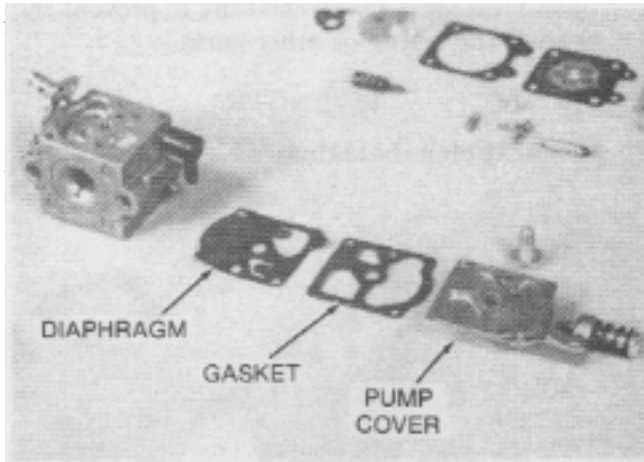
WALBRO CARBURETOR "WA" SERIES DISASSEMBLY



7. Remove the fuel pump cover screw.



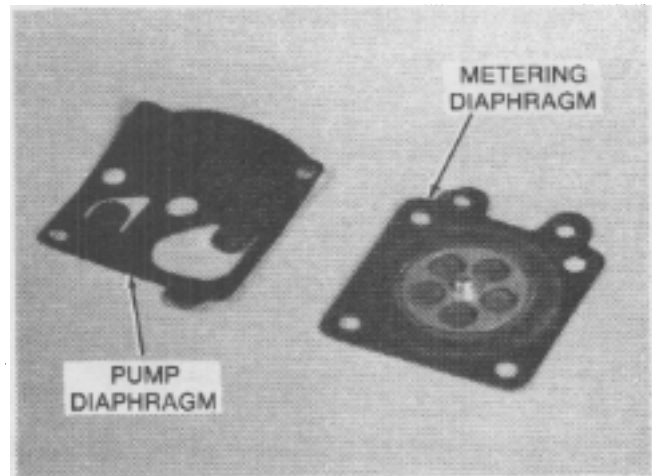
10. Wash in solvent and blow clean with compressed air.



8. Remove the pump cover gasket and diaphragm.

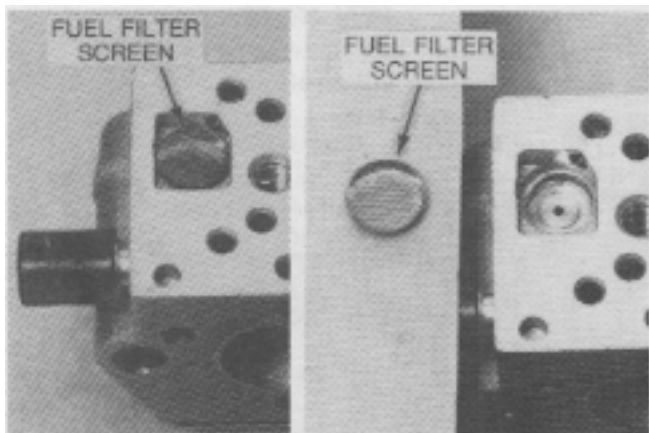
 **NOTE**

Always replace gasket and diaphragm when overhauling.




11. Diaphragms eventually deteriorate and become stiff with age and use. This results in an engine that may not start, hard to start or will not accelerate. Also erratic or uneven engine operation could be noted.

Diaphragms have to be soft and flexible to function properly.

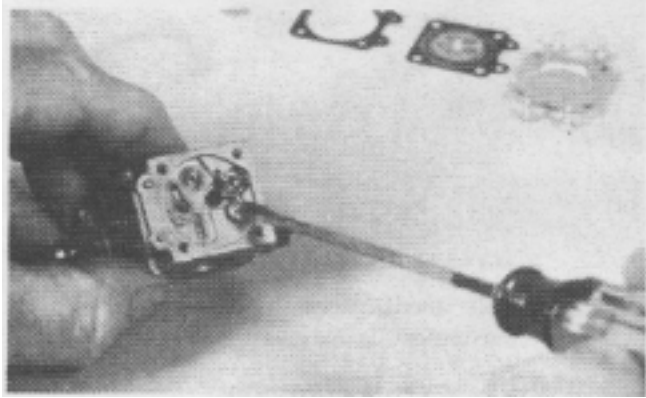


9. Thoroughly wash, clean the fuel filter screen and all passages before reassembling.

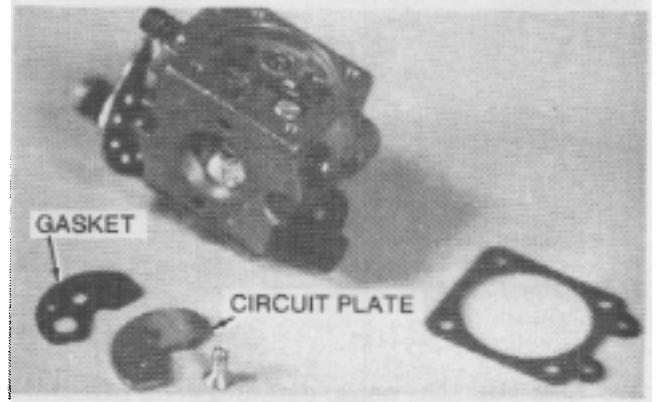
 **NOTE:** Do not use cloth towels to wipe it off. Fuzz from cloth tends to stick on the screen.

WALBRO CARBURETOR "WA" SERIES REASSEMBLY

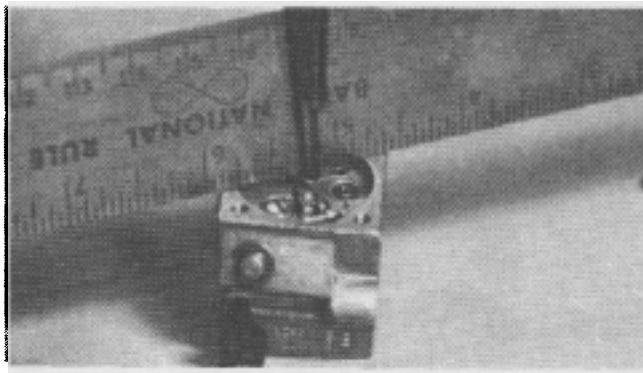
CARBURETION (CONT'D) WALBRO CARBURETOR



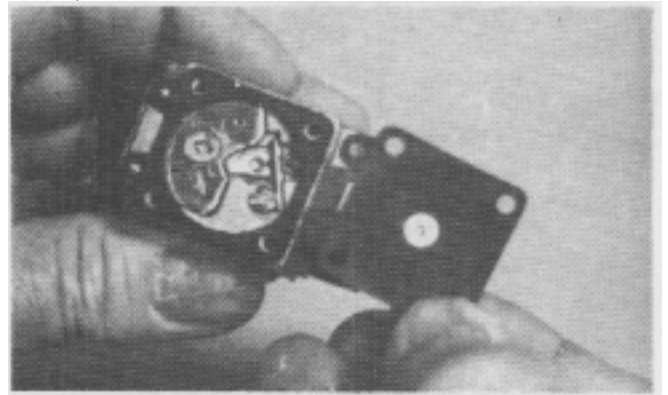
11. Reassemble inlet needle, lever and spring.



14. Assemble gasket and circuit plate.



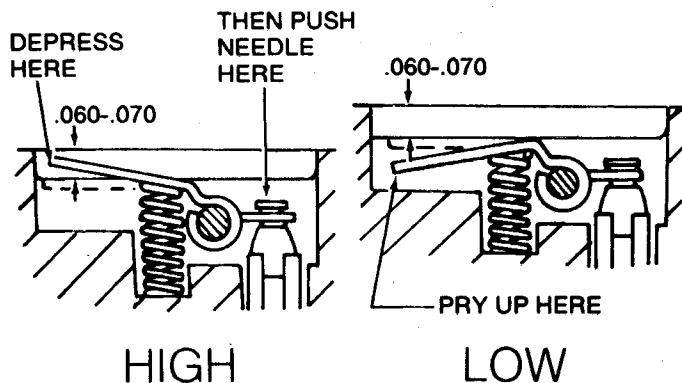
12. Place a straight edge across carburetor body. Use a wire gauge to measure distance between straight edge and top of lever. It should be .060-.070 below straight edge.



15. Assemble the metering gasket next to carburetor body. Assemble the diaphragm on the gasket. Be sure there are no wrinkles in the diaphragm.

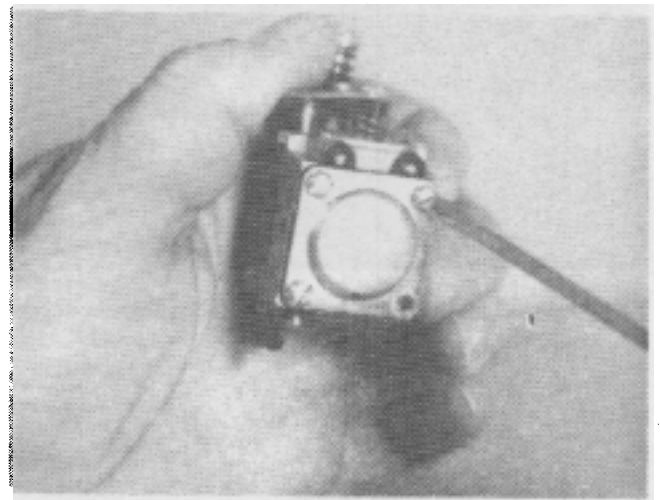


CAUTION: Do not damage needle and seat during adjustments.



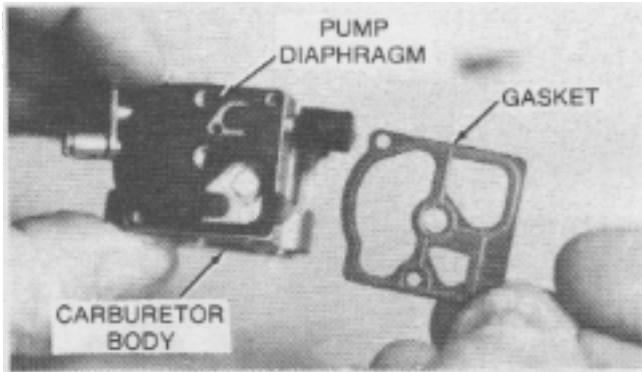
13. Adjust the lever as shown above.

If adjusted too high, engine will run rich. Too low, it runs lean. Poor acceleration, erratic or uneven running may also be noted.

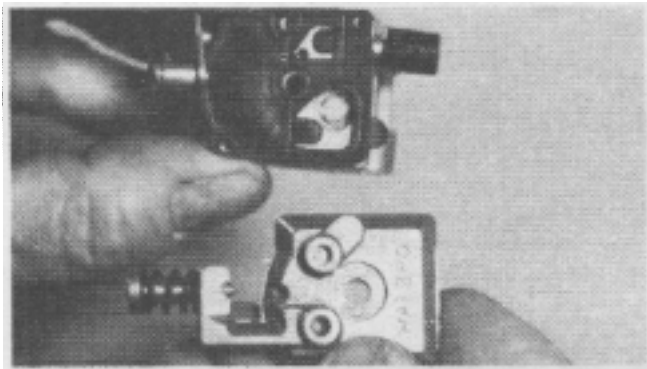


16. Assemble metering cover and tighten all screws securely.

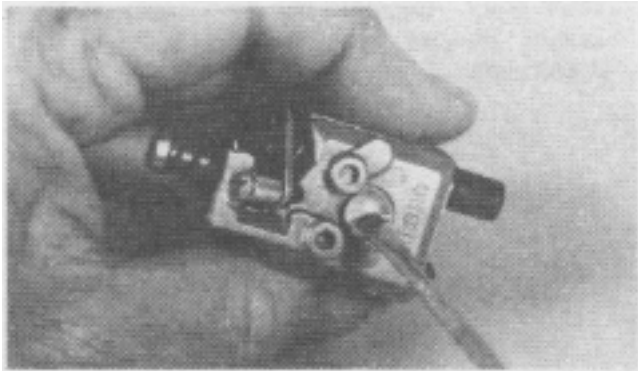
WALBRO CARBURETOR "WA" SERIES REASSEMBLY



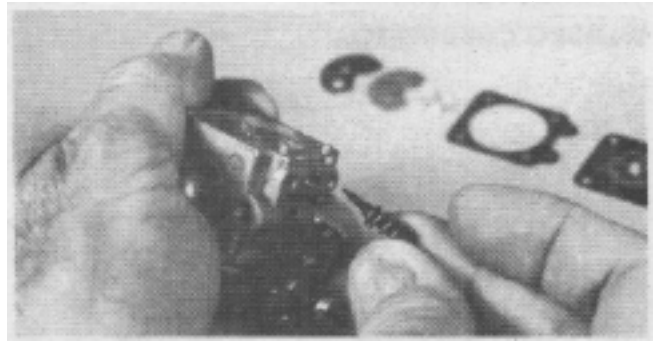
17. Assemble the pump diaphragm on carburetor body making sure there are no wrinkles.



18. Assemble the gasket.



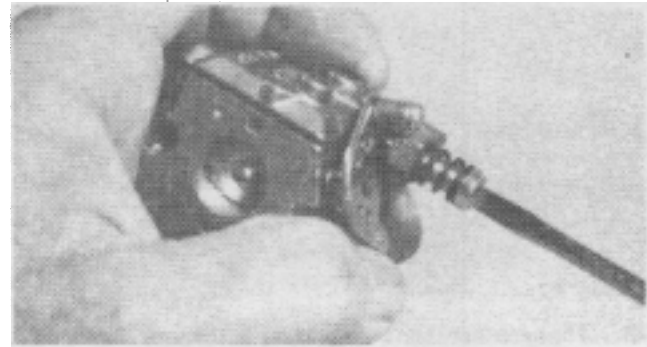
19. Assemble pump cover and tighten screw securely.



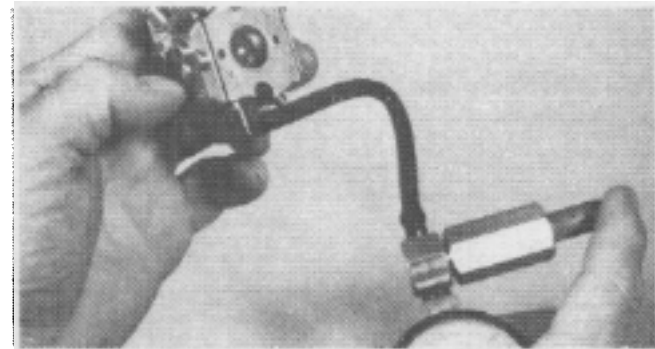
20. Assemble needle valve in carburetor. Seat it very lightly and back it out one (1) full turn.

NOTE

Do not force needle into seat as damage will result, requiring replacement of carburetor body.



21. Turn idle stop screw in until point contacts throttle arm. After contact turn it in two (2) more turns.



22. After reassembly is complete, attach a pressure gauge to the fuel inlet nipple. Introduce a pressure of 5-7 pounds to check for leaks.

NOTE

It is normal for pressure to drain off very slowly in this test.

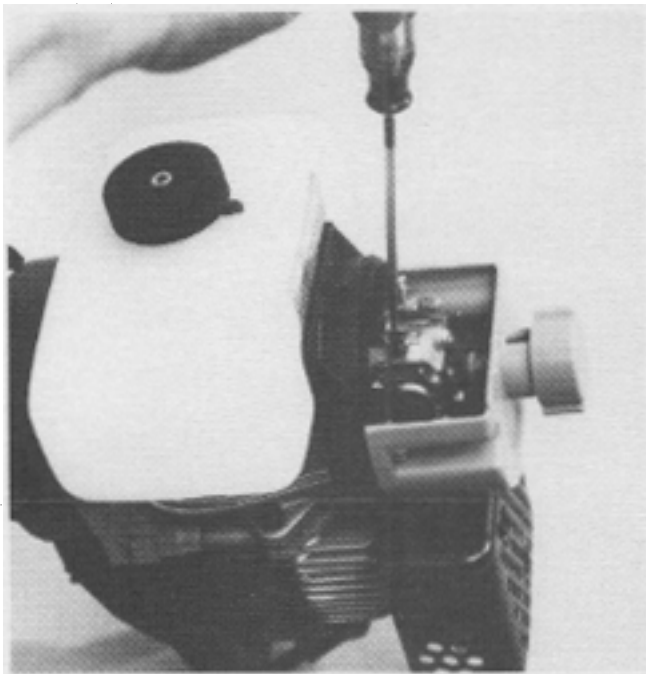
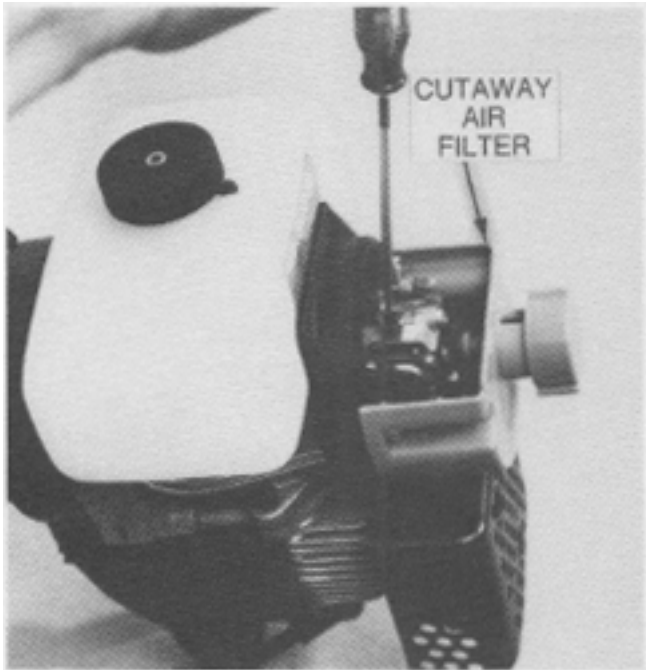
NOTE

Do not exceed 8 lbs. pressure in this test.

If a rapid drop in pressure is noted, disassemble and correct.

SERVICE BULLETIN REFERENCES

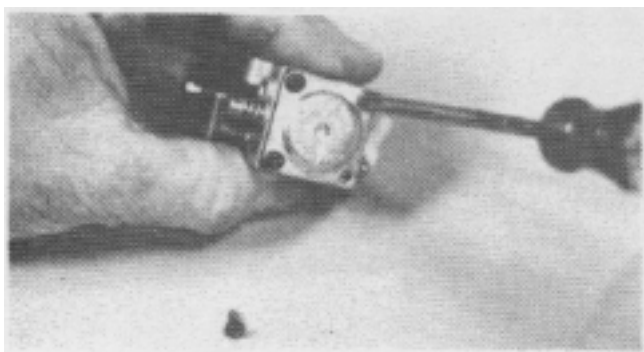
WALBRO CARBURETOR "WA" SERIES REASSEMBLY



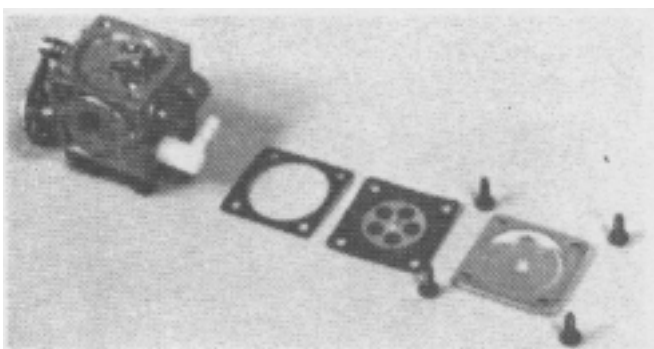
For testing and adjusting a Lawn-Boy Trimmer carburetor, use an air filter cover that has been cut-away as illustrated. When in place, it deflects the hot exhaust gasses away from the carburetor air intake. These hot gasses prevents the adjusting of the carburetor correctly. It also provides access to the needle valve(s) and idle stop screw.

1. The Lawn-Boy Trimmer is equipped with a diaphragm-type carburetor. Start the engine in the following manner. The engine may be hard to start if incorrect procedure is used.
2. Place ignition switch in the "on" position.
3. Rotate choke to fully choked position.
4. When starting, operator should hold the Lawn-Boy Trimmer unit in a position so that the cutting lines are away from the person.
5. Depress the throttle trigger, and pull the recoil starter rope until engine pops. Once the engine has popped, rotate the choke to partial choke position.
6. Pull the recoil start rope, with throttle depressed, until engine starts. After a 5 second warm up, move choke knob to run position.
7. If engine does not start immediately, repeat steps 2 thru 6.
8. Once the engine has started, let it idle for a short time (allowing engine to warm up) before proceeding to trim. If engine won't idle see page 18-38 for proper carburetor adjustment.


CARBURETION (CONT'D)



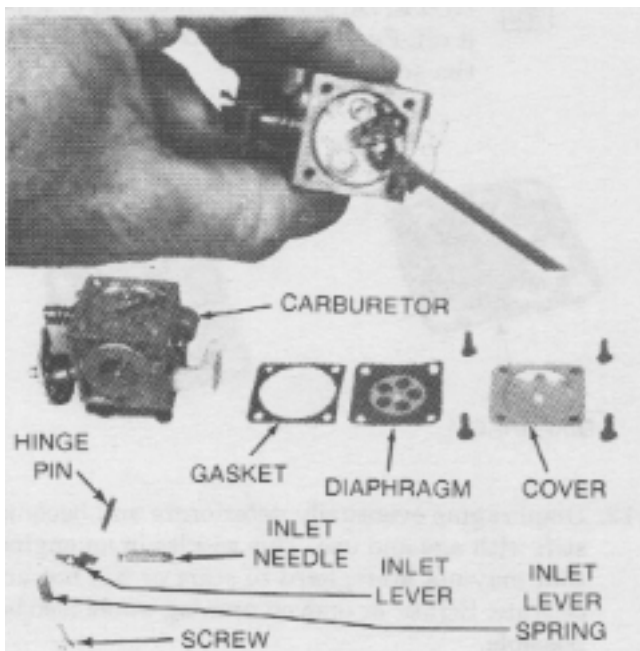
1. Remove metering cover screws.



2. Remove metering cover, diaphragm and gasket.

 NOTE

Always replace the diaphragm and gasket.

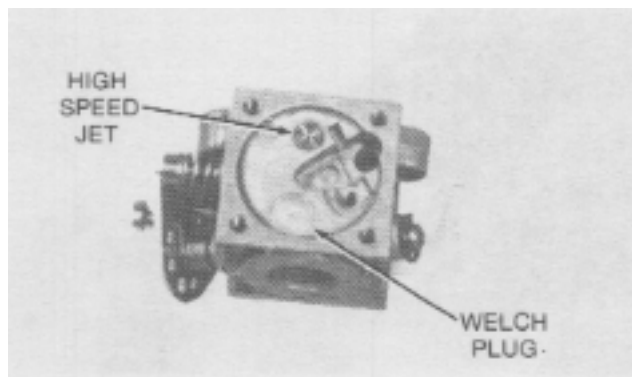


3. The inlet lever is under spring tension. Remove inlet lever screw very carefully to prevent loss of spring or other parts.

 NOTE

Do not stretch spring.
SERVICE BULLETIN REFERENCES

TILLOTSON CARBURETOR
DISASSEMBLY

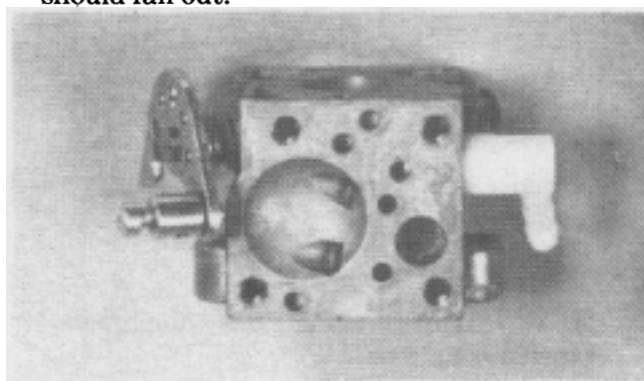


4. The brass high speed plug cannot be removed for cleaning.

To completely clean this carburetor, it is necessary to remove the Welch plug for access to the primary and secondary circuits.



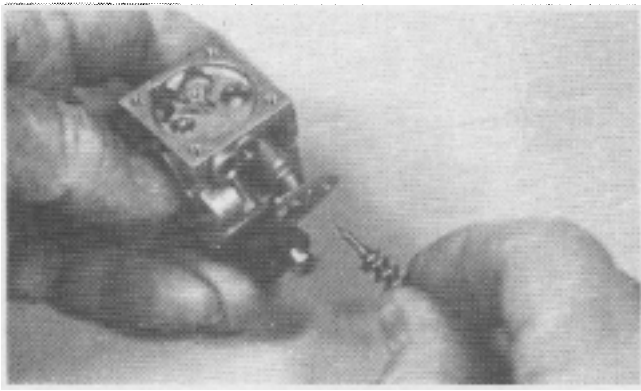
5. Use a 3/16" drift punch and hammer to loosen the plug. Tap the plug lightly to buckle it. It should fall out.



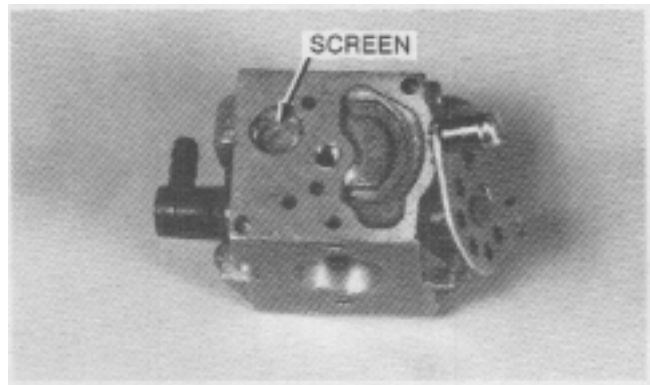
6. CORRECT PROCEDURE to clean this carburetor is wash in solvent and blow all passages with compressed air.

 NOTE

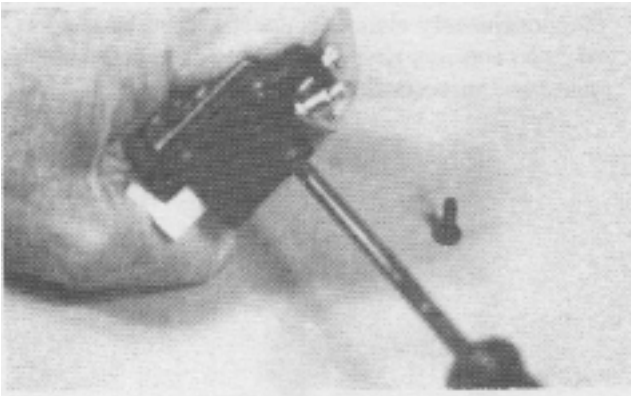
Never use drill bits or wire to clean passages as damage will result.



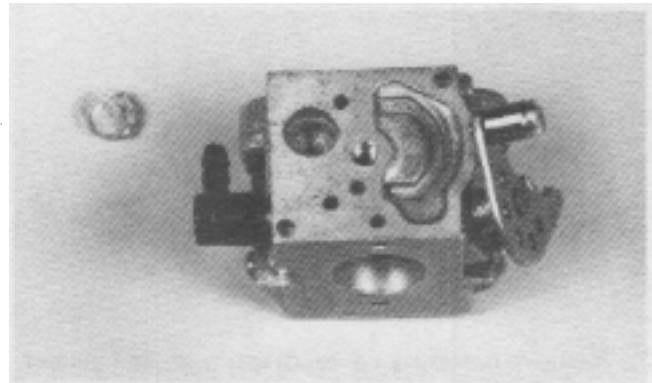
7. Remove the needle valve. Inspect for damage or wear. Replace if necessary.



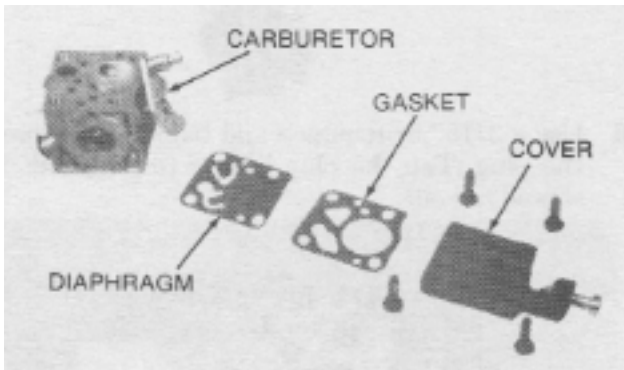
10. The carburetor can now be washed in solvent and all passages blown out thoroughly.



8. Remove the fuel pump cover screws.



11. Thoroughly wash, clean the fuel filter screen and all passages before reassembling.

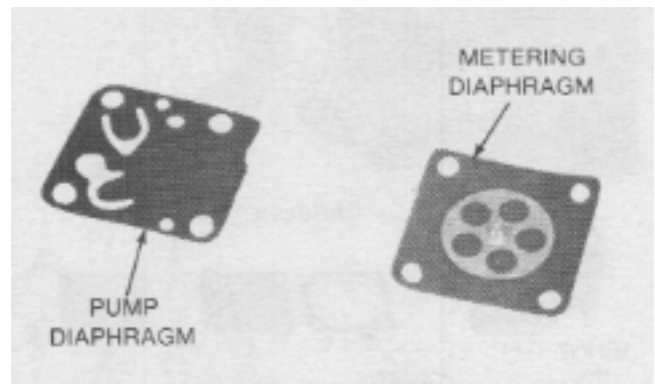


9. Remove the pump cover, gasket and diaphragm.

NOTE

Always replace gasket and diaphragm when overhauling.

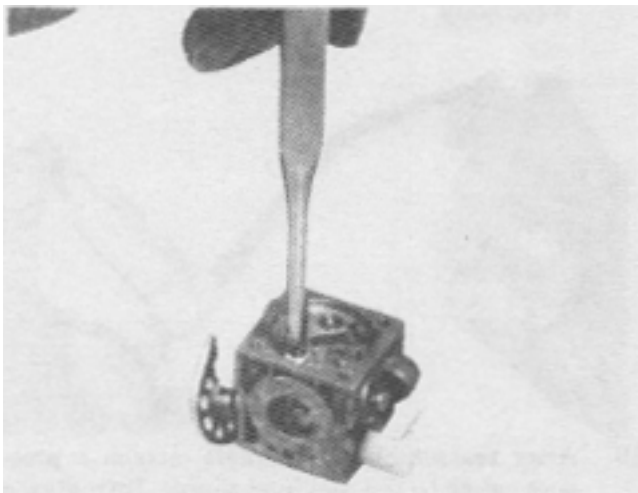
NOTE: Do not use cloth towels to wipe it off. Fuzz from cloth tends to stick on the screen.



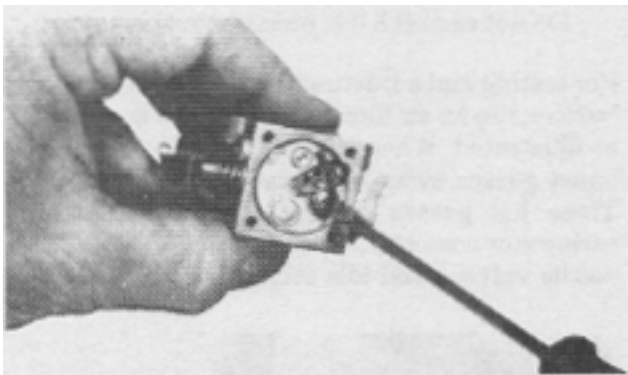
12. Diaphragms eventually deteriorate and become stiff with age and use. This results in an engine that may not start, hard to start or will not accelerate. Erratic or uneven running would also be possible.

Diaphragms have to be soft and flexible to function properly.

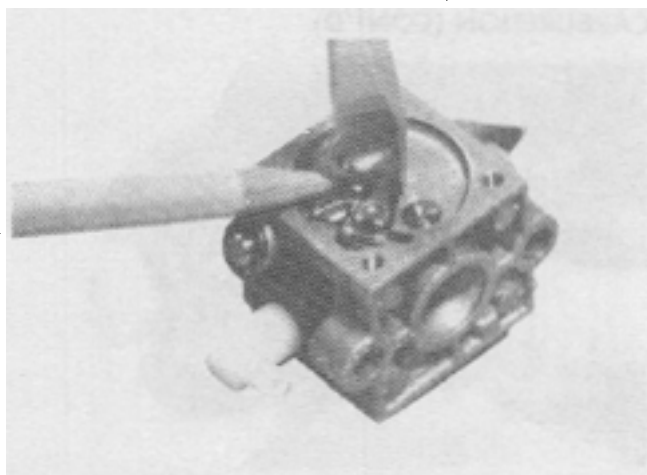
CARBURETION (CONT'D)



12. It is necessary to install a new Welch plug. Position the plug in the carburetor. Make sure it is positioned correctly. With the 3/16" drift punch seat the plug by rapping lightly. Make sure it is secured in position.



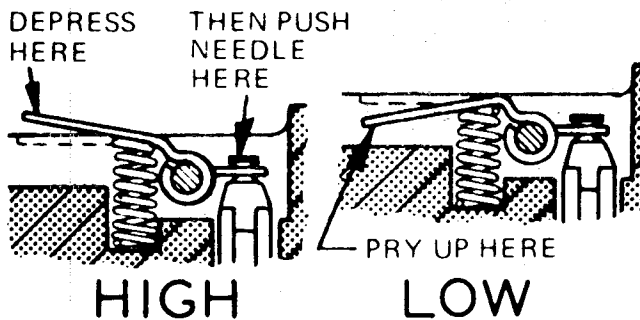
13. Reassemble inlet lever, needle and spring.



14. To check the height of the inlet lever of the Tillotson carburetor, place a straight edge on the floor of the metering chamber above the lever. The top of the lever should be flush with the straight edge.



CAUTION: Do not damage needle and seat during adjustments.

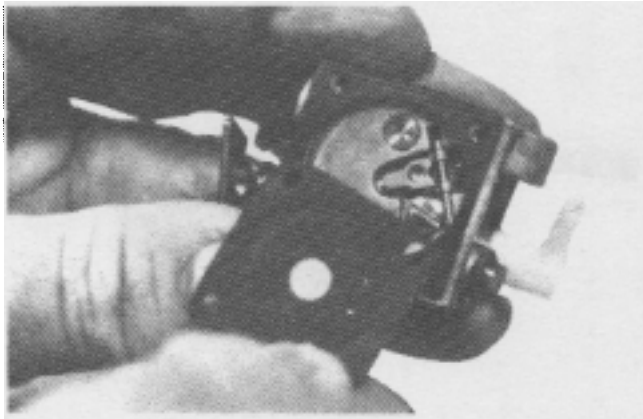


15. Adjust the lever as shown above.

If adjusted too high, engine will run rich. Too low, it runs lean. Poor acceleration, erratic or uneven running may also be noted.

TILLOTSON CARBURETOR REASSEMBLY

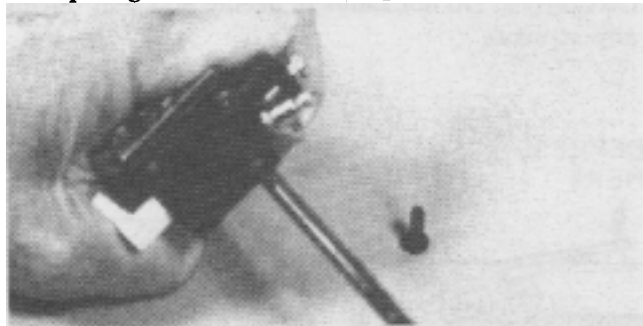
CARBURETION (CONT'D)



16. Assemble the metering gasket, diaphragm and cover. Tighten screws securely.

NOTE

The pin on the large metal disc of the diaphragm is located on top of the inlet lever. Be sure there are no wrinkles in the diaphragm before assembling the cover.



17. Place the diaphragm on the carburetor, then the gasket and cover. Be sure there are no wrinkles in the diaphragm.

NOTE

There are two dowel pins on the cover for assembly purposes. Tighten screws securely.

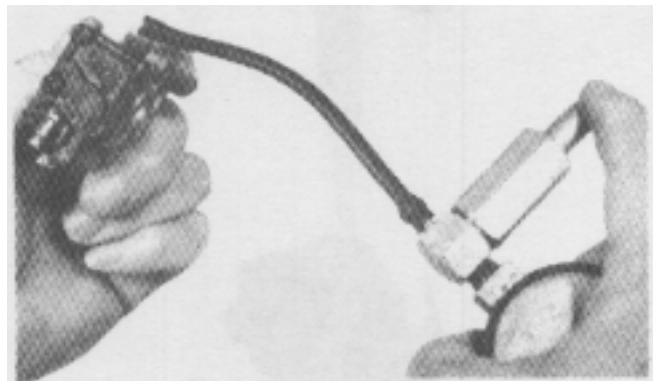


18. Assemble the needle valve in carburetor. Seat it very lightly and back it out one (1) turn.

Turn idle-stop screw in three (3) turns after contacting lever.

NOTE

Do not force needle into seat as damage will result requiring replacement of carburetor body.

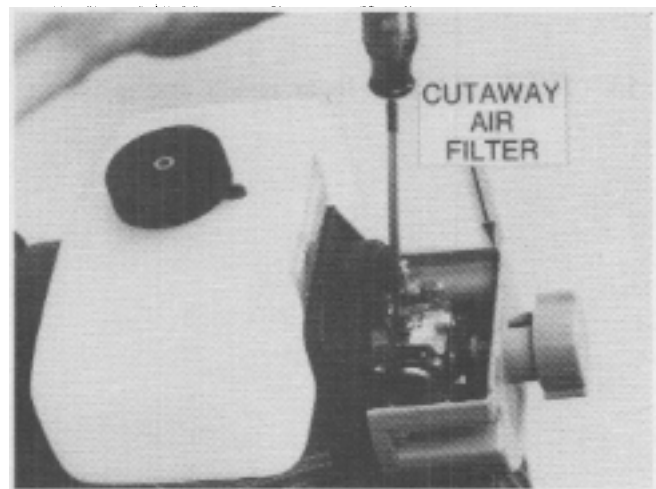


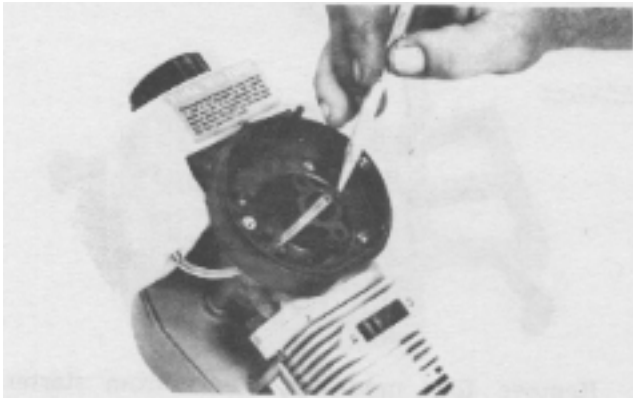
19. After reassembly is complete, attach a pressure gauge to the fuel inlet nipple. Introduce a pressure of 5-7 pounds. If a rapid drop in pressure is noted, disassemble and correct.

NOTE

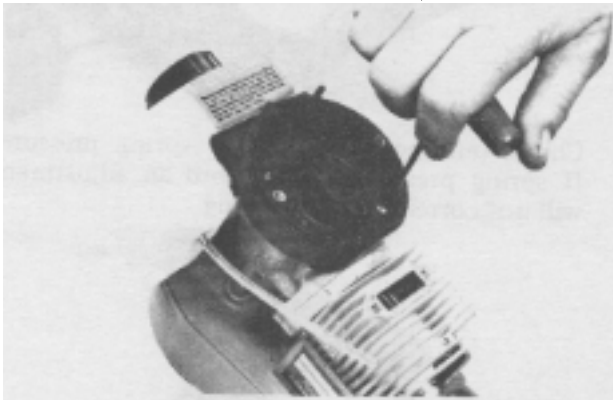
Do not exceed 8 lbs. pressure in this test.

For testing and adjusting a Lawn-Boy Trimmer carburetor, use an air filter cover that has been cut-away as illustrated. When in place, it deflects the hot exhaust gasses away from the carburetor air intake. These hot gasses prevents the adjusting of the carburetor correctly. It also provides access to the needle valve(s) and idle stop screw.

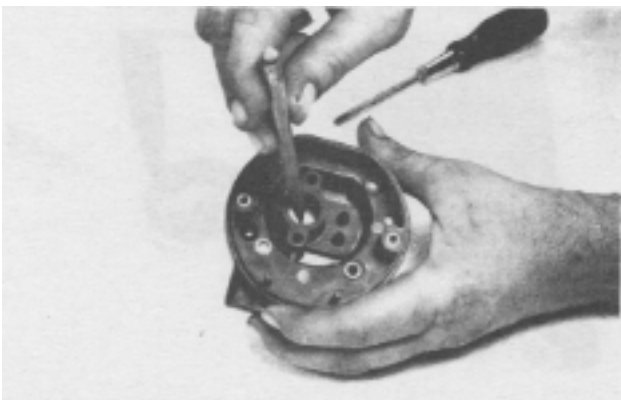




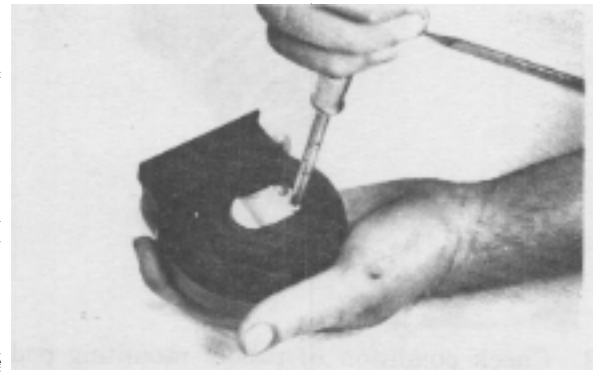
4. Make sure no foreign material has clogged reed plate passages.



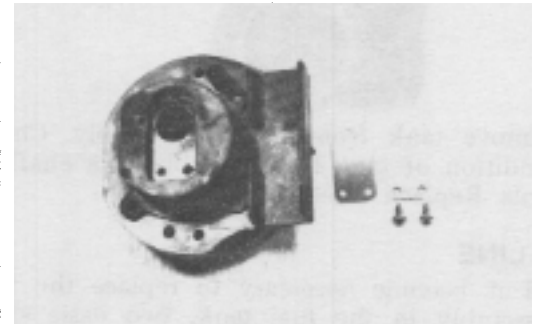
5. Remove four mounting screws from reed plate and carburetor mount.



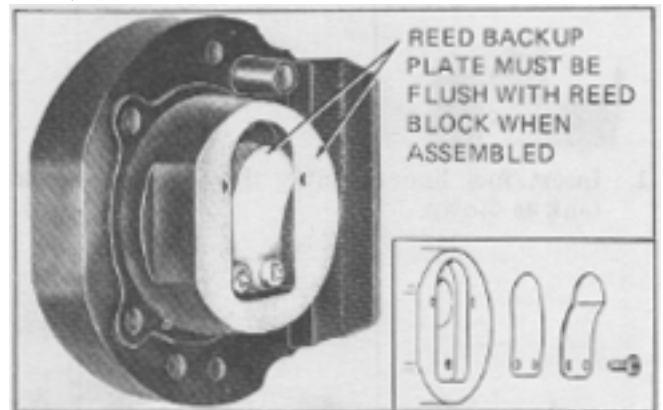
6. Check reed for freedom of movement.



7. To replace reed, remove two mounting screws as shown.



8. Reed plate and carburetor mount assembly showing reed plate, reed backup and mounting screws.



NOTE

When reassembling reed plate and reed backup to carburetor mount assembly the curved portion **MUST BE** installed as shown.



3. Check condition of rubber mounting pads on either side of fuel tank. Replace if necessary.



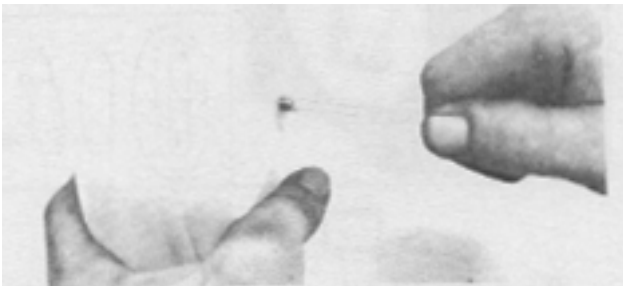
4. Remove tank from shroud assembly. Check condition of tank for any rubbing or chaffing spots. Replace if necessary.

FUEL LINE

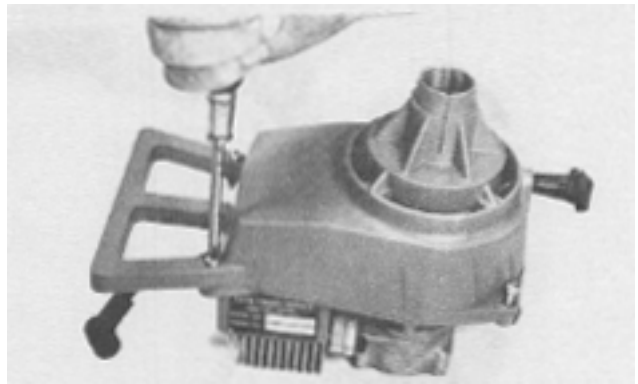
Should it become necessary to replace the fuel line assembly in the fuel tank, two basic steps should be followed:



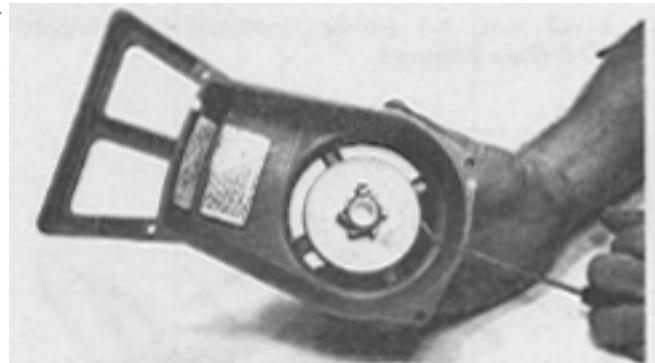
1. Insert fuel line assembly through hole in gas tank as shown.



2. Wiggle and pull the fuel line as shown above until the fuel filter assembly is seated. Install tank on trimming unit.



1. Remove four mounting screws from starter housing.



2. Check pull cord for proper spring pressure. If spring pressure is weak and an adjustment will not correct; replace spring.



3. Remove snap ring with snap ring pliers.



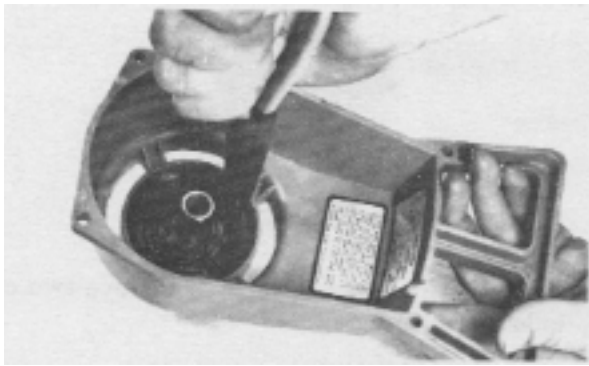
4. Use pliers to remove spring from its container. Be careful not to unwind spring.

POWERHEAD

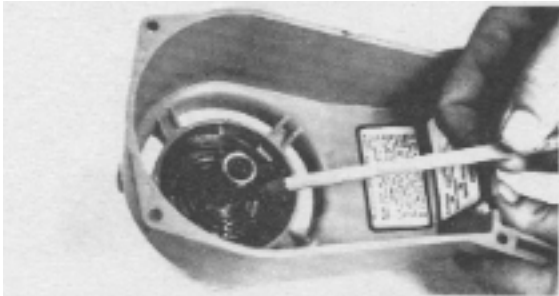
FLYWHEEL REMOVAL

 NOTE

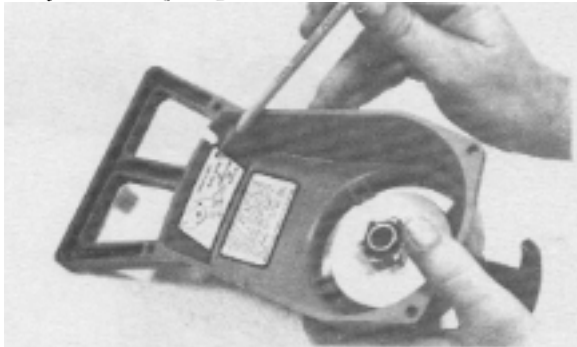
Be careful not to break cooling fins.



5. Place spring in starter housing as shown. Make sure outer spring catches on post.



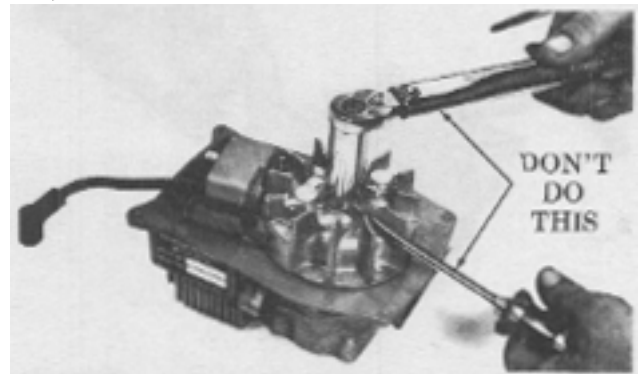
6. When re-installing pulley, use small amount of oil on pivot location. Also grease backside of pulley where spring rides.



7. Adjust rope tension as indicated on decal located inside starter housing. One (1) turn maximum pre-tension.



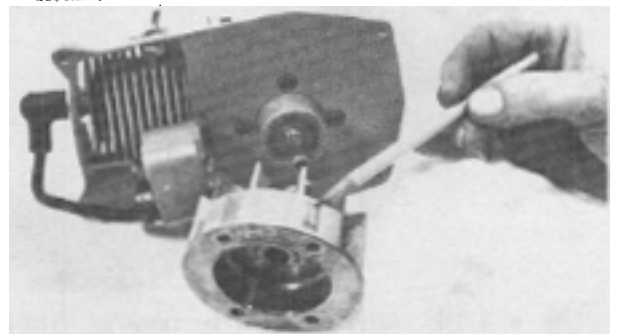
8. Pull slowly on starter rope to engage starter dogs, then install the starter housing mounting screws.



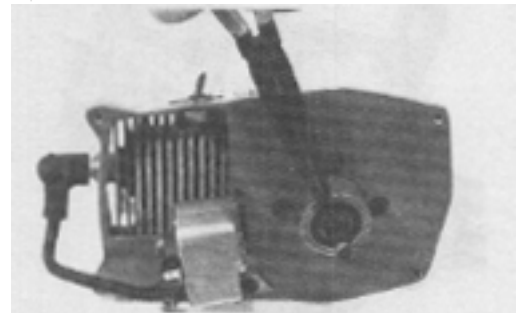
1. To remove flywheel; use Lawn-Boy tool part no. 677389 piston stop. DO NOT insert screwdriver between cooling fins. Remove flywheel nut and square drive. Use a deep socket size 5/8".



2. Use butt end of hammer or plastic mallet and tap flywheel to break loose from the main shaft.

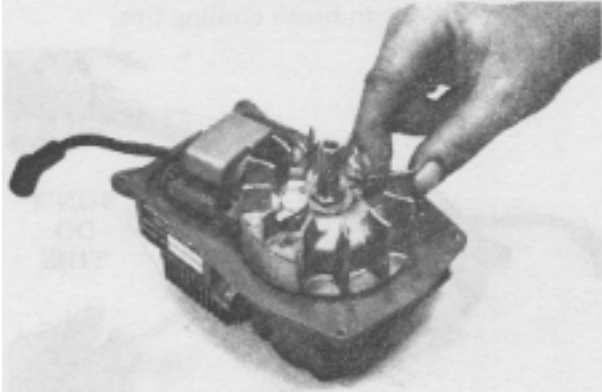


3. Check condition of magnets for C.D. Module rubbing. If rubbing has occurred, burnish scratches.



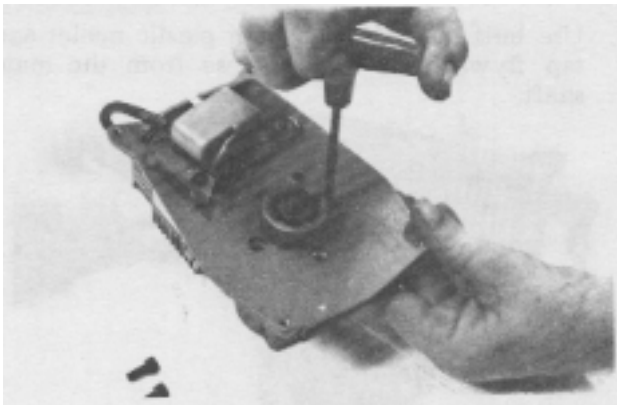
4. Remove half-moon crankshaft key with pliers. Check key for wear.

STARTER DOG & C.D. MODULE ADJUSTMENT



1. Check condition of starter dogs for freedom of movement before securing flywheel.
2. Torque flywheel nut to 150 in. lbs.
3. Set C.D. Module air gap by inserting Lawn-Boy special tool part nu. 604659 between flywheel magnets and module. Secure both mounting screws on module. Air gap setting should be .010.

SHROUD & CYLINDER REPLACEMENT



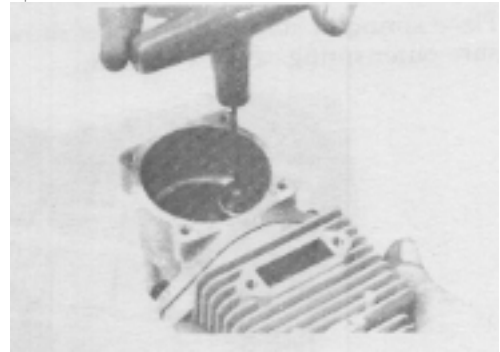
1. Use a 3/16" Allen wrench to remove shroud mounting bolts.



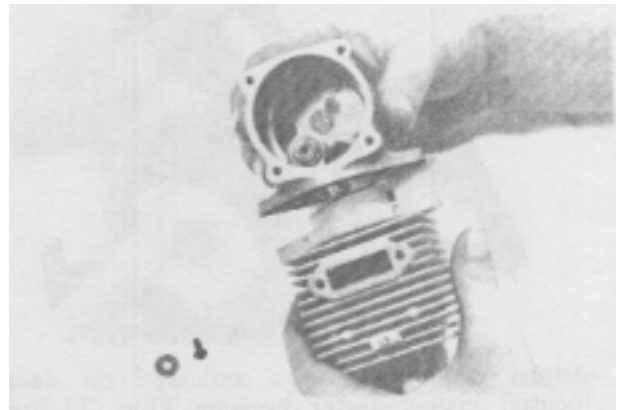
2. Shroud mounting bolts, shroud and short block assembly illustrated.



3. Use a 3/16" Allen wrench to remove two cylinder mounting bolts.



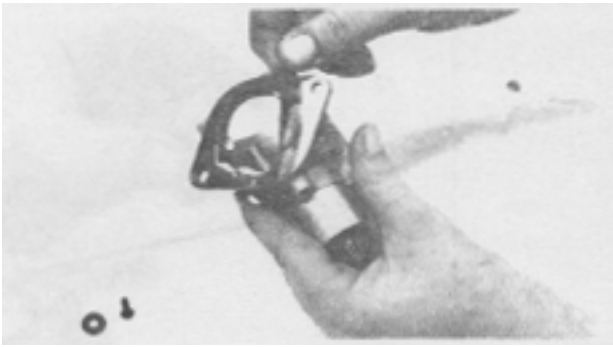
4. Use a 3/32" Allen wrench to remove connecting rod bolt and washer. CAUTION: Do not lose mounting washer.



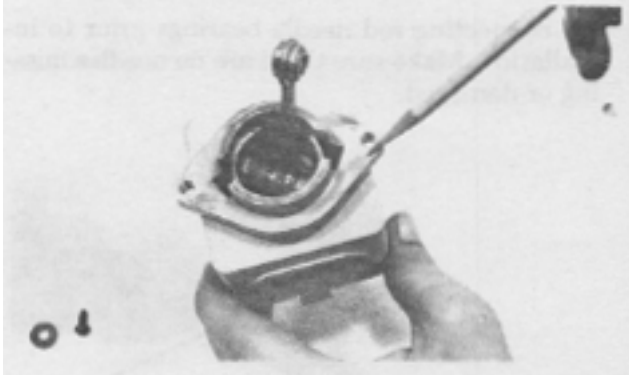
5. Disconnect connecting rod from crank pin.



6. Remove cylinder and piston assembly from crankcase assembly.

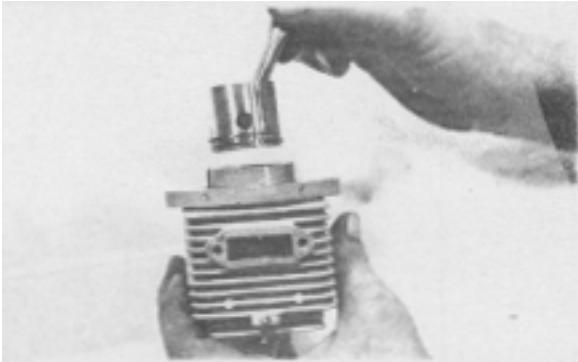


7. Always replace and install a new gasket when replacing cylinder.



8. Prior to re-assembly, make sure gasket mounting surfaces are clean and free of all gasket material.

PISTON & CYLINDER ASSEMBLY



1. Remove piston and connecting rod assembly from cylinder.

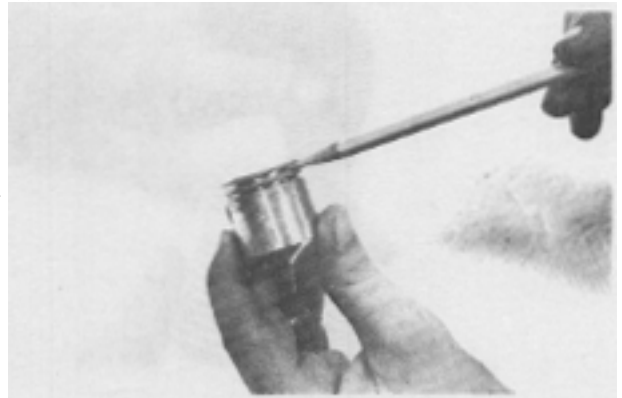


2. Check condition of cylinder bore. If rubbing, scuffing or ridges appear, replace cylinder and piston.



3. Remove piston rings using a circular motion. If either of these piston rings breaks, always replace both piston rings.

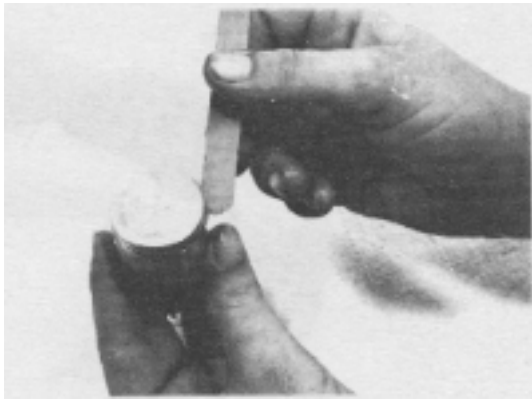
Examine rings for wear. Replace them, if they are worn.



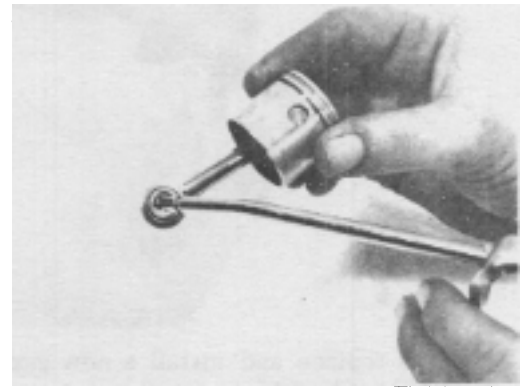
4. Check and clean ring grooves for carbon deposits.



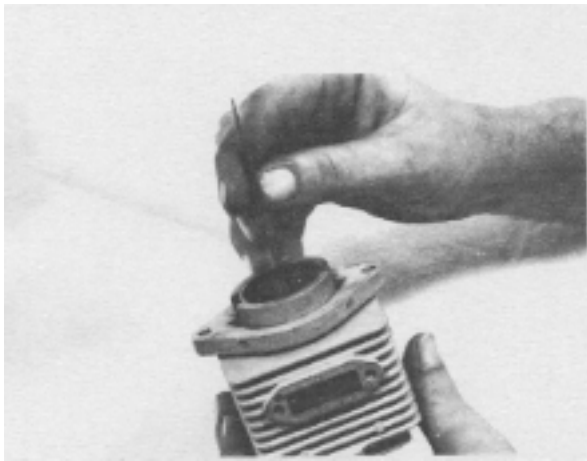
5. Slip piston ring in ring groove as shown and check for groove wear. Refer to page 18-4 for specifications.



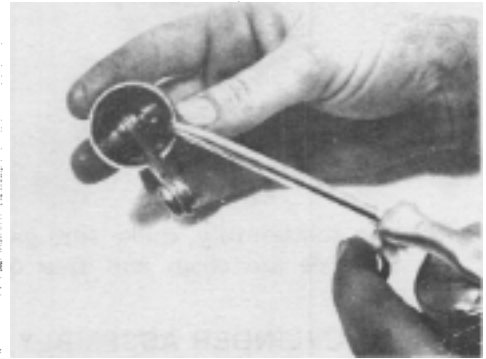
6. Using a feeler gauge check piston ring to piston groove clearance. If ring clearance exceeds .005 inch, replace piston, rings and rod assembly.



9. Oil connecting rod needle bearings prior to installation. Make sure there are no needles missing or damaged.



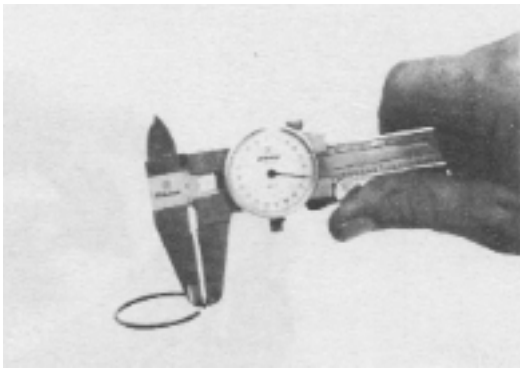
7. Using feeler gauge, check ring end gap in cylinder. If it exceeds .025 inch replace piston rings. Gap should be checked at both upper and lower ends of cylinder.



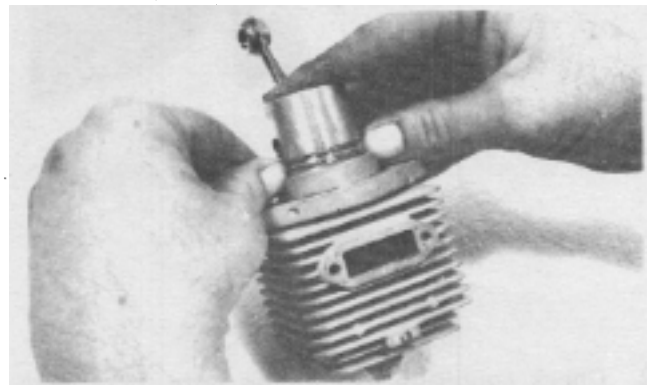
10. Oil wrist pin.



11. Oil piston rings. Stagger piston ring gaps on top of piston and away from all ports.



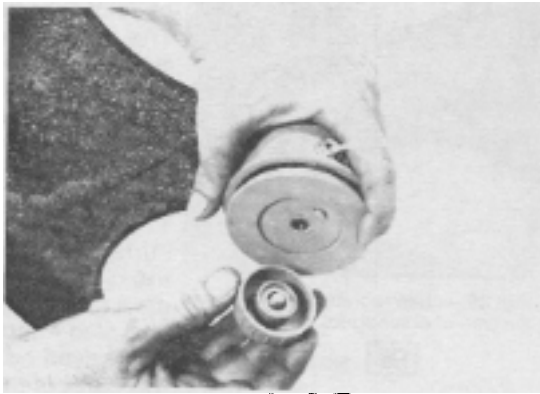
8. Piston ring width is an important indication of piston ring wear. If piston ring width is smaller than .052 inch replace piston rings.



12. Compress the rings with your fingers and insert piston into cylinder.

MAINTENANCE

BUMP HEAD - MODEL 3100



1. Unscrew bump knob in counterclockwise direction.



2. Remove inner spool.

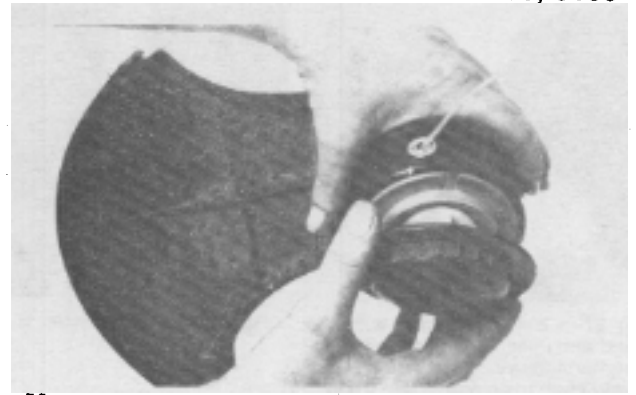


3. Use rag and clean inner surface of outer spool. **CAUTION:** Always clean dirt from inner and outer spool before re-installing.



4. Check indexing teeth on inner and outer spool for wear. Replace if necessary.

BUMP HEAD - MODELS 3130, 3160



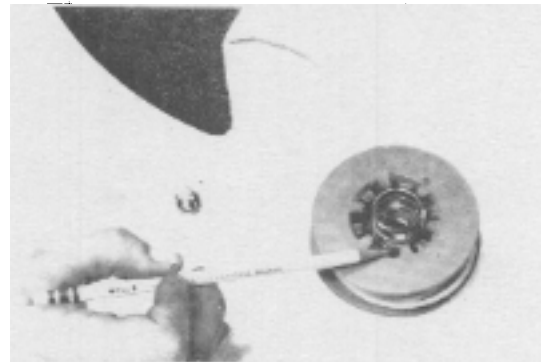
1. Unscrew bump cover in counterclockwise direction.



2. Remove inner spool.



3. Use rag and clean inner surface of outer spool.



4. Check indexing teeth on inner spool for wear. Replace inner spool, if necessary. **CAUTION:** Always clean dirt from inner spool before re-installing.

INSTALLING NEW TRIMMING LINE & BUMP MAINTENANCE MODEL 1300

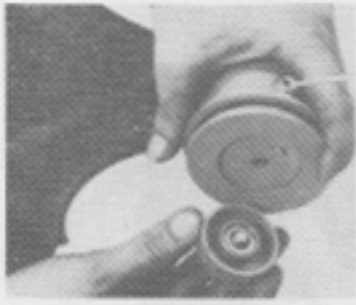


Fig. 27 — Hold outer spool with one hand and unscrew bump knob in counterclockwise direction. Inspect bump knob to be sure it can freely move axially on the captured bolt.



Fig. 28 — Remove inner spool.



Fig. 29 — Use rag and clean inner surface of outer spool.



NOTE

Always clean dirt from inner and outer spool before re-installing.



Fig. 30 — Check indexing teeth on inner and outer spool for wear. If necessary, replace.



Fig. 31 — Loop new trimming line in and around the two holes as shown and wind trimming line in direction indicated on inner spool.



Fig. 32 — Wind 25 ft. of new cutting line in even and tight layers. Failure to do so may result in improper line operation.

When installing new trimming line, a few maintenance checks should be made. The reason for doing this is to provide continuous trouble-free operation of your Bump Head. The basic maintenance cares necessary for the Bump Head are as follows: The cleaning of the inner surface of the outer spool; the cleaning of the teeth area of the inner spool; and also checking for worn and frayed conditions of the teeth of the inner spool.

If the above conditions exist, you should replace the inner spool. When winding line on inner spool, it is extremely important to wind the line in the proper direction. Failure to do so will cause the Bump Head to operate incorrectly.

Always use Genuine
Monoflail®
replacement line

Monoflail

INSTALLING NEW TRIMMING LINE & BUMP HEAD MAINTENANCE MODELS 1330 AND 1360



Fig. 34 — Hold outer spool with one hand and unscrew bump knob in counterclockwise direction. Inspect bump knob to be sure it can freely move axially on the captured bolt.



Fig. 35 — Remove inner spool.



Fig. 36 — Use rag and clean inner surface of outer spool.



NOTE

Always clean dirt from inner and outer spool before re-installing.

When installing new trimming line, a few maintenance checks should be made. The reason for doing this is to provide continuous trouble-free operation of your Bump Head. The basic maintenance cares necessary for the Bump Head are as follows: The cleaning of the inner surface of the outer spool; the cleaning of the teeth area of the inner spool; and also checking for worn and frayed conditions of the teeth of the inner spool.

If the above conditions exist, you should replace the inner spool. When winding line on inner spool, it is extremely important to wind the line in the proper direction. Failure to do so will cause the Bump Head to operate incorrectly.

Always use Genuine
Monoflail®
replacement line

Monoflail



Fig. 37 — Check indexing teeth on inner and outer spool for wear. If necessary, replace.



Fig. 38 — Loop new trimming line and around the two holes as shown and wind trimming line in direction indicated on inner spool.



Fig. 39 — Wind 30 ft. of new cutting line in even and tight layers. Failure to do so may result in improper line operation.

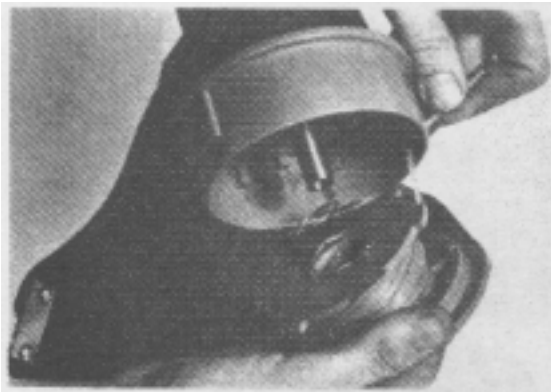


Fig. 40 — Insert trimming line into eyelet and reposition inner spool.

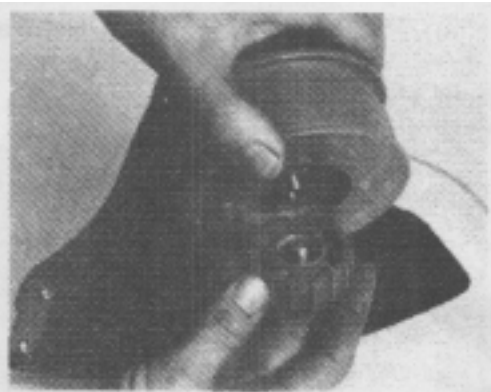
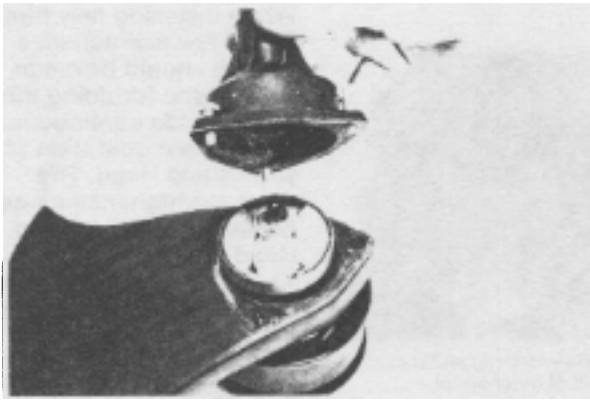


Fig. 41 — Replace inner spool and bump knob.

CENTRIFUGAL CLUTCH - MODELS 3130, 3160

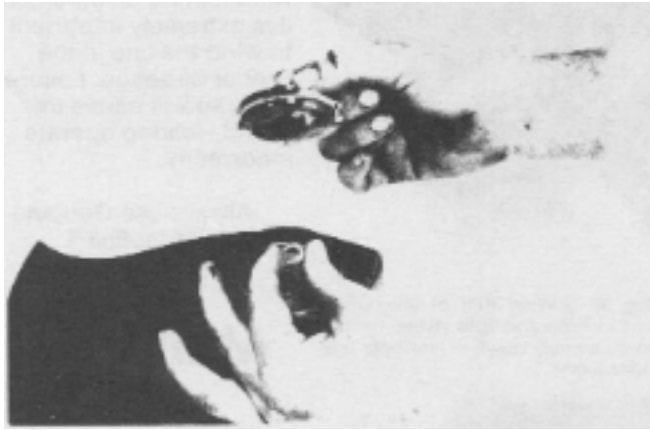


1. Remove three mounting screws from the clutch bell housing.

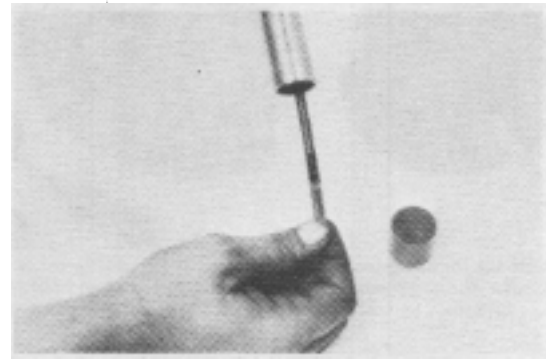


4. Check condition of clutch rotor bushing and apply light coating of grease when re-installing. **CAUTION:** Do not overgrease.

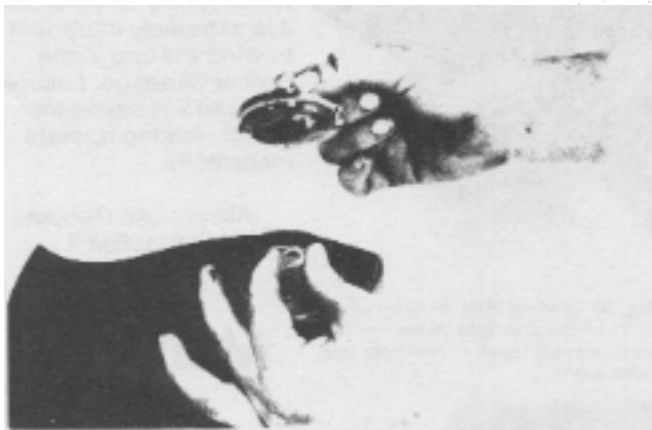
MAINTENANCE DRIVE SHAFT



2. Remove clutch rotor from clutch drum. Be sure not to lose thrust washer installed beneath rotor assembly.



Remove flexible drive shaft and inspect for any excessive wear conditions.



3. Check clutch drum and clutch rotor for excessive wear. Replace if necessary.



IMPORTANT: Anytime flexible drive shaft core is removed from outer housing, it should be cleaned and regreased with high speed, high temperature wheel bearing grease, Mobile #532 or equivalent.

NOTE After approximately every 10 operating hours, the flexible drive shaft should be reversed end for end to add additional life to the drive shaft.

FUEL & CARBURETOR MAINTENANCE AND REPAIR MODEL SSI

Your Lawn-Boy Trimmer is equipped with a diaphragm type carburetor that has been carefully calibrated. In most instances no adjustment will be required by the operator.


1. Condition of air filter is very important to the operation of the unit. The condition of the air filter should be checked on a daily basis for a dirty or clogged element. A dirty filter will restrict the air flow, upsetting the fuel-air mixture in the carburetor, resulting in symptoms often mistaken for out-of-adjustment carburetor. For air filter maintenance, see the maintenance section.
2. The carburetor has two basic adjustments, idle speed adjustment and the idle mixture adjustment. The high speed jet is a fixed jet so no high speed adjustment is necessary.

YOUR CARBURETOR MAY NEED ADJUSTMENT IF YOU NOTICE ANY OF THE FOLLOWING CONDITIONS

- 1) Will not idle.
- 2) Hesitates or dies on acceleration.
- 3) Loss of engine power which is not corrected by air filter or muffler cleaning.
4. Unit seems to operate in an erratic or fuel-rich condition (noted by excessive smoke out of the exhaust system).

 NOTE: Careless adjustments can seriously damage your trimmer.

- 1) Remove choke cover (Fig. 6) to expose the adjustments.
- 2) Make initial settings with the engine stopped: See Note 1.
 - a) Turn the idle speed screw (Fig. 7) out (counterclockwise); then in until the carburetor throttle lever just begins to move, continue moving two more full turns. (Walbro carburetors)
 - b. Turn the idle mixture screw (Fig 8) in (clockwise) until *lightly* seated, then turn counterclockwise one turn.
- 3) These initial settings should allow you to start and warm up your trimmer prior to final adjustments.
- 4) Release the throttle lever to let the engine idle. If the engine stops, turn the idle speed screw clockwise $\frac{1}{8}$ turn at a time as required until engine maintains idle.

 NOTE: All adjustments should be made when cutting line is extended to its maximum cutting length.

- 5) Adjust idle speed and idle mixture screw to achieve smoothest engine idle:
 - a) Adjust idle mixture screw for the fastest idle; then turn counterclockwise $\frac{1}{8}$ turn.
 - b) Squeeze the trigger if the engine falters or hesitates on acceleration, turn the idle mixture screw counterclockwise $\frac{1}{16}$ turn at a time, just enough to achieve rapid acceleration.
 - c) If the idle speed has changed significantly because of a) & b), above, readjust idle speed screw.


FUEL & CARBURETOR MAINTENANCE AND REPAIR MODEL SSII

Your Lawn-Boy Trimmer is equipped with a diaphragm type carburetor that has been carefully calibrated. In most instances no adjustment will be required by the operator.

1. Condition of air filter is very important to the operation of the unit. The condition of the air filter should be checked on a daily basis for a dirty or clogged element. A dirty filter will restrict the air flow, upsetting the fuel-air mixture in the carburetor, resulting in symptoms often mistaken for out-of-adjustment carburetor. For air filter maintenance, see the maintenance section.
2. The carburetor has two basic adjustments, idle speed adjustment and the idle mixture adjustment. The high speed jet is a fixed jet so no high speed adjustment is necessary.


YOUR CARBURETOR MAY NEED ADJUSTMENT IF YOU NOTICE ANY OF THE FOLLOWING CONDITIONS

- 1) Will not idle.
- 2) Hesitates or dies on acceleration.
- 3) Loss of engine power which is not corrected by air filter or muffler cleaning.
4. Unit seems to operate in an erratic or fuel-rich condition (noted by excessive smoke out of the exhaust system).
5. Head continues to rotate at idle when the head is in contact with the ground.

 NOTE: All adjustments should be made when cutting line is extended to its maximum cutting length, and the cutting head is in contact with the ground.

- 1) Remove choke cover (Fig. 6) to expose the adjustments.

- 2) Make initial settings with the engine stopped: see Note 1.
 - a) Turn the idle speed screw (Fig. 7) out (counterclockwise); then in until the carburetor throttle lever just begins to move, continue moving two more full turns. (Walbro carburetors)
 - b) Turn the idle mixture screw (Fig. 8) in (clockwise) until *lightly* seated, then turn counterclockwise one turn.
- 3) These initial settings should allow you to start and warm up your trimmer prior to final adjustments.
- 4) Release the throttle lever to let the engine idle. If the engine stops, turn the idle speed screw clockwise $\frac{1}{8}$ turn at a time as required until engine maintains idle without the cutting head rotating.
- 5) Adjust idle speed and idle mixture screw to achieve smoothest engine idle:
 - a) Adjust idle mixture screw for the fastest idle; then turn counterclockwise $\frac{1}{8}$ turn.
 - b) Squeeze the trigger if the engine falters or hesitates on acceleration, turn the idle mixture screw counterclockwise $\frac{1}{16}$ turn at a time, just enough to achieve rapid acceleration.
 - c) Adjust idle speed.
 - (1) High enough to disengage the centrifugal clutch and stop the head from rotating.
 - d) Recheck for proper operation, repeat steps b) and c) above, if necessary

 NOTE: The weight of the head and wand when in contact with the ground should stop the head from rotating. Because the head rotates on anti-friction bearings, it is normal for the head to rotate when not in contact with the ground.

 NOTE Tillotson Equipped Models: Initial settings are idle mixture, 1 turn open. Idle speed is 3 turns after lever begins to move.

MAINTENANCE AIR FILTER



Fig. 1 — Remove carburetor cover mounting screws.

 NOTE:

**CLEAN AND RE-OIL
AIR FILTER
EVERY 10 HOURS**

Your unit's air filter is one of the most important areas to maintain. If the air filter is not cared for as described on the carburetor cover or as shown in Figs. 1 thru 5, you will void your warranty.

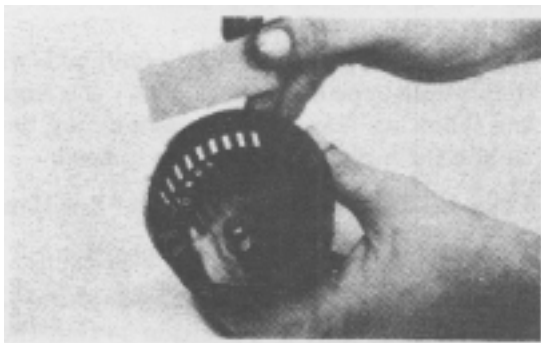


Fig. 2 — Remove filter from carburetor cover.



Fig. 3 — Wash filter in kerosene, petroleum solvent or detergent.

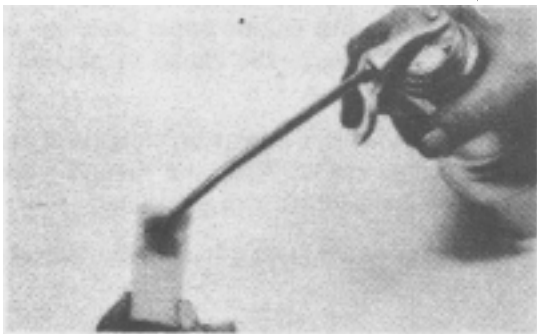


Fig. 4 — Squeeze dry and re-oil air filter with SAE 30 engine oil.



Fig. 5 — Squeeze filter to spread oil and re-install in carburetor cover.

CARBURETOR ADJUSTMENTS MAINTENANCE AND REPAIR (CON'T)

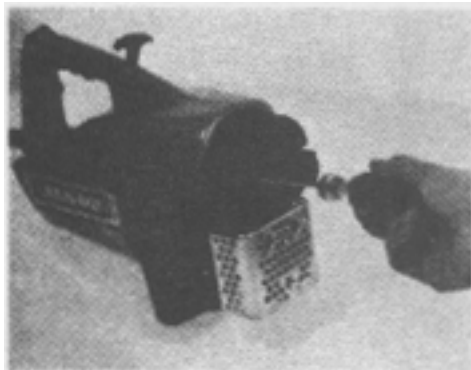


Fig. 6 — Unscrew mounting screws and remove choke cover assembly.

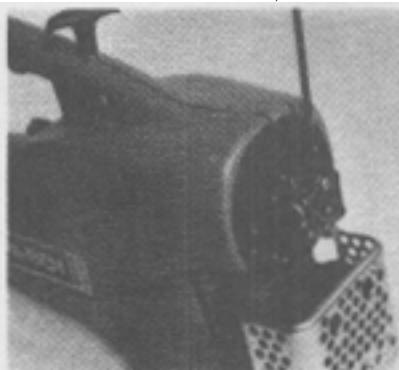


Fig. 7 — View showing idle speed adjustment screw.



Fig. 8 — View showing idle mixture adjustment with cut-away air filter cover in place.

 NOTE:

When closing idle mixture adjustment screw, turn finger-tight only. Forcing adjustment screw with screwdriver will cause serious damage to seat.

WALBRO CARBURETOR REASSEMBLY SSI — SSII



For testing and adjusting a Lawn-Boy Trimmer carburetor, use an air filter cover that has been cut-away as illustrated. When in place, it deflects the hot exhaust gasses away from the carburetor air intake. These hot gasses prevents the adjusting of the carburetor correctly. It also provides access to the needle valve(s) and idle stop screw.

1. The Lawn-Boy Trimmer is equipped with a diaphragm-type carburetor. Start the engine in the following manner. The engine may be hard to start if incorrect procedure is used.
2. Place ignition switch in the "on" position.
3. Rotate choke to fully choked position.
4. When starting, operator should hold the Lawn-Boy Trimmer unit in a position so that the cutting lines are away from the person.
5. Depress the throttle trigger, and pull the recoil starter rope until engine pops. Once the engine has popped, rotate the choke to partial choke position.
6. Pull the recoil start rope, with throttle depressed, until engine starts. After a 5 second warm up, move choke knob to run position.
7. If engine does not start immediately, repeat steps 2 thru 6.
8. Once the engine has started, let it idle for a short time (allowing engine to warm up) before proceeding to trim. If engine won't idle see page 18-38 for proper carburetor adjustment.



CARBURETION

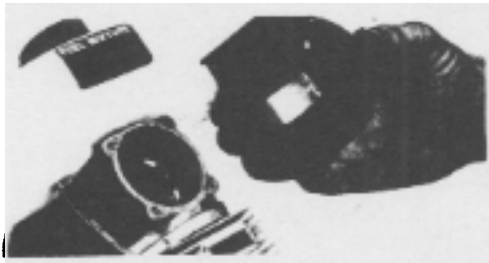


Fig. 9 — Remove carburetor mounting screws.



Fig. 10 — Disconnect fuel line from carburetor fuel inlet.

FOR CARBURETOR REPAIR AND SERVICE REFER TO PAGES 18-6 THROUGH 18-15.

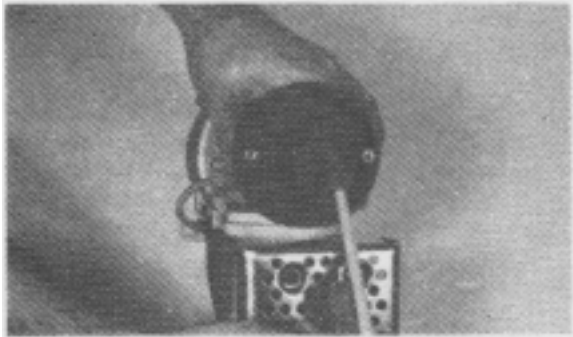


Fig. 11 — Make sure no foreign material has clogged reed plate passages.

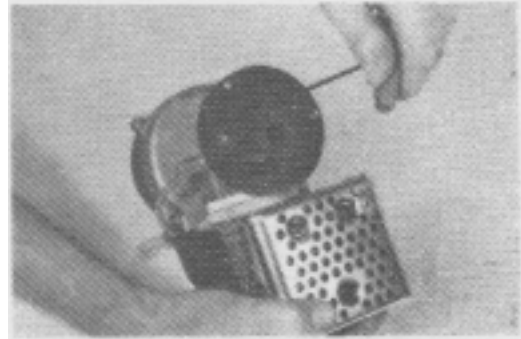


Fig. 12 — Remove four mounting screws from reed plate and carburetor mount.



Fig. 13 — Check reed for freedom of movement.

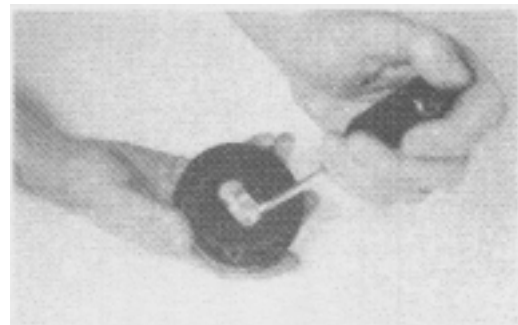


Fig. 14 — To replace reed if necessary, remove two mounting screws as shown.

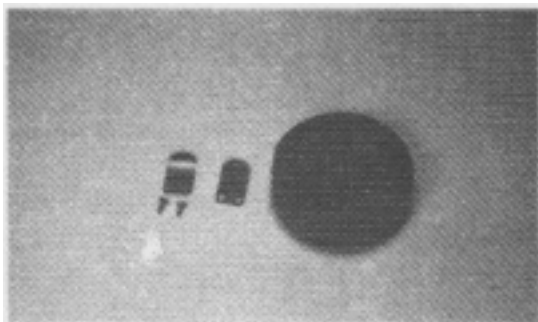
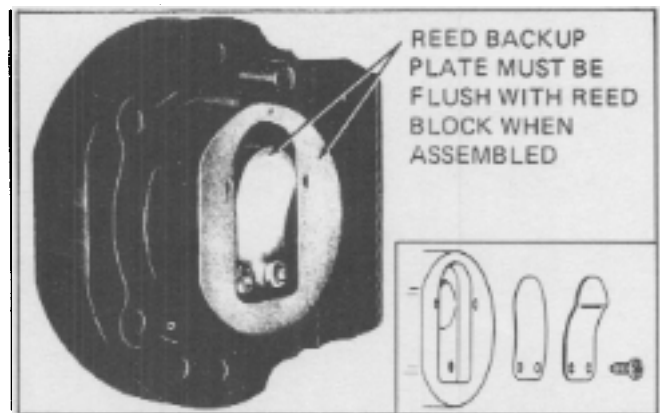


Fig. 15 — Reed plate and carburetor mount assembly showing reed plate, reed backup and mounting screws.



NOTE

Fig. 16 — When reassembling reed plate and reed backup to carburetor mount assembly the curved portion **MUST** BE installed as shown.

MUFFLER

The muffler assembly should be removed periodically to inspect for excessive carbon build-up. Excess carbon deposits around the exhaust ports or exhaust exit holes will cause engine to perform in a sluggish manner.

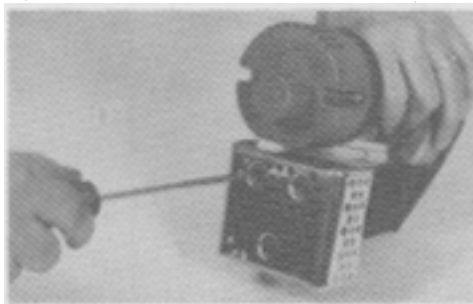


Fig. 17 — Remove two muffler mounting bolts.

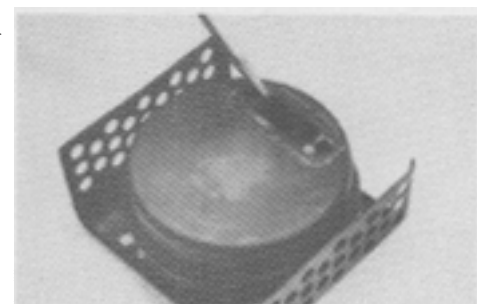


Fig. 18 — Check port area on muffler assembly for excess carbon deposits.

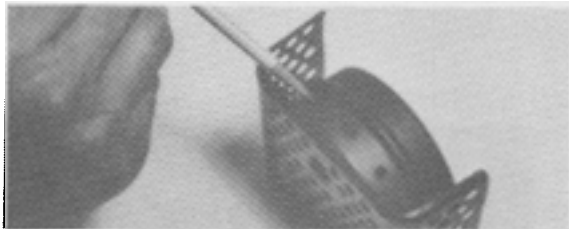


Fig. 19 — Exhaust exit holes in muffler should be free from carbon build-up. Suggest to use small wire to clean this area when necessary.

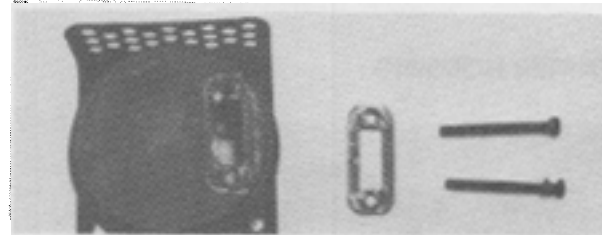


Fig. 20 — Basic parts of muffler assembly.

ENGINE REMOVAL



Fig. 21 — Remove all the Phillips mounting screws holding outer cowls.



Fig. 22 — Unscrew head adjustment counterclockwise direction until free of clamp.

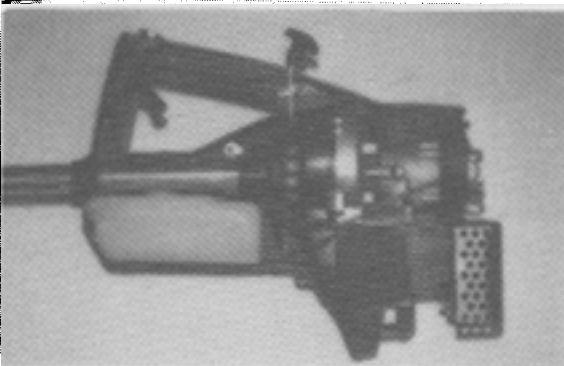


Fig. 23 — Turn trimmer over and remove the side opposite the gas tank filler.

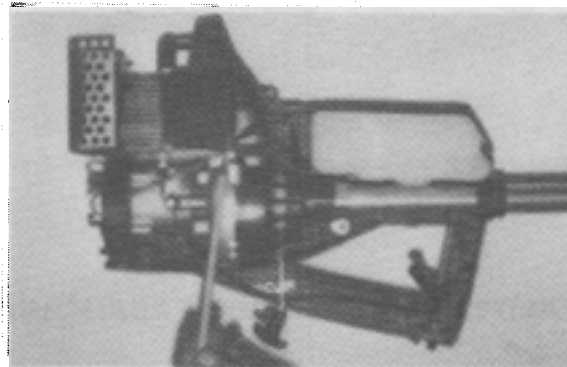


Fig. 24 — With the left side removed proceed to lift from the housing handle area, the switch and lead assembly, the throttle lever and spring, and the throttle wire housing. Also loosen the fuel line from the retaining groove in the starter housing.

NOTE

Routing and assembly of the following for reassembly: fuel line, throttle return spring, throttle wire housing, switch and wire routing.

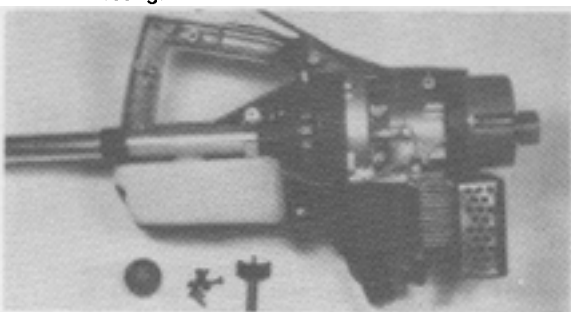


Fig. 25 — Trimmer shown with throttle, ignition switch and gas tank disconnected.

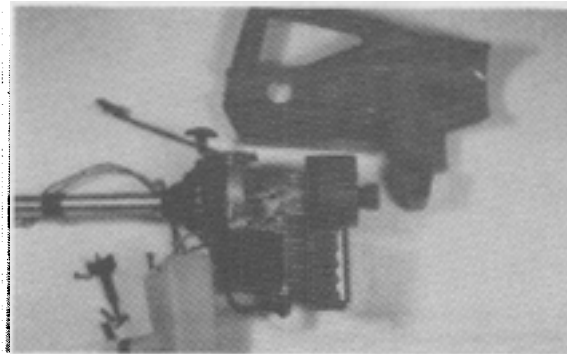


Fig. 26 — Trimmer engine shown removed from right side of cowl.

STARTER HOUSING



Fig. 27 — Remove four mounting screws from starter housing.

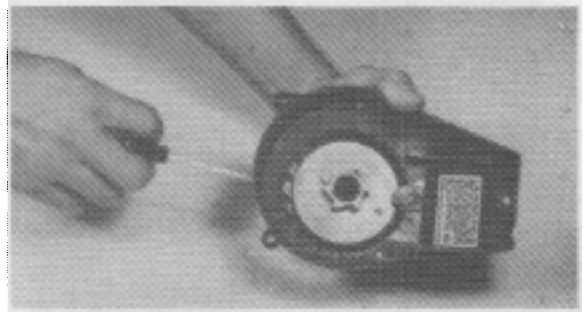


Fig. 28 — Checking pull cord for proper spring pressure. If spring pressure is weak and an adjustment will not work (Fig. 29), it will be necessary to replace spring.

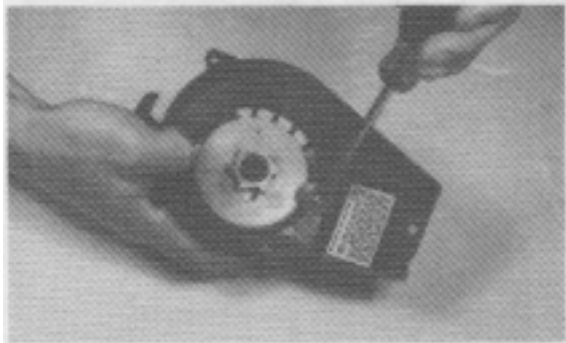


Fig. 29 — Adjust rope tension as indicated on decal located inside starter housing.

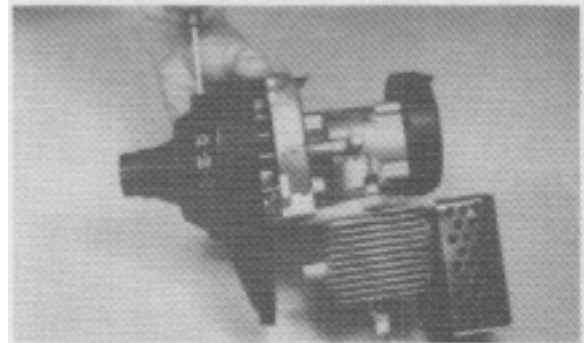


Fig. 30 — Pull slowly on starter rope to engage starter dogs, then install the starter housing mounting screws (ref. Fig. 27).

STARTER DOG & C.D. MODULE ADJUSTMENT

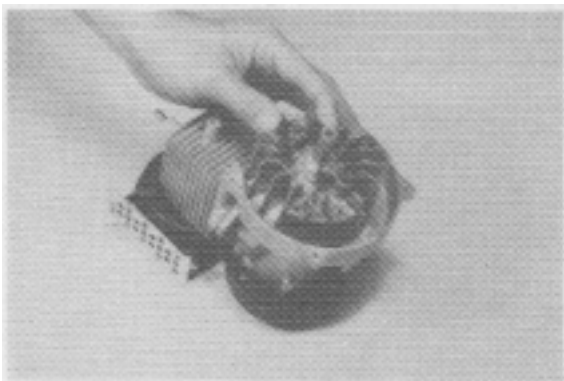


Fig. 31 — Check condition of starter dogs for freedom of movement before securing flywheel.

18-30



Fig. 32 — Set C.D. Module air gap by inserting air gap gauge (604659) between flywheel magnet and module. Secure both mounting screws on module. Air gap setting should be .010 .015.

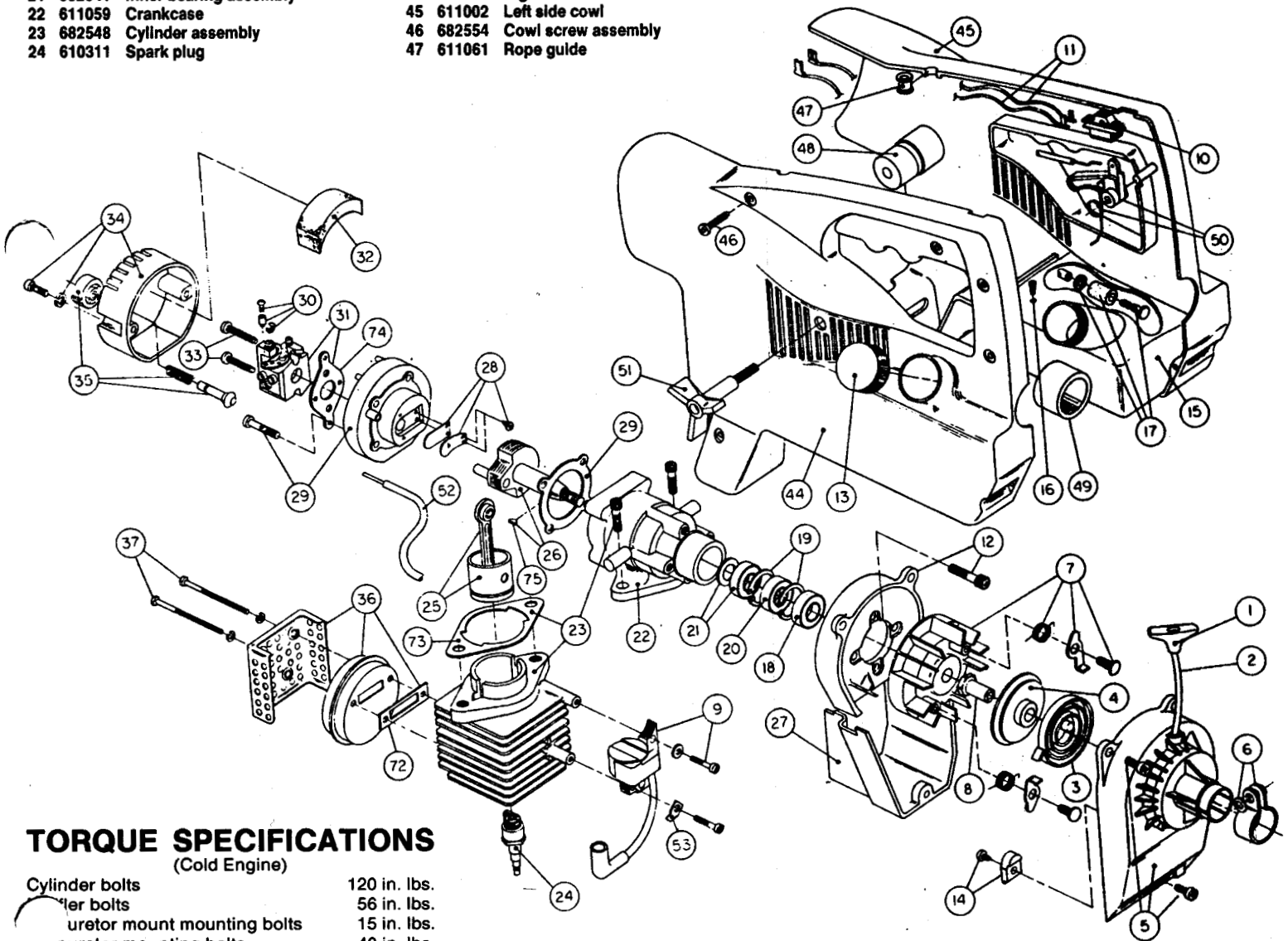
ENGINE MODELS SS I SS II

ITEM	PART NO.	PART NAME
1	610300	Pull handle
2	610301	Rope
3	610302	Recoil spring
4	682030	Recoil pulley assembly
5	682540	Starter housing assembly
6	682541	Upper clamp assembly
7	682307	Flywheel assembly
8	610303	Square drive nut
9	682498	Module assembly
10	682542	Switch assembly
11	682543	Wire leads assembly
12	682544	Shroud assembly
13	682545	Fuel cap assembly
14	682546	Pulley retainer assembly
15	611000	Fuel tank
16	611058	Fuel tank vent
17	682547	Fuel line assembly
18	610308	Outer bearing
19	682040	Snap ring assembly
20	610309	Seal
21	682041	Inner bearing assembly
22	611059	Crankcase
23	682548	Cylinder assembly
24	610311	Spark plug

ITEM	PART NO.	PART NAME
25	682502	Piston & rod assembly
26	682549	Power shaft assembly
27	611060	Shroud extension
28	682046	Reed assembly
29	682550	Carburetor mount assembly
30	682048	Throttle adjustment assembly
31	682310	Carburetor assembly (Walbro)
	682551	Carburetor assembly (Tillotson)
32	610312	Air cleaner filter
33	682505	Carburetor mounting screw assembly
34	682312	Air cleaner cover assembly
35	682313	Choke knob assembly
36	682311	Muffler assembly
37	682054	Muffler mounting bolt assembly
*38	682055	Engine gasket kit
*39	682552	Engine hardware kit
*40	682057	EOM carburetor repair kit (Walbro)
*41	682058	Gasket-Diaphragm repair kit (Walbro)
*42	682507	Piston ring set
*43	682553	Carburetor repair kit (Tillotson)
44	611001	Right side cowl
45	611002	Left side cowl
46	682554	Cowl screw assembly
47	611061	Rope guide

ITEM	PART NO.	PART NAME
48	682555	Engine mount assembly
49	611062	Grommet tube
50	611004	Throttle trigger assembly
51	611005	Head adjustment knob
52	682556	Throttle wire assembly
53	611063	Ground tab
*71	682557	Short block assembly (Items 18-26)
72	610672	Exhaust gasket (10 pack)
73	610674	Cylinder gasket (10 pack)
74	610675	Carburetor gasket (10 pack)
75	610676	Flywheel key (10 pack)
(A) *76	682558	Crankcase service assembly (Items 18-22, 26)
*29	610673	Carburetor mount gasket (10 pack)

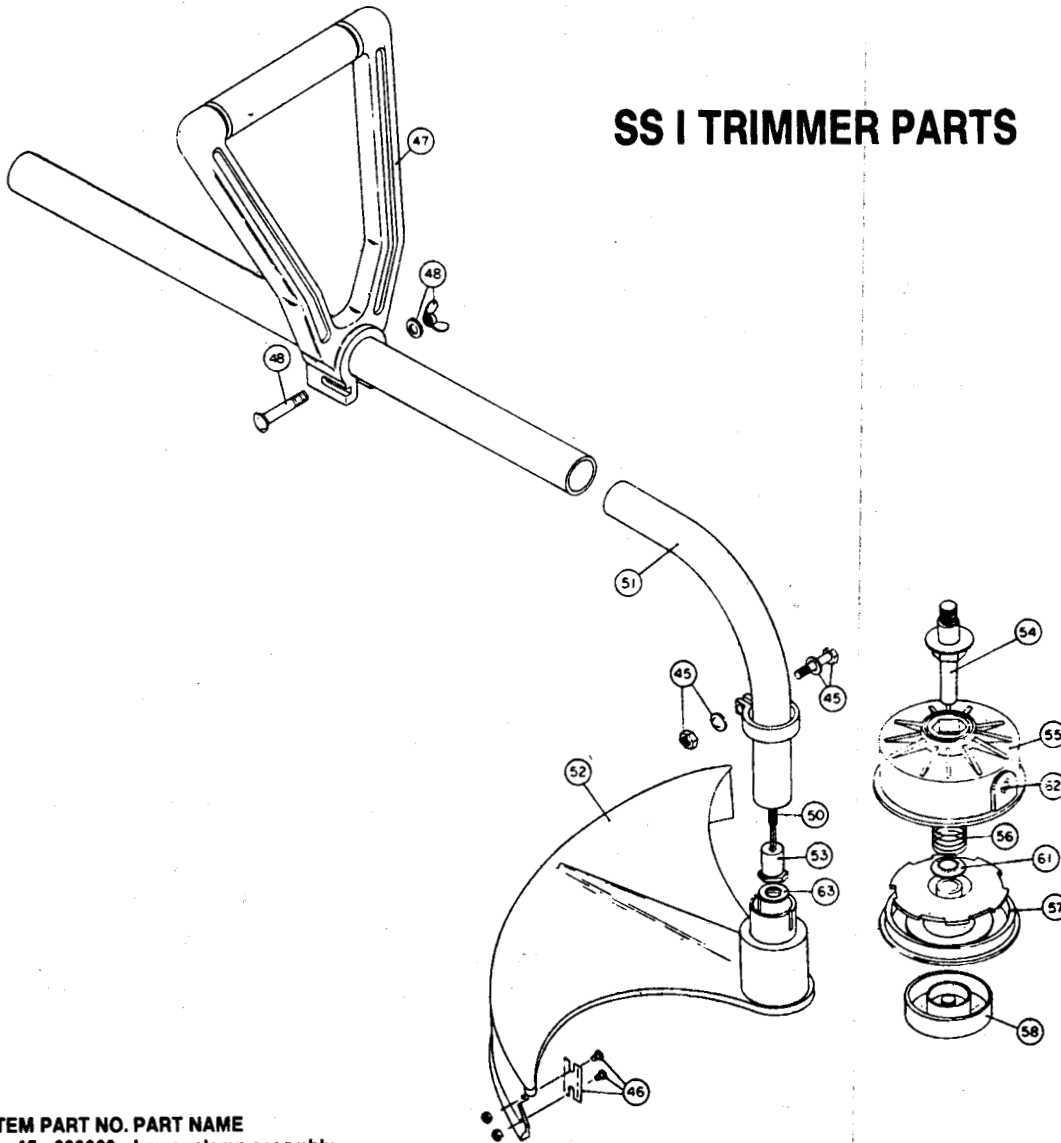
*NOT SHOWN



TORQUE SPECIFICATIONS (Cold Engine)

Cylinder bolts	120 in. lbs.
Filter bolts	56 in. lbs.
Carburetor mount mounting bolts	15 in. lbs.
Carburetor mounting bolts	40 in. lbs.
Shroud mounting bolts	120 in. lbs.
Module mounting screws	28 in. lbs.
Starter housing screws	40 in. lbs.
Air cleaner cover mounting screws	40 in. lbs.
Flywheel nut	150 in. lbs.
Spark plug	150 in. lbs.

SS I TRIMMER PARTS

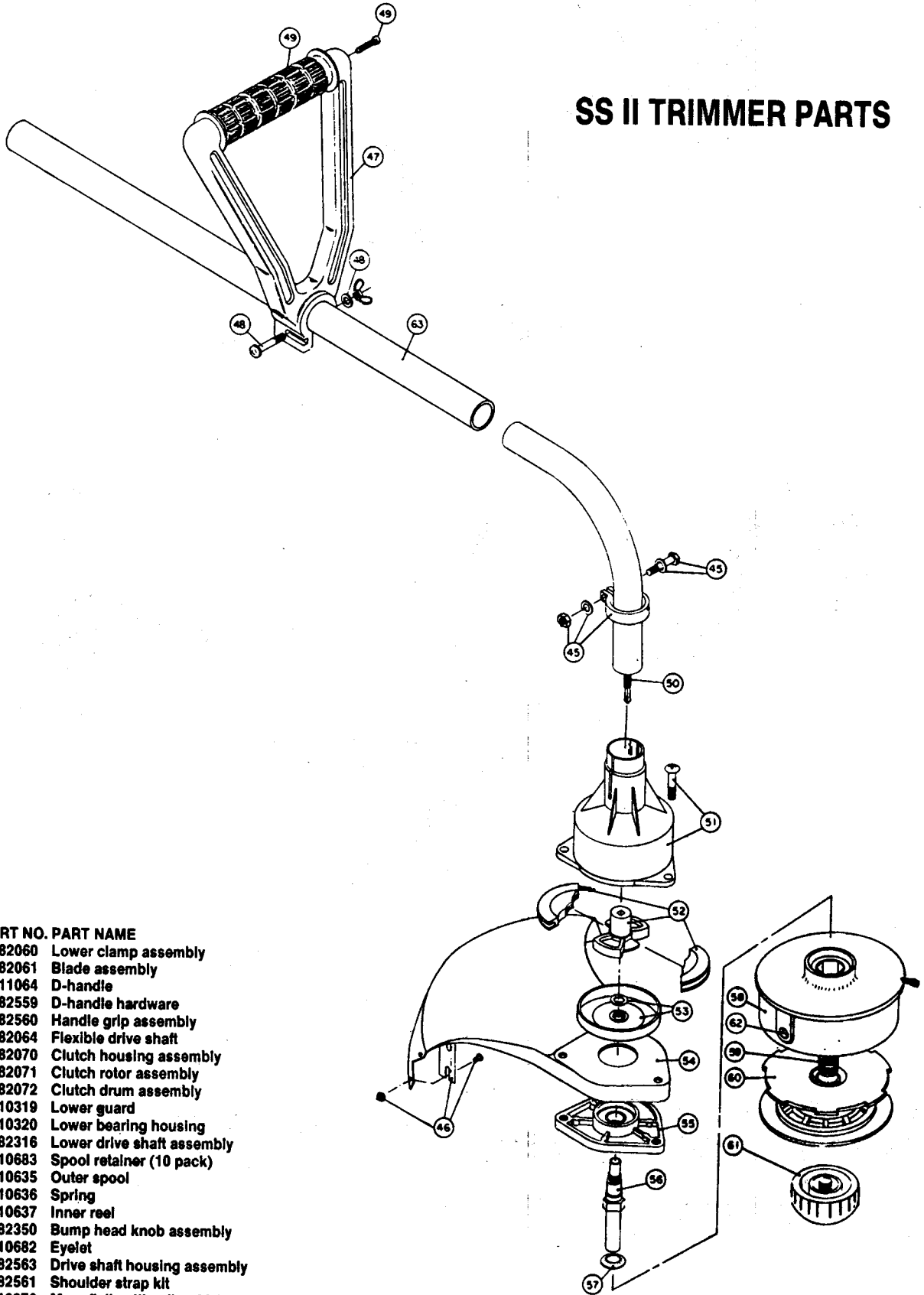


ITEM PART NO. PART NAME

- 45 682060 Lower clamp assembly
- 46 682061 Blade assembly
- 47 611003 D-handle
- 48 682559 D-handle hardware assembly
- *49 682561 Shoulder strap kit
- 50 682064 Flexible drive shaft
- 51 682562 Drive shaft housing assembly
- 52 682066 Guard and bearing housing assembly
- 53 610303 Square drive nut
- 54 682348 Spool shaft assembly
- 55 682068 Outer spool assembly
- 56 610317 Spring
- 57 610318 Inner reel
- 58 682069 Bump head knob assembly
- *59 610375 Monofil cutting line 50 ft. (2 fills)
- *60 610977 Monofil cutting line 1 lb. (16 fills)
- 61 610660 Retainer (10 pack)
- 62 610682 Eyelet
- 63 610996 Washer

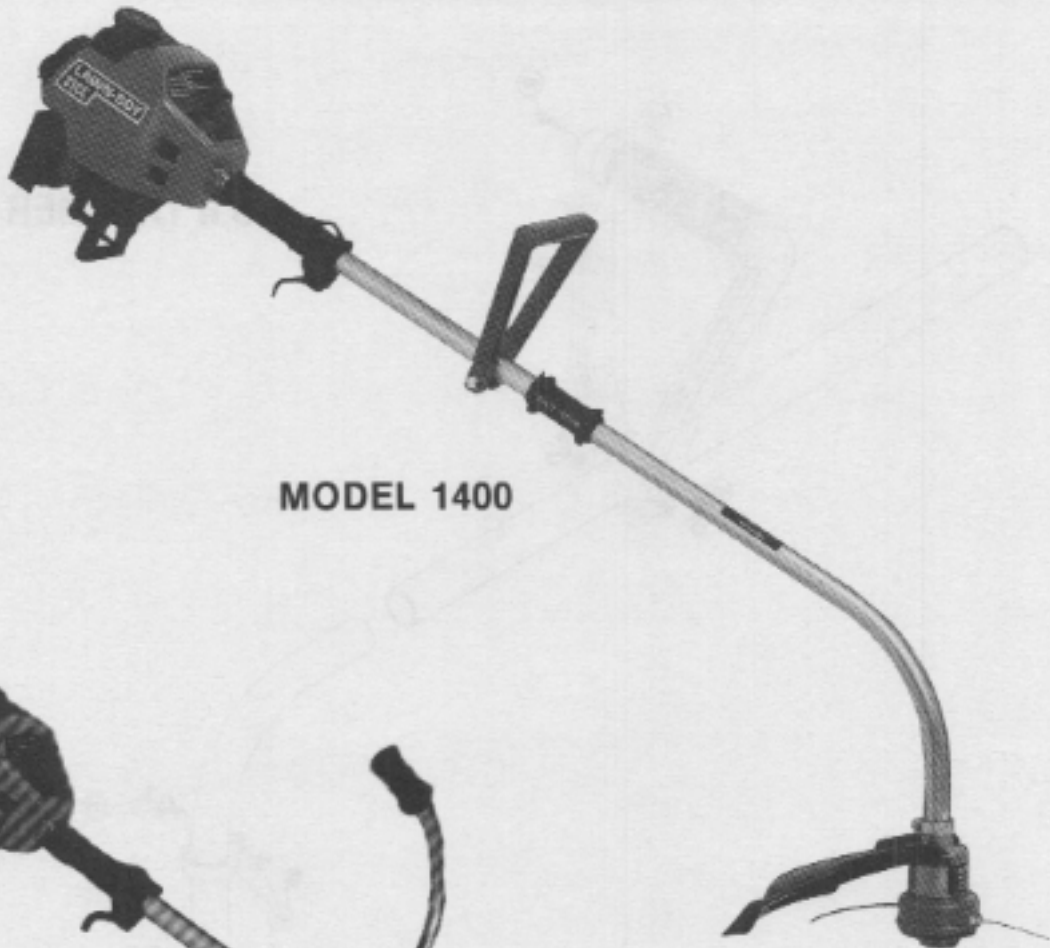
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SS II TRIMMER PARTS

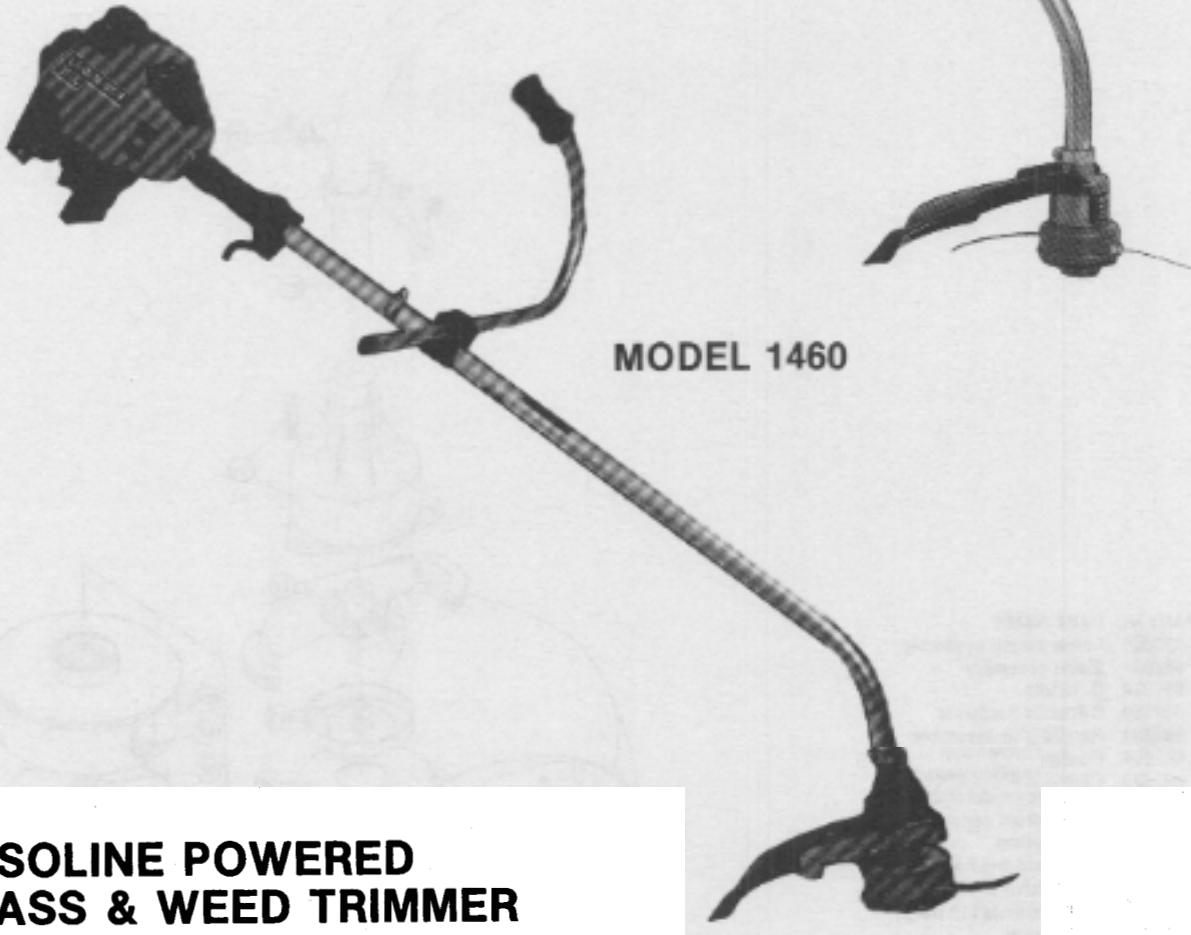


- | ITEM | PART NO. | PART NAME |
|------|----------|------------------------------|
| 45 | 682060 | Lower clamp assembly |
| 46 | 682061 | Blade assembly |
| 47 | 611064 | D-handle |
| 48 | 682559 | D-handle hardware |
| 49 | 682560 | Handle grip assembly |
| 50 | 682064 | Flexible drive shaft |
| 51 | 682070 | Clutch housing assembly |
| 52 | 682071 | Clutch rotor assembly |
| 53 | 682072 | Clutch drum assembly |
| 54 | 610319 | Lower guard |
| 55 | 610320 | Lower bearing housing |
| 56 | 682316 | Lower drive shaft assembly |
| 57 | 610683 | Spool retainer (10 pack) |
| 58 | 610635 | Outer spool |
| 59 | 610636 | Spring |
| 60 | 610637 | Inner reel |
| 61 | 682350 | Bump head knob assembly |
| 62 | 610682 | Eyelet |
| 63 | 682563 | Drive shaft housing assembly |
| *64 | 682561 | Shoulder strap kit |
| *65 | 610376 | Monofall cutting line 30 ft. |
| *66 | 610978 | Monofall cutting line 1 lb. |

*NOT SHOWN



MODEL 1400



MODEL 1460

**GASOLINE POWERED
GRASS & WEED TRIMMER**
with Bump Head Line Release

ASSEMBLY



NOTE:

FAILURE TO FOLLOW THESE ASSEMBLY INSTRUCTIONS MAY CAUSE POWER SHAFT FAILURE

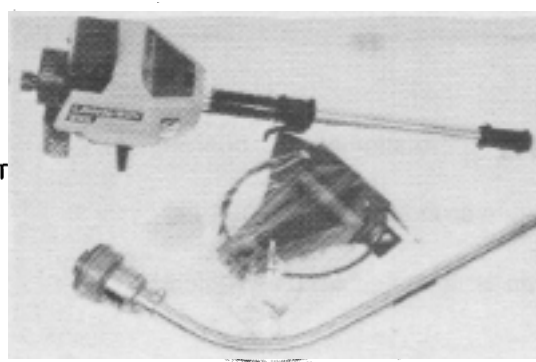


Fig. 1—Unpack contents from shipping container as shown.

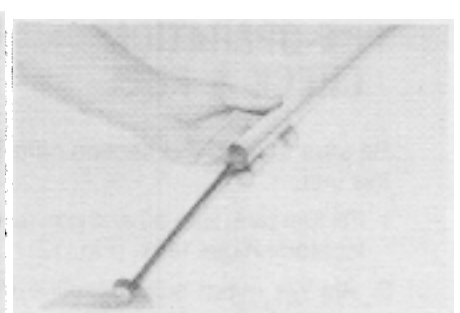


Fig. 2—Remove Flex Drive Shaft from plastic bag and install Shaft into lower portion of trimmer. Flex Shaft may require some extra force to push past bend in Boom. Rotate Flex Shaft until it has engaged into cutting head.

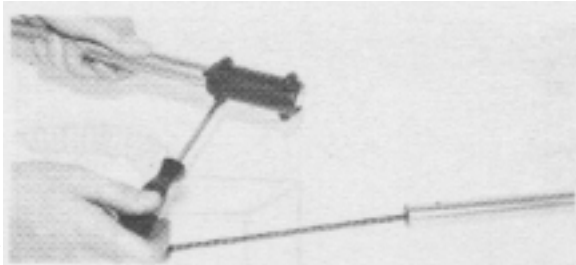


Fig. 3—Loosen all four corners of Split Boom Coupling as to allow lower portion of Boom to be assembled.



Fig. 4—Insert loose end of Flex Drive Shaft into upper portion of Trimmer Boom. It may be necessary to rotate Cutting Head Assembly to be sure Flex Shaft is properly engaged into engine portion of Trimmer Boom.

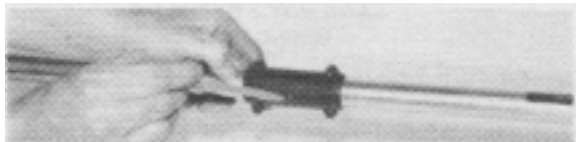


Fig. 5—Check sight hole, as shown, to make sure both ends of Trimmer Boom are together and that Pin of Coupling is in hole of Lower Boom.

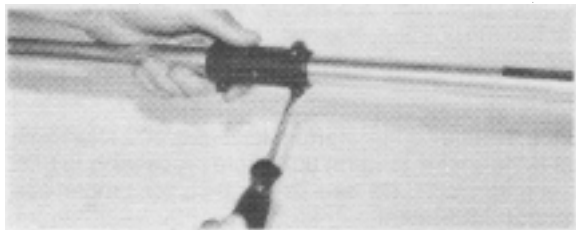


Fig. 6—Tighten the three corner screws and the thumb screw before trimming.



Fig. 7—Remove "D" handle from package. Spread and twist "D" handle enough to interlock tabs as it is being installed over tube. Install bolt, washer and wing nut and tighten.

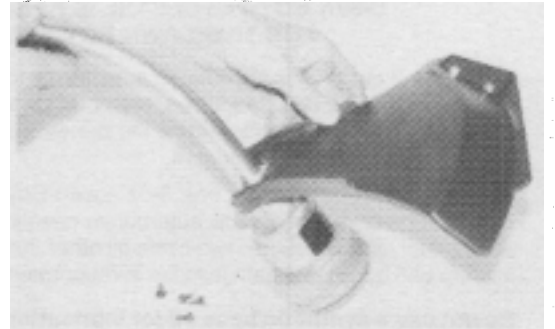


Fig. 8—Insert guard onto steel tube above clamp assembly as shown.



Fig. 9—Drop guard down to top of aluminum bearing housing and rotate guard into proper position.



Fig. 10—Drop small amount of oil onto guard screws to ease their installation.



Fig. 11—Tighten all four guard screws before running unit.



NOTE: Guard must be installed before operation of weed trimmer.

PRE-OPERATION CHECK & FUEL

Be sure to read this section carefully before attempting to operate this unit.

1. Fill fuel tank with oil and gas mixture as indicated on red fuel tag located on gas tank. (Fig. 12)
2. Always make sure gasoline cap is tightened securely before attempting to start engine.

READ CAREFULLY

LAWN BOY 2 CYCLE OIL IS RECOMMENDED FOR THIS LAWN BOY TRIMMER

Lawn-Boy 2 cycle oil is formulated specifically for high performance, two cycle engines. Special additives promote thorough mixing and ready combustion. This gives the engine the benefits of clean, fresh lubrication every revolution of the crankshaft.

Thoroughly mix contents of one 8-oz. Lawn-Boy 2 cycle oil can with two U.S. gallons of regular grade automotive gasoline. Do not mix directly in engine fuel tank. If you use two cycle oil other than Lawn-Boy 2 cycle oil, a mixture of 6 oz. oil to 1 gal. gasoline is recommended.

Do not use a synthetic base oil for lubrication in Lawn-Boy Gasoline Trimmers.

Remember to pay strict attention to the fuel mixing instructions. DO NOT use no-lead fuel, fuel containing alcohol or fuel labeled "Gasohol". DO NOT use a 40:1 ratio. NOT FOLLOWING MIXING PROCEDURE CAN CAUSE ENGINE TO SEIZE.



SAFETY WARNING

Gasoline is extremely flammable and highly explosive under certain conditions. Always stop engine, and do not smoke or allow open flame or spark when refueling.

READ CAREFULLY

STARTING

1. The Lawn Boy Trimmer is equipped with a diaphragm-type carburetor. Start the engine in the following manner. The engine may be hard to start if incorrect procedure is used.
2. Place ignition switch in the "on" position. (Fig. 13)
3. Rotate choke to fully choked position. (Reference Fig. 14)
4. When starting, operator should hold the Lawn Boy Trimmer unit in a position so that the cutting lines are away from the person.

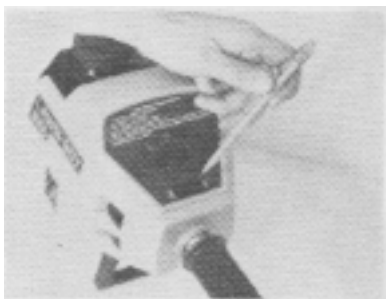


Fig. 13—Place ignition switch in the "on" position.



Fig. 14—Place choke knob in choke position.

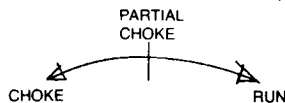
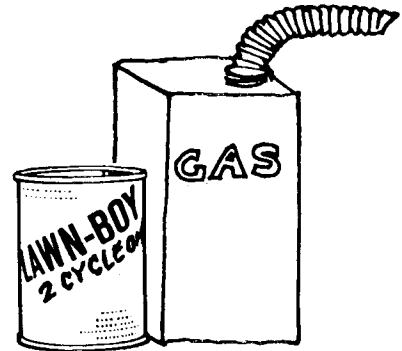


Fig. 15—Operator with unit in starting attitude. Depress the throttle trigger and pull starter rope in a brisk manner with the unit in the above position.



Fig. 12—Fuel decal located on gas tank.

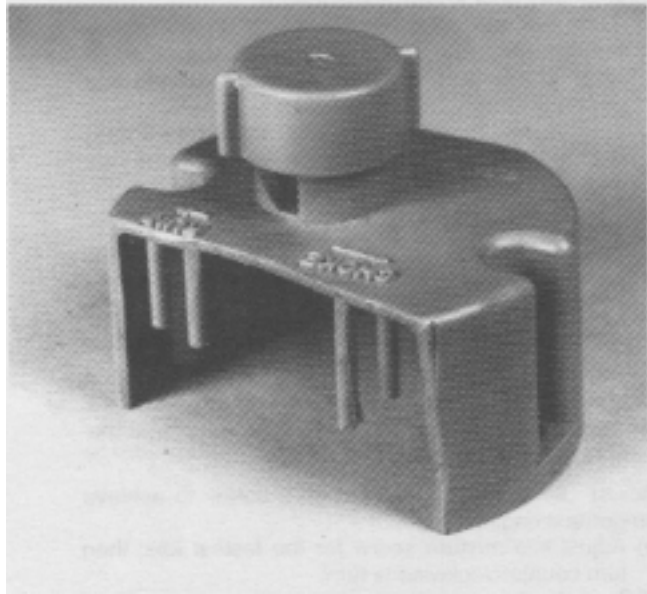


8 oz. Lawn-Boy 2 cycle oil to 2 gallons regular gas

LAWN-BOY 2 CYCLE OIL MIXING RATIO

5. Depress the throttle trigger, or engage throttle lock, and pull the recoil starter rope until engine pops. Once the engine has popped, rotate the choke to partial choke position. (Fig. 14)
6. Pull the recoil start rope, with throttle depressed, until engine starts. After a 5 second warm up, move choke knob to run position. (Fig. 14)
7. If engine does not start immediately, repeat steps 2 thru 6.
8. Once the engine has started, let it idle for a short time (allowing engine to warm up) before proceeding to trim. If engine won't idle see page 18-38 for proper carburetor adjustment.

WALBRO CARBURETOR REASSEMBLY



For testing and adjusting a Lawn-Boy Trimmer carburetor, use an air filter cover that has been cut-away as illustrated. When in place, it deflects the hot exhaust gasses away from the carburetor air intake. These hot gasses prevents the adjusting of the carburetor correctly. It also provides access to the needle valve(s) and idle stop screw.

1. The Lawn-Boy Trimmer is equipped with a diaphragm-type carburetor. Start the engine in the following manner. The engine may be hard to start if incorrect procedure is used.
2. Place ignition switch in the "on" position.
3. Rotate choke to fully choked position.
4. When starting, operator should hold the Lawn-Boy Trimmer unit in a position so that the cutting lines are away from the person.
5. Depress the throttle trigger, or engage throttle lock and pull the recoil starter rope until engine pops. Once the engine has popped, rotate the choke to partial choke position.
6. Pull the recoil start rope, with throttle depressed, until engine starts. After a 5 second warm up, move choke knob to run position.
7. If engine does not start immediately, repeat steps 2 thru 6.
8. Once the engine has started, let it idle for a short time (allowing engine to warm up) before proceeding to trim. If engine won't idle see page 18-38 for proper carburetor adjustment.


FUEL & CARBURETOR ADJUSTMENT

Your Lawn Boy Trimmer is equipped with a diaphragm type carburetor that has been carefully calibrated. In most instances no adjustment will be required by the operator.


1. Condition of air filter is very important to the operation of the unit. The condition of the air filter should be checked on a daily basis for a dirty or clogged element. A dirty filter will restrict the air flow, upsetting the fuel-air mixture in the carburetor, resulting in symptoms often mistaken for out-of-adjustment carburetor. For air filter maintenance, see the maintenance section.
2. The carburetor has two basic adjustments, idle speed adjustment and the idle mixture adjustment. The high speed jet is a fixed jet so no high speed adjustment is necessary.

YOUR CARBURETOR MAY NEED ADJUSTMENT IF YOU NOTICE ANY OF THE FOLLOWING CONDITIONS

- 1) Will not idle.
- 2) Hesitates or dies on acceleration.
- 3) Loss of engine power which is not corrected by air filter or muffler cleaning.
- 4) Unit seems to operate in an erratic or fuel-rich condition (noted by excessive smoke out of the exhaust system).

 NOTE: Careless adjustments can seriously damage your trimmer.

- 1) Remove choke cover (Fig. 16) to expose the adjustments.
- 2) Make initial settings with the engine stopped. These initial settings should allow you to start and warm up your trimmer prior to final adjustments.
 - a) Turn the idle speed screw (Fig. 17) out counterclockwise, then in until the carburetor throttle lever just begins to move; continue moving two more full turns.
 - b) Turn the idle mixture screw (Fig. 18) in (clockwise) until *lightly* seated, then turn counterclockwise one and one half turns.
- 3) Start and warm up the trimmer.
- 4) Release the throttle lever to let the engine idle. If the engine stops, turn the idle speed screw clockwise $\frac{1}{8}$ turn at a time as required until engine maintains idle.

 NOTE: All adjustments should be made when cutting lines are extended to their maximum cutting length.

Adjustments must be made quickly, as running with choke cover removed for more than two minutes will cause the carburetor to over heat, causing erratic operation.

- 5) Adjust idle speed and idle mixture screw to achieve smoothest engine idle:
 - a) Adjust idle mixture screw for the fastest idle; then turn counterclockwise $\frac{1}{8}$ turn.
 - b) Squeeze the trigger if the engine falters or hesitates on acceleration, turn the idle mixture screw counterclockwise $\frac{1}{16}$ turn at a time, just enough to achieve rapid acceleration.
 - c) If the idle speed has changed significantly because of a) & b), above, readjust idle speed screw.

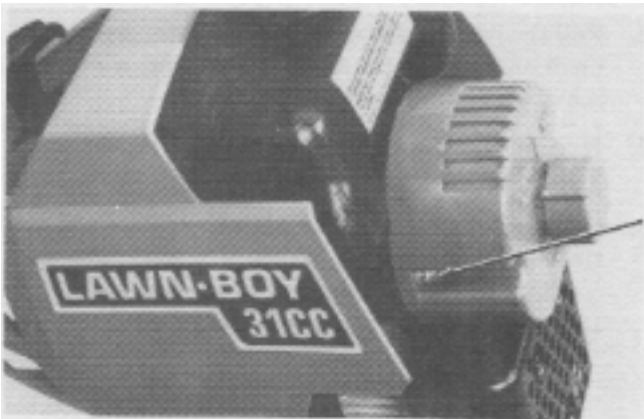


Fig. 16—Unscrew mounting screws and remove choke cover assembly.

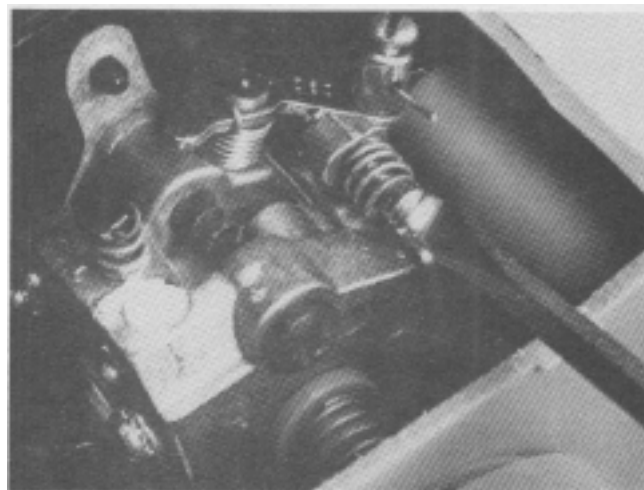



Fig. 17—View showing idle speed adjustment screw.



Fig. 18—View showing low speed mixture carburetor adjustment.

 NOTE When closing low speed mixture screw, turn finger-tight only. Forcing adjustment screw with screwdriver will cause serious damage to seat.

STOPPING

The Lawn Boy Trimmer is equipped with an ignition type on/off switch (Fig. 12). Engine stopping is accomplished by moving the switch lever to the "off" position, causing the engine to stop.

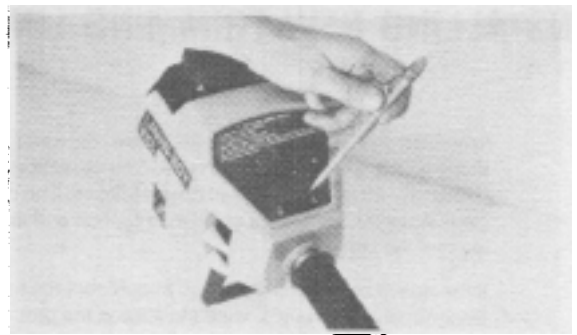


Fig. 19—Ignition switch for stopping the engine.

TRIMMING LINE ADJUSTMENT & BUMP HEAD

Your Lawn Boy Trimmer has been designed with a Bump Head™ or automatic trimming line release system. The basic principle behind the automatic line release system is the use of centrifugal force. Centrifugal force is generated on the cutting line when the unit is in a spinning operation. Therefore, in order to release line automatically, the unit must be running. The best r.p.m. range when tapping and releasing the line is a **high engine speed**. This feature enables the operator to release more trimming line without stopping the engine. As the line becomes frayed and worn, additional line may be released by lightly tapping the unit on the ground. Each time the unit is bumped, approximately 1" of trimming line will be released. The unit is also equipped with a weed guard that has built in an automatic line cutting blade. This merely means that if excessive line is released, it will be automatically cut to the proper length. When tapping the unit on the ground for more line release, it should be done on bare ground or hard soil. If it is attempted in tall grass, the unit will probably stall.

Your Lawn Boy Trimmer has been designed to keep the moving parts to an absolute minimum. The basic unit is engineered with high strength alloy parts to stand heavy, everyday use. Your unit will provide many hours of good service, provided that a few simple operational techniques are used.

NOTE: Line release becomes more difficult as cutting line becomes shorter.

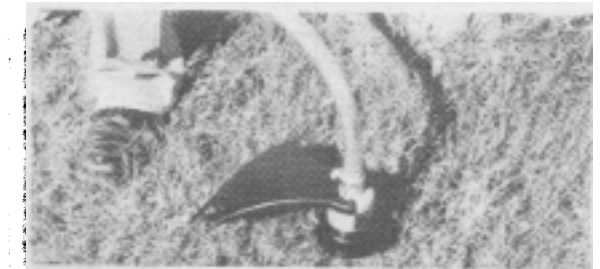


Fig. 20—Operator bumping head in a downward direction to extend more trimming line. NOTE: The trimmer must be operating at **high engine speed** to release more line.



Fig. 21—Decorative scalping is accomplished by removing all vegetation around trees, posts, fences, etc. Use 30-degree angle when trimming in this method.



Fig. 22—The operator should maintain approximately a 30-degree angle to the trimming area, allowing more efficient trimming.



Fig. 25—When edging, let the top of the trimming line do the work. Cut with trimmer in the position shown.

EDGING

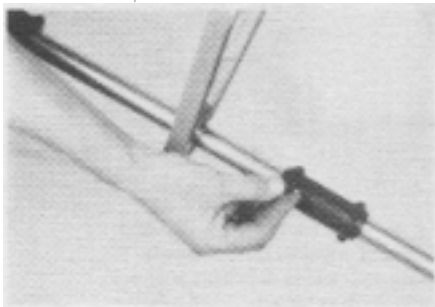


Fig. 23—Loosen thumb screw on Split Boom Coupling as shown.

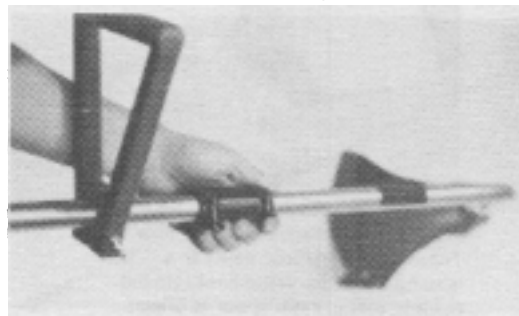



Fig. 24—Using Split Boom Coupling as a handle rotate lower portion of Boom to desired edging angle and tighten thumb screw before edging.

INSTALLING NEW TRIMMING LINE & BUMP HEAD MAINTENANCE

When installing new trimming line, a few maintenance checks should be made. The reason for doing this is to provide continuous trouble-free operation of your Bump Head. The basic maintenance cares necessary for the Bump Head are as follows: The cleaning of the inner surface of the outer spool; the cleaning of the teeth area of the inner spool; and also checking for worn and frayed conditions of the teeth of the inner spool

If the above conditions exist, you should replace the inner spool. When winding line on inner spool, it is extremely important to wind the lines in the proper direction. Failure to do so will cause the Bump Head to operate incorrectly.

 **NOTE:** A dual line replacement cartridge is available at your Lawn Boy Dealer.

Always use Genuine
Monoflail™
replacement line

Monoflail®

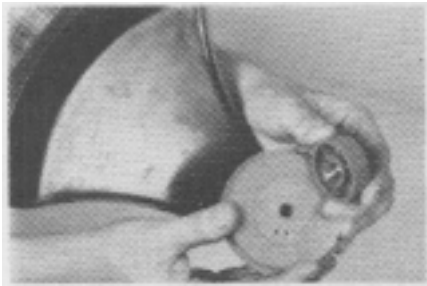


Fig. 26—Hold outer spool with one hand and unscrew bump knob in counterclockwise direction. Inspect bump knob to be sure it can freely move axially on the captured bolt.

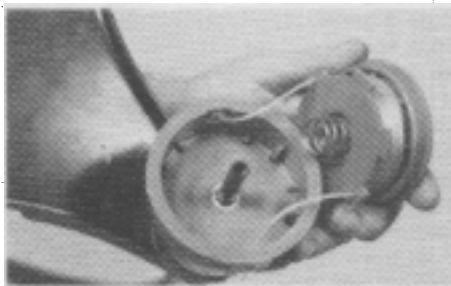


Fig. 27—Remove inner spool.



Fig. 28—Use rag and clean inner surface of outer spool.

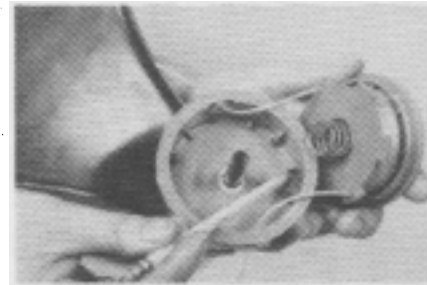


Fig. 29—Check indexing teeth on inner and outer spool for wear. If necessary, deburr or replace.



Fig. 30—Loop new trimming line into two equal lengths and around the two holes as shown and wind trimming line in direction indicated on inner spool.



Fig. 31—Wind approx. 25 ft of new cutting line in even and tight layers. Be sure not to overlap the two separate lines. Failure to do so may result in improper line operation.

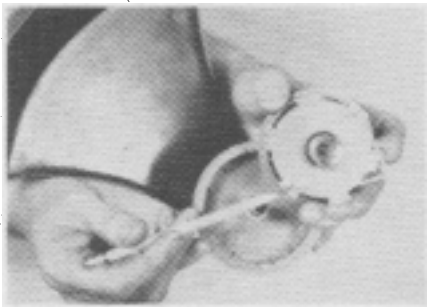


Fig. 32—After the new trimming line has been tightly & properly wound around spool, insert each end of the new line in opposite slots provided to hold line.



Fig. 33—With each end of the new Trimmer Line in their respective holding slots, insert the lines into the eyelets, install inner spool as shown, pulling the lines carefully to outside. Grasp both lines and pull to release the lines from the holding slots in the spool.



Fig. 34—Hold outer spool with one hand and unscrew bump knob in counterclockwise direction. Inspect bump knob to be sure it can freely move axially on the captured bolt.

MAINTENANCE AIR FILTER



NOTE:

CLEAN AND RE-OIL AIR FILTER EVERY 10 HOURS

Your unit's air filter is one of the most important areas to maintain. If the air filter is not cared for as described on the carburetor cover or as shown in Figs. 35-38, you will void your warranty.



Fig. 34—Remove filter from carburetor cover.



Fig. 35—Wash filter in kerosene, petroleum solvent or detergent.

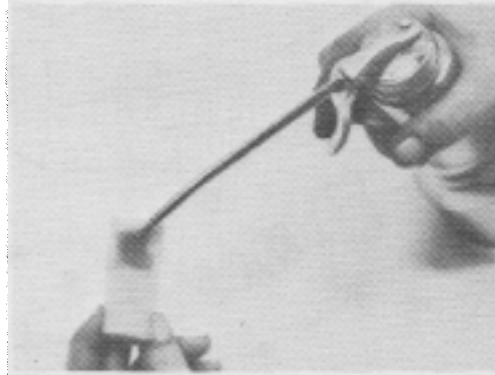


Fig. 36—Squeeze dry and re-oil air filter with SAE 30 engine oil.

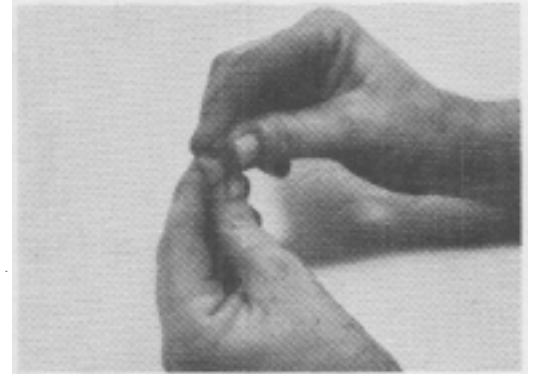


Fig. 37—Squeeze filter to spread oil and re-install in carburetor cover.

MAINTENANCE DRIVE SHAFT



NOTE:

After approximately every 10 hours of continuous use, the flexible drive shaft should be reversed end for end to add additional life to the drive shaft.

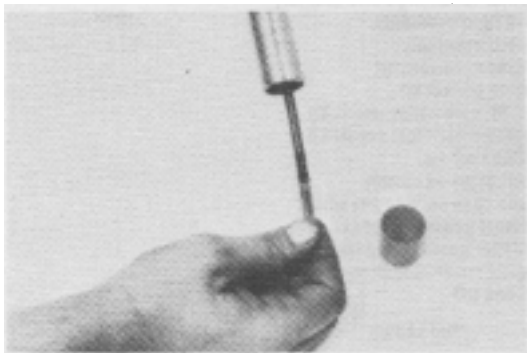
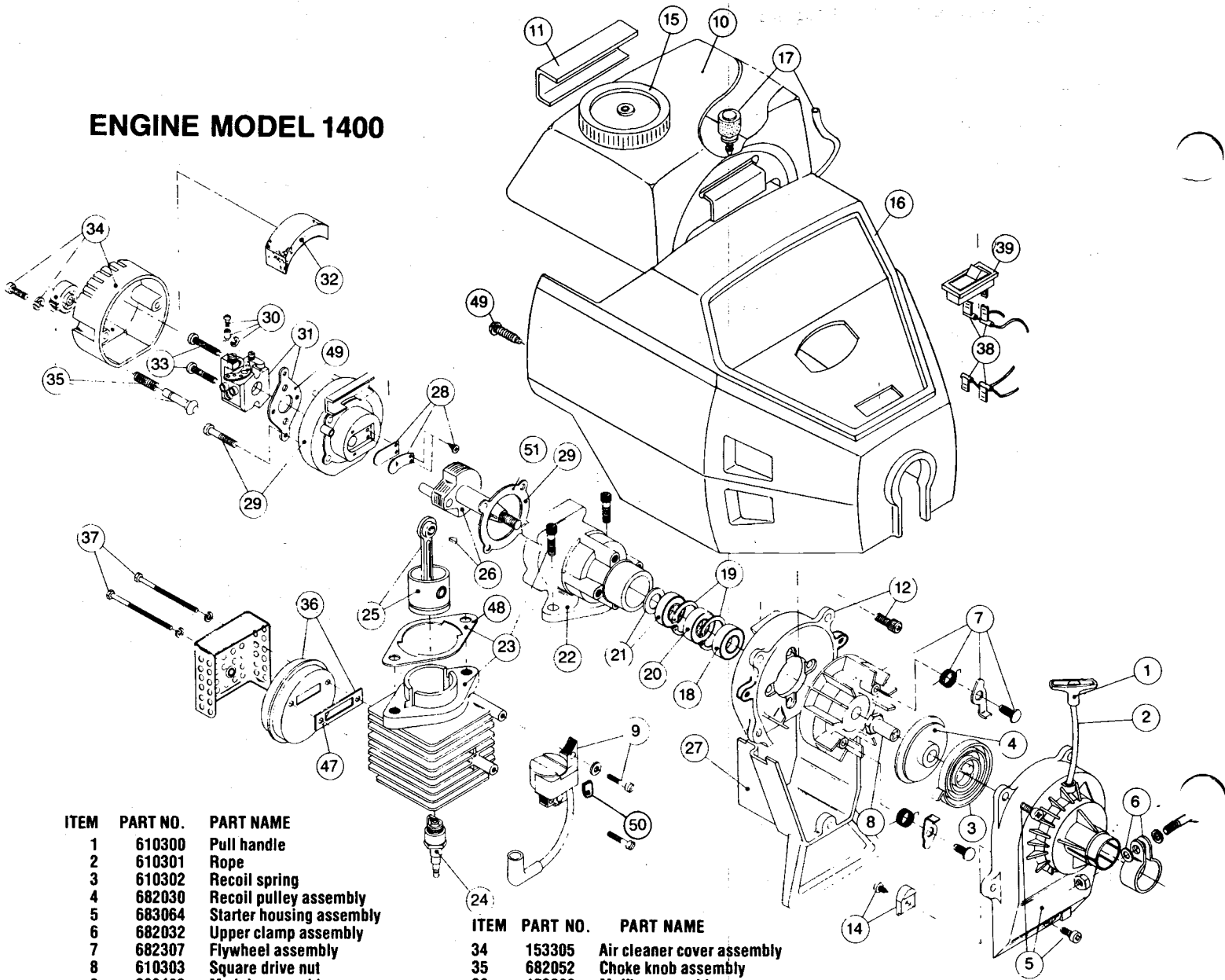


Fig. 38—Remove flexible drive shaft and inspect for any excessive wear conditions.



Fig. 39—IMPORTANT: Anytime flexible drive shaft core is removed from outer housing, it should be cleaned and regreased with high speed, high temperature wheel bearing grease, Mobil #532 or equivalent.

ENGINE MODEL 1400



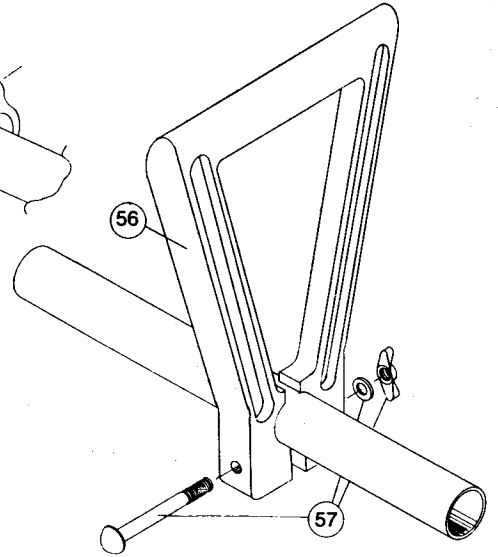
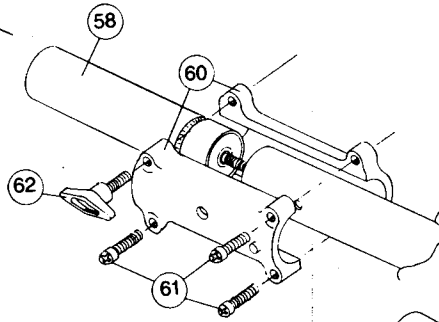
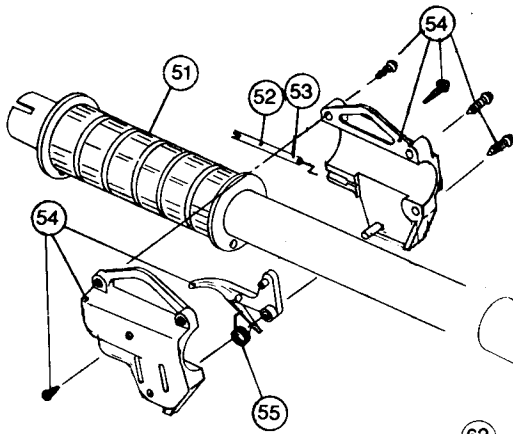
ITEM	PART NO.	PART NAME
1	610300	Pull handle
2	610301	Rope
3	610302	Recoil spring
4	682030	Recoil pulley assembly
5	683064	Starter housing assembly
6	682032	Upper clamp assembly
7	682307	Flywheel assembly
8	610303	Square drive nut
9	682498	Module assembly
10	611714	Fuel tank
11	145307	Rear mounting pad
12	683065	Shroud assembly
13	145308	Front mounting pad
14	682546	Pulley retainer assembly
15	683066	Cap and vent assembly
16	683067	Engine cover & decal assembly
17	682039	Fuel line assembly
18	610308	Outer bearing
19	682040	Snap ring assembly
20	610309	Seal
21	682041	Inner bearing assembly
22	145563	Crank case
23	611735	Cylinder assembly
24	610311	Spark plug
25	153302	Piston and rod assembly
26	153303	Power shaft assembly
27	683078	Shroud extension and stand
28	682046	Reed assembly
29	682504	Carburetor mount assembly
30	682048	Throttle adjustment assembly
31	683063	Carburetor assembly
32	610312	Air cleaner filter
33	682505	Carburetor mounting screw assembly

ITEM	PART NO.	PART NAME
34	153305	Air cleaner cover assembly
35	682052	Choke knob assembly
36	153306	Muffler assembly
37	682054	Muffler mounting bolt assembly
38	683068	Wire lead assembly
39	683069	Switch assembly
*40	682552	Engine hardware kit
*41	153307	Engine gasket kit
*42	153308	O. E. M. carburetor repair kit
*43	153309	Gasket diaphragm repair kit
*44	682507	Piston ring set
*45	683099	Short block assembly
*46	153311	Crank case service assembly
47	610672	Exhaust gasket (10 pack)
48	145564	Cylinder gasket (10 pack)
49	683070	Engine cover mounting screw assembly
50	611063	Ground tab

*Not shown

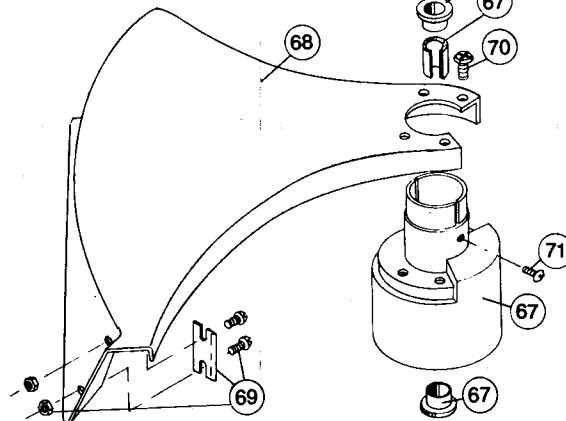
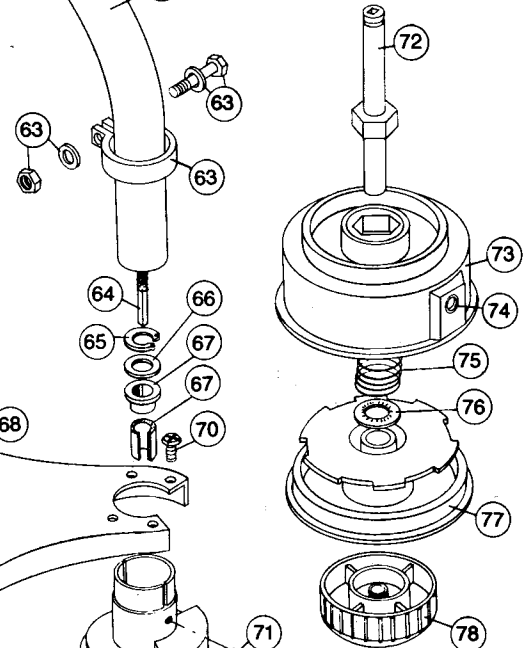
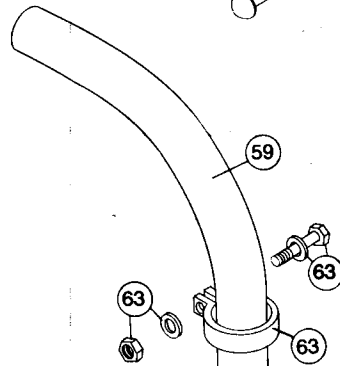
TORQUE SPECIFICATIONS (Cold Engine)

Cylinder bolts	120 in. lbs.
Muffler bolts	56 in. lbs.
Carburetor mount mounting bolts	15 in. lbs.
Carburetor mounting bolts	40 in. lbs.
Shroud mounting bolts	120 in. lbs.
Module mounting screws	28 in. lbs.
Starter housing screws	40 in. lbs.
Air cleaner cover mounting screws	40 in. lbs.
Flywheel nut	150 in. lbs.
Spark plug	150 in. lbs.



ITEM	PART NO.	PART NAME
51	610313	Main handle grip
52	682062	Throttle cable housing assembly
53	610315	Throttle cable
54	153316	Throttle trigger assembly
55	610314	Throttle trigger spring
56	611715	D-handle
57	153317	D-handle hardware assembly
58	683071	Upper drive shaft housing assembly
59	683072	Lower drive shaft housing assembly
60	683073	Split boom coupling set
61	683074	Coupling bolt assembly
62	611716	Adjustment knob
63	682060	Lower clamp assembly
64	682064	Flexible drive shaft
65	145570	Retaining ring
66	145567	Washer
67	153312	Bushing housing assembly
68	145565	Guard
69	682061	Blade assembly
70	153318	Guard mounting screw assembly
71	145569	Anti-rotation screw
72	153313	Spool shaft
73	683075	Outer spool
74	145566	Eyelet
75	610317	Spring
76	610660	Retainer (10 pack)
77	610318	Inner reel
78	682069	Bump head knob assembly
*79	610375	Monofil cutting line 50 ft (2 fills)
*80	610977	Monofil cutting line 1 lb (16 fills)
*81	683062	Dual line cartridge replacement
*82	683059	Complete cutting head (twin line)

*Not shown



PARTS MODEL 1400

1400 & 1460 SERIES TROUBLE SHOOTING



NOTE:

If you do not understand, or feel you are incapable of properly correcting any problem described here, please contact your nearest Lawn Boy Service Center. Improper servicing can be dangerous and expensive to you as a customer.

TROUBLE SHOOTING

POSSIBLE CAUSE AND CHECK

POSSIBLE REMEDY

STARTER ROPE WILL NOT REWIND

Broken Starter Spring/Not enough Preload
Broken pulley

Contact your nearest L/B Service Center/
Adjust tension per decal on inside of starter housing
Replace

STARTER DOES NOT ENGAGE FLYWHEEL

Broken Pawl Spring
Broken Pawls or Pins

Contact your nearest L/B Service Center
Contact your nearest L/B Service Center

ENGINE DIFFICULT OR WILL NOT START

Fuel Tank empty
Solid State weak. CHECK: Remove Spark Plug, reattach Plug Wire, hold Plug against engine and pull starter rope (a strong white spark should jump across plug points—weak Solid State produces a short red spark)
Solid State grounded. CHECK: Wire from Solid State to "ON-OFF" Switch for bare spots.
Carburetor misadjusted
Engine flooded
Engine is severely vapor locked

Ignition Switch in Off Position
Broken Reed Valve

Fill Fuel Tank
Contact your nearest L/B Service Center

Wrap Wire with electrical tape or replace

Follow Carburetor Adjusting Procedure
Follow Starting Procedure WITHOUT USING CHOKE
ALLOW TO COOL COMPLETELY, then follow Starting Instructions, page 5
Put switch in On Position
Contact your nearest L/B Service Center

CARBURETOR FLOODS

Carburetor misadjusted
Damaged Carburetor Diaphragm
Leaking Gasket
Leaking Inlet Needle Seat

Follow Carburetor Adjusting Procedure
Contact your nearest L/B Service Center
Contact your nearest L/B Service Center
Contact your nearest L/B Service Center

ENGINE WILL NOT IDLE

Carburetor misadjusted
Carburetor Diaphragm leaking
Carburetor Inlet Seat Gasket leaking
Crankshaft seals leaking
Cylinder scored or compression low
Reeds leaking or broken
Head bound with grass

Follow Carburetor adjusting Procedure
Contact your nearest L/B Service Center
Contact your nearest L/B Service Center
Contact your nearest L/B Service Center
Contact your nearest L/B Service Center
Contact your nearest L/B Service Center
Clean until free of grass

TROUBLE SHOOTING CONTINUED

POSSIBLE CAUSE AND CHECK

POSSIBLE REMEDY

ENGINE BACKFIRES OR MISFIRES

- Fuel Mix improper or contaminated
- Spark Plug fouled
- Solid State intermittently shorting. CHECK: loose or bare wires or loose assemblies
- Defective Reed Assembly

- Drain tank and refill with freshly mixed fuel
- Clean Spark Plug and regap or replace
- Tighten assemblies, wrap wires

Contact your nearest L/B Service Center

HEAD WILL NOT TURN WHEN THROTTLE LEVER IS SQUEEZED

- Shaft broken
- Flex Shaft not engaged

- Replace shaft
- Re-assemble properly

ENGINE WILL NOT ACCELERATE

- Carburetor misadjusted
- Dirty Air Filter
- Spark Plug fouled or Solid State weak
- Carbon build-up
- Carburetor Diaphragm Cover loose or Diaphragm Gasket leaking
- Broken Reed Valve

- Follow Carburetor Adjusting Procedure
- Clean Air Filter or replace
- Clean Spark Plug and regap or replace
- Clean Exhaust Port and Muffler
- Contact your nearest L/B Service Center
- Contact your nearest L/B Service Center

ENGINE LACKS POWER OR DIES IN THE CUT

- Dirty Air Filter
- Carbon build-up
- Low compression. CHECK: Compression pressure tests below 90 PSI or lessened engine resistance to pulling starter rope

- Clean Air Filter or replace
- Clean Exhaust Port and Muffler, page 18
- Contact your nearest L/B Service Department

HEAD WILL NOT ADVANCE LINE

- Out of Line
- Bump Knob Bound Up
- Indexing Teeth Worn or Burred
- Head Dirty
- Line Welded or
- Line Twisted When Refilled
- Not Enough Line Exposed

- Refill with Genuine Monofail® Cutting Line
- Replace
- Replace
- Clean
- Disassemble, remove welded section and rewind line per instructions
- Manually index until 4" of line shows outside the head.

ENGINE SPECIFICATIONS



Spark plug gap	.025
Flywheel torque	150 in. lbs.
C. D. Module air gap	.010-.015
Piston ring end gap	.025 max.
Piston side ring clearance	.005 max.
Compression avg.	120 lbs.; min. 90 lbs.
Piston ring width	.052 min.
Spark plug	Champion DJ8J

ENGINE COVER REMOVAL

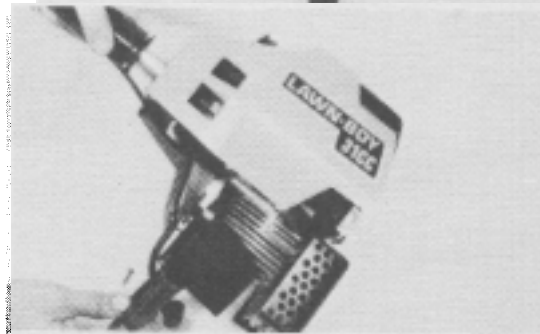


Fig. 1—Remove Screw, Spark Plug Wire & Shroud Extension Stand.

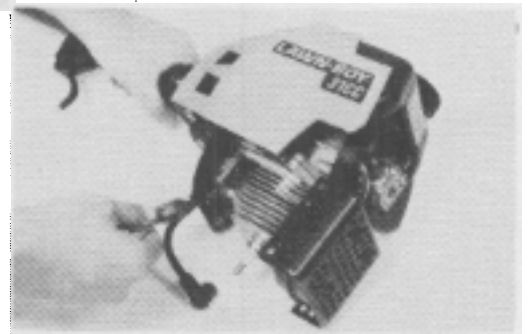


Fig. 2—Remove (2) Wire Leads at Ignition Module. Be sure that wire leads are secured in retainer slot before reassembly.

ENGINE COVER REMOVAL (CON'T.)

MUFFLER

The muffler assembly should be removed periodically to inspect for excessive carbon build-up. Excess carbon deposits around the exhaust ports or exhaust exit holes will cause engine to perform in a sluggish manner.

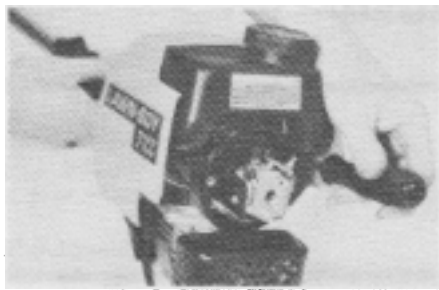


Fig. 3—Remove (2) Engine Cover Screws.

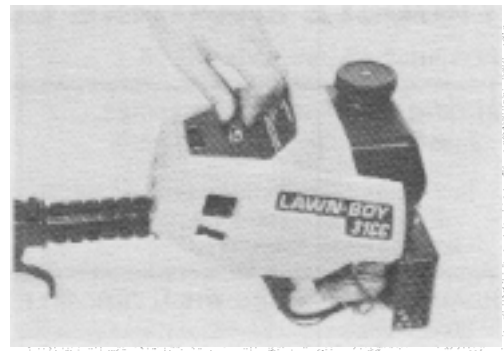


Fig. 4—Slide Cover forward on Boom as Starter Handle is tucked thru opening. Remove Cover.



Fig. 5—Remove two muffler mounting bolts.

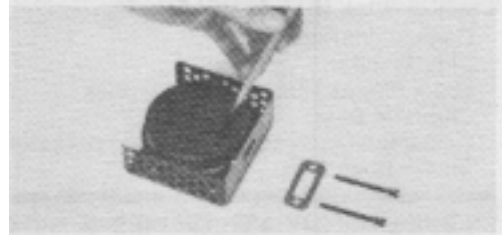


Fig. 6—Check port area on muffler assembly for excess carbon deposits.

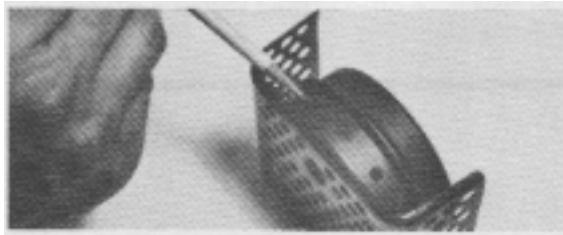


Fig. 7—Exhaust exit holes in muffler should be free from carbon build-up. Suggest to use small wire to clean this area when necessary.

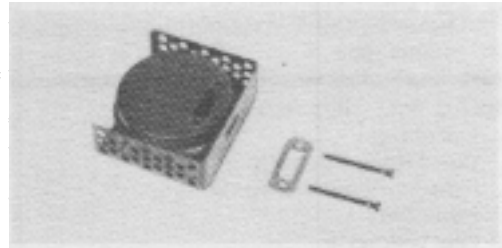


Fig. 8—Basic parts of muffler assembly.

STARTER HOUSING



Fig. 1—Remove four mounting screws from starter housing.

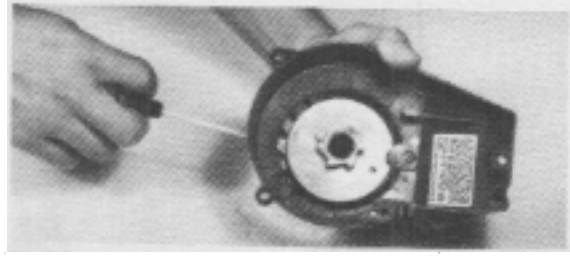


Fig. 2—Check pull cord for proper spring pressure. If spring pressure is weak and an adjustment will not work (Fig. 3), it will be necessary to have dealer replace spring.



Fig. 3—Adjust rope tension as indicated on decal located inside starter housing.

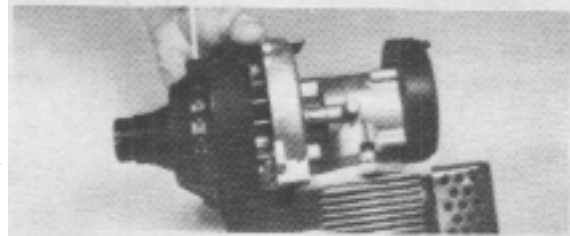


Fig. 4—Pull slowly on starter rope to engage starter dogs, then install the starter housing mounting screws (ref. Fig. 1).

STARTER DOG & C.D. MODULE ADJUSTMENT

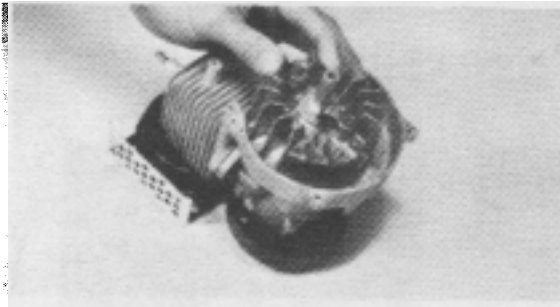


Fig. 5—Check condition of starter dogs for freedom of movement before securing flywheel.



Fig. 6—Set C. D. Module air gap by inserting air gap gauge (604659) between flywheel magnet and module. Secure both mounting screws on module. Air gap setting should be .010 .015.

MODEL 1400 FUEL SYSTEM

WT-II WALBRO CARBURETOR



Fig. 1—Remove carburetor cover mounting screws.



Fig. 2—Remove carburetor mounting screws.



Fig. 3—Disconnect fuel line and throttle cable from carburetor.



Fig. 4—Make sure no foreign material has clogged reed plate passages.



Fig. 5—Remove four mounting screws from reed plate and carburetor mount.



Fig. 6—Check reed for freedom of movement.

CARBURETION

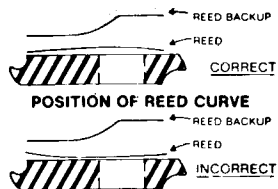


Fig. 7—To replace reed if necessary, remove two mounting screws as shown.

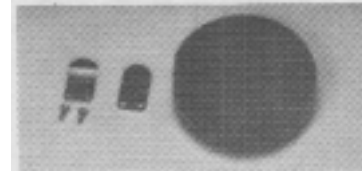


Fig. 8—Reed plate and carburetor mount assembly showing reed plate, reed backup and mounting screws.



Fig. 9—Check condition of rubber mounting pads on either side of fuel tank. Replace if necessary.



Fig. 10—View showing tank removed from shroud assembly. Also at this time check condition of tank for any rubbing or chaffing spots. Replace if necessary.

FUEL LINE

Should it become necessary to replace the fuel line assembly in the fuel tank, two basic steps should be followed:



Fig. 11—Step 1: Insert the fuel line assembly through filler neck in gas tank as shown.

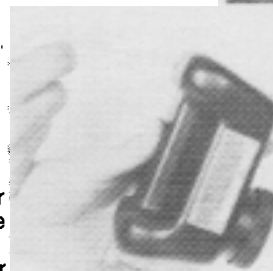


Fig. 12—Step 2: Wiggle and pull the fuel line as shown above until the fuel filter assembly is seated. Tank should now be ready for re-installation on trimming unit. Before operating engine, check for fuel leaks.

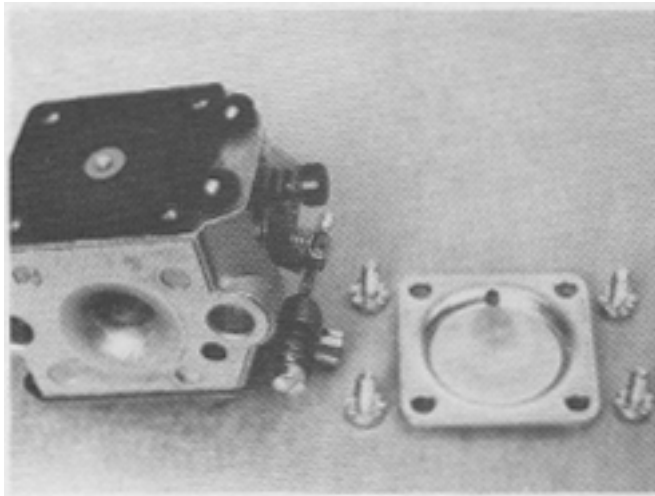


Fig. 13—Remove Fuel Metering cover.

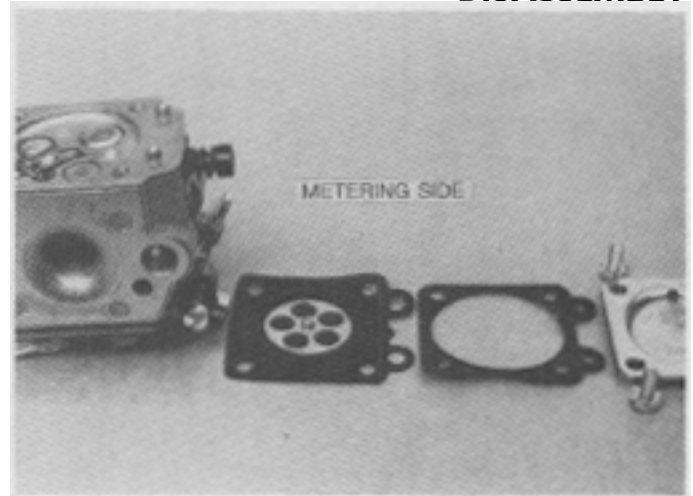



Fig. 14—Remove metering cover, diaphragm and gasket.

 **NOTE:** The gasket and diaphragm should always be replaced.

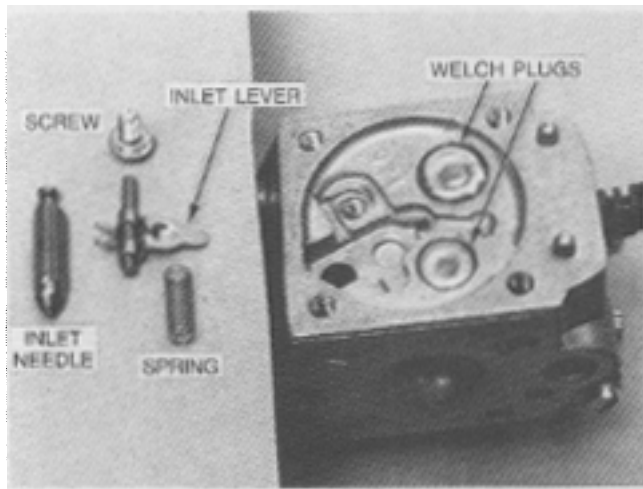


Fig. 15—The inlet lever is under spring tension. Remove inlet lever assembly very carefully to prevent loss of spring or other parts.

 **NOTE:** DO NOT STRETCH SPRING.

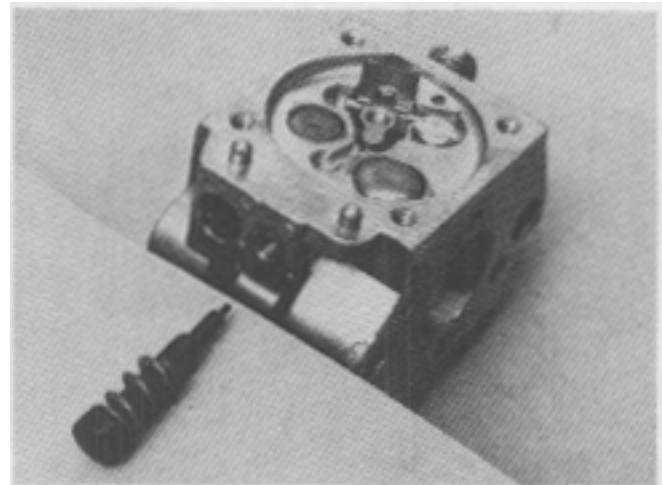


Fig. 16—Remove needle valve. Check for wear or damage. Replace if necessary.

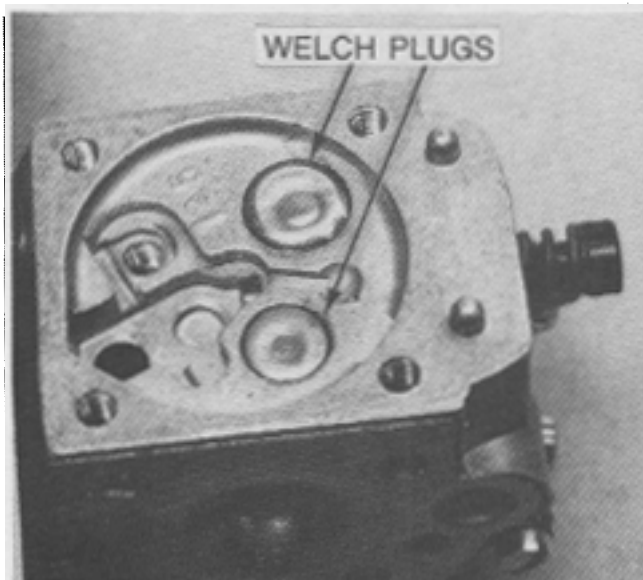



Fig. 17—To completely clean this carburetor, it is necessary to remove both welch plugs.



Fig. 18—Correct procedure to clean this carburetor is wash in solvent and blow all passages with compressed air.

 **NOTE:** Never use drill bits or wire to clean passage as damage will result.

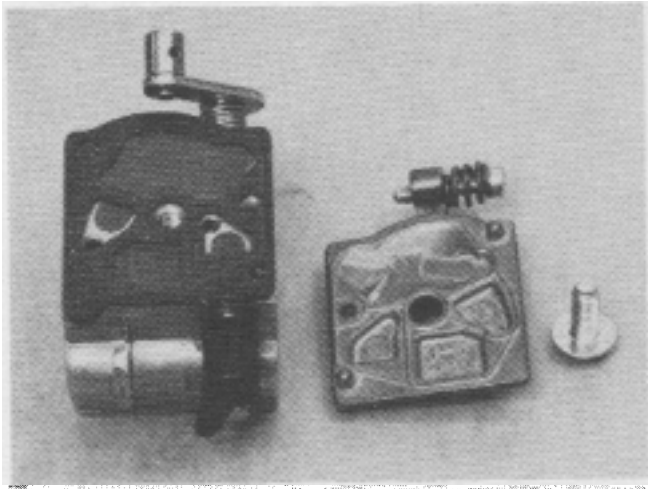


Fig. 19—Remove fuel pump cover screw.

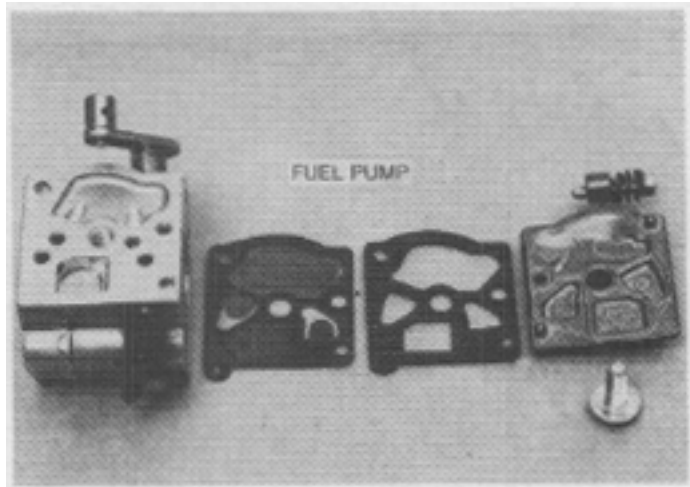



Fig. 20—Remove the pump cover gasket and diaphragm.

 **NOTE:** Always replace gasket and diaphragm when overhauling.

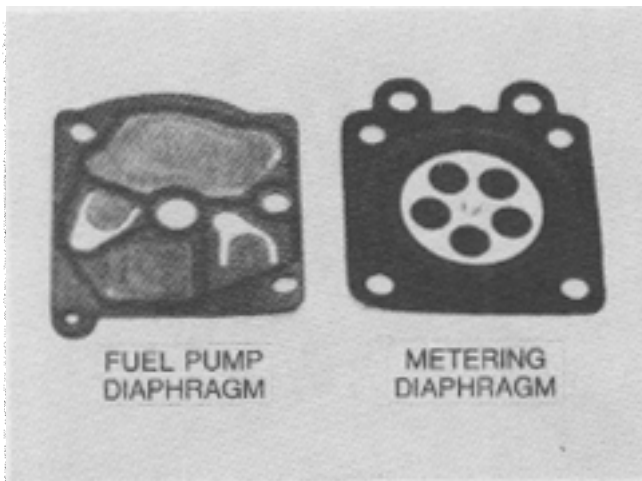


Fig. 21—Diaphragms eventually deteriorate and become stiff with age and use. The results may be an engine not starting; hard to start or will not accelerate. Also erratic or uneven engine operations could be noted.

Diaphragms have to be soft and flexible to function properly.

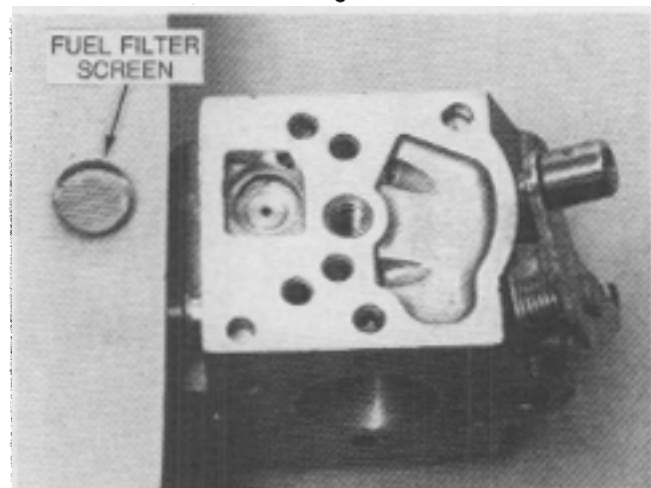



Fig. 22—Thoroughly wash, clean the fuel filter screen and all passages before reassembling.

Wash in solvent and blow clean with compressed air.

 **NOTE:** Do not use cloth towels to wipe it off. Fuzz from cloth tends to stick on the screen.

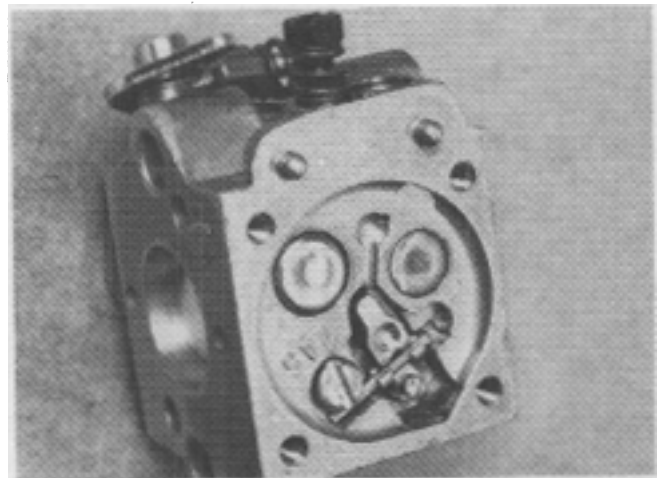


Fig. 23—Reassemble inlet needle, lever and spring.

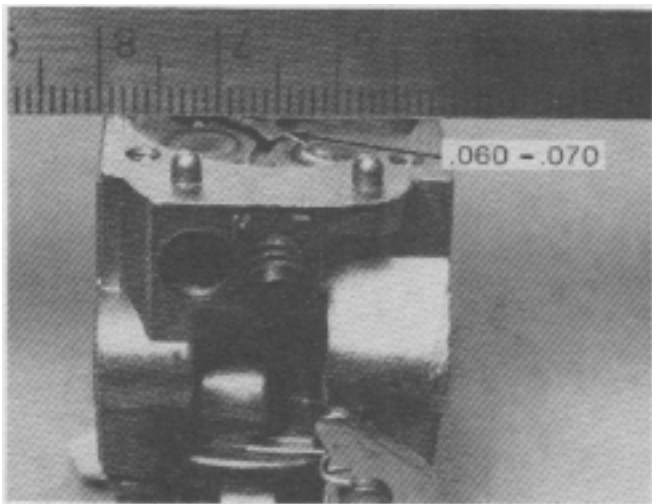
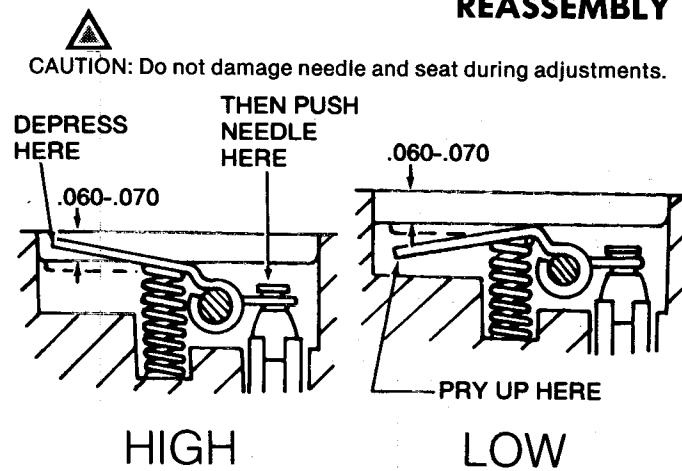


Fig. 25—To check the height of the inlet lever of the WALBRO WT-II carburetor, place a straight edge across carburetor boom above the lever. The top of the lever should be between .060-.070.



CAUTION: Do not damage needle and seat during adjustments.

Fig. 26—Adjust the lever as shown above. If adjusted too high, engine will run rich. Too low, it runs lean. Poor acceleration, erratic or uneven running may also be noted.

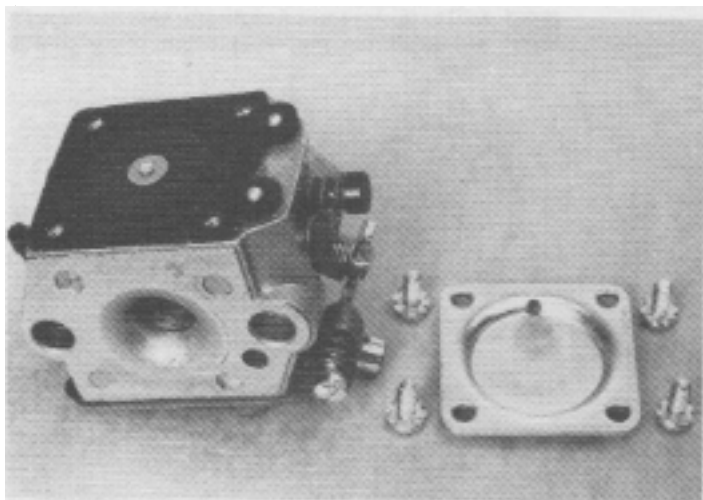


Fig. 27—Assemble the metering gasket next to carburetor body. Assemble the diaphragm on the gasket. Be sure there are no wrinkles in the diaphragms.

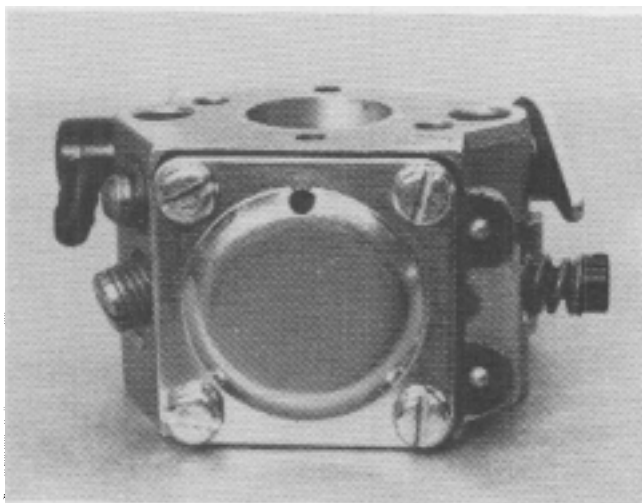


Fig. 28—Assemble metering cover and tighten all screws securely.

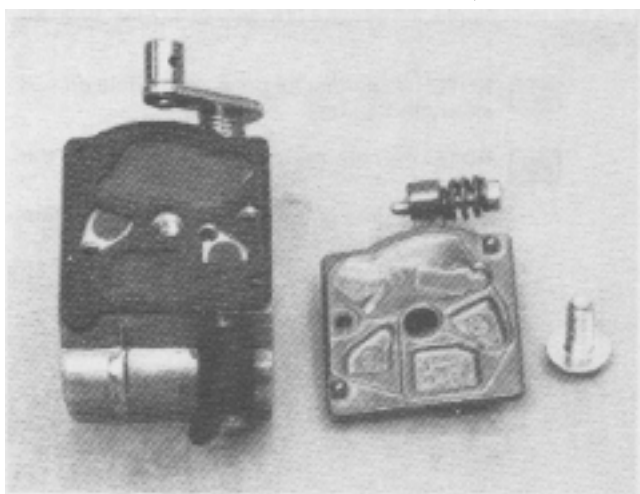


Fig. 29—Assemble the pump diaphragm and gasket on carburetor body making sure there are no wrinkles.

CARBURETION (CONT'D.)

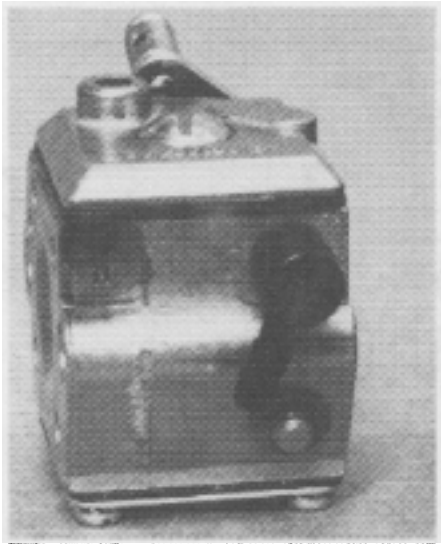


Fig. 31—Assemble pump cover and tighten screw securely.

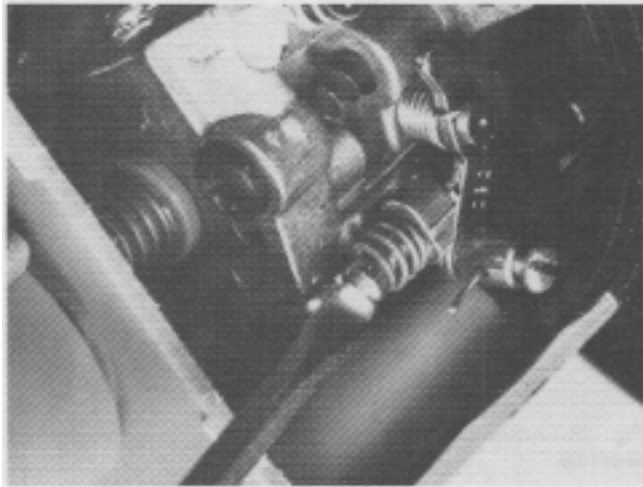


Fig. 33—Turn idle stop screw out counterclockwise, then in until the carburetor throttle lever just begins to move; continue moving 2 more full turns.

These initial settings on the Idle speed and idle mixture should allow you to start and warm up the trimmer prior to final adjustments.

WT-II WALBRO CARBURETOR REASSEMBLY

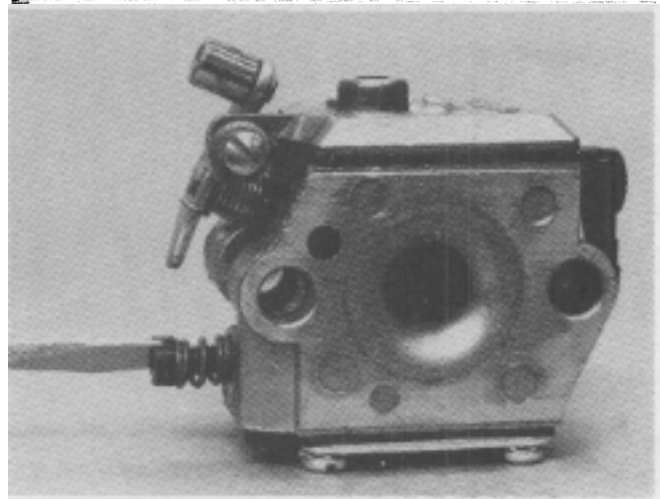



Fig. 32—Assemble needle valve in carburetor. Seat it very lightly and back it out one and a half (1 1/2) turns.

 **NOTE:** Do not force needle into seat as damage will result requiring replacement of carburetor body.

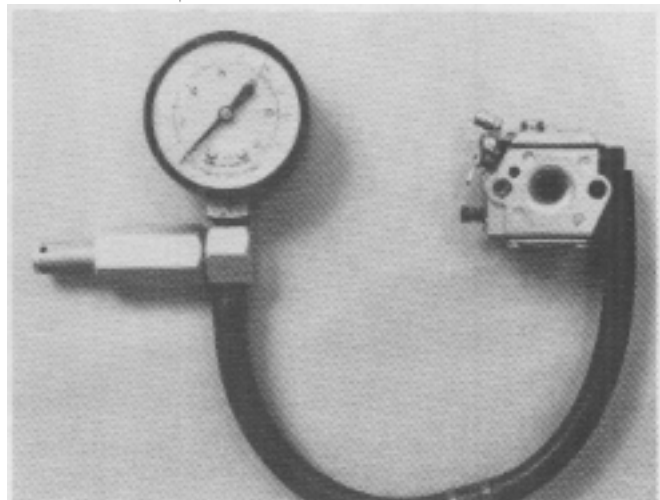


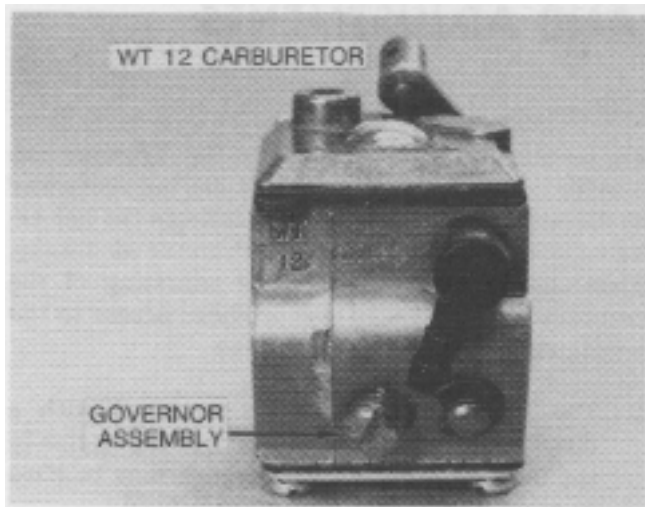


Fig. 34—After reassembly is complete attach a pressure gauge to the fuel inlet nipple. Introduce a pressure of 5 - 7 lbs. to check for leaks.

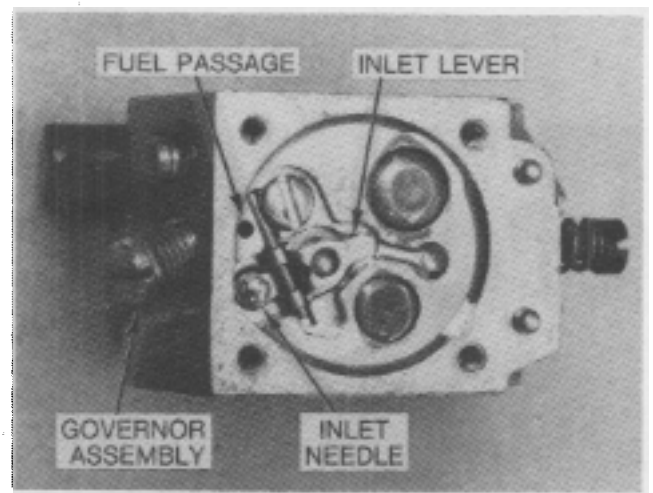
 **NOTE:** It is normal for pressure to drain off very slowly in this test.

 **NOTE:** Do not exceed 8 lbs. pressure in this test.

If a rapid drop in pressure is noted disassemble and correct.

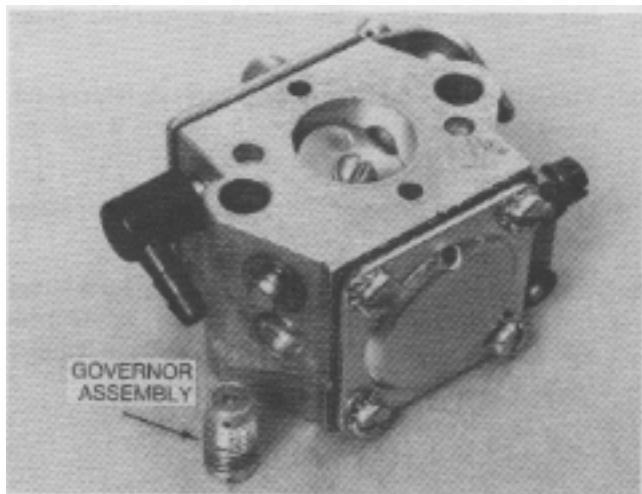


34. A different carburetor is used on the Model 1460 Trimmer, it is a Walbro WT-12 which controls the high speed of the engine with a built-in governor.

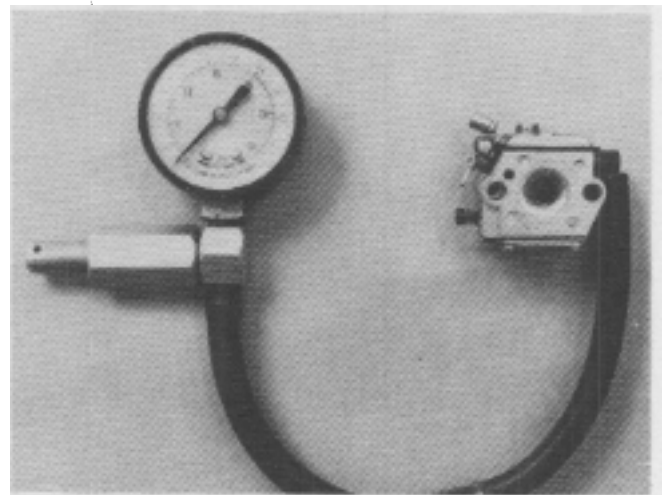


35. When engine speed reaches 8500 - 8800 RPM, vibrations from the higher speed causes a spring loaded ball check valve to move off its seat which opens another fuel passage. The extra fuel flowing from this passage into the air stream creates a richer mixture which reduces the engine speed slightly.

For repairs and adjustments refer to Servicing Information on the WT-II Walbro Carburetor.

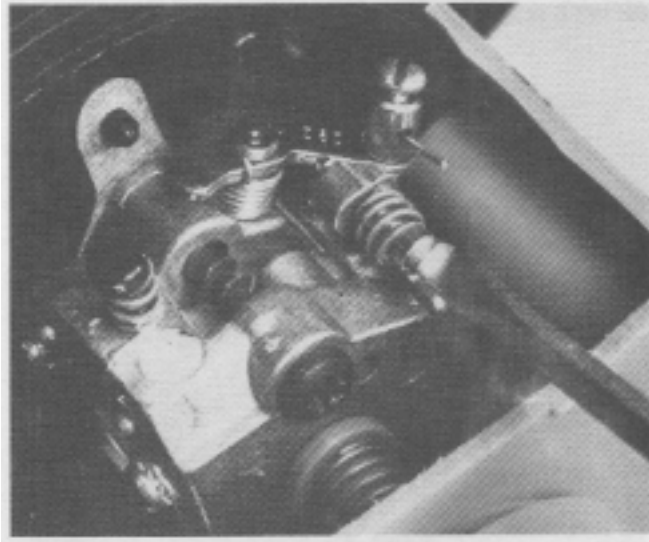
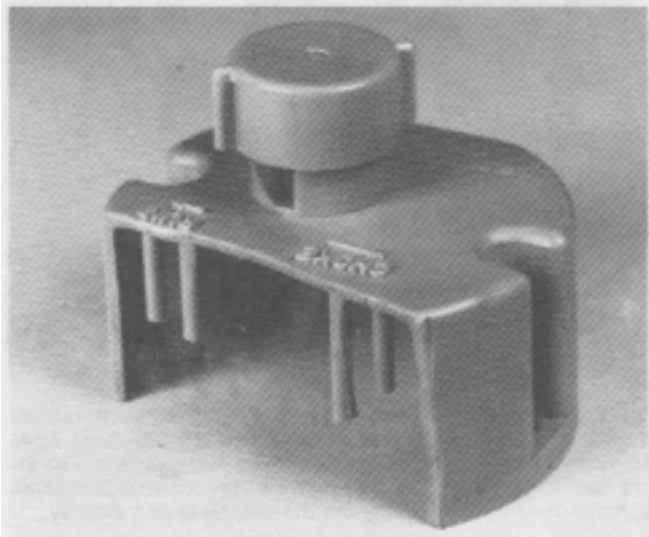


36. The governor assembly itself is sealed and can not be disassembled. However the complete assembly can be removed from the carburetor for normal cleaning and blowing out passages in the carburetor.



37. After reassembly is complete, attach a pressure gauge to the fuel inlet nipple. Introduce a pressure of 5-7 pounds. If a rapid drop in pressure is noted, disassemble and correct.

WALBRO CARBURETOR REASSEMBLY, TESTING AND ADJUSTMENTS



For testing and adjusting a Lawn-Boy Trimmer carburetor, use an air filter cover that has been cut-away as illustrated. When in place, it deflects the hot exhaust gasses away from the carburetor air intake. These hot gasses prevents the adjusting of the carburetor correctly. It also provides access to the needle valve(s) and idle stop screw.

1. The Lawn-Boy Trimmer is equipped with a diaphragm-type carburetor. Start the engine in the following manner. The engine may be hard to start if incorrect procedure is used.
2. Place ignition switch in the "on" position.
3. Rotate choke to fully choked position.
4. When starting, operator should hold the Lawn-Boy Trimmer unit in a position so that the cutting lines are away from the person.
5. Depress the throttle trigger and pull the recoil starter rope until engine pops. Once the engine has popped, rotate the choke to partial choke position.
6. Pull the recoil start rope, with throttle depressed, until engine starts. After a 5 second warm up, move choke knob to run position.
7. If engine does not start immediately, repeat steps 2 thru 6.
8. Once the engine has started, let it idle for a short time (allowing engine to warm up) before proceeding to trim. If engine won't idle see page 18-38 for proper carburetor adjustment.

LAWN-BOY®

SERVICE UPDATE

1983

1984

INCLUDES THESE MODELS

		SUPREME	
4600	20" Push With Rear Catcher	4600	20" Push With Rear Catcher
5249	19" Push W/O Catcher	5253	19" Push W/O Catcher
7231	21" Push W/O Catcher	7232	21" Push W/O Catcher
7270	21" Push With Side Catcher	7271	21" Push With Side Catcher
R7270	21" Push With Rear Catcher	R7271	21" Push With Rear Catcher
7270AE	21" Push With Side Catcher, El. St.	7271AE	21" Push With Side Catcher, El. St.
R7270AE	21" Push With Rear Catcher, El. St.	R7271AE	21" Push With Rear Catcher, El. St.
8240	21" S. P. With Side Discharge	8125	20" S. P. Rear Discharge
R8240	21" S. P. With Rear Discharge	8241	21" S. P. With Side Discharge
8240AE	21" S. P. With Side Discharge, El. St.	R8241	21" S. P. With Rear Discharge
R8241AE	21" S. P. With Rear Discharge, El. St.	8241AE	21" S. P. With Side Discharge, El. St.
8290	21" S. P. W/O Catcher	R8241AE	21" S. P. With Rear Discharge, El. St.
		8291	21" S. P. W/O Catcher
		MULCH-R-CATCH	
4573	21" Push With Rear Catcher		
8673	21" S. P. With Rear Catcher	8674	21" S. P. With Rear Catcher
8673AE	21" S. P. With Rear Catcher, El. St.		
		SCAMP	
4250	20" Push W/O Rear Catcher	4251	20" Push W/O Rear Catcher
4505	20" Push W/O Catcher	4506	20" Push W/O Catcher
8605	20" S. P. W/O Catcher	8606	20" S. P. W/O Catcher
4250	20" Push W/O Rear Catcher		
		COMMERCIAL	
6261	21" Push W/O Catcher	6262	21" Push W/O Catcher
6301	21" Push H. D. W/O Catcher	6302	21" Push H. D. W/O Catcher
8402	21" S. P. W/O Catcher	8403	21" S. P. W/O Catcher
		OTHER	
7088JP	21" Push BBC W/O Bag (JCP)		
8352JP	21" S. P. BBC W/O Bag (JCP)		

CPSC Compliance System Chart

1983		Model	1984	Blade Brake Clutch	Flywheel Brake	
SUPREME					PRS	ZONE
7270	21"	Push with Side Catcher	7271	X		
7270AE	21"	Push with Side Catcher, El. St.	7271AE		X	
7231	21"	Push w/o Catcher	7232	X		
R7270	21"	Push with Rear Catcher	R7271	X		
8240	21"	S.P. with Side Catcher	8241	X		
R8240	21"	S.P. with Rear Catcher	R8241	X		
8240AE	21"	S.P. with Side Catcher, El. St.	8241AE		X	
R8240AE	21"	S.P. with Rear Catcher, El. St.	R8241AE		X	
4600	20"	Push with Rear Catcher	4600			X
5249	19"	Push w/o Catcher	5253			X
R7270AE	21"	Push with Rear Catcher, El. St.	R7271AE		X	
8290	21"	S.P. w/o Catcher	8291	X		
—	20"	S.P. Rear Discharge	8125			X
MULCH-R-CATCH						
4573	21"	Push with Rear Catcher	—			X
8673	21"	S.P. with Rear Catcher	8674			X
8673AE	21"	S.P. with Rear Catcher, El. St.	—		X	
SCAMP						
4505	20"	Push w/o Catcher	4506			X
8605	20"	S.P. w/o Catcher	8606			X
4250	20"	Push with Rear Catcher	4251			X
COMMERCIAL						
6261	21"	Push w/o Catcher	6262	X		
6301	21"	Push H.D. w/o Catcher	6302			X
8402	21"	S.P. w/o Catcher	8403	X		
OTHER						
7088JP	21"	Push BBC w/o Bag (JCP)	4505(JCP)			X
8352JP	21"	S.P. BBC w/o Bag (JCP)	4250(JCP)			X
		—	7072(JCP)			X
		—	8072(JCP)			X

Mower Weight Specifications

Model	Est. Shipping Wt.	Curb Wt.
4573	81 lbs.	69 lbs.
4600	83 lbs.	69 lbs.
5249	66 lbs.	52 lbs.
6261	93 lbs.	75 lbs.
6301	82 lbs.	65 lbs.
7231	80 lbs.	66 lbs.
7270	84 lbs.	71 lbs.
R7270	87 lbs.	72 lbs.
7270AE	80 lbs.	64 lbs.
R7270AE	84 lbs.	65 lbs.
8240	94 lbs.	77 lbs.
R8240	97 lbs.	78 lbs.
8240AE	90 lbs.	73 lbs.
R8240AE	93 lbs.	74 lbs.
8290	90 lbs.	72 lbs.
8402	100 lbs.	81 lbs.
8673	93 lbs.	79 lbs.
8673AE	101 lbs.	84 lbs.

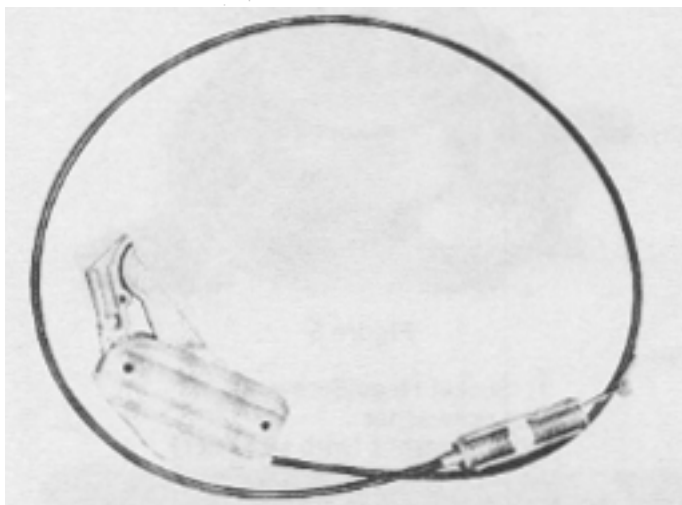


Figure 1A Brake Cable Assembly

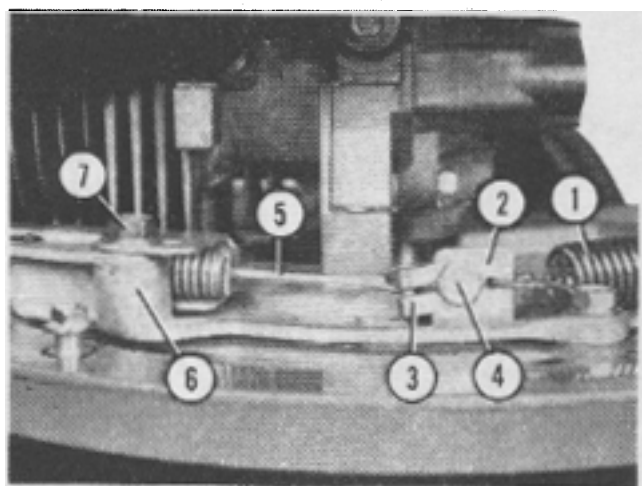


Figure 1B System Components (above deck)

1. Return Spring
2. Actuator Arm
3. Clevis
4. Shoulder Bolt
5. Brake Cable
6. Spring Box
7. Spring Box Mounting Screw



Figure 2 Clutch/Brake Unit Components

1. Clutch/Brake Housing
2. Clutch/Brake Assembly
3. Actuator & Arm Assembly
4. Brake Plate
5. Actuator Shield
6. Actuator Bearing Assembly
7. Shoulder Screws (3)
8. Socket Head Screw, Washer & Lockwasher
9. Pressure Springs (3)

Clutch/Brake Removal

STEP #1 (above deck)

Remove the Clevis from the Actuator Arm, then use a section of starter rope (Fig. 3) to disconnect the Return Spring.

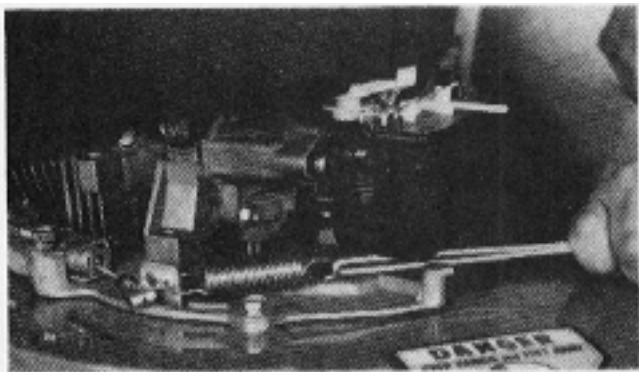


Figure 3 Removing Return Spring

STEP #2

Install a Piston Stop, then position the mower to allow work below the deck. Remove the 2 Blade Retaining Bolts and the Blade. Remove the 3 Muffler Retaining Bolts and the Muffler.

NOTE: An O-ring seal is used between the muffler and exhaust ports. Remove and discard this item (to be replaced with a new part during reassembly).

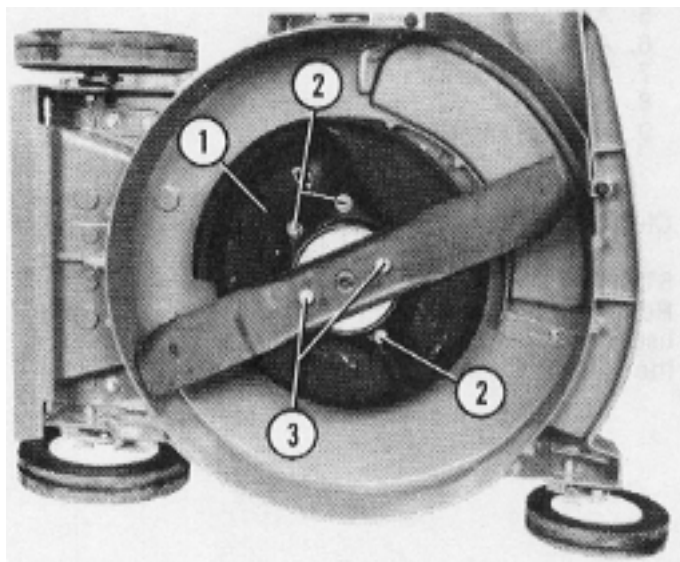


Figure 4

- 1. Muffler
- 2. Muffler Retaining Bolts
- 3. Blade Retaining Bolts

STEP #3

Remove the Socket Head Screw, Lockwasher and Flatwasher shown in Fig. 5. Install the Clutch Retaining Tool shown in Fig. 6 into end of crankshaft.

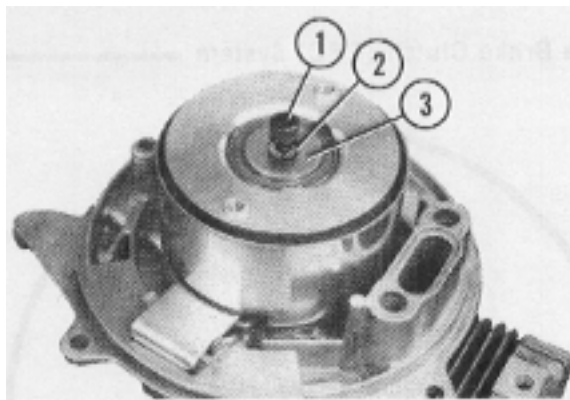


Figure 5

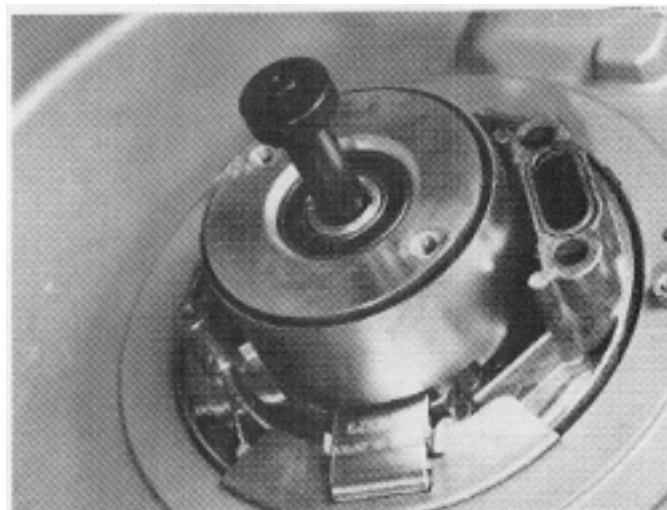
- 1. Socket Head Screw
- 2. Lockwasher
- 3. Flatwasher (with shoulder)



Figure 6

STEP #4

Use the Lawn-Boy Puller shown in Fig. 7 to remove the Clutch/Brake Assembly from the crankshaft. Remove the crankshaft key. **NOTE:** Assemble the two pulling screws into clutch at an equal depth of approximately 1/2" to prevent damage.



SAFETY WARNING: The Clutch/ Brake Assembly is under 150 lbs. tension. Do not attempt to remove it without using the Clutch Retaining Tool.

NOTE: If the Clutch/Brake Assembly separates during removal use a puller like the one shown in Fig. 8 to remove the remaining portion.

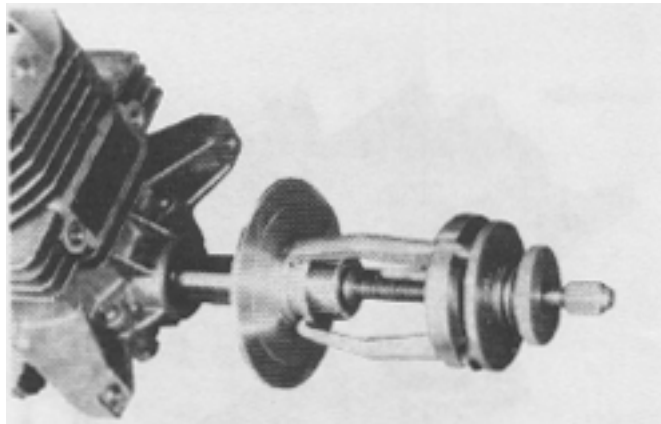


Figure 8 Recommended Puller (example)

Snap-On Puller #CG-243-3 (shown) or Owatonna Puller #STD-80.
Available from OTC Service Tool Div. Owatonna.

NOTE: Socket Head Screw must be inserted into crankshaft end before installing puller to prevent damage to threads inside shaft.



STEP #5
Remove the 3 Shoulder Screws and Pressure Springs, then remove the Brake Plate (Fig. 9).

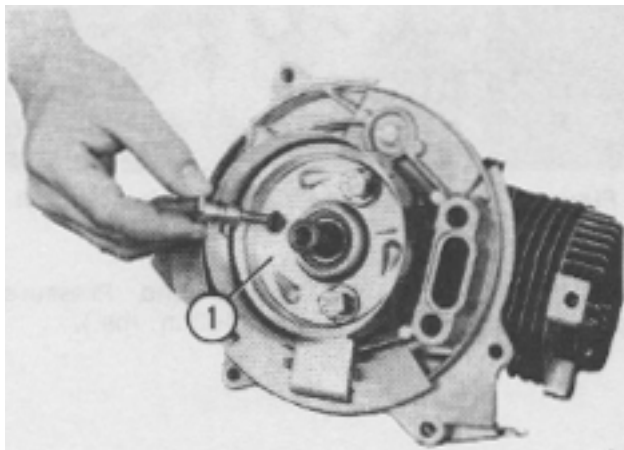


Figure 9 Shoulder Screw & Spring Removal
1. Brake Plate

STEP #6
Remove the Actuator Bearing Assembly (Fig. 10).

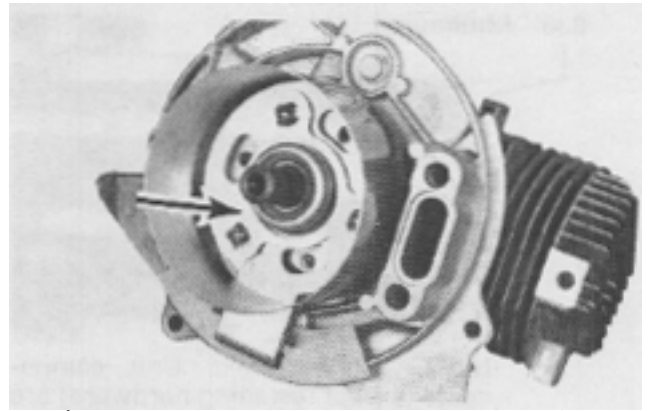


Figure 10 Actuator Bearing Assembly

STEP #7
Remove the Actuator & Arm Assembly. This will permit removal of the Clutch/Brake Housing. Remove the Actuator Shield.

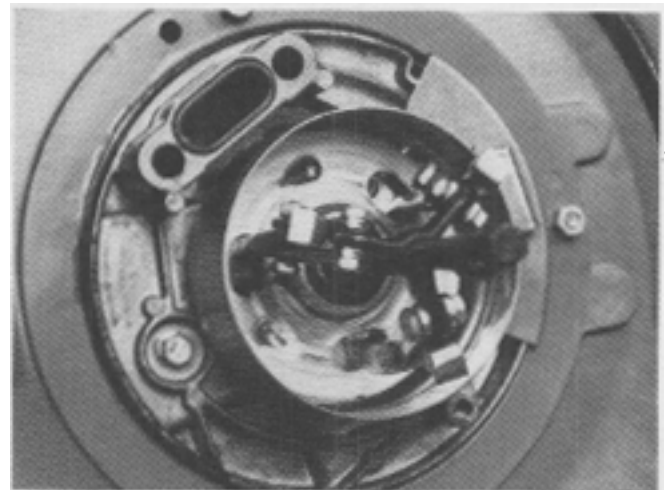


Figure 11

NOTE: It may be necessary to use a puller to remove the Actuator & Arm Assembly. Illustrated above is an OTC-STD-80 Puller.



Clutch/Brake Re-assembly and Installation _____

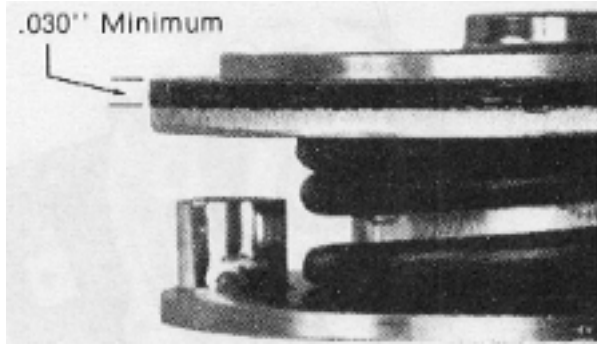
Pre-assembly Inspection _____

Carefully inspect all components for signs of damage or excessive wear.

NOTE: Most problems with excessive facing wear are caused by improper operation (slow engagement) or a loose or misadjusted cable.



SAFETY WARNING: Clutch/Brake Unit must be replaced if bonded facing wears to .030" or less (see following illustration).



NOTE: Clutch/Brake Unit components (except fastening hardware) are not available as service items. If any part or parts are unsuitable for re-use or if the Clutch/Brake Assembly was separated during disassembly, the entire Clutch/Brake Unit must be replaced.



Clean and inspect crankshaft. Use polishing paper to prepare crankshaft for Clutch/Brake Unit installation.

Installation Procedure



SAFETY WARNING: Apply Loctite #271 (L-B PN 388517) to all clutch/brake hardware during assembly.

STEP #1

Pre-assemble the Actuator & Arm into the Clutch/Brake Housing, then position the Actuator Shield onto the Arm as shown in Fig. 12.

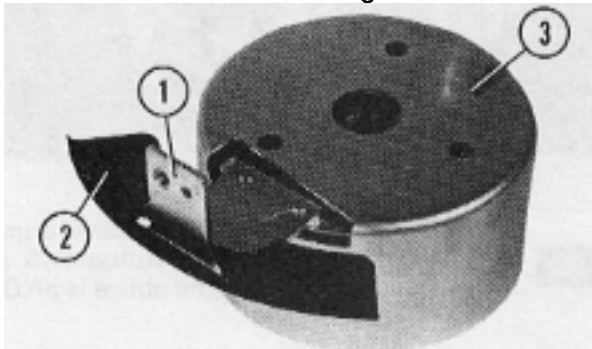


Figure 12 Clutch/Brake Unit Pre-assembly

1. Actuator & Arm Assembly
2. Actuator Shield
3. Clutch/Brake Housing



STEP #2

Fit the assembly onto the engine with the Actuator Arm through the Engine Mounting Plate as shown in Fig. 13.

Figure 12-A

Occasionally the actuator arm and bearing assembly will not slide onto the crankshaft easily. If not use a 3/4"-12 point deep socket and a soft hammer to install it. See Figure 12(A).

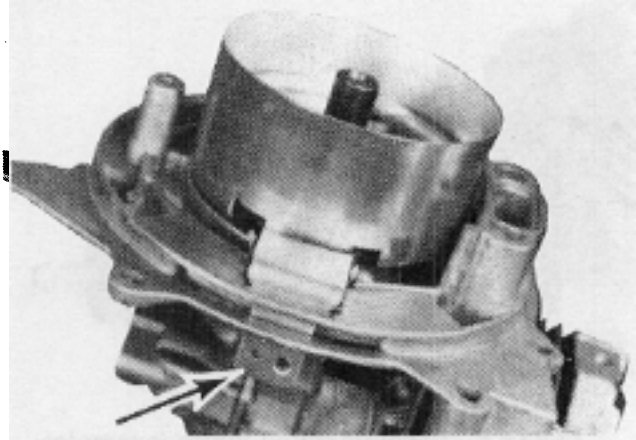


Figure 13 Correct Actuator Arm Location

STEP #3

Install the Actuator Bearing & Retainer Assembly and the Brake Plate.



NOTE: Arrow on Brake Plate must point toward exhaust ports (Fig. 14).

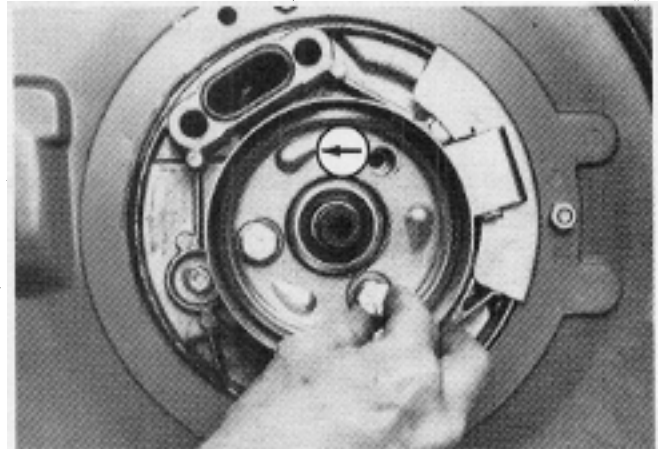


Figure 14 Shoulder Screw & Spring Installation

STEP #4

Install the 3 Shoulder Screws and Pressure Springs. Tighten to 13 ft. lbs. (160 in. lbs.).

STEP #5

Install the Clutch Key, then the Clutch/Brake Assembly. Secure with the Socket Head Screw, Lockwasher and Flatwasher. Tighten to 27 ft. lbs. (325 in. lbs.). Be sure clutch key does not slide out.



NOTE: Be certain the Flatwasher is installed correctly, with the shoulder toward the crankshaft.

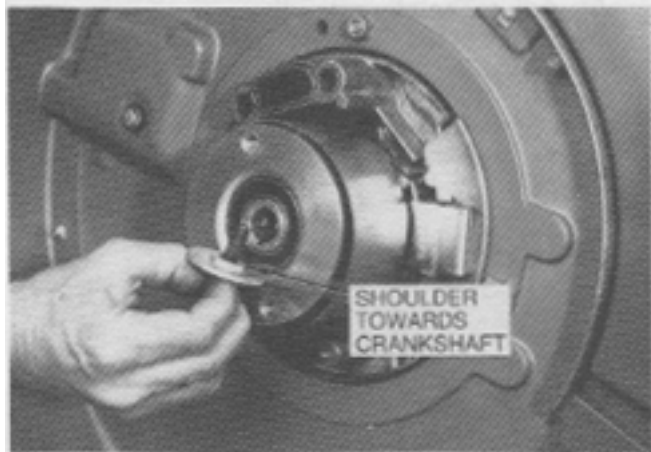


Figure 16 Socket Head Screw

STEP #6

Install a new Exhaust O-ring, then attach the Muffler. Tighten the Muffler Retaining Bolts to 13 ft. lbs. (160 in. lbs.).

STEP #7

Attach the Blade. Tighten the Blade Retaining Bolts to 30 ft. lbs. (360 in. lbs.).



SAFETY WARNING: Be certain to apply Loctite #271 (L-B PN 388517) to all fasteners beneath the mower deck.

STEP #8

Move above the deck and install the Return Spring into the Actuator Arm as shown in Fig. 17.

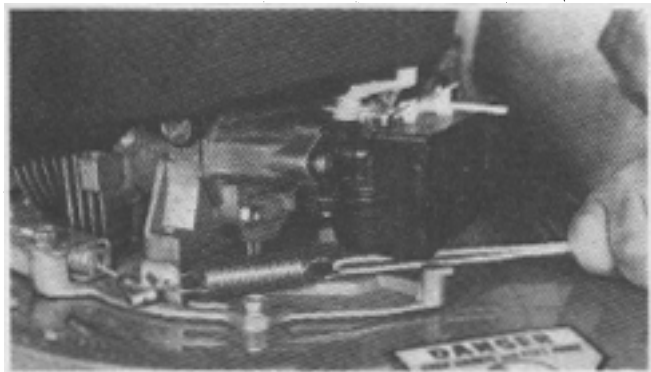


Figure 17 Installing Return Spring



NOTE: Spring hook opening should face toward engine.

Re-connect the Clevis to the Actuator Arm and tighten the Shoulder Bolt to 70 in. lbs.

Clutch/Brake Cable Adjustment

STEP #1

Position the Spring Box as shown so that the cable does not sag, yet isn't too taut. Cable deflection should not exceed 1/4" when light finger pressure is applied (see Fig. 18). Tighten the Spring Box Screw to 13 ft. lbs. (160 in. lbs.).

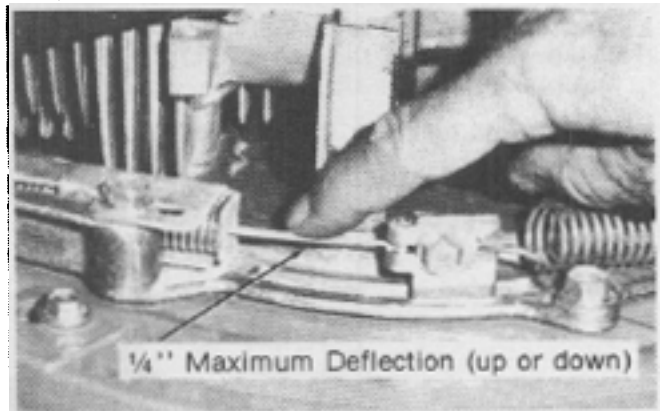


Figure 18 Checking Brake Cable Tension

STEP #2

Test Clutch/Brake Cable for proper adjustment by pulling bail control all the way back (against handle), then check to see that the Conduit Fitting has unseated the correct distance from the Spring Box surface, as shown in Fig. 19.



Figure 19

Clutch/Brake Unit Testing Procedures

Braked Mode (bail control released):

Connect a torque wrench to the Allen Head Screw (retaining the Clutch/Brake Assembly) and turn it in the direction of normal blade rotation. It should require at least 60 in. lbs. torque to "slip" brake.

Engaged Mode (bail control engaged, piston stop installed):

Use same procedure as described above. Torque required to "slip" clutch should be between 50 and 60 in. lbs.

Special Tools and Related Procedures

In addition to the tools already mentioned, the following items are being made available to assist in BBC service:

Seal Protector

This item is for use when installing a main bearing seal over the end of the new BBC crankshaft. Clean and polish crankshaft.

Position the tool over the crankshaft as shown in Fig. 20. Lube the seal protector and seal, then slide the seal over the tool and into position. Use a seal driver to properly seat the seal.

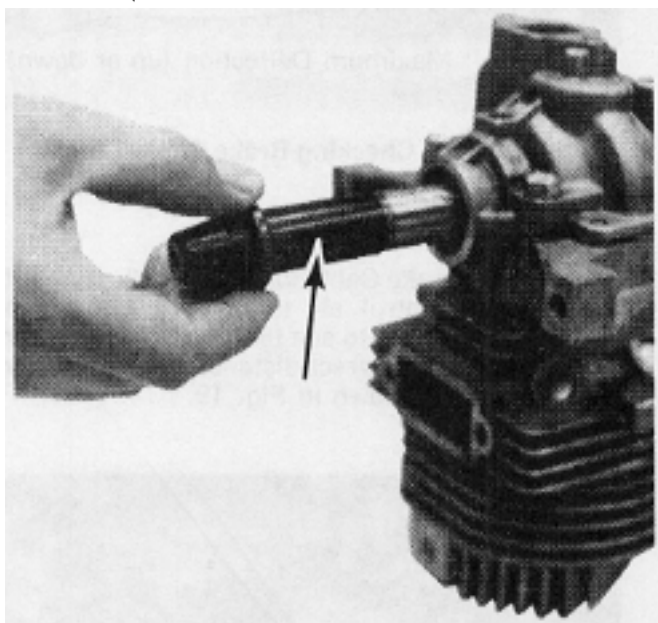


Figure 20 Seal Protector in place

Engine Mounting Plate Locating Tool

This tool is necessary to properly align the Engine Mounting Plate on the engine of BBC models.



NOTE: Installing the Engine Mounting Plate without this tool can cause clutch damage or malfunction.

Position the Engine Mounting Plate and turn the Mounting Bolts partially into place. Slide the Locating Tool over the crankshaft as shown in Fig. 21. Adjust the Mounting Plate as necessary until it aligns with the tapered surface of the Locating Tool. Tighten the Mounting Bolts to 13 ft. lbs. (160 in. lbs.). Make sure exhaust gasket is in place and aligned with the holes adjacent to exhaust ports before tightening the 2 Mounting Bolts at that location.

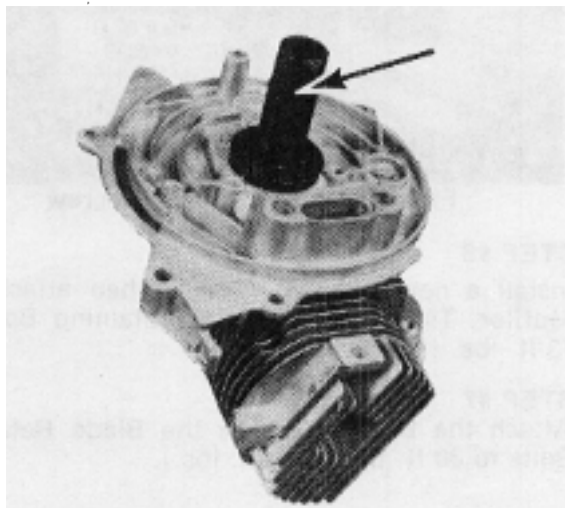


Figure 21 Engine Mounting Plate Alignment Tool

Special BBC Short Block

Since the Blade Brake Clutch unit requires a special end on the crankshaft, a new service short block has been created. It is identical to a standard short block assembly in every respect, except for the crankshaft.

To service and repair the flywheel brake system, remove the shroud and tank assembly.

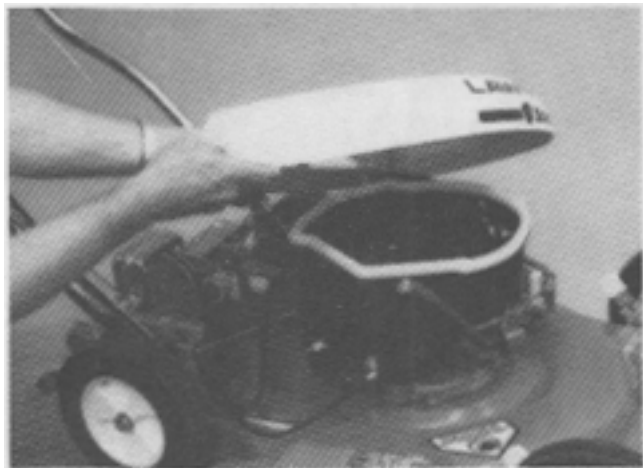


Figure 1



Figure 2

Lift spacer from top of shroud base. (On Scamp Models only).

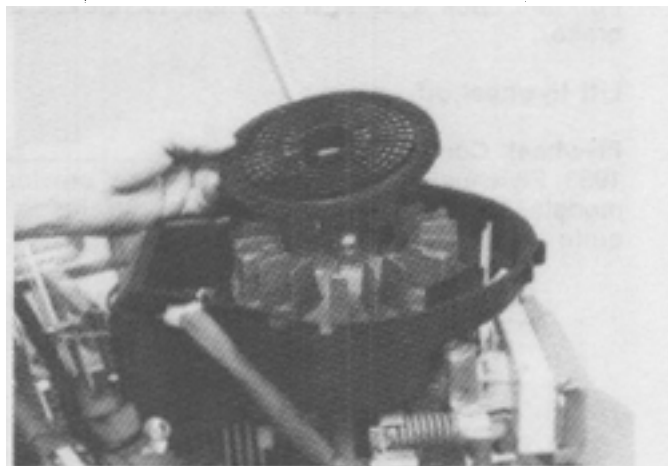


Figure 3

Remove flywheel screen. (3 screws).

Flywheel Removal/Installation

It will be necessary to move the Flywheel Brake Arm away from the flywheel (pull back on control bail) to allow removal or installation of the flywheel.



Figure 4

Remove flywheel nut.

To break flywheel loose use a soft hammer and rap sharply down on one of the thick fins while lifting with other hand on opposite side of flywheel.

NOTE: Do not break any fins on flywheel. It will be unbalanced and vibrate.


Flywheel Brake Servicing

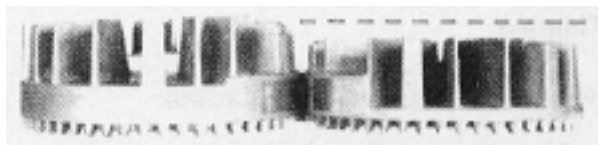
Pull bail back against the handle to release the brake.

Lift flywheel off.

Flywheel Configurations

1983 Flywheels are much taller than previous models. As Fig. 5 shows, the visual difference is quite apparent.

 **NOTE:** These new flywheels are not interchangeable with those of previous Lawn-Boy models.




1983

Previous Years

Figure 5 Flywheel Height Comparison

It is important to note that two different materials are used on compliance mower flywheels. Flywheels for all Flywheel Brake models are made of aluminum, but due to the need for additional rotating weight (inertia), the Blade Brake Clutch (BBC) flywheels are made of zinc. The zinc flywheels are plainly marked as such to prevent confusion. Be certain you install only the correct type flywheel for the specific mower.

 **SAFETY WARNING:** Flywheel Brake (Zone and PRS) and Blade Brake Clutch (BBC) flywheels are not interchangeable. The correct type flywheel (aluminum or zinc) is critical to proper CPSC compliance.

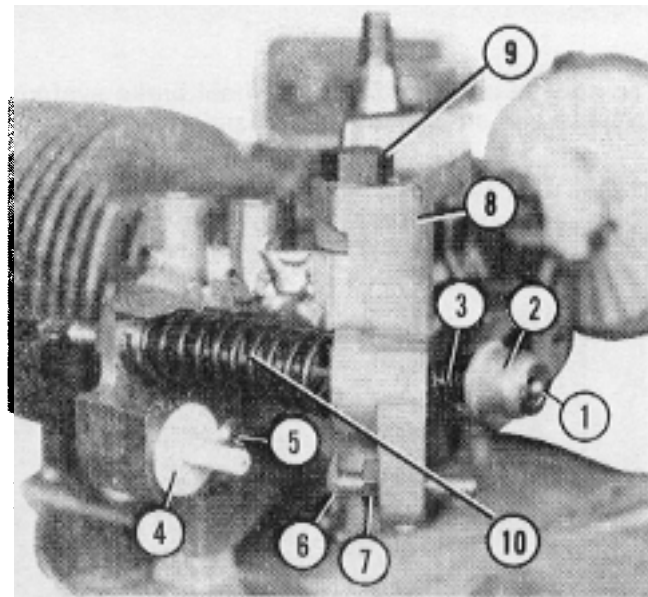


Figure 6 Flywheel Brake System Components

1. Retainer Clip
2. Cup
3. "Pigtail" Spring
4. Circuit Switch
5. Switch Retaining Screw
6. Adjusting Bolt
7. Locknut
8. Brake Arm
9. Brake Arm Bolt
10. Cable Retainer Spring

Brake Pad Wear

Flywheel Brake Arm (with bonded brake pad) must be replaced if pad wears below .030" at any spot.

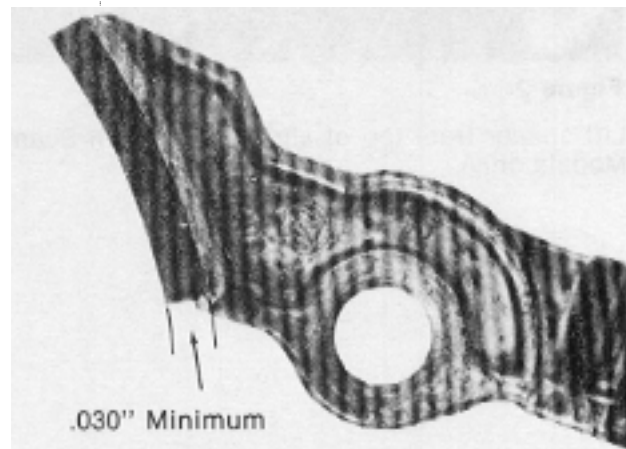


Figure 7 Flywheel Brake Pad Wear

Flywheel Brake Servicing

To replace the brake arm, it will be necessary to disconnect the brake cable from the engine.

Set the flywheel back on the engine.



Figure 8

Step #1

With flywheel in place and the bail control released (out of operating position), compress the "Pigtail" Spring by hand, then remove the Retainer Clip, Cup and Spring.

Step #2

Remove the cable from the housing.

Remove the flywheel.

Step #3

Remove circuit switch adjusting bolt and lock nut. (See Fig. 6).

Step #4

Remove brake arm bolt and brake arm. (See Fig. 6).

Step #5

Re-assemble circuit switch adjusting bolt and lock nut into the new brake arm. Turn it into bracket until head is against the bracket. (See Fig. 6).

Step #6

Thoroughly clean the threads of the bolt and apply Lawn-Boy Screw Lock, part number 384848 to the threads.

Step #7

Assemble the brake arm and bolt onto bracket.

Tighten to 5-7 ft. lbs. (63-75 in. lbs.)

Step #8

Reassemble the cable retainer spring into the bracket assembly.

Step #9

It is necessary to check the brake cable adjustment before reinstalling it in the bracket.

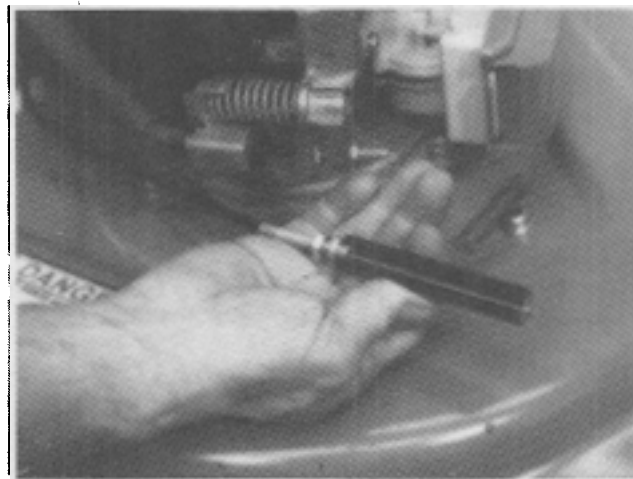


Figure 9

Step #10

To adjust the brake cable, loosen the jam nut and back it off. Place the brake cable adjusting gauge, part number 611703 over the end of the cable. Assemble the retainer clip (see fig. 9) on the cable against the gauge.

Turn adjusting nut up against the gauge to apply approximately 5 lbs. tension.

Flywheel Brake Circuit Switch

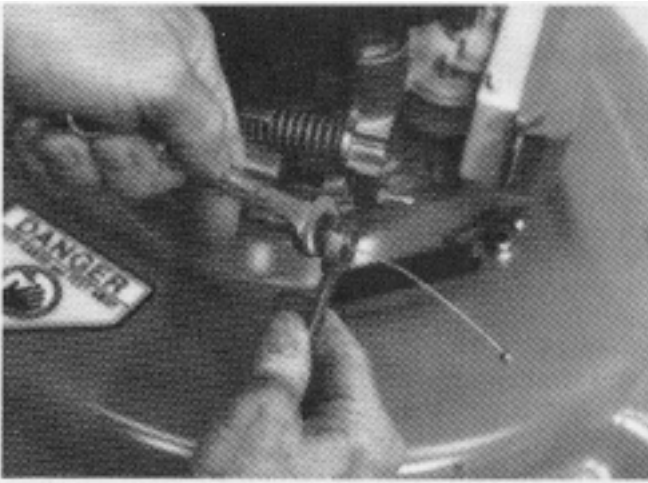


Figure 10

Step #11

Turn jam nut against the adjusting nut and tighten. Do not permit adjusting nut to turn.

NOTE: Use 2 1/2" open end wrenches. (See Fig. 10).

Step #12

Set flywheel back on the crankshaft.

Step #13

Reassemble the Cable into the Brake Bracket, then reassemble the Spring, Cup and Retainer Clip.

After the brake cable is reassembled, it is necessary to check the circuit switch adjustment.

Adjusting Circuit Switch

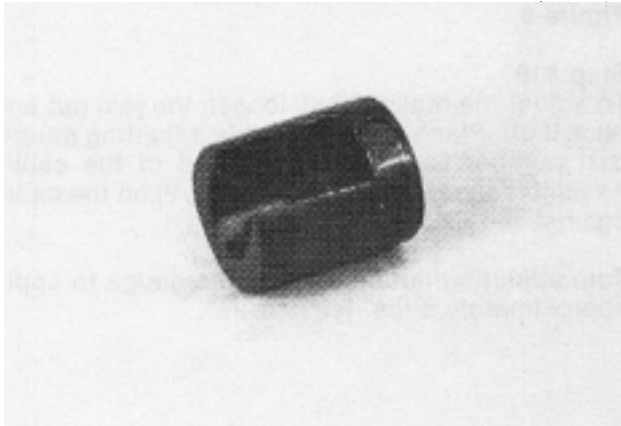


Figure 11

Step #1

Place the switch adjusting gauge Part No. 611702 on the plunger.

Step #2

Place a mark on the plunger at end of gauge. (See Fig. 12).

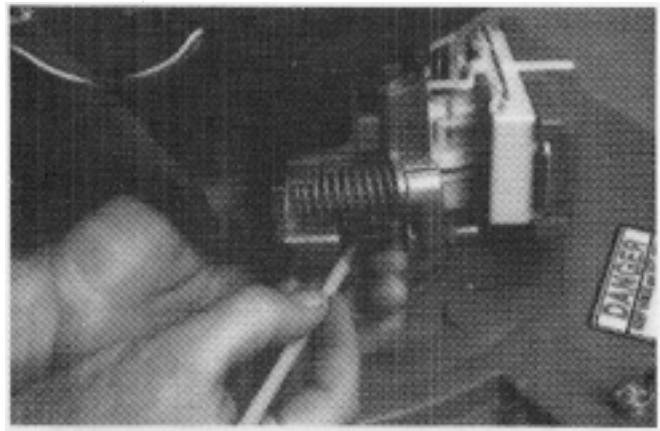


Figure 12

Step #3

Remove the gauge.

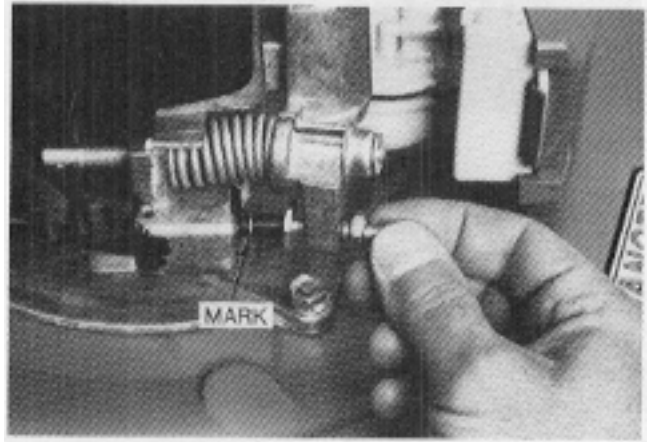


Figure 13

Step #4

Pull the bail back against the handle and hold it.

Step #5

Turn adjusting bolt in until mark on plunger is flush with face of switch body.

Step #6

Tighten lock nut.



NOTE: Be sure adjusting bolt does not turn.



NOTE: Recheck this switch adjustment to prevent the plunger from going in too far and damaging the switch internally. If it does not move in far enough, the engine will not start.



SAFETY WARNING: Proper adjustment of this switch is necessary to insure that blade motion stops within the required time.



NOTE: If proper switch adjustment cannot be made, check brake cable adjustment (see Fig. 9) as this will affect correct switch operation.



Figure 14

Trouble shooting the circuit switch.

Step #1

Disconnect both leads from the C.D. pack.

Step #2

Connect a continuity meter or light to these leads.

Step #3

Push the plunger in. The meter should read "0" or the light should go out.

Step #4

Release the plunger. The meter should indicate a completed circuit or the light will go on.

If the switch is defective, it requires replacement.



Figure 15

Step #5

To replace the switch, it will be necessary to remove the flywheel. This permits the brake arm to swing out of the way.

Step #6

Remove the switch retainer screw. (See Fig. 6).

Flywheel Brake Circuit Switch _____

Step #7

Using a drift punch and hammer, drive the switch body out of the bracket. (See Fig. 15). This will break the flange on the switch.

Step #8

Assemble the new switch and lead assembly into the bracket.

Step #9

Install the switch retainer screw. Reconnect the two leads onto the C.D. pack.

Step #10

Place a mark on the switch plunger using the gauge, part number 611702. Follow steps 1 thru 6 on page 16.



SAFETY WARNING: Proper adjustment of this switch is necessary to insure that blade motion stops within the required time.

CD Ignition Pack

A new "Open-to-Run" ignition system is used on the 1983 models. The new style CD Pack can be identified by its dark grey color.

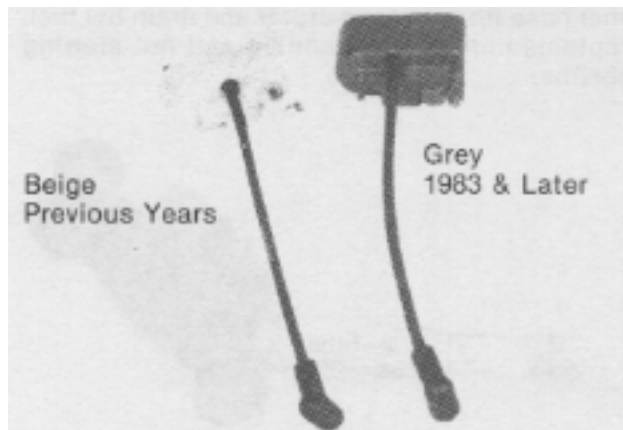


Figure 16 CD Pack Comparison

 **NOTE:** This Grey CD Pack cannot be used on previous Lawn-Boy Mowers.

CD Pack Testing

Use only the LAWN-BOY Test Spark Plug when performing the test and follow the described procedure. The spark coil can produce up to 28,000 Volts, causing painful shock or possible injury. **Do not contact the high tension lead while testing.**

STEP #1


Disconnect the high tension lead and remove the spark plug.

STEP #2

Disconnect the two small switch leads from the CD Pack.

STEP #3

Attach the high tension lead to a Lawn-Boy Test Spark Plug. Clip the test plug solidly to the engine to provide a ground. (See Fig. 17).

 **SAFETY WARNING:** Be certain the firing tip of the test plug is kept away from the spark plug hole in the cylinder. This prevents possible ignition of fuel vapors remaining in the engine.

Flywheel Brake Models

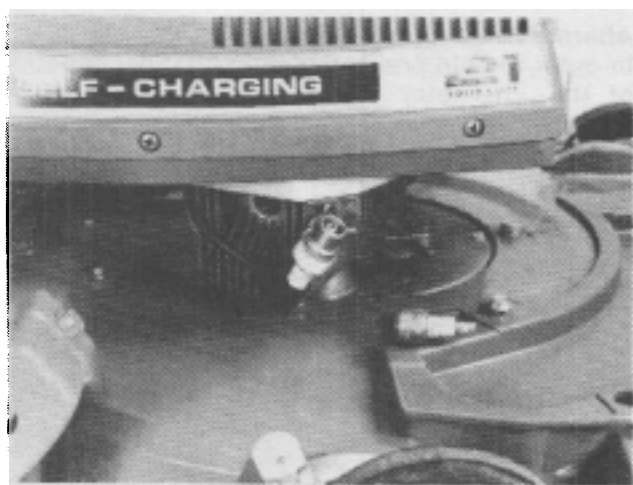
A. Zone (manual) Start type

Pull the bail back against the mower handle (operating position) and pull the starter rope. If there is no spark at the test plug tip, CD Pack should be replaced.

B. Power Restart (PRS) type

Pull bail back against mower handle (operating position). Turn Key Switch to "START" position ("crank" engine). If there is no spark at test plug tip, CD Pack should be replaced.

Ignition Testing



Proper Test Spark Plug position

Figure 17

Setting Air Gaps (Flywheel Brake System)

When setting air gaps between the flywheel and C.D. pack and alternator, always release the flywheel brake. This removes pressure from the side of the flywheel and prevents the crankshaft from being pushed against the side of the bearing.

With the brake off, the air gap adjustment will be more accurate. A .010 air gap is required for both the C.D. pack and alternator. (See Fig. 18).

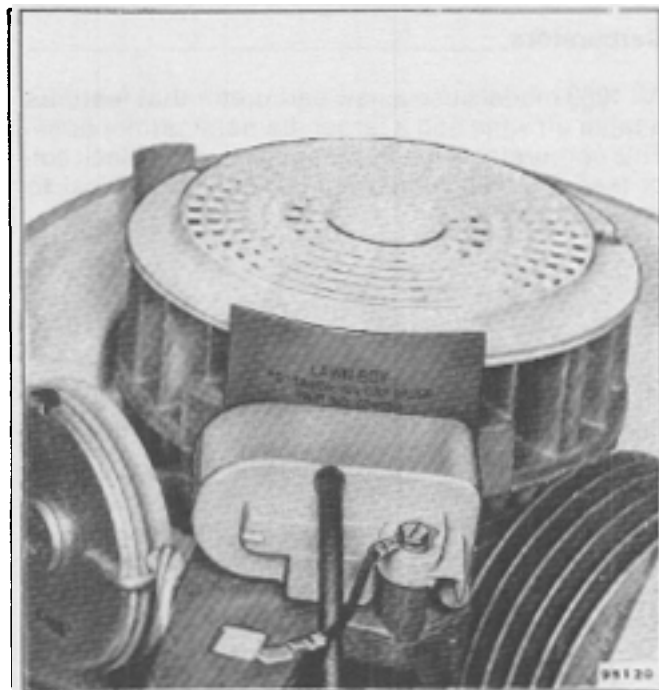


Figure 18

Alternator Lead Routing

In order to help prevent accidental disconnection of the Alternator Leads, the wires should be gathered into the shroud base during reassembly so that there is no tension on the connections (see Fig. 27).

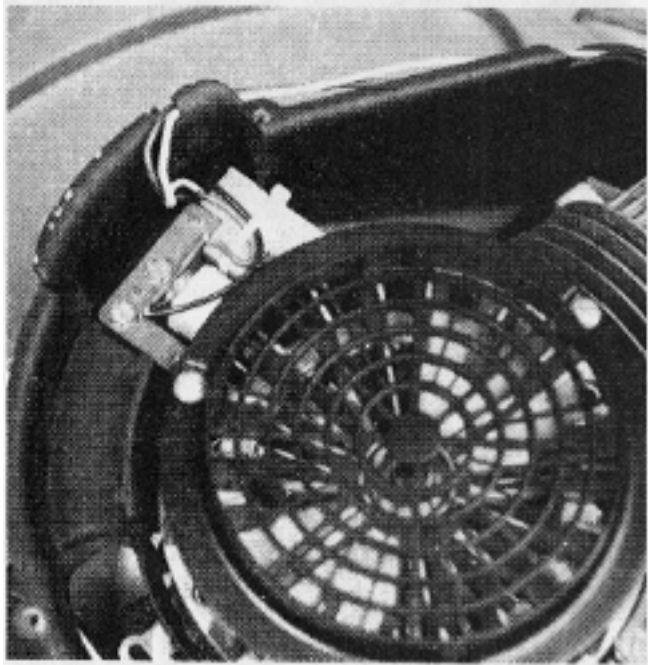


Figure 19 Correct Alternator Lead Routing

Carburetors

All 1983 models use a new carburetor that features a taller air vane and a larger diameter primer hose. This carburetor is easily recognized by its black color (see Fig. 19). Adjustments remain identical to previous years.

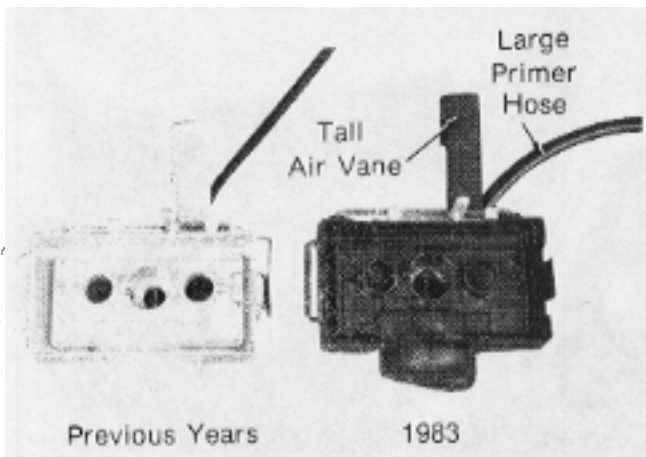


Figure 20 Carburetor Comparison

NOTE: This carburetor is not interchangeable with previous models.

If a mower is tipped back on its handle (as shown below), fuel may run from the carburetor and settle in the lowest point of the primer line when the machine is set upright. If this occurs, remove the primer hose from the carburetor and drain the fuel. Symptoms include rich running and hot starting problems.

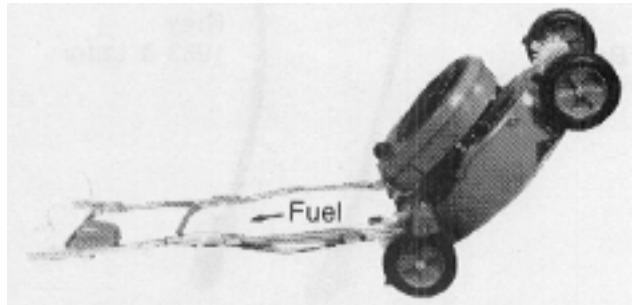


Figure 21

1983 ZONE & BBC STARTER

Removal

The Starter Retaining Screw (Fig. 36) now has a 1/4" Allen head.

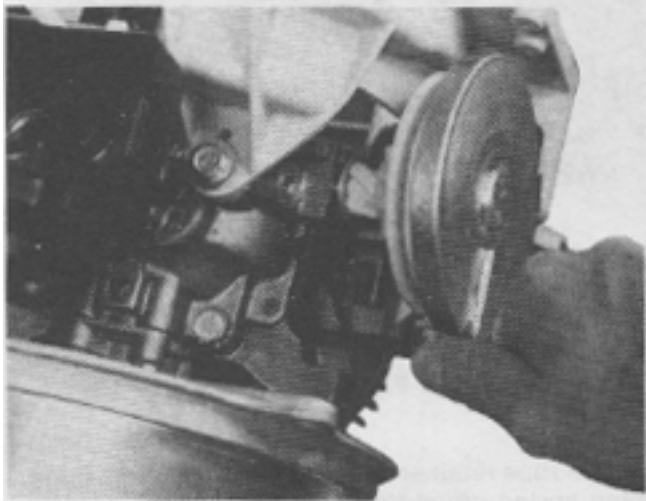


Figure 19 Starter Retainer Screw

LOOSEN AND BACK SCREW OUT 3 TO 4 TURNS.

PULL STARTER ASSEMBLY OUT OF CRANKCASE.

Manual Starters

A newly designed manual starter assembly is used on the 1983 models. The Starter Recoil Spring is now held inside a Retainer to prevent spring escape during service.

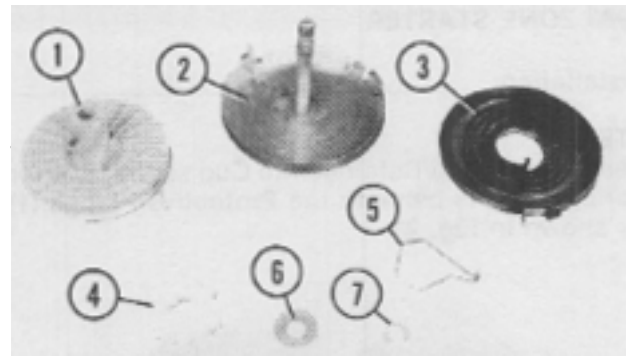


Figure 20 Manual Starter Components

- | | |
|--------------------|-------------------|
| 1. Starter Pulley | 5. Pinion Spring |
| 2. Pin & Cup | 6. Washer |
| 3. Spring/Retainer | 7. Retaining Ring |
| 4. Pinion Gear | |

NOTE: Pinion Gear, Washer, and Retaining Ring are unchanged. This new type starter recoil unit will fit any "F" Series engine and will be supplied as the standard service replacement in the future.



1983 ZONE STARTER

Installation

STEP #1

Assemble Spring/Retainer into Cup so that Starter Spring Hook is beneath the Protective Flange (1) as shown in Fig. 21.

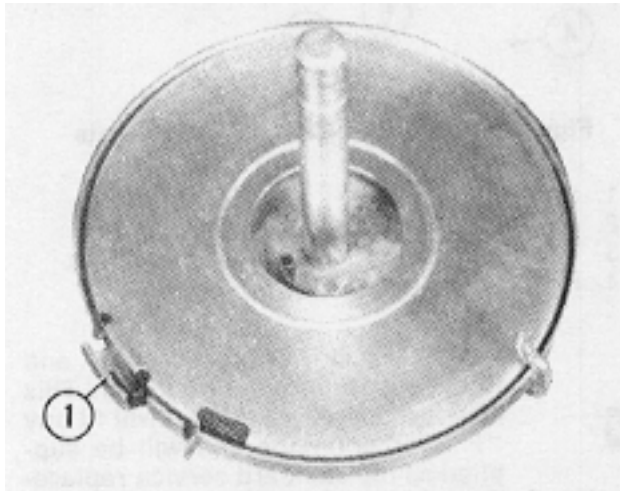


Figure 21 Proper Spring/Retainer Position

STEP #2

Mount the starter recoil assembly onto the engine in the correct position for the specific system, as shown in Fig. 22.

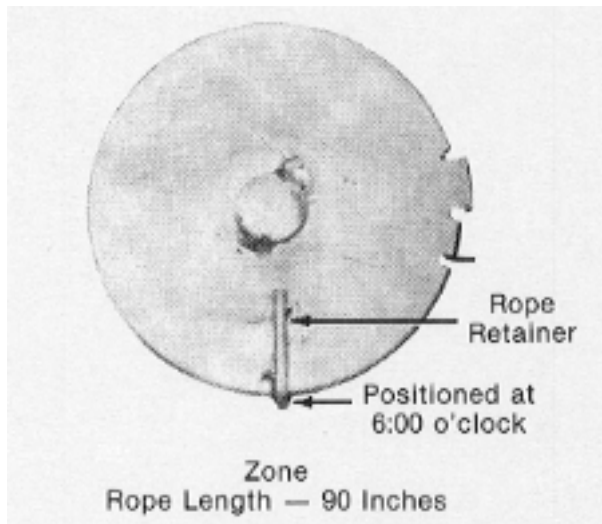


Figure 22 Correct Mounting Positions

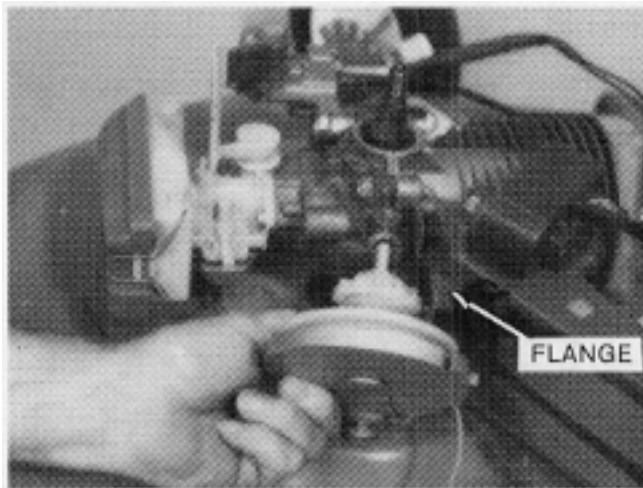
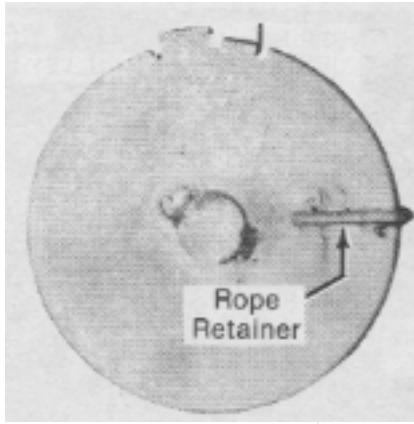


Figure 23

STEP #3

Position rope retainer at 6:00 o'clock position. Slide pinion spring around on pinion gear until prongs on pinion spring are positioned with one prong above flange and other below flange on C.D. mounting bracket. (See fig. 23). Slide starter assembly all the way in and tighten starter retaining screw. (See fig. 36).

**1983 BBC STARTER
INSTALLATION**



BBC Models

Rope Length — 58 Inches

Figure 24

Position rope retainer on BBC models at 3:00 o'clock. Slide pinion spring around on pinion gear until prongs on pinion spring are positioned with one prong above flange and other below flange on C.D. mounting bracket. (See Fig. 25). Slide starter assembly all the way in and tighten starter retaining screw. (See Fig. 36).

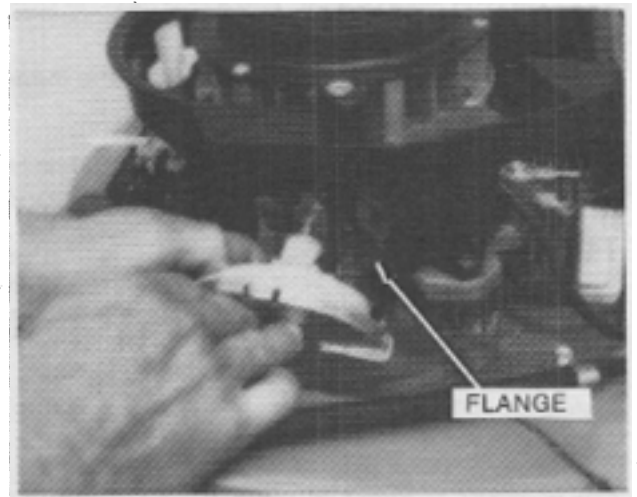


Figure 25

Flange

Pre-Tensioning

Required pretension on the Starter Spring is 1 1/2-2 1/2 turns.



NOTE: For Zone Start Models (those with the starter pull handle located on the mower handle), use the mark on the rope (located 58" from the inside end) as a guide rather than the end of the rope. This allows for the extra rope length necessary to reach the mower handle mount.

1984 MANUAL STARTER ASSEMBLIES _____

On 1984 Lawn-Boy compliance mowers the manual starter assembly has been changed.

There is one for the zone start and 4600 models (see Fig. 26) another for the BBC models. (See Fig. 27).

The pinion spring has been changed. It is now held in place by an anchor welded to the pin and cup assembly. Previously it was held in place by positioning the prongs above and below a flange on the C.D. mounting bracket.

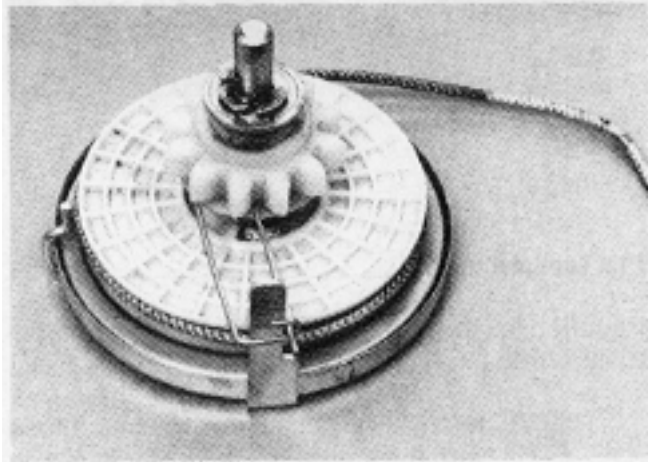


Figure 26

Zone start and 4600 models rope length - 90 inches.

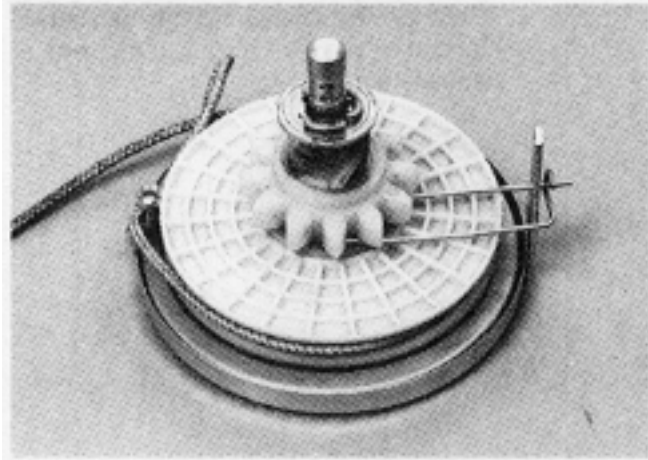


Figure 27

BBC models rope length - 58 inches.

NOTE: The BBC manual starter assembly (fig. 27) will retro-fit all "F" series manual start models 1978 thru 1982. Both new starter assemblies (Figs. 26 and 27) will be service replacements on 1983 compliance mowers.

Service and Maintenance of Manual Starter Assembly.

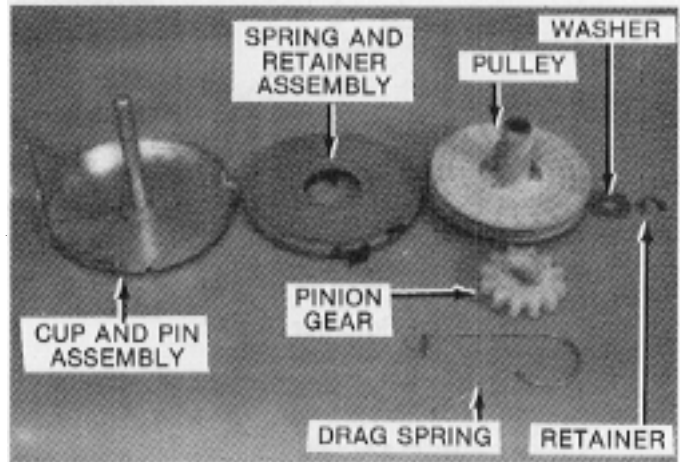


Figure 28

Unless the starter spring or rope breaks, it is not necessary to disassemble the starter only for cleaning, checking and fresh lubrication applied to the spring.

Manual Starter Servicing and Maintenance _____



Figure 29

If the starter assembly is disassembled for replacement of the spring or for an inspection, the assembly should be cleaned and re-lubricated with Lawn-Boy "A" Grease.

NOTE: Use caution when handling the spring and retainer cup assembly as it is possible for the spring to jump out.

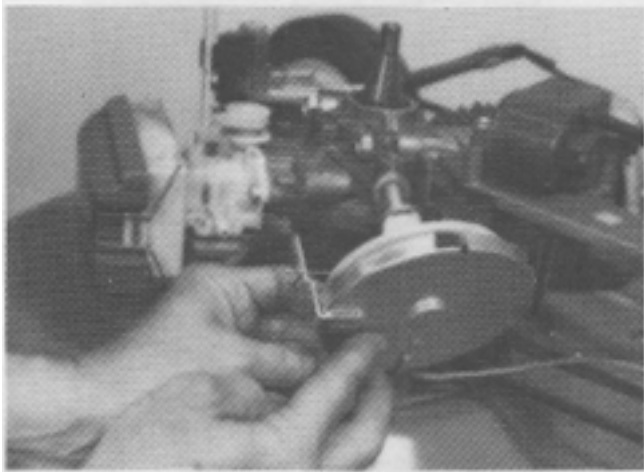


Figure 30

On zone start models only assemble starter onto engine with rope retainer positioned at 6:00 o'clock. Pinion spring anchor will be at 9:00 o'clock.

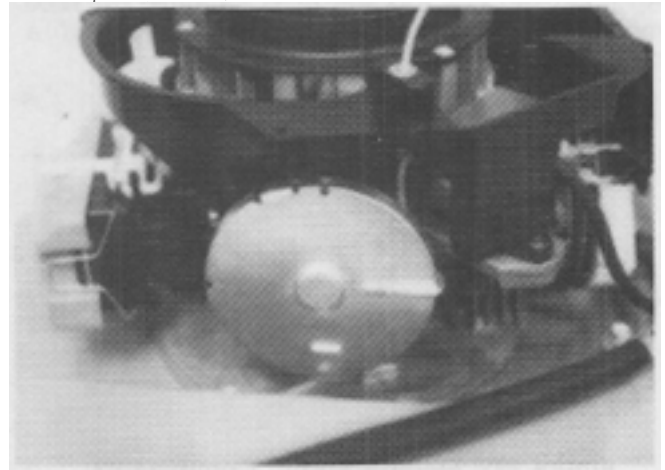


Figure 32

On BBC models, the rope retainer is placed at 3:00 o'clock. The pinion spring anchor will be at 6:00 o'clock.

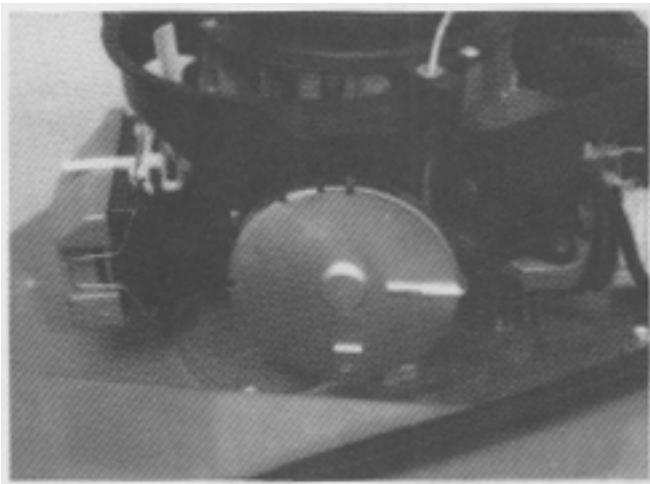


Figure 31

On the model 4600 the rope exits through the top of the shroud. Therefore, the rope retainer must be positioned at 3:00 o'clock. Pinion spring anchor will be at 6:00 o'clock.

Electric Starter Servicing and Maintenance

An improved electric starter is supplied on 1983 models. It features larger drive gears and a newstyle mounting. See Fig. 33.

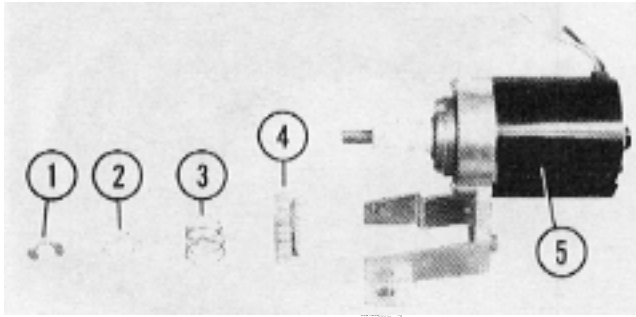



Figure 33 Electric Starter Components

1. Retaining Ring
2. Pinion Stop Washer
3. Pinion Spring
4. Pinion Gear & Spring
5. Electric Motor Assembly



Figure 34

When servicing and repairing the electric starter, always apply Lawn-Boy "A" Grease to the gears before re-assembling.

 **NOTE:** This unit will not interchange with previous models.

Adjustment

Install the unit with a .020-.030" gap where shown in Fig. 35.

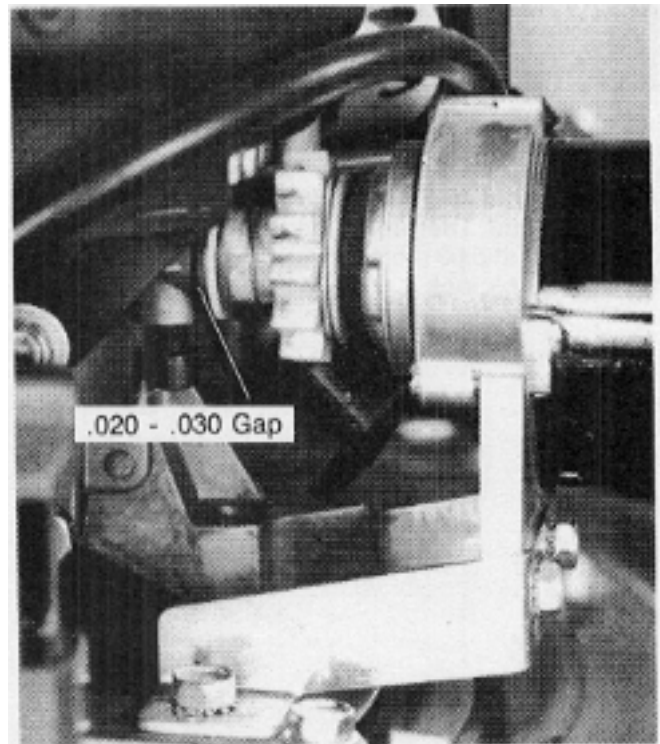


Figure 35 Correct Mounting

Piston and Rod

A .020" decompression hole (made by Laser beam) is now in the top of the piston to ease starting. Tests have shown no tendency for the hole to become plugged during mower operation when Lawn-Boy oil was used. If there is ever a need to clean the hole, be certain not to use a tool larger than .020", as this will reduce compression and engine efficiency.

Minimum allowable compression for engines with this piston is 80 PSI.



NOTE: This new piston will become the standard service replacement for all "F" Series engines. (See Fig. 36).



Figure 36

The connecting rod cap has been reinforced for added strength and 5/32" Allen-head capscrews are now used. These screws are now coated with a special epoxy resin. Torque specifications remain the same at 60 in. lbs. (tightened in 20 in. lb. increments). Lock plates are no longer used.

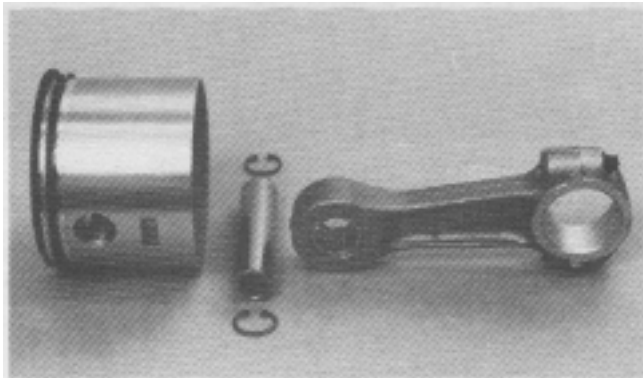


Figure 37 New Piston and Rod



NOTE: If screws are reused, be sure to clean the threads thoroughly and apply OMC Ultra Lock, part number 388517, or Loctite #271, before assembly.

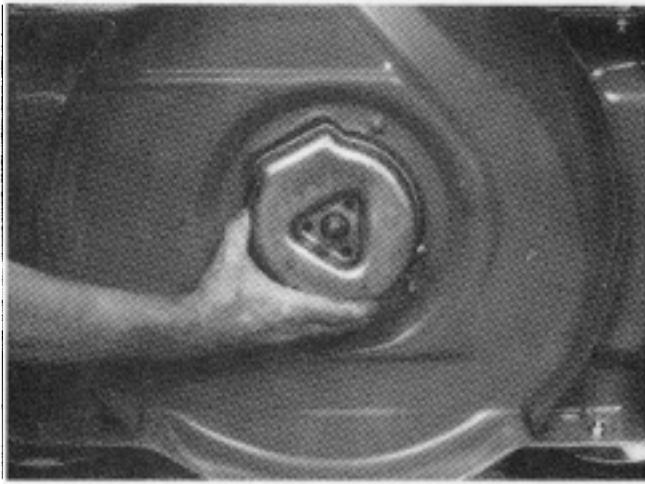


Figure 38

Assemble muffler onto crankshaft.

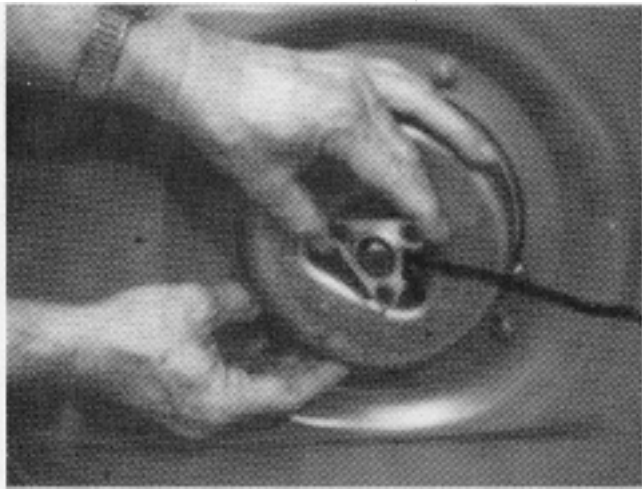


Figure 39

Always assemble the crankshaft support with the flange down towards the blade.



Figure 40

A special tool, crankshaft support gauge, part number 609968 is required to position the support correctly so it doesn't contact the crankshaft.

Slide the gauge onto crankshaft with the thin wall of gauge inside of support.

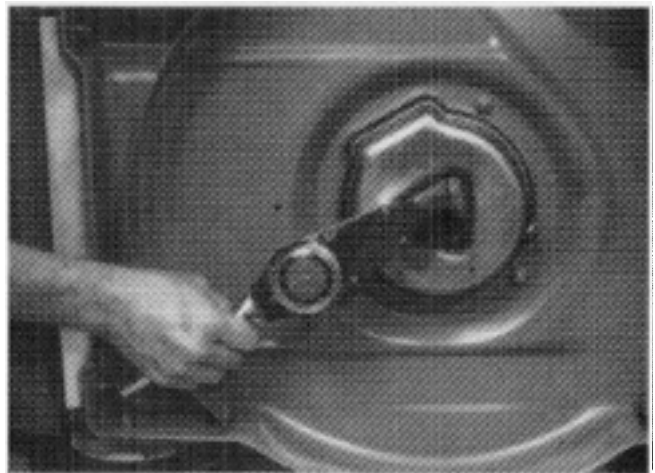


Figure 41

Clean threads on muffler bolts thoroughly and apply Ultra-Lock, part number 388517. Install bolts and tighten to 150-190 inch pounds.

Blade and Blade Housing

The Blade and Hardware shown below are used on all Lawn-Boy Scamp models.

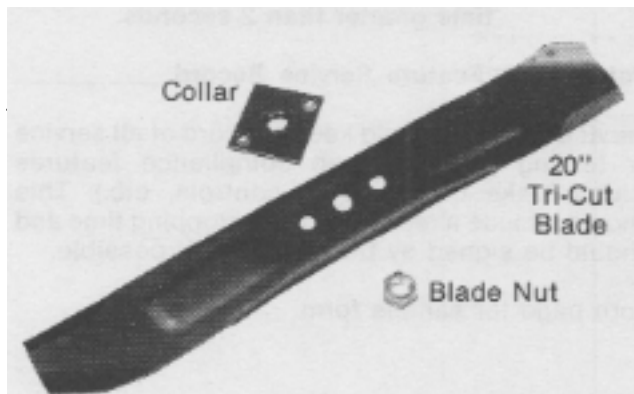



Figure 42

Torque blade nut to 45-50 ft lbs.

-  **NOTE:** This Blade and Hardware will fit all previous Lawn-Boy mowers, using only the Blade Driver and Blade Nut (as shown in Fig. 42). Do not use the old blade stiffener or washer with these new blades.

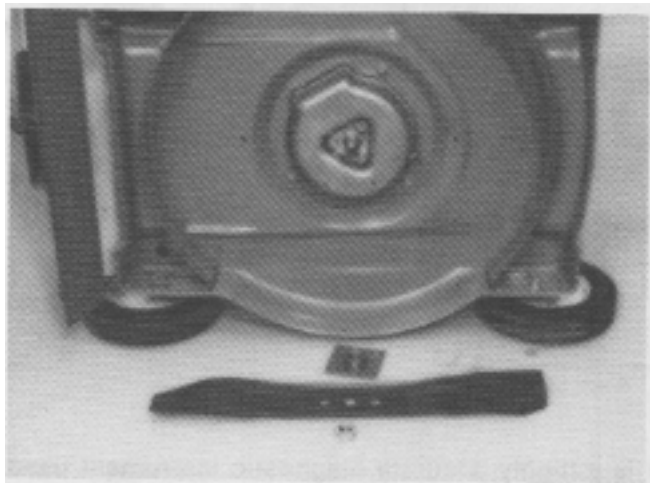



Figure 43

Before assembling collar on crankshaft, check to be sure it did not get bent or distorted when being removed. If so, replace it. Do not use, because, it will cause vibration.

If the blade nut is to be re-used, clean the threads thoroughly. Also clean threads on crankshaft.

Apply OMC Ultra-Lock, part number 388517 on the threads. Torque blade nut to 45-50 foot pounds.

-  **NOTE:** After repairs are completed always test the mower for starting, running and blade stoppage time.

The required blade stopping time is 3 seconds or less.

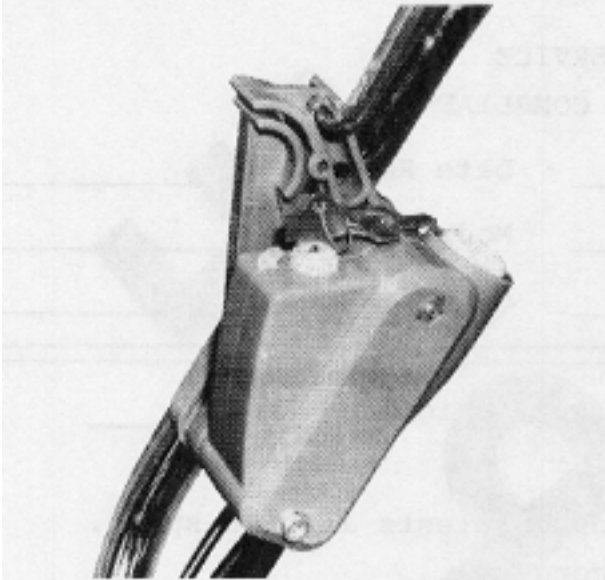
It is recommended to make 3 tests for blade stopping time and record each for future reference.

If it doesn't stop in the required length of time, determine what the problem is and correct it.

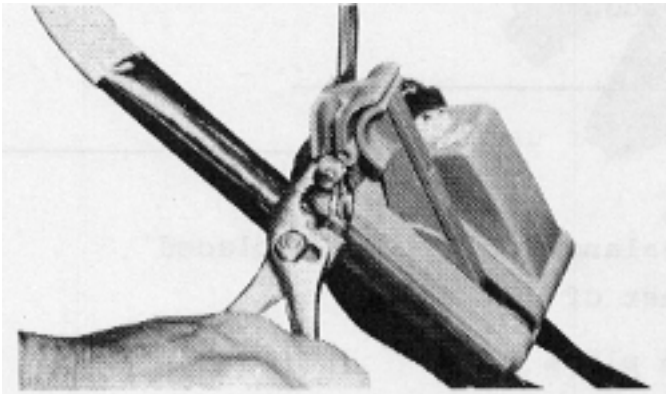
Hose and Wire Routing

It is important to correctly route and secure all hoses and wires when reassembling mower components after servicing. The following reference photos show typical examples of correct routing and tie locations:

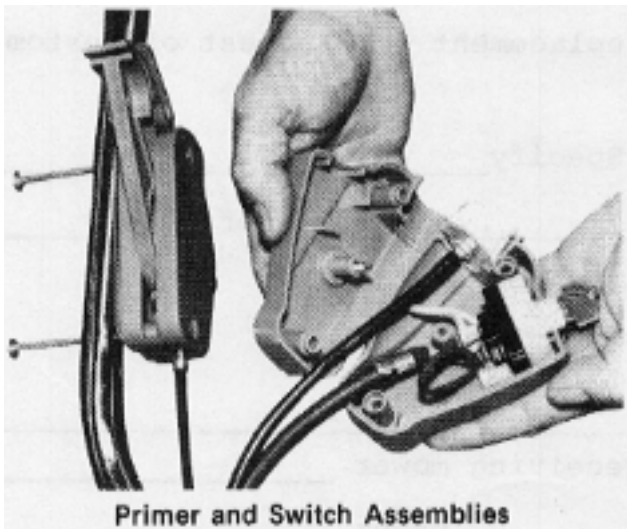
BBC Models



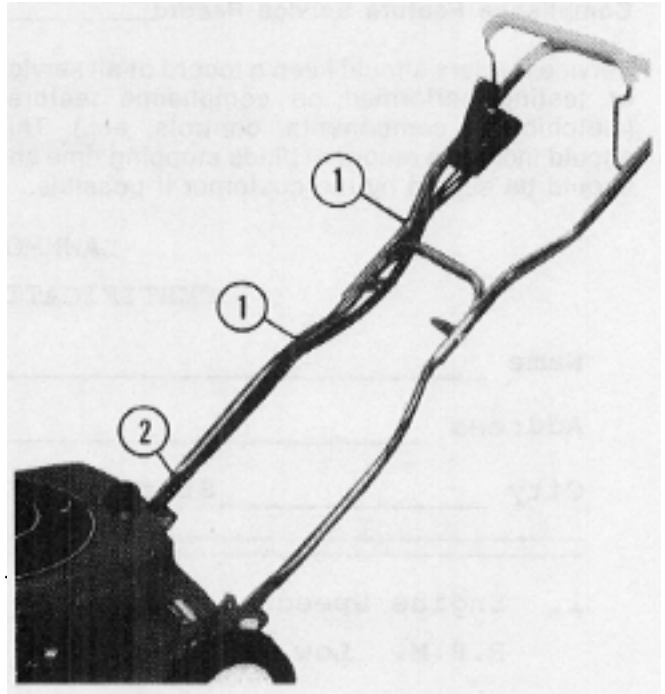
Control Console



Retainer Cup Removal

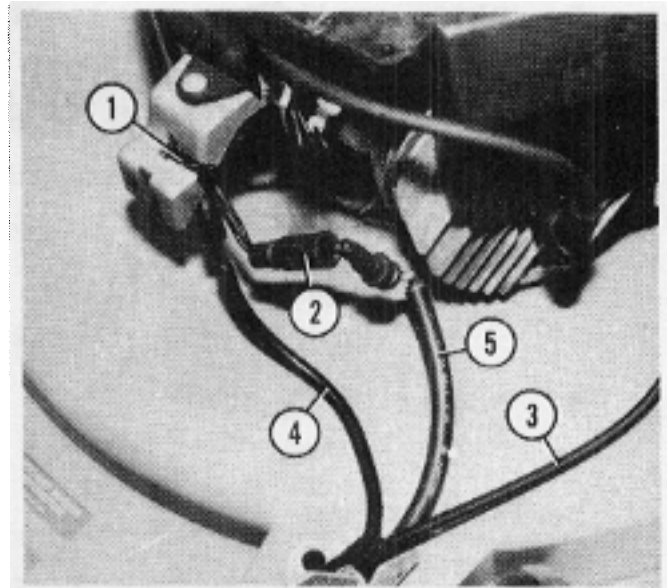


Primer and Switch Assemblies



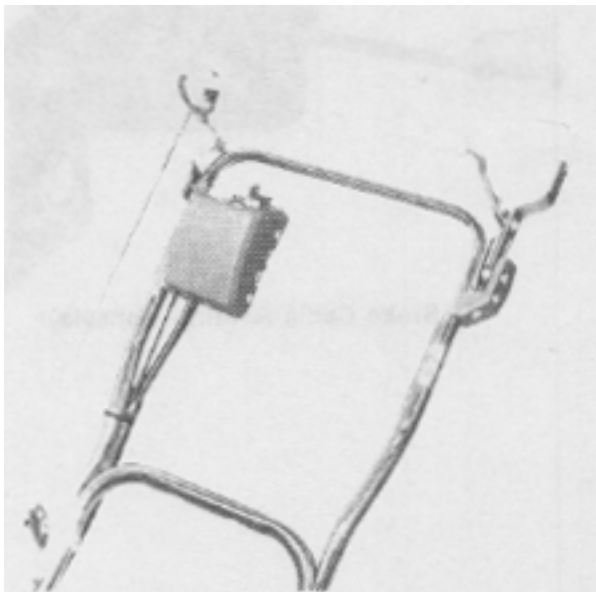
Tie Wrap Locations

1. Single Tie
2. Double Tie

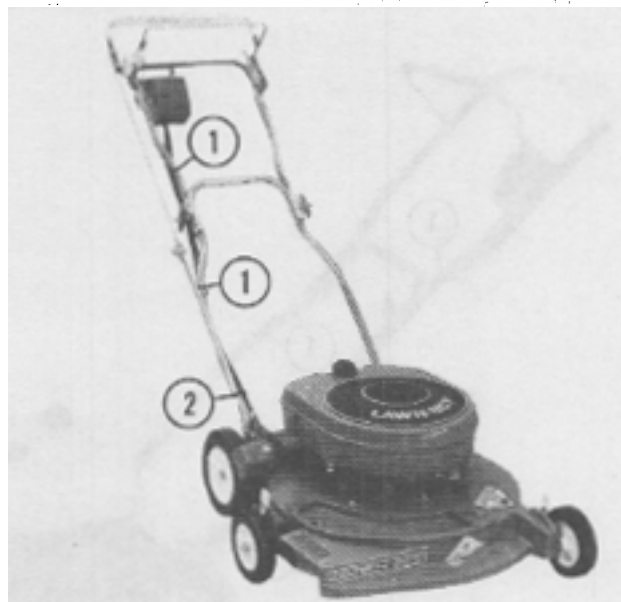


Hose and Cable Routing

1. Tie Wrap
2. Electrical Cable Connector
3. Brake Cable
4. Primer Hose
5. Electrical Cable

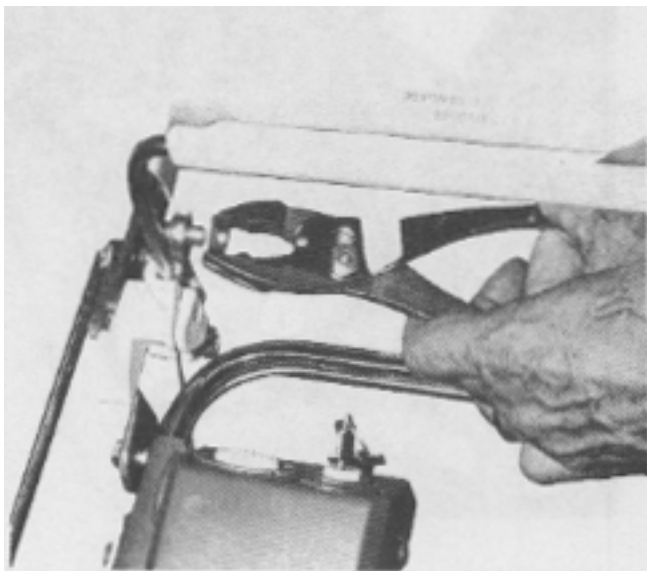


Control Console

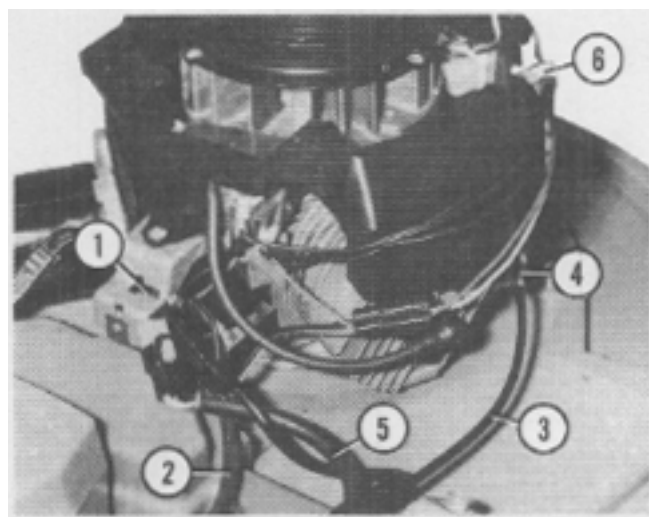


Tie Wrap Locations

- 1. Single Tie
- 2. Double Tie

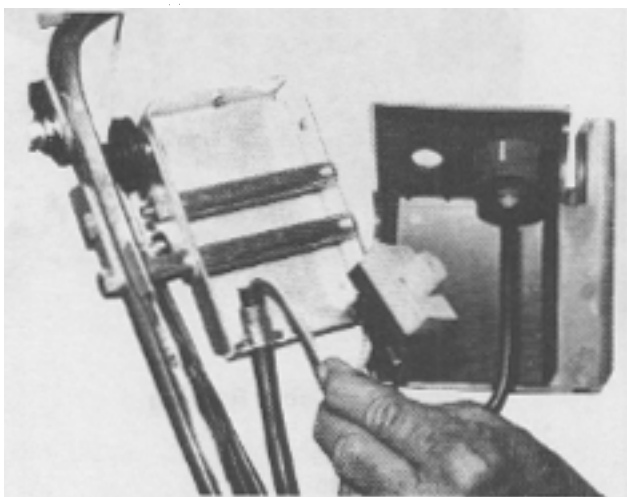


Retainer Cup Removal



Hose and Cable Routing

- 1. Tie Wrap
- 2. Primer Hose
- 3. Brake Cable
- 4. Brake Cable Retainer Clip
- 5. Electrical Cable
- 6. Switch Lead Retainer Clip



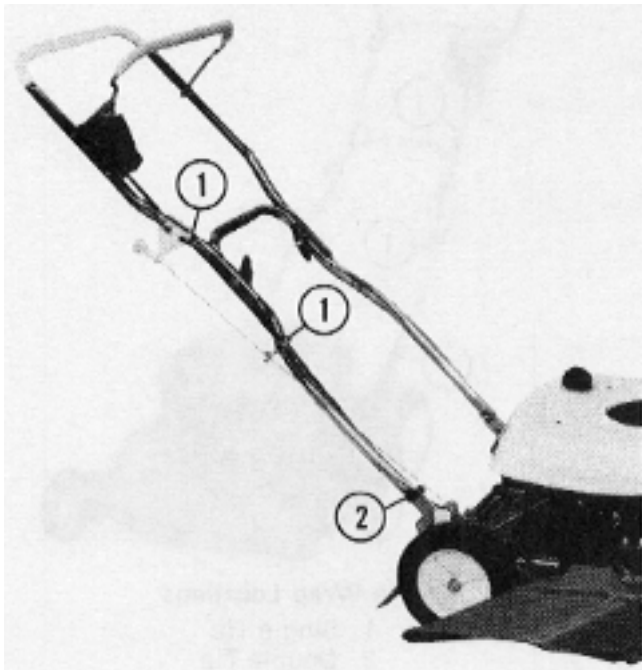
Primer and Switch Assemblies

For Your Information _____

The following service items are passed along as general information and do not necessarily apply only to new models.

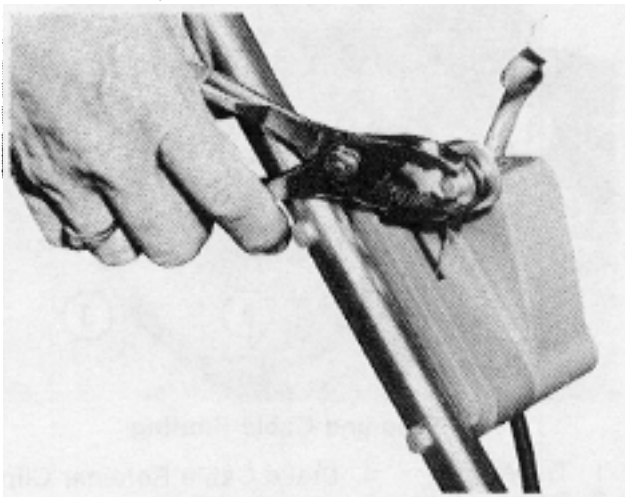
Vented Bowl Carburetors (identify by noting the vent hole in the primer bulb) must have a drop of Lawn-Boy Nut and Screw Lock applied to the threads of high-speed nozzle prior to carburetor assembly.

8" Wheels now include an oil-impregnated bronze bearing (non-removable).

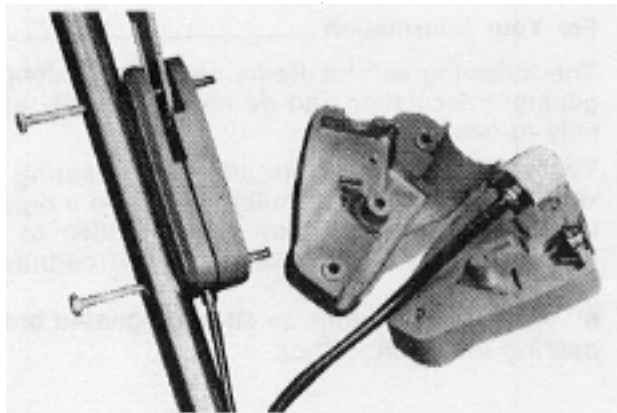


Tie Wrap Locations

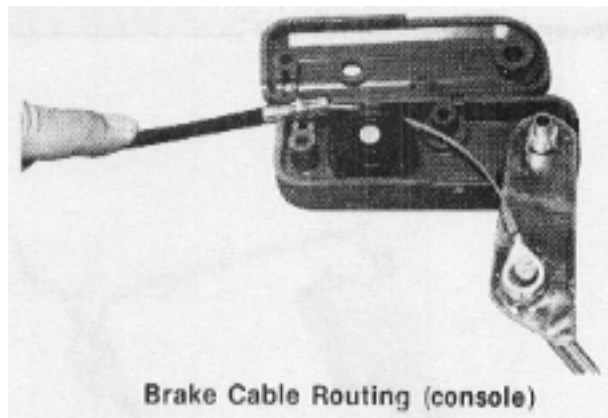
- 1. Single Tie
- 2. Double Tie



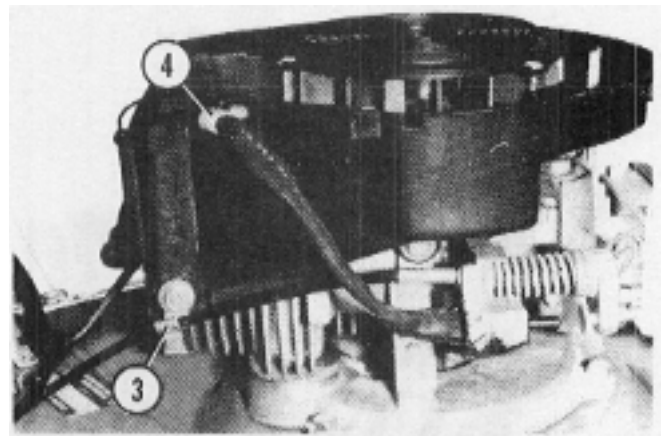
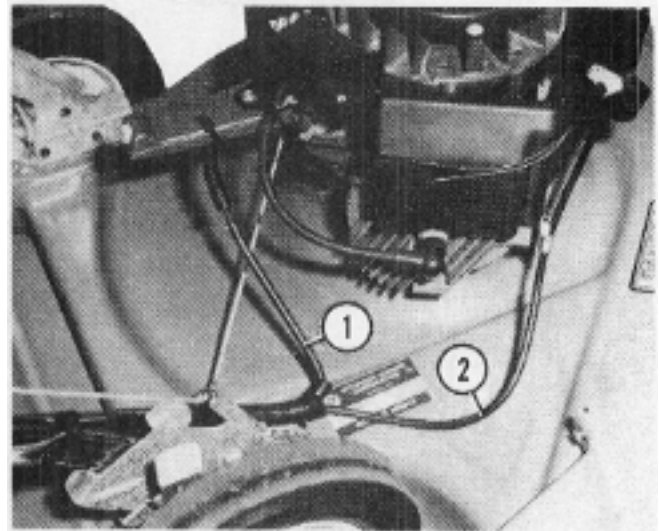
Retainer Cup Removal



Primer Assembly



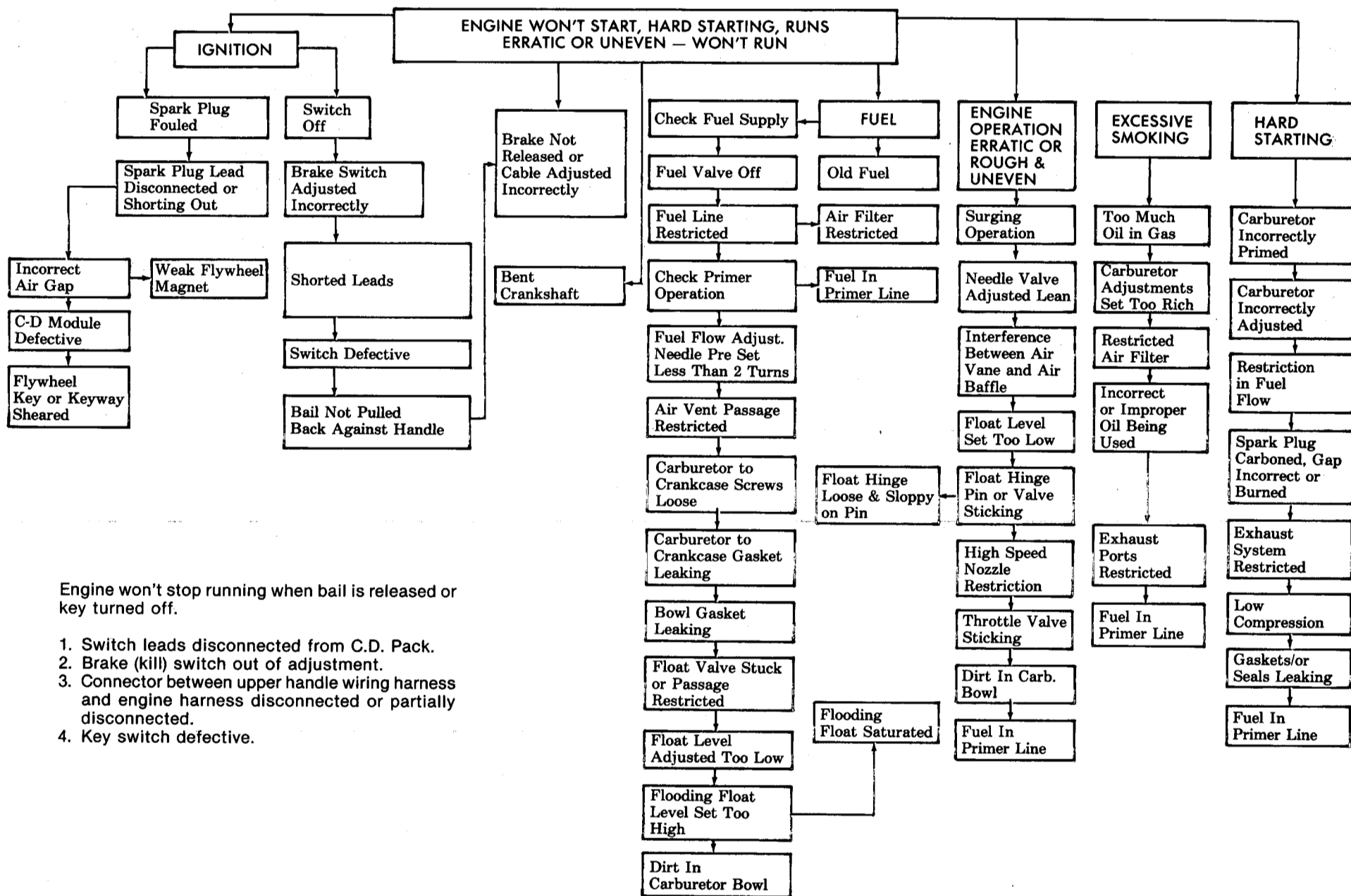
Brake Cable Routing (console)



Hose and Cable Routing

- 1. Primer Hose
- 2. Brake Cable
- 3. Brake Cable Retainer Clamp
- 4. Switch Cable Clamp

LAWN-BOY COMPLIANT MOWER TROUBLE SHOOTING CHECK CHART



Engine won't stop running when bail is released or key turned off.

1. Switch leads disconnected from C.D. Pack.
2. Brake (kill) switch out of adjustment.
3. Connector between upper handle wiring harness and engine harness disconnected or partially disconnected.
4. Key switch defective.

Engine Won't Start or Hard Starting ALL MODELS

Possible Cause

No fuel in tank.
 Fuel valve off.
 Insufficient or excessive priming.
 Spark plug lead disconnected.
 Spark plug fouled.
 Low compression in cylinder (80 PSI min.)
 Incorrect air gap between C.D. pack and flywheel.
 C.D. pack defective. (Refer to "CD Pack Testing,"
 Pg. 19)
 Primer hose disconnected from carburetor or connector.
 Primer hose restricted. (Refer to "Primer System
 Draining," Pg. 20).
 Air filter restricted.
 Carburetor needle valve incorrectly adjusted.
 Throttle valve stuck closed.
 Carburetor-to-crankcase screws not tight.
 Carburetor-to-crankcase gasket leaking air.
 Float chamber screws loose.
 Float chamber gasket leaking air.
 Restriction in high speed nozzle.
 High speed nozzle loose.
 Float valve stuck closed.
 Restriction in fuel passages (tank, valve, hose,
 float valve seat).
 Float level set too low.
 Reed Valves stuck closed or bent open more than
 .015".
 Air leak between crankcase halves.
 Intake plug leaking or missing.
 Main bearing seals leaking.
 Exhaust system restricted.

Zone Start Models
 Bail not pulled back against handle.
 Incorrect kill switch adjustment (see Fig. 16).
 Kill switch inoperative. (See "Ignition Circuit
 Switch Troubleshooting," Pg. 17).
 Brake dragging on flywheel.

Power Restart (PRS) Models
 Bail not pulled back against handle.
 Incorrect kill switch adjustment (see Fig. 16).
 Kill switch inoperative. (See "Ignition Circuit
 Switch Troubleshooting," Pg. 17).
 Brake dragging on flywheel.
 Battery disconnected.
 Battery run down (should be 12.5 - 14 volts).
 Starter motor cable disconnected.
 Starter solenoid defective.
 Key switch and cable connect disconnected or
 loose from engine harness.
 Key switch defective or loose connectors.

BBC Models
 Switch turned off.
 Switch defective or loose connectors.

Ignition Circuit ("Kill") Switch

(Zone & PRS Models)

The following conditions are indications of Switch misadjustment or failure.

Engine misfires when in self-propelling mode

Adjust Switch (See Fig. 16)

Engine stops if bail is not held extremely tight against handle

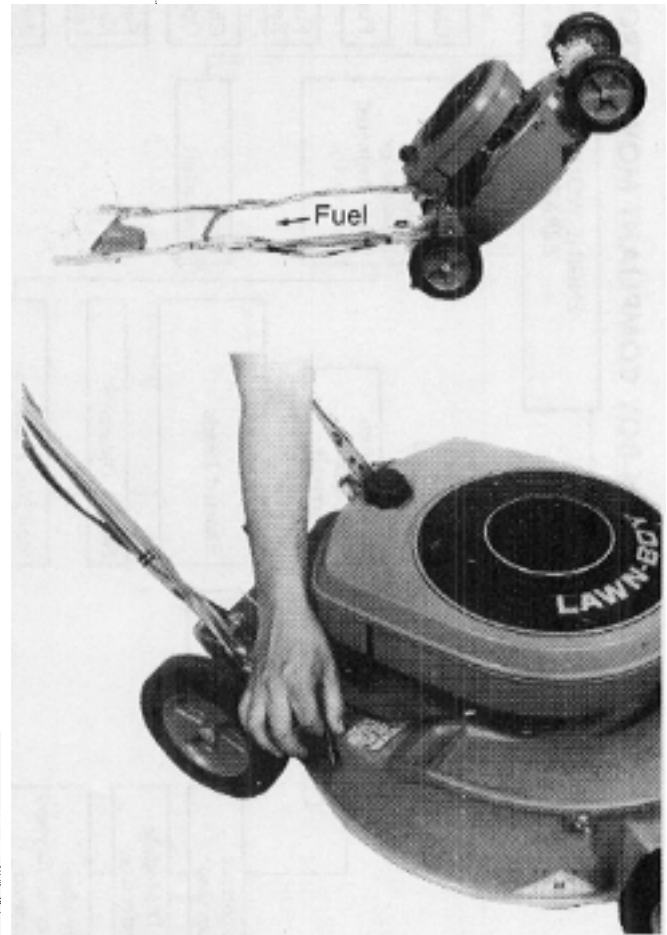
Adjust Switch (See Fig. 16)

Engine won't start (no spark)

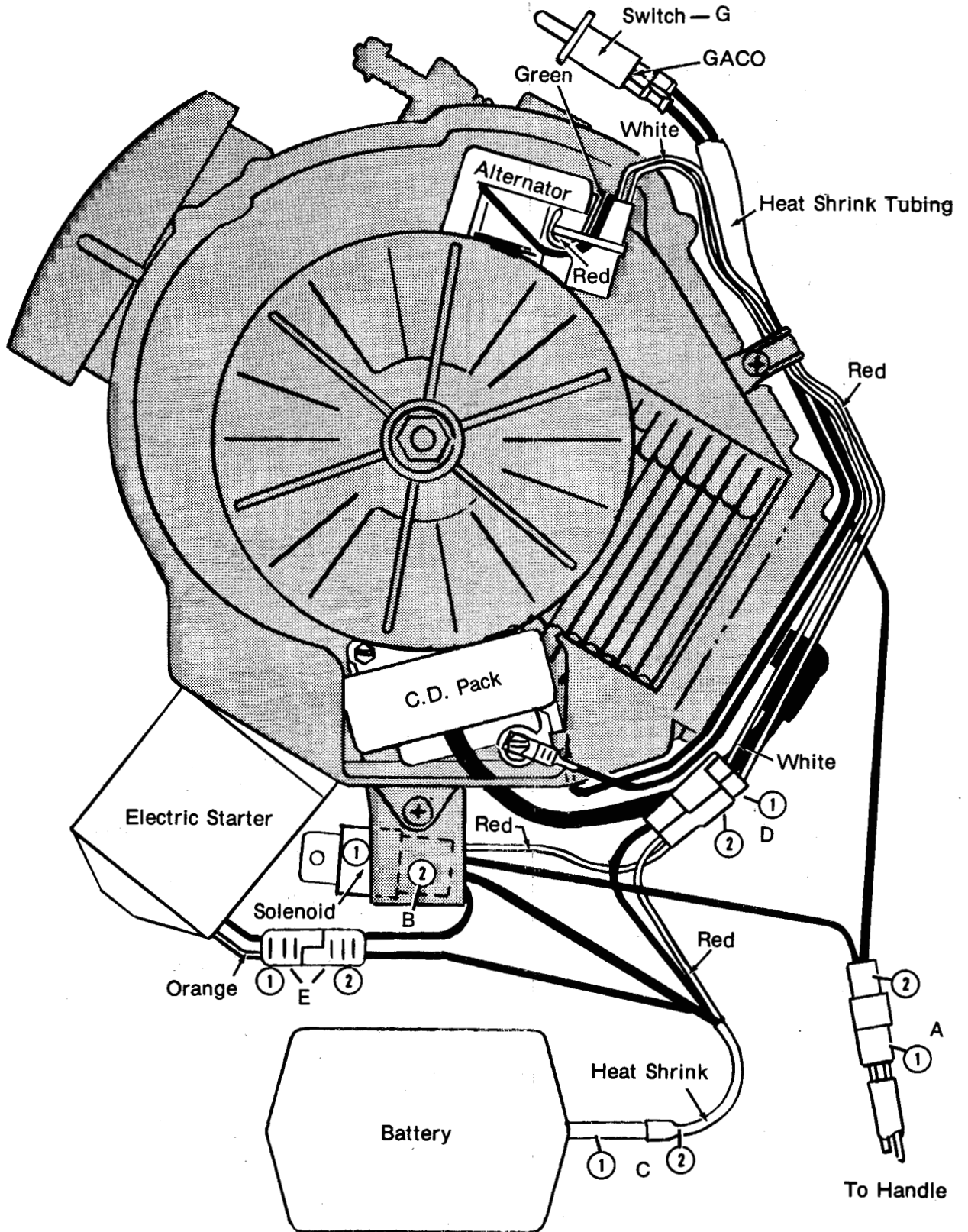
Adjust or replace switch

Primer System Draining

If a mower is tipped back on its handle (as shown below), fuel may run from the carburetor and settle in the lowest point of the primer line when the machine is set upright. If this occurs, remove the primer hose from the carburetor and drain the fuel. Symptoms include rich running and hot starting problems.



Power Restart (PRS)



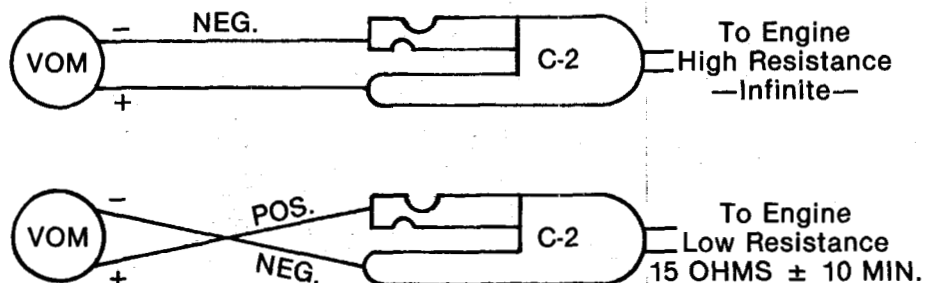
**Trouble Shooting And Test Procedures
To Be Followed In Sequence Below
(For Plug And Switch References - See Page 19-22)**

A. Starter will not turn engine (1st check)

1. Bail not pulled back against handle completely.
2. Key Switch not actuated or not functioning.
3. Plugs A-B-C- or E not connected.
4. Brake Switch (G) not actuated or not functioning.
5. Low charge in battery.

B. Starter will not turn engine (2nd check)

1. Disconnect plug (C) from battery.
2. Connect volt-ohm-meter (VOM) across plug (C-2).
3. Meter should indicate.



4. If the meter does not indicate the correct reading on the resistance scale,

a. See alternator test procedures pages 13-19 & 13-20.

5. Connect meter (vom) as illustrated in step (3-A).

6. Pull bail back against handle.

7. Turn switch key.

8. Meter should indicate

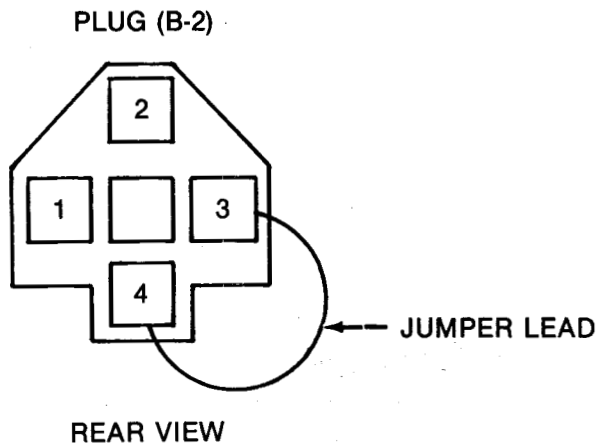
80 ohms \pm 15 on low resistance scale

9. If there is no reading on the meter, proceed as follows - otherwise if there is a reading on the meter, proceed to step (14).

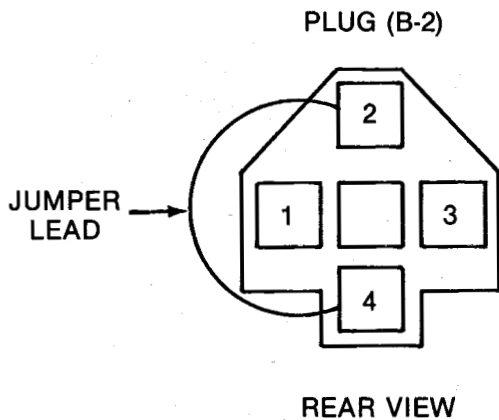
10. **With no reading on step (9)**
Disconnect plug (a), connect a jumper lead across plug (A-2) shorting terminals to each other.

11. Pull bail back against handle. If meter indicates 80 ohms \pm 15, the key switch is defective.

12. Remove jumper lead from (A-2). Connect the jumper lead between terminals (4 and 3) on plug (B-2). See below.

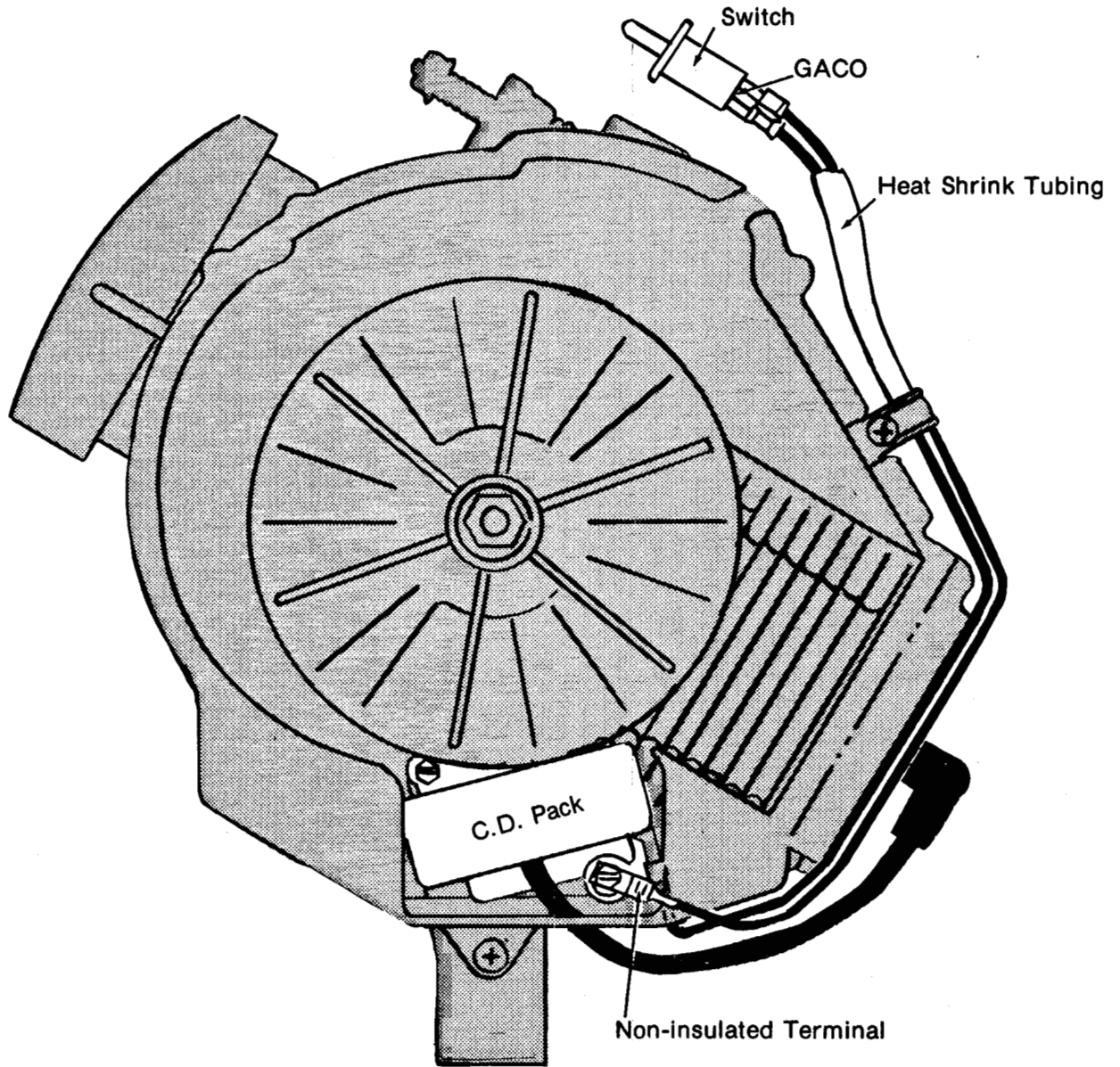


13. If meter indicates $80 \text{ ohms} \pm 15$, the brake (kill) switch is defective or requires readjustment. If the meter does not indicate $80 \text{ ohms} \pm 15$, the solenoid relay is defective and requires replacement.
14. Connect jumper lead across terminals (4 and 2) on plug (B-2).



15. If meter indicates $3 \text{ ohms} \pm 2.5$, replace solenoid relay. If meter does not indicate $3 \text{ ohms} \pm 2.5$, the starter assembly requires replacement.

Zone (manual) Start



4250, 4505, 8605 AND LATER COMPLIANT MOWERS

SCAMP MODELS SELF-PROPELLED SERVICING AND ADJUSTMENTS

All Lawn Boy Compliant Scamp Model Mowers feature a Flywheel Brake system. It will stop the blade from turning within 3 seconds after the operator releases the bail. The engine also stops at the same time.

Adjustments and servicing of the Scamp self-propelled mowers are very different from all previous models of self-propelled mowers.

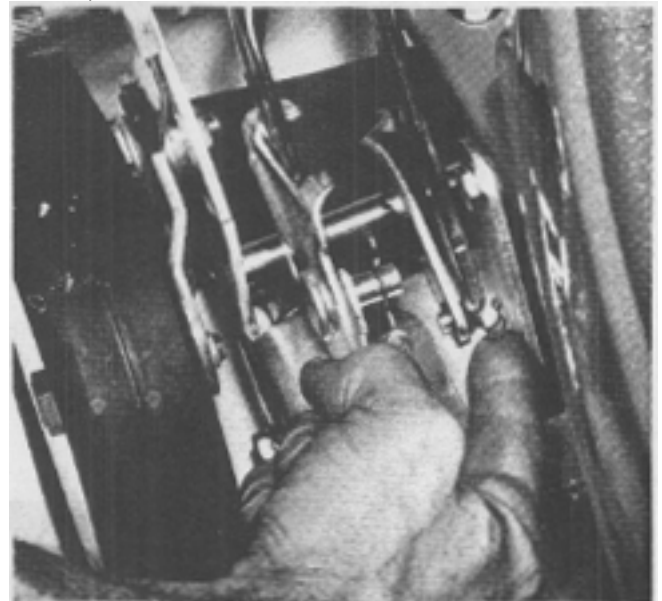


SAFETY WARNING: Before any adjustments or repairs are attempted, disconnect and remove spark plug to prevent starting.

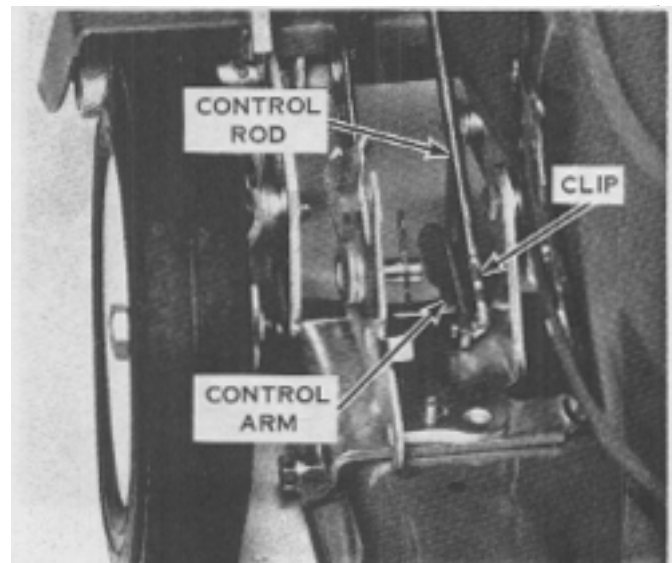


INSTALLING CONTROL ROD

1. Place retainer clip on clutch arm with long side of clip on the inside of clutch arm.
2. Align hole in clip with hole in arm and assemble lower end of the control rod in hole.
3. Turn (swivel) long end of clip up and snap into position on lower control rod as shown.

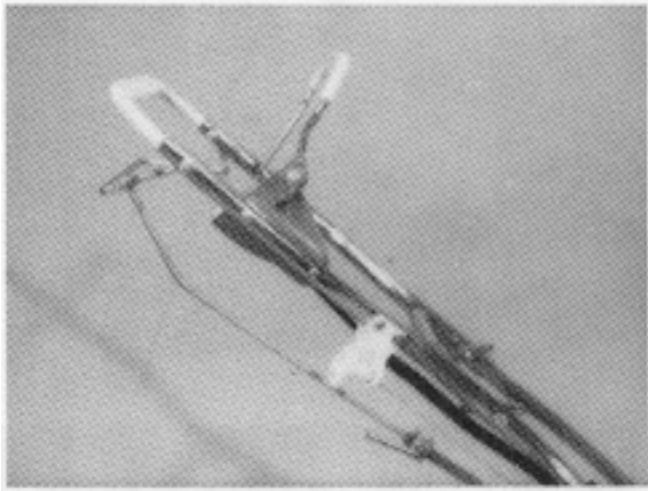


SAFETY WARNING: The lower self-propel control rod must be assembled to clutch arm as shown. If not the self-propel mechanism will not return to neutral when the control lever is released from the engaged position.

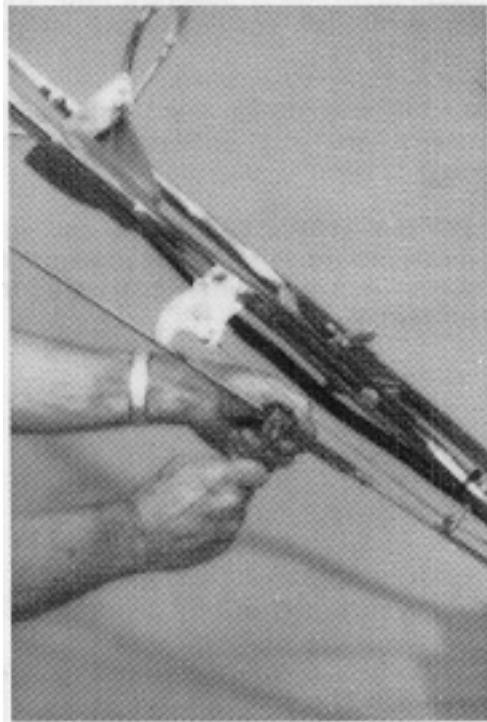


SCAMP MODELS SELF PROPELLED SERVICING AND ADJUSTMENTS

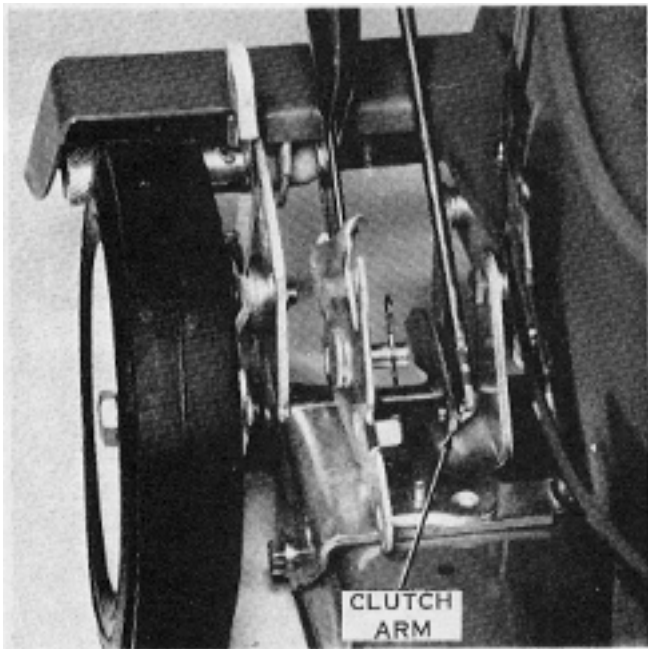
4. With the control handle in "neutral" (free) position as shown.



6. Secure upper and lower control rods together with the clamp screw as shown. This screw should be tightened securely by hand.



5. With the clutch arm resting on the handle and wheel bracket as shown.



SAFETY WARNING: Improper tightening of clamp screw on control rod may result in operator loss of drive control mechanism.

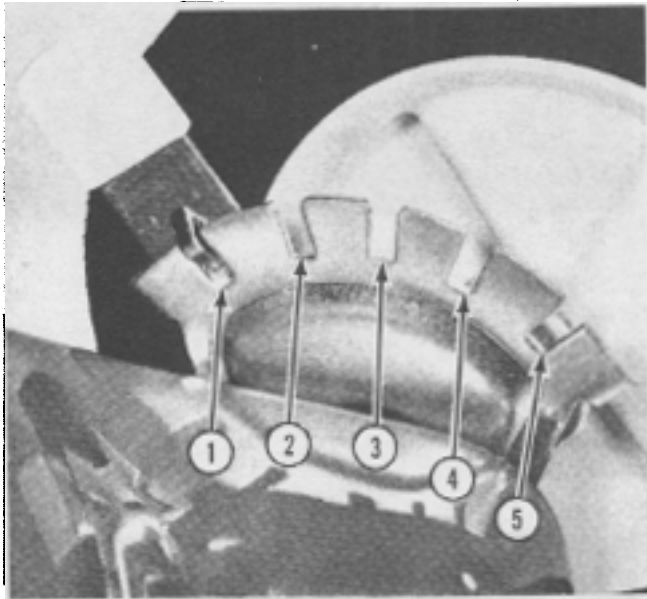


NOTE: To put mower in motion, pull upward on control handle and hold in drive position. To stop forward motion of mower, release control handle. Mower drive mechanism functions only when the control handle is held in "DRIVE" position.

SCAMP MODELS SELF PROPELLED SERVICING AND ADJUSTMENTS

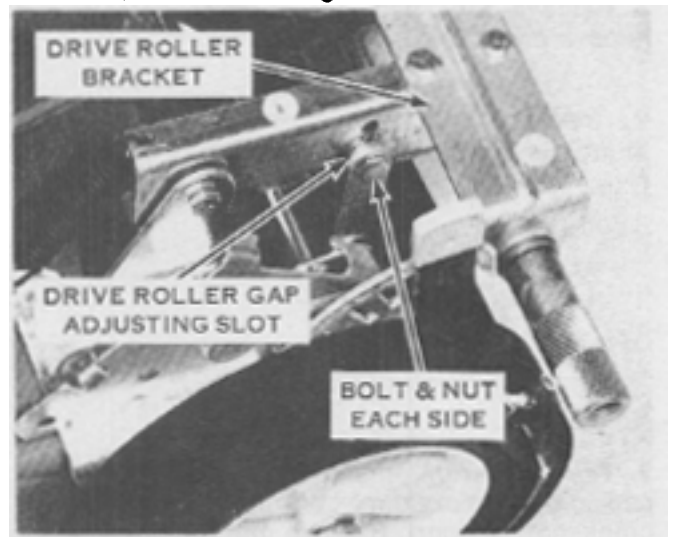
DRIVE ROLLER ADJUSTMENT

1. With the control handle in "Neutral", place both rear wheel height adjusters in #1 (lowest) cutting position as shown. A gap of 3/16" should appear between the drive rollers and tires.



2. Loosen bolt and nut located in drive roller gap adjusting slot on each side of drive roller bracket.

3. Move the drive roller bracket up or down to obtain the necessary 3/16" drive roller gap. Hold bracket in position and tighten both bolts and nuts securely.



SCAMP MODELS SELF-PROPELLED DRIVE BELT REPLACEMENT AND SERVICING

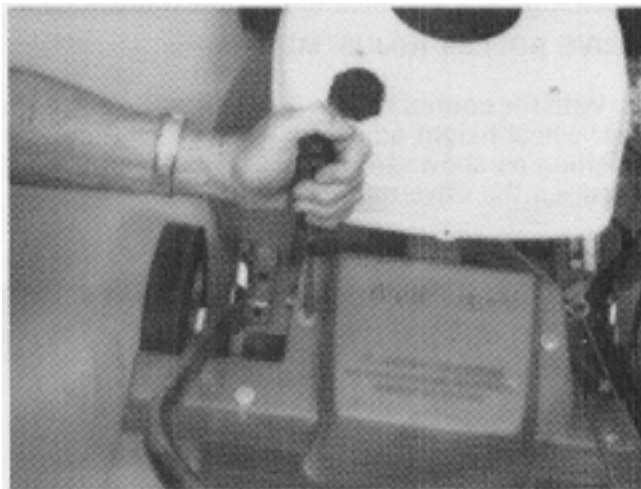
V BELT REMOVAL OR REPLACEMENT

SAFETY WARNING: To prevent starting engine, disconnect spark plug lead and remove spark plug.

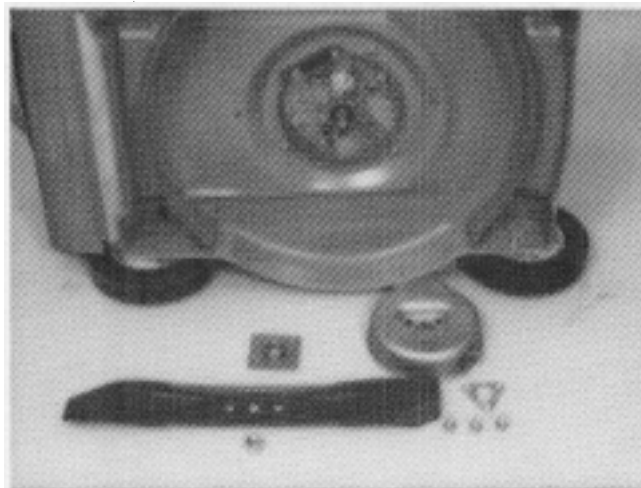
The "V" belt used on the utility self-propelled model mowers is a SPECIAL BELT. **DO NOT USE A SUBSTITUTE.** It won't work as WELL or as LONG.

To remove the belt:


1. Remove four belt guard cover screws and remove cover.




2. Turn mower up on side and remove nut, blade and collar. Remove three bolts securing muffler and crankshaft support. Remove muffler.



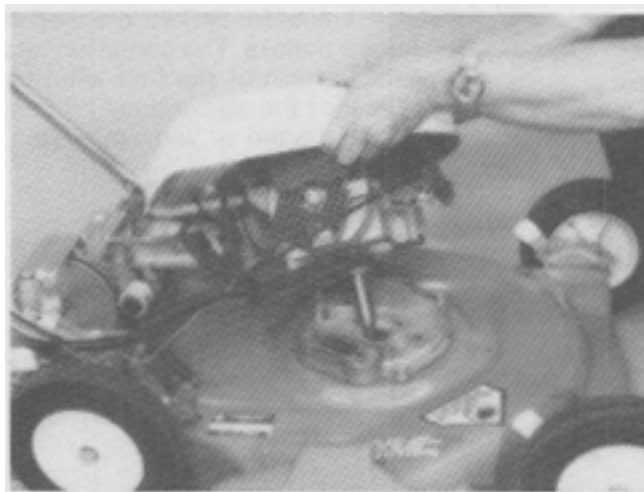
SCAMP MODELS SELF-PROPELLED DRIVE BELT REPLACEMENT AND SERVICING

 **SAFETY WARNING:** To prevent starting of engine, disconnect and remove spark plug prior to removing the engine.

3. Remove three bolts securing engine to muffler plate and remove engine.

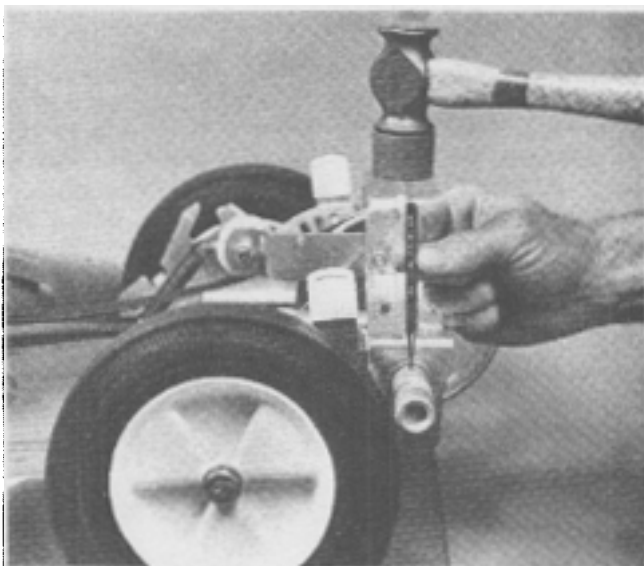
 **NOTE:** Do not remove muffler plate from housing when removing engine.

4. Remove engine and remove drive belt from drive pulley.

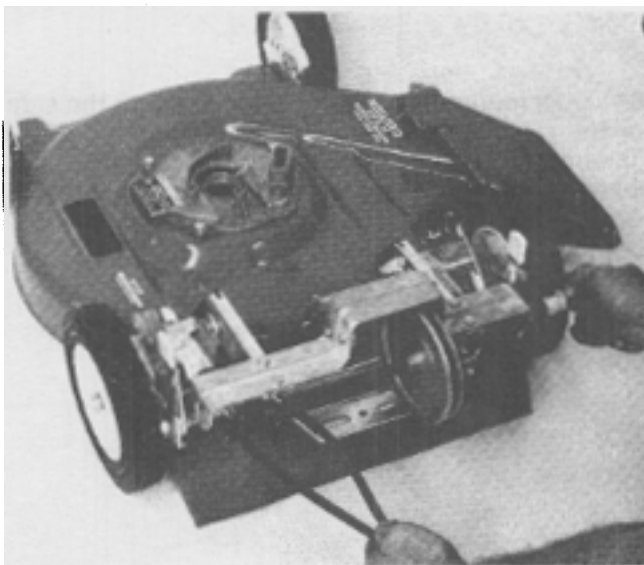


 **SAFETY WARNING:** Do not operate mower with belt guard removed.


5. Remove roll pin from left hand drive roller and remove roller.




6. Remove belt from driven pulley and slide shaft assembly to the right. Remove belt from mower as shown.



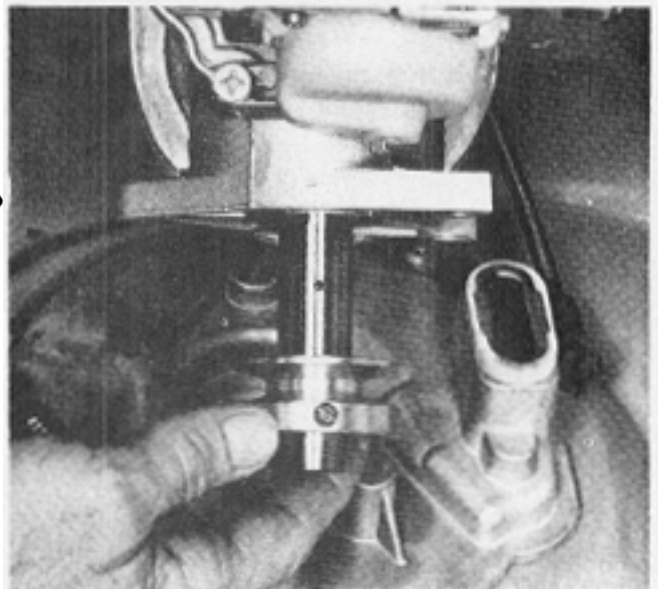
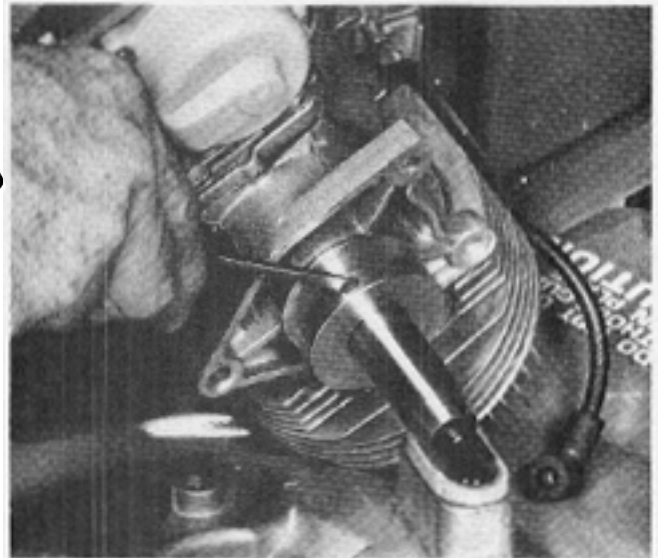
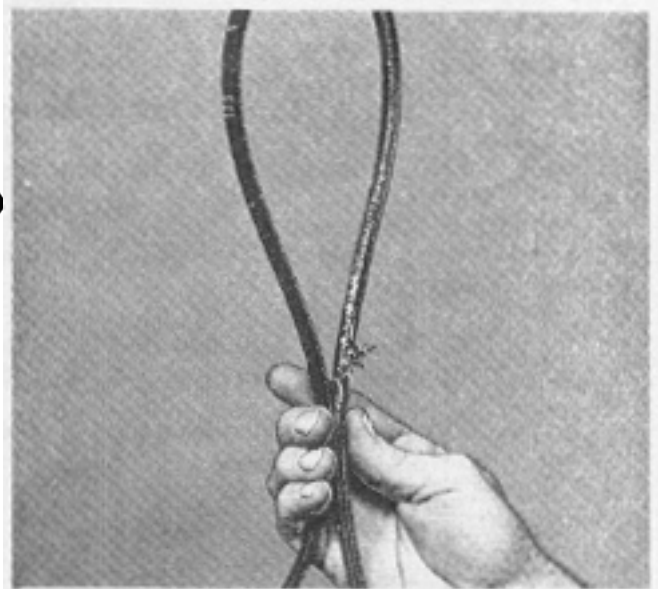
SCAMP MODELS SELF-PROPELLED DRIVE BELT REPLACEMENT AND SERVICING

 **NOTE:** After the belt has been removed, examine for broken, cracked or misaligned pulleys. The condition and the wear pattern of the belt will provide clues for the above possibilities. Replace damaged or worn pulleys.

7. The crankshaft pulley (drive pulley) is secured to the crankshaft with a SPECIAL slotted set screw. The end of this screw locates in a hole in the crankshaft. The correct position and tightness is very **IMPORTANT**. If not tightened securely, damage to the pulley, crankshaft and premature wear of the drive belt will result.

 **NOTE:** Apply OMC Ultra-Lock Part No. 388517 to threads of set screw prior to installation.

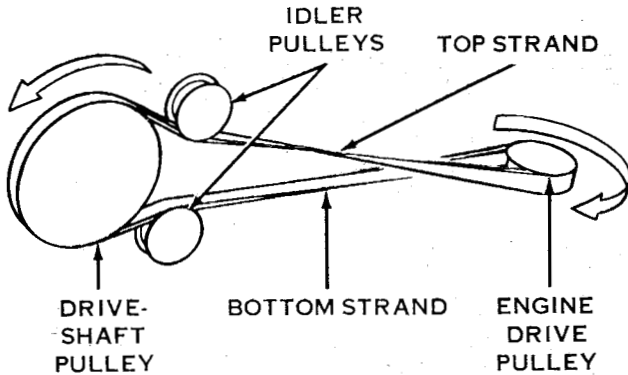
8. When reinstalling pulley to crankshaft, the side of the pulley with set screw is the lower side. If assembled upside down (set screw on top) misalignment and interference of pulley operation will result. Always check pulley for damage. Replace if necessary.



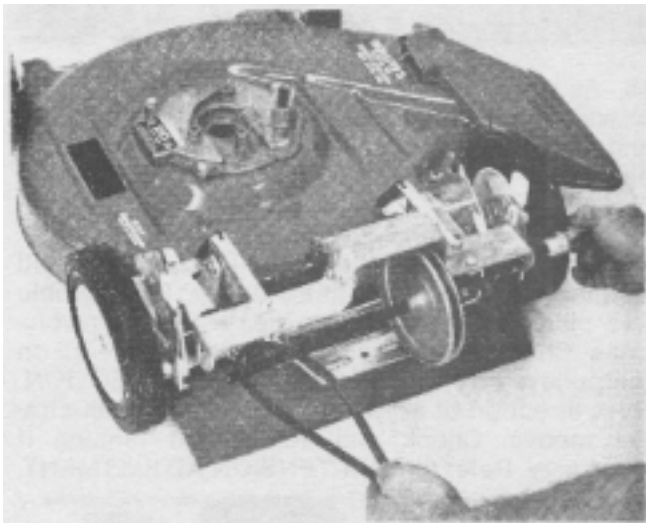
SCAMP MODELS SELF-PROPELLED DRIVE BELT REPLACEMENT AND SERVICING

 SAFETY WARNING

SAFETY WARNING: Incorrect drive belt installation may allow mower to operate in reverse direction causing injury to the operator or bystanders. Assemble drive belt as shown.




INSTALL BELT AS SHOWN
FOR PROPER PULLEY ROTATION

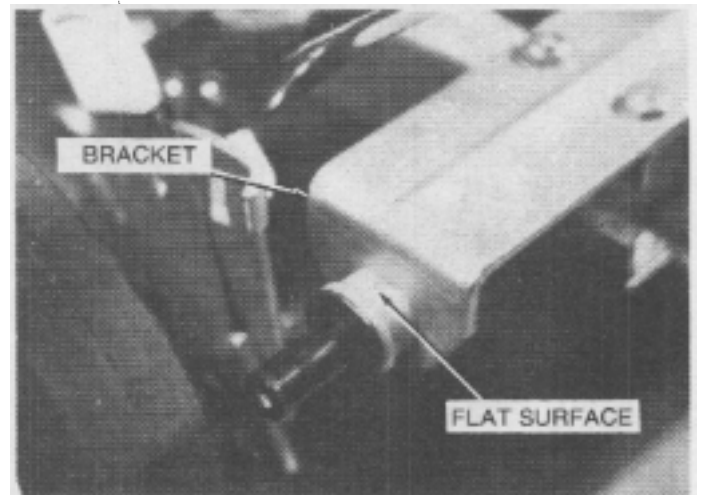
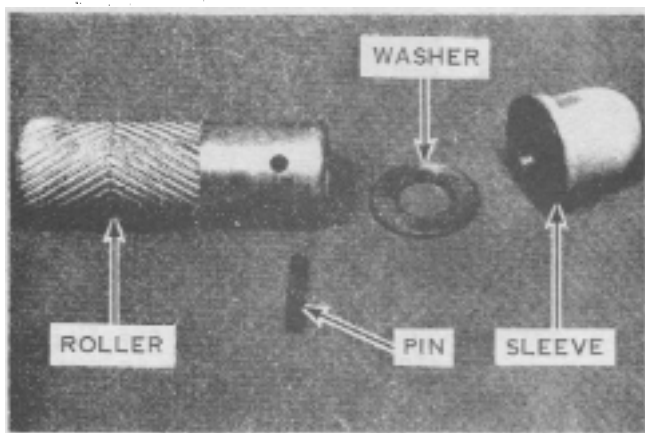


9. Place belt over left end of drive shaft as shown. Do not assemble on drive shaft pulley.

10. BUSHING AND BEARING INSTALLATIONS.

 **NOTE:** The sleeve has a flat surface that matches the flat surface of the bracket. When reassembling, the flat surfaces must match.

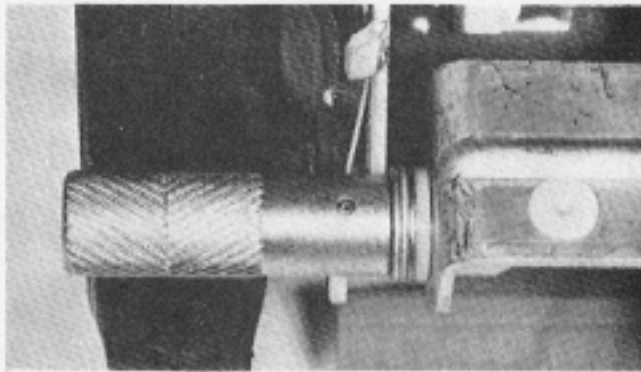
11. Check the condition of the drive shaft, bronze bearings, and sleeve. If signs of damage or wear appear, replace them.



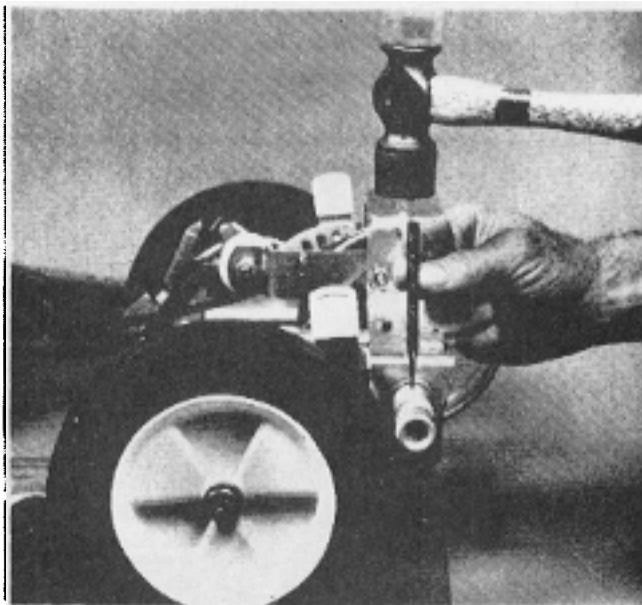
SCAMP MODELS SELF-PROPELLED DRIVE BELT REPLACEMENT AND SERVICING

12. Reassemble the drive shaft into the bearing and slide it to the left as far as possible. Assemble the washer and drive roller on the drive shaft.

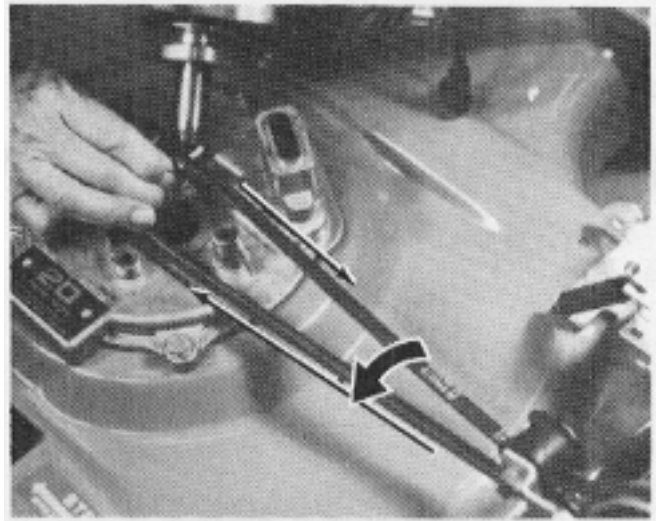
13. The drive rollers must be properly installed to utilize the self-cleaning feature. Proper installation is with the vee pointing toward the wheel.



14. Using a new roll pin, assemble the drive roller to the drive shaft. Use a 5/32" or larger drift punch, drive the roll pin into place, flush with the outer surface. Neither end should protrude beyond the roller surface.

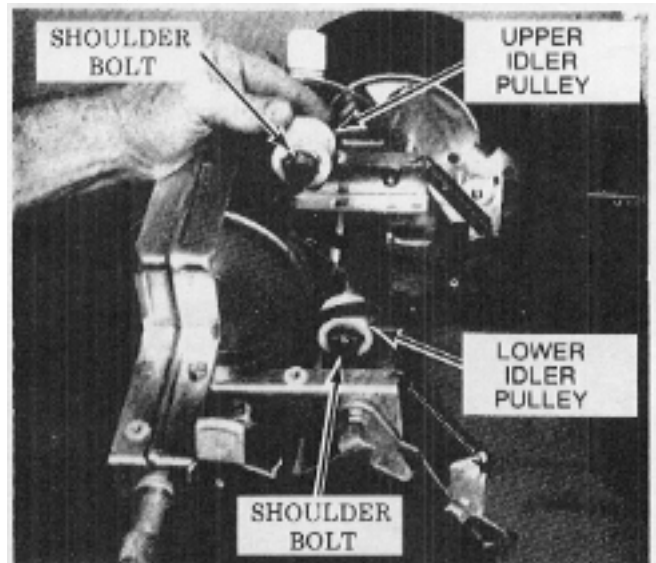


INSTALL BELT AS SHOWN
FOR PROPER PULLEY ROTATION



15. As you face the front of the mower, twist the forward end of the belt 1/4 turn counter clockwise and assemble on the engine drive pulley. Assemble engine on muffler plate and secure with three bolts.

16. Release spring tension on idler pulleys and assemble belt on drive shaft pulley. Reassemble idler pulley spring and rotate the belt several revolutions. Check to make sure the belt is centered on the pulleys and **TURNING IN RIGHT DIRECTION**. Note direction of arrow on large pulley in illustration above. Check and adjust belt tension if necessary. Refer to **BELT TENSION ADJUSTMENT**.

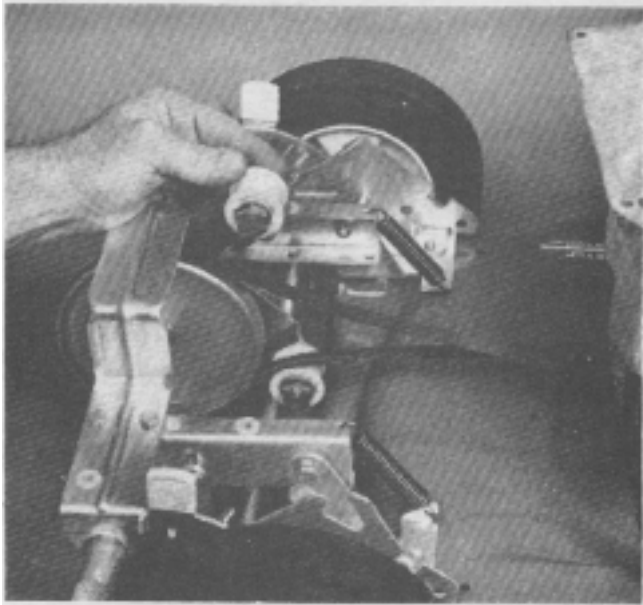


NOTE: When replacing either of the belt idler assemblies, use idler kit part no. 682374 for the top and kit part no. 682564 on the bottom.

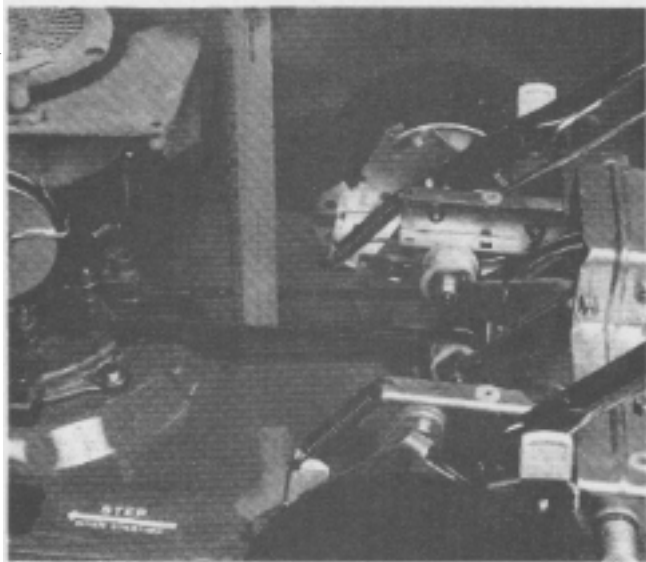
SCAMP MODELS SELF-PROPELLED DRIVE BELT REPLACEMENT AND SERVICING

BELT TENSION ADJUSTMENT

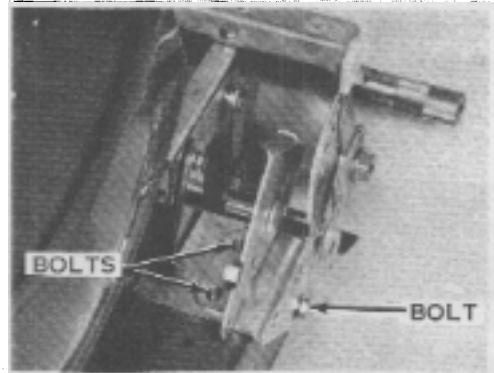
1. Check drive belt installation. Drive belt must be installed between idler pulleys as shown.



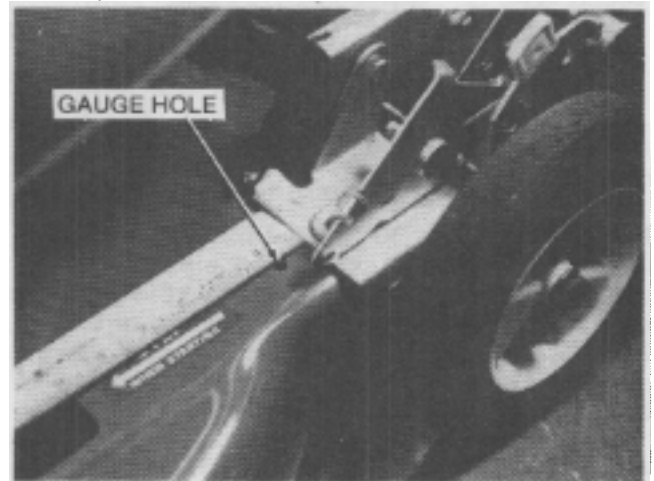
2. Drive belt should be checked to insure that proper tension exists in order to prevent premature belt failure. Lift floating idler from the upper strand of "V" belt. Belt will then become loose. Set floating idler onto "V" belt and check clearance between the two strands of the "V" belt. The distance between the two strands should not be less than 1/2" as shown.




3. To adjust belt tension; loosen four handle bracket mounting screws (two on each bracket) and two screws (one on each side) located on the sides of rear height adjuster bracket as shown. Slide entire self-propelling mechanism in direction necessary to obtain the proper "V" belt tension.



4. Care should be taken to insure that both sides of the self-propelling mechanism are positioned equally on the mower housing. This can be accomplished by measuring the distance from the front edge on the height adjuster brackets to the 1/4" diameter gage holes located directly in front of these brackets as shown. This distance must be the same for both sides. Before tightening screws make sure the distance between the strands of the "V" belt is not less than 1/2". Tighten the four handle bracket screws and the two side screws securely. Reassemble belt guard to self-propel mechanism using screws previously removed.



 SAFETY WARNING

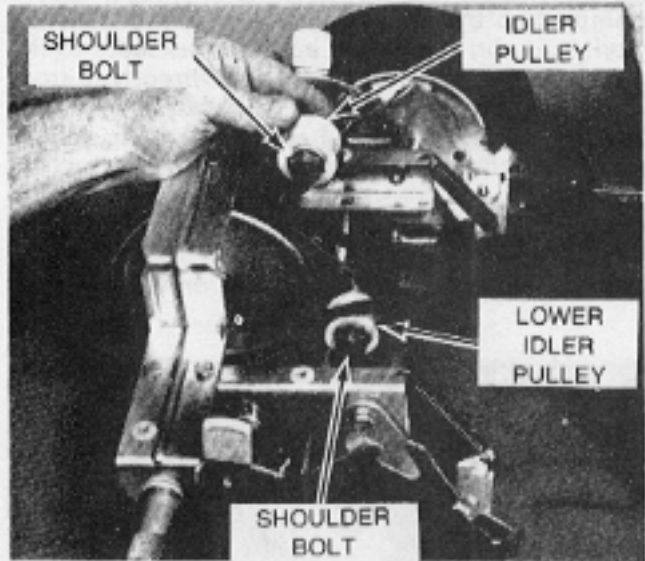
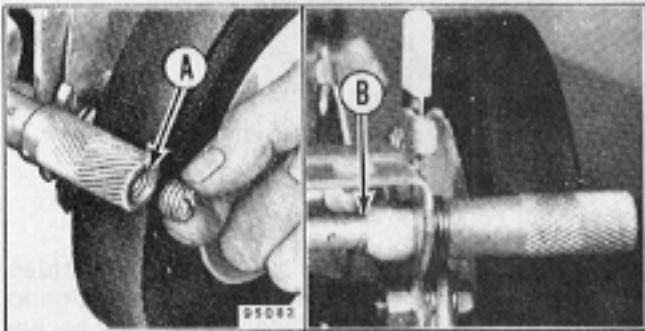
SAFETY WARNING: Do not operate mower with belt guard removed.

SCAMP MODELS SELF-PROPELLED DRIVE BELT REPLACEMENT AND SERVICING

LUBRICATION

50 HOURS

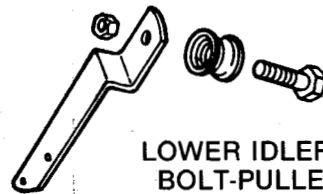
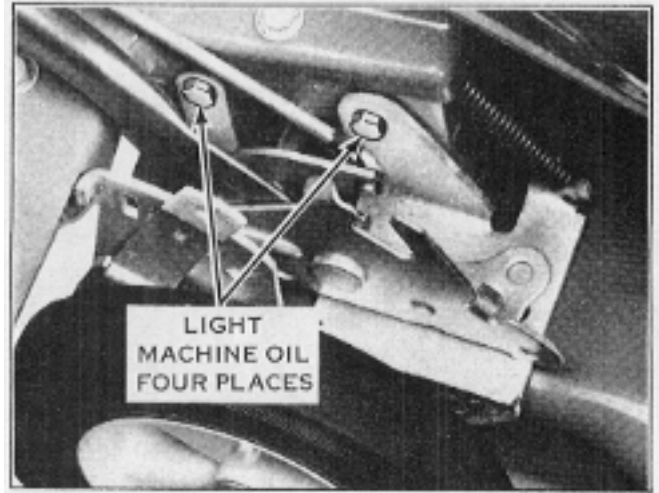
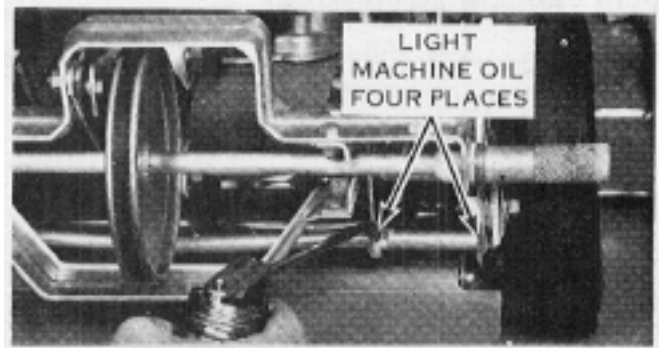
1. DRIVE ROLLER BEARINGS—Disassemble rotating shaft cover from self-propel mechanism by removing four screws. Unscrew plug from end of each drive roller (Point "A"). Fill exposed cavity with LAWN-BOY "A" GREASE, PART NO. 610726 OR EQUIVALENT. Replace plug and tighten until snug. Repeat procedure until lubricant appears on cross-shaft at Point "B". Reassemble rotating shaft cover to self-propel assembly.



FLOATING IDLER PULLEY—Do not immerse the idler pulley in solvent. Use a rag containing solvent, clean the hole in the idler pulley and the shoulder bolt thoroughly. Using a small amount of LAWN-BOY "A" GREASE or EQUIVALENT, relubricate the shoulder bolt and remount idler pulley assembly in the same order it was originally.

AS REQUIRED

1. CLUTCH LINKAGE—Apply several drops of light machine oil on clutch mechanism at all pivoting points.



**LOWER IDLER ASSEMBLY
BOLT-PULLEY-ARM-NUT
PART #682564**

LOWER IDLER PULLEY—Permanently lubricated. No lubrication required.

SCAMP BRAKE SERVICING AND REPAIR

To service and repair the flywheel brake system, remove the shroud and tank assembly. (5 phillips screws).

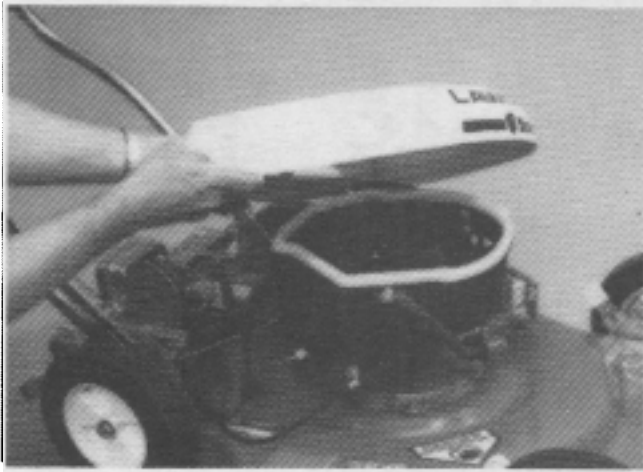


Figure 1

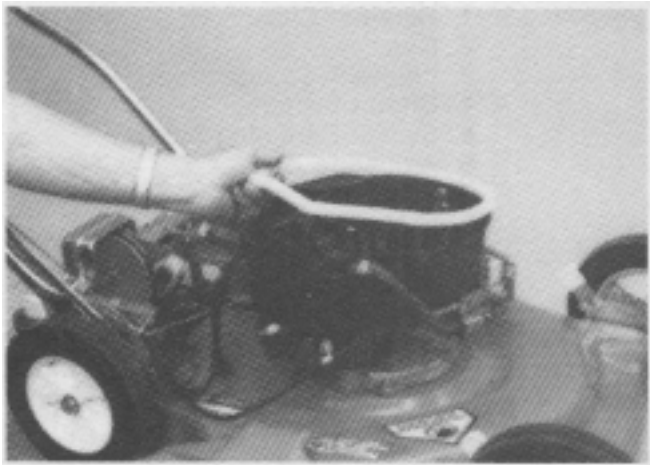


Figure 2

Lift spacer from top of shroud base.

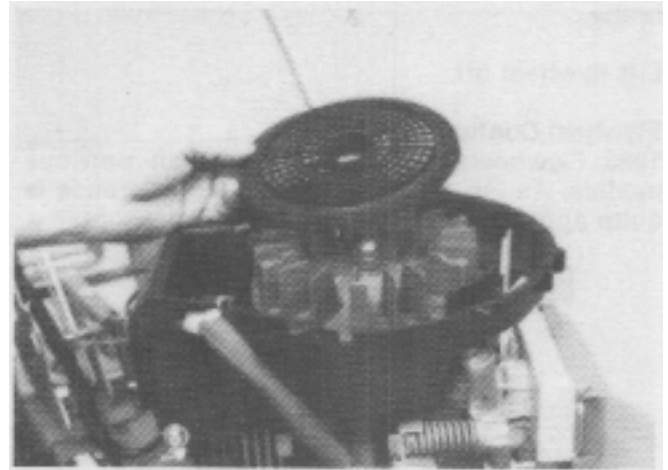


Figure 3

Remove flywheel screen. (3 screws).

Flywheel Removal/Installation

It will be necessary to move the Flywheel Brake Arm away from the flywheel (pull back on control bail) to allow removal or installation of the flywheel.



Figure 4

Remove flywheel nut.

To break flywheel loose use a soft hammer and rap sharply down on one of the thick fins while lifting with other hand on opposite side of flywheel.

NOTE: Do not break any fins on flywheel. It will be unbalanced and vibrate.


SCAMP BRAKE SERVICING AND REPAIR

Pull bail back against the handle to release the brake.

Lift flywheel off.

Flywheel Configurations

1983 Flywheels are much taller than previous models. As Fig. 5 shows, the visual difference is quite apparent.

 **NOTE:** These new flywheels are not interchangeable with those of previous Lawn-Boy models.

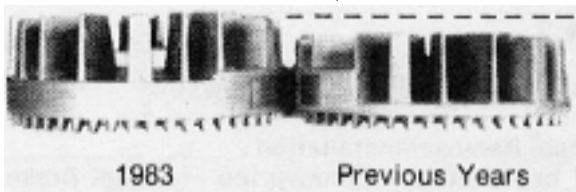



Figure 5 Flywheel Height Comparison

It is important to note that two different materials are used on compliance mower flywheels. Flywheels for all Flywheel Brake models are made of aluminum, but due to the need for additional rotating weight (inertia), the Blade Brake Clutch (BBC) flywheels are made of zinc. The zinc flywheels are plainly marked as such to prevent confusion. Be certain you install only the correct type flywheel for the specific mower.

 **SAFETY WARNING:** Flywheel Brake (Zone and PRS) and Blade Brake Clutch (BBC) flywheels are not interchangeable. The correct type flywheel (aluminum or zinc) is critical to proper CPSC compliance.

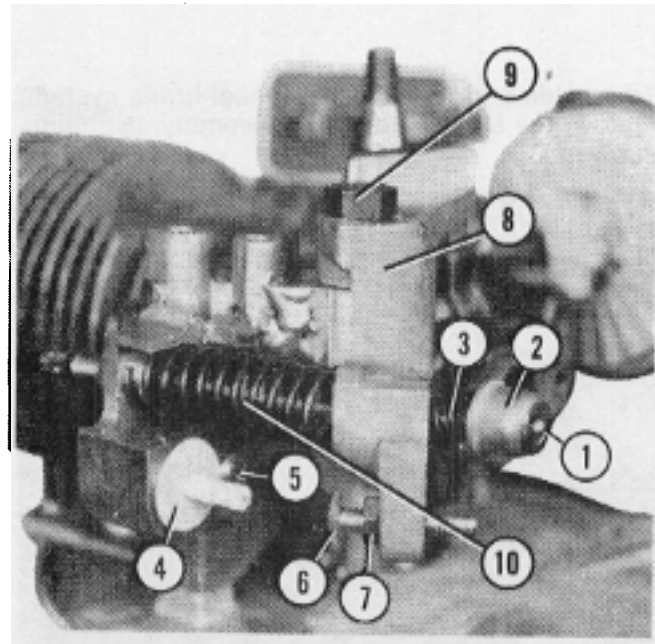
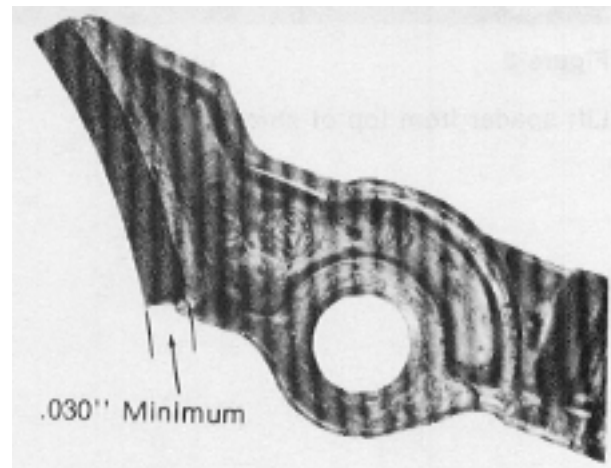


Figure 6 Flywheel Brake System Components

1. Retainer Clip
2. Cup
3. "Pigtail" Spring
4. Circuit Switch
5. Switch Retaining Screw
6. Adjusting Bolt
7. Locknut
8. Brake Arm
9. Brake Arm Bolt
10. Cable Retainer Spring

Brake Pad Wear

Flywheel Brake Arm (with bonded brake pad) must be replaced if pad wears below .030" at any spot.



.030" Minimum

Figure 7 Flywheel Brake Pad Wear

SCAMP BRAKE SERVICING AND REPAIR

To replace the brake arm, it will be necessary to disconnect the brake cable from the engine.

Set the flywheel back on the engine.



Figure 8

STEP #1

With flywheel in place and the bail control released (out of operating position), compress the "Pigtail" Spring by hand, then remove the Retainer Clip, Cup and Spring.

STEP #2

Remove the cable from the housing.

Remove the flywheel.

STEP #3

Remove circuit switch adjusting bolt and lock nut. (See Fig. 6).

STEP #4

Remove brake arm bolt and brake arm. (See Fig. 6).

STEP #5

Re-assemble circuit switch adjusting bolt and lock nut into the new brake arm. Turn it into bracket until head is against the bracket. (See Fig. 6).

STEP #6

Thoroughly clean the threads of the bolt and apply Lawn-Boy Screw Lock, part number 384848 to the threads.

STEP #7

Assemble the brake arm and bolt onto bracket.

Tighten to 5-7 ft. lbs. (63-75 in. lbs.)

STEP #8

Reassemble the cable retainer spring into the bracket assembly.

STEP #9

It is necessary to check the brake cable adjustment before reinstalling it in the bracket.

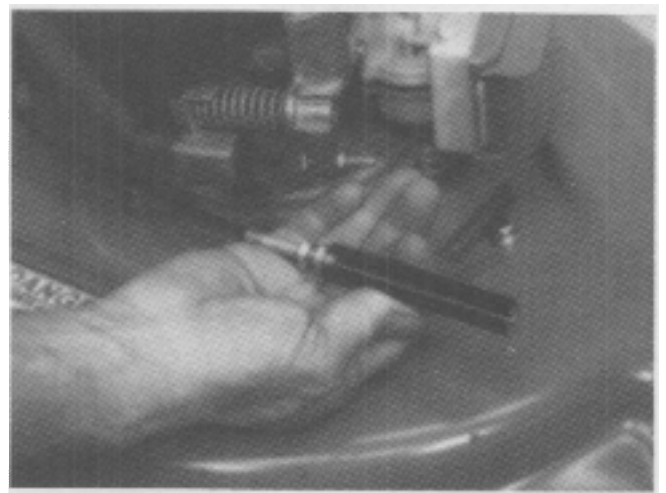


Figure 9

STEP #10

To adjust the brake cable, loosen the jam nut and back it off. Place the brake cable adjusting gauge, part number 611703 over the end of the cable. Assemble the retainer clip (see Fig. 9) on the cable against the gauge.

Turn adjusting nut up against the gauge to apply approximately 5 lbs. tension.

SCAMP BRAKE SERVICING AND REPAIR

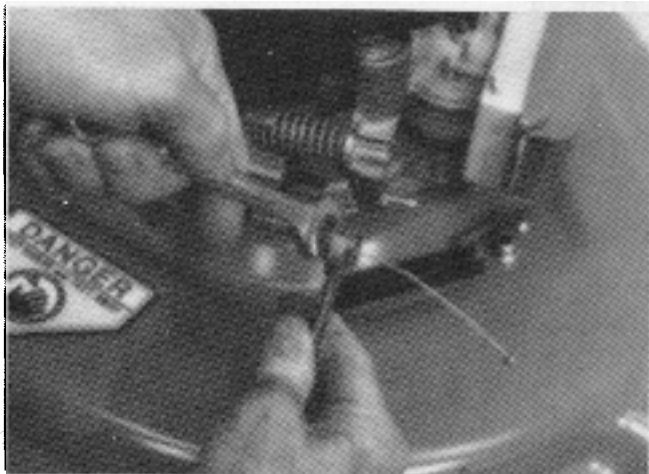



Figure 10

STEP #11

Turn jam nut against the adjusting nut and tighten. Do not permit adjusting nut to turn.

 **NOTE:** Use 2 1/2" open end wrenches. (See Fig. 10).

STEP #12

Set flywheel back on the crankshaft.

STEP #13

Reassemble the Cable into the Brake Bracket, then reassemble the Spring, Cup and Retainer Clip.

After the brake cable is reassembled, it is necessary to check the circuit switch adjustment.



Figure 11

STEP #1

Place the switch adjusting gauge on the plunger.

STEP #2

Place a mark on the plunger at end of gauge. (See Fig. 11).

STEP #3

Remove the gauge.

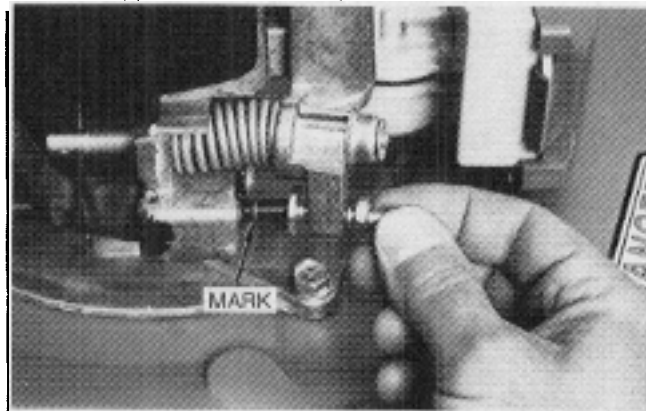


Figure 12

STEP #4


Pull the bail back against the handle and hold it.


STEP #5

Turn adjusting bolt in until mark on plunger is flush with face of switch body.

STEP #6

Tighten lock nut.

 **NOTE:** Be sure adjusting bolt does not turn.

 **NOTE:** Recheck this switch adjustment to prevent the plunger from going in too far and damaging the switch internally. If it does not move in far enough, the engine will not start.



SAFETY WARNING: Proper adjustment of this switch is necessary to insure that blade motion stops within the required time.



NOTE: If proper switch adjustment cannot be made, check brake cable adjustment (See Fig. 9) as this will affect correct switch operation.

SCAMP IGNITION CIRCUIT SWITCH TESTING AND REPLACEMENT

Trouble shooting the circuit switch.

STEP #1

Disconnect both leads from the C.D. pack.

STEP #2

Connect a continuity meter or light to these leads.

STEP #3

Push the plunger in. The meter should read "0" or the light should go out.

STEP #4

Release the plunger. The meter should indicate a completed circuit or the light will go on.

If the switch is defective, it requires replacement.

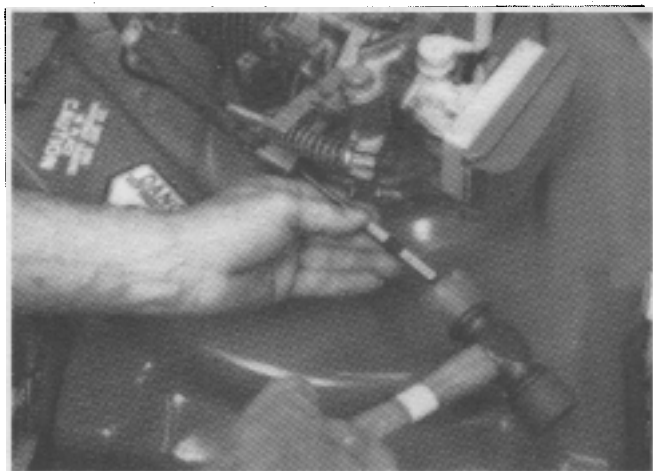


Figure 13

STEP #5

To replace the switch, it will be necessary to remove the flywheel for access to the switch. This permits the brake arm to swing out of the way.

STEP #6

Remove the switch retainer screw. (See Fig. 6).

STEP #7

Using a drift punch and hammer, drive the switch body out of the bracket. (See Fig. 13). This will break the flange on the switch.

STEP #8

Assemble the new switch and lead assembly into the bracket.

STEP #9

Install the switch retainer screw. Reconnect the two leads onto the C.D. pack.

STEP #10

Adjust the switch plunger travel with the gauge, part number 611702. Follow steps 1 thru 6 on page 14.



SAFETY WARNING: Proper adjustment of this switch is necessary to insure that blade motion stops within the required time.

SCAMP BLADE AND BLADE HOUSING

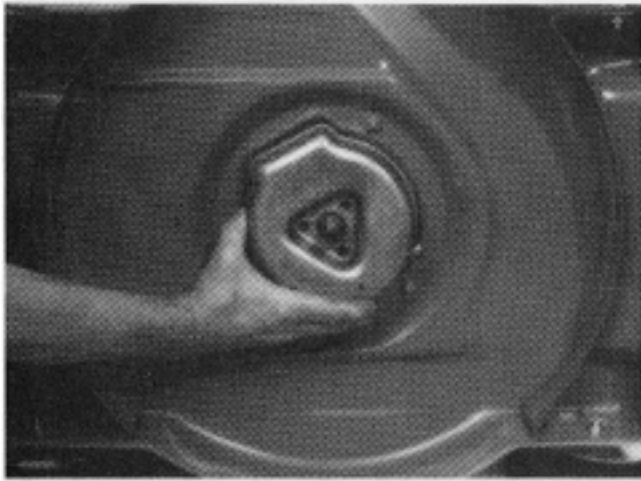


Figure 1

Assemble muffler onto crankshaft.

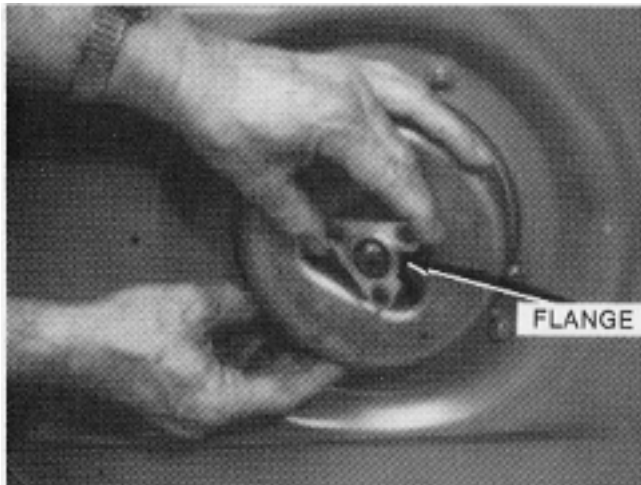


Figure 2

Always assemble the crankshaft support with the flange down towards the blade.

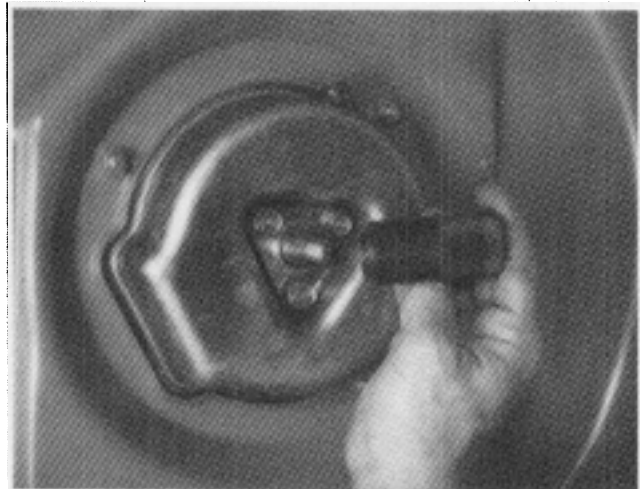


Figure 3

A special tool, crankshaft support gauge, part number 609968 is required to position the support correctly so it doesn't contact the crankshaft.

Slide the gauge onto crankshaft with the thin wall of gauge inside of support.



Figure 4

Clean threads on muffler bolts thoroughly and apply Ultra-Lock, part number 388517. Install bolts and tighten to 150-190 inch pounds.

SCAMP BLADE AND BLADE HOUSING

The Blade and Hardware shown below are used on all Lawn-Boy Scamp models.

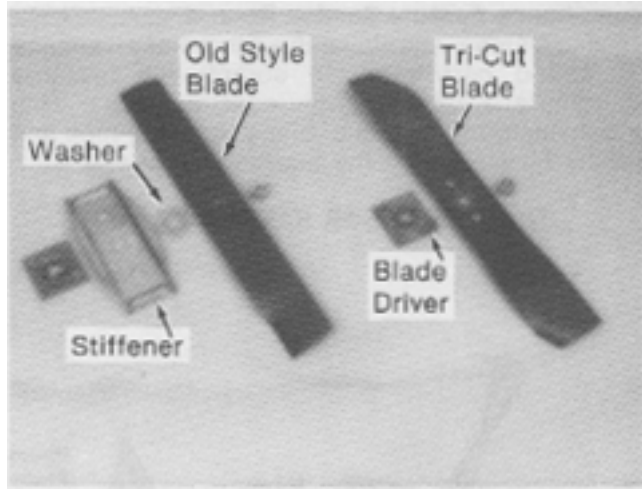



Figure 5

Torque blade nut to 45-50 ft. lbs.

 **NOTE:** This Blade and Hardware will fit all previous Lawn-Boy mowers, using only the Blade Driver and Blade Nut (as shown in Fig. 5). Do not use the old blade stiffener or washer with these new blades.

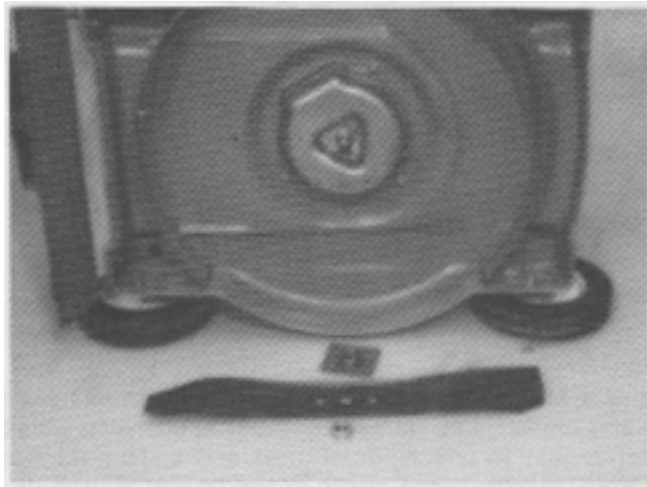



Figure 6

Before assembling collar on crankshaft, check to be sure it did not get bent or distorted when being removed. If so, replace it. Do not use, because, it will cause vibration.

If the blade nut is to be re-used, clean the threads thoroughly. Also clean threads on crankshaft.

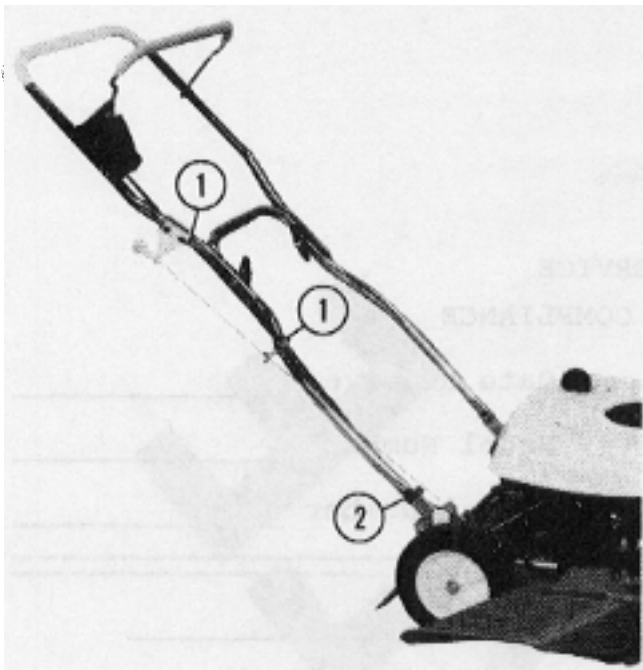
Apply OMC Ultra-Lock, part number 388517 on the threads. Torque blade nut to 45-50 foot pounds.

 **NOTE:** After repairs are completed always test the mower for starting, running and blade stoppage time.

The required blade stopping time is 3 seconds or less.

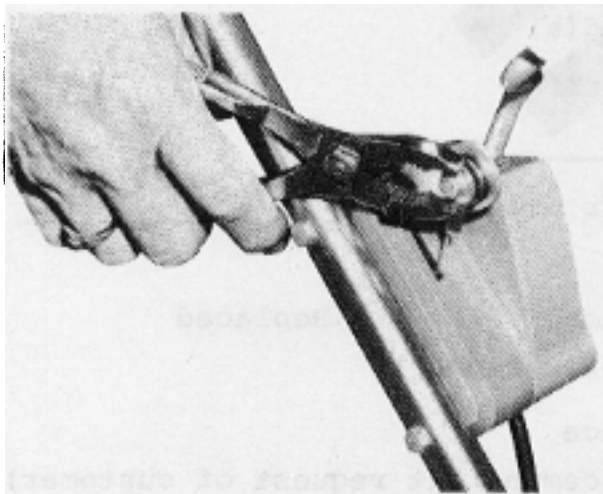
It is recommended to make 3 tests for blade stopping time and record each for future reference.

If it doesn't stop in the required length of time, determine what the problem is and correct it.

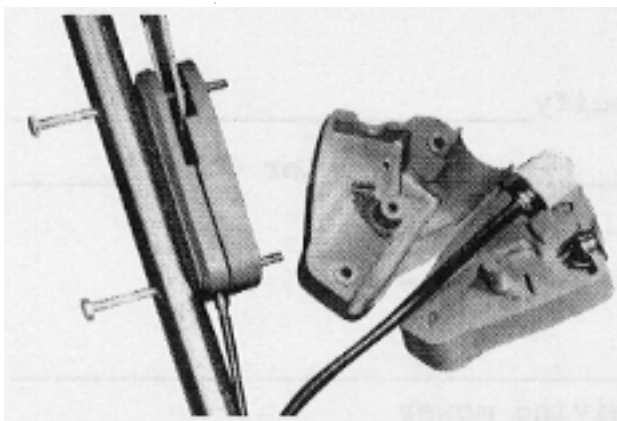


Tie Wrap Locations

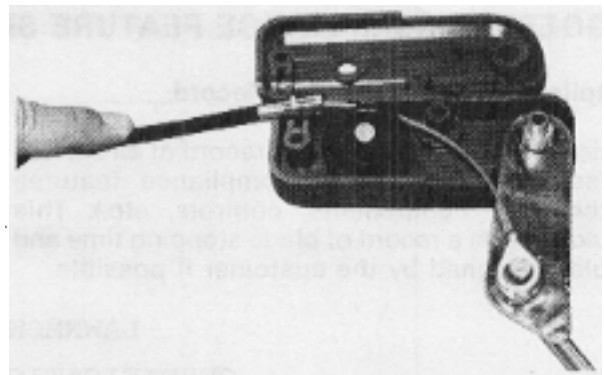
- 1. Single Tie
- 2. Double Tie



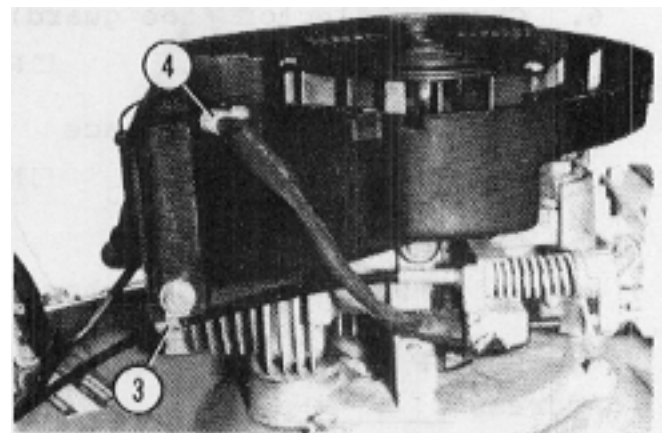
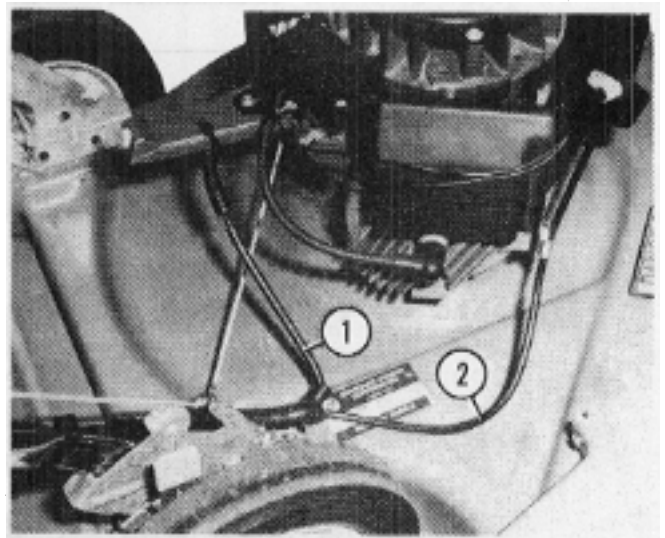
Retainer Cup Removal



Primer Assembly



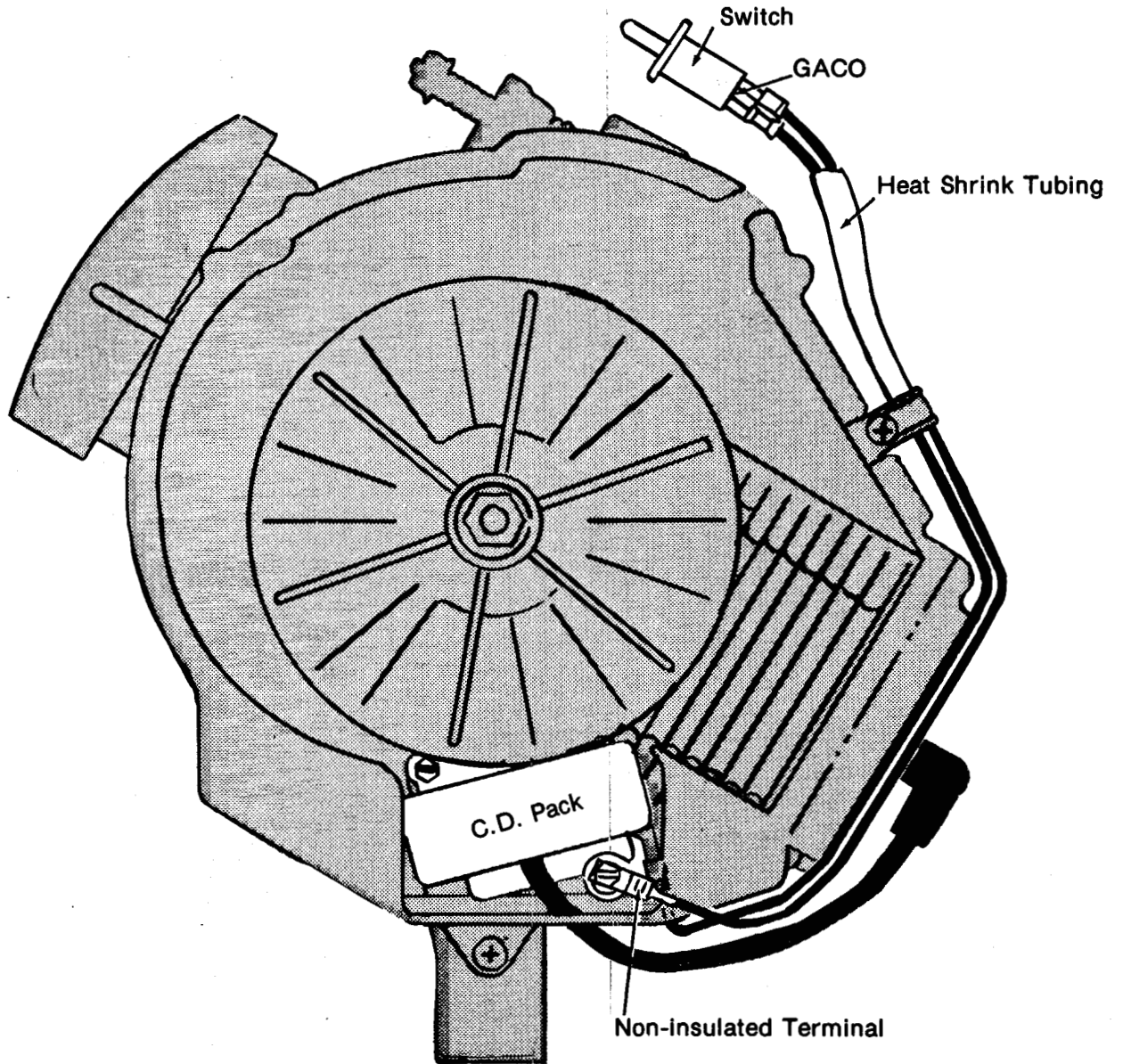
Brake Cable Routing (console)



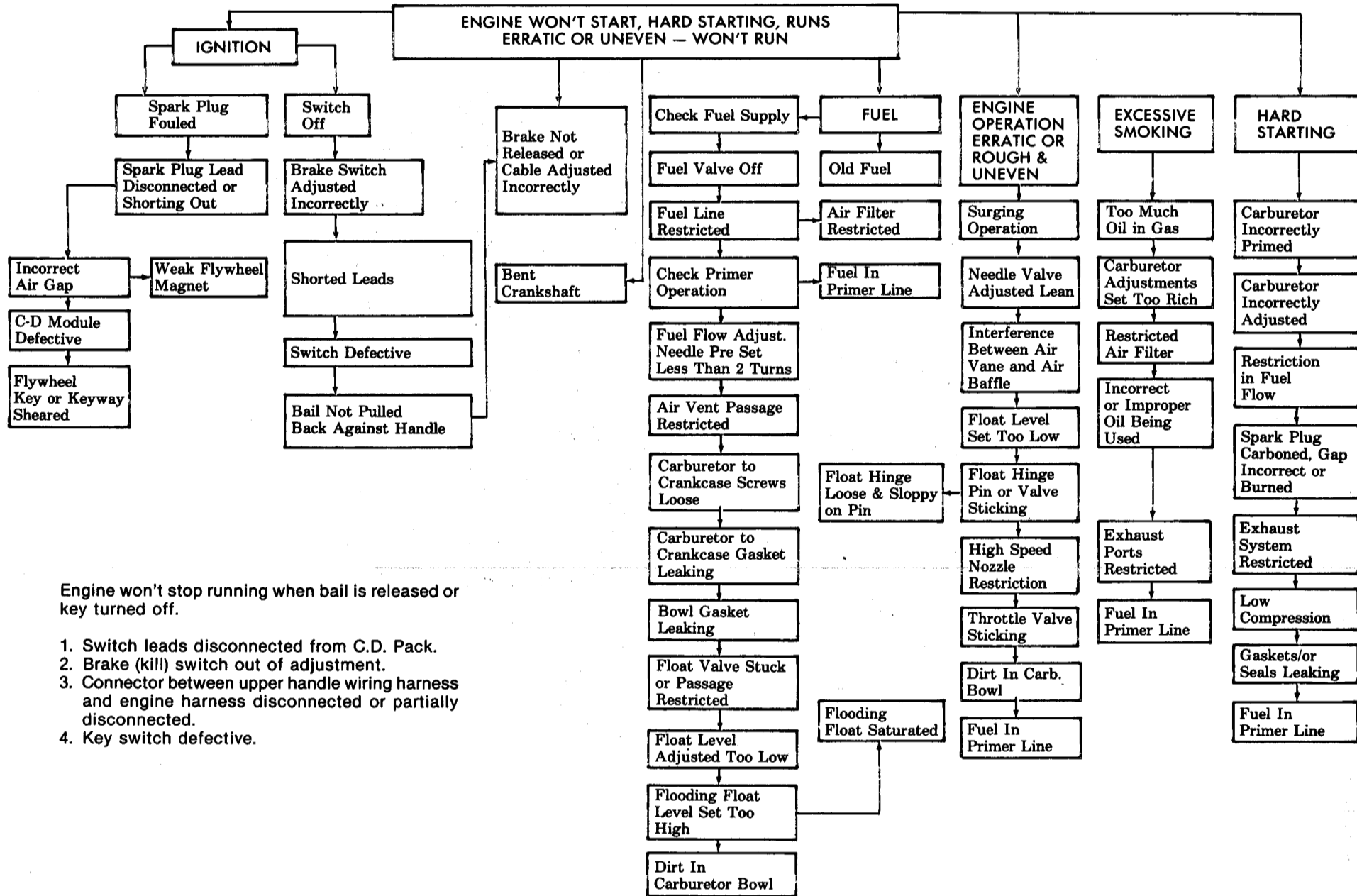
Hose and Cable Routing

- 1. Primer Hose
- 2. Brake Cable
- 3. Brake Cable Retainer Clamp
- 4. Switch Cable Clamp

Zone (manual) Start



LAWN-BOY COMPLIANT MOWER TROUBLE SHOOTING CHECK CHART



Engine Won't Start or Hard Starting**SCAMP****Possible Cause**

No fuel in tank.
 Fuel valve off.
 Insufficient or excessive priming.
 Spark plug lead disconnected.
 Spark plug fouled.
 Low compression in cylinder (80 PSI min.)
 Incorrect air gap between C.D. pack and flywheel.
 C.D. pack defective. (Refer to "CD Pack Testing," Pg. 15)
 Primer hose disconnected from carburetor or connector.
 Primer hose restricted. (Refer to "Primer System Draining," Pg. 63)
 Air filter restricted.
 Carburetor needle valve incorrectly adjusted.
 Throttle valve stuck closed.
 Carburetor-to-crankcase screws not tight.
 Carburetor-to-crankcase gasket leaking air.
 Float chamber screws loose.
 Float chamber gasket leaking air.
 Restriction in high speed nozzle.
 High speed nozzle loose.
 Float valve stuck closed.
 Restriction in fuel passages (tank, valve, hose, float valve seat).
 Float level set too low.
 Reed Valves stuck closed or bent open more than .015".
 Air leak between crankcase halves.
 Intake plug leaking or missing.
 Main bearing seals leaking.
 Exhaust system restricted.

Zone Start Models
 Bail not pulled back against handle.
 Incorrect kill switch adjustment (See Pg. 54 Fig. 12)
 Kill switch inoperative. (See "Ignition Circuit Switch Troubleshooting," Pg. 19-17).
 Brake dragging on flywheel.

Ignition Circuit ("Kill") Switch

(Zone)

The following conditions are indications of Switch misadjustment or failure.

Engine misfires when in self-propelling mode

Adjust Switch (See Pg. 54 Fig. 17).

Engine stops if bail is not held extremely tight against handle

Adjust Switch (See Pg. 54 Fig. 17).

Engine won't start (no spark)

Adjust or replace switch

Primer System Draining

If a mower is tipped back on its handle (as shown below), fuel may run from the carburetor and settle in the lowest point of the primer line when the machine is set upright. If this occurs, remove the primer hose from the carburetor and drain the fuel. Symptoms include rich running and hot starting problems.

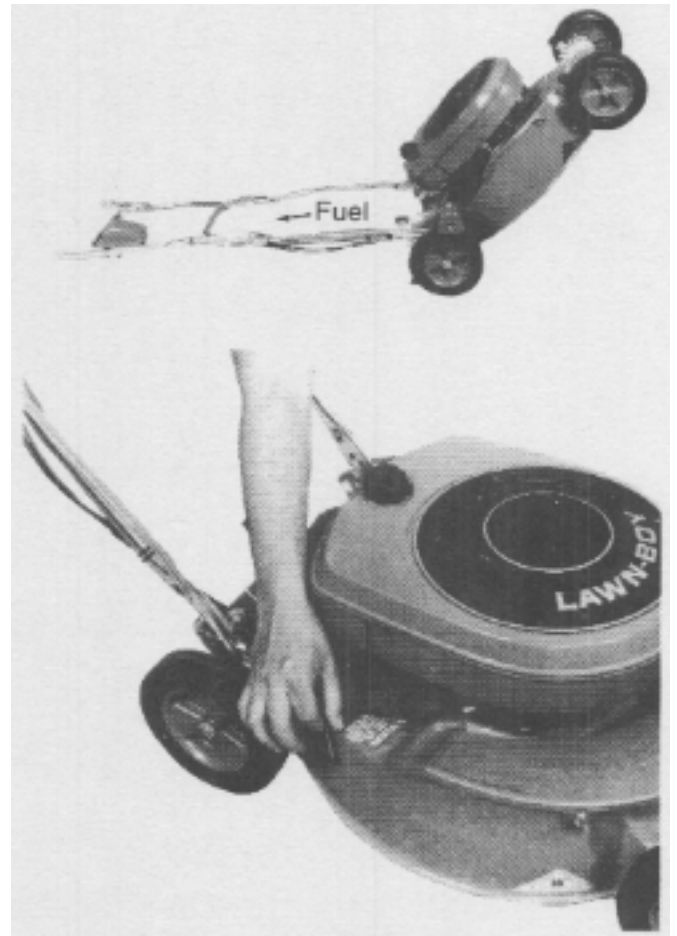




Fig. 1

The model 8125 is new. It features rear discharge with a diecast aluminum housing and is a gear driven self-propelled mower. Fig. 1.

It is a zone start model with the flywheel brake system. When the bail is released, both the engine and blade will stop within the 3-second time limit.

Another feature is an adjustable driven pulley which controls ground speed. It is located under the pulley cover.



SAFETY WARNING:

Disconnect the spark plug lead.

Remove two screws and lift cover off. Fig. 2.

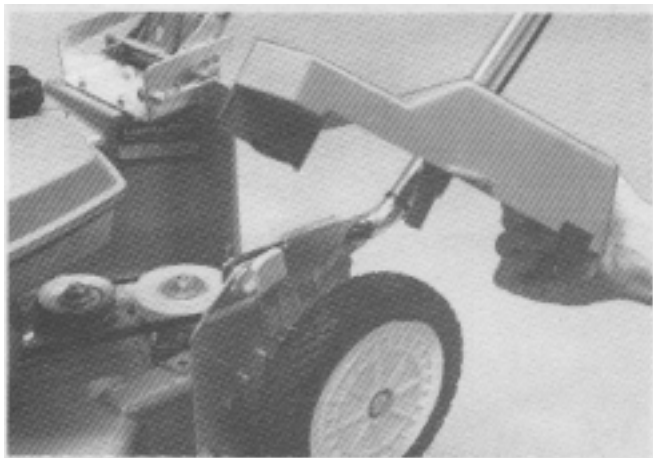


Fig. 2

With the engine operating at 3200 rpm, the ground speed can be controlled to operate at 2.4, 2.6, 2.8, 3.0 or 3.2 mph.

CHANGING GROUND SPEED.

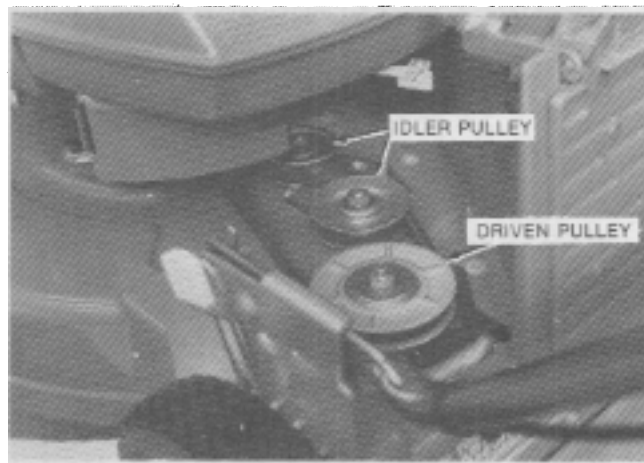


Fig. 3

Loosen the nut on the idler pulley bracket which will release the tension on the belt. Remove the nut and thick washer from the top of the driven pulley. When a spacer or spacers are not used, they are stored on top of the pulley under the nut and washer. Fig. 4.



Fig. 4

With no spacers between the pulley halves, the ground speed is 2.4 mph at 3200 rpm. Add **one spacer** between the pulley halves, the speed increases to 2.6 mph. **Two spacers** 2.8 mph. **Three spacers** 3.0 mph. **Four spacers** 3.2 mph.

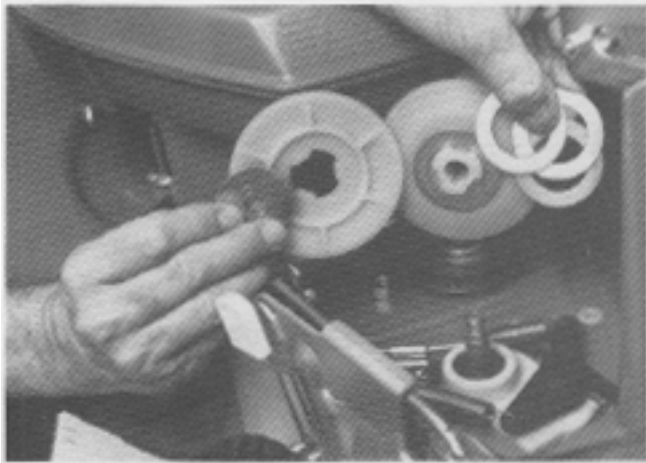


Fig. 5

The lower half of the pulley is keyed to the driven shaft in the transmission. Fig. 6.

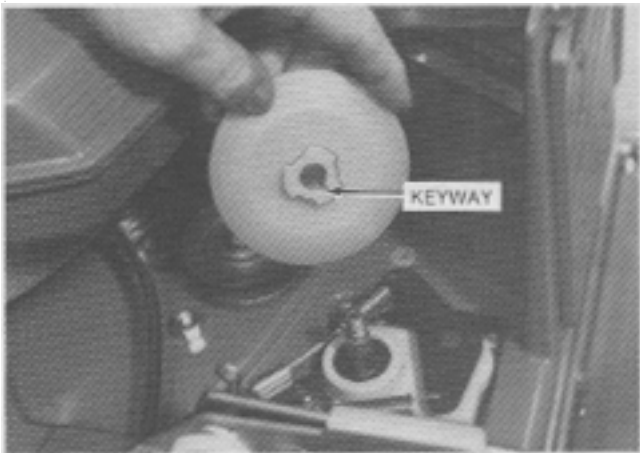


Fig. 6

After the ground speed has been selected, assemble the top half of the pulley onto the shaft. Fig. 7.

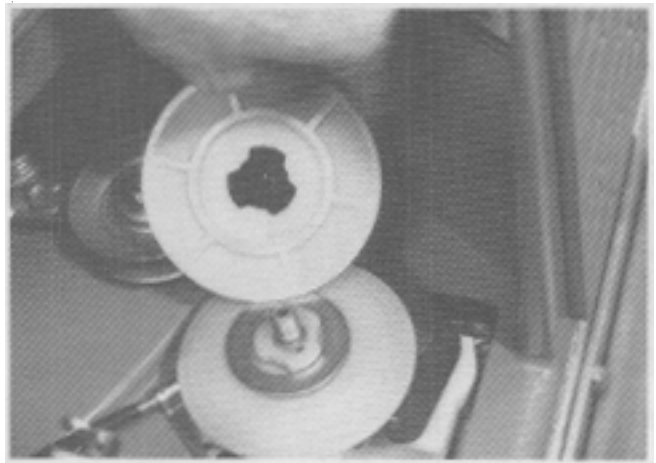


Fig. 7

Slide the pulley down making sure the two halves are assembled correctly. Fig. 8.



Fig. 8

Place the extra spacers on top of the pulley, assemble the washer and nut. Tighten the nut. Fig. 9.

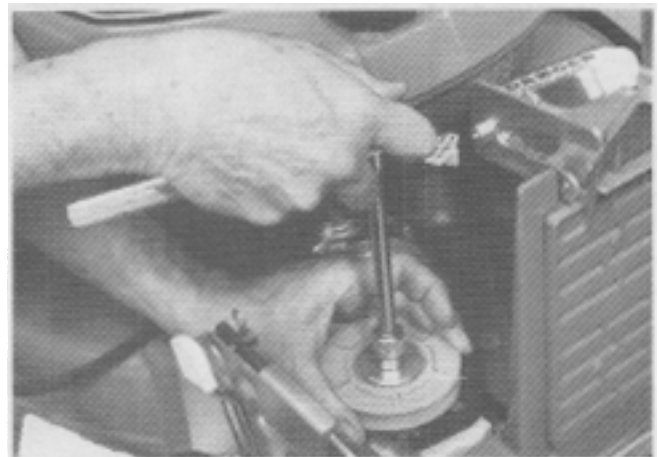


Fig. 9

Move the idler bracket to apply tension on belt and tighten idler bracket nut. Fig. 10-A. Belt should deflect approximately 3/8" with firm finger pressure. Fig. 10-B. Rotate engine several times to seat belt in grooves. Recheck belt tension and adjust as necessary.

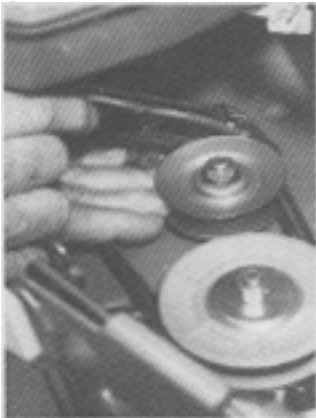


Fig. 10-A



Fig. 10-B

BELT REPLACEMENT PROCEDURES

A special belt is used to drive the transmission. It was specially designed and manufactured for use only on this mower.

 **NOTE:**

Use only the belt available from Lawn-Boy. No other belt will function properly on this mower.

 **SAFETY WARNING:**

Disconnect the spark plug lead.

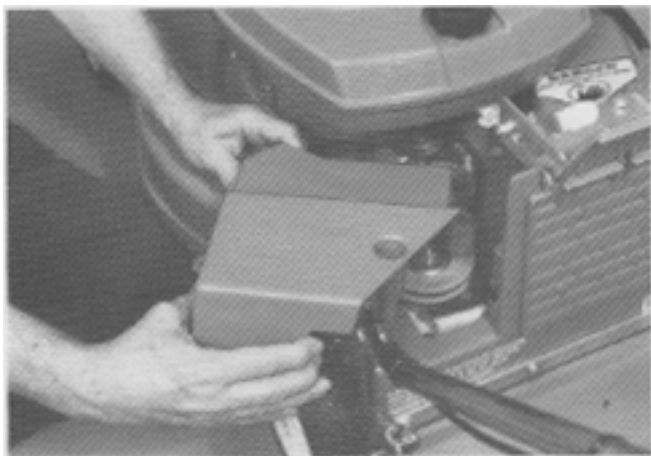


Fig. 11

To replace the belt, remove the pulley cover. Loosen the nut on the idler pulley bracket which will release tension on the belt. Fig. 12.

At this time, the belt can be rolled off the driven pulley, or you can separate the pulley to remove it.

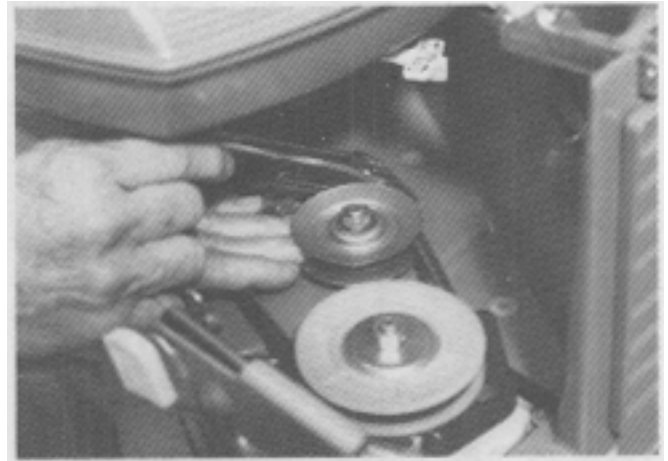


Fig. 12

It is necessary to remove the engine when replacing the belt.

Remove the blade nut, blade and collar. Remove three screws securing muffler and crankshaft support. Remove muffler. Fig. 13.

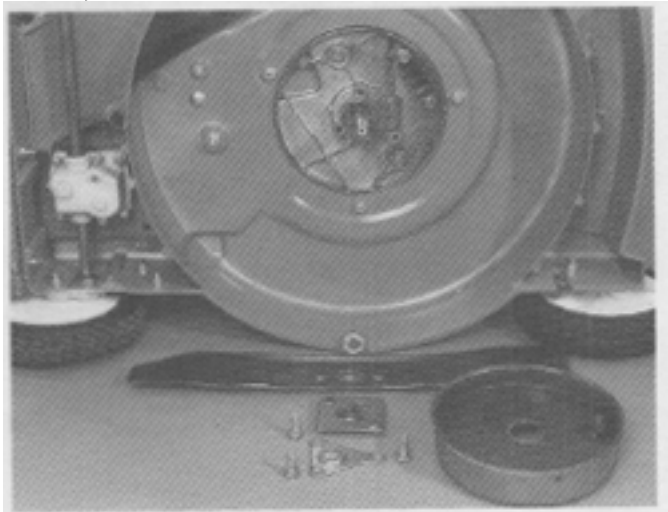


Fig. 13

Remove the four bolts that retain the engine to the muffler plate. Fig. 14.

NOTE:

Hold the engine while removing these bolts. Don't let it drop.

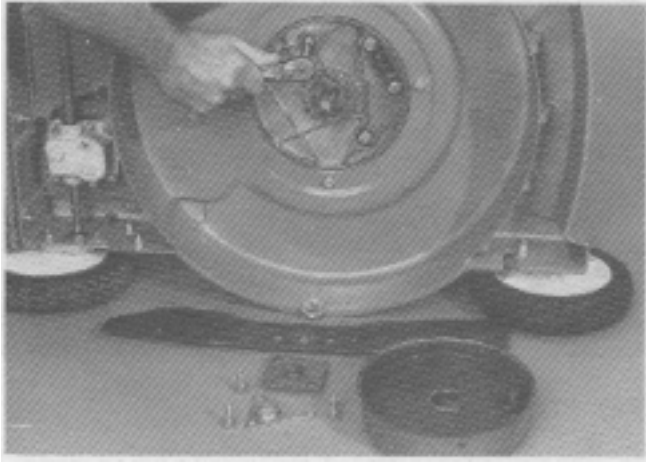


Fig. 14

Lift the engine up and remove the old belt. Also remove the old exhaust gasket and dispose of it.



Fig. 15

Install a new exhaust gasket. Fig. 16.

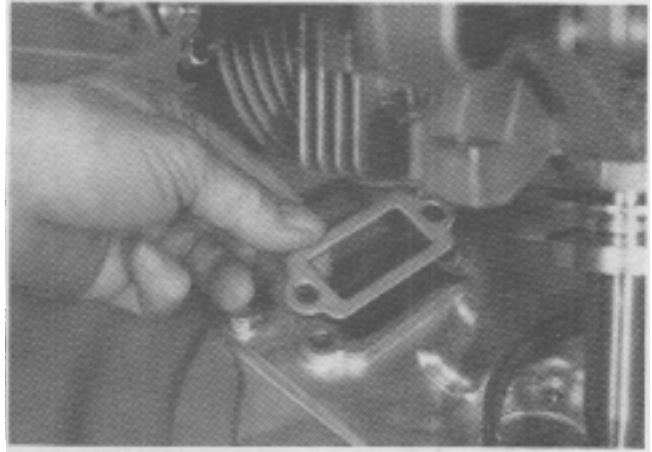


Fig. 16

Place the new belt over the drive pulley and set engine back onto the muffler plate. Fig. 17.

NOTE:

Don't disturb the new exhaust gasket when putting the engine in place.

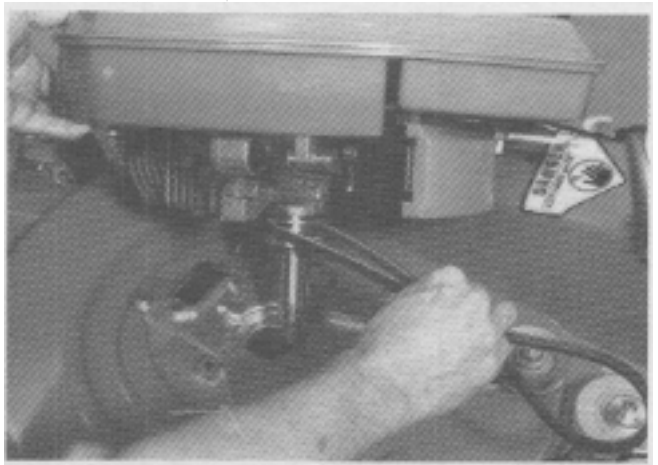


Fig. 17

Block one side of mower up. Fig. 18. Clean the threads of the engine mounting bolts with Loc Quic Primer, Part #384884. Apply OMC Ultra Lock, Part #388517 to the threads of the bolts and assemble all four into the engine mounting holes.

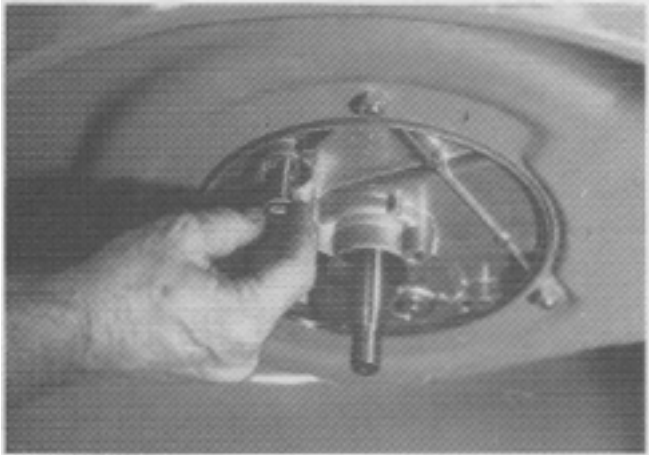


Fig. 18

Tighten all four engine mounting bolts to 150-190 in. lbs. (11-15 ft. lbs.)

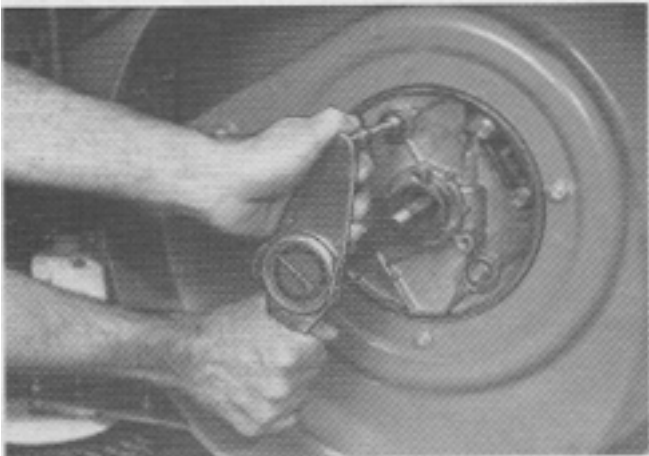


Fig. 19

Clean the threads of the three muffler screws with Loc Quic Primer, Part #385884. Apply OMC Ultra Lock, Part #388517 to the threads.

Assemble the muffler, crankshaft support (flange down) and start the three screws.

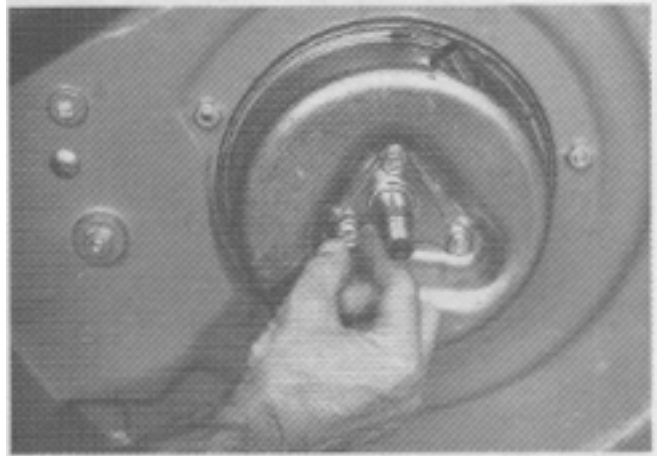


Fig. 20

Slide crankshaft support gauge, Part #609968 over the crankshaft with the thin wall of gauge going between the support and crankshaft. Fig. 21.



Fig. 21

Tighten all three screws to 142-170 in. lbs., 12-14 ft. lbs. Fig. 22.

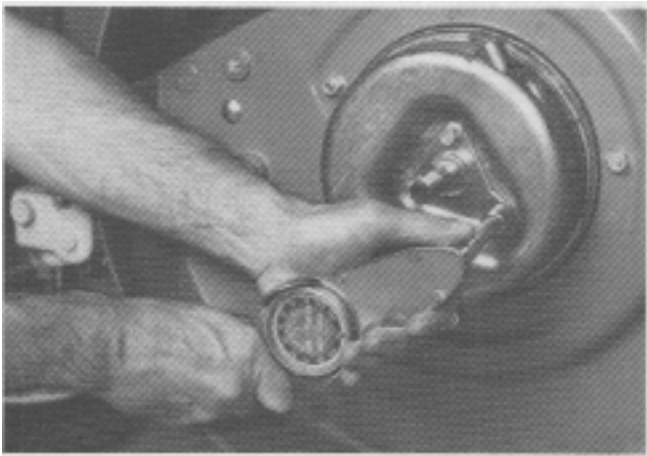


Fig. 22

Assemble the collar, blade and nut onto crankshaft. Tighten blade nut to 45-50 ft. lbs.

NOTE:

If the blade nut has been on and off four times it should be replaced. If not replaced, apply OMC Ultra Lock to threads of crankshaft before installing nut.

SAFETY WARNING:

Check the torque of all fasteners under the deck for tightness. A loose fastener can become a thrown object.

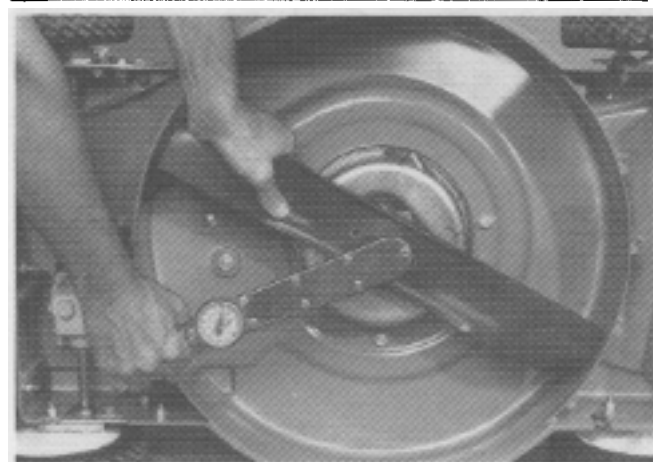


Fig. 23

Assemble the belt on the drive pulley of the crankshaft. With the idler pulley bracket loose, the belt should assemble over the driven pulley very easily. Fig. 24.



Fig. 24

Move the idler pulleys to apply tension on belt. Correct tension will be approximately 3/8" deflection with firm finger pressure. Fig. 25. Rotate engine several times to seat belt in grooves. Recheck belt tension and adjust as necessary.

After completing the belt replacement, start and run the mower to check operation of the drive system.

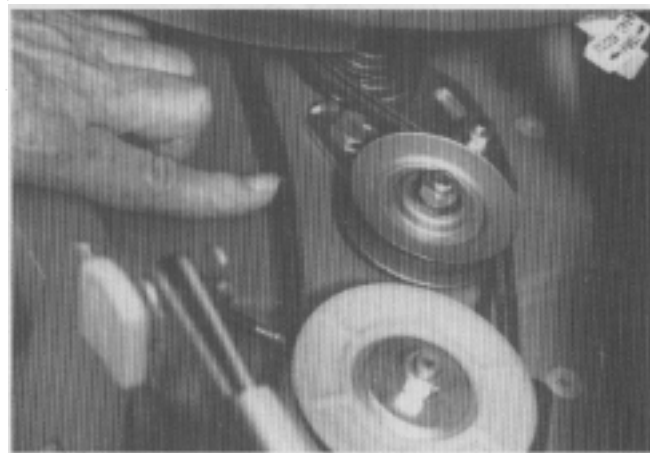


Fig. 25

If the operation is o.k., reassemble the pulley cover.

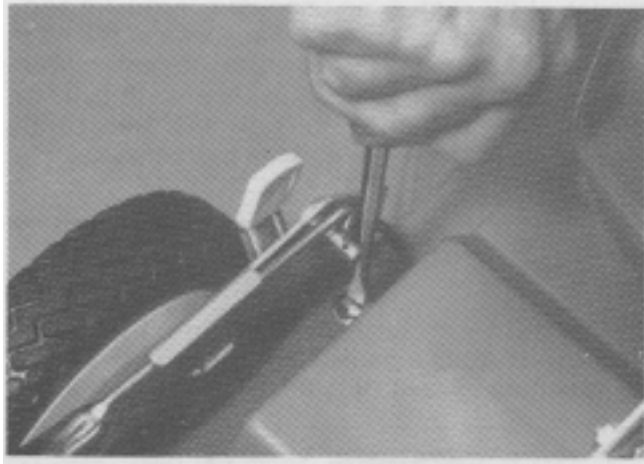


Fig. 26

MAINTENANCE AND LUBRICATION REQUIREMENTS.

Only Lawn-Boy "A" grease is approved for lubrication requirements of this gear drive model mower.



Fig. 27

A zerk grease fitting is located on the front of each wheel bracket. Lubricate once every 50 hours of operation. This provides lubrication for the axle shaft and bearing in the wheel bracket.



Fig. 28

Lubricant inside the wheel is applied at the factory. It requires no further lubrication unless the wheel was replaced or removed and washed out.

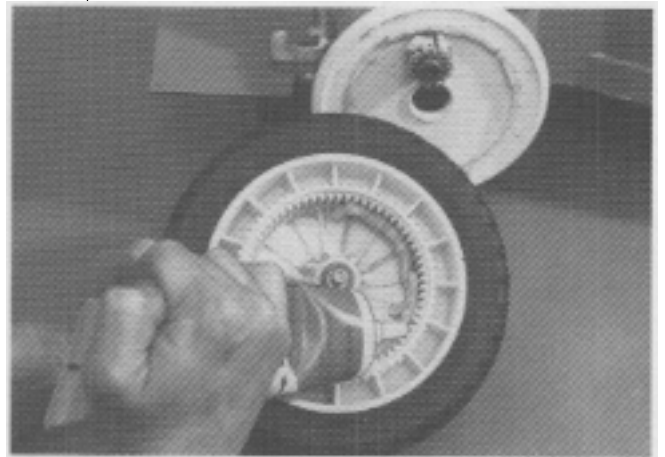


Fig. 29

To prevent dirt from entering inside of the wheel, apply Lawn-Boy "A" grease in the groove of the wheel cover. Fig. 30.

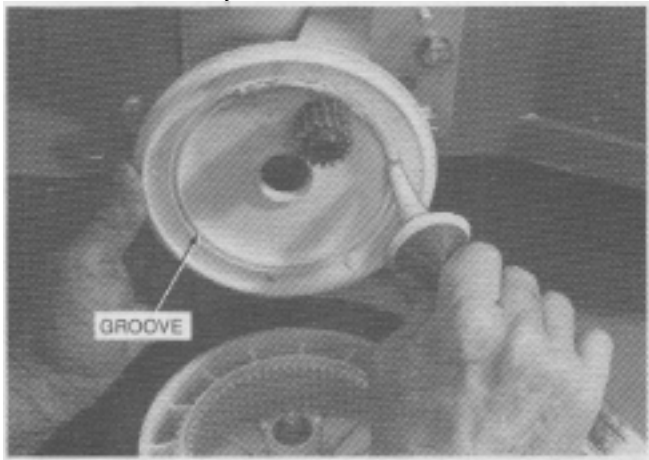
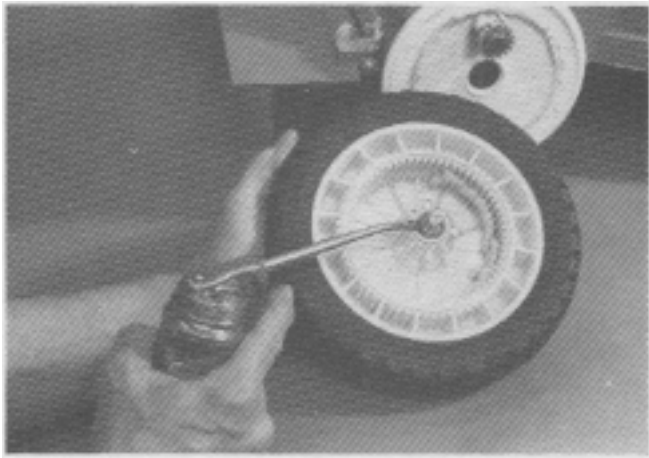


Fig. 30

Every 50 hours of operation the rear wheel bolts should be lubricated. Remove and clean the wheel bolt, liberally oil the bearing and each felt washer and reassemble. Fig. 31.



The transmission assembly is filled with "A" grease at the factory and should not require additional lubrication. However, if seepage of the lubricant is noted coming from around the seals or from the transmission housing gasket area (Fig. 32-A), grease can be added through the zerk fitting located on the lower side of the transmission. Fig. 32-B.

NOTE:

Do not put an excessive amount in transmission because there is a possibility of a pressure build-up resulting in seal failures.

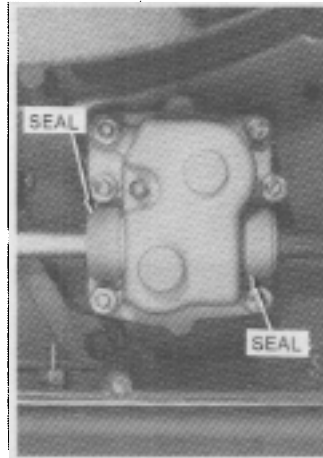


Fig. 32-A



Fig. 32-B

Should it be necessary to add lubricant to transmission, watch for an **upward** movement of the clutch arm when putting grease in. When movement is noted, stop the flow of lubricant immediately. Fig. 33.



Fig. 33

FRONT WHEEL MAINTENANCE

It is not necessary to lubricate the front wheel bolts.

For engine, exhaust and blade servicing refer to their respective sections in the Manual.

TRANSMISSION SERVICING AND REPAIR



SAFETY WARNING:

Disconnect the spark plug lead.

Remove the hairpin retainers and detach the handle from the brackets. Lay the handle down over front of mower. Fig. 34.

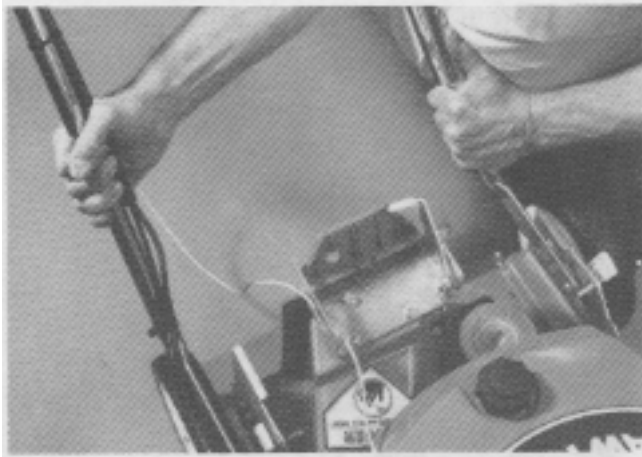


Fig. 34

Remove two screws and lift cover off. Fig. 35.

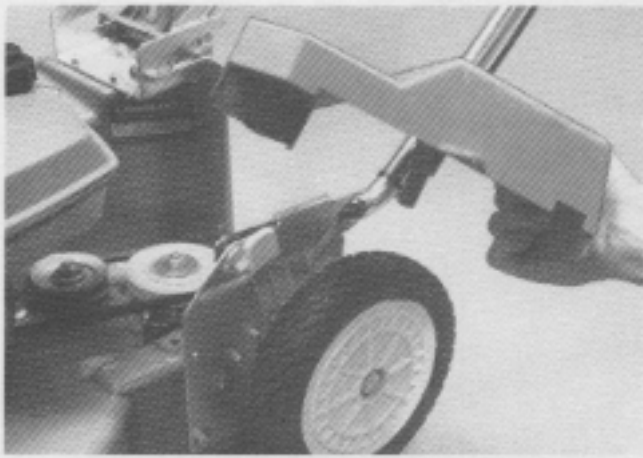


Fig. 35

Remove the driven pulley assembly from the transmission. Fig. 36.



Fig. 36

Remove the 7/16" nut from long transmission bolt that retains the clutch cable bracket and spring assembly to transmission. Lift the bracket, springs and arm assembly off transmission. Lay to one side.

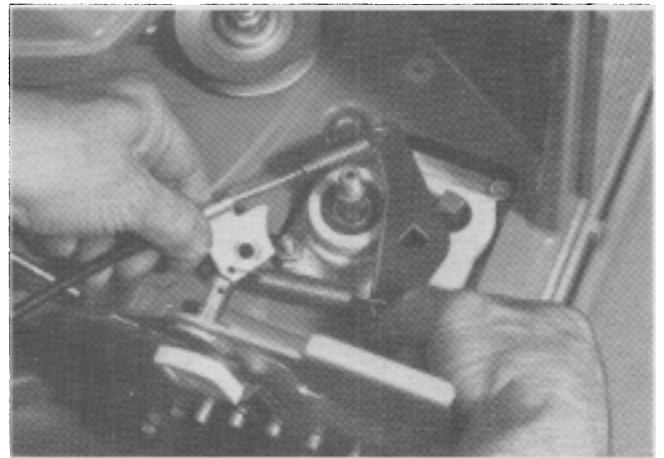


Fig. 37

An "O" ring is preassembled on the hub of the clutch arm before final assembly. When removing the arm from the transmission, the "O" ring slides off into the hole and around the square shaft of the shift fork. It will have to be removed from the hole. Fig. 38.

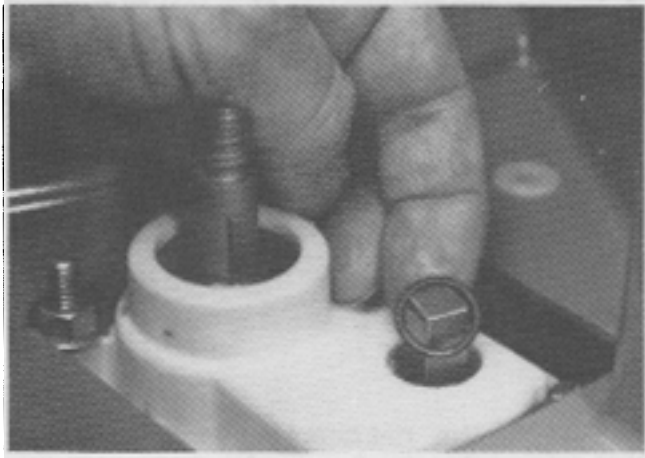


Fig. 38

To free the transmission from the housing, remove the shoulder bolt and nut. Fig. 39.

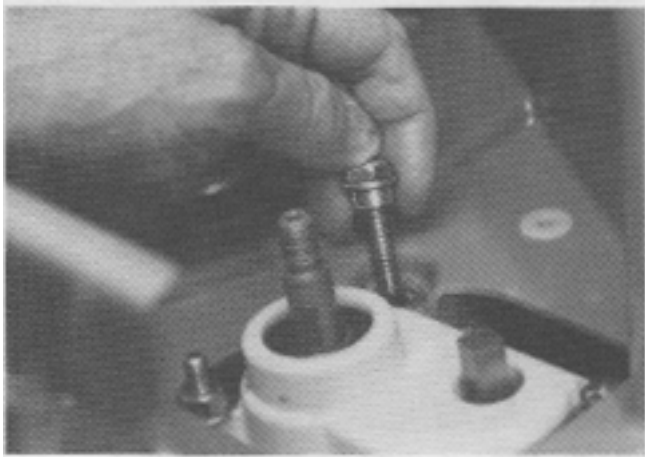


Fig. 39

Remove the right rear wheel bolt with a 3/4" socket.

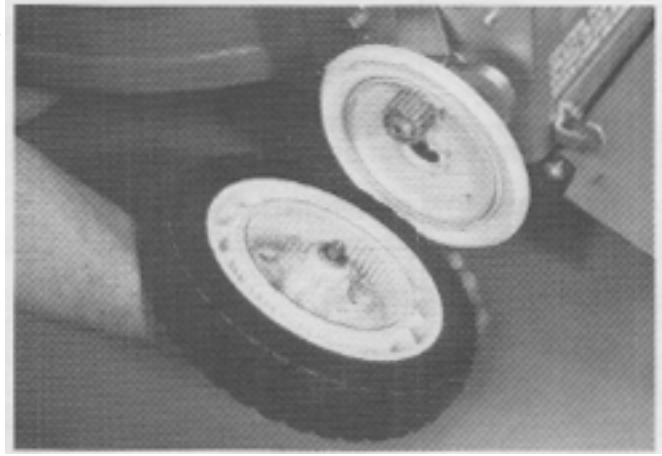


Fig. 40

Using a pair of expansion pliers, remove the retaining ring from end of shaft. Fig. 41.

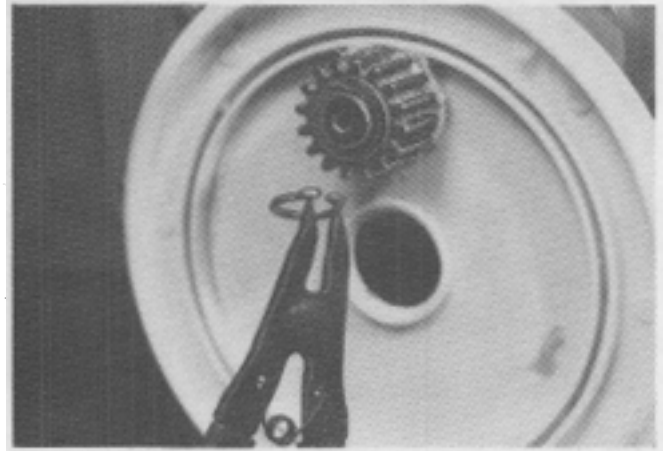


Fig. 41

The pinion gear is driven with a spring loaded key located in the shaft. Before removing the gear, turn it in both directions. It turns forward freely with a clicking or ratcheting noise. This noise is created by the key dropping over the driving shoulder of the gear. Turn backward and the shoulder of the gear moves up against the key which provides the self-propelling. This will be found on both rear wheels.

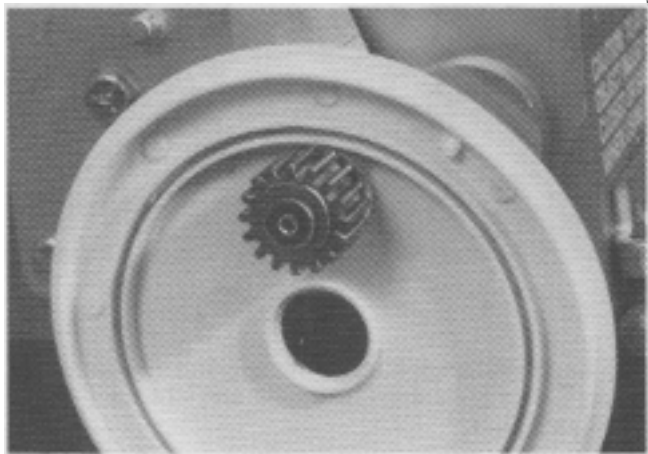


Fig. 42

When removing the gear from the shaft, be very careful because the key, being spring loaded, can pop out and be lost. The spring also can become lost. Fig. 43.

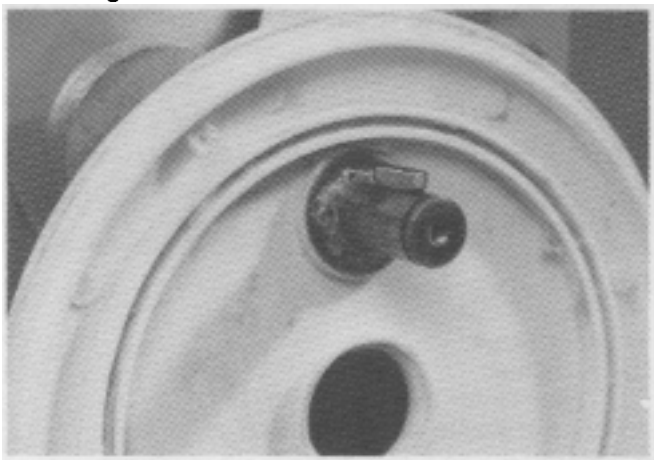


Fig. 43

Behind the pinion gear is another retaining ring. Remove it and slide the wheel cover off. Remove the left wheel, pinion gear and wheel cover. Fig. 44.

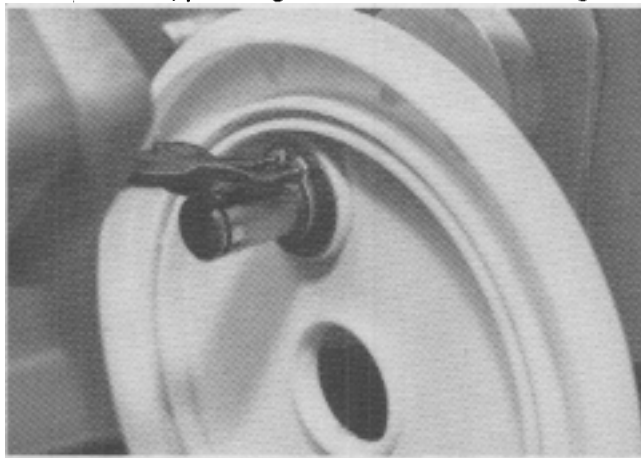


Fig. 44

To remove the transmission and shaft assembly from the mower, the right hand wheel bracket has to be removed. Disassemble three bolts and nuts and slide the bracket off the shaft. Fig. 45.

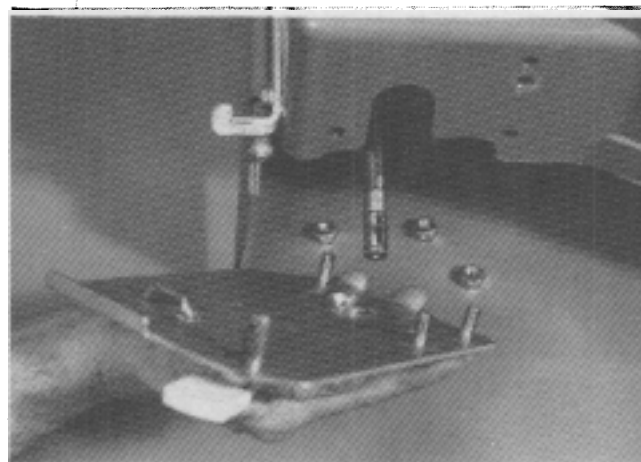


Fig. 45

Push the bronze bearing and retainers out of the bracket. Check the bearing surfaces for damage and wear. Replace if necessary. Also note the six lubricating holes in the bracket hub. When grease flows in, it follows a passage around the hub and out of each hole into the two holes in the bronze bearing and lubricates the shaft. Fig. 46.

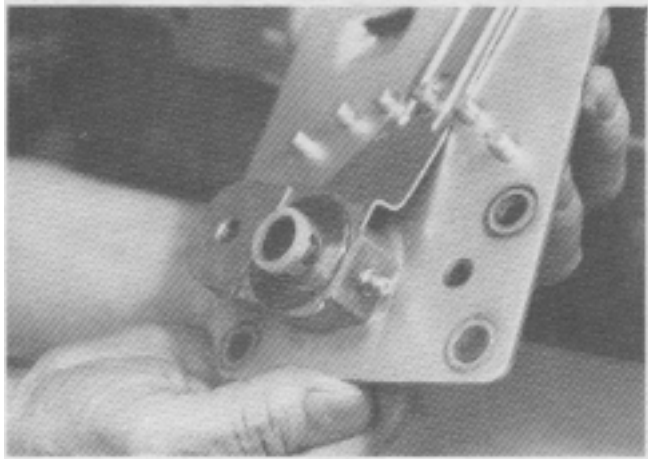


Fig. 46

The plastic bearing retainers are in two halves. One half has a lug or tab that locates in the recess of the other half. The slots permit lubrication to flow into the holes of the bronze bearing.

NOTE:

The bearing and plastic retainer assembly may be installed in bracket hub as removed or reversed. Either way is correct. Fig. 47.

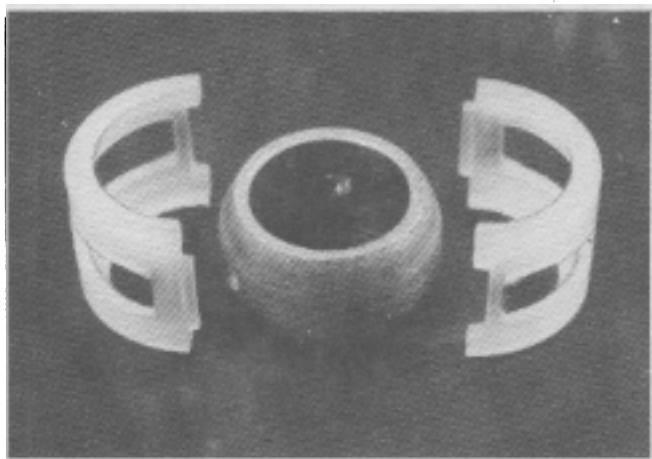


Fig. 47

Carefully pull the transmission and shaft assembly out of the left hand bracket. Fig. 48.

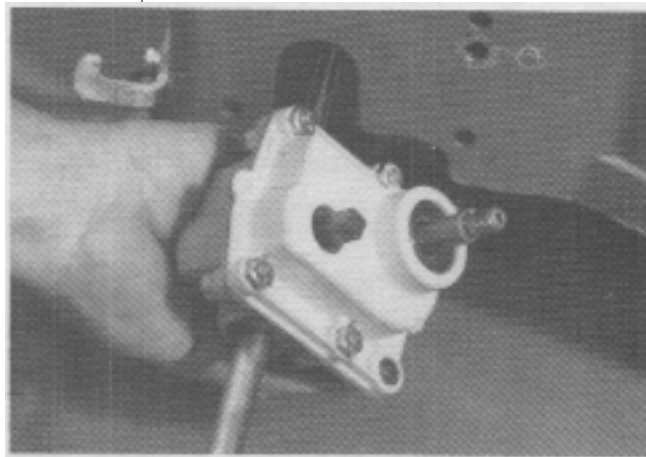


Fig. 48

Unless there is leakage from around the seals or gasket, or a failure internally, it will not have to be disassembled.

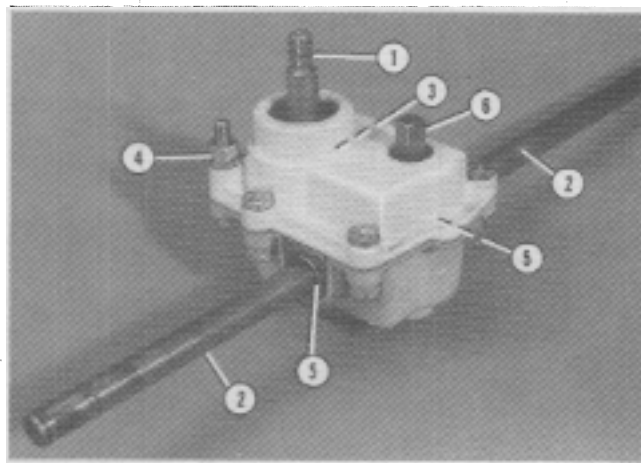


Fig. 49

1. Input Shaft
2. Driveshaft
3. Trans. Mounting Bolt Hole
4. Control Cable Mounting Bolt
5. Seals
6. Shift Fork

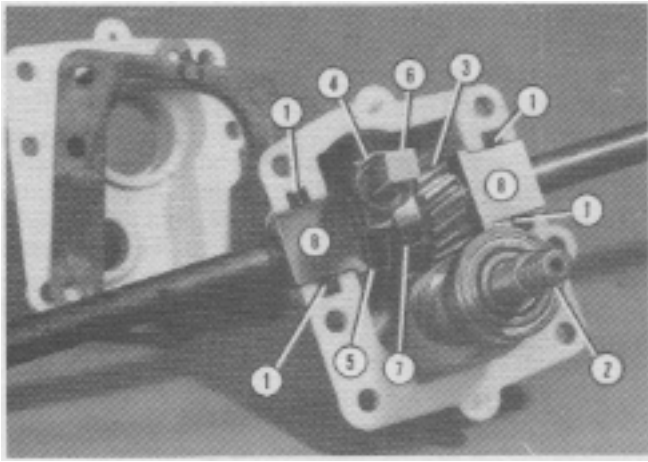


Fig. 50

- 1. Packing
- 2. Input Shaft & Bearing
- 3. Worm Wheel
- 4. "O" Ring Retainer
- 5. Shift Collar
- 6. Shift Fork
- 7. Driver Assembly
- 8. Bearing & Seal Assembly

Remove the input (worm) shaft and bearing assembly.

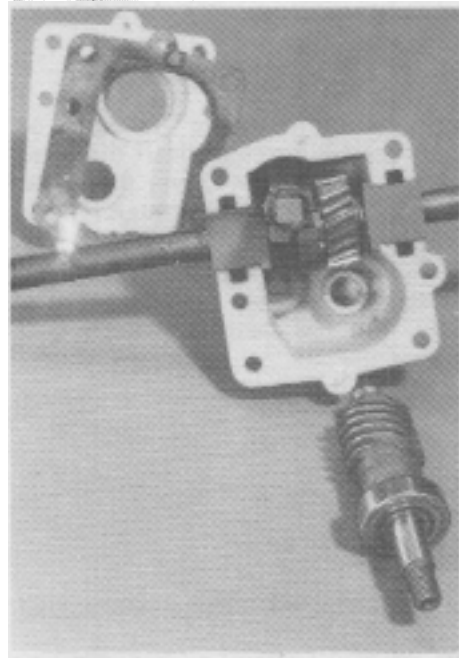


Fig. 51

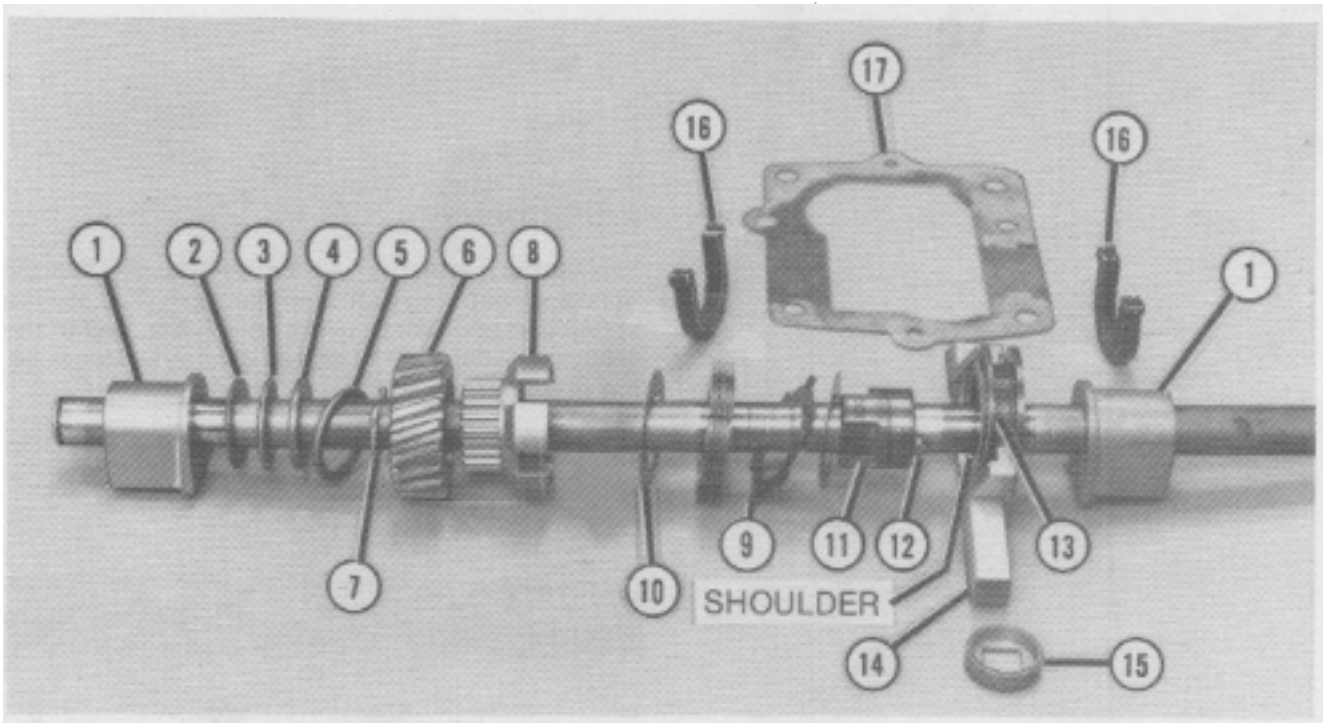


Fig. 52

- | | |
|----------------------------|--------------------------|
| 1. Bearing & Seal Assembly | 10. Driven Plates (7) |
| 2. Thrust Race (Thin) | 11. Driven Sleeve |
| 3. Thrust Bearing | 12. Pin |
| 4. Thrust Race (Thick) | 13. Shift Collar |
| 5. Washer (Worm Wheel) | 14. Shift Fork |
| 6. Worm Wheel | 15. "O" Ring Retainer |
| 7. Snap Ring | 16. Transmission Packing |
| 8. Driver | 17. Transmission Gasket |
| 9. Driver Plates | |

Wash and clean all parts. Inspect for wear or damage. Replace any worn or damaged parts.

NOTE:

If either the worm or worm wheel are worn or damaged (Fig. 52), always replace both at same time. Also, if one or more of the driver plates or driven plates are worn or damaged, replace all of them.

Whenever complete disassembly of the transmission is necessary, replace both packings and gasket (Fig. 52).

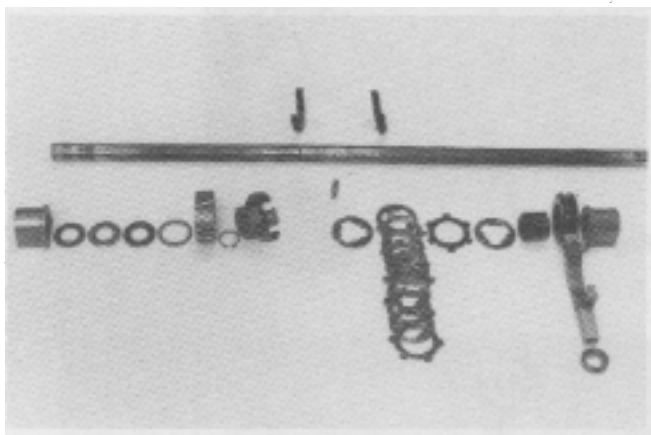


Fig. 53

Correct sequence in reassembly of the driver and driven plates into the housing is very important. If reassembled incorrectly, the transmission will not function properly. There are six driver plates (Ref. 2) and seven driven plates (Ref. 3, Fig. 54). Starting with a driven plate, place it in the housing. Next, assemble a driver plate, then a driven and continue alternating with every other one being a driver plate and the last one being a driven plate. Assemble the driven sleeve (Ref. 4, Fig. 54) into the plates, turning so it will go all the way down. If it has engaged all of the driven plates, it will be fully seated.

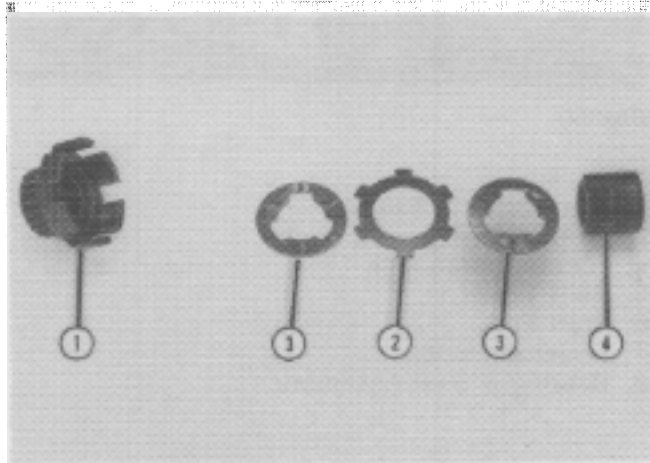


Fig. 54

1. Driver
2. Driver Plate
3. Driven Plate
4. Driven Sleeve

The clutch assembly will locate between the pin hole and snap ring groove in the shaft. Fig. 55. The spline end of driver housing will locate next to the groove with the slotted end of the driven sleeve being positioned over the pin hole.

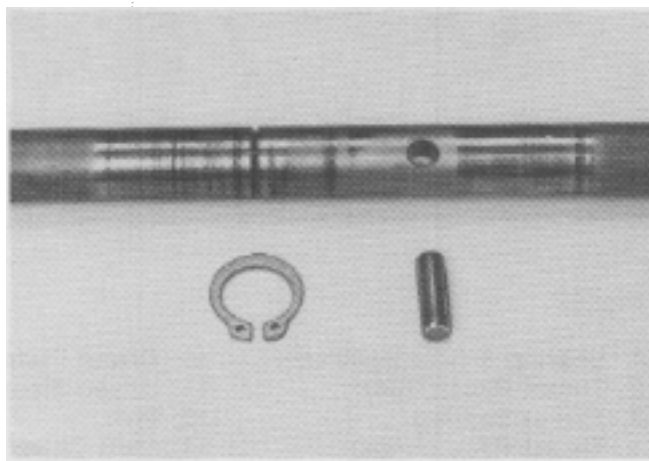


Fig. 55

Holding the clutch assembly in your fingers, slide it onto shaft. Assemble pin in hole and slide assembly over the pin. Fig. 56.

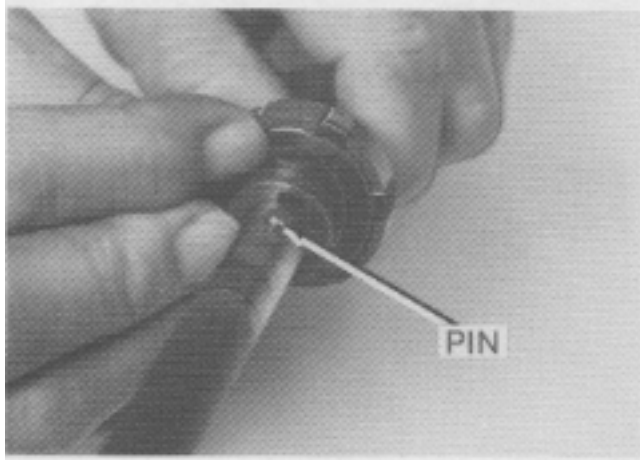


Fig. 56

Assemble snap ring in groove of shaft. Be sure the ring is completely seated in the groove. Fig. 57.

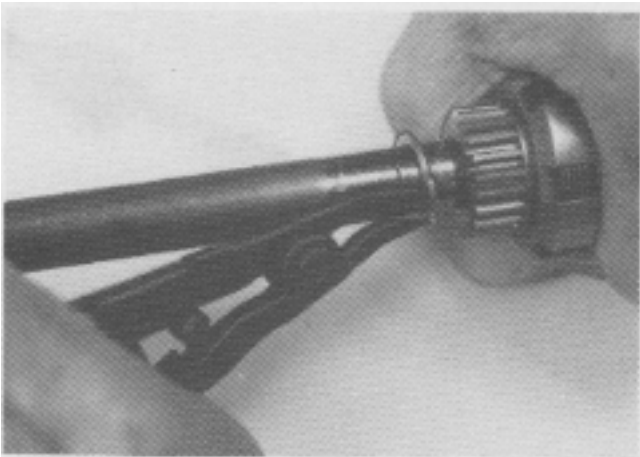


Fig. 57

Assemble worm wheel onto the spline. Fig. 58.

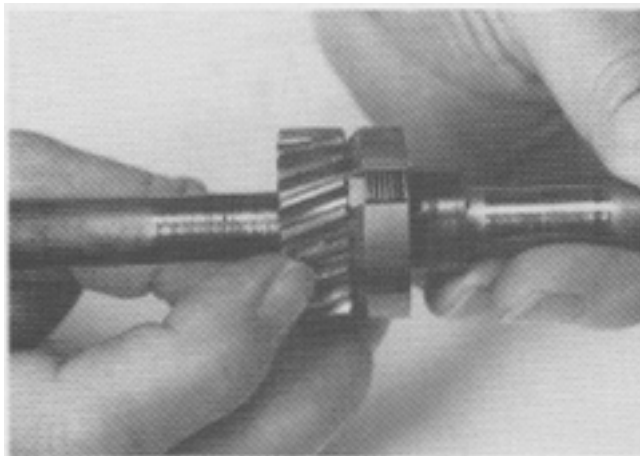


Fig. 58

Assemble large spacer washer into recess of worm wheel. Fig. 59.

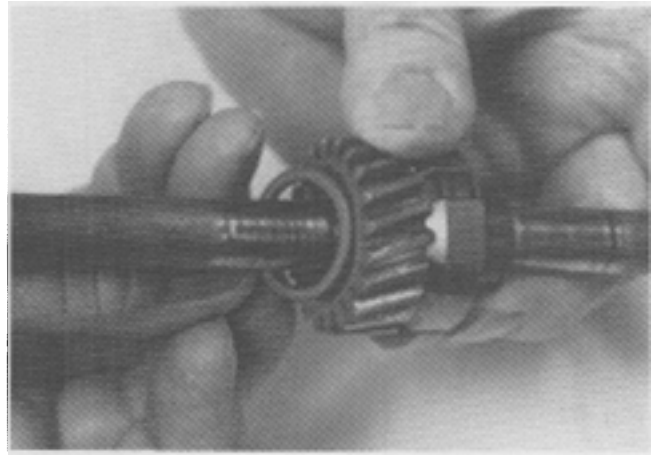


Fig. 59

Assemble the thick thrust race, then the thrust bearing and finally the thin thrust race. Fig. 60.

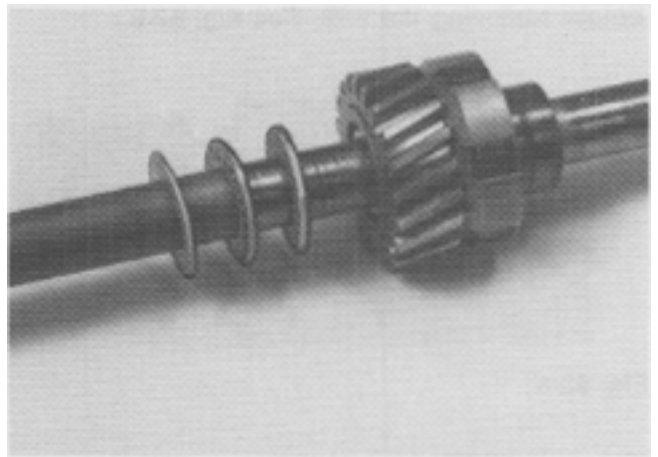


Fig. 60

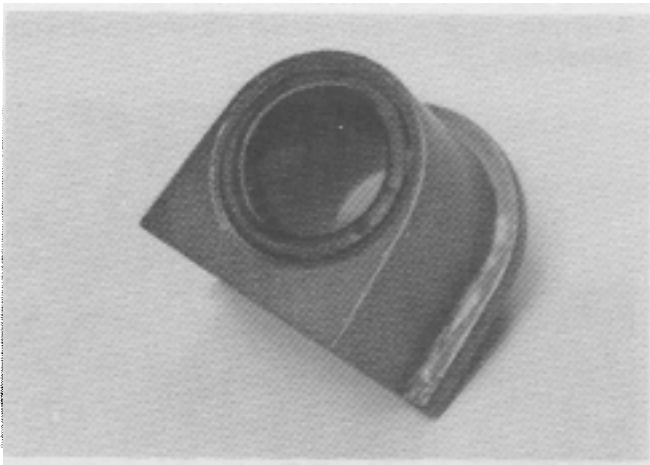


Fig. 61

To prevent damage when assembling the bearing with seal onto the shaft, Fig. 62-A it will require a special tool part #612087 (similar to tool shown). Lubricate the end of the tool and seal. Slide the tool into the seal, then assemble both onto the shaft. Be sure the seal is beyond the two ring grooves before removing the tool. See Fig. 62-B.

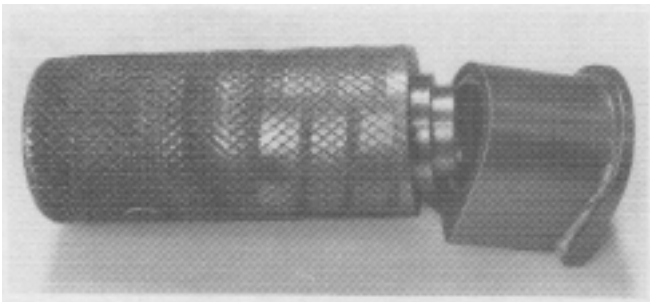


Fig. 62-A

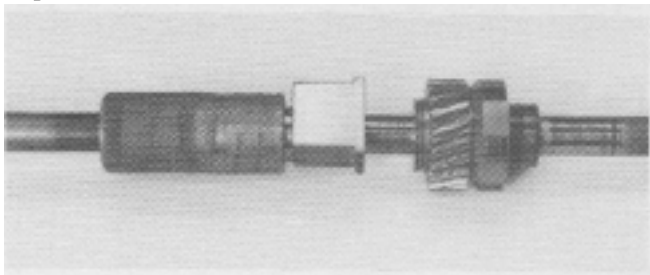


Fig. 62-B

Assemble the shift collar onto the shaft with the shoulder facing the clutch assembly. Fig. 63.

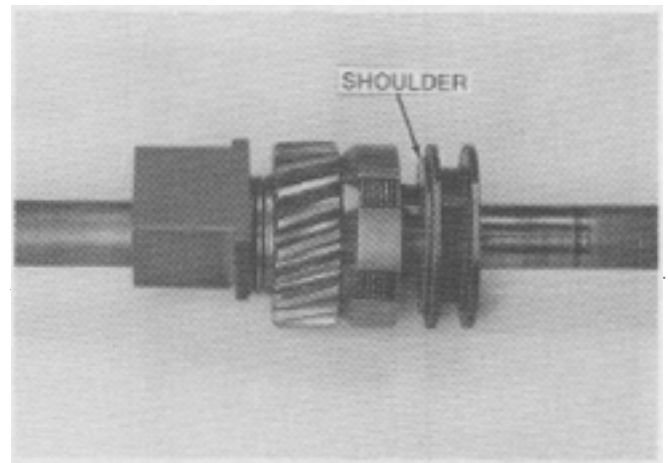


Fig. 63

Refer to Fig. 62 for the assembly procedures of the other bearing with seal.



Fig. 64

Assemble new packing in the lower gearcase. Fig. 65.

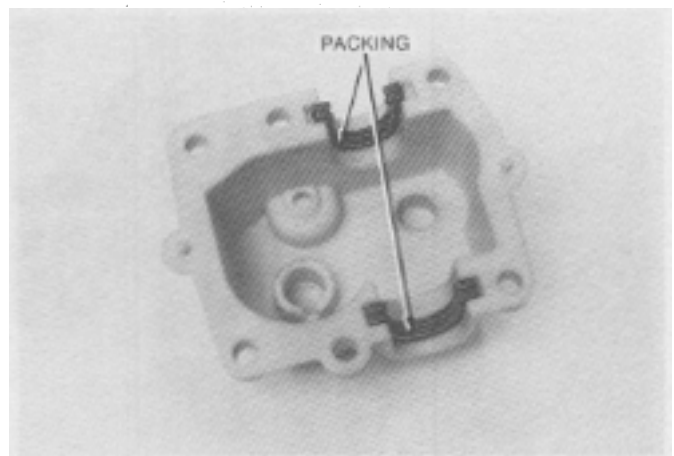


Fig. 65

Check to be sure the larger spacer washer is in the recess of the worm wheel. Push both bearings up against each end of transmission assembly. Assemble the shift fork in the groove of the collar. As you place the assembly in the gearcase, guide the lower end of shift fork into pivot hole. Fig. 66.

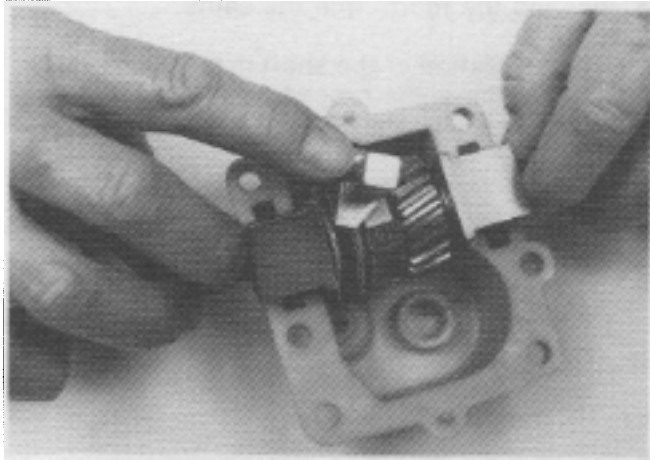


Fig. 66

Assemble the worm into the gearcase, Turn a few revolutions to check its freedom. Fig. 67.

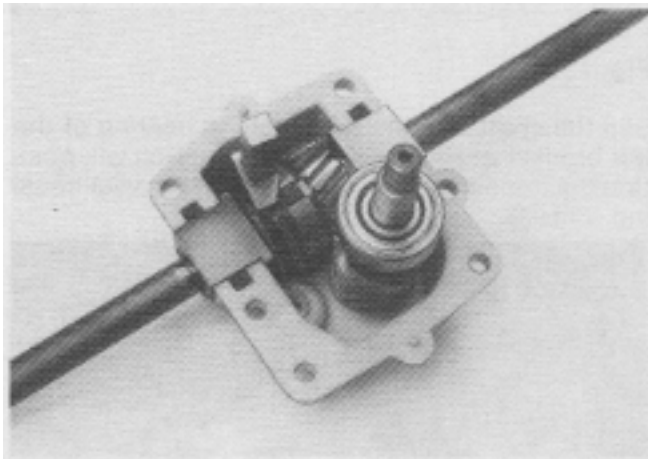


Fig. 67

NOTE:

Only Lawn-Boy type "A" grease is approved for use in this transmission assembly. If another lubricant is used, it will result in a failure of the transmission.

Fill the lower gearcase with Lawn-Boy type "A" grease until it is level with gasket surface. Fig. 68.

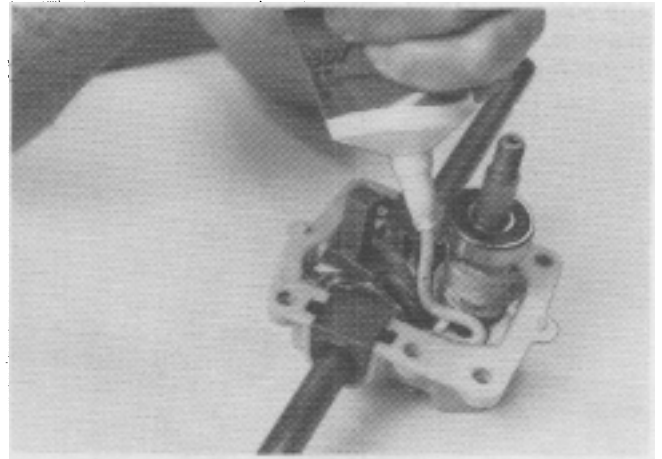


Fig. 68

Assemble a new gasket and set cover in place. Fig. 69.

NOTE:

There are two assembly dowels molded into lower case which locate in holes of upper case.

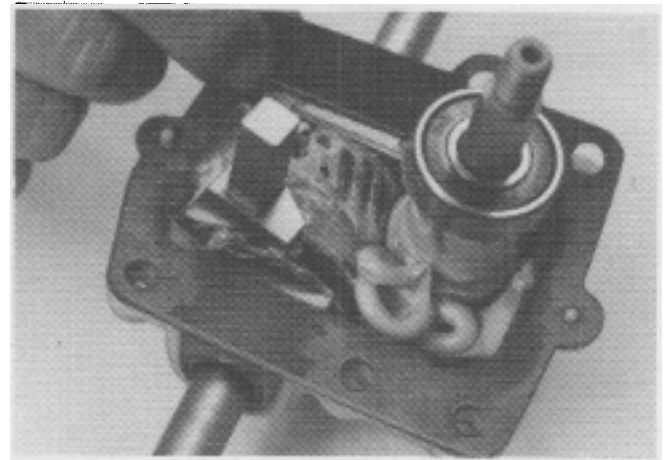


Fig. 69

Assemble the four short bolts into the housings with the heads on top. Assemble the long bolt from the bottom up through the long boss. Assemble the washer, then the nut on the long bolt but don't tighten until last. Fig. 70.

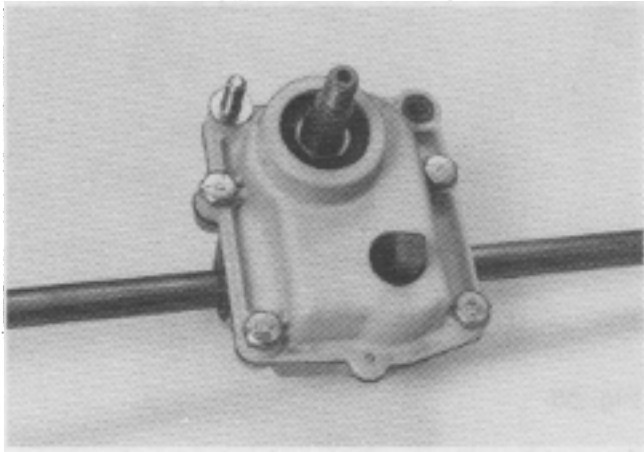


Fig. 70

Run all four nuts on short bolts up snug against housing. Fig. 71.

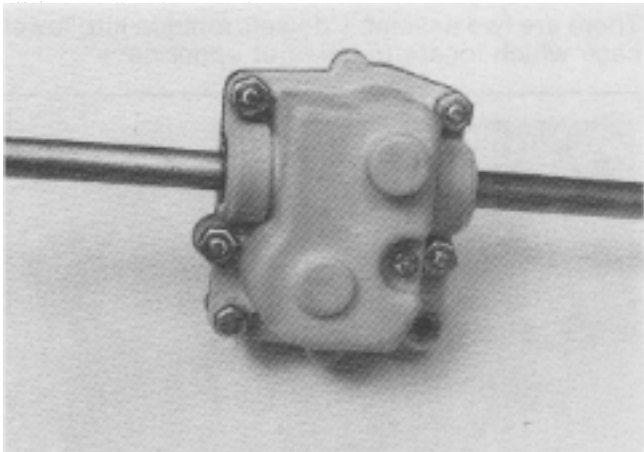


Fig. 71

The correct procedure in tightening the four short bolts and nuts is to use a criss-cross pattern. The required torque on each nut is 35-45 in. lbs. To obtain equal tightness, tighten one to 20 in. lbs., then cross over to the opposite corner and tighten to 20 in. lbs. Tighten the other one on same side to 20 in. lbs. and the fourth one the same.

Check the rotation of the shaft in both directions. If o.k., use the same procedure in tightening all bolts to 35-45 in. lbs. Recheck shaft rotation. Fig. 72.



Fig. 72

Slip the shaft into the self-aligning bearing of the left bracket assembly. A twisting motion will position the transmission into place in the mower housing. Fig. 73.

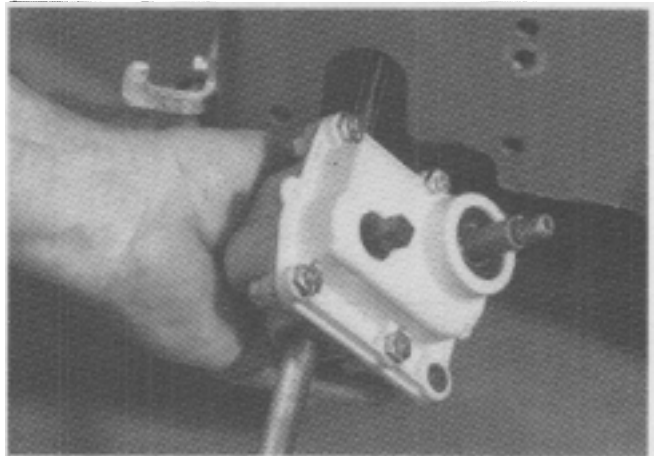


Fig. 73

Align the transmission with the mounting hole in the mower housing. Insert the shoulder bolt through the mounting hole, install the washer over the threads, and assemble to the transmission. Secure with the nut tightened to 35-45 in. lbs. Fig. 74.



Fig. 74

Assemble the right bracket assembly onto the shaft. Install three bolts and start the nuts. Tighten to 142-170 in. lbs. (12-15 ft. lbs.)

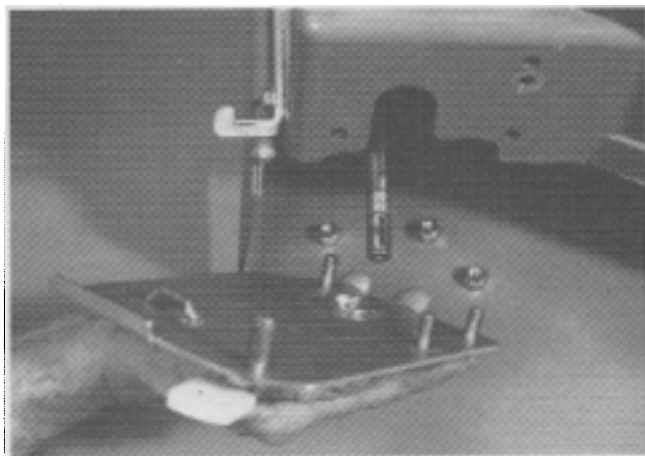


Fig. 75

Before installing the wheel cover on the shaft, apply Lawn-Boy type "A" grease in the groove. This grease stops dirt and debris from entering the gear area of the wheel. Fig. 76.

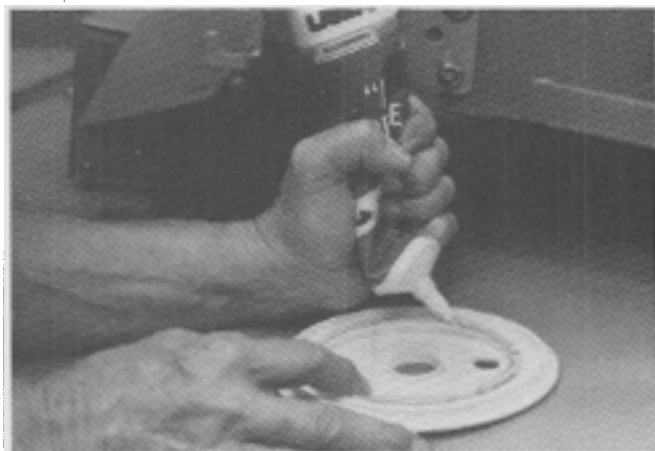


Fig. 76

Assemble the washer, the retaining ring and the spacer onto the shaft. Fig. 77.

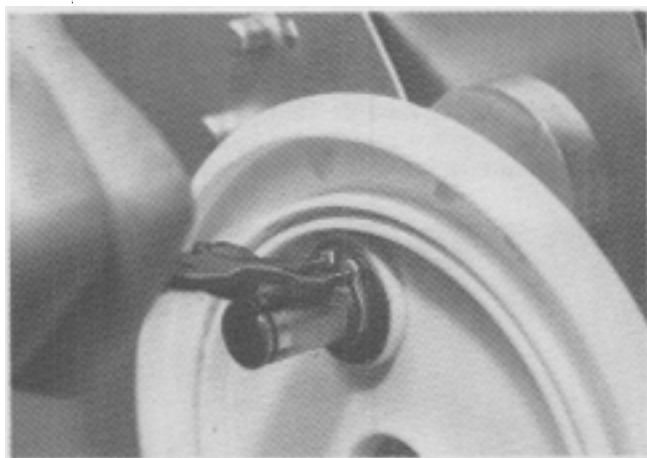


Fig. 77

Apply Lawn-Boy type "A" grease to the keyseats in the shaft.

Place the small ratchet spring in hole of the shaft. Fig. 78.



Fig. 78

Place the pinion gear drive key in slot. Fig. 79.

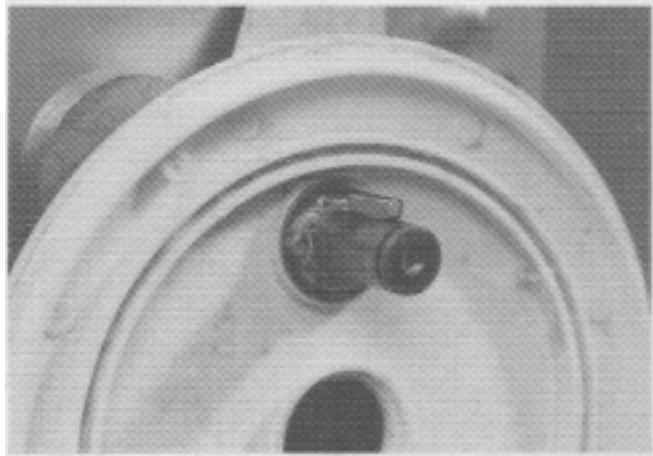


Fig. 79

To install the pinion gear, it will be necessary to push the spring loaded key down while sliding the gear on. Be sure the key stays in place. Assemble the second spacer and retaining ring. After the gear is installed, turn it forward. It should turn freely and you should hear a "clicking" sound which is the key moving over and off the drive shoulder. Turn it backward. The driving shoulder inside the gear should come against the key and stop the rotation. If it doesn't function as described above you have assembled it backward. Remove the gear very carefully to prevent losing the key and spring and turn the gear end for end and reassemble it. Fig. 80.

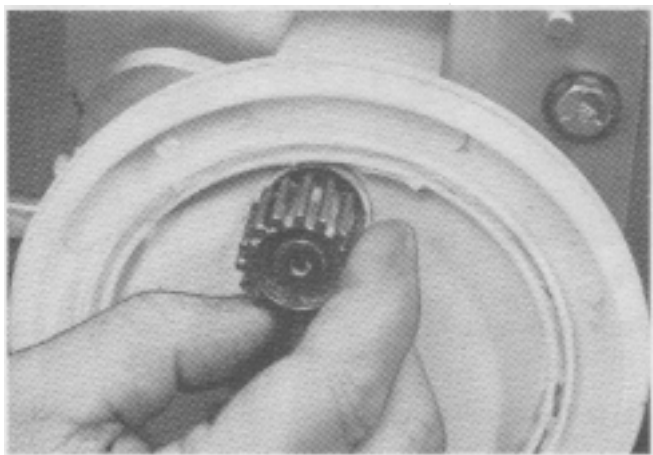


Fig. 80

Apply a film of Lawn-Boy oil to the wheel bolts. Fig. 81-A. Assemble the wheel and tighten the bolt. Also apply a generous amount of Lawn-Boy "A" grease in the planetary gear of the wheel. Fig. 81-B.

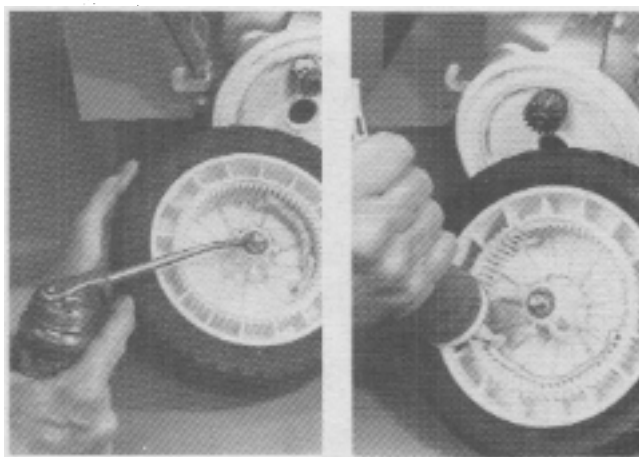


Fig. 81-A

Fig. 81-B

Repeat assembly procedures following Fig. 76 through Fig. 81-B on the left wheel.

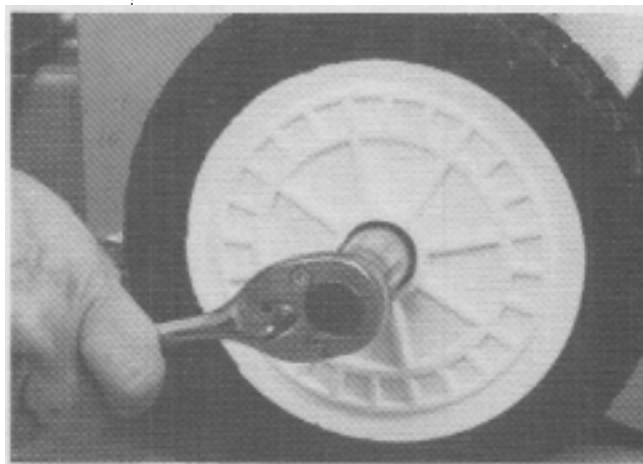


Fig. 82

Reassemble handle back on the mower. Install the hairpin clips. Fig. 83.

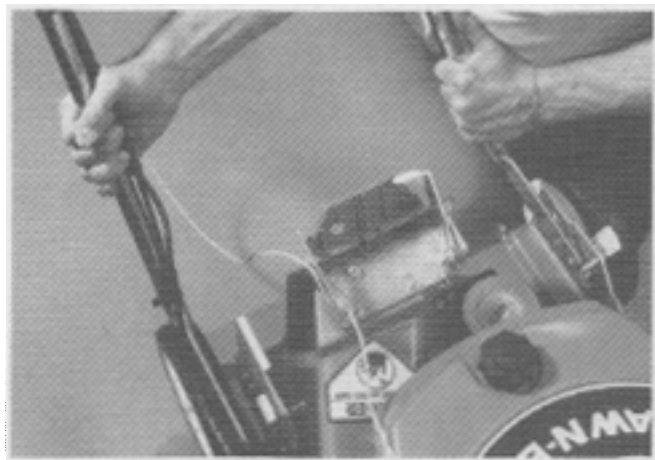


Fig. 83

Place the "O" ring retainer cup on the square shift fork shaft. The open side must be facing up. Fig. 84.

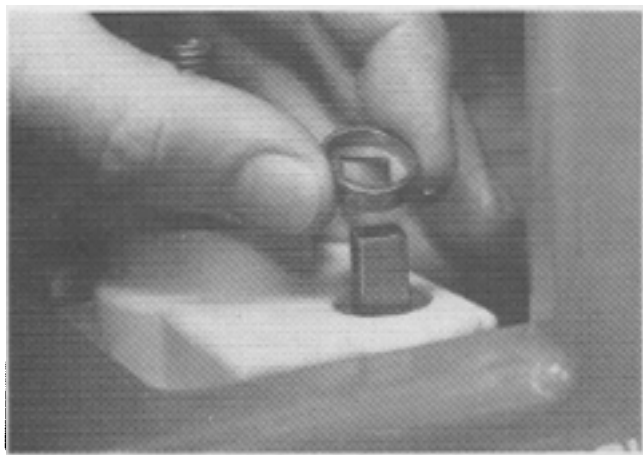


Fig. 84

Assemble the "O" ring onto the hub of the clutch arm. Fig. 85.

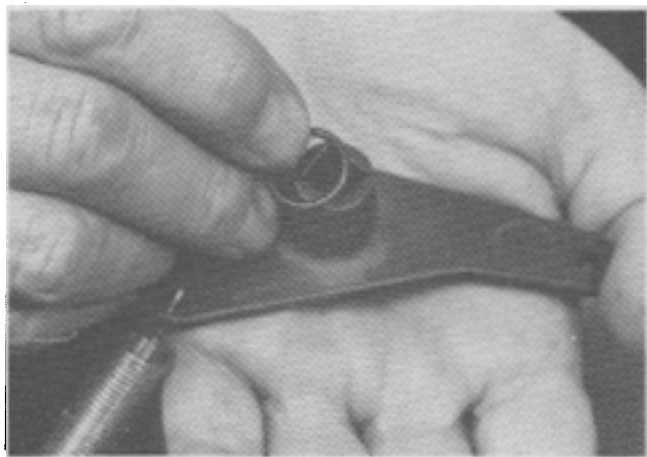


Fig. 85

Attach both springs to the clutch arm and cable mounting bracket. Fig. 86.



Fig. 86

Slide the clutch arm onto the shift fork shaft and press it into place. It will require effort to push it down due to the resistance of the "O" ring. Fig. 87.



Fig. 87

Assemble the clutch cable bracket on the long bolt in the transmission. Make sure the edge of bracket is seated against transmission housing. Assemble the nut and tighten to 35-45 in. lbs. Fig. 88.

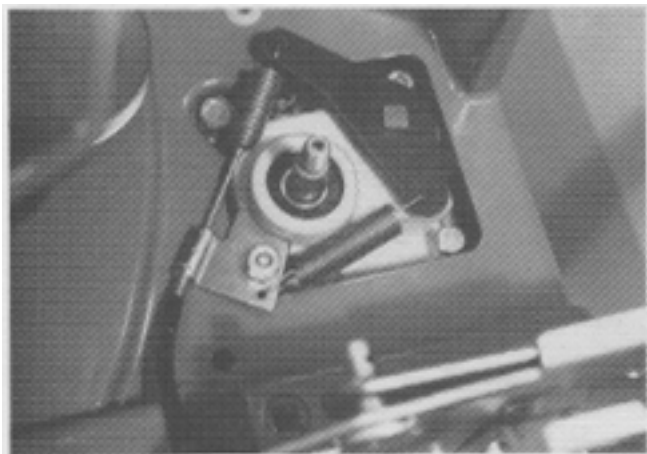


Fig. 88

Turn the clutch arm clockwise and hold it while moving the cable spring in its hole. There should be no tension on it. The hook of the spring should be slightly loose when moving it with your fingers. If it's too loose, there will be a loss of travel in the clutch arm. This will cause slippage of the clutch assembly resulting in a slipping transmission. If there is tension on this spring, it will cause creepage or forward travel of the mower. Fig. 89.

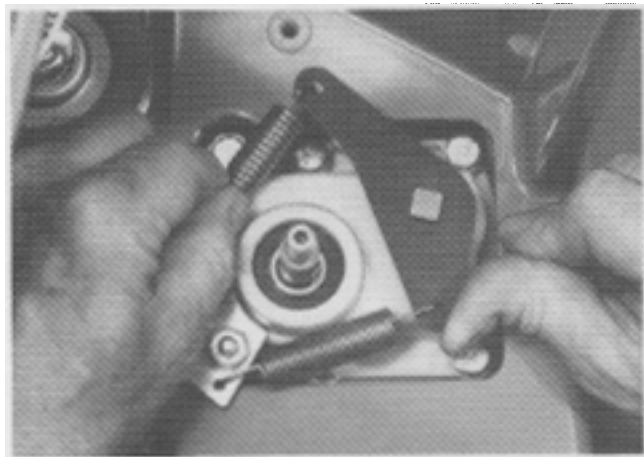


Fig. 89

If the cable has been replaced, install new tie wraps.

Pulling the cable down, holding it against the upper part of the handle, place a tie wrap just above the joint of the lower handle. Pull it tight. The second tie wrap should be placed approximately half way down the lower handle. The third tie wrap should be positioned at the bottom of the lower handle approximately 2-3 inches from the handle bracket. Fig. 90.

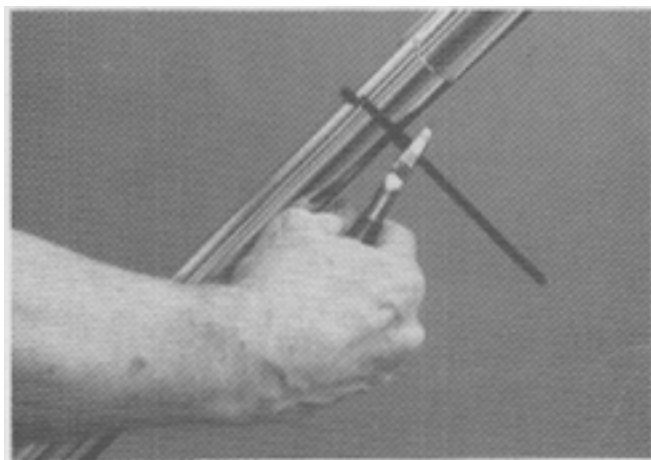


Fig. 90

It requires two 1/2" open end wrenches to adjust the clutch. Before making adjustments, move the control handle back and forth 3 or 4 times and check the connection of the cable spring on the arm. If it's out of adjustment as described (too tight or loose), adjust the two 1/2" nuts at the upper end of the cable. If the spring is too loose, back the upper nut off and run the lower nut up. Check the looseness of the spring when doing this. If the spring is tight, turn the nuts in the opposite direction to loosen. Tighten both nuts and, again, move the control handle back and forth 3 or 4 times. Check to determine that the adjustment did not change. Fig. 91.



Fig. 91

To reassemble pulley, washer and speed control spacers, refer to Figures 4 through 10-B.

Assemble the belt cover. Fig. 92. Start, run and test the mower for engine speed, carburetor adjustments, transmission operation, and blade stopping time. Engine speed should be 3100-3300 rpm at high speed and 2400-2600 rpm at low speed. It should run smooth and even and start within two pulls. The blade must stop within three seconds.

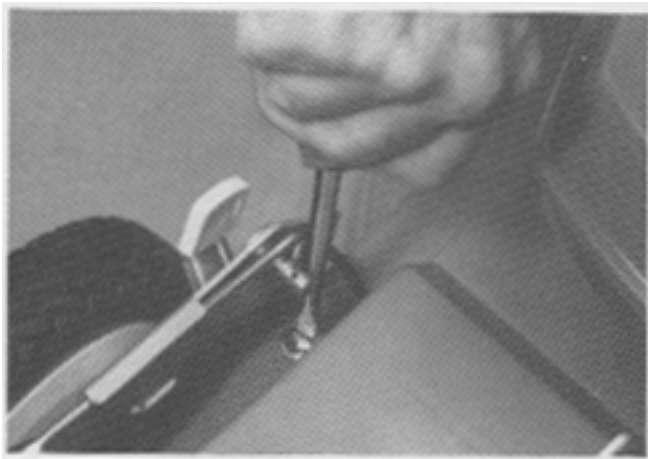


Fig. 92