

**OPERATING AND
MAINTENANCE MANUAL
WITH PARTS CATALOG**

**For Briggs & Stratton Engine
MODELS**

**"14"—"14B"—"14C"—"14F"—"14FB"—"14FBC"
"14FBPC"—"14FBP"—"14P"—"14R6"—"14R6D"**

PRICE 10¢ PER COPY



**MANUFACTURED BY
BRIGGS & STRATTON CORPORATION
MILWAUKEE 1, WISCONSIN, U. S. A.**

IMPORTANT SAFETY INFORMATION AND INSTRUCTIONS FOR ENGINE SELECTION ENGINE INSTALLATION ENGINE OPERATION

In the USA and Canada,
our 24 hour hotline is:

18002333723

Briggs & Stratton Corporation
Milwaukee, Wisconsin 53201

www.briggsandstratton.com

Keep these instructions for future reference.




Before installing and operating this engine read and observe all warnings, cautions and instructions on both sides of this sheet, on the engine, and in the operating & maintenance instructions.

NOTE: This sheet of instructions and safety information is not meant to cover all possible conditions and situations that may occur. Read entire Operating & Maintenance Instructions for this engine AND the instructions for the equipment this engine powers. Failure to follow instructions and safety information could result in serious injury or death.

The safety alert symbol () is used to identify safety information about hazards that can result in personal injury.

A signal word (DANGER, WARNING, or CAUTION) is used with the alert symbol to indicate the likelihood and the potential severity of injury. In addition, a hazard symbol may be used to represent the type of hazard.

 **DANGER** indicates a hazard which, if not avoided, will result in death or serious injury.

 **WARNING** indicates a hazard which, if not avoided, could result in death or serious injury.

 **CAUTION** indicates a hazard which, if not avoided, might result in minor or moderate injury.

CAUTION, when used **without** the alert symbol, indicates a situation that **could result in damage to the engine.**

HAZARD SYMBOLS AND MEANINGS



Fire



Explosion



Moving Parts



Toxic Fumes



Hot Surface



Shock



Kickback

(OVER)

FORM MS-6445-01/03

ENGINE SELECTION

 WARNING

Failure to select the correct engine could result in fire or explosion.

- Some engines are unique and designed for specific applications or types of equipment. If this engine will be used to build new equipment, contact Briggs & Stratton to ensure that the engine is appropriate for the intended use.
Note: For all Go-karts use only a model 136200 series engine, which offers improved safety and performance.
- Replacement engines should be the same model as the original engine, or be the Briggs & Stratton designated replacement engine. Refer to the Operation & Maintenance Instructions for engine identification information.
Note: For all Go-karts use only a model 136200 series engine, which offers improved safety and performance.
- Do not use Briggs & Stratton engines on 3-wheel All-Terrain Vehicles (ATVs), motor bikes, air craft products, or vehicles intended for use in competitive events. Briggs & Stratton does not approve of or authorize such uses.

ENGINE INSTALLATION

- [1] Do not attempt to install this engine if you do not have the appropriate tools and knowledge of small engine installation procedures. Use only Briggs & Stratton parts. Contact your Authorized Service Dealer for assistance.
- [2] Do not modify the engine in any way without Briggs & Stratton factory approval. Any such modification is at the owner's sole risk.
- [3] If the exhaust system on the old engine was supplied by the equipment manufacturer, you must transfer the exhaust system and related components (original muffler and related pipes, brackets, clamps, and shields) to the new engine. All components must be in good condition.
- [4]

 WARNING	Install muffler (and muffler deflector if used) so outlet points away from operator, fuel tank, and equipment, and so muffler heat will not damage or deform engine and components.
	
- [5]

 WARNING	Ensure all fuel lines and fittings are properly assembled and do not leak. Replacement parts must be the same model as the original.
	
- [6]

 WARNING	Ensure all wiring, including safety switches and engine shut-off components are completely installed and functioning properly.
	
- [7] Set engine speed to equipment manufacturer's specification. Refer to equipment manufacturer's manual. Do not tamper with governor springs, or other parts that will increase engine speed above specification.

- [8]







 WARNING	All engine parts, including fuel cap, spark plug, muffler, air cleaner, and covers and guards for drive components (gears, belts, shafts, couplings, etc.) must be in place before attempting to start engine.
	
- [9]

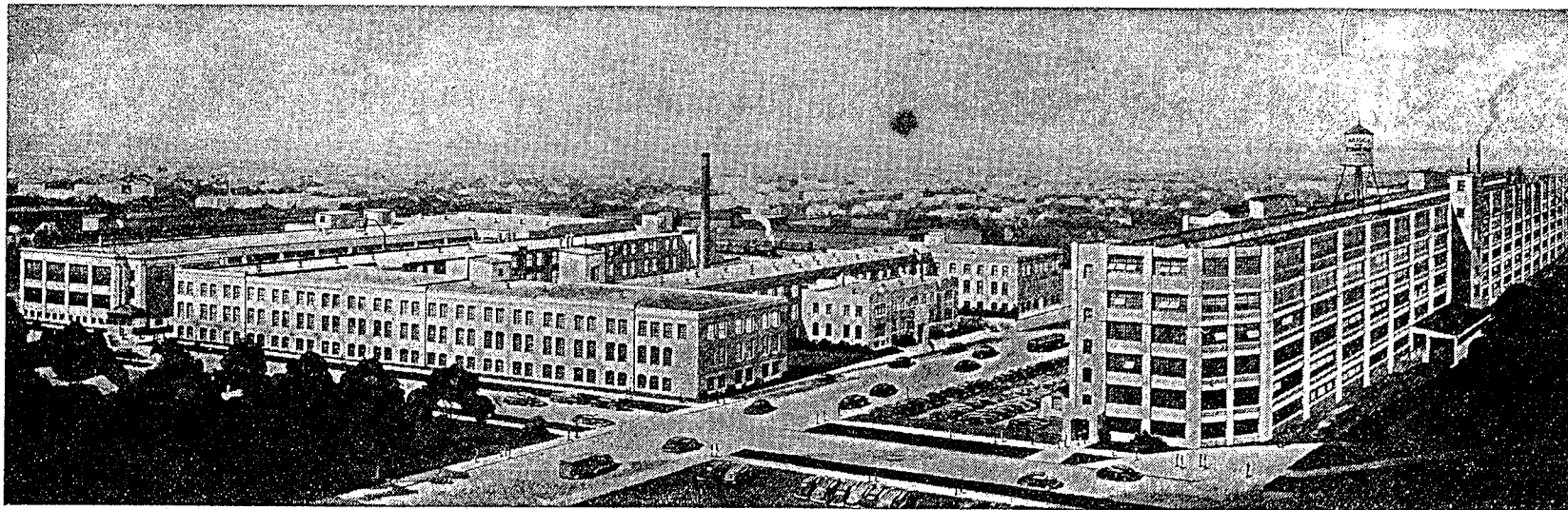
 WARNING	If engine is installed on walk behind lawn mower, all mower components, including cutting blade, must be correctly installed before attempting to start engine.
	
- [10]

 WARNING	When working on the engine or equipment, remove spark plug wire from spark plug. For electric start, remove negative wire from battery.
	
- [11]

 WARNING	Do not check for spark with spark plug removed. Use Briggs & Stratton spark tester #19368.
	

ENGINE OPERATION

	 WARNING
	When adding fuel:
<p>Turn engine off and let engine cool at least 2 minutes before removing gas cap.</p> <p>Fill fuel tank outdoors or in well-ventilated area. Fill tank to about 1 inch below lowest portion of neck to allow for fuel expansion.</p> <p>Keep gasoline away from sparks, open flames, pilot lights, heat, and other ignition sources.</p>	
	 WARNING
	When starting engine:
<p>Remove all external equipment/engine loads.</p> <p>Wait until spilled fuel is evaporated. Start engine outdoors.</p> <p>Pull cord slowly until resistance is felt, then pull rapidly.</p> <p>If engine floods, set choke to OPEN/RUN, place throttle in FAST and crank until engine starts.</p>	
	 WARNING
	When operating equipment:
<p>Do not tip engine or equipment at angle which causes gasoline to spill.</p> <p>Run engine outdoors. Do not run in enclosed area, even if doors or windows are open.</p> <p>Do not choke carburetor to stop engine.</p>	



WHERE BRIGGS & STRATTON ENGINES ARE MADE

These large and modern factory buildings, located in Milwaukee, Wisconsin, are complete with all modern equipment and machinery for precision construction, economical production, rigid inspection, and thorough testing of Briggs & Stratton 4-cycle gasoline engines.

Briggs & Stratton Corp. produces more small 4-cycle single cylinder air-cooled gasoline engines than any other manufacturer in the world.

CONTENTS

	Page
Introduction	2
General Information	3
Operator's Section	
a. Preparation for Use.....	4
b. How to Start.....	4-5
c. Lubrication	5
d. Storage Instructions	8
Maintenance Section	
a. Engine Trouble Chart.....	6
b. Servicing Reference Chart.....	7
c. Disassembling the Engine.....	8
d. The Fuel System.....	9
e. The Governor	10
f. The Ignition System.....	12
g. Lubrication System	15
h. Valves	15
i. Cylinder	16
j. Crankshaft	16
k. Cam Shaft and Cam Gear.....	17
l. Piston Assembly and Connecting Rod	18
m. Air Cleaner	18
n. Muffler	18
o. Overload	18
Parts Section	
a. How to Find Part Number.....	19
b. Illustration of Parts.....	20-24
c. Parts List	25-34
d. Where to Order Parts.....	37
e. Warranty	37
f. Authorized Service Distributors.....	Back Cover

INTRODUCTION

This book has been especially prepared to cover the Engine Models listed on the cover and is published for the information and guidance of all concerned.

THERE IS A RIGHT WAY TO OPERATE THIS ENGINE. THIS BOOK TELLS YOU HOW.

Guessing how to run it may cause failure to receive the maximum in performance and dependable service originally built into this engine. Each engine has been carefully tested and adjusted at the factory before packing for shipment, and if correctly operated will perform efficiently and economically.

This book is divided into four sections, namely:

1. **GENERAL**, contains information that you should know regarding the principal specifications and design of the engine.
2. **OPERATOR'S SECTION**, contains instructions necessary for starting and operating the engine in the field.
3. **MAINTENANCE SECTION**, consists of instructions pertaining to actual repairs such as are conducted in the repair shop.
4. **PARTS SECTION**, includes exploded views of the various engine assemblies and component parts and parts lists.



CAUTION!

1. **Exhaust gases contain carbon monoxide which is odorless and a deadly poison. Proper care must be taken to provide efficient ventilation.**
2. **Fill crankcase and air cleaner with proper oil before starting engine. See that oil level is maintained.**
3. **Do not fill the gasoline tank while the engine is running. Avoid spilling gasoline on a hot engine—this may cause an explosion and serious injury.**
4. **This engine is air cooled. The fan action of the vaned flywheel forces cooling air between the fins of the cylinder and cylinder head which keeps the engine at its proper operating temperature.**

Lack of air due to clogging of blower screen, flywheel vanes, or cylinder and cylinder head fins causes overheating which may result in serious damage such as warped or cracked cylinder head, ignition failure, burnt valves, sticking rings, scored piston, bearing failures, etc.

When the air entering the cooling system carries a considerable amount of foreign matter such as grass or heavy dirt, the cooling system can become restricted or clogged in a very short time and regular cleaning is required.

It is recommended that frequent inspection be made during use to determine how often cleaning is necessary. If this is done, the air cleaner serviced properly, and the engine operated on a good grade of gasoline and oil, you may expect trouble-free performance indefinitely. The life of your engine is in direct ratio to the care it receives.

GENERAL INFORMATION

This engine is a single cylinder, L-Head air cooled type; bore 2 $\frac{1}{2}$ " and stroke 2 $\frac{3}{4}$ ". It is rated at

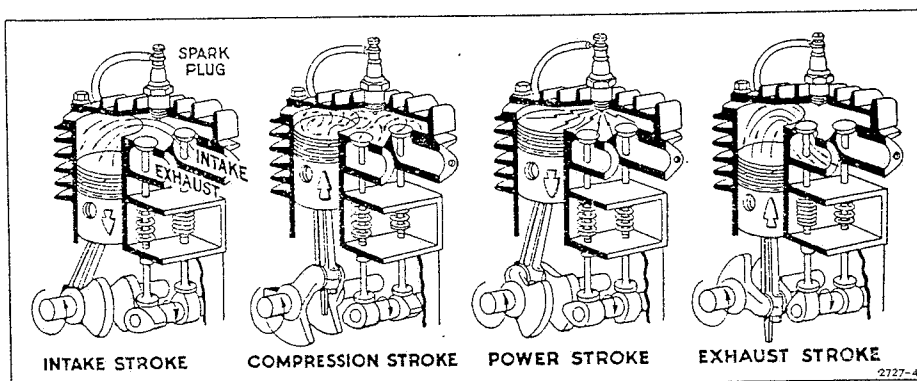
3.55 h.p. at 2200 r.p.m.
4.50 h.p. at 2700 r.p.m.
5.10 h.p. at 3200 r.p.m.

The horsepower ratings listed above are established by standard I.C.E.I. procedures. For practical operation, the horsepower loading should not exceed 85 per cent of these ratings. Engine power will decrease 3 per cent for each 1,000 feet above sea level, and 1 per cent for each 10 degrees above 60 degrees F.

It is of the same basic 4-cycle design used in automobiles, aircraft, trucks, and tractors. As the name indicates, there are four strokes to one complete power cycle.

THE 4-STROKE CYCLE

Plate No. 1



- a. **INTAKE STROKE:** The piston goes down, creating a suction in the cylinder which draws gas through open intake valve into the space above the piston.
- b. **COMPRESSION STROKE:** The piston comes up with both valves closed, highly compressing the gas into the space left between the top of the piston and cylinder head.
- c. **POWER STROKE:** At this point the magneto sends high tension current to the spark plug, firing or exploding the compressed gas and driving the piston down.
- d. **EXHAUST STROKE:** Exhaust valve opens and the upward stroke of the piston forces out all of the burnt gases, thus completing the power cycle.

Ignition is supplied by a magnematic ignition system. The spark plug is 14mm.

Lubrication is supplied by a splash system which furnishes positive lubrication to all moving parts. Oil reservoir capacity is three pints.

The gasoline tank holds four quarts. The carburetor is float feed type, adjustable.

The governor is adjustable, mechanical type, fully enclosed, running in oil.

Two valves are employed: one Intake and one Exhaust.

The piston and connecting rod are made of aluminum alloy. Crankshaft is a drop forging, counterweighted to reduce vibration.

Air cleaner is an efficient oil bath type.

This engine has been substantially built. It is made of high grade materials by skilled workmen, in a factory fully equipped with the most modern machinery. Before shipped from factory it received many tests and careful inspections.

OPERATOR'S SECTION STARTING AND OPERATING INSTRUCTIONS

1. PREPARATION FOR USE.

a. Before starting the engine, fill the crankcase with Mobiloil Arctic or other high grade oil not heavier than S. A. E. No. 20 for operating the engine in temperatures of 32° F. or above. For temperatures below 32° F. use Mobiloil Arctic Special S. A. E. No. 10W or other high grade oil.

The oil filler cap is located at the end of engine base. To open, tilt cap so "catch" is vertical, as shown in inset in plate below. In this position cap will stay open. With the engine standing level pour oil in opening until it rises to the top of filler cap opening. Be sure oil stays to top level before replacing cap. The crankcase holds three pints. To close, snap cap into place. When closed be sure cap is flat as shown in plate below.

b. Fill air cleaner with same oil as used in the crankcase and fill to the indicated oil level. Clean out and refill every 25 hours. Change oil daily under dusty conditions.

c. Fill the fuel tank with a good grade of regular, clean, fresh gasoline such as Mobilgas. DO NOT MIX OIL WITH GASOLINE.

2. HOW TO START.

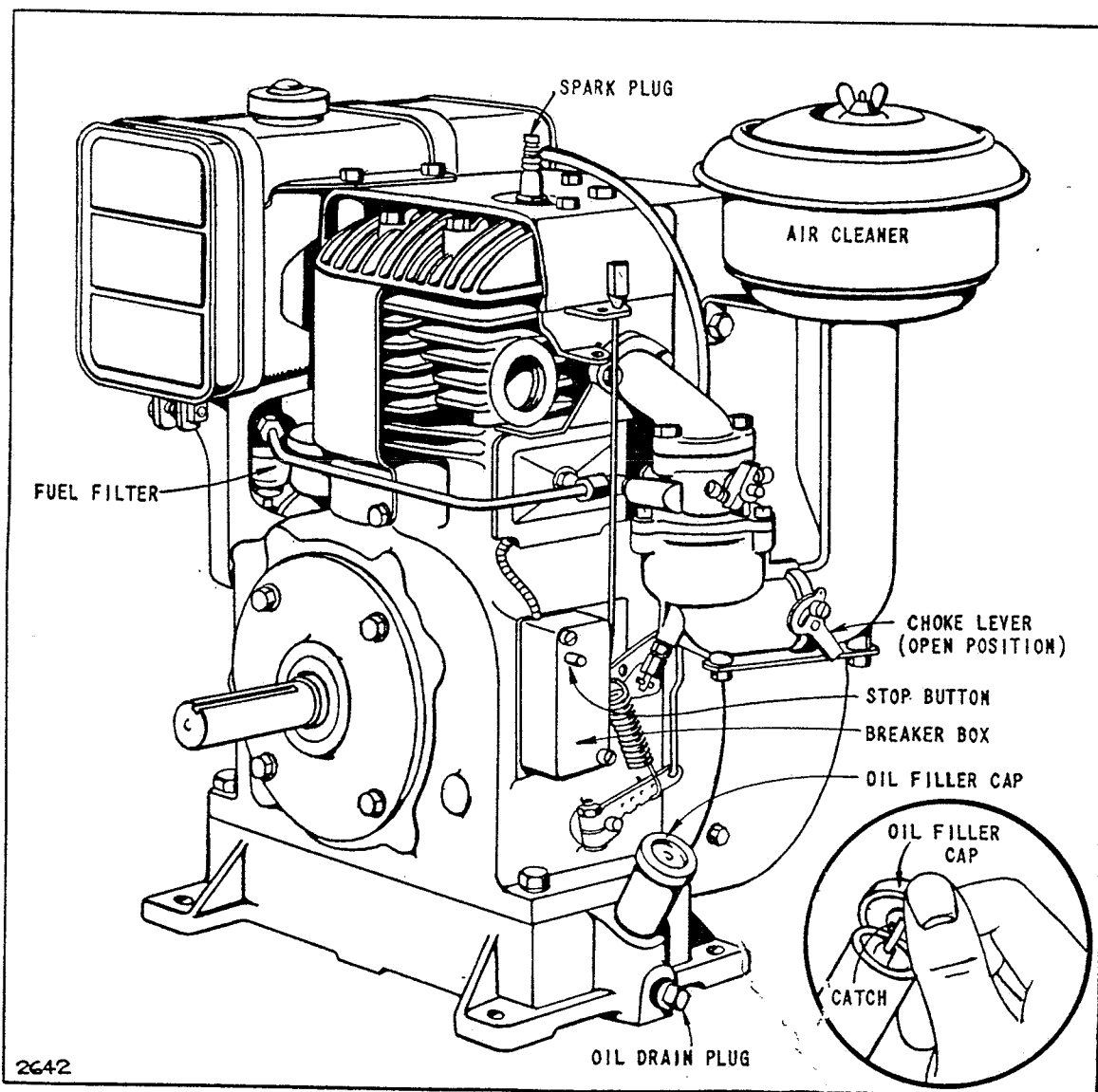
Engines may be started either with a rope or a hand crank.

To Start with Rope

a. Open gasoline shut-off valve in fuel filter by turning to left or in a counter-clockwise direction.

b. Completely close carburetor choke by moving choke lever to left or in a clockwise direction.

Plate No. 2



c. Wind the starter rope around the starter pulley with the knot in the pulley notch. Pull the rope with a quick steady pull to spin the flywheel with choke fully closed to prime the engine. Then open choke about one-eighth and repeat operation.

d. After the engine warms up, gradually open choke valve to right or in a counter-clockwise direction until engine runs smoothly with the choke wide open. (A warm engine does not require as much choking as a cold one.)

To Start with Hand Crank

a. Open gasoline shut-off valve on fuel filter by turning to left or in a counter-clockwise direction.

b. Completely close carburetor choke by moving choke lever to left or in a clockwise direction.

c. Place hand crank on crankshaft at flywheel so that the crank engages the pin on the flywheel.

d. Rotate crank and flywheel until compression is felt. The crank handle should now be in a downward, or 6 o'clock, position.

e. Lift crank handle with a quick motion to an upward, or 12 o'clock, position. It is not necessary to spin the crank handle. It normally requires only one or two revolutions of the engine to get an ignitable charge into the cylinder to start with the choke fully closed. If further cranking is necessary, the choke should be opened slightly. The spark is automatically retarded when engine is cranked.

f. After engine starts, gradually open the choke valve by moving the choke lever to right or counter-clockwise direction until engine runs smoothly with choke valve wide open.

3. FAILURE OF THE ENGINE TO START. Cold weather causes the oil in the crankcase to become thick and the gasoline less volatile. If engine fails to start after several attempts, check the spark plug—see that it is clean and the gaps set to .025". If the engine fails to start after a reasonable number of trials, do not make any adjustments until you have studied the Engine Trouble Chart on next page.

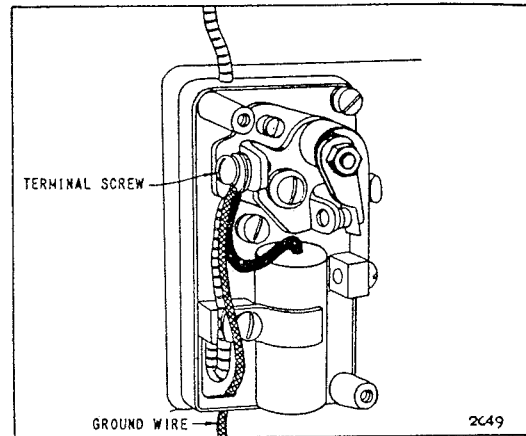
4. HOW TO STOP.

a. Press the red stop button located on the breaker box. See Plate No. 2. Hold button down until engine stops.

b. On some applications where the stop button cannot be reached conveniently, a ground wire may be provided. This should be fastened to the breaker plate terminal screw and assembled as shown in Plate No. 3. When assembling be sure that no strands of wire touch the breaker box or cover or the spark will be grounded.

c. Close the fuel shut-off valve so that gasoline will not spill out through carburetor when handling the engine.

GROUND WIRE ASSEMBLY—Plate No. 3



5. USE CLEAN GASOLINE. A good grade of regular gasoline is recommended. Be sure the vent hole in the top of the fuel tank is open, for air must enter the tank to allow the gasoline to flow to the carburetor.

6. DO NOT MIX OIL WITH GASOLINE. This engine is provided with an efficient lubrication system which splashes oil to all moving parts. There are no external parts which require separate oiling.

7. USE THE RIGHT KIND OF OIL. (See Paragraph 1.)

8. ADD OIL REGULARLY. After each 5 hours of operation, fill the crankcase to the top of the filler opening. (See Paragraph 1a.)

9. CHANGE OIL FREQUENTLY. After each 25 hours of engine operation, the oil should be completely drained from the crankcase while engine is warm. Do not remove engine from its mounting base. Remove the oil drain plug, located at end of engine base, and let the oil flow into a pan or other receptacle. Do not flush out with kerosene. Replace the drain plug, and refill with fresh oil.

Clean out old oil in the air cleaner and refill every 25 hours of engine operation. Daily under dusty operating conditions.

10. KEEP THE ENGINE CLEAN. It will pay you to keep the engine clean both inside and outside. See that no dirt or water enters engine when filling with oil or gasoline. As a precautionary measure always wipe off the fuel cap and oil filler cap, as well as around them before refilling. Dirt in the engine or fuel tank will cause trouble and even serious damage.

When operating the engine under conditions where there is an excessive amount of grass clippings, chips, sawdust, or similar material in the air around the engine, the blower housing should be removed periodically and the flywheel and cylinder fins cleaned to permit proper air flow for cooling.

MAINTENANCE SECTION**ENGINE TROUBLE CHART****ENGINE DIFFICULT TO START**

1. No fuel in tank, or fuel shut-off valve closed.
2. Fuel flow obstructed.
3. Spark plug cracked.
4. Spark plug fouled.
5. Improper fuel mixture.
6. Throttle stuck in closed position.
7. Defective ignition.
 - a. Breaker points worn or pitted.
 - b. Breaker points out of adjustment.
 - c. Rotor out of time.
 - d. Frayed wires grounding on breaker box.
8. Improper timing.
9. Valves sticking.
10. Valve seats bad.
11. Too much oil in air cleaner.

ENGINE MISSING

1. Spark plug fouled.
2. Spark plug cracked.
3. Spark plug gap wrong.
4. Defective spark.
5. Ignition breaker points pitted or burned.
6. Valves warped or broken.

ENGINE LOSING POWER

1. Deposits in cylinder head.
2. Valves not seating properly.
3. Carburetor choke valve partly closed.
4. Improper fuel mixture.
5. Piston rings sticking.
6. Improper timing.
7. Muffler clogged.
8. Governor or throttle loose.
9. Air cleaner requires cleaning.
10. Cooling air stream obstructed or restricted.
11. Too much oil in air cleaner.

ENGINE KNOCKS

1. Deposits in cylinder head.
2. Worn main bearings.
3. Worn rod bearings.
4. Worn piston and cylinder.
5. Engine overheated.
6. Tight pistons.
7. Loose rotor.
8. Lack of oil.
9. Tappet clearance too large.

FAULTY CARBURETOR

1. Carburetor improperly adjusted.
2. Inlet valve leaking or sticking.
3. Shut-off valve closed.
4. Sediment or water in fuel tank.

EXCESSIVE SMOKE FROM EXHAUST

1. Carburetor needle valve open too far.
2. Carburetor float sticking or leaking.
3. Worn piston or piston rings.
4. Carburetor choke partly closed.
5. Too much oil in air cleaner.

EXPLOSION IN CARBURETOR

1. Gas mixture too lean.
2. Intake valve sticking.
3. Intake tappets sticking.
4. Intake valve spring weak or broken.
5. Intake valve warped or broken.
6. Intake tappets set too close.

POOR COMPRESSION

1. Valves not seating.
2. Valves sticking.
3. Piston rings worn.
4. Piston rings broken.
5. Piston rings sticking.
6. Loose spark plug.
7. Cylinder head loose.
8. Scored cylinder.
9. Worn piston and cylinder.
10. Faulty cylinder head gasket.
11. Tappets set too close.

SERVICING REFERENCE CHART

STARTING AND OPERATING INSTRUCTIONS	Paragraph	LUBRICATION SYSTEM	Paragraph
Preparation for Starting.....	1	The Splash System.....	44
How to Start.....	2	Oil Leaks	45
Failure of Engine to Start.....	3	VALVES	
How to Stop.....	4	Valve Adjustments	46
Use Clean Gasoline.....	5	To Remove	47
Do Not Mix Oil with Gasoline.....	6	To Replace	48
Use the Right Kind of Oil.....	7	Valve Reseating	49
Add Oil Regularly.....	8	Valve Timing	50
Change Oil Frequently.....	9	CYLINDER	
Keep the Engine Clean.....	10	The Cylinder Head.....	51
Disassembling the Engine.....	11	To Remove and Clean Cylinder Head...	52
FUEL SYSTEM		To Reassemble Cylinder Head.....	53
Avoid Gummy Gasoline.....	12	Checking the Cylinder.....	54
How to Avoid Gum Formation.....	13	CRANKSHAFT	
To Clean Fuel Lines.....	14	To Remove	55
To Clean Fuel Filter.....	15	To Reassemble	56
To Clean Fuel Tank Cap.....	16	To Remove Ball Bearing.....	57
To Adjust the Carburetor.....	19	To Replace Ball Bearing.....	58
To Remove and Replace Carburetor....	20	Oil Seal	59
To Disassemble the Carburetor.....	21	CAM SHAFT AND CAM GEAR	
To Check Carburetor Inlet Valve and Seat	22	To Remove Cam Shaft and Cam Gear...	60
To Clean Carburetor Parts.....	23	To Replace	61
To Reassemble Carburetor.....	24	PISTON ASSEMBLY AND CONNECTING ROD	
GOVERNOR		Piston	62
Correct Engine Speed.....	25	Piston Rings	63
To Reset Governor Lever.....	26	Piston Pin	64
Governor Speed Adjustment.....	27	Connecting Rod	65
To Remove and Replace.....	28	AIR CLEANER	
IGNITION SYSTEM		To Remove, Clean, and Replace.....	66
To Check for Spark.....	30	MUFFLER	
Spark Plug Adjustment.....	31	To Clean	67
To Clean and Adjust Breaker Points...	32	OVERLOAD	
To Replace Breaker Points.....	33	To Prevent	68
To Replace Condenser	34	REPAIR PARTS INFORMATION	
To Replace Breaker Box Assembly....	35	How to Order.....	69
To Remove Flywheel	36		
To Reassemble Flywheel	37		
To Replace Coil	38		
Ignition Cable	39		
To Remove Armature	40		
To Remove Rotor	41		
To Reassemble Rotor	42		
To Adjust Rotor Timing.....	43		

IMPORTANT NOTICE

Unless you have a thorough knowledge of internal combustion engines and proper tools, we do not recommend that you attempt to make major engine repairs. This does not mean that you shouldn't make necessary adjustments and simple repairs, but in case of emergency we advise you to get in touch with our nearest service organization. See inside back cover.

DISASSEMBLING THE ENGINE

- 11.** To facilitate the complete disassembly of the engine for major repairs or general overhaul, the following procedure for removing parts is recommended:
1. Drain oil and fuel.
 2. Remove air cleaner, brace, and pipe.
 3. Remove muffler.
 4. Disconnect fuel line.
 5. Remove fuel tank, and bracket assembly.
 6. Remove spark plug.
 7. Remove screws (2) which hold carburetor to elbow, remove carburetor and unhook throttle link.
 8. Remove carburetor elbow and front air guide.
 9. Remove rope starter pulley.
 10. Remove blower case.
 11. Remove cylinder head.
 12. Remove valve cover plate and gasket.
 13. Remove valve, springs, and retainer.
 14. Remove flywheel.
 15. Remove rotor.
 16. Remove armature and back plate.
 17. Remove engine base.
 18. Remove piston and connecting rod.
 19. Remove piston pin and rings.
 20. Remove crankcase cover on drive side.
 21. Slide crankshaft out through drive side.
 22. Remove bearing support on flywheel side.
 23. Remove governor lever from crankcase, and remove governor assembly.
 24. Remove breaker box assembly.
 25. Drive out cam shaft and remove gear and tappets.
- Check each item as removed to determine its condition. On following pages you will find instructions for proper repair procedure.

STORAGE INSTRUCTIONS

Engines stored any length of time should be completely drained of fuel to prevent gum deposits forming on essential parts such as the carburetor, fuel filter, fuel lines, and tank.

Such deposits may affect the operation of the engine when again used. Therefore, it is important that the following instructions be adhered to before storing the engine:

- a. Remove filter bowl, open shut-off valve and drain tank completely.
- b. Operate engine until it stops from exhaustion of fuel.
- c. Replace filter bowl.
- d. Leave shut-off valve open.
- e. Remove spark plug, pour one ounce of S. A. E. No. 20 oil into cylinder and crank slowly to spread oil. Replace spark plug.

THE FUEL SYSTEM

12. AVOID GUMMY GASOLINE. If you experience trouble with a gummy, sticky substance with a sharp obnoxious odor, change to fresh gasoline. This gum comes from the gasoline and clogs the carburetor, fuel line, fuel tank, etc.

13. YOU CAN AVOID MOST TROUBLE FROM GUM IF YOU WILL KEEP THE FUEL TANK FULL WHEN NOT USING THE ENGINE. If you use it only occasionally, drain tank completely and refill when the engine is used again. The reason for this is that evaporation of gasoline causes most gum deposits.

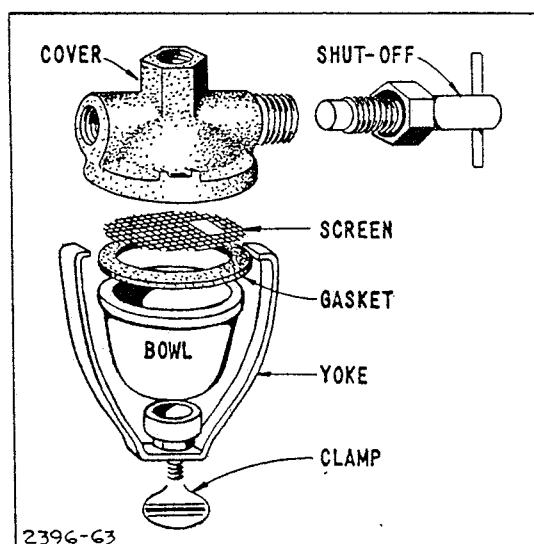
14. TO CLEAN THE FUEL LINES.

- a. Close the shut-off valve in the fuel filter by turning lever to the right or in a clockwise direction.
- b. Disconnect fuel line at filter.
- c. Blow through fuel line to clear it.

15. TO CLEAN FUEL FILTER. (See Plate No. 4.)

- a. Loosen thumb screw below filter bowl.
- b. Remove and clean filter bowl and screen.
- c. Open shut-off valve to see if fuel flows freely from the tank. **IMPORTANT:** If you find a gummy, varnish-like substance use alcohol or acetone to dissolve it. (See Paragraphs 12 and 13.)

Fuel Filter — Plate No. 4



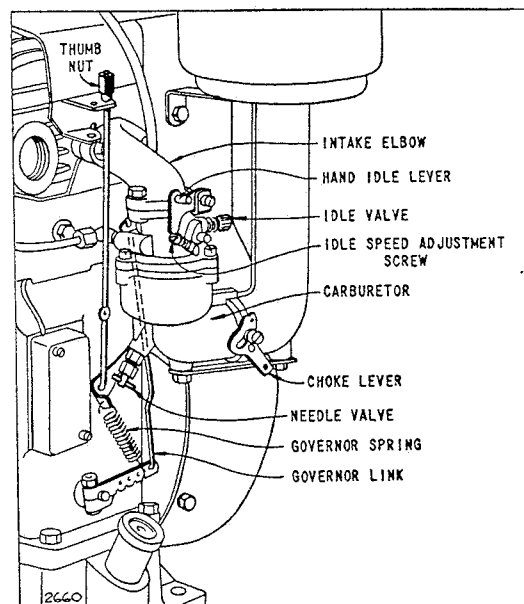
16. TO CLEAN FUEL TANK CAP. Be sure that the small vent hole in the fuel tank cap is not clogged up, for air must enter the tank to allow the gasoline to flow to the carburetor. Test by blowing through top of cap.

17. CORRECT USE OF CHOKE. The correct carburetor setting (see Paragraph 19)

gives the engine the best mixture to run on when it is hot. When cold it is necessary to choke the carburetor to get a rich mixture, because cold gasoline does not vaporize readily. A warm or hot engine requires very little choking. Until you become familiar with the engine, you may make the mistake of not choking the carburetor enough or you may choke it too much. If engine fails to start after three or four attempts with the choke closed, try a few times with the choke part-way open and then all the way open.

18. THE CARBURETOR. The carburetor on this engine is of the float type. The gasoline is regulated by a needle valve. The throttle is automatically controlled by a governor. (See Paragraphs 25, 26, and 27.)

Carburetor Hook-up — Plate No. 5



19. TO ADJUST THE CARBURETOR.

- a. Completely close needle valve by turning to right, or in a clockwise direction, as far as possible. Do not screw up too tight or use force when closing as needle valve may be damaged.
- b. From closed position, open needle valve one to one and one-quarter turns.
- c. After the engine has been started and warmed up make a final adjustment with the choke wide open by turning the needle valve to the point at which engine operates most smoothly. This setting will also take care of starting with use of the choke.
- d. If it is necessary to keep choke partially closed several minutes before engine runs smoothly, carburetor setting is too lean and needle valve should be opened a

trifle . . . turn to left or counter-clockwise. For governor adjustments see Paragraphs 25, 26, and 27.

e. The idle valve setting is about a half to three-quarters of a turn open. Do not force screw against seat or you will damage both.

f. The idle adjustment screw is set at the factory to permit an idling speed of about 1200 R. P. M. If you want to idle the engine at a higher speed than 1200 R. P. M. turn the adjustment screw to the right or in a clockwise direction.

g. Some engines are also equipped with a hand idling device. (See Plate No. 5.) To idle engine, lower hand idle lever on idling device. Raise lever to bring engine back to normal running speed.

20. TO REMOVE AND REPLACE CARBURETOR.

- a. Close shut-off valve in fuel filter.
- b. Disconnect fuel line at carburetor.
- c. Remove air cleaner and pipe.
- d. Remove two screws and lockwashers from the intake elbow.

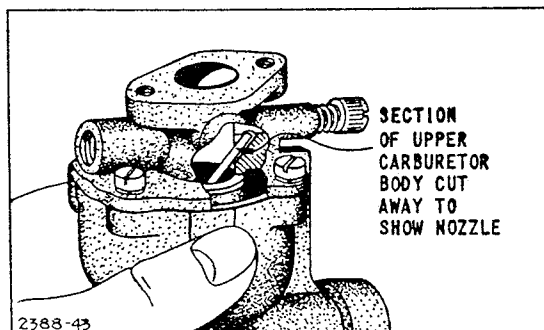
e. Unhook throttle link. The carburetor is then free from all connections. To RE-PLACE reverse the operations as performed above.

21. TO DISASSEMBLE CARBURETOR.

- a. Remove needle valve, stuffing box nut, gland, and nozzle.
- b. Remove screws and lockwashers from the carburetor body.

CAUTION: The upper and lower bodies are interlocked by the nozzle (see Plate No. 6) and failure to disassemble in above order will result in damaged parts.

Carburetor Nozzle—Plate No. 6



22. TO CHECK CARBURETOR INLET VALVE AND SEAT. (See Plate No. 7.)

a. Pull out the brass pin that holds the carburetor float. A worn or dirty inlet valve and seat, or incorrect float level will cause the carburetor to leak.

23. TO CLEAN CARBURETOR PARTS.

a. Wash parts with alcohol or acetone to remove gum deposits and dirt.

b. Blow through all passages and openings. Do NOT use wire to clean out holes.

c. Replace worn or damaged parts.

24. TO REASSEMBLE. (See Plate No. 7.)

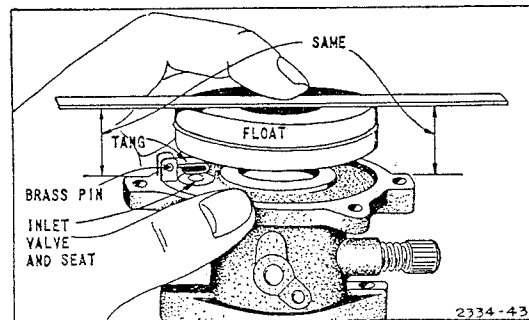
a. The float should be in a horizontal position when it closes inlet valve and seat.

b. Check the float by inverting upper carburetor body and place a scale or flat, straight piece of steel across carburetor float and see that the distance from the top of float to carburetor body flange is equal on both sides. The float hinge tang can be bent to attain proper position of float.

c. Reassemble remaining parts in following order:

1. Upper and lower carburetor bodies.
2. Nozzle and needle valve parts.

Carburetor Float Position—Plate No. 7



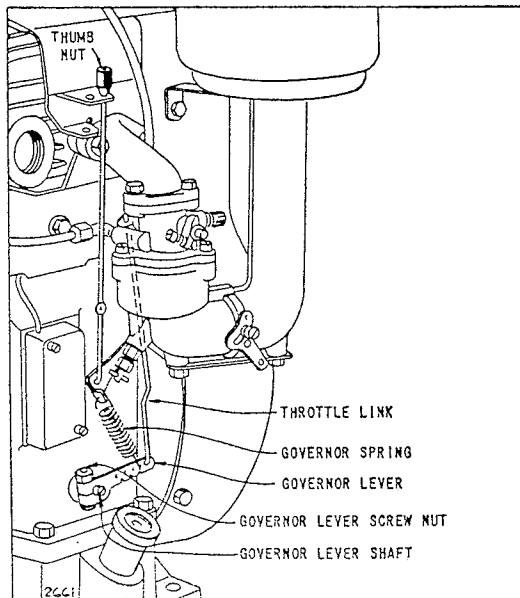
THE GOVERNOR

25. CORRECT ENGINE SPEED. The speed of this engine is automatically maintained under varying loads by a centrifugal governor. It is built in the engine and operates from the cam gear. It was carefully adjusted at the factory and should not be re-adjusted unless absolutely necessary. Recommended engine speed is 2200 to 3200 R. P. M. However, as different types of equipment require various operating speeds for the greatest efficiency, it is suggested that you follow the recommendations of the manufacturer of the complete unit which the engine powers.

26. TO RESET GOVERNOR LEVER. If the governor lever has become loosened or removed from the governor lever shaft, reset as follows:

- a. With carburetor and governor linkage assembled to the engine, loosen the governor lever screw nut. (See Plate No. 8.)
- b. Move carburetor throttle to wide open position, and while held in this position, use a small screw driver to turn the governor lever shaft counter-clockwise until it strikes a "stop" inside the crankcase.
- c. With shaft and throttle in these positions tighten governor lever screw nut.

Governor Hook-up — Plate No. 8



27. GOVERNOR SPEED ADJUSTMENTS.

Two types of speed adjustments are used: (1) Thumb nut adjustment located above and left of carburetor (see Plate No. 8) and (2) Remote controls (see Plates No. 9, 10, and 10A).

1. THUMB NUT ADJUSTMENT. See Plate No. 8.

- a. To increase speed, turn nut to right or clockwise direction or move lower end of governor spring farther away from governor lever shaft.
- b. To reduce speed, turn nut to left or counter-clockwise or move lower end of spring closer to governor lever shaft.
- c. If the speed variation between no load and full load is too great move spring closer to governor lever shaft.
- d. If the speed of the engine is not steady although the carburetor has been properly adjusted move the spring farther away from the governor lever shaft.

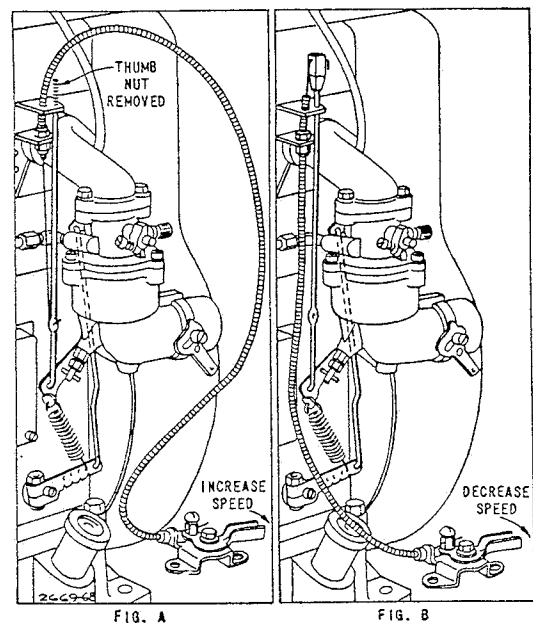
2. REMOTE CONTROLS. Two types of remote control are available—(a) remote governor control (see Plate No. 9) and (b) remote throttle control (see Plates No. 10 and 10A). With all remote controls, the lower end of throttle spring should be hooked through the hole in governor lever nearest the throttle link—not in the notch.

a. With the **remote governor control** the governed speed of the engine is adjusted or set by the movement of a remote control lever at some distance from the engine. The speed of the engine is determined by the position of this lever and for any fixed position of the lever, the engine speed remains constant regardless of the load that the engine is pulling. Thumb nut must be removed or loosened as shown in Plate 9, Fig. A and B. Unless this is done, the

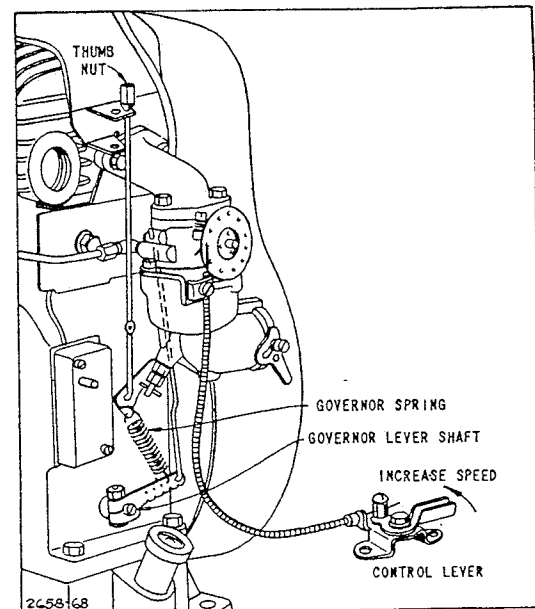
engine speed will be controlled by the location of the thumb nut and not the remote control.

b. With the **remote throttle control**, the top speed of the engine is controlled by the governor and can be adjusted with the thumb nut as explained in Paragraph 26. All other speeds from idle to top speed may be controlled by the movement of a remote control lever at some distance from the engine. This lever controls the throttle directly and for any fixed position of the lever the engine speed will increase if load is removed, and decrease if the engine load is increased.

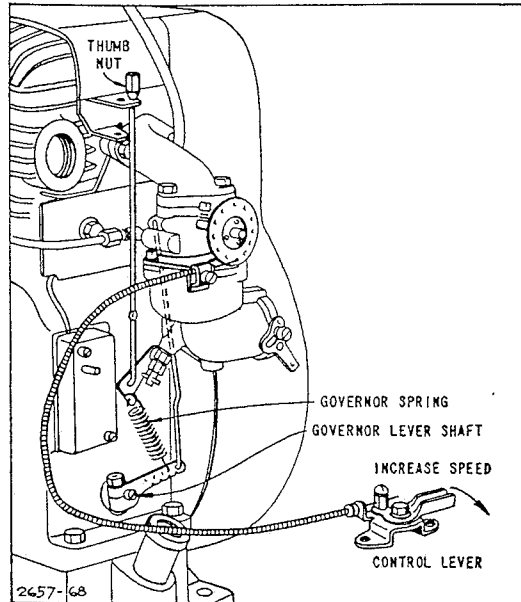
Remote Governor Controls — Plate No. 9



Remote Throttle Control — Plate No. 10



28. TO REMOVE AND REPLACE GOVERNOR. The governor mechanism is self-

Remote Throttle Control — Plate No. 10A

oiling and seldom do any parts need replacing. However, if trouble should develop and an inspection is necessary, proceed as follows:

- Loosen governor lever screw nut and pull lever from governor lever shaft.
- Remove engine from base and tilt back until engine rests on fuel tank.
- Remove cotter pin from governor lever shaft, then remove shaft.
- Slide out governor gear assembly. If any parts show breakage or undue wear, replace with new ones.

To replace governor, reverse above procedure.

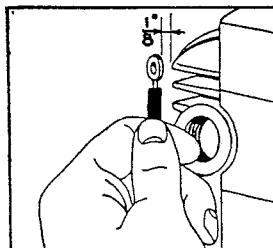
THE MAGNETIC IGNITION SYSTEM

20. The spark is produced by a magnemetic ignition system consisting of an armature, coil, and rotor located in back of the flywheel, and a breaker box containing the points, condenser, and stop switch located on the engine as shown in Plate No. 2. The ignition current is transmitted into the engine cylinder through an ignition cable and spark plug.

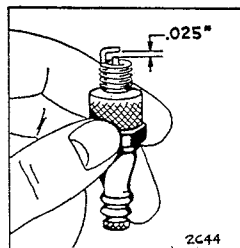
30. TO CHECK FOR SPARK.

- Remove the ignition cable from the plug. Remove plug. Hold ignition cable terminal about $\frac{1}{8}$ " from any metal part of cylinder head. (See Plate No. 11.)

Checking Spark
Plate No. 11



Checking Gap
Plate No. 12



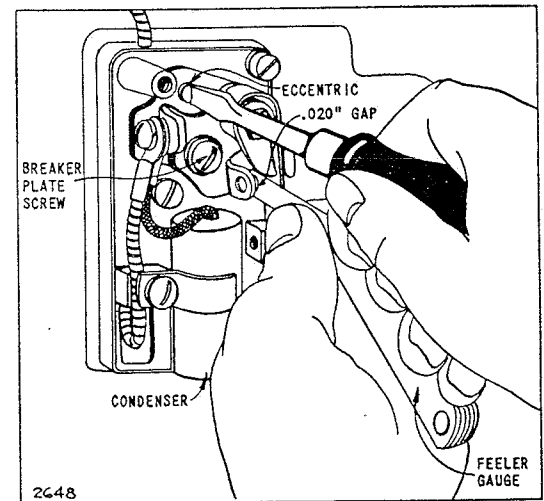
b. Crank engine and if spark jumps this gap the entire ignition system with the exception of the spark plug is O.K. for starting.

c. If no spark develops, remove the breaker box cover and check to see that none of the wires attached to the breaker plate are grounded against the box or cover.

31. SPARK PLUG GAP ADJUSTMENT. The spark plug should be cleaned and the gap reset to .025" after each 100 hours of operation. (See Plate No. 12.) Always keep a fresh plug on hand. Use Champion No. J-8 or exact equivalent. When inserting plug place a little graphite grease on the threads to prevent sticking.

32. TO CLEAN AND ADJUST BREAKER POINTS. (See Plate No. 13.) It is not necessary to remove the flywheel to adjust breaker points or replace the condenser. The breaker points are located in the breaker box. (See Plates No. 13 and 2.) To open loosen two screws on cover. Clean points—use a carborundum point stone. Then insert a hard finished card or piece of paper and close and open points. The card or paper will absorb any dirt or filings on the points. Adjust breaker points as follows:

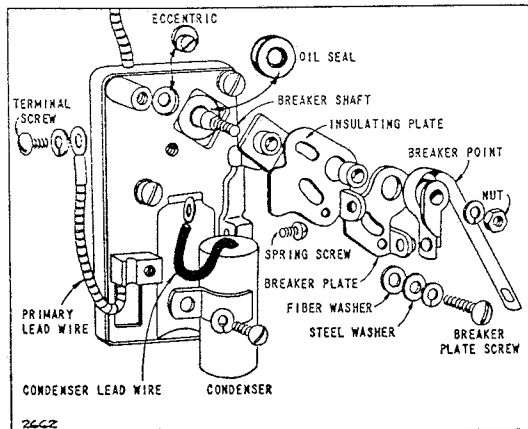
- Rotate crankshaft until points open to widest gap.
- Loosen breaker plate screw slightly.
- Rotate eccentric to secure .020" gap.
- Tighten breaker plate screw.

Adjusting Breaker Points — Plate No. 13**33. TO REPLACE BREAKER POINTS.** (See Plate No. 14.)

- Rotate crankshaft until points are in wide open position. Leave crankshaft in this position while changing points.
- Remove terminal screw.
- Remove spring screw.
- Loosen nut until top of nut is flush with end of threaded shaft.
- Tap nut with screw driver handle to free breaker point from taper.

- f. Remove nut and breaker point.
 - g. Remove breaker plate screw and breaker plate.
 - h. Pry out the breaker shaft oil seal and press in new seal with metal side out.
 - i. Put new breaker plate on top of insulating plate taking care that the dowel in breaker plate engages hole in insulating plate. Fasten breaker plate screw only enough to put a light tension on the plate.
 - j. Adjust eccentric so that left edge of insulating plate is parallel to edge of box and tighten screw. This locates the breaker plate so that proper gap adjustments may be made.
 - k. Turn breaker shaft in clockwise direction as far as possible. Place new breaker point on shaft, then the lockwasher and tighten nut down on lockwasher.
 - l. Replace spring screw and terminal screw.
 - m. Adjust points by loosening breaker plate screw slightly and rotating eccentric to secure .020" gap between points.
- Tighten breaker plate screw.

Breaker Box Assembly — Plate No. 14



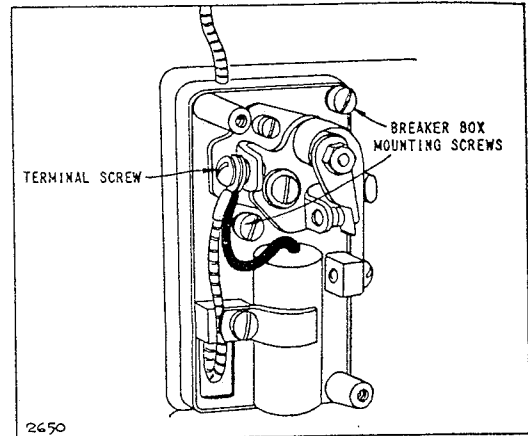
34. TO REPLACE CONDENSER. (See Plate No. 14.) Fasten the condenser lead wire and primary lead wire to breaker plate. The condenser mounting tang also holds the primary lead wire in place.

35. TO REPLACE BREAKER BOX ASSEMBLY. (See Plate No. 15.)

- a. Remove breaker box cover.
- b. Remove terminal screw.
- c. Remove two breaker box mounting screws.
- d. To reassemble reverse above operation but adjust points before assembling cover. (See Paragraph 32.)

36. TO REMOVE FLYWHEEL. The flywheel is securely mounted on the crankshaft by means of a taper fit and a right hand threaded nut.

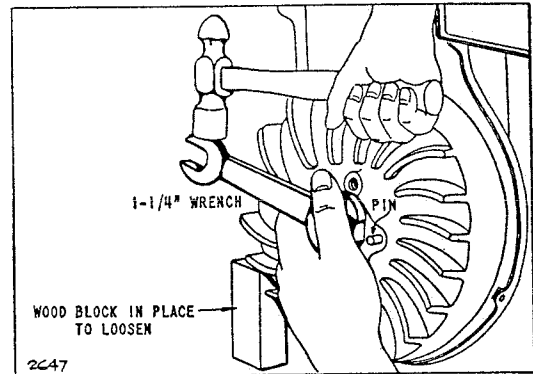
Breaker Box — Plate No. 15



Remove flywheel as follows:

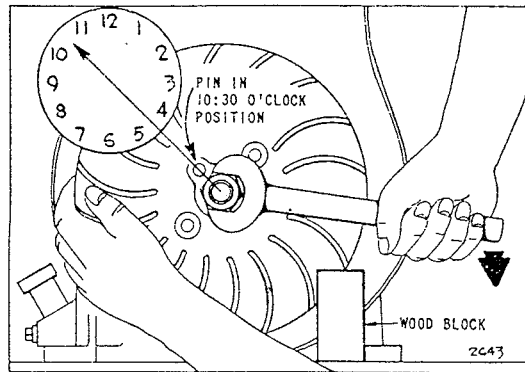
- a. Loosen the two cap screws to remove starter pulley.
- b. Remove blower housing.
- c. Place a block of wood 4 inches high under a fin on flywheel to hold in place. (See Plate No. 16.)
- d. Use a 1 1/4-inch wrench to remove flywheel nut. Be careful not to damage the starter pin on flywheel.
- e. Rap flywheel end of crankshaft with a babbitt or rawhide hammer to jar flywheel loose if a flywheel puller is not available.

Removing Flywheel — Plate No. 16



37. TO REASSEMBLE FLYWHEEL. (See Plate No. 17.)

- a. Thoroughly clean taper of crankshaft and flywheel.
- b. Turn crankshaft until arrow marked 14 on rotor aligns with arrow on armature. (See Plate No. 20.)
- c. Assemble flywheel with starter pin in 10:30 o'clock position. (See Plate No. 17.) This setting brings starter crank in bottom position for easy starting. This setting may be changed if a different starting position is desired.
- d. Tighten flywheel nut with fingers as much as possible, then lock flywheel with wooden block and tighten nut securely with a 1 1/4-inch wrench.

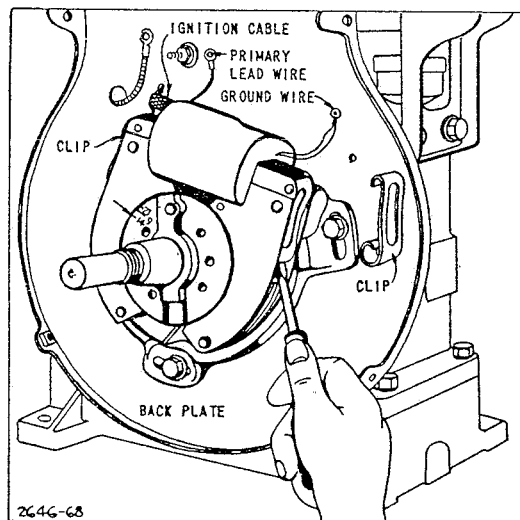
Assembling Flywheel — Plate No. 17**38. TO REPLACE COIL.** (See Plate No. 18.)

a. With flywheel removed (see Paragraph 36) loosen primary lead wire and primary and secondary ground wires from back plate.

b. Pry out clips at each end of coil core. Hold hand over clips to prevent flying.

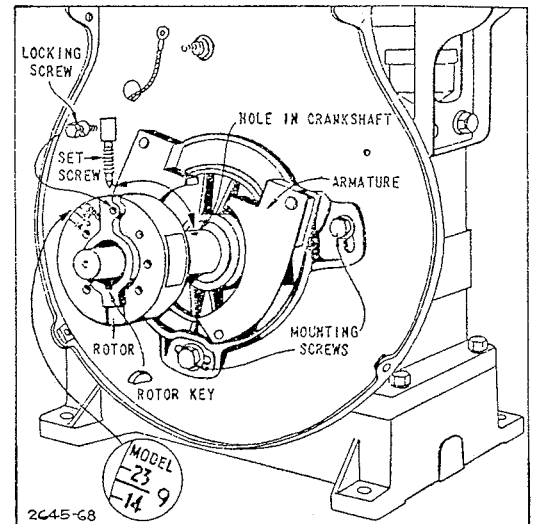
c. Pull ignition cable through back plate but be careful not to pull terminal from ignition cable.

d. Reassemble coil by reversing the above operation, but be sure that the primary wire from coil is assembled between ignition cable and the back of plate. Inspect this wire and the armored primary wire leading from terminal on back plate to the breaker box for frayed ends or broken insulation which may cause short circuiting.

Removing Coil — Plate No. 18

39. IGNITION CABLE. Examine cable at the spark plug end and be sure that the wire strands are not broken loose from the terminal. Insulation must not be broken or soaked with oil or water, or grounded in any way as this will prevent proper ignition. The cable is permanently fastened to the coil and any attempts to remove it will result in damage to the coil.

40. TO REMOVE ARMATURE. Loosen the three mounting screws which hold the armature plate to crankcase. (See Plate No. 20.)

Rotor and Armature — Plate No. 20

41. TO REMOVE ROTOR. (See Plate No. 20.)

a. Remove lock screw.

b. Remove set screw and slide rotor from crankshaft.

c. Remove rotor key if crankshaft or bearing support is to be removed.

CAUTION: Do not place rotor on a metal bench. At all times whether on or off the engine keep the rotor within the armature as much as possible. This is to prevent the rotor from losing magnetism. Keep watches away from rotor to prevent their being magnetized.

42. TO REASSEMBLE ROTOR.

a. Insert rotor key in keyway in crankshaft.

b. Slide rotor onto crankshaft so that set screw hole aligns with hole in crankshaft. Be sure that rotor key remains in place.

c. Tighten set screw securely.

d. Turn lock screw, with lock washer, into hole in rotor to prevent set screw from loosening. The lock screw is self threading and the hole does not require tapping.

43. TO ADJUST ROTOR TIMING. The rotor and armature are correctly timed at the factory and require timing only if the armature has been removed from the engine, or if the cam gear or crankshaft have been replaced. If necessary to adjust, proceed as follows:

a. Set point gap at .020" and with rotor properly located on the crankshaft by means of the pointed set screw, turn the crankshaft in normal direction of rotation

until breaker points start to open. Use a timing light or insert a piece of tissue paper between the breaker points to determine when the points begin to open.

b. Loosen the three armature mounting screws slightly and rotate armature until the arrow on armature lines up with the arrow marked 14 on rotor as shown in Plate No. 20.

c. Retighten mounting screws.

If after the ignition system has been checked as described in preceding paragraphs and it still does not deliver a satisfactory spark, we recommend sending the engine to our nearest service organization.

LUBRICATION SYSTEM

44. This engine is lubricated with a splash system. A dipper on the connecting rod splashes an ample supply of oil to all moving parts including parts on 6-to-1 gear reduction models. For further information, see Paragraph No. 62. There are no external parts on the engine that require oiling.

45. **OIL LEAKS.** If oil leaks from either end of crankshaft or from breaker box it indicates a worn oil seal or a worn or dirty breather. Remove breather, wash in gasoline, and reassemble.

VALVES

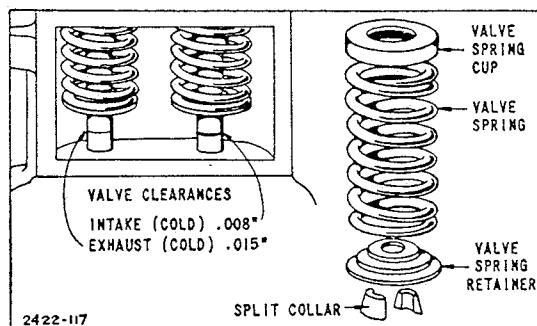
46. **VALVE ADJUSTMENT.** (See Plate No. 21.) To check valve clearance, remove carburetor and valve cover plate. Correct valve clearances when engine is cold are:

*Exhaust Valve015"
 Intake Valve008"

*Engines with exhaust valves stamped "T. P. A." on head should be set at .018".

Tappet clearance is adjusted by grinding required amount from end of valve stem. End of stem must be square with stem proper.

Valve Adjustment — Plate No. 21



47. **TO REMOVE VALVES.** (See Plate No. 22, Fig. A.)

a. Remove muffler, carburetor intake elbow, cylinder head, and cylinder head cover.

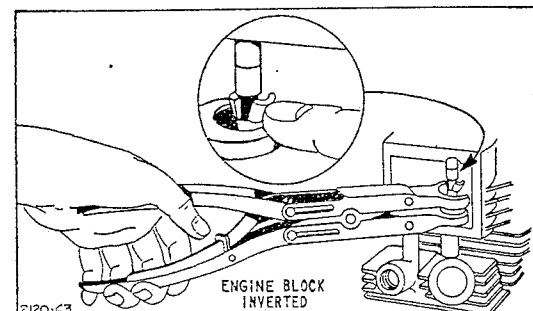
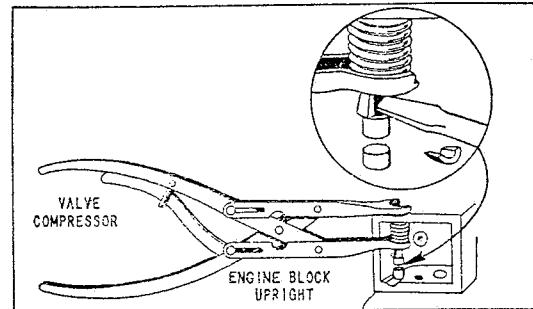
b. Place valve spring compressor on top of valve chamber and below spring retainer as illustrated. Then compress the spring and pry out split retainer collars and spring with a screwdriver.

48. **TO REPLACE VALVES.** (See Plate No. 22, Fig. B.)

a. Invert cylinder after oil has been drained.

b. Place valve spring and retainer into compressor tool and compress as much as possible. Place tool into valve chamber and slip valve into place. Slip one-half of retainer collar into groove in valve stem and move it toward the rear of the valve chamber, then insert the other half. Release spring compressor.

To Remove and Replace Valves
 Plate No. 22 (Fig. A)



(Fig. B)

49. **VALVE RESEATING.**

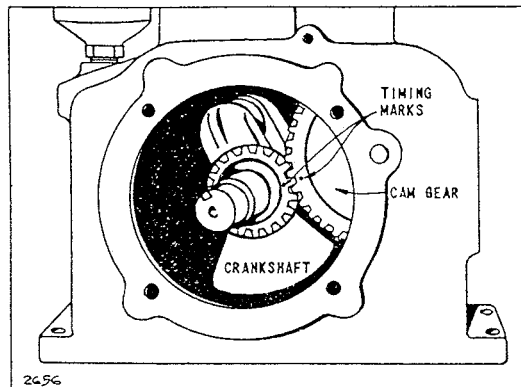
a. Grind in the same manner as automobile valves. If valves stick they may be coated with gum or carbon. To remove gum, use alcohol or acetone. Clean valve stems thoroughly with wire brush or emery cloth. Also scrape all carbon from valves.

b. If the inspection shows that the valve stem is badly worn or the seat is too badly pitted, we recommend sending the engine to our nearest service organization.

50. **VALVE TIMING.** The timing of the valves is taken care of by the meshing of the cam shaft gear with the gear on the crankshaft. These gears are properly meshed when the mark on the cam shaft

gear is in line with the mark on the crankshaft pinion. (See Plate No. 23.)

Valve Timing — Plate No. 23



CYLINDER

51. CYLINDER HEAD. The cylinder head is held in place with seven cap screws.

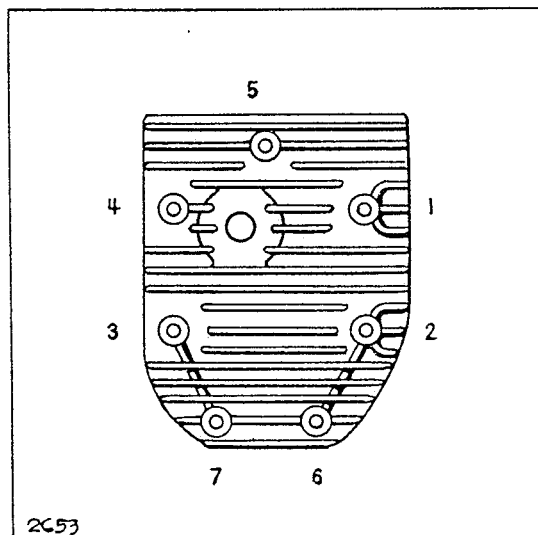
52. TO REMOVE AND CLEAN CYLINDER HEAD.

- Remove spark plug.
- Remove cylinder head and cover.
- Accumulated dirt, grease, and oil should be scraped and blown out of the air passages. This is important to allow free circulation of air and prevent overheating.
- Clean carbon deposits with wire brush or scraper and thoroughly blow out. See that spark plug hole is clean and that the threads are not stripped.

53. TO REASSEMBLE CYLINDER HEAD.

- Use a new gasket, Part No. 290814. If not available, clean the old one and coat both sides with cup grease — **shellac is not recommended.**

Tightening Cylinder Head — Plate No. 24



b. Replace cylinder head and cover and tighten cap screws a little at a time, while engine is cold, taking them in rotation as shown in Plate No. 24.

e. Continue in this manner until securely tight, but do not exert more than 200 inch pounds of pull.

d. Use a small amount of graphite grease on spark plug threads before replacing.

e. Retighten screws after engine is hot.

54. CHECKING THE CYLINDER.

a. Cylinders that are scored, out of round, or oversize should be rebored. In such cases we recommend sending the engine to our nearest service organization.

CRANKSHAFT

55. TO REMOVE CRANKSHAFT.

- Drain oil from crankcase.
- Remove blower case.
- Remove flywheel. (See Paragraph 36.)
- Remove rotor. (See Paragraph 41.) Remove burr if any at rotor set screw hole.
- Remove rotor key.
- Remove engine from base and tilt backward so it rests on fuel tank.
- Disconnect connecting rod and push piston up in cylinder bore so it clears crankshaft. Do not push too far as top ring may come out of cylinder.
- Remove four hexagon head screws and crankcase cover on drive side. On engines with ball bearings, remove the crankcase cover from drive side and also the ball bearing support from flywheel side.
- Slide crankshaft out, being careful that the counterweights clear the cam gear. Crankpin should be in direction of the breather. (See Plate No. 23.)

56. TO REASSEMBLE CRANKSHAFT.

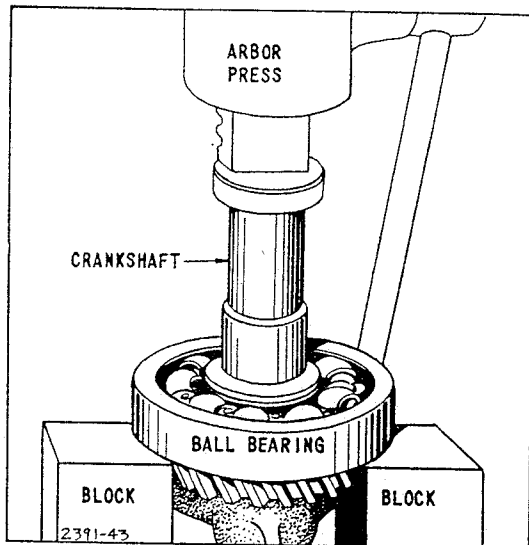
- Turn cam gear until timing mark is visible.
- Assemble crankshaft from drive side matching the timing mark on crankshaft gear with the timing mark on cam gear. Mark tooth on crankshaft with chalk before inserting into engine.
- Assemble crankcase cover to drive side and bearing support to flywheel side.
- Crankshaft end play should be .002" to .008" and should be checked with a dial indicator. If no indicator is available mount a pulley or clamp on the power take-off end of crankshaft as close to crankcase cover as possible. Move crankshaft in, then out, using a feeler gauge between the pulley and the crankcase cover to measure the end play.

e. To adjust the end play remove the bearing support on the flywheel side and use one or more of the following gaskets to obtain the correct play:

- Part No. 27295 $\frac{1}{4}$ " thick
- Part No. 27296005" thick
- Part No. 27297009" thick

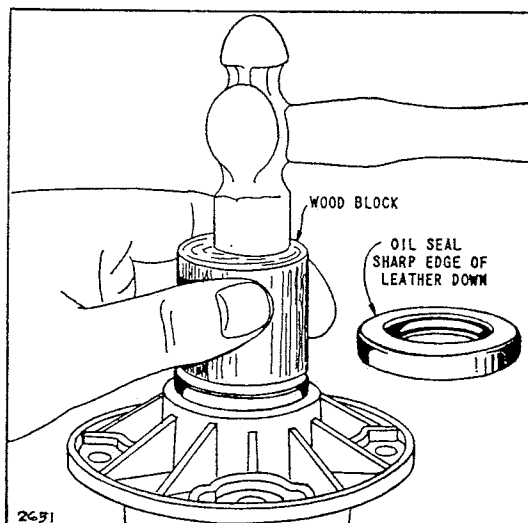
57. TO REMOVE BALL BEARING. Some models of this engine have ball bearings on both sides of crankshaft. If ball bearings are worn or rough, replace with new ones, Part No. 29530. With both sides of ball bearing supported in an Arbor Press remove as shown in Plate No. 25.

Removing Ball Bearing from Crankshaft
Plate No. 25



58. TO REPLACE BALL BEARING. Heat ball bearing in hot oil before installing on crankshaft. When hot it will become a slip fit. Hold crankshaft in a vise and place ball bearing into place with the sealed end

Replacing Oil Seal — Plate No. 26



down. Allow bearing to cool slowly — do not submerge in cold water.

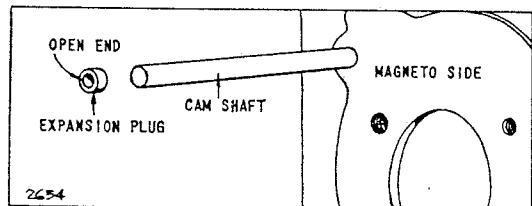
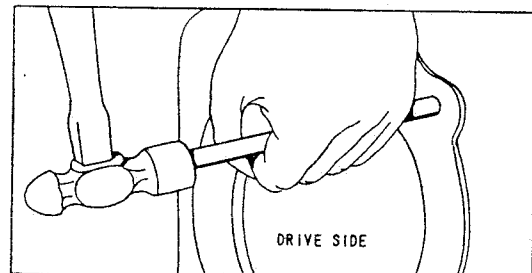
59. OIL SEAL. (See Plate No. 26.) Replace oil seal, using a wood block and hammer to force into position. If worn or damaged replace with a new one. The sharp side of leather in seal should be toward inside of engine. When assembling the crankcase cover to engine use a piece of shim stock on thin sheet steel as a guide to protect the oil seal. When assembling the bearing support on the flywheel side, be sure there is no burr, at the rotor set screw hole in crankshaft, which might damage the oil seal.

CAM SHAFT AND CAM GEAR

60. TO REMOVE CAM SHAFT AND CAM GEAR. After crankshaft has been removed as explained in preceding chapter, proceed as follows:

- a. Use a blunt punch and force cam shaft out from drive side of the engine as shown in Plate No. 27. The cam gear will then be free for removal from crankcase.
- b. Be sure not to get burrs on the end of shaft. After removal, check for wear. If badly worn, replace with new shaft, Part No. 63614.

Removing Cam Shaft — Plate No. 27



61. TO REPLACE CAM SHAFT.

- a. Insert cam shaft through hole on the flywheel side of the engine far enough to permit sliding the cam gear into position.
- b. Slide cam shaft through cam gear and press in flush with outside of crankcase on opposite side.
- c. Install the expansion plug in hole on the flywheel side with its open end out. Seal with "Permatex" or other liquid gasket material to prevent oil leaks.
- d. When inserting the crankshaft be sure to line up timing marks on the cam shaft gear with the gear on the crankshaft. (See Plate No. 23.)

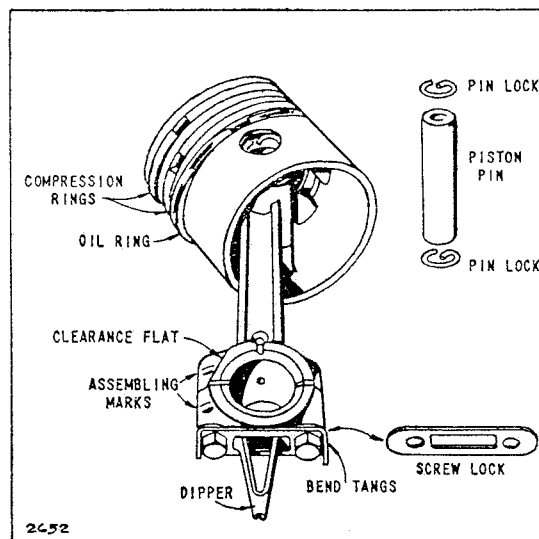
PISTON ASSEMBLY AND CONNECTING ROD

62. PISTON. (See Plate No. 28.)

a. The piston in this engine is made of a special aluminum alloy which is very light in weight. The top and second lands of the piston are smaller than the skirt to allow for greater expansion at the piston head. When piston is removed be sure to thoroughly clean carbon from head of piston and ring grooves. If piston is out of round or scored it should be replaced.

b. If an oversize piston is necessary, we recommend sending the engine to our nearest service organization.

Piston Assembly — Plate No. 28



63. PISTON RINGS. Three rings are used: Two compression and one oil control. Before assembling new rings, thoroughly clean piston grooves so rings move freely. When fitted in the cylinder allow a gap of .007" to .017". (See Plate No. 28.) Before assembling new rings to piston be sure that piston ring grooves are thoroughly cleaned and rings move in grooves freely. Squirt oil on rings and piston before inserting into cylinder bore.

64. PISTON PIN.

a. The piston pin is a slip fit in the piston. To remove, first remove lock rings, then slip pin out of piston.

65. CONNECTING ROD. The connecting rod is also made of a special aluminum alloy which combines strength with light weight. When assembling connecting rod to crankshaft, the cam gear clearance flat must be toward the carburetor side of engine. (See Plate No. 28.) The assembly marks on the cap and rod must be on the same side. The connecting rods are equipped with an oil dipper which is held in place

with two cap screws. After securely tightening the cap screws, bend tang of screw lock against screw head with pliers.

AIR CLEANER

66. TO REMOVE, CLEAN, AND REPLACE. (See Plate No. 29.) The air cleaner is to protect the engine from dirt and grit. It is therefore important that it be cleaned and refilled every 25 hours the engine is in use. (Daily if operating under dusty conditions.) Clean as follows:

a. Remove thumb nut and slide entire cleaner over rod.

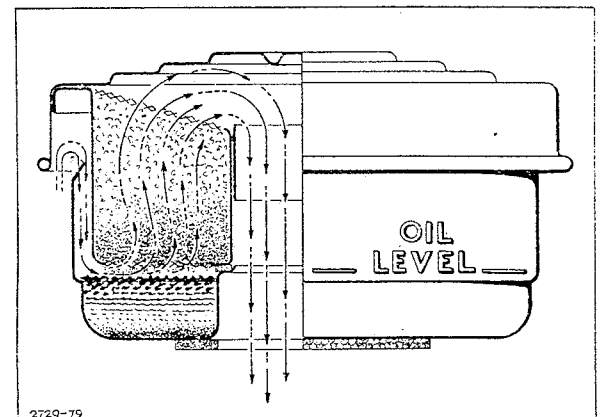
b. Remove cover and filter and pour out oil.

c. Wash the filter element in gasoline. Shake to remove excess gasoline so that engine will not be flooded upon starting.

d. Clean bowl and cover by submerging in gasoline and wipe dry.

e. Replace parts. Fill cleaner with oil of the same viscosity as used in the crankcase up to the level marked on cleaner bowl. See Instructions on air cleaner label.

Air Cleaner Assembly — Plate No. 29



MUFFLER

67. TO CLEAN. After long periods of service it is possible that the muffler will become clogged to the point where it will affect the engine's power. To check the muffler unscrew it from the engine and run water into the open end of the muffler. If full streams of water come out of small holes at the end of the muffler, you will know that it is not clogged up. If the water runs through very slowly, however, the muffler is probably clogged and should be replaced.

OVERLOAD

68. TO PREVENT. Always be sure that the machine the engine is operating is well lubricated and running freely. If it is not, it may cause the engine to be overloaded, resulting in it overheating, losing power, or stopping entirely.

PARTS SECTION

INDEX

How to Find the Correct Number of Part You Need.....(See below)	Page
Numerical Parts List.....	25-34
Illustrations of Parts Groups:	
Cylinder and Base Parts.....	20
Piston, Connecting Rod, Crankshaft, and Breaker Box Parts.....	21
Flywheel, Ignition System, and Blower Housing Parts.....	22
Fuel System Parts.....	23
Gear Reduction Parts.....	24



69. HOW TO FIND THE CORRECT NUMBER OF THE PART YOU NEED

a. Make a note of your engine **TYPE NUMBER** (Not the Serial Number) that appears on the metal nameplate attached to the engine cylinder shield.

b. Refer to pages illustrating parts and locate the **Master Part Number** by comparing your old part with illustrations. Assemblies include all part numbers shown in frames in illustration. All parts shown in assembly frames on which part numbers are given can be purchased separately.

c. After the Master Part Number has been identified, refer to the following Parts List where these Master Part Numbers are listed in numerical order.

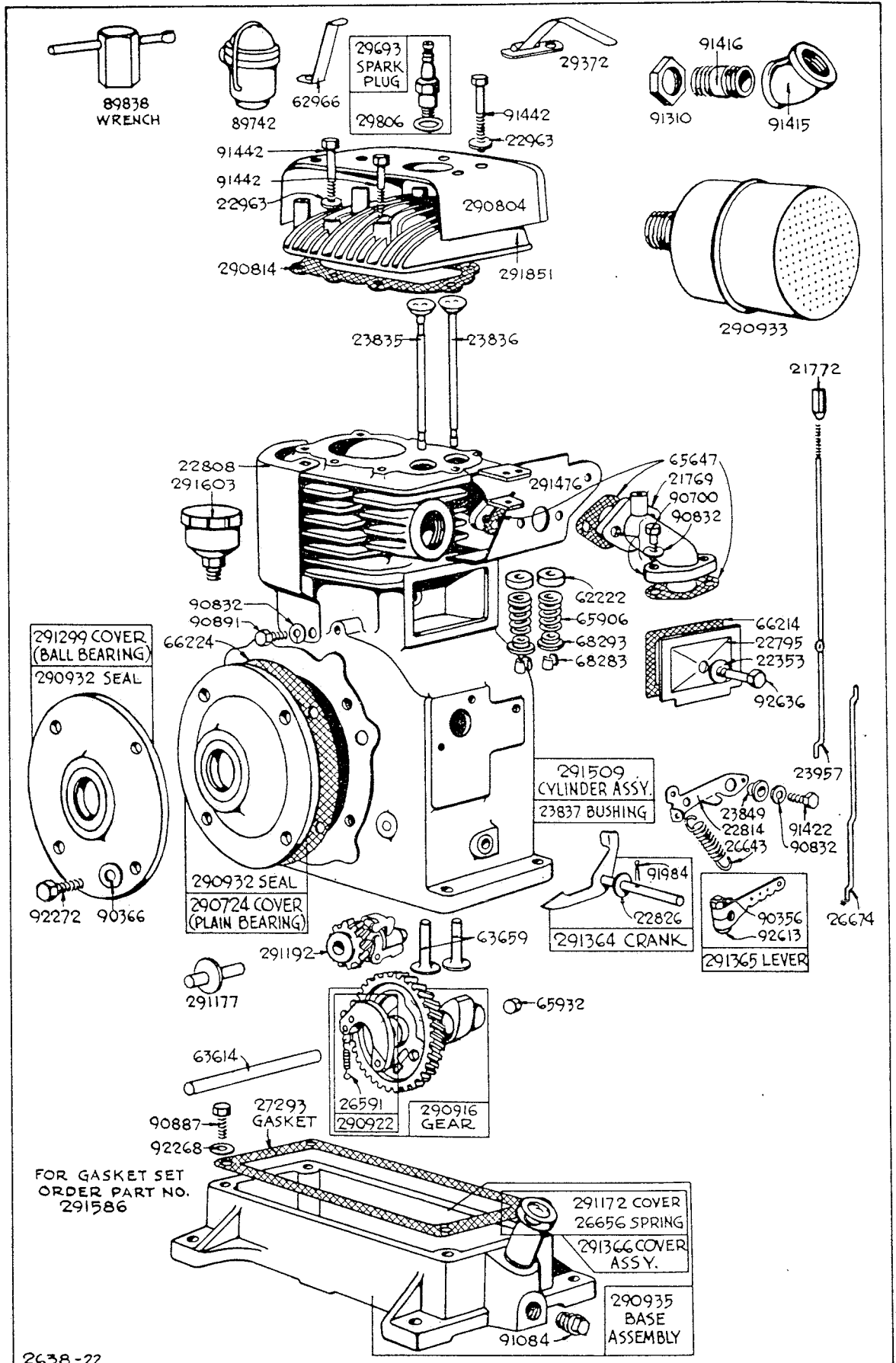
THE MASTER PART IS USED ON ALL TYPES OF ENGINES EXCEPT THOSE TYPES LISTED UNDER "NOTE."

d. If a "Note" appears below the Master Part Number, this means that this part is made different from the Master Part for certain types, and if your type is listed under "Note" order the part referred to.

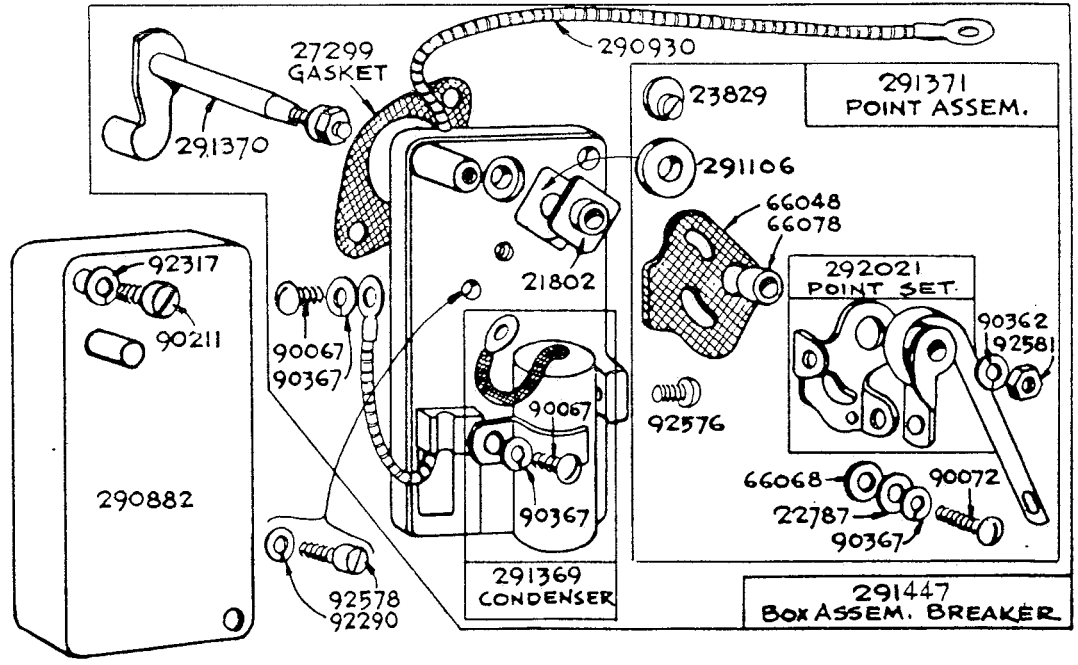
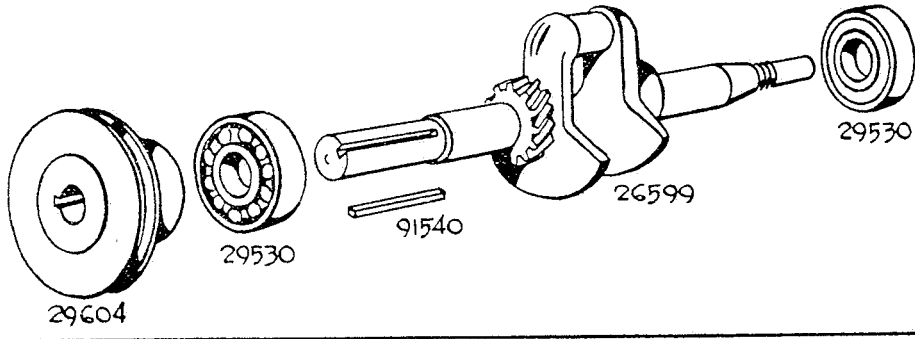
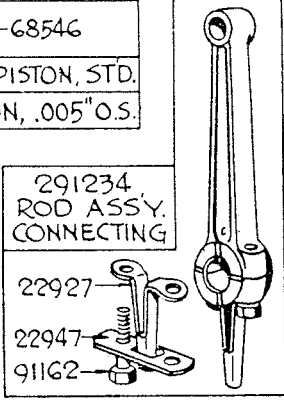
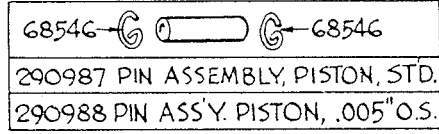
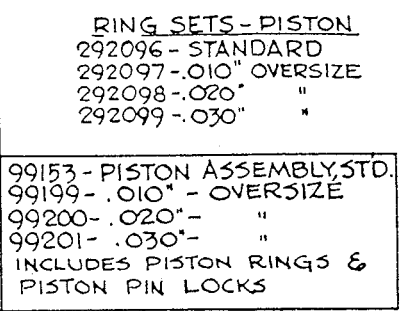
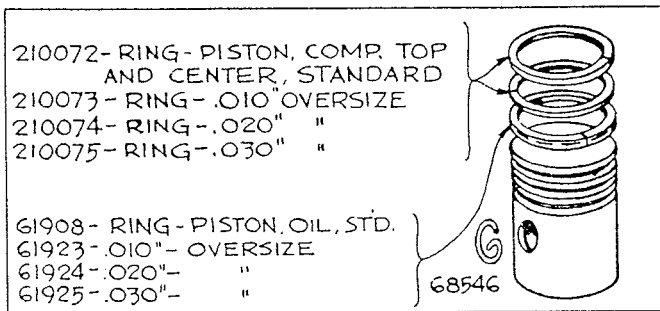
e. If your Engine Type Number does not appear after any part number listed under "Note," order the Master Part Number.

f. When ordering parts—or writing for service information—always specify the **MODEL NUMBER—TYPE NUMBER—and SERIAL NUMBER** of your engine.

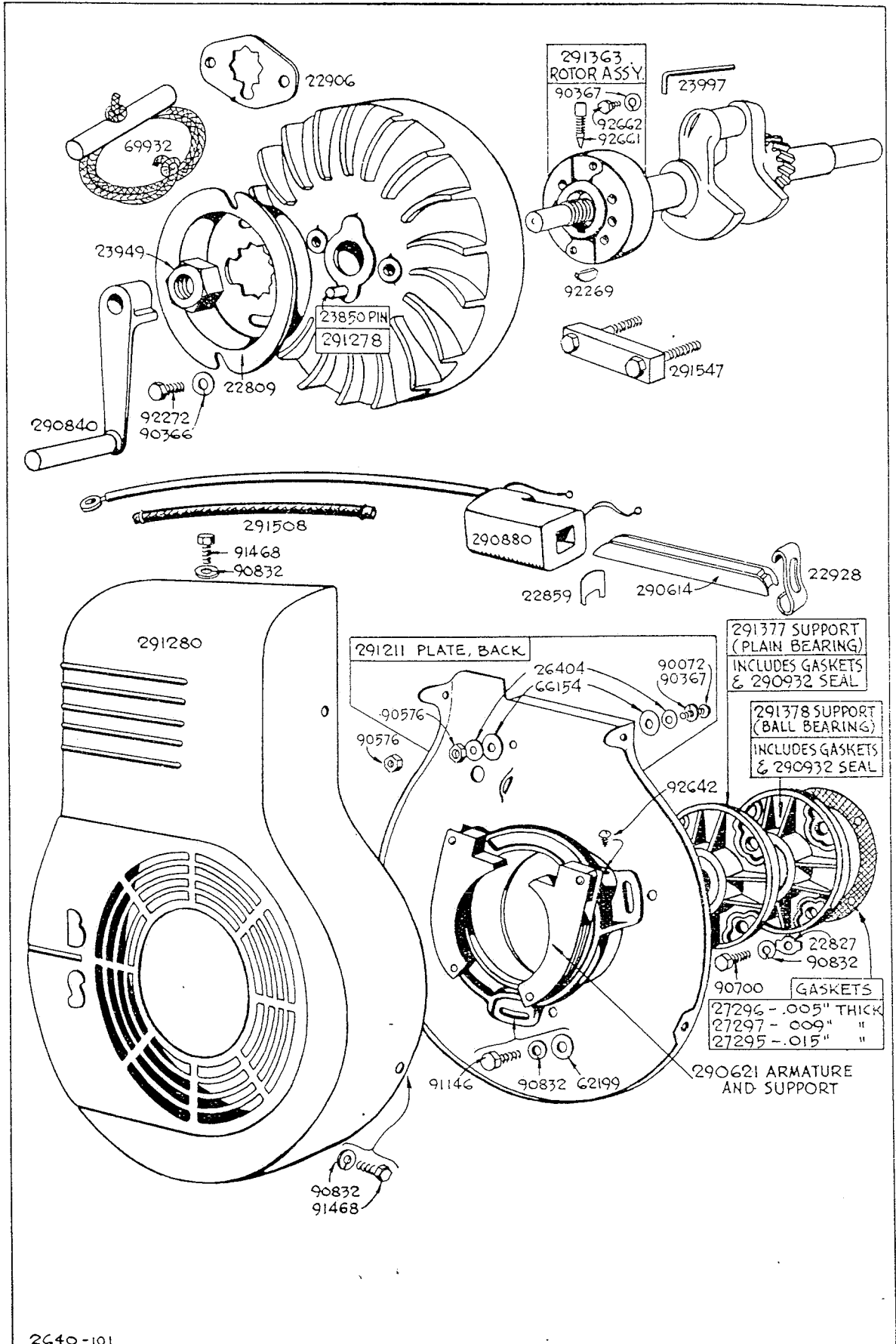
g. All parts should be ordered from the nearest member of our Nation-wide Service Organization. (See Page 37.) In ordering parts by mail, selling prices will be furnished on request or parts will be shipped at prevailing prices.



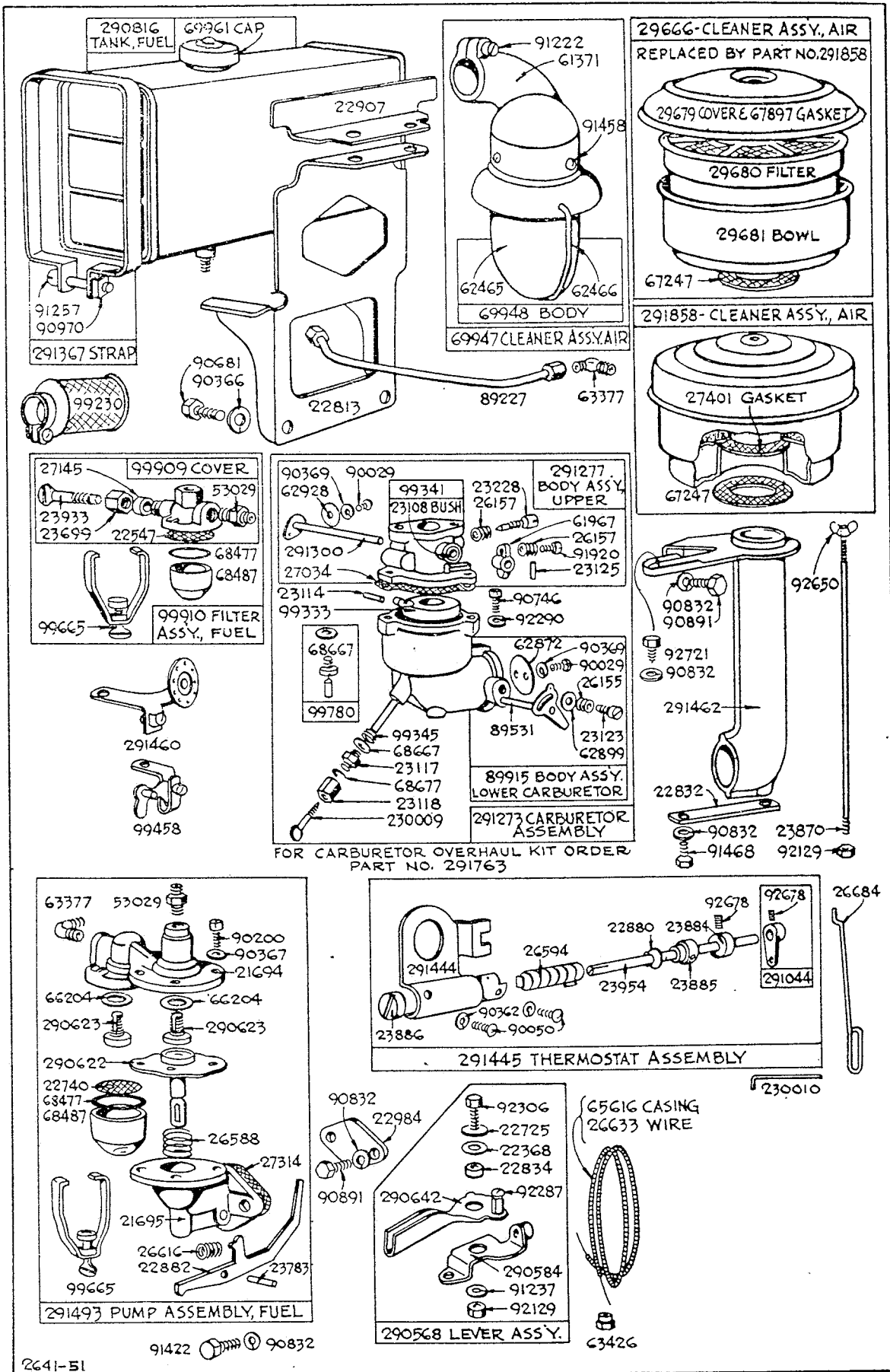
CYLINDER AND BASE PARTS — PLATE No. 30
Assemblies include all parts shown in frames



2639-80

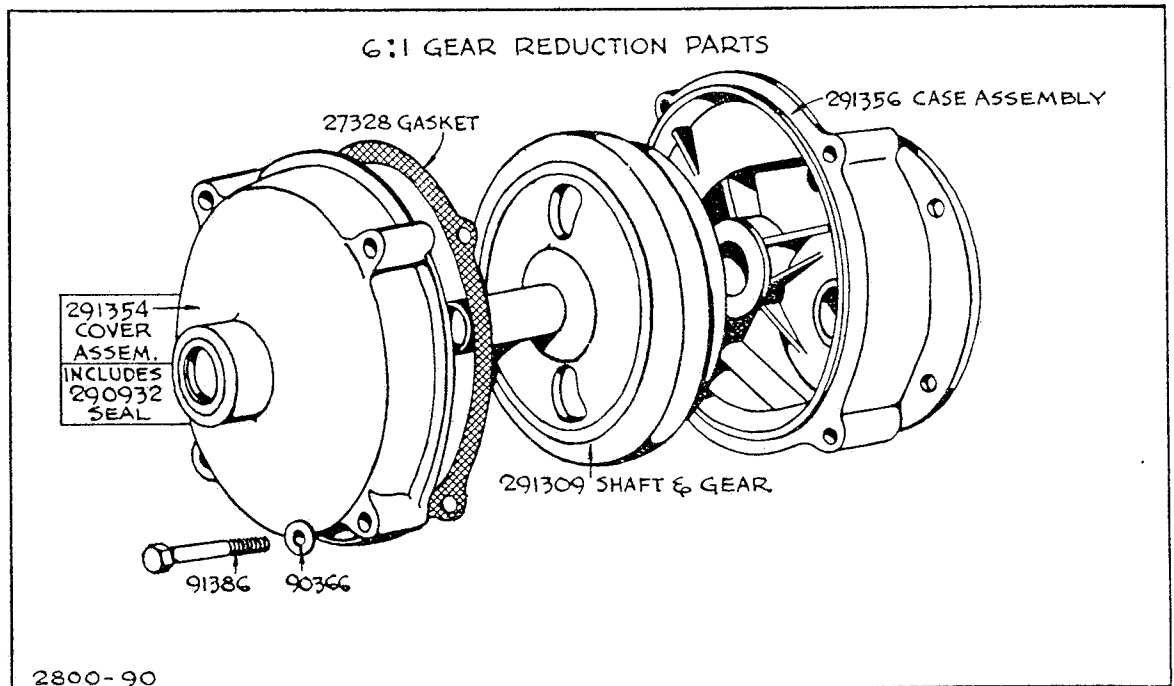


FLYWHEEL, IGNITION SYSTEM AND BLOWER HOUSING PARTS — PLATE No. 32
Assemblies include all parts shown in frames



2641-51

FUEL SYSTEM PARTS — PLATE No. 33
Assemblies include all parts shown in frames



GEAR REDUCTION PARTS — PLATE No. 34
Assemblies include all parts shown in frames

NUMERICAL PARTS LIST

MASTER PART NO.	NAME	SHIPPING WEIGHT	
		Lbs.	Oz.
21694	Head—Fuel Pump		6
21695	Body—Fuel Pump		6
21769	Elbow—Carburetor Intake		10
21772	Nut—Governor Adjusting		1
	<i>Note:</i> No. 23402 Nut—Governor Stop		1
	Used on type No. 202312.		
21802	Bushing—Oil Seal Clamp		1
*22353	Washer—Valve Cover		1
22368	Washer—Control Lever		1
22547	Screen—Fuel Filter		1
22725	Washer—Control Lever		1
22740	Screen—Fuel Pump Filter		1
22787	Washer—Breaker Plate		1
22795	Cover—Valve		4
22808	Shield—Cylinder		6
22809	Pulley—Rope Starter		10
	<i>Note:</i> No. 210150 Pulley—Starter	3	8
	Used on type No. 202565.		
22813	Bracket—Fuel Tank	1	
22814	Lever—Governor Control		3
22826	Washer—Governor Crank		1
22827	Washer—Bushing Support		1
22832	Strap—Air Cleaner Pipe		2
22834	Washer—Spacer		1
22859	Retainer—Coil		1
	<i>Note:</i> No. 220245 Retainer—Coil		1
	Used on type Nos. 202064, 202065, 202324, 202325, 202553, 202563, 202565, 202839, 202843.		
22880	Washer—Thermostat		1
22882	Lever—Fuel Pump		2
22906	Lock—Flywheel Nut		2
22907	Support—Upper Fuel Tank		3
22927	Dipper—Connecting Rod		2
	<i>Note:</i> No. 22991 Dipper—Connecting Rod		3
	Used on type No. 202527.		
22928	Clip—Armature Spring		1
	<i>Note:</i> No. 220244 Clip—Armature Spring		1
	Used on type Nos. 202064, 202065, 202324, 202325, 202553, 202563, 202565, 202839, 202843.		
22947	Lock—Connecting Rod Screw		2
22963	Washer—Cylinder Head		1
	<i>Note:</i> No. 220208 Washer—Cylinder Head		1
	Used on type Nos. 202065, 202324, 202563, 202565, 202839, 202843.		
22984	Cover—Fuel Pump Hole		2
23108	Bushing—Throttle Shaft		1
†23114	Pin—Float Hinge		1
†23117	Retainer—Needle Valve		1
	<i>Note:</i> No. 292226 Retainer Assembly—Jet Needle		2
	Used on type Nos. 202061, 202321, 202555, 202556, 202557, 202559, 202570, 202835.		
†23118	Nut—Needle Valve Packing		1
23123	Screw—Choke Lever		1
23125	Pin—Throttle Lever		1
†23228	Valve—Carburetor Idle		1
23699	Nut—Fuel Shut-Off Lever		1
23783	Pin—Fuel Pump Lever		1
23829	Eccentric		1

*Included in Gasket Set — Part No. 291586.

†Included in Carburetor Overhaul Kit — Part No. 291763.

MASTER PART NO.	NAME	SHIPPING WEIGHT	
		Lbs.	Oz.
23835	Valve—Exhaust		3
	<i>Note:</i> No. 26735 Valve—Exhaust.....		3
	Used on type Nos. 202064, 202065, 202324, 202325, 202541, 202549, 202553, 202563, 202565, 202839, 202843.		
23836	Valve—Intake		3
	<i>Note:</i> No. 23835 Valve—Intake.....		3
	Used on type Nos. 202064, 202065, 202324, 202325, 202541, 202549, 202553, 202563, 202565, 202839, 202843.		
23837	Bushing—Governor Crank		1
23849	Bushing—Control Lever		1
23850	Pin—Flywheel		1
23870	Stud—Air Cleaner		4
23884	Stop—Thermostat Shaft		1
23885	Support—Thermostat Shaft (Inner)		1
23886	Support—Thermostat Shaft (Outer)		1
23933	Lever—Fuel Shut-Off		2
23949	Nut—Flywheel		4
	<i>Note:</i> No. 92675 Nut—Pulley Mounting		2
	Used on type No. 202977.		
	No. 92799 Nut—Pulley Mounting.....		2
	Used on type No. 202565.		
	No. 230125 Nut—Flywheel		4
	Used on type Nos. 202065, 202324, 202563, 202565, 202839, 202843.		
23954	Shaft—Thermostat		2
23957	Rod—Governor Control		1
23997	Wrench—Socket Hd. Screw		1
26155	Spring—Choke Lever		1
†26157	Spring—Idle Valve and Throttle Adjustment.....		1
26404	Washer—Back Plate Terminal		1
26588	Spring—Fuel Pump Diaphragm		1
26591	Spring—Spark Advance		1
26594	Thermostat		1
26599	Crankshaft		7
	<i>Note:</i> No. 26652 Crankshaft		7
	Used on type Nos. 202810, 202811, 202812, 202813, 202814, 202815, 202816, 202817, 202818, 202819, 202820, 202821, 202823, 202824, 202825, 202826, 202827, 202828, 202829, 202830, 202831, 202832, 202833, 202834, 202835, 202836, 202837, 202838, 202839, 202840, 202841, 202842, 202843.		
	No. 26661 Crankshaft		7
	Used on type Nos. 202510, 202522, 202523, 202525, 202529, 202531, 202532, 202536, 202550, 202556.		
	No. 26663 Crankshaft		7
	Used on type Nos. 202512, 202538, 202546, 202570.		
	No. 26664 Crankshaft		7
	Used on type Nos. 202513, 202514, 202516, 202517, 202519, 202520, 202524, 202535, 202540, 202541, 202547, 202557, 202560, 202564.		
	No. 26667 Crankshaft		7
	Used on type Nos. 202310, 202311, 202312, 202313, 202314, 202315, 202316, 202318, 202319, 202320, 202321, 202322, 202323, 202324, 202325, 202511, 202515, 202518, 202521, 202530, 202534, 202537, 202549, 202551, 202553, 202555, 202558, 202559, 202561, 202569.		
	No. 26685 Crankshaft		9
	Used on type No. 202527.		
	No. 26707 Crankshaft		7
	Used on type Nos. 202526, 202533, 202542, 202545, 202548, 202554, 202562, 202563, 202566, 202567, 202568.		
	No. 26708 Crankshaft		7
	Used on type Nos. 202034, 202067.		

(See following page)

† Included in Carburetor Overhaul Kit — Part No. 291763.

MASTER PART NO.	NAME	SHIPPING WEIGHT	
		Lbs.	Oz.
	No. 26709 Crankshaft	7	
	Used on type Nos. 202528, 202543, 202544.		
	No. 26711 Crankshaft	7	
	Used on type Nos. 202975, 202976, 202978, 202979, 202980.		
	No. 26730 Crankshaft	7	
	Used on type No. 202977.		
	No. 26848 Crankshaft	7	
	Used on type No. 202064.		
	No. 26849 Crankshaft	7	
	Used on type No. 202565.		
26616	Spring—Fuel Pump Lever		1
26633	Wire—Control—78" long		2
	<i>Note:</i> If longer wire is required, specify length in inches; if shorter wire is needed, order No. 26633 and cut to required length.		
26643	Spring—Governor		1
26656	Spring—Oil Filler Cover		1
26674	Link—Throttle		1
26684	Link—Choke		1
*27034	Gasket—Carburetor Body		1
27145	Packing—Fuel Shut Off Lever		1
*27293	Gasket—Engine Base		2
*27295	Gasket—Plain or Ball Bearing Support— $\frac{1}{4}$ " thick		1
*27296	Gasket—Plain or Ball Bearing Support—.005" thick		1
*27297	Gasket—Plain or Ball Bearing Support—.009" thick		1
*27299	Gasket—Breaker Box		1
27314	Gasket—Fuel Pump Mounting		1
27328	Gasket—Gear Case Cover		1
	<i>Note:</i> No. 68247 Gasket—Gear Case Cover		1
	Used on type Nos. 202975, 202976, 202977, 202978, 202979, 202980.		
27401	Gasket—Air Cleaner		1
29372	Switch—Stop		3
29530	Bearing—Ball (Used only on 14B, 14FB, 14FBC, 14FBP and 14FBPC Engines)		10
29604	Pulley—Drive, Vee Belt—3" dia.	1	
29679	Cover—Air Cleaner		8
29680	Filter—Air Cleaner	1	
29681	Bowl—Air Cleaner		8
29693	Plug—Spark (with gasket)		3
	<i>Note:</i> No. 291835 Plug—Spark (with gasket).....		3
	Used on type No. 202820.		
	No. 291954 Plug—Spark (With Gasket).....		4
	Used on type Nos. 202064, 202065, 202324, 202325, 202553, 202563, 202565, 202839, 202843.		
29806	Gasket—Spark Plug		1
53029	Connector—Fuel Pipe		1
61371	Elbow—Air Cleaner		8
61908	Ring—Piston, Oil—Standard		1
61923	Ring—Piston, Oil—.010" O. S.		1
61924	Ring—Piston, Oil—.020" O. S.		1
61925	Ring—Piston, Oil—.030" O. S.		1
61967	Stop—Throttle		1
62199	Washer—Armature Support Mounting		1
62222	Cup—Valve Spring		1
62465	Bowl—Air Cleaner		6
62466	Clamp—Air Cleaner		1
62872	Valve—Choke		1
	<i>Note:</i> No. 22954 Valve—Choke		1
	Used on type Nos. 202067, 202320, 202527, 202543, 202547, 202548, 202554, 202560, 202563, 202564, 202567.		
62899	Washer—Choke Lever		1
62928	Valve—Throttle		1
62966	Switch—Stop		2
63377	Connector—Fuel Pipe		1

†Included in Carburetor Overhaul Kit — Part No. 291763.

*Included in Gasket Set — Part No. 291586.

MASTER PART NO.	NAME	SHIPPING WEIGHT	
		Lbs.	Oz.
63426	Locknut—Control Wire Casing		1
63614	Shaft—Cam		6
63659	Tappet—Valve		4
65616	Casing—Control Wire—72" long		8
	<i>Note: If longer casing is required, specify length in inches; if shorter wire is needed, order No. 65616 and cut to required length.</i>		
*65647	Gasket—Intake Elbow		1
65906	Spring—Valve		2
	<i>Note: No. 26828 Spring—Exhaust Valve</i>		2
	<i>Used on type Nos. 202064, 202065, 202324, 202325, 202565, 202839, 202843.</i>		
65932	Plug—Cam Shaft		1
66048	Plate—Insulator		1
	<i>Note: No. 66318 Plate—Insulator</i>		1
	<i>Used on type Nos. 202064, 202065, 202324, 202325, 202553, 202563, 202565, 202839, 202843.</i>		
66068	Washer—Breaker Plate Insulating		1
	<i>Note: No. 66328 Washer—Breaker Plate Insulating</i>		1
	<i>Used on type Nos. 202064, 202065, 202324, 202325, 202553, 202563, 202565, 202839, 202843.</i>		
66078	Bushing—Breaker Plate Pivot		1
	<i>Note: No. 66338 Bushing—Breaker Plate Pivot</i>		1
	<i>Used on type Nos. 202064, 202065, 202324, 202325, 202553, 202563, 202565, 202839, 202843.</i>		
66154	Washer—Back Plate Terminal		1
	<i>Note: No. 66364 Washer—Back Plate Terminal</i>		1
	<i>Used on type Nos. 202064, 202065, 202324, 202325, 202553, 202563, 202565, 202839, 202843.</i>		
66204	Gasket—Fuel Pump Valve		1
*66214	Gasket—Valve Cover		1
*66224	Gasket—Crankcase Cover		2
*67247	Gasket—Air Cleaner Mounting		1
67897	Gasket—Air Cleaner Cover		1
68283	Collar—Valve Spring Retainer		1
68293	Retainer—Valve Spring		1
	<i>Note: No. 292260 Rotocap—Exhaust Valve</i>		3
	<i>Used on type Nos. 202064, 202065, 202324, 202325, 202565, 202839, 202843.</i>		
*68477	Gasket—Fuel Filter Bowl		1
68487	Bowl—Fuel Filter		2
68546	Lock—Piston Pin		1
+68667	Gasket—Fuel Inlet Valve Seat and Nozzle		1
+68677	Packing—Needle Valve		1
69932	Rope—Starter		6
69947	Cleaner Assembly—Air	2	
69948	Body—Air Cleaner	1	8
69961	Cap—Fuel Tank		4
89227	Pipe—Fuel—12" long		4
	<i>Note: No. 29190 Pipe—Fuel—8" Long</i>		3
	<i>Used on type No. 202558.</i>		
	<i>No. 99591 Pipe—Fuel—14¼" long</i>		4
	<i>Used between carburetor and fuel pump on type Nos. 202527, 202543, 202545, 202548, 202563, 202566; also used on other type numbers which are equipped with a fuel pump.</i>		
	<i>The following fuel pipes and fittings are used with combination fuel tank on type Nos. 202028, 202046, 202054, 202318, 202514, 202531, 202534, 202546, 202816.</i>		
	<i>No. 291492 Pipe—Fuel—18" long</i>		4
	<i>No. 89248 Pipe—Fuel—2¼" long</i>		1

(See following page)

*Included in Gasket Set — Part No. 291586.

†Included in Carburetor Overhaul Kit — Part No. 291763.

MASTER PART NO.	NAME	SHIPPING WEIGHT	
		Lbs.	Oz.
	No. 92655 Tee		1
	The following fuel pipes and fittings are used on type Nos. 202061, 202321, 202555, 202556, 202557, 202559, 202570, 202835:		
	No. 290999 Pipe—Fuel—4 $\frac{7}{8}$ " Long		2
	No. 292086 Pipe—Fuel—7 $\frac{1}{4}$ " Long		3
	No. 92647 Tee		1
	No. 92713 Coupling		1
	No. 292486 Wing Plug, Chain and Clip Assy.....		1
89531	Shaft and Lever—Choke		1
	Note: { No. 291440 Shaft, Vane and Lever Assembly—Automatic Choke..		2
	{ No. 291776 Lever Assembly—Automatic Choke.....		3
	{ Includes: No. 91941 Screw—Machine, Fill. Hd., 8-32x $\frac{1}{8}$ ".....		1
	Used on type Nos. 202067, 202320, 202527, 202543, 202547, 202548, 202554, 202560, 202563, 202564, 202567.		
89742	Shield Assembly—Spark Plug		6
89838	Wrench—Spark Plug		6
89915	Body Assembly—Lower Carburetor		1
	Note: No. 291472 Body Assembly—Lower Carburetor		1
	Used on type Nos. 202067, 202320, 202527, 202543, 202547, 202548, 202554, 202560, 202563, 202564, 202567.		
90029	Screw—Machine, Rd. Hd.—4-36 x $\frac{1}{4}$ "		1
90050	Screw—Machine, Rd. Hd.—6-32 x $\frac{1}{4}$ "		1
90067	Screw—Machine, Rd. Hd.—8-32x $\frac{1}{8}$ ".....		1
90072	Screw—Machine, Rd. Hd.—8-32x $\frac{5}{8}$ "		1
90200	Screw—Machine, Fill. Hd.—8-32 x $\frac{1}{2}$ "		1
90211	Screw—Machine, Fill. Hd.—8-32 x $\frac{3}{8}$ "		1
90356	Nut—Hex.—10-24		1
90362	Washer—Lock—No. 6x $\frac{3}{4}$ x $\frac{3}{16}$ "		1
90366	Washer—Lock— $\frac{1}{2}$ x $\frac{1}{8}$ x $\frac{1}{16}$ "		1
90367	Washer—Lock—No. 8x $\frac{3}{4}$ x $\frac{3}{16}$ "		1
90369	Washer—Lock—No. 4x $\frac{1}{4}$ x $\frac{3}{16}$ "		1
90576	Nut—Hex.—8-32		1
90681	Screw—Cap, Hex. Hd.— $\frac{1}{4}$ -18 x $\frac{5}{8}$ "		1
	Note: No. 92409 Screw—Cap, Hex. Hd.— $\frac{1}{8}$ -18x $\frac{3}{4}$ ".....		1
	Used on type Nos. 202065, 202324, 202563, 202565, 202839, 202843.		
90700	Screw—Cap, Hex. Hd.— $\frac{1}{4}$ -20 x $\frac{3}{4}$ "		1
	Note: No. 92412 Screw—Cap, Hex. Hd.— $\frac{1}{4}$ -20x $\frac{3}{4}$ ".....		1
	Used on type Nos. 202065, 202324, 202563, 202565, 202839, 202843.		
90746	Screw—Machine, Fill. Hd.—10-32 x $\frac{5}{8}$ "		1
90832	Washer—Lock— $\frac{1}{4}$ x $\frac{3}{16}$ x $\frac{5}{16}$ "		1
	Note: No. 92778 Washer—Lock.....		1
	Used to lock shielding terminals to armature support lug on type Nos. 202064, 202065, 202324, 202325, 202553, 202563, 202565, 202839, 202843.		
90887	Screw—Cap, Hex. Hd.— $\frac{3}{8}$ -16 x 1 $\frac{1}{4}$ "		1
	Note: No. 92406 Screw—Cap, Hex. Hd.— $\frac{3}{8}$ -16x1 $\frac{1}{4}$ "		1
	Used on type Nos. 202065, 202324, 202563, 202565, 202839, 202843.		
90891	Screw—Cap, Hex. Hd.— $\frac{1}{4}$ -20 x $\frac{1}{2}$ "		1
	Note: No. 92676 Screw—Sheet Metal, Hex. Hd. Type "Z," No. 14x $\frac{5}{8}$ "....		1
	Used to fasten air cleaner pipe brace to front air guide on engines between Serial No. 21868 and 51286.		
	No. 92734 Screw—Cap, Hex. Hd.— $\frac{1}{4}$ -20x $\frac{1}{2}$ "		1
	Used on type Nos. 202563, 202565, 202839.		
90923	Screw—Sheet Metal, Rd. Hd., Type "A"—No. 6x $\frac{1}{4}$ "		1
	Note: No. 92642 Screw—Sheet Metal, Rd. Hd., Type "A"—No. 8x $\frac{3}{8}$ ".....		1
	Used on engines before Serial No. 1733.		
90970	Nut—Square— $\frac{1}{4}$ -20		1
	Note: No. 92425 Nut—Square— $\frac{1}{4}$ -20		1
	Used on type Nos. 202065, 202324, 202565, 202839, 202843.		

MASTER PART NO.	NAME	SHIPPING WEIGHT	
		Lbs.	Oz.
91084	Plug—Pipe— $\frac{3}{8}$ "		1
	<i>Note:</i> No. 92542 Plug—Oil Drain		1
	Used on type No. 202065.		
	No. 92738 Plug—Oil Drain— $\frac{3}{8}$ " Magnetic		1
	Used on type Nos. 202565, 202839, 202843.		
91146	Screw—Cap, Hex. Hd.— $\frac{1}{4}$ -20 x $\frac{7}{8}$ "		1
	<i>Note:</i> No. 92636 Screw—Cap, Hex. Hd.— $\frac{1}{4}$ -20x2"		1
	Used to mount rotor brush at lower armature support lug on type No. 202553.		
	No. 92730 Screw—Cap, Hex. Hd.— $\frac{1}{4}$ -20x2"		1
	Used to mount rotor brush at lower armature support lug on type Nos. 202065, 202563.		
	No. 92732 Screw—Cap, Hex. Hd.— $\frac{1}{4}$ -20x $\frac{7}{8}$ "		1
	Used on type Nos. 202065, 202324, 202563, 202565, 202839, 202843.		
91162	Screw—Connecting Rod		1
91222	Screw—Machine, Fill. Hd.— $\frac{1}{4}$ -20x1"		1
91237	Washer—Lock— $\frac{1}{4}$ x $\frac{3}{8}$ x $\frac{3}{4}$ "		1
91257	Screw—Machine, Fill. Hd.— $\frac{1}{4}$ -20x1 $\frac{1}{2}$ "		1
	<i>Note:</i> No. 92424 Screw—Machine, Fill. Hd.— $\frac{1}{4}$ -20x1 $\frac{1}{2}$ "		1
	Used on type Nos. 202065, 202324, 202565, 202839, 202843.		
91310	Locknut—Muffler Nipple		1
91386	Screw—Gear Case Cover (2" long)		1
	<i>Note:</i> No. 92279 Screw—Gear Case Cover (1 $\frac{1}{2}$ " long)		1
	Used on type Nos. 202975, 202976, 202977, 202978, 202979, 202980.		
	No. 92415 Screw—Gear Case Cover		1
	Used on type Nos. 202839, 202843.		
91415	Elbow—Muffler 45°		1
	<i>Note:</i> No. 91296 Elbow—Muffler 90°		1
	Used on type Nos. 202047, 202060, 202063, 202838.		
91416	Nipple—Muffler		1
91422	Screw—Cap, Hex. Hd.— $\frac{1}{4}$ -20 x $\frac{5}{8}$ "		1
91442	Screw—Cylinder Head (2 $\frac{1}{4}$ " long)		1
	<i>Note:</i> No. 91203 Screw—Cylinder Head (1 $\frac{3}{4}$ " long)		1
	No. 91386 Screw—Cylinder Head (2" long)		1
	Used in cylinder head bosses on power take-off side on engines before Serial No. 51411.		
	No. 92496 Screw—Cylinder Head		1
	Used on type Nos. 202065, 202324, 202563, 202565, 202839, 202843.		
91458	Screw—Parker Kalon—No. 7 x $\frac{1}{2}$ "		1
91468	Screw—Cap, Hex. Hd.— $\frac{1}{4}$ -20 x $\frac{3}{8}$ "		1
	<i>Note:</i> No. 92672 Screw—Sheet Metal, Hex. Hd., Type "Z," No. 14x $\frac{1}{2}$ "		1
	Used to mount blower housing on engines between Serial No. 21868 and 51286.		
	No. 92734 Screw—Cap, Hex. Hd.— $\frac{1}{4}$ -20x $\frac{1}{2}$ "		1
	Used on type Nos. 202065, 202324, 202563, 202565, 202839, 202843.		
91540	Key—Pulley Mounting		1
91920	Screw—Machine, Fill. Hd.—8-32 x $\frac{5}{8}$ "		1
91984	Pin—Cotter— $\frac{1}{8}$ x $\frac{1}{2}$ " long		1
92129	Nut—Hex.— $\frac{1}{4}$ -28		1
92268	Washer—Lock— $\frac{3}{8}$ x $\frac{1}{8}$ x $\frac{3}{4}$ "		1
	<i>Note:</i> No. 92405 Washer—Lock— $\frac{3}{8}$ x $\frac{1}{8}$ x $\frac{3}{4}$ "		1
	Used on type Nos. 202065, 202324, 202563, 202565, 202839, 202843.		
92269	Key—Woodruff—No. 9		1
92272	Screw—Cap, Hex. Hd.— $\frac{1}{8}$ -18 x $\frac{3}{4}$ "		1
	<i>Note:</i> No. 92409 Screw—Cap, Hex. Hd.— $\frac{1}{8}$ -18x $\frac{3}{4}$ "		1
	Used on type Nos. 202065, 202324, 202563, 202565, 202839, 202843.		
92287	Screw—Machine, Rd. Hd.—10-32 x $\frac{1}{4}$ "		1
92290	Washer—Lock—No. 10x $\frac{1}{8}$ x $\frac{3}{4}$ "		1
	<i>Note:</i> No. 92313 Washer—Lock—Shakeproof		1
	Used to mount breaker box on type Nos. 202064, 202065, 202324, 202325, 202553, 202563, 202565, 202839, 202843.		
92306	Screw—Cap, Hex. Hd.— $\frac{1}{4}$ -28 x $\frac{5}{8}$ "		1

MASTER PART NO.	NAME	SHIPPING WEIGHT	
		Lbs.	Oz.
92317	Washer—Lock—Shakeproof No. 1208.....		1
	Note: No. 92791 Washer—Lock—Shakeproof		1
	Used to mount breaker box cover on type Nos. 202064, 202065, 202324, 202325, 202553, 202563, 202565, 202839, 202843.		
92576	Screw—Machine, Rd. Hd.—3-32x $\frac{1}{8}$ ".....		1
92578	Screw—Breaker Box Mounting		1
92581	Nut—Hex.—6-40		1
92613	Bolt—Governor Lever		1
92636	Screw—Cap, Hex. Hd.— $\frac{1}{4}$ -20 x 2"		1
	Note: No. 92730 Screw—Cap, Hex. Hd.— $\frac{1}{4}$ -20x2"		1
	Used on type Nos. 202065, 202324, 202563, 202565, 202839, 202843.		
92642	Screw—Sheet Metal, Rd. Hd., (See Part No. 90923).....		1
92650	Nut—Wing		1
92661	Screw—Rotor Set (Socket Hd.)		1
	Note: {No. 23931 Screw—Rotor Set (Slotted Hd.)		1
	{No. 90660 Pin—Cotter— $\frac{3}{32}$ x $\frac{1}{2}$ "		1
	Used on engines before serial No. 24211.		
	No. 92743 Screw—Rotor		1
	Used on type Nos. 202065, 202324, 202563, 202565, 202839, 202843.		
92662	Screw—Rotor Screw Locking		1
	Note: No. 90660 Pin—Cotter— $\frac{3}{32}$ x $\frac{1}{2}$ "		1
	Used on engines before serial No. 24211.		
	No. 92733 Screw—Rotor Screw Locking		1
	Used on type Nos. 202065, 202324, 202563, 202565, 202839, 202843.		
92678	Screw—Set, Socket Hd.—6-32 x $\frac{1}{8}$ "		1
92721	Screw—Self Tapping, Hex. Hd.— $\frac{1}{4}$ -20x $\frac{1}{2}$ "		1
99153	Piston Assembly—Standard		12
99199	Piston Assembly—.010" O. S.		12
99200	Piston Assembly—.020" O. S.		12
99201	Piston Assembly—.030" O. S.		12
99230	Arrester—Flame	1	
99333	Float—Carburetor		2
99341	Body—Upper Carburetor	1	
†99345	Nozzle—Carburetor		2
99458	Idling Device		4
99665	Yoke Assembly—Fuel Filter		2
†99780	Valve and Seat—Fuel Inlet.....		1
99909	Cover Assembly—Fuel Filter		2
99910	Filter Assembly—Fuel		10
210072	Ring—Piston, Compression, Top and Center, Std. ($\frac{3}{32}$ " Thick).....		1
	Note: No. 61906 Ring—Piston, Compression, Top—Std. ($\frac{1}{8}$ " Thick)....		1
	No. 61907 Ring—Piston, Compression, Center—Std. ($\frac{1}{8}$ " Thick)..		1
	Used on engines before Serial No. 72439.		
210073	Ring—Piston, Compression, Top and Center, .010" O.S. ($\frac{3}{32}$ " Thick).....		1
	Note: No. 61917 Ring—Piston, Compression, Top—.010" O.S. ($\frac{1}{8}$ " Thick)		1
	No. 61918 Ring—Piston, Compression, Center—.010" O.S. ($\frac{1}{8}$ "		
	Thick)		1
	Used on engines before Serial No. 72439.		
210074	Ring—Piston, Compression, Top and Center, .020" O.S. ($\frac{3}{32}$ " Thick).....		1
	Note: No. 61919 Ring—Piston, Compression, Top—.020" O.S. ($\frac{1}{8}$ " Thick)		1
	No. 61920 Ring—Piston, Compression, Center—.020" O.S. ($\frac{1}{8}$ "		
	Thick)		1
	Used on engines before Serial No. 72439.		
210075	Ring—Piston, Compression, Top and Center, .030" O.S. ($\frac{3}{32}$ " Thick).....		1
	Note: No. 61921 Ring—Piston, Compression, Top—.030" O.S. ($\frac{1}{8}$ " Thick)		1
	No. 61922 Ring—Piston, Compression, Center—.030" O.S. ($\frac{1}{8}$ "		
	Thick)		1
	Used on engines before Serial No. 72439.		
†230009	Valve—Needle		1
	Note: No. 230085 Valve—Jet Needle.....		1
	Used on type Nos. 202061, 202321, 202555, 202556, 202557, 202559, 202570, 202835.		

†Included in Carburetor Overhaul Kit—Part No. 291763.

MASTER PART NO.	NAME	SHIPPING WEIGHT	
		Lbs.	Oz.
230010	Wrench—Socket Screw		1
290568	Lever Assembly—Control		4
290584	Base—Control Lever		2
290614	Core—Coil		6
	<i>Note:</i> No. 292319 Core—Coil		6
	Used on type Nos. 202064, 202065, 202324, 202325, 202553, 202563, 202565, 202839, 202843.		
290621	Armature and Support Assembly	3	
	<i>Note:</i> No. 292318 Armature and Support Assembly	3	
	Used on type Nos. 202064, 202065, 202324, 202325, 202553, 202563, 202565, 202839, 202843.		
290622	Diaphragm—Fuel Pump		2
290623	Valve—Fuel Pump		1
290642	Lever—Control		2
290724	Cover Assembly—Crankcase	3	
290804	Cover—Cylinder Head		6
*290814	Gasket—Cylinder Head		1
	<i>Note:</i> Two 290814 Cylinder Head Gaskets are used on type Nos. 202028, 202046, 202054, 202061, 202318, 202321, 202514, 202531, 202534, 202546, 202555, 202556, 202557, 202559, 202570, 202816, 202835.		
290816	Tank Assembly—Fuel	2	8
	<i>Note:</i> When replacing fuel tanks mounted with banding, two tank straps must also be ordered. See Master Part No. 291367; also No. 291490 under Note.		
	No. 291488 Tank Assembly	2	8
	Used on type Nos. 202042, 202065, 202066, 202313, 202319, 202324, 202533, 202535, 202554, 202829, 202832, 202833, 202839, 202841, 202843.		
	No. 291513 Tank Assembly—Combination Fuel	3	
	Used on type Nos. 202028, 202046, 202054, 202318, 202514, 202531, 202534, 202546, 202816.		
290840	Crank—Starting	1	8
290880	Coil—Magneto (includes ignition cable)		12
	<i>Note:</i> No. 292047 Coil Assembly—Ignition (Includes Ignition Cable)... Used on type Nos. 202064, 202065, 202324, 202325, 202553, 202563, 202565, 202839.	1	
	Includes: { No. 66298 Bushing—Terminal Insulator		1
	{ No. 92704 Terminal—Spark Plug		1
	{ No. 92705 Terminal—Shielding		1
	{ No. 220162 Clip—Shielding Grounding		1
	{ No. 292412 Elbow—Spark Plug Cable		2
290882	Cover—Breaker		3
	<i>Note:</i> No. 292397 Cover—Breaker		3
	Used on type Nos. 202064, 202065, 202324, 202325, 202553, 202563, 202565, 202839, 202843.		
290916	Gear—Cam	1	8
290922	Weight—Spark Advance		4
290930	Lead—Primary		2
	<i>Note:</i> No. 292069 Lead—Primary		3
	Used on type Nos. 202064, 202065, 202324, 202325, 202553, 202563, 202565, 202839, 202843.		
	Uses: No. 92705 Terminal—Shielding		1
	(Used at Armature Support Lug)		
290932	Seal—Oil		2
290933	Muffler	1	8
	<i>Note:</i> No. 291244 Muffler		10
	Used on type No. 202048.		
	No. 291519 Muffler	3	
	Used on type Nos. 202030, 202313, 202319, 202324, 202817, 202827.		
290935	Base Assembly—Engine	3	
	<i>Note:</i> No. 21897 Base—Engine	2	8
	Used on type No. 202065.		
	Uses: No. 89859 Nipple—Oil Filler.....		3
	(See following page)		

*Included in Gasket Set — Part No. 291586.

MASTER PART NO.	NAME	SHIPPING WEIGHT	
		Lbs.	Oz.
	No. 291487 Base Assembly—Engine	10	
	Used on type No. 202527.		
	No. 292295 Base Assembly—Engine	3	
	Used on type Nos. 202565, 202839, 202843.		
290987	Pin Assembly—Piston—Standard		4
290988	Pin Assembly—Piston—.005" O.S.		4
291044	Lever Assembly—Thermostat		1
291106	Seal—Oil		1
291172	Cover—Oil Filler		2
291177	Shaft—Governor Gear		1
291192	Gear Assembly—Governor		5
291211	Plate Assembly—Back	1	
	Note: No. 292162 Plate Assembly—Back.....	1	
	Used on type Nos. 202064, 202065, 202324, 202325, 202553, 202563, 202565, 202839, 202843.		
291234	Rod Assembly—Connecting		14
	Note: No. 291518 Rod Assembly—Connecting		14
	Used on type No. 202527.		
291273	Carburetor Assembly	2	8
	Note: No. 291471 Carburetor Assembly	2	8
	Used on type Nos. 202067, 202320, 202527, 202543, 202547, 202548, 202554, 202560, 202563, 202564, 202567.		
	No. 292109 Carburetor Assembly.....	2	8
	Used on type Nos. 202061, 202321, 202555, 202556, 202557, 202559, 202570, 202835.		
291277	Body Assembly—Upper Carburetor	1	
291278	Flywheel Assembly	13	
291280	Housing Assembly—Blower	3	
291299	Cover Assembly—Crankcase	1	
291300	Shaft Assembly—Throttle		1
291309	Shaft Assembly—Drive	10	
	Note: No. 290577 Drive Shaft, Gear and Bearing Assembly	7	
	Used on type Nos. 202975, 202976, 202977, 202978, 202979, 202980.		
	Includes: {No. 22723 Shim—.003" thick		1
	{No. 22724 Shim—.010" thick		1
	No. 292466 Shaft Assembly—Drive.....	10	
	Used on type Nos. 202840, 202841, 202842.		
291354	Cover Assembly—Gear Case.....	2	8
	Note: No. 290574 Cover Assembly—Gear Case	4	
	Used on type Nos. 202975, 202976, 202977, 202978, 202979, 202980.		
	Includes: {No. 22723 Shim—.003" thick		1
	{No. 22724 Shim—.010" thick		1
	{No. 63899 Cup—Bearing		6
	{No. 69858 Seal—Oil		4
291356	Case Assembly—Gear	3	8
	Note: No. 291676 Case Assembly—Gear	6	
	Used on type Nos. 202975, 202976, 202977, 202978, 202979, 202980.		
	Includes: {No. 63382 Cup—Bearing		6
	{No. 230012 Pin—Washer Retainer		1
	{No. 220064 Washer—Thrust		1
291363	Rotor Assembly	2	8
	Note: No. 292067 Brush Assembly—Rotor.....	4	
	Used on type Nos. 202065, 202553, 202563.		
	Includes: No. 292065 Brush.....		1
	No. 292353 Rotor Assembly	2	8
	Used on type Nos. 202065, 202324, 202563, 202565, 202839, 202843.		
291364	Crank Assembly—Governor		2
291365	Lever Assembly—Governor		2
291366	Cover Assembly—Oil Filler		2
	Note: No. 89910 Filler Cap and Drain Plug Assembly.....		6
	Used on type No. 202065.		
	Uses: No. 65938 Gasket—Filler Cap.....		1

MASTER PART NO.	NAME	SHIPPING WEIGHT	
		Lbs.	Oz.
291367	Strap Assembly—Fuel Tank		6
	<i>Note:</i> No. 291490 Strap Assembly—Fuel Tank		8
	Used on type Nos. 202028, 202042, 202046, 202054, 202066, 202313, 202318, 202319, 202514, 202531, 202533, 202534, 202535, 202546, 202554, 202816, 202829, 202832, 202833, 202841.		
	No. 292356 Strap Assembly—Fuel Tank		6
	Used on type No. 202565.		
	No. 292360 Strap Assembly—Fuel Tank		8
	Used on type Nos. 202065, 202324, 202839, 202843.		
291369	Condenser		2
	<i>Note:</i> No. 202227 Condenser.....		2
	Used on type Nos. 202064, 202065, 202324, 202325, 202553, 202563, 202565, 202839, 202843.		
291370	Shaft Assembly—Breaker		2
291371	Point Set—Breaker		4
291377	Support Assembly—Plain Bearing		12
291378	Support Assembly—Ball Bearing		8
291444	Tube Assembly—Thermostat		4
291445	Thermostat Assembly		8
291447	Box Assembly—Breaker		8
	<i>Note:</i> No. 292079 Box Assembly—Breaker.....		8
	Used on type Nos. 202064, 202065, 202324, 202325, 202553, 202563, 202565, 202839, 202843.		
	Includes: No. 92705 Terminal.....		1
291460	Control Assembly—Throttle		3
291462	Pipe Assembly—Air Cleaner		9
291476	Guide—Front Air		2
291493	Pump Assembly—Fuel	1	4
291508	Shielding Assembly—Ignition Cable		1
291509	Cylinder	25	
	<i>Note:</i> No. 291743 Cylinder.....	25	
	Used on type Nos. 202064, 202065, 202324, 202325, 202541, 202549, 202553, 202563, 202565, 202839, 202843.		
291547	Puller—Flywheel	1	8
	<i>Note:</i> Optional Accessory.		
291586	Gasket Set		6
291603	Breather		5
291763	Carburetor Overhaul Kit		2
291851	Head—Cylinder	2	
291858	Cleaner Assembly—Air	2	
292021	Point Set—Breaker		2
292096	Ring Set—Standard Piston ($\frac{3}{32}$ " Thick).....		3
	<i>Note:</i> No. 290696 Ring Set—Standard Piston ($\frac{1}{8}$ " Thick).....		3
	Used on engines before Serial No. 72439.		
292097	Ring Set—.010" O. S. Piston ($\frac{3}{32}$ " Thick).....		3
	<i>Note:</i> No. 290697 Ring Set—.010" O.S. Piston ($\frac{1}{8}$ " Thick).....		3
	Used on engines before Serial No. 72439.		
292098	Ring Set—.020" O.S. Piston ($\frac{3}{32}$ " Thick).....		3
	<i>Note:</i> No. 290698 Ring Set—.020" O.S. Piston ($\frac{1}{8}$ " Thick).....		3
	Used on engines before Serial No. 72439.		
292099	Ring Set—.030" O.S. Piston ($\frac{3}{32}$ " Thick).....		3
	<i>Note:</i> No. 290699 Ring Set—.030" O.S. Piston ($\frac{1}{8}$ " Thick).....		3
	Used on engines before Serial No. 72439.		

Free Manuals Download Website

<http://myh66.com>

<http://usermanuals.us>

<http://www.somanuals.com>

<http://www.4manuals.cc>

<http://www.manual-lib.com>

<http://www.404manual.com>

<http://www.luxmanual.com>

<http://aubethermostatmanual.com>

Golf course search by state

<http://golfingnear.com>

Email search by domain

<http://emailbydomain.com>

Auto manuals search

<http://auto.somanuals.com>

TV manuals search

<http://tv.somanuals.com>