

# EXPLORING EQUIPMENT

## Oil Maintenance Practices

Engine oil is a major factor affecting the performance and service life of your engines. Monitoring the oil levels and frequent oil changes are essential for maintaining and prolonging the life of your commercial equipment.

Equipment operators often are responsible for monitoring and changing the oil. At the beginning of each season, train operators in proper oil maintenance procedures. Use this article to explain the importance of a clean, adequate engine oil supply.

Engine oil performs the following vital functions:

● **Lubrication.** Oil maintains a film between moving parts to help prevent metal-to-metal contact, which causes friction and engine wear. The key to an oil's ability to lubricate is its viscosity, or resistance to flow. The higher an oil's number, the higher its viscosity will be. For example, a 40-weight oil is thicker than 20-weight.

● **Sealing.** The same oil film that provides lubrication also assists sealing to maintain engine efficiency. Oil provides sealing both in the combustion chamber and with seals and shafts. It helps the piston rings seal pressure in the combustion chamber.

● **Cooling.** Your engine's oil also carries heat away from the hot areas, especially the piston and cylinder head.

● **Cleaning.** The term "detergent oil" refers to the cleaning capabilities of engine oil. Many engine oil additives assist in keeping the engine clean. About half the test criteria an engine oil must meet concern detergent properties. These detergents are necessary because of combustion by-products that find their way into the oil. Detergents keep varnish and deposits from forming in the engine, and to some degree remove existing deposits.

### Checking the Oil

Running your lawn mower's engine with insufficient oil can cause serious engine damage, resulting in costly repairs or down time. Therefore, it is important to check the engine oil every time you use equipment.

The following is a typical procedure for checking a lawn mower's engine oil. Refer to your operator's manual for the proper procedure for your mower:

- Stop the engine and position the mower on a level surface.
- Clean the area around the oil filler cap/dipstick.
- Remove the oil filler cap and wipe the dipstick clean.
- Insert the dipstick into the oil filler neck, but do not screw it in.
- Check the oil level shown on the dipstick.

If the level is low, add the recommended oil to the upper mark on the dipstick. Do not overfill.

Commercial equipment is operated under the toughest conditions, so it's helpful to have a mower equipped with a system such as Honda's Oil Alert. An alert system warns the operator when the engine oil level begins to fall below a safe limit, indicating the operator should stop the engine immediately and add oil.

### Why Change The Oil?

Adding oil regularly isn't enough. You need periodically to drain the old oil and replace it with clean oil. As crankcase oil lubricates, seals, cools and cleans, it becomes contaminated with acids, dirt and abrasives. These contaminants stay in the oil and can damage the engine. Also, prolonged use depletes many oil additives, rendering them ineffective.

Grounds care equipment works extremely hard for each hour of operation, requiring frequent oil changes. For example, you probably will run an air-cooled commercial lawn mower at or near full throttle for long periods of time. After 100 hours of operation, the small quantity of oil in the crankcase can work the equivalent of an automobile engine traveling 5,000 hard miles. Also, consider that your automobile's engine runs in a relatively clean environment. A lawn mower's engine can be exposed to extremely dusty conditions, which further dirty the oil.

With the quality of today's engine oil, change the oil every 100 hours to provide adequate protection against premature engine wear. Make it a practice to log the hours of operation for equipment to determine proper maintenance intervals.

New engines are the one important exception to this recommendation. Newly machined surfaces moving against one another in a new engine produce abrasive powdered metal particles that will enter the engine's oil within the first few hours of use. To prolong engine life, change the engine oil after the first 20 hours of use on a new machine.

### Which Oil to Use

In selecting an engine oil, two questions that typically arise relate to the viscosity and American Petroleum Institute (API) rating.

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Selecting the proper oil viscosity for an air-cooled lawn mower engine becomes especially important because ambient (surrounding) temperature greatly affects oil temperature. Most manufacturers have a chart in the operator's manual showing the recommended viscosity to use for certain ambient temperatures.

You want to use the thinnest oil that maintains sufficient film strength to keep engine parts from touching. The thinner the oil, the lower its internal friction and the better its ability to flow quickly when you first start the engine.

To decide the oil viscosity best suited for Honda Power Equipment engines, we tested numerous oils. These tests revealed the best oils had a low viscosity index, such as 10W-30. (Viscosity index refers to the rate of change in viscosity within a given temperature range.) Multi-grade oils with a high viscosity index, such as 10W-40 and 20W-50, do not work as well when exposed to higher temperatures associated with power equipment engines.

SG is the suggested API oil rating for use in Honda commercial lawn mowers. SG is currently the highest quality gasoline engine oil available. SG-classified oil provides improved control of engine deposits, which can be of special concern in lawn mowers. Lawn mower engines have closed crankcases, so crankcase vapors are recirculated back into the combustion chamber, forming oil deposits that can lead to ring and valve sticking. Honda Power Equipment found SG oils to be significantly better than SF oils in reducing these deposits.

#### How to Change the Oil

Below is a typical procedure for changing the oil in a lawn mower. Always consult the owner's manual of your particular model for any variation from the steps below.

- Start the mower and allow the engine to reach normal operating temperature. Shut off the mower and disconnect the spark plug before proceeding.
- Place a suitable container under the mower deck to catch the used oil. Check to make sure the drain hole in the mower deck is not clogged. Remove grass and debris, if necessary.
- Clean any dirt from around the oil filler cap/dipstick and remove the cap. The biggest enemy of a commercial lawn mower engine is dirt, and any dirt that falls through the filler opening will contribute to engine wear.
- Remove the oil drain bolt. The used oil will flow along the mower deck channel to the drain hole. Allow it to drain completely. Get as much of the old oil out of the engine as possible.
- Install the oil drain bolt and tighten it securely. Do not over-tighten.
- Fill with the recommended oil to the upper level on the dipstick. Do not overfill. An engine with too much oil will smoke, foul spark plugs and run poorly.
- Install the filler cap/dipstick.
- Wipe up any oil from the mower deck to reduce dirt and grass build up when you use the mower. Reconnect the spark plug wire.
- Dispose of the used engine oil in a way that is compatible with the environment. We suggest taking it in a sealed container to your local service station or recycling center for reclamation. If you have several pieces of equipment, start an oil-collection drum. Some recycling companies will drive to your site for pickup. Whichever method you choose, do not throw it in the trash or pour it on the ground.

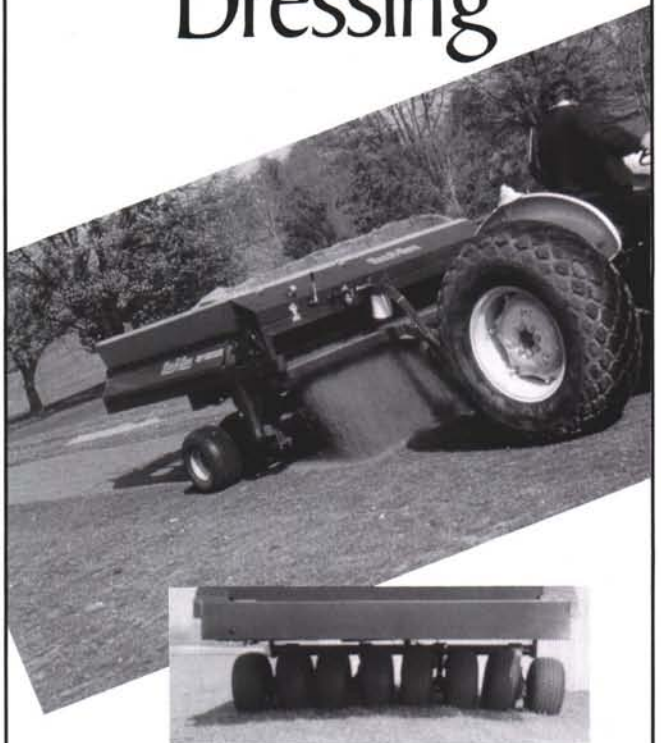
A routine oil change is also a good time to inspect the crankcase breather hose to be sure it is securely fastened and undamaged. A torn or disconnected breather hose will allow dirt to enter the engine, which will result in rapid engine wear.

Oil is the lifeblood of your lawn mower's engine. You can help ensure long engine life and many hours of trouble-free operation by performing proper oil maintenance. □

*This article was written by service engineers at Honda Power Equipment, Duluth, GA.*

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