

M17x.xxx Check Engine Light on with Misfire DTC's

Topic number	LI07.61-P-070707
Version	10
Function group	07.61 - ME fuel injection/ ignition system
Date	3/6/23
Validity	AMG M17x.xxx Engine Group
Reason for change	Remedy Revision

Complaint

The customer complains of a check engine light (CEL) on. May also complain of the engine running roughly and/or a loss of power.

Cause

Multiple Causes

Remedy

Please see the document "Remedy Instructions" in attachments.

Attachments	
File	Description
Smoke Check.pdf	Smoke Check
BR253_ground_points.pdf	253 Ground Points
C_Class Ground Points LS1.pdf	205 Ground Points
facelift 463 ground check.pdf	463 Ground Points
Ground points LS2_BR213_englx.pdf	213 Ground Points
GT Ground Check.pdf	190 Ground Points
Ground Points LS2_BR222 (002).pdf	222 Ground Points
Massestellen LS2_BR290_engl.pdf	290 Ground Points
Fault Counter Instructions.pdf	Fault Counter Instructions
Misfire LI Revision v3.pdf	Remedy Instructions

Symptoms						
Power generation > Engine management > Engine running > Runs rough/shakes						
Power generation > Engine management > Indicator lamp > Engine diagnosis > lit						
Power generation > Engine management > Engine performance > No/poor output						
Parts						
Part number	ES1	ES2	Designation	Quantity	Note	EPC

XENTRY TIPS

A1779060206		Ignition Coil	8	X
Control unit/fault code				
Control unit		Fault text		
N3/10 - Motor electronics 'MRG1AMGV8' for combustion engine 'M177' (ME) (MRG1AMGV8)		P031600 - Combustion misfires were detected at engine start. _		
		P030800 - Combustion misfiring of cylinder 8 has been detected. _		
		P030700 - Combustion misfiring of cylinder 7 has been detected. _		
		P030600 - Combustion misfiring of cylinder 6 has been detected. _		
		P030500 - Combustion misfiring of cylinder 5 has been detected. _		
		P030400 - Combustion misfiring of cylinder 4 has been detected. _		
		P030300 - Combustion misfiring of cylinder 3 has been detected. _		
		P030200 - Combustion misfiring of cylinder 2 has been detected. _		
		P030100 - Combustion misfiring of cylinder 1 has been detected. _		
		P030022 - Combustion misfiring has been detected. The signal amplitude is greater than the maximum amplitude.		
N3/10 - Motor electronics 'MED1775' for combustion engine 'M176/M177/M178' (ME) (MED1775)		P030021 - Combustion misfiring has been detected. The signal amplitude is less than the minimum amplitude.		
		P030000 - Combustion misfiring has been detected. _		
		P036300 - Injector shutoff was activated due to a combustion misfire. _		
		P030885 - Combustion misfiring of cylinder 8 has been detected. There is a signal above the permissible limit value.		
		P030800 - Combustion misfiring of cylinder 8 has been detected. _		
		P030785 - Combustion misfiring of cylinder 7 has been detected. There is a signal above the permissible limit value.		
		P030700 - Combustion misfiring of cylinder 7 has been detected. _		
		P030685 - Combustion misfiring of cylinder 6 has been detected. There is a signal above the permissible limit value.		

XENTRY TIPS

	<p>P030600 - Combustion misfiring of cylinder 6 has been detected. _</p> <p>P030585 - Combustion misfiring of cylinder 5 has been detected. There is a signal above the permissible limit value.</p> <p>P030500 - Combustion misfiring of cylinder 5 has been detected. _</p> <p>P030485 - Combustion misfiring of cylinder 4 has been detected. There is a signal above the permissible limit value.</p> <p>P030400 - Combustion misfiring of cylinder 4 has been detected. _</p> <p>P030385 - Combustion misfiring of cylinder 3 has been detected. There is a signal above the permissible limit value.</p> <p>P030300 - Combustion misfiring of cylinder 3 has been detected. _</p> <p>P030285 - Combustion misfiring of cylinder 2 has been detected. There is a signal above the permissible limit value.</p> <p>P030022 - Combustion misfiring has been detected. The signal amplitude is greater than the maximum amplitude.</p> <p>P030027 - Combustion misfiring has been detected. The signal change rate is above the permissible limit value.</p> <p>P030200 - Combustion misfiring of cylinder 2 has been detected. _</p> <p>P030185 - Combustion misfiring of cylinder 1 has been detected. There is a signal above the permissible limit value.</p> <p>P030100 - Combustion misfiring of cylinder 1 has been detected. _</p>
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Operation numbers/damage codes				
Op. no.	Operation text	Time	Damage code	Note

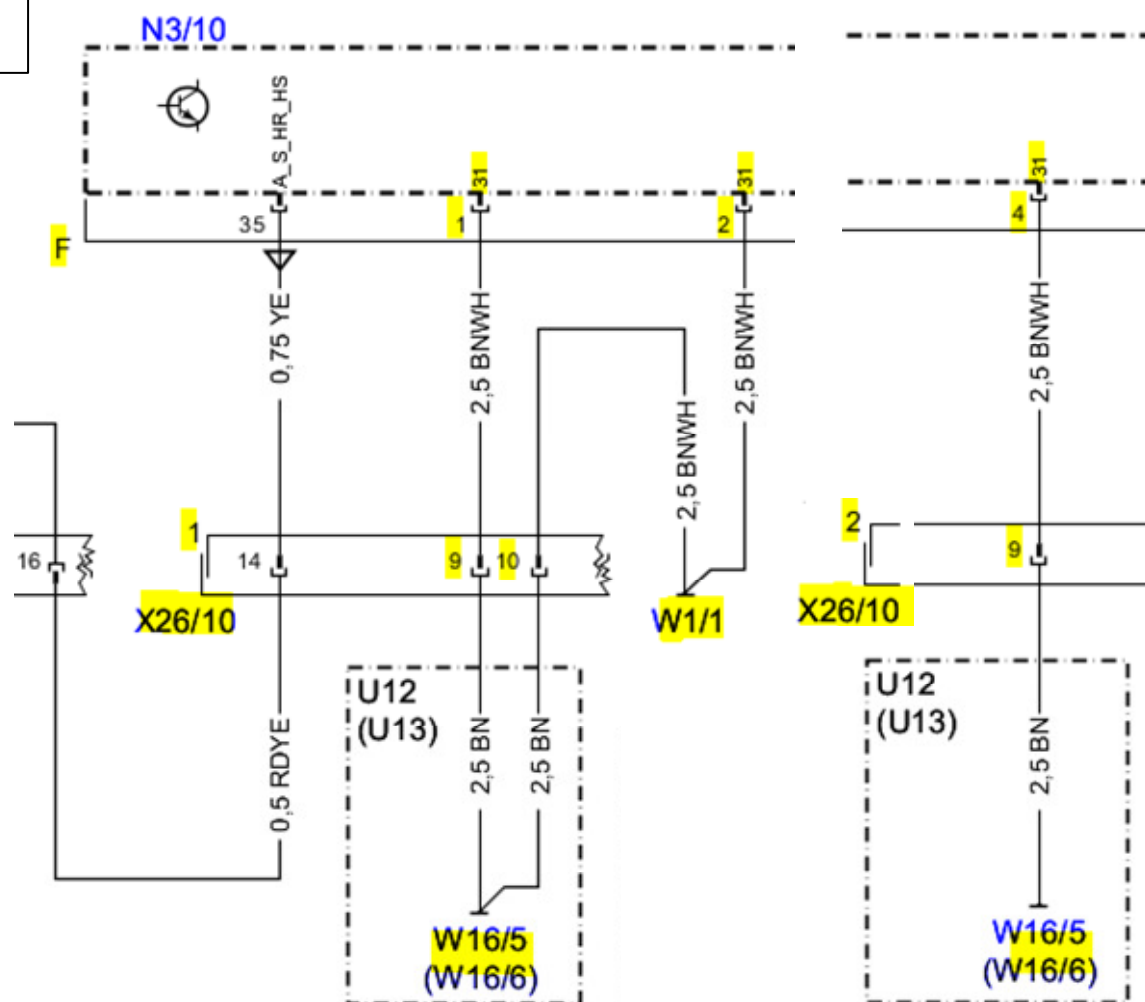
Perform the Following:

Smoke test exhaust and check for leaks:

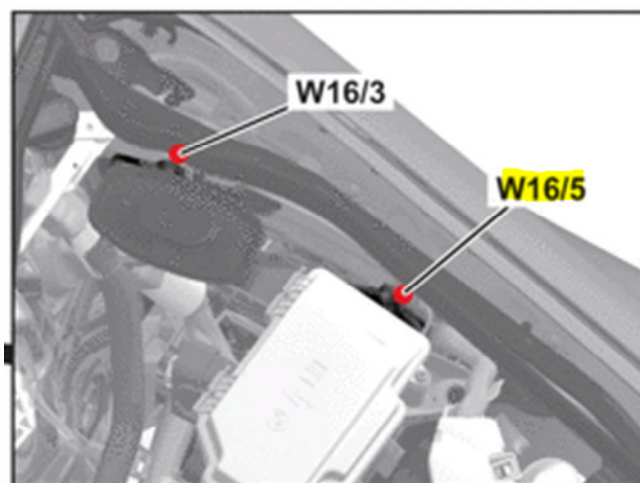
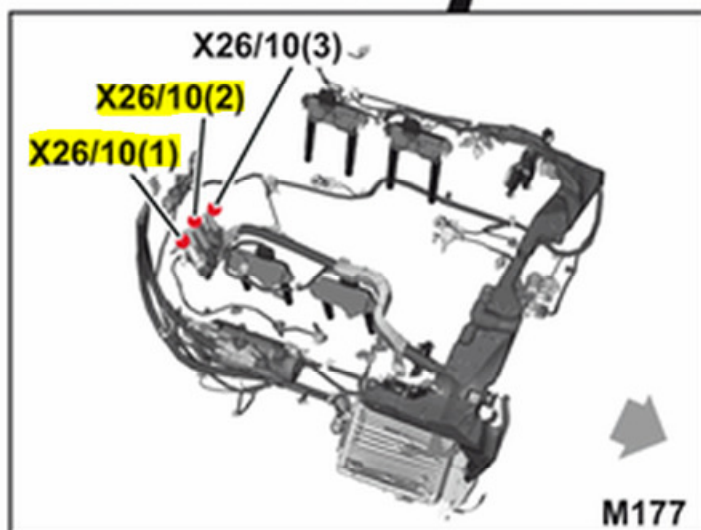
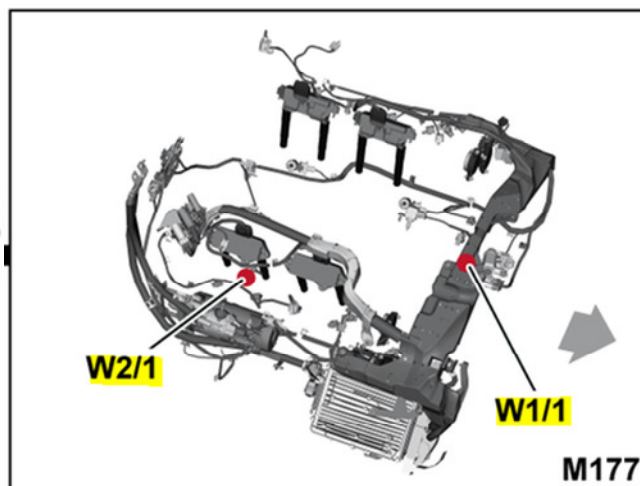
1. Working each bank one at a time, remove the upstream O2 sensor and install the smoke tip.
 - a. Seal around the tip where it meets the O2 sensor bung to ensure there are no leaks
2. Turn the smoke machine on at the maximum possible pressure.
3. Look for leaks in the exhaust
4. Using very soapy water (it should create suds by itself by spraying) saturate all connections.
 - a. Pay close attention to the exhaust clamps directly after the turbos as well as the weld fore and aft of the catalytic converter
 - b. Move and stress the components
5. Look for signs of bubbles
6. Perform the check with engine cold and again after a 5 minute run time (lukewarm)

Smoke test exhaust and check for leaks:

1. Working each bank one at a time, install the smoke machine tip into the intake air temperature sensor port
2. Remove the oil fill cap
3. Turn the pressure up on the smoke machine to maximum and fill the engine with smoke until it begins to come out of the oil fill port.
4. Reinstall the oil fill cap
5. Look for leaks
6. Using very soapy water (it should create suds by itself by spraying) saturate all connections.
 - a. Move and stress the components
 - b. Look for signs of bubbles
 - c. Perform the check with engine cold and after a 5 minute run time (lukewarm)

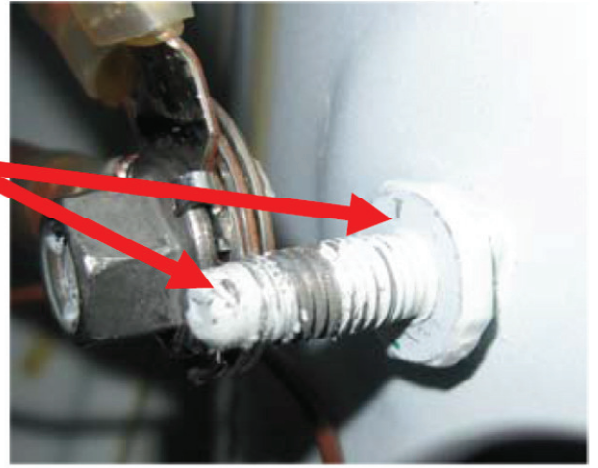
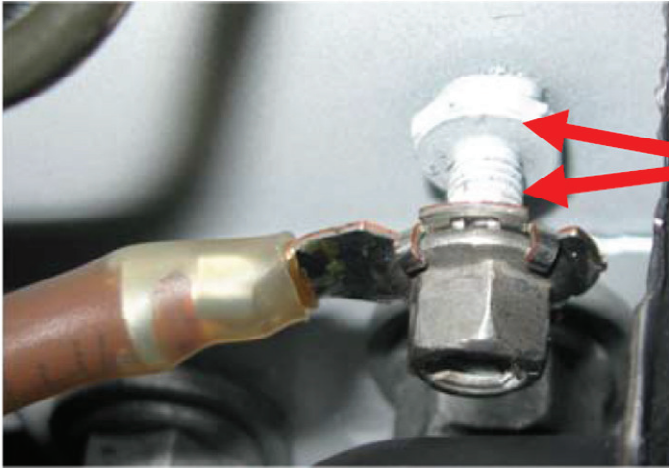


PE07.08-P-2101FBC



Massestellen prüfen:

Lösen sie die Muttern der Massestellen und prüfen Sie, ob hier eine saubere Kontaktfläche vorhanden ist. Ggf. reinigen und nacharbeiten!



Überlackierte Massestellen an Karosserie

Abhilfe:

- Massestellen bearbeiten
- Lackreste entfernen
- Neu verschrauben
- Konservieren (A000 989 46 22)

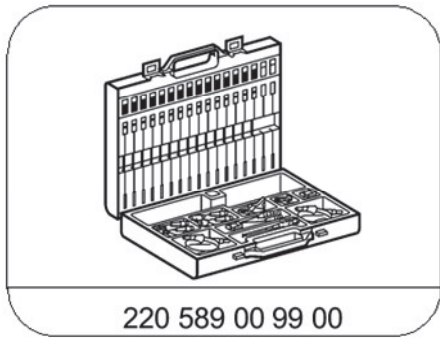
Hinweis:

Überlackierte Massestellen sind erst nach Demontage der Leitungen sichtbar!

Die Kontaktierung erfolgt über das Gewinde. Beachten Sie hierzu auch die **SI54.18-P-0013A**

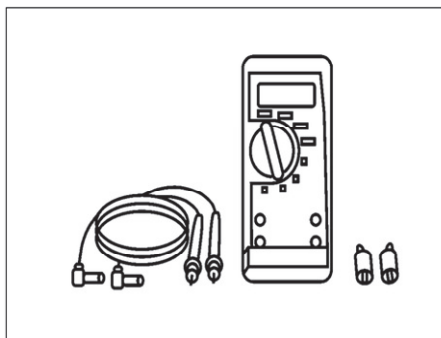
Leitungen nach Schaltplan, am entsprechenden Bauteil / Steuergerät beginnend, mit einem Durchgangsmessgerät auf Widerstand prüfen.

Hinweis: Widerstand muss < 0,5 Ohm betragen!

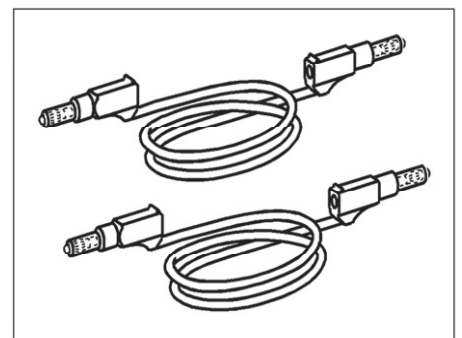


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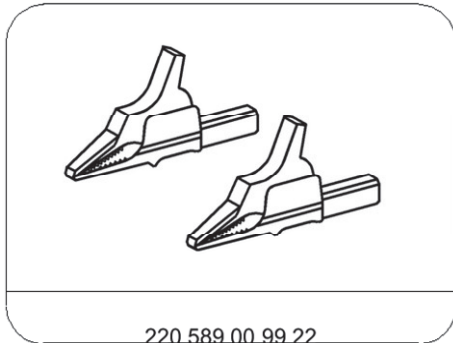
Elektro-Anschluß-Set



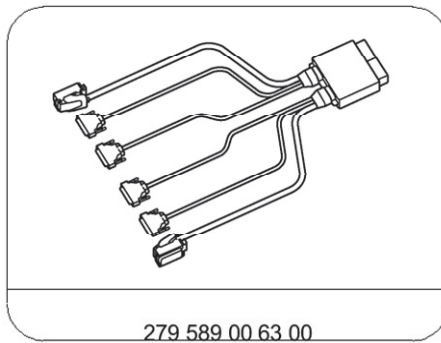
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220 589 00 99 20



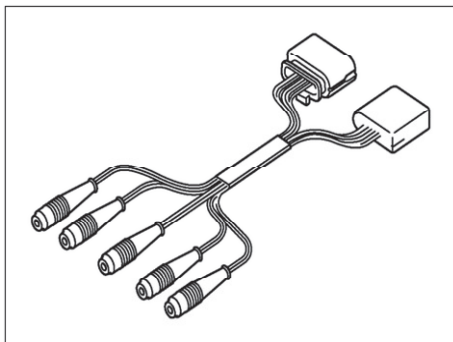
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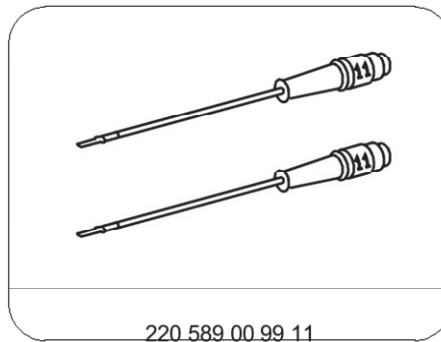
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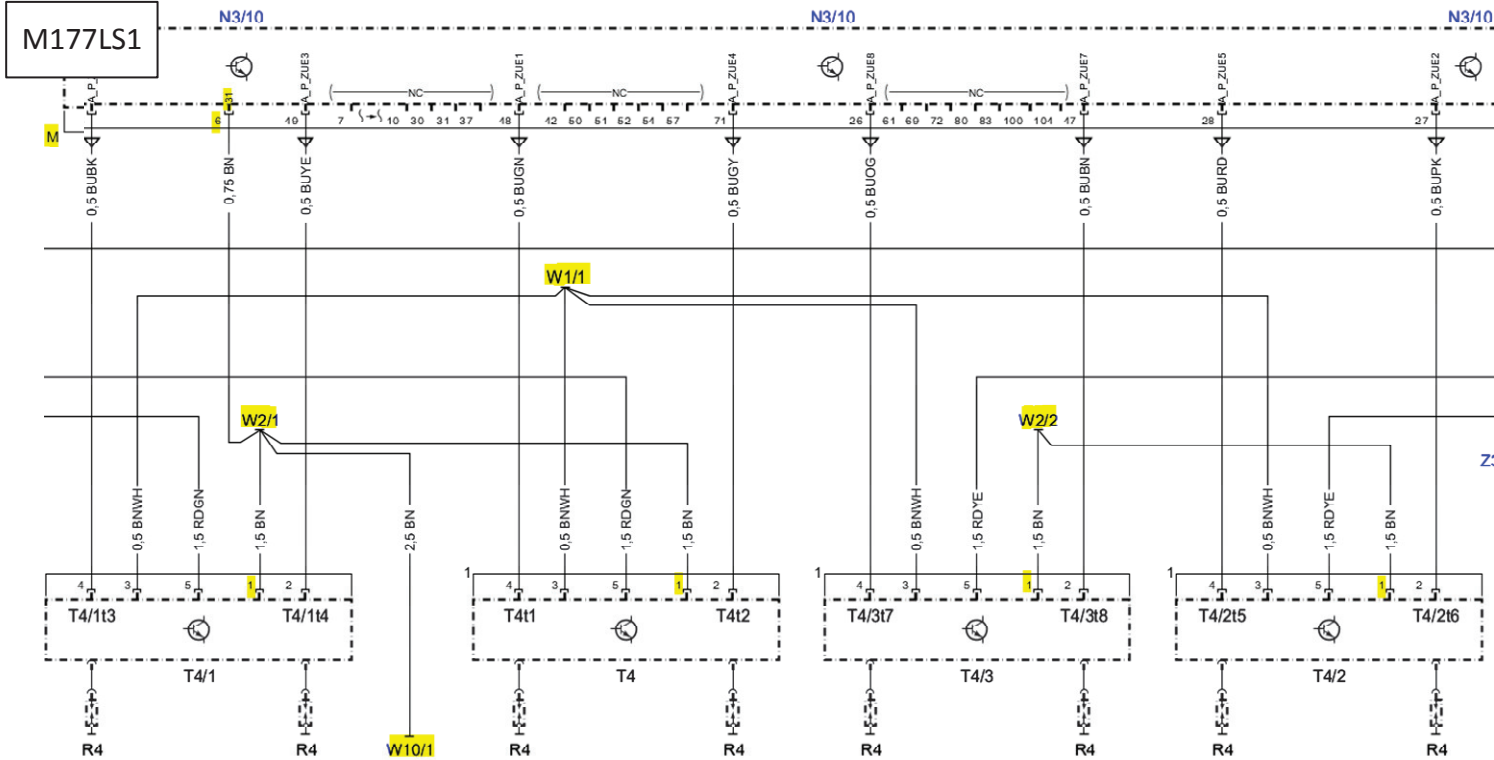
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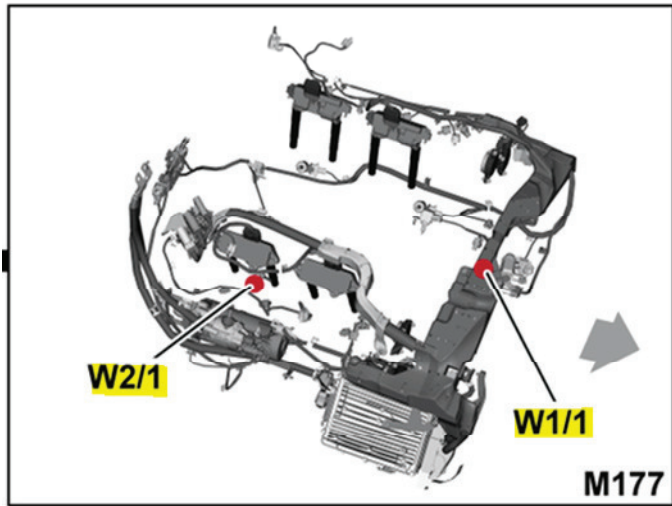
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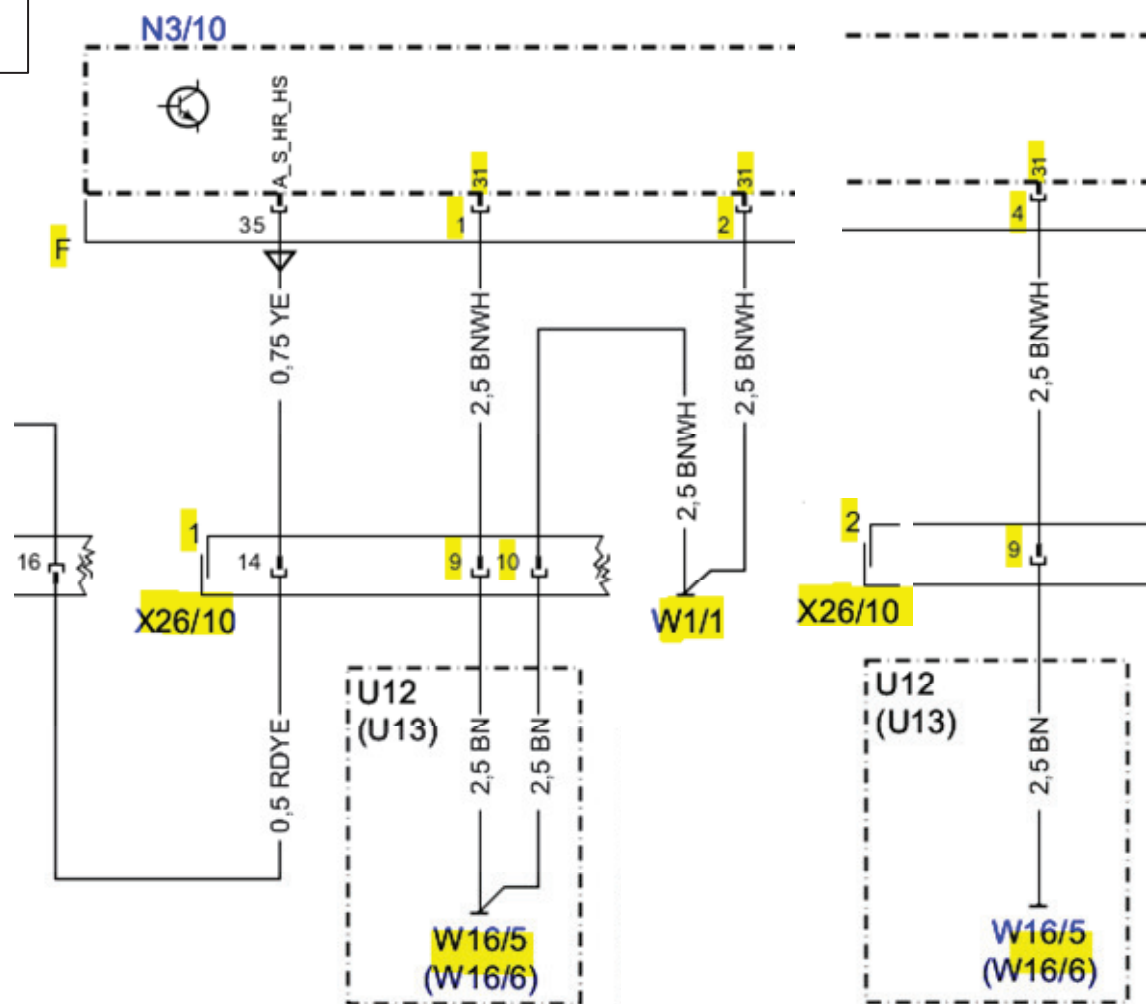
Leitungen nach Schaltplan, am entsprechenden Bauteil / Steuergerät beginnend, mit einem Durchgangsmessgerät auf Widerstand prüfen.

Hinweis: Widerstand muss < 0,5 Ohm betragen!

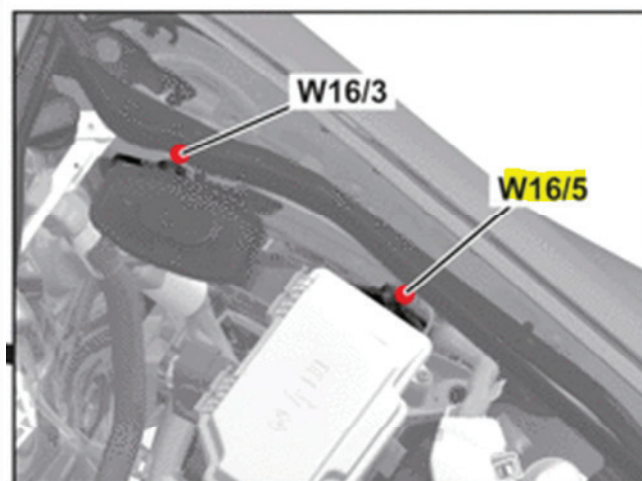
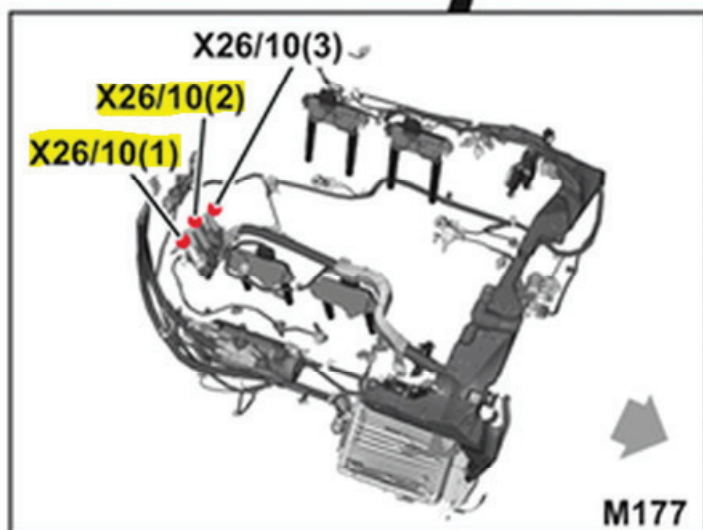
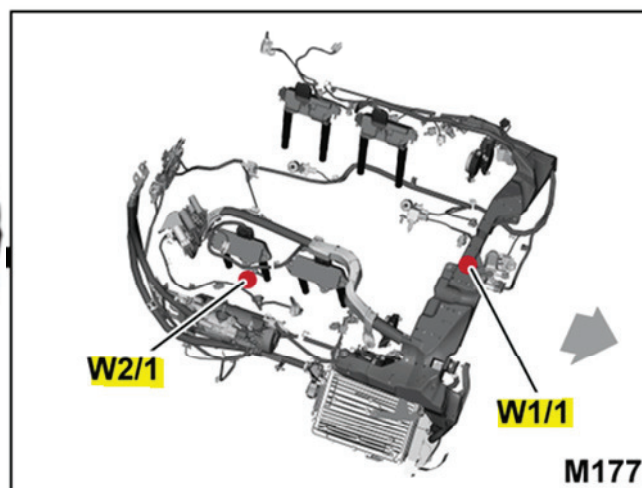


PE07.08-P-2101FBD



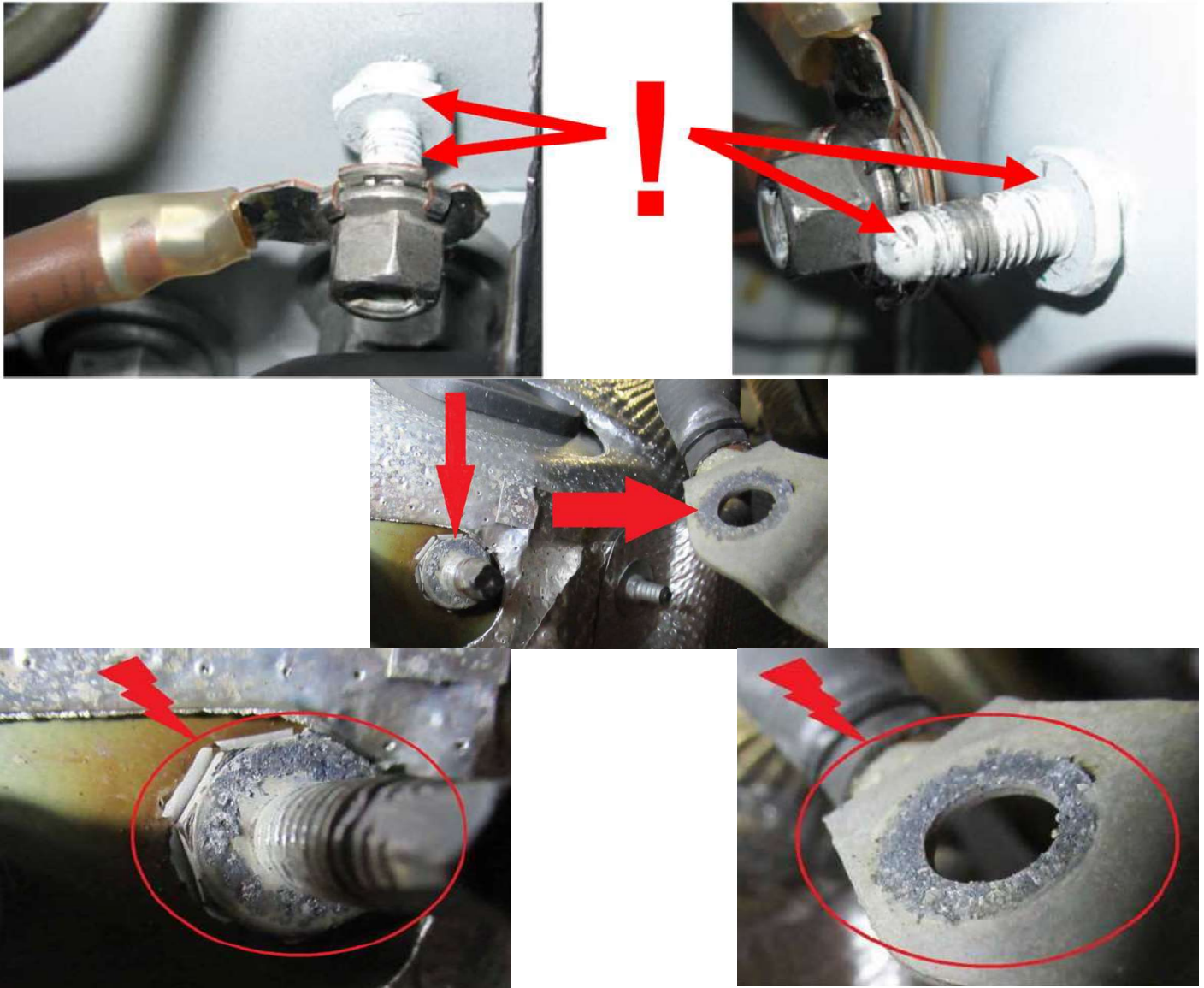


PE07.08-P-2101FBC



Check ground points:

Release the nut of the ground points and check whether the ground points are clean and if there is a clean contact surface. Clean the ground points and rework if necessary!



Overpainted ground points at vehicle body

remedy:

- rework ground points
- remove paint remains
- retighten the nut
- apply preservative agent (A000 989 46 22)

note:

Overpainted ground points are only visible after removing the wiring and the nut!

The contact at the ground points takes place via the screw thread. Please have also a look to **SI54.18-P-0013A**

Check resistance of single lines by using wiring diagram and multimeter, starting at the component/ control unit.

note: the resistance has to be < 0,5 Ohm!

Overpainted ground points at vehicle body

remedy:

- rework ground points
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- retighten the nut
- apply preservative agent

A001 989 37 51 09

A000 989 46 22

A000 986 72 70 10

A000 989 91 51

note:

Overpainted ground points are only visible after removing the wiring and the nut!

The contact at the ground points takes place via the screw thread. Please have also a look to **SI54.18-P-0013A**

NOTICE

Coated surfaces may become damaged. If the electroplated protective layer becomes damaged, the metal corrodes and oxidizes. The electric resistance increases due to corrosion and oxidation.

- ⇒ Select the appropriate web ring depending on the surface coating, soiling, corrosion, and oxidation.
- ⇒ Carefully perform the cleaning process. If necessary, repeat the process several times and check the surface coating for damage in the meantime.

NOTICE

An incorrect tightening torque may damage the screw connection. Rust solvent, contact spray, grease, etc. reduce the static friction in the thread. The specified tightening torque is therefore exceeded when the screw connection is tightened.

- ⇒ Do not use rust solvent, contact spray, grease, etc.
- ⇒ Tighten screw connections to the specified tightening torque. Observe the vehicle manufacturer specifications.

1.3.3 Apply a preservative to the screw connections of the electric contacts

Applying a preservative to the screw connections of electric contacts prevents oxidation and corrosion.

Requirements:

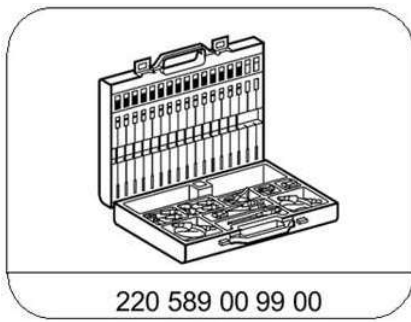
- Electric contacts are not damaged.
- Electric contacts are clean and dry.

1. Tighten the screw connections to the specified tightening torque. Observe the vehicle manufacturer specifications.
2. Select the preservative.
3. Spray the preservative all around the screw connection of the electric contact.



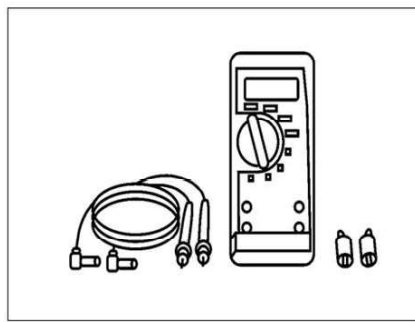
Preservative

- Contact points with normal temperatures (e.g., body): Use a preservative that is approved for the temperature range. Observe the vehicle manufacturer specifications.
- Contact points with high temperatures (e.g., engine, transmission, etc.): Use a preservative that is approved for the temperature range. Observe the vehicle manufacturer specifications.
- Due to capillary action, the preservative also reaches the cavities of the screw connection.

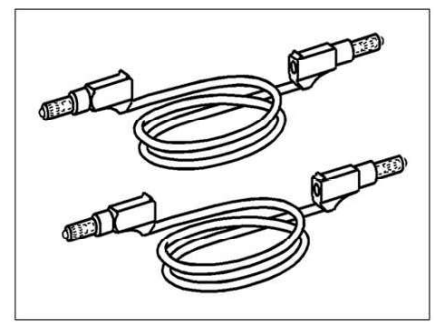


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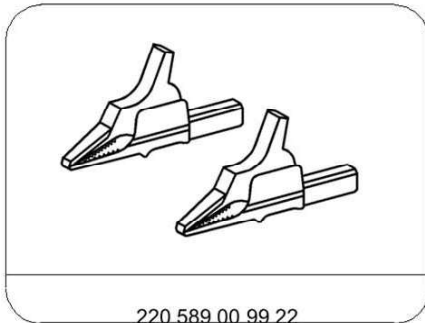
Elektro-Anschluß-Set



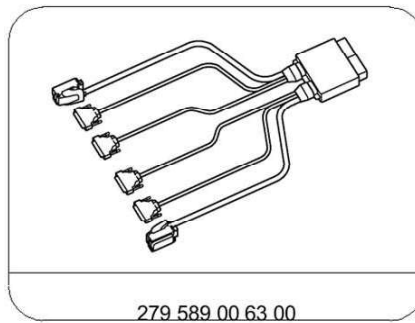
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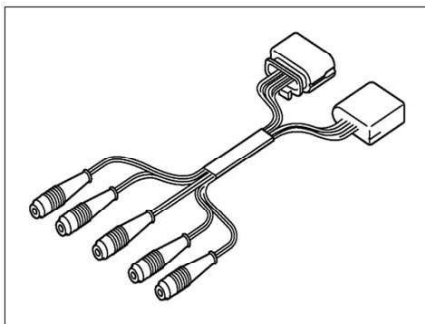
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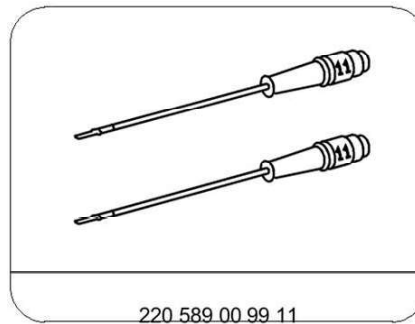
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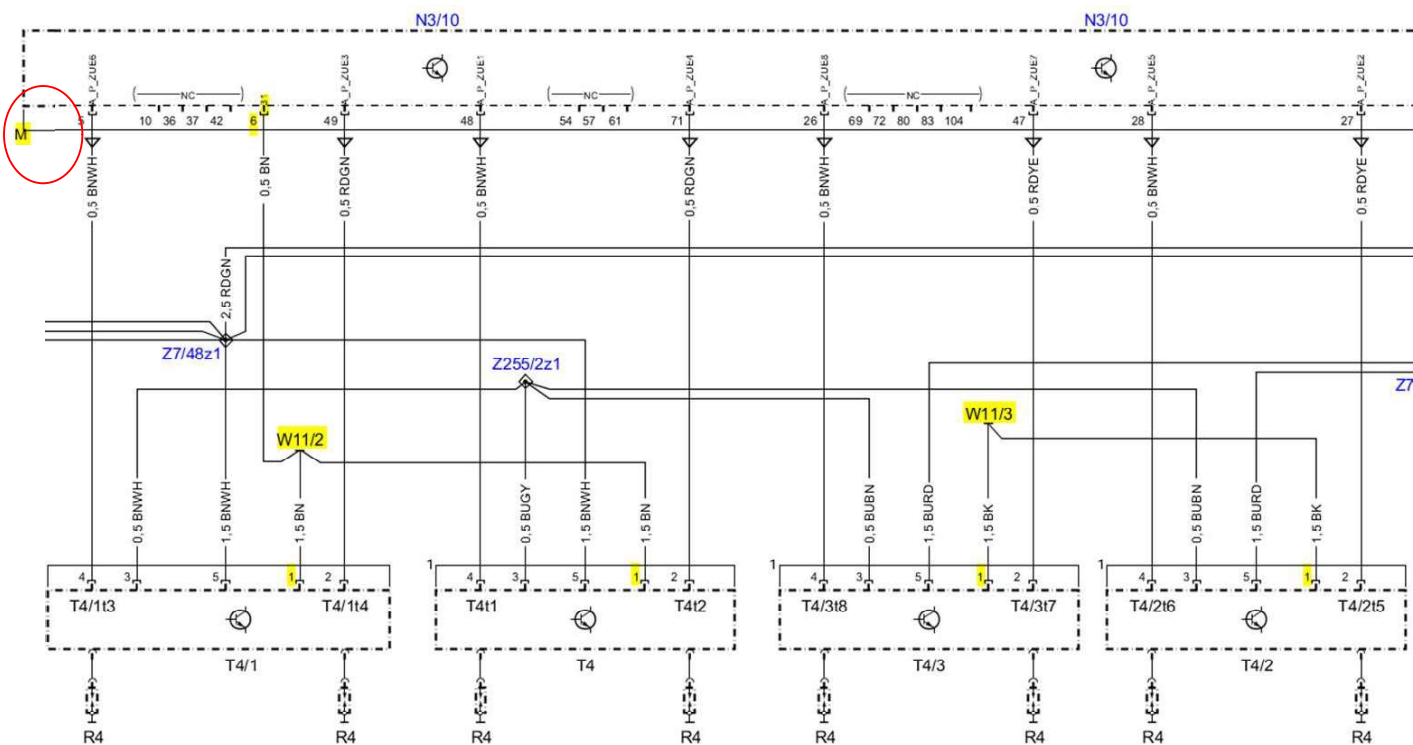
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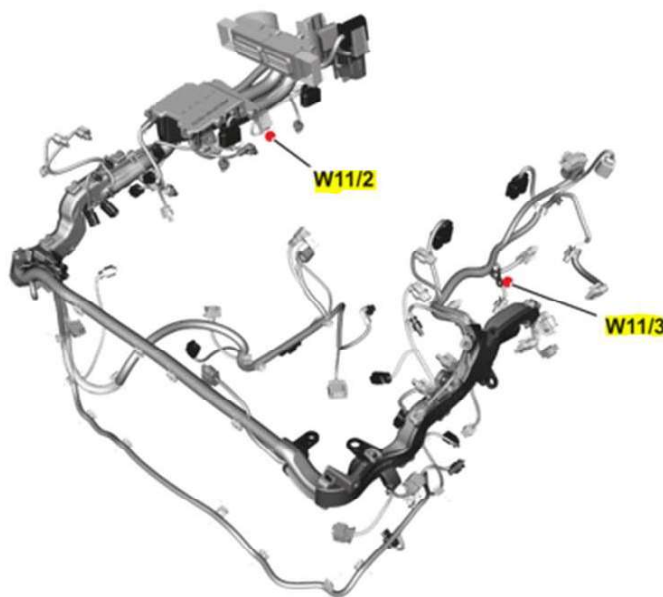
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Check resistance of single lines by using wiring diagramm and multimeter, starting at the component/ control unit.

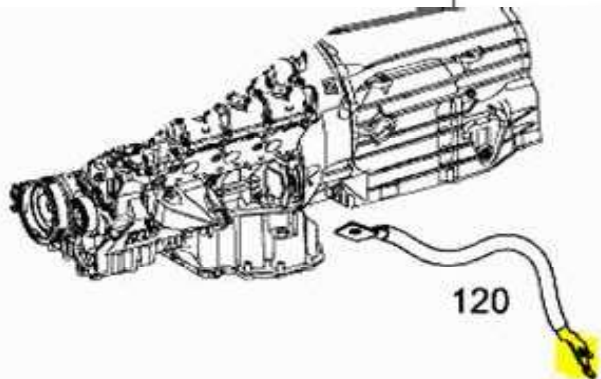
note: the resistance has to be < 0,5 Ohm!



213: PE07.08-P-2101DBE
222/217: PE07.08-P-2101SEM

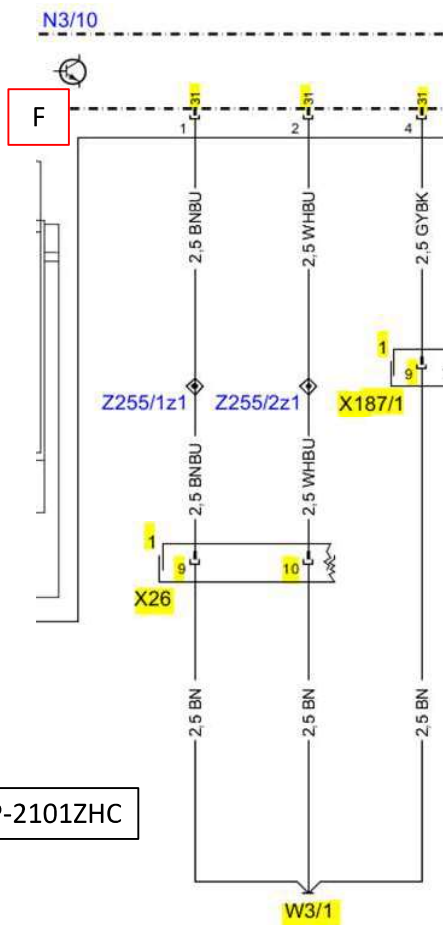


M177

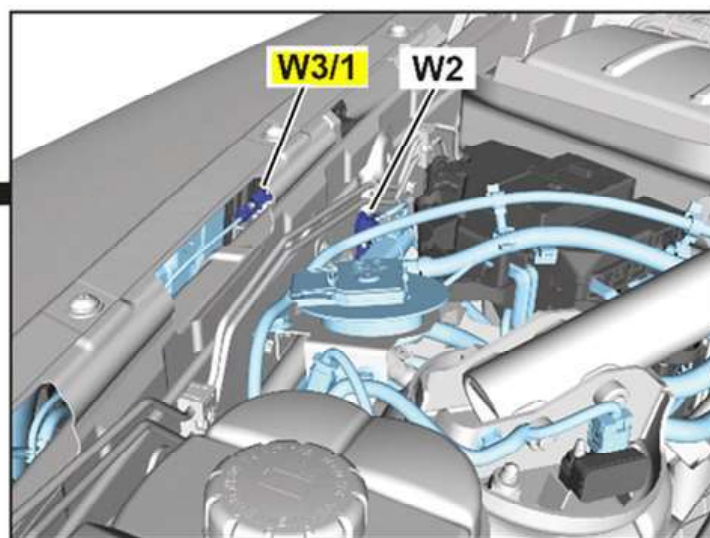
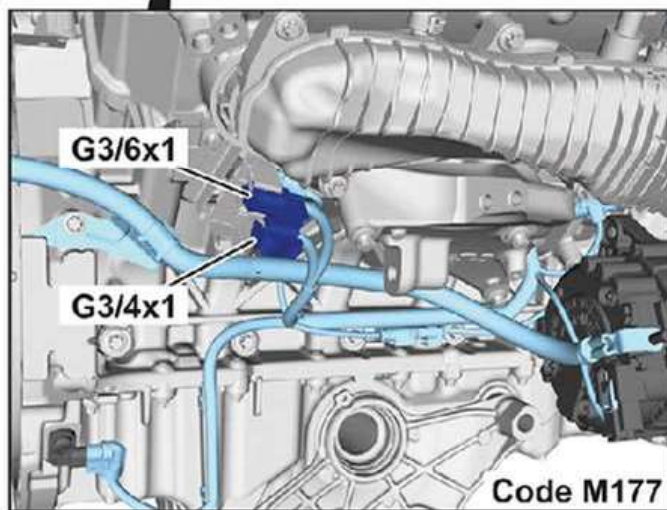
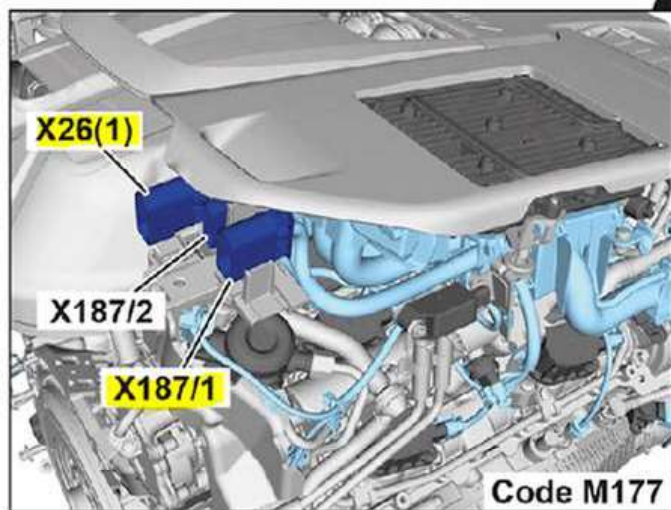


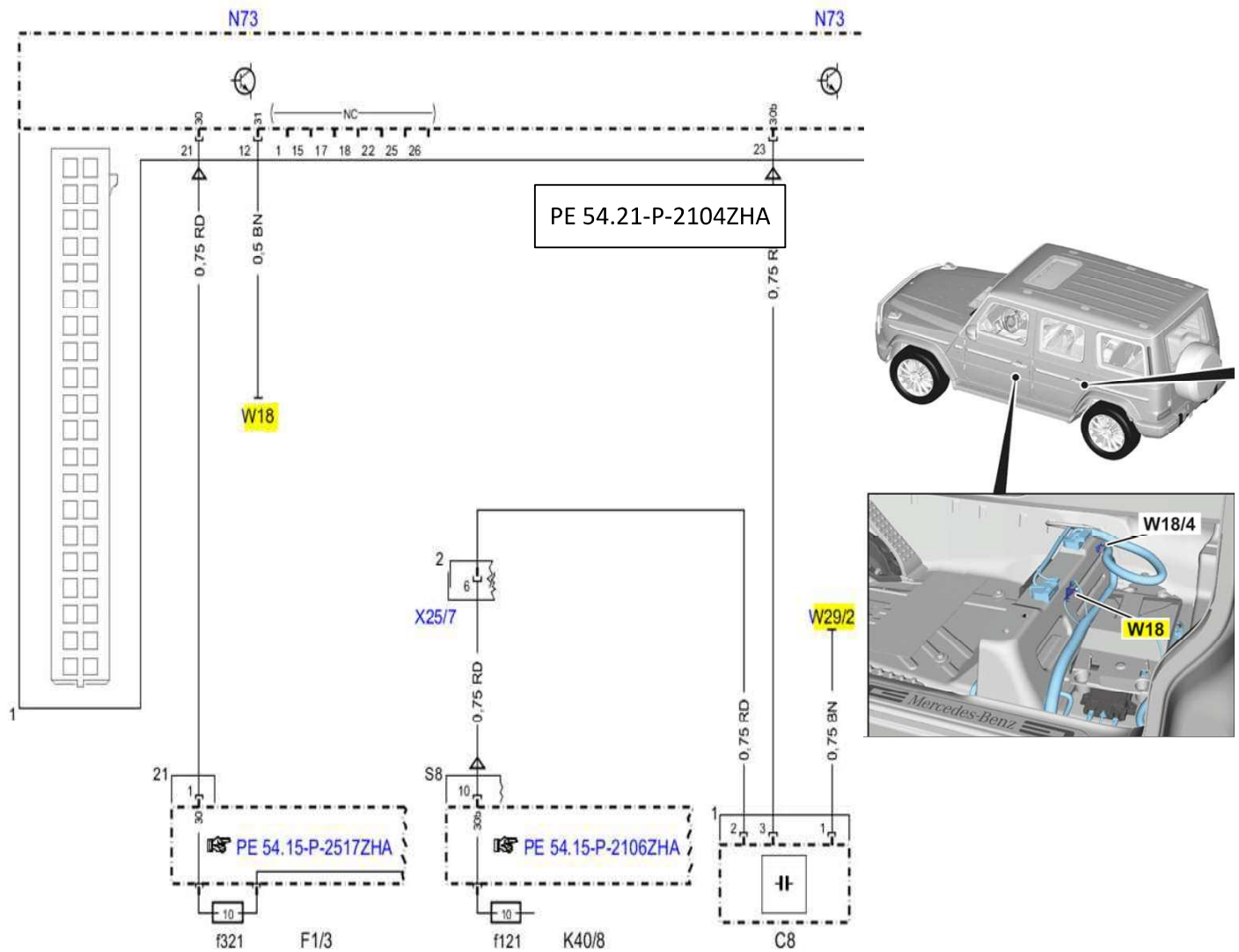
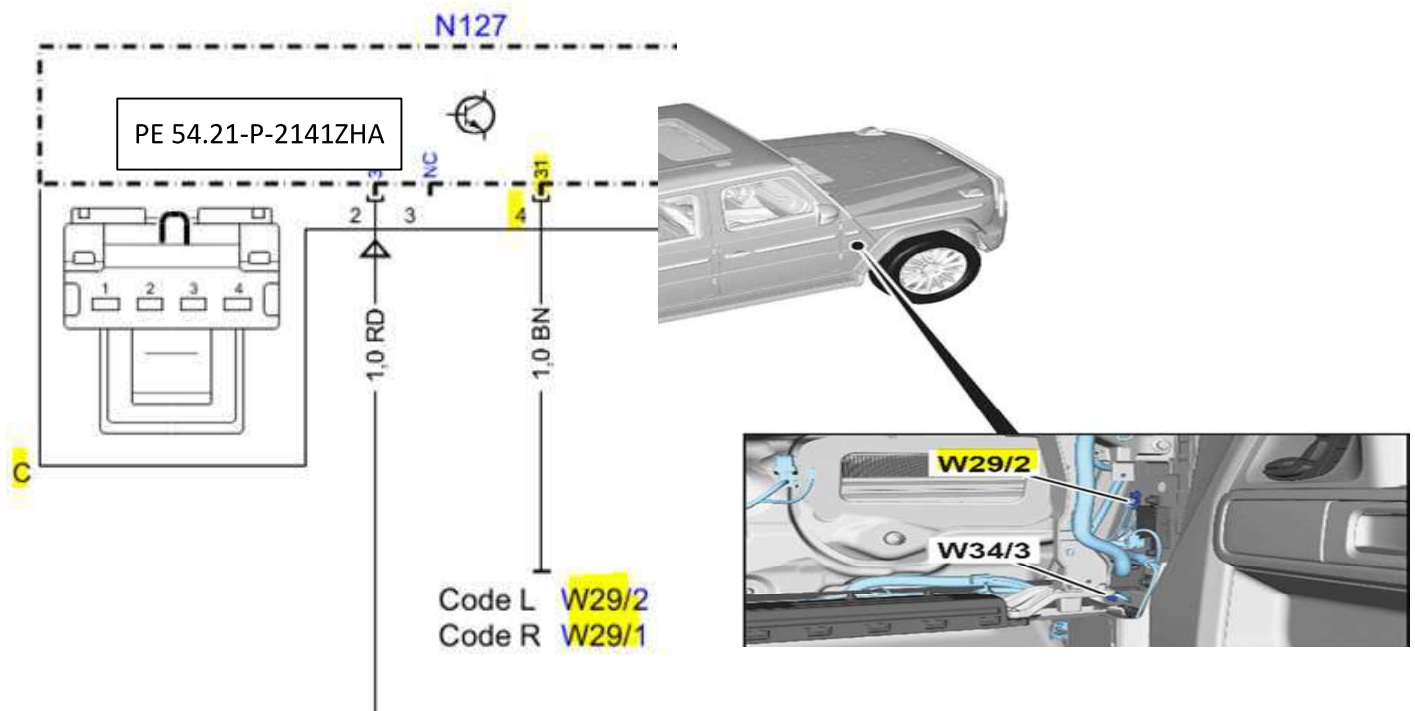
Check resistance of single lines by using wiring diagram and multimeter, starting at the component/ control unit.

note: the resistance has to be < 0,5 Ohm!



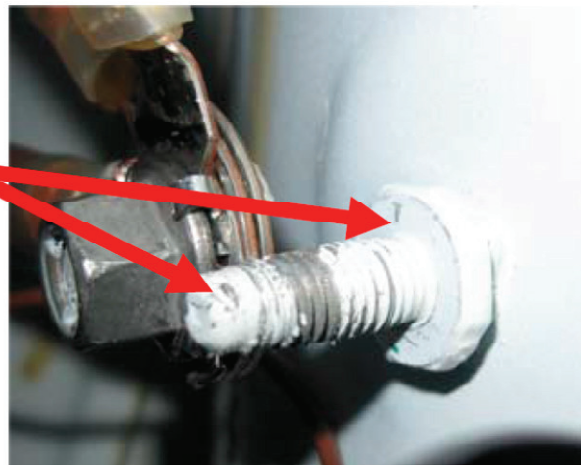
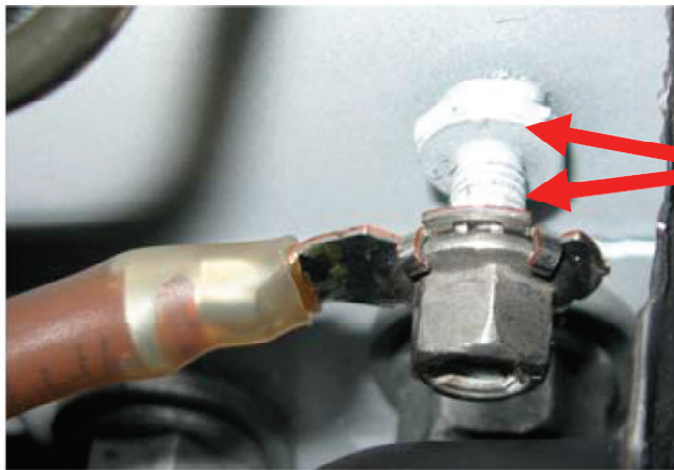
PE07.08-P-2101ZHC





Check ground points:

Release the nut of the ground points and check whether the ground points are clean and if there is a clean contact surface. Clean the ground points and rework if necessary!



Overpainted ground points at vehicle body

remedy:

- rework ground points
- remove paint remains
- retighten the nut
- apply preservative agent (A000 989 46 22)

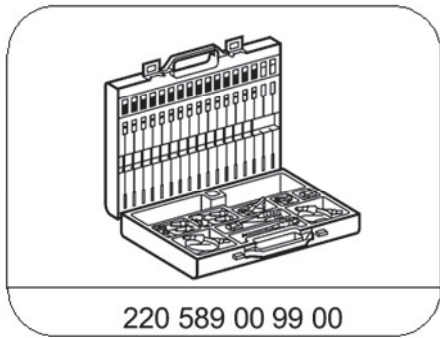
note:

Overpainted ground points are only visible after removing the wiring and the nut!

The contact at the ground point takes place via the screw thread. Please have also a look to **SI54.18-P-0013A**.

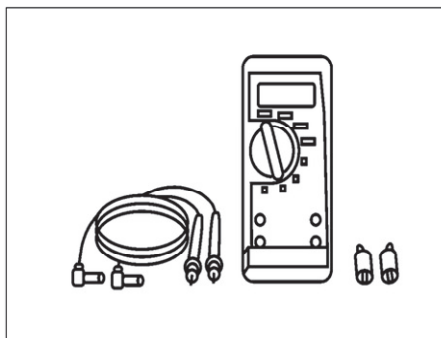
Check resistance of the single lines by using wiring diagram and multimeter, starting at the component/ control unit

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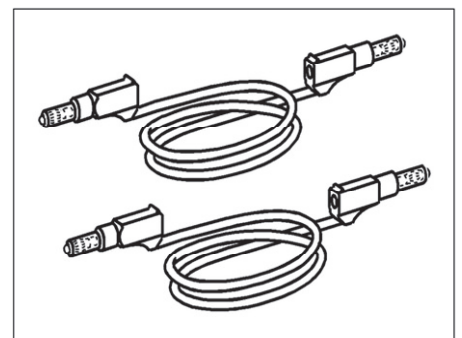


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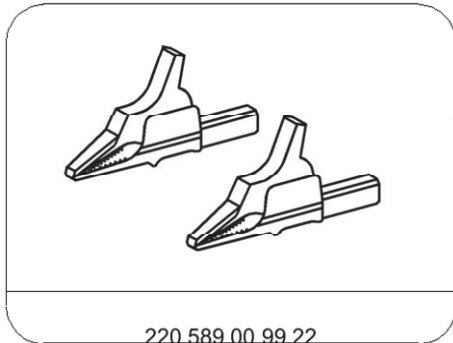
Elektro-Anschluß-Set



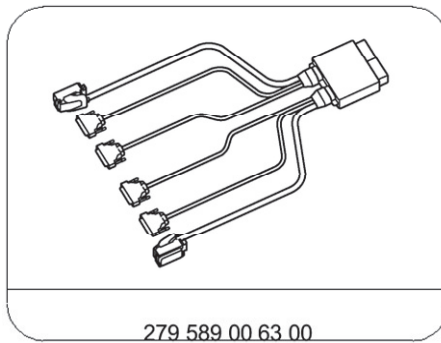
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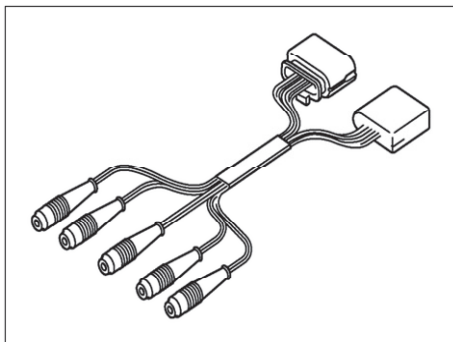
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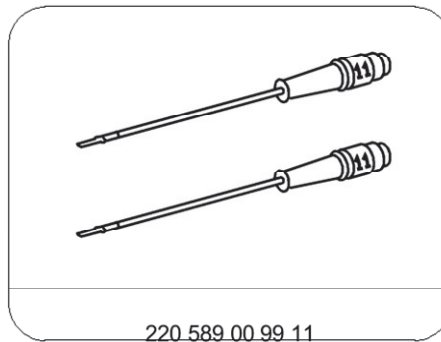
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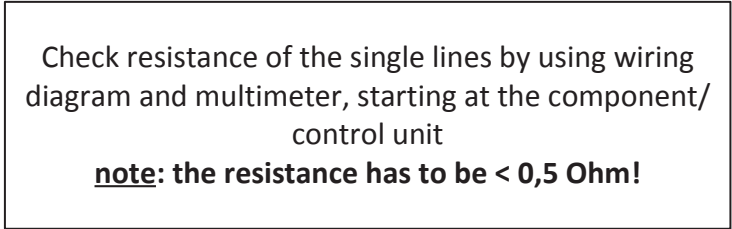
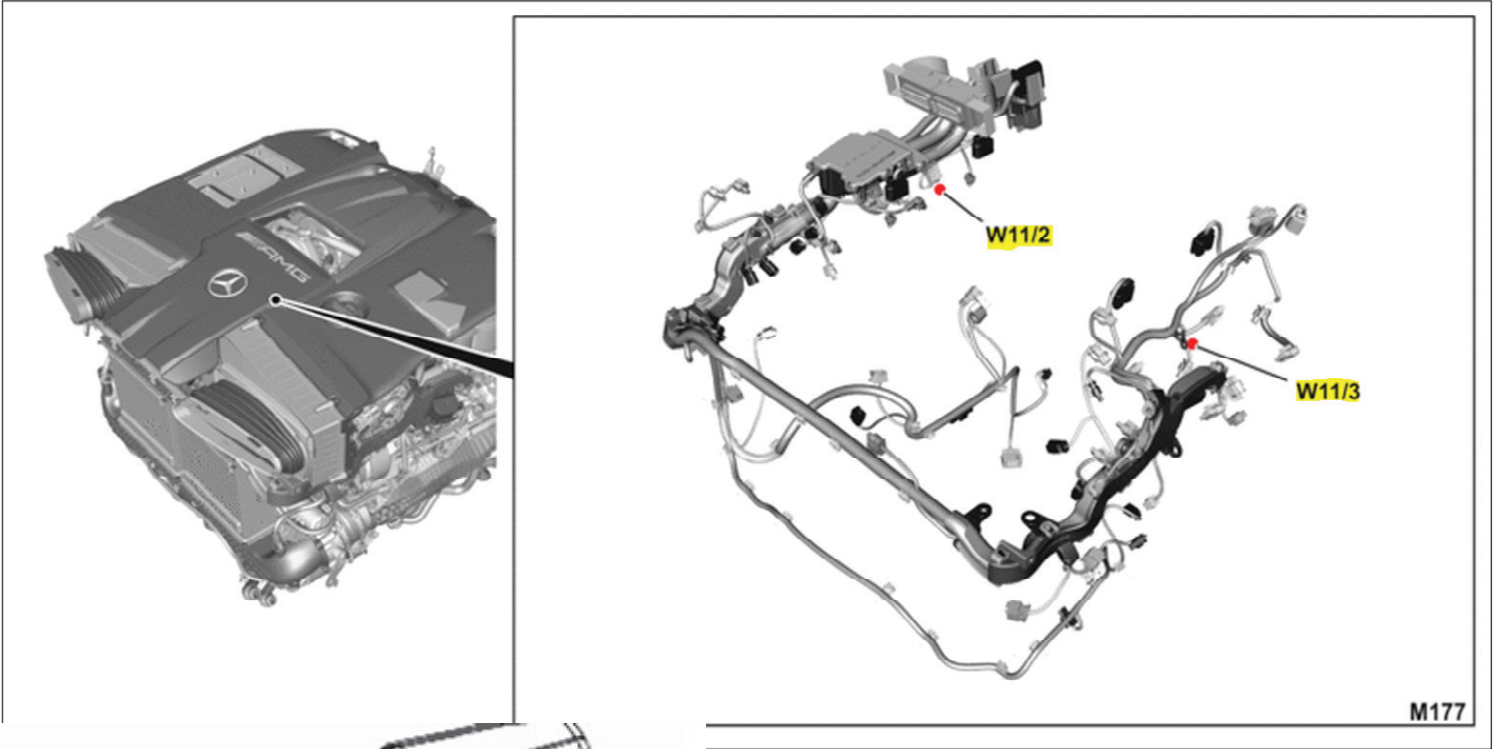


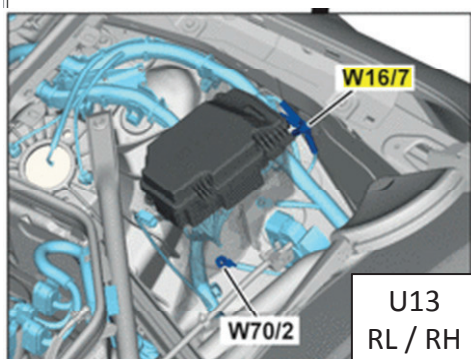
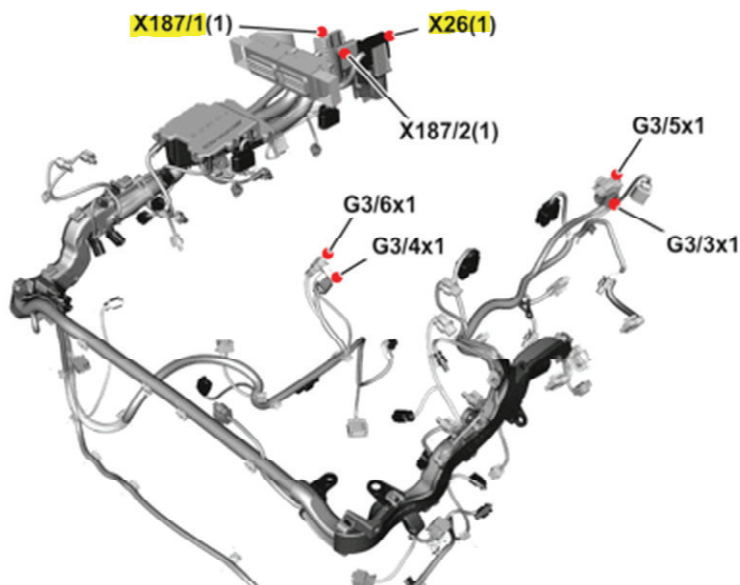
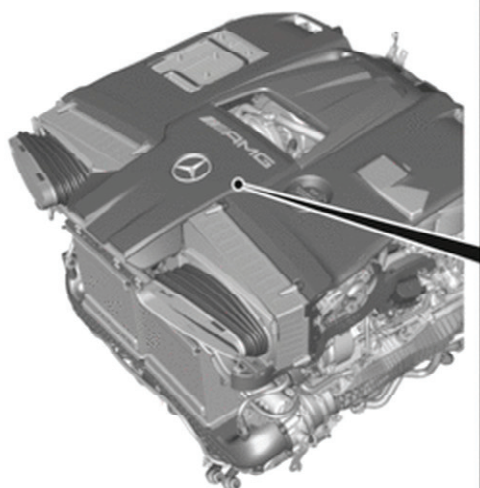
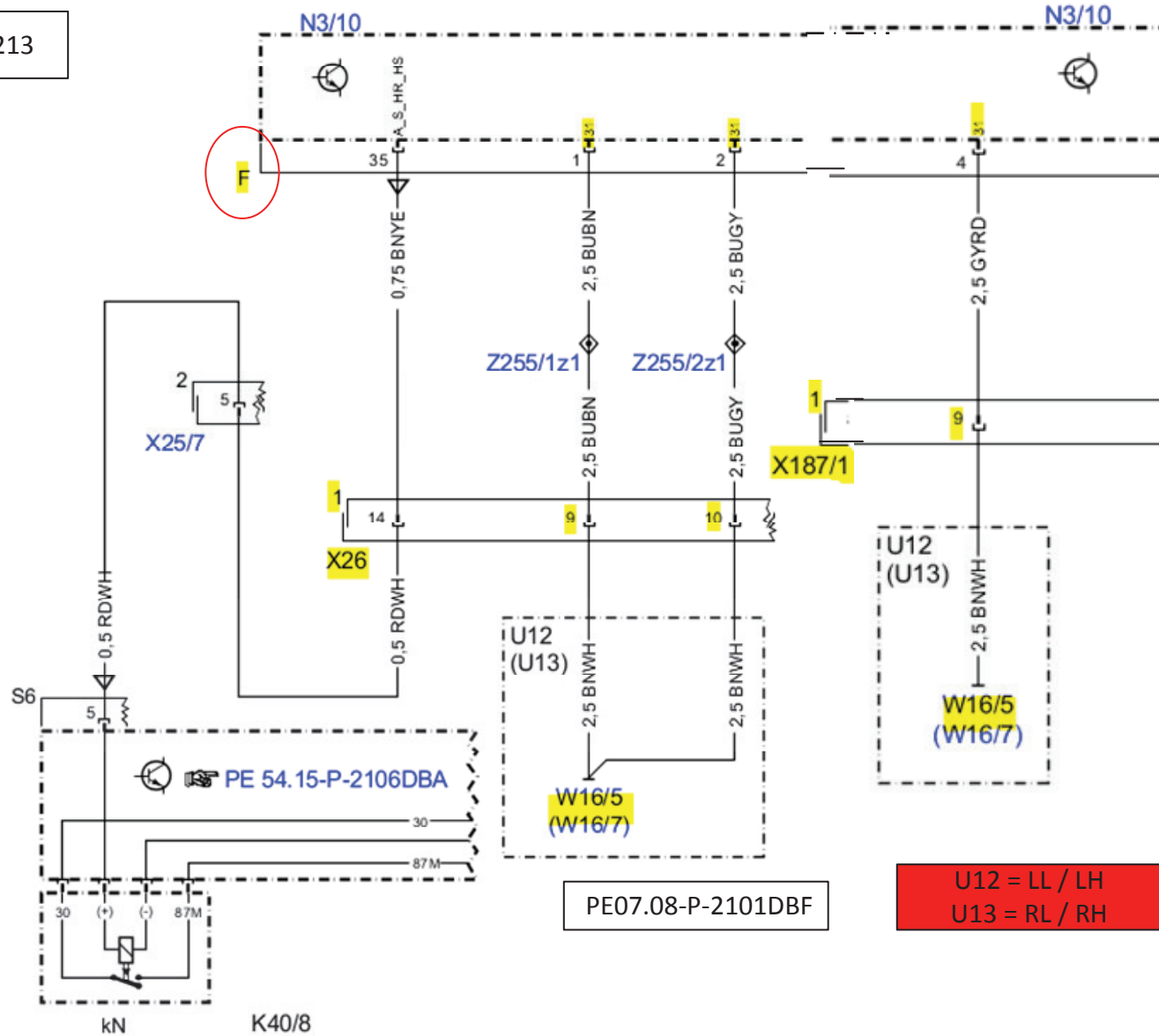
220 589 00 99 11

Check resistance of the single lines by using wiring diagram and multimeter, starting at the component/ control unit

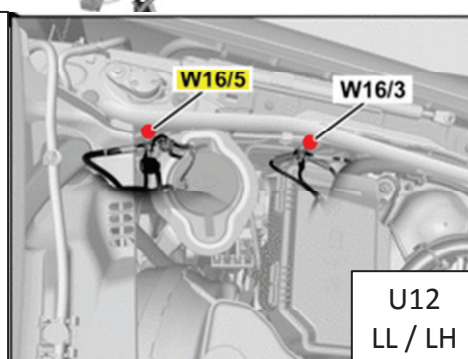
note: the resistance has to be < 0,5 Ohm!

M177 LS2



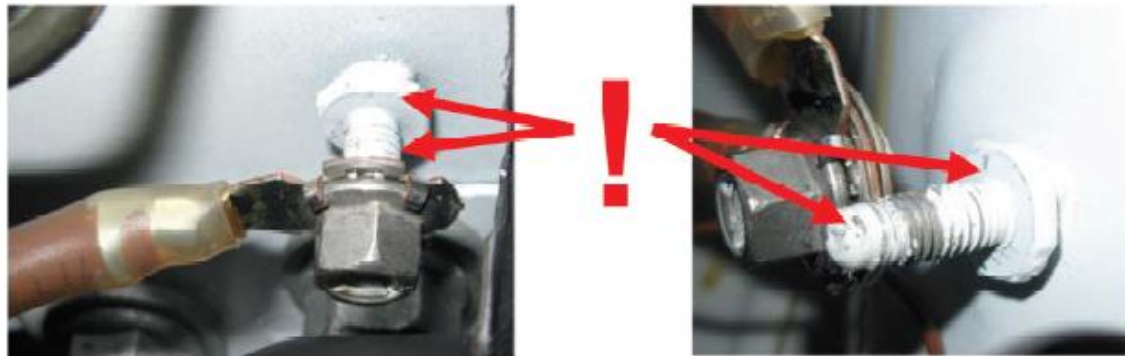


Check resistance of the single lines by using wiring diagram and multimeter, starting at the component/ control unit
note: the resistance has to be < 0,5 Ohm!



Check ground points:

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Overpainted ground points at vehicle body

remedy:

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- remove paint remains
- retighten the nut
- apply preservative agent (A000 989 46 22)

note:

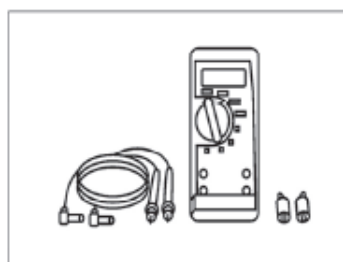
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The contact at the ground point takes place via the screw thread. Please have also a look to **SI54.18-P-0013A**.

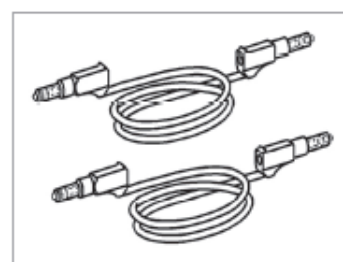


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Elektro-Anschluß-Set



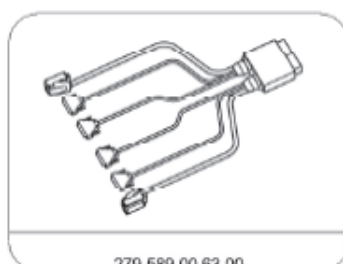
000 588 06 19 00



220 589 00 99 20



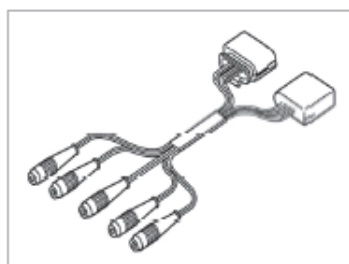
220 589 00 99 22



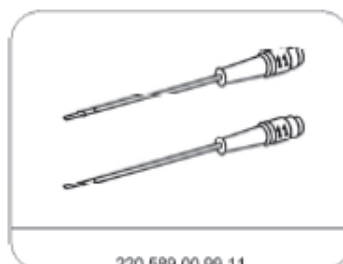
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000 589 00 21 00



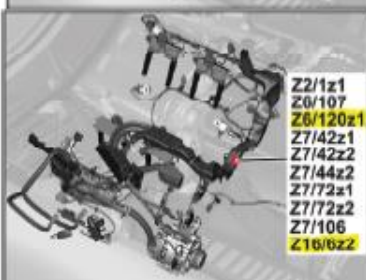
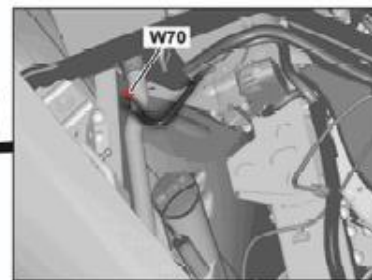
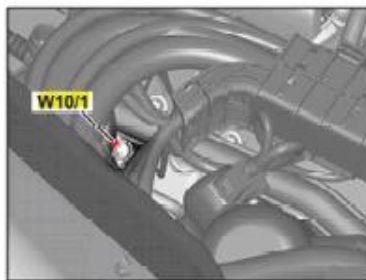
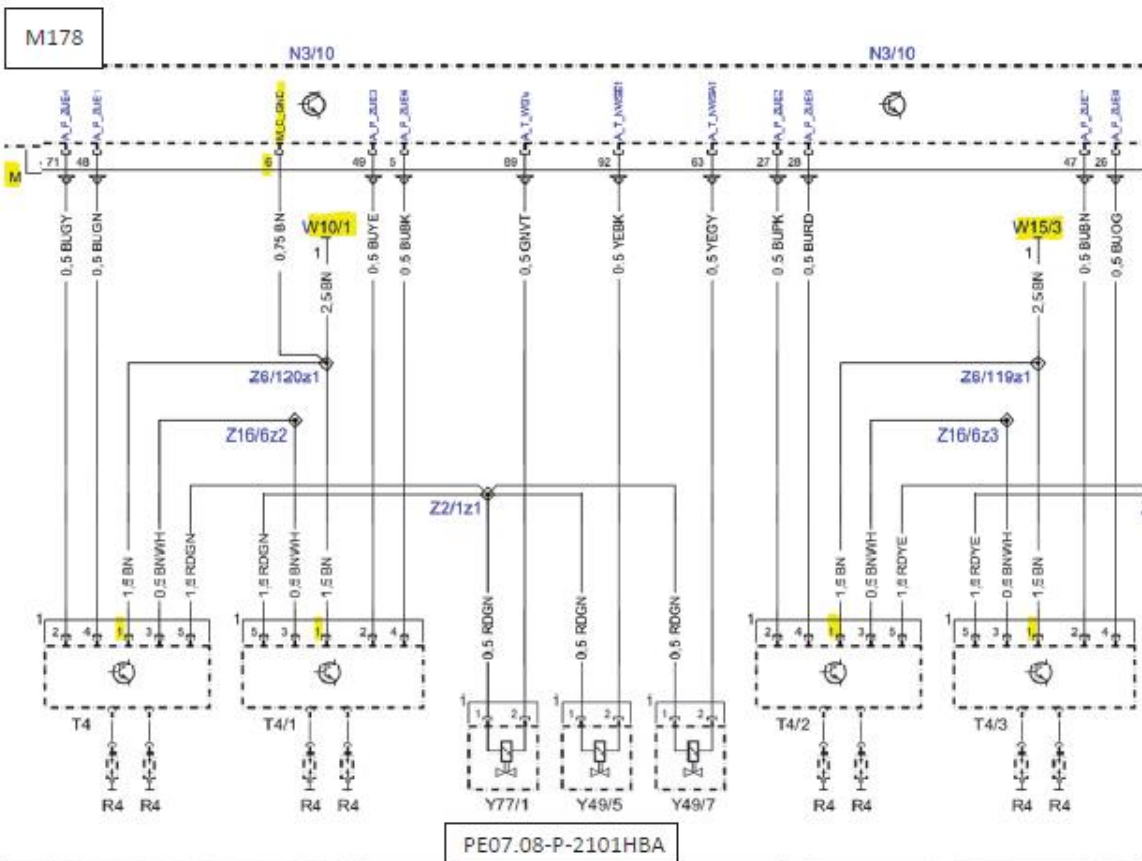
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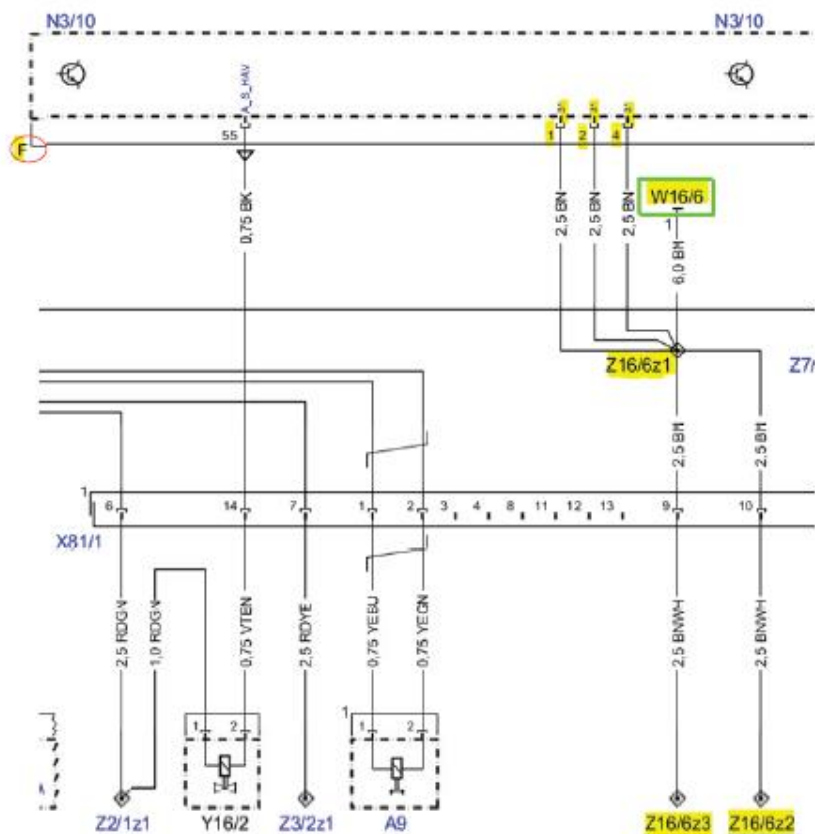
220 589 00 99 11

Check resistance of the single lines by using wiring diagram and multimeter, starting at the component/ control unit

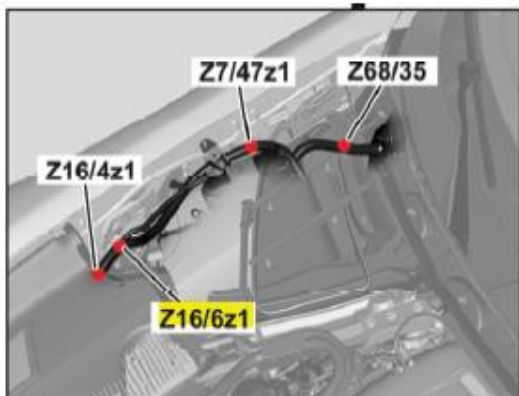
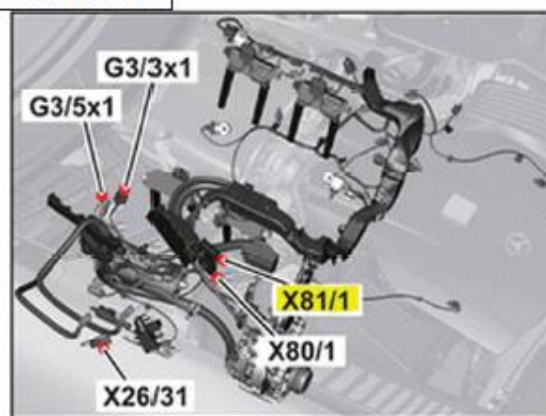
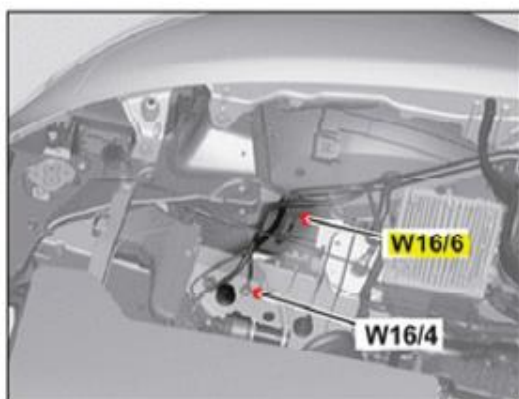
note: the resistance has to be < 0,5 Ohm!



Check resistance of the single lines by using wiring diagram and multimeter, starting at the component/ control unit
note: the resistance has to be < 0,5 Ohm!



PE07.08-P-2101HBA



Check resistance of the single lines by using wiring diagram and multimeter, starting at the component/ control unit

note: the resistance has to be < 0,5 Ohm!

Check ground points:

Release the nut of the ground points and check whether the ground points are clean and if there is a clean contact surface. Clean the ground points and rework if necessary!



Overpainted ground points at vehicle body

remedy:

- rework ground points
- remove paint remains
- retighten the nut
- apply preservative agent (A000 989 46 22)

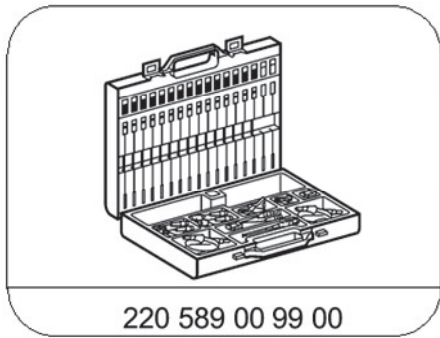
note:

Overpainted ground points are only visible after removing the wiring and the nut!

The contact at the ground point takes place via the screw thread. Please have also a look to **SI54.18-P-0013A**.

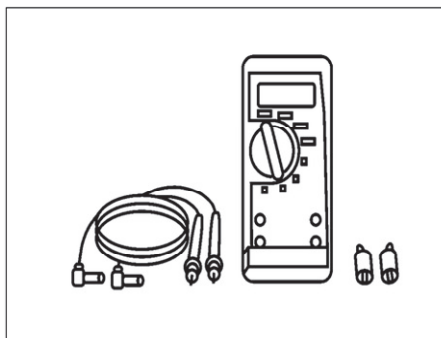
Check resistance of the single lines by using wiring diagram and multimeter, starting at the component/ control unit

note: the resistance has to be < 0,5 Ohm!

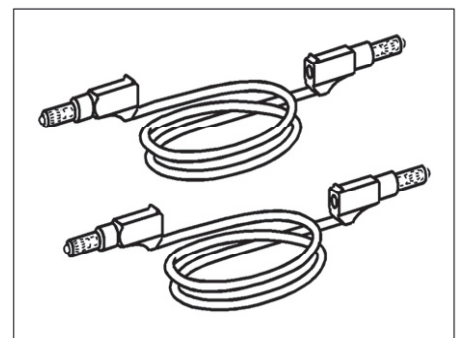


220 589 00 99 00

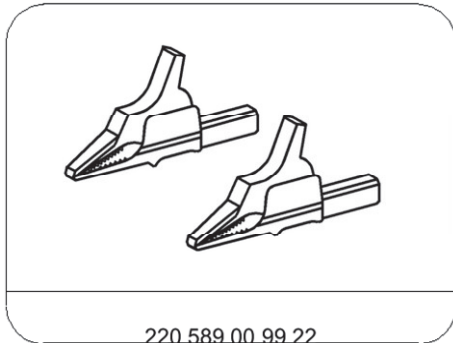
Elektro-Anschluß-Set



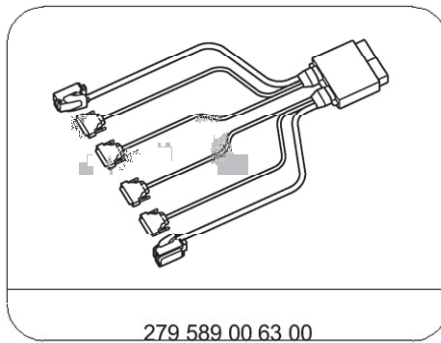
000 588 06 19 00



220 589 00 99 20



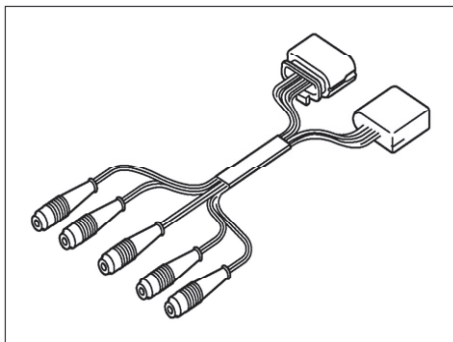
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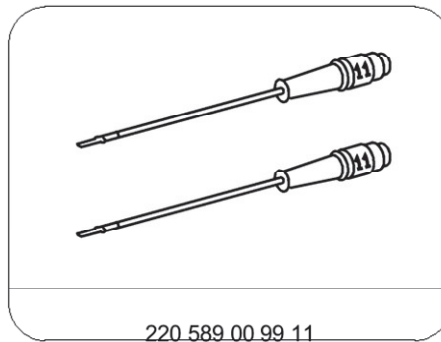
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000 589 00 21 00



177 589 00 63 00

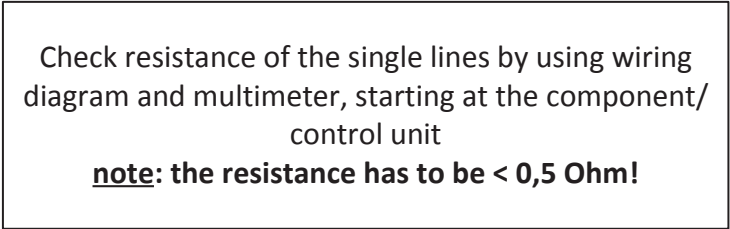
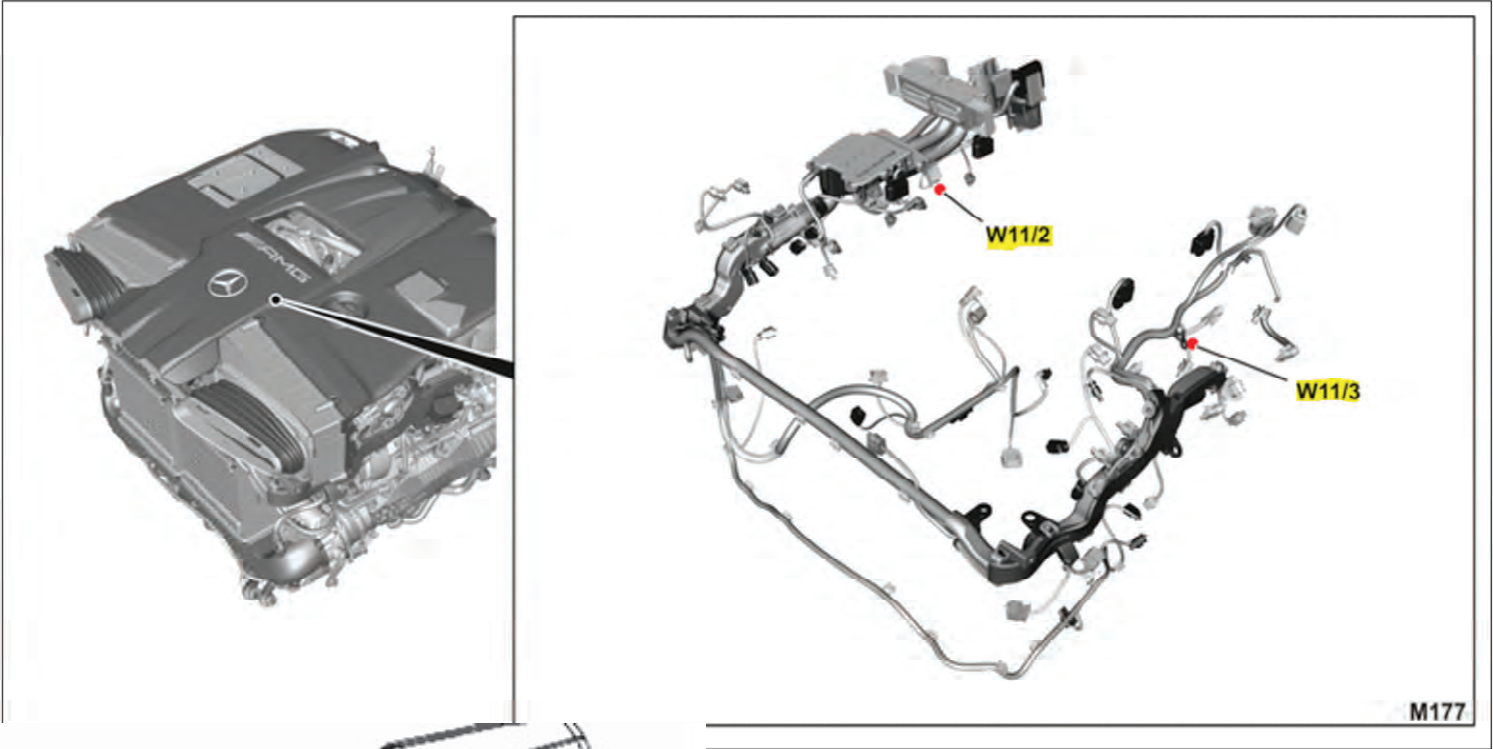


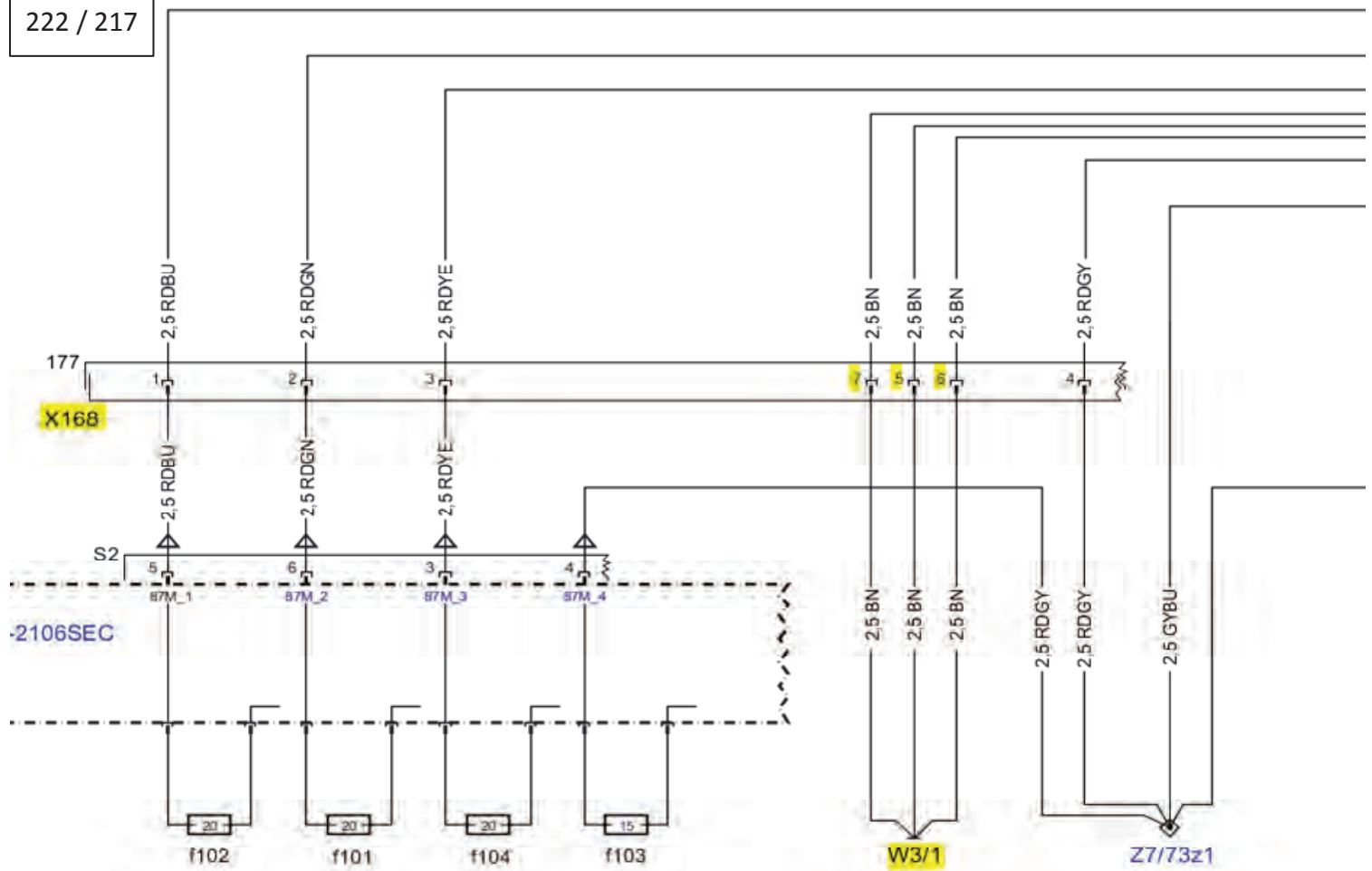
220 589 00 99 11

Check resistance of the single lines by using wiring diagram and multimeter, starting at the component/ control unit

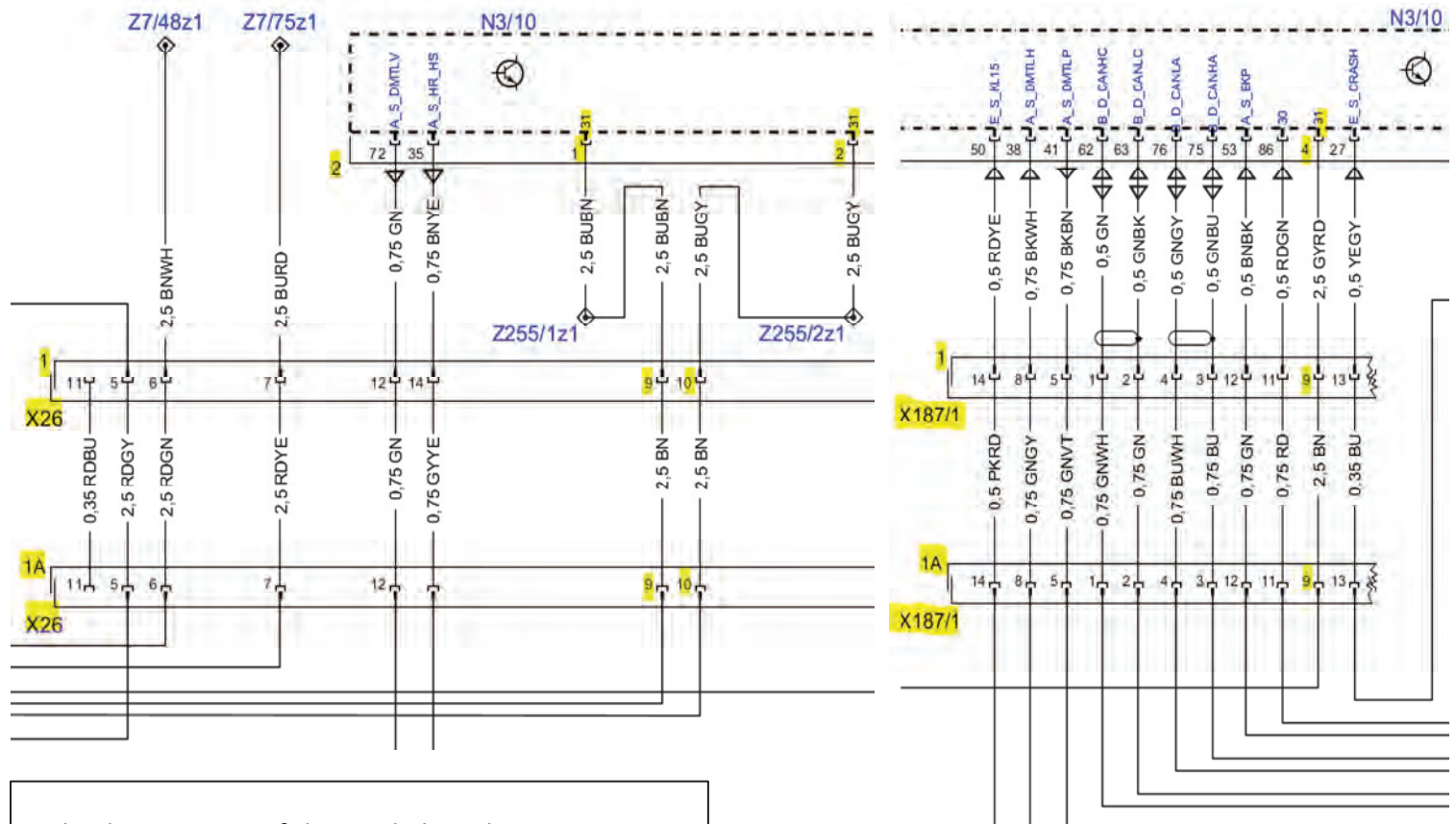
note: the resistance has to be < 0,5 Ohm!

M177 LS2



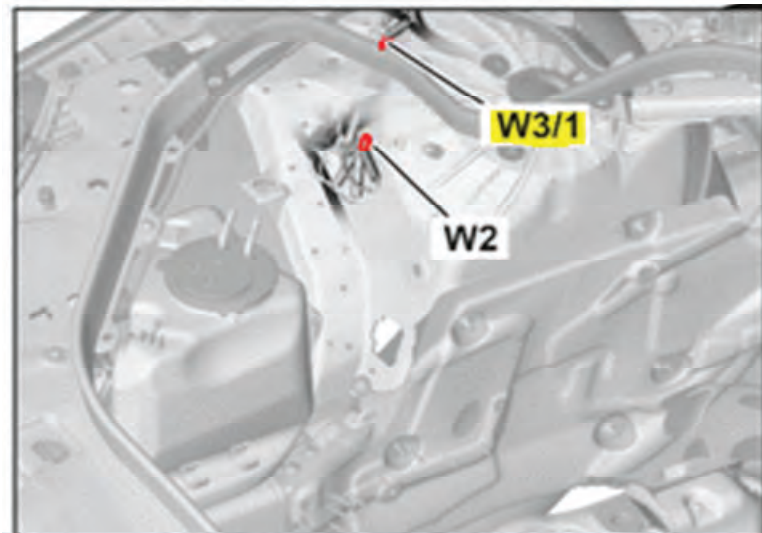
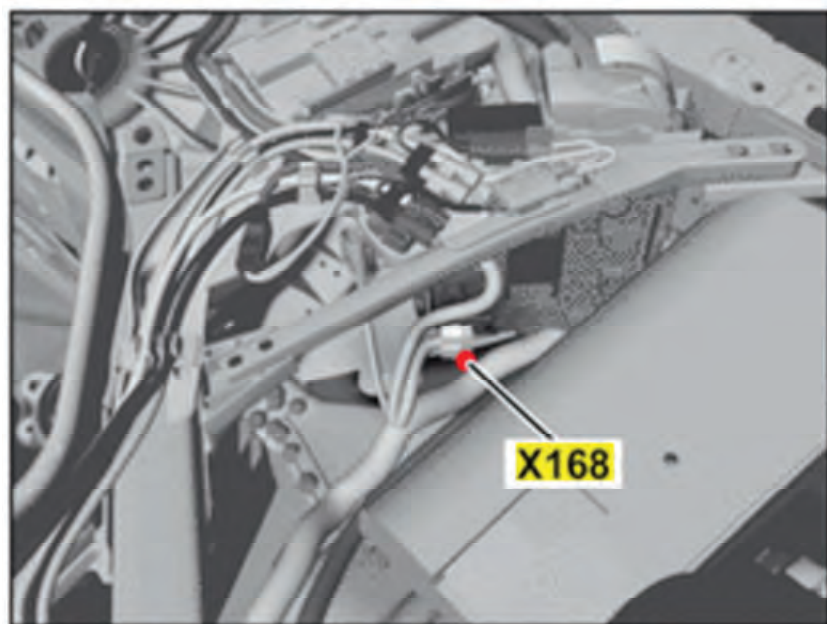
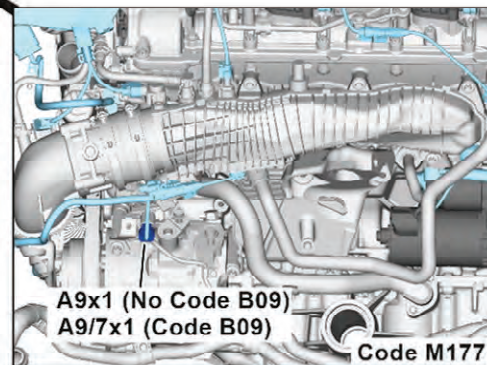
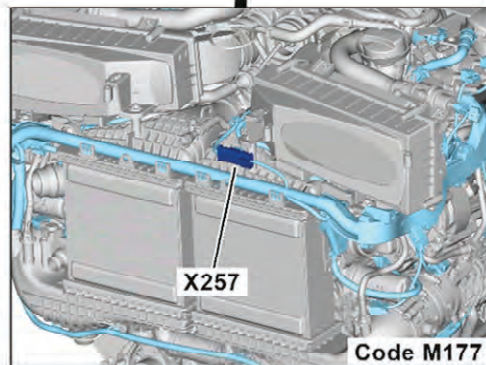
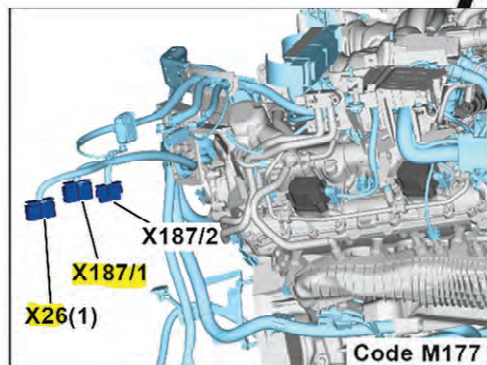
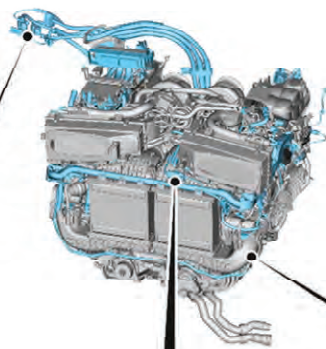


PE07.08-P-2101SEL



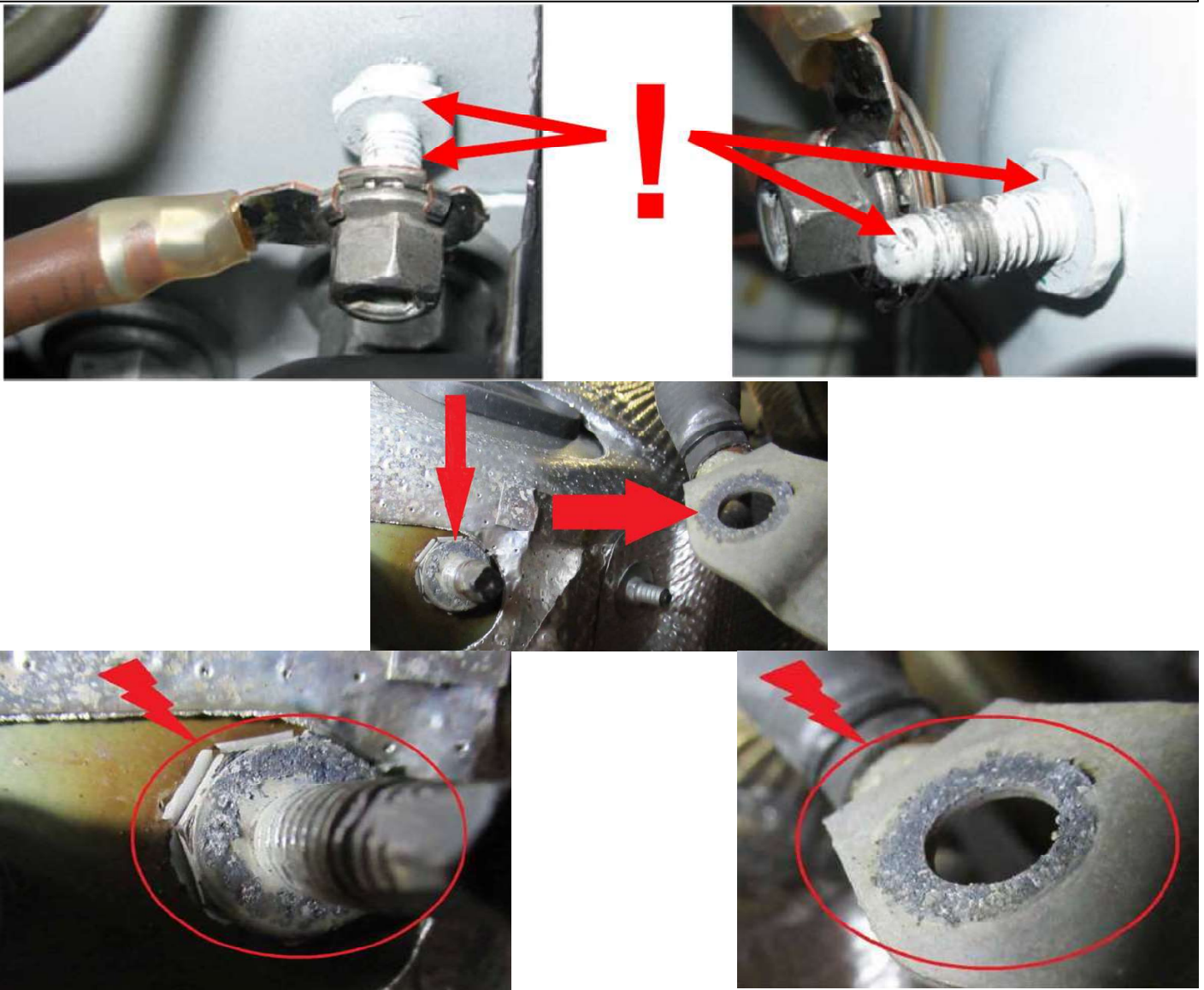
Check resistance of the single lines by using wiring diagram and multimeter, starting at the component/control unit

note: the resistance has to be < 0,5 Ohm!



Check ground points:

Release the nut of the ground points and check whether the ground points are clean and if there is a clean contact surface. Clean the ground points and rework if necessary!



Overpainted ground points at vehicle body

remedy:

- rework ground points
- remove paint remains
- retighten the nut
- apply preservative agent (A000 989 46 22)

note:

Overpainted ground points are only visible after removing the wiring and the nut!

The contact at the ground points takes place via the screw thread. Please have also a look to **SI54.18-P-0013A**

Check resistance of single lines by using wiring diagram and multimeter, starting at the component/ control unit.

note: the resistance has to be < 0,5 Ohm!

Overpainted ground points at vehicle body

remedy:

- rework ground points
- remove paint remains
- retighten the nut
- apply preservative agent

A001 989 37 51 09

A000 989 46 22

A000 986 72 70 10

A000 989 91 51

note:

Overpainted ground points are only visible after removing the wiring and the nut!

The contact at the ground points takes place via the screw thread. Please have also a look to **SI54.18-P-0013A**

NOTICE

Coated surfaces may become damaged. If the electroplated protective layer becomes damaged, the metal corrodes and oxidizes. The electric resistance increases due to corrosion and oxidation.

- ⇒ Select the appropriate web ring depending on the surface coating, soiling, corrosion, and oxidation.
- ⇒ Carefully perform the cleaning process. If necessary, repeat the process several times and check the surface coating for damage in the meantime.

NOTICE

An incorrect tightening torque may damage the screw connection. Rust solvent, contact spray, grease, etc. reduce the static friction in the thread. The specified tightening torque is therefore exceeded when the screw connection is tightened.

- ⇒ Do not use rust solvent, contact spray, grease, etc.
- ⇒ Tighten screw connections to the specified tightening torque. Observe the vehicle manufacturer specifications.

1.3.3 Apply a preservative to the screw connections of the electric contacts

Applying a preservative to the screw connections of electric contacts prevents oxidation and corrosion.

Requirements:

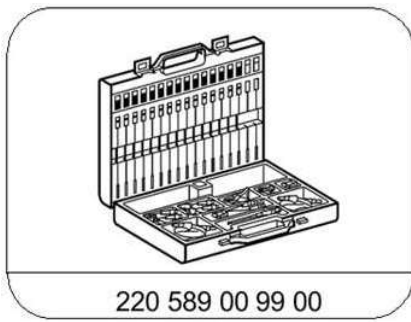
- Electric contacts are not damaged.
- Electric contacts are clean and dry.

1. Tighten the screw connections to the specified tightening torque. Observe the vehicle manufacturer specifications.
2. Select the preservative.
3. Spray the preservative all around the screw connection of the electric contact.



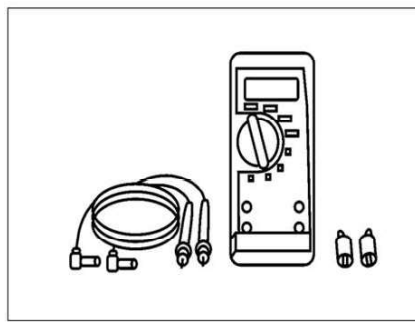
Preservative

- Contact points with normal temperatures (e.g., body): Use a preservative that is approved for the temperature range. Observe the vehicle manufacturer specifications.
- Contact points with high temperatures (e.g., engine, transmission, etc.): Use a preservative that is approved for the temperature range. Observe the vehicle manufacturer specifications.
- Due to capillary action, the preservative also reaches the cavities of the screw connection.

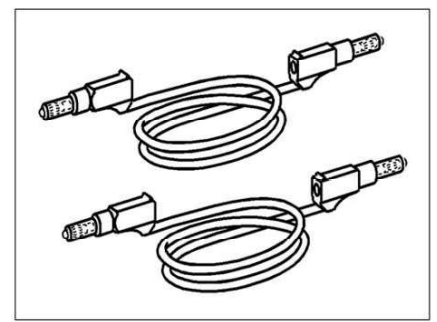


220 589 00 99 00

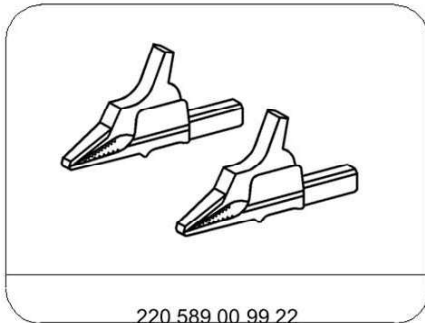
Elektro-Anschluß-Set



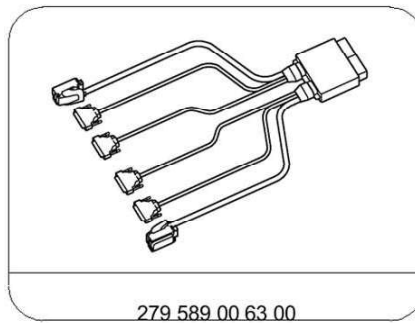
000 588 06 19 00



220 589 00 99 20



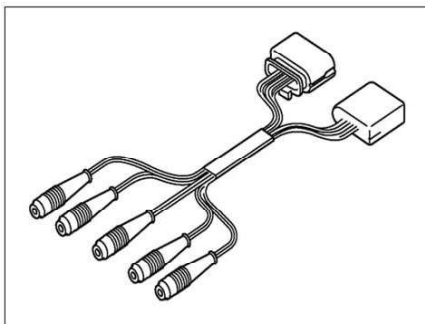
220 589 00 99 22



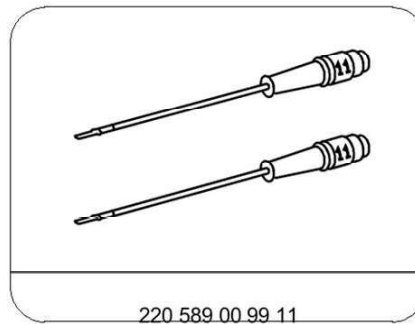
279 589 00 63 00



000 589 00 21 00



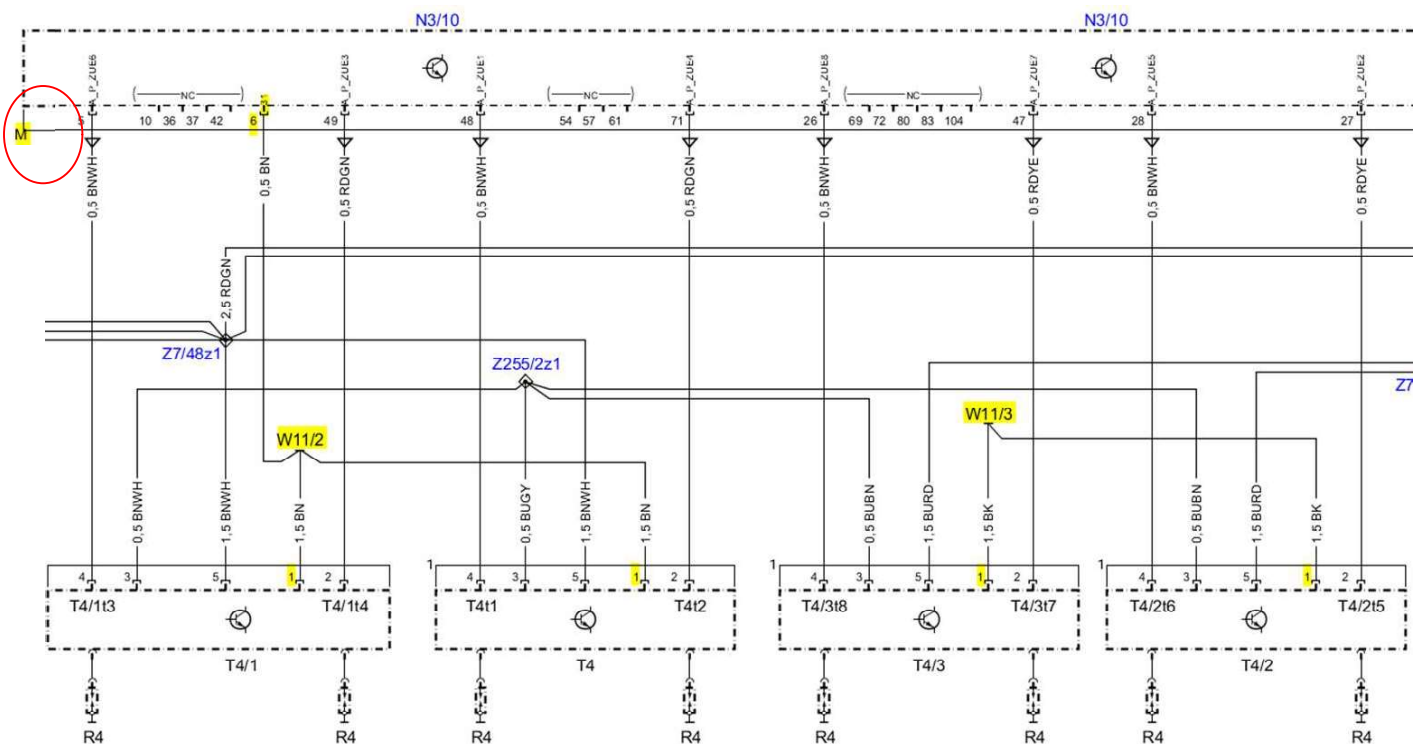
177 589 00 63 00



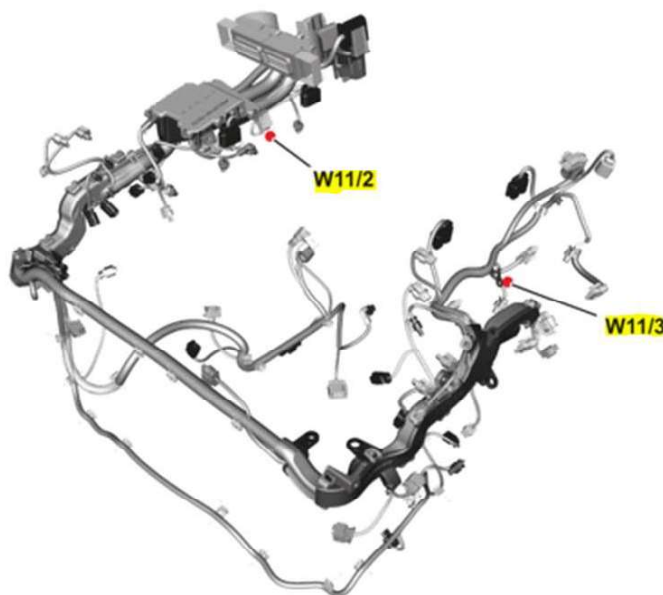
220 589 00 99 11

Check resistance of single lines by using wiring diagramm and multimeter, starting at the component/ control unit.

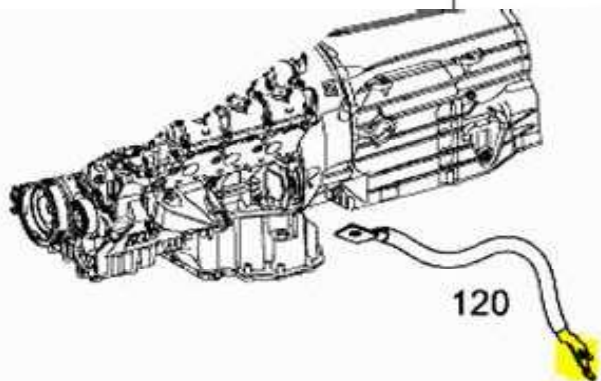
note: the resistance has to be < 0,5 Ohm!



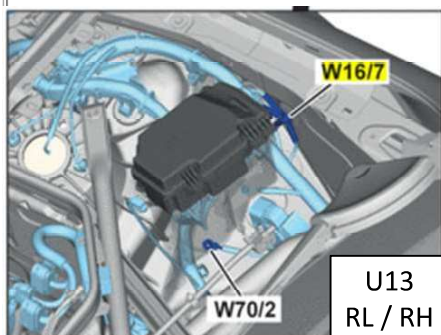
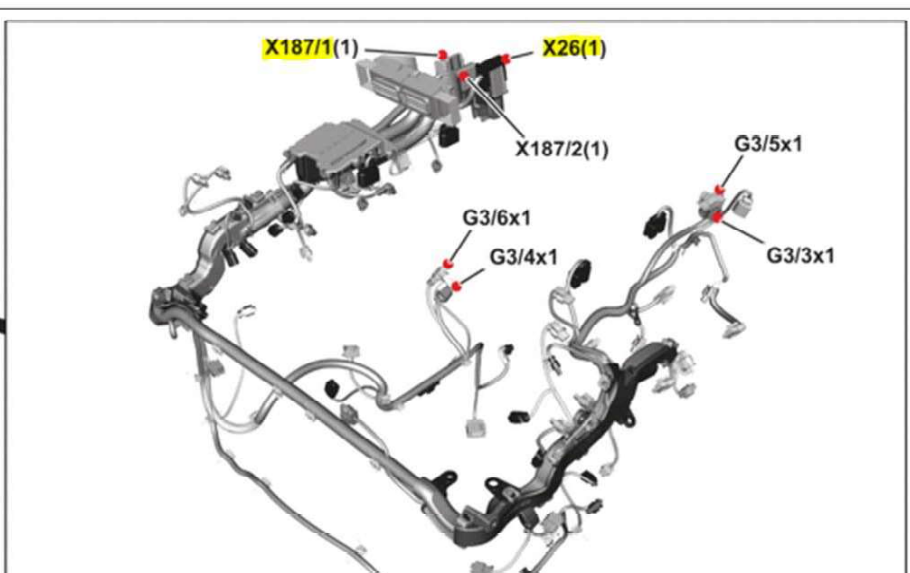
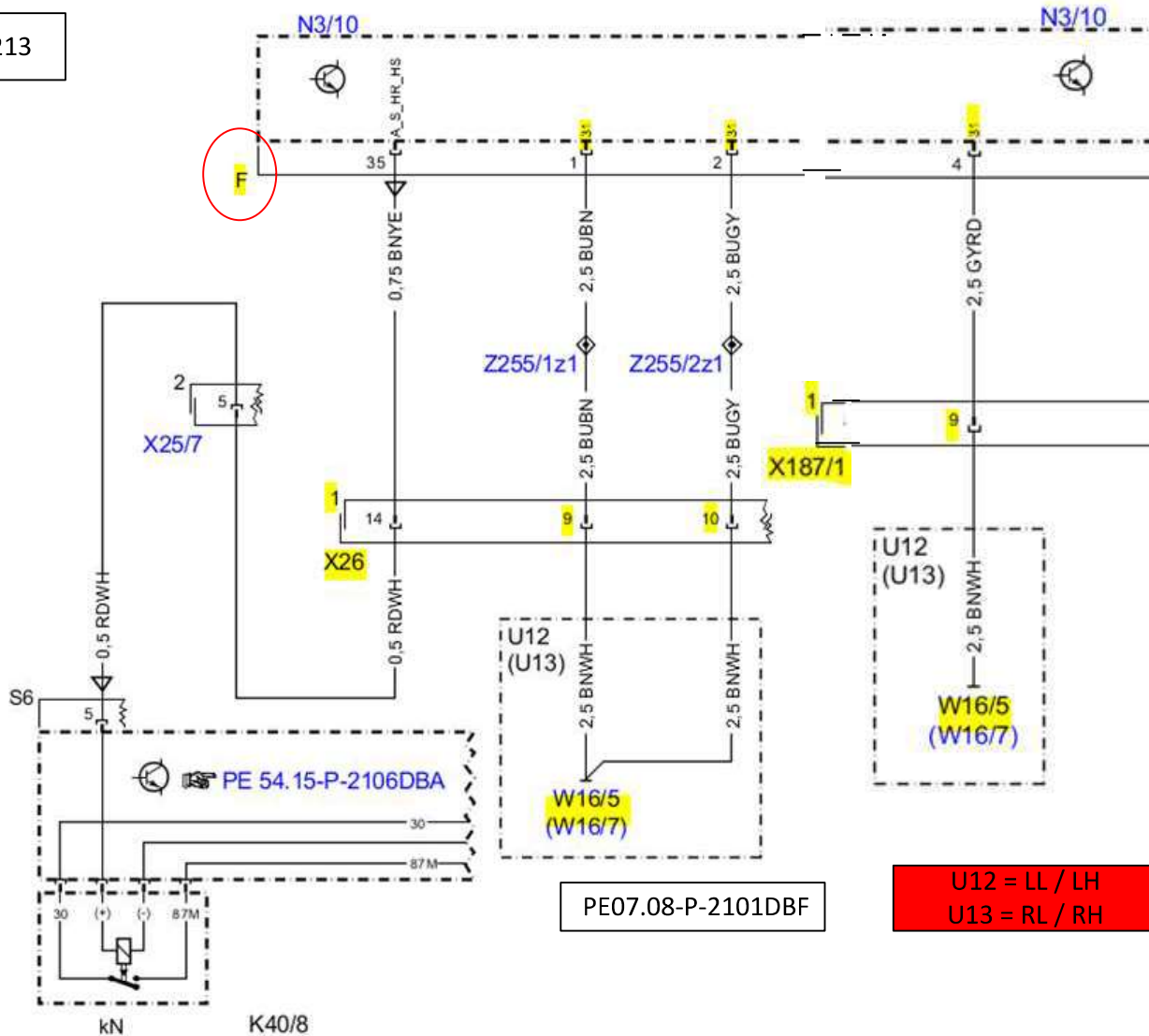
213: PE07.08-P-2101DBE
222/217: PE07.08-P-2101SEM



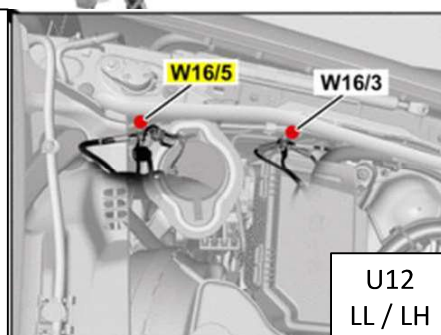
M177



Check resistance of single lines by using wiring diagram and multimeter, starting at the component/ control unit.
note: the resistance has to be < 0,5 Ohm!



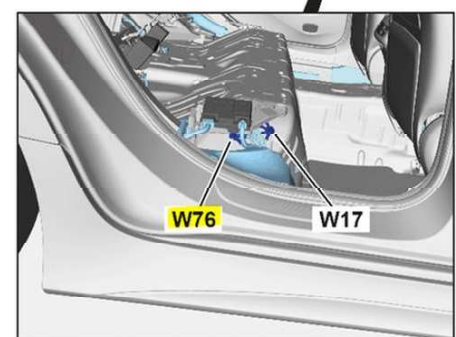
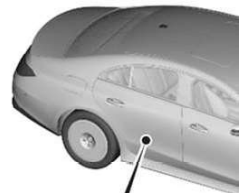
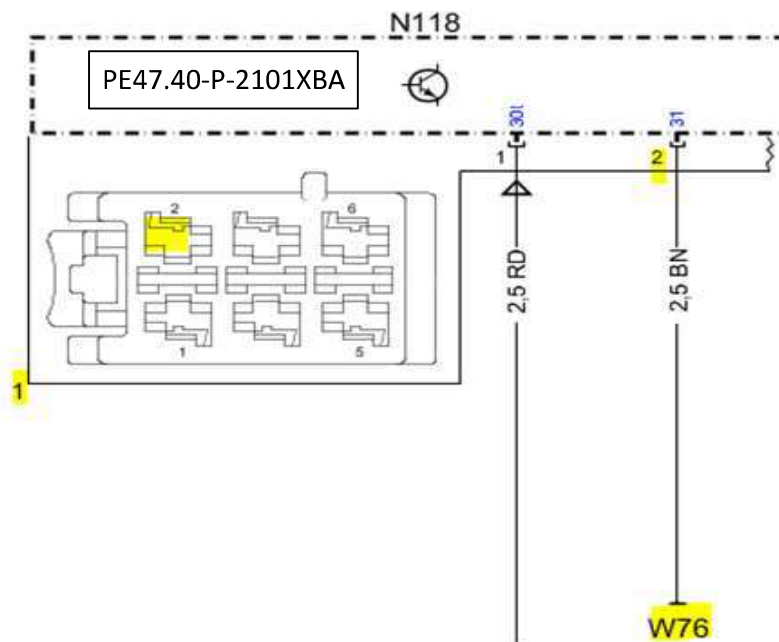
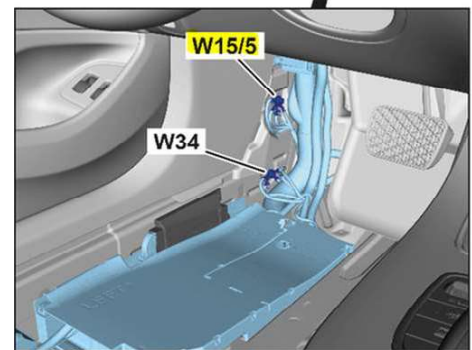
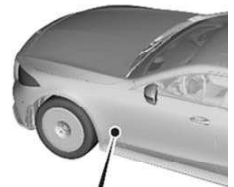
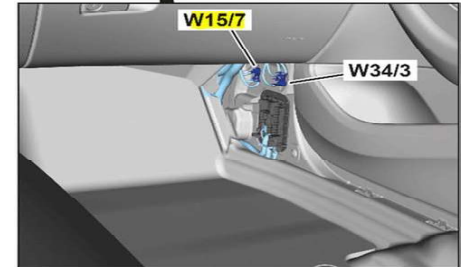
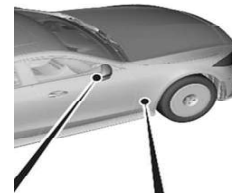
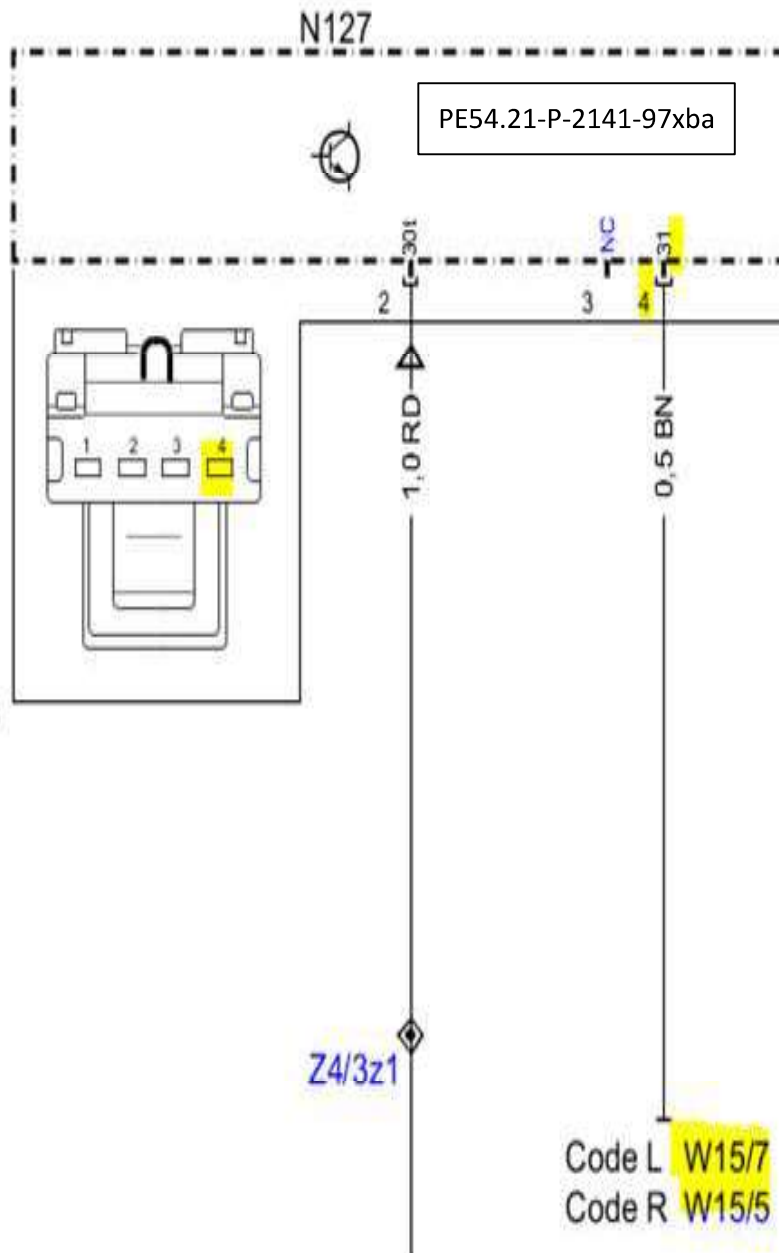
Check resistance of single lines by using wiring diagramm and multimeter, starting at the component/ control unit.
note: the resistance has to be < 0,5 Ohm!



M177

U13
RL / RH

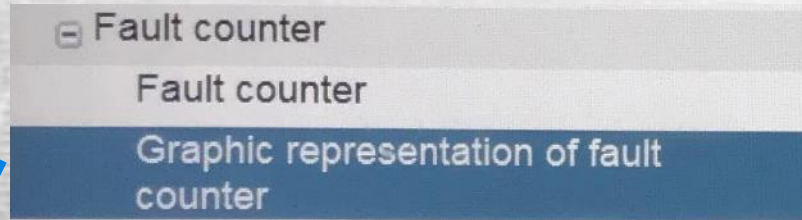
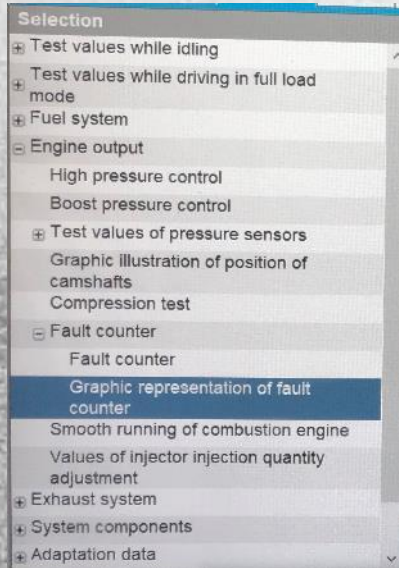
U12
LL / LH



Misfiring detection

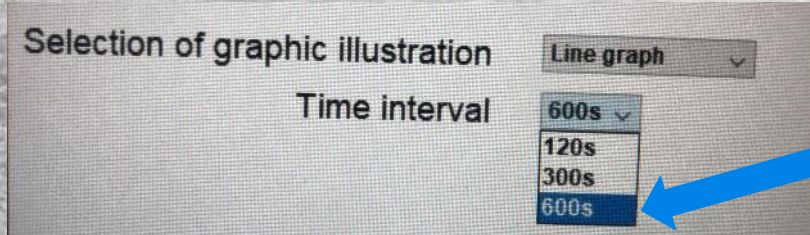
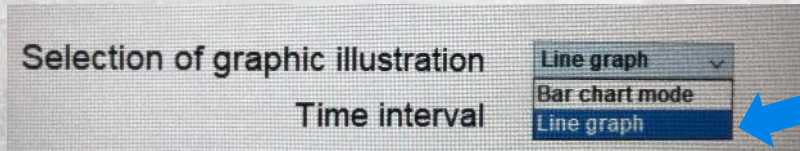
For reading out the misfiring detection, please have a look at the following pages.

Please choose at first the folder **actual values** and then **engine output** and **fault counter**, **Graphic representation of fault counter**



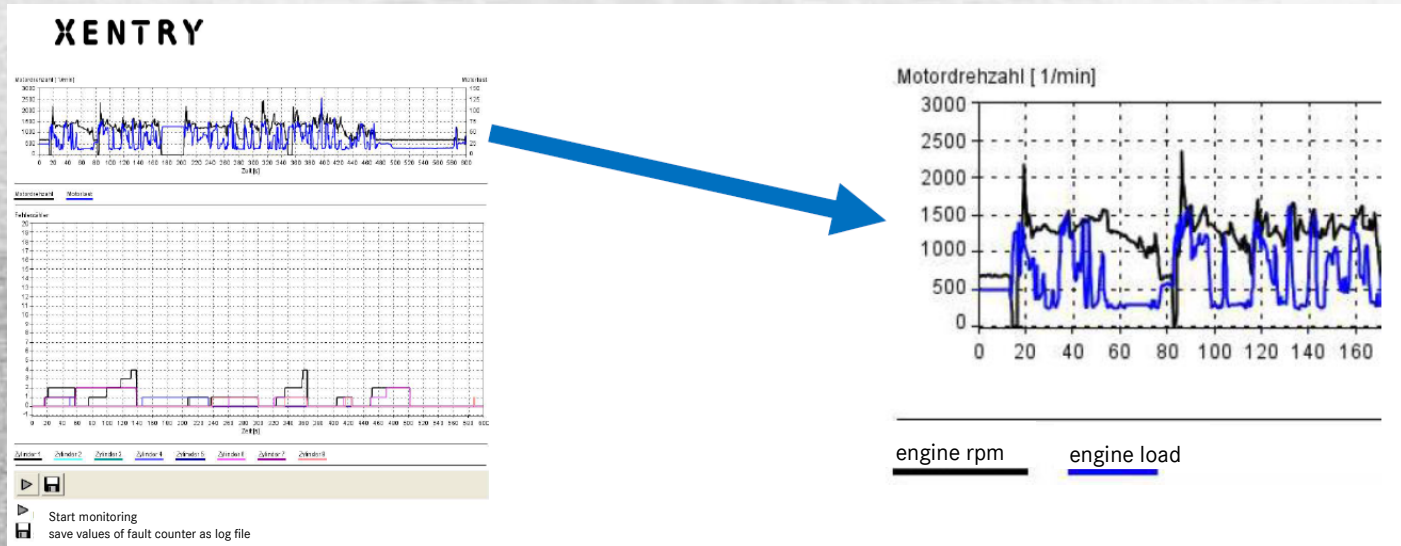
Misfiring detection

Now choose the selection of graphic illustration: **line graph**. You can select the recording time via the point **time interval** as **600 seconds**, if you did not get any other information for example via the TIPS case. After that press continue.



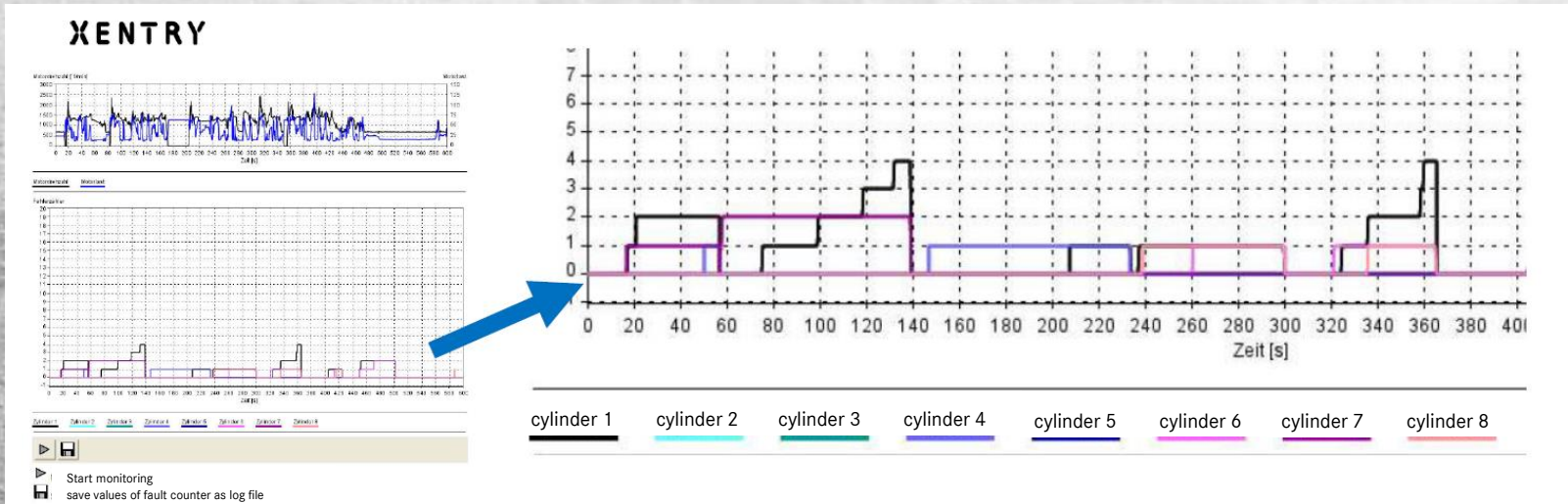
Misfiring detection

Now the following figure is visible in XENTRY. Please start the measurement under observance of customers complaint. Normally the engine should be started at cold after starting the measurement and then the car should be driven at complaint circumstances. The engine load and the rpm is visible at the upper part of the diagram.



Misfiring detection

Now the following figure is visible in XENTRY. Please start the measurement under observance of customers complaint. Normally the engine should be started at cold after starting the measurement and then the car should be driven at complaint circumstances. The measured misfiring will be shown at the lower part of the diagram and matched to every single cylinder.

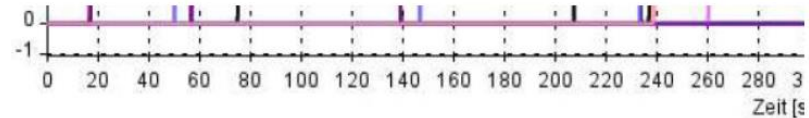
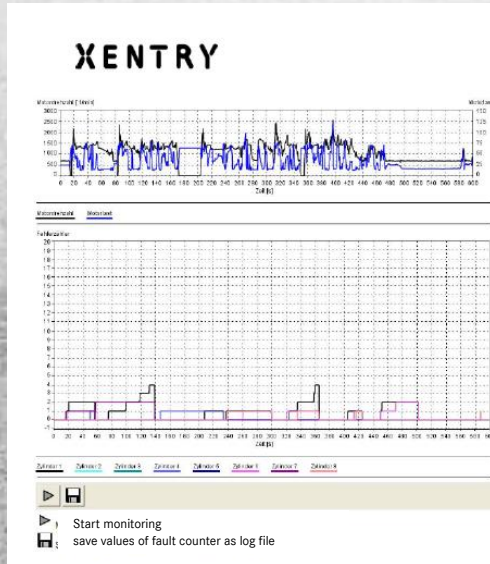


Misfiring detection

To start the measurement, please press



Let the measurement run for the time you have chosen before (e.g. 600 seconds)



cylinder 1 cylinder 2 cylinder 3 cylinder 4 cylinder 5 cylinder 6



Start monitoring

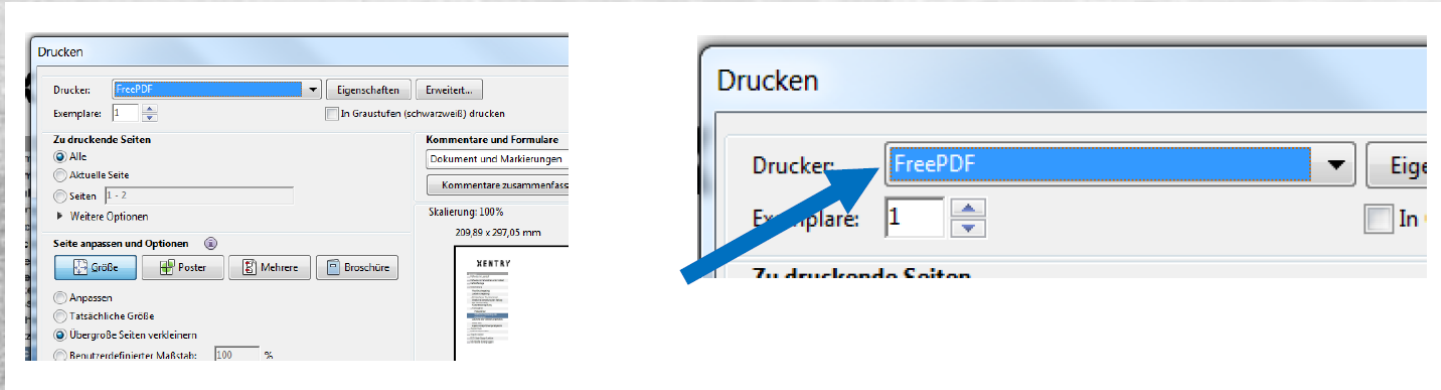


save values of fault counter as log file


Misfiring detection

At the end of the measurement, please proceed with the following steps:

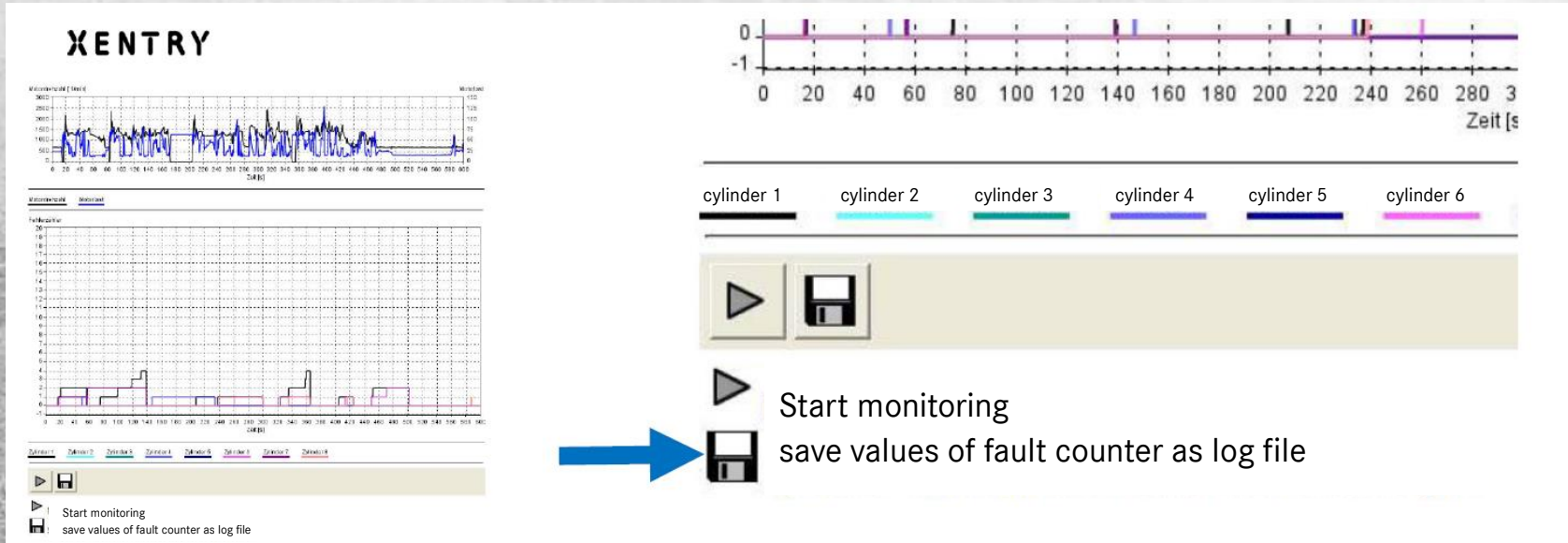
Please print the screen view of the measurement firstly. Hereto choose „print“ and print it as pdf (not on paper). Save this pdf file. It is not possible to evaluate a normal printed out measurement on paper as black and white print out.




Misfiring detection

Afterwards please save the values as log file via the button 

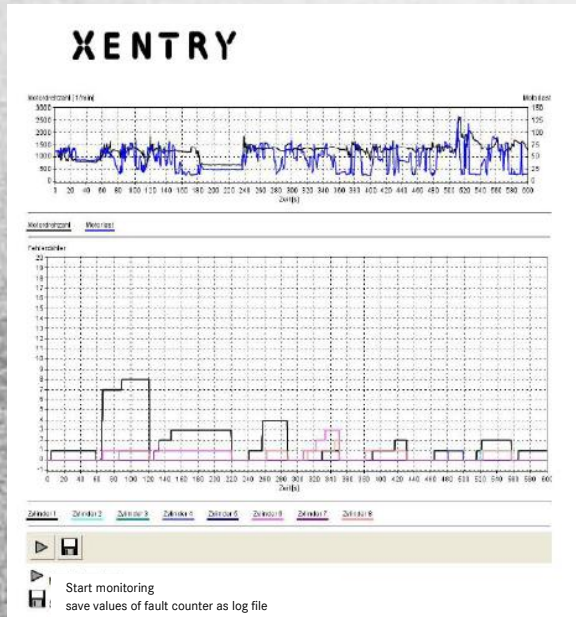
It is indispensable to follow the mentioned sequence because it is not possible to create a line graph after saving the log file.



Misfiring detection

To start an additional measurement, please press again 

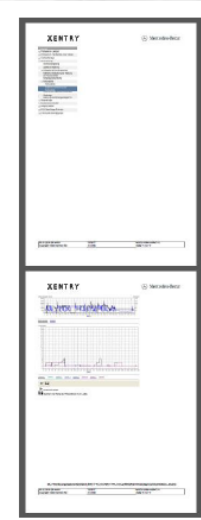
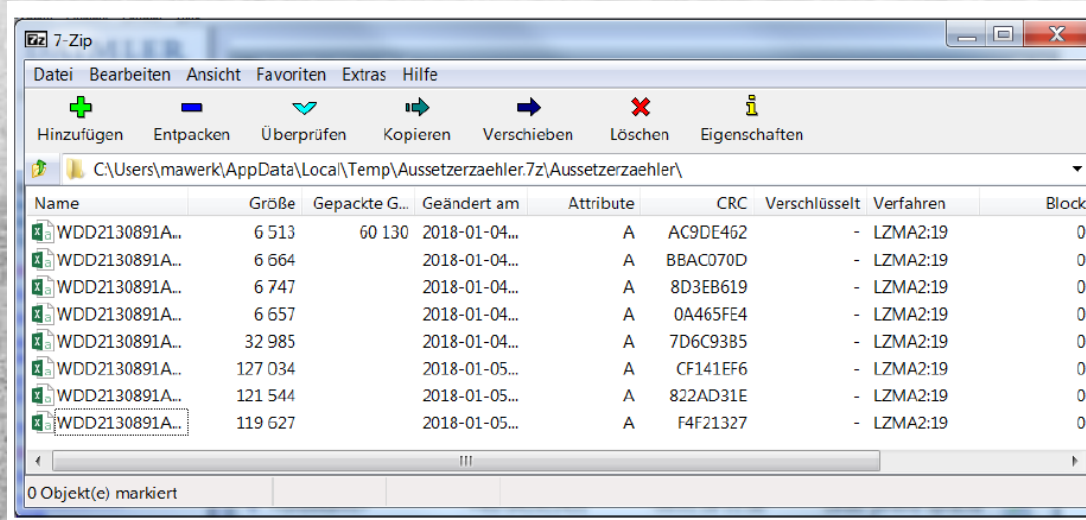
Let the new measurement also run for the chosen time (e.g. 600 seconds)



Misfiring detection

After the measurement you have the possibility to evaluate at what time the misfires were detected at every single cylinder.

You can also see under which circumstances they were visible: At idling, at load and at which rpm. If you were asked to attach them to a TIPS-case, please attach the diagram (screen view) as well as the log file to the case.



FORWARD: Work through each step of the following. If you have to work past step (1) and must open a PTSS case reference step (10) for a list of what must be included. Failure to include all attachments from step (10) will result in the case being sent back.

LIST OF TERMS

IPD = Injector Performance Data

LGFC = Line Graph Version of the Fault Counter

AEAD = AMG Engine Adaptation Drive

HPFT = High Pressure Fuel Test

Before any other steps performed

Determine if misfire is currently occurring or only stored misfire fault.

Record LGFC-pre before any other work performed.

Read out and save the initial IPD. Label this "IPDi".

1. Check for ME Control Unit Software Update

- a. If there is available SW for the ME, update it along with the VGS, PTCU, and FSCU control units (as available)

IF NO ME UPDATE IS AVAILABLE STOP HERE AND PROCEED TO STEP 2

- b. Ensure that all the ignition coils are plugged in. Remove the coils on any misfiring cylinders and check that the boot is not damaged and that the coil is not cracked.
- c. Clear out the mixture adaptation data and perform 2 AEAD's (this can be found in the AMG User's Guide)
- d. Read out the IPD again. Label this "IPDA".
- e. Perform 2 more AEAD's (do NOT clear the mixture adaptation data again).
- f. Read out the IPD once more. Label this "IPDB".
- g. Perform a LGFC per the attachment "Hot-Cold Misfire Detection". Label this "LGFC-Post"

You may release the vehicle at this point if ALL of the following conditions are met:

- No single cylinder has a fault count above 10 in LGFC-Post
- FRA and FRA2 are both below 1.0 in IPDB
- ORA and ORA2 are both below 1.0 in IPDB and the difference between them is not greater than 0.5

If ANY of the previous bullet points' conditions are not met, work through the remaining steps beginning at step (2).

2. Smoke Test the Intake/Exhaust

- a. Smoke test the intake/exhaust per the attachment "Smoke Check".
- b. If no leaks are found, proceed to step (3).

NOTE: Smoke emanating from the wastegate arm bushing on the center section of the turbocharger is normal provided the turbo is cool to the touch

NOTE: The smoke machine must be output smoke at a pressure of 16psi (~1100 mbar) at a minimum.

- c. If leaks are found, repair them and work through steps (1c)-(1g).
 - i. If all the conditions at the end of (1g) are met, release the vehicle.
 - ii. If all the conditions at the end of (1g) are not met, continue to step (3).

3. Measure the Following Grounds

- a. If any reading is above 0.5 ohms, check the grounding locations of the model you're diagnosing (see attachments)
 - i. ME Connector F, Pin 1 to ground
 - ii. ME Connector F, Pin 2 to ground
 - iii. ME Connector F, Pin 4 to ground
 - iv. ME Connector M, Pin 6 to ground
- b. Rework the grounding locations by removing and cleaning the chassis ground point(s) regardless of the ohm reading.
- c. If rework/replacement does not remedy the complaint, proceed to step (4).
- d. If through inspection/rework/replacement an issue is found, work through steps (1c)-(1g)
 - i. If all the conditions at the end of (1g) are met, release the vehicle.
 - ii. If all the conditions at the end of (1g) are not met, continue to step (4).

4. Inspect Ignition Coils

- a. Inspect the coils and verify that they are PN: A 177 906 02 06 or higher
- b. Inspect the pins on the coil(s) of the misfiring cylinder(s)
- c. Inspect for physical damage (cracking, damaged boots) on the coil(s) of the misfiring cylinder(s)
- d. If all coils are in good condition and are also PN: A 177 906 02 06 or higher, swap the coil(s) of the misfiring cylinder(s) with those of cylinders that are not misfiring and road test the vehicle.

- e. If the misfires move with the coils, replace the coils and the spark plugs from the original misfiring cylinder(s)
- f. Afterwards complete steps (1c)-(1g).
 - i. If all the conditions at the end of (1g) are met, release the vehicle.
 - ii. If all the conditions at the end of (1g) are not met, continue to step (5).

5. Borescope the Tops of the Injectors and Inspect Each Injector's IMA Code

- a. Ensure that the physical location of each injector matches what is coded in the ME.
- b. If the injectors are not coded correctly, correct this in XENTRY Diagnosis
 - i. Afterwards complete steps (1c)-(1g)
 - ii. If all the conditions at the end of (1g) are met, release the vehicle.
 - iii. If all the conditions at the end of (1g) are not met, continue to step (6).
- c. If the injectors are coded correctly, proceed to step (6)

6. Test the Fuel Holding Pressure for Each Bank

- a. Allow the vehicle to idle until operating temperature is achieved then shut it down.
- b. Monitor the fuel pressure on each bank at 15 minute intervals for 1 hour
- c. Record the fuel pressure readings at each interval
- d. Label these T=0, T=15, T=30 and so on
- e. Proceed to step (7)

7. Perform a XENTRY Guided High Pressure Fuel Test from Cold Start for Each Bank

- a. For each bank perform a XENTRY guided HPFT test from cold start
- b. If the test fails for either bank, replace the high pressure fuel pump for that bank
 - i. Afterwards complete steps (1c)-(1g)
 - ii. If all the conditions at the end of (1g) are met, release the vehicle.
 - iii. If all the conditions at the end of (1g) are not met, continue to step (8).

8. Borescope each cylinder starting with the misfiring cylinder(s)

- a. Actuate the fuel pump to build pressure in the fuel rail
- b. Borescope each cylinder and look for signs of a leaking injector
- c. If a leaking injector is found replace it along with the spark plug for that cylinder as well as all the injector seals
 - i. Perform new injector coding
 - ii. Observe AR07.03-P-1010-04MM
 - iii. Clear all fault codes
 - iv. Afterwards complete steps (1c)-(1g)
 - v. If all the conditions at the end of (1g) are met, release the vehicle.
 - vi. If all the conditions at the end of (1g) are not met, continue to step (8).
- d. If no leaking injectors are found, proceed to step (8).

9. Perform a Compression and Leak-Down Test (via PICO-Scope or Manually)

- a. Perform a compression check using PICO-Scope or manually and record the results for each cylinder.
- b. Review and compare the results to BE01.00-P-1000-01B
 - i. If the compression pressure is not within the permissible range or if the variance between cylinders falls outside the permissible range attempt to identify where the pressure is escaping from (head, valve(s), block, rings, coolant reservoir, etc.).
- c. Perform a cylinder leak-down test and record the results for each cylinder.
- d. Review and compare the results to BE01.00-P-1000-02Z
 - i. If leakage between cylinders is not within permissible range and/or deviation between cylinders exceeds 15%, attempt to identify where the pressure is escaping from (intake, exhaust, crankcase). Then proceed to step (10).
- e. If leaking is within the permissible range and deviation between cylinders does not exceed 15% proceed to step (10).

10. Open a PTSS Case

- a. The following MUST be included in the case before it is sent:
 - i. IPDi (from step (1))
 - ii. Printouts of the current SW install in the ME, VGS and PTCU
 - iii. Engine Performance Data as it is now
 - iv. LGFC from the vehicle as it is currently (see attachment "Hot-Cold Misfire Detection"). Label this LGFC-Current
 - v. Results of the fuel pressure hold tests from step (6)
 - vi. Results of the HPFT's from step (7)
 - vii. The results of the compression and leakdown tests from step (9)