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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. There are three main buttons on the home page and they lead to the following content:

- **Book Resources-** This button leads to the Pearson automotive textbooks where all of the resources are sorted by chapter making it easy to teach and supply students with the resources that make their learning easier. Also included are quizzes with answers making it easy for instructors.
- **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.
- **Pearson-** FREE resources are available to instructors through the Pearson website. The button also includes where to request an exam copy of any of the Pearson automotive textbooks.

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?

No trips planned for the remainder of 2021.

Keep up with me at:

www.jameshalderman.com


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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 CVTs.

Buy Now!
Request Quote




Book Resources

Resources supporting automotive instructors who teach using the Halderman book series.



Downloads

Conference PowerPoints, service information, training resources and more.

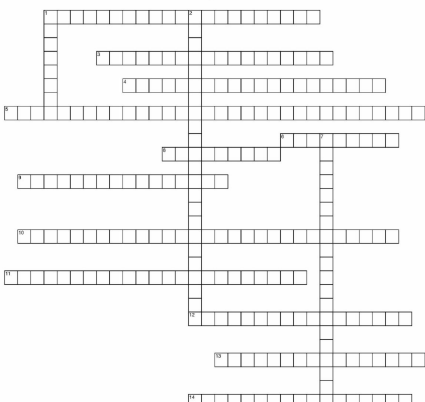


Pearson

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

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Continuously Variable Transmissions
Chapter 11



<http://www.halderman.com>

ACROSS

1. A _____ is a pressure transducer to monitor primary pulley pressure.
2. The IFS measures _____.
3. The IFS measures _____, varies the gear ratio in a continuous manner instead of a series of steps or fixed gear ratios.
4. _____ is made up of three wedges and two pulleys, instead of using three or more gears. A CVT uses two variations with pulleys, sometimes called _____, to change the gear ratio.
5. An _____ can be a magnetic or a hydraulic sensor.
6. A _____ is a friction transducer coefficient sensor used to measure the temperature of the roadway.
7. A _____ is a multi-contact switch operated by the manual shift lever.

DOWN

1. _____ is made up of about 400 wedge-shaped segments that are held together by two steel bands.
2. The _____ is a pressure transducer to monitor secondary pulley pressure.
3. The _____ controls the line pressure to the transmission hydraulic system.
4. An _____ fuel injectors set a fueler P0771 or a P0712 DTC.

12. The _____ is a linear position sensor that changes the position of the upper end of the pulley shafts.

13. Refer to the vehicle speed sensor cables up to the engine block, the cable is often referred to as the _____ and is most noticeable only during periods of rapid acceleration.

Auto Trivia

What year is this Z28 Camaro?

- a. 1967
- b. 1969
- c. 1971
- d. 1973

**Answer at the bottom*



FAQ

Which Companies Build Automatic Transmissions?

Many larger automobile manufacturers make their own automatic transmissions, including General Motors, Ford, Chrysler, and Honda. However, several companies manufacture automatic transmissions and transaxles that are used in a variety of vehicles. These include:

- **ZF Friedrichshafen AG.** This German company manufactures manual and automatic transmissions and transaxles for many vehicle manufacturers, including Mercedes, BMW, Volvo, VW, Audi, Jaguar, Chrysler, Bentley, and Maserati.
- **Aisin AW.** This Japanese company makes automatic transmissions for many vehicle manufacturers, including Ford, Toyota, Nissan, Mazda, Mitsubishi, Subaru, Kia, and VW.
- **JATCO (Japan Automatic Transmission Company).** This is a Japanese manufacturer of automatic transmissions and transaxles for many vehicle manufacturers, including Nissan, Mazda, Infiniti, VW, Mitsubishi, and Suzuki.

Sample ASE certification-type question

A poor fuel economy concern is being diagnosed. A scan tool check indicates that the torque converter clutch is not being commanded on at highway speeds. Which is the most likely cause?

- a. Low ATF level
- b. Stuck open cooling system thermostat
- c. ATF level too high
- d. A defective torque converter

Answer/Explanation

The correct answer is b. When the temperature of the engine is cold, the computer prevents the operation of the torque converter clutch to allow the engine and the transmission to reach operating temperature as soon as possible. An engine thermostat that is stuck open would prevent the engine from reaching normal operating temperature especially in cold weather, and the computer would prevent the operation of the torque converter clutch, which improves fuel economy. Answers a and c are not correct because even though an incorrect level of ATF can cause transmission problems, it cannot cause the computer to not command the torque converter clutch to engage at highway speeds. Answer d is not correct because even though the torque converter could be faulty, it would not cause the computer to not command the application of the torque converter clutch at highway speeds.

Tech Tip

Magnetic Trays

Many shops use magnetic trays to help keep bolts and nuts organized. For example, one tray can be used just for the oil pan bolts and another for valve body bolts. When not being used, they should be stored attached to a metal workbench or tool box. If a magnetic tray is stored on a wooden workbench, the magnet can lose some of its holding power. Magnetic trays are an excellent tool to help keep fasteners organized so they do not get misplaced. Some technicians use a separate tray for the fasteners from each major component such as the valve body bolts.

They are available at most auto parts stores.



Case Study

The Starbucks Syndrome

A BMW 520i (122,000 miles) came in with only second gear, limp-in mode. The customer said the car would operate normally one day and have only second gear the next day. The fluid level is correct and appears in good condition. The shop checked for fault codes and found two:

1. Gear position switch
2. Speed sensor

Testing revealed faults in the gear position switch and speed sensor circuits (called Starbucks syndrome). Starbucks syndrome is a name given to the results of coffee and food spills onto the center console control switches. Corrosion caused by the spills increases resistance at the wire connections. Replacement of these two components fixed the problem.

Summary:

- **Complaint**—Customer complained that the transmission would be stuck in second gear at times.
- **Cause**—Corrosion found at the electrical connections for two components.
- **Correction**—The gear position and speed sensors were replaced.

Straight Talk

Owner of a Hybrid Electric Vehicle Concerned About Battery Life

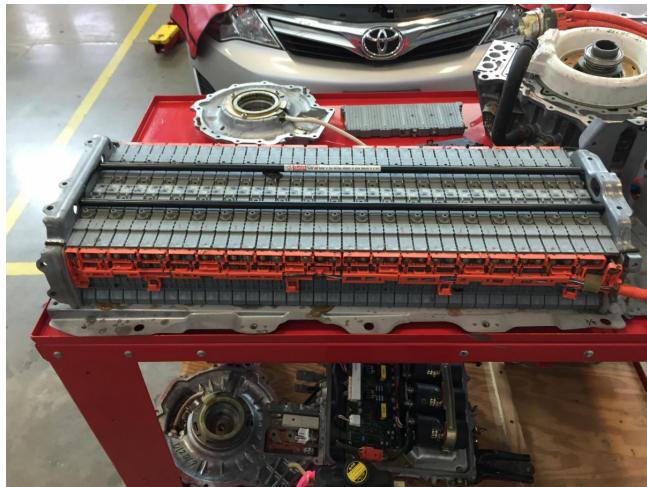
From the October 30 Wheels Section of the Dayton Daily News

Wheels:

Jack W. writes by email:

"I have a 2018 Toyota Avalon hybrid with a nickel-metal hydride (NiMH) battery. I generally keep cars for many years. I am concerned that the battery may give out before I may wish to replace the car. I understand that battery replacement would be very

expensive. In the event the battery did give out, is it possible that the car can be transformed to run on the existing 4-cylinder gasoline engine only? If so, how would the cost of transformation compare to replacing the HV battery? Thanks for your input. Enjoy reading your column".



Halderman:

Thanks for writing. Your high-voltage battery has a ten-year, 150,000 miles warranty. They are very reliable and I have known them to last over ten years and 300,000 miles. While the high-voltage battery does lose some capacity over time, this just results in slightly lower fuel economy.

Almost any shop or dealer can use a scan tool and check on the status of the battery by looking at the difference in voltage and internal resistance of individual modules. It is expensive to replace the high-voltage battery and many experts recommend purchasing a new high-voltage battery from a Toyota dealer if, or when, it has been proved to need replacement. Even though the high-voltage battery is degraded, the vehicle can still function by using the gasoline engine more than usual resulting in reduced fuel economy. I own two hybrid electric vehicles myself and one is ten years old and is still in good health. Don't worry about it and just enjoy it.

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



**Answer To This Month's Trivia:
D. 1973**

Contact Us

