

# Unit C: Agricultural Power Systems

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## Lesson 3: Measuring Engine Components and Specifications

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# Terms

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- ❖ 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

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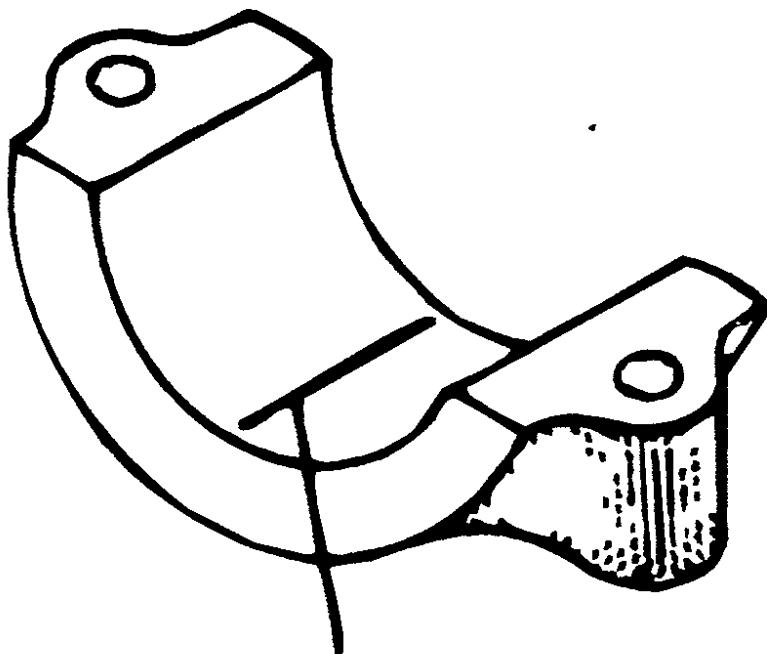
- ★ **Micrometer caliper** – precision measuring tool for taking outside measurements.
- ★ **Inside micrometer** – determines the inside of a cylinder
- ★ **Flat feeler gage** – recognizes the spacing between two surfaces
- ★ **Dial indicator** – recognizes the spacing between two surfaces and records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

# Tools (continued)

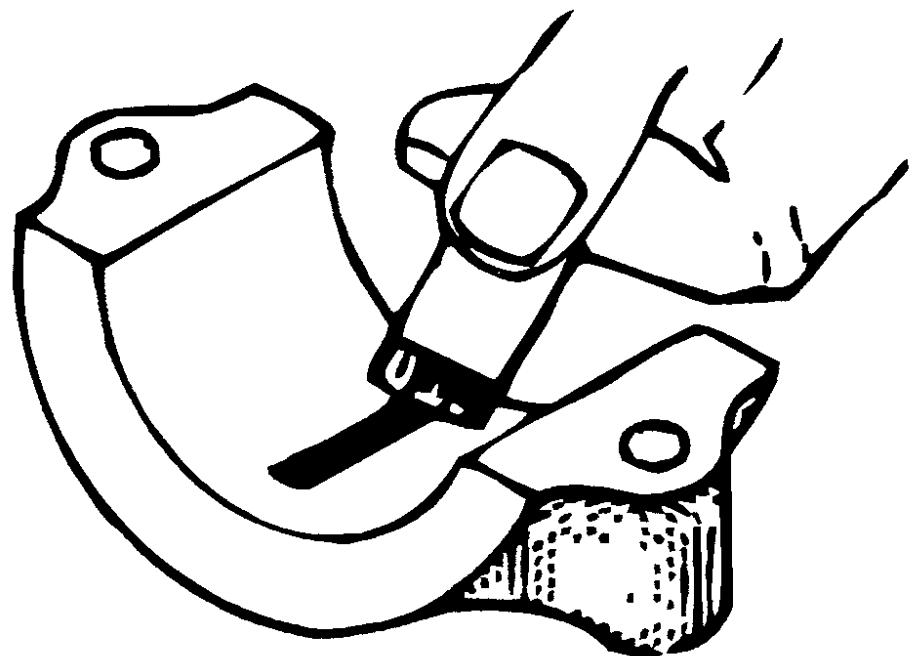
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- ❖ **Round-wire gage** – used in measuring the electrode gap of spark plugs
- ❖ **Plastigage** – a thin, plastic, threadlike material used to measure the clearance between the bearing journal on a crankshaft and the bearing rod cap

# Plastigage



Plastigage

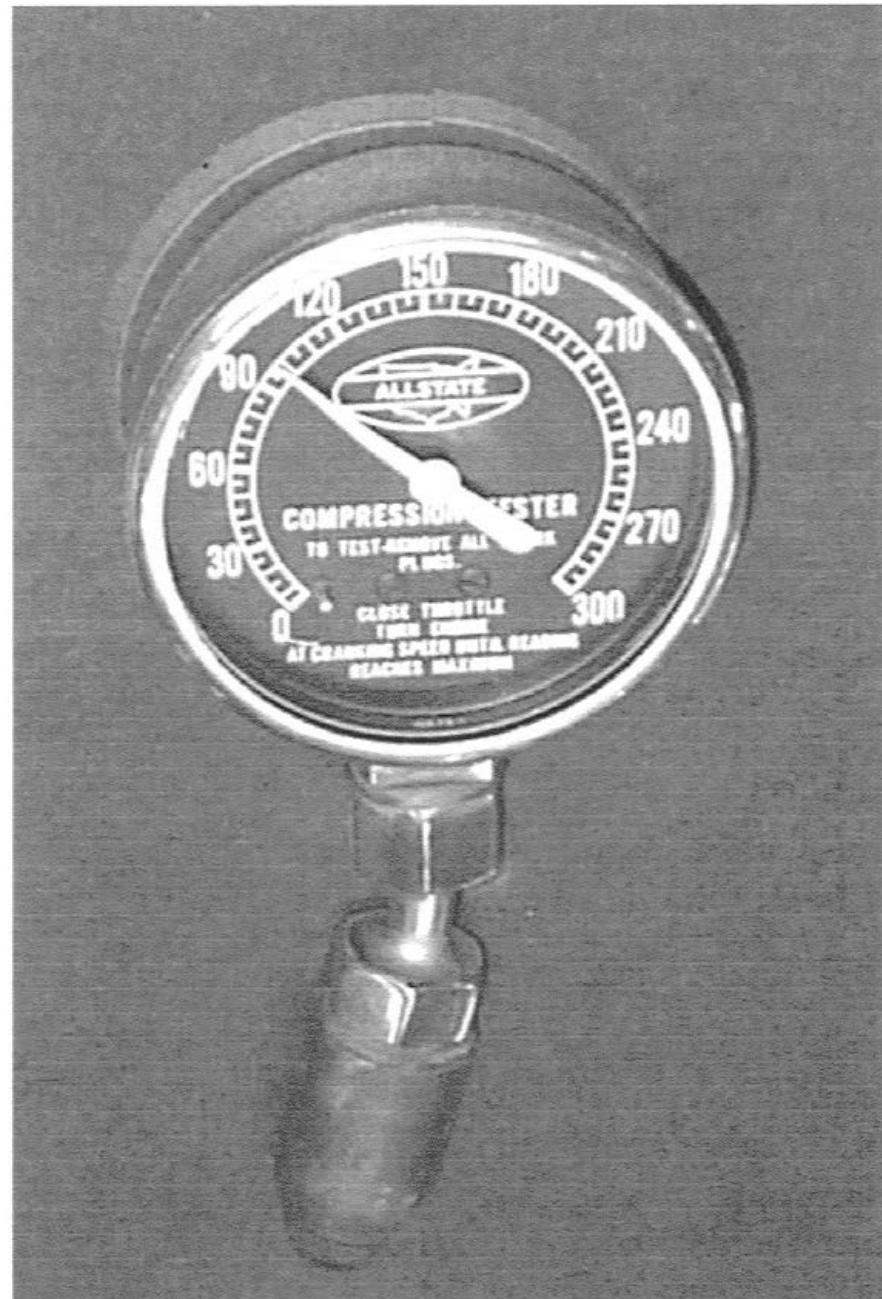


# Tools (continued)

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- ❖ **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

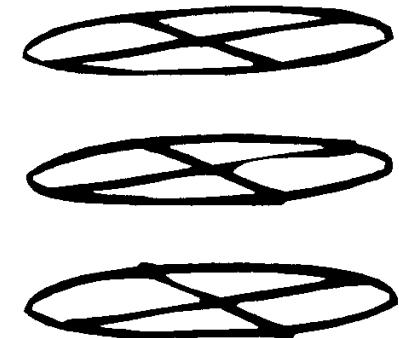
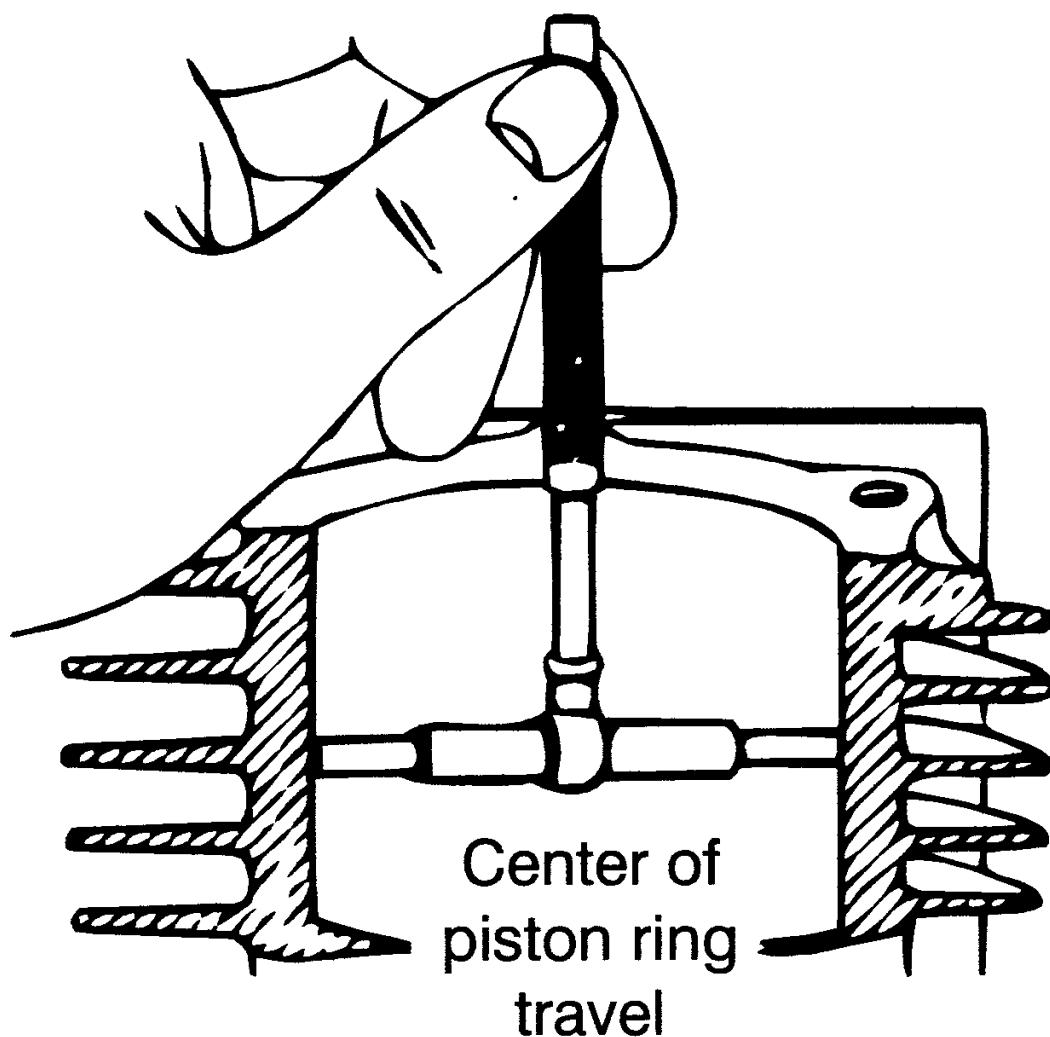


# Tools (continued)

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- ❖ **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

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- ❖ 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

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- ❖ Fuel
- ❖ Oxygen
- ❖ Compression
- ❖ Ignition

# Fuel

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- ★ 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

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

# Compression

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- ✳ 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

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- ★ 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

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- ❖ 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?