



**Module Number: 04**

**Subject: Transfer Case Control Module**

**Objective:**

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

- Perform transfer case function test
- Perform proper version coding of the transfer case module
- Explain how the transfer case system is powered and protected
- List possible actuations and actual values in SDS/DAS

**Vehicle and tools required:**

- G Class
- Fender covers
- SDS/DAS

**Required materials:**

- Hand out material for Powertrain Electronics
- WIS

**Instructions:**

1. Follow the attached instructions and answer the questions
2. Use your hand out and ask your instructor for assistance
3. Stop at “★ *Instructor check point* \_\_\_\_\_” for signature
4. It should take you about 45 minutes



**Means cease all activity and get your instructor (safety issue).**

**📍 Means the instructor needs to discuss or provide information.**

**Part A : Adaptation**

1. What is the tire size on this vehicle? \_\_\_\_\_
2. What is the front and rear axle ratio as indicated by the identification tag on the axles? \_\_\_\_\_
3. Connect SDS/DAS to the vehicle and access transfer case control module (VG). Select “Control unit adaptations”>”Read coding and change if necessary”. What is the current coding for tires and axle ratio?  
Tires:\_\_\_\_\_ Axle ratio:\_\_\_\_\_
4. Does the version coding match what you found in steps 1/2? YES NO

**If not, call instructor**

**Now we will simulate a control module that was replaced without being version coded.**

**Ensure selector lever is in “Park” and parking brake is on**

5. Return to “Control unit adaptation” main menu. Select “Set control module to base function”. Was the control module successfully reset? YES NO
6. With selector lever in “P”, and driver’s door is open. Release parking brake. What do you observe in the instrument cluster?  
Multi-function display: \_\_\_\_\_  
Audible beep: YES NO  
Transfer case range indicator: H L N ■
7. Close the driver’s door. What effect does this have on the instrument cluster warning message?  
\_\_\_\_\_  
\_\_\_\_\_

8. Discuss in your group why an open driver’s door in conjunction with a released parking brake sets of the instrument cluster warning  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

9. Start the engine and determine what range the transfer case is in by placing the selector lever into "D". **READ NOTE BELOW.**     Neutral  Hi or Low



**NOTE: IF THE TRANSFER CASE IS IN NEUTRAL:**

- **DO NOT SHIFT BACK TO PARK, AS PARKING PAWL DAMAGE COULD OCCUR!**
- **DO NOT ACCELERATE THE ENGINE, AS TRANSFER CASE INPUT SHAFT BEARING DAMAGE COULD OCCUR!!**

10. Switch engine off and place shifter back into "P"  
11. Read out transfer case fault memory and list all DTC's

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

12. Is there a code related to "coding of the control unit"?                     YES  NO

13. Go to "Control unit adaptations" and select "Read coding and change if necessary". What is the current coding of the tires and axle ratio?

Tires: \_\_\_\_\_                    Axle ratio: \_\_\_\_\_

**Note:** For the USA version, "Lamp output" is always set to "Do not activate".

14. Correct the version coding to match the vehicle equipment. Clear fault memory

15. Check the operation of the transfer case. Is it shifting?                     YES  NO

16. Open the door and perform a shift operation. Do you get an instrument cluster warning during the Hi/Lo shift?                     YES  NO

**Note:** This is normal operation

17. Go to "Control unit adaptations" and select "Learning process of transfer case"

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

## **Part B: Actual Values and Actuations**

1. Go to “Control unit adaptations” and select “Data of last shift operation”. What was the vehicle and differential speed during last gearshift?

Vehicle Speed \_\_\_\_\_

Differential Speed \_\_\_\_\_

2. Return to “Control unit adaptations” and select “Number of shift operation”  
What is the “number of gearshifts into off road gear”? \_\_\_\_\_  
What is the “number of gearshifts into neutral position”? \_\_\_\_\_

3. Go to “Actual values” and select “Position data of the sensors”.  
What is the actual value (voltage) of the transfer case switch when pressed and held in the various positions?

Not operated: \_\_\_\_\_ Volts

High: \_\_\_\_\_ Volts

Low: \_\_\_\_\_ Volts

4. What is the actual value for “Position of shift sleeve of the transfer case” when the transfer case is shifted in the different gears?

High: \_\_\_\_\_ mm

Low: \_\_\_\_\_ mm

Neutral: \_\_\_\_\_ mm

**Note:** *Shift* parameters must be met for shifting the transfer case

5. Go to “Actuations” and select “Shift transfer case”. What are the prerequisites for the actuation?

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6. From Actuations shift into “Off-road gear”. Was it successful?  YES  NO
7. How did you verify? \_\_\_\_\_
8. Shift back into “On-road gear. Was the actuation successful?  YES  NO

9. Locate the wiring diagram of the transfer case control module. Is there a fuse that directly supplies power to transfer case shift motor?  YES  NO

**Hint:** Use F6 "Help for complete vehicle".

10. Which fuse protects the transfer case circuit? \_\_\_\_\_

If you observe any damaged parts or missing fasteners on this vehicle, please inform your instructor prior to leaving this workstation.



**Call your instructor last discussion and clarification**