Modern Automotive Technology
Chapter 49

Engine Removal, Disassembly, and Parts Cleaning
Learning Objectives

- Determine if engine removal is necessary for repairs
- List precautions for removing an engine
- Describe general safety rules when removing an engine
- List various methods for cleaning an engine
- Describe safety rules when cleaning parts
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1. The RIDGE REAMING TOOL is needed to cut out and remove the lip at the top of a worn cylinder caused by piston wear.

2. A COLD SOAK TANK is a cleaning machine for removing oil and grease from parts.
Cylinder Inspection

Inspect for wear, indicated by a ridge or lip at the top of the cylinder.
A ridge reamer cuts off the lip
Cold Soak Tank

Wear eye protection, gloves, and a respirator
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3. Using an ORGANIZING TRAY is a board with holes in it for push rods, valves, and lifters, and is usefully for keeping engine parts together during disassembly.

4. AIR DRYING is normally the last method of cleaning parts, it uses pressure from the compressor to remove dirt, solvent, water, etc.
Although an indispensable tool, NEVER blow compressed air directly onto skin or towards a person; eye injuries, health issues or death can result!
5. An engine that is BOLIED is cleaned in strong chemicals to remove mineral deposits in water jackets

6. A MUSHROOMED VALVE STEM tip is enlarged and smashed outward by rocker arm action
If the engine is old, pry out the block and head core (freeze) plugs

Block and cylinder heads may be boiled out to remove mineral deposits from water jackets

If cylinders are excessively worn, the block may be sent to a machine shop for boring and cleaning
With the valve springs compressed, keepers can be removed.
Grinding the Valve Tip

Remove only enough to smooth the tip
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7. A **HOT TANK** is a cleaning machine that is filled with strong, corrosive chemicals that dissolve grease, grime and carbon from engine and other automotive parts.

8. A **RING GROOVE CLEANER** is used to remove carbon, it is a special cleaning tool commonly used during piston service.
Hot Tank

Clean only cast iron and steel parts
Piston Inspection

Cap and rod markings should match cylinder number

Piston arrow should point to front of engine

Rod and cap numbers
Piston Grooves

Remove carbon build-up from piston ring grooves with a ring groove cleaner.

Oil Rings (typically made up of 3 individual pieces)
Ring Groove Cleaner

Ring groove cleaner—used to scrape carbon from piston ring grooves
9. A VALVE SPRING COMPRESSOR is a tool that fits on the valve head on one end and valve spring retainer on the other end.

10. A POWER BRUSH is driven by air or electric drill to remove hard carbon deposits.
Cylinder Head Disassembly
Power Cleaning Tools

Scuff pads are hard plastic cleaning wheels mount in a drill—use on aluminum or plastic engine parts
OHC Valve Spring Compressor

- Tool on unmachined surface
- Overhead cam
- Special valve spring compressor
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