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Author & Automotive Expert James D. Halderman

What's new with Jim?

Everything is organized for you!

My [website](#) is now located on its own server. This means faster access and makes it easier for instructors to access all of the resources posted including:

1. There are now over 1,000 videos and all are up-to-date and high-quality and all educational. They are also rated “good, better and best” to help instructors select the best ones to share with their students.
2. Over 900 original animations to help students visualize how things work.
3. Resources are placed under the “Downloads” button and are sorted by ASE content area as well as under “Book Resources” where they are all sorted by textbook and chapter.

FREE SAMPLE:

Send your name and contact information to the website manager for a free two-day trial. Send your request to Glen at glen@jameshalderman.com

Where's Jim?

After a busy September where I went to Motor Bella in Pontiac, Michigan and the ASTE Conference in Cary, NC, I have no travel plans for October.

Keep up with me at:

www.jameshalderman.com

[Email Jim](#)

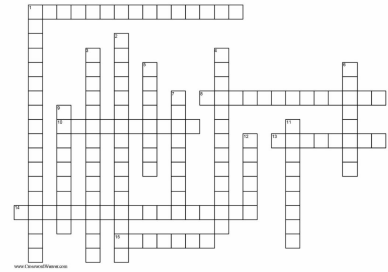
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Puzzle of the month

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

Engine Blocks

Chapter 30



ACROSS

- 1 The block deck must be resurfaced in a surfacing machine that can control the amount of metal removed when it is necessary to match the size of the combustion chambers, this procedure is called _____.
- 8 The process of using a coarse and fine stone is called _____.
- 10 During manufacture, all of holes, called the _____, are drilled from outside the block.
- 13 Cylinder blocks with deep gullies may be able to be salvaged by _____ the cylinder.
- 14 Coolant flows around the cylinder sleeve, so this type of sleeve is called a _____.
- 15 Main bearing bores are called _____.

DOWN

- 1 Sleeves that are not in contact with the coolant passages are called _____.
- 2 The hole is drilled up and down in the cylinder as it rotates to produce a _____ on the cylinder wall which aids in proper ring break-in.
- 3 After oil holes are drilled, the unneeded open ends may be capped by pipe plugs, steel balls, or cup-type soft plugs, often called _____.
- 4 Coolant passages around the cylinders are often called the _____.
- 5 A _____ is a structural member that attaches to the bottom of the block and supports the crankshaft.
- 6 The size of the abrasive is called the _____.
- 7 Another name for freeze plugs are _____.
- 9 Blocks are often of the _____ design, which means that the cylinder, water jacket, main bearing supports, and oil passages are all cast as one structure for strength and quietness.
- 11 The cylinder head is fastened to the top surface of the block, called the _____.
- 12 Many engines use a _____ which ties all of the main bearing caps together to add strength to the lower part of the block.

Auto Trivia

The hood scoop pictured is on a _____

- a. 1967 Pontiac GTO
- b. 1962 Ford T-Bird
- c. 1969 Ford Mustang Mach 1
- d. 1970 Dodge Charger

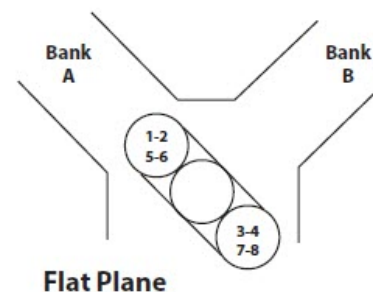
**Answer at the bottom*



FAQ

What Is a Flat-Plane Crankshaft?

A flat-plane crank is a type of crankshaft for use in internal combustion engines that have a 180-degree angle between crank throws. No matter the firing order, flat plane engines will always alternate back and forth between the two cylinder banks. This produces more efficient exhaust scavenging without the need to have header primaries cross over from one bank to the other. Another thing that differentiates a flat plane crankshaft from a cross plane crank is the lack of massive counterweights. Without the additional mass of the counterweights, the lighter flat plane cranks will spin more easily than their cross-plane counterparts, making them more ideal for high-revving, high-rpm applications. The downside is flat-plane crankshafts tend to create more vibration within the engine without the help of counterweights. Flat plane crankshafts are typically found on race cars and high-end exotic cars because of their high-rpm performance. In most cases, race car drivers do not mind a little extra vibration in their



engine, and exotic car companies will spend money on lighter weight materials to reduce vibration in street-oriented cars. It also gives the new Shelby GT 350 a totally different sound from other American performance cars.

Sample ASE certification-type question

After the engine block has been machined, the block should be cleaned with _____.

- a. A stiff brush and soap and water
- b. A clean cloth and engine oil
- c. WD-40
- d. Spray solvent washer

Answer/Explanation

The correct answer is a. Soap (or detergent) and water should be used to clean a block after machining because the soapsuds will lift any grit remaining in the machined grooves. Answer b is not correct because while a clean cloth and engine oil can be used to prepare an engine block for assembly, it will not remove the grit from the small grooves left from the machining or grinding operation. Answer c is not correct because WD-40 will help prevent rust from forming but it will not clean as well as soap and water. Answer d is not correct because it requires the soap or detergent and water rather than a solvent (oil-based product) to lift the grit from the block surfaces.

Tech Tip

High Engine Speeds Require High-Performance Parts

Do not go racing with stock parts. A stock harmonic balancer can come apart and the resulting vibration can break the crankshaft if the engine is used for racing. Check the Internet or race part suppliers for the recommended balancer to use.



Case Study

The Mysterious Engine Vibration

A Buick 3.8-liter V-6 engine vibrated the whole car after a new short block engine had been installed. The technician who had installed the replacement engine did all of the following:

1. Checked the spark plugs and secondary ignition
2. Disconnected the torque converter from the flex plate (drive plate) to eliminate the possibility of a torque converter or an automatic transmission pump problem.

3. Removed all accessory drive belts one at a time
Yet, the vibration still existed. Another technician checked the engine mounts and found that the left (driver's side) engine mount was out of location, ripped, and cocked. The transmission mount was also defective. After the technician replaced both mounts and made certain that all mounts were properly set, the vibration was eliminated.

Summary:

- **Complaint**—Vehicle vibrated after a replacement engine block was installed.
- **Cause**—Defective engine and transmission mounts.
- **Correction**—Both mounts were replaced which corrected the vibration.

Straight Talk

Reader Asks About Gasoline Octane

From the September 25 Wheels section of the Dayton Daily News.

Wheels:

Jim B. writes by email:

"I have always used premium gasoline in all of my vehicles because I want to use the best. I want a premium product that is highly refined and does not include dirt or other contaminants that

could harm my trucks. However, lately the cost of gasoline, especially premium, has increased so much so that I try to reduce my driving to help reduce my cost of filling the gas tank. I have considered using the "plus" grade but I am concerned that it is not as refined as premium. Do you think using plus grade of gasoline will be okay to use in my Chevrolet pickup trucks?"



Halderman:

I think the term "premium" is causing confusion with many owners because it is an indication of the fuel's anti-knock characteristics and does not indicate the quality of the fuel. All gasoline is refined to an industry standard to a specific octane rating such as 87, 89 or 91 etc. The recommended octane rating is shown in the owner's manual or often on the fuel door. Most vehicles require 87 (regular) grade of gasoline. Some, especially high-performance vehicles, recommend 89 (mid-grade or plus) or 91+ (premium). Unless the vehicle manufacturer recommends or requires the use of premium fuel, there is no advantage to using a higher grade (octane rating) gas. All vehicles use a fuel filter, both in the fuel tank and in the fuel line before the fuel is sent to the fuel injectors, so any dirt or debris is caught before it can enter the engine. Therefore, I recommend using regular grade of fuel in your Chevrolet trucks. Your wallet will like the savings.

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



**Answer To This Month's Trivia:
B. 1962 Ford Thunderbird**

Contact Us