

Small Engines

Servicing Small Engines on Lawn and Garden Equipment

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Four common reasons for small engine failure are:

1. Allowing dirt to enter the engine.
2. Failure to check and to change oil level regularly.
3. Overloading the engine.
4. Running the engine too fast (changing governor settings).

The following operations should be performed on small engines to service them properly.

CLEANING

If engines are not kept clean, the engine will overheat, rubber parts soften, dirt gets into the engine, oil becomes dirty, loose nuts and cracks in the engine parts are covered and go unnoticed.

To clean the engine, use kerosene or diesel fuel and an old paint brush to clean greasy surfaces. Use an air hose with a pressure suitable for blowing dirt from hard to reach places and a water hose with a nozzle. (Clean engine only when engine is cool.)

AIR CLEANERS

Air cleaners should be serviced every 25 hours of use. Chainsaws may require this service twice a day. Oil-bath type cleaners should have oil replaced with same grade oil used in the crankcase. Two-cycle engines use same oil as is mixed with the gasoline. Be careful not to overfill.

Sponge type air filters should be washed with kerosene and then washed in soap and water. Dry and re-oil with same oil used in crankcase.

Dry-filter type cleaners are best serviced by replacement. However, lightly tapping on a flat surface will remove some dust.

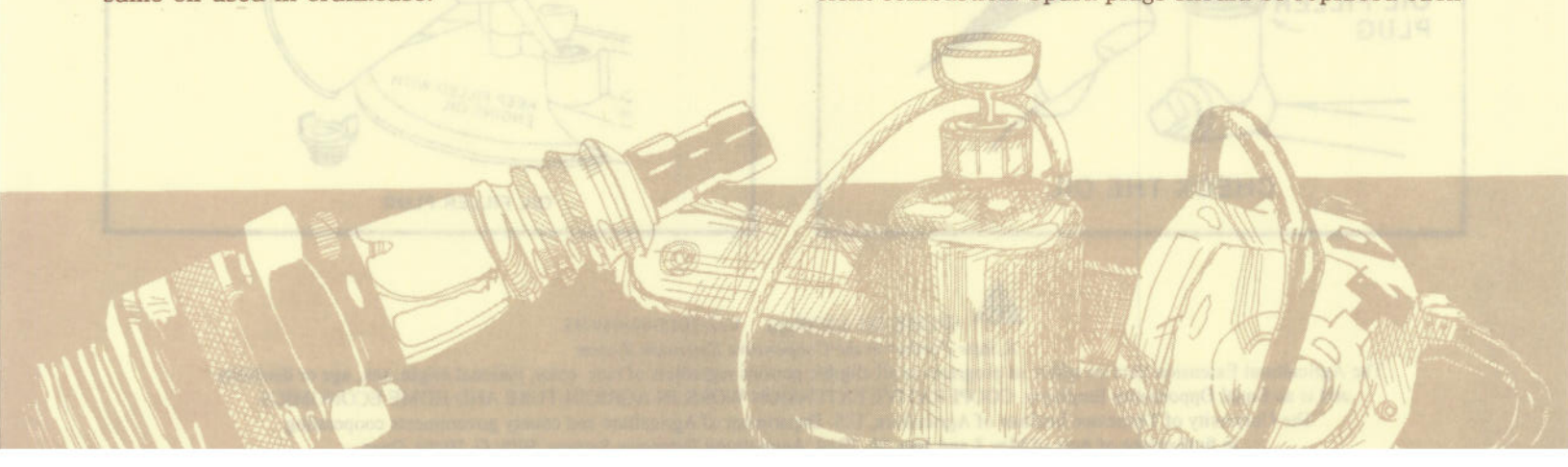
OIL FOR SMALL ENGINES

Most small engines do not have an oil filter. Oil should be changed every 25 hours or twice a year to remove contamination. Replace oil with oil recommended by the manufacturer in the operator's manual. Most manufacturers recommend SAE 10W-30 or SAE 30. Look for oil with SE or SF classification on the can.

Oil levels should be checked every two to four hours of operation. Every time you refuel the engine is a good time to check the oil level. Add oil if low but be careful not to overfill as this can damage the engine.

SPARK PLUGS

Several factors concerning plugs should be considered when replacing plugs. The proper plug will clean itself during operation. (1) Heat Range — "Cold" plugs should be used when the engine will be under heavy load. "Hot" plugs should be used when the engine will be under light load or idling much of the time. (2) Plug Reach — Most small engines use 14 millimeter size plugs. Most of these plugs are made in four reaches: 3/8 inch, 7/16 inch, 1/2 inch, 3/4 inch. The base of the plug you use should be even with the inside of the combustion chamber. A plug too long may hit the piston; plugs too short will not give efficient combustion. Spark plugs should be replaced each



year. A new plug will require about 10,000 volts to spark; however, a used plug may require over 15,000 volts to spark. Older ignition systems may not produce this voltage.

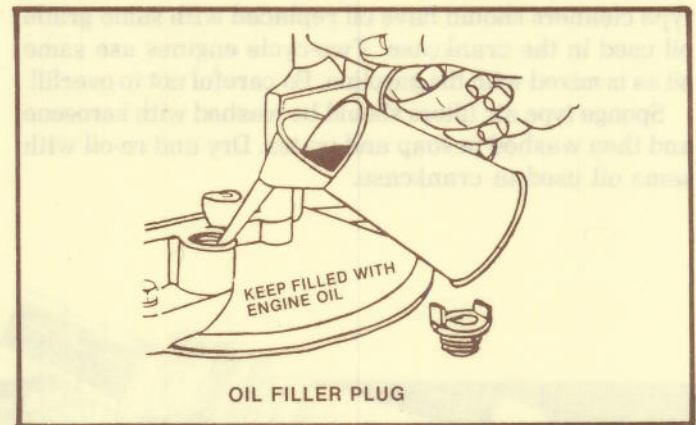
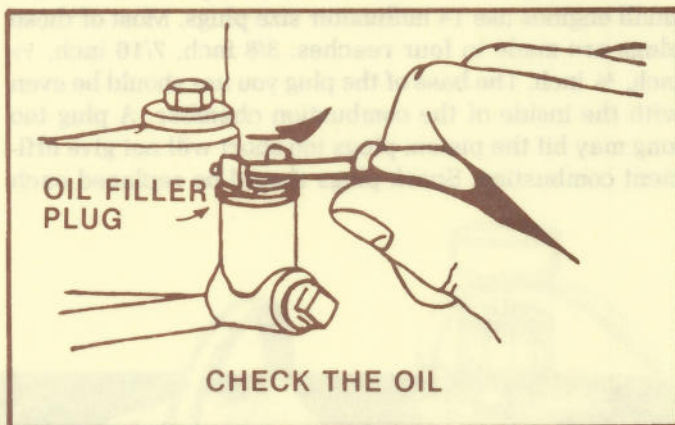
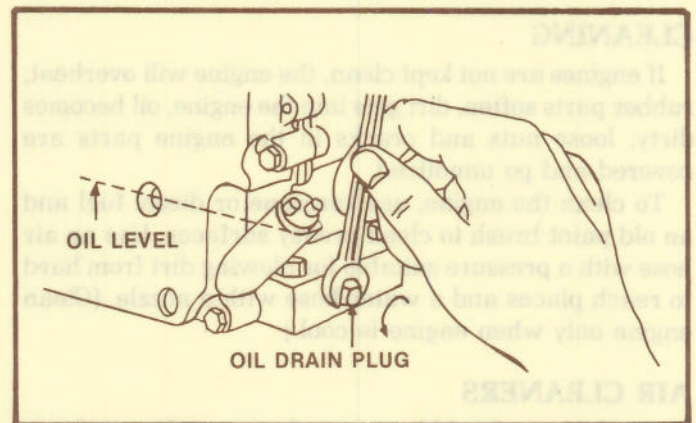
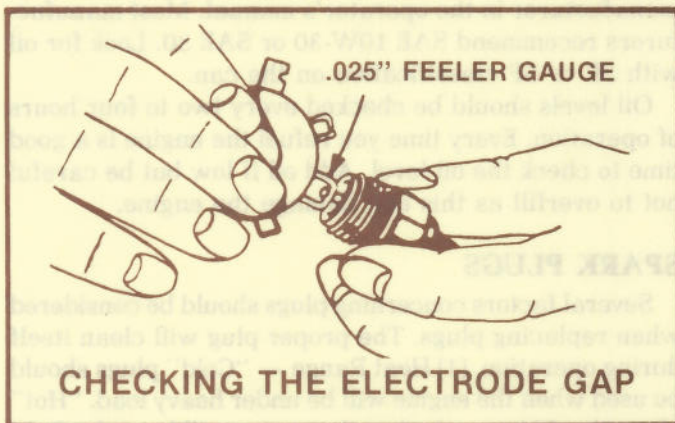
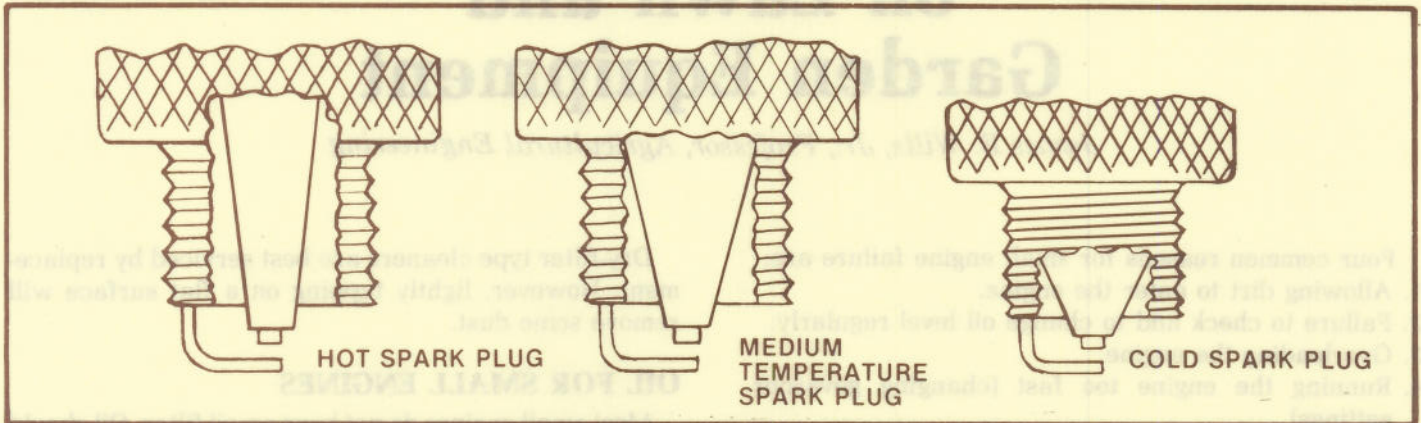
Plugs should be cleaned and re-gapped every 25 hours. A small-bladed pocket knife or a sand-blast plug cleaner will clean plugs sufficiently. Always use a round gauge to gap plugs. Also take care in handling plugs to prevent cracking of the porcelain insulation which will result in shorting of the spark.

Torque plugs of each size according to the table below:

Size	Torque*
10 MM (3/8 +)	10-15 ft.-lbs.
14 MM (9/16-)	22-30 ft.-lbs.
18 MM (11/16 +)	25-40 ft.-lbs.

**Lower figures are for aluminum head engines.*

Take care of your small engine and it should give long, satisfactory service.



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