

Small Gas Engine Service & Maintenance

Engine Codes:

All Briggs Stratton engines have special codes that are stamped on the blower housing of the engine. These codes are very beneficial when servicing a small gas engine because they contain the most basic information about the engine itself.

The following is an excerpt from your Briggs & Stratton Service and Repair Instruction Book, it will explain the meaning of each code and how they are used.

HOW TO READ BRIGGS & STRATTON MODEL, TYPE AND CODE NUMBERS

MODEL	TYPE	CODE
92902	1234-01	90012201

Model Number Explanation:

- I. The first one or two digits indicate the approximate CUBIC INCH DISPLACEMENT.
- II. The first digit after displacement designates the BASIC DESIGN SERIES, relating to cylinder construction, ignition, or other major differences.
- III. The second digit after the displacement indicates POSITION OF CRANK SHAFT, TYPE OF CARBURETOR, and sometimes GOVERNOR.
- IV. The third digit after displacement indicates TYPE OF BEARING and whether or not the engine is equipped with REDUCTION GEARS, AUXILIARY PTO, and/or PRESSURE LUBRICATION.
- V. The last digit indicates the TYPE STARTER, or CHARGING SYSTEM.

BRIGGS & STRATTON MODEL NUMBER SYSTEM

Example: See the chart in a Briggs & Stratton Service Manual

MODEL 92902

<u>9</u>	<u>2</u>	<u>9</u>	<u>0</u>	<u>2</u>
9 Cubic Inches	Design Series 2	Vertical Crank Pulsa- Jet Carb.	Plain Bearing	Rewind Starter

TYPE 1234-01. The Type number identifies the engine's mechanical parts, color of paint, decals, Governor Speed, and Original Equipment Manufacturer.

CODE 90012201. The Code is the manufacturing date and is read as follows:

<u>YEAR</u>	<u>MONTH</u>	<u>DAY</u>	<u>ASSEMBLY LINE and MANF. PLANT</u>
90	01	22	01

Fuels & The Fuel System:

Fuels:

Briggs & Stratton engines call for any gasoline that is intended for automotive use and has an octane rating higher than 77. It is recommended that a *lead-free* gasoline be used because lead-free gasolines leave fewer deposits and tend to prolong valve life. It is not recommended to use any gasoline that contains alcohols such as Gasohol, Ethanol, or Methanol.

Fuel System:

The fuel system is designed to transform liquid fuel into an atomized state, or an air-fuel mixture. After creating this air-fuel mixture, it is the job of the system to transport the mixture into the cylinder head where it will be compressed and ignited.

The fuel system on many types of small engines is serviced by one or a combination of the following:

1. Cleaning jets, ports, and all other carburetor parts.
2. Removing old and/or dirty fuel and all trash particles from the system.
3. Replacing diaphragms, gaskets, O-rings, and/or springs.
4. Replacing Worn or Faulty parts.

Servicing the fuel system, which consists of the fuel tank, the carburetor, the fuel line, and the fuel filter, will be covered more thoroughly in other labs.

Air Cleaners:

Types of Air Cleaners:

There are several types of air cleaners and they each have their own distinct way of filtering the air that enters the engine.

Oil Bath Air Cleaner:

Oil bath air cleaners, (Figure, 1.6), are commonly used on engines that perform regularly in dirty conditions, because of their ability to collect larger amounts of dirt particles. Incoming air is forced through a sharp turn directly above an oil reservoir which captures any dirt or particles that may accompany it. Cleaning this type of air cleaner simply involves washing out the metal bowl with a solvent, drying the bowl, and refilling the bath with fresh oil.

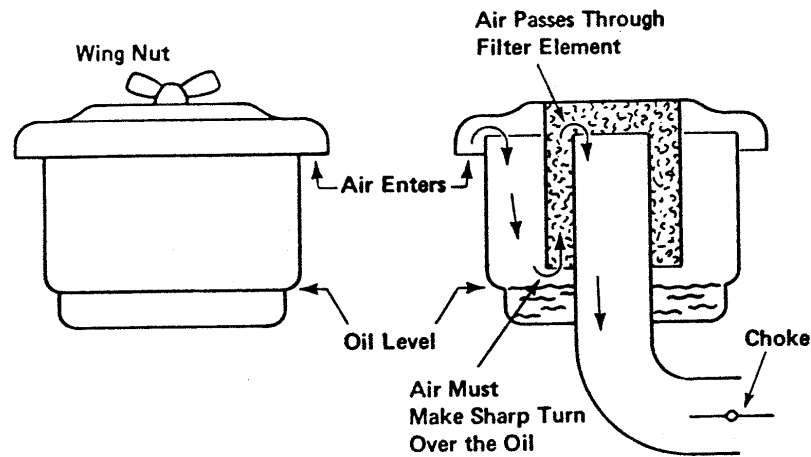


Fig. 1.6, Oil Bath Air Cleaner
Courtesy of Briggs & Stratton Corp.

Dry Paper Type Element:

A dry paper element, (Figure, 1.7), draws air through its porous surface which allows it to catch any particles that may accompany the air flow. The element may be cleaned by lightly tapping it or by blowing the dirt away from the inside-out with low pressure air. Do not soak or wash a dry paper element. Also, a dry paper element should never be coated with oil.

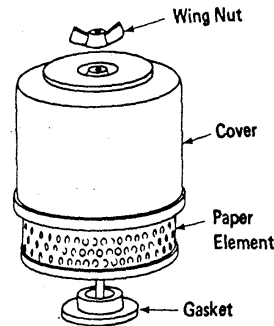


Fig. 1.7 Dry Paper Element
Courtesy of Briggs & Stratton Corp.

Polyurethane Foam Elements:

Foam elements are popular types of air cleaners because of their durability and reliability that results from their ability to be washed and re-used time and time again. Foam filters, (Figure, 1.8), are saturated with oil which allows them to catch all of the dirt that flows through them. These filters are cleaned by washing them in warm soapy water, and are then allowed to air dry after all of the excess water is squeezed out. After drying, the filter should be saturated with fresh oil and then replaced.

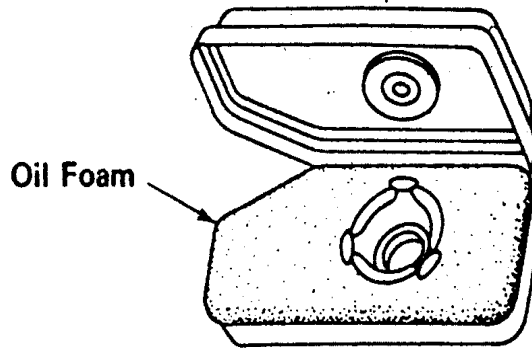


Fig. 1.8 Poly Foam Element
Courtesy of Briggs & Stratton Corp.

Dual-Element Air Cleaners:

Some air cleaners are considered to be dual-element cleaners because they combine two of the filtering materials mentioned previously. A very common dual-element cleaner, (Figure, 1.9), is the combination of dry paper and polyurethane foam without an oil coating. Oil bath dual-element air cleaners may also incorporate polyurethane foam, but the foam is usually coated with oil.

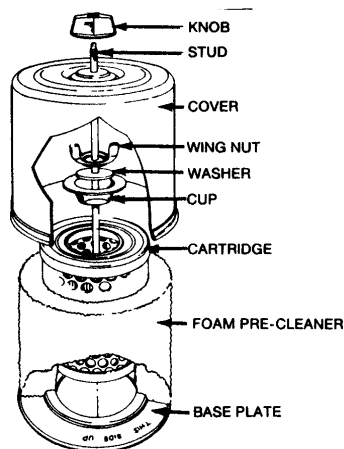
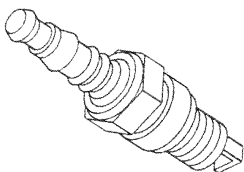


Fig. 1.9, Dual Element Air Cleaner
Courtesy of Briggs & Stratton Corp.

Ignition System:

Spark Plug:



Courtesy of Briggs & Stratton Corp.

Spark plugs should be cleaned and gapped, or replaced after 100 hours of operation. Since spark plugs operate under severe conditions, they are easily fouled.

Remove the spark plug and examine it carefully. If the electrode is burned away or pitted, or if the insulator is cracked, discard the plug and get a new one of the same designation. You will find the designation printed on the plug.

If the plug looks fine, use a penknife or a small wire brush to scrape carbon from around the electrode. If an air compressor is available, complete the cleaning with a blast of air. Solvents may also be used to complete the cleaning. A small file is recommended, not a sand blaster, to file the surface of the electrode. Do not allow any foreign material to fall into the cylinder while the spark plug is removed.

Whether the plug is new or not, set the electrode gap to the manufacturer's specifications. The recommended gap for most small engines is .030 inch, (Figure, 1.10). A flat feeler gauge can be used to check the gap when the spark plug is new; however, a round-wire gauge should always be used to check and adjust worn spark plugs.

To install, start the plug by hand and torque to manufacturer's specifications. On most small engines the torque specification will be from 18 to 22 foot pounds. Do not over tighten!

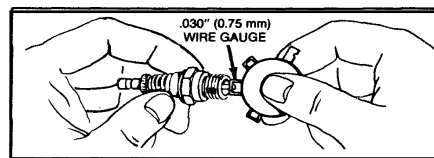


Fig. 1.10, Setting Spark Plug Gap
Courtesy of Briggs & Stratton Corp.

Coil, Armature, & Flywheel Magnet:

To ensure peak performance of the small engine's ignition system, the coil, armature, and flywheel magnet must remain dry, free from corrosion, and properly adjusted.

To remove any deposits of oxidation on the flywheel magnet, use emery cloth, or an abrasive tape.

To adjust the armature, loosen the armature mounting screws slightly. The air gap between the flywheel and the armature should coincide with the manufacturer's specifications, but a good rule of thumb is to use a business card or a shim as a gauge. Simply place the card or shim between the flywheel, (Figure, 1.11 & 1.12), and the armature, making sure that there is no space left between the three, and re-tighten the armature.

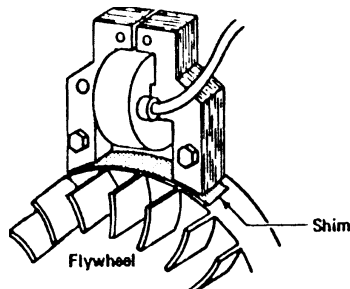


Fig. 1.11, Adjusting Armature Air Gap
Courtesy of Briggs & Stratton Corp.

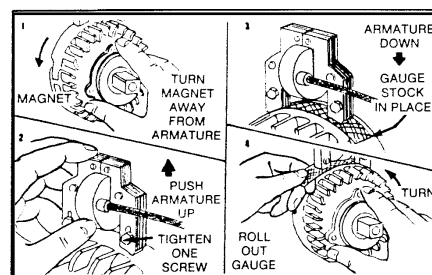


Fig. 1.12, Adjustment Steps
Courtesy of Briggs & Stratton Corp.

Breaker Points & Condenser:

If the engine is equipped with breaker points and a condenser, (Figure, 1.13), they should be sealed away from the outer environment. This ensures that dust, moisture, and other contaminants will not interfere with their operation. The breaker points and condenser should be checked periodically and/or replaced if they fail to function properly. We will learn more about servicing the breaker points and condenser in Labs III, V, and VI.

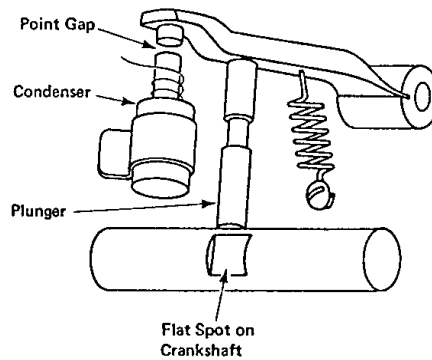


Fig. 1.13, Breaker Points and Condenser

Small Engine Storage:

If the engine is to be out-of-service for a long period of time, such as over the winter, the following pre-storage procedure is recommended.

1. Drain fuel from the tank and carburetor; start and run the engine to remove all gasoline from the fuel system. If you do not wish to do this, you may add a fuel stabilizer to the fuel to maintain fuel quality.
2. Drain oil from the crankcase while the engine is still warm. Flush the crankcase with a light weight oil such as SAE 5w or 10w. Refill with the proper grade of fresh oil. Another method is to refill the crankcase with the recommended oil; then run the engine until it reaches the full operating temperature.
3. Clean the exterior of the engine.
4. Service the air cleaner.
5. Remove, clean, and gap the spark plug.
6. Pour a tablespoon of oil into to spark plug hole; crank the engine slowly by hand, and replace the spark plug.
7. Paint or spread a light coat of oil over any exposed surfaces of the engine which are subject to rust and/or corrosion.
8. Cover the engine and store in a cool dry place.



Notes: