

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

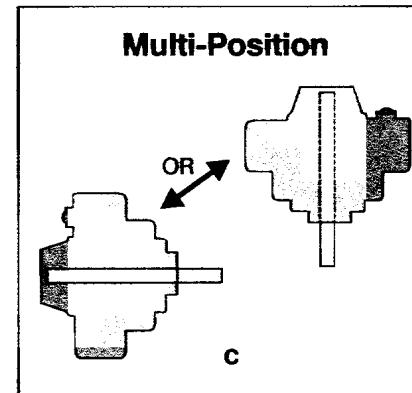
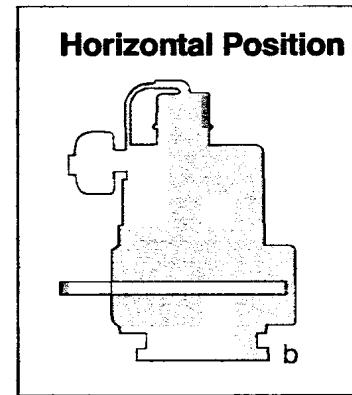
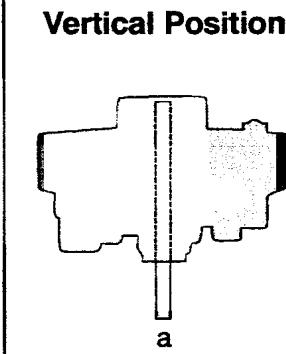
Classifying small engines

- ★ 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

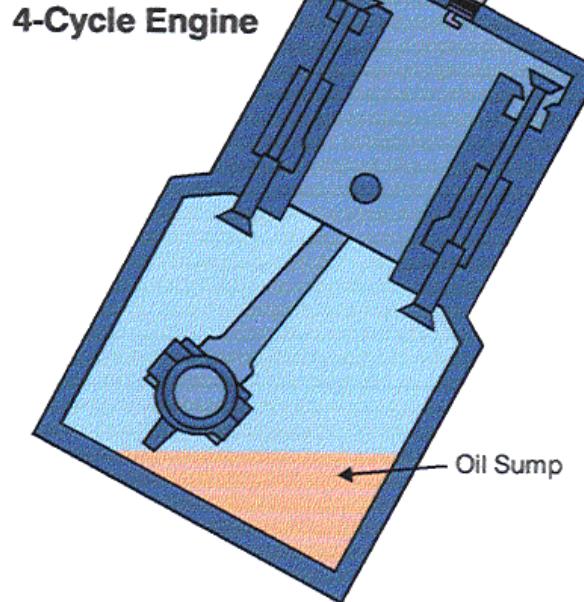
Crankshaft Positions



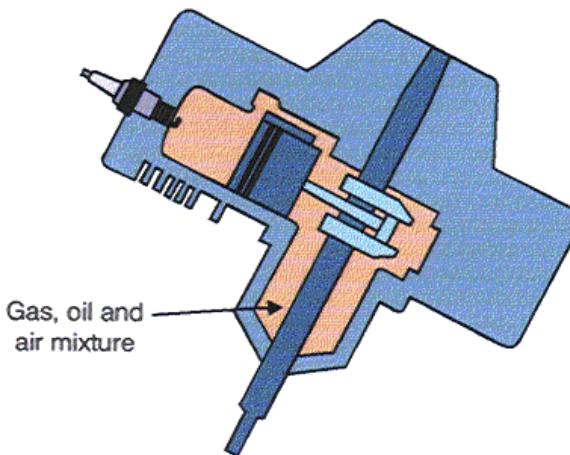
Number of power strokes

- ❖ 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

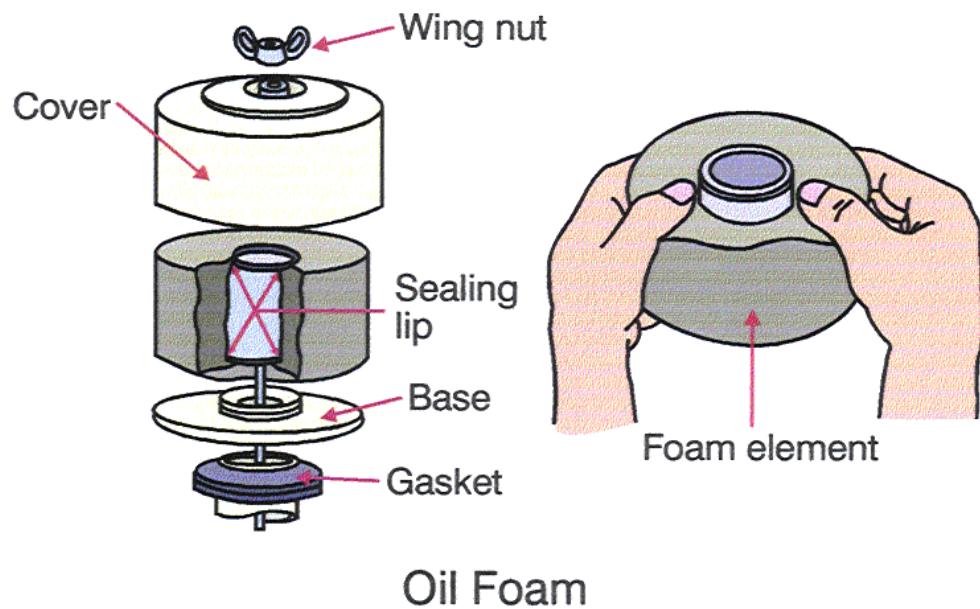
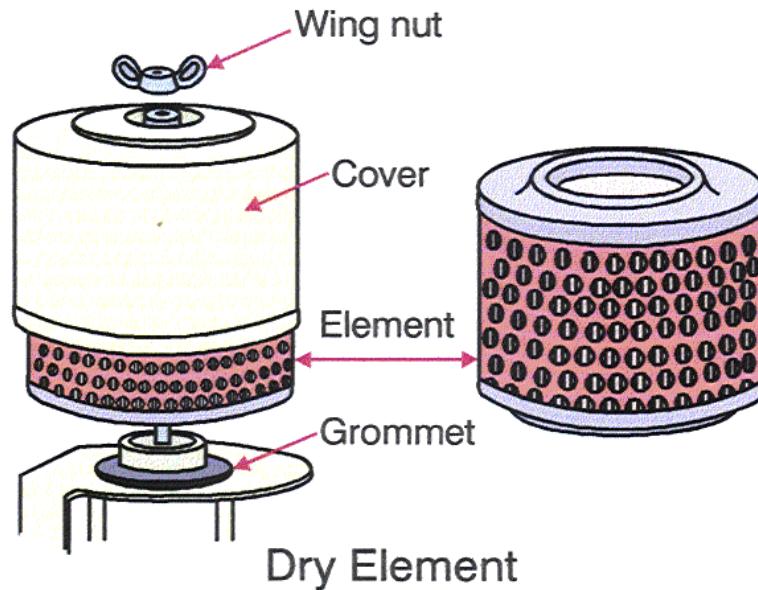
Common service jobs

- ★ 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



Oil Foam

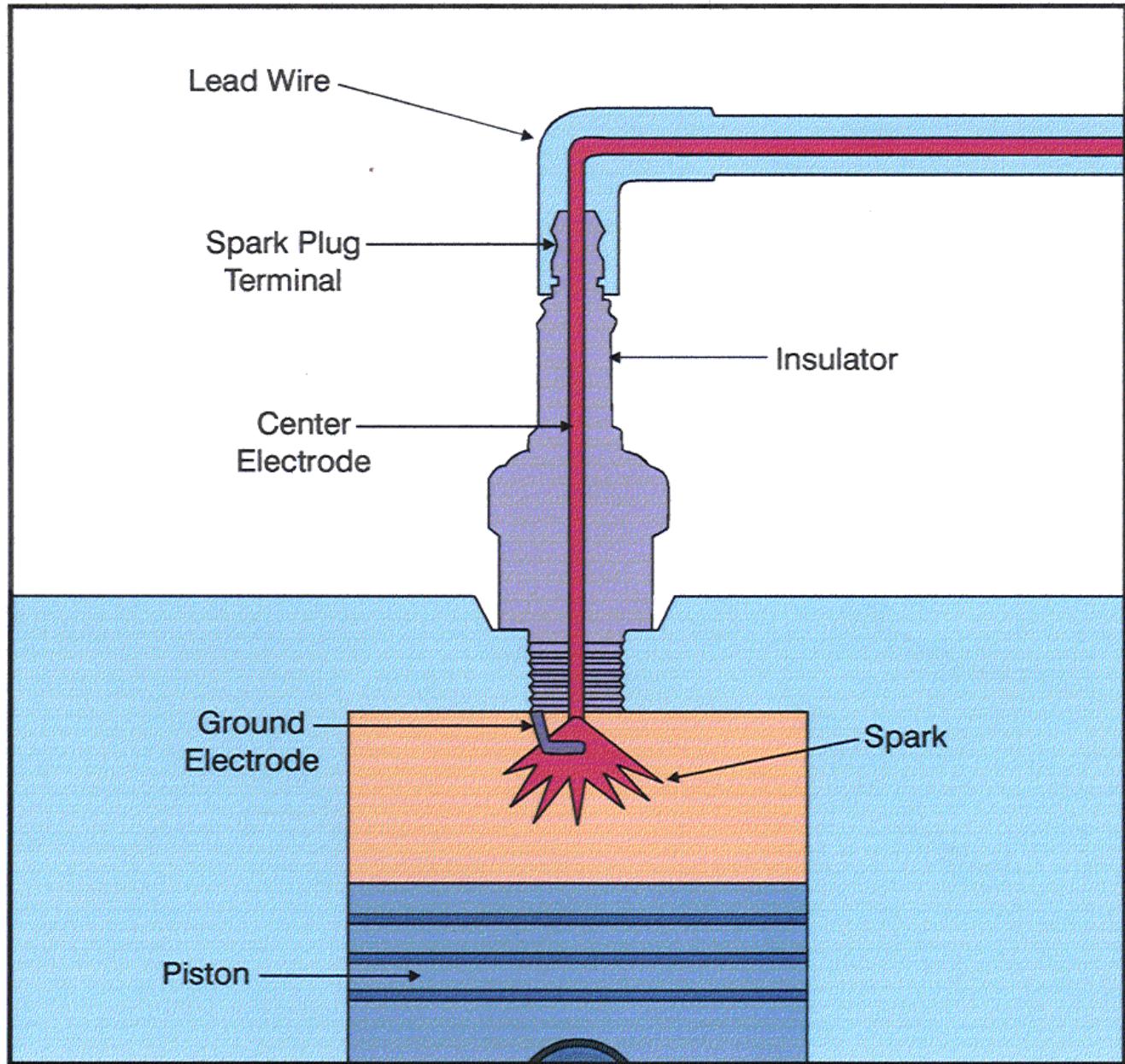
Lubricating small engines

- ★ 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?