

Insulation fault HV-PTC N33/14

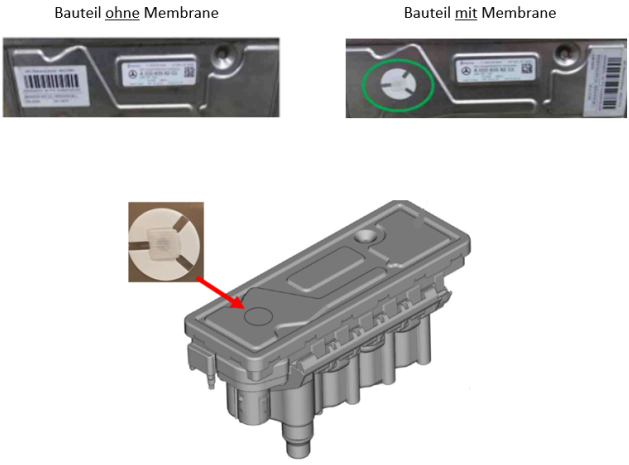
Topic number	LI83.70-P-078292
Version	2
Function group	83.70 - Auxiliary/supplementary heater
Date	1/8/25
Validity	Model series 295, 296, 297 exclusively with high voltage PTC from Eberspächer (German town)
Reason for change	Validity

Complaint

Red warning message in instrument cluster: "Towing not allowed, see Operator's Manual, consult workshop without starting the engine again".

Cause

Missing diaphragm on high voltage PTC (interior heating) N33/14 component part results in moisture buildup in the installation space for the heater and causes an insulation fault. The entry of moisture into the high voltage PTC (interior heating) N33/14 in the high voltage wiring harness to the DC/DC converter N83/1 causes a slow-acting insulation fault. This may occur sporadically only to start with before actively developing over time.

Attachments	
File	Description
Vergleich N33-14 ohne und ohne Membrane.PNG 	Distinguishing characteristic for interior heating without and with diaphragm
EVA2 Isolation measurement_HV-wiring DCDC - PTC Version GI DE V1.1.docx	Isolationsmessung HV-Leitung DCDC - HV PTC Deutsch
EVA2 Isolation measurement_HV-wiring DCDC - PTC Version GI EN V1.1.docx	Insulation measurement HV wiring DCDC - HV PTC English

Remedy

Exchange high voltage PTC (interior heating) N33/14 with new part with diaphragm (production date as from 22T231, see component part label). If necessary, and after further testing/measurement, replace wiring harness for DC/DC converter N83/1 to high voltage PTC (interior heating) N33/14.

Note: According to the Replacement Parts Department only high voltage PTCs (interior heating) with a diaphragm and with production date as from 22T231 are available!

WIS-References		
Document number	Title	Note
AR83.70-P-8001EQS	Remove/install high-voltage PTC heater	N33/14 replacement document

Disclaimer

NOTE: The information contained in this document is intended for use by trained, professional technicians with the knowledge to properly and safely perform diagnosis and repairs on Mercedes-Benz vehicles, using Mercedes-Benz approved tools and equipment. It informs service technicians about conditions that could occur in certain vehicles and provides information that could assist in proper vehicle diagnosis, service, or repair. It does not indicate that a defect is present in any vehicle referenced in this document nor does it imply warranty coverage. DO NOT assume that a symptom or condition, or a described cause of a symptom or condition, affects any particular vehicle or groups of vehicles, or that a described repair applies to any particular vehicle or groups of vehicles. There can be multiple causes resulting in the same or similar symptoms or conditions described in this document, and trained professional service technicians must use their diagnostic skills to make evaluations on a case-by-case basis. The information contained in this document does not guarantee warranty coverage nor does it extend the vehicle's warranty in any way.

Symptoms
Body > Air conditioning > Heater > Remains cold
Overall vehicle > Power supply > High-voltage on-board electrical system > High-voltage battery > Display message

Parts						
Part number	ES1	ES2	Designation	Quantity	Note	EPC
A 000 835 83 03			Water heater	1	Water heater = High voltage PTC (interior heating)	X

Control unit/fault code	
Control unit	Fault text
N82/2 - Battery management system (BMS) (BMS40)	<p>P2C85FA - There is a vehicle-side insulation fault in the hybrid/high-voltage on-board electrical system. _</p> <p>P2C8800 - There is an insulation warning in the hybrid/high-voltage on-board electrical system. _</p> <p>P2C8700 - There is a vehicle-side insulation warning in the hybrid/high-voltage on-board electrical system. _</p> <p>P2C8500 - There is a vehicle-side insulation fault in the hybrid/high-voltage on-board electrical system. _</p> <p>P0AA600 - There is an insulation fault in the hybrid/high-voltage on-board electrical system. _</p>

XENTRY Tips

N127 - Drivetrain (PTCU) (CPC3EV297)	P154800 - There is a warning due to a detected insulation fault. _
--------------------------------------	--

Operation numbers/damage codes				
Op. no.	Operation text	Time	Damage code	Note
			8360M	Interior heating N33/14