

# **Briggs & Stratton**

Service, Operator's,  
& Parts Manual

**A, AL, ALP, AP,  
& AR-6**

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**BS-SOP-A SERIES**

**Service, Operator's, & Parts Manual**

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## 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° use "Mobiloil Arctic Special" or other high grade oil not heavier than S. A. E. No. 10W.

The oil filler plug is painted blue and is located on top of engine base. See Plate 2. With the engine standing level pour oil in opening until it rises to the top of filler plug opening. The crankcase holds three pints.

b. Fill air cleaner with oil of the same viscosity as used in the crankcase and fill to the indicated oil level.

c. Fill the fuel tank with a good grade of regular, clean, fresh gasoline. The tank holds four quarts. DO NOT MIX OIL WITH GASOLINE.

#### 2. HOW TO START ROPE STARTER.

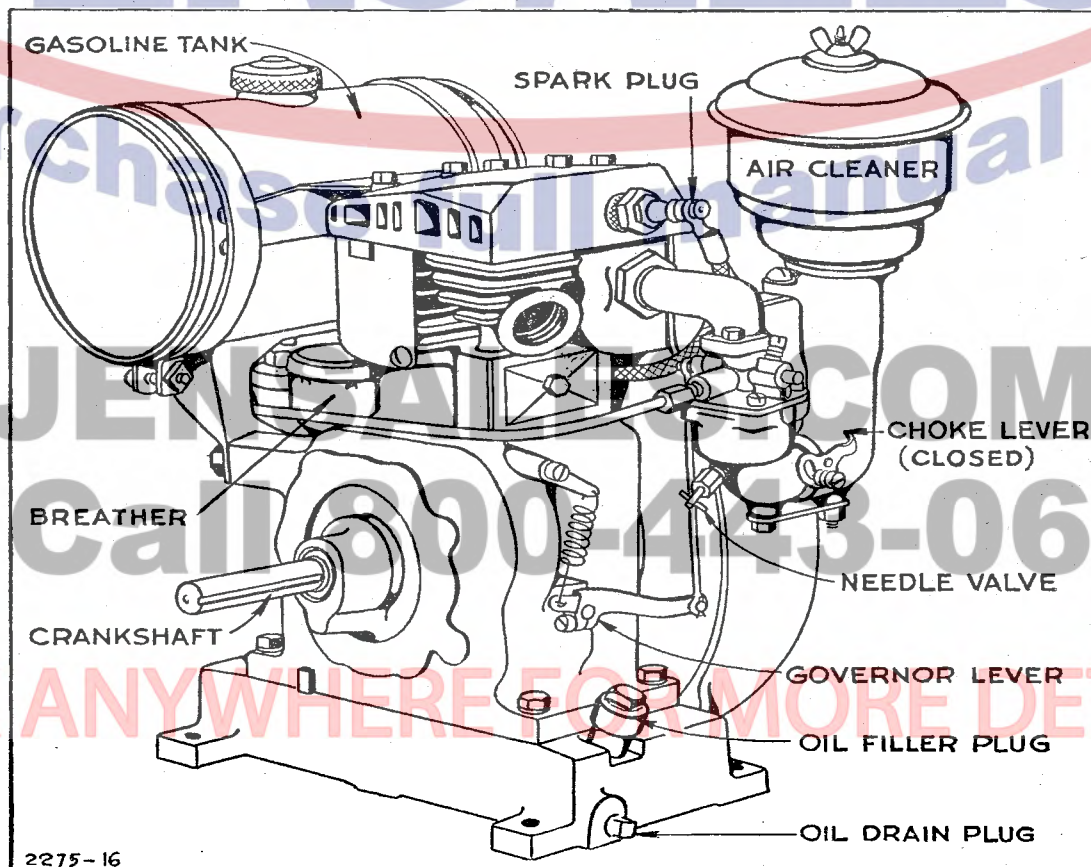
a. Open gasoline shut-off valve in gas filter by turning to left or in a counter-clockwise direction.

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

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 magneto 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 in a counter-clockwise direction until engine runs smoothly with the choke wide open. Operate the choke the same as you do on an automobile. (A warm engine does not require as much choking as a cold one.)

Plate No. 2



2275-16

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

1. No fuel in tank.
2. Fuel flow obstructed.
3. Loose or defective wiring.
4. Spark plug cracked.
5. Spark plug fouled.
6. Improper choking.
7. Improper fuel mixture.
8. Throttle valve stuck or out of adjustment.
9. Throttle rod loose.
10. Valve seats bad.
11. Valves sticking.
12. Timing improper.
13. Defective magneto.
  - a. Breaker points worn or pitted.
  - b. Breaker points out of adjustment.
  - c. High tension wire shorted.

**ENGINE MISSING**

1. Spark plug fouled.
2. Spark plug cracked.
3. Spark plug gap wrong.
4. Defective wiring.
5. Ignition breaker points sticking.
6. Valves warped, broken, or sticking.

**ENGINE LOSING POWER**

1. Carburetor choke valve partly closed.
2. Improper fuel mixture.
3. Piston rings sticking.
4. Improper timing.
5. Muffler clogged.
6. Governor or throttle loose.
7. Air cleaner requires cleaning.
8. Overload.
9. Cooling air stream obstructed or restricted.

**ENGINE KNOCKS**

1. Carbon in cylinder.
2. Loose main bearings.
3. Loose rod bearings.
4. Worn piston and cylinder.
5. Engine overheated.
6. Tight pistons.
7. Loose flywheel.
8. Lack of oil.

**FAULTY CARBURETION**

1. Carburetor improperly adjusted.
2. Inlet valve leaking.
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.

**EXPLOSION IN CARBURETOR**

1. Gas mixture too lean.
2. Intake valve sticking.
3. Intake tappets sticking.
4. Intake valve spring weak.
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 or weak.
4. Piston rings broken.
5. Piston rings sticking.
6. Loose spark plug.
7. Cylinder head loose.
8. Scored cylinder.
9. Worn piston and cylinder.

## SERVICING REFERENCE CHART

**STARTING AND OPERATING INSTRUCTIONS**

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runs smoothly, carburetor setting is too lean and needle valve should be opened a notch or two . . . turn to left. For governor adjustments see Paragraphs 25-26.

e. The idle adjustment screw 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 throttle lever adjustment screw is set at the factory to permit an idling speed of about 1,200 R. P. M. If you want to idle the engine at a higher speed than 1,200 R. P. M. turn the throttle lever adjusting screw to the right or in a clockwise direction.

## 20. TO REMOVE AND REPLACE CARBURETOR.

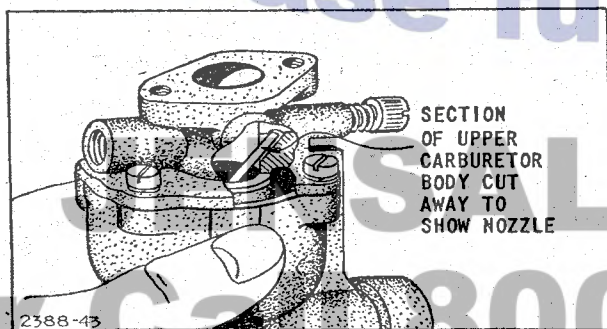
- Close shut-off valve in fuel filter.
- Disconnect fuel line at carburetor.
- Remove air cleaner and elbow.
- Remove two cap screws and lockwashers from the intake elbow.
- Remove throttle link. The carburetor is then free from all connections. TO REPLACE reverse the operations as performed above.

## 21. TO DISASSEMBLE CARBURETOR.

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

**CAUTION:** The upper and lower bodies are interlocked by the nozzle (see Plate No. 5) and failure to disassemble in above order will result in damaged parts.

Carburetor Nozzle — Plate No. 5



## 22. TO CHECK CARBURETOR INLET VALVE AND SEAT (See Plate No. 6.)

- 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.

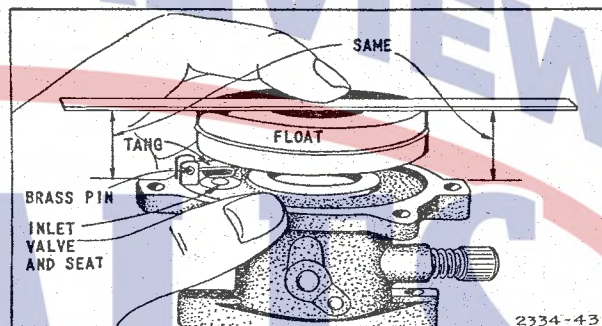
- Wash parts with alcohol or acetone to remove gum deposits and dirt.
- Blow through all passages and openings. Do NOT use wire to clean out holes.

- Replace worn or damaged parts.

## 24. TO REASSEMBLE. (See Plate No. 6)

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

Carburetor Float Position — Plate No. 6



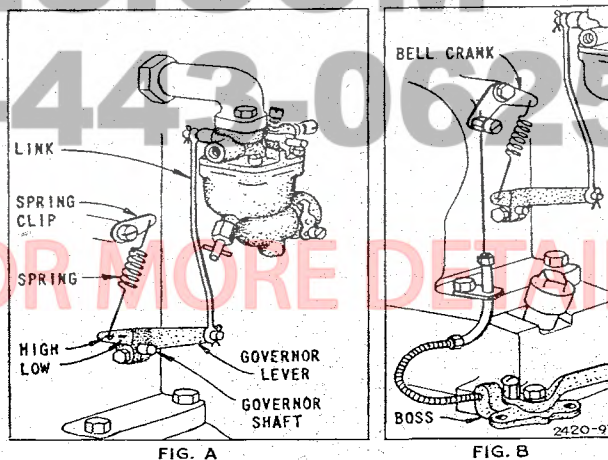
- Reassemble remaining parts in following order:

- Upper and lower carburetor bodies.
- Nozzle and needle valve parts.

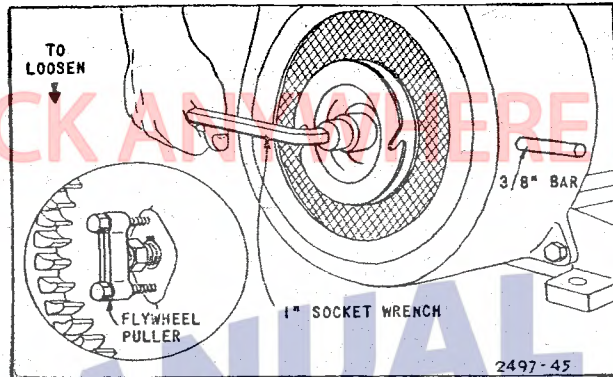
## THE GOVERNOR

**25. CORRECT ENGINE SPEED.** The speed of this engine is automatically maintained under varying loads by a centrifugal governor. It is operated from the cam gear. The governor was carefully adjusted at the factory and should not be readjusted unless absolutely necessary. As different types of equipment require various operating speeds for the greatest efficiency, it is sug-

Governor Hook-up — Plate No. 7



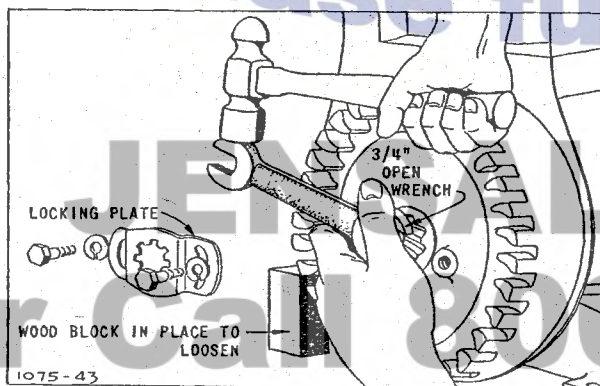
### Removing Flywheel Rope Starter Engine Plate No. 10



to the crankshaft by means of a taper fit, a soft key and right hand threaded nut. Remove as follows:

- Place a rod or punch through the  $\frac{3}{8}$ " hole in the blower housing at fuel tank side so that it passes between the fins of the flywheel. This will hold the flywheel rigid and prevent its turning as you loosen pulley nut.
- Use a 1" socket wrench with a "T" or "L" handle and tap handle to loosen nut.
- When nut is loosened, remove pulley.
- Remove blower housing.
- Screw nut back on crankshaft until it projects  $\frac{1}{8}$ " beyond end of crankshaft.
- Screw the two flywheel puller cap screws into holes of the flywheel hub. Turn these screws down evenly until tight. Rap flywheel puller sharply with a hammer. Repeat this operation if necessary to loosen flywheel.

### Removing Flywheel Crank Starter Engine Plate No. 10A



**2. CRANK STARTER ENGINE.** The flywheel is securely mounted to the crankshaft by means of a taper fit, a soft key and pinion gear and lock. Remove as follows:

- Remove blower housing.
- Unscrew two cap screws and lockwashers that hold pinion gear lock on flywheel.

e. Place a wood block under the flywheel fin on left side of flywheel to hold it rigid and prevent turning.

d. Use a  $\frac{3}{4}$ " open end wrench on pinion and tap end of wrench lightly with a hammer. Be careful not to hammer too hard or a broken fin may result which will throw flywheel out of balance.

e. Remove flywheel with flywheel puller No. 29157 provided with engine.

**35. TO REASSEMBLE THE FLYWHEEL.** Thoroughly clean flywheel hole and tapered end of crankshaft.

Reverse the operation in preceding paragraphs. Place a very thin coat of cup grease on the crankshaft taper and see that flywheel key is in place.

**36. TO REMOVE MAGNETO ASSEMBLY.** After removing flywheel as explained in Paragraph 34, proceed as follows:

- Detach the ignition cable from the spark plug.
- Remove the contact point dust cover, and the four magneto mounting screws to remove magneto.
- Turn the crankshaft so that the contact plunger holds the contact points open and then remove magneto assembly.

**37. TO REPLACE MAGNETO ASSEMBLY.** Reverse the above operations and use the old gasket between the magneto plate and crankcase, or if damaged use one of the following new gaskets for proper end play:

Part No. 66527 — .005" thick

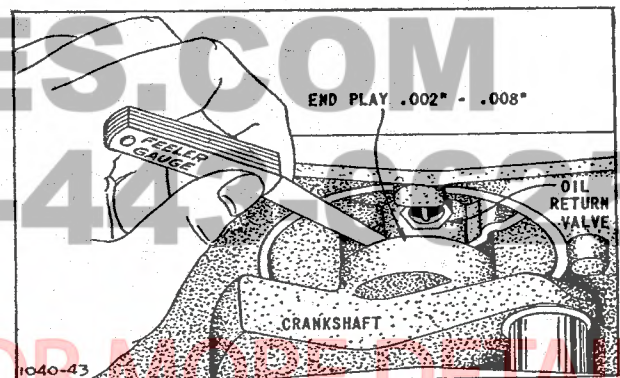
Part No. 66537 — .009" thick

Part No. 66457 — .015" thick

The end play should be .002" to .008" between magneto bearing and crankshaft thrust faces as shown in Plate No. 12.

Use lockwashers under mounting screws.

### Correct End Play — Plate No. 12



**38. MAGNETO TIMING.** The magneto assembly is always correctly timed with the engine when the flywheel is assembled to the tapered crankshaft with a key and securely held in place with threaded pulley