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# HALDERMAN

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Author & Automotive Expert James D. Halderman

## What's new with Jim?

*Everything is organized for you!*

As we approach the holiday season, take a look at the resources that are on the Halderman [website](#). One of the three main buttons on the home page is "Downloads."

**Downloads**-Looking for an animation or a video? Use this button to get to these resources all sorted by ASE area to make it easy to find exactly what you need.

**Jim's Favorites**- This section includes all of Jim's favorite resources that he has used in the classroom to teach his automotive students. These are suitable to be downloaded and can be shared with your students so they have these resources also.

### **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](mailto:glen@jameshalderman.com)

## Where's Jim?

No trips planned for the remainder of 2021.

Keep up with me at:

[www.jameshalderman.com](http://www.jameshalderman.com)

[Email Jim](#)

[Facebook](#)

## Puzzle of the month

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

## Jim's Favorites

This page contains all of Jim's favorite downloads, websites, and videos all broken out by ASE area.

### (A1) Engine Repair

Block Casting Numbers

Crank Casting Numbers

Cylinder Head Casting Numbers

Engine Performance Diagnosis Chart – Microsoft Word

Engine performance Diagnosis Chart – PDF

Lubrication Service Sheet

Oil Change Specifications by Make and Model Including Reset Procedures

### (A5) Brakes

Brake Bleeding Sequences – Microsoft Word

Brake Bleeding Sequences – Microsoft Excel

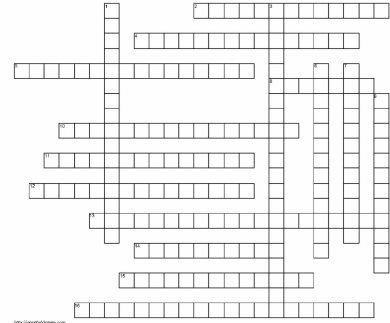
Lug Nut Tighten Torque Specs

### (A6) Electrical and Electronic Systems

Dash Warning Lights Poster

## Clutch Parts and Operation

Chapter 4



#### ACROSS

- Some vehicles use a \_\_\_\_\_ that is connected to the bearing retainer and has the release bearing connected directly to it.
- When the driver depresses the clutch pedal, a \_\_\_\_\_ is forced against the release levers of the pressure plate.
- One large, round, steel spring, called a \_\_\_\_\_, is used to apply even force on the clutch disc in a diaphragm spring style pressure plate.
- \_\_\_\_\_ is the tendency of a moving object to remain in motion, because of its weight, unless forced to stop.
- The purpose of a \_\_\_\_\_ is to dampen engine vibrations and keep them from being transmitted to the passenger compartment through the transmission and shift linkage.
- Another name for the throwout bearing is the \_\_\_\_\_.
- A \_\_\_\_\_ pressure plate uses coil springs and three or four release levers.
- The release bearing, is often supported and rides on \_\_\_\_\_

#### DOWN

- The \_\_\_\_\_ are positioned by a series of windows in the web and retainer.
- The \_\_\_\_\_ is the relative amount of friction between two surfaces.
- The \_\_\_\_\_ is bolted to and rotates with the flywheel.
- The engine end of a transmission input (clutch) shaft is supported by a \_\_\_\_\_ that is pressed into the end of the crankshaft.
- Another name for a clutch spring is a \_\_\_\_\_.

## Auto Trivia

- The tails lights are from \_\_\_\_\_?
- 1953 Buick
  - 1954 Buick
  - 1958 Dual Ghia
  - 1958 Buick

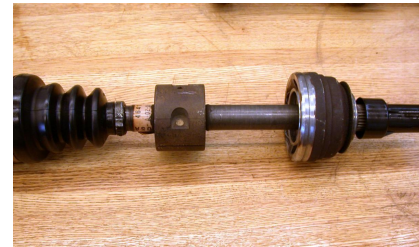
*\*Answer at the bottom*



## FAQ

### What Is That Weight for on the Drive Axle Shaft?

Some drive axle shafts are equipped with what looks like a balance weight. It is actually a dampener weight used to dampen out certain drive line vibrations. The weight is not used on all vehicles and may or may not appear on the same vehicle depending on engine, transmission, and other options. The service technician should always try to replace a defective or worn drive axle shaft with the exact replacement. When replacing an entire drive axle shaft, the technician should always follow the manufacturer's instructions regarding either transferring or not transferring the weight to the new shaft.



## Sample ASE certification-type question

- Drive shaft U-joint working angles can be changed by \_\_\_\_\_.
- Replacing the U-joints

- b. Using shims or wedges under the transmission or rear axle
- c. Rotating the position of the drive shaft on the yoke
- d. Tightening the differential pinion nut

### **Answer/Explanation**

**The correct answer is b.** Shims under the transmission mount or a wedge under the leaf springs at the rear of the vehicle can be used to correct or adjust drive shaft U-joint working angles. Answer a is not correct because the working angle of a U-joint is not changed if the U-joint itself is replaced. Answer c is not correct because the relationship between the front and the rear U-joints remain the same even if the slip yoke is changed at the output shaft of the transmission. Answer d is not correct because tightening the differential pinion nut will not change the working angles of the U-joints.

## Tech Tip

### **The Tape Measure Trick**

To easily make a free clutch pedal travel measurement, try this:

1. Hook the end of a tape measure onto the pedal, and run it through the steering wheel. Note the reading at the steering wheel as the pedal is depressed through its travel.
2. Clutches that use hydraulic or cable linkage should have a small amount of free travel, whereas rod and lever linkage clutches should have about one inch (25 mm) of free travel.

## Case Study

### **The Case of the Stuck in Gear Jeep**

A Jeep Wrangler (120,000 mi) sometimes got stuck in first or reverse, and the only way to get it out of gear is to shut the engine off. The transmission shifted okay most of the time. Thinking that the clutch or related components were the most likely cause, the transmission was removed, and an inspection revealed a seizing pilot bushing. Replacement of the bushing fixed this problem. The pilot bushing did not allow the input shaft to move independently of the flywheel when the clutch was depressed and the new pilot bushing fixed this situation.

#### **Summary:**

- **Complaint**—Owner stated that the transmission was stuck in first or reverse.
- **Cause**—Seized pilot bushing.
- **Correction**—Replacement of the bushing corrected the stuck in gear concern.

## Straight Talk

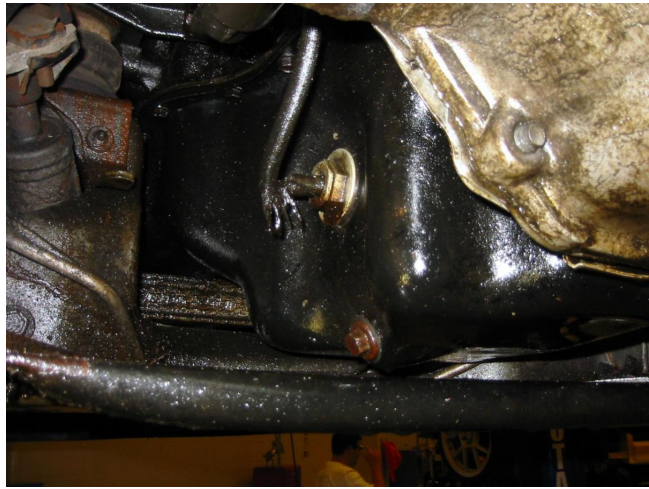
### **Synthetic vs Regular Oil Change**

*From the November 28 Wheels Section of  
the Dayton Daily News*

**Wheels:**

*James H. writes by email:*

*"I have a 2006 Cadillac DTS with 149,500 miles. Using the oil life monitor, I usually change my oil around 25% and/or about 5,000 miles. I have been using oil for cars with over 75000 miles. Between these oil changes I use between a half quart to a full quart. It looks like I might be losing oil from around the oil filter. Should I change to a synthetic oil?"*

**Halderman:**

Thanks for writing. Losing a quart between oil changes, I think, is perfectly normal for an engine with almost 150,000 miles. Ask your service technician to check the source of the leak, as it may be due to a leaking O-ring. I would suggest that you keep using what you have been using and I don't see the need for you to switch to an oil that is 100% synthetic. An interesting note is that any engine oil that has a "0" in the viscosity, such as SAE 0W-20 has to be synthetic in order to meet the performance standards.

*Have an automotive question? Get a straight answer by writing to Jim at [jim@jameshalderman.com](mailto:jim@jameshalderman.com)*



**Answer To This Month's Trivia:  
C. Dual Ghia**

**Contact Us**