

Service Campaign Bulletin

Campaign No. 2012080004, November 2012

TO: ALL MERCEDES-BENZ CENTERS

SUBJECT: **Model 221 (S400 Hybrid), Model Years 2010 - 2012**
Check the Power Electronics Module, Replace if Necessary

This Service Campaign has been initiated because Daimler AG (DAG), the manufacturer of Mercedes-Benz vehicles, has determined that thermally variable continuous loading, combined with the variability of capacitor quality, may lead to a capacitance loss in the Power Electronics Module on the affected vehicles. Dealers will update the Power Electronics Module software, and if necessary, replace the Power Electronics Module, at the next workshop visit.

Prior to performing this Service Campaign:

- Please check VMI to determine if the vehicle is involved in the Campaign and if it has been previously repaired.
- Please review the entire Service Campaign bulletin and follow the repair procedure exactly as described.

Please note that Recall and Service Campaigns **do not expire** and may also be performed on a vehicle with a vehicle status indicator.

Approximately 1,855 vehicles are affected.

Order No. P-SC-2012080004

This bulletin has been created and maintained in accordance with MBUSA-SLP S423QH001, Document and Data Control, and MBUSA-SLP S424HH001, Control of Quality Records.

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Procedure

Note:

- Use DAS/Xentry 09/12 or higher.
- Follow the steps exactly as described in DAS/Xentry.
- Connect battery charger.

A. Check Total Capacity in Power Electronics Module

1. Connect Star Diagnosis to vehicle.
2. Update software for electric motor control unit software (ring flash: SG-BMS, SG-DDW and SG-EM):
Select menu item Control units / Drive / SG-EM Electric motor control unit / Control unit adaptations / Control unit programming".

Note:

- After the software update, the internal combustion engine is to be restarted to ensure that the control unit programming was completed and documented successfully.
- Return to the menu item Control unit groups.

3. Determining total capacity in electric motor control unit.
 - Set ignition to "Position ON" (circuit 15) and back to "Position OFF".
 - Remove ignition key and leave removed at least 2 minutes.

Note:

During this time, no electrical consumers may be actuated and all doors/gates must remain closed. DAS/XENTRY and battery charger remain connected.

- This procedure (step 3) is to be repeated **six times**.
 - Then perform "Control unit reset" (can be found under Actuators).
4. Create SG-EM control unit log (this operation step is mandatory for the data transfer):
Select menu item "Control units / Drive / SG-EM Electric motor control unit / Control unit log" and create control unit log.
 5. Assessment of total capacity in power electronics module:
Read out value "Average value of total capacity" in SG-EM control unit log.
To do so, in electric motor control unit under "Current values" read off the value "Average value of total capacity" (arrow, Figure 1 [in screen display] and see also Figure 2 – field no. 088 [in control unit log print out]).

Note:

If the average value "0" is shown, the test sequence has not been completed successfully. The measurement (step 3) is to be performed here until a value greater than "0" is displayed.

- If average value is **equal to/greater than 800 uF (OK): Procedure is complete.**
- If average value is **less than 800 uF (NOT OK):** Proceed to subject **B**.

Note:

- The text in SDS is written partially in German (A, Figure 1) in the screen print below:
 "Durchschnittswert der Gesamtkapazität" this translates to: "Average value of total capacity".

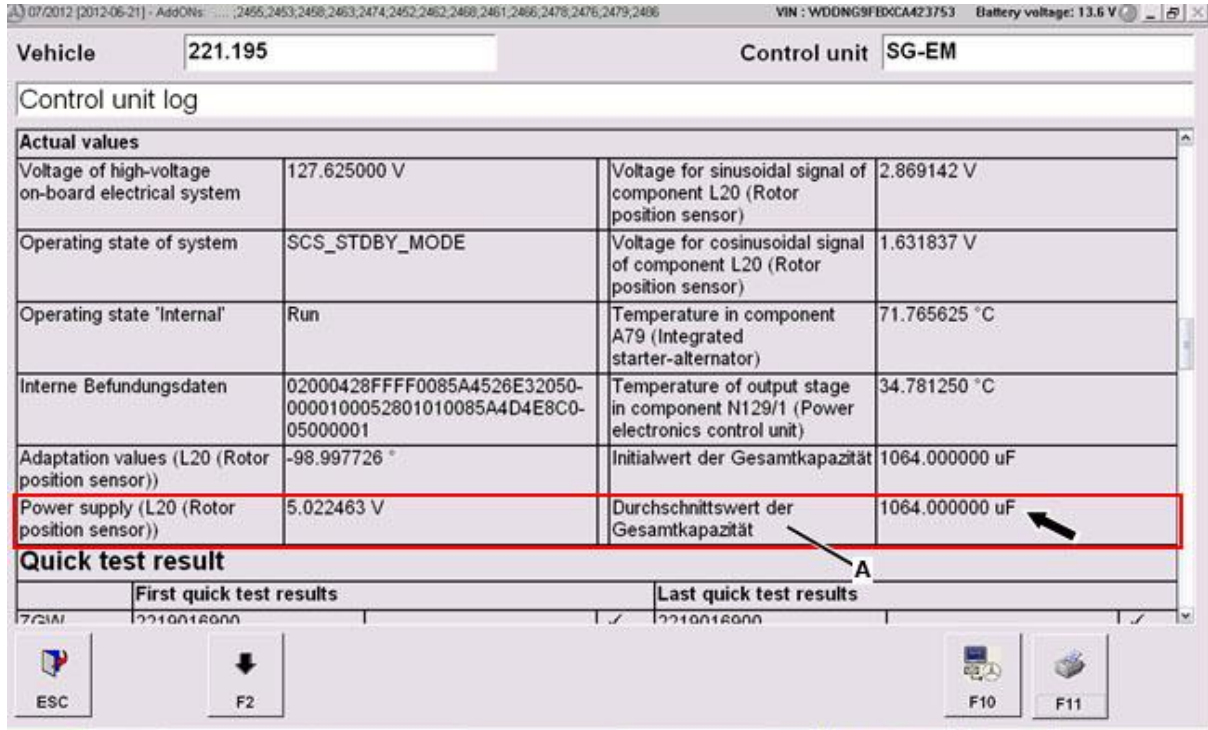


Figure 1

Control unit: SGEM				
No.	Name	Specified value	Actual values	Unit
082	Measurement no. 1 is the measured total capacitance of the high-voltage on-board electrical system during precharging of the high-voltage on-board electrical system.		1036	uF
083	Measurement no. 2 is the measured total capacitance of the high-voltage on-board electrical system during precharging of the high-voltage on-board electrical system.		1076	uF
084	Measurement no. 3 is the measured total capacitance of the high-voltage on-board electrical system during precharging of the high-voltage on-board electrical system.		1007	uF
085	Measurement no. 4 is the measured total capacitance of the high-voltage on-board electrical system during precharging of the high-voltage on-board electrical system.		1040	uF
086	Measurement no. 5 is the measured total capacitance of the high-voltage on-board electrical system during precharging of the high-voltage on-board electrical system.		1062	uF
087	Initial value of total capacitance	[800...1200]	1080	uF
088	Average value of total capacitance	[800...1200]	1056	uF

Figure 2

- Include this control unit log print out in vehicle file:

B. Replace Power Electronics Module

1. Refer to WIS: AR08.10-P-0011SXH and additional information on the following pages.

WARNING!

- Secure work area with high voltage warning tape and cones (Figure 2).
- Follow all safety precautions and notes in above WIS instructions.

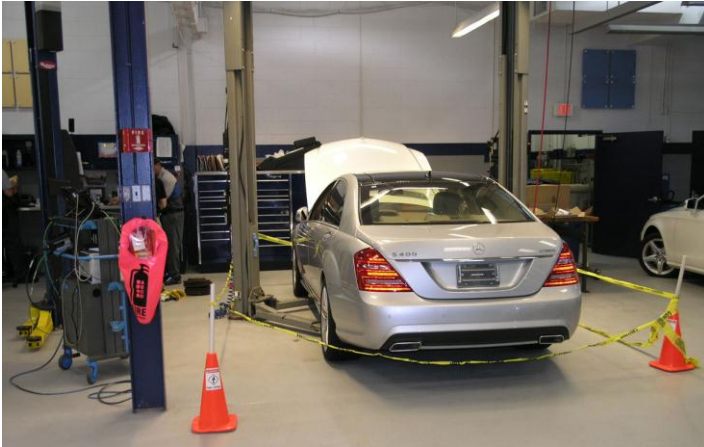


Figure 2

Note (regarding above WIS instructions)

- Please refer also to Figure 3 when disconnecting high voltage battery connector from high voltage battery (step 5 of WIS: AR08.10-P-0011SXH).



Figure 3 (supplemental illustration for WIS instructions)

- 2 High voltage battery connector
- 2a Screw
- 2b Bracket

- Note installed position of power electronics cable connector in relationship to air conditioning compressor connector **prior to disconnecting** cable (step 7 of WIS: AR08.10-P-0011SXH). This cable connector has only one installed position.

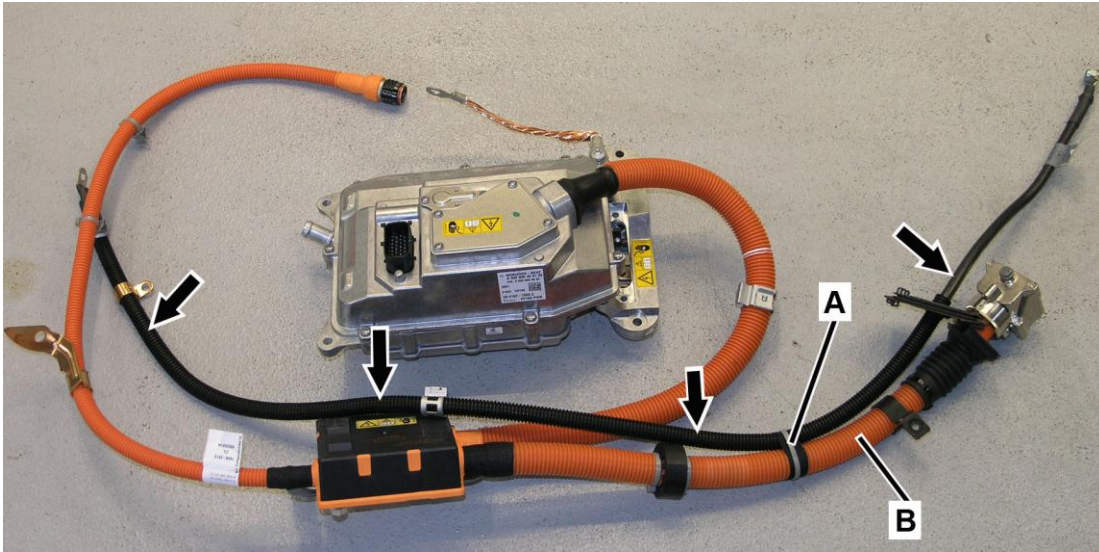


Figure 4

Note:

- Remove lower bolt from right front motor mount and lift engine slightly with under hoist jack stand in order to allow additional clearance when removing power electronics module. Torque bolt to 35 Nm when reinstalling.



WARNING!:

Risk of vehicle falling off vehicle lift. Be careful not to raise vehicle off of vehicle lift when raising engine with under hoist jack stand.

- Do not remove the existing alternator cable (arrows, Figure 4) from vehicle when removing power electronics module. Cut cable tie (A) to detach existing alternator cable (arrows) from old power electronics cable (B) and leave existing alternator cable (arrows) on vehicle
- Prior to installing **new** power electronics module, cut cable tie (A, Figure 4) and remove **new** alternator cable (arrows) attached to **new** power electronics module cable (B). The **new** alternator cable (arrows) does not get installed on vehicle.



IMPORTANT: Secure original alternator cable (arrows) to same position on **new** power electronics cable (B) with **new** cable tie (A) after installing power control module. Be sure to use **only** the cable tie listed in parts table.

Note (regarding WIS documents referenced in this Procedure):

- Replacement of parts **not** listed in the parts table of this Procedure **or** not listed in WIS: AR08.10-P-0011SXH are **not** claimable under this campaign. Parts listed in WIS documents **referenced** in WIS: AR08.10-P-0011SXH are also **not** claimable under this campaign. If replacement of additional part(s) is necessary, check coverage prior to submitting under warranty.
- Parts listed in WIS: AR08.10-P-0011SXH are only to be replaced **if necessary**.

Primary Parts Information

Qty.	Part Name	Part Number	Estimated Replacement Rate
1	Converter for starter (power electronics module)	A 000 906 40 01 05	5%
1	Cable tie	A 000 995 29 94	
2	Nuts (exhaust hanger)	A 112 142 00 72	
2	Bolts (exhaust head pipe to manifold)	A 170 990 00 10	
1 Gal	Engine coolant	BQ 1 03 0004	

Warranty Information**Repair 1**

Operation: Connect/disconnect battery charger (02-5058)
 Star Diagnosis System (SDS), Connect/disconnect (02-4762)
 Check power electronics module*, create SG-EM control unit log (02-7640)

Damage Code	Operation Number	Model Indicator(s)
08 930 31 8	02-5058	AF
	02-4762	
	02-7640	

* **Includes:** Update power electronics module software.

Repair 2

Operation: Connect/disconnect battery charger (02-5058)
 Star Diagnosis System (SDS), Connect/disconnect (02-4762)
 Check power electronics module *, create SG-EM control unit log (02-7640)
 Replace power electronics module (02-7641)

Damage Code	Operation Number	Model Indicator(s)
08 930 31 7	02-5058	AF
	02-4762	
	02-7640	
	02-7641	

* **Includes:** Update power electronics module software.

Note

Operation code times are subject to change. Please refer to StarTime for current labor times.