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Coding, Individualization & Programming

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Coding, Individualization & Programming (CIP)

Model: All

Production: All

OBJECTIVES

After completion of this module you will be able to:

- Understand the purpose of CIP and what it means
- Program/update installed modules
- Access retrofit functions
- Access Individualization functions
- Access ZCS functions

Coding, Individualization & Programming

Introduction

With the introduction of the E65 in 2001, BMW not only introduced a vehicle loaded with the latest technology but also introduced a new way of performing vehicle coding and programming. In order to code and program an E65, a software program commonly referred to as CIP was introduced. The acronym CIP stands for **C**oding, **I**ndividualization & **P**rogramming and with the introduction of Progman & CIP 15.0 it has become the sole software tool for coding and programming vehicles.

Initially CIP was developed for use on the E65/E66 and newer models but has since been expanded to include all vehicles produced prior to the introduction of the E65 that utilize an SGC/UNIX programming structure.

The intention of the CIP program is to insure that whenever a module is updated or replaced it will still be compatible with all the other modules installed in the vehicle (equipped with a MOST bus). Since all of the communication between the various modules installed in a vehicle is over a bus network structure, it is very important that all of the installed modules be able to communicate with each other without problems.

To ensure compatibility/seamless integration between control modules, the CIP software reads out the part numbers of all the control modules installed in the vehicle as well as the software levels of the respective modules. The information from the various installed modules is then cross referenced against a “master reference list” to determine if a module(s) needs to be updated and how this update will effect the other installed modules. Once this cross reference process is started it can result in additional issues such as:

- If the software level in a selected module is updated will the hardware of the module still be able to function correctly.
- If the software to be installed is not going to be compatible with the installed hardware then the module will need to be replaced.
- If updated software is installed in the selected module will this have any impact on any other installed modules and will they need to have the software updated or will the hardware need to be updated in additional modules in order to install the revised software.

Example: *A desktop computer originally built with a Pentium I, 75 Mhz processor using Windows 95 is not able to operate using Windows 2000. In order to operate with Windows 2000 this old desktop computer needs to be upgraded with new hardware. However, a desktop computer designed to operate with Windows 2000 can be updated to Windows XP without having to upgrade the hardware of the computer.*

All hardware devices that utilize software/programs to operate can only have the installed software updated a certain number of times before the operating capacity of the installed hardware is exceeded and no longer compatible, this results in the device no longer being able to function. In order for these devices to continue to operate the installed hardware/control modules will need to be updated, which is what happens in our vehicles or desktop computers over time.

Specific information pertaining to coding and programming with CIP are provided in **SI B 09 05 01**.

Integration Levels

All new models produced as of the E65 have a minimum allowable software level, based on production date, which is referred to as an integration level or data status. The integration level defines the software level that all the control modules installed into a particular model, at time of production, must be at in order to ensure compatibility. Once an integration level for a specific production period is defined/“locked”, the modules installed in those vehicles can not be updated beyond that level.

The Integration level or data status for vehicles equipped with a most bus is provided in the “Status report” or “Measures plan” as shown below.

Vehicle data status: E060-04-09-503

Target data status: E060-04-09-555

If the vehicle data status and target data status are not the same, this indicates that some of the installed control modules need to be updated to bring the vehicle up to the latest level.

If the software levels were not locked it would be quite complex to track all software and hardware variations for all models through all production ranges. It would be extremely difficult to determine what software and hardware level is compatible with each module installed in a specific vehicle(s) and exactly what needs to be updated if one module is updated or replaced, therefore a limit or locked point must be define for specific production periods by model.

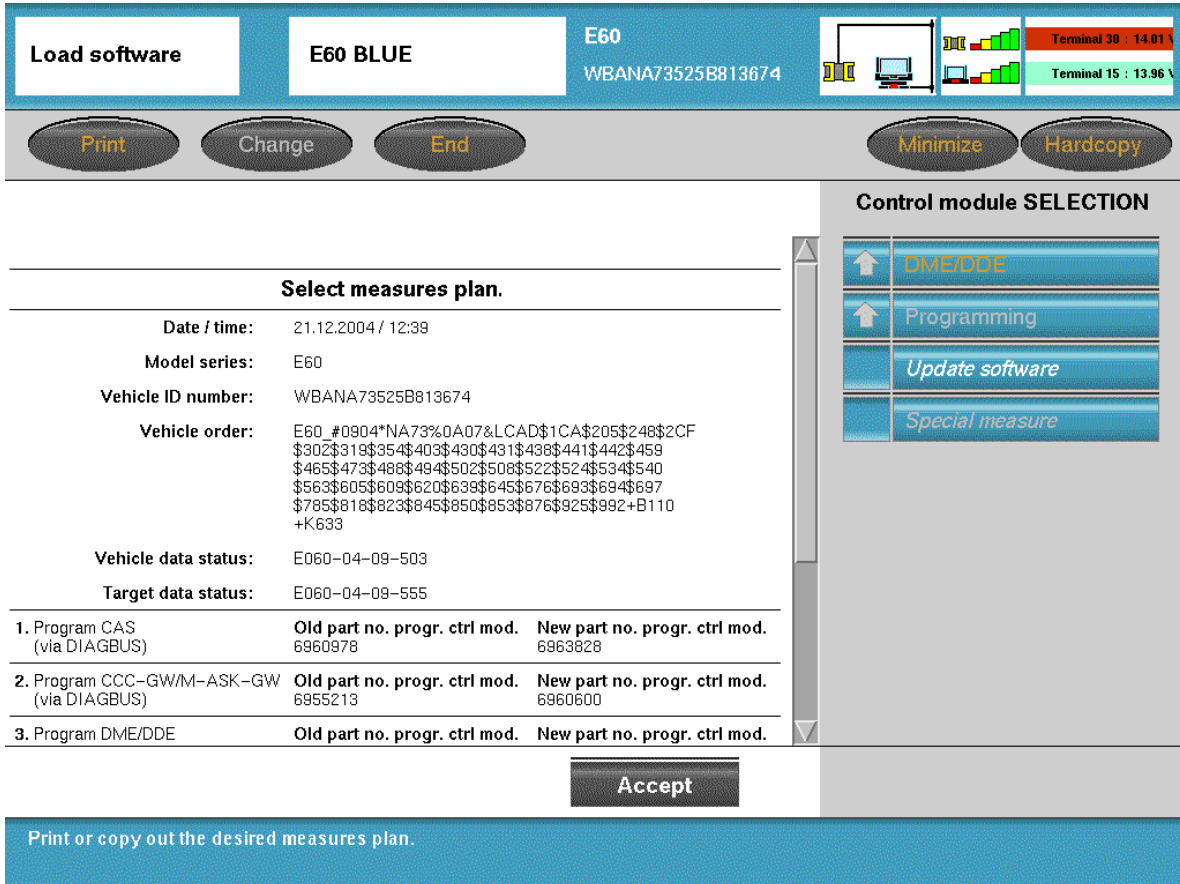
Example: *MY2002 vehicles can not be programmed with software that is assigned to MY2003 vehicles since the defined integration level for each Model Year is different. Similarly Windows 2000 can not be installed & operated on a computer originally developed to run with Windows 95.*

Information contained in this module is for reference as a user guide, more detailed information can be obtained from the respective Service Information Bulletins

SI B09 05 01 & SI B09 03 98.

Measures Plan

A measures plan is generated by CIP to identify what if any control modules need to be updated in order to bring a vehicle up to the latest integration level or data status. The measures plan also identifies the part number of the old/installed programmed control module and also what the new part number will be after the update is performed.



Load software **E60 BLUE** **E60**
WBANA73525B813674

Terminal 30 : 14.01
Terminal 15 : 13.96

Print Change End Minimize Hardcopy

Select measures plan.

Date / time: 21.12.2004 / 12:39

Model series: E60

Vehicle ID number: WBANA73525B813674

Vehicle order: E60_#0904*NA73%0A07&LCAD\$1CA\$205\$248\$2CF
\$302\$319\$354\$403\$430\$431\$438\$441\$442\$459
\$465\$473\$488\$494\$502\$508\$522\$524\$534\$540
\$563\$605\$609\$620\$639\$645\$676\$693\$694\$697
\$785\$818\$823\$845\$850\$853\$876\$925\$992+B110
+K633

Vehicle data status: E060-04-09-503

Target data status: E060-04-09-555

	Old part no. progr. ctrl mod.	New part no. progr. ctrl mod.
1. Program CAS (via DIAGBUS)	6960978	6963828
2. Program CCC-GWM-ASK-GW (via DIAGBUS)	6955213	6960600
3. Program DME/DDE		

Control module SELECTION

- DME/DDE
- Programming
- Update software
- Special measure

Accept

Print or copy out the desired measures plan.

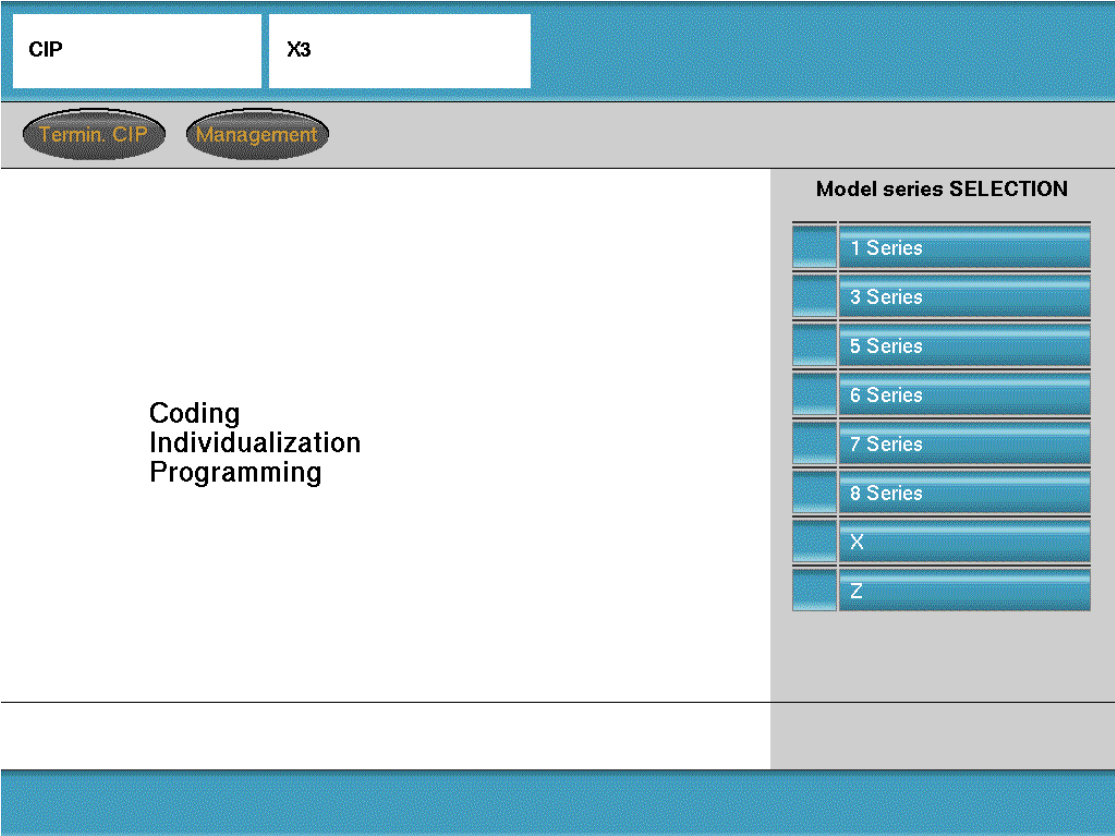
By accepting the defined plan all modules that are listed will be updated “automatically”.

Important!!!

Whenever a measures plan is defined it should always be printed out before proceeding in order to document the work performed, by attaching it to the repair order.

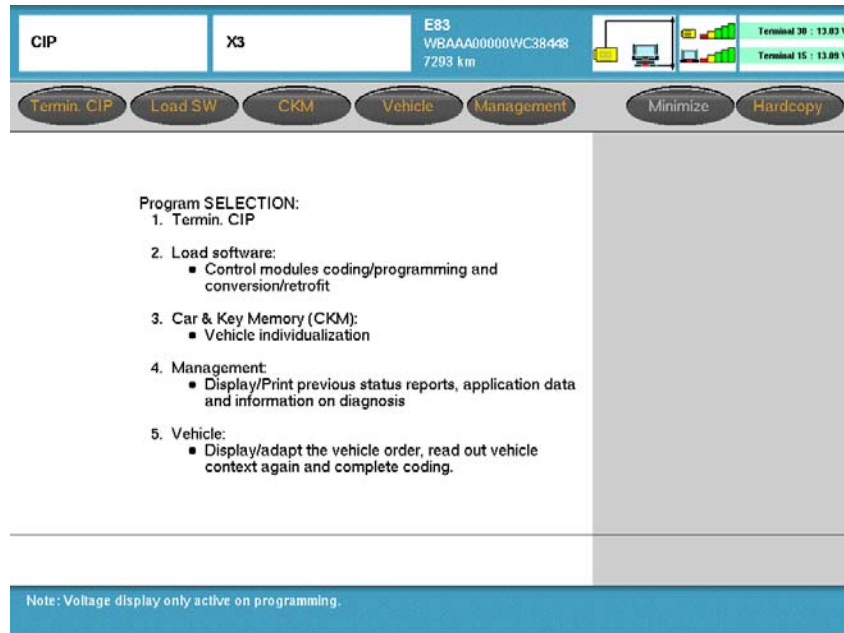
Note: An all inclusive status report or measures plan is only generated for vehicles equipped with a MOST-bus, to ensure compatibility. For all other vehicles a measures plan is generated only for the module selected to be updated (i.e. DME, TCU, EGS...) no evaluation of the other modules in the vehicle is made.

Initial CIP Screen



From the initial CIP screen select the model for which a coding or programming session is to be performed.

CIP Main Selection Screen



Selection of CIP functions/options:

Termin. CIP - End the CIP program and return to Progman home screen

Load SW - Load software function to be selected if:

- Control module has been replaced
- Retrofit process is to be carried out
- Vehicle software is to be updated
- Coding/programming of one or more module(s) is to be performed

CKM - Vehicle and Key Memory/Individualization allows various driver selectable features (such as drive way locking, seat memory, central locking/unlocking, daytime running lights etc.) to be coded to the vehicle or individual keys.

Management - Provides the ability to:

- Display the current version of CIP installed
- Print previously performed Service Measure Reports
- Run a test on the software currently installed on system (SSS)

Vehicle - Allows access to:

- Vehicle Order
- Initialization
- Service Functions
- Complete vehicle coding

Control Module Replacement Yes/No

The screenshot shows a software interface with a blue header bar. On the left, there is a 'Load software' button and a text field containing 'X3'. To the right of the text field, the vehicle information is displayed: 'E83', 'WBAAA00000WC44237', and '2871 km'. Further right, there are icons for a printer, a bar chart, and a terminal window showing 'Terminal 30 : 13.71 \\' and 'Terminal 15 : 13.83 \\'.

Below the header bar is a grey bar containing five buttons: 'Print', 'Change', 'End', 'Minimize', and 'Hardcopy'. The 'End' and 'Hardcopy' buttons are highlighted in orange.

The main area of the screen is white and contains the following text:

Have control modules been replaced on this car?
Note: For retrofits press *No*.

At the bottom of the main area, there are two buttons: 'Yes' and 'No'.

At this screen information is needed to determine which path is to be followed.

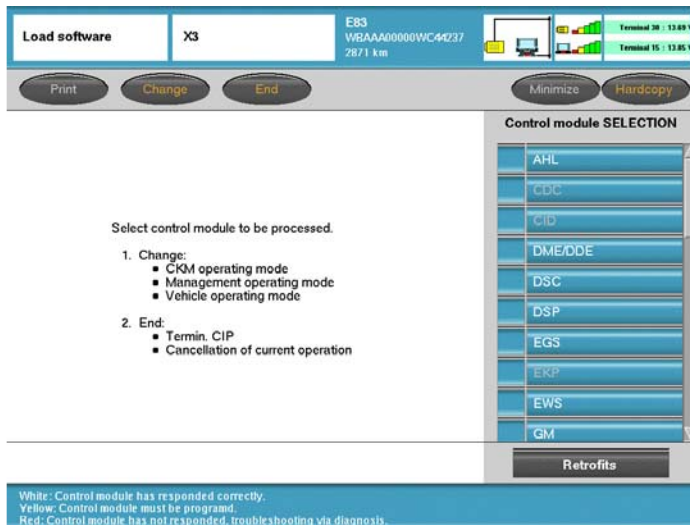
Answer **“Yes”** if:

- A previously installed control module has been replaced.

Answer **“No”** if :

- No control module(s) has been replaced but an update on one or more modules needs to be performed.
- A retrofit needs to be performed on the vehicle (such as installation of CD player, ULF, phone cradle installation, activation of bluetooth, etc...).
- A control module for a new system/accessory is installed as part of a retrofit installation.

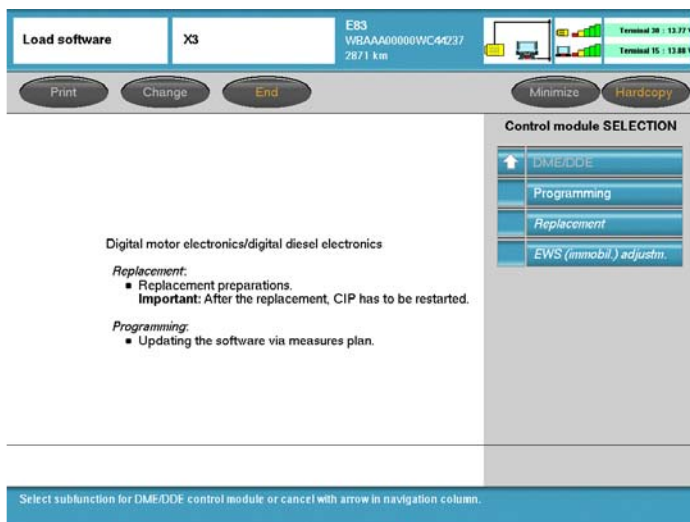
CIP Functions - If No (Non MOST-Bus Vehicles with VO)



Select the module to be reprogrammed

Or

Select **“Retrofits”** if an accessory function/feature is to be added or deleted.



Example: DME/DDE was selected on previous screen.

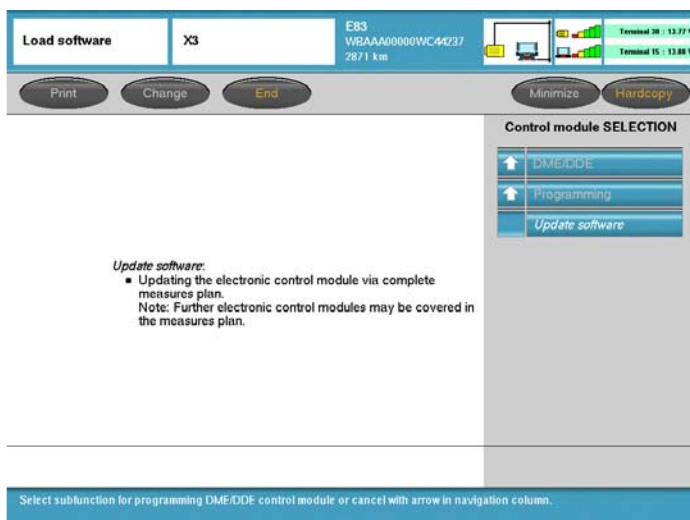
Programming is selected if:

- Checking for availability of updated software for selected control module.
- It is known that updated software is available for the selected control module.

Replacement is selected if a module was replaced.

EWS is selected if:

- Alignment of EWS & DME must be performed



Example: Programming was selected on previous Screen.

Upon selecting **“Update software”** a measures plan will be generated that is specific to the module selected.



A measures plan for the selected system/module is displayed.

A measures plan identifies the programmed part number for the control module(s) installed:

- “Old part no. progr. ctrl. mod.” - indicates p/n for software currently installed.
- “New part no. progr. ctrl. mod.” - indicates the p/n if the module is updated, by accepting the displayed measures plan the module will be updated to the new number and software.

Note: The “update” does not need to be performed if the two part numbers are the same.

On vehicles without a MOST-Bus, a “Measures plan” provides information on updates that are available for the selected control module. By selecting accept, only the module listed in the measures plan will be updated.

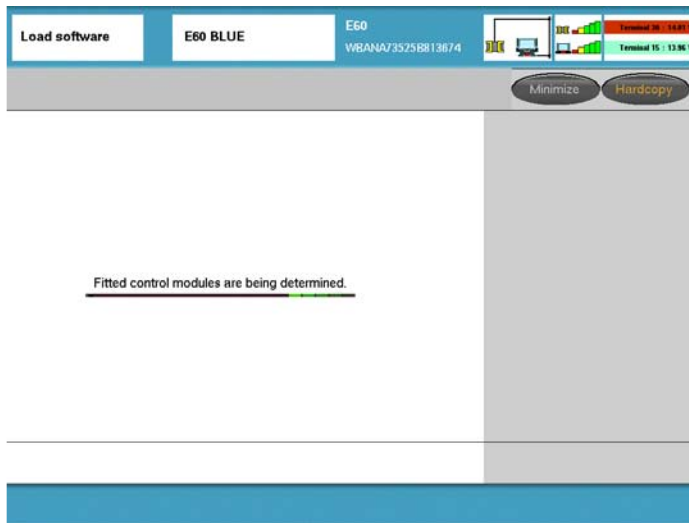
Note: Prior to selecting accept, printout a copy of the measures plan and attach it to the repair order to document the work performed.

Important!!!

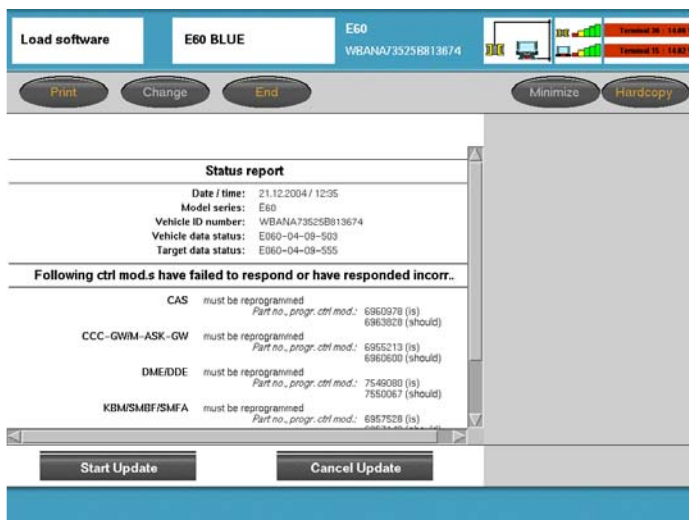
If the measures plan identifies any control modules that will need to be replaced exit CIP.

For additional information pertaining to programming using CIP refer to **SI B09 05 01**.

CIP Functions - If No (MOST-Bus Vehicles)



After selecting **“No”** CIP evaluates the installed control modules to determine if any updates are required.

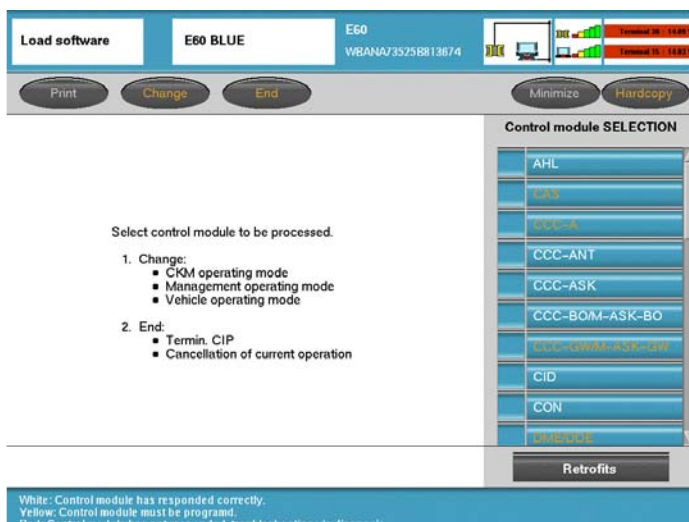


Once the evaluation is completed and CIP determines that there are updates available a **“Status report”** is generated.

Note: Status report is similar to a measures plan.

The status report identifies the control modules for which an update is available and also indicates if the module will need to be reprogrammed or replaced.

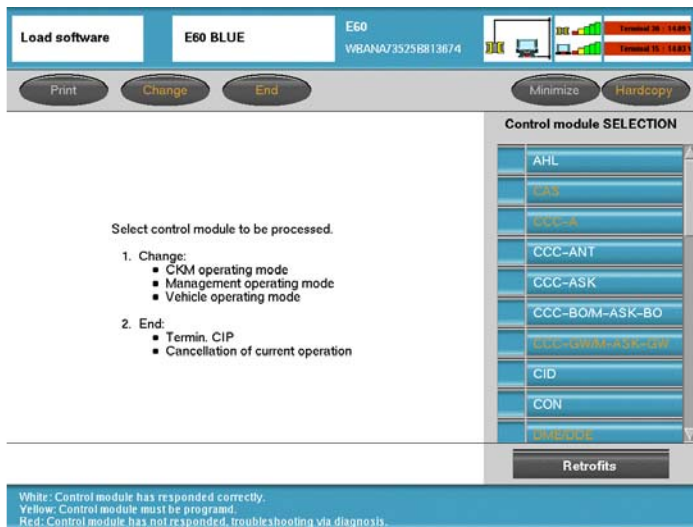
Information is also provided indicating the current programmed part number and also what the number should be after an update is performed.



If **“Cancel update”** is selected or if CIP determines that there are no updates needed or available for the vehicle then the **“Control module selection”** screen is displayed.

For additional information pertaining to programming using CIP refer to **SI B09 05 01**.

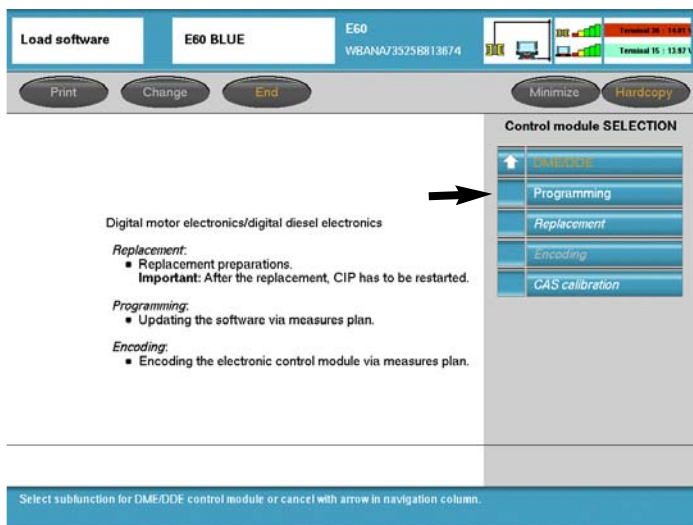
Control Module Selection - Programming - Update Software



From the “Control module selection” screen specific control modules can be selected for reprogramming.

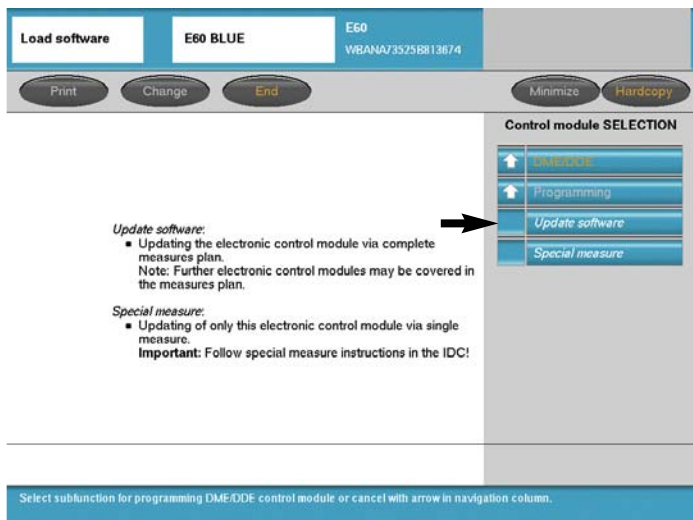
Or

Select “**Retrofits**” if an accessory function/feature is to be added or deleted

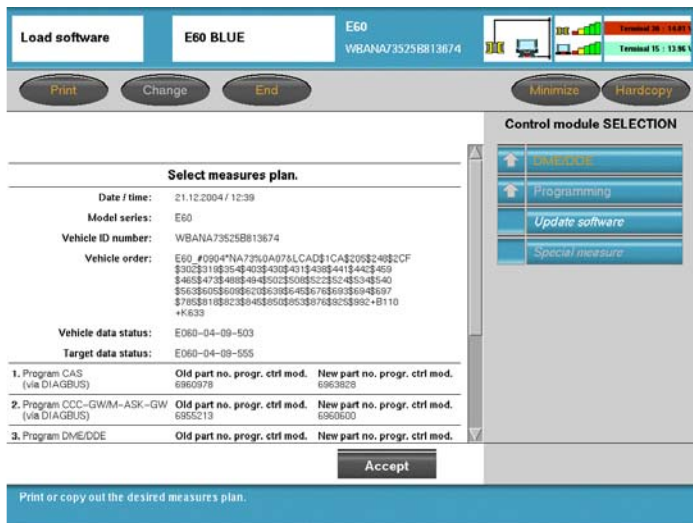


Example: DME DDE is selected on the previous screen.

By selecting “**Programming**” the software of the selected module can be updated or a measures plan for all installed modules can be obtained and updated.



By selecting “**Update Software**” a measures plan will be generated that will indicate what updates if any are available not only for the DME but for all modules installed in the vehicle.



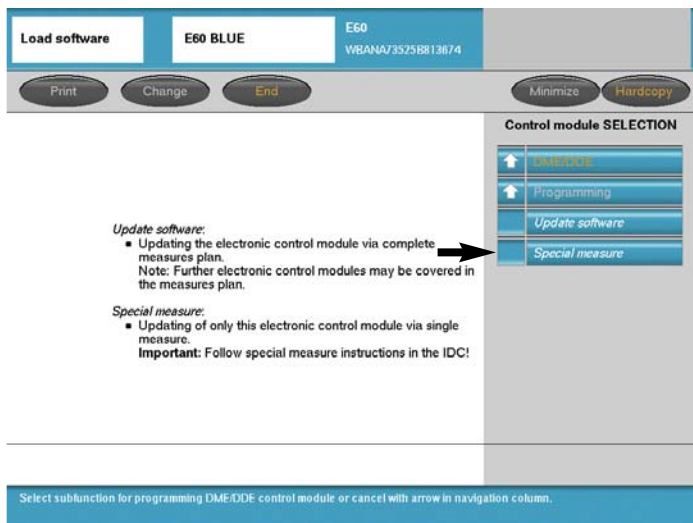
A "Measures plan" provides information on updates that are available for all installed control modules. By selecting accept, all modules listed in the measures plan will be updated.

Note: Prior to selecting accept printout a copy of the measures plan and attach it to the repair order to document the work performed.

Important!!!

If the measures plan identifies any control modules that will need to be replaced exit CIP.

Control Module Selection-Programming-Special Measures

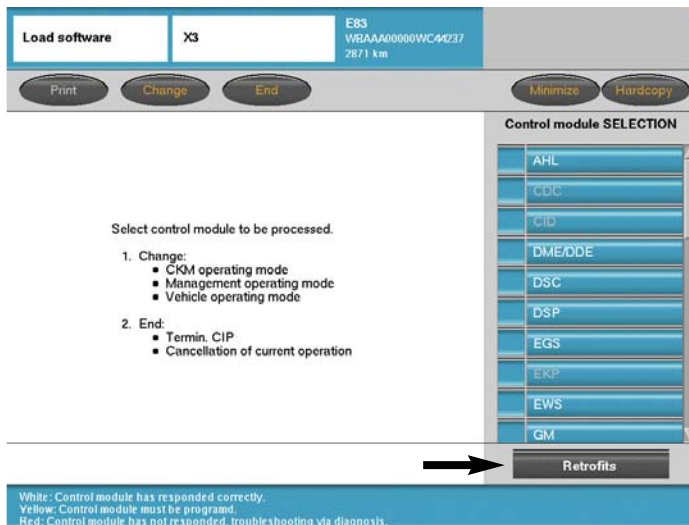


Important!!!

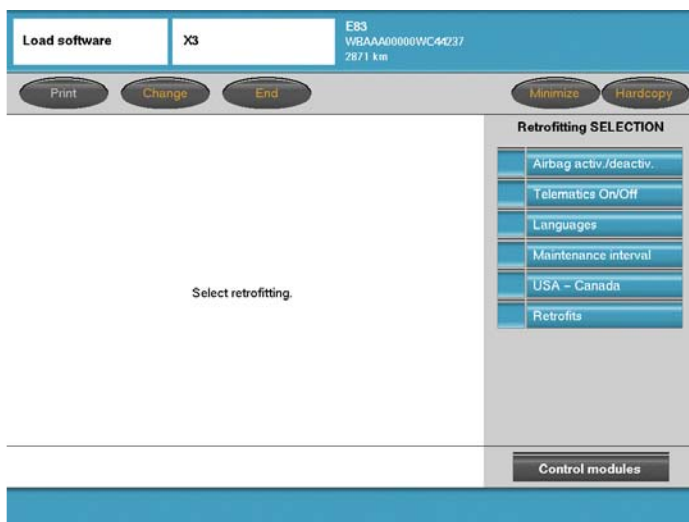
The "Special Measures" function is only to be used in the event that a control module(s) can not be programmed during the "Update Software" process that is executed as a result of a developed "Measures plan"/"Status report" or specific instructions are given in a Service Information Bulletin which require the use of special measures to update a module.

In the event that a control module(s) can not be programmed successfully the information will appear next to the specific module(s) in the final report, which is generated upon completion of an update or "Measures plan".

Retrofits

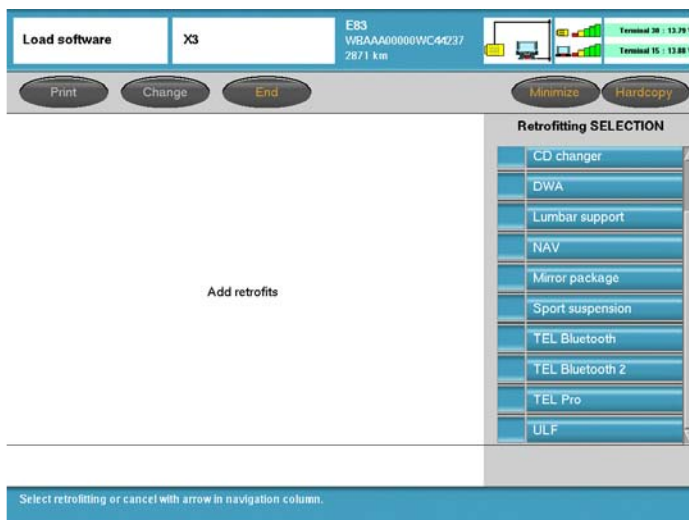


Select **“Retrofits”** to view a list of functions/features that can be modified or installed.



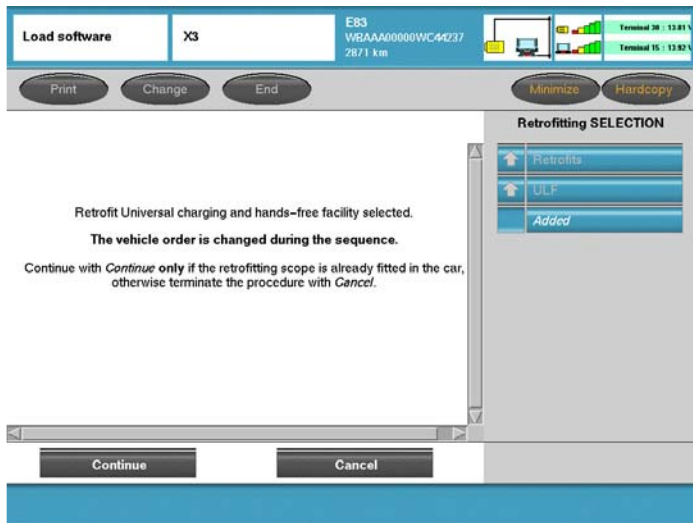
The initial screen displays information pertaining to:

- Airbag activation/deactivation
- Telematics On/Off
- Language (setting control display/monitor language)
- Maintenance interval - reset/checking
- USA-Canada conversion
- Retrofits - listing accessories installed or available for installation.



By selecting **“Retrofits”** on the previous screen a list of accessory systems available for installation is obtained.

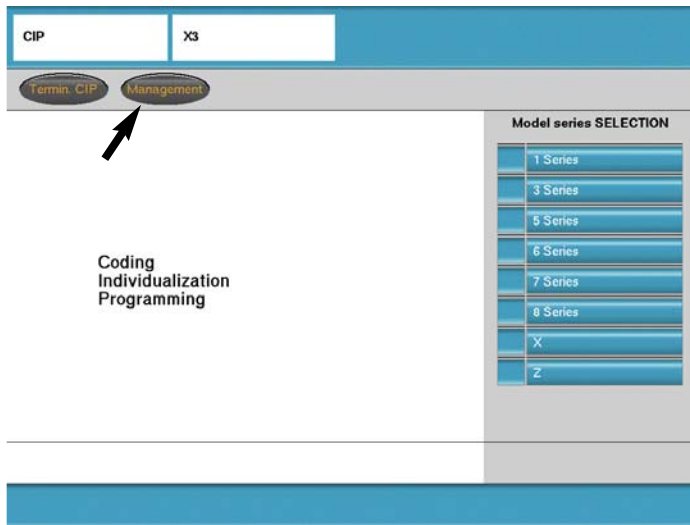
Note: Some of the items listed may not be available as retrofits for US vehicles. Please refer to ASAP portal on Centernet for more information.



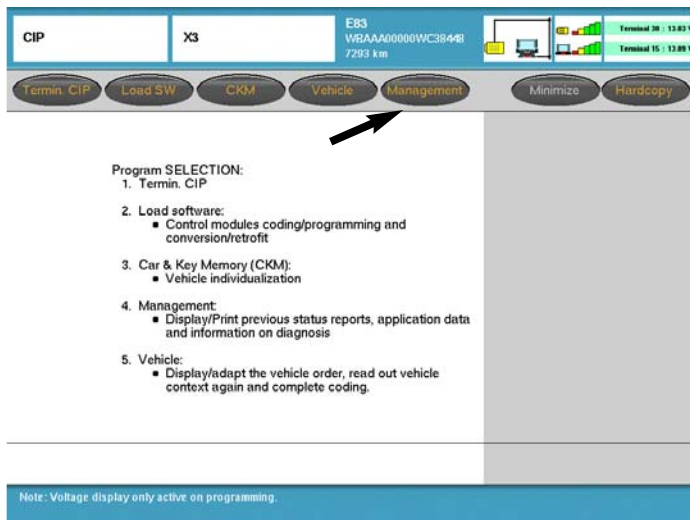
Example: *ULF* was selected on previous screen.

If this system/module is installed the vehicle order will be modified to reflect the addition of this module/accessory to the vehicle by selecting **“Continue”**.

Management



“Management” can be selected from the main/initial CIP screen.



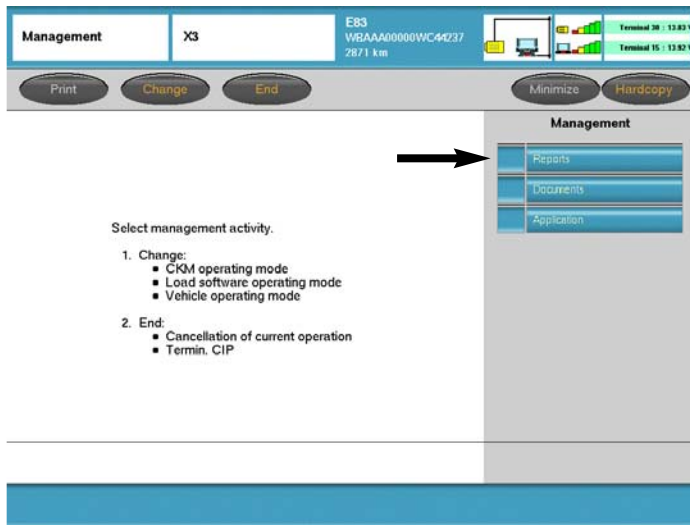
Or

“Management” can be selected from the Main CIP Selection screen.

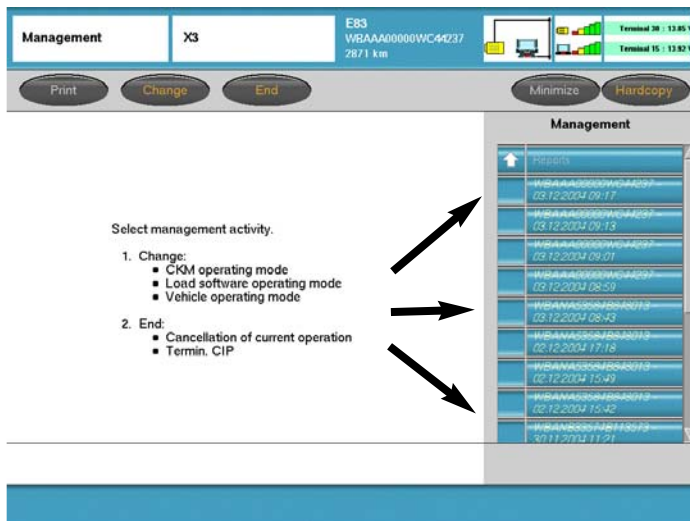
By selecting “Management” the following functions can be accessed:

- Print previously performed Service Measure reports
- Display the current version of CIP installed
- Run a test on the software currently installed on the system (SSS)

Management - Reports



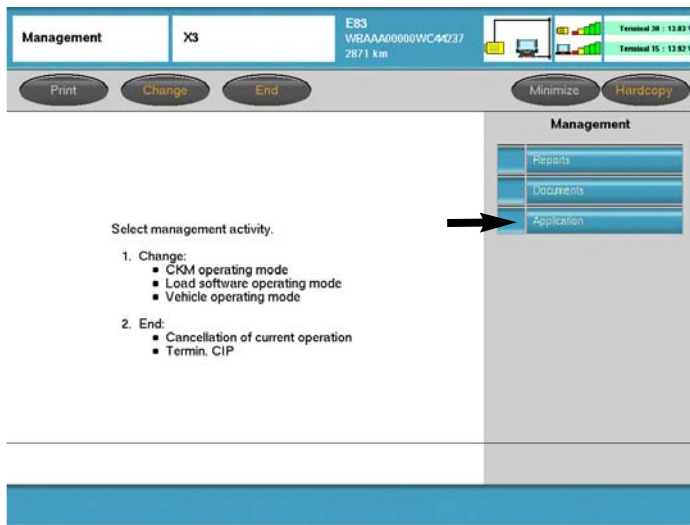
To access the most recently generated measures plans select **“Reports”**.



The 16 most recently generated measures plans can be accessed/ viewed.

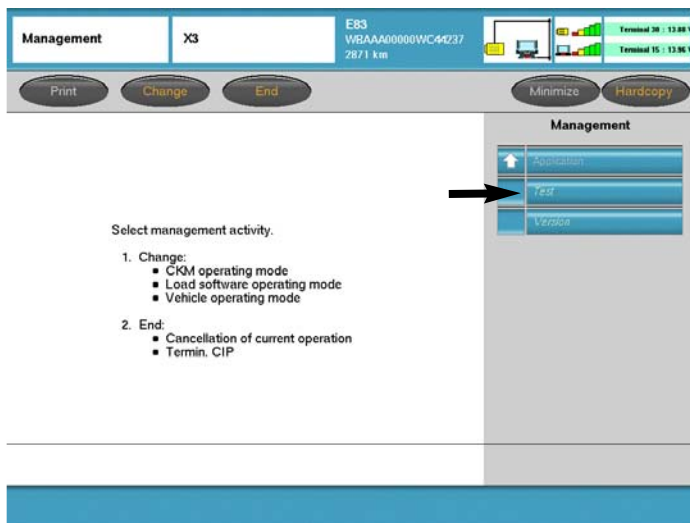
NOTE: The reports are not specific to the vehicle currently connected but are a cumulative listing of vehicles recently connected/accessed using CIP via a specific SSS.

Management - Application - Test & Version

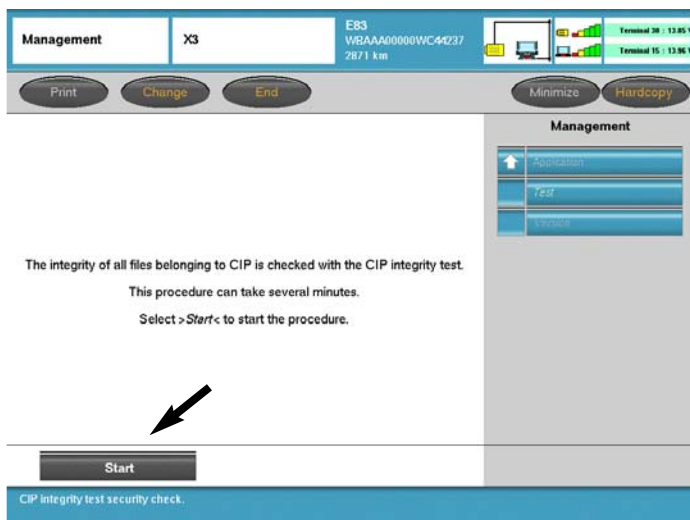


The “Application” function provides the ability to:

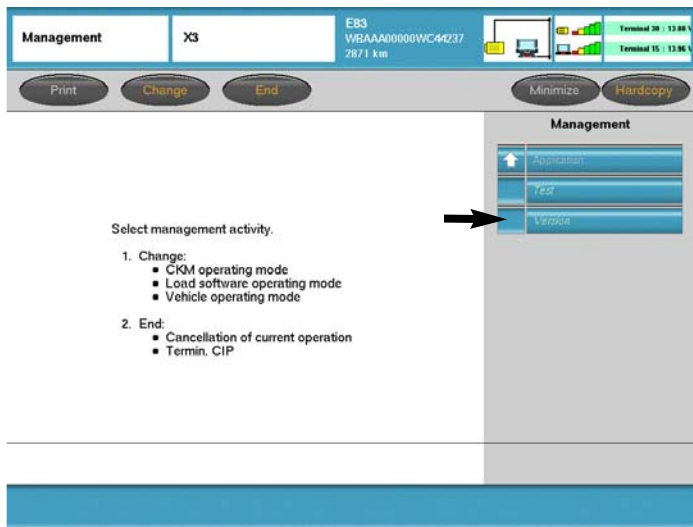
- Run a system test
- Determine information regarding the version of CIP currently installed



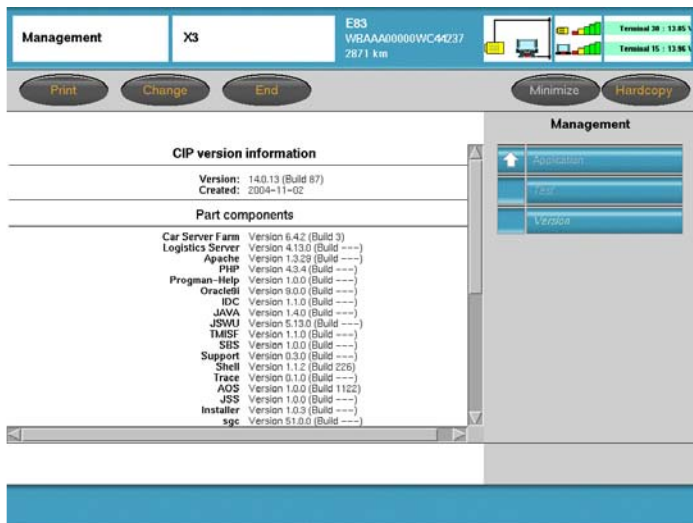
Select “**Test**” if system files are to be checked.



By selecting the “**Start**” button a brief test of the system files will be performed.

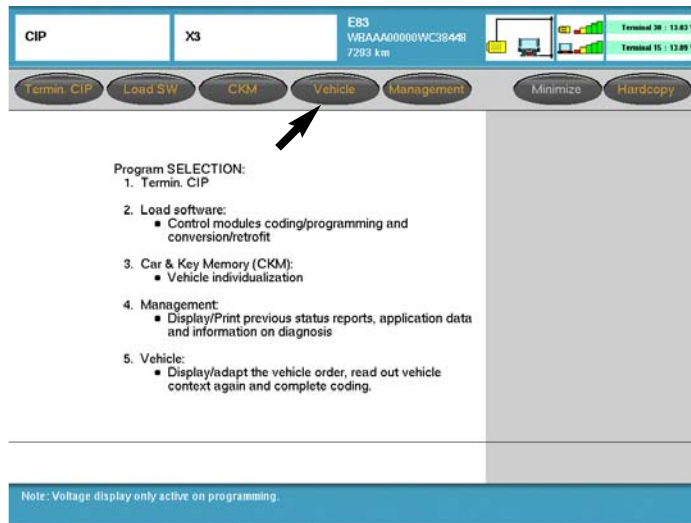


By selecting **“Version”** installed application information will be displayed.



A list of the various files/applications installed as well as their software levels is displayed.

Vehicle



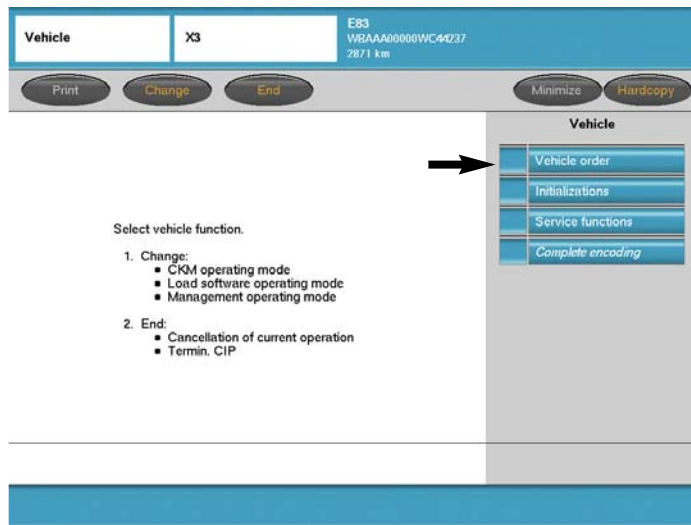
“**Vehicle**” can be selected from the main CIP selection screen to access additional functions:

- Vehicle order
- Initialization
- Service functions
- Complete encoding

By selecting “Vehicle” the following functions can be accessed:

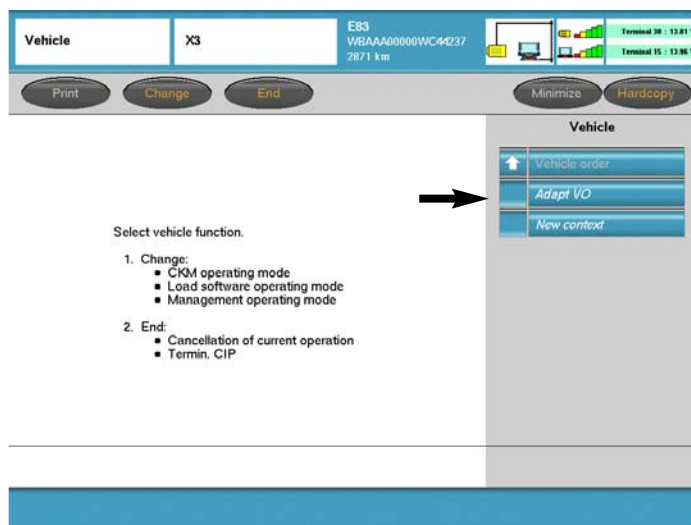
- Vehicle Order
- Initialization
- Service functions
- Complete encoding

Vehicle - Vehicle Order

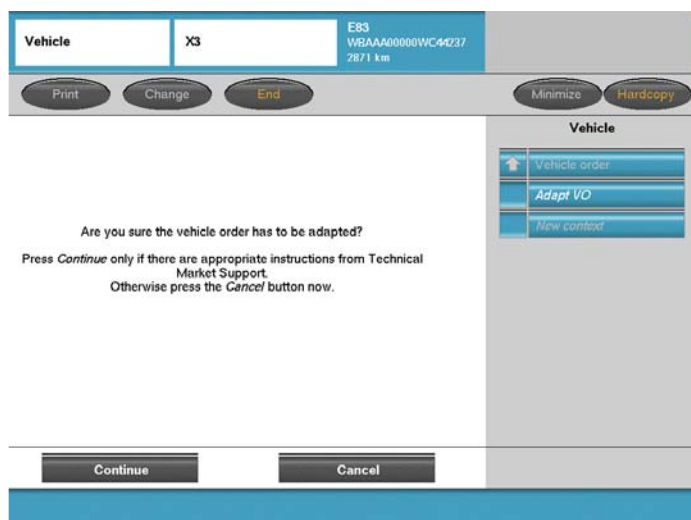


By selecting **“Vehicle order”** the ability to adapt/modify the vehicle order can be accessed.

Note: Changing the vehicle order may affect vehicle operation. Modifying the vehicle order should only be performed when directed to do so by the Technical Hotline, Service Information Bulletin or Aftersales Installation Instructions.



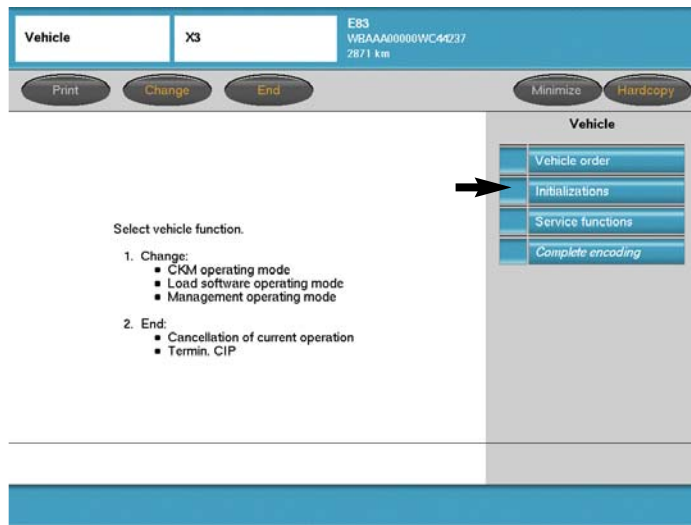
Selection of **“Adapt VO”** provides the ability to install a modified Vehicle Order file.



Before selecting **“Continue”** a floppy disk (1.44) containing the modified/new vehicle order must be inserted into the disk drive of the SSS.

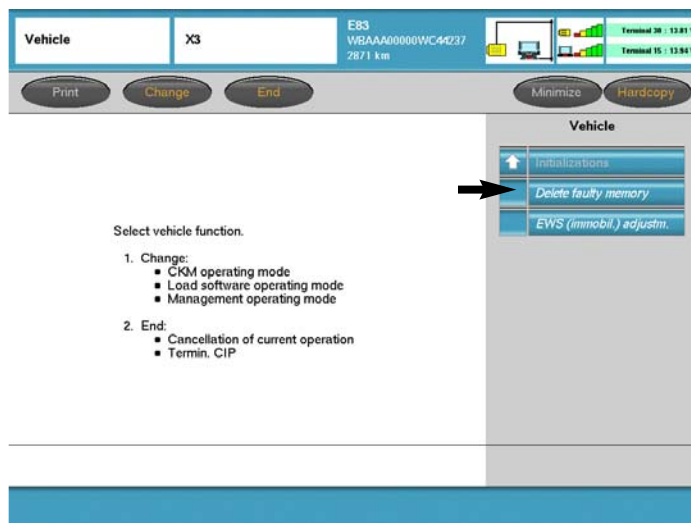
Note: The modified VO file is obtained from the Technical Hotline by submitting a PUMA case requesting a modified VO, the PUMA case should indicate what accessory/feature needs to be added or removed. The modified file will be sent via E-mail and must be copied on to a 1.44” floppy disk. Do not attempt to open the received file on a PC, as this may corrupt the data contained in the file. (Refer to SI B 09 05 01)

Vehicle - Initialization

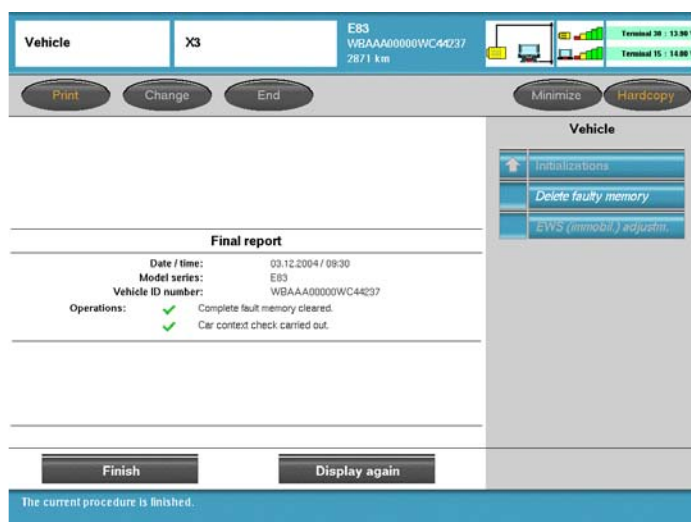


The **“Initialization”** function provides access to three different functions:

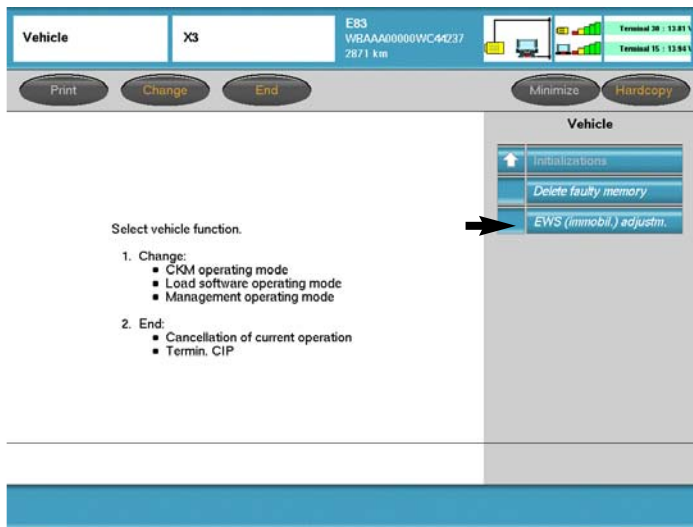
- Start system time - Used to synchronize all modules contained on the vehicles byte-flight bus.
- Delete fault memory
- CAS or EWS calibration



By selecting **“Delete fault memory”** the fault memory of all installed control modules will be cleared.



Displays a report pertaining to the clearing of the fault memory on all installed modules.

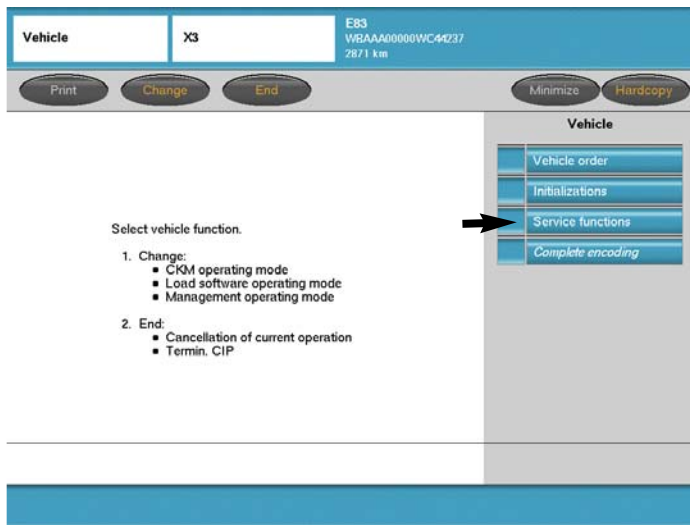


By selecting **“EWS adjustm.”** or **“CAS Calibration”** the rolling code tables can be initialized.

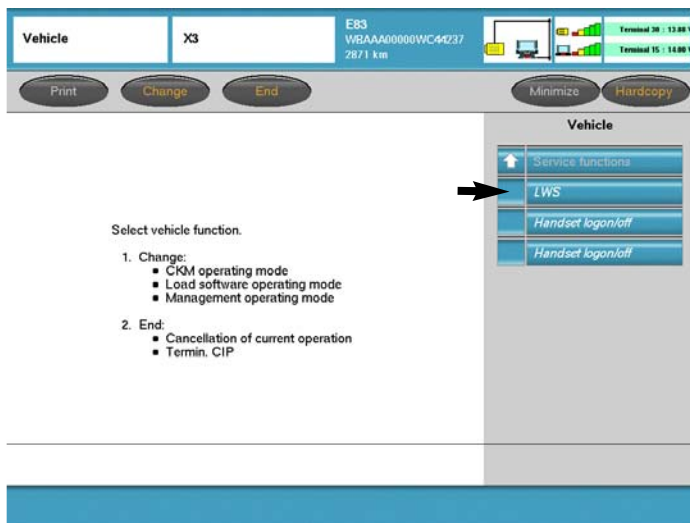


By selecting **“Yes”** the calibration/initialization of the rolling code tables in the DME and CAS or EWS modules will be carried out.

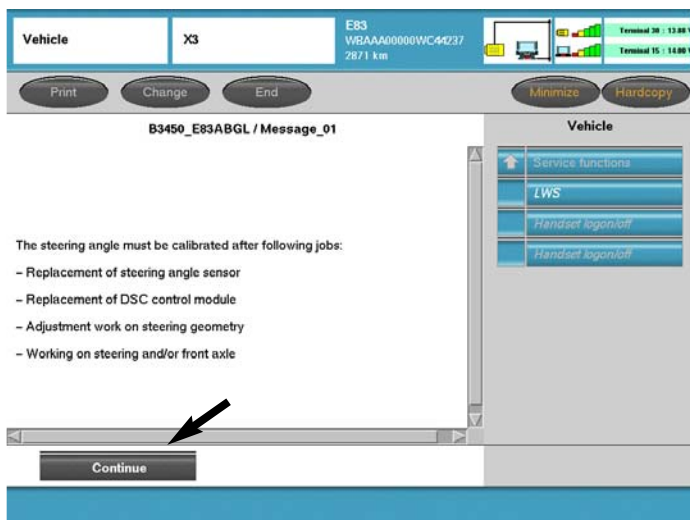
Vehicle - Service Function



The **“Service function”** feature provides access to various calibration functions.

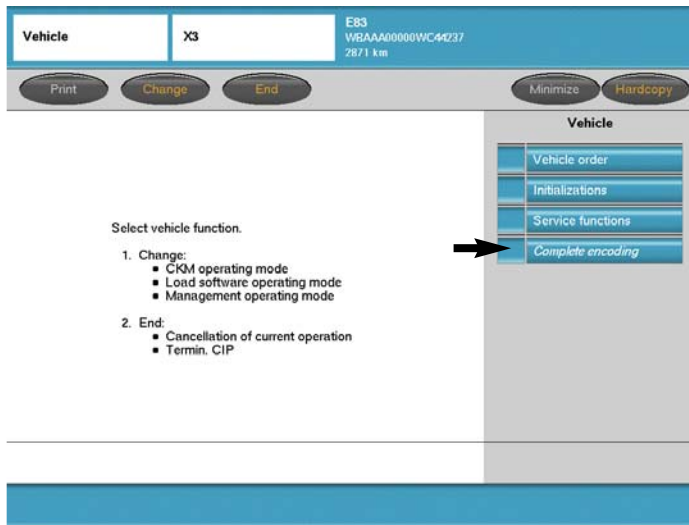


Selecting **“LWS”** will provide the ability to calibrate the steering angle sensor.

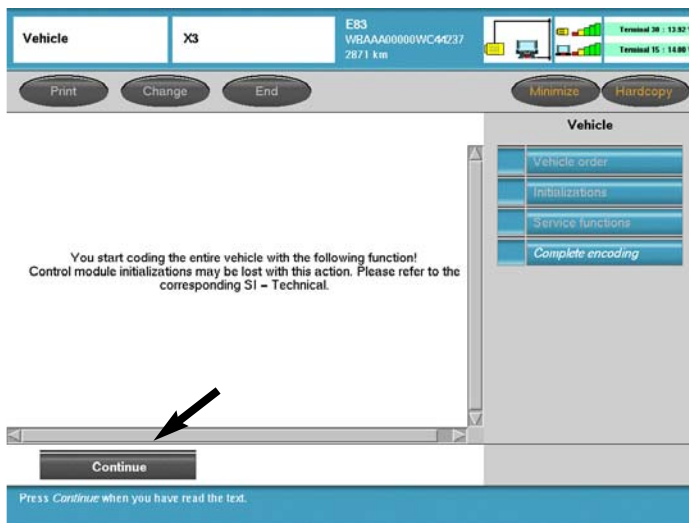


By selecting continue the process to calibrate the steering angle sensor will be carried out.

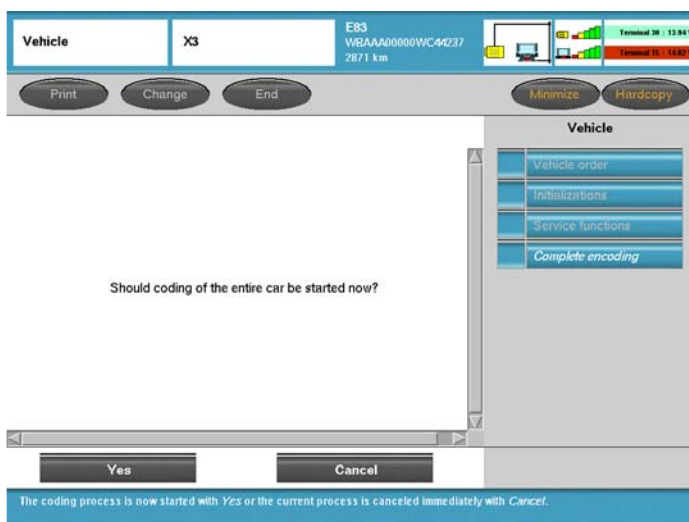
Vehicle - Complete Encoding



“**Complete encoding**” provides the ability to code/decode all control modules installed in the vehicle.

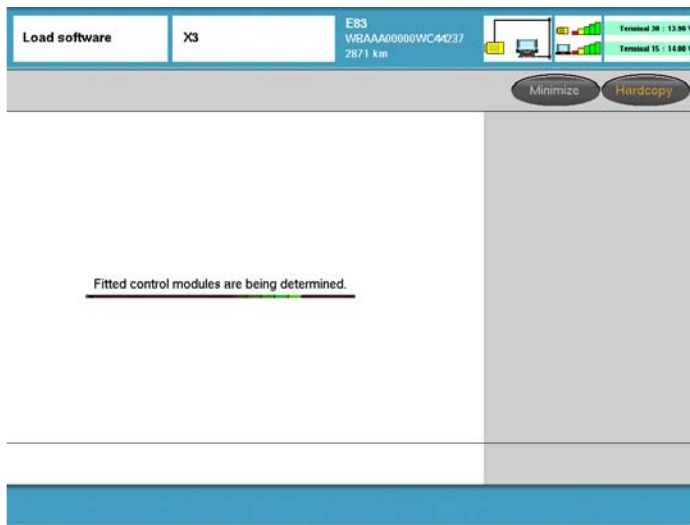


Recoding all the installed control modules may result in the loss of initialization or system settings such as radio station presets or seat/mirror memory.

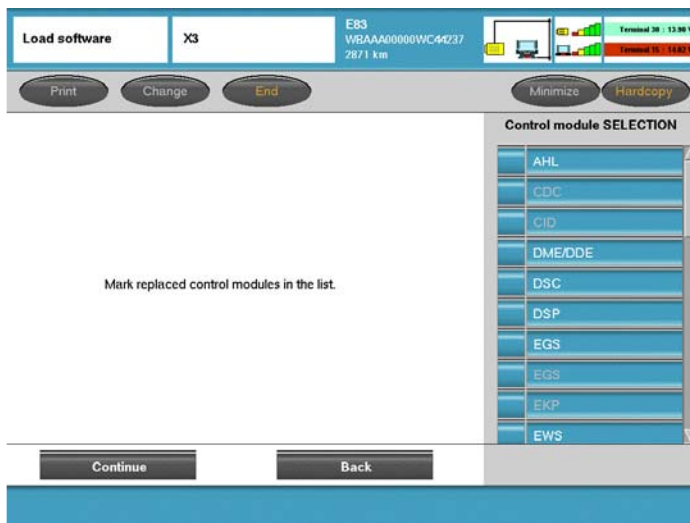


By selecting “**Yes**” all installed control modules will be recoded based on the information contained in the Vehicle Order.

CIP Functions - If Yes



After selecting **“Yes”** on the Yes/No selection screen a determination/check of all installed control modules is performed.



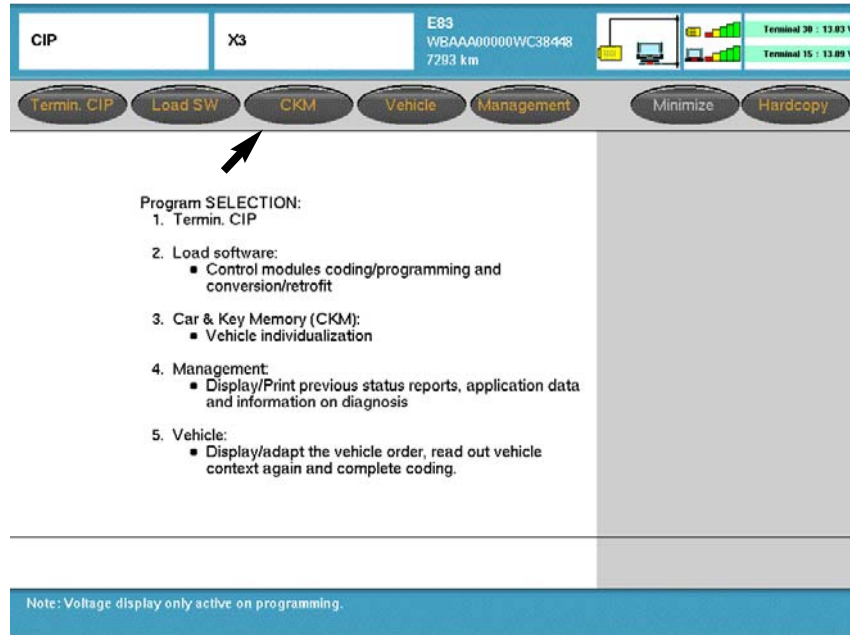
Upon completing a check of the installed control modules, a list highlighting the installed control modules is displayed.

Select the control module(s) that were replaced and select continue.

After selecting the replaced module(s) and selecting continue a measures plan will be generated which compares the integration levels (actual vs. target) for not only the modules replaced but for all installed modules as well. If any of the installed control modules do not match the target level they will be updated along with the replacement modules.

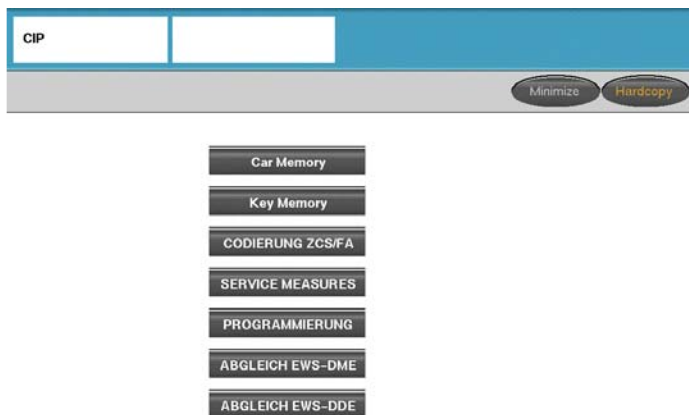
For additional information pertaining to programming replacement modules refer to **SI B09 05 01**.

CKM - Individualization (Vehicle & Key Memory)



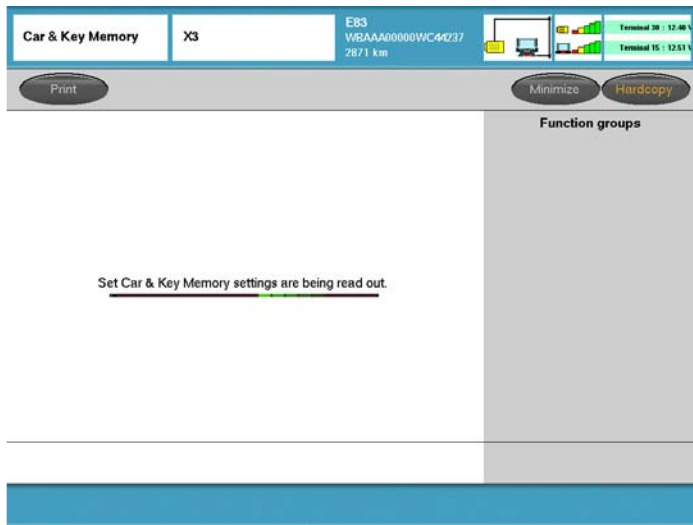
The CKM feature contained in CIP (for models produced as of the E65) provides the ability to “customize” certain vehicle and key functions to meet the specific preferences of the customer. It is important to note that the functions/features that can be “customized” will vary depending on model, equipment level and vehicle software level.

Upon selecting “CKM” a check of the current vehicle and key settings is made and displayed. The displayed settings list should be printed out and provided to the customer in order for them to select how the available functions should be set. The CKM function contained within CIP allows settings for both vehicle and keys to be made directly, the older version separates the key settings from the vehicle setting as different functions.

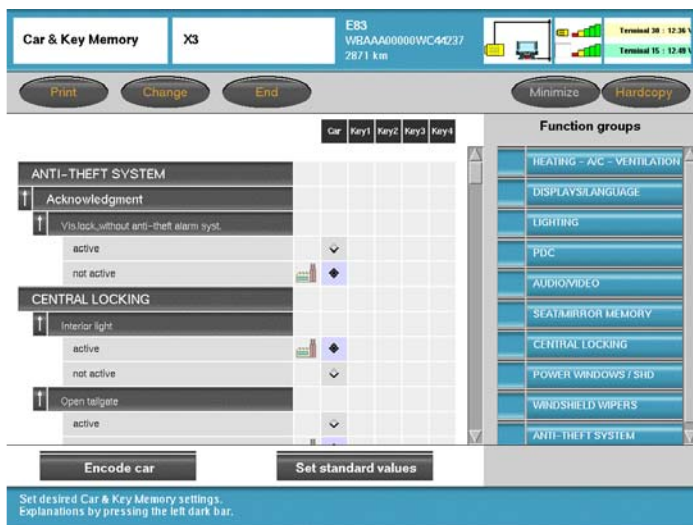


On older vehicles the Car Memory and Key Memory settings can be accessed via the SGC/UNIX function (refer to Progman Module and the section pertaining to accessing CIP Functions for E31/E32/E34/E36/E38/E39/E46/E52/E53).

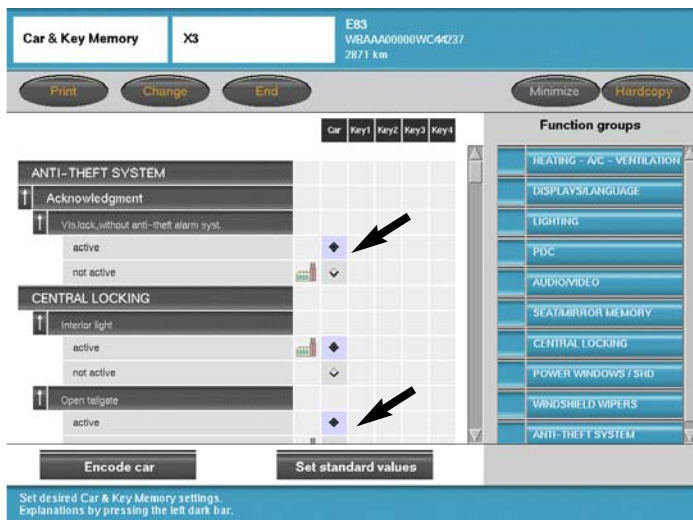
Detailed information pertaining to CKM configuration is available in **SI B09 03 98**.



Upon selecting “CKM” a check of the current vehicle and key settings is made.

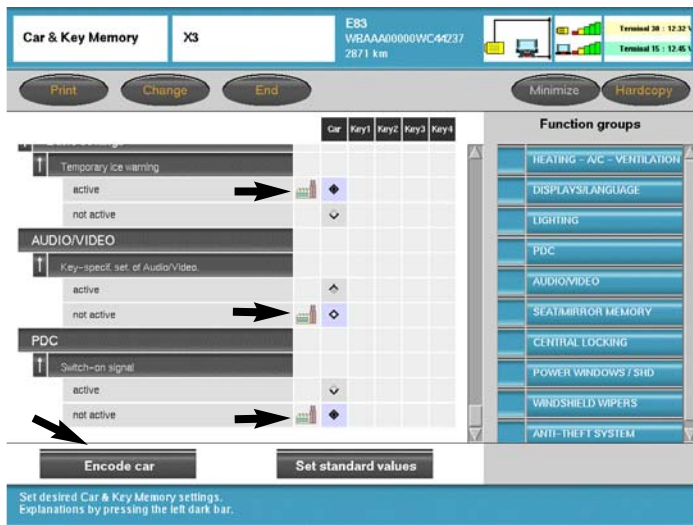


Once the check is complete the current settings are displayed and can be printed out.



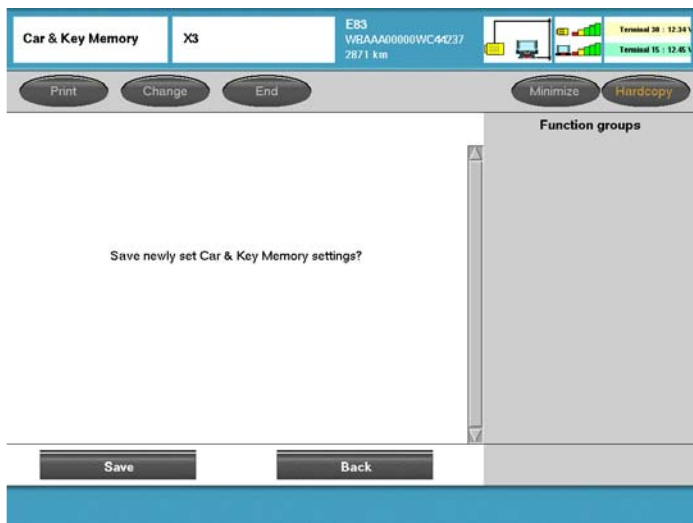
Changes to the current settings can be made by selecting the preferred function.

Note: Some preference settings can be made that are specific to the key being used.



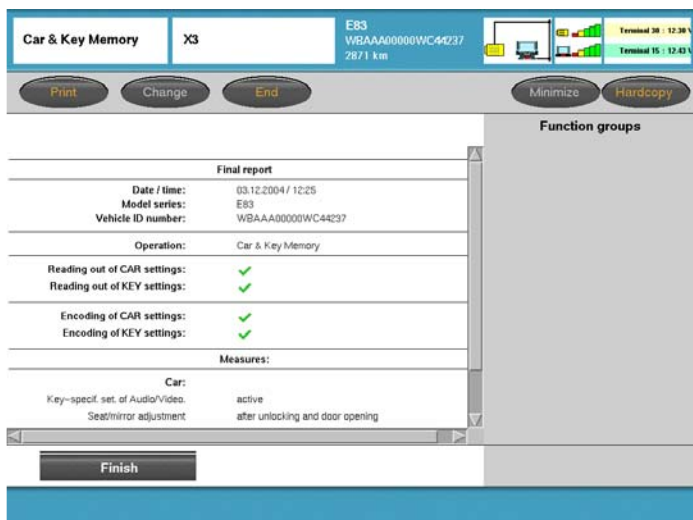
The factory default settings are identified by a “factory” symbol.

To except/code the new setting to the vehicle or key select **“Encode car”**.



To lock the changes to the vehicle and/or keys select **“Save”**.

By selecting back additional changes can be selected or the function aborted.



Once the new values are stored/set a final report showing the new setting will be displayed. The report will also show if the effected modules did or did not accept the changes.

ZCS Coding Procedure

The ZCS coding procedure can currently be performed with the DISplus using DIS CDs until DIS CD 42 is released at which time all SGC/Unix coding and programming functions will be available only via Progman using the GT1 or SSS.

There are two methods of encoding replacement control modules:

- Manual input of ZCS
- Automatic ZCS retrieval and coding

Coding Control Modules that Store the ZCS

On earlier production vehicles when replacing a control module that stores the ZCS code (i.e. Kombi?Instrument Cluster) the information must be entered manually in order to code the replacement module. The ZCS code from the label located in the vehicle or a print-out of the code stored in the module to be replaced must be entered into the new module.

The control modules that store the ZCS and require manual input are:

- IKE - E38
- EKM - E31
- Instrument Cluster - E32/34 (After 9-91) & E36 (except 318ti and Z3 Roadster)
- EWS II - 318ti & Z3 Roadster

Note: As long as the defective EWS II control module can communicate with the coding equipment, automatic encoding is possible.

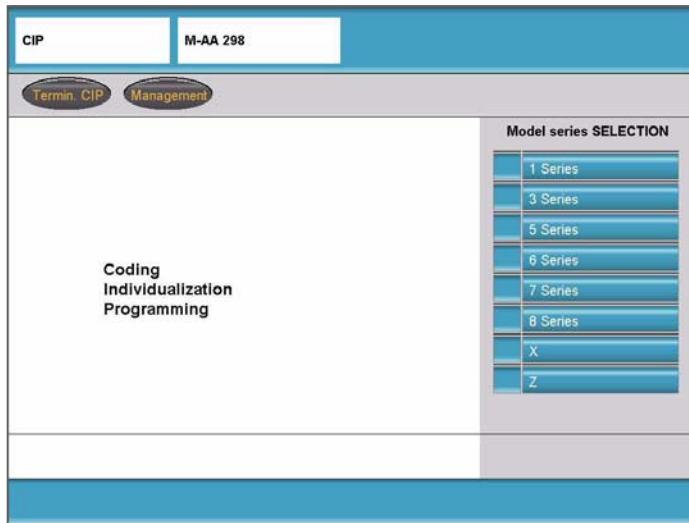
On later production vehicles where the ZCS information is stored in two modules, redundant data storage, the ZCS information to code the replacement module can be obtained from the second/backup module.

Vehicles which have redundant ZCS data storage are:

- E36 (Z3) - Instrument Cluster & EWS II as of 9/98
- E39 - Instrument Cluster & EWS II
- E46 - Instrument Cluster & LSZ
- E53 - Instrument Cluster & LSZ

Note: E46 changed from ZCS to a Vehicle Order (VO/FA) vehicle data structure in 9/01.

Manual Input of ZCS Data



From Progman establish a connection to the interface connected to the vehicle and access CIP.

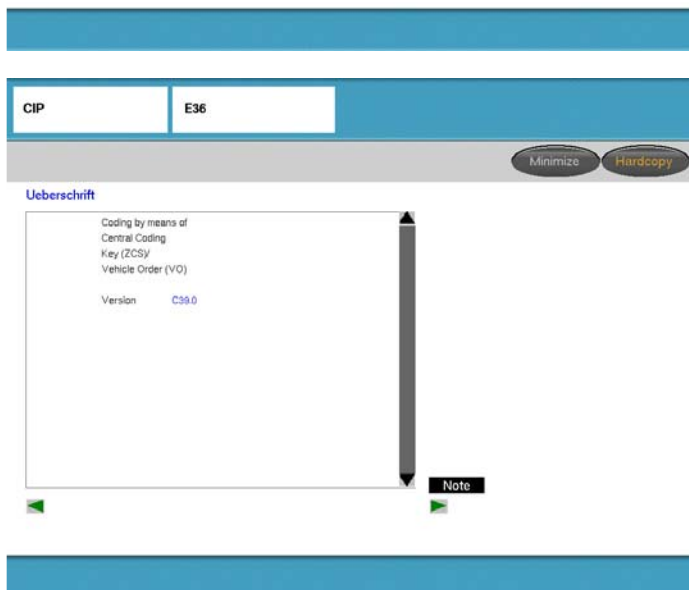
To perform the procedure from CIP the Model series must be selected **(3 series, 7 series ...)**.

Then select the body **(E32, E36 ...)**.



Select **“Codierung ZCS/FA”**.

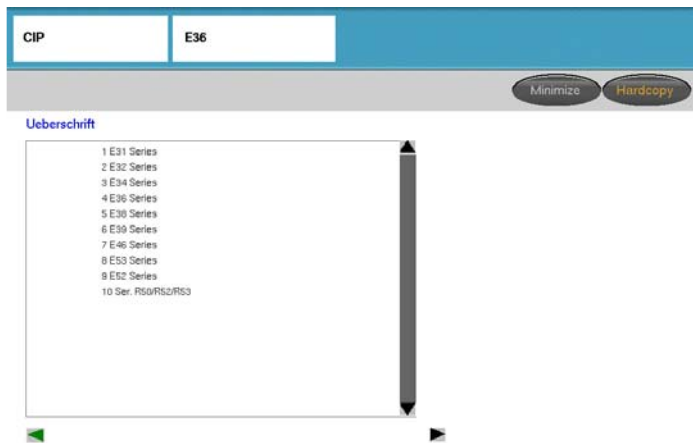
Then advance screen to the right two times to enter the vehicle series selection screen.



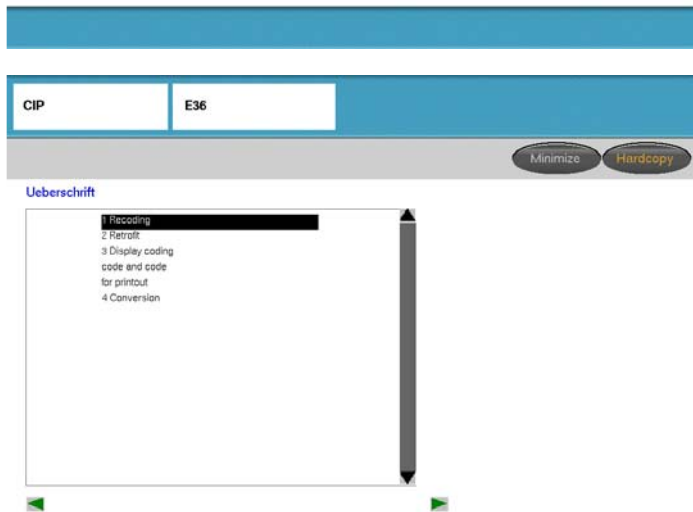
The version ID page is displayed.

Make sure it is the most up-to-date version of the software for the encoding procedure.

Press the right arrow.

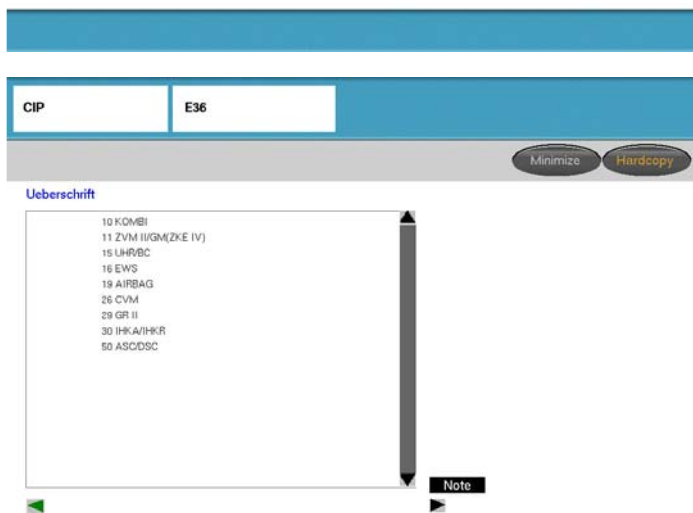


Select vehicle series (i.e **“E36 Series”**).



Select **“Recoding”**.

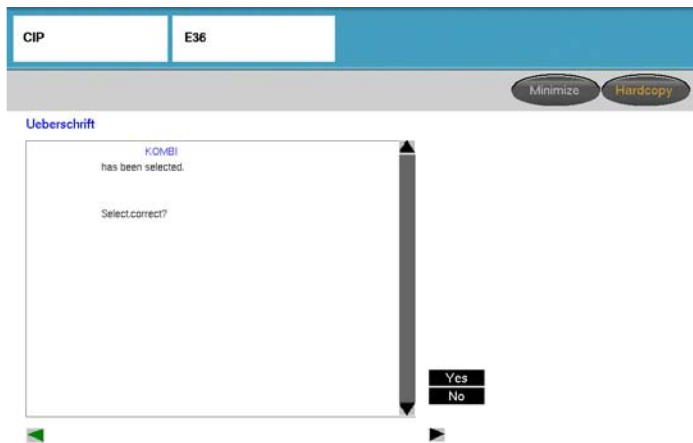
Then advance screen to the right.



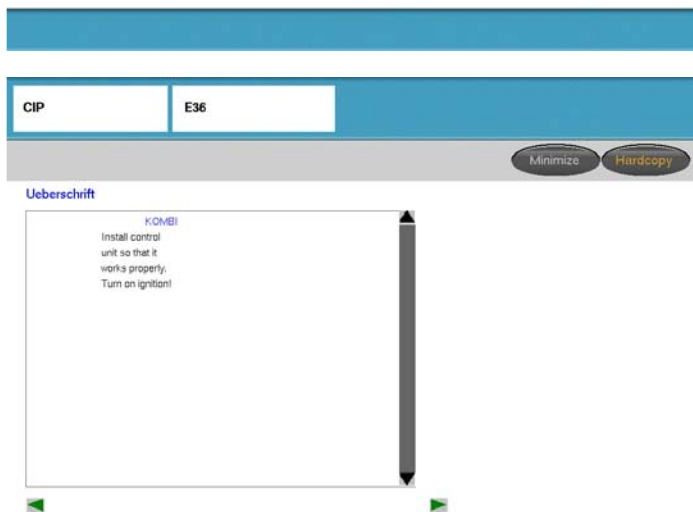
Displays control modules that are ZCS codable.

Example:

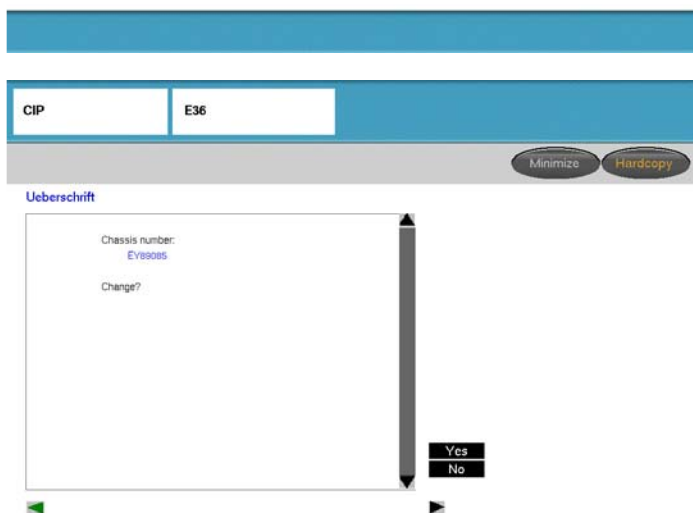
Select **“KOMBI”**.



Select **“Yes”** to recode KOMBI.



Follow the instructions given on screen.

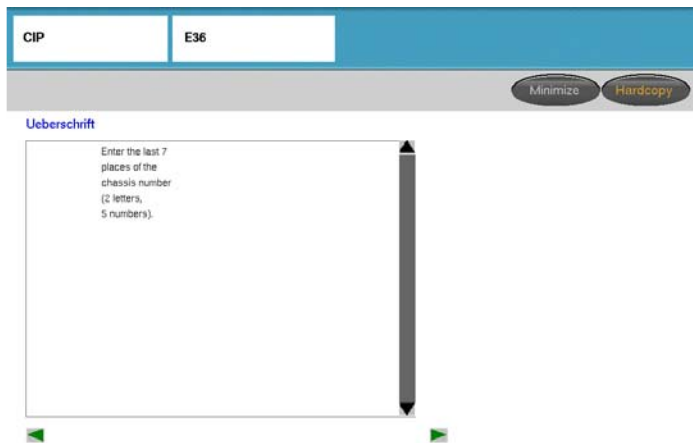


Chassis number of vehicle is displayed.

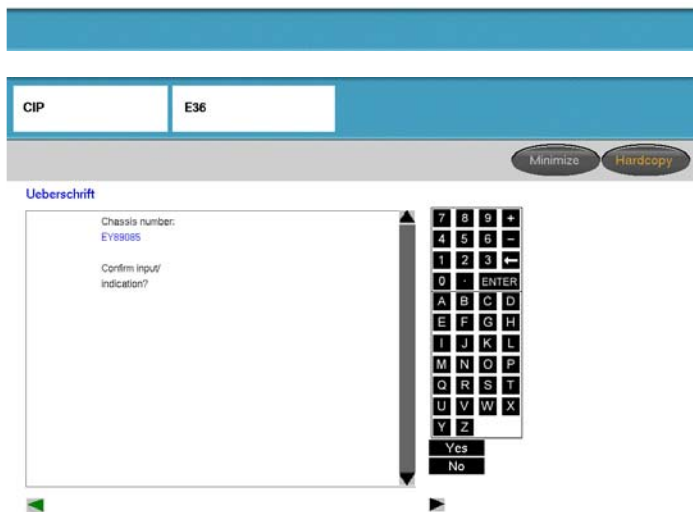
Select **“Yes”** to accept VIN.

Select **“No”** if VIN needs to be changed.

When installing a new module the last 7 digits of the VIN will need to be entered.



Follow the instructions given on screen.

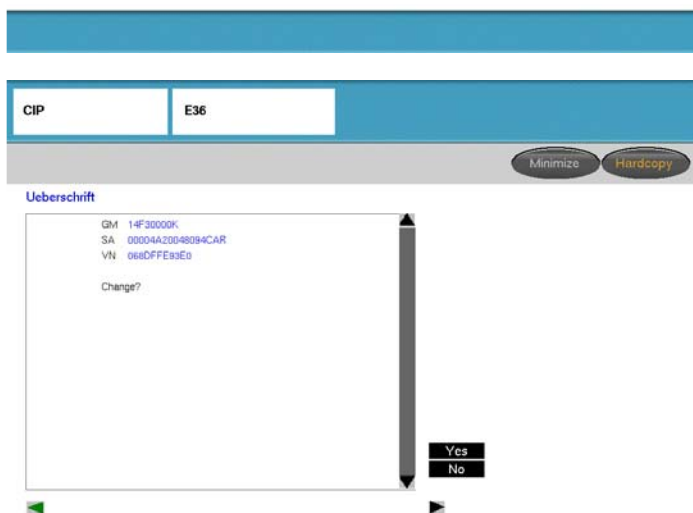


Chassis number of vehicle is displayed, enter VIN using touch screen pad or the keyboard on an SSS.

Select **“Yes”** to accept VIN.

Select **“No”** if VIN needs to be changed/corrected.

When installing a new module the last 7 digits of the VIN will need to be entered.



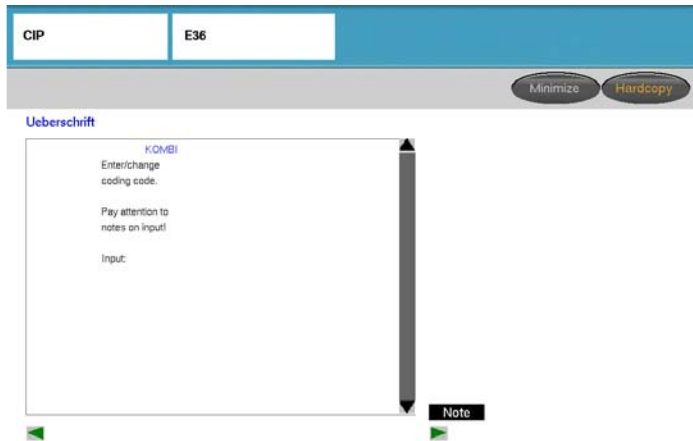
Current ZCS code is displayed

Select **“YES”** to accept current code

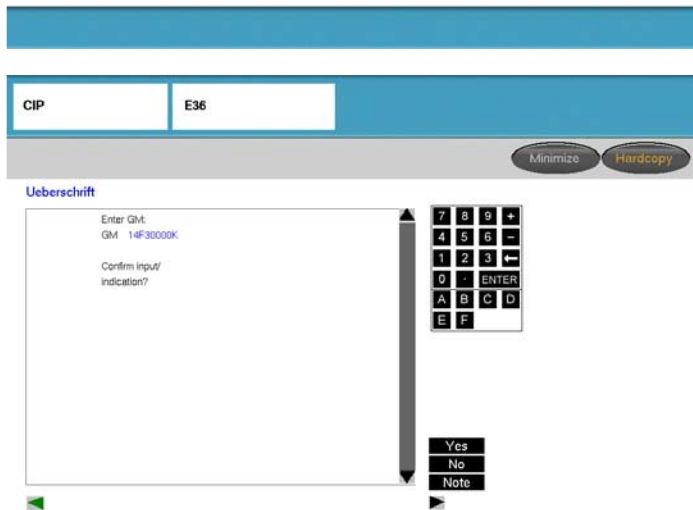
Select **“No”** to change the ZCS data

When installing a new module the ZCS code of the vehicle will need to be entered. The information can be obtained from:

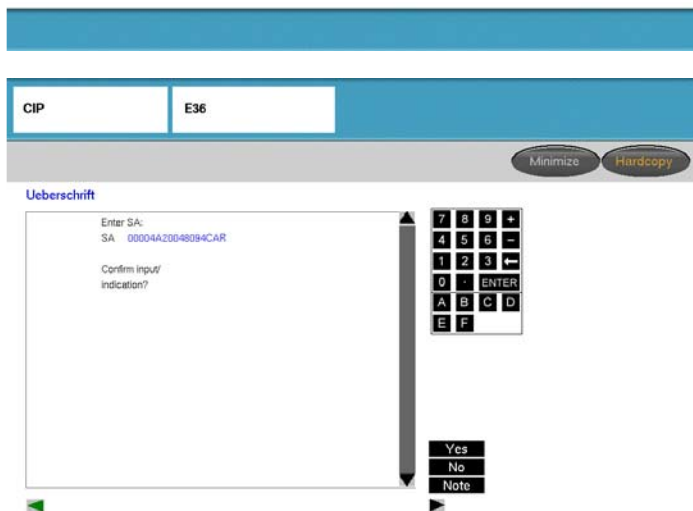
- ZCS print out of old module before removal
- ZCS label located in vehicle



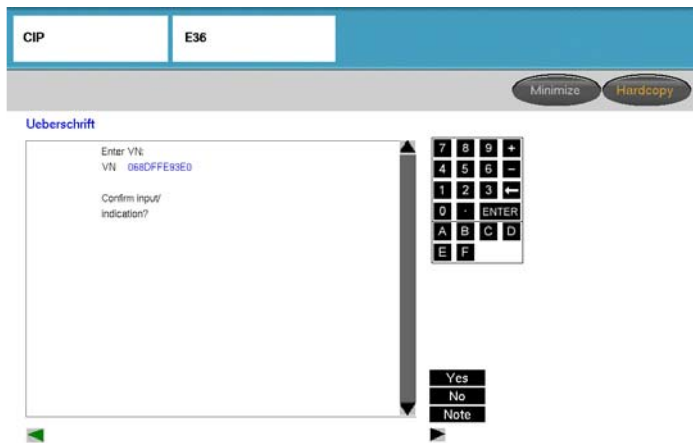
If the ZCS code must be changed follow the instruction given on screen and enter the required information exactly as indicated on the ZCS label or printout of ZCS code before removal of module.



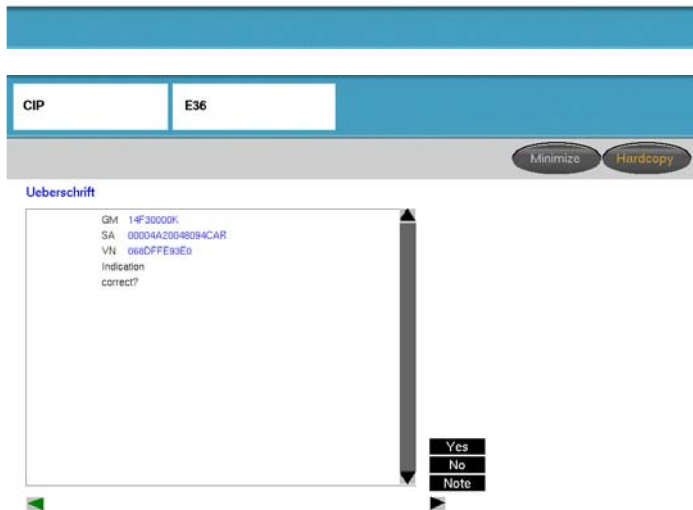
Confirm or enter new GM information.



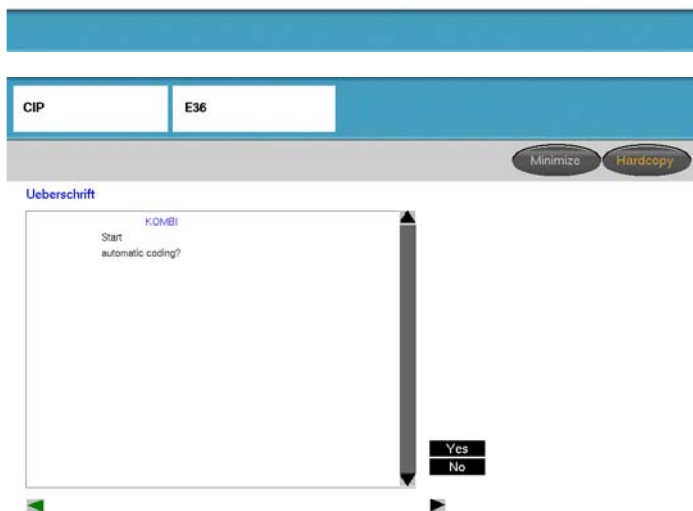
Confirm or enter new SA information.



Confirm or enter new VN information.



Confirm or correct ZCS information.



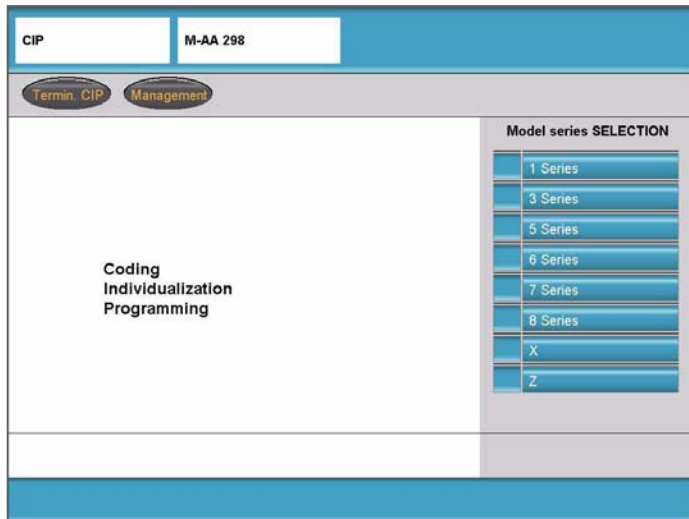
Select **“Yes”** to begin the coding process for the installed/selected module.

Upon completion of the coding process print out a copy of the ZCS information displayed and attach it to the repair order to be maintained with vehicle file.

Switch ignition off for 10 seconds, then check for proper system operation.

Automatic Coding Procedure

When a control module is replaced that does not store the ZCS code, the replacement module is coded automatically using the ZCS code stored in the Kombi, EWS or LSZ.



From Progman establish a connection to the interface connected to the vehicle and access CIP.

To perform the procedure from CIP the Model series must be selected **(3 series, 7 series ...)**.

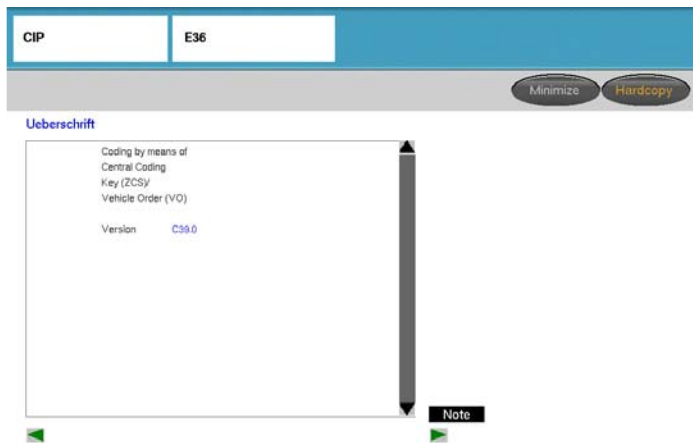
Then select the body **(E32, E36 ...)**.



Select **“Codierung ZCS/FA”**.

Then advance screen to the right two times to enter the vehicle series selection screen.

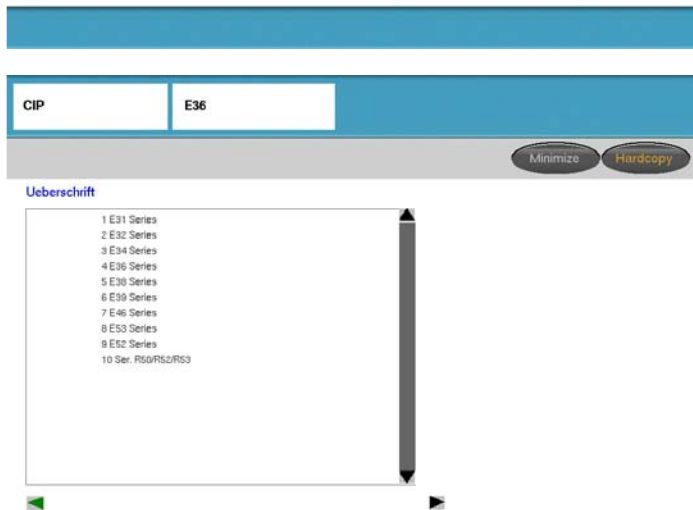




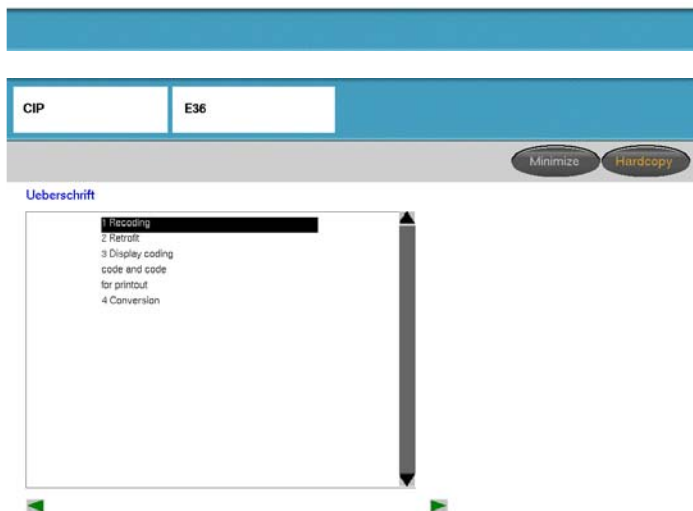
The version ID page is displayed.

Make sure it is the most up-to-date version of the software for the encoding procedure.

Press the right arrow.



Select vehicle series (i.e **“E36 Series”**).



Select **“Recoding”**

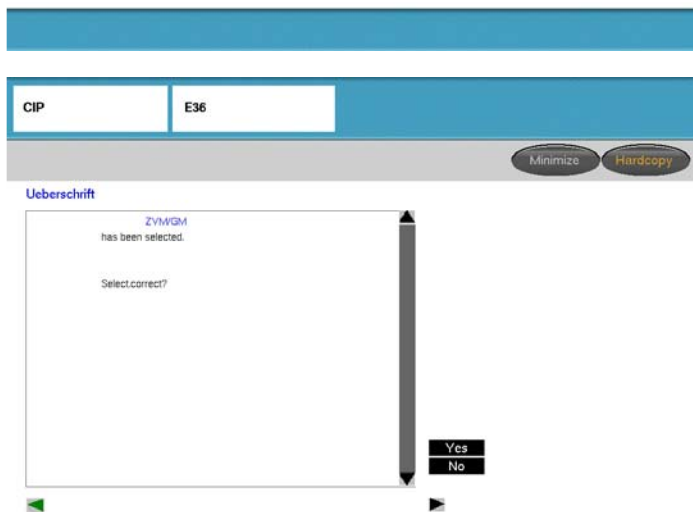
Then advance screen to the right.



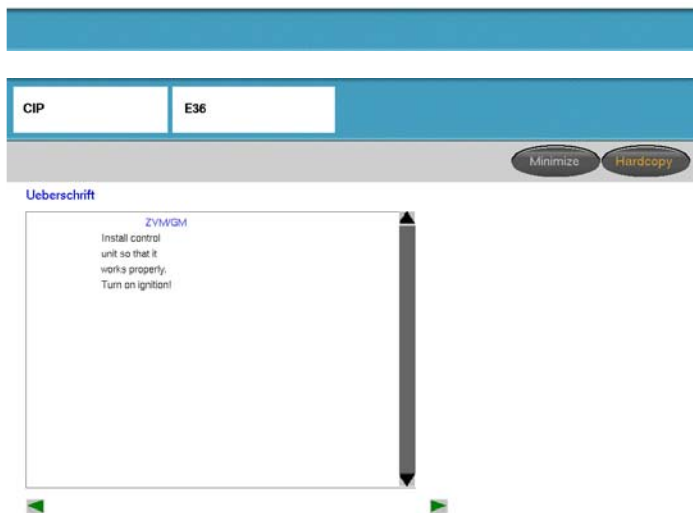
Displays control modules that are ZCS codable.

Example:

Select **“ZVN II/GM (ZKE IV)”**.



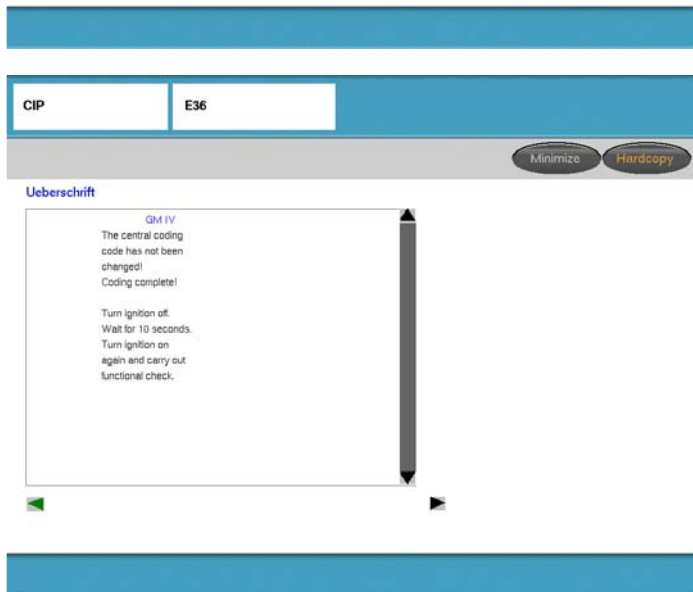
Confirm module selection.



If a replacement module is to be installed install it now.

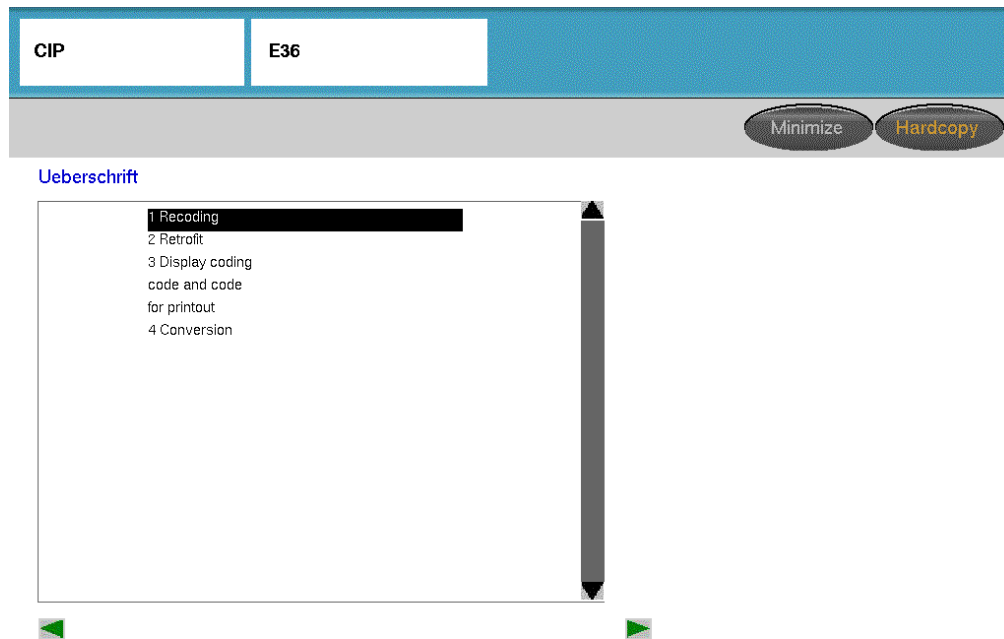


Select yes to begin coding or recoding the selected module.



Coding/recoding process of selected module is complete, follow the instructions given.

Additional ZCS Coding Functions



Retrofit

The retrofit function allows options or accessory equipment to be added after the vehicle is manufactured.

By selecting to install a new option/accessory from the list of available retrofits for the specific vehicle, the ZCS information will be updated to reflect the addition of the new option or accessory that was installed. Updating of the ZCS information will ensure that the new component is recognized and able to communicate with the other modules in the vehicle.

Conversion

The conversion function allows specific features of certain control modules/systems to be modified, similar to the way Individualization(Vehicle & Key Memory) is used on newer models to “customize” a vehicle.