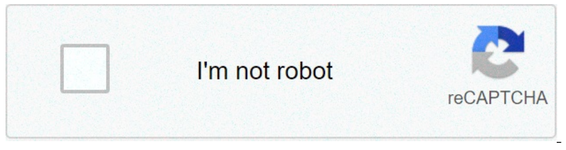

Continue

How do you fix a briggs and stratton carburetor

By Amelia Allonsy Updated December 09, 2018 The governor springs on a Briggs & Stratton lawn mower carburetor control the engine speed under load and no-load operating conditions. The governor increases and decreases engine speed as the lawn mower is used over different terrains. There are generally two governor springs that operate the engine throttle and governor, the primary and secondary springs. The primary governor spring is longer than the secondary spring with a longer end that is oval shaped and a shorter end that is rounded. The secondary governor spring has equal length oval-shaped ends. Unscrew the air filter housing cover screw with a flat-head screwdriver to gain access to the throttle and governor springs. Pull the screw out of the air filter housing and lift the air filter housing free from the top of the carburetor. Pull the spark plug wire off the spark plug to prevent the engine from accidentally starting when working. Twist the rubber spark plug boot while pulling to free the spark plug boot from the spark plug. Draw a diagram or take a picture of the governor primary and secondary spring locations if the old springs are still attached to help in the installation of the new governor springs. While this is not necessary, it helps to have a reference picture so you can see exactly where each part goes. Unclip the long oval-shaped end of the primary governor spring from the loop in the governor throttle arm linkage by hand. Unclip the short round end of the primary governor spring from the throttle control lever by hand. The governor primary and secondary springs both clip to the loop in the governor throttle arm linkage. The throttle lever is located on the throttle lever control bracket in front of the carburetor. Unclip the secondary governor spring end from the loop in the governor throttle arm linkage by hand. Unclip the other end of the governor secondary spring from the stationary tang, located on the throttle lever control bracket. Clip the long oval-shaped end of the new governor primary spring onto the governor throttle arm linkage by hand. Clip the other short round end of the primary spring into the slot in the throttle control lever. Clip one oval-shaped end of the governor secondary spring into the loop of the governor throttle arm linkage. Clip the other oval-shaped end of the secondary spring into the hole of the stationary tang, located on the throttle lever control bracket. Place the air filter housing assembly on the top of the carburetor. Insert the screw into the air filter housing cover and tighten with a flat-head screwdriver. Reconnect the spark plug wire. Things You Will Need Flat-head screwdriver Governor springs Avoid installing new governor springs with needle-nosed pliers to prevent stretching the springs, resulting in improper throttle and governor operation. The diaphragm on a Briggs & Stratton 550 lawn mower engine is part of the carburetor. A carburetor's job is to gather the fuel and mix it with air before delivering it to the engine. It delivers different ratios of gas and air, depending on the running speed. The diaphragm helps to regulate the fuel in the mixture. When the diaphragm is bad, the lawn mower will not run smoothly. The symptoms of a bad diaphragm are similar to other mower problems. Refusal to start or cutting out during running may be the first sign of a problem. The mower may smoke excessively or sound sluggish. At high speeds, the motor is more likely to give out or seem like it is starving or flooding. Conversely, the idle speed may be higher than normal and the mower may rev up and down on its own. The symptoms are not exclusive and a mower may have any combination of them. The diaphragm is made of a rubbery material. With constant exposure to fuel and heat, it can stiffen or dry rot. It needs to remain flexible to do its job properly. Going bad may not have anything to do with something you've done wrong or faulty parts, but is likely the result of regular use. If the diaphragm becomes stiff or cracked, it will put too much fuel into the engine. The excess smoke that accompanies it is fuel burning off, while the revving and stopping is caused by flooding in the engine. Fortunately, a diaphragm can be replaced without replacing the entire carburetor. To access it, you must remove the air filter and the bolts holding the carburetor onto the mower. The carburetor is either on top of the fuel tank or right next to it, depending on which series of the Briggs & Stratton 550 your have. Screw off the bottom of the carburetor to reveal the rubber gasket and diaphragm. One corner of the diaphragm has a spring. When you squash it in, it should bounce right back and have good spring. There should be no cracks and the rest of the diaphragm should be pliable. If it is rotting or has some damage, pry it off and replace it with a new one. Carburetor rebuild or repair kits will provide a new diaphragm as well as other replaceable parts. A few other lawnmower problems may have some of the same symptoms as a bad diaphragm, particularly the difficulties with starting and sputtering. A bad spark plug can cause many problems. This is one of the easiest fixes, because all you have to do is unscrew and replace the spark plug on the outside of the mower. The starter assembly may also have some complications. The rope should pull smoothly and begin the internal spinning within the first few inches of rope. If it does not, the rope may be tangled or the spring may be broken. Poor compression may also be at fault. Briggs & Stratton recommends visiting an authorized service center for compression testing on its engines. Top reviews Most recent Top reviews Rebuilding the carburetor may be required if basic adjustments don’t fix your small engine problems or improve performance on your lawn mower or outdoor power equipment. Follow the steps below for overhauling small engine carburetors. WARNING: Always read the engine and equipment manual(s) before starting, operating, or servicing your engine or equipment to avoid personal injury or property damage. Fuel and its vapors are extremely flammable and explosive. Always handle fuel with extreme care. See an authorized dealer or contact Briggs & Stratton if you are unsure of any procedure or have additional questions. Find all Engine Safety Warnings Step 1: Removing the Carburetor Step 2: Disassembling A Float-Type Carburetor Step 3: Inspecting the Carburetor Step 4: Inspecting Air-Fuel Mixture Screws Step 5: Reassembling the Small Engine Carburetor Step 6: Attaching The Carburetor & Air Cleaner Assembly Step 1: Removing the Carburetor Disconnect the spark plug lead and secure it away from the spark plug. Then, remove the air cleaner assembly. Turn off the fuel valve at the base of the fuel tank. If your engine does not contain a fuel valve, use a fuel line clamp to prevent fuel from draining out of the tank while the carburetor is disconnected from the engine. Some carburetors contain an electrical device at the base of the fuel bowl to control afterfire. Disconnect the device, known as an anti-afterfire solenoid, by removing the wire connector from the solenoid's receptacle. With the carburetor still connected to the governor, unfasten the carburetor mounting bolts. If a connecting pipe joins the carburetor to the engine block, first remove the pipe mounting bolts. Then, disconnect the carburetor from the pipe by removing the nuts and sliding the carburetor off the studs. Sketch the governor spring positions before disconnecting them to simplify reattachment. Then, disconnect the governor springs and remove the carburetor, taking special care not to bend or stretch links, springs or control levers. Step 2: Disassembling A Float-Type Carburetor Your carburetor contains a small amount of fuel. Prepare a clean bowl to catch dripping fuel and store small parts. During disassembly, inspect the bowl for dirt and debris to determine the condition of your carburetor. Remove the fuel bowl from the carburetor body. The fuel bowl may be attached with either a bolt or the high-speed mixture screw. Push the hinge pin out of the carburetor body with a small pin or pin punch. Take care to tap only the pin to avoid damaging the carburetor body. Remove the float assembly, inlet needle valve and fuel bowl gasket. If your carburetor contains an idle mixture screw, remove it along with the spring. Rotate the throttle plate to the closed position, remove the throttle plate screws and the throttle plate. Remove the throttle plate shaft and foam seal. Then, remove the choke plate and choke shaft and felt or foam washer in the same manner. Use your carburetor repair kit to identify replaceable welch plugs. These seals cover openings in the carburetor left over from machining. Insert a sharpened 5/32" pin punch at the edge of each plug to be removed and tap cleanly to free the plug. Unscrew the main jet from the side of the carburetor pedestal (if equipped). Then, unscrew the emulsion tube; it may be screwed in tight. A carburetor screwdriver is the best tool for the job. It's designed to fit the slot in the head or the emulsion tube so that you won't damage the threads inside the pedestal of the tube itself as you loosen it. Remove the emulsion tube. Step 3: Inspecting the Carburetor Soak metal and plastic carburetor parts in all-purpose parts cleaner for no more than 15 minutes to remove grit. Or, while wearing safety glasses, spray the parts with carburetor cleaner. Then, wipe away solvent and other residue thoroughly using a clean cloth. Never use wire or tools because they can damage or further obstruct plugged openings. Inspect all components and use additional carburetor cleaner to loosen stubborn grit and to clear obstructions. Replace any parts that are damaged or permanently clogged. Step 4: Inspecting Air-Fuel Mixture Screws Brass mixture screws control the air-fuel mixture at high speed and at idle. Over tightening can damage the tip of the screw so that proper adjustment is no longer possible. Remove any non-metal parts and soak mixture screws in carburetor cleaner for 15 minutes. Then, inspect them carefully for wear. Replace a mixture screw if the tip is bent or contains a ridge. Step 5: Reassembling the Small Engine Carburetor Install new welch plugs from your repair kit using a pin punch slightly smaller than the outside diameter of the plug. Tap on the punch with a hammer until the plug is flat (strong blows with the hammer will cause the plug to cave in). Then, seal the outside edge of the plug with enamel nail polish. Assemble the choke by inserting the return spring inside the foam seal and sliding the spring and seal assembly onto the choke shaft. Plastic choke plates have a stop catch at one end of the spring; metal plates have a notch to hold the hook at one end of the spring. Insert the choke shaft into the carburetor body and engage the return spring. If the choke lever uses a detent spring to control the choke plate position, guide the spring into the notched slot on the choke lever. Place the choke plate on the shaft with the single notch on the edge toward the fuel inlet. Lift the choke shaft and lever up slightly and turn counterclockwise until the stop on the lever clears the spring anchor. Push the shaft down. Insert the choke plate into the choke shaft or attach it with screws so that the dimples face the fuel inlet side of the carburetor. The dimples help hold and align the choke shaft and plate. Install the throttle shaft seal with the sealing lip down in the carburetor body until the top of the seal is flush with the top of the carburetor. Turn the shaft until the flat side is facing out. Attach the throttle plate to the shaft with the screws so that the numbers on the throttle plate face the idle mixture screw and the dimples face in. Install the inlet needle seat with the groove down, using a bushing driver. Then, install the inlet needle on the float and install the assembly in the carburetor body. Insert the hinge pin and center pin. Then, install the rubber gasket on the carburetor and attach the fuel bowl, fiber washer and bowl nut. Step 6: Attaching The Carburetor & Air Cleaner Assembly Position the carburetor so the beveled edge fits into the fuel intake pipe and attach the carburetor with nuts or bolts, as required, leaving these fasteners loose for final tightening with a torque wrench. Consult your Briggs & Stratton Authorized Dealer for proper tightening torque. Install the air cleaner assembly, making certain that the tabs on the bottom of the air cleaner are engaged. More Carburetor Repair Resources How to Clean a Small Engine Carburetor By Staff 1 / 10 Briggs and Stratton Model 14 with the OEM ignition coil, part no. 290880. 2 / 10 Briggs and Stratton Model 14 with the OEM ignition coil, part no. 290880. 3 / 10 The core from a later model B and S coil, unmodified. 4 / 10 The winding of a later model B and S coil with lengthened spark plug wire. 5 / 10 A later model B and S coil, which sets apart from the flywheel, to be modified. 6 / 10 The core from a later model B and S coil that’s been modified for use on earlier B and S Models 9 through 23, 19X,XXX and 23X,XXX engines. 7 / 10 Later model B and S coil with modified core and lengthened spark plug wire, ready for use on B and S Models 9, 14, 19, 23, 19X,XXX and 23X,XXX. 8 / 10 A Model 9, sans flywheel, with the coil modification. 9 / 10 A Model 14, sans flywheel, with the coil modification and hose clamp securing it. 10 / 10 view of a Model 9 with the flywheel installed, showing lack of space for the hose clamp retention and how wire was used from rivets on the core to the OEM core mounts. ❮ ❯ This submission is not so much about a successful engine repair as it is about a clever and ingenious idea, which also saves a substantial sum of money in the event you’re a working stiff. I’m writing this for Kent David Redd, the creator of the idea, as he has an interest in passing it along. I’ve been told on a number of occasions through the years, “necessity is the mother of invention” and “work with what you have.” That’s how this all came about. I’ll start from the beginning, but I promise not to bore you to tears with details. I have a Briggs and Stratton Model 14 engine that acted as if it had a partially plugged carburetor, since it would start and idle just fine. However, when attempting to throttle it up, the engine would die. After repeatedly pulling the carburetor apart and checking every conceivable possibility I could come up with, I gave in. Listing the engine for sale, cheap I might add, a couple fellas contacted me with an interest in the engine and asked me to describe the engine’s behavior, which I did. I was consistently told the coil was shorting out at higher RPMs, but not at idle speed. So of course when I was turning the engine over, checking for spark, I assumed the coil was all right. I then decided if it was just a bad coil, I’d just keep the engine and replace it. Six Months Later After the engine sat in its dark corner for another six months, I decided I wanted to hear the baby beastie run once again. I knew I couldn’t afford a new replacement coil and the engine wasn’t worth the cost, so I posted an ad on the Internet looking for a functioning used coil but got no bites. The offers I did receive were for new “Made in China” or NOS coils, some at ridiculously high prices, while others were reasonably fair. While considering the purchase of an NOS coil, Kent David Redd made me an offer for instructions … yes, illustrated instructions on how to convert a later model Briggs and Stratton coil to fit my Model 14. Person-ally, I thought it sounded a bit goofy, but it did spark my curiosity. After sending a reply to his offer and asking about the price tag, he forwarded said instructions via e-mail at no cost. After reading through them several times and looking over the illustrations, the conversion began making sense. The end result was that I didn’t have to ask questions, the conversion only required approximately four hours of easy labor, not a dime from my pocket, and the Model 14 engine runs sweet as a dream. This is such an ingenious idea and I was so impressed with it, I talked to Kent about doing this story and he had no problem with it and liked the idea of getting this out for others to use. I’m very impressed with this, especially since at the time he came up with it, he, too, was between the proverbial “rock and a hard place,” so just maybe necessity is the mother of invention. Creativity at Work The coil to be modified needs to be, 1: From a Briggs and Stratton engine of 2-1/2 to 16 HP; 2: Points-type ignition (pre-1981), and; 3: Two-legged core rather than three. These coils can easily be found at a scrap yard from a trashed push mower. The biggest key here is that the B and S Model 9, 14, 19 and 23 engines used what was referred to as “Magnamatic” ignition, which was very different than the typical arrangement in the other models. The main difference is that the coil was placed under the flywheel rather than on top of the outside of the flywheel, so space is pretty tight under there. Another difference is that the permanent magnets are not placed in the flywheel, so it needs no key and keyway for correct spark timing, but rather the magnets are placed in a “hub” of about 3-inches in diameter and mounted directly onto the crankshaft, this also being under the flywheel. Removing the old coil from the Model 9, 14, 19 or 23 is self-explanatory. That coil sits on top of a laminated armature that surrounds the hub that the magnets are in. The concept here is to make the replacement coil fit where the other was – in a very tight space. There are a few things I did a bit differently than Kent, so you will have a choice on how you want to do this. What is described is to remove the coil from the core laminations. I didn’t do that, but rather placed a small, 3/4-inch-thick block of wood under the core to proceed with the next step. From the top of the core (looking at the coil as if it were mounted above the flywheel), measure downward 2-1/4-inches and scribe a line across both legs. Using a milling machine (for best results), cut-off saw or hacksaw (preferably with fine-toothed blade such as 24 to 32 TPI), cut the bottom portion of the legs off at the scribed line. Accuracy is important due to the limited space. If you do not remove the coil from the core, cut slowly so you don’t cut into the windings. It is suggested you place a block of wood on the underside of the coil and run a wood screw through the slotted mounting hole into the wood to keep the laminations from getting bent. You can also use a very small clamp to keep them together. After those portions of the core legs are removed, the replacement coil will be close to 0.20-inch too wide to fit in the armature of the Magnamatic ignition. Therefore, 0.10-inch needs to be removed from each leg from the point of where the legs were just cut and 3/4-inch vertically. The same block of wood can be used on the underside from the core – just use a disc grinder or file to gently remove the needed material. Be careful not to bend the laminations of the core, since they’re almost impossible to straighten. In the event you remove too much material, simply shim the required amount between the core and the armature. The grounding lead of the modified coil can be connected to the same screw as the old magneto grounding lead. The primary lead going to the points only needs to have a ring terminal put on the end to connect it in the same manner as the primary lead of the old coil. The secondary lead (spark plug wire) will need to be lengthened via a splice in the shorter secondary lead of the modified coil. Solder the leads together, then, using silicone, make a very thick layer over the top of the splice to insulate it. A quicker method, if you don’t want to wait for the silicone to cure, is to use hotmelt glue. The job can be completed and ready for use in less than five minutes with this method. Finishing Up Securing the replacement coil cannot be done in the same method as the previous coil, so you will need to study your options at this point. In Kent’s first modification, wire was tightly fastened over top of the coil. The next step is to use a hose clamp, cut and modified in place of the wire. In my operation, I cut and added additional length to a hose clamp (you can simply buy a large diameter clamp if you wish, which is cheaper and easier) and placed the clamp over the top of the “new” coil and around the entire armature of the ignition. I don’t believe I have more than about 0.005-inch clearance between the band of the hose clamp and the inside surface of the flywheel at the point it runs over the top side of the coil – that’s just how tight things are under there. From this point comes the gravy work: Reassemble the engine components and start your beastie up … it’s a real thrill after having previously given up on it! Put this idea in your memory bank, because even if you can’t use it now, you never know when you might. RELATED ARTICLES Learn about the intriguing history of the Benz gas engine and its inventor Karl Benz. Check out this beautiful circa 1893 10hp foos gas engine and learn about its fascinating history. Catch up with gas engine enthusiast Jordan Friedrich to find out what he loves about old iron.