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## Author & Automotive Expert James D. Halderman

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The content on my [website](http://www.jameshalderman.com) is expanding almost every week. In support of 18 automotive text books, the James Halderman website offers extensive downloadable support materials including:

- Crosswords
- Word Searches
- Chapter PowerPoints
- ASE Task Sheets

### Where's Jim?

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

Keep up with me at:

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

[Email Jim](#)

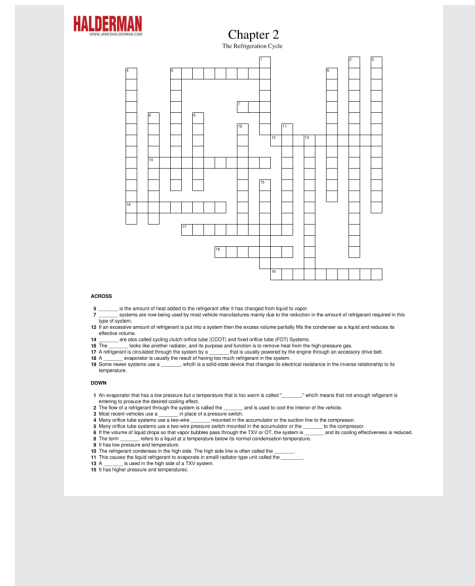
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### Puzzle of the month

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

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## Auto Trivia

The photo shows the front end of a \_\_\_\_\_.

- Oldsmobile Cutlass
- Monte Carlo
- Buick Skylark
- Chevrolet Chevelle

*\*Answer at the bottom*



## FAQ

### What Does "Short Cycling" Mean?

If the system is low on refrigerant, it will short cycle, or rapidly cycle on and off. This is the result of the compressor pulling the refrigerant out of the low side quickly to open either the cycling switch or the low-pressure switch. With the compressor off, the flow into the evaporator raises the pressure enough to reclose the switch and restart the compressor. With a normal charge, the low-side pressure should be 15 PSI to 35 PSI and the clutch should be on for 45 seconds to 90 seconds and be off for only about 15 seconds to 30 seconds.

## Sample ASE certification-type question

The discharge air temperature is cool with higher than normal low side pressure along with excessive high-side pressure. Which represents the most likely cause?

- a. Low on refrigerant
- b. Clogged condensate drain
- c. Excess refrigerant in the system
- d. Lack of airflow through the condenser

### Answer/Explanation

*The correct answer is c.* Excess refrigerant is the most likely cause of higher than normal low-side pressure gauge reading with a higher than normal high-side pressure reading. Too much refrigerant is being metered into the evaporator or the compressor is not pulling it out, which can occur on some systems that use a variable-displacement compressor. Answer a is not correct because a low refrigerant charge would cause the discharge air to be warm and both gauge pressure readings below normal. Answer b is not correct because a clogged condensate drain would cause water to overflow the evaporator housing and flow onto the floor of the vehicle and would not create higher than normal pressure on the low-side gauge. Answer d is not correct because a lack of airflow through the condenser would cause a higher than normal high-side pressure reading and not a higher than normal low-side pressure reading.

## Tech Tip

### Easy to Add Animations and Videos to Power Point Slides

There are over 700 animations posted on the Halderman website and all are in movie mode (MP4) which makes it easy to add and view within a Power Point. There are also over 2,000 video links all sorted by chapter in each title making it easy to find and to use exactly what is needed to teach a lesson. See YouTube video for instructions on how to add animation to the Power Points.

<https://www.youtube.com/watch?v=X2Ktz-2nGo4>

## Case Study

### The Case of The Warmer Driver's Side

The owner of a Ford Mustang complained that the temperature of the air coming from the driver's side vents seemed to be warmer than the air coming from the passenger side vents. The service technician knew that uneven air discharge temperature from the instrument panel registers (cold on one side and warm on the other) can be caused by a low charge level. This will cause some parts of the

evaporator to be cold while others are warm. It is possible for the air from the cold side to flow to a single register. Most customers complain that the driver's side is blowing warmer air than the passenger side when the system is partially discharged. Evacuation of the system and recharging with the specified amount of refrigerant, corrected the uneven discharge vent temperature concern.

**Summary:**

- **Complaint-** The temperature of the air coming from the driver's side vents seemed to be warmer than the air coming from the passenger side vents.
- **Cause-** Low refrigerant charge level
- **Correction-** Evacuation of the system and recharging with the specified amount of refrigerant corrected the uneven discharge vent temperature concern

## Straight Talk

### Reader Has Question About A Vibration During Braking

*From the September 26 Wheels Section of the  
Dayton Daily News*

**Wheels:**

*N.R. from Florida asks:*

*"I have a question. If I am going down the road at 50 MPH and I get a slight vibration on braking, do I need to have my tires balanced? I have been told that I may need new brake rotors or tires and these are expensive. Isn't there a less expensive fix for the vibration?"*



**Halderman:**

No, a tire balance will not cure the vibration during braking. A tire balance is needed if a vibration is felt at highway speeds.

- If the vibration is felt or seen in the steering wheel or dash, the front tires are out-of-balance or out-of-round.
- If the vibration is felt in the seat or appears to be the entire vehicle, then the rear tires are out-balance or out-of-round.

In your case, the vibration is felt only during braking, so the most likely cause is due to thickness variation in the front disc brake rotors, commonly called "warped rotors." Rotors can become warped over time due to rust forming between the hub and the rotors or by overheating the rotors, such as during braking when descending long grades instead of using the gear selector and using low gear. Another possible cause can occur when the wheels are tightened using an air impact wrench instead of using a torque wrench. The rotor can become slightly deformed by the unequal torque on the lug nuts. All wheels should have the retaining nuts tightened using a torque wrench.

The situation will likely continue to worsen, but is not likely to be a safety issue.

There are a couple of options including:

1. Have the rotors machined. The technician should thoroughly clean any rust between the rotor and the wheel hub and tighten the lug nuts using a torque wrench to factory specification.
2. The rotors could be replaced instead of being machined, often called “turning the rotors.”
3. It might be wise to have the disc brake pads replaced at the same time because the technician has to remove the disc brake caliper to get access to the rotors anyway.

Depending on the number of miles on the vehicle and how long it will be kept will help determine what is done. I would recommend taking it to a shop or dealer and ask for their opinion and recommendation.

*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:  
B. Monte Carlo**

**Contact Us**

