

Checking Engine Compression

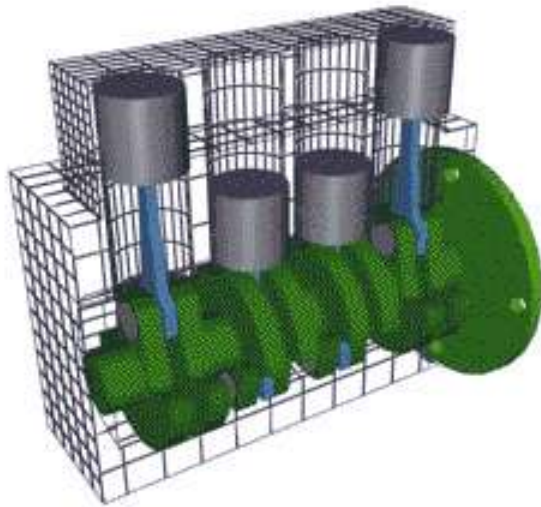
Lab # 4



Checking Engine Compression

- As we learned earlier in the course four stroke gasoline engines develop compression during the compression stroke.
- As the piston travels from bottom dead center upwards toward top dead center both intake and exhaust valves are closed.
- The fuel-air mixture gets compressed to approximately $1/6$ of its original volume.

Checking Engine Compression



- Also as we learned earlier pistons are manufactured slightly smaller in diameter than the bore of the particular engine and then rings are installed to maintain proper compression.

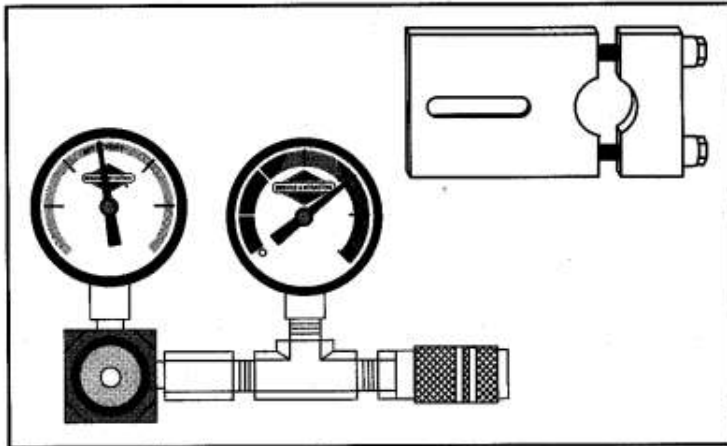
Checking Engine Compression

- Good engine compression is very important for good engine economy. The higher the compression ratio the higher the power an engine can develop.
- A higher compression ratio means a higher initial pressure at the end of the compression stroke, so as the power stroke starts higher combustion pressures will be attained.
- The burning gasses will expand to a greater volume when an engine has good compression this translates to a greater push on the piston in the power stroke.

Checking Engine Compression

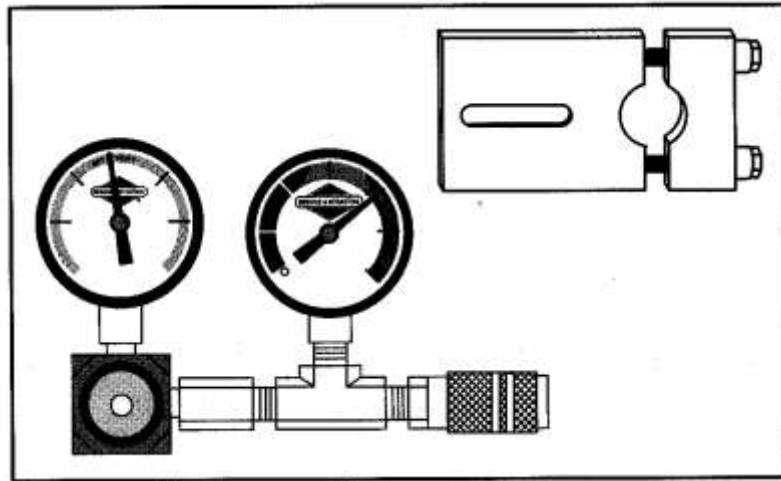
- Engines can lose compression in many ways;
 - worn, damaged, or improperly seating valves
 - loose or improperly seating spark plug
 - worn or broken cylinder head gasket
 - out of round cylinder
 - worn, or broken piston rings
 - out of round piston
 - damaged cylinder head
 - damaged cylinder

Checking Engine Compression



- We can check an engines compression in a couple of ways;
- The first and most accurate method is to use a **leakdown tester**. This is a specialty tool manufactured by engine makers. This device tests an engine sealing capabilities using compressed air.

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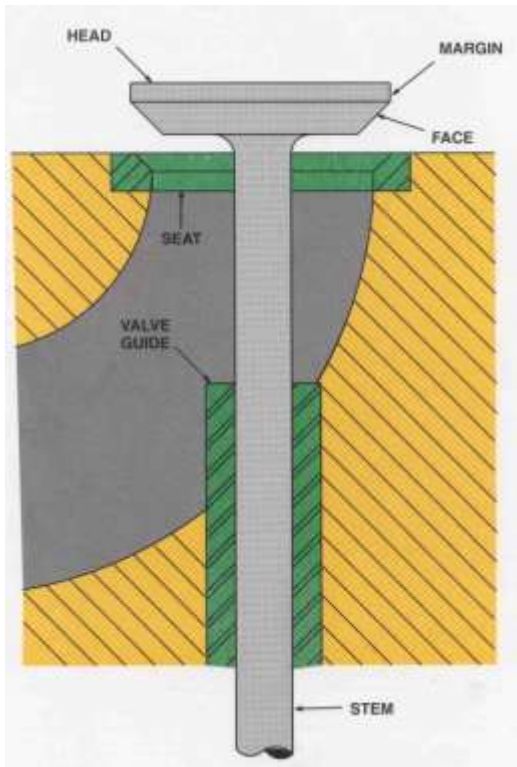


- Basically you insert the device in place of your engines spark plug, fill the cylinder with compressed air and the leakdown tester measures any air leaks.

Checking Engine Compression

- If you do not have this tester or access to compressed air use the following method;
 - slowly pull the engine through the compression stroke
 - If the engine spins very easily, then there is very little compression.
 - listen for unusual squeaks, squeals, scraping, or knocking sounds (these could mean worn bearings, scored cylinder walls or pistons, or broken rings or other parts.
 - engines with good compression will resist the pull of the rope. Another sign of good compression is a sucking sound when the engine is spun fast.

Checking Engine Compression



- In lab number four we are going to begin our examination of the compression system by looking at the valves.
- You will examine the various valve retaining methods, and perform some basic valve measurements

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