



# Author & Automotive Expert James D. Halderman



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Halderman newsletter

June 2020

## What's new with Jim?

### ATTENTION: College Instructors

Interested in becoming a published author? Do you have knowledge that you would like to share with the world? Send me your resume to [jim@jameshalderman.com](mailto:jim@jameshalderman.com) and let's talk.

Schools are out and while the country is trying to get back to normal, I think the virus will cause us all to rethink how teaching and learning is achieved going forward. To help with online content, my team has been working hard to create online assignments and other enhancements to my website. To get full access for an entire year for just \$79 (\$119 value) sign up today at [www.jameshalderman.com](http://www.jameshalderman.com).

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Halderman's resources for the automotive series.

### Downloads

Conference PowerPoints, service information, training resources and more.

### Pearson

Book ordering information, request exam copy, test bank questions and more.

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## Where's Jim?

Due to the Coronavirus, all events have been canceled and I have no travel plans for the summer.

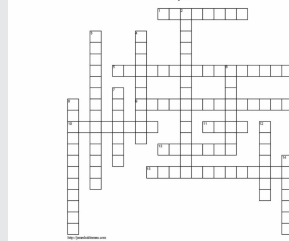
Keep up with me at:  
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## Puzzle of the month

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

### Manual Transmission/Transaxle Diagnosis and Service

Chapter 8



ACROSS

1. Check for \_\_\_\_\_, which is a reddish-blast found around a shaft that has rotated and is a likely location where wear has occurred.
2. The \_\_\_\_\_ is a small cupped or the angle-off check socket that checks for clutch drag as well as transaxle/transmission problems.
3. It is recommended to drive \_\_\_\_\_ at each regular change.
4. \_\_\_\_\_ is an advanced stage of decay when flaking areas of gear teeth from the bearing race occurs.
5. A selector \_\_\_\_\_ is located at a bearing at one end of each shaft, and the function of it is to hold the amount of preload.
6. A light grinding strip of the surface of the bearing race is called \_\_\_\_\_.
7. Scratches, pits, or scoring in a bearing's outer ring on the ball or roller surfaces of a bearing is called \_\_\_\_\_.

DOWN

1. The \_\_\_\_\_ measure the effort required to rotate the transmission's input or gear shaft, and will not just the rear wheel and drive shaft.
2. \_\_\_\_\_ is a series of small burrs or grooves across the raceways of a bearing.
3. \_\_\_\_\_ is a series of small burrs or grooves across the raceways of a bearing race is called \_\_\_\_\_.
4. When final shaft drag occurs after the bearing race, it is called \_\_\_\_\_.
5. Clamping the components of a transaxle/transmission that uses tapered roller bearings, the \_\_\_\_\_ of each shaft should be checked.
6. A diagonal path of the ordinary bearing race while excessive wear occurs is known as the riding surface from a bore and that is not correctly aligned is called \_\_\_\_\_.
7. \_\_\_\_\_ is obtained when balls or rollers fall to rest and the roller damage is large and/or rollers with evidence of excessive heat.
8. Another term for pitting is \_\_\_\_\_.

## Auto Trivia



What year is this Chevrolet Impala?

- a. 1961
- b. 1962
- c. 1963
- d. 1964

**Answer at the bottom of this page!**

## FAQ

### **Why Does One Wheel Spin When the Other Wheel Is On Dry Pavement?**

A standard, called an open differential splits torque equally to the drive wheels. If one tire is on a slippery surface and only 50 lb ft of torque can be applied to the road, the other side will also have the same 50 lb ft. Even if the tire on the other side from the one on a slippery surface is on dry pavement, the force being sent to the drive wheel (50 lb ft) is not enough to propel the vehicle.

## *Sample ASE certification-type question*

### **Question:**

The owner of a vehicle equipped with a manual transaxle complained that gear clash was heard whenever shifting. Which is the least likely to be the cause?

- a. Worn blocking ring
- b. Misadjusted clutch linkage
- c. Defective output shaft bearing
- d. Defective pilot bearing

### **Answer/Explanation**

*The correct answer is c.* A defective output shaft bearing(s) is not likely to cause gear clash even though it could cause noise while driving. Answer a is not correct because a worn blocking ring can cause gear clash when shifting into the gear with the worn ring. Answer b is not correct because a misadjusted clutch linkage could cause the clutch to not fully disengage thereby causing gear clash whenever shifting into any gear. Answer d is not correct because a defective pilot bearing could keep the input shaft turning even when the clutch has been depressed causing gear clash whenever shifting into any gear.

## *Tech Tip*

### **Look for the Hole in the Retainer Plate**

Most axle flanges include a hole so that a socket and extension bar can be used to remove and replace the retainer bolts. If the axle does not have a hole in the retainer plate, the axle uses a C-lock-type retaining method.



## Straight Talk

From the May 30 Wheels section of Dayton Daily News

### The Case of Road Groove Wander

#### Wheels

Tom B. writes by email:

"I have an Acura and I purchased new tires. Immediately on my way home I was experiencing a very squirrely and unstable feeling that made me immediately slow down and wonder if they tightened my wheels properly. After a few days of driving I discovered the unstable feeling was due to concrete road surfaces with grooves in them for water. It appears that the tires are catching the grooves and trying to steer the car. I would like your thoughts especially on the theory that the problem is the tires and different tires would not do this".

#### Halderman:

I asked my son Brad, who is a tire engineer in Akron to see what his thoughts were. Here is his response: "I looked at this tire design and I'm not surprised at all that it's sensitive to road grooves. It's called (not surprisingly) Road Groove Wander. It is tread geometry related. Basically, the circumferential grooves are all straight, so they "hook" the road grooves. The road grooves look straight but have enough wander it pulls the car around. That size must be just right for more than one groove to line up with the road grooves. We use modeling tools to predict this wander.

The same tire in a different width might be fine or that whole tire line might be sensitive, just how the groove spacing lines up. Your tires on another vehicle might also be fine. The fix is to replace the tires with something else. Being new, I'm sure the dealer will work with you".

Thanks Brad.



*Have an automotive question? Please write to Jim with your questions at [jim@jameshalderman.co](mailto:jim@jameshalderman.co)*

Trivia question answer: b.

Please let me know what you think of the newsletter. I would love to include any of your automotive news, trivia questions or any tech tips you might have. Send me your suggestions! You can email me [here](#) or visit [my website](#). You can connect with me on Facebook, Twitter and LinkedIn too (links above).

Regards,  
*Jim Halderman*

*James D. Halderman writes automotive technology textbooks for [Pearson Education](#). He is an ASE-certified Master Technician with more than 20 years instructional experience.*