

# Unit C: Agricultural Power Systems

---

## Lesson 3: Measuring Engine Components and Specifications

---

# Terms

---

- ✦ Compression gage
- ✦ Dial indicator
- ✦ Flat feeler gage
- ✦ Inside micrometer set
- ✦ Micrometer caliper
- ✦ Plastigage
- ✦ Round-wire gage
- ✦ Tachometers
- ✦ Telescoping gage
- ✦ Torque wrench



# Tools used in measuring engine components

---

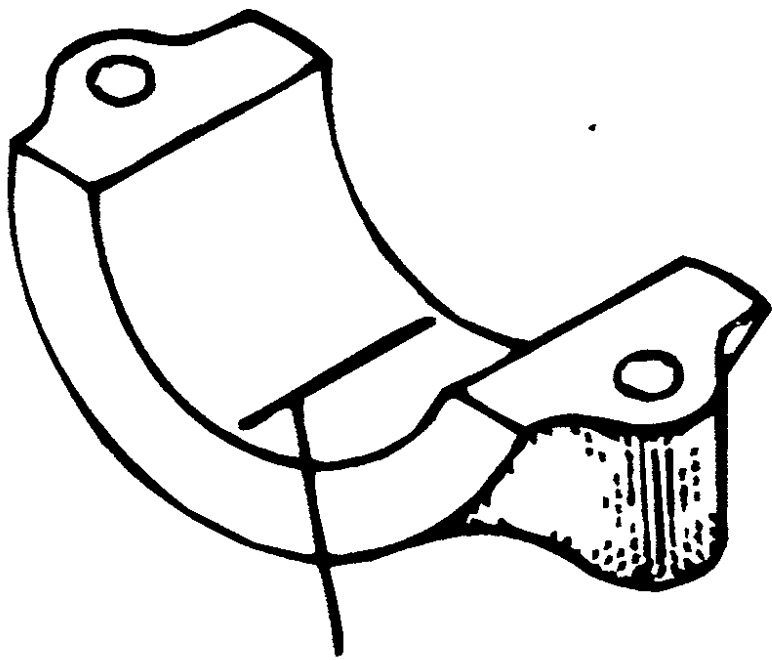
- ✦ **Micrometer caliper** – precision measuring tool for taking outside measurements.
- ✦ **Inside micrometer** – determines the inside of a cylinder
- ✦ **Flat feeler gage** – recognizes the spacing between two surfaces
- ✦ **Dial indicator** – recognizes the spacing between two surfaces and records readings of the dial needle

# Tools (continued)

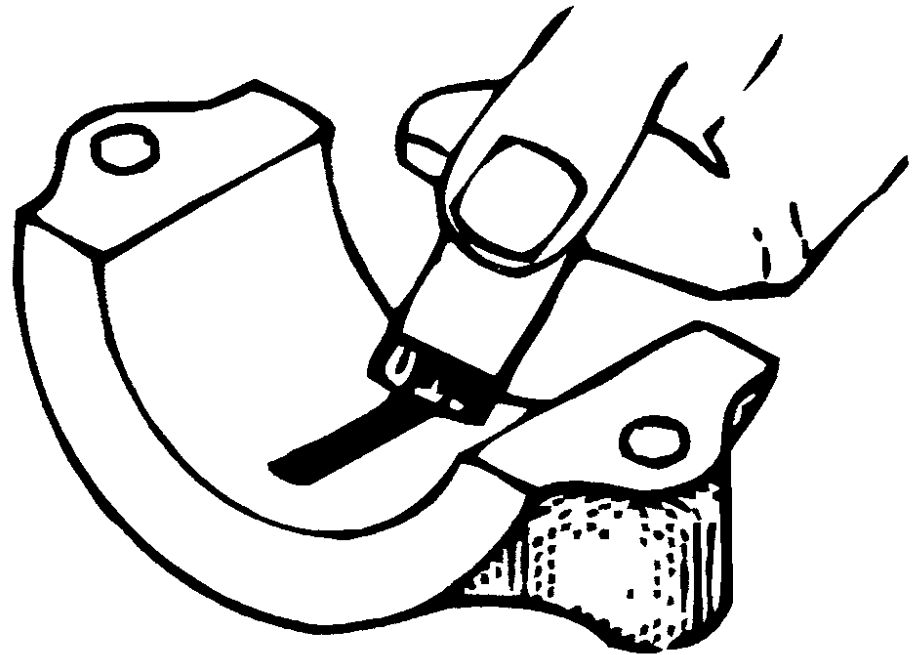
---

- ✦ **Round-wire gage** – used in measuring the electrode gap of spark plugs
- ✦ **Plastigage** – a thin, plastic, threadlike material used to measure the clearance between the bearing journal on a crankshaft and the bearing rod cap

# Plastigage



Plastigage



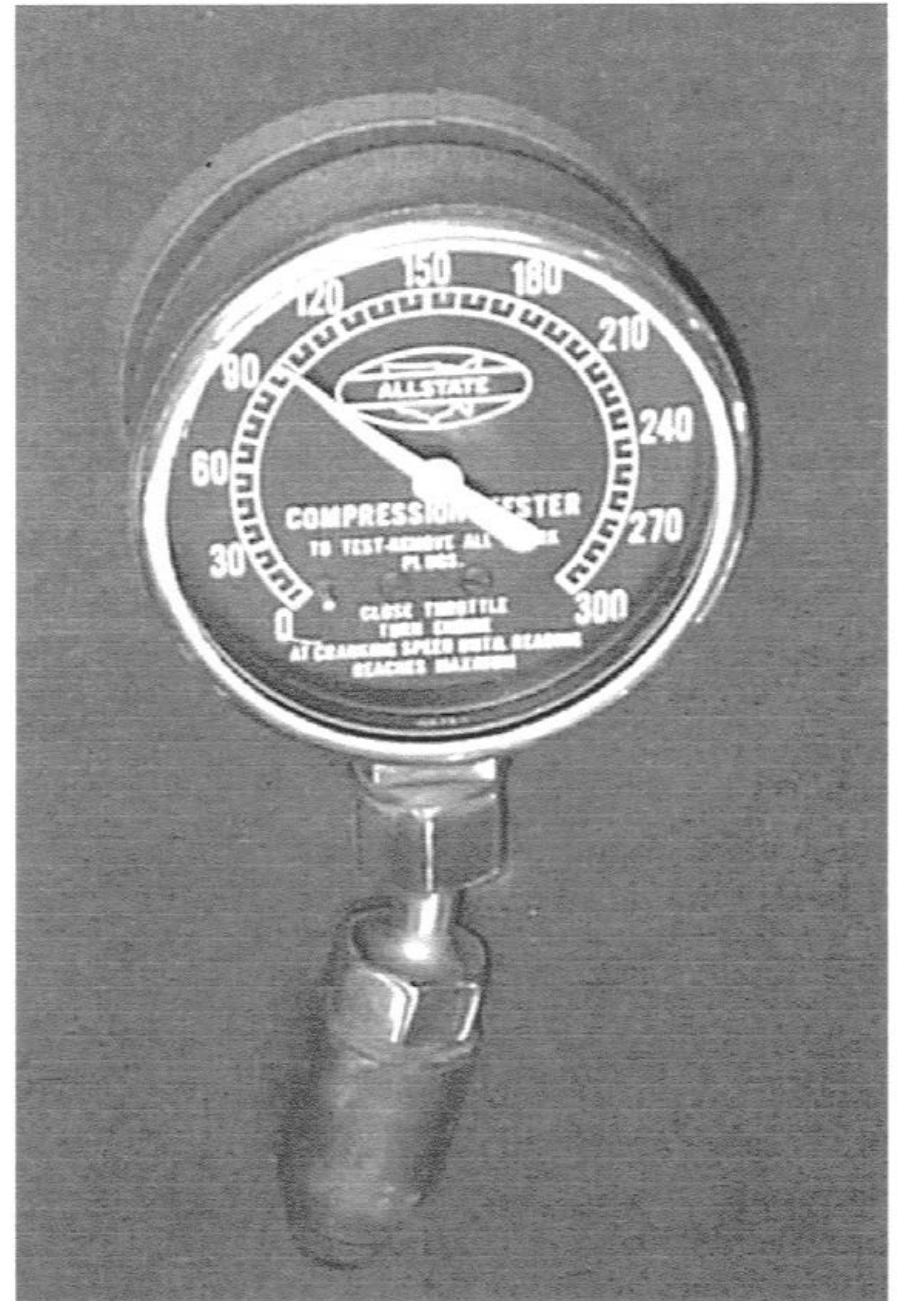


# Tools (continued)

---

- ✦ **Torque wrench** – the hand tool used for torque which bolts and nuts must be tightened to
- ✦ **Compression gage** – helps in determining if there is a problem with the cylinder, piston rings, valves, or gaskets. It measures compression pressure in kilopascals

# Compression Gage





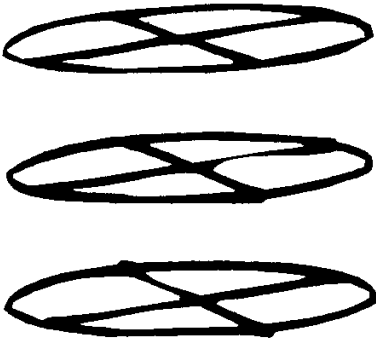
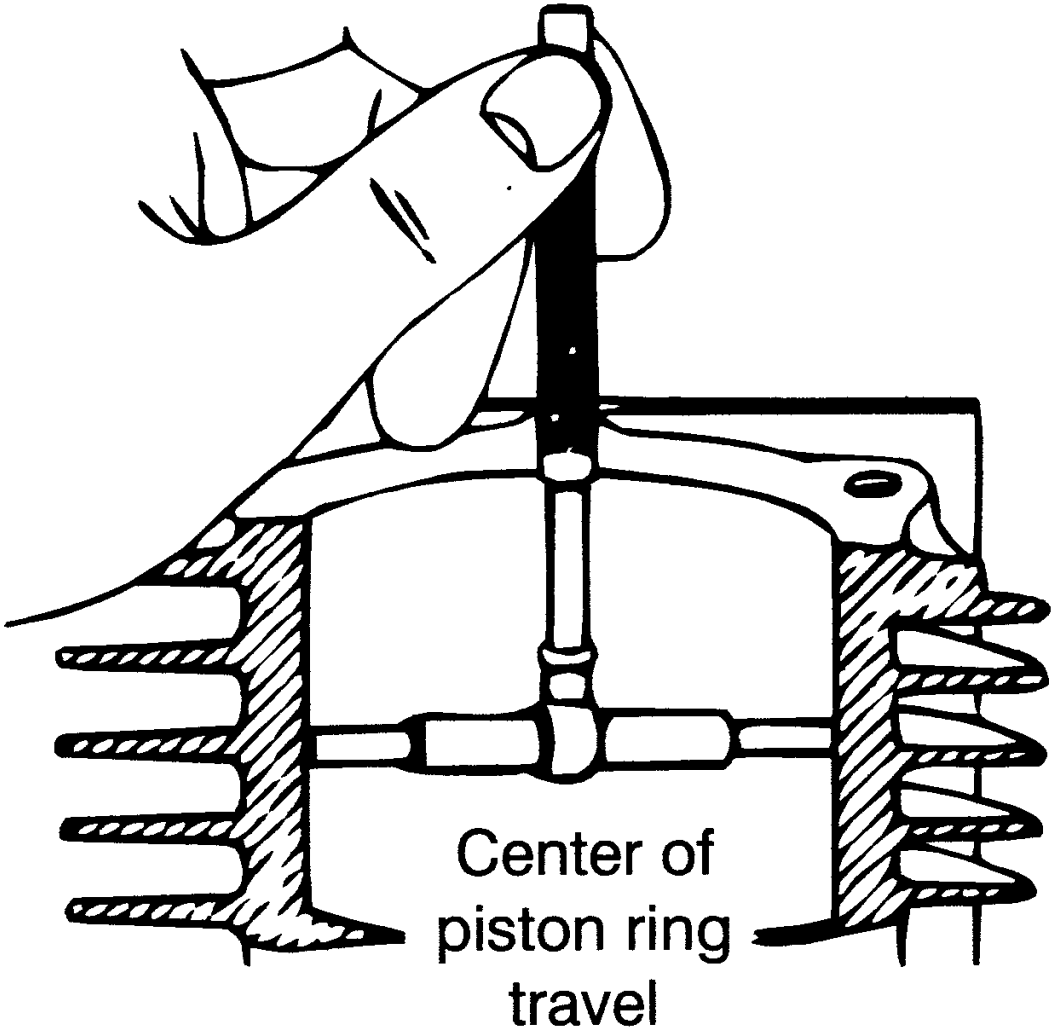
# Tools (continued)

---

- ✦ **Telescoping gage** – a tool used for measuring inside diameter
- ✦ **Tachometers** – used for reading revolutions per minute



# Telescoping Gage



Measure at six points

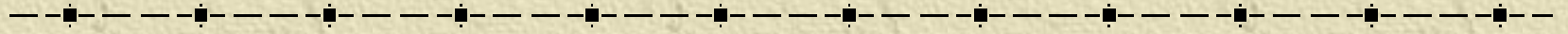
# Specifications of an internal combustion engine

---

✦ **Charts detail the exact specification to increase performance and prolong life**

- ✦ **Related to engine size and work requirements**
- ✦ **Clearances of the intake and exhaust valves**

# Four major specifications on small engines



- ✦ Fuel
- ✦ Oxygen
- ✦ Compression
- ✦ Ignition



# Fuel

- 
- ✦ Use the fuel recommended by the manufacturer
  - ✦ Guidelines for carburetor adjustments:
    - ✦ Turning valve clockwise creates leaner fuel mixture
    - ✦ Turning valve counter clockwise creates richer fuel mixture

# Oxygen

---

- ✦ Engines need to take in clean air in order for combustion to occur.
  - ✦ Air filters should be routinely checked and cleaned

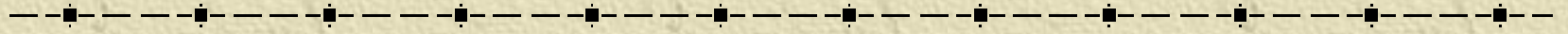
# Compression

---

- ✦ Not having compression indicates a serious problem in the engine
- ✦ Quick test method: pull the starter rope. If there is no resistance against the starter rope, the engine lacks compression



# Ignition



- ✦ Routinely check spark plugs
- ✦ Clean the electrodes with a wire brush
- ✦ If reinstalling spark plugs, the plug gap should be adjusted properly

# Setting the gap on a spark plug



*(Courtesy, Interstate Publishers, Inc.)*

# Review/Summary

---

- ✦ What are some of the instruments used for measuring internal combustion engines?
- ✦ What are the specifications of an internal combustion engine?
- ✦ What are four major specifications that are commonly checked on small engines?