

120/21 ENU WMHO

Service

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### WMH0 - Re-Programming Various Control Units (Workshop Campaign)

Revision: This bulletin replaces bulletin Group 9 120/21 WMHO, dated August 24, 2021. Model Year: As of 2020 up to 2021 Important: **CRITICAL WARNING** - This campaign includes steps where control unit(s) in the vehicle will be programmed with the PIWIS Tester. The vehicle voltage must be maintained between 13.5 volts and 14.5 volts during this programming. Failure to maintain this voltage could result in damaged control unit(s). Damage caused by inadequate voltage during programming is not a warrantable defect. The technician must verify the actual vehicle voltage in the PIWIS Tester before starting the campaign and also document the actual voltage on the repair order. Model Line: Taycan (Y1A) Taycan Cross Turismo (Y1B) Concerns: Re-program various control units Information: During a data analysis with regard to hardware and software versions in the field and their combinations, we have discovered that there has been a deviation from the defined target status on the affected vehicles. As a result, the consistency of the network of hardware and software versions defined and approved by Porsche cannot be guaranteed. Action required: • Re-program the control units using the PIWIS Tester with installed software version 40.550.040 (or higher). Depending on the software version of the individual control units in the vehicle system, other control units must also be re-programmed or coded. Only the control units that do not correspond to the defined VR12.1.1 software setpoint level are programmed. Information The guided programming sequence during this campaign includes all control units from the

corresponding software releases, in addition to those which are to be reprogrammed. In the programming sequence, the following software versions of the individual control units are again compared with the target status of the software release. If the actual status already matches, the programming of the relevant control unit is automatically skipped, and so the scope of the control units may vary depending on the vehicle.

# *i* Information

Each vehicle affected by this measure has been assigned **exactly one scope**, which includes the measures required for updating the software.

For details of the exact scope of this campaign that is assigned to each vehicle, see PCSS Vehicle Information.

An overview of the corresponding action required for each scope can be found in the table below.

Allocation	Model year	Scope of control unit programming	
Scope 1:	Model year 2020 vehicles	<ul> <li>VR8.6</li> <li>VR8.7</li> <li>VR12.1.1 - &gt; Sequence 2</li> </ul>	
Scope 2:	<ul> <li>Model year 2020 vehicles</li> <li>Model year 2021 vehicles</li> </ul>	• VR12.1.1 - > Sequence 2	
Scope 3:	Model year 2020 vehicles	• VR12.1.1 - > Sequence 1	
Scope 4:	<ul> <li>Model year 2020 vehicles</li> <li>Model year 2021 vehicles</li> </ul>	• VR12.1.1 - > Sequence 3	
Scope 5:	Model year 2020 vehicles	<ul> <li>VR8.6</li> <li>VR8.7</li> <li>VR12.1.1 - &gt; Sequence 1/2/3</li> </ul>	
Scope 6:	Model year 2020 vehicles	<ul> <li>VR8.7</li> <li>VR12.1.1 - &gt; Sequence 2</li> </ul>	

Scope overview:

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### Information

After **each** completed programming session, a working log **must** be created and, after the campaign has been completed, will be uploaded to the quality line using the PIWIS Tester.

Affected Vehicles: Only vehicles assigned to the campaign (see also PCSS Vehicle Information).

### **Required tools**



The Taycan (Y1A/Y1B) is equipped as standard with a lithium starter battery.

Lithium starter batteries must only be charged using a suitable battery charger that has a current and voltage-controlled charge map.

For further information about the battery chargers to be used, see  $\Rightarrow$  Workshop Manual '270689 Charging battery/vehicle electrical system'.

Tools:

- Battery charger with a current rating of **at least 90 A** and **also** with a **current and voltagecontrolled charge map** for lithium starter batteries, e.g. VAS 5908 battery charger 90 A
- 9900 PIWIS Tester 3 with software version 40.550.040 (or higher) installed.

### Preparatory work - all scopes

### NOTICE

Fault entry in the fault memory and control unit programming aborted due to undervoltage.

- Increased current draw during diagnosis or control unit programming can cause a drop in voltage, which can result in one or more fault entries and the abnormal termination of the programming process.
- ⇒ Before starting control unit programming, connect a suitable battery charger with a current rating of at least 90 A to the vehicle.

### NOTICE

Control unit programming will be aborted if the WiFi connection is unstable.

- An unstable WiFi connection can interrupt communication between the PIWIS Tester and the vehicle communication module (VCI). As a result, control unit programming may be aborted.
- ⇒ During control unit programming, always connect the PIWIS Tester to the vehicle communication module (VCI) via the USB cable.

### NOTICE

Control unit programming will be aborted if the driver's key is not recognized

- If the driver's key is not recognized in the vehicle, programming cannot be started or will be interrupted.
- ⇒ Position the driver's key with the back facing forward upright between the holding struts in the rear cupholder (emergency start tray) to ensure a permanent radio link between the vehicle and remote control.

### NOTICE

Programming interrupted

- Malfunctions in control unit
- Risk of damage to control unit
- ⇒ Route the line between the vehicle communication module (VCI) and diagnostic socket on the vehicle without tension and make sure that the connector is inserted fully into the diagnostic socket.
- ⇒ Check that the rechargeable battery for the PIWIS Tester is charged sufficiently. Connect the PIWIS Tester to the power supply unit if necessary.

### Information

To carry out the campaign, the PIWIS Tester must be online and logged into the Porsche Partner Network (PPN).



### Information

Use the **new** PIWIS Tester data cable to carry out the campaign. The difference between the old  $\Rightarrow$  *PIWIS Tester data cable* -1- and new  $\Rightarrow$  *PIWIS Tester data cable* -2- data cable is shown in the illustration.

If the connection between the vehicle and PIWIS Tester is interrupted, check the data cable for the PIWIS Tester for signs of damage. If the data cable is damaged, it **must** be **replaced**. To do this, follow the instructions in the PPN for "Returning faulty USB cable caps" (PPN portal > Dr Ing. h.c. Porsche AG > Aftersales > Workshop > PIWIS > Documents).



The procedure described here is based on the PIWIS Tester 3 software version **40.450.020**.

The PIWIS Tester instructions take precedence and in the event of a discrepancy, these are the instructions that must be followed.

A discrepancy may arise with later software versions for example.



PIWIS Tester data cable

# Information

To prevent any excessive and potentially noticeable heating of the charging clamp of the negative cable while charging the 12-volt vehicle electrical system battery using an external battery charger, always check the following points:

- Always connect the charging terminal of the negative cable vertically from above to the ground point for the external power connection. Make sure that the charging clamp cable is routed loosely to prevent the charging clamp from tilting sideways at the ground point.
- When connecting the charging clamp, make sure that it is a sufficient distance away from peripheral parts (e.g. pneumatic supply line for air-spring strut).
- Before raising the vehicle using a lifting platform, always disconnect the battery charger completely from the vehicle in order to prevent the connecting line of the charging terminal from becoming taut and the charging terminal tipping sideways at the ground point as a result.



### Information

The state of charge of the high-voltage battery should not be less than 30% or more than 80% for the software update.

- Work Procedure: 1 Connect a suitable battery charger, e.g. Battery charger 90A, to the jump-start terminals in the luggage compartment and switch it on.
  - 2 Position the driver's key with the back facing forward upright between the holding struts in the rear cupholder (emergency start tray) to guarantee a permanent radio link between the vehicle and remote control  $\Rightarrow$  *Emergency start tray*.
  - 3 9900 - Connect PIWIS Tester 3 to the vehicle communication module (VCI) via the USB cable. Then connect the communication module to the vehicle and switch on the PIWIS Tester. Operate the PIWIS Tester through the power supply unit.



Emergency start tray

- Establish operational readiness (switch on ignition). 4
- 5 On the PIWIS Tester start screen, call up the 'Diagnostics' application.

The vehicle type is then read out, the diagnostic application is started and the control unit selection screen is populated.

Create Vehicle Analysis Log (VAL) using the PIWIS Tester. 6 Mark the vehicle analysis log you have just created with the attribute "Initial VAL" and after carrying out the campaign, return it using the PIWIS Tester.

7 Read out and check the fault memory. Mark the vehicle analysis log you have just created with the attribute "Initial VAL" and after carrying out the campaign, return it using the PIWIS Tester.

# Then update the control unit according to the scope clearly assigned to the respective vehicle.

The relevant scope assigned to the vehicle can be seen in the PCSS Vehicle Information.

- 8 Delete the working logs that are currently stored on the Tester.
  - 8.1 Select F10" ('Logs') in the **lower** menu bar in the control unit overview and select the **working log**.
- Allocation Software Action required Scope 1: **VR8.6**  $\Rightarrow$  Technical Information '270689 Re-program various • • VR8.7 control units - Scope 1'. ٠ VR12.1.1-> Sequence 2  $\Rightarrow$  Technical Information '270689 Re-program various Scope 2: • VR12.1.1 - > control units - Scope 2'. Sequence 2  $\Rightarrow$  Technical Information '270689 Re-program various Scope 3: • VR12.1.1 - > control units - Scope 3'. Sequence 1 Scope 4: • VR12.1.1 - >  $\Rightarrow$  Technical Information '270689 Re-program various control units - Scope 4'. Sequence 3 Scope 5:  $\Rightarrow$  Technical Information '270689 Re-program various ٠ **VR8.6** VR8.7 • control units - Scope 5'. • VR12.1.1-> Sequence 1/2/3 VR8.7  $\Rightarrow$  Technical Information '270689 Re-program various Scope 6: • VR12.1.1 - > control units - Scope 6' Sequence 2
- 8.2 Select and delete the stored working logs.

Re-program various control units - Scope 1

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Electrically moved side windows and rear spoiler

- Danger of limbs being trapped or severed
- Risk of damage to components
- $\Rightarrow$  Do not reach into the danger area.

- $\Rightarrow$  Keep third parties away from the danger area.
- $\Rightarrow$  Do not move components or tools into the danger area.

### NOTICE

Using the software on vehicles that are not assigned to this campaign:

- Risk of damage to control unit
- $\Rightarrow$  Use the listed software versions only for the vehicles assigned to the campaign.

### Information

The guided programming sequence during this campaign includes all control units from the corresponding software releases, in addition to those which are to be reprogrammed. In the programming sequence, the following software versions of the individual control units are again compared with the target status of the software release. If the actual status already matches, the programming of the relevant control unit is automatically skipped, and so the scope of the control units may vary depending on the vehicle.

# i Information

To ensure that no user-specific settings from **cloud-based services (Porsche Connect & My Porsche)** are lost during the update, activate **Privacy mode** before starting the update. When Privacy mode is activated, communication between the vehicle and the Porsche Connect app and My Porsche is disabled. No vehicle-specific information is transferred. As a result, settings cannot be configured on the vehicle using the Porsche Connect app or My Porsche.

When the **instrument cluster** and **central computer** are re-programmed, the **individual settings** implemented **in the vehicle** by the customer will be lost and reset to the **default values** of the country version that applies to the vehicle.

After carrying out the campaign, please inform customers that personal settings they have implemented in the instrument cluster and central display of the central computer will have to be **set again** and provide them with any **help and support** they need for setting the relevant options.

This affects the following settings, for example:

- Individual settings for tubes 1 to 3 of the instrument cluster as well as the extended map view or reduced view of the instrument cluster
- Individual settings of the head-up display (HUD)
- Selected functions of individual tubes in the instrument cluster, e.g. auto zoom, 3D map and satellite map
- Arrangement of tiles in the home screen and MyScreen on the central display
- Individual seat, exterior mirror and ergonomic settings

- Air conditioning settings, such as ventilation and air quality
- Privacy settings
- Frequency setting of the garage door opener (Homelink)

### Information

Only control units that are not up-to-date are updated. As a result, programming is aborted if the control units have already been updated.

Work Procedure: 1 Only relevant for vehicles with Scope 1: Start control unit programming of VR8.6.

The basic procedure for control unit programming is described in the Workshop Manual  $\Rightarrow$ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester'

Required PIWIS Tester software version:	<b>40.550.040</b> (or higher)		
Type of control unit programming:	Control unit programming using the <b>'Campaign'</b> <b>function in the Additional menu</b> on the PIWIS Tester by entering a programming code.		
Programming code:	P5P8E		
Programming sequence:	Read and follow the <b>information and instructions</b> <b>on the PIWIS Tester</b> during the guided programming sequence.		
	Do not interrupt programming and coding.		
	A backup documentation process for the re-programmed software versions starts as soon as programming and coding is complete.		
Programming time (approx):	Up to 120 minutes		
Software versions programmed during this campaign:	Over-the-air (OTA) control unit 0861		
	High-voltage power electronics, 0012     front and rear		
	High-voltage charger (OBC) 1073     control unit		
	High-voltage battery control unit E860 (BMCe)		
	Chassis control (PASM) 0896		

For specific information on control unit programming of VR8.6 during this campaign, see the table below:

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	Display and operator control unit 0897 in rear center console
	Instrument cluster 0394
	Following control unit programming, the software version can be read out of the relevant control unit in the 'Extended identifications' menu using the PIWIS Tester.
Procedure in the event of abnormal termination of control unit programming:	<ul> <li>End and restore operational readiness (switch ignition off and then on again).</li> <li>Reading out and erasing fault memories ⇒ Workshop Manual '9XOOIN Basic instructions and procedure for control unit programming using the PIWIS Tester'.</li> <li>Repeat control unit programming by entering the programming code again, whereby extended logging must be started using the key combination •Ctrl" + •L".</li> <li>Extended logging records diagnostic software data, particularly vehicle communication data, which is required for analysing the issues that caused programming to be aborted.</li> <li>If control unit programming is aborted a second time, stop operational readiness for approx. 15 minutes (switch off ignition) and repeat the procedure described here again.</li> </ul>
Procedure in the event of error messages appearing during the programming sequence:	⇒ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester - section on "Fault finding"'.

- 2 Create a new working log.
  - 2.1 Once programming is complete, confirm by selecting F4" ('Save') in the Campaign menu below.
  - 2.2 Select F10" ('Logs').
  - 2.3 Select the log type **Work log**.
  - 2.4 The created working log with the designation of the sequence performed is unnamed and saved.
  - 2.5 Select the working log and press F10" ('Displays').
  - 2.6 Select the printer icon in the selection bar at the top right.
  - 2.7 Select printer ('PDF').

2.8 Print the working log. This is stored automatically on the Tester.

- 3 Then perform software update to software release **VR8.7**.
- 4 Start control unit programming of **VR8.7**.

The basic procedure for control unit programming is described in the Workshop Manual  $\Rightarrow$ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester'.

For specific information on control unit programming of VR8.7 during this campaign, see the table below:

Required PIWIS Tester software version:	<b>40.550.040</b> (or higher)	
Type of control unit programming:	Control unit programming using the <b>'Campaign'</b> <b>function in the Additional menu</b> on the PIWIS Tester by entering a programming code.	
Programming code:	V6P8C	
Programming sequence:	Read and follow the <b>information and instructions</b> <b>on the PIWIS Tester</b> during the guided programming sequence.	
	Do not interrupt programming and coding.	
	A backup documentation process for the re-programmed software versions starts as soon as programming and coding is complete.	
Programming time (approx):	Up to 100 minutes	
Software versions programmed during this campaign:	High-voltage power electronics, 0012     front and rear	
	High-voltage charger (OBC) 1079     control unit	
	High-voltage battery control unit E870 (BMCe)	
	HV voltage converter     0899	
	Brake booster (electric brake 0100 booster)	
	High-voltage DC battery charger 0990 (booster)	
	Engine electronics (DME) 0014	
	Brake electronics (PSM) 0094	

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	Driver's seat and passenger's 0064     seat adjustment
	Assistance systems (zFAS) 0355
	Following control unit programming, the software version can be read out of the relevant control unit in the 'Extended identifications' menu using the PIWIS Tester.
Procedure in the event of abnormal termination of control unit programming:	<ul> <li>End and restore operational readiness (switch ignition off and then on again).</li> <li>Reading out and erasing fault memories ⇒ Workshop Manual '9XOOIN Basic instructions and procedure for control unit programming using the PIWIS Tester'.</li> <li>Repeat control unit programming by entering the programming code again, whereby extended logging must be started using the key combination •Ctrl" + •L".</li> <li>Extended logging records diagnostic software data, particularly vehicle communication data, which is required for analysing the issues that caused programming to be aborted.</li> <li>If control unit programming is aborted a second time, stop operational readiness for approx. 15 minutes (switch off ignition) and repeat the procedure described here again.</li> </ul>
Procedure in the event of error messages appearing during the programming sequence:	⇒ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester - section on "Fault finding"'.

- 5 Create a new working log.
  - 5.1 Once programming is complete, confirm by selecting F4" ('Save') in the Campaign menu below.
  - 5.2 Select F10" ('Logs').
  - 5.3 Select the log type **Work log**.
  - 5.4 The created working log with the designation of the sequence performed is unnamed and saved.
  - 5.5 Select the working log and press F10" ('Displays').
  - 5.6 Select the printer icon in the selection bar at the top right.
  - 5.7 Select printer ('PDF').

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5.8 Print the working log. This is stored automatically on the Tester.

### Information

- Battery sensor (12-volt vehicle electrical system battery): An actual voltage of at least 14 volts is required for programming the 12-volt battery sensor. Switching the ignition off and on again after one minute is therefore integrated in the programming sequence. As a result, the voltage of the 12-volt vehicle electrical system battery increases briefly and the programming sequence can be started. Follow the instructions on the PIWIS Tester.
- Programming must not be performed if the supply voltage has not yet been checked to be 14 volts. This is displayed on the PIWIS Tester before starting programming.
- 6 Then perform software update to software release **VR12.1.1**.

Start control unit programming VR12.1.1 (Sequence 2).

For specific information on control unit programming in this sequence, see the table below:

Required PIWIS Tester software version:	<b>40.550.040</b> (or higher)
Type of control unit programming:	Control unit programming using the <b>'Campaign'</b> function in the Additional menu on the PIWIS Tester by entering a programming code.
Programming code:	K4M2S
Programming sequence:	Read and follow the <b>information and instructions</b> <b>on the PIWIS Tester</b> during the guided programming sequence.
	Do not interrupt programming and coding.
	A backup documentation process for the re-programmed software versions starts as soon as programming and coding is complete.
Programming time (approx):	Up to 125 minutes

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Software versions programmed during this campaign:	•	Power electronics, front and rear	0012
	•	Engine electronics (DME) control unit	0014
	•	High-voltage battery control unit (BMCe)	1401
	•	High-voltage DC battery charger (booster)	1250
	•	HV voltage converter	1230
	•	Control unit for chassis control (PASM)	1160
	•	Power steering control unit (EPS)	0430
	•	Brake electronics (PSM) control unit	0120
	•	Control unit for steering column adjustment	0210
	•	Control unit for rear axle steering	0962
	•	Rear lid control unit	0172
	•	Air-conditioning control unit	1160
	•	Control unit for rear-differential lock	2021
	•	Thermal management control unit (TME)	0323
	•	Electric passenger compartment heater (PTC)	0015
	•	Gateway control unit	2591
	•	Instrument cluster	0595
	•	Over-the-air (OTA) control unit	1221
	•	OTA partition	1221
	•	High-voltage charger (OBC), 11 kW	1083
	•	Battery sensor	4174
	•	Transmission control unit (EGS)	0250
	Foll ver:	owing control unit programming, th sion can be read out of the relevant	e software control unit in

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# **Technical Information**

	the 'Extended identifications' menu using the PIWIS Tester.
Procedure in the event of abnormal termination of control unit programming:	<ul> <li>End and restore operational readiness (switch ignition off and then on again).</li> <li>Reading out and erasing fault memories ⇒ Workshop Manual '9XOOIN Basic instructions and procedure for control unit programming using the PIWIS Tester'.</li> <li>Repeat control unit programming by entering the programming code again, whereby extended logging must be started using the key combination • Ctrl" + •L".</li> <li>Extended logging records diagnostic software data, particularly vehicle communication data, which is required for analysing the issues that caused programming to be aborted.</li> <li>If control unit programming is aborted a second time, stop operational readiness for approx. 15 minutes (switch off ignition) and repeat the procedure described here again.</li> </ul>
Procedure in the event of error messages appearing during the programming sequence:	⇒ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester - section on "Fault finding".

- 7 Create a new working log.
  - 7.1 Once programming is complete, confirm by selecting F4" ('Save') in the Campaign menu below.
  - 7.2 Select F10" ('Logs').
  - 7.3 Select the log type **Work log**.
  - 7.4 The created working log with the designation of the sequence performed is unnamed and saved.
  - 7.5 Select the working log and press F10" ('Displays').
  - 7.6 Select the printer icon in the selection bar at the top right.
  - 7.7 Select printer ('PDF').
  - 7.8 Print the working log. This is stored automatically on the Tester.

### Concluding work - Scope 1

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Electrically moved side windows and rear spoiler

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- Danger of limbs being trapped or severed
- Risk of damage to components
- $\Rightarrow$  Do not reach into the danger area.
- $\Rightarrow$  Keep third parties away from the danger area.
- $\Rightarrow$  Do not move components or tools into the danger area.

### NOTICE

Movement of the rear wheels by activating the electric motor; vehicle driving off when the wheels are touching the ground

- · Personal injury as a result of wheel or vehicle movement
- Material damage to vehicle, drive or brake components
- ⇒ Raise the vehicle on a lifting platform until the drive wheels are free
- ⇒ Press the foot brake during adaptation
- ⇒ Cordon off the work area

### NOTICE

Programming interrupted

- Malfunctions in control unit
- Risk of damage to control unit
- ⇒ Route the line between the vehicle communication module (VCI) and diagnostic socket on the vehicle without tension and make sure that the connector is inserted fully into the diagnostic socket.
- ⇒ Check that the rechargeable battery for the PIWIS Tester is charged sufficiently. Connect the PIWIS Tester to the power supply unit if necessary.
- Work Procedure: 1 Establish bus idle for at least 15 minutes.
  - 1.1 End operational readiness (switch off ignition).
  - 1.2 Disconnect the PIWIS Tester diagnostic connector from the diagnostic socket.
  - 1.3 Lock the vehicle using the driver's key and remove the driver's key from the proximity of the vehicle (approx. 10 meter/ 32.8 ft).
  - 1.4 Unlock the vehicle again after waiting for at least 15 minutes.
  - 1.5 Plug the PIWIS Tester diagnostic connector into the diagnostic socket again and restore communication with the vehicle.
  - Place the vehicle onto a lifting platform, but do not raise it yet.
     Follow the instructions on the PIWIS Tester for lifting the vehicle during the following sequence.

### Information

The current version of the onboard Driver's Manual has been available online since 5 March 2021.

A blank USB storage medium is required for installing the onboard Driver's Manual (approx. 100 MB). If there is already data stored on the USB storage medium, this will be deleted during the procedure.

### i Information

Before starting sequence 5 (subsequent work), connect the PIWIS Tester to a network to establish an Internet connection. The PIWIS Tester **must** be **connected online** for the subsequent work described below and for installing the onboard Driver's Manual.

# Information

- Component protection: Component protection must only be taught for the control unit for assistance systems (zFAS). To do this, select component protection for assistance systems (zFAS) in the procedure. If the component protection teaching process is aborted, stop sequence 5 and read and follow the additional information provided under ⇒ *Technical Information '9X00IN Additional instructions for the concluding work'*.
- **Enabled functions:** If function activation is aborted, component protection must first be taught again. Then, start sequence 5 again in order to restore the enabled functions.
- Coding of all control units: Always allow coding to run to the end of the process. If individual coding routines fail, the relevant control units can be selected manually in the overview afterwards and coded again individually.
- 3 Start subsequent work for various control units.

Required PIWIS Tester software version:	40.550.040 (or higher)
Programming code:	K4M5S
Expiry:	Read and follow the <b>information and</b> <b>instructions on the PIWIS Tester</b> during the guided procedure for the subsequent work.
	Do not interrupt the process.
Programming time (approx):	Up to 55 minutes

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	Subsequent work carried out during this process	Distance measuring sensor (ACC) -     Peset personalization
		For manual procedure, see $\Rightarrow$ Workshop Manual '278555 Replacing control unit for distance measuring sensor'.
		Air conditioning - Teach servo motors
		For the manual procedure, see relevant servo motor Workshop Manual 872019 <b>xx</b> .
		Commissioning rear-differential lock
		For manual procedure, see $\Rightarrow$ Workshop Manual '397555 Replacing rear-differential lock control unit'.
		Engine electronics (DME) transmission     adaptation
		For manual procedure, see $\Rightarrow$ Workshop Manual '247055 Replacing DME control unit'.
		Door standardization, front and rear
		For manual procedure, see
		<ul> <li>⇒ Workshop Manual '577355 Replacing front door control unit'</li> <li>⇒ Workshop Manual '587355 Replacing rear door control unit'</li> </ul>
		Teaching component protection
		For manual procedure, see $\Rightarrow$ Workshop Manual '903555 Replace gateway control unit Select the control unit for <b>assistance</b> <b>systems (zFAS)</b> in the PIWIS Tester procedure.
		Restoring enabling functions
		For manual procedure, see $\Rightarrow$ Workshop Manual '903555 Replace gateway control unit'.
		Installing onboard Driver's Manual
		For manual procedure, see $\Rightarrow$ Workshop Manual 'OXO1IN diagnostic system: Performing vehicle handover'.
		Automatic coding of all control units

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Procedure if the sequence is aborted:	<ul> <li>End and restore operational readiness (switch ignition off and then on again).</li> <li>Reading out and erasing fault memories ⇒ Workshop Manual '9XOOIN Basic instructions and procedure for control unit programming using the PIWIS Tester'.</li> <li>Repeat subsequent work sequence by entering the programming code again, whereby extended logging must be started using the key combination         <ul> <li>Ctrl" + •L".</li> </ul> </li> <li>Extended logging records diagnostic software data, particularly vehicle communication data, which is required for analysing the issues that caused programming to be aborted.</li> <li>If subsequent work is aborted a second time, end operational readiness for approx. 15 minutes (switch off ignition) and repeat the procedure described here again.</li> <li>In the case of further aborts, the subsequent work must be successively carried out manually.</li> </ul>
Procedure in the event of error messages appearing during the programming sequence:	⇒ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester - section on "Fault finding"'.

- 4 Create a new working log.
  - 4.1 Once programming is complete, confirm by selecting F4 " ('Save') in the Campaign menu below.
  - 4.2 Select F10" ('Logs').
  - 4.3 Select the log type **Work log**.
  - 4.4 The created working log with the designation of the sequence performed is unnamed and saved.
  - 4.5 Select the working log and press F10" ('Displays').
  - 4.6 Select the printer icon in the selection bar at the top right.
  - 4.7 Select printer ('PDF').

- 4.8 Print the working log. This is stored automatically on the Tester.
- 5 Establish bus idle for at least 15 minutes.
  - 5.1 End operational readiness (switch off ignition).
  - 5.2 Disconnect the PIWIS Tester diagnostic connector from the diagnostic socket.
  - 5.3 Lock the vehicle using the driver's key and remove the driver's key from the proximity of the vehicle (approx. 10 meter/ 32.8 ft).
  - 5.4 Unlock the vehicle again after waiting for at least 15 minutes.
  - 5.5 Plug the PIWIS Tester diagnostic connector into the diagnostic socket again and restore communication with the vehicle.
- 6 Teach steering lock settings.
  - 6.1 Select the power steering 'EPS' control unit in control unit selection ('Overview' menu) and press •F12" ('Next') to confirm.
  - 6.2 Once the power steering control unit has been found and is displayed in the list, select the 'Maintenance/repairs' menu.
  - 6.3 Select the 'Commissioning' function and confirm with •F12" ('Next').
  - 6.4 Follow the instructions on the Tester to perform the commissioning process.
  - 6.5 If the left and right steering lock settings are not saved during the procedure, adjust the height and depth of the steering wheel position and repeat the commissioning procedure.
- 7 **Only relevant for vehicles if fault memory entries are stored for seat adjustment:** Standardize seat adjustment for driver's and passenger's side.
  - 7.1 Select the 'Seat adjustment on front passenger's side' control unit in the control unit selection screen ('Overview' menu) and press F12" ('Next') to confirm your selection.
  - 7.2 Once the seat adjustment on front passenger's side control unit has been found and is displayed in the overview, select the **'Maintenance/repairs'** menu.
  - 7.3 Select the **'Standardize seat motors'** function and press F12" ('Next') to confirm your selection.
  - 7.4 Read the instructions and confirm by pressing F12" ('Next').
  - 7.5 Press F8" ('Start') to run the procedure.
  - 7.6 Once the seat motors on the **passenger's side** have been standardized, also teach the **driver's side**. To do this, select the **'Seat adjustment on front driver's side'** control unit in the control unit selection screen (**'Overview'** menu) and **repeat Steps 6.2 to 6.6**. Then, continue with **Step 2**.

- 8 Manually retract the rear spoiler, which extended automatically during programming.
  - 8.1 Select the **'Rear spoiler'** control unit in the control unit selection screen (**'Overview'** menu) and press •F12<sup>#</sup> ('Next') to confirm.
  - 8.2 Once the rear spoiler control unit has been found and is displayed in the overview, select the 'Maintenance/repairs' menu.
  - 8.3 Select the function 'Teach rear spoiler' and press F12" ('Next') to confirm.
  - 8.4 Read the instructions and confirm by pressing •F12" ('Next').
  - 8.5 Meet the displayed conditions that must be checked manually and tick the relevant 'Status' box.
  - 8.6 Select the 'Teach rear spoiler' function and press F8" ('Execute') to confirm.
  - 8.7 Once the rear spoiler has been taught and retracted fully, select the **'Overview'** menu to return to the control unit selection screen.
- 9 Calibration of power electronics at front and rear.
  - 9.1 Select the 'Rear high-voltage power electronics' control unit in the control unit selection screen ('Overview' menu) and confirm with •F12" ('Next').
  - 9.2 Once the high-voltage power electronics on rear axle control unit has been found and is displayed in the 'Overview', select the **'Drive links/checks'** menu.
  - 9.3 Select the 'Electric motor Reset calibration' function and confirm with F12" ('Next').
  - 9.4 Set the entry to **Basic setting** in the Values column on the 'Parameters' tab.
  - 9.5 Confirm that calibration has been reset with •F8" ('Execute').
  - 9.6 Go back to the control unit selection screen ('Overview' menu), select the 'Front high-voltage power electronics' control unit and repeat Steps 8.2 to 8.4 for the selected control unit.
  - 9.7 After resetting both calibrations, select the two control units 'Front high-voltage power electronics' and 'Rear high-voltage power electronics' in the control unit selection screen and open the 'Fault memory' menu.
  - 9.8 Check whether the fault code 'P171900' is displayed for both control units:
    - If the fault code 'P171900' is displayed for the 'Rear high-voltage power electronics' and 'Front high-voltage power electronics' control unit, continue with Step 8.9.
    - The fault code 'P171900' is not displayed or is displayed only for one of the two control units. Carry out Steps 8.1 to 8.6 for the relevant control units again.
  - 9.9 Disconnect the PIWIS Tester from the vehicle.
  - 9.10 Switch off and disconnect the battery charger.

# Information

Connect the PIWIS Tester to a network as soon as possible and log into the PPN in order to transfer the backup documentation created during this campaign to the PAG systems.

Start the calibration drive and complete the following steps. 9.11



### Information

Resetting the high-voltage power electronics will limit the maximum vehicle speed to 70 km/h (43 mph). The warning message "Reduced speed" will be displayed on the instrument cluster. Any road on which it is possible to accelerate to a speed of at least 60 km/h (38 mph) can be used as the calibration route.

### Read and follow safety instructions:

- Only perform calibration on public roads if the road and traffic conditions are conducive to doing so
- The road traffic regulations must always be observed
- Other road users must not be at risk when performing calibration
- Move the vehicle on public roads only if it is roadworthy
- Accelerate the vehicle to at least 60 km/h (38 mph).
- Release the accelerator pedal and allow the vehicle roll in overrun for at least 1 second. Calibration is performed during this overrun phase.
- Switch ignition off and on again to reset the "Reduced speed" warning message.
- 10 Only relevant if the message "Tyre pressure monitoring fault Service necessary" is displayed: Teach Tyre Pressure Monitoring (TPM) system using the PIWIS Tester. For instructions, see:

 $\Rightarrow$  Workshop Manual '443225 Teach the wheel electronics'

#### i Information

In the menu-guided procedure, check the 'Teach wheel IDs' menu item after confirming with • F12" to make sure that the function 'Teach 2nd wheel IDs without driving' is selected. Then, select the function '2nd wheel IDs unknown' and continue the procedure according to menu guidance.

- 11 Read out and erase the fault memories of all control units.
  - 11.1 Press • F7" in the control unit selection screen ('Overview' menu) to call up the Additional menu.

11.2 Select the function "Read all fault memories and erase if required" and press • F12" ('Next') to confirm  $\Rightarrow$  erase fault memory.

The fault memories of the control units are read out.

11.3 Once you have read out the fault memories, check the fault memory entries.



#### Information

workshop campaign number.

If control units are found to have faults that are **not** caused by control unit programming,

Overview					•
			Function		
Measurement of clos	ed-circu	ait current			-
Maintenance of vehic	ie data				
Vehicle analysis log	(VAL)				
Campaign					
Vehicle handover					
Read all fault memor	ies and	erase if required			

erase fault memory

11.4 Press • F8" to delete fault memory entries.

11.5 Press • F12" ('Yes') in response to the question as to whether you really want to delete all fault memory entries.

these must first be found and corrected. This work cannot be invoiced under the

The faults stored in the fault memories of the various control units are deleted.



### Information

If fault memory entries for individual control units cannot be deleted, proceed as follows:

- End operational readiness (switch off ignition).
- Disconnect the PIWIS Tester diagnostic connector from the diagnostic socket.
- Lock the vehicle using the driver's key and remove the driver's key from the proximity of the vehicle (approx. 10 meter/ 32.8 ft).
- Unlock the vehicle again after waiting for at least 15 minutes.
- Restore operational readiness (switch on ignition).
- Plug the PIWIS Tester diagnostic connector into the diagnostic socket again and restore communication with the vehicle.
- Read out the fault memory again and delete any fault memory entries that are stored.

- 11.6 Once you have erased the fault memories, select the **'Overview'** menu to return to the control unit selection screen  $\Rightarrow$  *Control unit selection*.
- 12 Create Vehicle Analysis Log (VAL) using the PIWIS Tester. Mark the vehicle analysis log you have just created

with the attribute "Final VAL" and after carrying out the campaign, return it using the PIWIS Tester.

### 13 Performing system test using the PIWIS Tester

13.1 First, the service technician carries out his steps as usual.

The system test is started automatically with the backup documentation process at the end of the process. Alternatively, the system test can also be started manually by pressing  $\bullet$ F3."

04	erview	Contractory Partment			
DTC	Refue	Centrol unit	DSN	Persche part number	
		Airbag			-
		Gateway			
		DME			
		PDK (Porsche Doppelkupplung)			
		PDK selector lever			
		Instrument cluster			
		Steering wheel electronics			
		Stopwatch			
		PCM / CDR			

Control unit selection

Vehicle control unit i	ni (2001) Vagostar last	instant.									<b>*</b>
Overview		-				ALC: NO	-				-
		Cre	ating	docu Plea	iment ise wi	ation ait	upda	ites.			
8 1	-th	16	ť	٩	4	4	0		4	R	H

### backup documentation

13.2 The result list is displayed to the technician after the check has been completed. This shows if control units are not yet at the required software version  $\Rightarrow$  *Programming required* **or** a hardware check is required in accordance with the Spare Parts Catalogue (PET) $\Rightarrow$  *Detailed view of integration test* - *Hardware*.



Programming required



Hardware check required

13.3 Click on the affected control unit to view further details and start programming ⇒ Detailed view of integration test - software version. The step-by-step instructions then start.

The hardware check is performed against the Parts Catalogue  $\Rightarrow$  *Detailed view of integration test - Hardware.* 

	E STATE					
Seat adjustment on passenger side (001)		Necessary	/ action	Propagating required		
		Actual par	tourbe	8,11896/1908		
		Pepilet	perinumber	44/80507008		
		Actual with	laute version	0091		
í.		Repared	attente venten	1004	1.	
		Actual has	duale version	009		
		Required	tedvan version	009		

Detailed view of integration test - software version



13.4 When programming or hardware testing is complete, backup documentation including the joint test is performed again.
All affected control units should now be re-programmed or checked in the control unit overview and their status. To do this, repeat Steps 2-4 until all control units are free of faults ⇒ Vehicle integration test complete.



Information

The vehicle must not be handed back to the customer until all control units have been checked and the system is thus compliant  $\Rightarrow$  Conformity of the vehicle system

13.5

In the event of a fault - Performance of the integration test

Detailed view of integration test - Hardware

Feguerere 11808112021					19 K
before refure	ing the vehicle to the o	ALCON.			
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Vehicle integration test complete



Conformity of the vehicle system

If the integration test fails, this is displayed as a result  $\Rightarrow$  *Vehicle control unit integration test failed*. Then complete the following steps:

 13.6 In the Additional menu (F7), execute the "Maintenance of vehicle data with PIWIS ONLINE" function and write the current vehicle data record from the online system into the vehicle.



Vehicle control unit integration test failed

- 13.7 Carry out the integration test again.
- 13.8 In the event of a further fault, contact Technical Support.
- 14 Attach the working log to the PQIS line.
  - 14.1 Select the PCCS button under **Applications** on the PIWIS Tester.
  - 14.2 Log into the PCCS using the PIWIS Tester with the corresponding quality line.
  - 14.3 Select Upload file in the PIWIS Tester.
  - 14.4 Select Pdf Prints in the drop-down menu.
  - 14.5 Attach the created work logs to the quality line.
- 15 End operational readiness (switch off ignition).
- 16 Disconnect the PIWIS Tester from the vehicle.

# i Information

Connect the PIWIS Tester to a network as soon as possible and log into the PPN in order to transfer the backup documentation created during this campaign to the PAG systems.

- 17 Switch off and disconnect the battery charger.
- 18 Enter the campaign in the Warranty and Maintenance booklet.
   End of remedial action –

For warranty processing, see **Scope 1** in the  $\Rightarrow$  *Technical Information '443225 Warranty processing section'* 

### Re-program various control units - Scope 2



Electrically moved side windows and rear spoiler

- Danger of limbs being trapped or severed
- Risk of damage to components

- $\Rightarrow$  Do not reach into the danger area.
- $\Rightarrow$  Keep third parties away from the danger area.
- $\Rightarrow$  Do not move components or tools into the danger area.

### NOTICE

Using the software on vehicles that are not assigned to this campaign:

- Risk of damage to control unit
- $\Rightarrow$  Use the listed software versions only for the vehicles assigned to the campaign.



### Information

To ensure that no user-specific settings from **cloud-based services (Porsche Connect & My Porsche)** are lost during the update, activate **Privacy mode** before starting the update. When Privacy mode is activated, communication between the vehicle and the Porsche Connect app and My Porsche is disabled. No vehicle-specific information is transferred. As a result, settings cannot be configured on the vehicle using the Porsche Connect app or My Porsche.

When the **instrument cluster** and **central computer** are re-programmed, the **individual settings** implemented **in the vehicle** by the customer will be lost and reset to the **default values** of the country version that applies to the vehicle.

After carrying out the campaign, please inform customers that personal settings they have implemented in the instrument cluster and central display of the central computer will have to be **set again** and provide them with any **help and support** they need for setting the relevant options.

This affects the following settings, for example:

- Individual settings for tubes 1 to 3 of the instrument cluster as well as the extended map view or reduced view of the instrument cluster
- Individual settings of the head-up display (HUD)
- Selected functions of individual tubes in the instrument cluster, e.g. auto zoom, 3D map and satellite map
- Arrangement of tiles in the home screen and MyScreen on the central display
- Individual seat, exterior mirror and ergonomic settings
- Air conditioning settings, such as ventilation and air quality
- Privacy settings
- Frequency setting of the garage door opener (Homelink)



After carrying out the campaign, please inform customers that Infotainment updates are available via the central computer (PCM) and provide them with any help and support they need during installation  $\Rightarrow$  *Infotainment update in central display*.

These updates are only available if the customer has logged in on the vehicle using his/her main user credentials (Porsche ID). Several updates are available depending on equipment and these must be installed one after the other in steps. It can take several minutes to install these. New functions can only be used when all updates have been completed and the vehicle has established bus idle for at least 15 minutes.



Infotainment update in central display

Work Procedure:



### Information

- Battery sensor (12-volt vehicle electrical system battery): An actual voltage of at least 14 volts is required for programming the 12-volt battery sensor. Switching the ignition off and on again after one minute is therefore integrated in the programming sequence. As a result, the voltage of the 12-volt vehicle electrical system battery increases briefly and the programming sequence can be started. Follow the instructions on the PIWIS Tester.
- Programming must not be performed if the supply voltage has not yet been checked to be 14 volts. This is displayed on the PIWIS Tester before starting programming.
- 1 Start control unit programming VR12.1.1 Sequence 2.

Only relevant for model year 2020 vehicles.

For specific information on control unit programming in this sequence, see the table below:

Required PIWIS Tester software version:	<b>40.550.040</b> (or higher)
Type of control unit programming:	Control unit programming using the <b>'Campaign'</b> function in the Additional menu on the PIWIS Tester by entering a programming code.
Programming code:	K4M2S

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# **Technical Information**

Programming sequence:	Read and follow the <b>information and instructions</b> <b>on the PIWIS Tester</b> during the guided programming sequence.
	Do not interrupt programming and coding.
	A backup documentation process for the re-programmed software versions starts as soon as programming and coding is complete.
Programming time (approx):	Up to 125 minutes
Software versions programmed during this campaign:	Power electronics, front and 0012     rear
	Engine electronics (DME) 0014     control unit
	<ul> <li>High-voltage battery control unit 1401 (BMCe)</li> </ul>
	<ul> <li>High-voltage DC battery charger 1250 (booster)</li> </ul>
	HV voltage converter 1230
	Control unit for chassis control 1160     (PASM)
	Power steering control unit 0430     (EPS)
	Brake electronics (PSM) control 0120     unit
	Control unit for steering column 0210     adjustment
	Control unit for rear axle     0962     steering
	Rear lid control unit 0172
	Air-conditioning control unit 1160
	Control unit for rear-differential 2021     lock
	Thermal management control 0323     unit (TME)
	Electric passenger 0015     compartment heater (PTC)
	Gateway control unit 2591
	Instrument cluster 0595

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	Over-the-air (OTA) control unit 1221
	OTA partition 1221
	High-voltage charger (OBC), 11 1083     kW
	Battery sensor 4174
	Transmission control unit (EGS) 0250
	Following control unit programming, the software version can be read out of the relevant control unit in the 'Extended identifications' menu using the PIWIS Tester.
Procedure in the event of abnormal termination of control unit programming:	<ul> <li>End and restore operational readiness (switch ignition off and then on again).</li> <li>Reading out and erasing fault memories ⇒ Workshop Manual '9XOOIN Basic instructions and procedure for control unit programming using the PIWIS Tester'.</li> <li>Repeat control unit programming by entering the programming code again, whereby extended logging must be started using the key combination •Ctrl" + •L".</li> <li>Extended logging records diagnostic software data, particularly vehicle communication data, which is required for analysing the issues that caused programming to be aborted.</li> <li>If control unit programming is aborted a second time, stop operational readiness for approx. 15 minutes (switch off ignition) and repeat the procedure described here again.</li> </ul>
Procedure in the event of error messages appearing during the programming sequence:	⇒ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester - section on "Fault finding"'.

- 2 Create a new working log.
  - 2.1 Once programming is complete, confirm by selecting F4" ('Save') in the Campaign menu below.
  - 2.2 Select F10" ('Logs').
  - 2.3 Select the log type **Work log**.
  - 2.4 The created working log with the designation of the sequence performed is unnamed and saved.
  - 2.5 Select the working log and press F10" ('Displays').

- 2.6 Select the printer icon in the selection bar at the top right.
- 2.7 Select printer ('PDF').
- 2.8 Print the working log. This is stored automatically on the Tester.
- 3 Start control unit programming **VR12.1.1 Sequence 2**.

# *i* Information

### Special features of sequence 2:

After programming the 22kW (OBC) high-voltage charger, the central computer (PCM) settings must be reset to the factory settings.

After carrying out the campaign, therefore, please **inform** your customers that personal settings they have implemented in PCM will have to be **set again** and provide them with any **help and support** they need for setting the relevant options.

This affects the following settings in the Vehicle menu, for example:

- Lowering of exterior mirror on passenger's side during parking manoeuvres
- Locking settings
- Light & Visibility settings
- Units (kilometers/miles, Celsius/Fahrenheit, ...)
- Language

### Only relevant for model year 2021 vehicles.

For specific information on control unit programming in this sequence, see the table below:

Required PIWIS Tester software version:	40.550.040 (or higher)
Type of control unit programming:	Control unit programming using the <b>'Campaign' function</b> <b>in the Additional menu</b> on the PIWIS Tester by entering a programming code.
Programming code:	K4M2S
Programming sequence:	Read and follow the <b>information and instructions on the</b> <b>PIWIS Tester</b> during the guided programming sequence.
	Do not interrupt programming and coding.
	A backup documentation process for the re-programmed software versions starts as soon as programming and coding is complete.
Programming time (approx):	up to 70 minutes*

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Software versions programmed	Power electronics, front and rear	0012
during this sequence:	Engine electronics (DME) control unit	0014
	High-voltage charger (OBC), 11 kW	1083
	or (depending on equipment)	
	• High-voltage charger (OBC), 22 kW	1256
	High-voltage battery control unit	1441 (H13)
	(BMCe)	or (depending on equipment)
		1442 (H14)
	High-voltage DC battery charger     (booster)	1250
	HV voltage converter	1230
	Head-up display	1208
	Instrument cluster	0595
	Over-the-air (OTA) control unit	1221
	Sequence 2 includes other control units from release VR12.1.1, which are only re-coded.	n the software
	Following control unit programming, the sof can be read out of the relevant control unit in identifications' menu using the PIWIS Tester.	tware version the 'Extended
Procedure in the event of abnormal termination of control unit programming:	<ul> <li>End and restore operational readiness off and then on again).</li> <li>Reading out and erasing fault memorie <i>Manual '9XOOIN Basic instructions and control unit programming using the PIV</i></li> <li>Repeat control unit programming by enprogramming code again, whereby ext must be started using the key combina         <ul> <li>L"</li> <li>Extended logging records diagnostic s particularly vehicle communication dat is required for analysing the issues that programming to be aborted.</li> <li>If control unit programming is aborted stop operational readiness for approx.</li> </ul> </li> </ul>	(switch ignition $s \Rightarrow Workshop$ procedure for <i>VIS Tester'</i> . Itering the ended logging tion • Ctrl " + oftware data, a, which caused a second time, 15 minutes

Service

	(switch off ignition) and repeat the procedure described here again.
Procedure in the event of error messages appearing during the	⇒ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS
programming sequence:	Tester - section on "Fault finding"'.

- 4 Create a new working log.
  - 4.1 Once programming is complete, confirm by selecting F4 " ('Save') in the Campaign menu below.
  - 4.2 Select F10" ('Logs').
  - 4.3 Select the log type **Work log**.
  - 4.4 The created working log with the designation of the sequence performed is unnamed and saved.
  - 4.5 Select the working log and press F10" ('Displays').
  - 4.6 Select the printer icon in the selection bar at the top right.
  - 4.7 Select printer ('PDF').
  - 4.8 Print the working log. This is stored automatically on the Tester.

### Concluding work - Scope 2

### 

Electrically moved side windows and rear spoiler

- Danger of limbs being trapped or severed
- Risk of damage to components
- $\Rightarrow$  Do not reach into the danger area.
- $\Rightarrow$  Keep third parties away from the danger area.
- $\Rightarrow$  Do not move components or tools into the danger area.

Work Procedure: 1 Establish bus idle for at least 15 minutes.

- 1.1 End operational readiness (switch off ignition).
- 1.2 Disconnect the PIWIS Tester diagnostic connector from the diagnostic socket.
- 1.3 Lock the vehicle using the driver's key and remove the driver's key from the proximity of the vehicle (approx. 10 meter/ 32.8 ft).
- 1.4 Unlock the vehicle again after waiting for at least 15 minutes.

- 1.5 Plug the PIWIS Tester diagnostic connector into the diagnostic socket again and restore communication with the vehicle.
- 2 Resetting PCM to factory settings Only required for 22kW OBC
  - 2.1 Select the "Central computer" control unit in the control unit selection screen (Exterior overview menu) and call up the "Maintenance/repairs" area.
  - 2.2 Select the "Reset factory settings" **function** and follow the instructions on the screen.
- 2 Manually retract the rear spoiler, which extended automatically during programming.
  - 2.1 Select the **'Rear spoiler'** control unit in the control unit selection screen (**'Overview'** menu) and press •F12" ('Next') to confirm.
  - 2.2 Once the rear spoiler control unit has been found and is displayed in the overview, select the 'Maintenance/repairs' menu.
  - 2.3 Select the function 'Teach rear spoiler' and press F12" ('Next') to confirm.
  - 2.4 Read the instructions and confirm by pressing F12" ('Next').
  - 2.5 Meet the displayed conditions that must be checked manually and tick the relevant 'Status' box.
  - 2.6 Select the **Teach rear spoiler** function and press F8" ('Execute') to confirm.
  - 2.7 Once the rear spoiler has been taught and retracted fully, select the **'Overview'** menu to return to the control unit selection screen.
- 3 Only relevant if the message **"Tyre pressure monitoring fault Service necessary"** is displayed: Teach Tyre Pressure Monitoring (TPM) system using the PIWIS Tester. *⇒ Workshop Manual '443225 Teach the wheel electronics'*

# i

### Information

In the menu-guided procedure, check the **'Teach wheel IDs'** menu item after confirming with •F12" to make sure that the function **'Teach 2nd wheel IDs without driving'** is selected. Then, select the function **'2nd wheel IDs unknown'** and continue the procedure according to menu guidance.

- 4 Read out and erase the fault memories of all control units.
  - 4.1 Press F7" in the control unit selection screen ('Overview' menu) to call up the Additional menu.

4.2 Select the function "Read all fault memories and erase if required" and press • F12" ('Next') to confirm  $\Rightarrow$  erase fault memory.

The fault memories of the control units are read out.

4.3 Once you have read out the fault memories, check the fault memory entries.



#### Information

workshop campaign number.

If control units are found to have faults that are **not** caused by control unit programming,

Overview	-				1
			Function		
Measurement of	closed-ci	rcuit current			-
Maintenance of v	ehicle da	ta			
Vehicle analysis	log (VAL)				
Campaign					
Vehicle handove					
Read all fault me	mories a	nd erase if required			1

erase fault memory

4.4 Press • F8" to delete fault memory entries.

4.5 Press • F12" ('Yes') in response to the question as to whether you really want to delete all fault memory entries.

these must first be found and corrected. This work cannot be invoiced under the

The faults stored in the fault memories of the various control units are deleted.



### Information

If fault memory entries for individual control units cannot be deleted, proceed as follows:

- End operational readiness (switch off ignition).
- Disconnect the PIWIS Tester diagnostic connector from the diagnostic socket.
- Lock the vehicle using the driver's key and remove the driver's key from the proximity of the vehicle (approx. 10 meter/ 32.8 ft).
- Unlock the vehicle again after waiting for at least 15 minutes.
- Restore operational readiness (switch on ignition).
- Plug the PIWIS Tester diagnostic connector into the diagnostic socket again and restore communication with the vehicle.
- Read out the fault memory again and delete any fault memory entries that are stored.

- 4.6 Once you have erased the fault memories, select the **'Overview'** menu to return to the control unit selection screen  $\Rightarrow$  *Control unit selection*.
- 5 Create Vehicle Analysis Log (VAL) using the PIWIS Tester.
   Mark the vehicle analysis log you have just created with the attribute "Final VAL" and after carrying out the campaign, return it using the PIWIS Tester.

### 6 Performing system test using the PIWIS Tester

6.1 First, the service technician carries out his steps as usual.

The system test is started automatically with the backup documentation process at the end of the process. Alternatively, the system test can also be started manually by pressing  $\bullet$ F3."

Overview		The Design Party and				
DTC	Ratur	Cantrol unit	DSN	Persche part number	T	
		Airbag			-	
		Gateway				
		DME				
		POK (Porsche Doppelkupplung)				
		PDK selector lever				
		Instrument cluster				
		Steering wheel electronics				
		Stopwatch				
		PCM / CDR				

Control unit selection

Vehicle control unit im	it /2021 regration test									<b>\$</b>
Conting Sources	alian updales. I	Passe yet				and the second				
		Cre	eating	docu Plea	iment ise w	ation ait	upda	ites.		
8				0				iller and	10000	

#### backup documentation

6.2 The result list is displayed to the technician when the check has been completed. This shows if control units are not yet at the required software version ⇒ *Programming required* or a hardware check is required in accordance with the Spare Parts Catalogue (PET)⇒ *Detailed view of integration test* - *Hardware*.



Programming required



Hardware check required

6.3 Click on the affected control unit to view further details and start programming ⇒ Detailed view of integration test - software version. The step-by-step instructions then start.

The hardware check is performed against the Parts Catalogue  $\Rightarrow$  *Detailed view of integration test - Hardware.* 

	E STATE				n			
Carate adjustment or passenger pide (201)		Necessary	/ action		Property in a paired			
		Actual par	tourbe		8/1899/908			
		Pepilet	perinumber		4482597558			
		Actual sufference version			0051			
		Actual factories version			19954			
					009			
		Required	tedvan version		009			

Detailed view of integration test - software version



Detailed view of integration test - Hardware

6.4 When programming or hardware testing is complete, backup documentation including the joint test is performed again.
All affected control units should now be re-programmed or checked in the control unit overview and their status. To do this, repeat Steps 2-4 until all control units are free of faults ⇒ Vehicle integration test complete.



Information

The vehicle must not be handed back to the customer until all control units have been checked and the system is thus compliant  $\Rightarrow$  Conformity of the vehicle system

6.5

In the event of a fault - Performance of the integration test

 Artigeneral ALLEGIT 2020
 Image: Control of Cont

Vehicle integration test complete



Conformity of the vehicle system
If the integration test fails, this is displayed as a result  $\Rightarrow$  *Vehicle control unit integration test failed*. Then complete the following steps:

6.6 In the Additional menu (F7), execute the "Maintenance of vehicle data with PIWIS ONLINE" function and write the current vehicle data record from the online system into the vehicle.



Vehicle control unit integration test failed

- 6.7 Carry out the integration test again.
- 6.8 In the event of a further fault, contact Technical Support.
- 7 Attach the work log to the PQIS line.
  - 7.1 Select the PCCS button under **Applications** on the PIWIS Tester.
  - 7.2 Log into the PCCS using the PIWIS Tester with the corresponding quality line.
  - 7.3 Select Upload file in the PIWIS Tester.
  - 7.4 Select **Pdf Prints** in the drop-down menu.
  - 7.5 Attach the created work logs to the quality line.
- 7 End operational readiness (switch off ignition).
- 8 Disconnect the PIWIS Tester from the vehicle.

### i Information

Connect the PIWIS Tester to a network as soon as possible and log into the PPN in order to transfer the backup documentation created during this campaign to the PAG systems.

- 9 Switch off and disconnect the battery charger.
- Enter the campaign in the Warranty and Maintenance booklet.
   End of remedial action –

For warranty processing, see **Scope 2** in the  $\Rightarrow$  *Technical Information '443225 Warranty processing section'* 

#### Re-program various control units - Scope 3



Electrically moved side windows and rear spoiler

- Danger of limbs being trapped or severed
- Risk of damage to components

- $\Rightarrow$  Do not reach into the danger area.
- ⇒ Keep third parties away from the danger area.
- $\Rightarrow$  Do not move components or tools into the danger area.

#### NOTICE

Using the software on vehicles that are not assigned to this campaign:

- Risk of damage to control unit
- $\Rightarrow$  Use the listed software versions only for the vehicles assigned to the campaign.

re: 1 Select Guest account from the central display (PCM) and activate Privacy mode (available in some countries).

#### Information

To ensure that no user-specific settings from **cloud-based services (Porsche Connect & My Porsche)** are lost during the update, activate **Privacy mode** before starting the update. When Privacy mode is activated, communication between the vehicle and the Porsche Connect app and My Porsche is disabled. No vehicle-specific information is transferred. As a result, settings cannot be configured on the vehicle using the Porsche Connect app or My Porsche.

When the **instrument cluster** and **central computer** are re-programmed, the **individual settings** implemented **in the vehicle** by the customer will be lost and reset to the **default values** of the country version that applies to the vehicle.

After carrying out the campaign, please inform customers that personal settings they have implemented in the instrument cluster and central display of the central computer will have to be **set again** and provide them with any **help and support** they need for setting the relevant options.

This affects the following settings, for example:

- Individual settings for tubes 1 to 3 of the instrument cluster as well as the extended map view or reduced view of the instrument cluster
- Individual settings of the head-up display (HUD)
- Selected functions of individual tubes in the instrument cluster, e.g. auto zoom, 3D map and satellite map
- Arrangement of tiles in the home screen and MyScreen on the central display
- Individual seat, exterior mirror and ergonomic settings
- Air conditioning settings, such as ventilation and air quality
- Privacy settings
- Frequency setting of the garage door opener (Homelink)

Work Procedure: 1

### **I**Information

- **Distance measuring sensor control unit (ACC):** Programming is performed in two stages because of the high data volume. First, the bootloader ACC is programmed and an error message is displayed. This error message in step 5 can be ignored and you can continue with the campaign. Follow the instructions on the PIWIS Tester.
- Airbag control unit: Manual intermediate steps are required after programming the central control unit for assistance systems (zFAS). For safety reasons, the airbag is unlocked during a guided procedure prior to coding and is then locked again when coding is complete. Follow the instructions on the PIWIS Tester. If the guided airbag procedure is aborted, the airbag must be locked again manually after completion of sequence 1. For instructions, see: ⇒ Workshop Manual '695355 Replacing airbag control unit'
- Rear-end electronics control unit (BCM 2): If the driver's key is not detected in the vehicle, programming of the rear-end electronic cannot be started or will be interrupted. You must therefore position the driver's key with the back facing forward upright between the holding struts in the rear cupholder (emergency start tray) to guarantee a permanent radio link between the vehicle and remote control.
- 2 Start control unit programming VR12.1.1 Sequence 1.

The basic procedure for control unit programming is described in the Workshop Manual  $\Rightarrow$ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester'.

#### Sequence 1:

For specific information on control unit programming in this sequence, see the table below:

Required PIWIS Tester software version:	<b>40.550.040</b> (or higher)
Type of control unit programming:	Control unit programming using the <b>'Campaign'</b> function in the Additional menu on the PIWIS Tester by entering a programming code.
Programming code:	K4M1S
Programming sequence:	Read and follow the <b>information and instructions</b> <b>on the PIWIS Tester</b> during the guided programming sequence.
	Do not interrupt programming and coding.
	A backup documentation process for the re-programmed software versions starts as soon as programming and coding is complete.
Programming time (approx):	Up to 125 minutes

# 9

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**Technical Information** 

Software versions programmed during this sequence:	Distance measuring sensor 0496     control unit (ACC)
	Front-end electronics control 0712     unit (BCM1)
	Rear-end electronics (BCM2) 0565     control unit
	Radar sensor for front corner 0485     radar, left and right
	Lane Change Assist control unit, 0486 left and right
	Central control unit for 0365     assistance systems (zFAS)
	Airbag control unit 3303
	Following control unit programming, the software version can be read out of the relevant control unit in the 'Extended identifications' menu using the PIWIS Tester.
Procedure in the event of abnormal termination of control unit programming:	<ul> <li>End and restore operational readiness (switch ignition off and then on again).</li> <li>Reading out and erasing fault memories ⇒ Workshop Manual '9XOOIN Basic instructions and procedure for control unit programming using the PIWIS Tester'.</li> <li>Repeat control unit programming by entering the programming code again, whereby extended logging must be started using the key combination •Ctrl" + •L".</li> <li>Extended logging records diagnostic software data, particularly vehicle communication data, which is required for analysing the issues that caused programming to be aborted.</li> <li>If control unit programming is aborted a second time, stop operational readiness for approx. 15 minutes (switch off ignition) and repeat the procedure described here again.</li> </ul>
Procedure in the event of error messages appearing during the programming sequence:	⇒ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester - section on "Fault finding"'.

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- 3 Create a new working log.
  - 3.1 Once programming is complete, confirm by selecting F4 " ('Save') in the Campaign menu below.
  - 3.2 Select F10" ('Logs').
  - 3.3 Select log type **Work log**.
  - 3.4 Rename and save the working log created with the designation of the sequence performed.
  - 3.5 Select the working log and press F10" ('Displays').
  - 3.6 Select the printer icon in the selection bar at the top right.
  - 3.7 Select printer ('PDF').
  - 3.8 Print the working log. This is stored automatically on the Tester.

#### Concluding work - Scope 3

#### 

Electrically moved side windows and rear spoiler

- Danger of limbs being trapped or severed
- Risk of damage to components
- $\Rightarrow$  Do not reach into the danger area.
- $\Rightarrow$  Keep third parties away from the danger area.
- $\Rightarrow$  Do not move components or tools into the danger area.

#### NOTICE

**Programming interrupted** 

- Malfunctions in control unit
- Risk of damage to control unit
- ⇒ Route the line between the vehicle communication module (VCI) and diagnostic socket on the vehicle without tension and make sure that the connector is inserted fully into the diagnostic socket.
- ⇒ Check that the rechargeable battery for the PIWIS Tester is charged sufficiently. Connect the PIWIS Tester to the power supply unit if necessary.
- Work Procedure: 1 Establish bus idle for at least 15 minutes.
  - 1.1 End operational readiness (switch off ignition).
  - 1.2 Disconnect the PIWIS Tester diagnostic connector from the diagnostic socket.
  - 1.3 Lock the vehicle using the driver's key and remove the driver's key from the proximity of the vehicle (approx. 10 meter/ 32.8 ft).

- 1.4 Unlock the vehicle again after waiting for at least 15 minutes.
- 1.5 Plug the PIWIS Tester diagnostic connector into the diagnostic socket again and restore communication with the vehicle.
- 2 Distance measuring sensor (ACC) Reset personalization For manual procedure, see: ⇒ Workshop Manual '278555 Replacing control unit for distance measuring sensor'
- 3 Teach component protection. For manual procedure, see: ⇒ Workshop Manual '903555 Replace gateway control unit Select the Assistance systems (zFAS) control unit in the PIWIS Tester procedure.
  - 3.1 Restoring enabling functions For manual procedure, see: ⇒ Workshop Manual '903555 Replace gateway control unit'.
- 4 Automatic coding of all control units
- 5 Manually retract the rear spoiler, which extended automatically during programming.
  - 5.1 Select the **'Rear spoiler'** control unit in the control unit selection screen (**'Overview'** menu) and press F12<sup>#</sup> ('Next') to confirm.
  - 5.2 Once the rear spoiler control unit has been found and is displayed in the overview, select the 'Maintenance/repairs' menu.
  - 5.3 Select the function 'Teach rear spoiler' and press F12" ('Next') to confirm.
  - 5.4 Read the instructions and confirm by pressing F12" ('Next').
  - 5.5 Meet the displayed conditions that must be checked manually and tick the relevant 'Status' box.
  - 5.6 Select the 'Teach rear spoiler' function and press F8" ('Execute') to confirm.
  - 5.7 Once the rear spoiler has been taught and retracted fully, select the **'Overview'** menu to return to the control unit selection screen.
- 6 Only relevant if the message "**Tyre pressure monitoring fault Service necessary**" is displayed: Teach Tyre Pressure Monitoring (TPM) system using the PIWIS Tester. For instructions, see:

 $\Rightarrow$  Workshop Manual '443225 Teach the wheel electronics'

### i Information

In the menu-guided procedure, check the **'Teach wheel IDs'** menu item after confirming with •F12" to make sure that the function **'Teach 2nd wheel IDs without driving'** is selected.

Then, select the function **'2nd wheel IDs unknown'** and continue the procedure according to menu guidance.

- 7 Read out and erase the fault memories of all control units.
  - 7.1 Press F7" in the control unit selection screen ('Overview' menu) to call up the Additional menu.
  - 7.2 Select the function "Read all fault memories and erase if required" and press • F12" ('Next') to confirm  $\Rightarrow$  erase fault memory.

The fault memories of the control units are read out.

7.3 Once you have read out the fault memories, check the fault memory entries.

Overview	-				Codings adaptations
			Function		
leasurement of o	losed-cir	cuit current			
aintenance of v	ehicle dat	ta .			
ehicle analysis l	og (VAL)				
ampaign					
ehicle handover					
rad all fault mer	nories an	d erase if required	1		

erase fault memory

Information

If control units are found to have faults that are **not** caused by control unit programming,

these must first be **found** and **corrected**. This work **cannot** be invoiced under the workshop campaign number.

- 7.4 Press F8" to delete fault memory entries.
- 7.5 Press F12" ('Yes') in response to the question as to whether you really want to delete all fault memory entries.

The faults stored in the fault memories of the various control units are deleted.



i

#### Information

If fault memory entries for individual control units cannot be deleted, proceed as follows:

- End operational readiness (switch off ignition).
- Disconnect the PIWIS Tester diagnostic connector from the diagnostic socket.
- Lock the vehicle using the driver's key and remove the driver's key from the proximity of the vehicle (approx. 10 meter/ 32.8 ft).
- Unlock the vehicle again after waiting for at least 15 minutes.
- Restore operational readiness (switch on ignition).
- Plug the PIWIS Tester diagnostic connector into the diagnostic socket again and restore communication with the vehicle.
- Read out the fault memory again and delete any fault memory entries that are stored.

- 7.6 Once you have erased the fault memories, select the **'Overview'** menu to return to the control unit selection screen  $\Rightarrow$  *Control unit selection*.
- 8 Create Vehicle Analysis Log (VAL) using the PIWIS Tester.
   Mark the vehicle analysis log you have just created with the attribute "Final VAL" and after carrying out the campaign, return it using the PIWIS Tester.

#### 9 Performing system test using the PIWIS Tester

9.1 First, the service technician carries out his steps as usual.

The system test is started automatically with the backup documentation process at the end of the process. Alternatively, the system test can also be started manually by pressing  $\bullet$ F3."

9.2 The result list is displayed to the technician after the check has been completed. This shows if control units are not yet at the required software version  $\Rightarrow$  *Programming required* **or** a hardware check is required in accordance with the Spare Parts Catalogue (PET)  $\Rightarrow$  *Detailed view of integration test* - *Hardware*.

### **Technical Information**

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#### backup documentation



Programming required



Hardware check required

9.3 Click on the affected control unit to view further details and start programming ⇒ Detailed view of integration test - software version. The step-by-step instructions then start.

The hardware check is performed against the Parts Catalogue  $\Rightarrow$  *Detailed view of integration test - Hardware.* 

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		Pepilet	parinumber				
		Actual and	Realize version		0891		-1
		Repaired	arthrone version		1964		
		Actual ha	duale vesion		009		
		Required	terduare version		009		

Detailed view of integration test - software version



9.4 When programming or hardware testing is complete, backup documentation including the joint test is performed again.
 All affected control units should now be re-programmed or checked in the control unit overview and their status. To do this, repeat Steps 2-4 until all control units are free of faults ⇒ Vehicle integration test complete.



Information

The vehicle must not be handed back to the customer until all control units have been checked and the system is thus compliant  $\Rightarrow$  Conformity of the vehicle system

9.5

In the event of a fault - Performance of the integration test

Detailed view of integration test - Hardware

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Vehicle integration test complete



Conformity of the vehicle system

If the integration test fails, this is displayed as a result  $\Rightarrow$  *Vehicle control unit integration test failed*. Then complete the following steps:

9.6 In the Additional menu (F7), execute the "Maintenance of vehicle data with PIWIS ONLINE" function and write the current vehicle data record from the online system into the vehicle.



Vehicle control unit integration test failed

- 9.7 Carry out the integration test again.
- 9.8 In the event of a further fault, contact Technical Support.
- 10 Attach the working log to the PQIS line.
  - 10.1 Select the PCCS button under **Applications** on the PIWIS Tester.
  - 10.2 Log into the PCCS using the PIWIS Tester with the corresponding quality line.
  - 10.3 Select Upload file in the PIWIS Tester.
  - 10.4 Select Pdf Prints in the drop-down menu.
  - 10.5 Attach the created work logs to the quality line.
- 11 End operational readiness (switch off ignition).
- 12 Disconnect the PIWIS Tester from the vehicle.

### i Information

Connect the PIWIS Tester to a network as soon as possible and log into the PPN in order to transfer the backup documentation created during this campaign to the PAG systems.

- 13 Switch off and disconnect the battery charger.
- 14 Enter the campaign in the Warranty and Maintenance booklet.- End of remedial action -

For warranty processing, see **Scope 3** in the  $\Rightarrow$  *Technical Information '443225 Warranty processing section'* 

#### Re-program various control units - Scope 4



Electrically moved side windows and rear spoiler

- Danger of limbs being trapped or severed
- Risk of damage to components

- Do not reach into the danger area. ⇒
- Keep third parties away from the danger area. ⇒
- Do not move components or tools into the danger area. ⇒

#### NOTICE

Using the software on vehicles that are not assigned to this campaign:

- Risk of damage to control unit •
- Use the listed software versions only for the vehicles assigned to the campaign. ⇒

Work Procedure: 1 Select Guest account from the central display (PCM) and activate Privacy mode (available in some countries).

### Information

- The new software version of the additional instrument (stopwatch) and multifunction steering wheel is only shown after restarting these components. This restart takes place in bus idle during the concluding work.
- Start control unit programming VR12.1.1 Sequence 3. 2

#### Only for model year 2020:

For specific information on control unit programming in this sequence, see the table below:

Required PIWIS Tester software version:	<b>40.550.040</b> (or higher)
Type of control unit programming:	Control unit programming using the <b>'Campaign'</b> function in the Additional menu on the PIWIS Tester by entering a programming code.
Programming code:	K4M3S
Programming sequence:	Read and follow the <b>information and instructions</b> <b>on the PIWIS Tester</b> during the guided programming sequence.
	Do not interrupt programming and coding.
	A backup documentation process for the re-programmed software versions starts as soon as programming and coding is complete.
Programming time (approx):	Up to 130 minutes

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	1		
Software versions programmed during this campaign:	•	Multifunction steering wheel	0091
	•	Seat adjustment control unit, front	0064
	•	Additional instrument control unit (stopwatch)	0015
	•	Door control unit, front and rear	0390
	•	Control unit for exterior acoustics (eSound)	0100
	•	Control unit for interior acoustics (iSound)	0290
	•	Display and operator control unit in rear center console	1170
	•	Connect control unit	0236
			or
			0237
			or
			0238
			or
			0239
			or
			0245
			or
			0247
	Foll ver the Tes	lowing control unit programming, th sion can be read out of the relevant 'Extended identifications' menu usi ster.	e software control unit in ng the PIWIS

Procedure in the event of abnormal termination of control unit programming:	<ul> <li>End and restore operational readiness (switch ignition off and then on again).</li> <li>Reading out and erasing fault memories ⇒ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester'.</li> <li>Repeat control unit programming by entering the programming code again, whereby extended logging must be started using the key combination • Ctrl" + • L".</li> <li>Extended logging records diagnostic software data, particularly vehicle communication data, which is required for analysing the issues that caused programming to be aborted.</li> <li>If control unit programming is aborted a second time, stop operational readiness for approx. 15 minutes (switch off ignition) and repeat the procedure described here again.</li> </ul>
Procedure in the event of error messages	⇒ Workshop Manual '9X00IN Basic instructions and
appearing during the programming	procedure for control unit programming using the
sequence:	PIWIS Tester - section on "Fault finding"'.

- 3 Create a new working log.
  - 3.1 Once programming is complete, confirm by selecting F4" ('Save') in the Campaign menu below.
  - 3.2 Select F10" ('Logs').
  - 3.3 Select the log type **Work log**.
  - 3.4 The created working log with the designation of the sequence performed is unnamed and saved.
  - 3.5 Select the working log and press F10" ('Displays').
  - 3.6 Select the printer icon in the selection bar at the top right.
  - 3.7 Select printer ('PDF').
  - 3.8 Print the working log. This is stored automatically on the Tester.
- 4 Start control unit programming **VR12.1.1 Sequence 3**.

Only for model year 2021.

For specific information on control unit programming in this sequence, see the table below:

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### **Technical Information**

Required PIWIS Tester software version:	40.550.040 (or higher)
Type of control unit programming:	Control unit programming using the <b>'Campaign' function</b> <b>in the Additional menu</b> on the PIWIS Tester by entering a programming code.
Programming code:	K4M3S
Programming sequence:	Read and follow the <b>information and instructions on the</b> <b>PIWIS Tester</b> during the guided programming sequence.
	Do not interrupt programming and coding.
	A backup documentation process for the re-programmed software versions starts as soon as programming and coding is complete.
Programming time (approx):	up to 30 minutes
Software version programmed	Door control unit, front and rear     0390
during this sequence:	Sequence 3 includes other control units from the software release VR12.1.1, which are only re-coded.
	Following control unit programming, the software version can be read out of the relevant control unit in the 'Extended identifications' menu using the PIWIS Tester.
Procedure in the event of abnormal termination of control unit programming:	<ul> <li>End and restore operational readiness (switch ignition off and then on again).</li> <li>Reading out and erasing fault memories ⇒ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester'.</li> <li>Repeat control unit programming by entering the programming code again, whereby extended logging must be started using the key combination •Ctrl" + •L".</li> <li>Extended logging records diagnostic software data, particularly vehicle communication data, which is required for analysing the issues that caused programming to be aborted.</li> <li>If control unit programming is aborted a second time, stop operational readiness for approx. 15 minutes (switch off ignition) and repeat the procedure described here again.</li> </ul>
Procedure in the event of error messages appearing during the programming sequence:	⇒ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester - section on "Fault finding"'.

- 5 Create a new working log.
  - 5.1 Once programming is complete, confirm by selecting F4" ('Save') in the Campaign menu below.
  - 5.2 Select F10" ('Logs').
  - 5.3 Select the log type **Work log**.
  - 5.4 The created working log with the designation of the sequence performed is unnamed and saved.
  - 5.5 Select the working log and press F10" ('Displays').
  - 5.6 Select the printer icon in the selection bar at the top right.
  - 5.7 Select printer ('PDF').
  - 5.8 Print the working log. This is stored automatically on the Tester.
- 6 Standardize front and rear doors consecutively.
  - 6.1 Select all four **door control units** in the control unit selection screen (**'Overview'** menu) and press F12" ('Next') to confirm your selection.
  - 6.2 Once the door control units have been found and are displayed in the overview, select the 'Maintenance/repairs' menu.
  - 6.3 Select the **'Standardization run'** function for the first of the four door control units and press F12" ('Next') to confirm.
  - 6.4 Read the instructions and confirm by pressing F12" ('Next').
  - 6.5 Meet the displayed conditions that must be checked manually, tick the relevant 'Status' box, and press •F12" ('Next') to confirm.
  - 6.6 Select the **Door \ Power window standardization** function and press F8" ('Execute') to start the procedure.
  - 6.7 Standardize the other three door control units in succession.

To do this, repeat **Steps 5.3 - 5.6** for the relevant door control units.

6.8 Once all four door control units have been coded, select the **'Overview'** menu to return to the control unit selection screen.

#### Concluding work - Scope 4

#### 

Electrically moved side windows and rear spoiler

- Danger of limbs being trapped or severed
- Risk of damage to components

- $\Rightarrow$  Do not reach into the danger area.
- $\Rightarrow$  Keep third parties away from the danger area.
- $\Rightarrow$  Do not move components or tools into the danger area.
- Work Procedure: 1 Establish bus idle for at least 15 minutes.
  - 1.1 End operational readiness (switch off ignition).
  - 1.2 Disconnect the PIWIS Tester diagnostic connector from the diagnostic socket.
  - 1.3 Lock the vehicle using the driver's key and remove the driver's key from the proximity of the vehicle (approx. 10 meter/ 32.8 ft).
  - 1.4 Unlock the vehicle again after waiting for at least 15 minutes.
  - 1.5 Plug the PIWIS Tester diagnostic connector into the diagnostic socket again and restore communication with the vehicle.
  - 2 Manually retract the rear spoiler, which extended automatically during programming.
    - 2.1 Select the **'Rear spoiler'** control unit in the control unit selection screen (**'Overview'** menu) and press F12<sup>#</sup> ('Next') to confirm.
    - 2.2 Once the rear spoiler control unit has been found and is displayed in the overview, select the 'Maintenance/repairs' menu.
    - 2.3 Select the function 'Teach rear spoiler' and press F12" ('Next') to confirm.
    - 2.4 Read the instructions and confirm by pressing F12" ('Next').
    - 2.5 Meet the displayed conditions that must be checked manually and tick the relevant 'Status' box.
    - 2.6 Select the **Teach rear spoiler** function and press •F8" ('Execute') to confirm.
    - 2.7 Once the rear spoiler has been taught and retracted fully, select the **'Overview'** menu to return to the control unit selection screen.
  - 3 Only relevant if the message **"Tyre pressure monitoring fault Service necessary"** is displayed: Teach Tyre Pressure Monitoring (TPM) system using the PIWIS Tester. *⇒ Workshop Manual '443225 Teach the wheel electronics'*

### i Information

In the menu-guided procedure, check the **'Teach wheel IDs'** menu item after confirming with •F12" to make sure that the function **'Teach 2nd wheel IDs without driving'** is selected. Then, select the function **'2nd wheel IDs unknown'** and continue the procedure according to menu guidance.

4 Read out and erase the fault memories of all control units.

- 4.1 Press F7 " in the control unit selection screen ('Overview' menu) to call up the Additional menu.
- 4.2 Select the function "Read all fault memories and erase if required" and press • F12" ('Next') to confirm.

The fault memories of the control units are read out.

4.3 Once you have read out the fault memories, check the fault memory entries.



#### Information

If control units are found to have faults that are **not** caused by control unit programming,

Maintenance of veh	nicle data								
Vehicle analysis log	g (VAL)								
Campaign									
Vehicle handover									
Read all fault mem-	ories and e	rase if requir	red						
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t a test. Press [F12] to

these must first be **found** and **corrected**. This work **cannot** be invoiced under the workshop campaign number.

- 4.4 Press F8" to delete fault memory entries.
- 4.5 Press F12" ('Yes') in response to the question as to whether you really want to delete all fault memory entries.

The faults stored in the fault memories of the various control units are deleted.



#### Information

If fault memory entries for individual control units cannot be deleted, proceed as follows:

- End operational readiness (switch off ignition).
- Disconnect the PIWIS Tester diagnostic connector from the diagnostic socket.
- Lock the vehicle using the driver's key and remove the driver's key from the proximity of the vehicle (approx. 10 meter/ 32.8 ft).
- Unlock the vehicle again after waiting for at least 15 minutes.
- Restore operational readiness (switch on ignition).
- Plug the PIWIS Tester diagnostic connector into the diagnostic socket again and restore communication with the vehicle.
- Read out the fault memory again and delete any fault memory entries that are stored.

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- 4.6 Once you have erased the fault memories, select the **'Overview'** menu to return to the control unit selection screen .
- 5 Create Vehicle Analysis Log (VAL) using the PIWIS Tester.

Mark the vehicle analysis log you have just created with the attribute **"Final VAL"** and after carrying out the campaign, return it using the PIWIS Tester.

#### 6 Performing system test using the PIWIS Tester

6.1 First, the service technician carries out his steps as usual.

The system test is started automatically with the backup documentation process at the end of the process. Alternatively, the system test can also be started manually by pressing  $\bullet$ F3."

6.2 The result list is displayed to the technician after the check has been completed. This shows if control units are not yet at the required software version  $\Rightarrow$  *Programming required* **or** a hardware check is required in accordance with the Spare Parts Catalogue (PET)  $\Rightarrow$  *Detailed view of integration test* - *Hardware*.

Control unit selection

Creating documentation updates. Please wait ...

0

0 8

PCM / CDP

8

backup documentation



Hardware check required



6.3 Click on the affected control unit to view further details and start programming ⇒ Detailed view of integration test - software version. The step-by-step instructions then start.

The hardware check is performed against the Parts Catalogue  $\Rightarrow$  *Detailed view of integration test - Hardware.* 

	E STATE						-
Careta Lunit Seat adjustment on passenger side (001)		Necessar	Becausely artics		Processing and ded		
		Actual pa	Actual part number		8/18607808		- 6
		Pepilet	Required perimeter		49.82597558		-
		Actual and	Realize version		0091		
		Repaired	Departed achieves version		100Å		
		Actual ha	duale vesion	um (09			
		Required	Required hardware version		009		

Detailed view of integration test - software version



6.4 When programming or hardware testing is complete, backup documentation including the joint test is performed again.
All affected control units should now be re-programmed or checked in the control unit overview and their status. To do this, repeat Steps 2-4 until all control units are free of faults ⇒ Vehicle integration test complete.



Information

The vehicle must not be handed back to the customer until all control units have been checked and the system is thus compliant  $\Rightarrow$  Conformity of the vehicle system

6.5

In the event of a fault - Performance of the integration test

Detailed view of integration test - Hardware

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Consect (High)			¢				
Chassie cordisi.	ait springs (204)			1			
Bateway 11.1 (00	10						
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Vehicle integration test complete



Conformity of the vehicle system

If the integration test fails, this is displayed as a result  $\Rightarrow$  *Vehicle control unit integration test failed*. Then complete the following steps:

6.6 In the Additional menu (F7), execute the "Maintenance of vehicle data with PIWIS ONLINE" function and write the current vehicle data record from the online system into the vehicle.



Vehicle control unit integration test failed

- 6.7 Carry out the integration test again.
- 6.8 In the event of a further fault, contact Technical Support.
- 7 Attach the working log to the PQIS line.
  - 7.1 Select the PCCS button under **Applications** on the PIWIS Tester.
  - 7.2 Log into the PCCS using the PIWIS Tester with the corresponding quality line.
  - 7.3 Select Upload file in the PIWIS Tester.
  - 7.4 Select **Pdf Prints** in the drop-down menu.
  - 7.5 Attach the created work logs to the quality line.
- 8 End operational readiness (switch off ignition).
- 9 Disconnect the PIWIS Tester from the vehicle.

### i Information

Connect the PIWIS Tester to a network as soon as possible and log into the PPN in order to transfer the backup documentation created during this campaign to the PAG systems.

- 10 Switch off and disconnect the battery charger.
- Enter the campaign in the Warranty and Maintenance booklet.
   End of remedial action –

For warranty processing, see **Scope 4** in the  $\Rightarrow$  *Technical Information '443225 Warranty processing section'* 

#### Re-program various control units - Scope 5



Electrically moved side windows and rear spoiler

- Danger of limbs being trapped or severed
- Risk of damage to components

- $\Rightarrow$  Do not reach into the danger area.
- $\Rightarrow$  Keep third parties away from the danger area.
- $\Rightarrow$  Do not move components or tools into the danger area.

#### NOTICE

Using the software on vehicles that are not assigned to this campaign:

- Risk of damage to control unit
- $\Rightarrow$  Use the listed software versions only for the vehicles assigned to the campaign.

Work Procedure: 1 Only relevant for vehicles with Scope 5: Start control unit programming of VR8.6.

The basic procedure for control unit programming is described in the Workshop Manual  $\Rightarrow$ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester'

### For specific information on control unit programming of VR8.6 during this campaign, see the table below:

Required PIWIS Tester software version:	40.550.040 (or higher)
Type of control unit programming:	Control unit programming using the <b>'Campaign'</b> function in the Additional menu on the PIWIS Tester by entering a programming code.
Programming code:	P5P8E
Programming sequence:	Read and follow the <b>information and instructions</b> <b>on the PIWIS Tester</b> during the guided programming sequence.
	Do not interrupt programming and coding.
	A backup documentation process for the re-programmed software versions starts as soon as programming and coding is complete.
Programming time (approx):	Up to 120 minutes

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Software versions programmed during	Over-the-air (OTA) control unit 0861
this campaign:	High-voltage power electronics, 0012     front and rear
	High-voltage charger (OBC) 1073     control unit
	High-voltage battery control unit E860 (BMCe)
	Chassis control (PASM) 0896
	Display and operator control unit 0897 in rear center console
	Instrument cluster 0394
	Following control unit programming, the software version can be read out of the relevant control unit in the 'Extended identifications' menu using the PIWIS Tester.
Procedure in the event of abnormal termination of control unit programming:	<ul> <li>End and restore operational readiness (switch ignition off and then on again).</li> <li>Reading out and erasing fault memories ⇒ Workshop Manual '9XOOIN Basic instructions and procedure for control unit programming using the PIWIS Tester'.</li> <li>Repeat control unit programming by entering the programming code again, whereby extended logging must be started using the key combination •Ctrl" + •L".</li> <li>Extended logging records diagnostic software data, particularly vehicle communication data, which is required for analysing the issues that caused programming to be aborted.</li> <li>If control unit programming is aborted a second time, stop operational readiness for approx. 15 minutes (switch off ignition) and repeat the procedure described here again.</li> </ul>
Procedure in the event of error messages appearing during the programming sequence:	⇒ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester - section on "Fault finding"'.

- 2 Create a new working log.
  - 2.1 Once programming is complete, confirm by selecting F4 " ('Save') in the Campaign menu below.

- 2.2 Select F10" ('Logs').
- 2.3 Select log type **Work log**.
- 2.4 Rename and save the working log created with the designation of the sequence performed.
- 2.5 Select the working log and press F10" ('Displays').
- 2.6 Select the printer icon in the selection bar at the top right.
- 2.7 Select printer ('PDF').
- 2.8 Print the working log. This is stored automatically on the Tester.
- 3 Then perform software update to software release **VR8.7**.
- 4 Start control unit programming of **VR8.7**.

The basic procedure for control unit programming is described in the Workshop Manual  $\Rightarrow$ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester'.

For specific information on control unit programming of VR8.7 during this campaign, see
the table below:

Required PIWIS Tester software version:	40.550.040 (or higher)
Type of control unit programming:	Control unit programming using the <b>'Campaign'</b> function in the Additional menu on the PIWIS Tester by entering a programming code.
Programming code:	V6P8C
Programming sequence:	Read and follow the <b>information and instructions</b> <b>on the PIWIS Tester</b> during the guided programming sequence.
	Do not interrupt programming and coding.
	A backup documentation process for the re-programmed software versions starts as soon as programming and coding is complete.
Programming time (approx):	Up to 100 minutes

Service

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Software versions programmed during	High-voltage power electronics, 0012
this campaign:	front and rear
	High-voltage charger (OBC) 1079     control unit
	High-voltage battery control unit E870     (BMCe)
	HV voltage converter 0899
	Brake booster (electric brake 0100 booster)
	High-voltage DC battery charger 0990     (booster)
	Engine electronics (DME) 0014
	Brake electronics (PSM) 0094
	Driver's seat and passenger's 0064     seat adjustment
	Assistance systems (zFAS) 0355
	Following control unit programming, the software version can be read out of the relevant control unit in the 'Extended identifications' menu using the PIWIS Tester.
Procedure in the event of abnormal termination of control unit programming:	<ul> <li>End and restore operational readiness (switch ignition off and then on again).</li> <li>Reading out and erasing fault memories ⇒ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester'.</li> <li>Repeat control unit programming by entering the programming code again, whereby extended logging must be started using the key combination • Ctrl" + •L".</li> <li>Extended logging records diagnostic software data, particularly vehicle communication data, which is required for analysing the issues that caused programming to be aborted.</li> <li>If control unit programming is aborted a second time, stop operational readiness for</li> </ul>

	approx. 15 minutes (switch off ignition) and repeat the procedure described here again.
Procedure in the event of error messages	⇒ Workshop Manual '9X00IN Basic instructions and
appearing during the programming	procedure for control unit programming using the
sequence:	PIWIS Tester - section on "Fault finding"'.

- 5 Create a new working log.
  - 5.1 Once programming is complete, confirm by selecting F4 " ('Save') in the Campaign menu below.
  - 5.2 Select F10" ('Logs').
  - 5.3 Select the log type **Work log**.
  - 5.4 Rename and save the working log created with the designation of the sequence performed.
  - 5.5 Select the working log and press F10" ('Displays').
  - 5.6 Select the printer icon in the selection bar at the top right.
  - 5.7 Select printer ('PDF').
  - 5.8 Print the working log. This is stored automatically on the Tester.
- 6 Then carry out **VR12.1.1 sequences 1 3**.
- 7 Select Guest account from the central display (PCM) and activate Privacy mode (available in some countries).

### lnformation

To ensure that no user-specific settings from **cloud-based services (Porsche Connect & My Porsche)** are lost during the update, activate **Privacy mode** before starting the update. When Privacy mode is activated, communication between the vehicle and the Porsche Connect app and My Porsche is disabled. No vehicle-specific information is transferred. As a result, settings cannot be configured on the vehicle using the Porsche Connect app or My Porsche.

When the **instrument cluster** and **central computer** are re-programmed, the **individual settings** implemented **in the vehicle** by the customer will be lost and reset to the **default values** of the country version that applies to the vehicle.

After carrying out the campaign, please inform customers that personal settings they have implemented in the instrument cluster and central display of the central computer will have to be **set again** and provide them with any **help and support** they need for setting the relevant options.

This affects the following settings, for example:

- Individual settings for tubes 1 to 3 of the instrument cluster as well as the extended map view or reduced view of the instrument cluster
- Individual settings of the head-up display (HUD)

- Selected functions of individual tubes in the instrument cluster, e.g. auto zoom, 3D map and satellite map
- Arrangement of tiles in the home screen and MyScreen on the central display
- Individual seat, exterior mirror and ergonomic settings
- Air conditioning settings, such as ventilation and air quality
- Privacy settings
- Frequency setting of the garage door opener (Homelink)



#### Information

After carrying out the campaign, please inform customers that Infotainment updates are available via the central computer (PCM) and provide them with any help and support they need during installation  $\Rightarrow$  *Info*tainment update in central display.

These updates are only available if the customer has logged in on the vehicle using his/her main user credentials (Porsche ID). Several updates are available depending on equipment and these must be installed one after the other in steps. It can take several minutes to install these. New functions can only be used when all updates have been completed and the vehicle has established bus idle for at least 15 minutes.



#### Information

- Infotainment update in central display Distance measuring sensor control unit (ACC): Programming is performed in two stages because of the high data volume. First, the bootloader ACC is programmed and an error message is displayed. This error message in step 5 can be ignored and you can continue with the campaign. Follow the instructions on the PIWIS Tester.
- Airbag control unit: Manual intermediate steps are required after programming the central control unit for assistance systems (zFAS). For safety reasons, the airbag is unlocked during a guided procedure prior to coding and is then locked again when coding is complete. Follow the instructions on the PIWIS Tester. If the guided airbag procedure is aborted, the airbag must be locked again manually after completion of sequence 1. For instructions, see:  $\Rightarrow$  Workshop Manual '695355 Replacing airbag control unit'
- Rear-end electronics control unit (BCM 2): If the driver's key is not detected in the vehicle, programming of the rear-end electronic cannot be started or will be interrupted. You must therefore position the driver's key with the back facing forward upright between the holding struts in the rear cupholder (emergency start tray) to guarantee a permanent radio link between the vehicle and remote control.

8 Start control unit programming **VR12.1.** Start **sequence 1**.

The basic procedure for control unit programming is described in the Workshop Manual  $\Rightarrow$ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester'.

#### Sequence 1:

### For specific information on control unit programming in this sequence, see the table below:

Required PIWIS Tester software version:	<b>40.550.040</b> (or higher)				
Type of control unit programming:	Control unit programming using the <b>'Campaign'</b> function in the Additional menu on the PIWIS Tester by entering a programming code.				
Programming code:	K4M1S				
Programming sequence:	Read and follow the <b>information and instructions</b> <b>on the PIWIS Tester</b> during the guided programming sequence.				
	Do not interrupt programming and coding.				
	A backup documentation process for the re-programmed software versions starts as soon as programming and coding is complete.				
Programming time (approx):	Up to 125 minutes				
Software versions programmed during this sequence:	Distance measuring sensor 0496     control unit (ACC)				
	Front-end electronics control 0712     unit (BCM1)				
	Rear-end electronics (BCM2) 0565     control unit				
	Radar sensor for front corner 0485     radar, left and right				
	Lane Change Assist control unit, 0486     left and right				
	Central control unit for 0365     assistance systems (zFAS)				
	Airbag control unit 3303				
	Following control unit programming, the software version can be read out of the relevant control unit in the 'Extended identifications' menu using the PIWIS Tester.				

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Procedure in the event of abnormal termination of control unit programming:	<ul> <li>End and restore operational readiness (switch ignition off and then on again).</li> <li>Reading out and erasing fault memories ⇒ Workshop Manual '9XOOIN Basic instructions and procedure for control unit programming using the PIWIS Tester'.</li> <li>Repeat control unit programming by entering the programming code again, whereby extended logging must be started using the key combination •Ctrl" + •L".</li> <li>Extended logging records diagnostic software data, particularly vehicle communication data, which is required for analysing the issues that caused programming to be aborted.</li> <li>If control unit programming is aborted a second time, stop operational readiness for approx. 15 minutes (switch off ignition) and repeat the procedure described here again.</li> </ul>
Procedure in the event of error messages	⇒ Workshop Manual '9X00IN Basic instructions and
appearing during the programming	procedure for control unit programming using the
sequence:	PIWIS Tester - section on "Fault finding"'.

- 9 Create a new working log.
  - 9.1 Once programming is complete, confirm by selecting F4 " ('Save') in the Campaign menu below.
  - 9.2 Select F10" ('Logs').
  - 9.3 Select the log type **Work log**.
  - 9.4 Rename and save the working log created with the designation of the sequence performed.
  - 9.5 Select the working log and press F10" ('Displays').
  - 9.6 Select the printer icon in the selection bar at the top right.
  - 9.7 Select printer ('PDF').
  - 9.8 Print the working log. This is stored automatically on the Tester.

#### Information

- Battery sensor (12-volt vehicle electrical system battery): An actual voltage of at least 14 volts is required for programming the 12-volt battery sensor. Switching the ignition off and on again after one minute is therefore integrated in the programming sequence. As a result, the voltage of the 12-volt vehicle electrical system battery increases briefly and the programming sequence can be started. Follow the instructions on the PIWIS Tester.
- Programming must not be performed if the supply voltage has not yet been checked to be 14 volts. This is displayed on the PIWIS Tester before starting programming.
- 10 Start control unit programming **VR12.1.1 Sequence 2**.

For specific information on control unit programming in this sequence, see the table below:

Required PIWIS Tester software version:	<b>40.550.040</b> (or higher)			
Type of control unit programming:	Control unit programming using the <b>'Campaign'</b> function in the Additional menu on the PIWIS Tester by entering a programming code.			
Programming code:	K4M2S			
Programming sequence:	Read and follow the <b>information and instructions</b> <b>on the PIWIS Tester</b> during the guided programming sequence. <b>Do not interrupt programming and coding.</b>			
	A backup documentation process for the re-programmed software versions starts as soon as programming and coding is complete.			
Programming time (approx):	Up to 125 minutes			
Software versions programmed during this campaign:	Power electronics, front and 0012     rear			
	Engine electronics (DME) 0014     control unit			
	High-voltage battery control unit 1401 (BMCe)			
	High-voltage DC battery charger 1250 (booster)			
	HV voltage converter     1230			
	Control unit for chassis control 1160     (PASM)			

$\mathbf{O}$	Service			Technical Information			
<u> </u>	WMHO	ENU <b>120/21</b>					ormation
					•	Power steering control unit (EPS)	0430
					•	Brake electronics (PSM) control unit	0120
					•	Control unit for steering column adjustment	0210
					•	Control unit for rear axle steering	0962
					•	Rear lid control unit	0172
					•	Air-conditioning control unit	1160
					•	Control unit for rear-differential lock	2021
					•	Thermal management control unit (TME)	0323
					•	Electric passenger compartment heater (PTC)	0015
					•	Gateway control unit	2591
					•	Instrument cluster	0595
					•	Over-the-air (OTA) control unit	1221
					•	OTA partition	1221
					•	High-voltage charger (OBC), 11 kW	1083
					•	Battery sensor	4174
					•	Transmission control unit (EGS)	0250
					Foll ver the Tes	owing control unit programming, th sion can be read out of the relevant 'Extended identifications' menu usi ter.	ne software control unit in ing the PIWIS

Procedure in the event of abnormal termination of control unit programming:	<ul> <li>End and restore operational readiness (switch ignition off and then on again).</li> <li>Reading out and erasing fault memories ⇒ Workshop Manual '9XOOIN Basic instructions and procedure for control unit programming using the PIWIS Tester'.</li> <li>Repeat control unit programming by entering the programming code again, whereby extended logging must be started using the key combination •Ctrl" + •L".</li> <li>Extended logging records diagnostic software data, particularly vehicle communication data, which is required for analysing the issues that caused programming to be aborted.</li> <li>If control unit programming is aborted a second time, stop operational readiness for approx. 15 minutes (switch off ignition) and repeat the procedure described here again.</li> </ul>
Procedure in the event of error messages appearing during the programming sequence:	→ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester - section on "Fault finding".

- 11 Create a new working log.
  - 11.1 Once programming is complete, confirm by selecting F4" ('Save') in the Campaign menu below.
  - 11.2 Select F10" ('Logs').
  - 11.3 Select the log type Work log.
  - 11.4 Rename and save the working log created with the designation of the sequence performed.
  - 11.5 Select the working log and press F10" ('Displays').
  - 11.6 Select the printer icon in the selection bar at the top right.
  - 11.7 Select printer ('PDF').
  - 11.8 Print the working log. This is stored automatically on the Tester.

#### Information

The new software version of the **additional instrument (stopwatch)** and **multifunction steering wheel** is only shown after restarting these components. This restart takes place in bus idle during the concluding work.

#### 12 Start control unit programming VR12.1.1 Sequence 3.

For specific information on control unit programming in this sequence, see the table below:

Required PIWIS Tester software version:	<b>40.550.040</b> (or higher)			
Type of control unit programming:	Control unit programming using the <b>'Campaign'</b> <b>function in the Additional menu</b> on the PIWIS Tester by entering a programming code.			
Programming code:	K4M3S			
Programming sequence:	Read and follow the <b>information and instructions</b> <b>on the PIWIS Tester</b> during the guided programming sequence. <b>Do not interrupt programming and coding.</b>			
	A backup documentation process for the re-programmed software versions starts as soon as programming and coding is complete.			
Programming time (approx):	Up to 130 minutes			
Software versions programmed during this campaign:	Multifunction steering wheel 0091			
	Seat adjustment control unit, 0064 front			
	Additional instrument control 0015     unit (stopwatch)			
	Door control unit, front and rear 0390			
	Control unit for exterior 0100     acoustics (eSound)			
	Control unit for interior 0290     acoustics (iSound)			
	Display and operator control unit 1170     in rear center console			
	Connect control unit 0236			
	or			
	0237			
	or			
	0238			
	or			
	0239			

	or 0245		
	or		
	0247		
	Following control unit programming, the software version can be read out of the relevant control unit in the 'Extended identifications' menu using the PIWIS Tester.		
Procedure in the event of abnormal termination of control unit programming:	<ul> <li>End and restore operational readiness (switch ignition off and then on again).</li> <li>Reading out and erasing fault memories ⇒ Workshop Manual '9XOOIN Basic instructions and procedure for control unit programming using the PIWIS Tester'.</li> <li>Repeat control unit programming by entering the programming code again, whereby extended logging must be started using the key combination • Ctrl" + •L".</li> <li>Extended logging records diagnostic software data, particularly vehicle communication data, which is required for analysing the issues that caused programming to be aborted.</li> <li>If control unit programming is aborted a second time, stop operational readiness for approx. 15 minutes (switch off ignition) and repeat the procedure described here again.</li> </ul>		
Procedure in the event of error messages appearing during the programming sequence:	⇒ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester - section on "Fault finding"'.		

- 13 Create a new working log.
  - 13.1 Once programming is complete, confirm by selecting F4 " ('Save') in the Campaign menu below.
  - 13.2 Select F10" ('Logs').
  - 13.3 Select the log type **Work log**.
  - 13.4 Rename and save the working log created with the designation of the sequence performed.
  - 13.5 Select the working log and press F10" ('Displays').
  - 13.6 Select the printer icon in the selection bar at the top right.

- 13.7 Select printer ('PDF').
- 13.8 Print the working log. This is stored automatically on the Tester.

#### Concluding work - Scope 5

#### 

Electrically moved side windows and rear spoiler

- Danger of limbs being trapped or severed
- Risk of damage to components
- $\Rightarrow$  Do not reach into the danger area.
- $\Rightarrow$  Keep third parties away from the danger area.
- $\Rightarrow$  Do not move components or tools into the danger area.

#### NOTICE

Movement of the rear wheels by activating the electric motor; vehicle driving off when the wheels are touching the ground

- Personal injury as a result of wheel or vehicle movement
- Material damage to vehicle, drive or brake components
- ⇒ Raise the vehicle on a lifting platform until the drive wheels are free
- ⇒ Press the foot brake during adaptation
- $\Rightarrow$  Cordon off the work area

#### NOTICE

**Programming interrupted** 

- Malfunctions in control unit
- Risk of damage to control unit
- ⇒ Route the line between the vehicle communication module (VCI) and diagnostic socket on the vehicle without tension and make sure that the connector is inserted fully into the diagnostic socket.
- ⇒ Check that the rechargeable battery for the PIWIS Tester is charged sufficiently. Connect the PIWIS Tester to the power supply unit if necessary.

Work Procedure: 1 Establish bus idle for at least 15 minutes.

- 1.1 End operational readiness (switch off ignition).
- 1.2 Disconnect the PIWIS Tester diagnostic connector from the diagnostic socket.

- 1.3 Lock the vehicle using the driver's key and remove the driver's key from the proximity of the vehicle (approx. 10 meter/ 32.8 ft).
- 1.4 Unlock the vehicle again after waiting for at least 15 minutes.
- 1.5 Plug the PIWIS Tester diagnostic connector into the diagnostic socket again and restore communication with the vehicle.
- Place the vehicle onto a lifting platform, but do not raise it yet.
   Follow the instructions on the PIWIS Tester for lifting the vehicle during the following sequence.



#### Information

The current version of the onboard Driver's Manual has been available online since 5 March 2021.

A blank USB storage medium is required for installing the onboard Driver's Manual (approx. 100 MB). If there is already data stored on the USB storage medium, this will be deleted during the procedure.

## *i* Information

Before starting sequence 5 (subsequent work), connect the PIWIS Tester to a network to establish an Internet connection. The PIWIS Tester **must** be **connected online** for the subsequent work described below and for installing the onboard Driver's Manual.

#### Information

- Component protection: Component protection must only be taught for the control unit for assistance systems (zFAS). To do this, select component protection for assistance systems (zFAS) in the procedure. If the component protection teaching process is aborted, stop sequence 5 and read and follow the additional information provided under ⇒ *Technical Information '9XOOIN Additional instructions for the concluding work'*.
- **Enabled functions:** If function activation is aborted, component protection must first be taught again. Then, start sequence 5 again in order to restore the enabled functions.
- Coding of all control units: Always allow coding to run to the end of the process. If individual coding routines fail, the relevant control units can be selected manually in the overview afterwards and coded again individually.
- 3 Start subsequent work for various control units (sequence 5).

Required PIWIS Tester software version:	40.550.040 (or higher)
Programming code:	K4M5S

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### **Technical Information**

Expiry:	Read and follow the <b>information and</b> <b>instructions on the PIWIS Tester</b> during the guided procedure for the subsequent work.			
	Do not interrupt the process.			
Programming time (approx):	Up to 55 minutes			
Subsequent work carried out during this process	Distance measuring sensor (ACC) -     Reset personalization			
	For manual procedure, see $\Rightarrow$ Workshop Manual '278555 Replacing control unit for distance measuring sensor'.			
	Air conditioning - Teach servo motors			
	For the manual procedure, see relevant servo motor Workshop Manual 872019 <b>xx</b> .			
	Commissioning rear-differential lock			
	For manual procedure, see ⇒ Workshop Manual '397555 Replacing rear-differential lock control unit'.			
	Engine electronics (DME) transmission     adaptation			
	For manual procedure, see ⇒ Workshop Manual '247055 Replacing DME control unit'.			
	Door standardization, front and rear			
	For manual procedure, see			
	<ul> <li>→ Workshop Manual '577355 Replacing front door control unit'</li> <li>→ Workshop Manual '587355 Replacing rear door control unit'</li> </ul>			
	Teaching component protection			
	For manual procedure, see $\Rightarrow$ Workshop Manual '903555 Replace gateway control unit'Select the control unit for <b>assistance</b> <b>systems (zFAS)</b> in the PIWIS Tester procedure.			
	Restoring enabling functions			
	For manual procedure, see $\Rightarrow$ Workshop Manual '903555 Replace gateway control unit'.			
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	Installing onboard Driver's Manual			
	For manual procedure, see $\Rightarrow$ Workshop Manual 'OXO1IN diagnostic system: Performing vehicle handover'.			
	Automatic coding of all control units			
Procedure if the sequence is aborted:	<ul> <li>End and restore operational readiness (switch ignition off and then on again).</li> <li>Reading out and erasing fault memories ⇒ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester'.</li> <li>Repeat subsequent work sequence by entering the programming code again, whereby extended logging must be started using the key combination         <ul> <li>Ctrl" + •L".</li> </ul> </li> <li>Extended logging records diagnostic software data, particularly vehicle communication data, which is required for analysing the issues that caused programming to be aborted.</li> <li>If subsequent work is aborted a second time, end operational readiness for approx. 15 minutes (switch off ignition) and repeat the procedure described here again.</li> <li>In the case of further aborts, the subsequent work must be successively carried out manually.</li> </ul>			
Procedure in the event of error messages appearing during the programming sequence:	⇒ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester - section on "Fault finding".			

- 4 Create a new working log.
  - 4.1 Once programming is complete, confirm by selecting F4 " ('Save') in the Campaign menu below.

- 4.2 Select F10" ('Logs').
- 4.3 Select the log type **Work log**.
- 4.4 Rename and save the working log created with the designation of the sequence performed.
- 4.5 Select the working log and press F10" ('Displays').
- 4.6 Select the printer icon in the selection bar at the top right.
- 4.7 Select printer ('PDF').
- 4.8 Print the working log. This is stored automatically on the Tester.
- 5 Establish bus idle for at least 15 minutes.
  - 5.1 End operational readiness (switch off ignition).
  - 5.2 Disconnect the PIWIS Tester diagnostic connector from the diagnostic socket.
  - 5.3 Lock the vehicle using the driver's key and remove the driver's key from the proximity of the vehicle (approx. 10 meter/ 32.8 ft).
  - 5.4 Unlock the vehicle again after waiting for at least 15 minutes.
  - 5.5 Plug the PIWIS Tester diagnostic connector into the diagnostic socket again and restore communication with the vehicle.
- 6 Teach steering lock settings.
  - 6.1 Select the power steering 'EPS' control unit in control unit selection ('Overview' menu) and press •F12" ('Next') to confirm.
  - 6.2 Once the power steering control unit has been found and is displayed in the list, select the 'Maintenance/repairs' menu.
  - 6.3 Select the 'Commissioning' function and confirm with F12" ('Next').
  - 6.4 Follow the instructions on the Tester to perform the commissioning process.
  - 6.5 If the left and right steering lock settings are not saved during the procedure, adjust the height and depth of the steering wheel position and repeat the commissioning procedure.
- 7 Only relevant for vehicles with Scope 5 or if fault memory entries are stored for seat adjustment: Standardize seat adjustment for driver's and passenger's side.
  - 7.1 Select the 'Seat adjustment on front passenger's side' control unit in the control unit selection screen ('Overview' menu) and press F12" ('Next') to confirm your selection.
  - 7.2 Once the seat adjustment on front passenger's side control unit has been found and is displayed in the overview, select the **'Maintenance/repairs'** menu.
  - 7.3 Select the **'Standardize seat motors'** function and press F12<sup>"</sup> ('Next') to confirm your selection.
  - 7.4 Read the instructions and confirm by pressing •F12" ('Next').

- 7.5 Press F8" ('Start') to run the procedure.
- 7.6 Once the seat motors on the **passenger's side** have been standardized, also teach the **driver's side**. To do this, select the **'Seat adjustment on front driver's side'** control unit in the control unit selection screen (**'Overview'** menu) and **repeat Steps 6.2 to 6.6**. Then, continue with **Step 2**.
- 8 Manually retract the rear spoiler, which extended automatically during programming.
  - 8.1 Select the **'Rear spoiler'** control unit in the control unit selection screen (**'Overview'** menu) and press •F12<sup>#</sup> ('Next') to confirm.
  - 8.2 Once the rear spoiler control unit has been found and is displayed in the overview, select the 'Maintenance/repairs' menu.
  - 8.3 Select the function 'Teach rear spoiler' and press F12" ('Next') to confirm.
  - 8.4 Read the instructions and confirm by pressing F12" ('Next').
  - 8.5 Meet the displayed conditions that must be checked manually and tick the relevant 'Status' box.
  - 8.6 Select the 'Teach rear spoiler' function and press •F8" ('Execute') to confirm.
  - 8.7 Once the rear spoiler has been taught and retracted fully, select the **'Overview'** menu to return to the control unit selection screen.
- 9 Calibration of power electronics at front and rear.
  - 9.1 Select the 'Rear high-voltage power electronics' control unit in the control unit selection screen ('Overview' menu) and confirm with F12" ('Next').
  - 9.2 Once the high-voltage power electronics on rear axle control unit has been found and is displayed in the 'Overview', select the **'Drive links/checks'** menu.
  - 9.3 Select the 'Electric motor Reset calibration' function and confirm with •F12" ('Next').
  - 9.4 Set the entry to **Basic setting** in the Values column on the 'Parameters' tab.
  - 9.5 Confirm that **calibration** has been reset with •F8" ('Execute').
  - 9.6 Go back to the control unit selection screen ('Overview' menu), select the 'Front high-voltage power electronics' control unit and repeat Steps 8.2 to 8.4 for the selected control unit.
  - 9.7 After resetting both calibrations, select the two control units 'Front high-voltage power electronics' and 'Rear high-voltage power electronics' in the control unit selection screen and open the 'Fault memory' menu.
  - 9.8 Check whether the fault code **'P171900'** is displayed for **both** control units:
    - If the fault code 'P171900' is displayed for the 'Rear high-voltage power electronics' and 'Front high-voltage power electronics' control unit, continue with Step 8.9.

- The fault code 'P171900' is not displayed or is displayed only for one of the two control units. Carry out Steps 8.1 to 8.6 for the relevant control units again.
- 9.9 Disconnect the PIWIS Tester from the vehicle.
- 9.10 Switch off and disconnect the battery charger.

#### Information

Resetting the high-voltage power electronics will limit the maximum vehicle speed to 70 km/h (43 mph). The warning message "Reduced speed" will be displayed on the instrument cluster. Any road on which it is possible to accelerate to a speed of at least 60 km/h (38 mph) can be used as the calibration route.

#### Read and follow safety instructions:

- Only perform calibration on public roads if the road and traffic conditions are conducive to doing so
- The road traffic regulations must always be observed
- Other road users must not be at risk when performing calibration
- Move the vehicle on public roads only if it is roadworthy
- 9.11 Start the calibration drive and complete the following steps.



i

#### Information

Resetting the high-voltage power electronics will limit the maximum vehicle speed to 70 km/h (43 mph). The warning message "Reduced speed" will be displayed on the instrument cluster. Any road on which it is possible to accelerate to a speed of at least 60 km/h (38 mph) can be used as the calibration route.

#### Read and follow safety instructions:

- Only perform calibration on public roads if the road and traffic conditions are conducive to doing so
- The road traffic regulations must always be observed
- Other road users must not be at risk when performing calibration
- Move the vehicle on public roads only if it is roadworthy
- Accelerate the vehicle to at least 60 km/h (38 mph).
- Release the accelerator pedal and allow the vehicle roll in overrun for at least 1 second. Calibration is performed during this overrun phase.
- Switch ignition off and on again to reset the "Reduced speed" warning message.
- 10 Only relevant if the message "**Tyre pressure monitoring fault Service necessary**" is displayed: Teach Tyre Pressure Monitoring (TPM) system using the PIWIS Tester. For instructions, see:

 $\Rightarrow$  Workshop Manual '443225 Teach the wheel electronics'

9

#### Information

In the menu-guided procedure, check the **'Teach wheel IDs'** menu item after confirming with •F12" to make sure that the function **'Teach 2nd wheel IDs without driving'** is selected. Then, select the function **'2nd wheel IDs unknown'** and continue the procedure according to menu guidance.

- 11 Read out and erase the fault memories of all control units.
  - 11.1 Press F7" in the control unit selection screen ('Overview' menu) to call up the Additional menu.
  - 11.2 Select the function "Read all fault memories and erase if required" and press • F12" ('Next') to confirm  $\Rightarrow$  erase fault memory.

The fault memories of the control units are read out.

11.3 Once you have read out the fault memories, check the fault memory entries.

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Maintenance of v	ehicle da	sta			
/ehicle analysis	og (VAL	)			
Campaign					
/ehicle handover					
Read all fault me	mories a	nd erase if required			
an 2	R		9 0	Sf O	33 N

erase fault memory



#### Information

If control units are found to have faults that are **not** caused by control unit programming,

these must first be **found** and **corrected**. This work **cannot** be invoiced under the workshop campaign number.

- 11.4 Press F8" to delete fault memory entries.
- 11.5 Press F12" ('Yes') in response to the question as to whether you really want to delete all fault memory entries.

The faults stored in the fault memories of the various control units are deleted.



#### Information

If fault memory entries for individual control units cannot be deleted, proceed as follows:

- End operational readiness (switch off ignition).
- Disconnect the PIWIS Tester diagnostic connector from the diagnostic socket.
- Lock the vehicle using the driver's key and remove the driver's key from the proximity of the vehicle (approx. 10 meter/ 32.8 ft).
- Unlock the vehicle again after waiting for at least 15 minutes.
- Restore operational readiness (switch on ignition).
- Plug the PIWIS Tester diagnostic connector into the diagnostic socket again and restore communication with the vehicle.

- Read out the fault memory again and delete any fault memory entries that are stored.
- 11.6 Once you have erased the fault memories, select the **'Overview'** menu to return to the control unit selection screen  $\Rightarrow$  *Control unit selection*.
- 12 Create Vehicle Analysis Log (VAL) using the PIWIS Tester. Mark the vehicle analysis log you have just created

with the attribute "Final VAL" and after carrying out the campaign, return it using the PIWIS Tester.

#### 13 Performing system test using the PIWIS Tester

13.1 First, the service technician carries out his steps as usual.

The system test is started automatically with the backup documentation process at the end of the process. Alternatively, the system test can also be started manually by pressing •F3." 
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Control unit selection

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	backup documentation

13.2	The result list is displayed to the technician
	after the check has been completed.
	This shows if control units are not yet at the
	required software version $\Rightarrow$ <i>Programming</i>
	required or a hardware check is required in
	accordance with the Spare Parts Catalogue
	$(PET) \Rightarrow Detailed view of integration test$
	Hardware.

# Contrarting Design Design (Section 100) Office Design (Section 100) Office <t

2 23

#### Programming required

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Night vision system (02 AUTOL POEnd	10 C		
Tite Pressure Monitoring 1	4		
Reversing camera	6		0
6 7 8 8 8	1 0	e e e 3	3 20

Hardware check required

13.3 Click on the affected control unit to view further details and start programming ⇒ Detailed view of integration test - software version. The step-by-step instructions then start.

The hardware check is performed against the Parts Catalogue  $\Rightarrow$  *Detailed view of integration test - Hardware.* 

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		Replied			44/82597688		
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		Achiel he	eduare version		009		
		Required	Required fordware version		009		-1

Detailed view of integration test - software version



13.4 When programming or hardware testing is complete, backup documentation including the joint test is performed again. All affected control units should now be programmed or checked afterwards in the control unit overview and their status. To do this, repeat Steps 2-4 until all control units are free of faults ⇒ Vehicle integration test complete.



#### Information

The vehicle must not be handed back to the customer until all control units have been checked and the system is thus compliant  $\Rightarrow$  Conformity of the vehicle system

13.5

In the event of a fault - Performance of the integration test

Detailed view of integration test - Hardware

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Vehicle integration test complete



Conformity of the vehicle system

If the integration test fails, this is displayed as a result  $\Rightarrow$  *Vehicle control unit integration test failed*. Then complete the following steps:

 13.6 In the Additional menu (F7), execute the "Maintenance of vehicle data with PIWIS ONLINE" function and write the current vehicle data record from the online system into the vehicle.



Vehicle control unit integration test failed

- 13.7 Carry out the integration test again.
- 13.8 In the event of a further fault, contact Technical Support.
- 14 Attach the working log to the PQIS line.
  - 14.1 Select the PCCS button under **Applications** on the PIWIS Tester.
  - 14.2 Log into the PCCS using the PIWIS Tester with the corresponding quality line.
  - 14.3 Select Upload file in the PIWIS Tester.
  - 14.4 Select Pdf Prints in the drop-down menu.
  - 14.5 Attach the created work logs to the quality line.
- 15 End operational readiness (switch off ignition).
- 16 Disconnect the PIWIS Tester from the vehicle.

# i Information

Connect the PIWIS Tester to a network as soon as possible and log into the PPN in order to transfer the backup documentation created during this campaign to the PAG systems.

- 17 Switch off and disconnect the battery charger.
- 18 Enter the campaign in the Warranty and Maintenance booklet.
   End of remedial action –

For warranty processing, see **Scope 5** in the  $\Rightarrow$  *Technical Information '443225 Warranty processing section'* 

#### Re-program various control units - Scope 6



Electrically moved side windows and rear spoiler

- Danger of limbs being trapped or severed
- Risk of damage to components

- $\Rightarrow$  Do not reach into the danger area.
- $\Rightarrow$  Keep third parties away from the danger area.
- $\Rightarrow$  Do not move components or tools into the danger area.

#### NOTICE

Using the software on vehicles that are not assigned to this campaign:

- Risk of damage to control unit
- $\Rightarrow$  Use the listed software versions only for the vehicles assigned to the campaign.

# *i* Information

The guided programming sequence as part of this campaign includes all control units from the corresponding software releases. During the programming sequence, the software versions of the individual control units listed below are compared with the required versions of software release. If the actual versions already correspond to the required versions, programming of the relevant control unit will be automatically skipped, which means that the number of control units programmed in addition to the control unit for the high-voltage charger can vary.

# i Information

To ensure that no user-specific settings from **cloud-based services (Porsche Connect & My Porsche)** are lost during the update, activate **Privacy mode** before starting the update. When private mode is activated, communication between the vehicle and the Porsche Connect App and My Porsche is blocked. No vehicle-specific information is transferred. As a result, settings cannot be configured on the vehicle using the Porsche Connect app or My Porsche.

When the **instrument cluster** and **central computer** are re-programmed, the **individual settings** implemented **in the vehicle** by the customer will be lost and reset to the **default values** of the country version that applies to the vehicle.

After carrying out the campaign, please inform customers that personal settings they have implemented in the instrument cluster and central display of the central computer will have to be **set again** and provide them with any help and **support** they need for setting the relevant options.

This affects the following settings, for example:

- Individual settings for tubes 1 to 3 of the instrument cluster as well as the extended map view or reduced view of the instrument cluster
- Individual settings of the head-up display (HUD)
- Selected functions of individual tubes in the instrument cluster, e.g. auto zoom, 3D map and satellite map
- Arrangement of tiles in the home screen and MyScreen on the central display

- Individual seat, exterior mirror and ergonomic settings
- Air conditioning settings, such as ventilation and air quality
- Privacy settings
- Frequency setting of the garage door opener (Homelink)

### lnformation

Only control units that are not up-to-date are updated. If these control units are already updated, hard programming will be aborted.

Work Procedure: 1 Only relevant for vehicles with Scope 6: Start control unit programming of VR8.7.

2 Start control unit programming of **VR8.7**.

The basic procedure for control unit programming is described in the Workshop Manual  $\Rightarrow$ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester'.

For specific information on control unit programming of VR8.7 during this campaign, see the table below:

Required PIWIS Tester software version:	40.550.040 (or higher)
Type of control unit programming:	Control unit programming using the <b>'Campaign'</b> function in the Additional menu on the PIWIS Tester by entering a programming code.
Programming code:	V6P8C
Programming sequence:	Read and follow the <b>information and instructions</b> <b>on the PIWIS Tester</b> during the guided programming sequence.
	Do not interrupt programming and coding.
	A backup documentation process for the re-programmed software versions starts as soon as programming and coding is complete.
Programming time (approx):	Up to 100 minutes

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Software versions programmed during	High-voltage power electronics, 0012
this campaign:	front and rear
	High-voltage charger (OBC) 1079     control unit
	High-voltage battery control unit E870     (BMCe)
	HV voltage converter 0899
	Brake booster (electric brake 0100 booster)
	High-voltage DC battery charger 0990     (booster)
	Engine electronics (DME) 0014
	Brake electronics (PSM) 0094
	Driver's seat and passenger's 0064     seat adjustment
	Assistance systems (zFAS) 0355
	Following control unit programming, the software version can be read out of the relevant control unit in the 'Extended identifications' menu using the PIWIS Tester.
Procedure in the event of abnormal termination of control unit programming:	<ul> <li>End and restore operational readiness (switch ignition off and then on again).</li> <li>Reading out and erasing fault memories ⇒ Workshop Manual '9XOOIN Basic instructions and procedure for control unit programming using the PIWIS Tester'.</li> <li>Repeat control unit programming by entering the programming code again, whereby extended logging must be started using the key combination •Ctrl" + •L".</li> <li>Extended logging records diagnostic software data, particularly vehicle communication data, which is required for analysing the issues that caused programming to be aborted.</li> <li>If control unit programming is aborted a second time, stop operational readiness for</li> </ul>

	approx. 15 minutes (switch off ignition) and repeat the procedure described here again.
Procedure in the event of error messages	⇒ Workshop Manual '9X00IN Basic instructions and
appearing during the programming	procedure for control unit programming using the
sequence:	PIWIS Tester - section on "Fault finding".

- 3 Create a new working log.
  - 3.1 Once programming is complete, confirm by selecting F4 " ('Save') in the Campaign menu below.
  - 3.2 Select F10" ('Logs').
  - 3.3 Select log type **Work log**.
  - 3.4 The created working log with the designation of the sequence performed is unnamed and saved.
  - 3.5 Select the working log and press F10" ('Displays').
  - 3.6 Select the printer icon in the selection bar at the top right.
  - 3.7 Select printer ('PDF').
  - 3.8 Print the working log. This is stored automatically on the Tester.



#### Information

- Battery sensor (12-volt vehicle electrical system battery): An actual voltage of at least 14 volts is required for programming the 12-volt battery sensor.
- Programming must not be carried out if the supply voltage is 14 volts and the voltage has not been checked beforehand. This is displayed in the PIWIS Tester before starting programming.
- The battery charger must be set to U: 14.8 V and Uehl: 14.4 must be set.
- After programming, the charger **must** return to **U: 14.4V** and **UehI: 13.8 V** must be set.
- 4 Then perform software update to software release **VR12.1.1**.

Start control unit programming VR12.1.1 (Sequence 2).

# For specific information on control unit programming in this sequence, see the table below:

Required PIWIS Tester software version:	40.550.040 (or higher)
Type of control unit programming:	Control unit programming using the <b>'Campaign'</b> function in the Additional menu on the PIWIS Tester by entering a programming code.

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Programming code:	K4M2S
Programming sequence:	Read and follow the <b>information and instructions</b> <b>on the PIWIS Tester</b> during the guided programming sequence.
	Do not interrupt programming and coding.
	A backup documentation process for the re-programmed software versions starts as soon as programming and coding is complete.
Programming time (approx):	Up to 125 minutes
Software versions programmed during this campaign:	Power electronics, front and 0012     rear
	Engine electronics (DME) 0014     control unit
	High-voltage battery control unit 1401     (BMCe)
	High-voltage DC battery charger 1250     (booster)
	HV voltage converter 1230
	Control unit for chassis control 1160     (PASM)
	Power steering control unit 0430     (EPS)
	Brake electronics (PSM) control 0120     unit
	Control unit for steering column 0210     adjustment
	Control unit for rear axle 0962     steering
	Rear lid control unit 0172
	Air-conditioning control unit 1160
	Control unit for rear-differential 2021     lock
	Thermal management control 0323     unit (TME)
	Electric passenger 0015     compartment heater (PTC)
	Gateway control unit 2591

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	Instrument cluster     OS	595
	Over-the-air (OTA) control unit	221
	OTA partition 12	221
	High-voltage charger (OBC), 11 10     kW	083
	Battery sensor 47	174
	Transmission control unit (EGS) 02	250
	Following control unit programming, the severation can be read out of the relevant corthe 'Extended identifications' menu using to Tester.	oftware ntrol unit in the PIWIS
Procedure in the event of abnormal termination of control unit programming:	<ul> <li>End and restore operational readines ignition off and then on again).</li> <li>Reading out and erasing fault memori Workshop Manual '9XOOIN Basic instand procedure for control unit prograusing the PIWIS Tester'.</li> <li>Repeat control unit programming by each the programming code again, where the programming code again, where extended logging must be started using combination • Ctrl" + • L".</li> <li>Extended logging records diagnostic data, particularly vehicle communication which is required for analysing the isses caused programming to be aborted.</li> <li>If control unit programming is aborted time, stop operational readiness for a 15 minutes (switch off ignition) and reprocedure described here again.</li> </ul>	ss (switch ries $\Rightarrow$ tructions amming entering by ing the key c software tion data, sues that d a second approx. epeat the
Procedure in the event of error messages appearing during the programming sequence:	⇒ Workshop Manual '9X00IN Basic instru procedure for control unit programming us PIWIS Tester - section on "Fault finding".	ictions and ising the

- 5 Create a new working log.
  - 5.1 Once programming is complete, confirm by selecting F4 " ('Save') in the Campaign menu below.
  - 5.2 Select F10" ('Logs').
  - 5.3 Select the log type **Work log**.
  - 5.4 The created working log with the designation of the sequence performed is unnamed and saved.

- 5.5 Select the working log and press F10" ('Displays').
- 5.6 Select the printer icon in the selection bar at the top right.
- 5.7 Select printer ('PDF').
- 5.8 Print the working log. This is stored automatically on the Tester.

#### Concluding work - Scope 6

#### 

Electrically moved side windows and rear spoiler

- Danger of limbs being trapped or severed
- Risk of damage to components
- $\Rightarrow$  Do not reach into the danger area.
- $\Rightarrow$  Keep third parties away from the danger area.
- $\Rightarrow$  Do not move components or tools into the danger area.

#### NOTICE

Movement of the rear wheels by activating the electric motor; vehicle driving off when the wheels are touching the ground

- Personal injury as a result of wheel or vehicle movement
- Material damage to vehicle, drive or brake components
- ⇒ Raise the vehicle on a lifting platform until the drive wheels are free
- ⇒ Press the foot brake during adaptation
- $\Rightarrow$  Cordon off the work area

#### NOTICE

Programming interrupted

- Malfunctions in control unit
- Risk of damage to control unit
- ⇒ Route the line between the vehicle communication module (VCI) and diagnostic socket on the vehicle without tension and make sure that the connector is inserted fully into the diagnostic socket.
- ⇒ Check that the rechargeable battery for the PIWIS Tester is charged sufficiently. If required, operate the PIWIS Tester through the power supply unit.

Work Procedure: 1 Establish bus idle for at least 15 minutes.

- 1.1 End operational readiness (switch off ignition).
- 1.2 Disconnect the PIWIS Tester diagnostic connector from the diagnostic socket.
- 1.3 Lock the vehicle using the driver's key and remove the driver's key from the proximity of the vehicle (approx. 10 meter/ 32.8 ft).
- 1.4 Unlock the vehicle again after waiting for at least 15 minutes.
- 1.5 Plug the PIWIS Tester diagnostic connector into the diagnostic socket again and restore communication with the vehicle.
- Place the vehicle onto a lifting platform, but do not raise it yet.
   Follow the instructions on the PIWIS Tester for lifting the vehicle during the following sequence.



#### Information

The current version of the onboard Driver's Manual has been available online since 5 March 2021.

A blank USB storage medium is required for installing the onboard Driver's Manual (approx. 100 MB). If there is already data stored on the USB storage medium, this will be deleted during the procedure.

### Information

Before starting sequence 5 (subsequent work), connect the PIWIS Tester to a network to establish an Internet connection. The PIWIS Tester **must** be **connected online** for the subsequent work described below and for installing the onboard Driver's Manual.



#### Information

- Component protection: Component protection must only be taught for the control unit for assistance systems (zFAS). To do this, select component protection for assistance systems (zFAS) in the procedure. If the component protection teaching process is aborted, stop sequence 5 and read and follow the additional information ⇒ Technical Information '9X00IN Additional instructions for concluding work'.
- **Enabled functions:** If the function activation is aborted, component protection must be taught again first. Then, start sequence 5 again in order to restore the enabled functions.
- Coding of all control units: Always allow coding to run to the end of the process. If individual coding routines fail, the relevant control units can be selected manually in the overview afterwards and coded again individually.
- 3 Start subsequent work for various control units.

Required PIWIS Tester software version:	40.550.040 (or higher)
Programming code:	K4M5S

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Expiry:	Read and follow the <b>information and</b> <b>instructions on the PIWIS Tester</b> during the guided procedure for the subsequent work. <b>Do not interrupt the process.</b>
Programming time (approx):	Up to 55 minutes
Subsequent work carried out during this process	Distance measuring sensor (ACC) -     Reset personalization
	For manual procedure, see $\Rightarrow$ Workshop Manual '278555 Replacing control unit for distance measuring sensor'.
	• Air conditioning - Teach servo motors
	For the manual procedure, see relevant servo motor Workshop Manual 872019 <b>xx</b> .
	Commissioning rear-differential lock
	For manual procedure, see ⇒ Workshop Manual '397555 Replacing rear-differential lock control unit'.
	Engine electronics (DME) transmission     adaptation
	For manual procedure, see ⇒ Workshop Manual '247055 Replacing DME control unit'.
	Door standardization, front and rear
	For manual procedure, see
	<ul> <li>→ Workshop Manual '577355 Replacing front door control unit'</li> <li>→ Workshop Manual '587355 Replacing rear door control unit'</li> </ul>
	Teaching component protection
	For manual procedure, see $\Rightarrow$ Workshop Manual '903555 Replace gateway control unit Select the control unit for <b>assistance</b> <b>systems (zFAS)</b> in the PIWIS Tester procedure.
	Restoring enabling functions

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	<ul> <li>For manual procedure, see ⇒ Workshop Manual '903555 Replace gateway control unit'.</li> <li>Installing onboard Driver's Manual</li> <li>For manual procedure, see ⇒ Workshop Manual '0X01IN diagnostic system: Performing vehicle handover'.</li> </ul>
Procedure if the sequence is aborted:	<ul> <li>Automatic coding of all control units</li> <li>End and restore operational readiness (switch ignition off and then on again).</li> <li>Reading out and erasing fault memories ⇒ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester'.</li> <li>Repeat subsequent work sequence by entering the programming code again, whereby extended logging must be started using the key combination         • Ctrl" + •L".</li> <li>Extended logging records diagnostic software data, particularly vehicle communication data, which is required for analysing the issues that caused programming to be aborted.</li> <li>If subsequent work is aborted a second time, end operational readiness for approx. 15 minutes (switch off ignition) and repeat the procedure described here again.</li> <li>In the case of further aborts, the subsequent work must be successively carried out manually.</li> </ul>
Procedure in the event of error messages appearing during the programming sequence:	⇒ Workshop Manual '9X00IN Basic instructions and procedure for control unit programming using the PIWIS Tester - section on "Fault finding"'.

- 4 Create a new working log.
  - 4.1 Once programming is complete, confirm by selecting F4 " ('Save') in the Campaign menu below.

- 4.2 Select F10" ('Logs').
- 4.3 Select the log type **Work log**.
- 4.4 The created working log with the designation of the sequence performed is unnamed and saved.
- 4.5 Select the working log and press F10" ('Displays').
- 4.6 Select the printer icon in the selection bar at the top right.
- 4.7 Select printer ('PDF').
- 4.8 Print the working log. This is stored automatically on the Tester.
- 5 Establish bus idle for at least 15 minutes.
  - 5.1 End operational readiness (switch off ignition).
  - 5.2 Disconnect the PIWIS Tester diagnostic connector from the diagnostic socket.
  - 5.3 Lock the vehicle using the driver's key and remove the driver's key from the proximity of the vehicle (approx. 10 meter/ 32.8 ft).
  - 5.4 Unlock the vehicle again after waiting for at least 15 minutes.
  - 5.5 Plug the PIWIS Tester diagnostic connector into the diagnostic socket again and restore communication with the vehicle.
- 6 Teach steering lock settings.
  - 6.1 Select the power steering 'EPS' control unit in control unit selection ('Overview' menu) and press •F12" ('Next') to confirm.
  - 6.2 Once the power steering control unit has been found and is displayed in the list, select the 'Maintenance/repairs' menu.
  - 6.3 Select the 'Commissioning' function and confirm with F12" ('Next').
  - 6.4 Follow the instructions on the Tester to perform the commissioning process.
  - 6.5 If the left and right steering lock settings are not saved during the procedure, adjust the height and depth of the steering wheel position and repeat the commissioning procedure.
- 7 **Only relevant for vehicles if fault memory entries are stored for seat adjustment:** Standardize seat adjustment for driver's and passenger's side.
  - 7.1 Select the 'Seat adjustment on front passenger's side' control unit in the control unit selection screen ('Overview' menu) and press F12" ('Next') to confirm your selection.
  - 7.2 Once the seat adjustment on front passenger's side control unit has been found and is displayed in the overview, select the **'Maintenance/repairs'** menu.
  - 7.3 Select the **'Standardize seat motors'** function and press F12<sup>"</sup> ('Next') to confirm your selection.

- 7.4 Read the instructions and confirm by pressing F12" ('Next').
- 7.5 Press F8" ('Start') to run the procedure.
- 7.6 Once the seat motors on the **passenger's side** have been standardized, also teach the **driver's side**. To do this, select the **'Seat adjustment on front driver's side'** control unit in the control unit selection screen (**'Overview'** menu) and **repeat Steps 6.2 to 6.6**. Then, continue with **Step 2**.
- 8 Manually retract the rear spoiler, which extended automatically during programming.
  - 8.1 Select the **'Rear spoiler'** control unit in the control unit selection screen (**'Overview'** menu) and press F12<sup>#</sup> ('Next') to confirm.
  - 8.2 Once the rear spoiler control unit has been found and is displayed in the overview, select the 'Maintenance/repairs' menu.
  - 8.3 Select the function 'Teach rear spoiler' and press F12" ('Next') to confirm.
  - 8.4 Read the instructions and confirm by pressing •F12" ('Next').
  - 8.5 Meet the displayed conditions that must be checked manually and tick the relevant 'Status' box.
  - 8.6 Select the 'Teach rear spoiler' function and press F8" ('Execute') to confirm.
  - 8.7 Once the rear spoiler has been taught and retracted fully, select the **'Overview'** menu to return to the control unit selection screen.
- 9 Calibration of power electronics at front and rear.
  - 9.1 Select the 'Rear high-voltage power electronics' control unit in the control unit selection screen ('Overview' menu) and confirm with •F12" ('Next').
  - 9.2 Once the high-voltage power electronics on rear axle control unit has been found and is displayed in the 'Overview', select the **'Drive links/checks'** menu.
  - 9.3 Select the 'Electric motor Reset calibration' function and confirm with •F12" ('Next').
  - 9.4 Set the entry to **Basic setting** in the Values column on the 'Parameters' tab.
  - 9.5 Confirm that **calibration** has been reset with •F8" ('Execute').
  - 9.6 Go back to the control unit selection screen ('Overview' menu), select the 'Front high-voltage power electronics' control unit and repeat Steps 8.2 to 8.4 for the selected control unit.
  - 9.7 After resetting both calibrations, select the two control units **'Front high-voltage power** electronics' and 'Rear high-voltage power electronics' in the control unit selection screen and open the **'Fault memory'** menu.
  - 9.8 Check whether the fault code **'P171900**' is displayed for **both** control units:

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- If the fault code 'P171900' is displayed for the 'Rear high-voltage power electronics' and 'Front high-voltage power electronics' control unit, continue with Step 8.9.
- The fault code 'P171900' is not displayed or is displayed only for one of the two control units. Carry out Steps 8.1 to 8.6 for the relevant control units again.
- 9.9 Disconnect the PIWIS Tester from the vehicle.
- 9.10 Switch off and disconnect the battery charger.



#### Information

Connect the PIWIS Tester to a network as soon as possible and log into the PPN in order to transfer the backup documentation created during this campaign to the PAG systems.

9.11 Start the calibration drive and complete the following steps.



#### Information

Resetting the high-voltage power electronics limits the maximum vehicle speed to 70 km/h. The warning message "Reduced speed" will be displayed on the instrument cluster. Any road on which it is possible to accelerate to a speed of at least 60 km/h (38 mph) can be used as the calibration route.

#### Read and follow safety instructions:

- Only perform calibration on public roads if the road and traffic conditions are conducive to doing so
- The road traffic regulations must always be observed
- Other road users must not be at risk when performing calibration
- Move the vehicle on public roads only if it is roadworthy
- Accelerate the vehicle to at least 60 km/h (38 mph).
- Release the accelerator pedal and allow the vehicle roll in overrun for at least 1 second. Calibration is performed during this overrun phase.
- Switch ignition off and on again to reset the "Reduced speed" warning message.
- 10 Only relevant if the message **"Tyre pressure monitoring fault Service necessary**" is displayed: Teach Tyre Pressure Monitoring (TPM) system using the PIWIS Tester.

For instructions, see:

 $\Rightarrow$  Workshop Manual '443225 Teach the wheel electronics'



#### Information

In the menu-guided procedure, check the **'Teach wheel IDs'** menu item after confirming with • F12" to make sure that the function **'2. Teach wheel IDs without driving'** is selected. Then, select the function **'2. Wheel IDs unknown'** and continue the procedure according to menu guidance.

- 11 Read out and erase the fault memories of all control units.
  - 11.1 Press F7" in the control unit selection screen ('Overview' menu) to call up the Additional menu.
  - 11.2 Select the function "Read all fault memories and erase if required" and press • F12" ('Next') to confirm  $\Rightarrow$  erase fault memory.

The fault memories of the control units are read out.

11.3 Once you have read out the fault memories, check the fault memory entries.

Overview				30
		Function		
Measurement of clos	ed-circuit current			٠
Maintenance of vehic	le data			
Vehicle analysis log (	VAL)			
Campaign				
Vehicle handover				
Read all fault memor	es and erase if require	4		
				-
				•

erase fault memory

Information

If control units are found to have faults that are **not** caused by control unit programming,

these must first be **found** and **corrected**. This work **cannot** be invoiced under the workshop campaign number.

- 11.4 Press F8" to delete fault memory entries.
- 11.5 Press F12" ('Yes') in response to the question as to whether you really want to delete all fault memory entries.

The faults stored in the fault memories of the various control units are deleted.



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#### Information

If fault memory entries for individual control units cannot be deleted, proceed as follows:

- End operational readiness (switch off ignition).
- Disconnect the PIWIS Tester diagnostic connector from the diagnostic socket.
- Lock the vehicle using the driver's key and remove the driver's key from the proximity of the vehicle (approx. 10 meter/ 32.8 ft).
- Unlock the vehicle again after waiting for at least 15 minutes.
- Restore operational readiness (switch on ignition).
- Plug the PIWIS Tester diagnostic connector into the diagnostic socket again and restore communication with the vehicle.
- Read out the fault memory again and delete any fault memory entries that are stored.

- 11.6 Once you have erased the fault memories, select the **'Overview'** menu to return to the control unit selection screen  $\Rightarrow$  *Control unit selection*.
- 12 Create Vehicle Analysis Log (VAL) using the PIWIS Tester. Mark the vehicle analysis log you have just created

with the attribute "Final VAL" and after carrying out the campaign, return it using the PIWIS Tester.

#### 13 Performing system test using the PIWIS Tester

13.1 First, the service technician carries out his steps as usual.

The system test is started automatically with the backup documentation process at the end of the process. Alternatively, the system test can also be started manually by pressing •F3."

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DTC	Status	Centrol unit	DSN	Perache part number	
		Airbag			-
		Gateway			
		DME			
		PDK (Porsche Doppelkupplung)			
		PDK selector lever			
		Instrument cluster			
		Steering wheel electronics			
		Stopwatch			
		PCM / CDR			

unit selec

Control unit selection

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- backup documentation
- 13.2 The result list is displayed to the technician after the check has been completed. This shows if control units are  $\Rightarrow$  *Programming required* not yet at the required software version **or** a hardware check is required in accordance with the Spare Parts Catalogue (PET)  $\Rightarrow$  *Detailed view of integration test Hardware*.



Programming required



Hardware check required

13.3 Click on the affected control unit to view further details and start programming ⇒ Detailed view of integration test - software version. The step-by-step instructions then start.

The hardware check is performed against the Parts Catalogue  $\Rightarrow$  *Detailed view of integration test - Hardware.* 

	E STATE						
Seat adjustment or passenger aide (001)		Necessary	/ action		Programming required	6	
		Actual par	tourbe		8/1899/908		
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		Actual with	ultura version		0091		
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		Actual has	duale version		009		
		Required	tedvan version		009		

Detailed view of integration test - software version



13.4 When programming or hardware testing is complete, backup documentation including the joint test is performed again.
All affected control units should now be re-programmed or checked in the control unit overview and their status. To do this, repeat Steps 2-4 until all control units are free of faults ⇒ Vehicle integration test complete.



Information

The vehicle must not be handed back to the customer until all control units have been checked and the system is thus compliant  $\Rightarrow$  Conformity of the vehicle system

13.5

In the event of a fault - Performance of the integration test

Detailed view of integration test - Hardware

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Drake electronics	(*5400)(42)						
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Vehicle integration test complete



Conformity of the vehicle system

If the integration test fails, this is displayed as a result  $\Rightarrow$  *Vehicle control unit integration test failed*. Then complete the following steps:

 13.6 In the Additional menu (F7), execute the "Maintenance of vehicle data with PIWIS ONLINE" function and write the current vehicle data record from the online system into the vehicle.



Vehicle control unit integration test failed

- 13.7 Carry out the integration test again.
- 13.8 In the event of a further fault, contact Technical Support.
- 14 Attach the working log to the PQIS line.
  - 14.1 Select the PCCS button under **Applications** on the PIWIS Tester.
  - 14.2 Log into the PCCS using the PIWIS Tester with the corresponding quality line.
  - 14.3 Select Upload file in the PIWIS Tester.
  - 14.4 Select Pdf Prints in the drop-down menu.
  - 14.5 Attach the created work logs to the quality line.
- 15 End operational readiness (switch off ignition).
- 16 Disconnect the PIWIS Tester from the vehicle.

# i Information

Connect the PIWIS Tester to a network as soon as possible and log into the PPN in order to transfer the backup documentation created during this campaign to the PAG systems.

- 17 Switch off and disconnect the battery charger.
- 18 Enter the campaign in the Warranty and Maintenance booklet.
   End of remedial action -

For warranty processing, see **Scope 6** in the  $\Rightarrow$  *Technical Information '443225 Warranty processing section'* 

#### Warranty processing



#### Information

The specified working time was determined specifically for carrying out this campaign and includes all necessary preliminary and subsequent work.

The working time may differ from the working times published in the Labor Operation List in the PCSS.

# Information

Generally, the working time includes all work that requires the active participation of the service technician.

This also covers all required preliminary work and subsequent work.

The working time includes the following activities during control unit programming:

- All required steps for starting or finishing programming
- Required interaction during a programming sequence
- Waiting times until programming starts
- Random check of programming status

If no further interaction by the service technician is required once control unit programming has started because programming is performed automatically, there is no need for the service technician to remain at the vehicle for the entire programming time.

These waiting times are not included in the working time if the total programming time is more than 15 minutes.

If programming takes up to 15 minutes, the full waiting time is included in the working time.

#### Scope 1: Re-program various control units

Re-program various control units		Labor time: 208 TU
Includes:	Connecting and disconnecting battery charger	
	Connecting and disconnecting PIWIS Tester	
	Re-program various control units to software version VR8.6	
	Re-program various control units to software version VR8.7	
	Various control units on software version VR12.1.1 ->	
	Re-programming sequence 2	
	Power steering commissioning	
	Retract the spoiler manually	
	Standardize seat adjustment for driver's and passenger's	
	side	
	Calibration of high-voltage power electronics (front and rear	
	axle)	
	Reading out and erasing fault memories	
	Create Vehicle Analysis Logs (VALs) before and after the	
	campaign	
	Create work logs and attach them to the quality line	

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#### Scope 2: Re-program various control units

Working ti	me:	
Re-progran	n various control units	Labor time: 158 TU
Includes:	Connecting and disconnecting battery charger	
	Connecting and disconnecting PIWIS Tester	
	Various control units on software version VR12.1.1 ->	
	Re-programming sequence 2	
	Power steering commissioning	
	Retract the spoiler manually	
	Standardize seat adjustment for driver's and passenger's	
	side	
	Calibration of high-voltage power electronics (front and rear	
	axle)	
	Teaching Tyre Pressure Monitoring (TPM) system	
	Reading out and erasing fault memories	
	Create Vehicle Analysis Logs (VALs) before and after the	
	campaign	
	Create work logs and attach them to the quality line	
⇒ Damag	e code WMP0 066 000 1	

#### Scope 3: Re-program various control units

Working time:				
Re-program various control units		Labor time: 101 TU		
Includes:	Connecting and disconnecting battery charger			
	Connecting and disconnecting PIWIS Tester			
	Various control units on software version VR12.1.1 ->			
	Re-program sequence 1			
	Retract the spoiler manually			
	Teaching Tyre Pressure Monitoring (TPM) system			
	Reading out and erasing fault memories			
	Create Vehicle Analysis Logs (VALs) before and after the			
	campaign			
	Create work logs and attach them to the quality line			
⇒ Damage	e code WMP0 066 000 1			

#### Scope 4: **Re-program various control units**

Working time:				
Re-program Includes:	n various control units Connecting and disconnecting battery charger Connecting and disconnecting PIWIS Tester Various control units on software version VR12.1.1 -> Re-program sequence 3 Retract the spoiler manually	Labor time: <b>130 TU</b>		
	Reading out and erasing fault memories Create Vehicle Analysis Logs (VALs) before and after the campaign Create work logs and attach them to the quality line			
 ⇒ Damag	e code WMP0 066 000 1			

#### Scope 5: **Re-program various control units**

#### Working time: Re-program various control units Labor time: 255 TU Connecting and disconnecting battery charger Includes: Connecting and disconnecting PIWIS Tester Re-program various control units to software version VR8.6 Re-program various control units to software version VR8.7 Various control units on software version VR12.1.1-> Re-programming sequence 1/2/3 Power steering commissioning Retract the spoiler manually Standardize seat adjustment for driver's and passenger's side Calibration of high-voltage power electronics (front and rear axle) Reading out and erasing fault memories Create Vehicle Analysis Logs (VALs) before and after the campaign Create work logs and attach them to the quality line $\Rightarrow$ Damage code WMP0 066 000 1

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#### Scope 6: Re-program various control units

Working time:				
Working tin Re-program Includes:	<pre>various control units Connecting and disconnecting battery charger Connecting and disconnecting PIWIS Tester Re-program various control units to software version VR8.7 Various control units on software version VR12.1.1 -&gt; Re-programming sequence 2 Power steering commissioning Retract the spoiler manually Standardize seat adjustment for driver's and passenger's side Calibration of high-voltage power electronics (front and rear axle) Reading out and erasing fault memories Create Vehicle Analysis Logs (VALs) before and after the campaign</pre>	Labor time: <b>175 TU</b>		
	Create work logs and attach them to the quality line			
⇒ Damage	e code WMP0 066 000 1			

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