



**Module Number:**

04-2

**Subject:** VR Diagnosis

**Objective:**

At the conclusion of this module, you will be able to:

- Identify limit switch functions
- Describe limit switch communication

**Vehicle and tools required:**

- R171
- SDS/DAS equipment with printer

**Required material:**

- Copy of classroom presentation: "Networking-Telematics"
- Copy of Job Aid "287 JA 03-2 VR Diag"

**Instructions:**

1. Follow the instructions and answer the questions.
2. Ask your instructor if assistance is needed.
3. Stop at "**Instructor check point** \_\_\_\_\_" for signature.

Customer complaint: “My roof stops working half way through operation when I try to close it!”

1. Verify complaint. What is your finding?

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2. Will the roof reverse in operation?

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3. With the action of the roof to this point, using the Job Aid for Diagnosis, can you determine what may be causing this malfunction?

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*Note: When diagnosing a roof problem, go back to the last full step completed. Then see what is missing or incorrect for the next step in its operational sequence.*

4. Connect SDS/DAS to car. Check for fault codes in Vario Roof. Record any fault codes that you find.

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5. What component do these codes concern? Where is it located? What is its function in operation of the roof?

Component ID	Location	Function
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6. Using SDS/DAS, enter into code #9925. What module is DAS talking to in order to get switch info? Is it SD or VR?

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From the switch – who is the first control module to read the switch info?

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How does VR receive this info?

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7. Enter on S69 (Vario roof “closed” limit switch (left pin). You are now looking at a list of possible tests. Enter into your first choice from this list. At this point, the “status of relevant fault code” compares S69 to S69/11 –  
What is the function of S69/11?
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*Note: To further clarify you can see the relationship between S69 and S69/11 in the VR diagnostic job aid.*

**Instructor check point** \_\_\_\_\_

8. What is the relationship between these two switches as far as roof closed and roof raised/lowered is concerned?
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9. Go back to the list of possible tests – enter into check component S69 – using actual values. Does this actual value make sense? Why or why not?
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10. Can you find actual values for switch position values? If so, how did you do it?
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11. From this list, what number is assigned S69 on the actual value screen?
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What would have been tested if you could actuate the switch and see the value change?

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12. If the switch is defective, could you jump it and see a change in the value?
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13. What is wrong with the roof?

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14. Please stow roof back in trunk.

15. We don't have the part needed to fix this car. Customer needs the car and wants the roof to be closed in case of rain. Do you have a job aid to help you close the roof manually?

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**Instructor check point** \_\_\_\_\_