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Author & Automotive Expert James D. Halderman

What's new with Jim?

Where's Jim?

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Due to the Coronavirus, all events have been canceled and I have no travel plans planned for the rest of the year.

Goodbye 2020 and we all hope that 2021 will be a much better year.

Two updates:

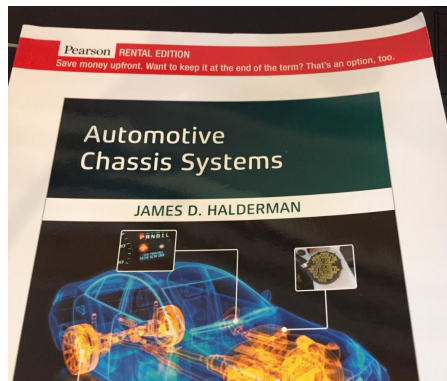
1. My team has been working hard to help instructors using online course materials including:

- Four new quizzes for each chapter (with answers) (2 multiple choice, 1 short answer, and 1 matching).
- Two puzzles for each chapter that can be used as a quiz to help students learn the key terms (word search and cross word).
- Animations
- Videos
- Case studies
- Plus, much more.

2. New textbook systems books ordering information. Here is what Pearson is doing to reduce the costs to the students:

- Rental copy with the option for the student to purchase it at the end of the rental period.
- eBook streaming to the student

The result is a much lower cost to the student.



Keep up with me at:

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Puzzle of the month

Find this month's puzzle of the month at this [link](#) and test your students knowledge on Exhaust systems.

Intake And Exhaust Systems
Chapter 20

ACROSS

3 The _____ catches the large bolts of high-pressure exhaust gases from the cylinder, directing out the pressure and allowing them to be released at an even and constant rate.

6 An upper manifold, usually called the _____, surrounds the lower manifold and includes the high-pressure manifold that provides the air that fills the engine's intake manifold.

8 The air filter is made of a chemically treated paper and is commonly _____ in the filter.

12 The size and shape of the _____ engine intake manifold can be optimized because the air that flows through the manifold is _____.

13 The intake manifold is supported _____ with brackets, called _____, which help to locate the manifold relative to the rest of the vehicle.

14 _____ are used on reciprocating engines with turbo or turbocharger exhaust manifolds.

15 Just as fuel lines are used to deliver fuel to the engine, _____ is used to deliver compressed air to the air _____.

DOWN

1 A resonance tube is often called a _____.

2 Some air filter _____ are made of pleated paper.

3 Some air filter _____ are made of pleated paper.

4 _____ are used to locate the manifold relative to the rest of the vehicle.

5 _____ are used on reciprocating engines with turbo or turbocharger exhaust manifolds.

6 An upper manifold, usually called the _____, surrounds the lower manifold and includes the high-pressure manifold that provides the air that fills the engine's intake manifold.

7 To reduce the emission of NOx, engines have been equipped with _____.

8 _____ fuel injectors spray fuel directly into the combustion chamber.

9 _____ fuel injectors spray fuel into the intake manifold.

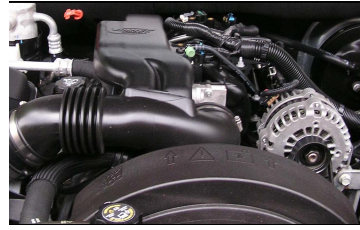
10 The _____ is a tube that carries exhaust gases to the exhaust gas collector before it enters the EGR valve.

11 The _____ is also called an _____.

Auto Trivia

Which vehicle manufacturer produced the “Vortec” engine family?

- a. General Motors
- b. Ford
- c. Toyota
- d. Honda



**Answer at the bottom*

FAQ

Where is the EGR valve?

Most newer vehicles that are equipped with variable valve timing (VVT) use the valve overlap to keep some exhaust gases in the combustion chamber. As a result, most newer engines do not use an EGR valve.

Sample ASE certification-type question

When pistons are installed in the block, the notch or arrow on the piston should be facing _____.

- a. Toward the lifter side of the block
- b. Toward the front of the engine
- c. Toward the rear of the engine
- d. Away from the lifter side of the block

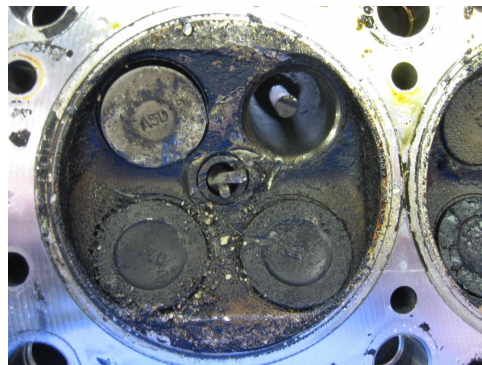
Answer/Explanation

The correct answer is b. The notch, arrow, or other mark on a piston should be installed facing toward the front (accessory drive belt end) of the engine. The piston pin is offset on many pistons and this ensures that the piston is correctly installed. Answer a is not correct because the piston mark cannot be pointed toward the side of the engine. Answer c is not correct as explained for answer b. Answer d is not correct because the arrow should face the front of the engine.

Tech Tip

A Picture Is Worth a Thousand Words

Take pictures with a cell phone camera, digital camera, or a video camcorder of the engine being serviced. Photos can be used to document what is found during disassembly to show the customer. These pictures will also be worth their weight in gold when it comes time to reassemble or reinstall the engine. It is very difficult for anyone to remember the exact location of every bracket, wire, and hose. Referring back to the photos of the engine before work was started will help you restore the vehicle to like-new condition.



Case Study

The Case of the Ford Fiesta 1.6L

The owner of a Ford Fiesta complained of a check engine light, yet the engine seemed to run fine. The service technician retrieved a P0017 (cam and crank correlation error) diagnostic trouble code. The technician removed the timing belt cover and determined that the timing belt had jumped one tooth. Because this engine is an interference-type engine where the valves hit the piston if the timing belt breaks when the engine is running, the technician



recommended replacing the timing belt kit available from many suppliers that include the following:

- timing belt
- timing belt tensioner
- water pump

The customer approved the repair and the new timing belt corrected the crank/cam correlation error code.

Summary:

Complaint- Check engine light on. Code P0017 Cam and Crank correlation error.

Cause- DTC P0017 Cam and Crank correlation error caused by the timing belt that had jumped one tooth.

Correction- Replace timing belt along with the timing belt tensioner and the water pump

Straight Talk

Readers Asks About First Oil Change

From the December 26 Wheels Section of the Dayton Daily News

Wheels:

Dave R. from Miami, Florida asks:

"I just took delivery of a new Chevrolet Colorado pickup truck in Orange Crush. I love the color and I think it is perfect for someone who lives in Florida. My question is that the owner's manual states that the oil should be changed at 12,000 miles and it requires six quarts of oil. I

always thought that the first oil change should occur as soon as it is broken in to get rid of the "shavings and metal debris" left from the manufacturing process. The manual says that break-in period is 500 miles and I was thinking that I should change the oil then. What are your thoughts and recommendations?"



Halderman:

I would follow the owner's manual recommendation and not change the oil until 12,000 or whenever the oil life monitor (OLM) indicates the oil life is less than 10%. The oil life monitor is a computer algorithm (program) that tracks engine usage and detects percentage points based on the time and temperature usage. For example, one cold start from zero degrees may deduct one point whereas it might take a 1,000 miles of highway driving at a steady speed in 70-degree weather to deduct another percentage point. Engine manufacturing and engine oil has greatly improved since you heard that the oil should be changed soon after

purchase. Now most vehicle manufacturers are recommending that the oil be changed about once a year or whenever the oil life monitor indicates that the oil needs to be changed. The OLM also “assumes” that the specified oil is being used, so always use Dexos approved oil in your new truck. Enjoy.

Have an automotive question? Get a straight answer by writing to Jim at jim@jameshalderman.com



**Answer To This Month's Trivia:
A. General Motors**

Contact Us

