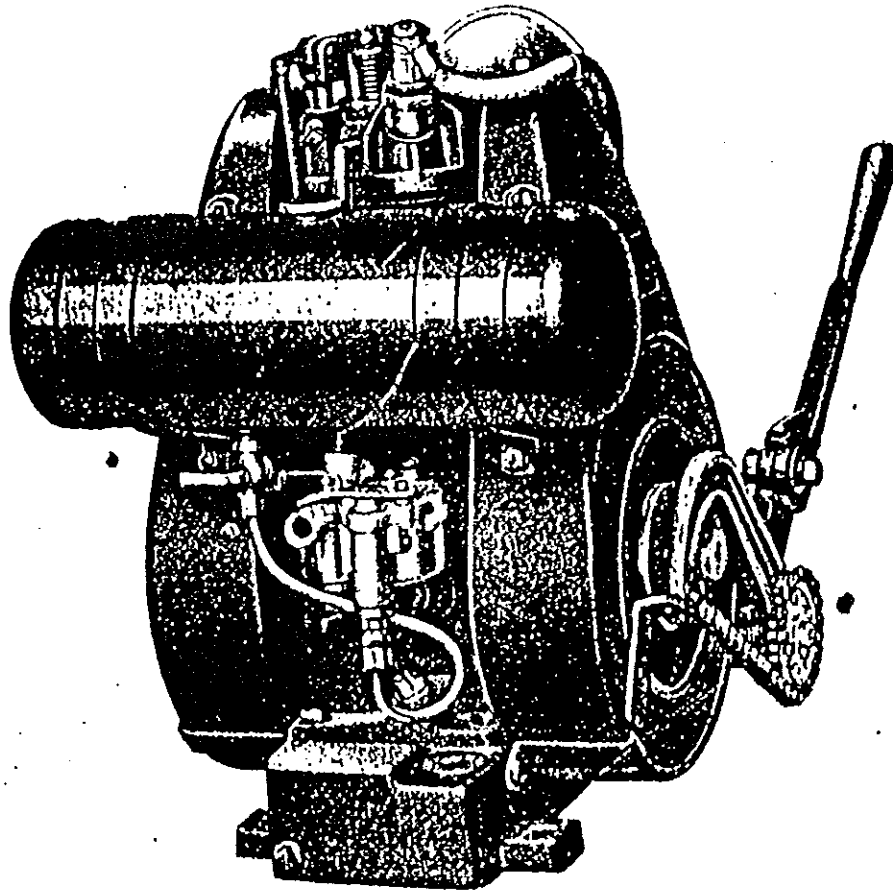


**INSTRUCTIONS  
AND PARTS PRICE LIST**

For Type "FI" Fullpower  
Briggs-Stratton Engine



**BRIGGS & STRATTON CORP.**

MILWAUKEE



WISCONSIN

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

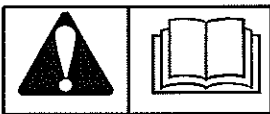
In the USA and Canada,  
our 24-hour hotline is:

18002333723

Briggs & Stratton Corporation  
Milwaukee, Wisconsin 53201

[www.briggsandstratton.com](http://www.briggsandstratton.com)

Keep these instructions for future reference.





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


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

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

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

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

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

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

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

## HAZARD SYMBOLS AND MEANINGS



Fire



Explosion



Moving Parts



Toxic Fumes



Hot Surface



Shock



Kickback

(OVER)







FORM MS-6445-01/03









# ENGINE SELECTION

|  |
|--|
|  <b>WARNING</b> |
|                 |
| <b>Failure to select the correct engine could result in fire or explosion.</b>                   |







- 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

- 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.
- Do not modify the engine in any way without Briggs & Stratton factory approval. Any such modification is at the owner's sole risk.
- 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.
- |  |   |
|--|---|
|  <b>WARNING</b> | 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. |
|                 |   |
- |  |  |
|--|--|
|  <b>WARNING</b> | Ensure all fuel lines and fittings are properly assembled and do not leak. Replacement parts must be the same model as the original. |
|                 |  |
- |  |  |
|--|--|
|  <b>WARNING</b> | Ensure all wiring, including safety switches and engine shut-off components are completely installed and functioning properly. |
|                 |  |
- 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.

- |  |  |
|--|--|
|  <b>WARNING</b> | 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. |
|                |  |
- |  |   |
|--|---|
|  <b>WARNING</b> | If engine is installed on walk behind lawn mower, all mower components, including cutting blade, must be correctly installed before attempting to start engine. |
|                |   |
- |  |   |
|--|---|
|  <b>WARNING</b> | When working on the engine or equipment, remove spark plug wire from spark plug. For electric start, remove negative wire from battery. |
|                |   |
- |  |  |
|--|--|
|  <b>WARNING</b> | Do not check for spark with spark plug removed. Use Briggs & Stratton spark tester #19368. |
|                |  |

# ENGINE OPERATION

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

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## **IMPORTANT—Please Read Carefully**

It is important that the instructions in this booklet be read and followed in order to insure satisfactory operation of the engine.

When desiring additional information, returning material or placing parts orders, address your letter to the attention of the Service Department. In replying to a letter from the company please mention the name of the individual and date of the letter, but address the letter to the company and not to an individual.

**WHEN ORDERING PARTS OR WRITING TO US ABOUT THIS ENGINE ALWAYS BE SURE TO GIVE THE NUMBER AND TYPE LETTER PRECEDING THE NUMBER. THIS NUMBER WILL BE FOUND ON THE NAME PLATE RIVETED TO THE BLOWER CASE.**

Above all be sure to follow the instructions contained on the following pages, especially those concerning keeping the engine clean and replenishing of the oil supply.

### **Guarantee**

The "Fullpower" Engine is guaranteed for one year against defects in material and workmanship. If within this time any part is found defective it should be returned to us, carrier charges prepaid, and if after our inspection, the part is found to be defective, no charge replacement will be made at once. Our guarantee is limited to replacement of parts and does not include any labor charges except in cases of new engines which are found not to operate satisfactorily from the start. In such cases write us, after having attempted to locate the trouble as outlined in this booklet and explain the difficulty as fully as possible. We will then advise you whether it will be necessary to return the entire engine to the factory for repairs.

### **Instructions For Use of Fullpower Engine Type FI**

This engine has been carefully inspected and given a thorough running test before being shipped. It should, therefore, run satisfactorily now unless something has happened to it since it left the factory, provided it is properly supplied with gasoline and oil. It should be expected that it may still be slightly stiff the first few hours running and the operation may be expected to improve after a few hours use. It

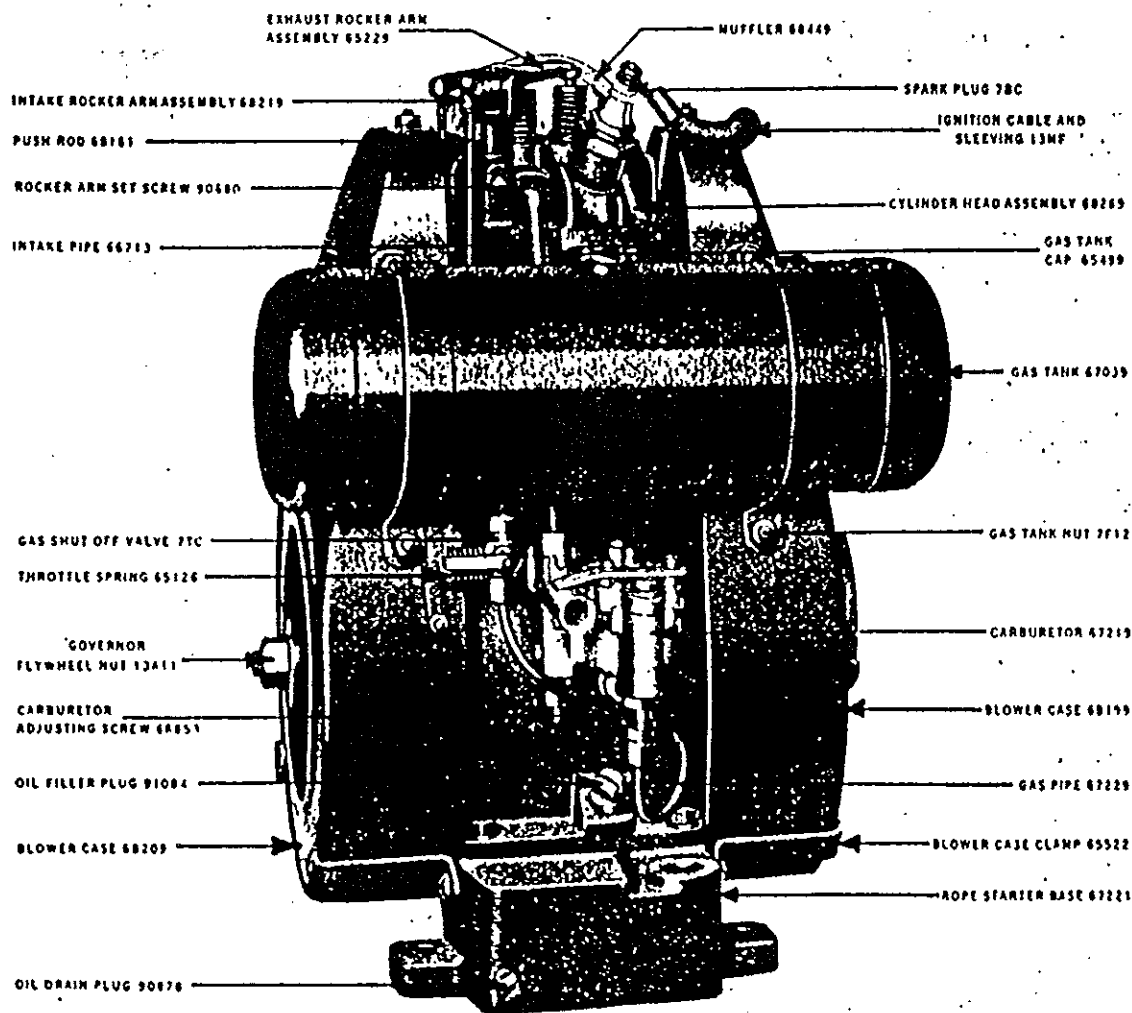


Figure 1—Model "FI" Fullpower Engine

would undoubtedly be a good idea to allow the engine to run without a load or with a light load for an hour or two before the full load is applied.

This little engine, although very simple and requiring very little care, nevertheless requires some attention and will give much better satisfaction if the instructions in this book are followed.

It is necessary to keep this engine as clean as possible. Wipe off any dirt or oil that accumulates on the engine and keep the engine covered when not in use.

Proper care in keeping engine clean and following the instructions on the following pages will do much toward keeping down repair bills. We will try on the following pages to give sufficient information so that you should be able to take care of any simple troubles which may arise.

The Fullpower Engine operates on what is known as the four cycle or four-stroke principle, the same as practically all automobile and stationary engines. The four cycles can be explained as follows: It requires four strokes of the piston to produce one power stroke.

**First Cycle or Suction Stroke:** The piston moves down in the cylinder when exhaust valve is closed. The suction thus produced draws a charge of gasoline mixed with a proper proportion of air into the cylinder. This mixture quickly forms a gas when the engine is hot. When the piston reaches the bottom of the cylinder and there is no more suction the spring on the intake valve closes it.

**Second Cycle or Compression Stroke:** The piston now makes the up or compression stroke. Both valves being closed, you will readily see that the charge of gas must be compressed into the small space in upper end of cylinder when the piston reaches the upper end of its stroke.

**Third Cycle or Power Stroke:** An instant before the piston reaches the end of its second stroke the timer breaks a contact in the ignition circuit, and this causes a spark to leap across the points of the spark plug. This ignites the compressed gas, which in burning expands so rapidly as to cause the term "explosion" to be used when describing this operation. It takes an instant for all the gas to ignite, and the spark is so timed that by the time all the gas is burning the piston has passed the upper end of the stroke and started down again. The rapid expansion of the burning gas pushes the piston down, forming the power stroke.

**Fourth Cycle or Exhaust Stroke:** When the piston reaches the bottom of the power stroke the exhaust valve is opened by the push rod

and the piston in moving up forces all the burnt gases out of the cylinder. At the top of the exhaust stroke the exhaust valve closes and the first cycle or suction stroke takes place again, followed by the other strokes as described.

All the cycles or strokes take place more rapidly than they can be described, but we believe that this explanation of the operation of the engine will help you understand it better and thus enable you to keep it in perfect running order.

### Inspection

Examine spark plug to see that it is screwed in place and is not cracked or broken. Revolve flywheel several times and watch the valve stems, rocker arms, and pushrods. These should work freely once every second revolution of the flywheel. When a valve is seated, or up, there should be a space between the exhaust valve stem and rocker arm of about the thickness of a shipping tag or about .012.

If the space between the valve stem and rocker arm is not as outlined above, the adjustment is made on the rocker arm fork or "yoke". Revolve flywheel until valve push rod and end of rocker arm are in lowest position. Loosen set screw holding rocker arm fork in place, raise rocker arm and fork and insert a shipping tag between the valve stem and rocker arm. Lower rocker arm and fork gently until one end of rocker arm rests on paper on valve stem and other end of rocker arm is seated on valve push rod. Then securely tighten set screw holding rocker arm fork in place and your valve adjustment is properly made.

If rocker arm is removed entirely, care should be taken so that the small slug No. 65232, which is placed between the set screw and rocker arm fork, does not drop out. The purpose of this slug is to prevent the set screw from marring the rocker arm fork when same is drawn up tight.

### Filling

Gasoline tank is filled through opening in top. Examine filler plug to see that small vent hole is clear and fill tank with gasoline. Replace plug.

The oil filler opening is on either side of the engine, one side opposite the carburetor, the other below the breather pipe. With the engine setting level pour oil in this opening until it overflows. This is the max-



imum oil level. Replace filler plug. We recommend the use of "Gargoyle Mobiloil A", which we have found by test to be of the proper characteristics for all conditions except outdoor use in winter weather when we recommend "Gargoyle Mobiloil Arctic." These oils may be obtained everywhere.

### Lubricating System

Lubrication of the Type FI Fullpower Engine is accomplished by the well known splash system. A positive action pump actuated by the cam shaft pumps the oil from the bottom of the oil pan into a dip trough, maintaining a constant level of oil in this trough, irrespective of the amount of oil supply in pan. The dipper on the lower end of the connecting rod dips into this trough on each stroke of the piston, distributing the oil in the form of a fine spray throughout the cylinder walls and crank case. By this means all moving parts are kept lubricated at all times.

**IMPORTANT:** Each day, before the engine is started, a few drops of oil should be placed in the oil hole of each rocker arm. This oiling does not apply to the valve springs.

After filling the oil reservoir through the oil filler opening as directed under paragraph headed "Oiling" no further attention is necessary except to examine the oil level as indicated by the height of the oil in the filler opening every five running hours. The first few times running a new engine it is advisable to check the oil level every two hours. The oil reservoir should be as nearly full as possible at all times.

### Draining Crankcase Oil

To reduce wear and maintain the efficiency of the engine, the lubricant must be kept in serviceable condition. This can only be done by draining the crankcase at regular intervals and filling with fresh oil.

**ONCE EVERY FIFTY RUNNING HOURS DRAIN THE OLD OIL OUT OF THE ENGINE BY TIPPING IT AND POURING THE OIL OUT OF THE OIL FILLER OPENING. THE OIL SHOULD THEN BE REPLACED BY FRESH OIL. THIS SHOULD BE DONE WHILE THE ENGINE IS STILL HOT, BECAUSE WHEN THE ENGINE IS COLD IT IS IMPOSSIBLE TO GET ALL THE OLD OIL OUT.**

Oil does not break down or undergo any permanent thinning when it is heated. When diluted with a certain amount of fuel, how-

ever, its body may be reduced so that it will not properly separate the friction surfaces. Dilution is especially troublesome in cold weather.

The crankcase oil also becomes contaminated with dust, drawn through the air intake of the carburetor into the combustion chamber, which works past the rings, and by dust entering through the crankcase breather. Particles of worn metal or carbon which flake off the underside of the piston heads also contribute to this contamination. The accumulation of worn metal particles is greatest in a new engine, while the friction surfaces are being "worn-in" to a permanent finish.

Therefore, to prolong the life of the engine, the crankcase should be drained of used oil after every 50 hours of operation, and refilled with fresh oil of the recommended grade. In case the engine is not setting level, the lower of the two drain plugs, shown in Figure 1, should be used.

**DRAIN THE RESERVOIR AFTER A RUN WHEN THE ENGINE IS HOT. THE OIL IS THEN MORE FLUID AND THOROUGHLY MIXED AND WILL CARRY OFF SEDIMENT MORE READILY.**

**DO NOT FLUSH WITH KEROSENE BECAUSE QUANTITIES OF IT WILL BE TRAPPED IN THE ENGINE AND WILL REMAIN TO DILUTE THE FRESH OIL.**

## STARTING

First make sure that the oil level is correct as described above, and also make sure that the gasoline tank is supplied with plenty of gasoline.

Slip the knot of the starter rope into the "V" of the starter pulley and wind all the cord on the pulley snugly, winding in a clock-wise direction when facing the engine from the starter pulley side. Grasp the cord and give it a fast hard pull so as to spin the engine. The cord will become disengaged from the pulley at the end of the pull. If the engine is cold it may be necessary to choke the carburetor slightly or to open the needle valve adjustment screw farther, as reviewed under the heading "Carburetor."

If the engine is equipped with the foot or hand lever starter it is only necessary to crank the engine over by pumping this starter lever as fast as possible in order to get as high a speed as possible on the engine. This starter is provided with an automatic clutch that releases as soon as the engine has started and there is absolutely no danger of the starter being jammed when the engine starts.

## If Engine Fails To Start Properly

If the engine fails to start properly the following suggestions may be of value and should be followed one by one until trouble is found:

### CAUSES

1. No gasoline in tank.
2. Water in gasoline.
3. No spark or poor spark.
4. Governor arm improperly adjusted.
5. Carburetor gas line plugged up.

### REMEDIES

1. Fill tank with gasoline.
2. Drain tank and refill.
3. Inspect and test spark plug and if not in good condition replace plug. Be sure cable is tight and breaker points are properly set. Refer to paragraph headed "Ignition" for detail ignition tests.
4. Refer to paragraph headed "Speed Regulation."
5. Refer to paragraph headed "Carburetor."

## Troubles and Remedies

### ENGINE LACKS POWER OR DOES NOT OPERATE SMOOTHLY

1. Leaky valves and engine badly carboned.
2. Compression leaks at other points.
3. Weak valve springs.
4. Clearance too great between exhaust valve and rocker arm.
5. Muffler clogged.
6. Dirty or cracked spark plug.
7. Engine overheating.
8. Worn piston rings.
9. Equipment operated by engine may be binding or otherwise working improperly.
10. Carburetor clogged up.

### REMEDIES

1. Head should be removed (see paragraph on "Lack of Compression"). Carbon should be thoroughly cleaned out and exhaust valve ground to a seat.

2. Spark plug must be securely screwed into head. Be sure gasket is in place. Cylinder head gasket may leak. Test for air leak and replace if necessary. Use only copper and asbestos gasket as supplied with engine.

3. Weak valve springs may be tested by inserting the point of a screwdriver into the coils and placing tension on the spring. If engine speeds up to normal, spring should be replaced. Head should be removed and valves removed as described in paragraph headed "Lack of Compression". Only valve springs as supplied by the factory for this purpose are to be used.

4. See third paragraph under "Inspection."

5. Make sure that small holes in muffler are not clogged.

6. Clean spark plug thoroughly and set points at .020" clearance. Replace plug if defective in any way. See paragraph headed "Ignition".

7. Caused by poor grade of oil or lack of oil or overload or tight bearings.

8. This condition will not occur until engine has had a great deal of use or has been run with poor or an insufficient quantity of oil. Replacement should be made by a reliable repair man or by the factory.

9. Disconnect engine and test equipment for freedom of movement or amount of friction. Be sure the equipment is kept well oiled and greased.

10. Same as No. 6 under "Engine fails to start properly."

### Engine Knocks

1. Engine badly carboned.
2. Loose connecting rod.
3. Loose crankshaft bearing.
4. Loose flywheel.
5. Lack of oil.

### REMEDIES

1. Proceed to clean out. See paragraph "Lack of Compression".
2. and 3. Have repairs made by a reliable repair man or return to factory. This condition is caused only by poor oiling or long service.
4. Be sure flywheel nuts and pulleys are properly tightened. Replace key on crankshaft if necessary.
5. Replenish oil supply.

## Carburetor

This carburetor is provided with one adjustment and that controls the volume of fuel delivered through the main nozzle. Turning to the right, or clockwise, closes off the amount of fuel fed through the main nozzle. Turning to the left, or counter clockwise, increases the amount of fuel fed through the nozzle.

Carburetors on the Briggs & Stratton, Model FI engine, are adjusted at the factory at three-fourths of one turn open. To find the point at which the motor delivers maximum power, first start the engine and run until thoroughly warm. With the engine properly warmed, turn to the right very gradually until motor indicates loss of power from lack of sufficient fuel. When this position is found, turn gradually to the left until that position of the adjustment gives maximum power.

We advise when starting cold motor to set adjustment at from three-fourths to one full turn open.

If necessary to clean gas line, no difficulty will result if this procedure is followed: Close shut off valve connecting gas tank with gas line. Unloosen nuts holding gas line, detach, clean and blow out with air.

There is also a screen in the gas shut-off valve at the lower end of the gasoline tank. Remove this valve and see that the screen is clean and free from foreign particles. Another screen will be found at the lower end of the carburetor where the gas line attaches. Be sure this screen is clean also.

For use outdoors or where there is much dirt or dust we have developed an air cleaner which slips into the carburetor air opening. The air cleaner proper can be removed from the carburetor by merely pulling same off. EVERY DAY the air cleaner should be rinsed or cleaned in kerosene to remove all dirt which may accumulate. Then dip in old crank case oil and replace.

## Ignition

If the engine fails to start, remove ignition cable from spark plug and remove spark plug. See that points are clean and about .020" apart. This will be a trifle greater than 1/64". Attach ignition cable firmly to spark plug and lay spark plug on top of engine so that steel part of plug is touching engine. Grasp ignition cable by the insulation

and keep plug in place as above. Revolve flywheel smartly by hand several times. At a point during each revolution a spark should jump across the gap in the spark plug providing spark plug is laid so that steel part is touching engine. If there is no spark the probabilities are that the spark plug is cracked or porous. Replace with a plug of reputable manufacture that you know has been tested and is O. K.

**IMPORTANT:** If for any reason it becomes necessary to replace the spark plug, be sure the same kind of a plug is substituted. It is very imperative that the sparking points of the plug extend down into the cylinder head the same distance as the formerly used plug reached. In other words, the new spark plug must be of the same length from the shoulder to the sparking points as the plug which accompanies the engine when it leaves our factory.

**CAUTION:** Never in any case try to test for spark by removing ignition cable from spark plug, trying to hold terminal of cable close to cylinder, revolving flywheel and watching for spark between ignition cable terminal and cylinder. You run an excellent chance of completely ruining your magneto if you test in this manner.

If there is still no spark remove pulley from end of crankshaft that holds magneto flywheel in place. Pulling outward on the flywheel, tap the end of the crankshaft gently with a piece of wood, brass or lead. Do not strike end of crankshaft with hammer or other hard substance as you will ruin the thread. This gentle tapping will loosen flywheel from its taper seat and it will come off of the crankshaft. Place keeper across magnets of flywheel to prevent demagnetizing. Any flat piece of steel will serve for this purpose. You will then have exposed to view the breaker arm part No. 65489. You will note that the breaker arm is pivoted in the center, with one end riding on the crankshaft. On the other end is located a tungsten point with another located opposite it. You may find that there is oil or foreign substance between these points or they may be burned. (Note: The latter only after an engine has seen considerable service.) If found to be dirty, clean well with a piece of fine sandpaper. If the points are rough scrape them with a sharp knife, but under no condition use emery cloth. When the points are separated the greatest, the gap should be about .020 of an inch.

Another important matter to watch is the proper fastening of the magneto cable which reaches from the connection on the coil to the spark plug. This cable should be securely fastened at both the coil and the spark plug. Fasten the cable to the coil connection with a pair of

pliers. Under no circumstances is the cable to be soldered to the coil. This heat will damage the winding. To insure the cable not coming loose at the coil, secure with the clamp just to the left of the points. This will insure a good connection even though the cable is jerked. The insulation of the coil and cable must not be cracked or oil soaked. Replace flywheel carefully and try as before. If still no spark develops there is something wrong that you cannot remedy and the engine should be returned to the factory or to a competent ignition expert for further repairs.

When replacing flywheel be sure that the taper end of the crankshaft and the taper hole in flywheel are absolutely clean to insure proper fit of flywheel to the shaft. Insert a bar or rod through the two holes in the starter pulley (which acts as a nut to hold the flywheel in place) and tighten securely by hitting bar with hammer. **PULLEY MUST BE DRAWN UP TIGHT.**

The key, which holds the flywheel in place, is made of aluminum so that it will shear off if the flywheel becomes loose, thereby not allowing any damage to be done to the keyways in the flywheel or crankshaft. The aluminum key is merely used to locate the parts in their proper relationship, and should never be replaced with a steel key.

### Lack of Compression

The mixture of gasoline from the carburetor must be compressed on the up stroke of the piston and in this condition fired by the spark jumping across the gap in the spark plug. If this compression is faulty there will be either no explosion or insufficient explosion to develop full power by the engine. To determine if you have compression revolve flywheel at a moderate speed by hand. If compression is correct, there will be a point during every second revolution where resistance will be felt. It will feel as if pull were against a spring and if the flywheel is revolved, fairly fast, up to this point of resistance and let go, it will rebound rapidly in the opposite direction. If this action does not take place there is no compression and the cause must be looked for. There are four causes of poor compression which you can easily determine and remedy.

1. Cylinder head loose. Can be detected by air coming through between cylinder and cylinder head and by oil oozing out at same place. Turn screws down tightly and if this does not remedy condition, use a new copper and asbestos gasket.

2. Spark plug loose. Screw down and if necessary replace gasket.

3. Exhaust valve not seating properly. First examine the exhaust valve spring and make sure it is not broken. If not broken insert the point of a screwdriver between the coils and place tension on the spring. If this makes the engine run normally the spring is weak and should be replaced. If spring is not at fault the valve may be badly carboned and need regrinding. (The latter can only occur in engines which have been running for some time and will never happen on new engines). To replace spring or regrind valves see paragraph on "Cylinder Head and Valves" for method of removal from engine.

4. Intake valve not seating properly. Test the spring as outlined above for exhaust valve spring. It should very seldom be necessary to replace intake valves. See paragraph "Cylinder Head and Valves".

If none of the causes mentioned above seem to be responsible for the lack of compression see paragraph headed "Worn Rings and Scored Cylinders" for further suggestions.

## Cylinder Head and Valves

Adherence to the following will be of assistance in removing cylinder head.

Remove ignition cable from spark plug, loosen nuts on blower case housing bracket, also screws holding bracket to cylinder head. This will permit of turning bracket so that it is under housing and obviate the necessity of the removal of the blower case assembly. Close gasoline shut off valve—loosen gas line nuts and remove line. Remove carburetor. Loosen nuts on gas tank (upper half of brackets only), which will permit access to the gas pipe which may then be removed. It is then only necessary to remove the remaining two screws. The cylinder head may now be lifted.

It is recommended that the 65509 cylinder head gasket be replaced each time the cylinder head is removed.

To regrind the exhaust valve it should not be necessary to remove the valve from the cylinder, unless the valve is in very bad condition. It should very seldom be necessary to regrind the intake valve. Secure a small amount of valve grinding compound from any garage, auto



supply or motorcycle supply store and cover the seat of the exhaust valve thinly with this compound, oscillating the valve rapidly in the seat. When clean metal shows all around on both the valve and seat, and there are no pits or black spots showing, the valve is properly ground. Wash valve and seat thoroughly with gasoline before assembling.

When necessary to remove exhaust valve to regrind or to replace exhaust valve spring, the following suggestions will be found helpful. The head should be laid on a bench with some means of supporting the exhaust valve from beneath, as a block of wood, etc. Using a tube, pipe or anything else that will bear down on the collar at the upper end of the exhaust valve stem without touching the split sleeve next to the stem, drive the collar or sleeve retainer down by several taps with a hammer. The split sleeve will then drop out, enabling the valve parts to be disassembled. If no other tool is available, the flywheel nut may be used to drive down the sleeve retainer or collar as described above. Always grind in, as described above, a new valve before assembling.

After assembling adjust the rocker arm. There should be a space about the thickness of a shipping tag between the exhaust valve stem and the rocker arm, when the exhaust valve is seated or up. This adjustment can be made as outlined in the first paragraph under the heading "Inspection" on page 7.

All Model FI Fullpower Engines are equipped with a cylinder head gasket composed of copper and asbestos. While it is possible to use this part a second time it is advisable to use a new gasket when available. Place cylinder head in proper position on cylinder. Insert screws, attaching magneto cable clip and upper blower clamps and draw to seat. Tighten all screws, a half turn at a time so as to bring head down evenly on the cylinder. Put intake pipe in head and the other end in the carburetor; then tighten carburetor to the cylinder.

## Worn Piston Rings or Scored Cylinders

This condition can be identified by the sound of air rushing down into the crank case when point of compression is reached. This would only occur after long use of the engine unless the engine was run without sufficient oil, or with a poor grade or dirty oil, or continuously overloaded.

In the condition, or whenever the engine does not perform satisfactorily and you have proper gasoline, ignition and compression at other points, we recommend that either a competent gas engine expert repair the engine, or it should be returned to the factory for repairs.

If the engine is torn down, in no event use any gasket, except the copper and asbestos cylinder head gasket, a second time. Always use new gaskets.

### Speed Regulation

The speed of the engine is set properly when leaving the factory, and there should be no need of adjustment unless the governing mechanism has been disarranged in transit. If it is necessary to change speed, proceed as follows:

Immediately in rear of carburetor will be found a lever attached to a small stem entering carburetor. From one of the holes in this arm a wire extends to the governor. Also a coil spring extends to a small bracket fastened to the blowercase by a screw. Loosen this screw and move bracket to the right to decrease speed, and to the left to increase the speed.

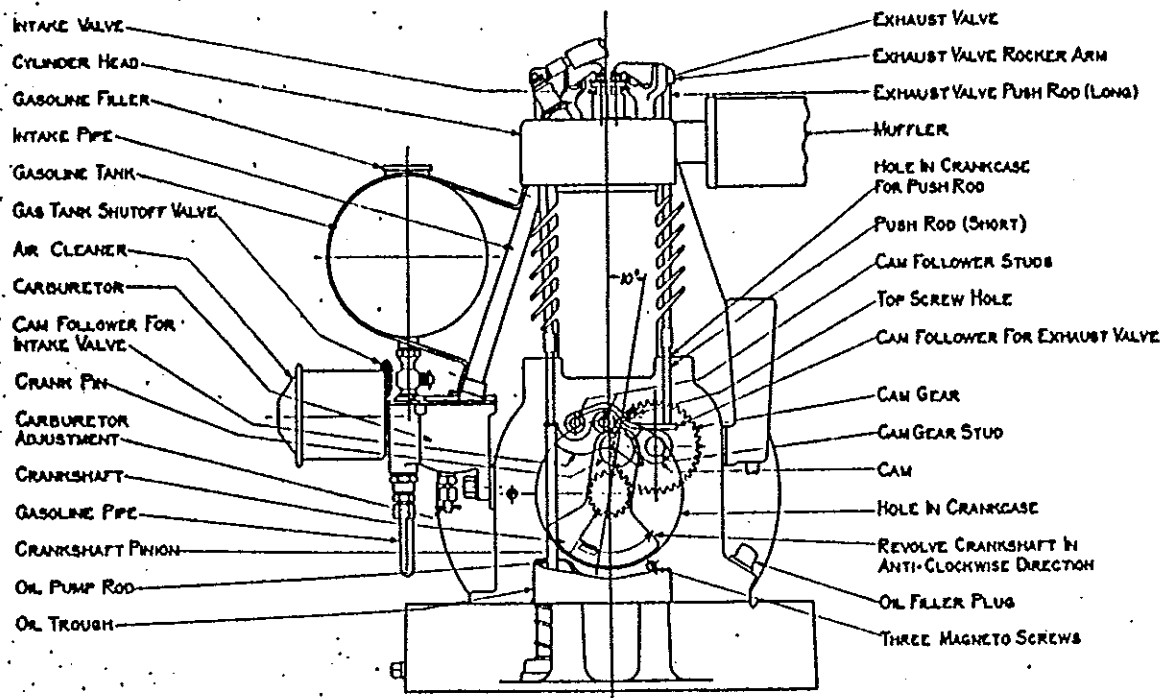
If the connecting rod has not been disassembled from the crank shaft, even though the engine has been otherwise disassembled, the timing gears will not be disengaged and the engine will not have to be retimed.

When taking the engine apart closely observe the relative position of the cam followers and other parts and how they are removed as this will be of great aid when reassembling.

### Timing

If the connecting rod has been disassembled from the crank shaft, the timing gears will have been disengaged, and when reassembling the engine gears must be properly engaged, or the engine will not run. Referring to diagram, Figure 2, will make timing instructions outlined in the following paragraphs, clearer.

After the connecting rod has been properly assembled to the piston by means of the piston pin, this pin being locked by the piston pin lock, the piston and connecting rod are inserted into the cylinder from the top, the cylinder head being removed. Insert the crank shaft through



VIEW LOOKING AT MAGNETO SIDE OF ENGINE  
 FIGURE 2—Timing Diagram

the large opening in the crank case, from which the magneto was removed, meshing the pinion (small gear) on the crank shaft with the cam gear. This cam gear should be on its stud with the cam part of the gear toward the wall of the crank case. The cam followers should be on their studs, secured in place by cotter pins, with the free ends of the cam followers riding on the cam of the cam gear.

The cam followers should be on their studs, secured in place by cotter pins with the cam followers placed as shown on the Timing Diagram. (Figure 2.)

Insert short push rod for exhaust valve through the hole in the crankcase. Now assemble the long push rod for the exhaust valve by taking the cup shaped end and slipping it over the end of the short push rod which is projecting out of the cylinder. Loosen the rocker arm set screw for the exhaust valve, and slide fork upward; then insert the upper end of the long push rod into the hole on the end of the long rocker arm. Now let the rocker arm fork slide downward again, but

only enough to prevent the long push rod from falling away from the rocker arm. Care should be taken in assembling the exhaust valve and its component parts exactly as specified.

Now revolve the crankshaft to the left or anti-clockwise direction, at the same time holding the exhaust valve push rod down so the lower end of the short push rod presses down against the long bent cam follower. Revolve crankshaft until the push rod just begins to rise. It will be best to do this several times so the exact spot may be determined. You will readily feel when the cam begins to push the cam follower and push rod upward. If you have the timing gears properly meshed, the crank pin of the crankshaft, or, in other words, the part of the crankshaft to which the connecting rod will be fastened, will be nearly in its topmost position. It will be to the right of its topmost position about  $10^{\circ}$  and will be pointing, nearly directly, towards the top one of the three screw holes in the crankcase, in which the screws fit that fasten the magneto to the crankcase.

If, when the exhaust valve push rod is just beginning to rise, the crankshaft is not in the correct position, pull it straight out toward you, disengaging the timing gears. Revolve it until it assumes the correct position described above, then push it straight in, engaging the timing gears. During this operation be sure that the cam gear has not moved. If you should engage the gears incorrectly, even so little as one tooth, the position of the crankshaft, when the push rod begins to rise, will be so far wrong that it will be readily apparent.

After the gears have been meshed properly, assemble the connecting rod to the crankshaft being sure that the screws holding the connecting rod cap in place are drawn down tightly and have lock-washers under each head.

Now assemble the intake valve and its component parts in the same order as the exhaust valve. Then adjust rocker arms according to information contained in paragraph four of this section.

When assembling base be sure to assemble oil pump rod to cam follower for intake valve, inserting small diameter on pump rod through small hole in cam follower. The lower end must slip into the recess in the oil pump plunger.

Always use new gaskets when reassembling the engine.

### To Stop Engine

The "FI" engine is equipped with a short-circuiting or "stop"

button on the blower housing. To stop the engine push this button in as far as it will go and hold until the engine stops. Then release the button.

It is very poor practice to stop the engine by choking the carburetor as this practice has a tendency to flood the engine with raw gasoline which washes the oil out of the piston and rings tending to make hard starting.

### Operation and Care

Always use a good grade of gasoline and be sure there is a sufficient amount in the tank. Use the very best grade of cylinder oil of medium weight. Be sure oil is up to proper level.

Inspect spark plug frequently and keep points free from carbon and at proper distance from each other.

**KEEP YOUR ENGINE CLEAN. THIS PROLONGS LIFE OF ENGINE AND INSURES SATISFACTORY OPERATION AT ALL TIMES.**

### Repairs

We have attempted to describe in this booklet only those repair operations which might well be undertaken by the average man with slight mechanical skill. If it is necessary to undertake any serious repairs to the magneto, replace piston, piston rings, bearings, or regrind cylinders, we recommend that the engine either be sent to a competent repair shop or to our factory for repairs. This should not be necessary until the engine has seen considerable service.

### Ordering Parts

We are listing below a list of parts of the Type "FI" Fullpower Engine for your convenience in ordering parts.

In order to avoid delay and unnecessary correspondence, the INSTRUCTIONS BELOW MUST BE CAREFULLY OBSERVED IN ORDERING PARTS. Do not order parts in the same letter you write on any other subject. Be sure to write plainly and legibly.

### Description of Parts

Select the part numbers by referring to both the list of parts and the illustrations of parts. Always refer to both the description and the illustration to make sure the proper part number is selected. If unable to determine the proper number of the part wanted describe it as fully

as possible. Do not depend on the numbers cast on parts as being correct as they may only cover part of what you want if it is an assembly.

**ALWAYS USE BOTH PART NUMBER AND DESCRIPTION OF PARTS ORDERED, IF POSSIBLE. ALWAYS GIVE THE NUMBER OF THE ENGINE ON YOUR ORDER.** Service orders cannot be filled unless these numbers are given. This number will be found on the name plate riveted to the Blower Case and is preceded by the type letter which should always be shown on the order.

### **Shipping Instructions**

Always specify on the order whether shipment is desired by parcel post, express or freight. In absence of any instructions we will always ship the cheapest way.

### **Remittance**

**REMITTANCE SHOULD ACCOMPANY EACH ORDER.** We will not ship any parts C. O. D. unless a deposit of more than twice the transportation charge has been made. Remittance must include sufficient to cover postage charge if to be shipped by mail as well as ten cents (\$0.10) to cover insurance. Any excess remittance will be refunded. **MINIMUM CHARGE FOR PARTS IS 25 CENTS PLUS POSTAGE AND INSURANCE.**

Remit either postoffice or express money order. Postage stamps will be accepted in amounts of less than one dollar (\$1.00) only.

### **Prices**

All prices in this book are subject to change without notice. In case of changes in price, orders will be filled at current prices. All prices shown are F. O. B. our factory in Milwaukee, Wis.

### **Instructions on Return Material**

Never return material to us without writing us a letter explaining what parts are being returned, the **ENGINE NUMBER** and the reason for return. Mark the shipment both outside and by tag on the parts with name and address. Do not include any instructions in packages, however. All instructions must be sent by mail to secure prompt attention. No return shipments will be accepted unless return transportation charges are prepaid.

Never return any material to the factory without first receiving permission from us to do so, except incorrect shipment of parts, defective material returned for replacement or material returned for repairs at your expense.

# PARTS PRICE LIST

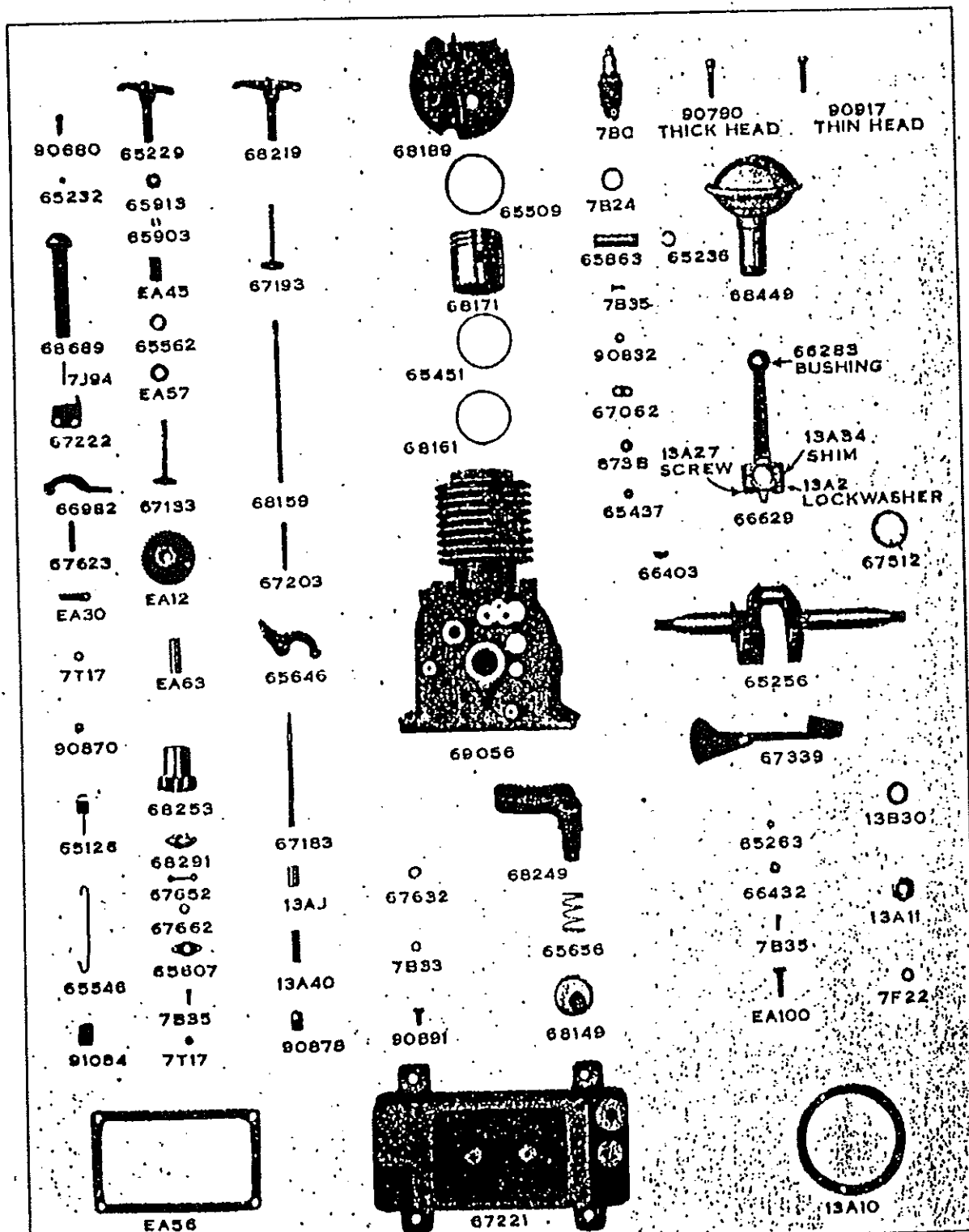
## FULLPOWER TYPE "FI" ENGINE

### CRANK CASE DIVISION

| Part No. | DESCRIPTION   | Price |
|----------|---|-------|
| 65250    | Crankshaft .....  | 8.00  |
| 65487    | Push Rod Packing .....  | .05   |
| 65646    | Cam Follower (Intake Valve) .....   | 1.00  |
| 65656    | Oil Pump Retainer Spring .....  | .10   |
| 66283    | Bushing for Connecting Rod .....  | .40   |
| 66403    | Woodruff Key (for Crankshaft).....  | .05   |
| 66411    | Starter Pulley .....  | 1.00  |
| 66629    | Connecting Rod Assembly, consisting of Connecting Rod, 13A2<br>Lockwasher, 13A27 Screw, 13A34 Shim, and 66283 Upper Bushing | 3.75  |
| 66713    | Intake Pipe .....   | .75   |
| 66979    | Starter Rope and Grip .....   | .30   |
| 66982    | Cam Follower for Exhaust Valve .....  | .45   |
| 67062    | Cork Retainer .....   | .10   |
| 67183    | Pump Rod .....  | .10   |
| 67203    | Push Rod (Lower) .....  | .10   |
| 67221    | Engine Base—Rope Starter Type .....   | 6.00  |
| 67222    | Oil Deflector .....   | .10   |
| 67249    | Air Cleaner .....   | 2.50  |
| 67512    | Crankshaft Thrust Washer .....  | .05   |
| 67632    | Oil Trough Washer .....   | .05   |
| 68149    | Screen Housing Assembly .....   | .50   |
| 68159    | Push Rod Assembly .....   | .40   |
| 68249    | Oil Trough Assembly .....   | 1.00  |
| 68689    | Breather Tube.....  | 1.90  |
| 90878    | Oil Drain Plug 1/4" .....   | .05   |
| 90801    | Hexagon Head Cap Screw for Oil Trough.....  | .05   |
| 91084    | Oil Filler Plug 3/8" .....  | .10   |
| 91172    | Carburetor Screw .....  | .05   |
| EA12     | Cam Gear .....  | 1.50  |
| 13AJ     | Pump Plunger .....  | .30   |
| 13A2     | Connecting Rod Lockwasher .....   | .01   |
| 13A10    | Crank Case Cover Gasket.....  | .10   |
| 13A27    | Connecting Rod Screw .....  | .05   |
| 13A34    | Connecting Rod Shim .....   | .10   |
| 13A40    | Pump Spring .....   | .07   |
| 7B33     | Oil Trough Lockwasher .....   | .01   |
| 7F22     | Carburetor and Cylinder Lockwasher.....   | .01   |
| 7J94     | Cam Follower Cotter Pin .....   | .01   |
| 873-B    | Cork Compression Washer .....   | .05   |

Engine serial number must be mentioned when ordering parts.

Figure 3—Type "FI" Engine Parts



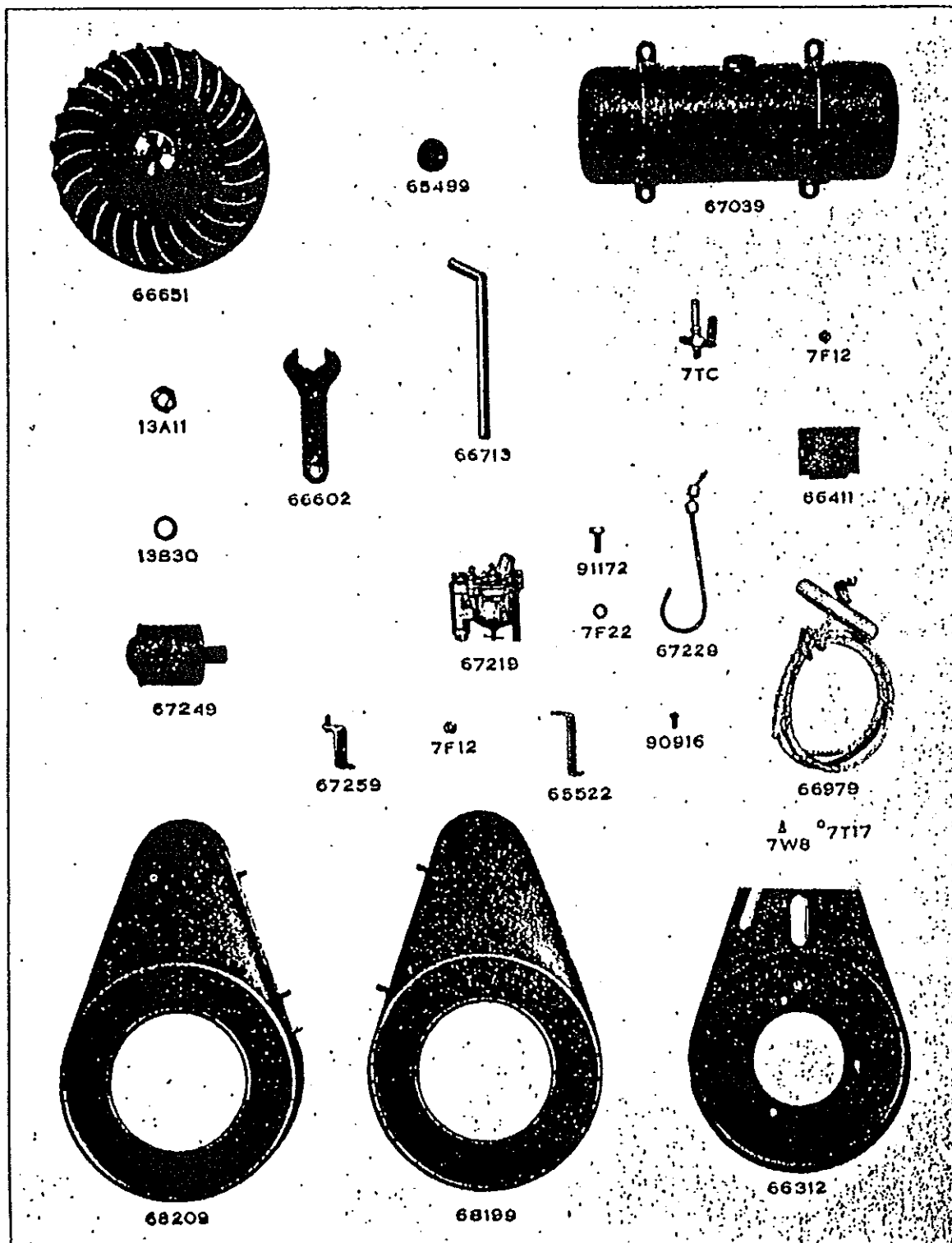


## CYLINDER DIVISION

| Part No. | DESCRIPTION  | Price |
|----------|--|-------|
| 65229    | Rocker Arm Assembly (Exhaust) consisting of 65861 Rocker Arm, 69011 Rocker Arm Fork, 65303 Rocker Arm Pin .....  | 1.50  |
| 65232    | Rocker Arm Slug .....  | .02   |
| 65236    | Piston Pin Lock .....  | .05   |
| 65303    | Rocker Arm Pin .....   | .10   |
| 65451    | Piston Ring .....  | .55   |
| 65509    | Cylinder Head Gasket .....   | .10   |
| 65562    | Valve Washer .....   | .05   |
| 65607    | Oil Valve Housing Gasket .....   | .05   |
| 65626    | Rocker Arm (Intake Valve) .....  | 1.00  |
| 65861    | Rocker Arm (Exhaust Valve) .....   | 1.00  |
| 65863    | Piston Pin .....   | .60   |
| 65903    | Valve Sleeve .....   | .10   |
| 65913    | Valve Sleeve Retainer .....  | .15   |
| 66602    | Spark Plug Wrench .....  | .20   |
| 67133    | Exhaust Valve .....  | 1.75  |
| 67193    | Intake Valve .....   | 1.75  |
| 67623    | Cam Follower Stud .....  | .10   |
| 67652    | Oil Valve Guide .....  | .05   |
| 67662    | Oil Valve .....  | .05   |
| 68161    | Oil Regulating Ring .....  | .55   |
| 68171    | Piston .....   | 2.50  |
| 68189    | Cylinder Head Assembly, consisting of Cylinder Head, 67193 Intake Valve, 67133 Exhaust Valve, EA-45 Valve Spring, 65903 Exhaust Valve Sleeve, 65913 Exhaust Valve Sleeve Retainer, EA-57 Exhaust Valve Spring Gasket, 65562 Exhaust Valve Spring Washers ..... | 6.00  |
| 68210    | Rocker Arm Assembly (Intake) .....   | 1.50  |
| 68253    | Bushing for Cylinder .....   | 1.25  |
| 68269    | Cylinder Head Assembly Complete, consisting of 68189 Cylinder Head, 65229 Rocker Arm, 68210 Rocker Arm Assembly (Intake) 2-65232 Slugs and 2-90680 Set Screws .....  | 9.00  |
| 68291    | Oil Valve Housing .....  | .10   |
| 68449    | Muffler .....  | 2.50  |
| 68829    | Muffler for use only on flexible steel tubing .....  | 2.50  |
| 69011    | Rocker Arm Fork .....  | .90   |
| 69052    | Piston Assembly consisting of 68171 Piston, 2-65451 Rings and 1-68161 Oil Regulator Ring .....   | 4.15  |
| 69056    | Cylinder Assembly, consisting of Cylinder, 67623 Cam Follower Stud, EA-03 Cam Gear Stud, 68253 Bushing, 68291 Oil Valve Housing, 65607 Oil Valve Housing Gasket, 67652 Oil Valve Guide, 67662 Oil Valve, 7T17 Lockwasher and 7B35 Screw .....                  | 12.75 |
| 90680    | Rocker Arm Set Screw .....   | .05   |

Engine serial number must be mentioned when ordering parts.

Figure 4—Type "FI" Engine Parts



**CYLINDER DIVISION—Cont.**

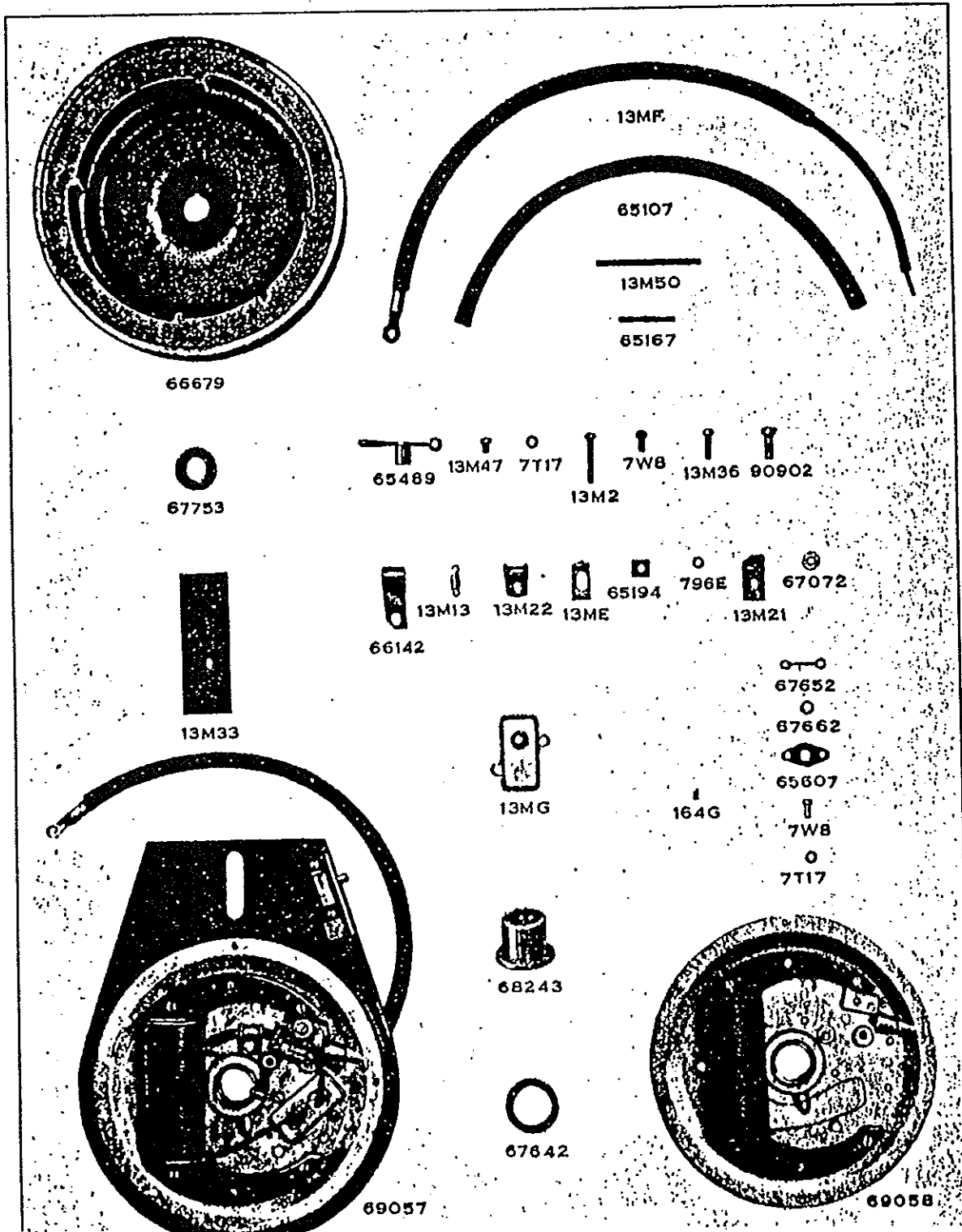
| Part<br>No. | DESCRIPTION                            | Price |
|-------------|--|-------|
| 90790       | Cylinder Head Screw (Thick Head) ..... | .05   |
| 90917       | Cylinder Head Screw (Thin Head) .....  | .05   |
| EA45        | Valve Spring .....                     | .15   |
| EA56        | Diaphragm Gasket .....                 | .05   |
| EA57        | Valve Spring Gasket .....              | .05   |
| EA63        | Cam Gear Stud .....                    | .10   |
| EA100       | Cylinder Screw .....                   | .05   |
| 7B0         | Spark Plug with 7B24 Gasket .....      | .75   |
| 7B24        | Spark Plug Gasket .....                | .05   |
| 7B35        | Screw for Oil Valve Assembly .....     | .01   |
| 7T17        | Lockwasher .....                       | .01   |

**MAGNETO DIVISION**

|         |   |       |
|---------|---|-------|
| 85107   | Ignition Cable Sleeve.....                    | .10   |
| 85167   | Condenser Lead Insulator .....                | .05   |
| 85194   | Square Bakelite Washer .....                  | .05   |
| 85489   | Breaker Arm Assembly .....                    | .75   |
| 85807   | Oil Valve Housing Gasket.....                 | .05   |
| 86142   | Ignition Cable Clamp.....                     | .05   |
| { 86679 | Magneto Flywheel .....                        | 9.20  |
| { 87753 | Magneto Flywheel Washer.....                  | .10   |
| 87072   | Bracket Washer .....                          | .05   |
| 87642   | Oil Retaining Washer .....                    | .05   |
| 87652   | Oil Valve Guide.....                          | .05   |
| 87662   | Oil Valve .....                               | .05   |
| 88243   | Magneto Bushing .....                         | 1.00  |
| 89057   | Magneto Assembly complete with Air Guide..... | 12.00 |
| 89058   | Armature and Magneto Back Plate Assembly..... | 7.40  |
| 90832   | Lockwasher for Magneto Cover Plate.....       | .01   |
| 90902   | Screw (Magneto Cover to Crank Case).....      | .05   |
| 7T17    | Lockwasher for 13M22 13M36 and 13MG.....      | .01   |
| 7W8     | Phillister Head Screw for 13M22.....          | .05   |
| 13M0    | Contact Bracket with Point.....               | .50   |
| 13M1    | Ignition Cable .....                          | .50   |
| 13M2    | Condenser .....                               | 1.50  |
| 13M2    | Armature Screw .....                          | .05   |
| 13M13   | Breaker Arm Spring .....                      | .05   |
| 13M21   | Bracket Shim .....                            | .05   |
| 13M22   | Ignition Cable Clamp.....                     | .05   |
| 13M33   | Coil Insulator .....                          | .10   |
| 13M36   | Contact Bracket Screw .....                   | .05   |
| 13M47   | Condenser Screw .....                         | .05   |
| 13M50   | Armature Lead Insulator 3" Long.....          | .05   |
| 164G    | Rivet .....                                   | .01   |
| 706D    | Round Fibre Washer.....                       | .05   |

Engine serial number must be mentioned when ordering parts.

Figure 5—Type "FI" Magneto Parts



| Part No. | GASOLINE TANK DIVISION DESCRIPTION          | Price |
|----------|---|-------|
| 65499    | Gas Tank Cap .....                          | .50   |
| 67039    | Gasoline Tank with 65499 gasoline Cap ..... | 4.00  |
| 67229    | Gasoline Pipe .....                         | .75   |
| 7B33     | Gas Tank Lockwasher.....                    | .01   |
| 7F12     | Gas Tank Nut .....                          | .05   |
| 7TC      | Gas Shut-off Valve .....                    | .70   |

**BLOWER—GOVERNOR—THROTTLE DIVISION**

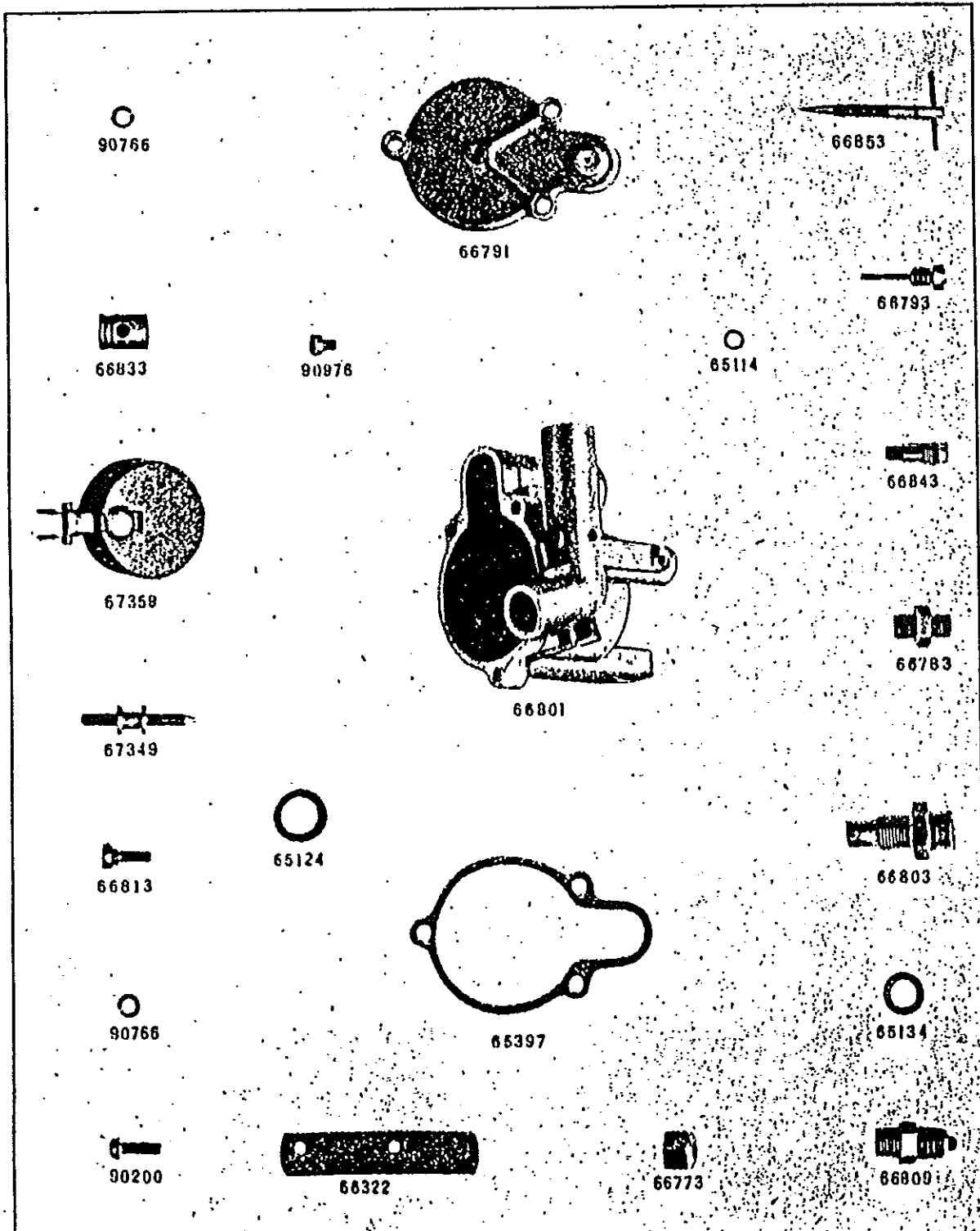
|       |   |      |
|-------|---|------|
| 65120 | Throttle Spring .....   | .15  |
| 65263 | Governor Bushing .....  | .05  |
| 65522 | Large Blower Case Clamp (Side) .....                          | .15  |
| 65546 | Throttle Link .....   | .15  |
| 66312 | Air Guide .....   | .20  |
| 66432 | Governor Arm Washer .....                                     | .05  |
| 66651 | Governor Flywheel .....                                       | 4.00 |
| 67259 | Upper Blower Case Bracket with Screw.....                     | .15  |
| 67339 | Governor Arm Assembly .....                                   | .75  |
| 68199 | Blower Case Assembly—Magneto Side of Rope Starter Type Engine | 1.25 |
| 68209 | Blower Case Assembly—Governor Side.....                       | 1.25 |
| 90699 | Blower Case Clamp Lockwasher .....                            | .01  |
| 90870 | Throttle Clip Nut .....                                       | .01  |
| 90916 | Side Bracket Screw .....                                      | .05  |
| EA30  | Throttle Spring Clip .....                                    | .10  |
| 13A11 | Governor Flywheel Nut 9/16" No. 18 Thread.....                | .20  |
| 13B30 | Governor Flywheel Washer .....                                | .05  |
| 7F12  | 1/4" 20 Hexagon Nut for Upper Blower Case Bracket.....        | .05  |
| 7T17  | Air Guide and Throttle Clip Washer .....                      | .01  |
| 7W8   | Air Guide Screw .....   | .05  |

**CONTROL DIVISION FOR LAWN MOWER**

|        |  |      |
|--------|--|------|
| 65469  | Carburetor control assembly.....                 | 2.25 |
|        | Consisting of the following:                     |      |
| 65431  | Control lever base.....                          | .55  |
| 7K23   | Cotter pin .....                                 | .01  |
| 7K33   | Round head screw-for swivel pin.....             | .05  |
| 7K41   | Swivel pin .....                                 | .25  |
| 7K68   | Spring washer .....                              | .10  |
| 13K3   | Control lever washer-plain.....                  | .05  |
| 13K4   | Control lever bushing.....                       | .10  |
| 13K5   | Control lever .....                              | .85  |
| 13K10  | Control lever cap screw-hexagon head.....        | .10  |
| *65496 | Control wire .....                               | .30  |
| *65500 | Control wire casing.....                         | .55  |
| 67239  | Tube and Clamp assembly.....                     | .75  |
| 68148  | Spacer .....                                     | .20  |
| 90700  | 1/4" 20 x 3/4" long hexagon head cap screw ..... | .05  |
| 7A39   | Lockwasher .....                                 | .01  |

\* On account of the different lengths of control wires and castings used on our various engine installations, it will be necessary to specify the lengths desired. Engine serial number must be mentioned when ordering parts.

Figure 6—Type "FI" Carburetor Parts



### CARBURETOR DIVISION

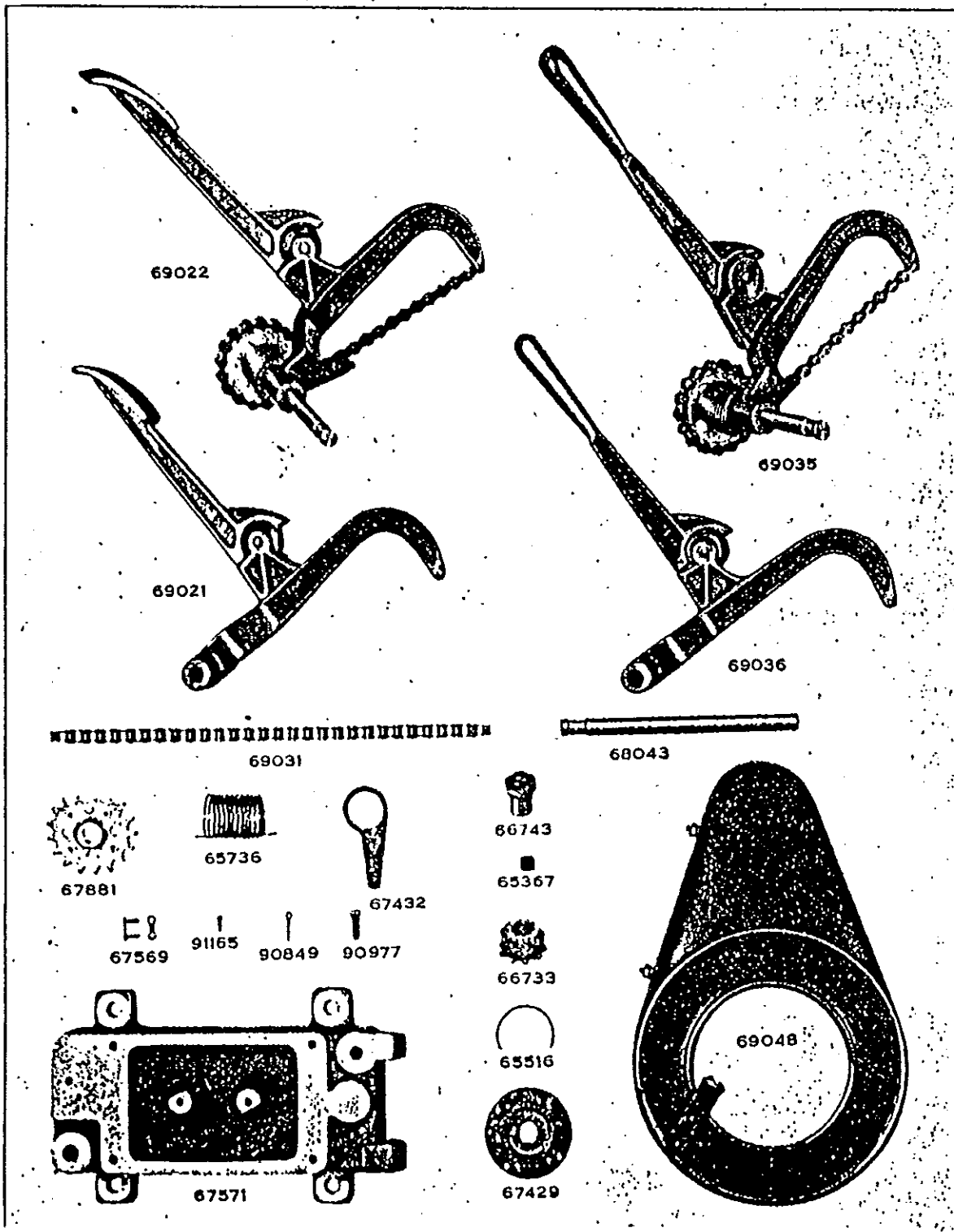
| Our<br>Number | Tillotson<br>Number | Description  | Price |
|---------------|---------------------|--|-------|
| 07210         | MS5A                | Tillotson Carburetor Complete with 60809 Connector.. | 7.75  |
| EA28          | 01452               | Throttle Shutter .....                               | .05   |
| 05114         | 0162                | Gasket .....   | .05   |
| 05124         | 0337                | Gasket .....   | .05   |
| 05134         | 0676                | Gasket .....   | .05   |
| 05387         | 0705                | Stuffing Box Packing .....                           | .05   |
| 05307         | 01400               | Float Bowl Cover Gasket.....                         | .10   |
| 00322         |                     | Air Cleaner Clip .....                               | .15   |
| 00773         | 0703                | Stuffing Box Nut .....                               | .15   |
| 00783         | 0702                | Stuffing Box Gland .....                             | .25   |
| 00791         | 01436               | Float Bowl Cover .....                               | .25   |
| 00793         | 0849                | Float Lever Pinion Screw.....                        | .10   |
| 00801         | 01442               | Body .....   | 3.00  |
| 00803         | 01308               | Inlet Seat .....                                     | .50   |
| 00809         |                     | Carburetor Connector .....                           | .25   |
| 00813         | 01434               | Cover Vent Screw .....                               | .20   |
| 00833         | 01454               | Venturi .....  | .15   |
| 00843         | 01455               | Nozzle .....   | .25   |
| 00853         | 01488               | Needle Valve Adjusting Screw .....                   | .30   |
| 07349         | 01447               | Inlet Needle .....                                   | 1.00  |
| 07359         | 01448               | Float .....  | 1.00  |
| 90200         | 054                 | 8/32 x 1/2" Screw .....                              | .05   |
| 90700         | 0092                | No. 8 Machine Screw Lockwasher .....                 | .05   |
| 90975         |                     | No. 18 x 1/4" Cotter Pln.....                        | .05   |
| 90970         | 0138                | 8/32 x 3/16" Screw .....                             | .05   |

### FOOT AND HAND LEVER STARTER DIVISION

| Part<br>No. | DESCRIPTION                                   | Price |
|-------------|---|-------|
| 05367       | Felt Washer .....                             | .01   |
| 05516       | Spring for Pawl Assembly.....                 | .10   |
| 05736       | Lever return spring .....                     | .35   |
| 00733       | Ratchet .....                                 | .60   |
| 00743       | Ratchet Nut .....                             | .30   |
| 07420       | Pawl assembly with 05516 spring.....          | .80   |
| 07482       | Spring lock .....                             | .10   |
| 07560       | Chain connecting link.....                    | .02   |
| 07571       | Foot or hand lever starter base standard..... | 6.00  |

Engine serial number must be mentioned when ordering parts.

Figure 7—Type "FI" Foot and Hand Lever Starter Parts





FOOT AND HAND LEVER STARTER DIVISION—Cont.

| No. Part | DESCRIPTION  | Price |
|----------|--|-------|
| 67881    | Sprocket .....   | .15   |
| 68043    | Starter Shaft .....  | .35   |
| 68131    | Foot or hand lever starter base for lawn mower application .....   | 6.00  |
| 69021    | Pedal and lever assembly-standard-consisting of 67851 starter lever<br>60851 starter pedal 66492 washer 90354 lock washer 91176 cap<br>screw 7T45 Nut.....   | 1.75  |
| 69022    | Foot pedal starter unit assembly-standard-consisting of 69021 pedal<br>and lever assembly 67509 master link 67881 starter sprocket<br>68043 starter shaft 90849 cotter pin 69031 chain 67432 spring<br>lock 65736 lever return spring 91165 round head iron rivet..... | 4.15  |
| 69031    | Chain .....  | .90   |
| 69035    | Hand lever starter unit assembly consisting of 69036 handle and<br>lever assembly 67509 master link. 67881 sprocket, 68043 starter<br>shaft, 90849 cotter pin, 69031 chain, 67432 spring lock, 65736<br>lever return spring and 91165 round head iron rivet.....       | 4.15  |
| 69036    | Starter handle and lever assembly consisting of 67851 lever, 67731<br>starter handle, 66492 washer, 90354 lockwasher, 91176 cap screw<br>and 7T45 nut.....   | 1.75  |
| 69048    | Blower case assembly for foot or hand lever starter type engine..  | 1.35  |
| 90849    | 3/32" Dia. x 3/4" lg. steel cotter pin .....   | .01   |
| 90977    | 5/16" 18 x 3/4" lg. Square head cup point set screw.....   | .05   |
| 91165    | Round head iron rivet.....   | .01   |

Engine serial number must be mentioned when ordering parts.

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