

Unit C: Agricultural Power Systems

Lesson 5: Using Small Engines

Terms

- ✦ Blow-by
- ✦ Degreaser
- ✦ Dry-filter type air cleaners
- ✦ Horizontal crankshaft engine
- ✦ Oiled-filter type air cleaners
- ✦ Service intervals
- ✦ Vertical Crankshaft engine

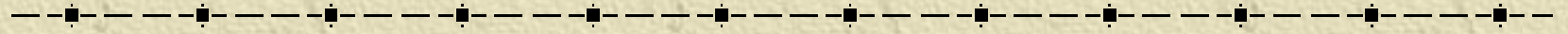
Small engines

- ✦ 25 horsepower or less
- ✦ Several million are now in use in the U.S.
- ✦ Accomplish tasks that other equipment cannot do

Small engine popularity

- ✦ Compact
- ✦ Lightweight
- ✦ Easy to service and repair
- ✦ Affordable

Reasons for small engine trouble



- ✦ Dirt and dust leads to rapid wear if not serviced properly
- ✦ Abuse by overloading
- ✦ Do not receive proper service or regular maintenance

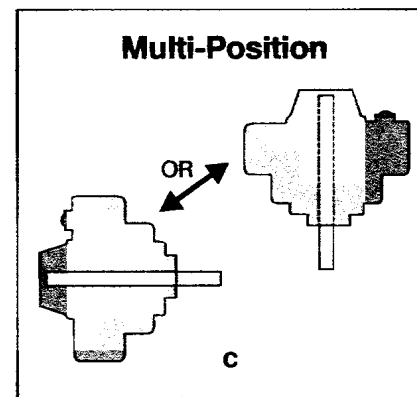
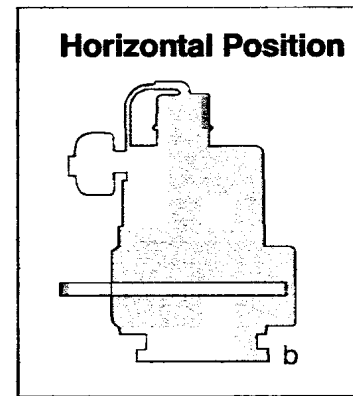
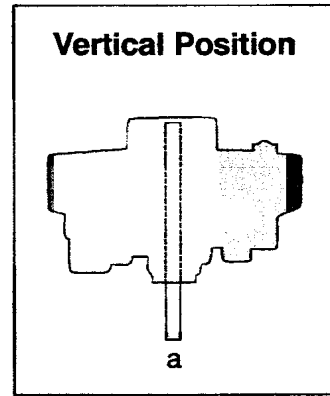
Classifying small engines

- ✦ By the position of their crankshafts
- ✦ By the number of power strokes per crankshaft revolution

Position of crankshafts

- ✦ **Vertical crankshaft engine** – its cylinder is in a horizontal position
- ✦ **Horizontal crankshaft engine** – may have its cylinder in a vertical, horizontal, or intermediate position
- ✦ **Multi-position crankshaft engine** – operates in any position

Crankshaft Positions

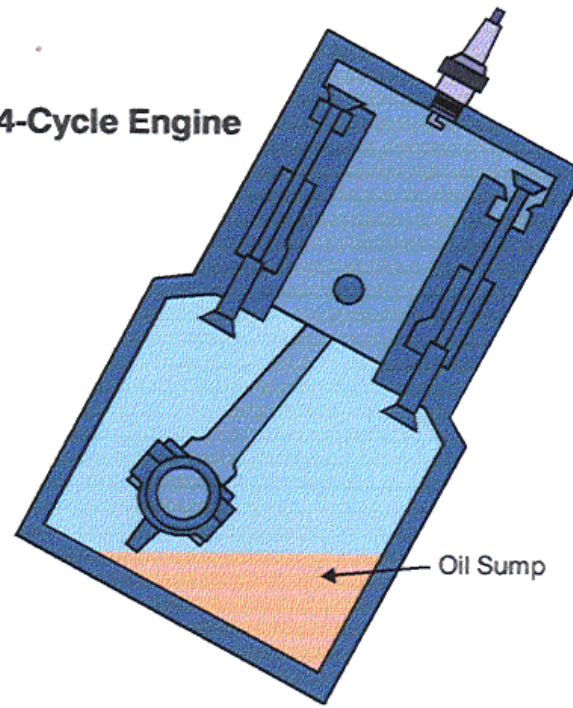


Number of power strokes

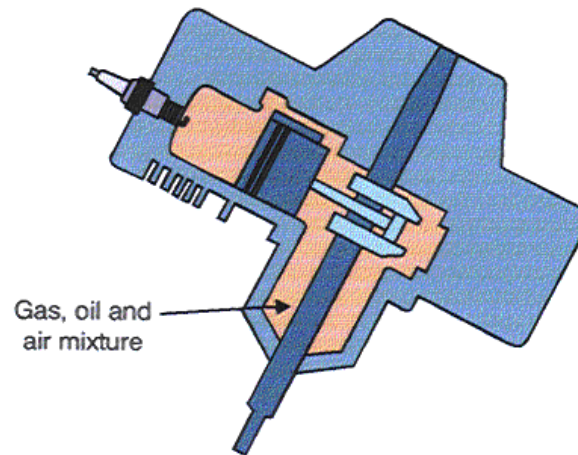
- ✦ Four stroke cycle engines – intake, compression, power, exhaust
- ✦ Two-stroke cycle engines – compression & intake, power & exhaust

Extreme angles of operation and oil supply

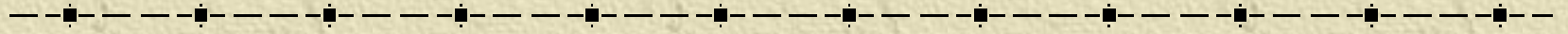
4-Cycle Engine



2-Cycle Engine



Service intervals

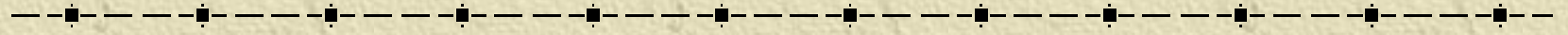


✦ The periods of time between the performance of service jobs

Common service jobs

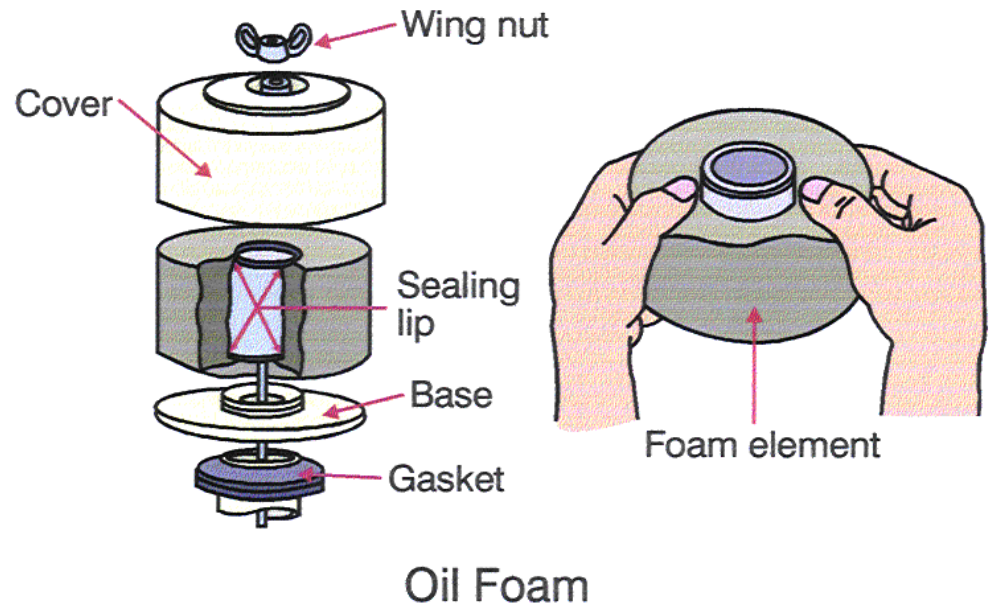
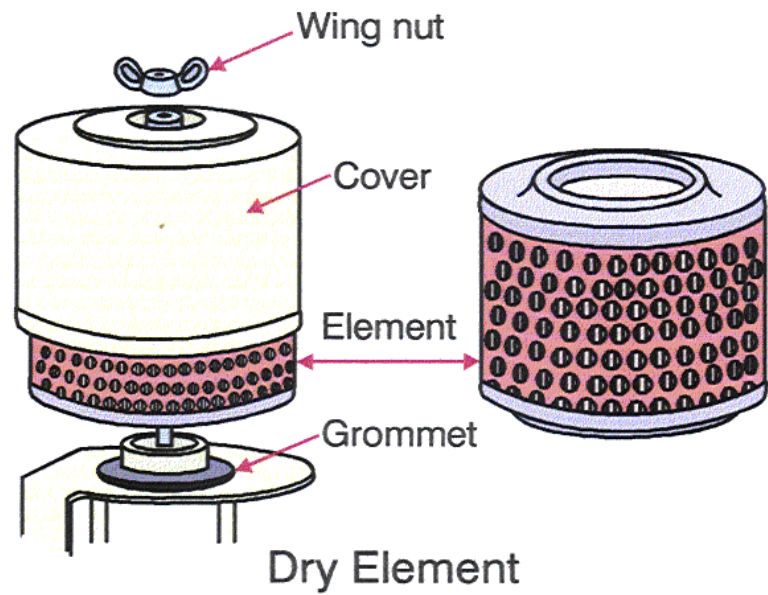
- ✦ Cleaning the engine
- ✦ Inspect and clean the exhaust system
 - ◆ **Degreaser** – solvent good for cleaning hard to reach places
- ✦ Inspect cooling system for obstructions

Servicing carburetor air cleaners



- ✦ **Oil-filter type air cleaner** – made of a sponge-like filtering material called polyurethane
- ✦ **Dry-filter type air cleaner** – consists of a porous filtering material made of paper or fiber

Types of air cleaners



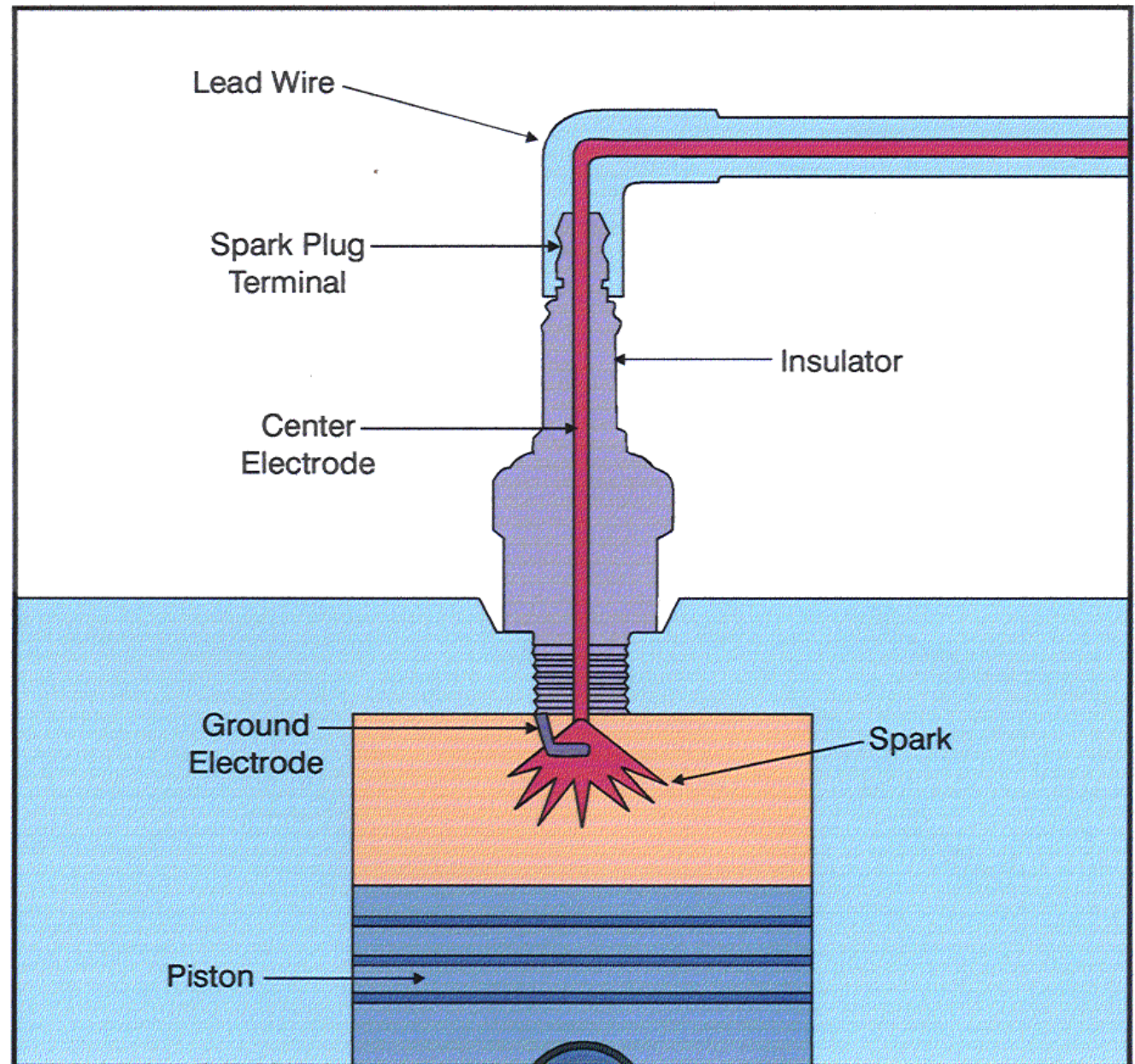
Lubricating small engines

- ✦ Engine oil is vital to engine life
 - ◆ **Blow-by** – gases under pressure that leak by the piston rings during combustion and the power stroke
- ✦ Four cylinder engines are lubricated from an oil reservoir
- ✦ Two-cycle engines are lubricated by specific types of oil in the fuel

Servicing spark plugs

- ✦ Anything that inhibits the flow of current through the spark plug and across the spark plug gap will affect the operation of the engine

Spark plug operation



Review/Summary

- ✦ Why are small engines so widely used?
- ✦ How are small engines classified?
- ✦ What are some of the common service jobs performed on small engines?