

Modern Automotive Technology Chapter 48



Engine Mechanical Problems

North Montco
Technical Career Center

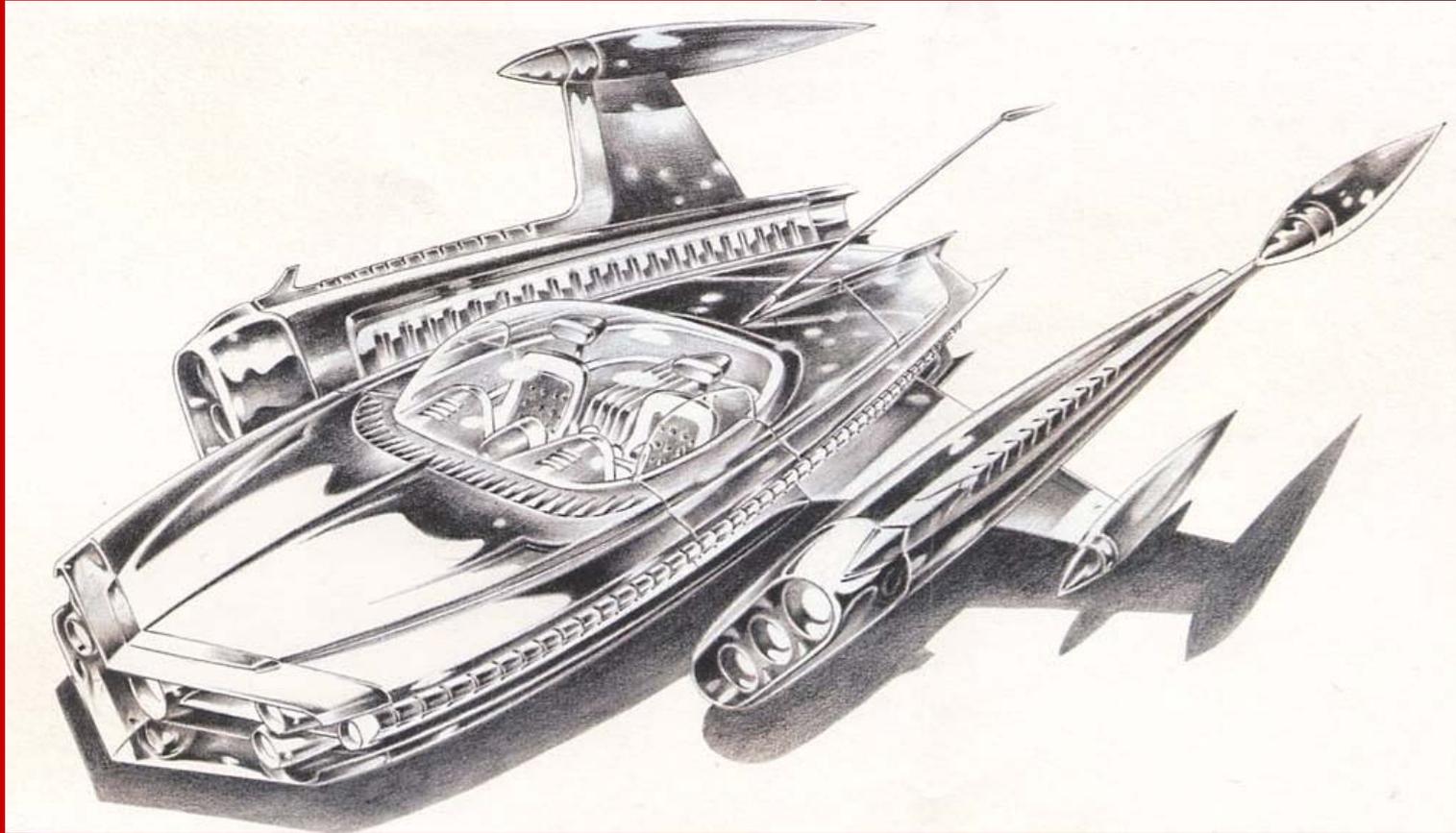
Chapter 48

Learning Objectives

- Explain why proper diagnosis is important to engine repair
- List common engine mechanical problems
- Discuss how to find abnormal engine noises
- Summarize the common causes of engine mechanical problems

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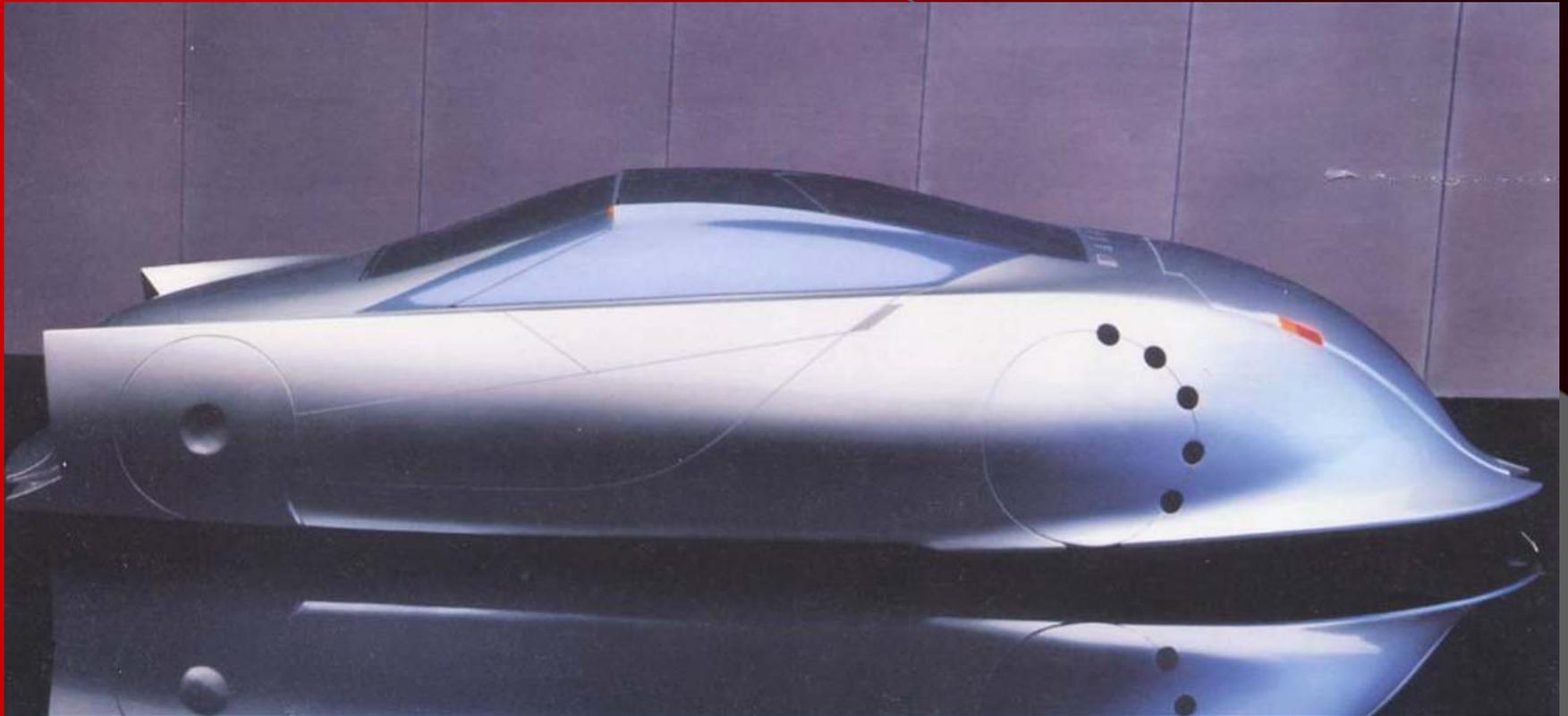
Engine Mechanical Problems



What does this concept car have in common with every car on the road today?

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Engine Mechanical Problems



Sooner or later, the engine will have some kind of mechanical failure!

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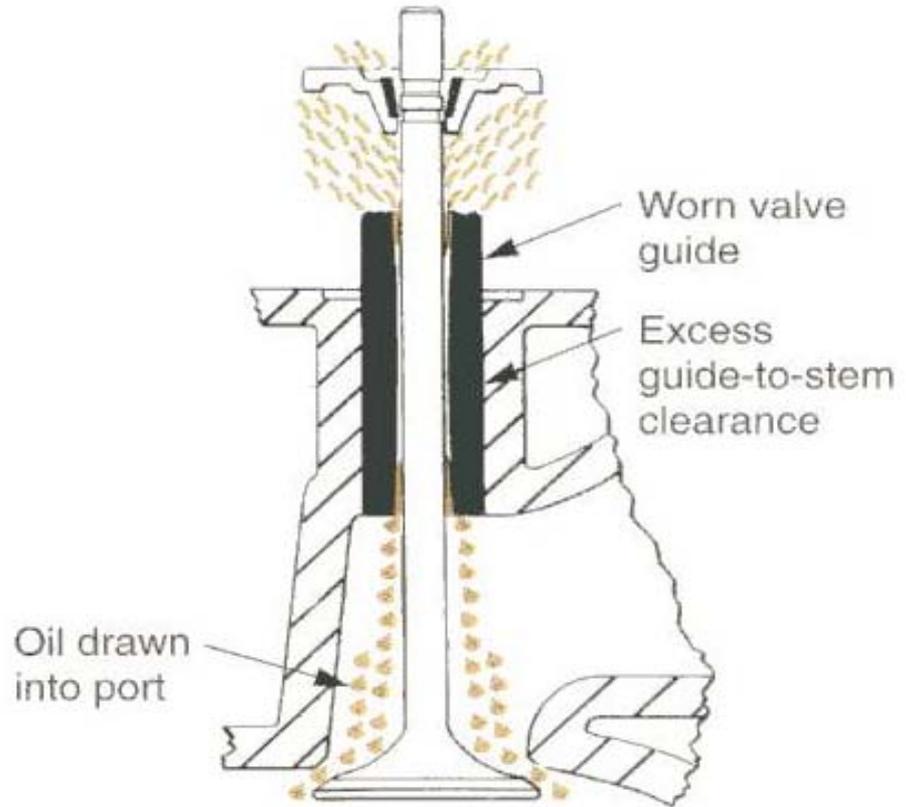
Engine Mechanical Problems

1. **BLUE-GRAY SMOKE** coming from the exhaust indicates motor oil is entering combustion chambers.
2. A **WET COMPRESSION TEST** should be done if cylinder pressure (compression) reads below specs.

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Engine Mechanical Problems

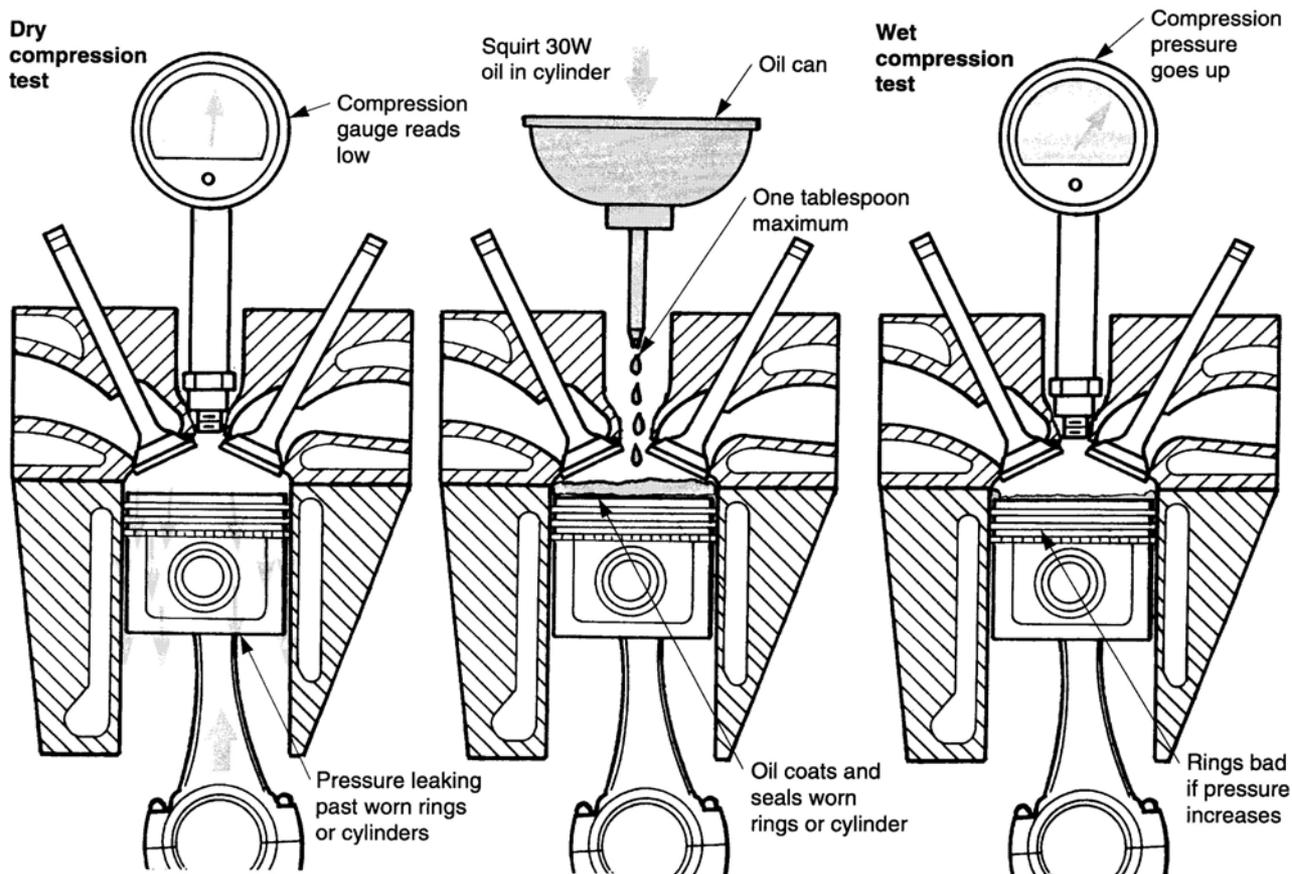
Worn Valve Guides



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Engine Mechanical Problems

Dry and Wet Compression Tests

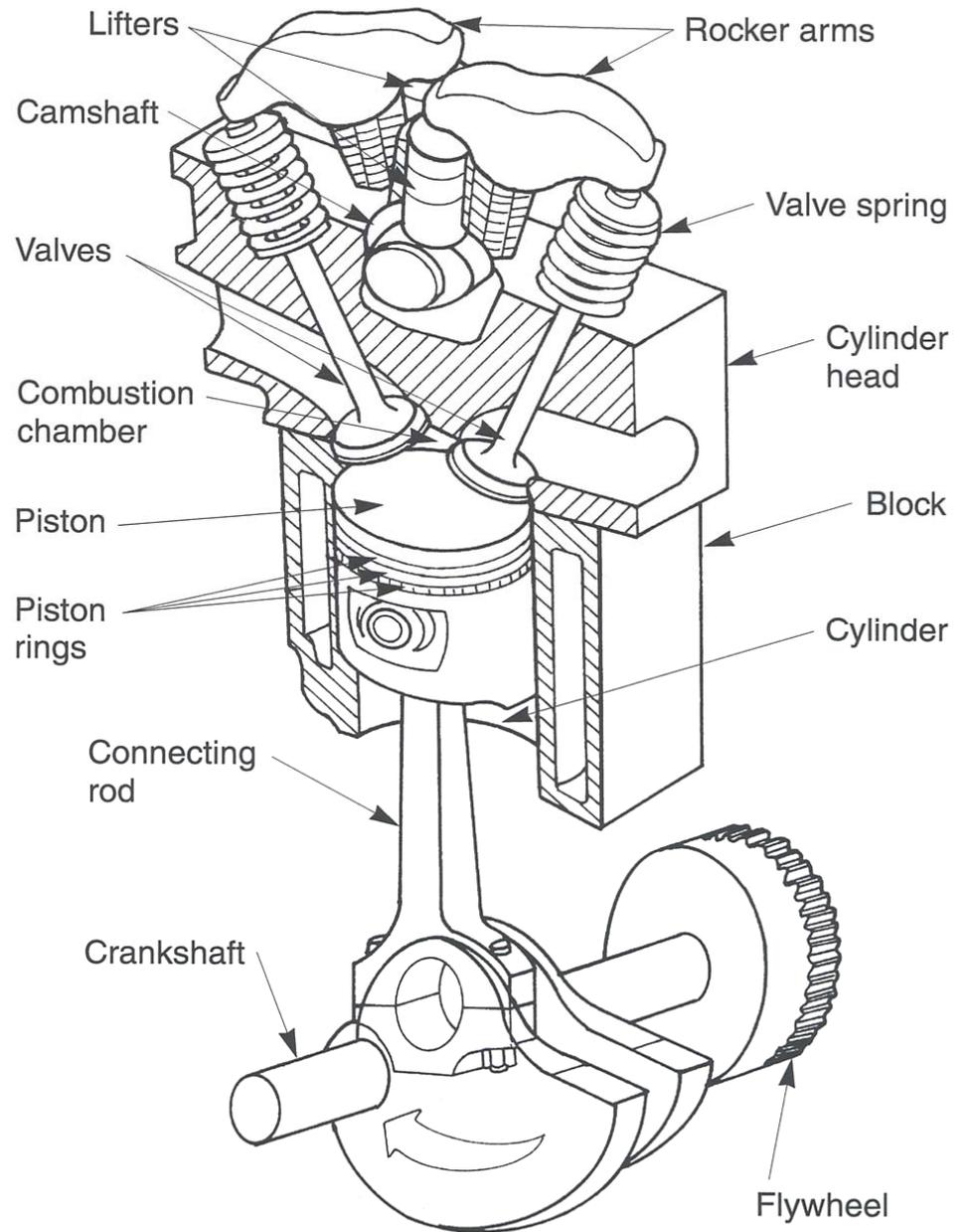


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3. DIESEL ENGINE COMPRESSION READINGS will average approximately 275 to 400 psi.
4. COOLANT IN THE OIL is caused by a mechanical problem that allows engine coolant to leak into the engine crankcase.

Engine Mechanical Components

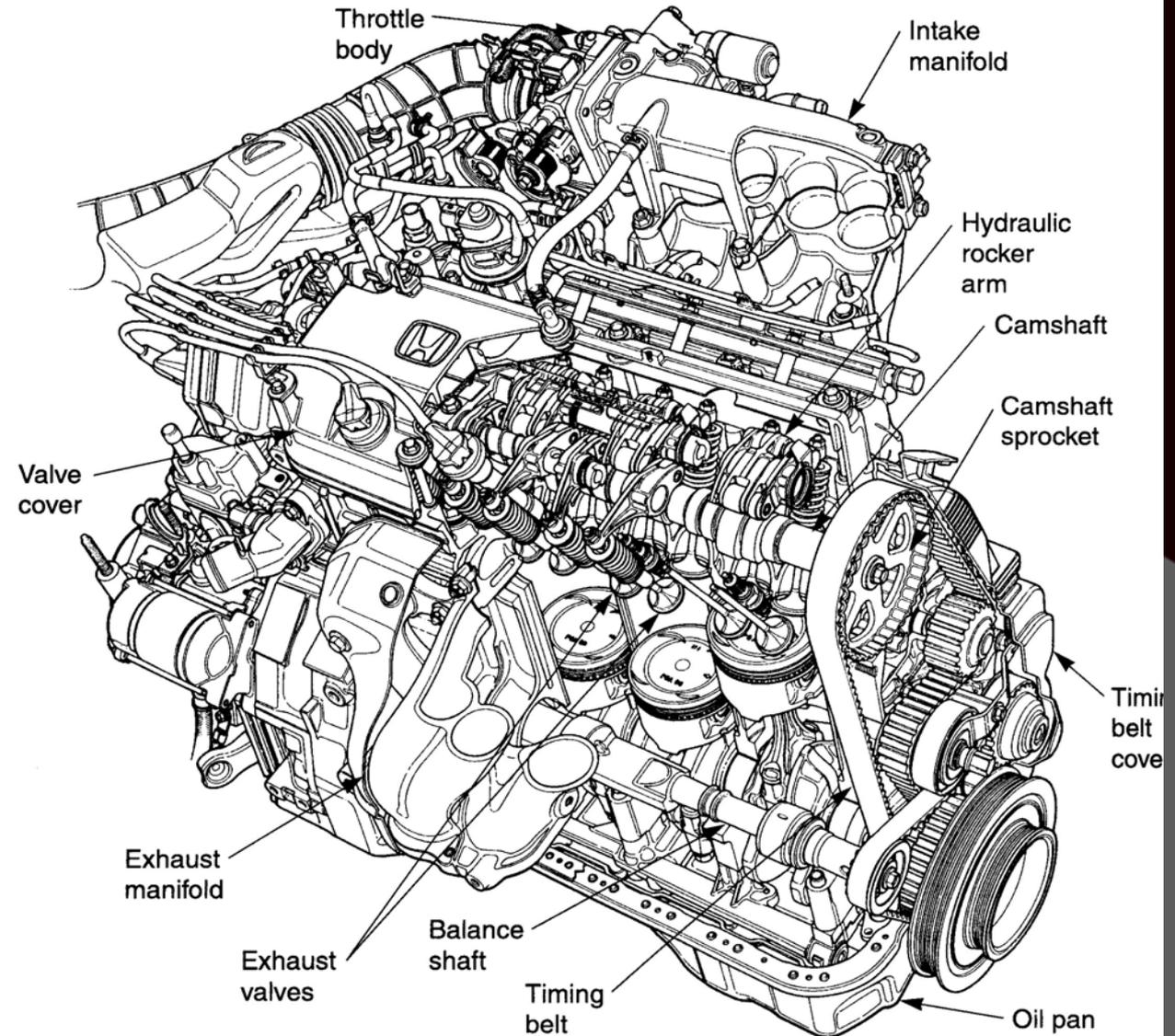


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Engine Mechanical Problems

5. **WHITE SMOKE** from the exhaust may be due to internal coolant leak into cylinder combustion chambers.
6. A **BURNED PISTON** is often the result of pre-ignition or detonation damage.

Single Overhead Cam Engine



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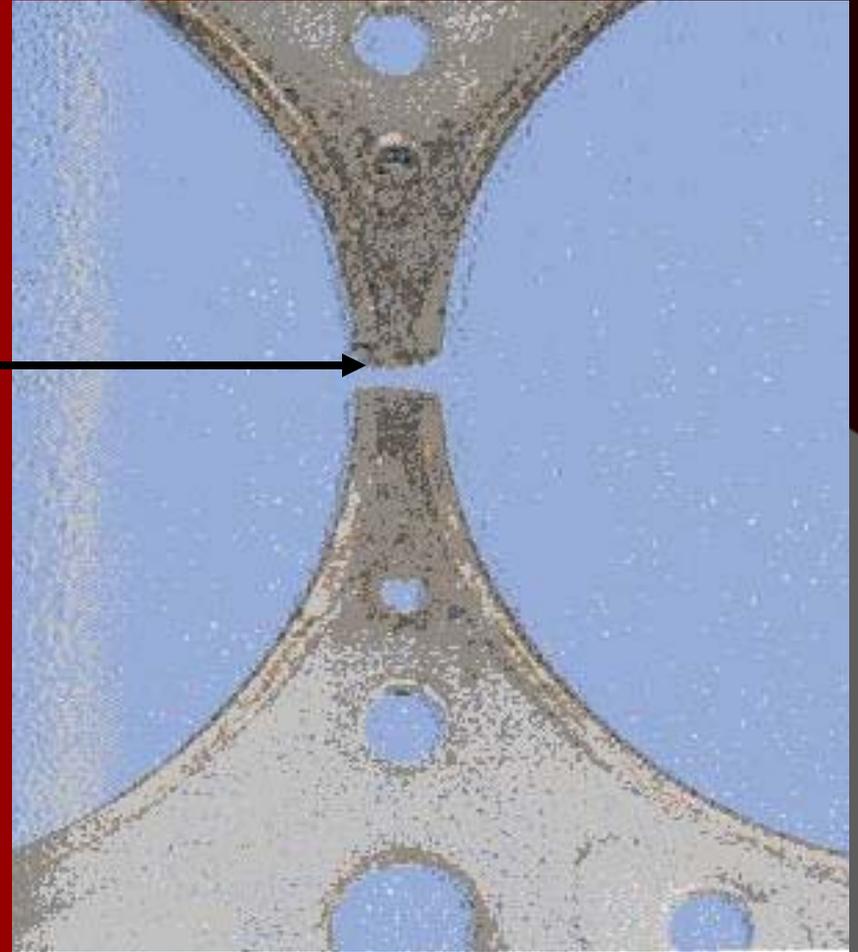
Engine Mechanical Problems

7. **BLACK SMOKE** from the exhaust is usually caused by extremely rich air-fuel mixture, **not** an engine mechanical problem.
8. A **GASOLINE ENGINE COMPRESSION READINGS** should run around 125 to 175 psi.

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A Blown
Head Gasket



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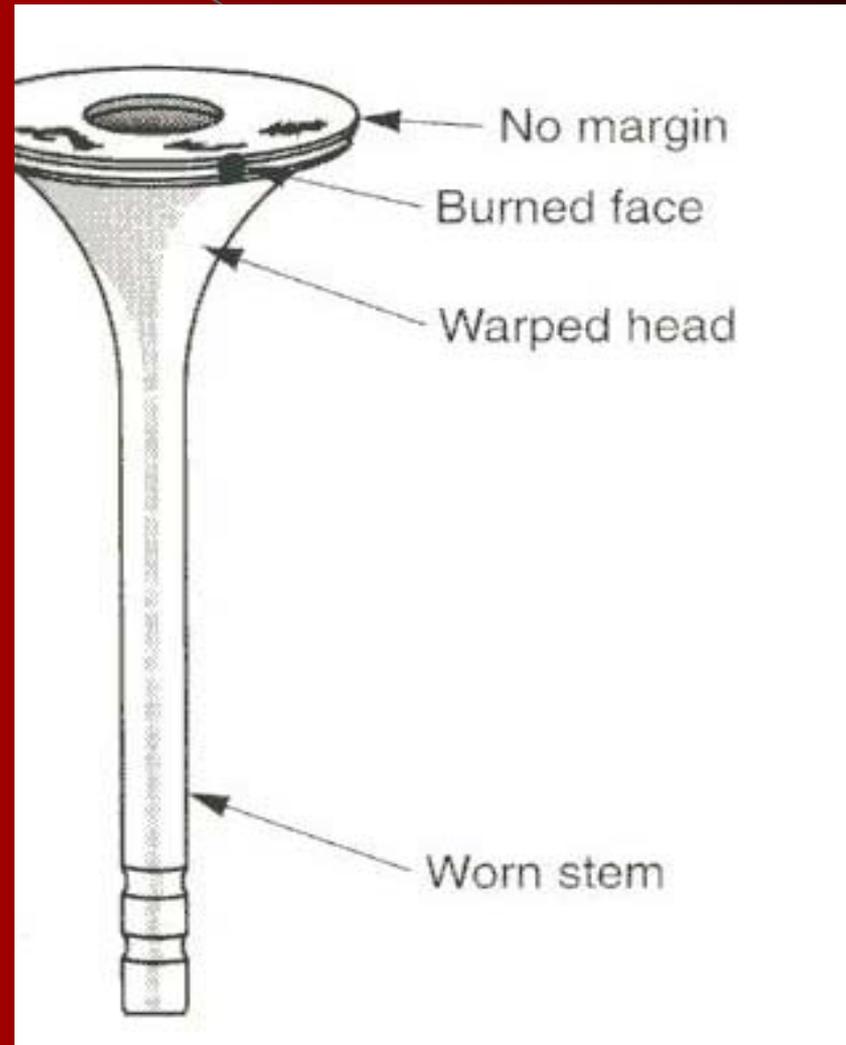
Engine Mechanical Problems

9. A **BURNED VALVE** results when the heat from combustion blows away a small portion of the valve face.
10. **ENGINE BLOW-BY** occurs when combustion pressure blows past the piston rings into the lower block and oil pan areas of the engine.

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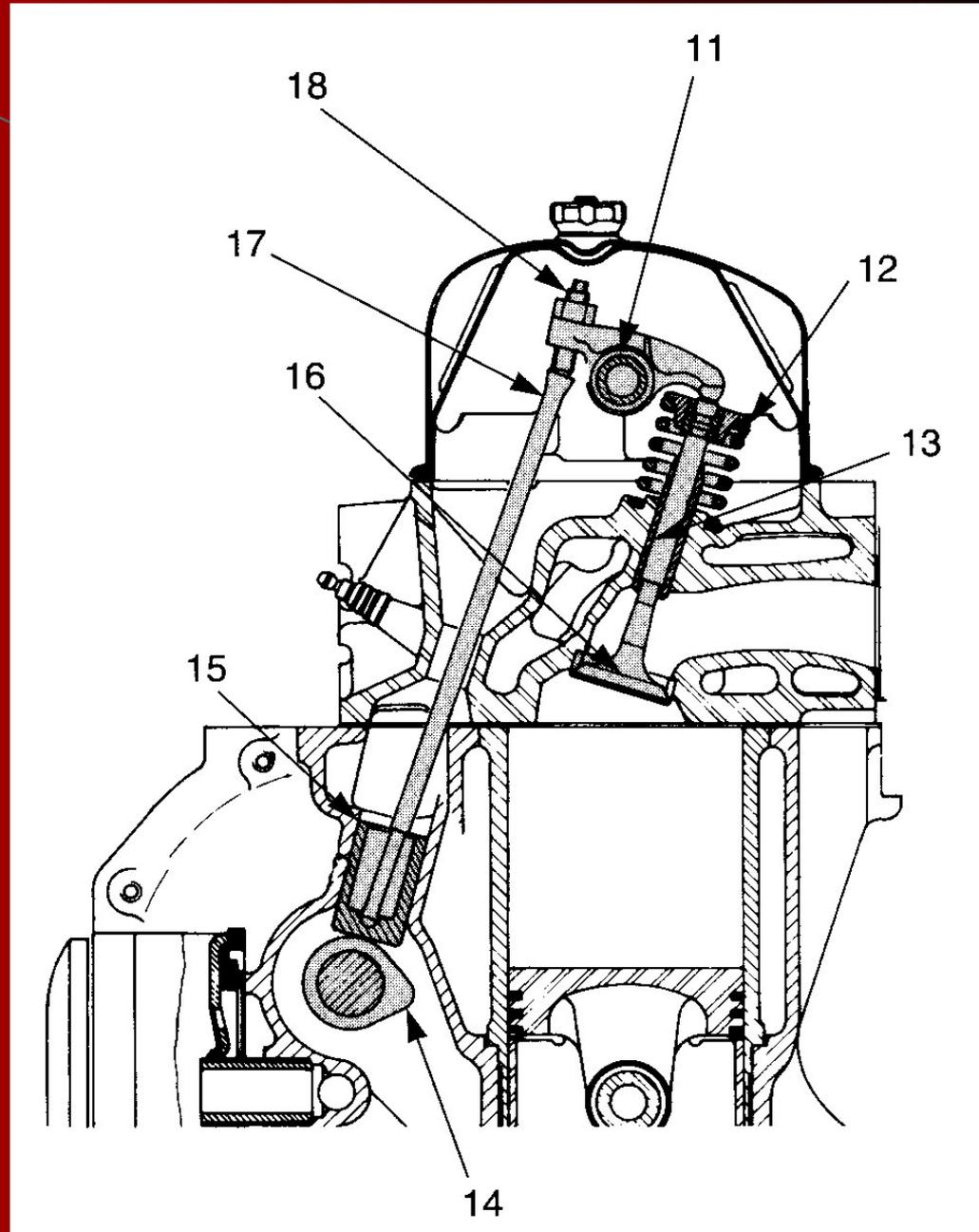
Engine Mechanical Problems

A Burned Valve



Engine Mechanical Problems

- 11. Worn rocker or shaft
- 12. Broken valve spring
- 13. Valve guide wear
- 14. Worn cam lobe
- 15. Worn lifter
- 16. Burned valve or seat
- 17. Worn push rod
- 18. Incorrect valve lash adjustment



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