	<p>Skill Module Number: 1.2</p> <p>Subject: Flashing ETC (722.9)</p>
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Objectives:

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

- Describe the process of flashing the transmission control module
- Describe the process of entering the SCN coding
- Explain the effects of a selection range sensor not learned correctly

Vehicle and tools required:

- 722.9 equipped vehicle connected to exhaust extraction system
- SDS / DAS
- SDflash Release CD
- Battery charger

Required material:

- Clipboard and pen

Instructions:

1. Follow the instructions and answer the questions .
2. Ask your instructor for assistance if needed.

Flashing Transmission Control Module

1. Connect SDS / DAS to your vehicle.
2. Navigate your way to the “Drive” menu. Now select “Transmission”, then “Control unit version”.
3. What is the MB object number for software? _____
4. What part of this object number indicates the current software version / level?

5. Return to the transmission main menu and then select “Fault codes.”
6. Are there any fault codes or events? YES NO
7. List any fault codes (if any). _____

8. Return to the transmission main menu.
9. To begin flashing the control module select “Initial startup” from the menu.

Note: The screen that now appears describes the steps that are required to perform a “complete initial startup of system ETC.” At this time the screen informs us that a precondition of this process is: “A new control module must have already been installed.” This is also the correct starting point if we needed to flash the existing control module (even though it does not indicate this as a possibility).

10. What are the 5 steps that you will be guided through?

11. Press F2 to begin this process.

12. The following screen provides two options, "Program control unit" or "Continue with Perform SCN coding." Explain why you might need to choose "Continue with Perform SCN coding"? _____



Instructor check point _____

13. Press F3 now to program the control module.

14. The screen that appears should look similar to this:

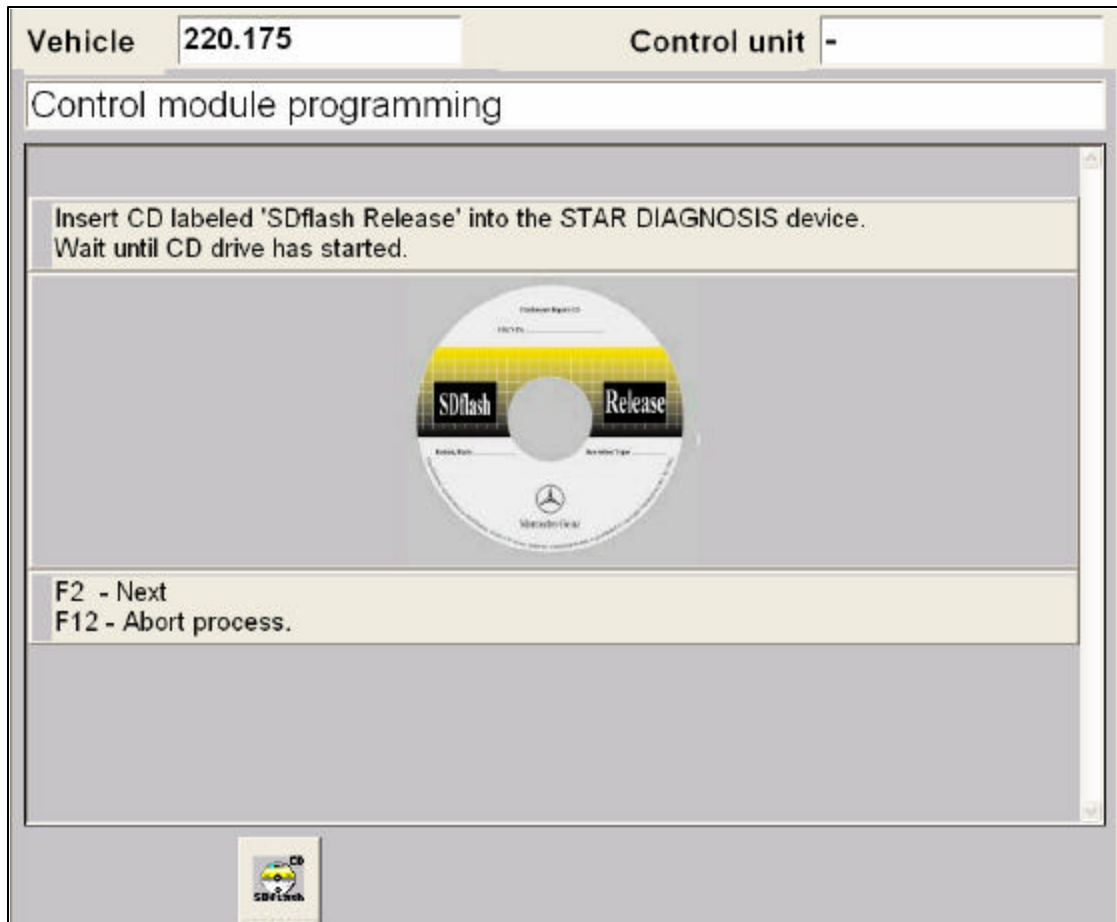
Vehicle	220.175	Control unit	-
Control module programming			
SDflash Release ☺			
Determination of new control unit software and subsequent control unit programming			
SDflash Repair ☺			
Inquiry form for programming data			
Program control unit.			

15. "SDflash Release ☺" refers to the SDflash Release CD that is issued periodically. "SDflash Repair ☺" list of options, refers to a specific "patch" repair CD that may have been sent to dealers or a request form for obtaining a CD.

16. The "SDflash Release ☺" and "SDflash Repair ☺" lines are just headings even though you can highlight them. Try highlighting "SDflash Release ☺" and pressing F3. What happened? _____

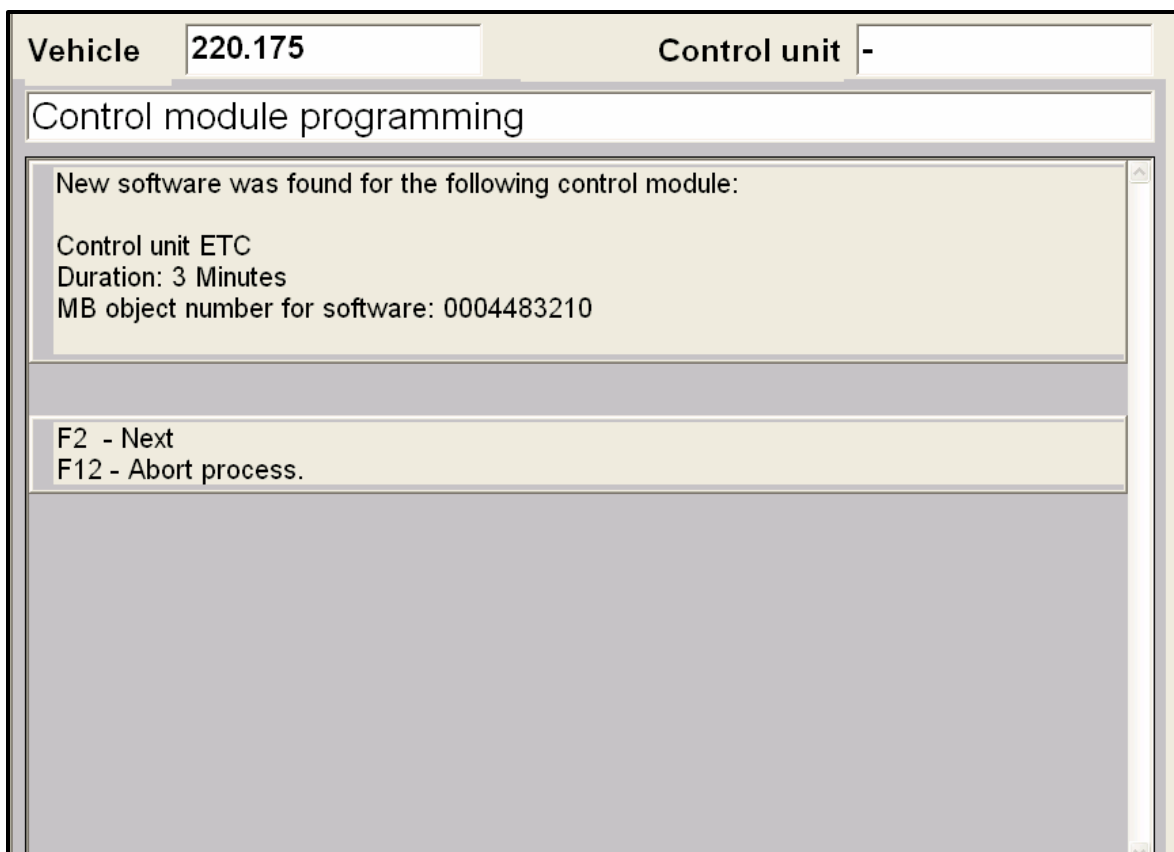
Now try highlighting "SDflash Repair ☺" and pressing F3. What happened?

17. Select "Determination of new control unit software and subsequent control unit programming" to continue.
18. If the SDflash Release CD is not installed in the SDS drive a screen will appear asking you to insert the CD, similar to this:



19. Follow the instructions on the screen by inserting the SDflash Release CD and pressing F2.
20. At this time, the latest software version on the SDflash Release CD is being compared to the current software level in the vehicle's ETC module.
Was new software found for your ETC module? YES NO
21. If **NO**, then continue with the following step. If **YES**, then skip to step 26.

22. Because we want to demonstrate the flash process to you, we need to return to the start of the process again so that we can use a “Training purposes only” CD that permits us to repeat the same software version flash. Press F2 to continue.
23. On this screen press F1 to return to the previous “Control module programming” screen.
24. Contact the instructor for the “Training purposes only” CD that you need to insert in place of the SDflash Release CD. Remove the SDflash Release CD and insert the “Training purposes only” CD.
25. Repeat the process we did earlier: “Determination of new control unit software and subsequent control unit programming”. Now we should see a screen that indicates new software was found. If not, contact the instructor.



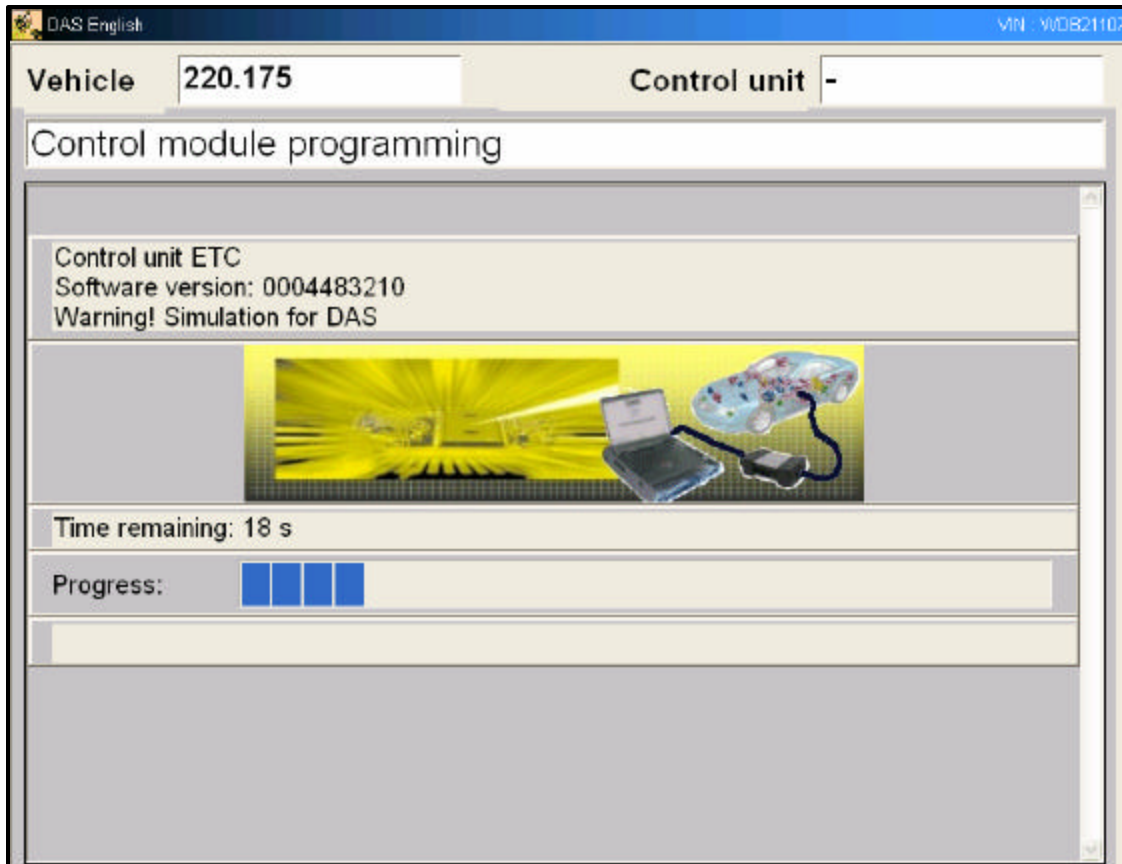
26. Contact the instructor to verify that you have reached the point where we will begin “Program control unit”. Make sure you have a battery charger connected to the vehicle, or run the engine during the flashing.



Instructor check point _____

27. Program the control unit by pressing F2.

28. A screen will appear informing you of the progress of the control module programming similar to this:



29. Follow the screen instructions until a screen appears asking you if you want to erase the fault memory.

30. At this time fault codes in the transmission control module could be erased, but for training purposes continue by pressing F2.

31. A screen will appear after a short time titled “Determine vehicle data for SCN coding.”

Vehicle	220.175	Control unit	ETC
Determine vehicle data for SCN coding.			
Vehicle ident no.	WDB2304761F130872		
Enter VIN as a 17-digit code. For example: WDB2200631A123456 USA, Canada: WDBNA63J0XA123456			
Complete entry with key F3.			

Because new software has been flashed to the ETC module, SDS / DAS automatically proceeds to the next step.

Note: Each time a control module is flashed, the SCN coding has to be determined, entered into SDS / DAS, and then transferred to the control module.

32. On this screen, verify that the “Vehicle ident no.” is correct and then press F3.

33. A screen will appear similar to the one below:

Vehicle	220.175	Control unit	ETC
Determine vehicle data for SCN coding.			
Vehicle ident no.	WDB2304761F130872		
MB object number for software	0004482010		
Check digit [1]	54-6F-A4-7B		
Print vehicle data with key F11 and poll the coding string, SCN and test digit using FDOK screen 4311 'Generation of SCN and coding string'. For retrofitting operations, the retrofit codes are required additionally..			
After the data have been received, the coding can be transmitted to the control unit via menu item 'Perform SCN coding'.			
If you have no access to FDOK, use button F4 to create and print out an application form for faxing.			

34. This screen provides you with the necessary information required for you to obtain the SCN coding. Normally, you would print this page (F11) and then use the information to obtain the SCN code and coding string from FDOK (e.g. Star Network).

Note: The retrofit codes are not generally used in USA as this relates to changes such as: customer requested change of axle ratio or similar.)

35. If you do not have access to the Star Network method, then pressing F4 will take you to a printable form to fax in a SCN request.

36. If you try to start the engine now, what happens? _____

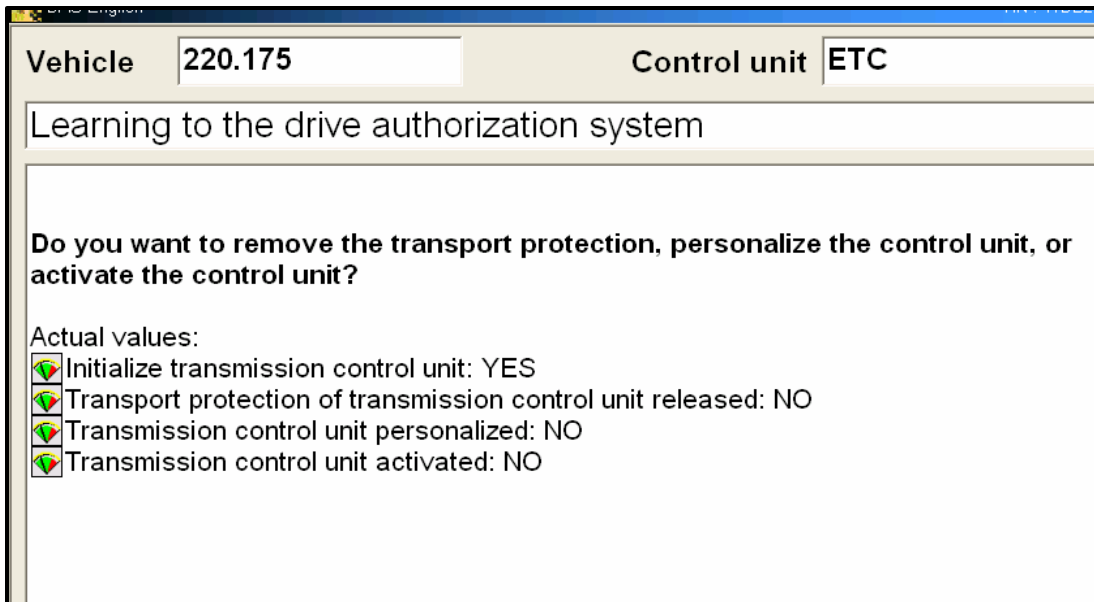
37. Explain your answer: _____

38. Contact the instructor for the SCN code & coding string for your vehicle.

39. Once you have the SCN code and coding string, press F2 to continue.
40. A screen will appear that allows you to enter the coding information into SDS.
Enter the information from the print out given to you. Scroll down to the bottom of the screen as you input the information, reading the notes.

Note: All “0’s” in the coding string should be entered as zeros, not the letter “o”.

41. Press the F3 button. First SDS checks that your input is correct before transferring the information to the control module.
42. If you entered the information incorrectly you will receive an error message.
Recheck the information and correct where necessary. If you entered the information correctly, then follow the instructions on the screen.
43. A screen will appear showing you what information was transferred, (notice the check digit number xx xx xx (2) is not part of the information transferred).
44. Press F2 to continue.
45. If you try to start the engine now, what happens? _____
46. Explain your answer: _____
- _____
47. The screen you should have now on SDS should look similar to this:



48. Are all the actual values “YES”? YES NO

49. When would you most likely see “YES” for “Initialize transmission control unit”, but “NO” for the other 3 actual values (like the screen shot on the previous page). _____

50. In our case the actual values are all “YES” so we do not need to perform these steps. Press F4 to continue.

51. The last step of the process is now displayed: “Teach-in of selection range sensor.” It is recommended to always perform this step, so press F3 to continue.

52. Follow the procedure on the screen to teach-in the selection range sensor.

Note: If you get an error message indicating that the learning process was faulty (or similar), perform the procedure again.

53. After you have finished the teach-in process a screen will appear informing you that the “Initial startup was fully completed”. Press F2 to continue.

54. You should now be back at the transmission main menu.



Instructor check point _____

Installing a Fault

1. From the main menu, select “Control unit adaptations”
2. Here we see some of the items we just performed.
Select “Learning process: Y3/8s1 (Selection range sensor (VGS))”
3. This learning process should be familiar as we just performed it. However, this time we will incorrectly carry out the procedure. After starting the process with the F5 button, confirm that you have placed the shifter in the position SDS is asking you to, but do not move the shifter out of “P”.

4. What happened after a few attempts of looking for “R”? _____

5. Start the engine and with your foot firmly on the brake place shifter in “R” and then “D.”
6. Do you notice anything with the engagement quality? YES NO
7. Navigate your way to fault codes and list any fault codes relevant to the selection range sensor. _____

8. Return to the main menu and select actual values.
9. Select “Emergency running”. Is the transmission in emergency running mode?
 YES NO
10. Return back to the main menu and select “Control unit adaptations”
11. Select “Learning process: Y3/8s1 (Selection range sensor (VGS))”
12. Perform the learning process correctly this time.
13. Start the engine and with your foot firmly on the brake place shifter in “R” and then “D.” Does the transmission still engage harshly? YES NO
14. Return to main menu and check fault codes. What do you notice about the fault code you had earlier (step 7)? _____
15. Exit out of DAS and remove key from ignition.

Actual values

1. If you have finished and wish to look through actual values, please take this opportunity to do so. Let the instructor know if you have any questions.

If you have noticed any parts that need to be replaced on this vehicle, please inform your instructor now.



Instructor check point _____