

Nine Points

By **DANIEL L. HEDGLIN**

Cushman Service Manager

WANT TO GIVE your golf cars or gasoline-powered utility vehicles nine lives? Here's how!

Golf course superintendents and their crews often can prevent serious problems that require expensive overhauls if they follow daily, routine maintenance pointers. So, by adhering to the following nine simple step-by-step small gasoline engine maintenance pointers, you can add years and miles of dependable service to golf cars and utility vehicles.

Keep Air Cleaners Clean: Cleanliness is essential to air-cooled engines on golf cars since the engines operate close to the ground and at low speeds. Thus the engines are vulnerable to dirt. It wears out more engines than do long hours of operation. Even a small amount of dirt will wear out a set of piston rings in a few hours.

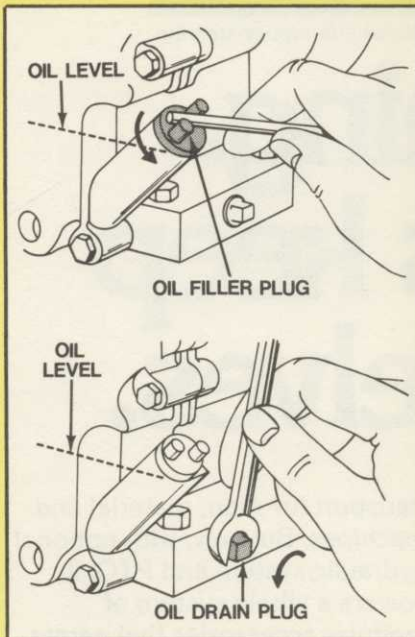
Check the air cleaner daily, especially if the vehicle is being used under extremely dusty conditions. Dry air cleaner elements should be cleaned by removing them and tapping them lightly on a flat surface to remove dirt. After cleaning in this manner, if it is not possible to see light through the element, it has served its useful life and should be replaced.

Check or Change Oil: Small engines have small crankcases, so the oil level should be checked daily. The oil should be changed at intervals recommended by the engine manufacturer. Change the oil while the engine is warm. This will allow the oil to flow more freely and carry away more contamination. Refill the crankcase to the proper level with a good grade of oil of the recommended viscosity or weight.

Spark Plugs: Worn, dirty or improperly adjusted spark plugs can cause hard starting and faulty operation. Spark plugs should be changed every 100 hours of operation. Before removing the spark plugs, blow or clean the area around the spark plug to avoid the possibility of dirt or sand getting into the engine. Since it is generally not economical to clean spark plugs, they should be replaced with new ones. Be sure to check the gap of the electrodes on the new spark

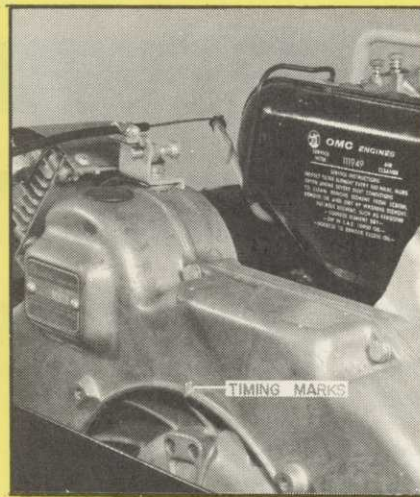


Small engine maintenance is not difficult. It does require regular checks on vital parts. Here workman checks engine and replaces air cleaner.

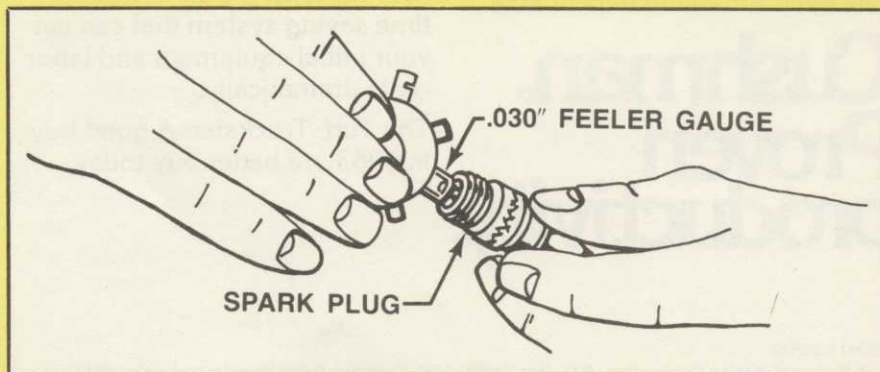


Lubrication is vital to engine performance.

Check engine markings for specifics.



Gap on spark plug should be checked regularly.



For Smooth Running Engines

plug, since it is unlikely that it will be properly set for your engine. Gap the plug to the engine manufacturer's specifications.

Start the plug in with your fingers to avoid cross-threading. Use a wrench only after you know it is started properly. Tighten the plug tight but don't over-tighten. A torque wrench will assure the proper setting.

Points: Inspect the breaker points every 500 hours or yearly and replace them if necessary. Points that are pitted or burned should be replaced.

Care should be exercised when handling a new set of points. Clean the new set of points with a piece of lint-free paper and then avoid touching the contacts with your fingers. The oil from your hands can cause a new set of contacts to start burning and fail prematurely.

Install the new set of points and carefully adjust the gap to the manufacturer's recommended setting. Remember that in many engines the correct point setting will also assure proper timing. On engines having variable timing, it will be necessary to adjust the timing with the aid of an automotive timing light.

Condenser: The condenser is an inexpensive part, but is just as important to the ignition system as the points. Therefore, it only makes good sense to replace the condenser every time the points are replaced.

Clean Combustion Chamber: Automotive fuels, constant speed and load operation gradually result in build-up of tetraethyl lead deposits in the combustion chamber of golf cars and gasoline-powered utility vehicles. Manufacturers usually suggest that the combustion chamber be cleaned every 100 to 300 hours of operation to remove these lead deposits.

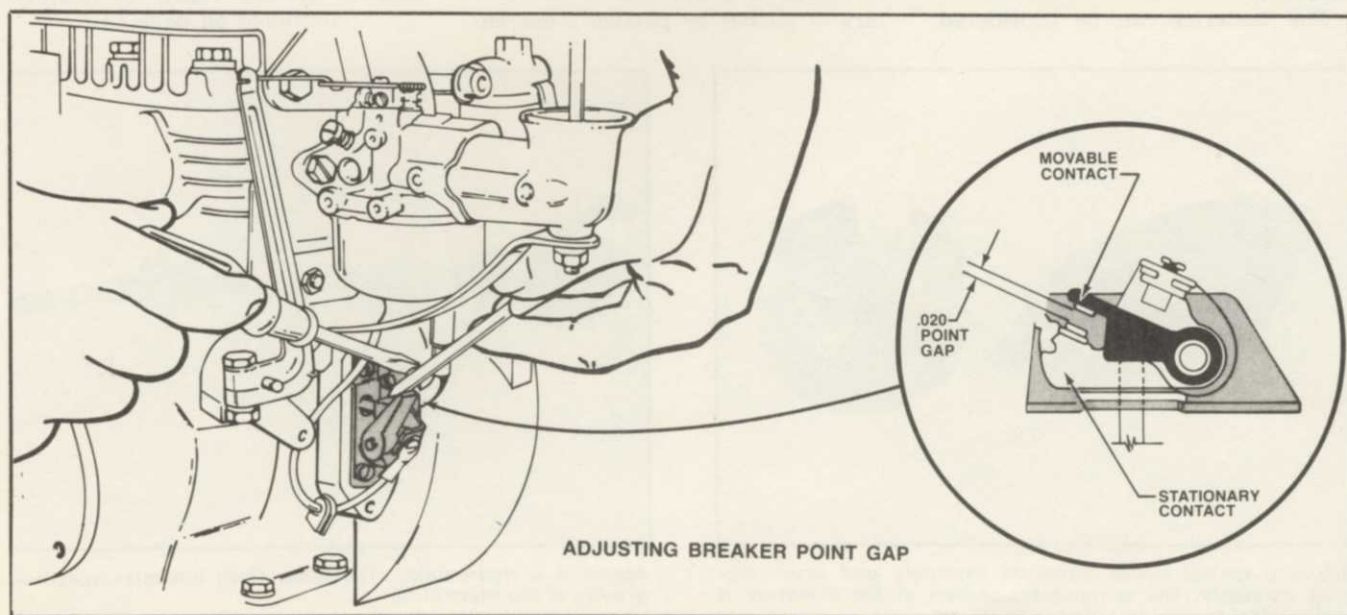
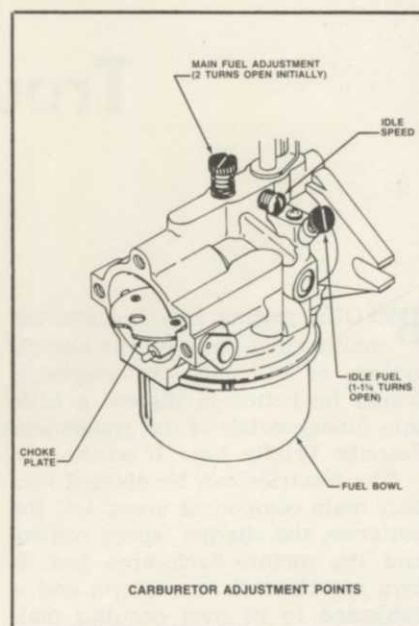
To clean the chamber, remove the cylinder head and scrape or wire-brush the lead and carbon deposits from the head, around the valves and from the piston top. Then reassemble the cylinder head, using a new gasket. When tightening the cylinder head screws, be sure to tighten them in an alternate sequence. For best results, tighten them with a torque wrench to the manufacturer's specifications.

Cleaning Exhaust Ports: Two-cycle engines will get a build-up of carbon in the exhaust system. These carbon build-ups are just as detrimental in the exhaust port as they are in the cylinder head. If these ports are left to build up with carbon, hard starting and a loss of power will be the result. To clean the exhaust ports, remove the muffler and/or exhaust pipe and clean the ports with a wooden dowel.

Carburetor Adjustments: Lack of engine power and black sooty exhaust smoke indicate the fuel mixture is too rich. An over-rich mixture can be caused by either a

clogged air cleaner or a carburetor needing adjustment. So, always check the air cleaner before adjusting the carburetor.

Main fuel adjustment—First, turn the "main fuel" screw clockwise until it bottoms lightly (**don't force it**), then back out two turns. With the engine thoroughly warmed up and running at full throttle and full load, turn the "main fuel" screw in until the engine slows down (lean setting). Then turn the screw out until the engine regains speed and then starts to slow down (over-rich)
(continued on page QQ)



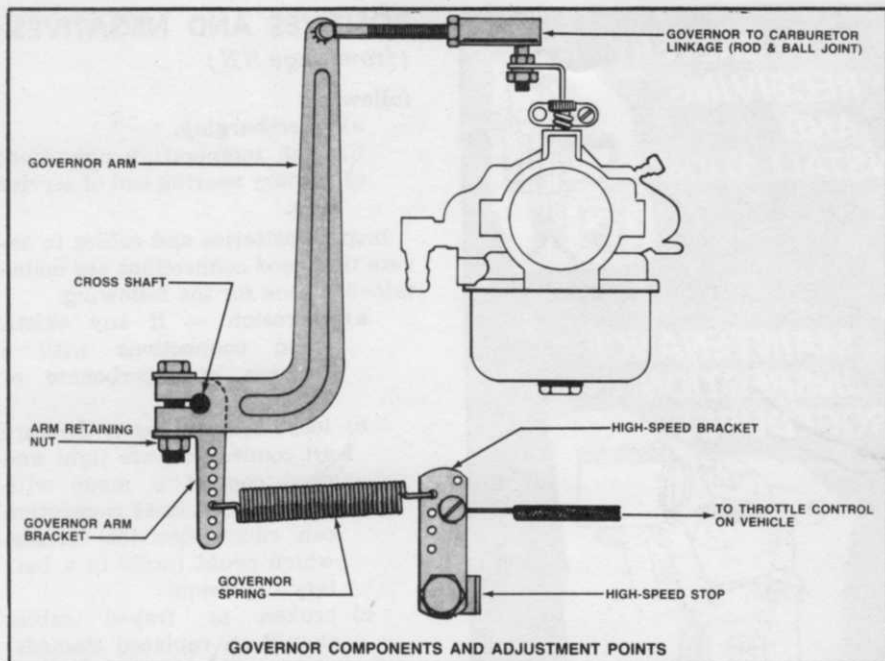
SMOOTH RUNNING ENGINES

(from page GG)

setting). Finally, turn the screw back in until it is positioned half way between lean and over-rich settings. A properly adjusted carburetor will allow the engine to accelerate smoothly and operate with steady governor action.

Idle adjustment — A rough idle usually is caused by the idle speed being set too low, or the idle mixture screw misadjusted. First, turn the "idle speed" screw in clockwise to increase speed. If the engine still idles poorly, stop it and turn the "idle fuel" screw all the way in clockwise until it bottoms lightly (**don't force it**), and then back out 1¼ turns. Next (re-start the engine and check the idle by turning the needle in or out ¼ turn at a time until a smooth idle is reached. The engine should operate satisfactorily when the carburetor is adjusted within the range of the manufacturer's specifications. If it does not operate satisfactorily, the carburetor needs cleaning or an abnormal condition exists in the engine.

Governor Adjustment: Governors, which maintain engine speed under



changing load conditions, are set at the factory and further adjustment shouldn't be required unless the linkage becomes worn or broken. The governor should not be readjusted so that engine r.p.m.'s exceed the manufacturer's recommendation. If this is done, it will generally re-

sult in a blown engine.

However, the butterfly or throttle plate in the carburetor should be checked to make sure that it is in a wide-open position when the foot feed is clear to the floor. This check should be made with the engine stopped. □

MINI BOSS delivers!

Because we designed this self-propelled sprinkler with smaller irrigation operations in mind, settings may be easily adjusted by one man. And, Mini Boss requires no man hours on the trip!

It's perfect for odd-shaped grass or turf areas and rough terrain, because only a pathway is needed for this unit to water effectively. Also, may be set for prevailing winds.

Mini Boss is built with top-quality materials and the minimum number of moving parts. Sturdy, yet lightweight, it may be towed with a light service vehicle.

Want to see this Mini machine perform? Write for details about our free demonstration seminar and specifications:

Boss Irrigation
Consolidated Pipe & Tubing
P.O. Box 191
San Angelo, Texas 76901

or call collect: 915/655-5446

