OPERATING AND MAINTENANCE MANUAL

WITH PARTS CATALOG

For Briggs & Stratton Engine

MODELS

"23"—"23B"—"23BC"—"23C"—"23FB"—"23FBP"
"23FBPC"—"23P"—"23PC"—"23R6"—"23R6D"

PRICE 10¢ PER COPY

4 CYCLE BRIGGS & STRATTON GASOLINE ENGINES

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.

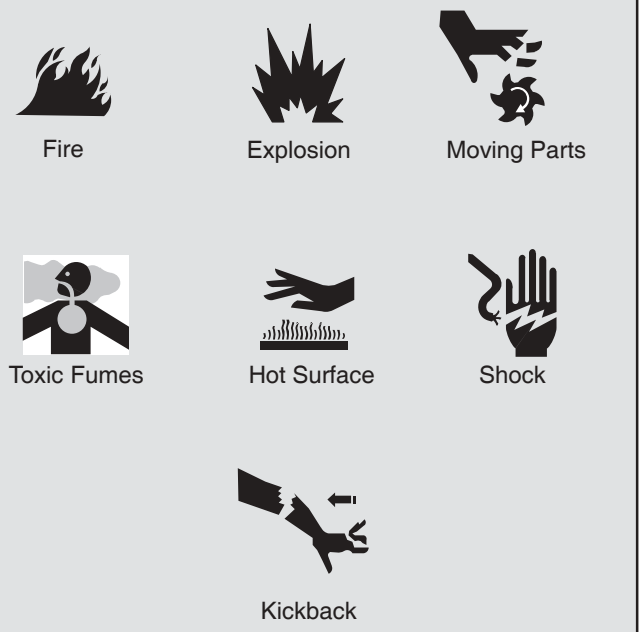
⚠ **DANGER** indicates a hazard which, if not avoided, **will result in death or serious injury.**

⚠ **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



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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:

Turn engine off and let engine cool at least 2 minutes before removing gas cap.

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.

Keep gasoline away from sparks, open flames, pilot lights, heat, and other ignition sources.

WARNING

When starting engine:

Remove all external equipment/engine loads.

Wait until spilled fuel is evaporated. Start engine outdoors.

Pull cord slowly until resistance is felt, then pull rapidly.

If engine floods, set choke to OPEN/RUN, place throttle in FAST and crank until engine starts.

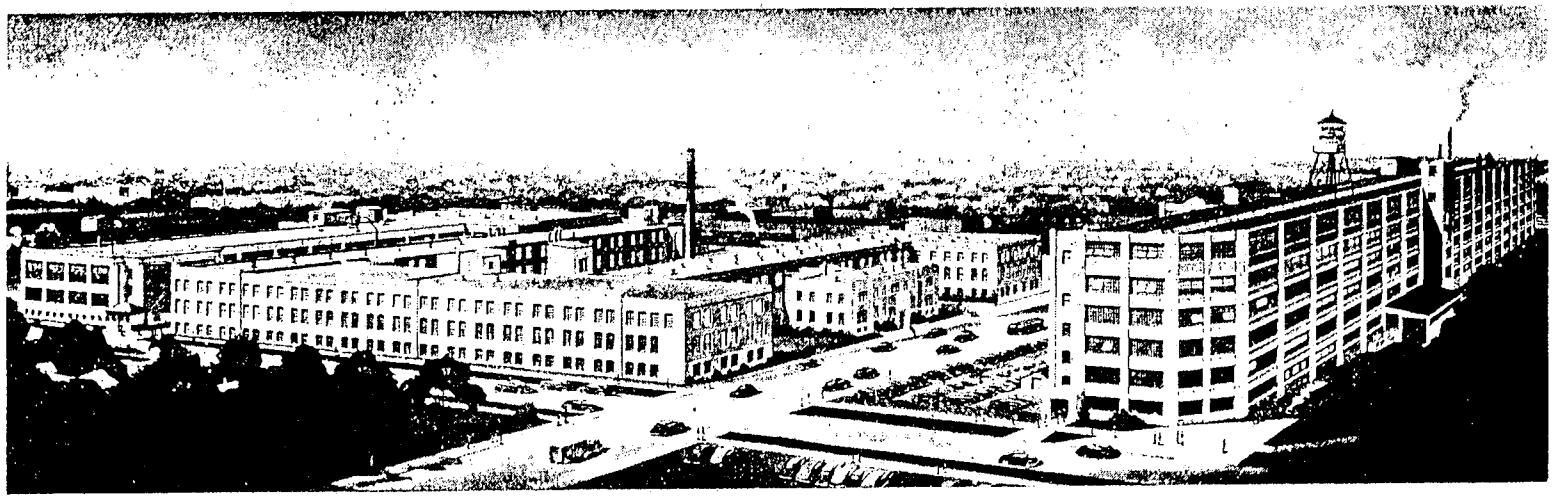
WARNING

When operating equipment:

Do not tip engine or equipment at angle which causes gasoline to spill.

Run engine outdoors. Do not run in enclosed area, even if doors or windows are open.

Do not choke carburetor to stop engine.



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 4-cycle single cylinder air-cooled gasoline engines than any other manufacturer in the world.

CONTENTS

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.

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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

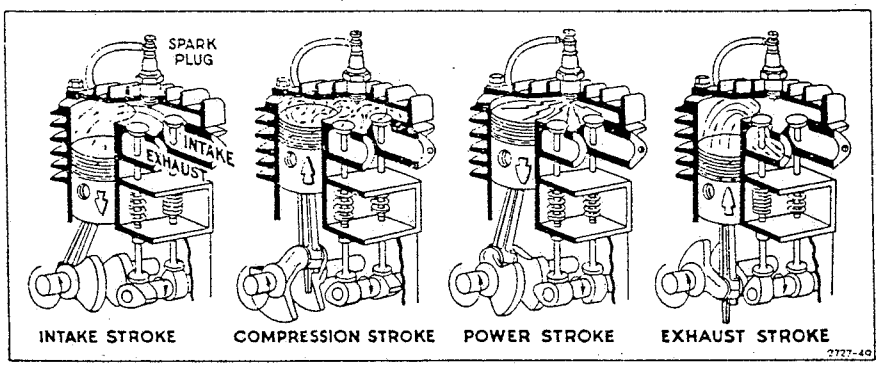
This engine is a single cylinder, L-Head air-cooled type; bore 3" and stroke 3¼". It is rated at

6.50 h.p. at 2200 r.p.m.
7.70 h.p. at 2700 r.p.m.
8.25 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 five pints.

The gasoline tank holds six 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 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 five 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.

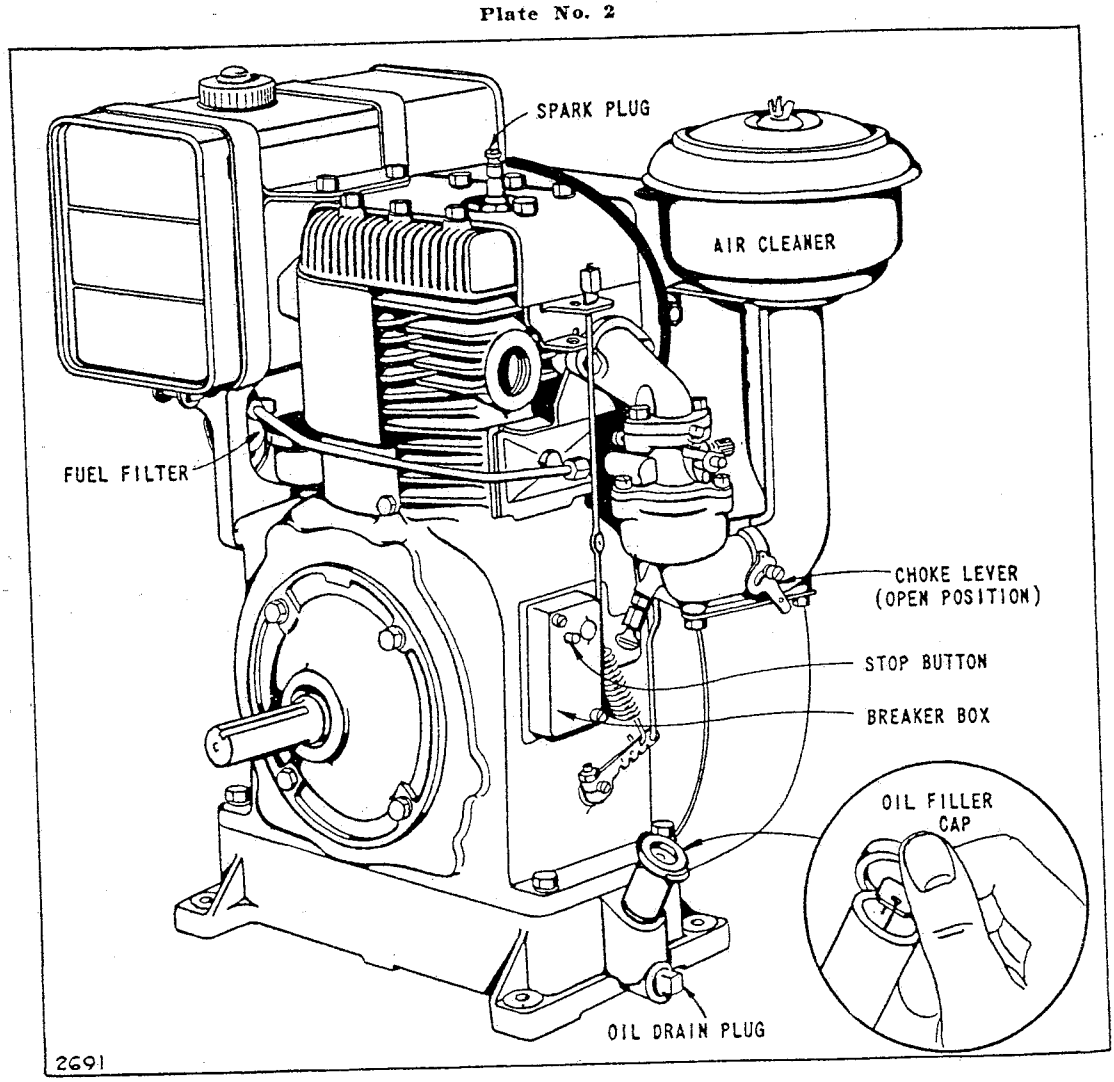
Engines may be started either with a rope or a hand crank.

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 ignitible 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 points 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.

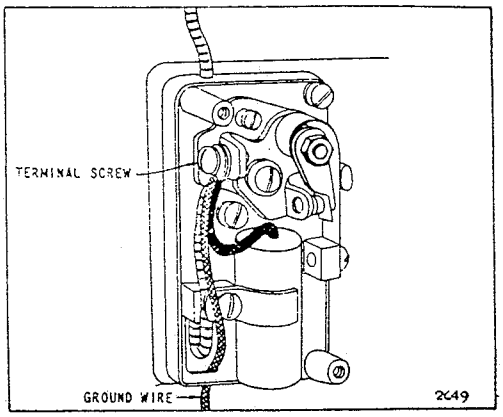
4. HOW TO STOP.

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 such as Mobilgas 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

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 the nearest member of our Nation-wide Service Organization. See Page 37.

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.

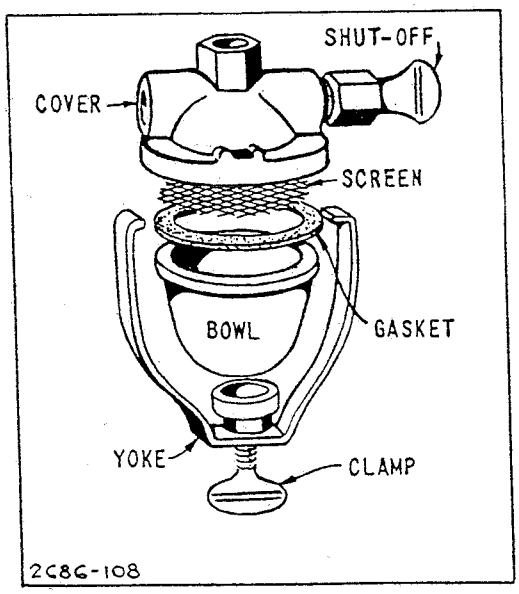
15. TO CLEAN FUEL FILTER. (See Plate No. 4.)

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

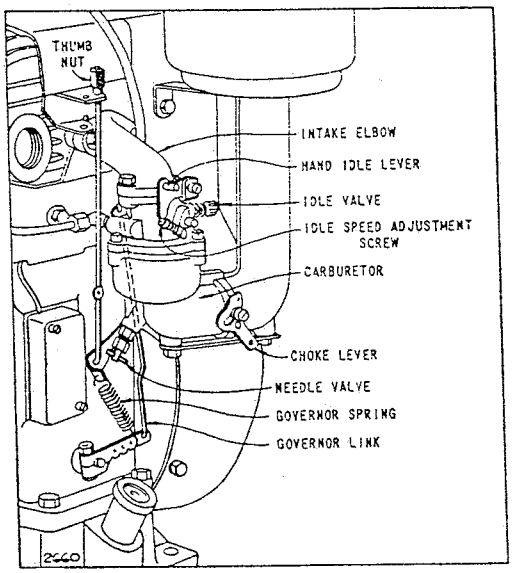


16. TO CLEAN FUEL TANK CAP. Be sure that the small vent hole in the fuel tank cap is not clogged up, for air must enter the tank to allow the gasoline to flow to the carburetor. Test by blowing through top of cap.

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 **REPLACE** reverse the operations as performed above.

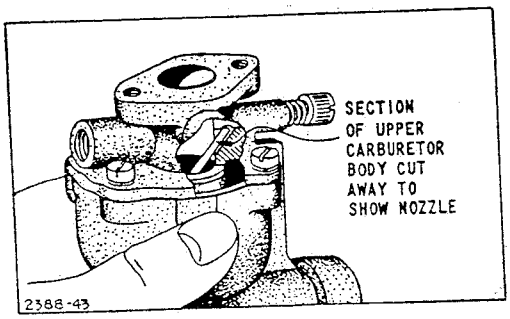
21. TO DISASSEMBLE CARBURETOR.

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.)

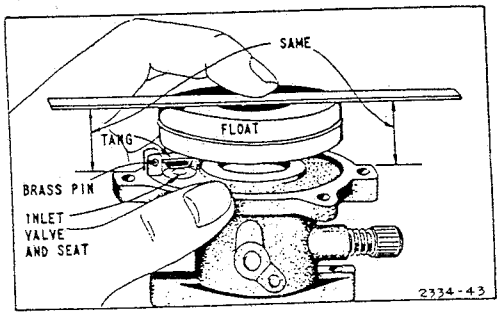
a. The float should be in a horizontal position when it closes inlet valve and seat.

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.

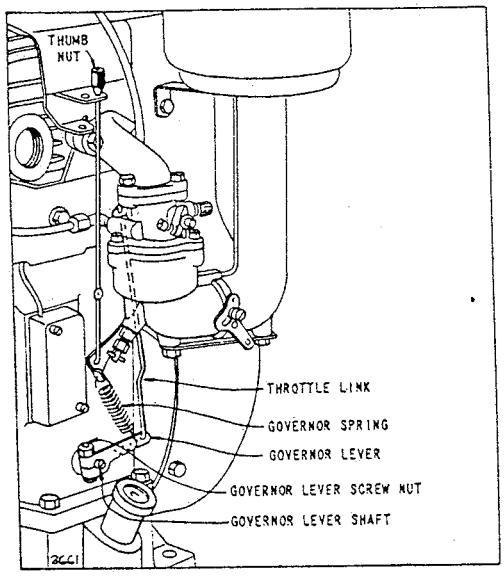
26. TO RESET GOVERNOR LEVER. If the governor lever has become loosened or removed from the governor lever shaft, reset as follows:

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 screwdriver 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

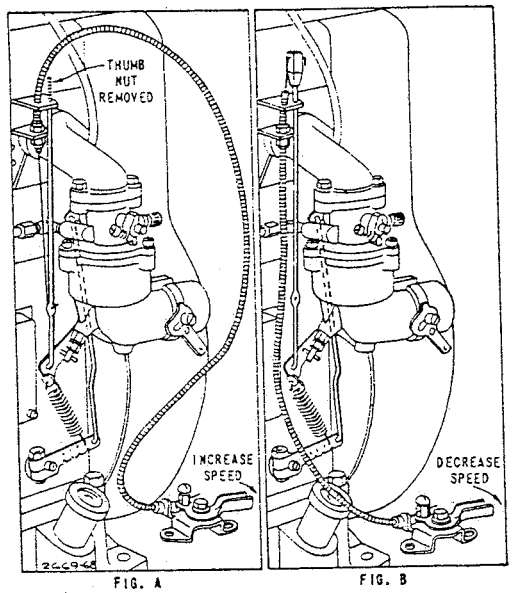
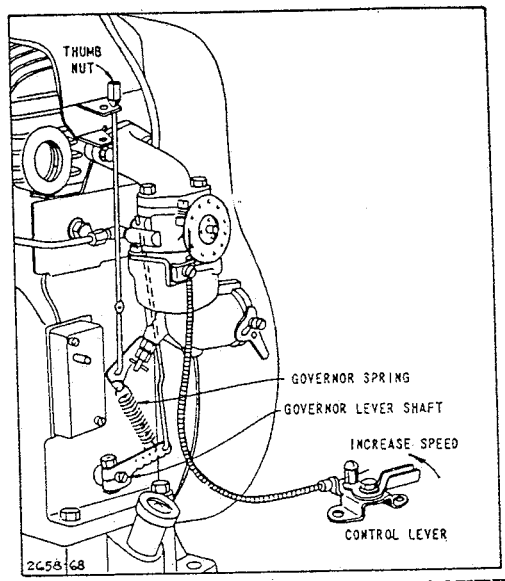


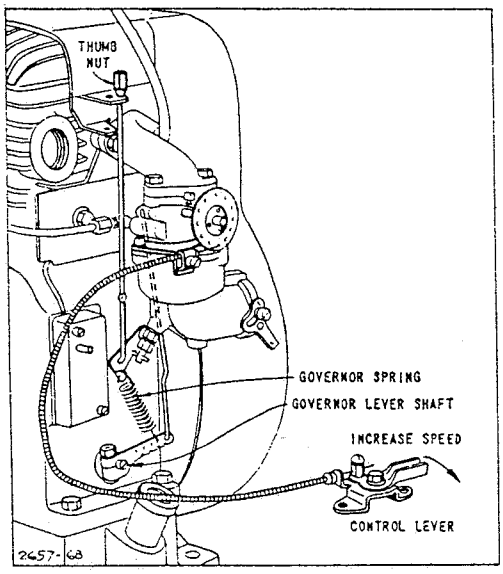
FIG. A FIG. B

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:

a. Loosen governor lever screw nut and pull lever from governor lever shaft.

b. Remove engine from base and tilt back until engine rests on fuel tank.

c. Remove cotter pin from governor lever shaft, then remove shaft.

d. Slide out governor gear assembly. If any parts show breakage or undue wear, replace with new ones.

To **replace** governor, reverse above procedure.

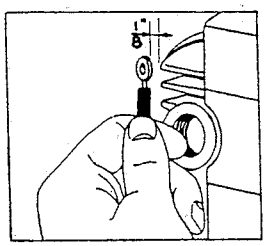
THE MAGNEMATIC IGNITION SYSTEM

29. The spark is produced by a magnematic 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.

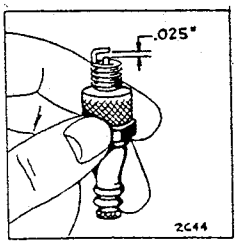
30. TO CHECK FOR SPARK.

a. Remove the ignition cable from the plug. Remove plug. Hold ignition cable terminal about ⅛" 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:

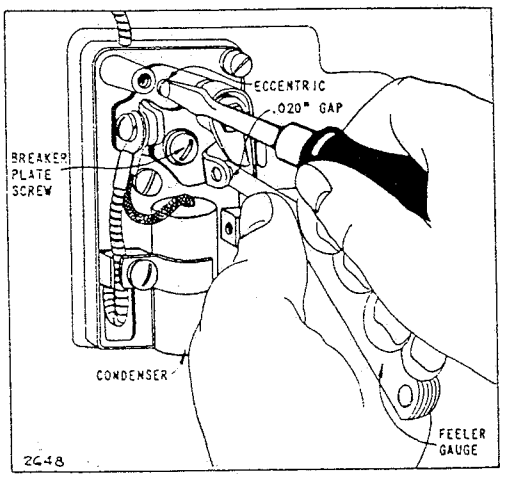
a. Rotate crankshaft until points open to widest gap.

b. Loosen breaker plate screw slightly.

c. Rotate eccentric to secure .020" gap.

d. Tighten breaker plate screw.

Adjusting Breaker Points — Plate No. 13



33. TO REPLACE BREAKER POINTS. (See Plate No. 14.)

a. Rotate crankshaft until points are in wide open position. Leave crankshaft in this position while changing points.

b. Remove terminal screw.

c. Remove spring screw.

d. Loosen nut until top of nut is flush with end of threaded shaft.

e. 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.

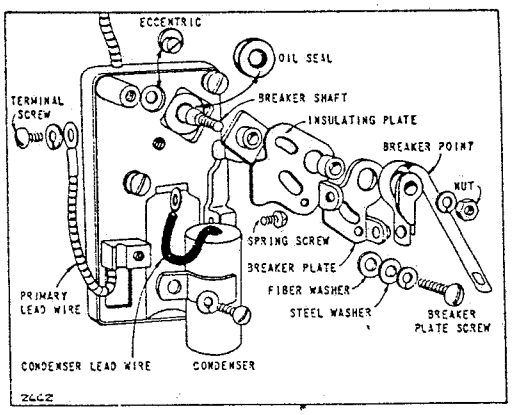
k. Turn breaker shaft in clockwise direction as far as possible. Place new breaker point on shaft, then the lockwasher and tighten nut down on lockwasher.

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 screw.

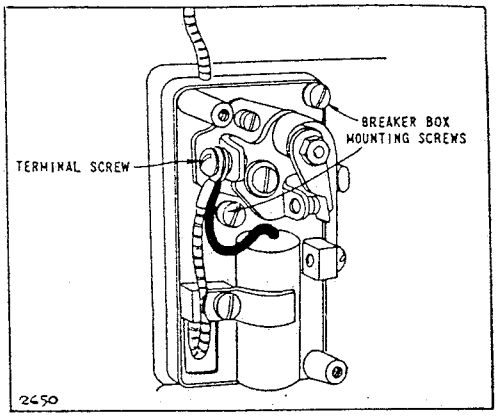
b. Remove terminal screw.

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.

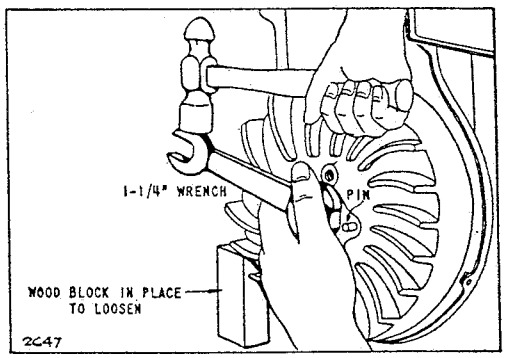
b. Remove blower housing.

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 1¼-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.)

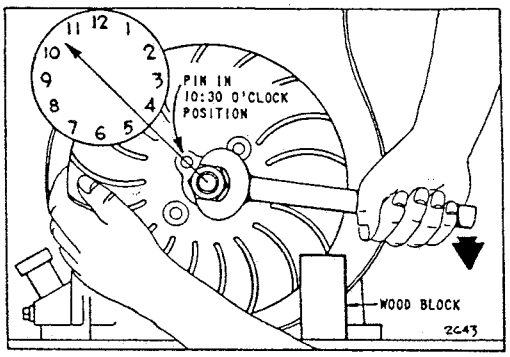
a. Thoroughly clean taper of crankshaft and flywheel.

b. Turn crankshaft until arrow marked 23 on rotor aligns with arrow on armature. (See Plate No. 19.)

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 1¼-inch wrench.

Assembling Flywheel — Plate No. 17



38. TO REPLACE COIL. (See Plate No. 18.)

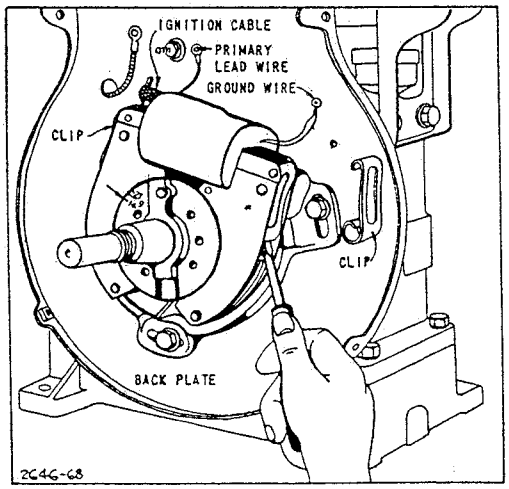
a. With flywheel removed (see Paragraph 36) loosen primary lead wire and primary and secondary ground wires from back plate.

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.

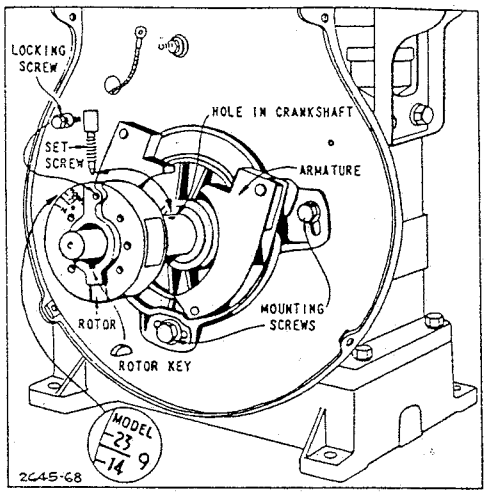
Removing Coil — Plate No. 18



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. 19.)

Rotor and Armature — Plate No. 19



41. TO REMOVE ROTOR. (See Plate No. 19.)

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 23 on rotor as shown in Plate No. 19.

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 6-to-1 gear reduction parts. 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

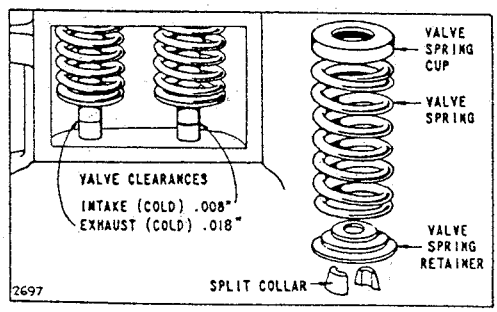
46. VALVE ADJUSTMENT. (See Plate No. 20.) To check valve clearance, remove carburetor and valve cover plate. Correct valve clearances when engine is cold are:

*Exhaust Valve ..... .018"
Intake Valve ..... .008"

**Engines with exhaust valves stamped "T. P. A." on head should be set at .022".*

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. 20



4. TO REMOVE VALVES. (See Plate No. 21, Fig. A.)

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

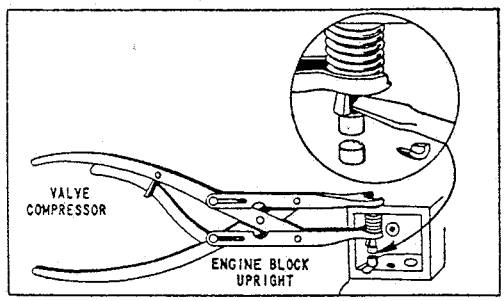
b. Place valve spring compressor on top of valve chamber and below spring retainer as illustrated. Then compress the spring and pry out split retainer collars and spring with a screwdriver.

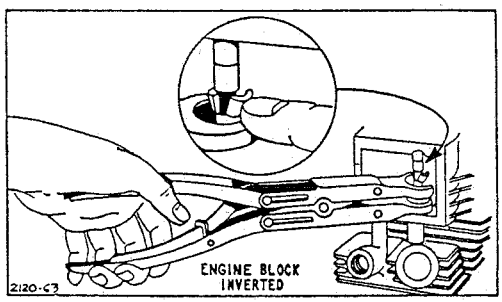
48. TO REPLACE VALVES. (See Plate No. 21, Fig. B.)

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. 21 (Fig. A)





(Fig. B)

49. VALVE RESEATING.

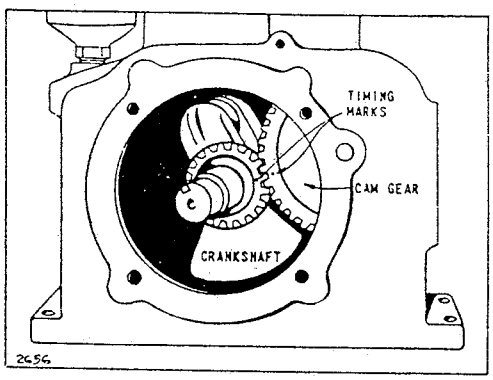
a. Grind in the same manner as automobile valves. If valves stick they may be coated with gum or carbon. To remove gum, use alcohol or acetone. Clean valve stems thoroughly with wire brush or emery cloth. Also scrape all carbon from valves.

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. 22.)

Valve Timing — Plate No. 22



CYLINDER

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

52. TO REMOVE AND CLEAN CYLINDER HEAD.

a. Remove spark plug.

b. Remove cylinder head and cover.

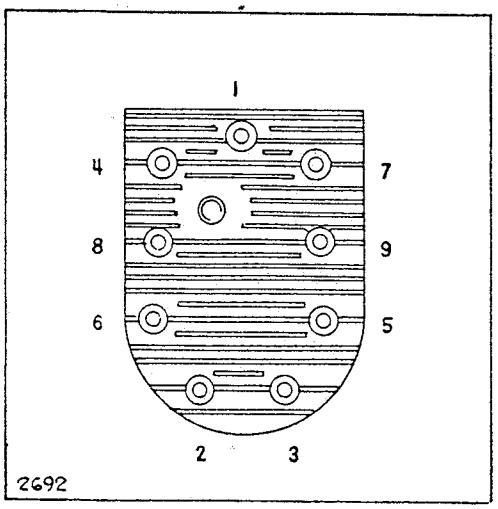
c. Accumulated dirt, grease, and oil should be scraped and blown out of the air passages. This is important to allow free circulation of air and prevent overheating.

d. 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.

a. Use a new gasket, Part No. 27352. If not available, clean the old one and coat both sides with cup grease — **shellac is not recommended.**

Tightening Cylinder Head — Plate No. 23



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. 23.

c. 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.

a. Drain oil from crankcase.

b. Remove blower case.

c. Remove flywheel. (See Paragraph 36.)

d. Remove rotor. (See Paragraph 41.) Remove burr if any at rotor set screw hole.

e. Remove rotor key.

f. Remove engine from base and tilt backward so it rests on fuel tank.

g. 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.

h. 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.

i. Slide crankshaft out, being careful that the counterweights clear the cam gear. Crankpin should be in direction of the breather. (See Plate No. 22.)

56. TO REASSEMBLE CRANKSHAFT.

a. Turn cam gear until timing mark is visible.

b. 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.

c. Assemble crankcase cover to drive side and bearing support to flywheel side.

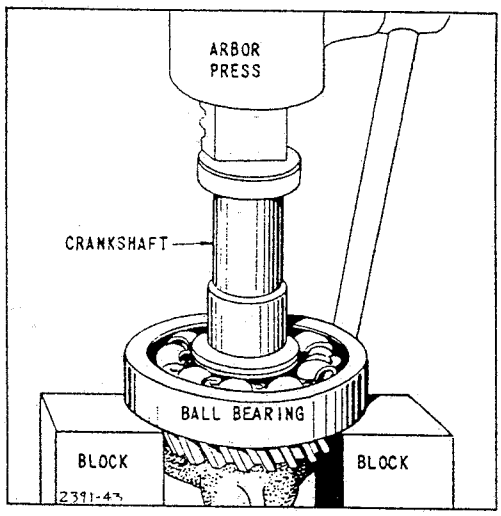
d. Crankshaft end play should be .002" to .008" and should be checked with a dial indicator. If no indicator is available mount a pulley or clamp on the power take-off end of crankshaft as close to crankcase cover as possible. Move crankshaft in, then out, using a feeler gauge between the pulley and 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. 27349..... 1/64" thick
Part No. 27374..... .005" thick
Part No. 27375..... .009" thick

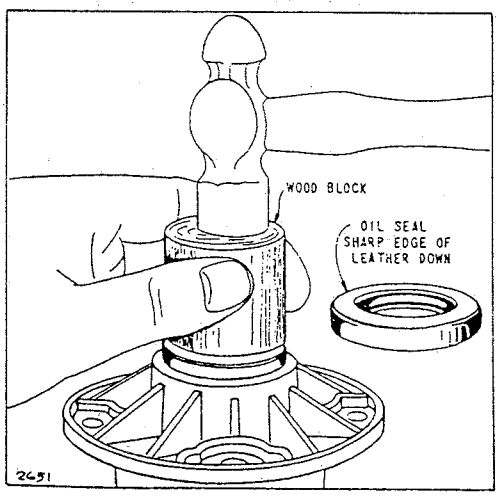
57. TO REMOVE BALL BEARING. Some models of this engine have ball bearings on both sides of crankshaft. If ball bearings are worn or rough, replace with new ones, Part No. 291667. With both sides of ball bearing supported in an Arbor Press remove as shown in Plate No. 24.

Removing Ball Bearing from Crankshaft Plate No. 24



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

Replacing Oil Seal — Plate No. 25



59. OIL SEAL. (See Plate No. 25.) 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.

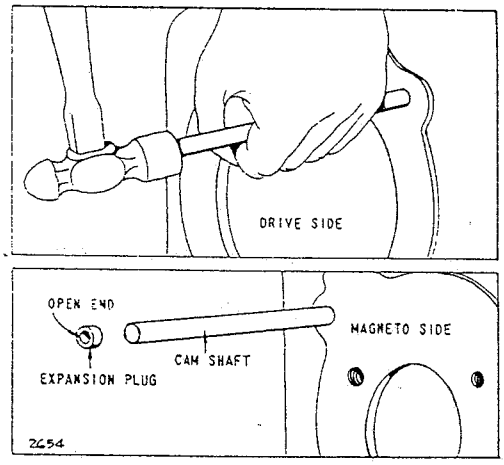
CAM SHAFT AND CAM GEAR

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. 26. 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. 66203.

Removing Cam Shaft — Plate No. 26



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. 22.)

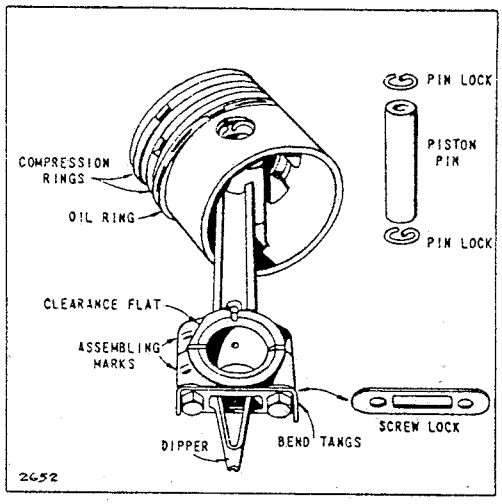
PISTON ASSEMBLY AND CONNECTING ROD

62. PISTON. (See Plate No. 27.)

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. 27



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. 27.) 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. 27.) 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. 28.) 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.

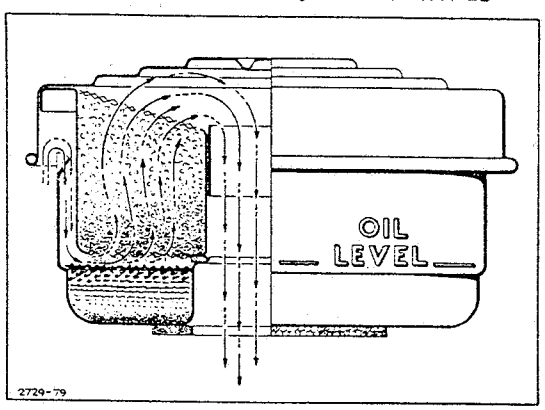
b. Remove filter from bowl and pour out oil.

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

d. Clean bowl 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. Be sure gasket is in place between filter and bowl. See instructions on name plate.

Air Cleaner Assembly — Plate No. 28



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

• • •

68. 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.

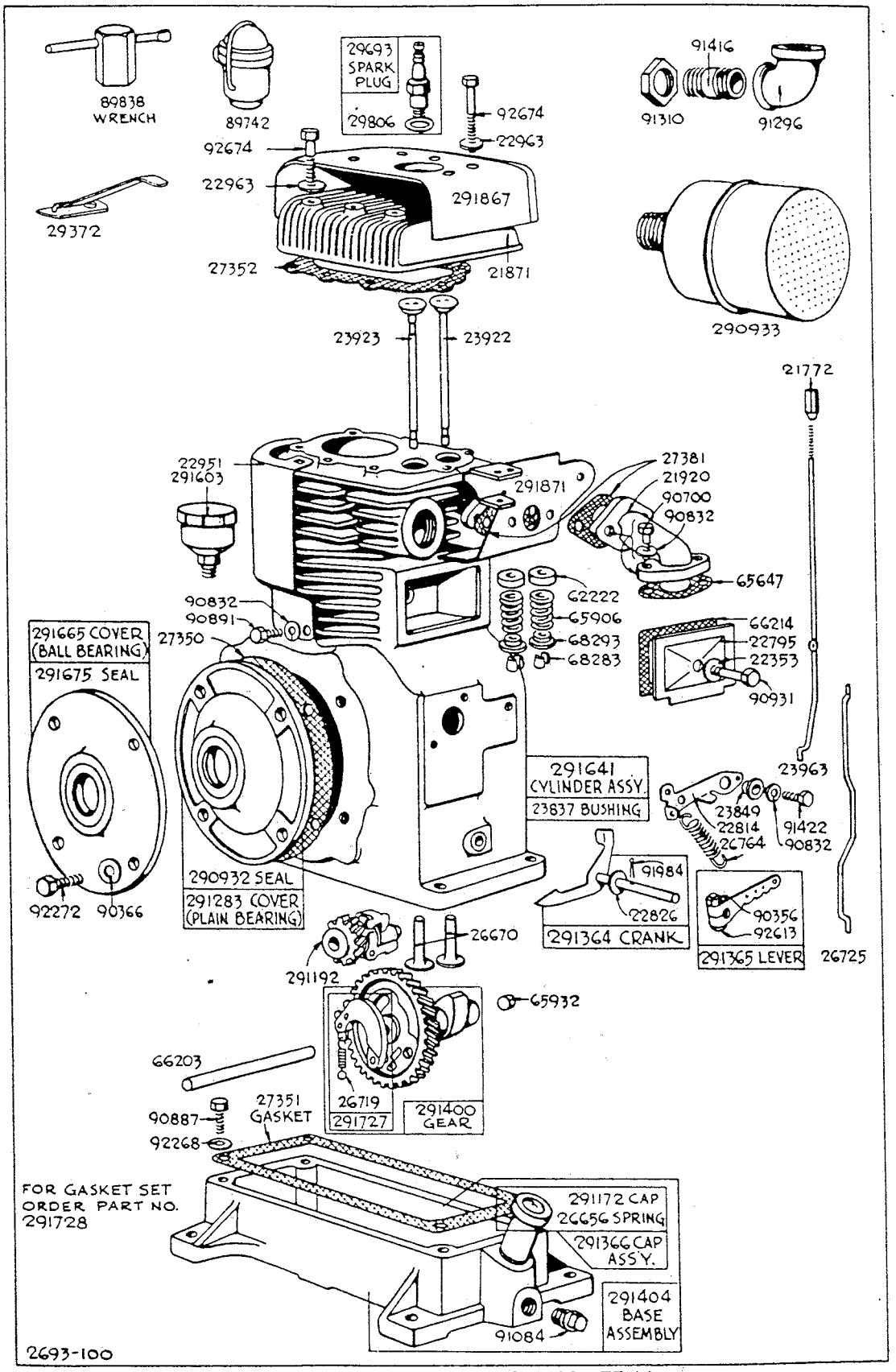
THE MASTER PART IS USED ON ALL TYPES OF ENGINES EXCEPT THOSE TYPES LISTED UNDER "NOTE."

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.

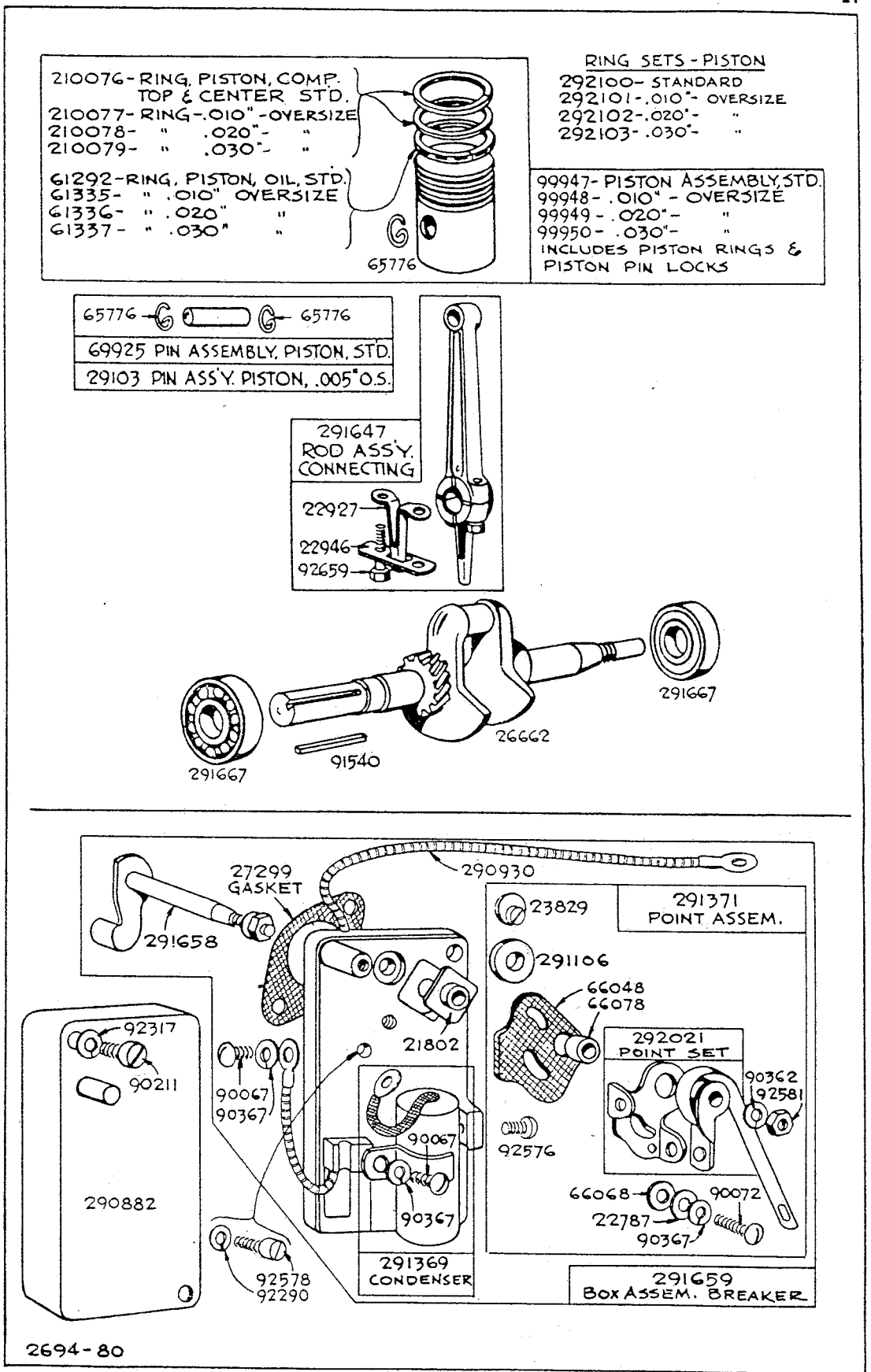
e. If your Engine Type Number does not appear after any part number listed under "Note," order the Master Part Number.

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

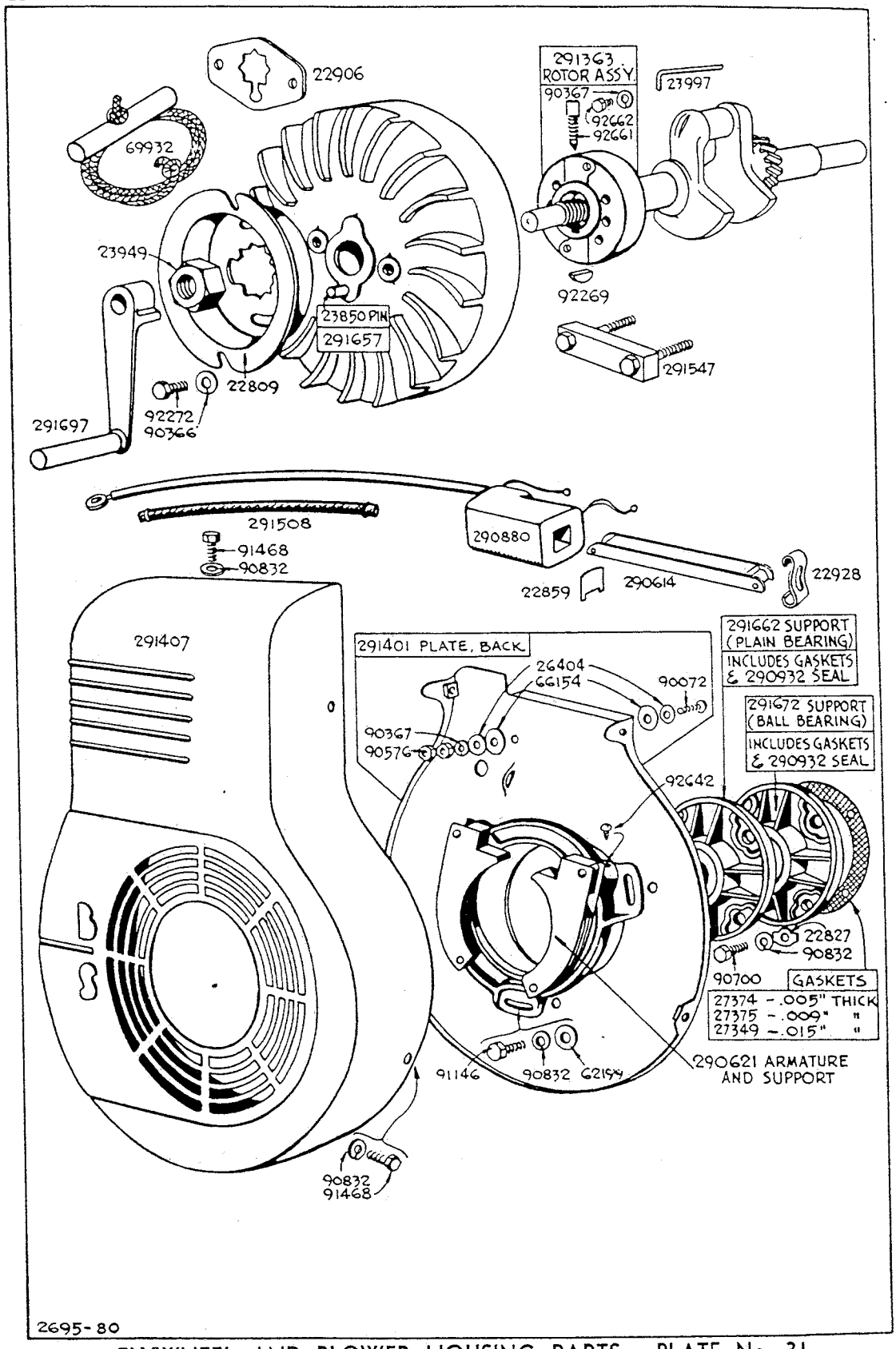
g. All parts should be ordered from the nearest member of our Nation-wide Service Organization. (See Page 33.) In ordering parts by mail, selling prices will be furnished on request or parts will be shipped at prevailing prices.



CYLINDER AND BASE PARTS — PLATE No. 29
Assemblies include all parts shown in frames

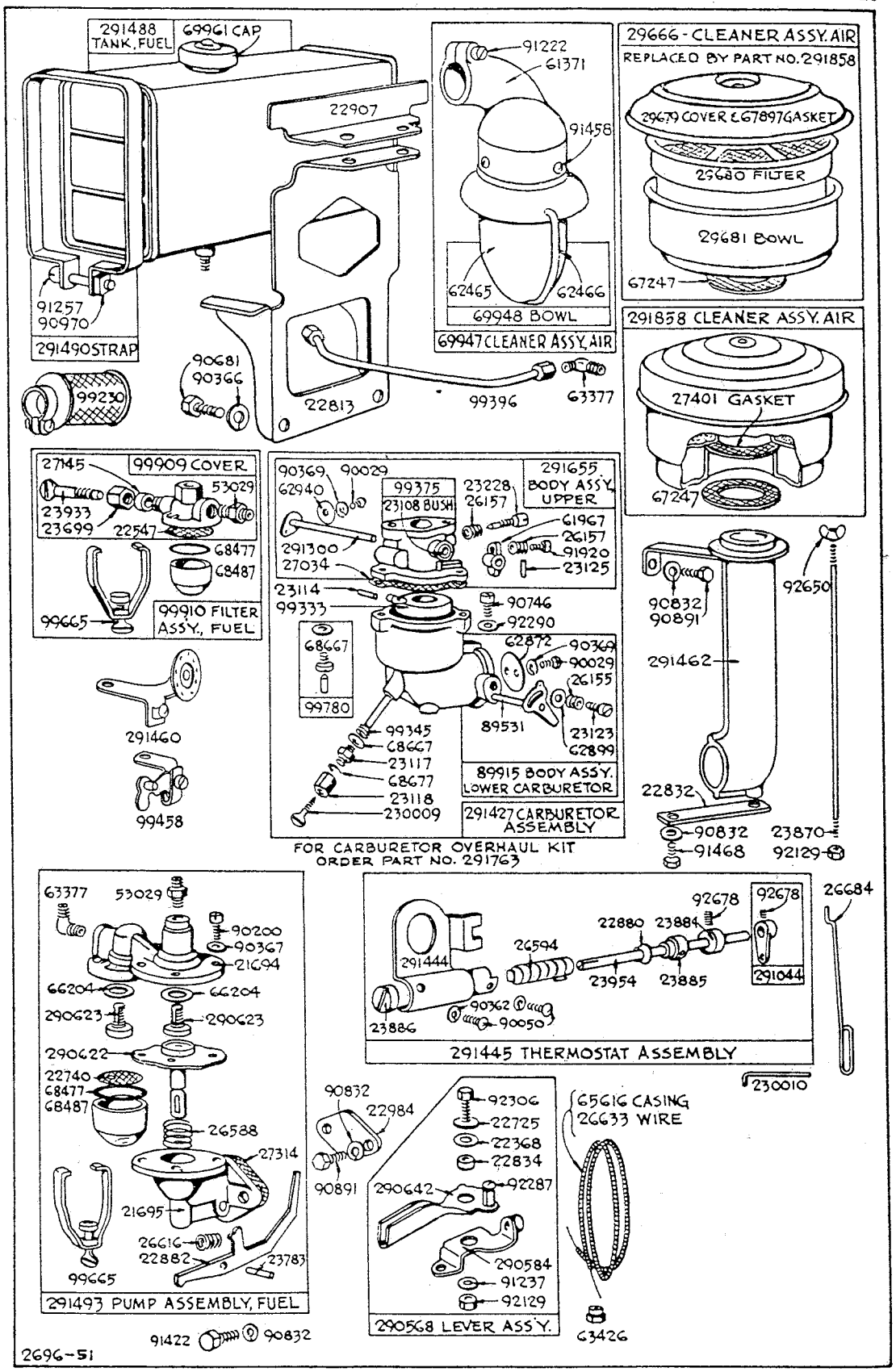


PISTON, CONNECTING ROD, CRANKSHAFT, BREAKER ASSEMBLY PARTS
PLATE No. 30 — Assemblies include all parts shown in frames

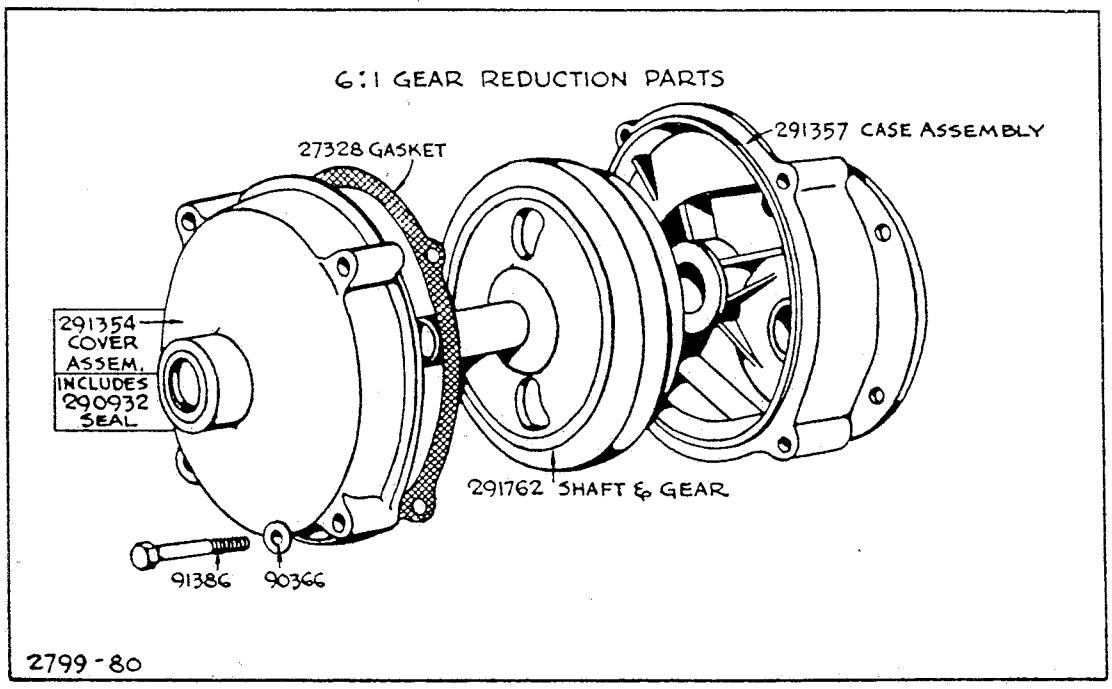


FLYWHEEL AND BLOWER HOUSING PARTS — PLATE No. 31

Assemblies include all parts shown in frames



FUEL SYSTEM PARTS — PLATE No. 32
Assemblies include all parts shown in frames



GEAR REDUCTION PARTS — Plate No. 33
Assemblies include all parts shown in frame

NUMERICAL PARTS LIST

PART NO.	NAME	SHIPPING WEIGHT Lbs.	Oz.
21694	Head—Fuel Pump		6
21695	Body—Fuel Pump		6
21772	Nut—Governor Adjusting		1
	Note: **No. 23402** Nut—Governor Stop Used on type No. 203314.		1
21802	Bushing—Oil Seal Clamp		1
21871	Head—Cylinder	2	8
21920	Elbow—Carburetor Intake		10
*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
22809	Pulley—Rope Starter		10
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
	Note: **No. 220245** Retainer—Coil Used on type Nos. 203057, 203062, 203063, 203064, 203065, 203067, 203068, 203333, 203533, 203551, 203553, 203556, 203559, 203561.		1
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
22928	Clip—Armature Spring		1
	Note: **No. 220244** Clip—Armature Spring Used on type Nos. 203057, 203062, 203063, 203064, 203065, 203067, 203068, 203333, 203533, 203551, 203553, 203556, 203559, 203561.		1
22946	Lock—Connecting Rod Screw		2
22951	Shield—Cylinder		6
22963	Washer—Cylinder Head		1
	Note: **No. 220208** Washer—Cylinder Head Used on type Nos. 203062, 203063, 203065, 203067, 203333, 203556, 203559, 203561.		1
22984	Cover—Fuel Pump Hole		2
23108	Bushing—Throttle Shaft		1
†23114	Pin—Float Hinge		1
†23117	Retainer—Needle Valve		1
	Note: **No. 292226** Retainer Assembly—Jet Needle Used on type Nos. 203052, 203323, 203542, 203543, 203547, 203825.		2
†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
23837	Bushing—Governor Crank		1
23849	Bushing—Control Lever		1

** Included in Gasket Set — Part No. 291728.*
† Included in Carburetor Overhaul Kit — Part No. 291763.

PART NO.	NAME	SHIPPING WEIGHT Lbs.	Oz.
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
23922	Valve—Intake		6
	Note: **No. 23923** Valve		6
	Used as Intake Valve on type Nos. 203044, 203057, 203059, 203062, 203063, 203064, 203065, 203067, 203068, 203318, 203333, 203533, 203534, 203548, 203551, 203553, 203556, 203558, 203559, 203561.		
23923	Valve—Exhaust		6
	Note: **No. 26736** Valve		6
	Used on type Nos. 203044, 203057, 203059, 203062, 203063, 203064, 203065, 203067, 203068, 203318, 203333, 203533, 203534, 203548, 203551, 203553, 203556, 203558, 203559, 203561.		
23933	Lever—Fuel Shut-Off		2
23949	Nut—Flywheel		4
	Note: **No. 230125** Nut—Flywheel		4
	Used on type Nos. 203062, 203063, 203065, 203067, 203333, 203556, 203559, 203561.		
23954	Shaft—Thermostat		2
23963	Rod—Governor Control		1
	Note: **No. 230040** Rod—Governor Control		1
	Used on type No. 203314.		
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
26594	Thermostat		1
26616	Spring—Fuel Pump Lever		1
26633	Wire—Control—78″ long		2
	Note: If longer wire is required, specify length in inches; if shorter wire is needed, order No. 26633 and cut to required length.		
26656	Spring—Oil Filler Cap		1
26662	Crankshaft	9	8
	Note: **No. 26700** Crankshaft	9	8
	Used on type Nos. 203513, 203532, 203544, 203551, 203557.		
	No. 26701 Crankshaft	9	8
	Used on type Nos. 203512, 203517, 203519, 203536, 203553, 203554, 203558.		
	No. 26720 Crankshaft	9	8
	Used on type Nos. 203510, 203533, 203537, 203538, 203559, 203560.		
	No. 26724 Crankshaft	9	8
	Used on type Nos. 203810, 203811, 203813, 203814, 203815, 203816, 203817, 203818, 203819, 203820. 203821, 203822, 203823, 203824 203825, 203826, 203827, 203828.		
	No. 26731 Crankshaft	9	8
	Used on type Nos. 203975, 203977, 203978, 203979, 203980, 203981.		
	No. 26734 Crankshaft	9	8
	Used on type Nos. 203514, 203529, 203531, 203539, 203541, 203545, 203555, 203561, 203563.		
	No. 26737 Crankshaft	9	8
	Used on type Nos. 203026, 203041, 203325, 203334, 203335, 203524, 203528.		
	No. 26741 Crankshaft	9	8
	Used on type Nos. 203516, 203523, 203526, 203527, 203534, 203535, 203543, 203556.		

(See following page)

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

PART NO.	NAME	SHIPPING WEIGHT Lbs.	Oz.
	No. 26742 Crankshaft	9	8
	Used on type No. 203521.		
	No. 26750 Crankshaft	9	8
	Used on type No. 203036.		
26670	Tappet—Valve		3
26684	Link—Choke		1
26719	Spring—Spark Advance		1
26725	Link—Throttle		1
26764	Spring—Governor		1
†27034	Gasket—Carburetor Body		1
27145	Packing—Fuel Shut Off Lever		1
*27299	Gasket—Breaker Box		1
27314	Gasket—Fuel Pump Mounting		1
27328	Gasket—Gear Case Cover		1
	Note: **No. 68247** Gasket—Gear Case Cover		1
	Used on type Nos. 203975, 203977, 203978, 203979, 203980, 203981.		
*27349	Gasket—Plain or Ball Bearing Support—1/64" thick		1
*27350	Gasket—Crankcase Cover		1
*27351	Gasket—Engine Base		2
*27352	Gasket—Cylinder Head		1
	Note: Two No. 27352 Cylinder Head Gaskets are used on type Nos. 203028, 203035, 203042, 203052, 203321, 203323, 203522, 203526, 203527, 203537, 203538, 203542, 203543, 203547, 203816, 203825.		
*27374	Gasket—Plain or Ball Bearing Support—.005" thick		1
*27375	Gasket—Plain or Ball Bearing Support—.009" thick		1
*27381	Gasket—Intake Elbow Mounting		1
27401	Gasket—Air Cleaner (Filter to Bowl)		1
29103	Pin Assembly—Piston—.005" O.S.		3
29372	Switch—Stop		3
29679	Cover—Air Cleaner		8
29680	Filter—Air Cleaner	1	
29681	Bowl—Air Cleaner		8
29693	Plug—Spark (with gasket)		3
	Note: **No. 291954** Plug—Spark		4
	Used on type Nos. 203057, 203062, 203063, 203064, 203065, 203067, 203068, 203333, 203533, 203551, 203556, 203559, 203561.		
29806	Gasket—Spark Plug		1
53029	Connector—Fuel Pipe		1
61292	Ring—Piston, Oil—Standard		1
61335	Ring—Piston, Oil—.010" O.S.		1
61336	Ring—Piston, Oil—.020" O.S.		1
61337	Ring—Piston, Oil—.030" O.S.		1
61371	Elbow—Air Cleaner		8
61967	Stop—Throttle		1
62199	Washer—Armature Support Mounting		1
62222	Cup—Valve Spring		1
	Note: **No. 220022** Washer		1
	Used between exhaust valve spring cup and top of valve chamber on type No. 203517.		
62465	Bowl—Air Cleaner		6
62466	Clamp—Air Cleaner		1
62872	Valve—Choke		1
	Note: **No. 22954** Valve—Choke		1
	Used on type Nos. 203026, 203069, 203324, 203335, 203524, 203531, 203539, 203540, 203541, 203545, 203557, 203563.		
62899	Washer—Choke Lever		1
62940	Valve—Throttle		1

† *Included in Carburetor Overhaul Kit — Part No. 291763.*
* *Included in Gasket Set — Part No. 291728.*

PART NO.	NAME	SHIPPING WEIGHT Lbs.	Oz.
63377	Connector—Fuel Pipe		1
	Note: **No. 92780** Elbow—Connector		1
	Used to connect shut-off valve to fuel pump on type No. 203561.		
63426	Locknut—Control Wire Casing		1
65616	Casing—Control Wire—72" long		8
	Note: If longer casing is required, specify length in inches; if shorter wire is needed, order No. 65616 and cut to required length.		
†*65647	Gasket—Intake Elbow		1
65776	Lock—Piston Pin		1
65906	Spring—Valve		2
	Note: **No. 26828** Spring—Exhaust Valve		2
	Used on type Nos. 203062, 203064, 203065, 203067, 203068, 203333, 203556, 203559, 203561.		
	No. 26833 Spring—Exhaust Valve		2
	Used on type Nos. 203554, 203558.		
	No. 26834 Spring—Exhaust Valve		2
	Used on type No. 203553.		
65932	Plug—Cam Shaft		1
66048	Plate—Insulator		1
	Note: **No. 66318** Plate—Insulator		1
	Used on type Nos. 203057, 203062, 203063, 203064, 203065, 203067, 203068, 203333, 203533, 203551, 203553, 203556, 203559, 203561.		
66068	Washer—Breaker Plate Insulating		1
	Note: **No. 66328** Washer—Breaker Plate Insulating		1
	Used on type Nos. 203057, 203062, 203063, 203064, 203065, 203067, 203068, 203333, 203533, 203551, 203553, 203556, 203559, 203561.		
66078	Bushing—Breaker Plate Pivot		1
	Note: **No. 66338** Bushing—Breaker Plate Pivot		1
	Used on type Nos. 203057, 203062, 203063, 203064, 203065, 203067, 203068, 203333, 203533, 203551, 203553, 203556, 203559, 203561.		
66154	Washer—Back Plate Terminal		1
	Note: **No. 66364** Washer—Back Plate Terminal		1
	Used on type Nos. 203057, 203062, 203063, 203064, 203065, 203067, 203068, 203333, 203533, 203551, 203553, 203556, 203559, 203561.		
66203	Shaft—Cam		5
66204	Gasket—Fuel Pump Valve		1
*66214	Gasket—Valve Cover		1
*67247	Gasket—Air Cleaner Mounting		1
67897	Gasket—Air Cleaner Cover		1
68283	Collar—Valve Spring Retainer		1
68293	Retainer—Valve Spring		1
	Note: **No. 292260** Rotocap—Exhaust Valve		3
	Used on type Nos. 203062, 203064, 203065, 203067, 203068, 203333, 203556, 203559, 203561.		
	No. 292307 Rotocap—Exhaust Valve		3
	Used on type No. 203553.		
*68477	Gasket—Fuel Filter Bowl		1
68487	Bowl—Fuel Filter		2
†68667	Gasket—Fuel Inlet Valve Seat and Nozzle		1
†68677	Packing—Needle Valve		1
69925	Pin Assembly—Piston—Standard		3
69932	Rope—Starter		6
69947	Cleaner Assembly—Air	2	
69948	Bowl—Air Cleaner	1	8
69961	Cap—Fuel Tank		4
89531	Shaft and Lever—Choke		1
	Note: **No. 291747** Shaft, Vane and Lever Assembly—Automatic Choke		2
	No. 291776 Lever Assembly—Automatic Choke		3
	Used on type Nos. 203026, 203069, 203324, 203335, 203524, 203531, 203539, 203540, 203541, 203545, 203557, 203563.		

† *Included in Carburetor Overhaul Kit — Part No. 291763.*
* *Included in Gasket Set — Part No. 291728.*

PART NO.	NAME	SHIPPING WEIGHT Lbs.	Oz.
89742	Shield Assembly—Spark Plug		6
89838	Wrench—Spark Plug		6
89915	Body Assembly—Lower Carburetor	1	
	Note: **No. 291745** Body Assembly—Lower Carburetor	1	
	Used on type Nos. 203026, 203069, 203324, 203335, 203524, 203531, 203539, 203540, 203541, 203545, 203557, 203563.		
90029	Screw—Machine, Rd. Hd.—4-36 x ¼"		1
90050	Screw—Machine, Rd. Hd.—6-32 x ¼"		1
90067	Screw—Machine, Rd. Hd.—8-32 x 5/16"		1
90072	Screw—Machine, Rd. Hd.—8-32 x ⅝"		1
90200	Screw—Machine, Fill. Hd.—8-32 x ½"		1
	Note: **No. 92779** Screw—Machine, Fill. Hd.—8-32x½"		1
	Used on type No. 203561.		
90211	Screw—Machine, Fill. Hd.—8-32 x ⅝"		1
90356	Nut—Hex.—10-24		1
90362	Washer—Lock—No. 6 x 3/64 x 1/32"		1
90366	Washer—Lock—5/16 x ⅛ x 1/16"		1
90367	Washer—Lock—No. 8 x 5/64 x 1/32"		1
	Note: **No. 92763** Washer—Lock—No. 8x5/64x1/32"		1
	Used on type No. 203561.		
90369	Washer—Lock—No. 4 x 3/64 x 1/32"		1
90576	Nut—Hex.—8-32		1
90681	Screw—Cap, Hex. Hd.—5/16-18 x ⅝"		1
90700	Screw—Cap, Hex. Hd.—¼-20 x ¾"		1
	Note: **No. 92731** Screw—Cap, Hex. Hd.—¼-20x¾"		1
	Used on type Nos. 203062, 203063, 203065, 203067, 203333, 203556, 203559, 203561.		
90746	Screw—Machine, Fill. Hd.—10-32 x ⅝"		1
90832	Washer—Lock—¼ x 3/32 x 5/64"		1
	Note: **No. 92706** Washer—Lock		1
	Used to lock shielding terminals to armature support lug on type Nos. 203057, 203062, 203063, 203064, 203065, 203067, 203068, 203333, 203533, 203551, 203553, 203556, 203559, 203561.		
90887	Screw—Cap, Hex. Hd.—⅜-16 x 1¼"		1
	Note: **No. 92406** Screw—Cap, Hex. Hd.—⅜-16x1¼"		1
	Used on type Nos. 203062, 203063, 203065, 203067, 203333, 203556, 203559, 203561.		
90891	Screw—Cap, Hex. Hd.—¼-20 x ½"		1
	Note: **No. 92676** Screw—Sheet Metal, Hex. Hd., Type Z, No. 14 x ⅝		1
	Used to fasten air cleaner pipe bracket to front air guide on engines before Serial No. 22096.		
	No. 92734 Screw—Cap, Hex. Hd.—¼-20x½"		1
	Used on type Nos. 203062, 203063, 203065, 203067, 203333, 203556, 203559, 203561.		
90923	Screw—Sheet Metal, Rd. Hd., Type A, No. 6x¼"		1
90931	Screw—Cap, Hex. Hd.—¼-20 x 2¼"		1
	Note: **No. 92741** Screw—Cap, Hex. Hd.—¼-20x2¼"		1
	Used on type Nos. 203062, 203063, 203065, 203067, 203333, 203556, 203559, 203561.		
90970	Nut—Square—¼"-20		1
	Note: **No. 92425** Nut—Square—¼-20		1
	Used on type Nos. 203062, 203065, 203556, 203559, 203561.		
91084	Plug—Pipe—⅜"		1
	Note: **No. 92738** Plug—Oil Drain		1
	Used on type Nos. 203063, 203067, 203559.		
91146	Screw—Cap, Hex. Hd.—¼-20 x ⅞"		1
	Note: **No. 92636** Screw—Cap. Hex. Hd.—¼-20x2"		1
	Used to mount rotor brush at lower armature support lug on type Nos. 203057, 203533, 203551, 203553.		
	No. 92732 Screw—Cap, Hex. Hd.—¼-20x⅞"		1
	Used on type Nos. 203062, 203063, 203065, 203067, 203333, 203556, 203559, 203561.		

PART NO.	NAME	SHIPPING WEIGHT Lbs.	Oz.
91222	Screw—Machine, Fill. Hd.—¼-20x1"		1
91237	Washer—Lock—¼ x 3/32 x 3/64"		1
91257	Screw—Machine, Fill Hd.—¼-20 x 1½"		1
	Note: **No. 92424** Screw—Machine, Fill. Hd.—¼-20x1½"		1
	Used on type Nos. 203062, 203065, 203556, 203559, 203561.		
91296	Elbow—Muffler—90°		2
	Note: **No. 91415** Elbow—Muffler—45°		1
	Used on type Nos. 203037, 203043, 203053, 203331.		
91310	Locknut—Muffler Nipple		1
91386	Screw—Gear Case Cover (2" long)		1
	Note: **No. 92279** Screw—Gear Case Cover (1½" long)		1
	Used on type Nos. 203975, 203977, 203978, 203979, 203980, 203981.		
91416	Nipple—Muffler		1
91422	Screw—Cap, Hex. Hd.—¼-20 x ⅝"		1
91458	Screw—Parker Kalon—No. 7 x ½"		1
91468	Screw—Cap, Hex. Hd.—¼-20 x ⅜"		1
	Note: **No. 92672** Screw—Sheet Metal, Hex. Hd., Type Z, No. 14 x ½"		1
	Used to mount blower housing on engines before Serial No. 22096.		
	No. 92734 Screw—Cap, Hex. Hd.—¼-20x½"		1
	Used on type Nos. 203062, 203063, 203065, 203067, 203333, 203556, 203559, 203561.		
91540	Key—Pulley Mounting		1
91920	Screw—Machine, Fill. Hd.—8-32 x ⅝"		1
91984	Pin—Cotter—1/16 x ½" long		1
92129	Nut—Hex.—¼-28		1
92268	Washer—Lock—⅜ x ⅛ x 3/32"		1
	Note: **No. 92405** Washer—Lock—⅜x⅛x3/32"		1
	Used on type Nos. 203062, 203063, 203065, 203067, 203333, 203556, 203559, 203561.		
92269	Key—Rotor		1
92272	Screw—Cap, Hex. Hd.—5/16-18 x ¾"		1
	Note: **No. 92409** Screw—Cap, Hex. Hd.—5/16-18x¾"		1
	Used on type Nos. 203062, 203063, 203065, 203067, 203333, 203556, 203559, 203561.		
92287	Screw—Machine, Rd. Hd.—10-32 x ¼"		1
92290	Washer—Lock—No. 10 x 1/16 x 3/64"		1
92306	Screw—Cap, Hex. Hd.—¼-28 x ⅝"		1
92317	Washer—Lock—Shakeproof No. 1208		1
92576	Screw—Machine, Rd. Hd.—8-32 x 5/16"		1
92578	Screw—Breaker Box Mounting		1
92581	Nut—Hex.—6-40		1
92613	Bolt—Governor Lever		1
92642	Screw—Sheet Metal, Rd. Hd. Use Part No. 90923		1
92650	Nut—Wing		1
92659	Screw—Connecting Rod		1
92661	Screw—Rotor Set (Socket Hd.)		1
	Note: **No. 92743** Screw—Rotor		1
	Used on type Nos. 203062, 203063, 203065, 203067, 203333, 203556, 203559, 203561.		
92662	Screw—Rotor Screw Locking		1
	Note: **No. 92733** Screw—Rotor Screw Locking		1
	Used on type Nos. 203062, 203063, 203065, 203067, 203333, 203556, 203559, 203561.		
92674	Screw—Cylinder Head		1
	Note: **No. 92742** Screw—Cylinder Head		1
	Used on type Nos. 203062, 203063, 203065, 203067, 203333, 203556, 203559, 203561.		
92678	Screw—Set, Socket Hd.—6-32 x 5/16"		1
99230	Arrester—Flame	1	
99333	Float—Carburetor		2
†99345	Nozzle—Carburetor		2

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

PART No.	NAME	SHIPPING WEIGHT Lbs.	Oz.
99375	Body—Upper Carburetor	1	
99396	Pipe—Fuel—13" long		4
	Note: **No. 89092** Pipe—Fuel—14" Long		4
	Used on type No. 203540.		
	No. 291703 Pipe—Fuel		4
	Used between carburetor and fuel pump on type Nos. 203325, 203524, 203529, 203531, 203561, 203563; also used on other engines equipped with a fuel pump.		
	The following fuel pipes and fittings are used with combination fuel tank on type Nos. 203028, 203035, 203042, 203321, 203522, 203526, 203527, 203537, 203538, 203816:		
	No. 291704 Pipe—Fuel—18" long		4
	No. 89248 Pipe—Fuel—2¼" long		1
	No. 92655 Tee		1
	The following fuel pipes and fittings are used on type Nos. 203052, 203323, 203542, 203543, 203547, 203825:		
	No. 290999 Pipe—Fuel—4⅞" Long		2
	No. 292086 Pipe—Fuel—7¼" Long		3
	No. 92647 Tee		1
	No. 92713 Coupling		1
	No. 92714 Plug-Wing		1
	The following fuel pipe and fittings used between fuel tank and fuel pump on type No. 203561:		
	No. 292378 Pipe—Fuel		2
	No. 292370 Valve—Fuel Shut-Off		3
	No. 292449 Cap Assembly—Elbow		1
	No. 92800 Elbow—90°		1
	No. 92784 Nipple		1
	No. 63377 Connector		1
99458	Idling Device		4
99665	Yoke Assembly—Fuel Filter		2
	Note: **No. 292375** Yoke—Fuel Pump Filter		2
	Used on type No. 203561.		
†99780	Valve and Seat—Fuel Inlet		1
99909	Cover Assembly—Fuel Filter		2
99910	Filter Assembly—Fuel		10
99947	Piston Assembly—Standard	1	
99948	Piston Assembly—.010" O.S.	1	
99949	Piston Assembly—.020" O.S.	1	
99950	Piston Assembly—.030" O.S.	1	
210076	Ring—Piston, Compression, Top and Center, Std. (3/32" Thick)		1
	Note: **No. 61963** Ring—Piston, Compression, Center—Standard (⅛" Thick)		1
	No. 61964 Ring—Piston, Compression, Top—Standard (⅛" Thick)		1
	Used on engines before Serial No. 44117.		
210077	Ring—Piston, Compression, Top and Center, 010" O.S. (3/32" Thick)		1
	Note: **No. 21002** Ring—Piston, Compression, Top—.010" O.S. (⅛" Thick)		1
	No. 21003 Ring—Piston, Compression, Center—.010" O.S. (⅛" Thick)		1
	Used on engines before Serial No. 44117.		
210078	Ring—Piston, Compression, Top and Center, .020" O.S. (3/32" Thick)		1
	Note: **No. 21005** Ring—Piston, Compression, Top—.020" O.S. (⅛" Thick)		1
	No. 21006 Ring—Piston, Compression, Center—.020" O.S. (⅛" Thick)		1
	Used on engines before Serial No. 44117.		
210079	Ring—Piston, Compression, Top and Center, .030" O.S. (3/32" Thick)		1
	Note: **No. 21008** Ring—Piston, Compression, Top—.030" O.S. (⅛" Thick)		1

(See following page)

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

PART NO.	NAME	SHIPPING WEIGHT Lbs.	Oz.
	No. 21009 Ring—Piston, Compression, Center—.030" O.S. (⅛" Thick)		1
	Used on engines before Serial No. 44117.		
†230009	Valve—Needle		2
	Note: **No. 230085** Valve—Needle		1
	Used on type Nos. 203052, 203323, 203542, 203543, 203547, 203825.		
230010	Wrench—Socket Screw		1
290568	Lever Assembly—Control		4
290584	Base—Control Lever		2
290614	Core—Coil		6
	Note: **No. 292319** Core—Coil		6
	Used on type Nos. 203057, 203062, 203063, 203064, 203065, 203067, 203068, 203333, 203533, 203551, 203553, 203556, 203559, 203561.		
290621	Armature and Support Assembly	3	
	Note: **No. 292318** Armature and Support Assembly	3	
	Used on type Nos. 203057, 203062, 203063, 203064, 203065, 203067, 203068, 203333, 203533, 203551, 203553, 203556, 203559, 203561.		
290622	Diaphragm—Fuel Pump		2
	Note: **No. 292374** Diaphragm—Fuel Pump		2
	Used on type No. 203561.		
290623	Valve—Fuel Pump		1
290642	Lever—Control		2
290880	Coil—Magneto (includes ignition cable)		12
	Note: **No. 292047** Coil Assembly—Ignition (Includes ignition cable)	1	
	Used on type Nos. 203057, 203062, 203063, 203064, 203065, 203067, 203068, 203333, 203533, 203551, 203553, 203556, 203559, 203561.		
	Includes: **No. 66298** Bushing—Terminal Insulator		1
	No. 92704 Terminal—Spark Plug		1
	No. 92705 Terminal—Shielding		1
	No. 220162 Clip—Shield Grounding		1
	No. 292412 Elbow—Spark Plug Cable		2
290882	Cover—Breaker		3
	Note: **No. 292397** Cover—Breaker		2
	Used on type Nos. 203062, 203063, 203064, 203065, 203067, 203068, 203551, 203553, 203556, 203559, 203561.		
290930	Lead—Primary		2
	Note: **No. 291970** Lead—Primary		3
	Used on type Nos. 203057, 203062, 203063, 203064, 203065, 203067, 203068, 203333, 203533, 203551, 203553, 203556, 203559, 203561.		
	Uses: **No. 92705** Terminal—Shielding		1
	(Used at Armature Support Lug)		
290932	Seal—Oil		2
290933	Muffler	1	8
	Note: **No. 291519** Muffler	3	
	Used on type Nos. 203022, 203027, 203054, 203056, 203058, 203312, 203318, 203327, 203329, 203330, 203828, 203977, 203981.		
291044	Lever Assembly—Thermostat		1
291106	Seal—Oil		1
291172	Cover—Oil Filler		2
291192	Gear Assembly—Governor		5
291283	Cover Assembly—Crankcase	1	6
291300	Shaft Assembly—Throttle		1
291354	Cover Assembly—Gear Case	3	
	Note: **No. 290574** Cover Assembly—Gear Case	4	
	Used on type Nos. 203975, 203977, 203978, 203979, 203980, 203981.		
	Includes: **No. 22723** Shim—.003" thick		1
	No. 22724 Shim—.010" thick		1
	No. 63899 Cup—Bearing		6
	No. 69858 Seal—Oil		4

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

PART No.	NAME	SHIPPING WEIGHT Lbs.	Oz.
291357	Case Assembly—Gear	3	
	Note: **No. 291712** Case Assembly—Gear	6	
	Used on type Nos. 203975, 203977, 203978, 203979, 203980, 203981.		
	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. 203057, 203533, 203551, 203553.		
	Includes: No. 292065 Brush		1
	No. 292353 Rotor Assembly	2	8
	Used on type Nos. 203062, 203063, 203065, 203067, 203333, 203556, 203559, 203561.		
291364	Crank Assembly—Governor		2
291365	Lever Assembly—Governor		2
291366	Cover Assembly—Oil Filler		2
	Note: **No. 292402** Cap—Oil Filler		2
	Used on type No. 203562.		
	Uses: **No. 65938** Gasket—Filler Cap		1
291369	Condenser		2
	Note: **No. 292227** Condenser		2
	Used on type Nos. 203057, 203062, 203063, 203064, 203065, 203067, 203068, 203333, 203533, 203551, 203553, 203556, 203559, 203561.		
291371	Point Set—Breaker		4
291400	Gear Assembly—Cam	2	
291401	Plate Assembly—Back	1	8
	Note: **No. 292163** Plate Assembly—Back	1	8
	Used on type Nos. 203057, 203062, 203063, 203064, 203065, 203067, 203068, 203333, 203533, 203551, 203553, 203556, 203559, 203561.		
291404	Base Assembly—Engine	3	8
	Note: **No. 21895** Base—Engine	3	
	Used on type No. 203562.		
	Uses: **No. 89859** Nipple—Oil Filler		3
	No. 292410 Base Assembly—Engine	3	8
	Used on type Nos. 203063, 203067, 203559.		
291407	Housing—Blower	3	
291427	Carburetor Assembly	2	8
	Note: **No. 291746** Carburetor Assembly	2	8
	Used on type Nos. 203026, 203069, 203324, 203335, 203524, 203531, 203539, 203540, 203541, 203545, 203557, 203563.		
	No. 292106 Carburetor Assembly	2	8
	Used on type Nos. 203052, 203323, 203542, 203543, 203547, 203825.		
291444	Tube Assembly—Thermostat		4
291445	Thermostat Assembly		8
291460	Control Assembly—Throttle		3
291462	Pipe Assembly—Air Cleaner		9
291488	Tank Assembly—Fuel	2	8
	Note: When replacing fuel tanks mounted with banding, two No. 291490 tank straps must also be ordered.		
	No. 291513 Tank Assembly—Fuel	3	
	Used on type Nos. 203028, 203035, 203042, 203321, 203522, 203526, 203527, 203537, 203538, 203816.		
	No. 292415 Tank Assembly—Fuel	3	13
	Used on type Nos. 203064, 203068.		
291490	Strap Assembly—Fuel Tank		8
	Note: **No. 292360** Strap Assembly—Fuel Tank		8
	Used on type Nos. 203062, 203065, 203556, 203559, 203561.		
291493	Pump Assembly—Fuel	1	4
	Note: **No. 292431** Pump Assembly—Fuel	1	4
	Used on type No. 203561.		
291508	Shielding Assembly—Ignition Cable		1

PART No.	NAME	SHIPPING WEIGHT Lbs.	Oz.
291547	Puller—Flywheel	1	8
	Note: Optional Accessory.		
291603	Breather		5
291641	Cylinder	36	
	Note: **No. 291772** Cylinder	36	
	Used on type Nos. 203044, 203057, 203059, 203062, 203063, 203064, 203065, 203067, 203318, 203333, 203533, 203534, 203548, 203551, 203553, 203556, 203558, 203559, 203561.		
291647	Rod Assembly—Connecting		10
291655	Body Assembly—Upper Carburetor	1	
291657	Flywheel Assembly	21	8
291658	Shaft Assembly—Breaker		3
291659	Box Assembly—Breaker		9
	Note: **No. 292036** Box Assembly—Breaker		8
	Used on type Nos. 203057, 203062, 203063, 203064, 203065, 203067, 203068, 203333, 203533, 203551, 203553, 203556, 203559, 203561.		
	Includes: **No. 92705** Terminal—Shielding		1
291662	Support Assembly—Plain Bearing		12
291665	Cover Assembly—Crankcase	1	
	Note: **No. 291710** Cover Assembly—Crankcase	1	
	Used on type Nos. 203514, 203515, 203519, 203523, 203526, 203529.		
291667	Bearing—Ball		12
	(Used only on Models 23B, 23FB, 23FBP, and 23FBPC engines)		
291672	Support Assembly—Ball Bearing		8
291675	Seal—Oil		2
291697	Crank—Starting	1	10
291727	Weight—Spark Advance		4
291728	Gasket Set		6
291762	Shaft Assembly—Drive	10	
	Note: **No. 290577** Drive Shaft, Gear and Bearing Assembly	7	
	Used on type Nos. 203975, 203977, 203978, 203979, 203980.		
	Includes: **No. 22723** Shim—.003" thick		1
	No. 22724 Shim—.010" thick		1
	No. 290638 Drive Shaft, Gear and Bearing Assembly	7	
	Used on type No. 203981.		
	Includes: **No. 22723** Shim—.003" Thick		1
	No. 22724 Shim—.010" Thick		1
291763	Carburetor Overhaul Kit		3
291858	Cleaner—Air	2	
291867	Cover—Cylinder Head		6
291871	Guide—Front Air		5
292021	Point Set—Breaker		2
292100	Ring Set—Standard Piston ($\frac{3}{32}$" Thick)		3
	Note: **No. 290630** Ring Set—Standard Piston (⅛" Thick)		3
	Used on engines before Serial No. 44117.		
292101	Ring Set—.010" O.S. Piston ($\frac{3}{32}$" Thick)		3
	Note: **No. 290631** Ring Set—.010" O.S. Piston (⅛" Thick)		3
	Used on engines before Serial No. 44117.		
292102	Ring Set—.020" O.S. Piston ($\frac{3}{32}$" Thick)		3
	Note: **No. 290632** Ring Set—.020" O.S. Piston (⅛" Thick)		3
	Used on engines before Serial No. 44117.		
292103	Ring Set—.030" O.S. Piston ($\frac{3}{32}$" Thick)		3
	Note: **No. 290633** Ring Set—.030" O.S. Piston (⅛" Thick)		3
	Used on engines before Serial No. 44117.		

NATION-WIDE SERVICE ORGANIZATION

To provide prompt and efficient service on Briggs & Stratton engines, Authorized Service Distributors and Engine Service Stations are located in the principal cities of the United States and Canada.

Each Authorized Service Organization carries a stock of original Briggs & Stratton repair parts. Each is equipped with special factory service tools and factory-trained mechanics, assuring expert repair service on all Briggs & Stratton engines.

All Authorized Service Organizations are instructed by the factory to replace free of charge all parts found to be defective in either material or workmanship, according to the conditions of the Briggs & Stratton Warranty.

All gratis work done under the warranty is the responsibility of the Authorized Service Organization until all the material involved and supporting facts are submitted to and approved by the factory.

In a difference of opinion regarding a Service Organization's decision, their terms should be accepted and, either through them or direct, have all materials and supporting facts submitted to the factory for review.

Genuine Briggs & Stratton service will assure continuous engine satisfaction. Our long experience in engine maintenance prompts us to urge that all service work be done by an Authorized Service Organization or at our factory. Mechanics unfamiliar with Briggs & Stratton products, or without proper tools, should not be permitted to make major repairs.

Parts and repair work are F. O. B. Factory or any Authorized Briggs & Stratton Service Distributor or Engine Service Station. The Service Distributor nearest you (see back cover page) will be glad to give you the name of our Engine Service Station in your locality. Space does not permit listing here.

BRIGGS & STRATTON ENGINE WARRANTY

BE SURE TO FILL IN AND MAIL WARRANTY REGISTRATION CARD WHICH ACCOMPANIED ENGINE AT TIME OF PURCHASE

THE WARRANTY — For Ninety Days from purchase date. Briggs & Stratton Corp. will replace for the original purchaser, FREE OF CHARGE, any part or parts found, upon examination at any Factory Authorized Service Distributor or at our factory at Milwaukee, Wisconsin, to be defective under normal use and service, on account of defects in material or workmanship.

All transportation charges on part or parts submitted for replacement under this warranty must be borne by purchaser.

WHAT THIS WARRANTY DOES NOT INCLUDE — This warranty does not cover the free replacement of parts inoperative because of wear occasioned by use. It does not cover the labor cost of replacing parts, neither is it effective if the engine has been the subject of misuse, negligence, or accident, nor if it has been repaired or altered, outside of our Milwaukee Factory or any factory-approved service station, in any way which, in our judgment, affects its condition or operation.

WARRANTY INSTRUCTIONS

When sending an engine, or engine parts, to a Briggs & Stratton Service Organization for service, at the same time always send by mail the following information:

Model Letter (or Number), Type Number, and Serial Number of the engine. (Take from metal plate on engine.)

Date purchased.

Kind of equipment engine is used on.

Name or trademark of manufacturer.

Name and address of dealer from whom purchased.

Approximate number of hours engine has run since equipment was bought.

Also, give complete report of trouble experienced and special servicing instructions.

The above information is necessary to insure prompt and proper service.

AUTHORIZED SERVICE ORGANIZATION

There is a member of the Briggs & Stratton Service Organization in your neighborhood who is fully qualified to take care of your service needs. Space does not permit listing here, but if you will write to the nearest distributor listed below, they will be glad to supply you with name and address.

STATE	CITY	NAME	LOCATION
Alabama	Birmingham 3	Birmingham Electric Battery Co.	Ave. B. at 23rd St.
Arizona	Phoenix	Motor Supply Co.	402-414 N. Central Ave.
California	Los Angeles 15	Electric Equipment Company	1611 S. Hope St.
California	San Francisco 9	Frank Edwards Co., Automotive Service Div.	382-4 Sixth St.
Colorado	Denver 1	Spitzer Electric Company	43 W. 9th Ave.
Florida	Jacksonville 1	Spencer Electric, Inc.	40 W. Beaver St.
Florida	Miami 32	Electric Equipment Co.	42-58 N. W. 4th St.
Florida	Tampa 1	Spencer Auto Electric, Inc.	607-11 E. Cass St.
Georgia	Atlanta 3	Auto Electric & Magneto Co.	477 Spring St., N. W.
Illinois	Chicago 16	Mid-States Auto Electric Co.	1905 S. Michigan Ave.
Indiana	Indianapolis 4	Gulling Auto Electric Co.	450 N. Capitol Ave.
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Louisiana	Shreveport 80	Chain Battery & Automotive Supply, Inc.	Marshall at Cotton Sts.
Massachusetts	Boston 15	Wm. H. Flaherty Co.	48-52 Cummington St.
Michigan	Detroit 1	Auto Electric & Service Corporation	90 Selden Ave.
Minnesota	Minneapolis 2	Reinhard Brothers Co., Inc.	11 S. Ninth St.
Missouri	Kansas City 8	The E. C. Cowie Electric Co.	1819 Wyandotte St.
Missouri	St. Louis 3	Medart Auto Electric Co , Inc.	3134 Washington Blvd.
Montana	Billings	Original Equipment, Inc.	423 N. Broadway
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Nebraska	Omaha 2	Carl A. Anderson, Inc.	16th and Jones St.
New Mexico	Albuquerque	Spitzer Electrical Co. of New Mexico	3rd and Mountain Rd.
New York	Buffalo 14	The Battery & Starter Co., Inc.	2505 Main St.
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North Dakota	Fargo	Reinhard Brothers Co., Inc.	301 N. Pacific Ave.
Ohio	Cincinnati 2	Gardner, Inc.	1847 Reading Rd.
Ohio	Cleveland 15	The Electric Power Maintenance Co.	Prospect at East 30th
Ohio	Toledo 2	Electric Power & Maintenance Co.	26-30 Seventeenth St.
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Oregon	Portland 9	Tracey & Co., Inc.	N. W. 10th and Glisan
Pennsylvania	Philadelphia 30	Auto Equipment & Service Co., Inc.	1522-24 Fairmount Ave.
Pennsylvania	Pittsburgh 24	Pitt Auto Electric Company	5135 Baum Blvd.
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South Dakota	Sioux Falls	Reinhard Brothers Co.	225 E. 11th St.
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Tennessee	Memphis 4	Automotive Electric Service Co.	982 Linden Ave.
Texas	Amarillo	The E. S. Cowie Electric Co.	700 Van Buren St.
Texas	Dallas 1	Beard & Stone Electric Company, Inc.	3909 Live Oak St.
Texas	El Paso	Motor Supply Co.	308 Chihuahua St.
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DOMINION OF CANADA

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BRIGGS & STRATTON CORP., Milwaukee 1, Wis., U.S.A.

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