ADM2/PLD-MR Trouble code overview

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Preface

Dear reader,

with the present trouble code overview, we give you a leaflet that should help you in troubleshooting.

You can access specific trouble codes in an alphabetical order in the subsequent index.

The contents of this trouble code overview are not updated, no provision is made for subsequent entries. Data contained in this trouble code overview can, therefore, deviate from the new state of information in the EWAnet or DAS.

All data in this leaflet have the status of the press deadline in February 2007 and can, therefore, deviate from the series-production status.

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Department SVI

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Trouble codes

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A

B

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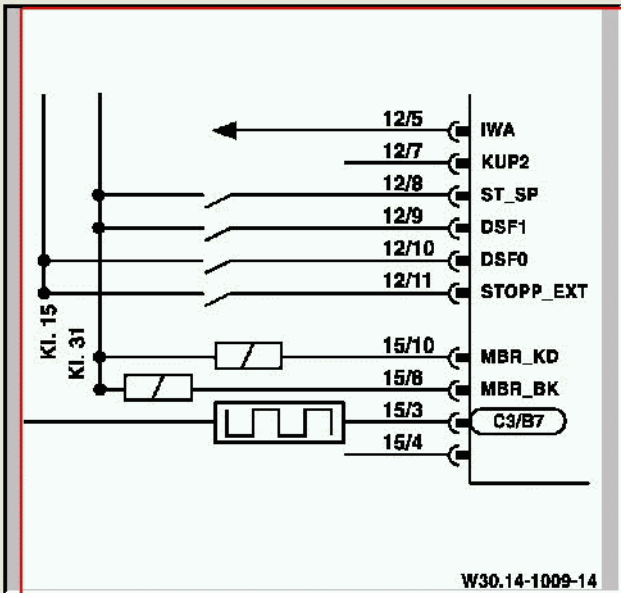
10003 - 10004 Constant throttle

10003: Constant throttle has –//–.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Constant throttle has –//–.

Instruction :
- Check for correct wiring.
- Check component Constant throttle.
- Erase fault memory.
- Pin 15/10

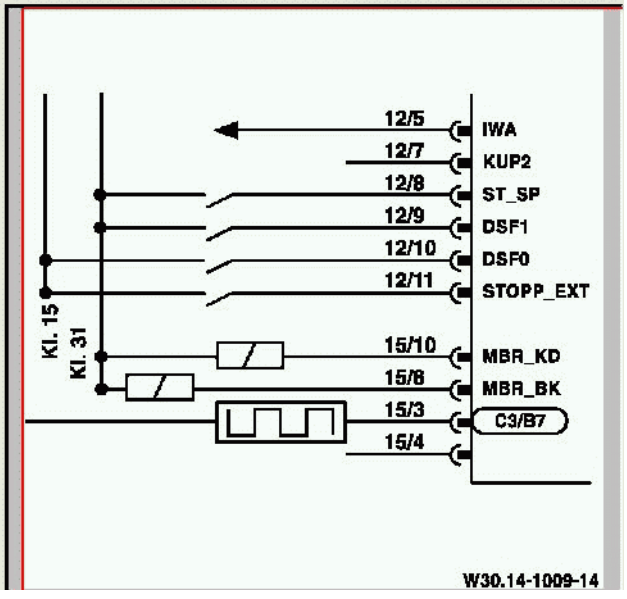


10004: Constant throttle has ⌐ ¬ –.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Constant throttle has ⌐ ¬ –.

Instruction :
- Check for correct wiring.
- Check component Constant throttle.
- Erase fault memory.
- Pin 15/10



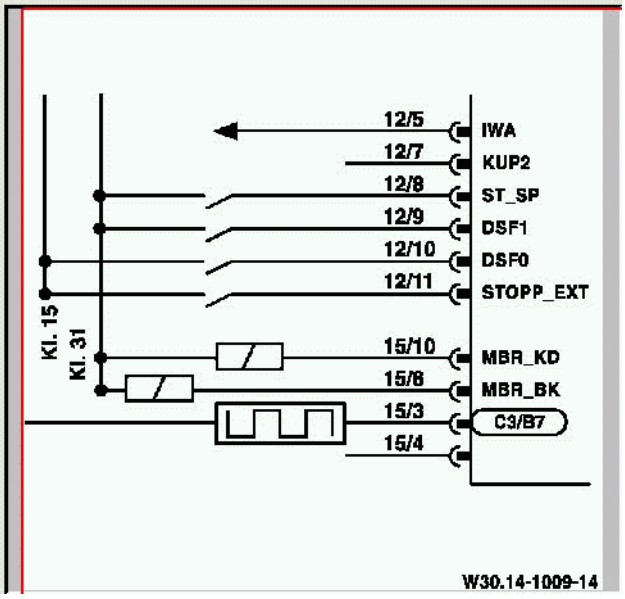
10103 - 10114 Vehicle speed sensor

10103: Vehicle speed sensor has –//–.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Vehicle speed sensor has –//–.

Instruction :
- Check speed signal 'C3' line from tachograph.
- If speedometer signal is implausible, check parameter 8/01.
- Erase fault memory.
- Pin 15/3

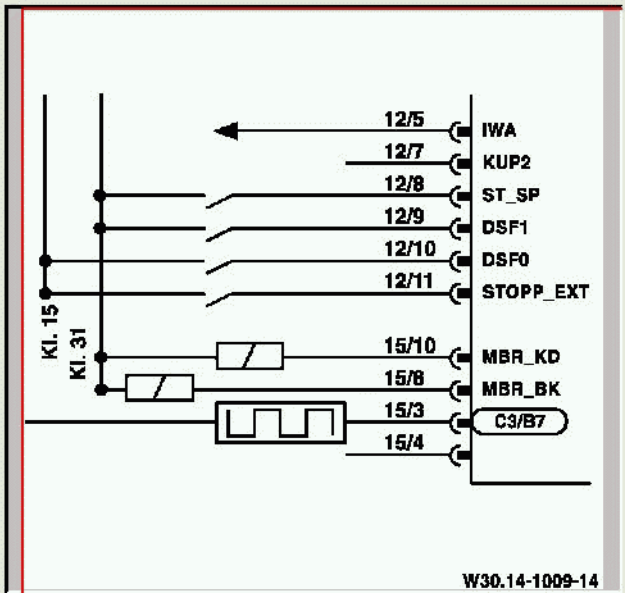


10104: Vehicle speed sensor has ⌐ ¬ –.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Vehicle speed sensor has ⌐ ¬ –.

Instruction :
- Check speed signal 'C3' line from tachograph.
- Erase fault memory.
- Pin 15/3



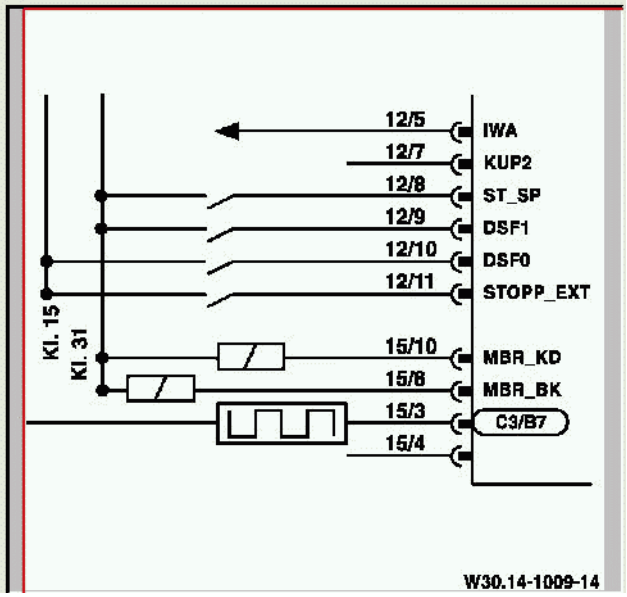
10103 - 10114 Vehicle speed sensor

10114: No signal from speed sensor.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- No signal from speed sensor.

Instruction :
- If speedometer signal is implausible, check parameter 8/01.
- Erase fault memory.
- Pin 15/3



10200 - 10204 Foot throttle actuator

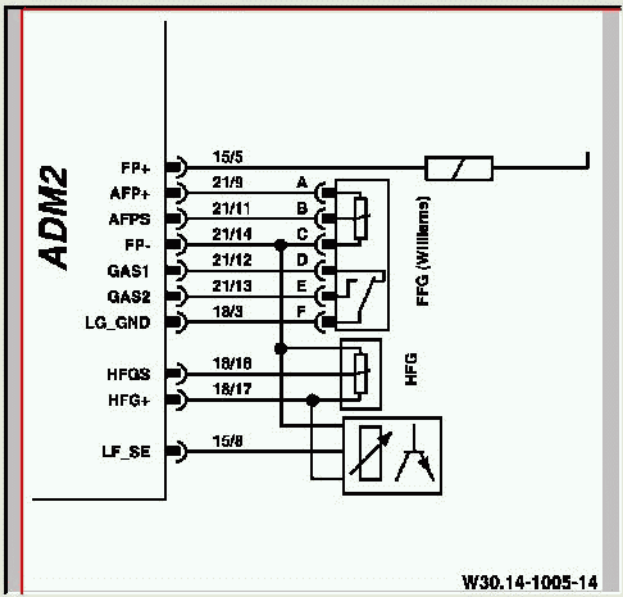
10200: Foot throttle actuator not learned

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Foot throttle actuator not learned

Instruction :
- Check for correct wiring.
- Perform a new teach-in of accelerator pedal.
- Erase fault memory.
- Pin 21/11

Note :
- Limit value (at idle speed) : 5.0 V
- Limit value (on kickdown) : 4.9 V



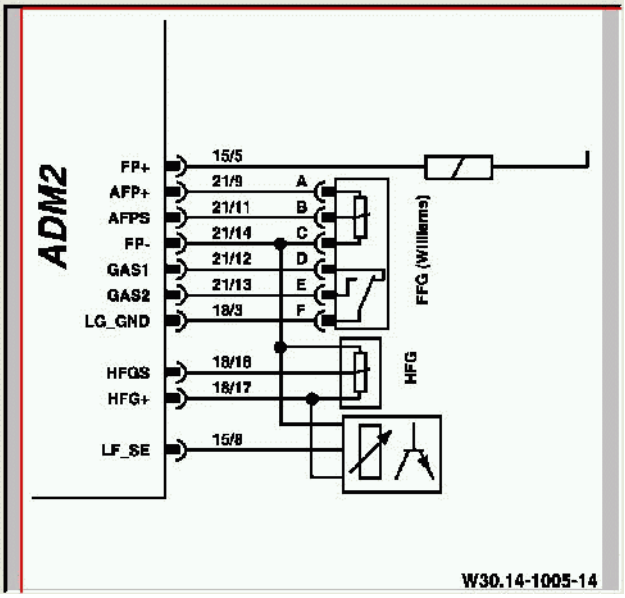
10202: Voltage of foot throttle sensor is not within permissible range.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Voltage of foot throttle sensor is not within permissible range.

Instruction :
- Check for correct wiring.
- Check accelerator pedal and replace if necessary.
- Erase fault memory.
- Pin 21/11

Note :
- Limit value (at idle speed) : 5.0 V
- Limit value (on kickdown) : 4.9 V



10200 - 10204 Foot throttle actuator

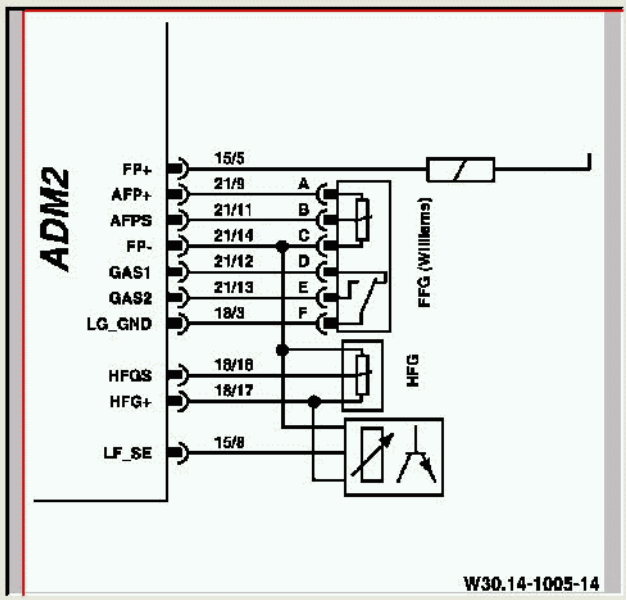
10203: Foot throttle actuator has overvoltage.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Foot throttle actuator has overvoltage.

Instruction :
- Check accelerator pedal and replace if necessary.
- Check for correct wiring.
- Erase fault memory.
- Pin 21/11

Note :
- Limit value (at idle speed) : 5.0 V
- Limit value (on kickdown) : 4.9 V



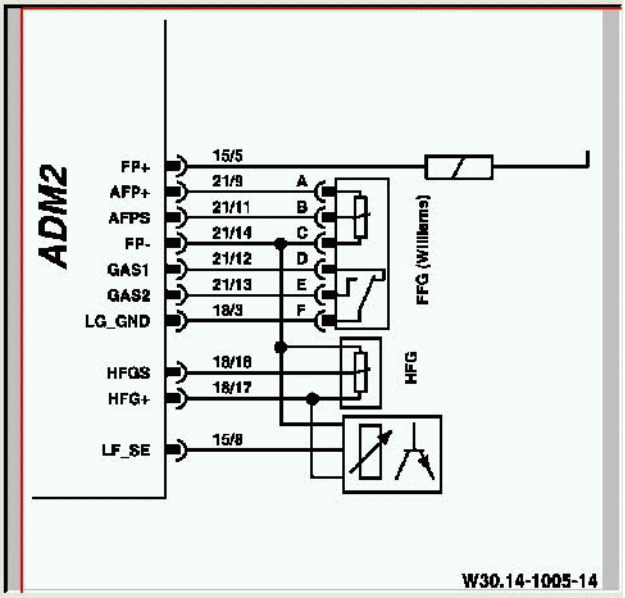
10204: Foot throttle actuator has undervoltage.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Foot throttle actuator has undervoltage or short circuit to ground.

Instruction :
- Check accelerator pedal and replace if necessary.
- Check for correct wiring.
- Erase fault memory.
- Pin 21/11

Note :
- Limit value (at idle speed) : 5.0 V
- Limit value (on kickdown) : 4.9 V



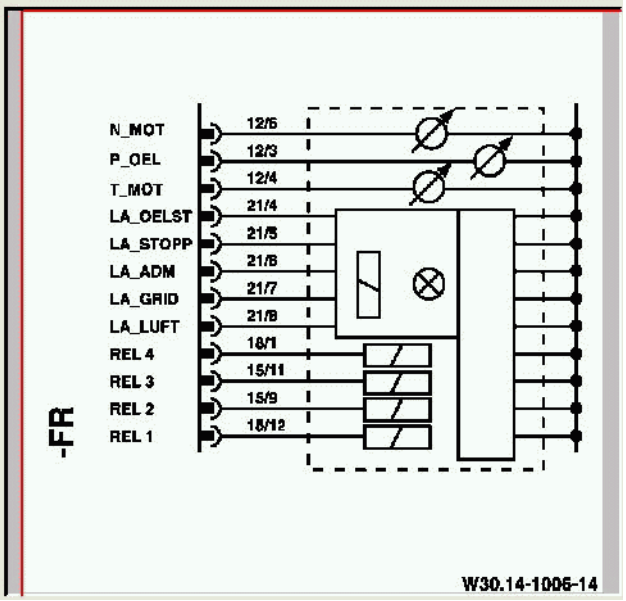
10400 - 10414 Oil level

10400: Oil level is too high.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Oil level is too high.

Instruction :
- Drain engine oil.
- Check for correct wiring.
- Erase fault memory.
- Pin 21/4

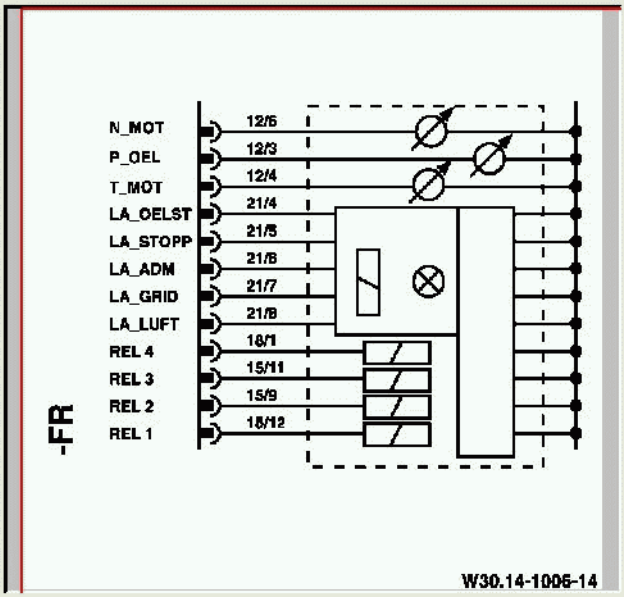


10401: The engine oil level is too low.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- The engine oil level is too low.

Instruction :
- Refill engine oil
- Check for correct wiring.
- Erase fault memory.
- Pin 21/4



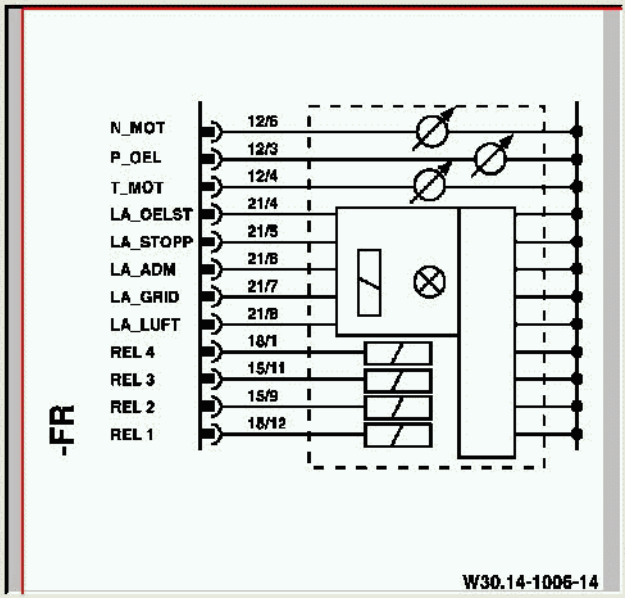
10400 - 10414 Oil level

10414: Oil level has dropped below operating limits.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Oil level has dropped below operating limits.

Instruction :
- Oil refilling
- Check for correct wiring.
- Erase fault memory.
- Pin 21/4



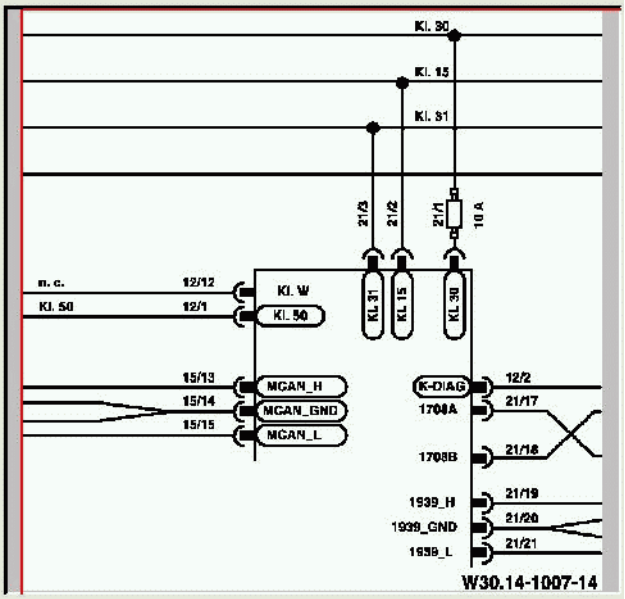
10501 - 10514 Oil pressure

10501: The oil pressure in the engine is too low.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- The oil pressure in the engine is too low.

Instruction :
- Check oil pump and oil circuit.
- Check for correct wiring.
- Erase fault memory.
- Pin 21/3

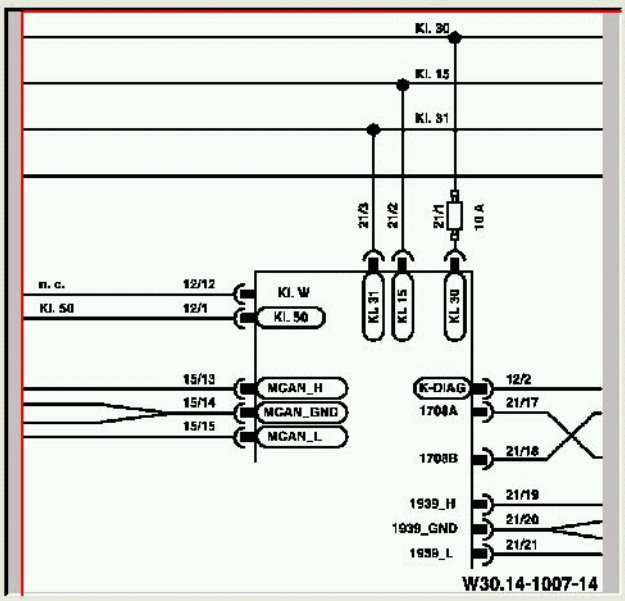


10514: Oil pressure has exceeded operating limits.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Oil pressure has exceeded operating limits.

Instruction :
- Check oil pump and oil circuit.
- Check for correct wiring.
- Erase fault memory.
- Pin 21/3



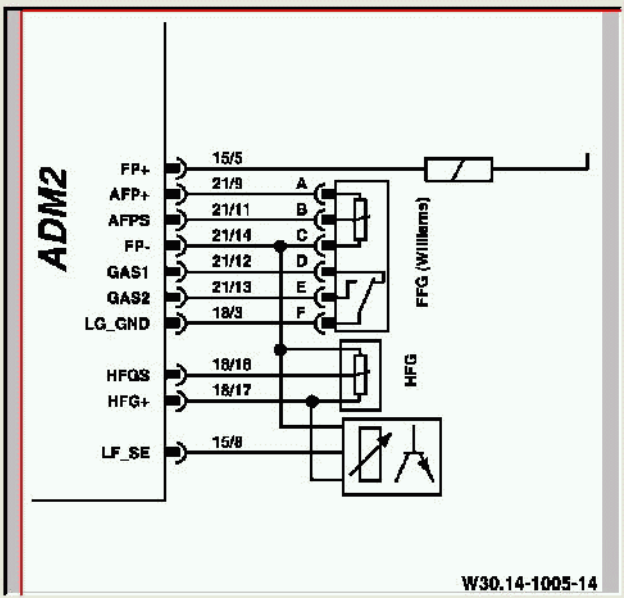
10800 - 10804 Air cleaner

10800: Differential pressure at air fan too high

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Differential pressure at air fan too high

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Pin 15/8

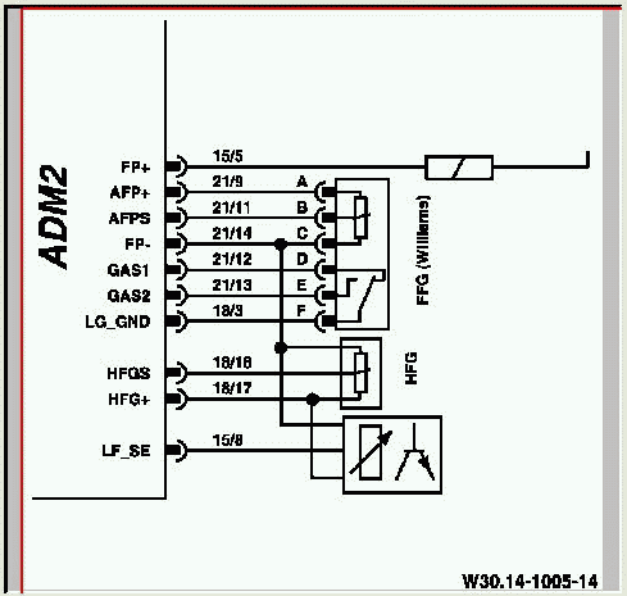


10803: Air cleaner has –//–.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Air cleaner has –//–.

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Pin number: 15/8



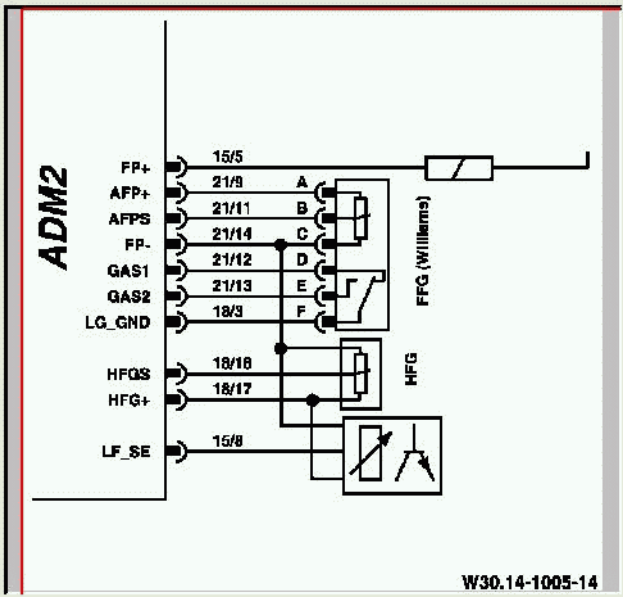
10800 - 10804 Air cleaner

10804: Air cleaner has ┌ ┐.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Air cleaner has ┌ ┐.

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Pin number: 15/8



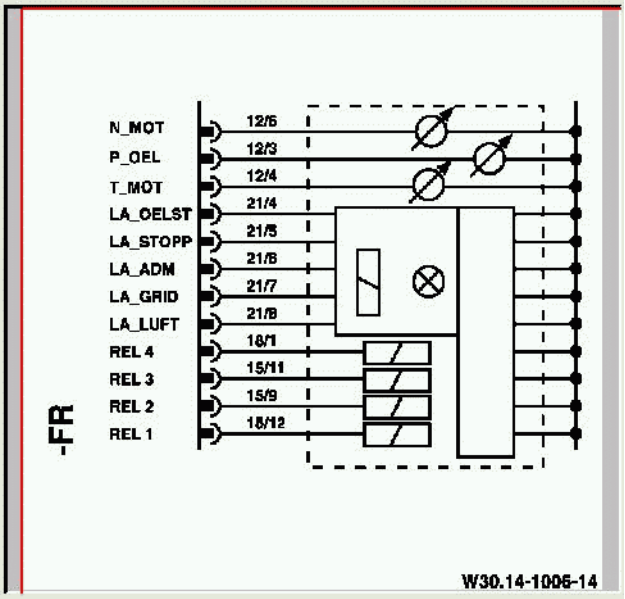
10900 - 10914 Coolant temperature

10900: Coolant temperature is too high.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Coolant temperature is too high.

Instruction :
- Check coolant level and coolant circuit.
- Check for correct wiring.
- Erase fault memory.
- Pin 21/4

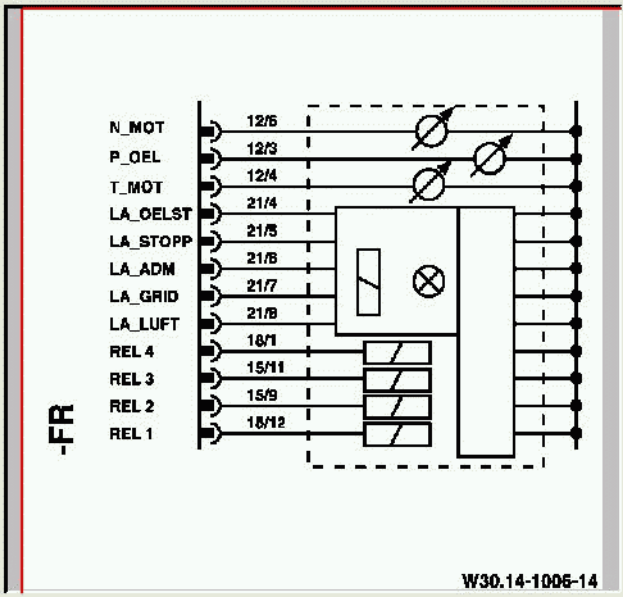


10914: Maximum permissible coolant temperature is exceeded.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Maximum permissible coolant temperature is exceeded.

Instruction :
- Check coolant level and coolant circuit.
- Check for correct wiring.
- Erase fault memory.
- Pin 21/4



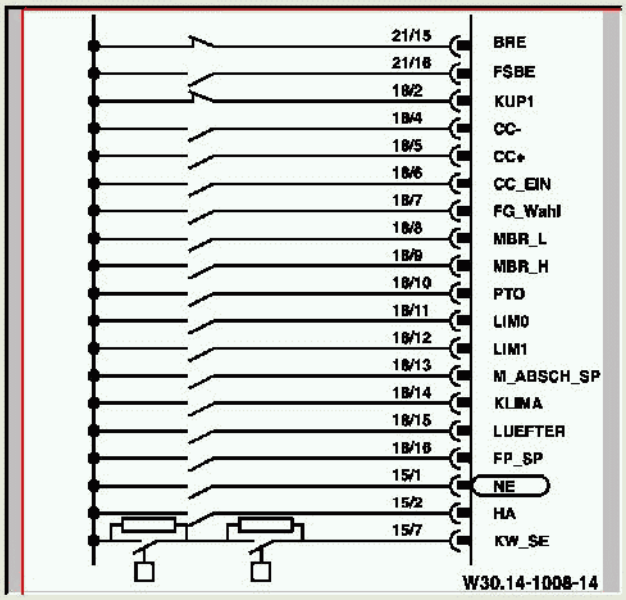
11001 - 11004 Coolant level

11001: The coolant level is too low.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- The coolant level is too low.

Instruction :
- Inspect coolant level - top up if necessary.
- Check for correct wiring.
- Erase fault memory.
- Pin number: 15/7



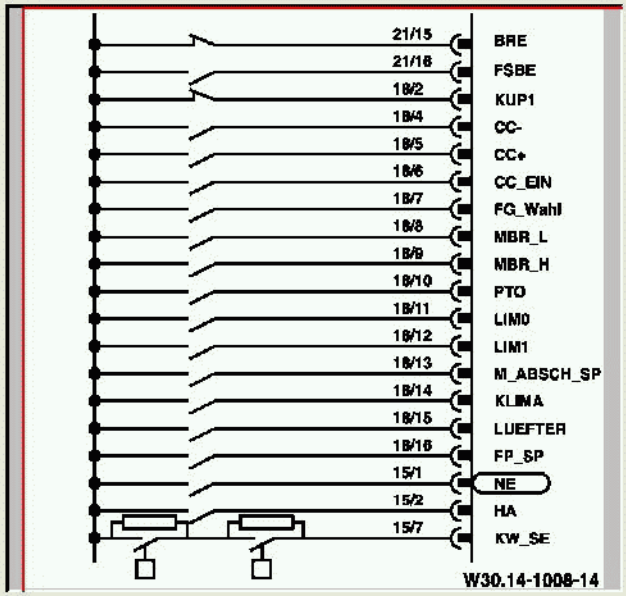
11003: Coolant level sensor has –//–.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Coolant level sensor has –//–.

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Pin 15/7

Note :
- Voltage must be higher than 2.0 V.



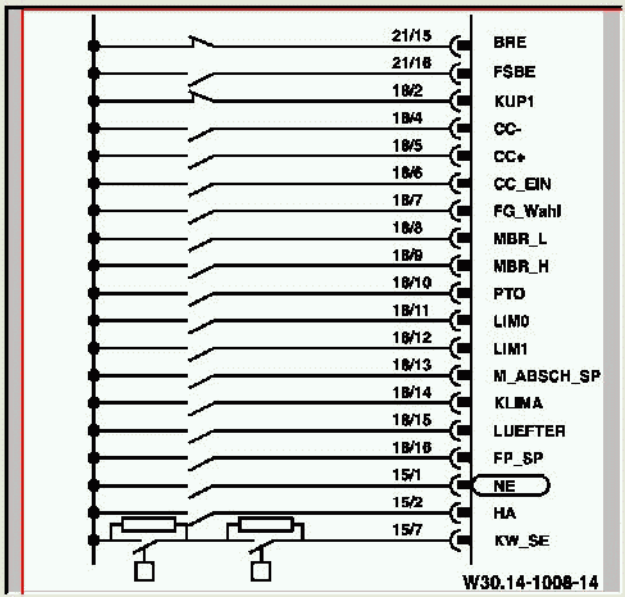
11001 - 11004 Coolant level

11004: Coolant level sensor has ┌ ┐ -.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Coolant level sensor has ┌ ┐ -.

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Pin 15/7



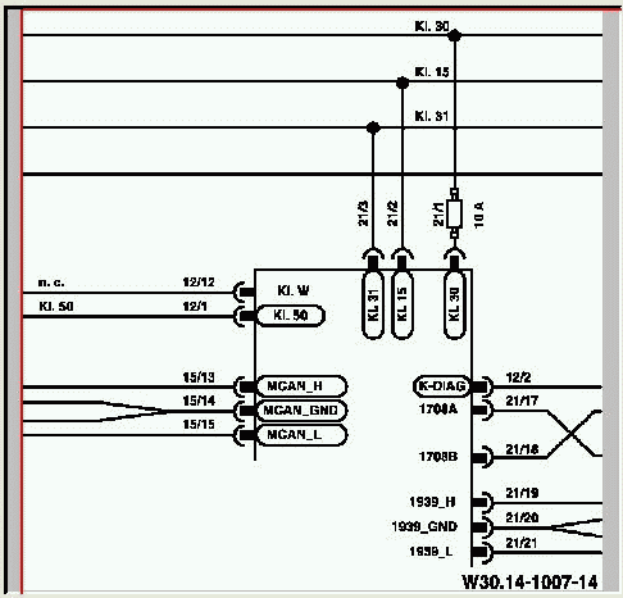
11100 - 11101 Terminal 15

11100: Terminal 15 has overvoltage.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Terminal 15 has overvoltage.

Instruction :
- Check supply voltage.
- Check parameterization 2/08 with 24/12-V on-board power supply for match.
- Erase fault memory.
- Pin 21/2

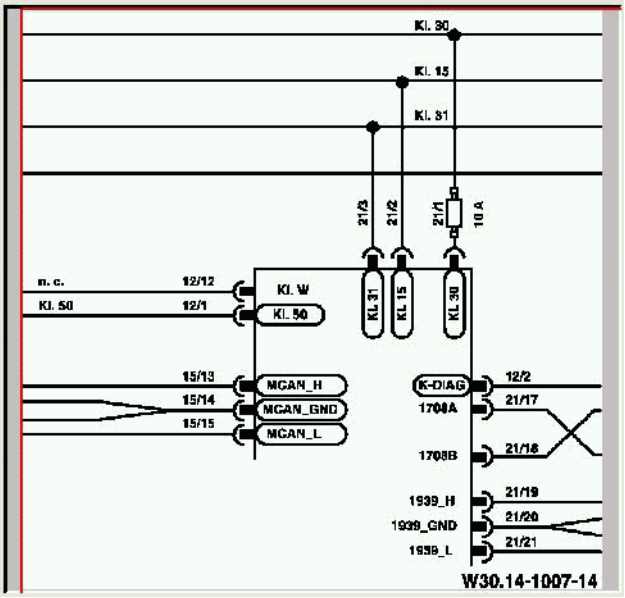


11101: Terminal 15: undervoltage

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Terminal 15: undervoltage

Instruction :
- Check supply voltage.
- Check parameterization 2/08 with 24/12-V on-board power supply for match.
- Erase fault memory.
- Pin 21/1



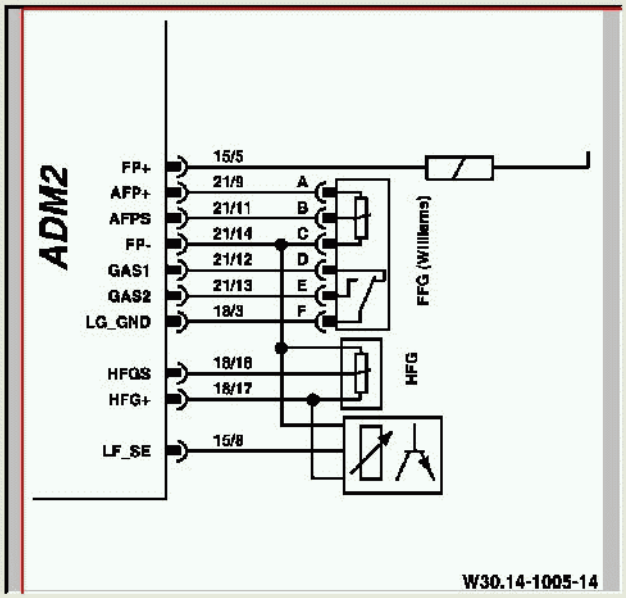
11705 - 11712 Idle speed switch

11705: Idle speed switch has –//–.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Idle speed switch has –//–.

Instruction :
- Check for correct wiring.
- Check accelerator pedal and replace if necessary.
- Erase fault memory.
- Pin 21/12, 21/13

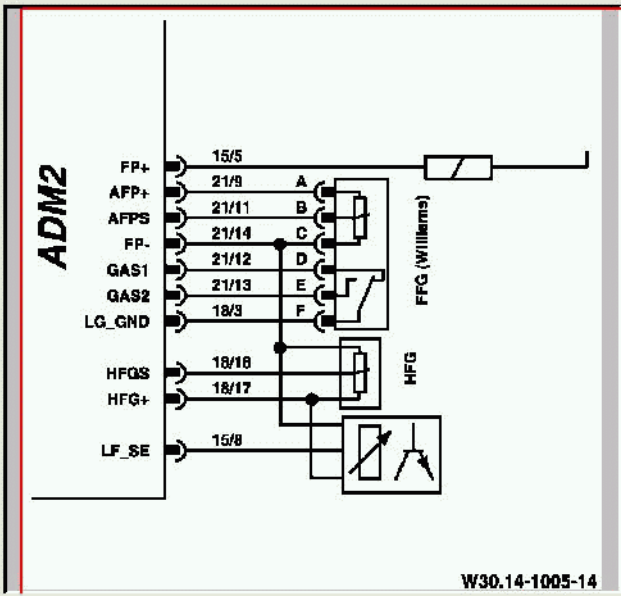


11712: Both idle speed switch contacts are closed.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Both idle speed switch contacts are closed.

Instruction :
- Check for correct wiring.
- Check accelerator pedal and replace if necessary.
- Erase fault memory.
- Pin 21/12, 21/13



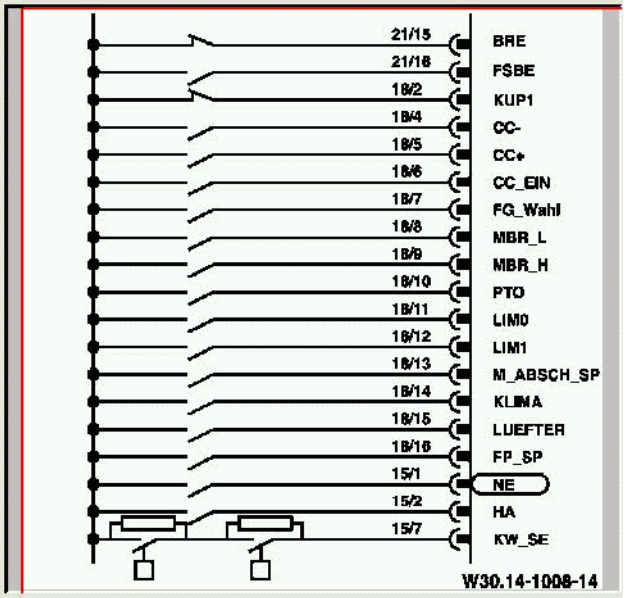
11812 - 11912 Cruise control switch

11812: Both cruise control switches CC- and CC+ are closed.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Both cruise control switches CC- and CC+ are closed.

Instruction :
- Check for correct wiring.
- Check component Cruise control switch for proper function.
- Erase fault memory.
- Pin 18/4, 18/5

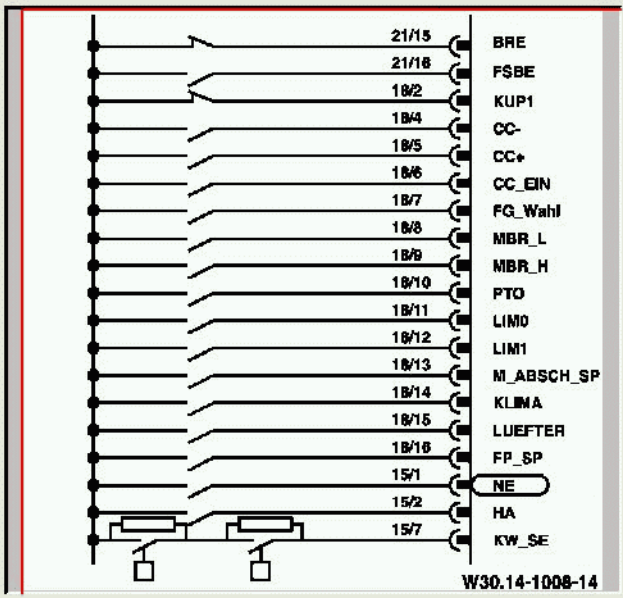


11912: Both cruise control switches CC- and CC+ are closed.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Both cruise control switches CC- and CC+ are closed.

Instruction :
- Check for correct wiring.
- Check component Cruise control switch for proper function.
- Erase fault memory.
- Pin 18/4, 18/5

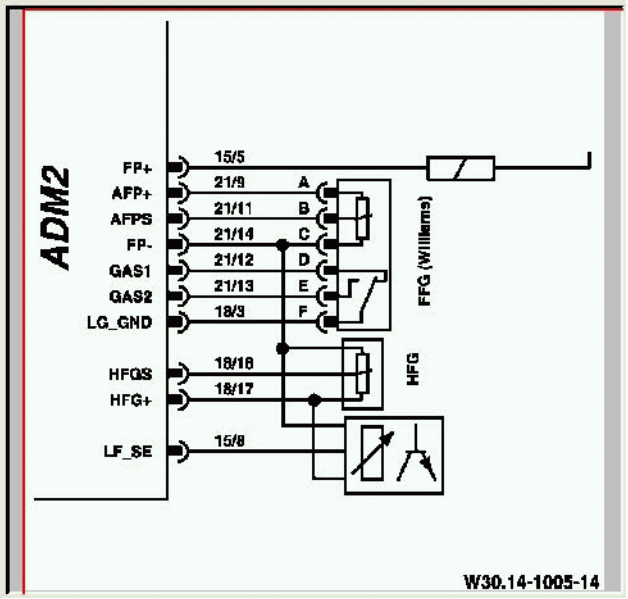


12103 - 12104 Voltage supply

12103: The voltage supply is too high

Figure legend :
- Control unit ADM adaptation module

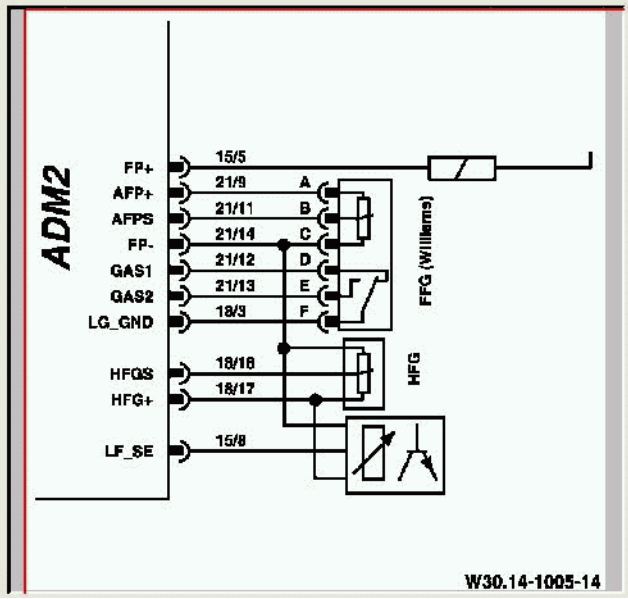
Possible causes of fault :
- Check for correct wiring.
- Supply voltage > 5.2 V
- Erase fault memory.
- Pin 21/9



12104: The voltage supply is too low.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Check for correct wiring.
- Supply voltage < 4.8 V
- Erase fault memory.
- Pin 21/9



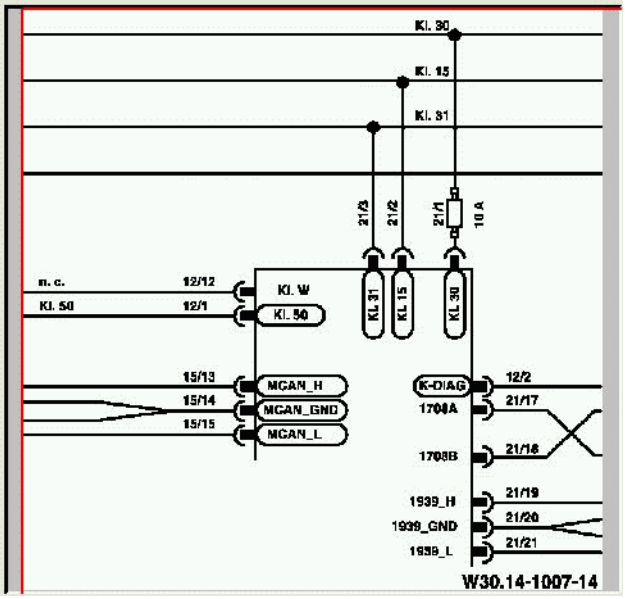
12202 - 12214 Control module MR

12202 Control module MR engine control (PLD) has no CAN bus connection.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Control module MR engine control (PLD) has no CAN bus connection.

Instruction :
- Check engine CAN bus line.
- Check control unit MR engine control (PLD) line.
- Check parameterization of control unit ADM2 and MR engine control (PLD) for single-wire capability
- Erase fault memory.

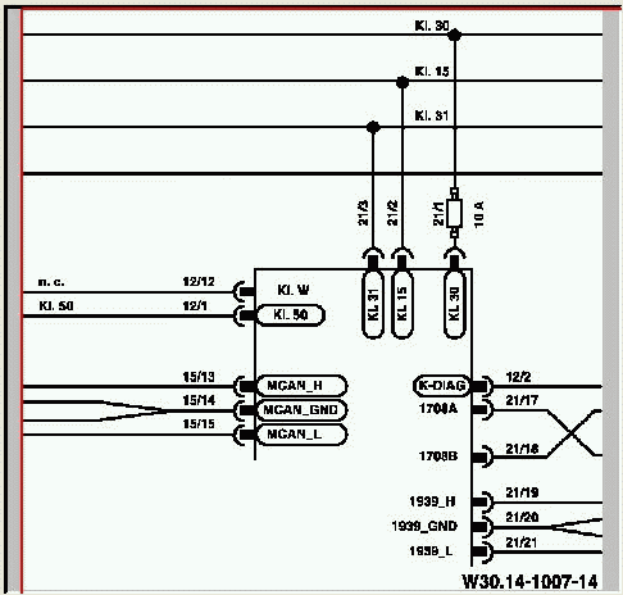


12214 CAN communication of control unit MR engine control (PLD) is in single-wire mode.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- CAN communication of control unit MR engine control (PLD) is in single-wire mode.

Instruction :
- Check parameterization of control unit ADM2 and MR engine control (PLD) for single-wire capability
- Erase fault memory.



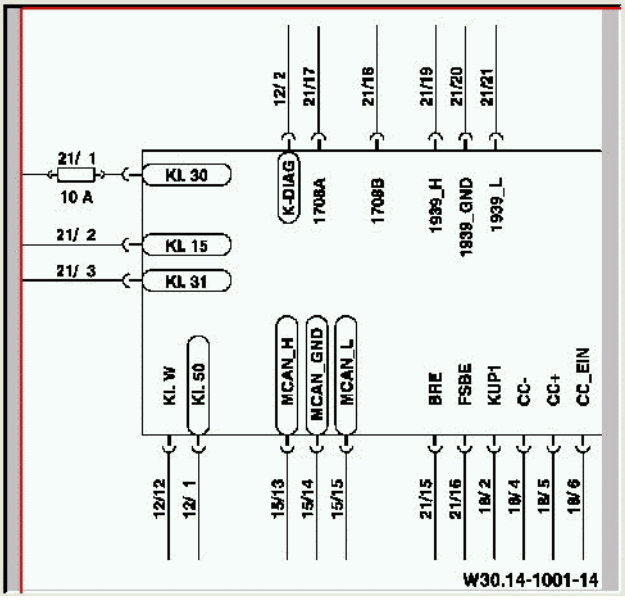
12312 Internal fault ADM

12312: Control unit: internal fault

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Control unit: internal fault

Instruction :
- Erase fault memory.



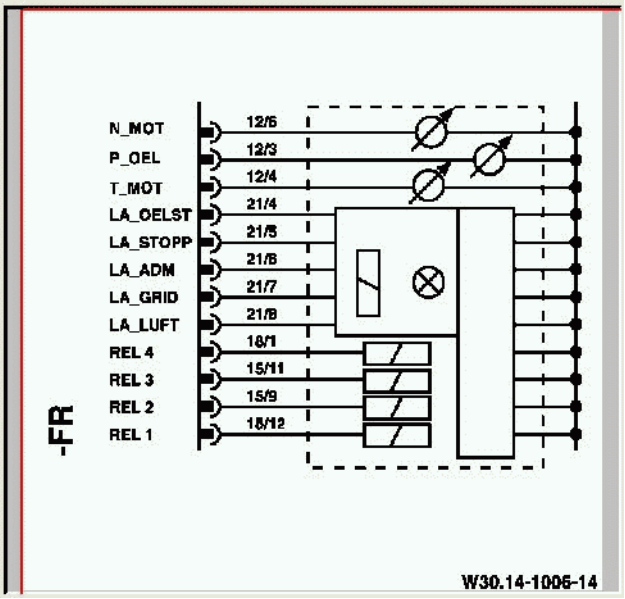
13305 - 13306 Relay 1

13305: Relay 1 has –//–.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Relay 1 has –//–.

Instruction :
- Check for correct wiring.
- Test relay 1.
- Erase fault memory.
- Pin 15/12

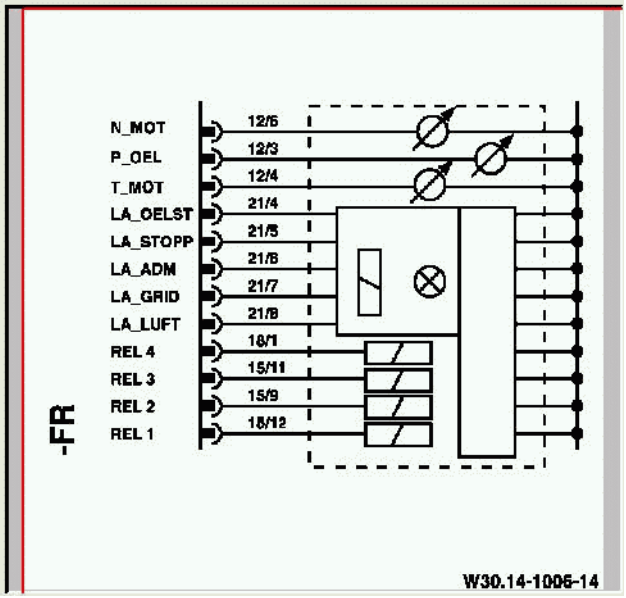


13306: Relay 1 has ⌐ ¬ –.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Relay 1 has ⌐ ¬ –.

Instruction :
- Check for correct wiring.
- Test coil at relay 1.
- Erase fault memory.
- Pin 15/12



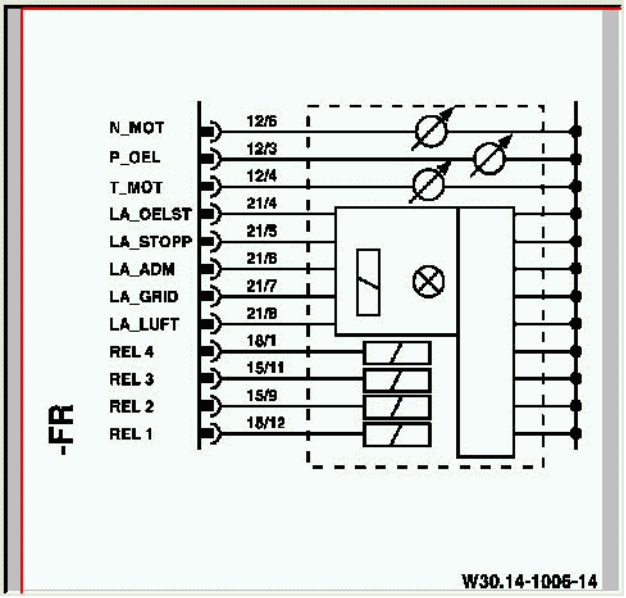
13900 - 13904 Relais 2

13900: Heater flange (relay 2) has no charge air temperature increase.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Heater flange (relay 2) has no charge air temperature increase.

Instruction :
- Check lines leading to heater flange.
- Test relay 2.
- Erase fault memory.
- Pin 15/9

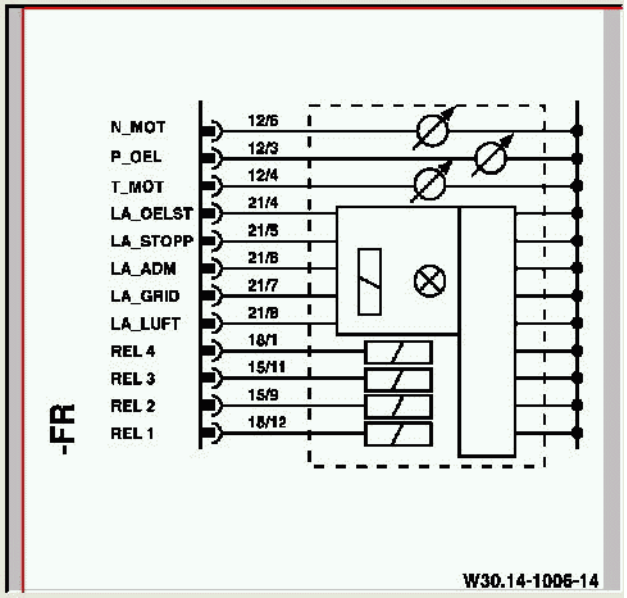


13901: Working contact of 2 relay sticking

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Working contact of 2 relay sticking

Instruction :
- Check lines leading to heater flange.
- Test relay 2.
- Erase fault memory.
- Pin 15/9



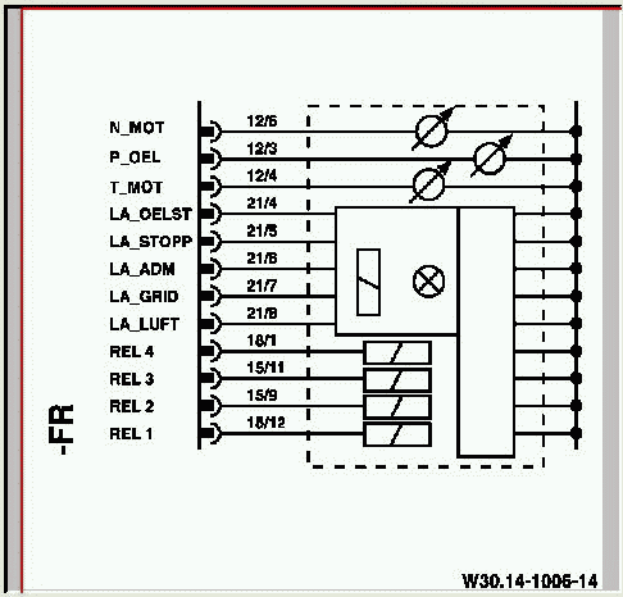
13900 - 13904 Relais 2

13902: Working contact of 2 relay doesn't close

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Working contact of 2 relay sticking

Instruction :
- Check lines leading to heater flange.
- Test relay 2.
- Erase fault memory.
- Pin 15/9

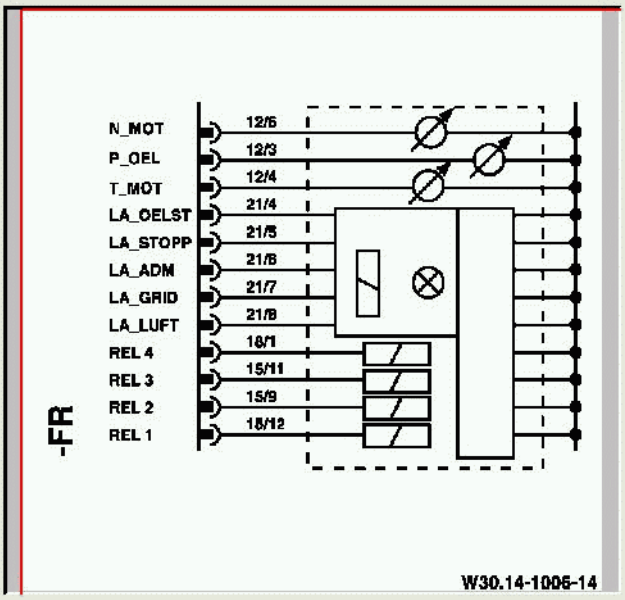


13903: Output 'Actuation of relay 2' has overvoltage or short circuit to positive.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Output 'Actuation of relay 2' has overvoltage or short circuit to positive.

Instruction :
- Check for correct wiring.
- Test relay 2.
- Erase fault memory.
- Pin 15/9



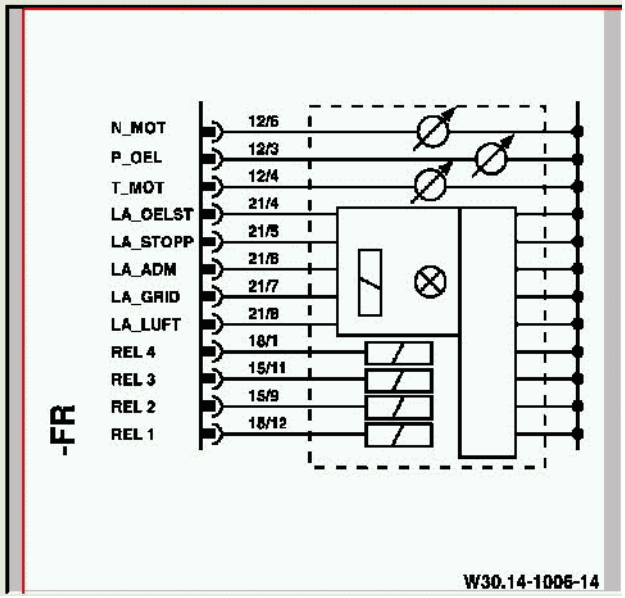
13900 - 13904 Relais 2

13904: Output 'Actuation of relay 2' has undervoltage or short circuit to ground.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Output 'Actuation of relay 2' has undervoltage or short circuit to ground.

Instruction :
- Check for correct wiring.
- Test coil at relay 2.
- Erase fault memory.
- Pin 15/9



14202 - 14204 Hand throttle actuator

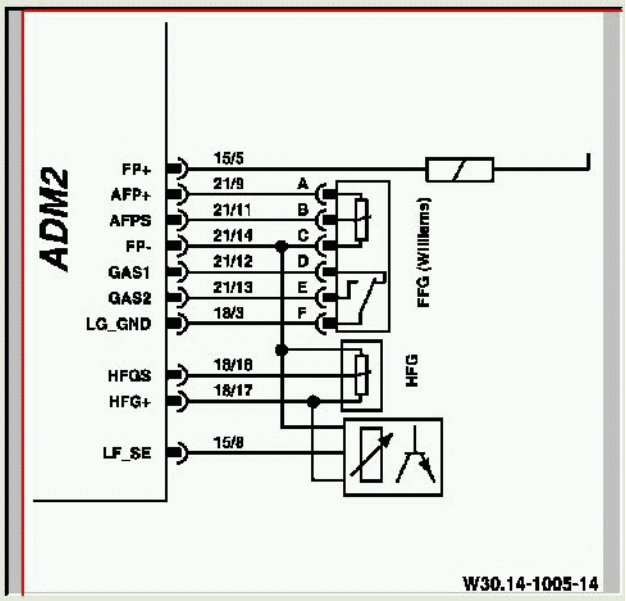
14202: Supply voltage of hand throttle actuator is faulty.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Supply voltage of hand throttle actuator is faulty.

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Pin 18/17

i Note :
- Minimum value: 4.8 V
- Maximum value: 5.2 V

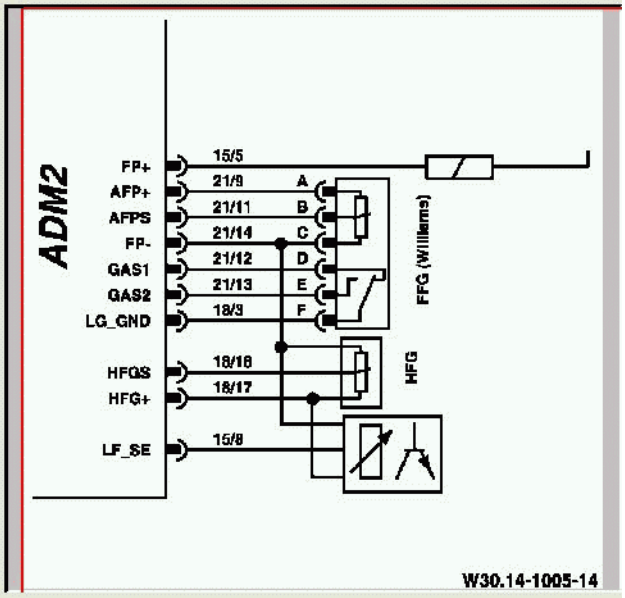


14203: Hand throttle actuator has overvoltage or short circuit to positive.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Hand throttle actuator has overvoltage or short circuit to positive.

Instruction :
- Check for correct wiring.
- Check component Manual throttle actuator.
- Erase fault memory.
- Pin 18/18



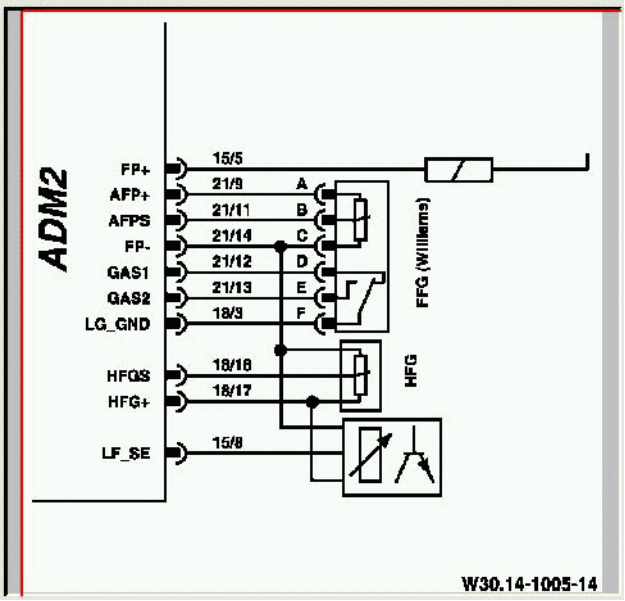
14202 - 14204 Hand throttle actuator

14204: Hand throttle actuator has undervoltage or short circuit to ground.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Hand throttle actuator has undervoltage or short circuit to ground.

Instruction :
- Check for correct wiring.
- Check component Manual throttle actuator.
- Erase fault memory.
- Pin 18/18



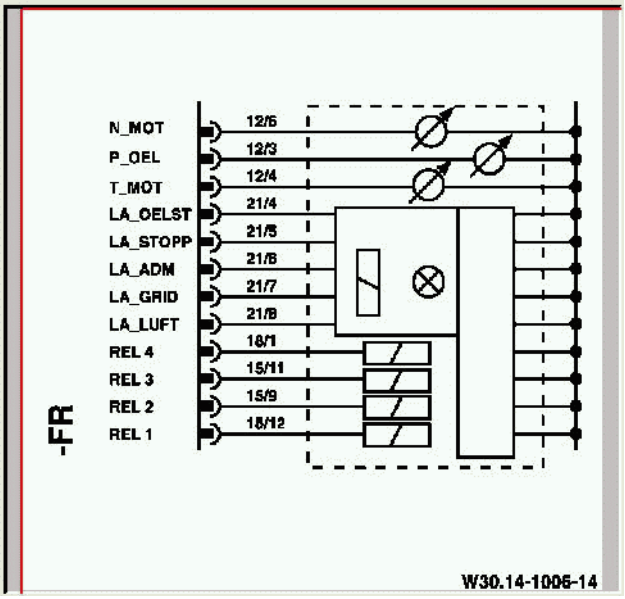
14403 - 14404 Relay 4

14403: 'Relay 4' output has –//–

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- 'Relay 4' output has –//–

Instruction :
- Check for correct wiring.
- Test relay 4.
- Erase fault memory.
- Pin 18/1

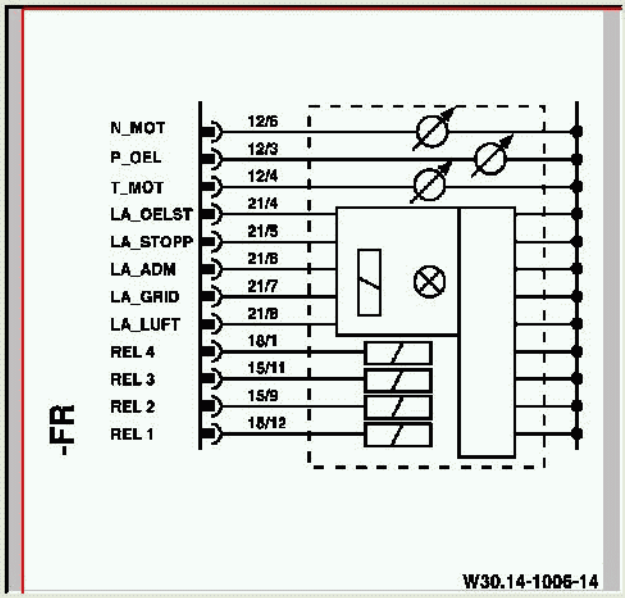


14404: 'Relay 4' output has ⌐¬–

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- 'Relay 4' output has ⌐¬–

Instruction :
- Check for correct wiring.
- Test coil at relay 4.
- Erase fault memory.
- Pin 18/1



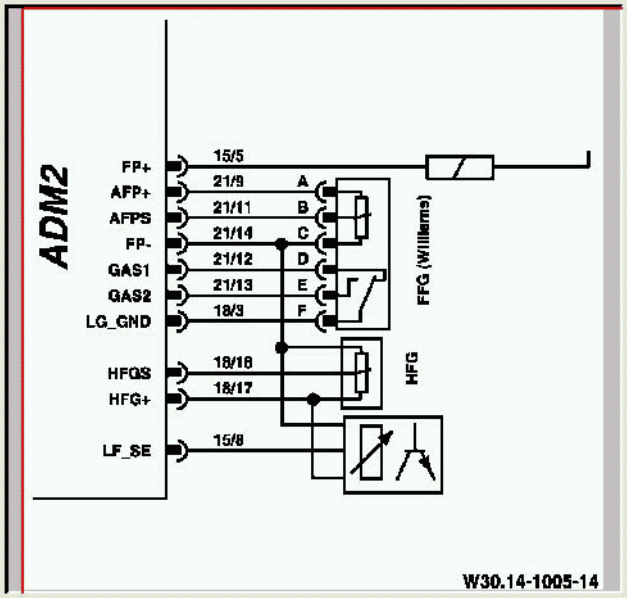
14503 - 14504 Transmission output 1

14503: Transmission output 1 has –//–.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Transmission output 1 has –//–.

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Pin 15/5

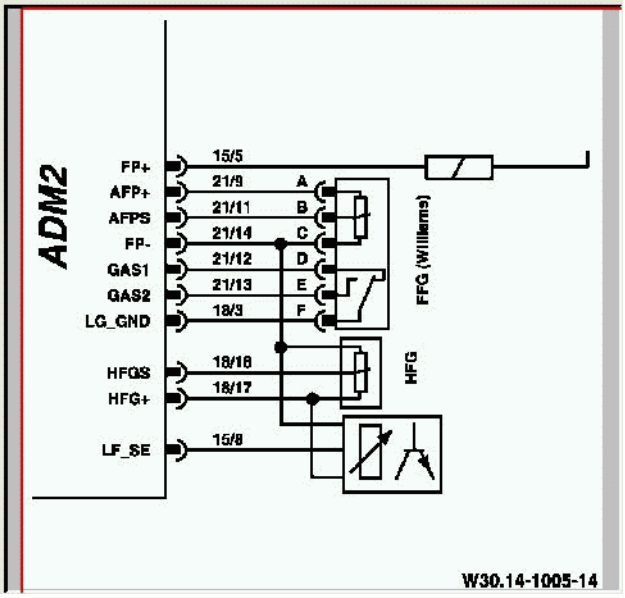


14504: Transmission output 1 has ⌐ ¬ –.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Transmission output 1 has ⌐ ¬ –.

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Pin 15/5



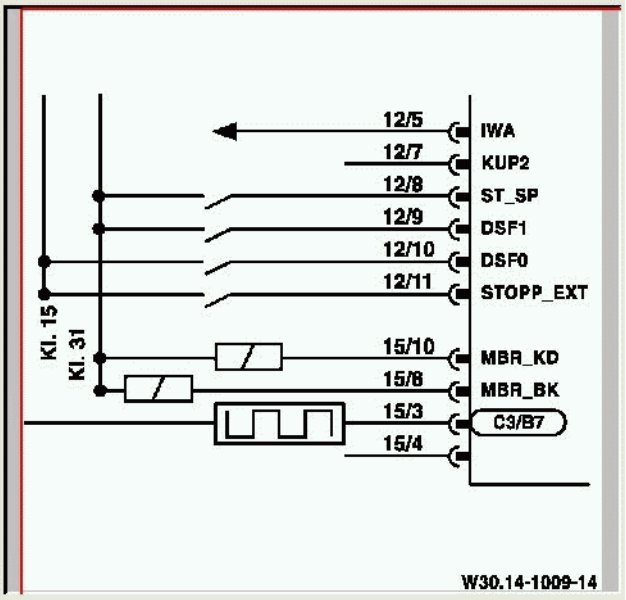
14603 - 14604 Brake flap

14603: Brake flap has –//–.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Brake flap has –//–.

Instruction :
- Check for correct wiring.
- Check brake flap.
- Erase fault memory.
- Pin 15/6

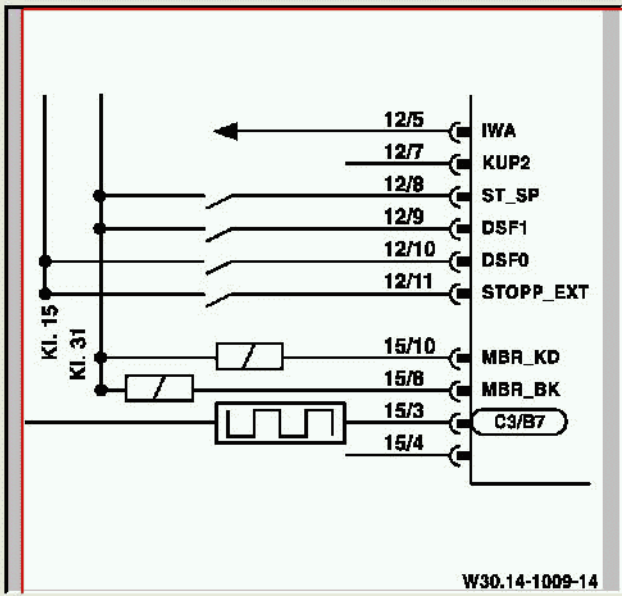


14604: Brake flap has ⌐ ¬ –.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Brake flap has ⌐ ¬ –.

Instruction :
- Check for correct wiring.
- Check brake flap.
- Erase fault memory.
- Pin 15/6



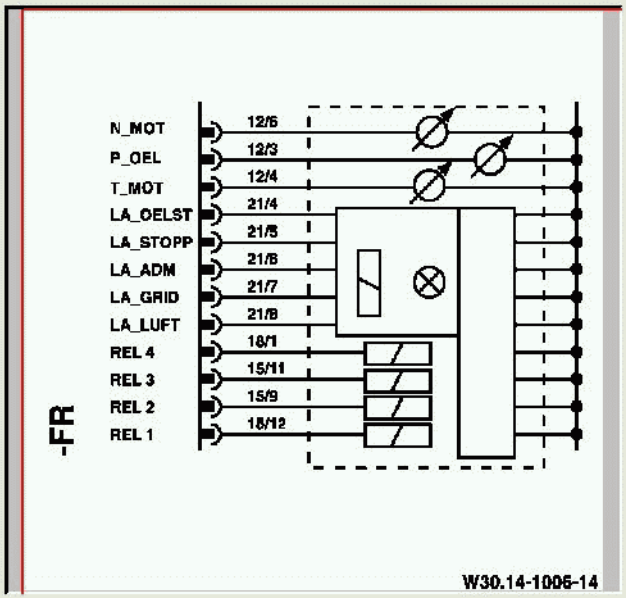
14703 - 14706 Oil pressure sensor

14703: Oil pressure sensor has overvoltage.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Oil pressure sensor has overvoltage.

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Pin 12/3

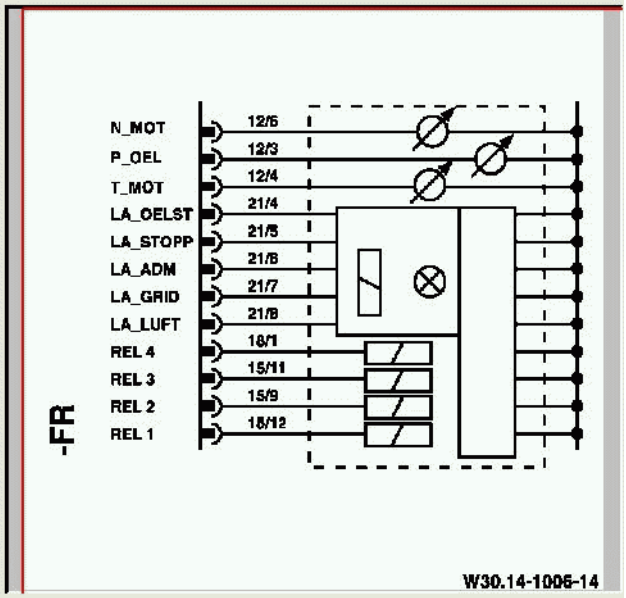


14704: Oil pressure sensor has undervoltage.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Oil pressure sensor has undervoltage.

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Pin 12/3



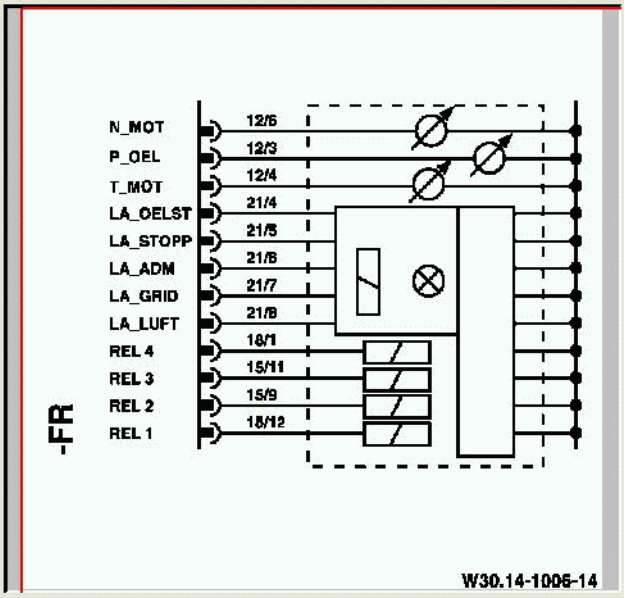
14703 - 14706 Oil pressure sensor

14705: Oil pressure sensor has –//–.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Oil pressure sensor has –//–.

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Pin 12/3

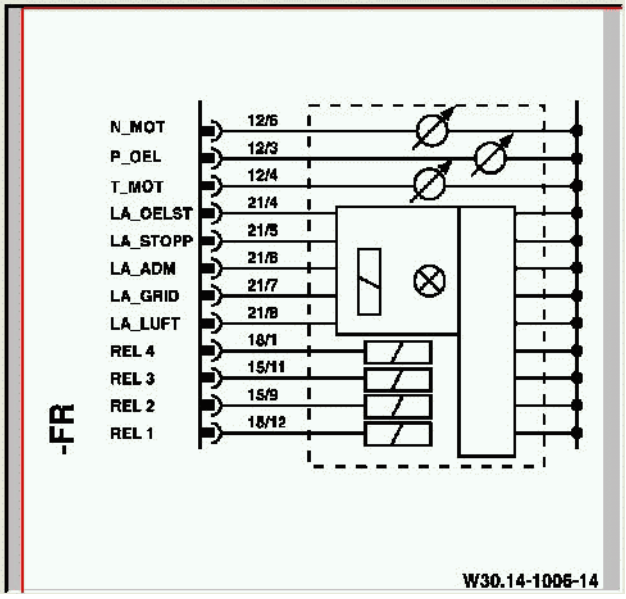


14706: Oil pressure sensor has ⌐ ¬ –.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Oil pressure sensor has ⌐ ¬ –.

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Pin 12/3



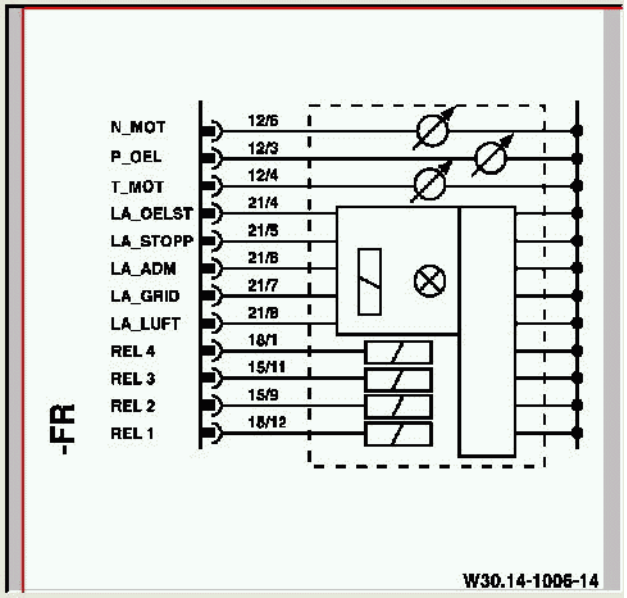
14803 - 14806 Coolant temperature sensor

14803: Coolant temperature sensor has overvoltage.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Coolant temperature sensor has overvoltage.

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Pin 12/4

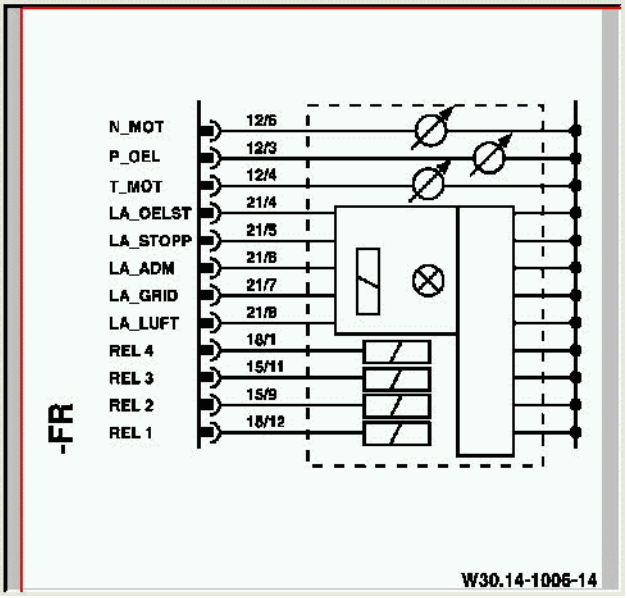


14804: Coolant temperature sensor has undervoltage.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Coolant temperature sensor has undervoltage.

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Pin 12/4



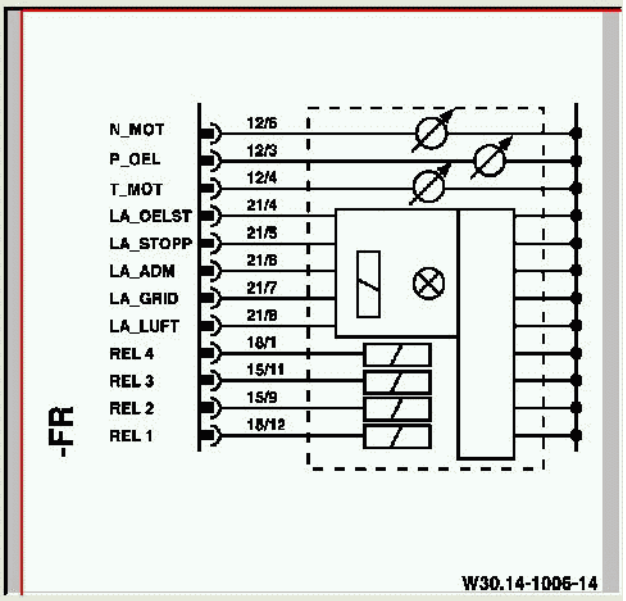
14803 - 14806 Coolant temperature sensor

14805: Coolant temperature sensor has –//–

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Coolant temperature sensor has –//–

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Pin 12/4

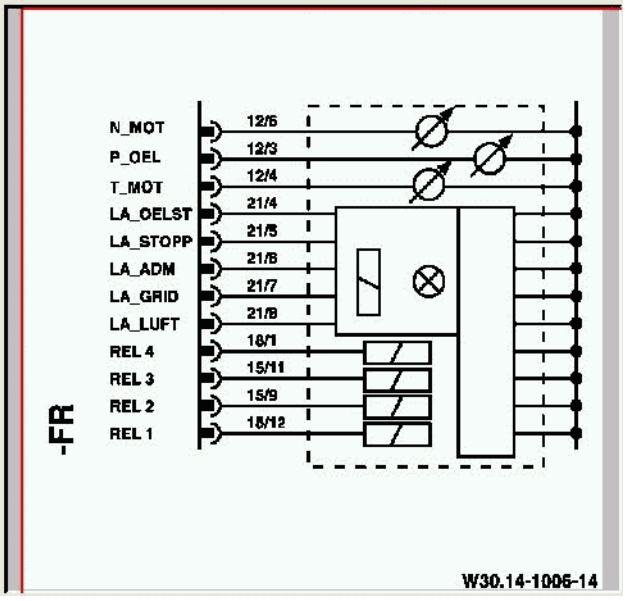


14806: Coolant temperature sensor has ⌐ ¬ –

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Coolant temperature sensor has ⌐ ¬ –

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Pin 12/4



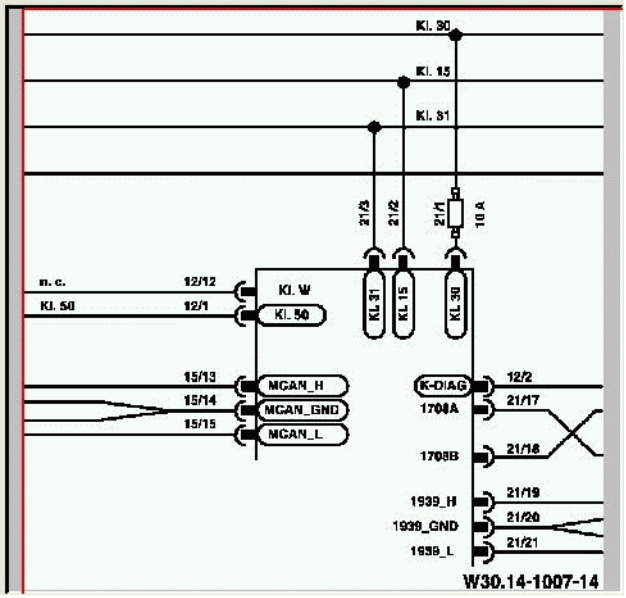
14902 Failure of CAN message

14902: Failure of CAN message 'J1939'

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Failure of CAN message 'J1939'

Instruction :
- Check for correct wiring.
- Erase fault memory.



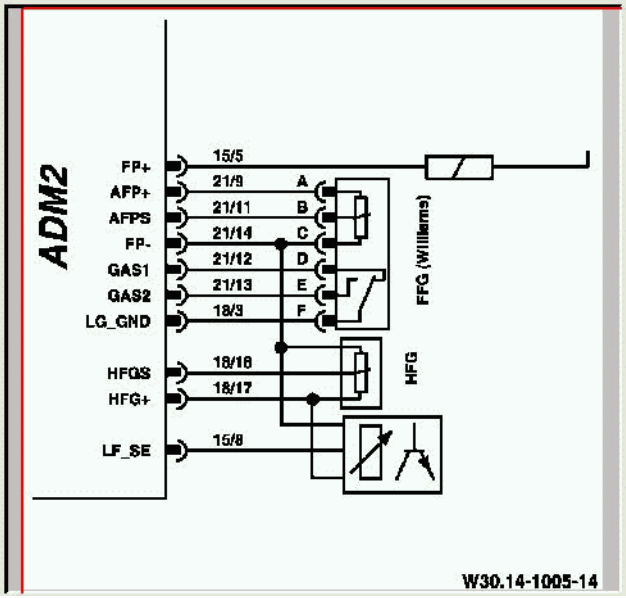
15001 - 15007 Foot throttle actuator

15001: Supply voltage of foot throttle actuator is faulty.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Supply voltage of foot throttle actuator is faulty.

Instruction :
- Check for correct wiring.
- Test battery voltage.
- Erase fault memory.
- Check foot throttle actuator connections.
- Pin 15/5

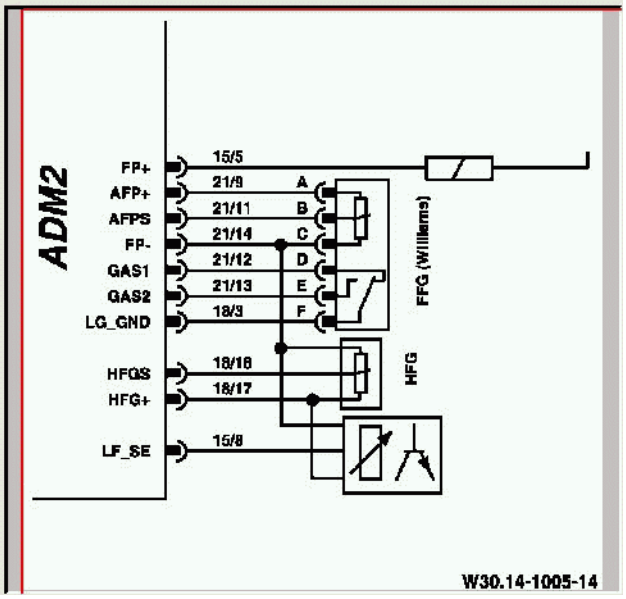


15002: PWM signals GAS1 and GAS2 of foot throttle actuator are not present.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- PWM signals GAS1 and GAS2 of foot throttle actuator are not present.

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Check foot throttle actuator connections.
- Pin 15/5, 21/12, 21/13, 21/14



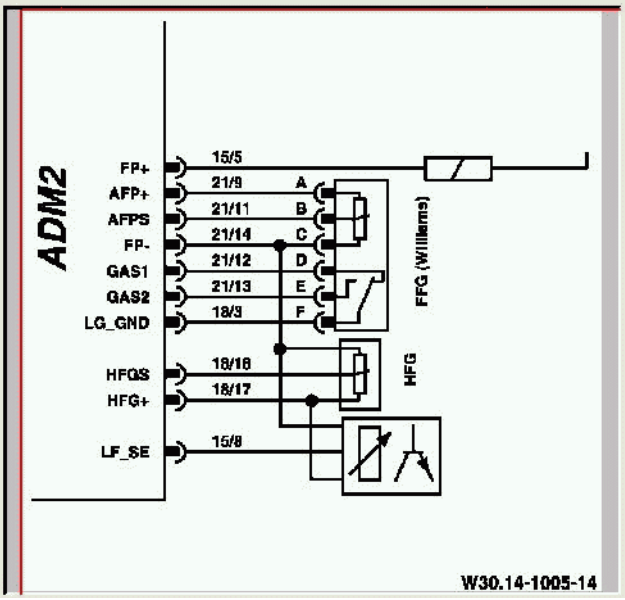
15001 - 15007 Foot throttle actuator

15003: PWM signal GAS2 at branch 2 of foot throttle actuator is not present.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- PWM signal GAS2 at branch 2 of foot throttle actuator is not present.

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Check foot throttle actuator connections.
- Pin 15/5, 21/13, 21/14

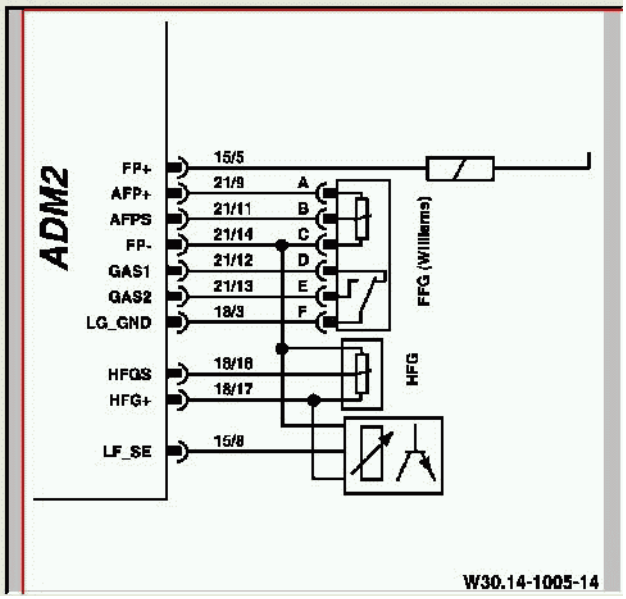


15004: PWM signal GAS1 at branch 1 of foot throttle actuator is not present.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- PWM signal GAS1 at branch 1 of foot throttle actuator is not present.

Instruction :
- Check for correct wiring.
- Erase fault memory.
- Check foot throttle actuator connections.
- Pin 15/5, 21/12, 21/13, 21/14



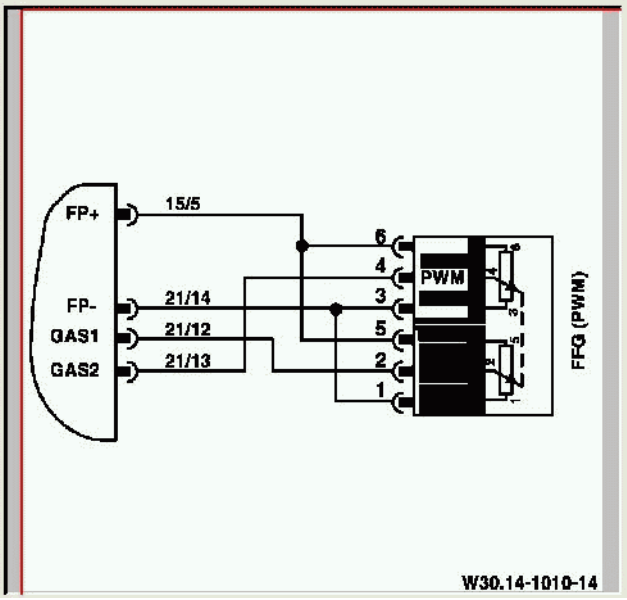
15001 - 15007 Foot throttle actuator

15005: Foot throttle actuator not learned

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Foot throttle actuator not learned

Instruction :
- Re-learn foot throttle actuator.
- Erase fault memory.

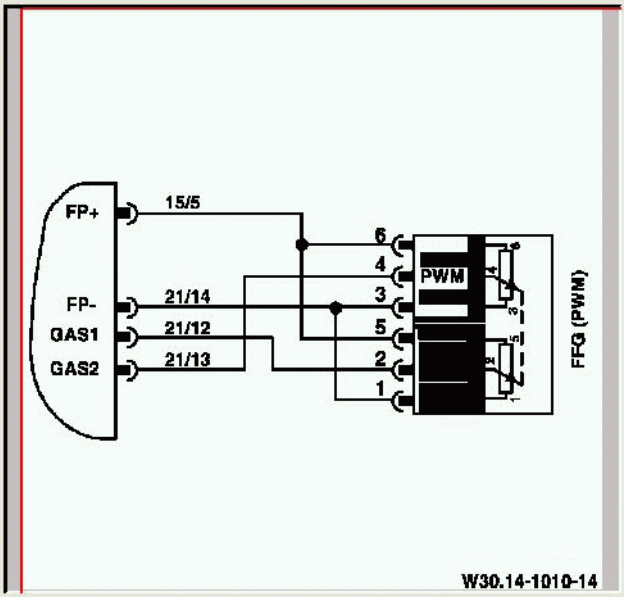


15006: Closed throttle stop of foot throttle actuator is limited.

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Closed throttle stop of foot throttle actuator is limited.

Instruction :
- Re-learn foot throttle actuator.
- Erase fault memory.



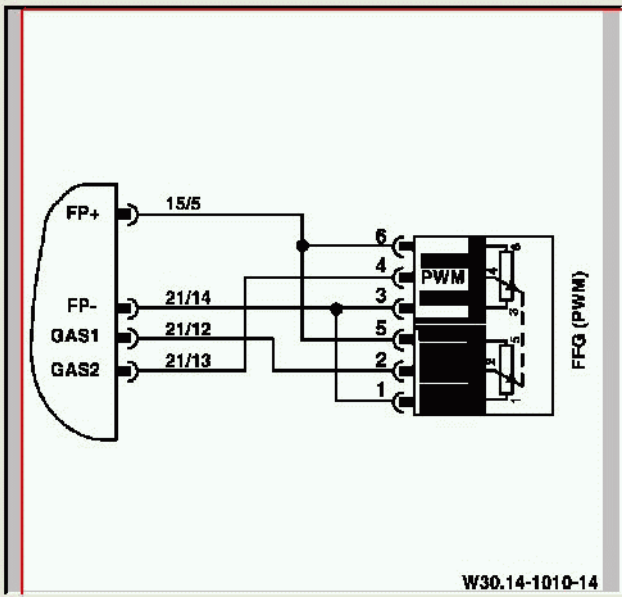
15001 - 15007 Foot throttle actuator

15007: Foot throttle actuator not within learned range

Figure legend :
- Control unit ADM adaptation module

Possible causes of fault :
- Foot throttle actuator not within learned range

Instruction :
- Re-learn foot throttle actuator.
- Erase fault memory.

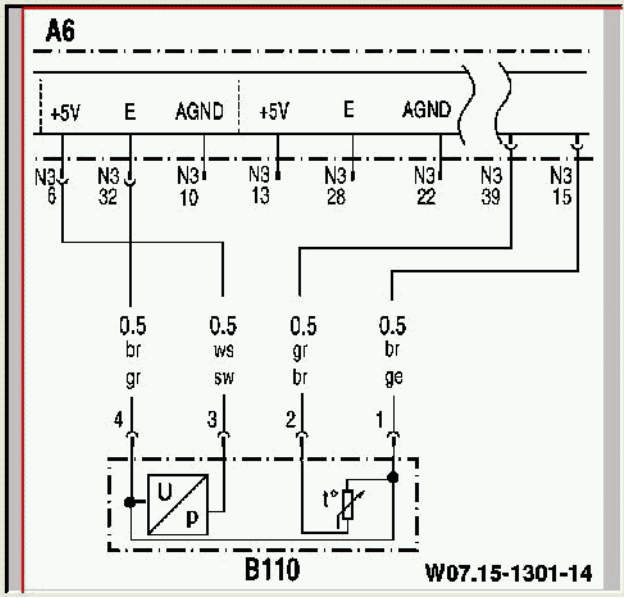


01015 - 01016 Oil pressure and oil temperature combination sensor

01015 : 'Oil pressure and oil temperature' combination sensor: temperature sensor, above measured range (⌐¬ + –//–)

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- B110: "Oil pressure and oil temperature" combination sensor

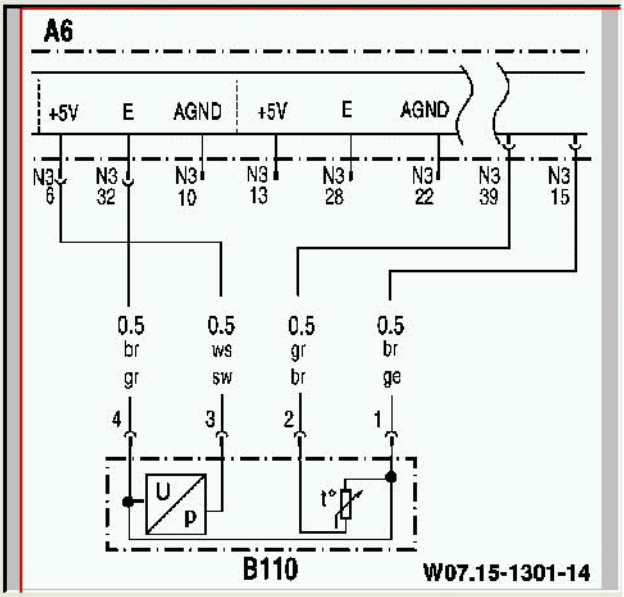
Possible causes of fault :
- Test combination sensor B110, replace if necessary. Specified value: 2,4 kOhms (equals 21 °C)
- Test cable N3/39 - B110/2 for –//– and ⌐¬ +, repair if necessary.
- Fault code 1 16 15 is also current: Test cable N3/15-B110/1 for –//–, repair if necessary.



01016 : 'Oil pressure and oil temperature' combination sensor: temperature sensor, below measured range (⌐¬ –)

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- B110: "Oil pressure and oil temperature" combination sensor

Possible causes of fault :
- Test combination sensor B110, replace if necessary. Specified value: 2,4 kOhms (equals 21 °C)
- Test cable N3/39- B110/2 for ⌐¬ –, repair if necessary.



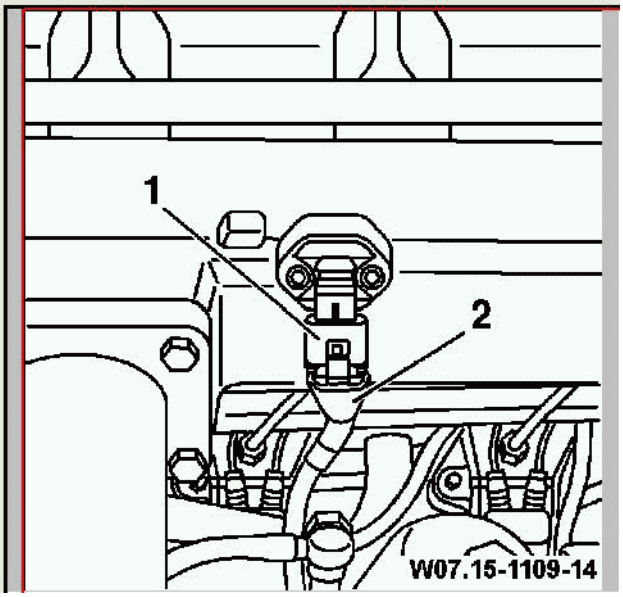
01822 Boost air temperature

01822 : Boost air temperature exceeded

Figure legend :
- 1: "Boost pressure and boost air temperature" combination sensor B111

Possible causes of fault :
- Charge air cooler
- Charge air pipe
- Boost air temperature sensor

Instruction :
- Visually inspect boost pressure system (boost air pipes, intercooler). Key F12: Work instructions in WIS
- Continue with key F2



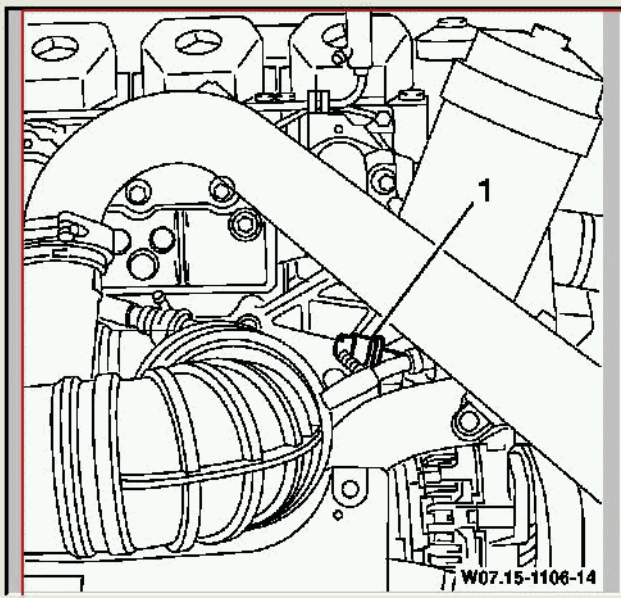
02020 Oil pressure

02020 : Oil pressure is too low.

Figure legend :
- 1: "Oil pressure and oil temperature" combination sensor

Possible cause of fault :
- The oil pressure in the engine is too low.

Instruction :
- Check oil pressure mechanically (with pressure gage).
- If the mechanical oil pressure measured value differs from the electrical oil pressure measured value, check oil pressure sensor and replace, if necessary.
- If the mechanical oil pressure measured value agrees with the electrical oil pressure measured value, look for cause for insufficient oil pressure at the engine.



02026 Engine oil level

02026 : The engine oil level is too high or too low.

Possible cause of fault :
- The engine oil level is too high or too low.

Instruction :
- Check oil level with dipstick with engine switched off; adjust to correct level if necessary.

Note :
- Provided the measured values are correctly detected, the fault is then not a fault of the control module or of the sensors.

02122 Coolant temperature

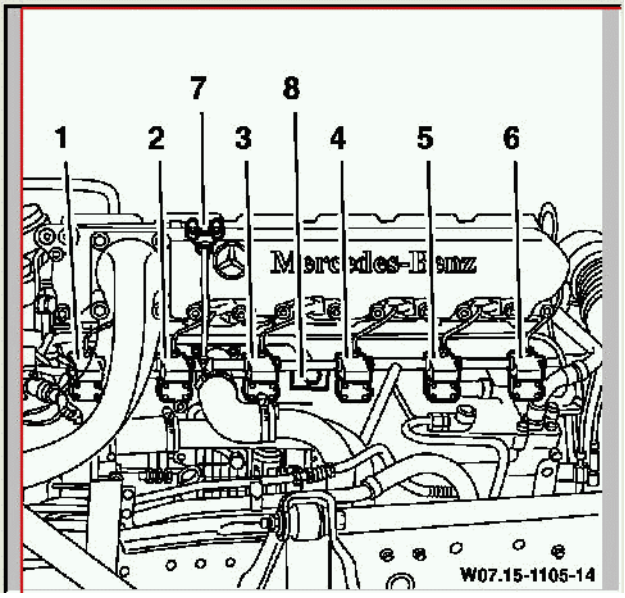
02122 : Coolant temperature is too high.

Figure legend :
- 8: Coolant temperature sensor B65

Possible cause of fault :
- Maximum permissible coolant temperature is exceeded.

Instruction :
- Test coolant temperature sensor and replace if necessary.
- If the coolant temperature sensor is o.k., look for cause for excessively high coolant temperature at the engine.

Note :
- Provided the measured values are correctly detected, the fault is then not a fault of the control module or of the sensors.



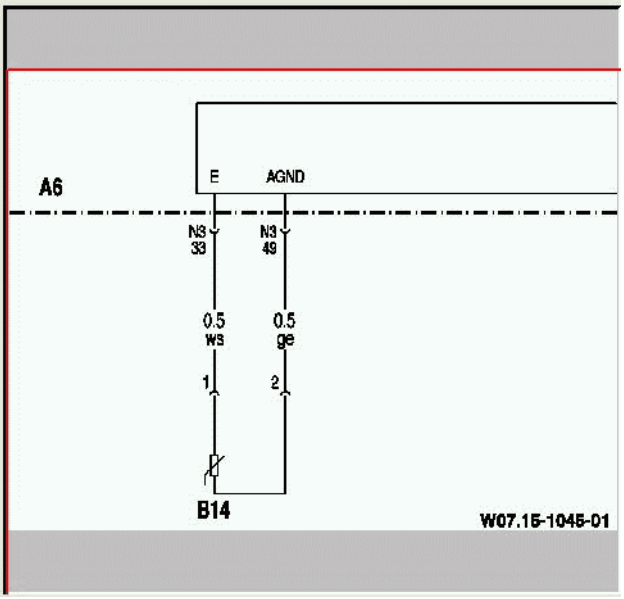
02509 - 02517 Oil level sensor

02509 : Oil level sensor –//–

Figure legend :
- A6: Control unit MR engine control
- B14: Oil level sensor

Instruction :
- Test cable N3 55/33 - B14/1 for –//–, repair or replace if necessary.
- Test cable N3 55/49 - B14/2 for –//–, repair or replace if necessary.
- Test oil level sensor B14, replace if necessary.

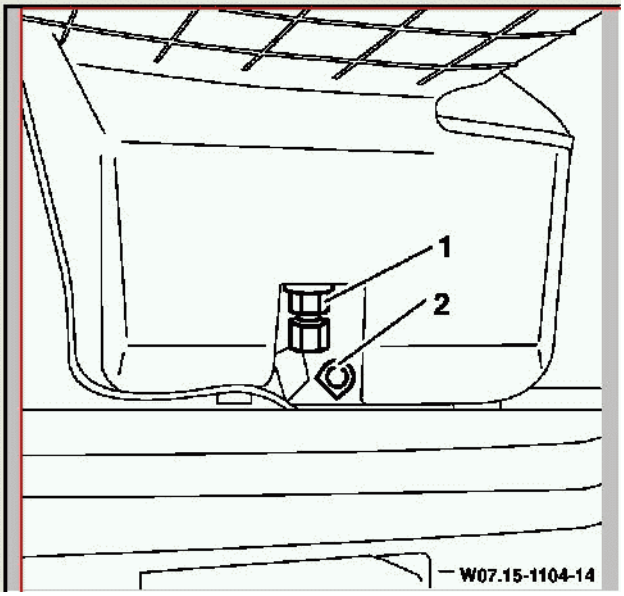
Fault code 02509 still present: :
- Before replacing the control module, perform the MR download 'oil level sensor'. (Download MR1_11)
- It is essential to first of all read the work instructions in the WIS (key F12).



02515 : Oil level sensor ⌐¬+, measuring range exceeded

Figure legend :
- 1: Oil level sensor B14
- 2: Connector of oil level sensor B14

Instruction :
- Inspect oil level, adjust to correct level if necessary.
- Fault 0 25 15 still current: Check parameterization of oil pan type, correct if necessary.
- Parameterization o.k.: Separate connector of oil level sensor.
- Fault code 0 25 09 current: Replace oil level sensor B14.

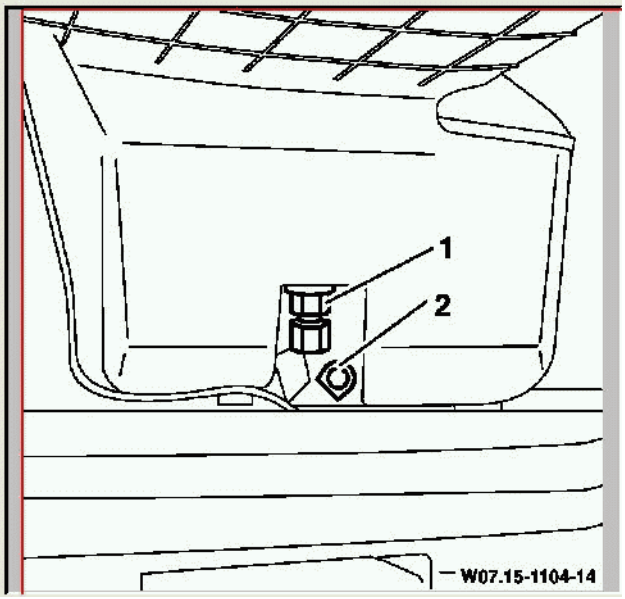


02509 - 02517 Oil level sensor

02516 : Oil level sensor ┌ ┐-, measuring range not reached

Figure legend :
- 1: Oil level sensor B14
- 2: Connector of oil level sensor B14

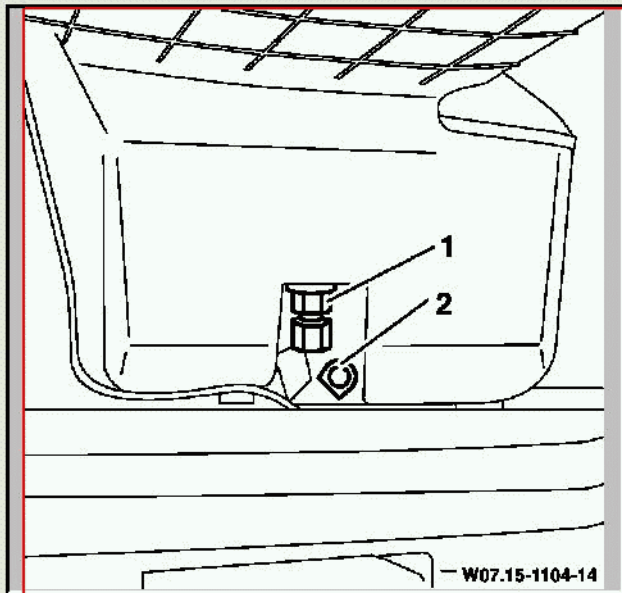
Test of component :
- Inspect oil level, adjust to correct level if necessary.
- Fault 0 25 16 still current: Check parameterization of oil pan type, correct if necessary.
- Parameterization o.k.: Separate connector of oil level sensor.
- Fault code 0 25 09 current: Replace oil level sensor B14.



02517 : Oil level sensor , readout implausible

Figure legend :
- 1: Oil level sensor B14
- 2: Connector of oil level sensor B14

Test of component :
- Inspect oil level, adjust to correct level if necessary.
- Fault 0 25 17 still current: Check parameterization of oil pan type, correct if necessary.
- Parameterization o.k.: Separate connector of oil level sensor.
- Fault code 0 25 09 current: Replace oil level sensor B14.



03015 - 03016 Fuel pressure sensor

03015 : Fuel pressure sensor, above measuring range (⌐ ¬ + –//–)
Fuel pressure sensor not fitted at present

03016 : Fuel pressure sensor, below measuring range (⌐ ¬ –)
Fuel pressure sensor not fitted at present

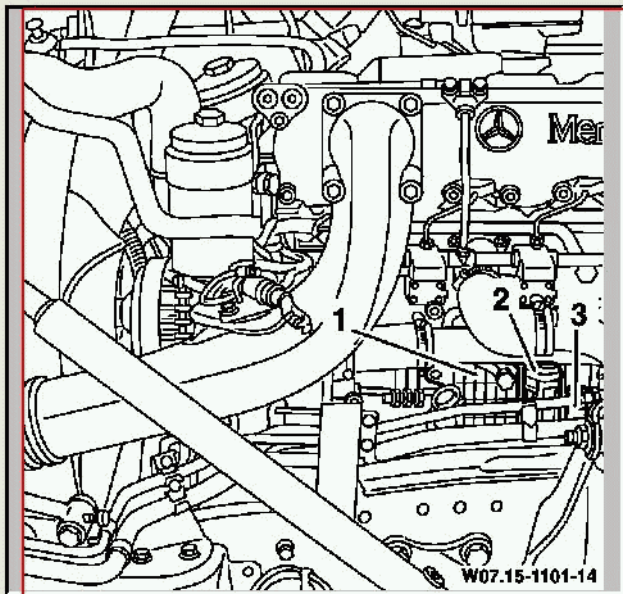
04024 - 04056 Internal fault

04024 : Internal fault in control unit

Figure legend :
- 1: Control unit MR engine control

Note :
- Backup processor faulty

Instruction :
- Check all affected plugs, connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary.
- If fault code still exists, replace control unit. Parameterize control unit MR engine control.

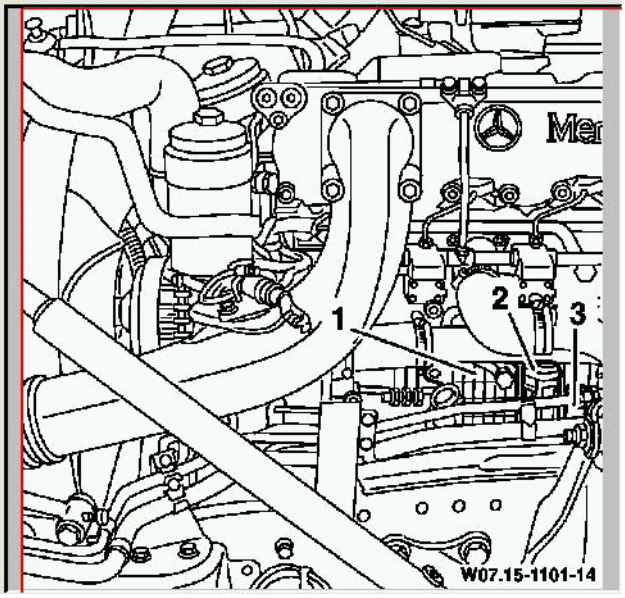


04037 : Internal fault in control unit

Figure legend :
- 1: Control unit MR engine control

Note :
- Number of cylinders implausible

Instruction :
- Check all affected plugs, connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary.
- If fault code still exists, replace control unit. Parameterize control unit MR engine control.



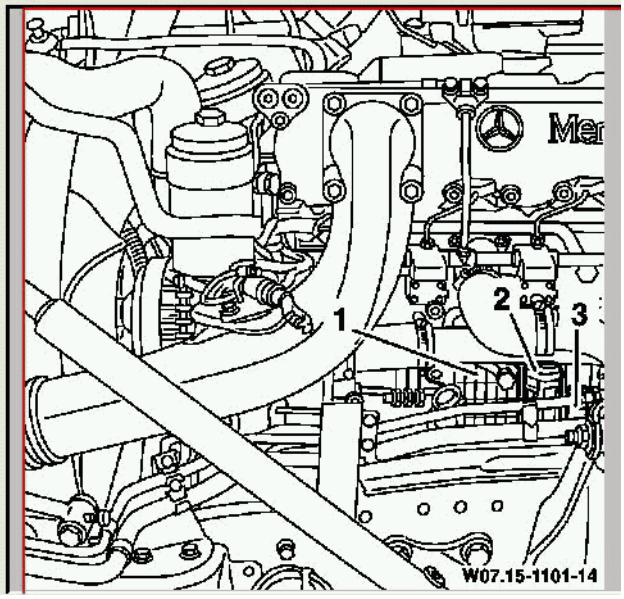
04024 - 04056 Internal fault

x4038 : Internal fault in control unit

Figure legend :
- 1: Control unit MR engine control

Note :
- Starter actuation (output stage) faulty

Instruction :
- If fault code 0 75 43 is current, .first of all process this fault code
- Check all affected plugs, connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. If fault code still exists, replace control unit. Parameterize control unit MR engine control.



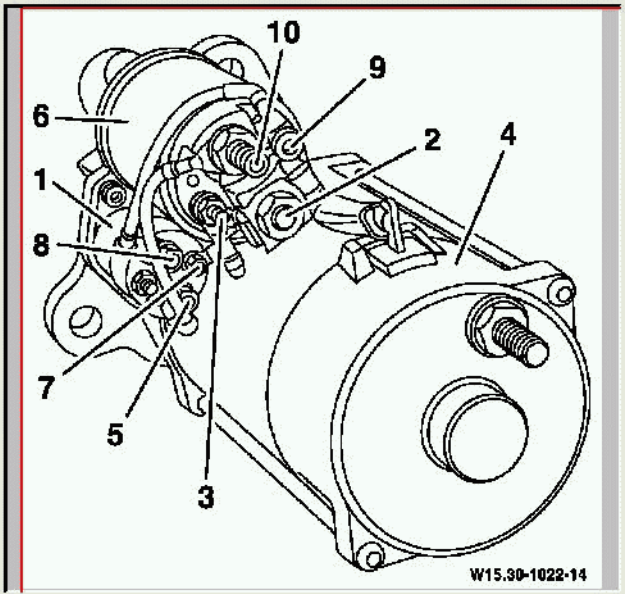
04040 : Internal fault in control unit

Figure legend :
- 1: Series relay
- 4: Starter
- 6: Solenoid switch
- 7: Terminal 86 on series relay

⚠ Important note :
- Disconnect battery before carrying out work on the electrical connections of the starter.

Possible causes of fault :
- Series relay defective
- Lines from series relay to solenoid switch at starter are defective.
- Line A6 X1 16/12 - M1 (starter) has –//–.

Note :
- Internal resistance of series relay: 17 ohms



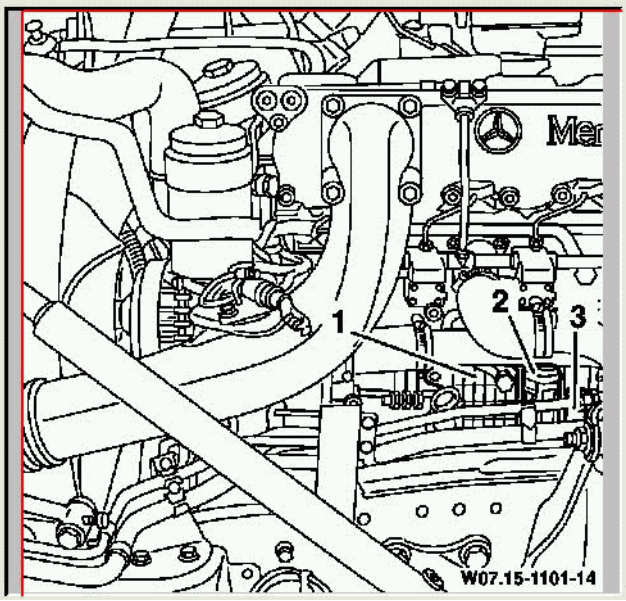
04024 - 04056 Internal fault

04047 : Internal fault in control unit

Figure legend :
- 1: Control unit MR engine control

Note :
- Map record faulty

Instruction :
- Check all affected plugs, connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. If fault code still exists, replace control unit. Parameterize control unit MR engine control.

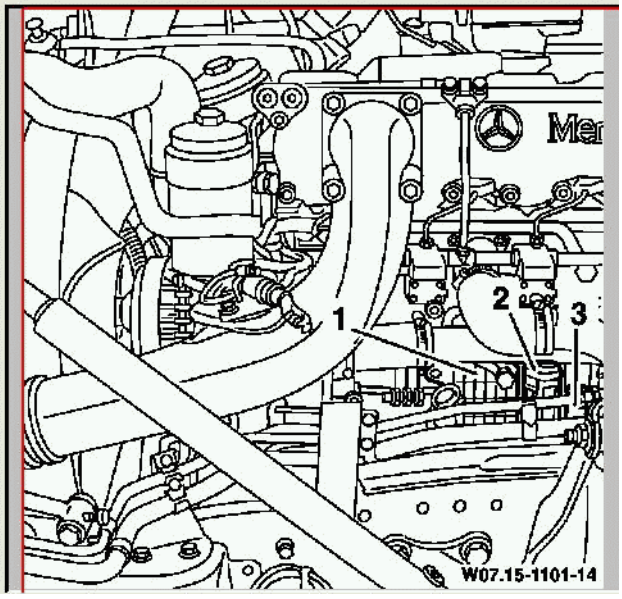


04048 : Internal fault in control unit

Figure legend :
- 1: Control unit MR engine control

Note :
- Number of cylinders implausible

Instruction :
- Check all affected plugs, connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. If fault code still exists, replace control unit. Parameterize control unit MR engine control.



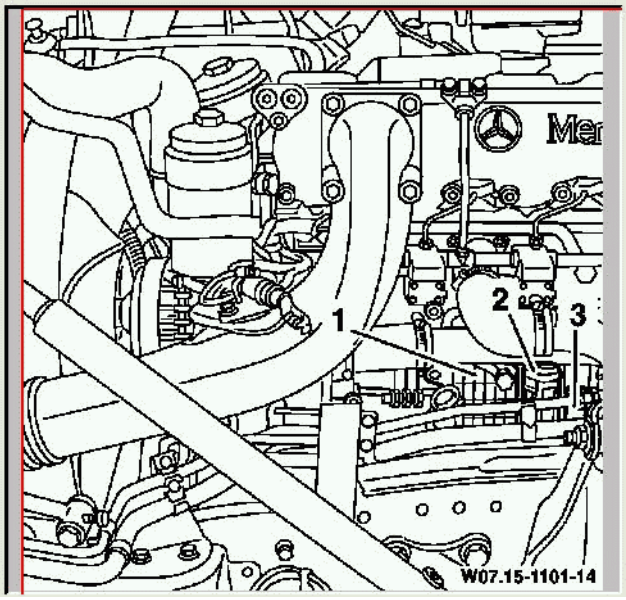
04024 - 04056 Internal fault

04050 : Internal fault in control unit

Figure legend :
- 1: Control unit MR engine control

Note :
- Control unit does not match engine.

Instruction :
- Check all affected plugs, connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. If fault code still exists, replace control unit. Parameterize control unit MR engine control.

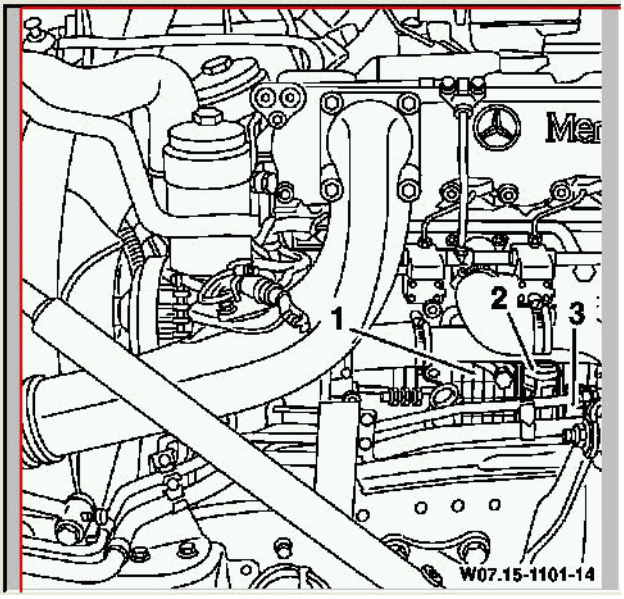


04051 : Internal fault in control unit

Figure legend :
- 1: Control unit MR engine control

Note :
- EEPROM error of control unit

Instruction :
- Check all affected plugs, connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. If fault code still exists, replace control unit. Parameterize control unit MR engine control.



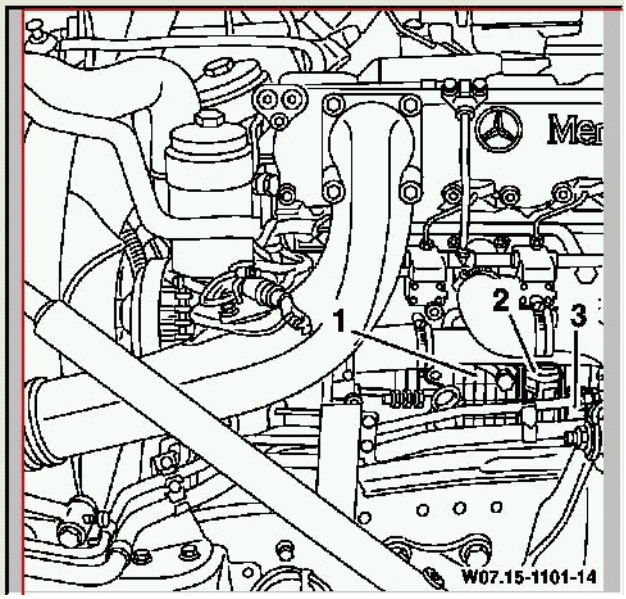
04024 - 04056 Internal fault

04056 : Internal fault in control unit

Figure legend :
- 1: Control unit MR engine control
- 2: Connector N3 (55-pin)
- 3: Connector X1 (15- or 16-pin)

Note :
- Engine-off running control of control module is incorrect or faulty.

Instruction :
- Test the cable at pin A6 X1 16/10 for short circuit to positive.
- Test the cable at pin A6 N3 55/12 for short circuit to positive.
- If all the wiring is in order and the fault code is still current, then replace control unit MR engine control.



06506 - 06564 Diagnostic cable oil separator

06506 : The diagnostic cable of the oil separator has ⌐ ¬ –.

No functionality stored

06564 : The diagnostic cable of the oil separator has –//– or ⌐ ¬ +.

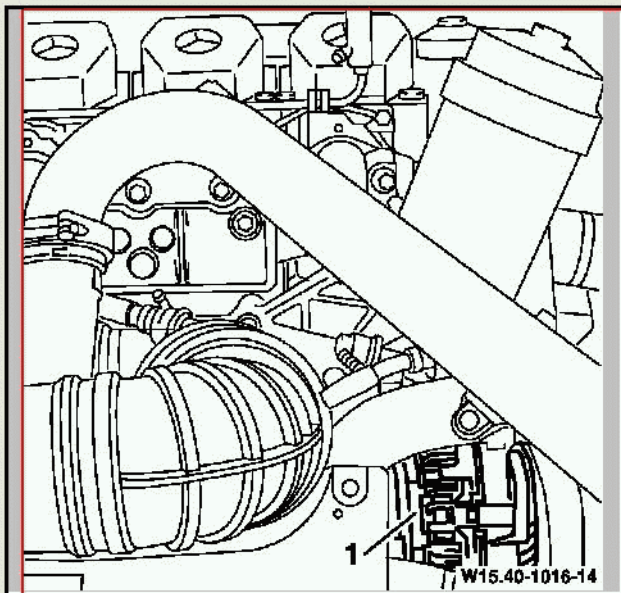
No functionality stored

07542 - 07543 Battery voltage

07542 : Battery voltage too high

Figure legend :
- 1: Generator

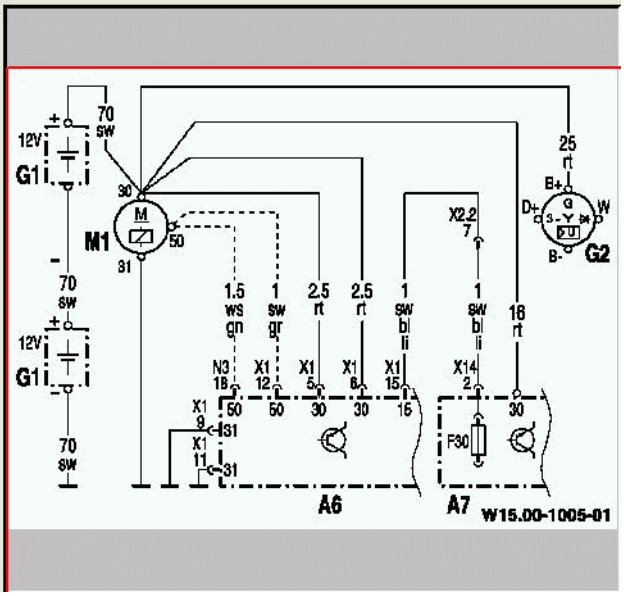
Possible causes of fault :
- Generator or regulator faulty
- MR engine control (PLD) control unit faulty



07543 : Battery voltage too low

Figure legend :
- A6: Control unit MR engine control
- A7: Base module
- G1: Battery
- G2: Generator
- X1, X2.2, X14: Plug connections
- M1: Starter

Possible causes of fault :
- Battery is severely discharged or faulty.
- Generator or regulator faulty
- Fuse F30 at base module is faulty.
- The cables of the voltage supply are faulty.

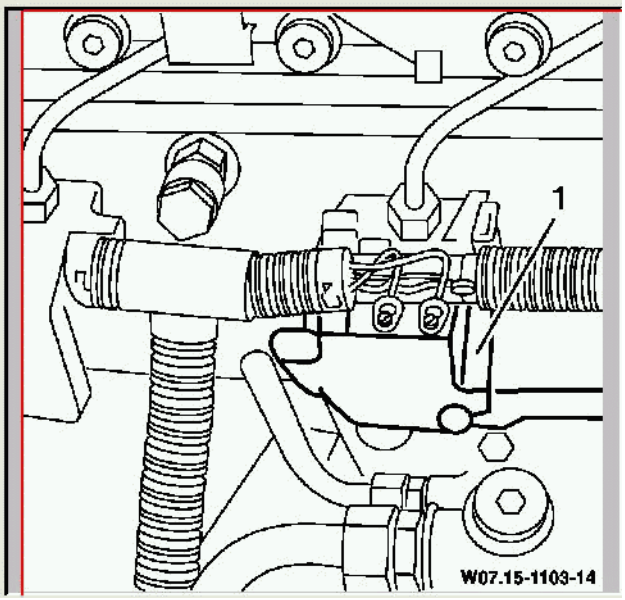


09044 - 09045 Unit pump cylinder 1

09044 : Unit pump cylinder 1: smooth idle control within limit

Figure legend :
- 1: Unit pump with screw contacts
- Wiring diagram with key F7

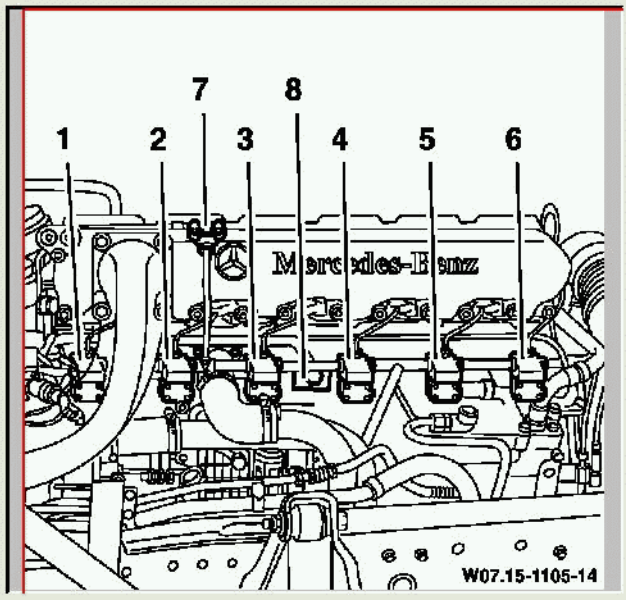
Instruction :
- Separate electrical screw connection at unit pump facing away from engine.
- Connect ammeter between disconnected cable and the relevant unit pump contact. (Terminal K10 ⟵Ⓐ⟶ Cable to terminal K10)
- When doing this, ensure good contacts of screw terminals. Run engine. Check and note readout(s).
- Readout of unit pump affected is clearly beyond the readouts of the other unit pumps: Replace unit pump for cylinder 1.
- Run engine.
- Test smooth idle speed control with selection menu 'actuations'.



09045 : Unit pump cylinder 1: single cylinder adjustment within limit

Figure legend :
- 1-6: Unit pumps

Instruction :
- Carry out compression test with selection menu 'actuations'.
- Compression of relevant cylinder < 75% of specified value? Rectify mechanical faults (valves, piston rings etc.).

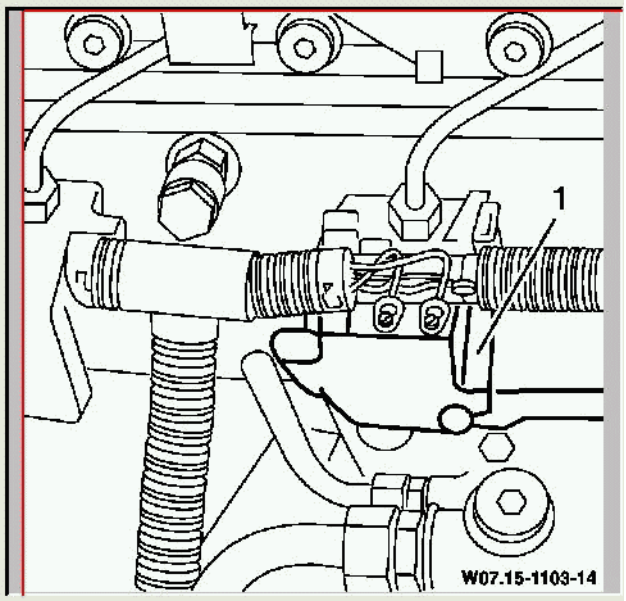


09144 - 09145 Unit pump cylinder 2

09144 : Unit pump cylinder 2: smooth idle control within limit

Figure legend :
- 1: Unit pump with screw contacts
- Wiring diagram with key F7

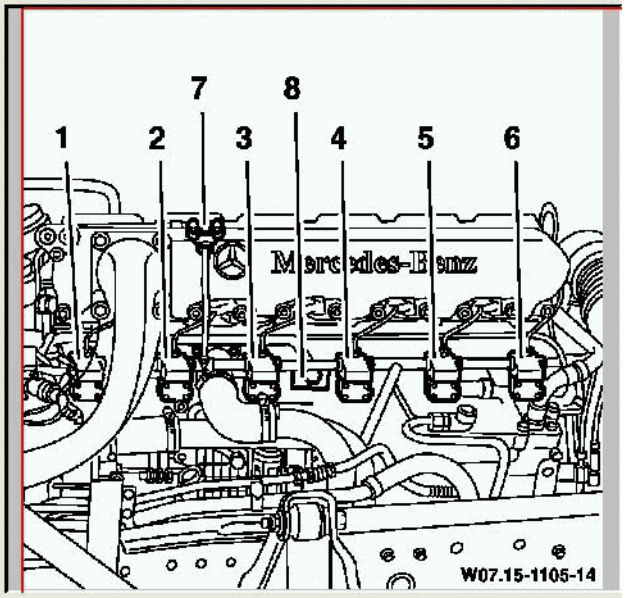
Instruction :
- Separate electrical screw connection at unit pump facing away from engine.
- Connect ammeter between disconnected cable and the relevant unit pump contact. (Terminal K13 ⟵Ⓐ⟶ Cable to terminal K13)
- When doing this, ensure good contacts of screw terminals. Run engine. Check and note readout(s).
- Readout of unit pump affected is clearly beyond the readouts of the other unit pumps: Replace unit pump for cylinder 2.
- Run engine.
- Test smooth idle speed control with selection menu 'actuations'.



09145 : Unit pump cylinder 2: single cylinder adjustment within limit

Figure legend :
- 1-6: Unit pumps

Instruction :
- Carry out compression test with selection menu 'actuations'.
- Compression of relevant cylinder < 75% of specified value? Rectify mechanical faults (valves, piston rings etc.).

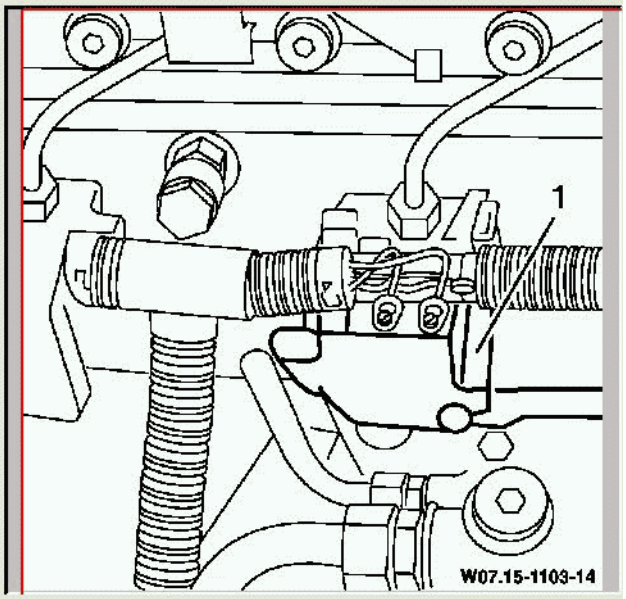


09244 - 09245 Unit pump cylinder 3

09244 : Unit pump cylinder 3: smooth idle control within limit

Figure legend :
- 1: Unit pump with screw contacts
- Wiring diagram with key F7

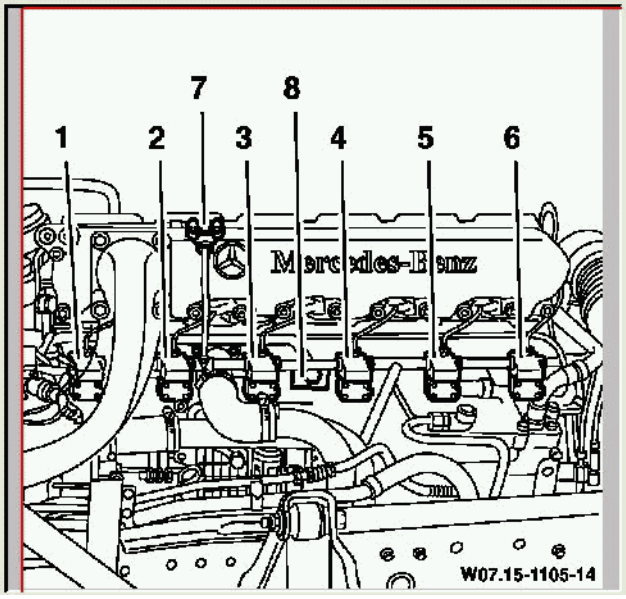
Instruction :
- Separate electrical screw connection at unit pump facing away from engine.
- Connect ammeter between disconnected cable and the relevant unit pump contact. (Terminal K14 ⟵Ⓐ⟶ Cable to terminal K14)
- When doing this, ensure good contacts of screw terminals. Run engine. Check and note readout(s).
- Readout of unit pump affected is clearly beyond the readouts of the other unit pumps: Replace unit pump for cylinder 3.
- Run engine.
- Test smooth idle speed control with selection menu 'actuations'.



09245 : Unit pump cylinder 3: single cylinder adjustment within limit

Figure legend :
- 1-6: Unit pumps

Instruction :
- Carry out compression test with selection menu 'actuations'.
- Compression of relevant cylinder < 75% of specified value? Rectify mechanical faults (valves, piston rings etc.).

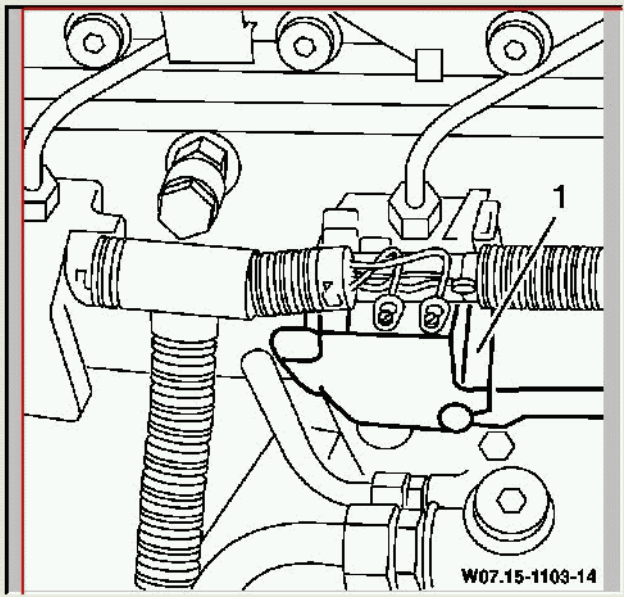


09344 - 09345 Unit pump cylinder 4

09344 : Unit pump cylinder 4: smooth idle control within limit

Figure legend :
- 1: Unit pump with screw contacts
- Wiring diagram with key F7

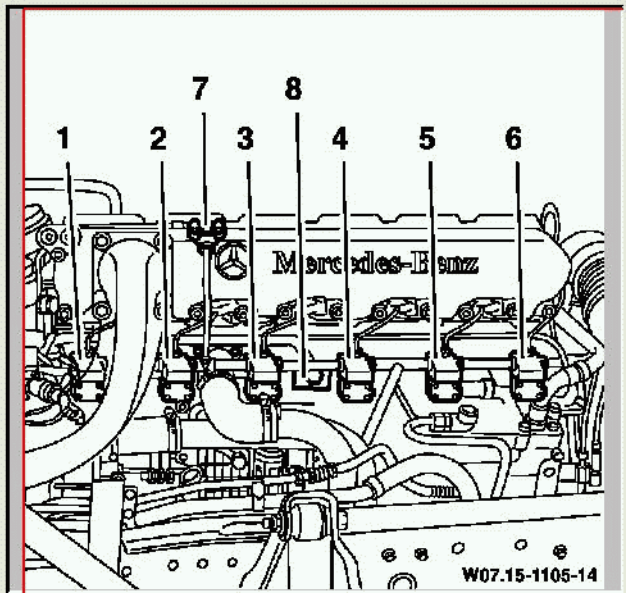
Instruction :
- Separate electrical screw connection at unit pump facing away from engine.
- Connect ammeter between disconnected cable and the relevant unit pump contact. (Terminal K38 ⟵Ⓐ⟶ Cable to terminal K38)
- When doing this, ensure good contacts of screw terminals. Run engine. Check and note readout(s).
- Readout of unit pump affected is clearly beyond the readouts of the other unit pumps: Replace unit pump for cylinder 4.
- Run engine.
- Test smooth idle speed control with selection menu 'actuations'.



09345 : Unit pump cylinder 4: single cylinder adjustment within limit

Figure legend :
- 1-6: Unit pumps

Instruction :
- Carry out compression test with selection menu 'actuations'.
- Compression of relevant cylinder < 75% of specified value? Rectify mechanical faults (valves, piston rings etc.).

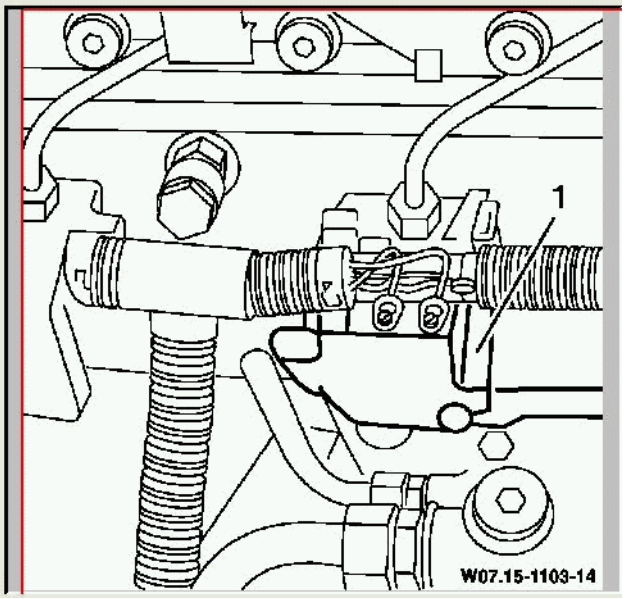


09444 - 09445 Unit pump cylinder 5

09444 : Unit pump cylinder 5: smooth idle control within limit

Figure legend :
- 1: Unit pump with screw contacts
- Wiring diagram with key F7

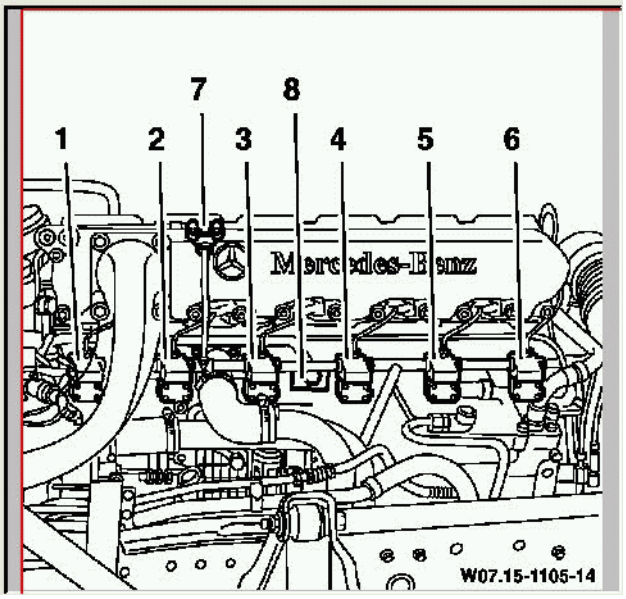
Instruction :
- Separate electrical screw connection at unit pump facing away from engine.
- Connect ammeter between disconnected cable and the relevant unit pump contact. (Terminal K19 ⟵Ⓐ⟶ Cable to terminal K19)
- When doing this, ensure good contacts of screw terminals. Run engine. Check and note readout(s).
- Readout of unit pump affected is clearly beyond the readouts of the other unit pumps: Replace unit pump for cylinder 5.
- Run engine.
- Test smooth idle speed control with selection menu 'actuations'.



09445 : Unit pump cylinder 5: single cylinder adjustment within limit

Figure legend :
- 1-6: Unit pumps

Instruction :
- Carry out compression test with selection menu 'actuations'.
- Compression of relevant cylinder < 75% of specified value? Rectify mechanical faults (valves, piston rings etc.).

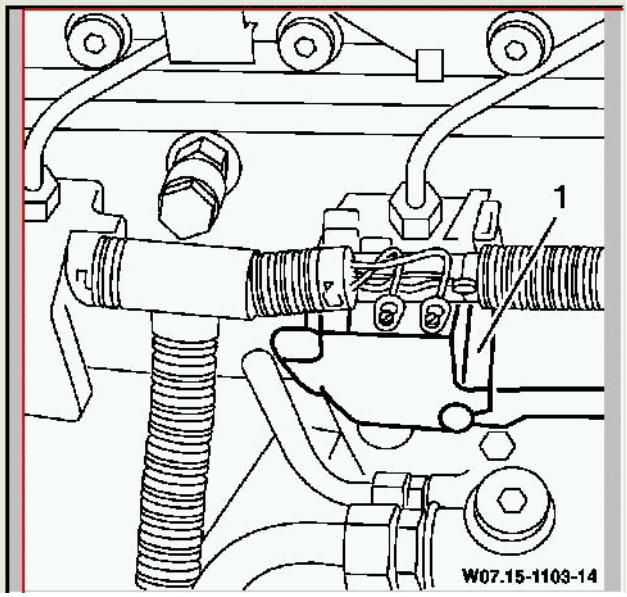


09544 - 09545 Unit pump cylinder 6

09544 : Unit pump cylinder 6: smooth idle control within limit

Figure legend :
- 1: Unit pump with screw contacts
- Wiring diagram with key F7

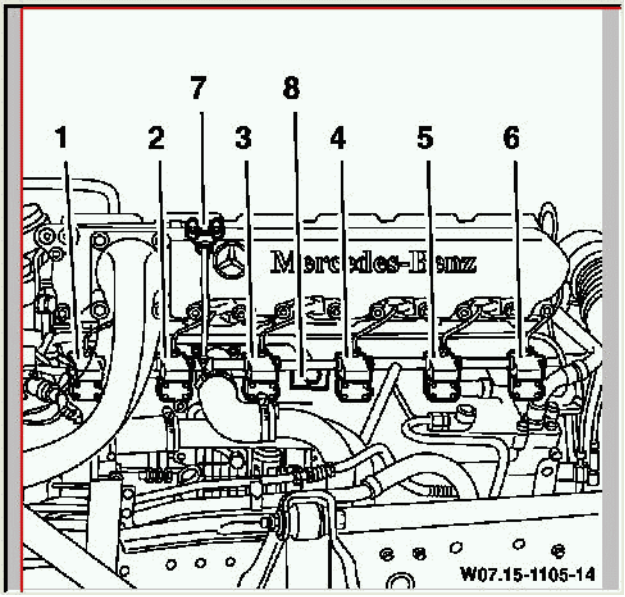
Instruction :
- Separate electrical screw connection at unit pump facing away from engine. Connect ammeter between disconnected cable and the relevant unit pump contact. (Terminal K21 ⊖Ⓐ⊕ Cable to terminal K21)
- When doing this, ensure good contacts of screw terminals. Run engine. Check and note readout(s).
- Readout of unit pump affected is clearly beyond the readouts of the other unit pumps: Replace unit pump for cylinder 6.
- Run engine.
- Test smooth idle speed control with selection menu 'actuations'.



09545 : Unit pump cylinder 6: single cylinder adjustment within limit

Figure legend :
- 1-6: Unit pumps

Instruction :
- Carry out compression test with selection menu 'actuations'.
- Compression of relevant cylinder < 75% of specified value? Rectify mechanical faults (valves, piston rings etc.).



09846 Single cylinder comparison aborted

09846 : Single cylinder comparison aborted

Instruction :

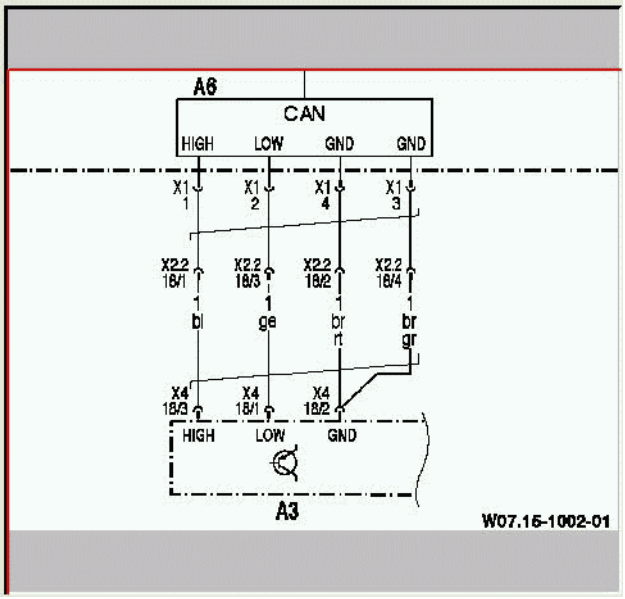
- Erase fault memory.
- Carry out single cylinder comparison with selection menu 'actuations'.

10100 - 10149 CAN-link

10100 : CAN-H link to FR drive control faulty

Figure legend :
- A6: Control unit MR engine control
- A3: Control unit FR drive control
- X1, X2.2, X4: Plug connections

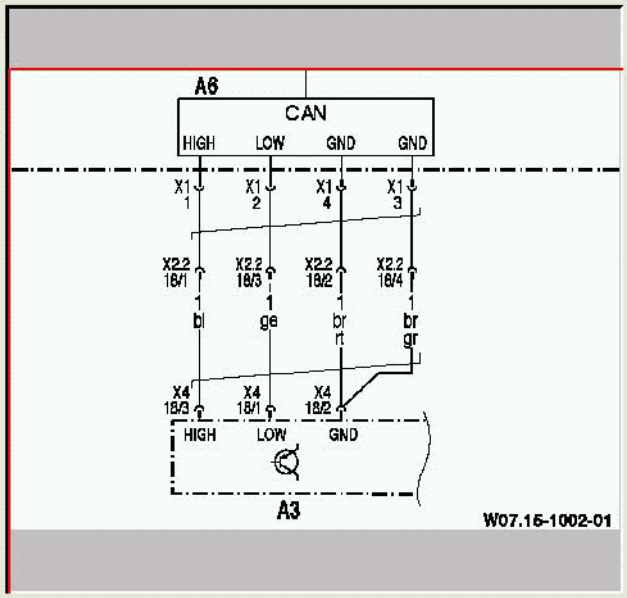
Instruction :
- Test cable A6 X1 16/1 - A3 X4 18/3 for –//–, repair or replace if necessary.
- Erase fault memory in control unit MR engine control
- Erase fault memory in control unit FR drive control



10101 : CAN-L link to FR drive control faulty

Figure legend :
- A6: Control unit MR engine control
- A3: Control unit FR drive control
- X1, X2.2, X4: Plug connections

Instruction :
- Test cable A6 X1 16/2 - A3 X4 18/1 for –//–, repair or replace if necessary.
- Erase fault memory in control unit MR engine control
- Erase fault memory in control unit FR drive control

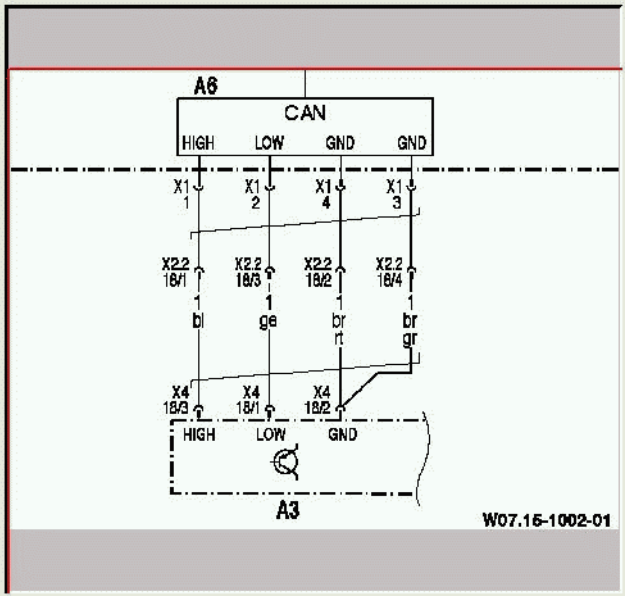


10100 - 10149 CAN-link

10102 : Data from control unit FR drive control faulty

Figure legend :
- A6: Control unit MR engine control
- A3: Control unit FR drive control
- X1, X2.2, X4: Plug connections

Instruction :
- Process current faults of control unit FR drive control except CAN bus fault codes 1 02 01, 0 02 02 and 1 02 03.

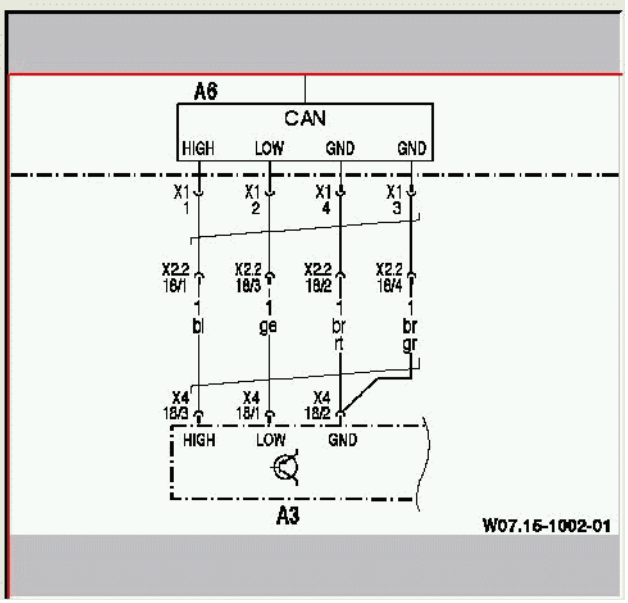


10104 : CAN link to FR drive control faulty

Figure legend :
- A6: Control unit MR engine control
- A3: Control unit FR drive control
- X1, X2.2, X4: Plug connections

Note :
- It is not possible to process the fault code either as a current or as a stored fault as no communication with control unit MR engine control is possible.

Instruction :
- Check CAN link to control unit FR drive control.
- Inspect cables, connectors, plug connections and electrical components for damage, correct connection, loose contact and corrosion, and repair if necessary.
- Process engine CAN bus fault in control unit FR drive control.
- Carry out operational check.



10100 - 10149 CAN-link

10104 : CAN link to FR drive control faulty

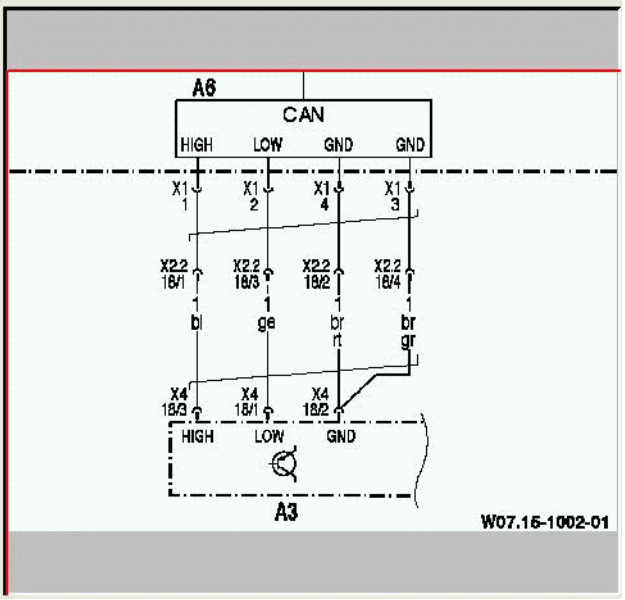
- X1, X2.2, X4: Plug connections

Note :

- It is not possible to process the fault code either as a current or as a stored fault as no communication with control unit MR engine control is possible.

Instruction :

- Check CAN link to control unit FR drive control.
- Inspect cables, connectors, plug connections and electrical components for damage, correct connection, loose contact and corrosion, and repair if necessary.
- Process engine CAN bus fault in control unit FR drive control.
- Carry out operational check.
- Communication with control unit MR engine control re-established: Check parameterization of control unit MR engine control for single-wire capability.

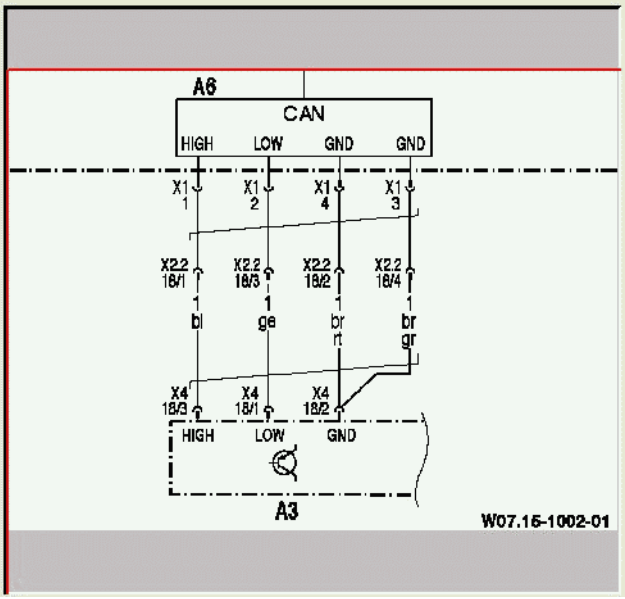


10149 Parameterizing error

10149 : CAN parameterizing error

Figure legend :
- A6: Control unit MR engine control
- A3: Control unit FR drive control
- X1, X2.2, X4: Plug connections

Instruction :
- Check whether parameterization of MR engine control and FR drive control agree.
- Check parameterization of fan in control modules MR engine control and FR drive control.
- Carry out operational check.



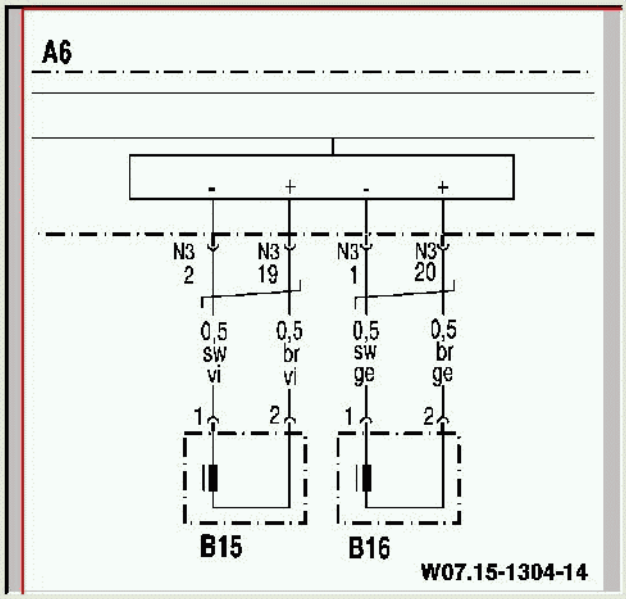
10308 - 10313 Crankshaft position sensor

10308 : Crankshaft position sensor ⌐ ¬ –

Figure legend :
- B15: Crankshaft position sensor

Possible causes of fault :
- Crankshaft position sensor B15
- Line N3 55/2 - B15 2/1 has ⌐ ¬ –.
- Line N3 55/19 - B15 2/2 has ⌐ ¬ –.

Note :
- Crankshaft position sensor Specification: 1,2 kOhm

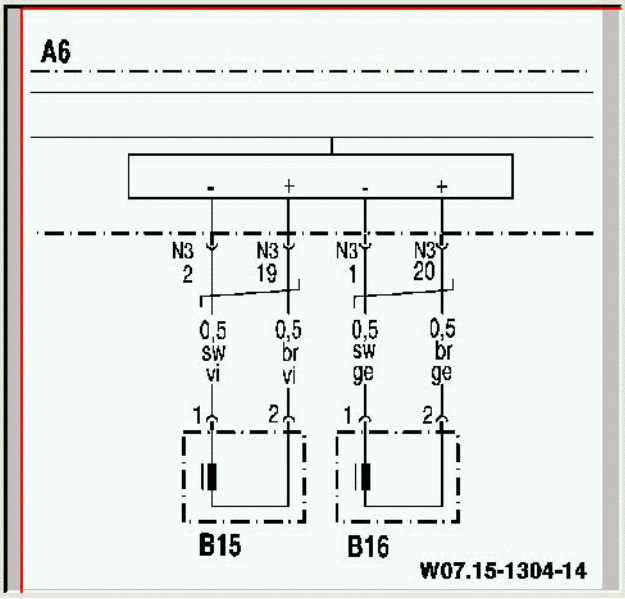


10309 : Crankshaft position sensor –//–

Figure legend :
- B15: Crankshaft position sensor

Possible causes of fault :
- Crankshaft position sensor B15
- Line N3 55/2 - B15 2/1 has –//–.
- Line N3 55/19 - B15 2/2 has –//–.

Note :
- Crankshaft position sensor Specification: 1,2 kOhm

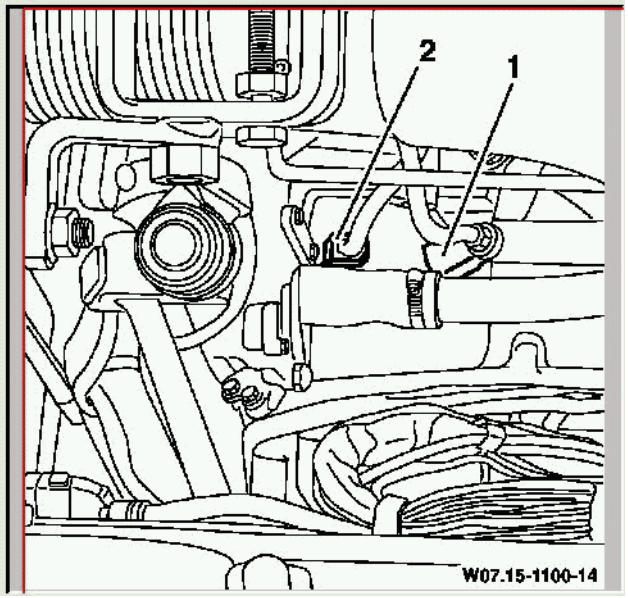


10308 - 10313 Crankshaft position sensor

10310 : Crankshaft position sensor, signal too low

Figure legend :
- 1: Crankshaft position sensor B15

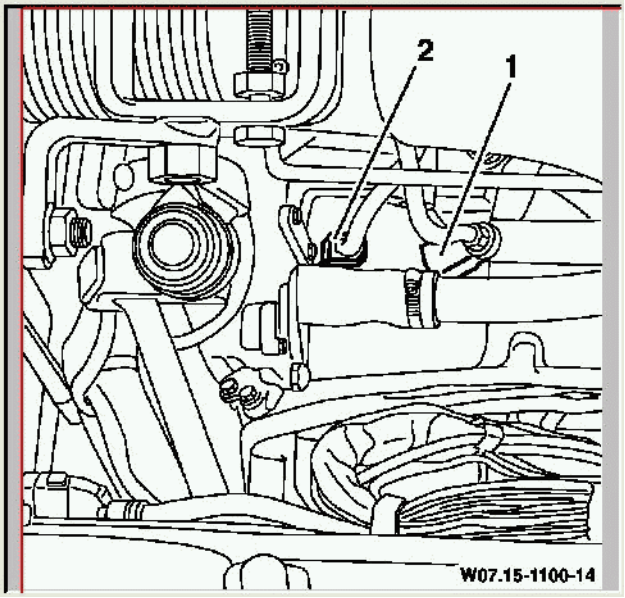
Instruction :
- With engine not running, pull out position sensor and inspect visually.
- Remove any metal swarf.
- If mechanical damage (clear signs of rubbing), replace position sensor.
- Replace clamping sleeve of position sensor if necessary.
- With engine switched off, press in position sensor as far as the mechanical stop.



10311 : Crankshaft position sensor, assignment of crankshaft and camshaft signal is errored.

Figure legend :
- 1: Crankshaft position sensor B15
- 2: Camshaft position sensor B16

Instruction :
- With engine not running, pull out position sensor and inspect visually.
- If mechanical damage (clear signs of rubbing), replace position sensor.
- Check tight installation of crankshaft and camshaft position sensors, replace clamping sleeve if necessary.
- With engine switched off, again press in both position sensors as far as the mechanical stop.
- Inspect wiring at plug connection N3 for damage, correct connection and corrosion, repair if necessary.
- Inspect crankshaft and camshaft position sensors at connector B15, B16 for wrong connection.

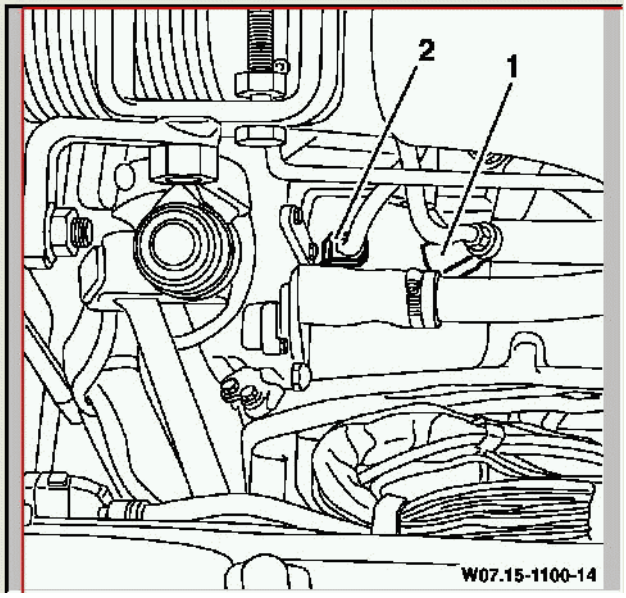


10308 - 10313 Crankshaft position sensor

10312 : Crankshaft position sensor, no signal

Figure legend :
- 1: Crankshaft position sensor B15

Instruction :
- With engine switched off, press in position sensor as far as the mechanical stop.
- Fault code 1 03 09 current: Process this fault code.
- Fault code 1 03 12 current: Inspect crankshaft position sensor, replace if necessary. Specification: 1,2 kOhm

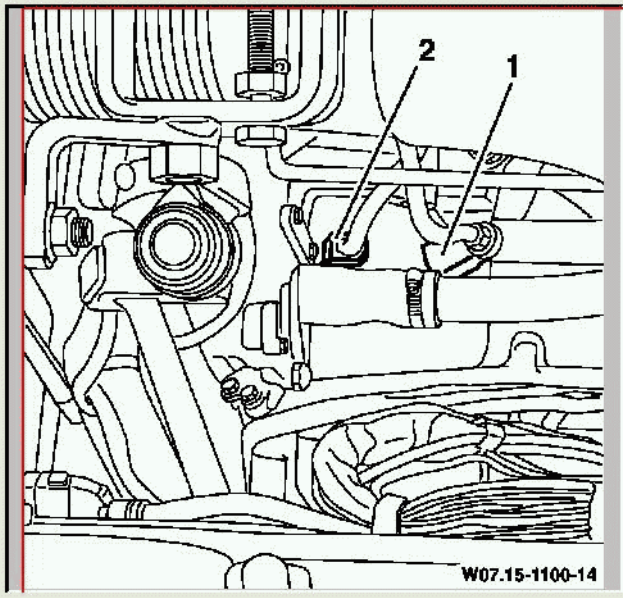


10313 : Crankshaft position sensor has incorrect polarity.

Figure legend :
- 1: Crankshaft position sensor B15

Note :
- Fault code 10313 can only occur during incorrect polarity test with selection menu 'actuations'.

Instruction :
- Connect crankshaft position sensor correctly.



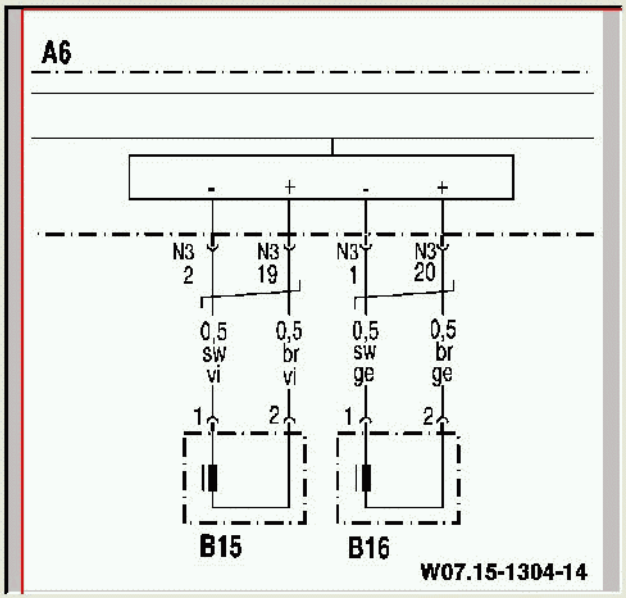
10408 - 10413 Camshaft position sensor

10408 : Camshaft position sensor ⌐ ¬ –

Figure legend :
- B16: Camshaft position sensor (TDC sensor, cylinder 1)

Possible causes of fault :
- Camshaft position sensor
- Line N3 55/1 - B16 2/2 has ⌐ ¬ –.
- Line N3 55/20 - B16 2/1 has ⌐ ¬ –.

Note :
- Camshaft position sensor (TDC sensor, cylinder 1) Specification: 1,2 kOhm

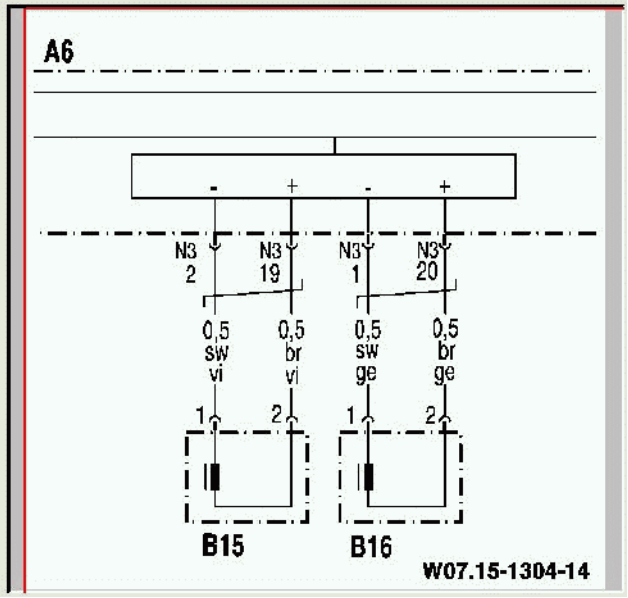


10409 : Camshaft position sensor –//–

Figure legend :
- B16: Camshaft position sensor (TDC sensor, cylinder 1)

Possible causes of fault :
- Camshaft position sensor (TDC sensor, cylinder 1)
- Line N3 55/1 - B16 2/2 has –//–.
- Line N3 55/20 - B16 2/1 has –//–.

Note :
- Camshaft position sensor (TDC sensor, cylinder 1) Specification: 1,2 kOhm



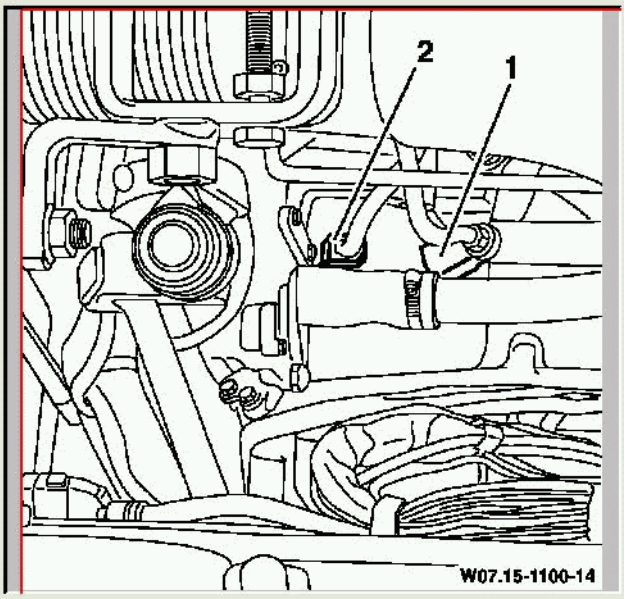
10408 - 10413 Camshaft position sensor

10413 : Camshaft position sensor incorrect polarity

Figure legend :
- 2: Camshaft position sensor B16 (TDC sensor, cylinder 1)

Note :
- Fault code 10413 can only occur during incorrect polarity test with selection menu 'actuations'.

Instruction :
- Connect position sensor B16 correctly.



10530 Engine overspeed

10530 : Engine overspeed

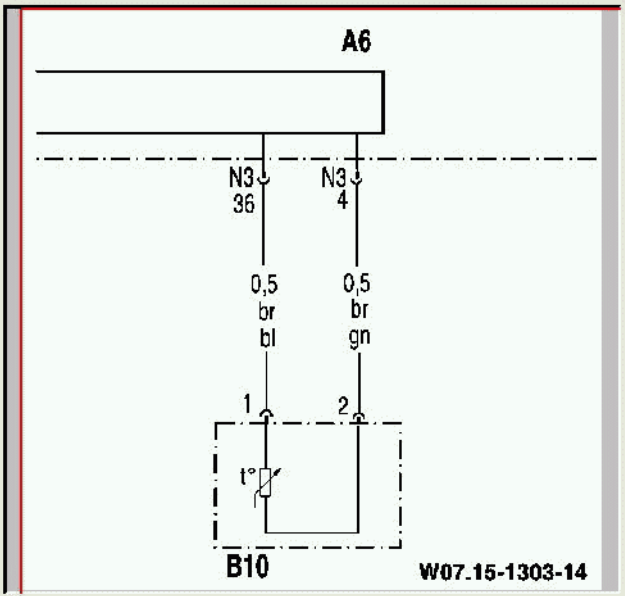
Instruction :
- Erase fault memory.
- Inform driver of permissible maximum speed.

11115 - 11116 Fuel temperature sensor

11115 : Fuel temperature sensor, above measuring range (⌐ ¬ + –//–)

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- B10: Fuel temperature sensor

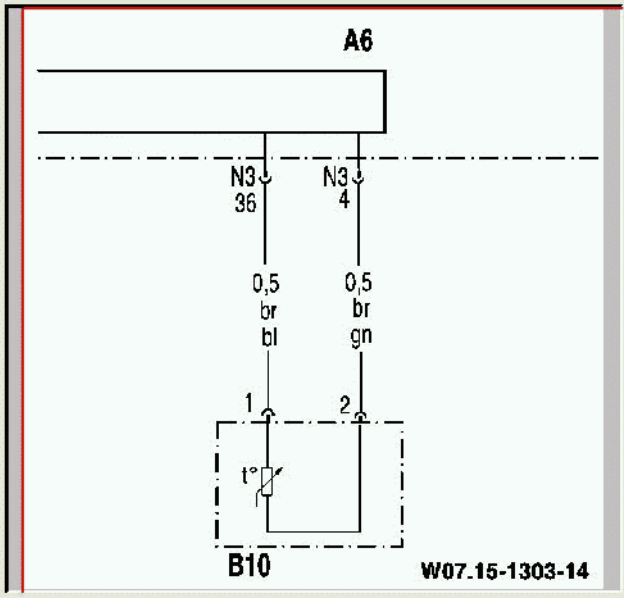
Possible causes of fault :
- Test sensor B10, repair or replace if necessary. Specified value: 2,4 kOhms (equals 21 °C)
- Test cable N3/36 - B10/1 for ⌐ ¬ + and –//–, repair if necessary.
- Test cable N3/4- B10/2 for –//–, repair if necessary.



11116 : Fuel temperature sensor, below measuring range (⌐ ¬ -)

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- B10: Fuel temperature sensor

Possible causes of fault :
- Test sensor B10, repair or replace if necessary. Specified value: 2,4 kOhms (equals 21 °C)
- Test cable N3/36- B10/1 for ⌐ ¬ –, repair if necessary.



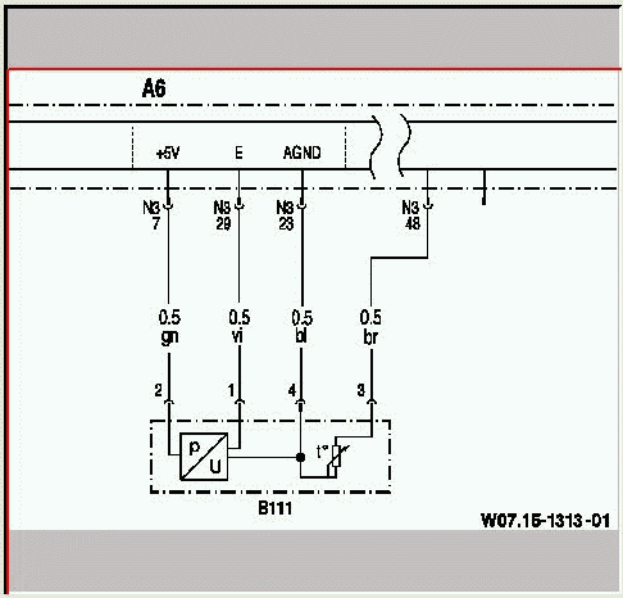
11215 - 11216 Charge pressure/air temperature combination sensor

11215 : 'Charge pressure and charge air temperature' combination sensor: temperature sensor, above measured range (⌐¬+ –//–)

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- B111: "Boost pressure and boost air temperature" combination sensor

Possible causes of fault :
- Combination sensor B111 faulty - Specified value: 2,4 kOhms (equals 21 °C)
- Line N3/48 - B111/3 has ⌐¬+ , –//–.

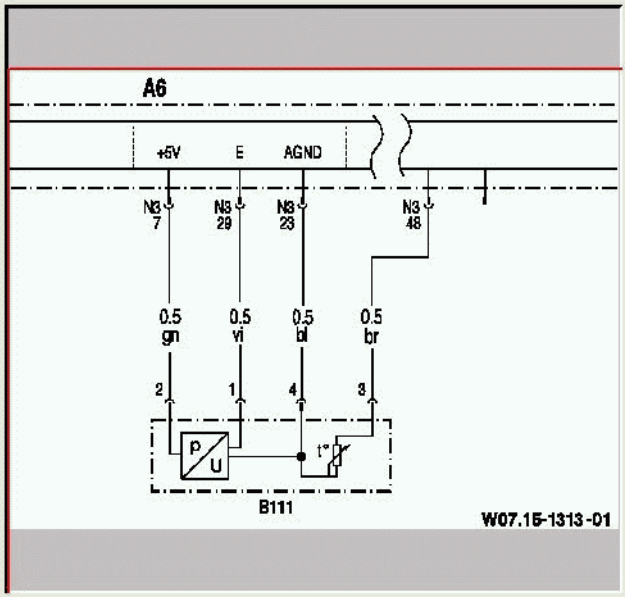
Note :
- Fault code 1 14 15 is also current: Test cable N3/23-B111/4 for –//–, repair if necessary.



11216 : 'Charge pressure and charge air temperature' combination sensor: temperature sensor, below measured range (⌐¬–)

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- B111: "Boost pressure and boost air temperature" combination sensor

Possible causes of fault :
- Combination sensor B111 faulty - Specified value: 2,3 kOhms (equals 21 °C)
- Line N3/48 - B111/3 has ⌐¬–.



11315 - 11316 Atmospheric pressure sensor

11315 : Atmospheric pressure sensor, above measuring range (⌐¬+ –//–)

Instruction :
- If fault codes 1 14 15 or 1 14 16 also exist, process these first of all.

11316 : Atmospheric pressure sensor, below measuring range (⌐¬–)

Instruction :
- If fault codes 1 14 15 or 1 14 16 also exist, process these first of all.

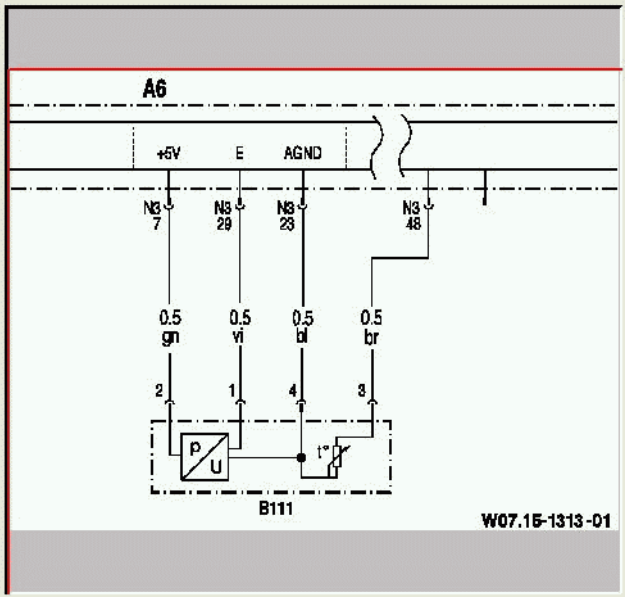
11415 - 11417 Charge pressure/air temperature combination sensor

11415 : 'Charge pressure and charge air temperature' combination sensor: pressure sensor, above measured range (⌐¬+ –//–)

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- B111: "Boost pressure and boost air temperature" combination sensor

Possible causes of fault :
- Combination sensor B111 faulty
- Line N3/29 - B111/1 has ⌐¬+ , –//–.

Note :
- Fault code 1 12 15 is also current: Test cable N3/23-B111/4 for –//–, repair if necessary.

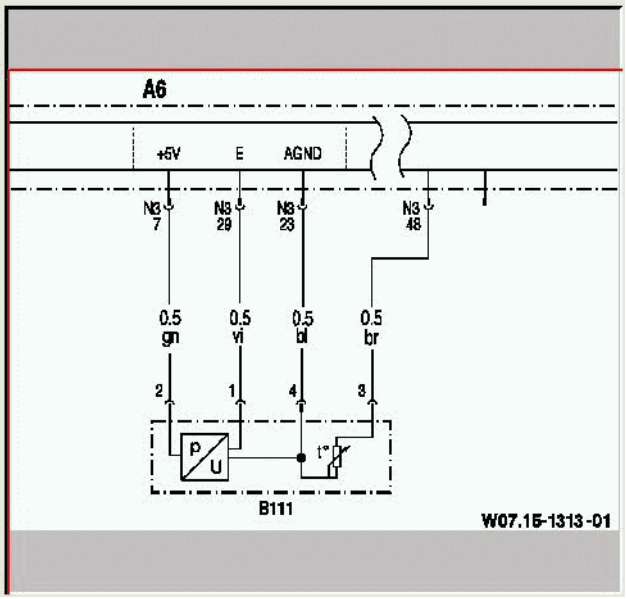


11416 : 'Charge pressure and charge air temperature' combination sensor: pressure sensor, below measured range (⌐¬–)

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- B111: "Boost pressure and boost air temperature" combination sensor

Possible causes of fault :
- Combination sensor B111 faulty
- Line N3/7 - B111/2 has ⌐¬–.
- Line N3/29 - B111/1 has ⌐¬–.

Instructions :
- Unplug connector from combination sensor. Fault codes 0 12 15 and 1 14 15 current: Replace combination sensor.



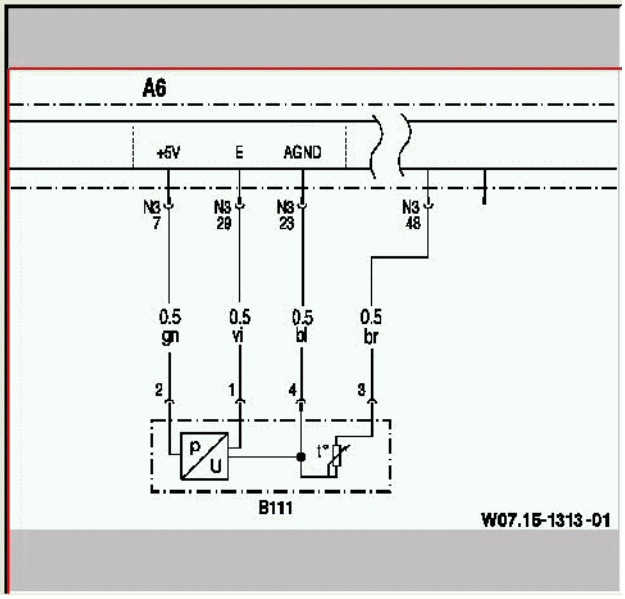
11415 - 11417 Charge pressure/air temperature combination sensor

11417 : 'Charge pressure and charge air temperature' combination sensor: pressure sensor, measured value implausible

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- B111: "Boost pressure and boost air temperature" combination sensor

Instruction :
- Test cable N3 55/7 - B111/2 for –//–, repair or replace if necessary.
- Visually inspect combination sensor, replace if necessary.

Note :
- Further information with key F2

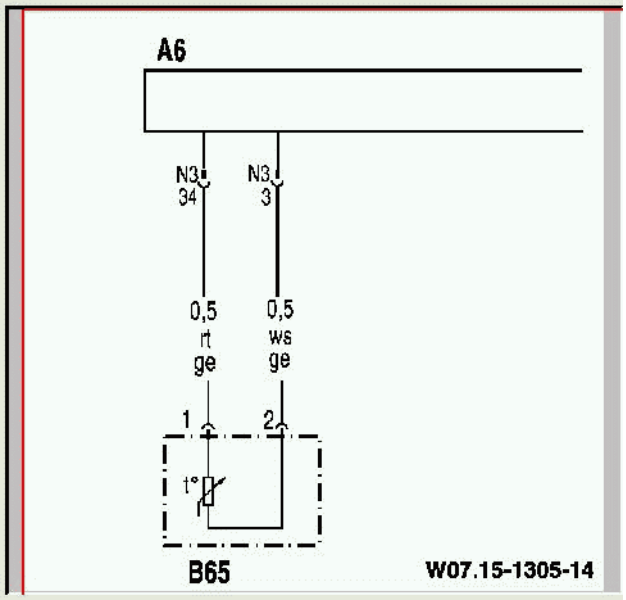


11515 - 11516 Coolant temperature sensor

11515 : Coolant temperature sensor, above measuring range (⌐¬ + –//–)

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- B65.1: Coolant temperature sensor

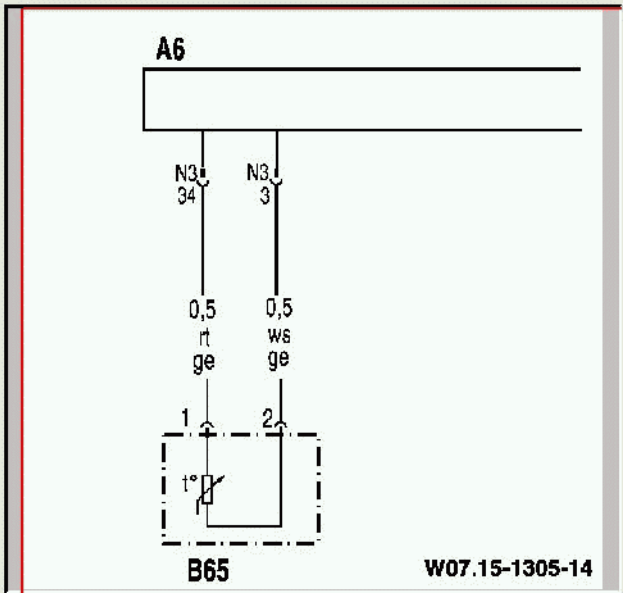
Possible causes of fault :
- Test sensor B65.1, repair or replace if necessary. Specified value: 2,4 kOhms (equals 21 °C)
- Test cable N3/34 - B65.1/1 for ⌐¬ + and –//–, repair if necessary.
- Test cable N3/3 - B65.1/2 for –//–, repair or replace if necessary.



11516 : Coolant temperature sensor, below measuring range (⌐¬ –)

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- B65.1: Coolant temperature sensor

Possible causes of fault :
- Test sensor B65.1, repair or replace if necessary. Specified value: 2,4 kOhms (equals 21 °C)
- Test cable N3/34- B65.1/1 for ⌐¬ –, repair if necessary.

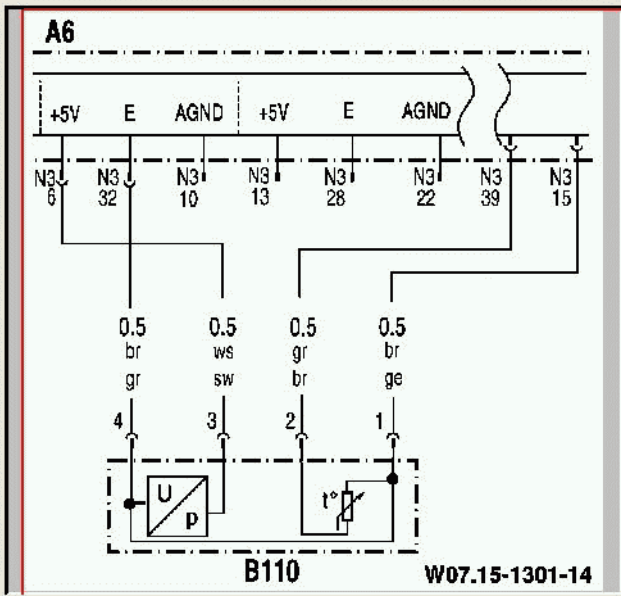


11615 - 11617 Oil pressure/temperature combination sensor

11615 : 'Oil pressure and oil temperature' combination sensor: pressure sensor, above measured range (⌐¬+ –//–)

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- B110: "Oil pressure and oil temperature" combination sensor

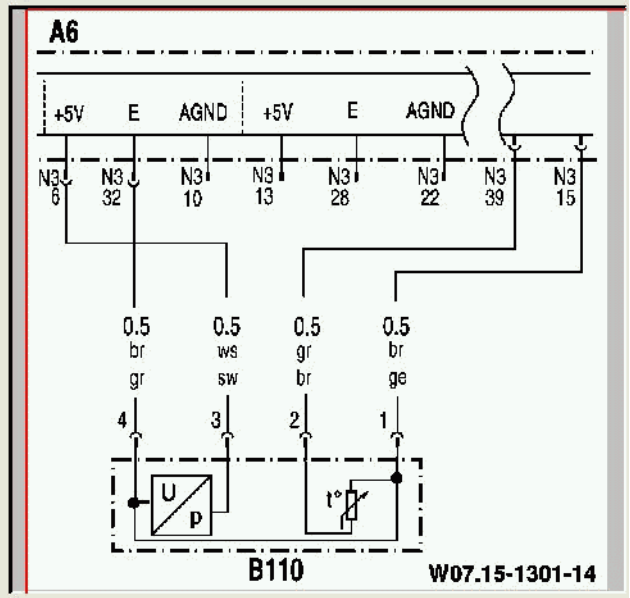
Possible causes of fault :
- Test combination sensor B110, replace if necessary.
- Test cable N3/32 - B110/4 for ⌐¬+ and –//–, repair if necessary.
- Fault code 0 10 15 is also current: Test cable N3/15-B110/1 for –//–, repair if necessary.



11616 : 'Oil pressure and oil temperature' combination sensor: pressure sensor, below measured range (⌐¬–)

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- B110: "Oil pressure and oil temperature" combination sensor

Possible causes of fault :
- Unplug connector from combination sensor. Fault codes 0 10 15 and 1 16 15 current: Replace combination sensor.
- Test cable N3/6- B110/3 for ⌐¬–, repair if necessary.
- Test cable N3/32- B110/4 for ⌐¬–, repair if necessary.

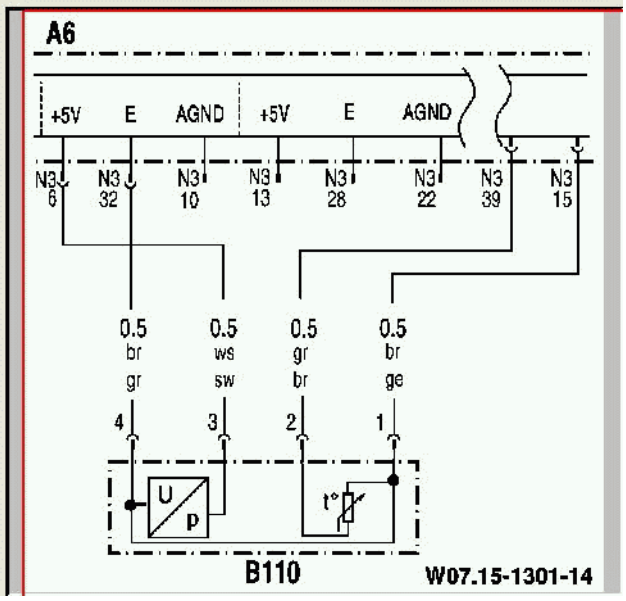


11615 - 11617 Oil pressure/temperature combination sensor

11617 : 'Oil pressure and oil temperature' combination sensor: pressure sensor, measured value implausible

Figure legend :
- 1: "Oil pressure and oil temperature" combination sensor B110

Instruction :
- Inspect oil level, adjust to correct level if necessary.
- Test cable N3 55/6 - B110/3 for –//–, repair or replace if necessary.
- Visually inspect combination sensor, replace if necessary.



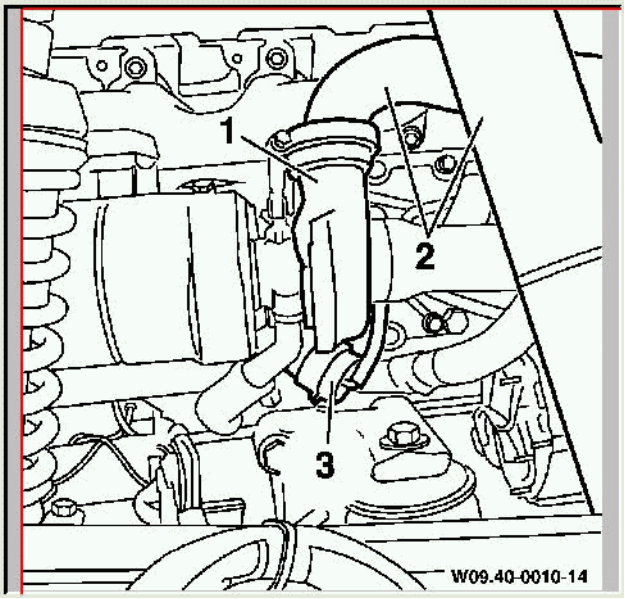
11818 Boost circuit faulty

11818 : Boost circuit faulty

Figure legend :
- 1: Turbocharger
- 2: Boost pipes

Instruction :
- Inspect hoses and connections between turbocharger, intercooler and boost pipes for leaks.
- Inspect intercooler.
- Check vacuum cell of bypass valve (wastegate) for leakage or defects.
- Carry out operational check.

Note :
- The vacuum cell of the bypass valve (wastegate) can be checked for leaks using pressure pump 124 589 15 21 01.

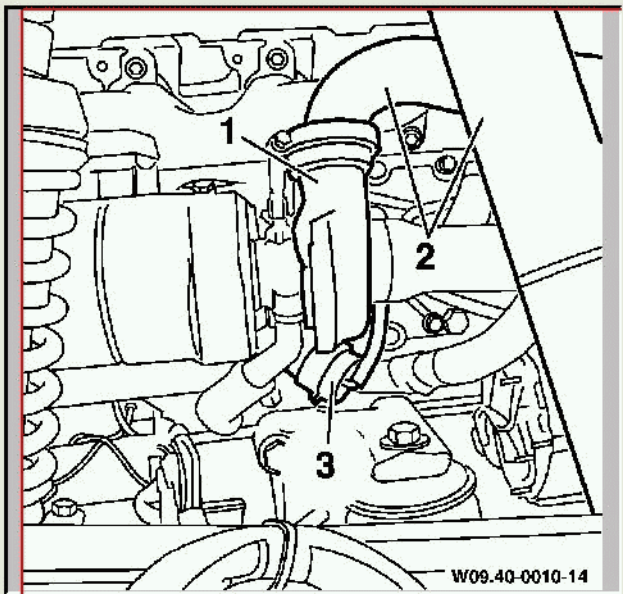


11820 Boost pressure too high

11820 : Boost pressure too high

Figure legend :
- 1: Turbocharger
- 3: Pressure unit for bypass valve

Instruction :
- Test operation of vacuum unit of bypass valve at turbocharger with pressure tester. The bypass valve should open at the pressure of approx. 1,7 bar.
- Specification not met: replace bypass valve (if possible) or turbocharger.
- Carry out operational check.



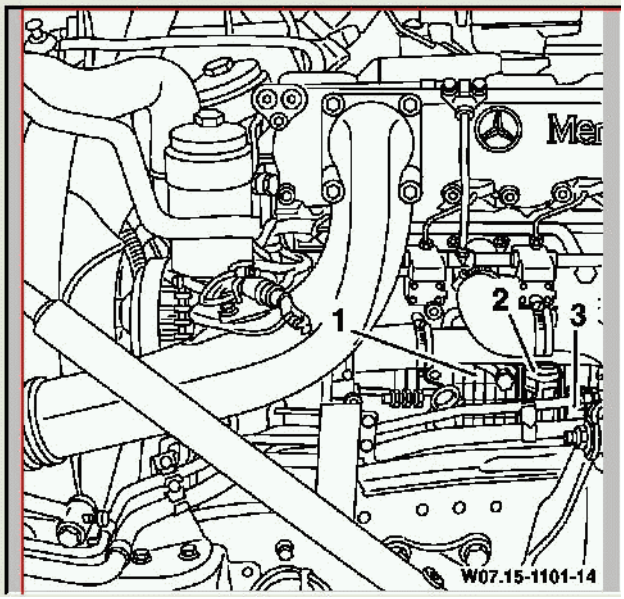
11873 Turbocharger

11873 : Turbocharger - Vehicle speed has synchronization fault.

Figure legend :
- 1: Control unit MR engine control

Note :
- Turbocharger 2: The component is not fitted to this vehicle.

Instruction :
- Replace control unit MR engine control and parameterize.
- Carry out operational check.



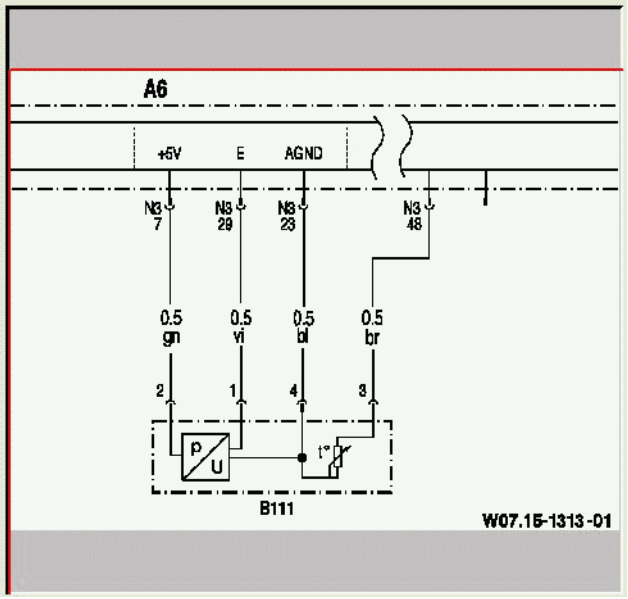
11875 Charge pressure deviation

11875 : Charge pressure deviation is too large.

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- B111: "Boost pressure and boost air temperature" combination sensor

Note :
- If fault codes 1 14 15, 1 1416 or 1 14 17 also exist, process these first of all.

Instruction :
- Inspect hoses and connections between turbocharger, intercooler and boost pipes for leaks.
- Inspect intercooler.
- Test boost pressure sensor.
- Carry out operational check.



11876 Charge pressure for braking operation

11876 : The charge pressure for braking operation is not reached.

No functionality stored

12219 Terminal 15

12219 : Terminal 15 of control unit MR or FR has –//–.

Important note :

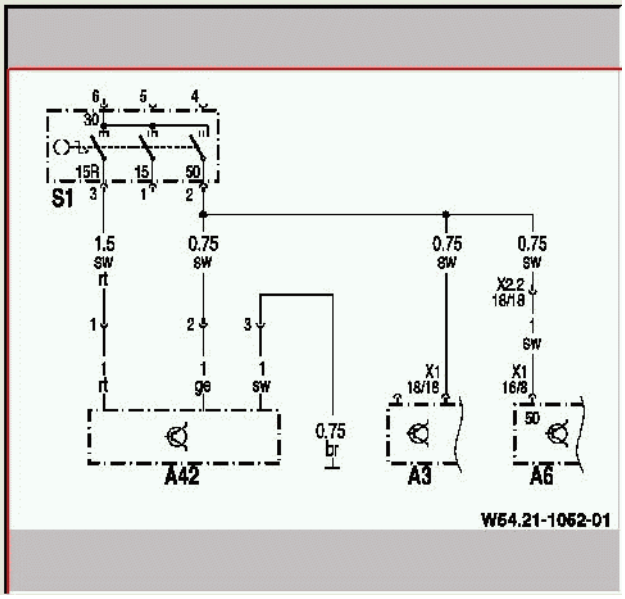
- If this fault occurs as current fault, the engine continues running. If the fault still exists and the engine is switched off, it can no longer be started after about 10 s. The fault code cannot be processed then either as a current or as a stored fault as no communication is possible with control unit MR engine control. (No communication either with control unit MR engine control nor with control unit FR drive control if tml. 15 of control unit FR drive control is interrupted)

12319 Terminal 50

12319 : Terminal 50 of control unit MR or FR has –//–.

Figure legend :
- S1: Drive switch
- A3: Control unit FR drive control
- A6: Control unit MR engine control
- A42: Control unit WSP immobilizer

Instruction :
- Test cable and plug connections between S1/2 and A3 X1 18/18 for –//–, repair if necessary.
- Test cable and plug connections between S1/2 and A6 X1 16/8 for –//–, repair if necessary.



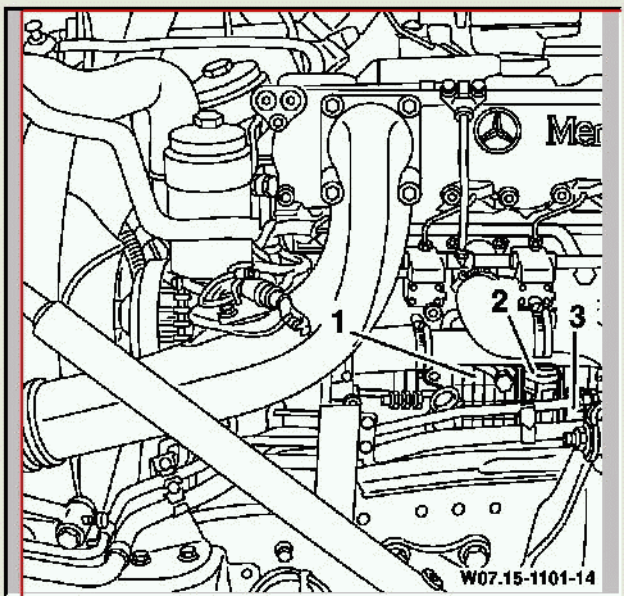
12415 - 12416 Differential fuel pressure sensor

12415 : The differential fuel pressure sensor has –//–.

Figure legend :
- 1: Control unit MR engine control

Note :
- The sensor is not installed.

Instruction :
- Replace control unit MR engine control and parameterize.
- Carry out operational check.

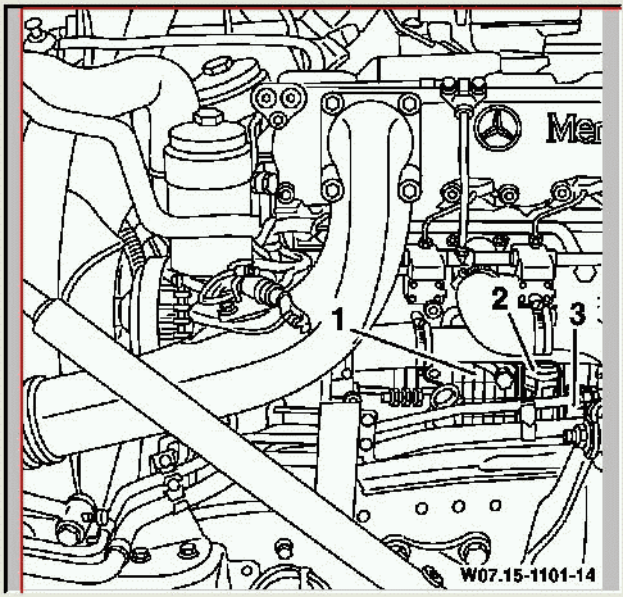


12416 : The differential fuel pressure sensor has ⌐¬+ , ⌐¬–.

Figure legend :
- 1: Control unit MR engine control

Note :
- The sensor is not installed.

Instruction :
- Replace control unit MR engine control and parameterize.
- Carry out operational check.



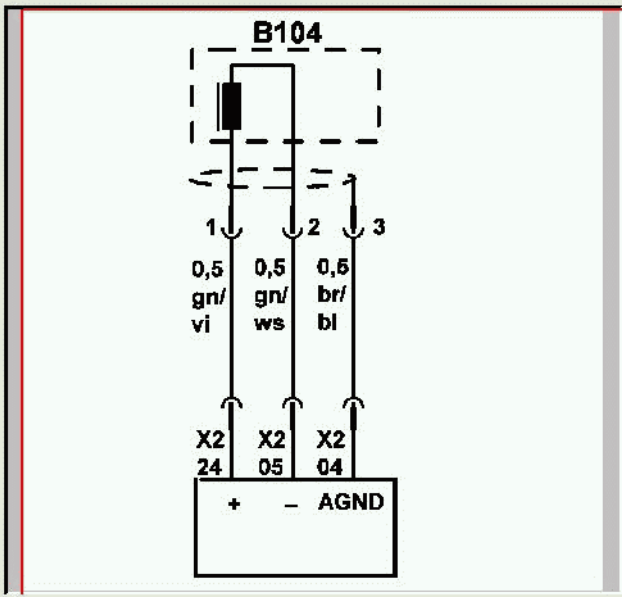
12612 - 12712 Turbocharger rpm sensor

12612 : The turbocharger rpm sensor has –//– , ⌐¬+ , ⌐¬–.

Figure legend :
- B104: Turbocharger rpm sensor
- X2: 55-pin connector at control unit MR (A6).

Possible causes of fault :
- Turbocharger rpm sensor
- Line B104 3/1 - A6 X2 55/24 has –//– , ⌐¬+ , ⌐¬–.
- Line B104 3/2 - A6 X2 55/05 has –//– , ⌐¬+ , ⌐¬–.

Note :
- Specified value at component B 104 is 630 - 1060 ohms.

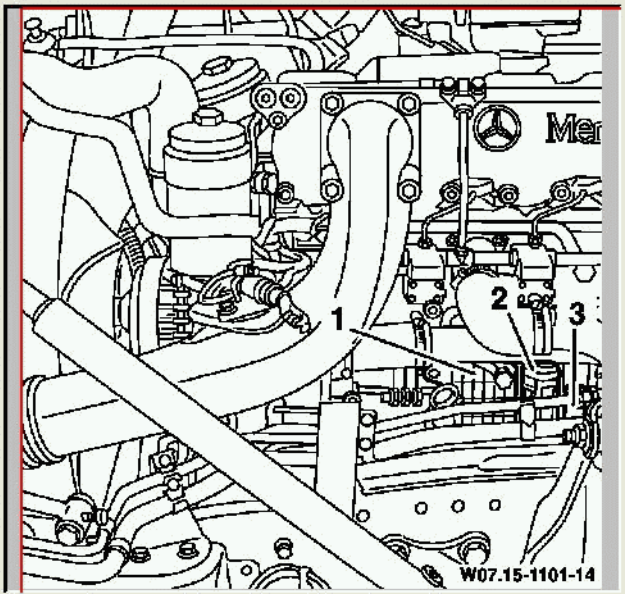


12712 : The turbocharger rpm sensor has –//– , ⌐¬+ , ⌐¬–. (Turbocharger 2)

Figure legend :
- 1: Control unit MR engine control

Note :
- The component is not fitted to this vehicle.

Instruction :
- Replace control unit MR engine control and parameterize.
- Carry out operational check.

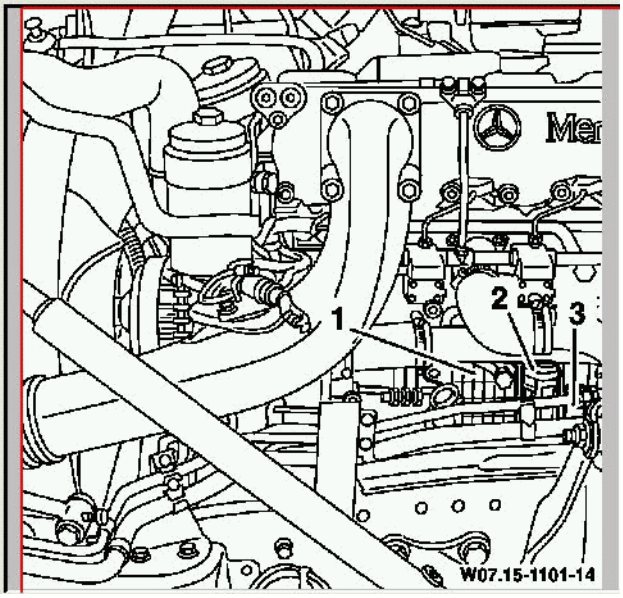


14034 - 14036 Internal fault

14034 : Internal fault in control unit

Figure legend :
- 1: Control unit MR engine control

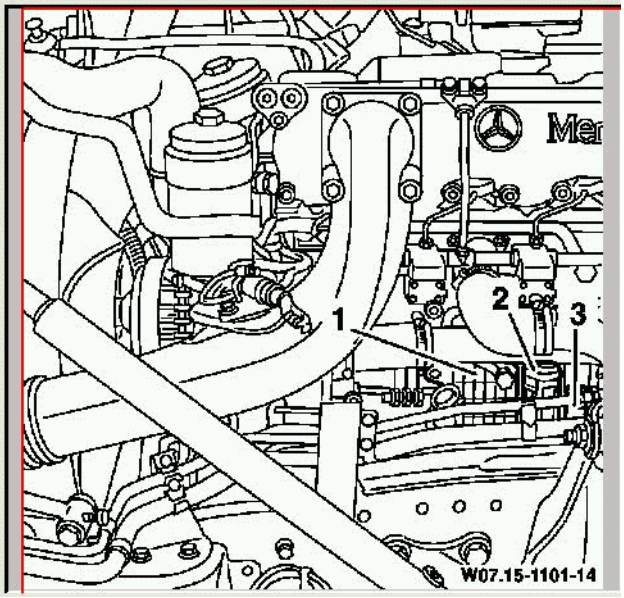
Instruction :
- Check all affected plugs, connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. If fault code still exists, replace control unit. Parameterize control unit MR engine control.



14035 : Internal fault in control unit

Figure legend :
- 1: Control unit MR engine control

Instruction :
- Check all affected plugs, connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. If fault code still exists, replace control unit. Parameterize control unit MR engine control.

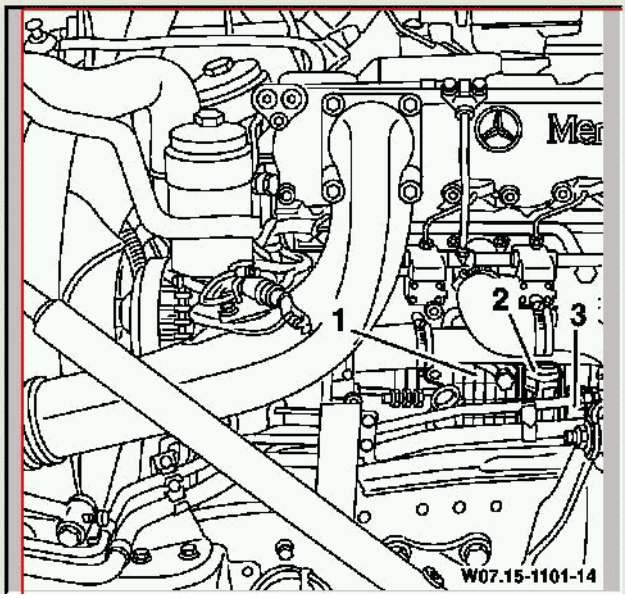


14034 - 14036 Internal fault

14036 : Internal fault in control unit

Figure legend :
- 1: Control unit MR engine control

Instruction :
- Check all affected plugs, connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. If fault code still exists, replace control unit. Parameterize control unit MR engine control.



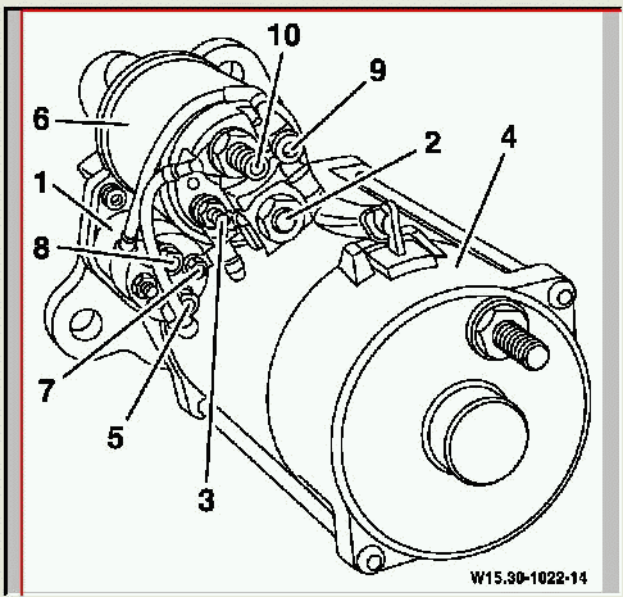
14039 Starter actuation

14039 : Starter actuation (output stage) faulty

Figure legend :
- 1: Series relay
- 3: Control line (terminal 50) from control unit MR
- 4: Starter
- 6: Solenoid switch

Possible causes of fault :
- Series relay is corroded (internal resistance too high).
- Wrong series relay is installed.
- The resistance of line A6 X1 16/12 - M1 (starter) is too high.

Note :
- The series relay must be checked and replaced if necessary, otherwise the new control unit will also be irreparably damaged.
- Internal resistance of series relay: 15 - 19 ohms



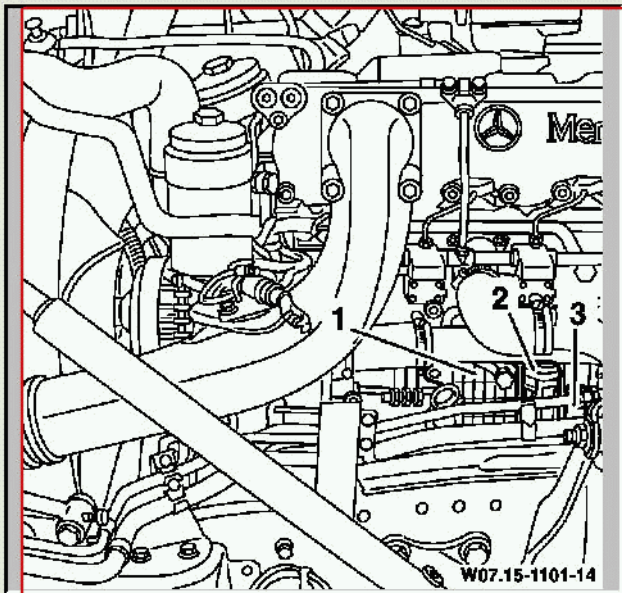
14041 Internal fault

14041 : Internal fault in control unit

Figure legend :
- 1: Control unit MR engine control

Note :
- Actuation of proportioning valves faulty (Hardware fault)

Instruction :
- Check all affected plugs, connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. If fault code still exists, replace control unit. Parameterize control unit MR engine control.



14049 Parameterizing error

14049 : Parameterizing error

Instruction :

- FR drive control (FMR) :

- Check parameter 73 in control module FR drive control.

- MR engine control (PLD) :

- Check parameters 8 and 9 in control module MR engine control (PLD).
- Check parameter 16 in control module MR engine control (PLD).

Note :

- For the Linnig fan, the proportioning valves 3 and 4 are set to 'active'.

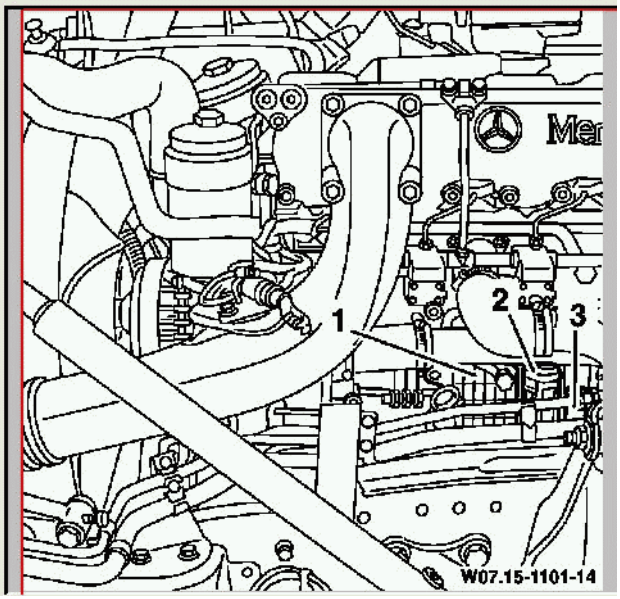
14052 - 14054 Internal fault

14052 : Internal fault in control unit

Figure legend :
- 1: Control unit MR engine control

Note :
- EEPROM error of control unit

Instruction :
- Check all affected plugs, connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. If fault code still exists, replace control unit. Parameterize control unit MR engine control.

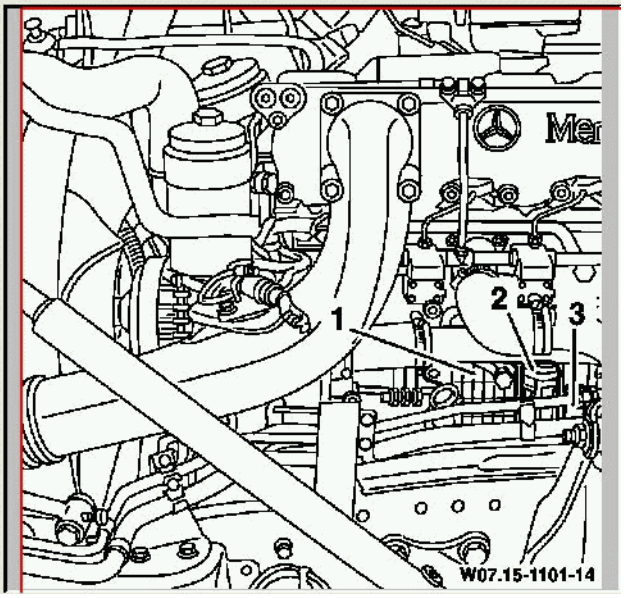


14054 : Internal fault in control unit

Figure legend :
- 1: Control unit MR engine control

Note :
- CAN data range faulty

Instruction :
- Check all affected plugs, connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. If fault code still exists, replace control unit. Parameterize control unit MR engine control.



14058 Data record has been manipulated

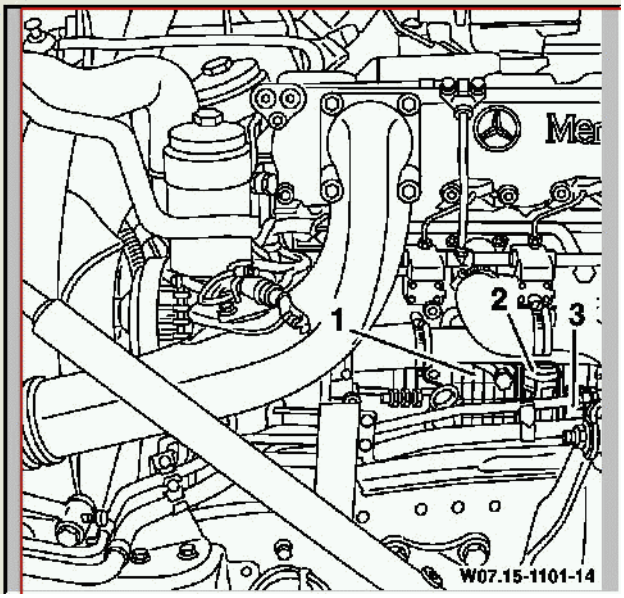
14058 : The data record in control module MR engine control (PLD) has been manipulated.

Figure legend :
- 1: Control unit MR engine control

Note :
- The data record in control module MR engine control (PLD) has been manipulated.
- The vehicle's owner and/or driver are to be informed that the General Operating Permit (ABE) for the vehicle has been cancelled.

Instruction :
- Replace control unit MR engine control and parameterize.
- Carry out operational check.

Risk of accident! :
- Brakes, tires, steering, drive train and other vehicle parts have not been adapted to changed data

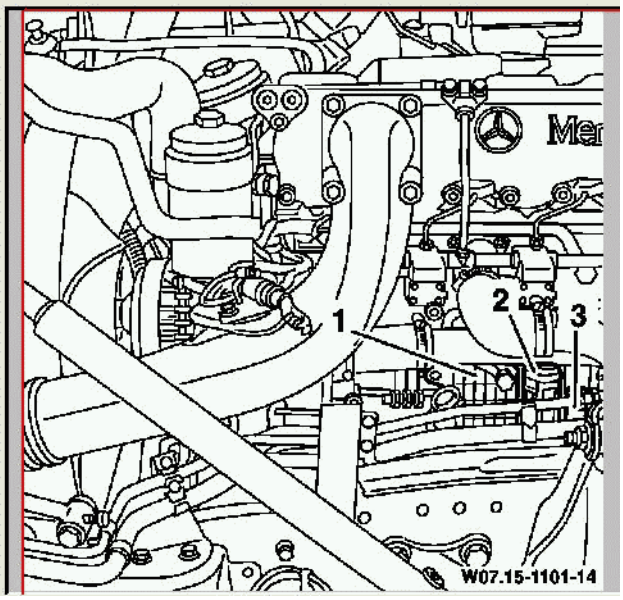


14058 : The data record in control module MR engine control (PLD) has been manipulated.

Note :
- The data record in control module MR engine control (PLD) has been manipulated.
- The vehicle's owner and/or driver are to be informed that the General Operating Permit (ABE) for the vehicle has been cancelled.

Instruction :
- Replace control unit MR engine control and parameterize.
- Carry out operational check.

Risk of accident! :
- Brakes, tires, steering, drive train and other vehicle parts have not been adapted to changed data record.
- Overload can result in vehicle damage that puts other road users at risk.
- Exhaust and noise characteristics may worsen.

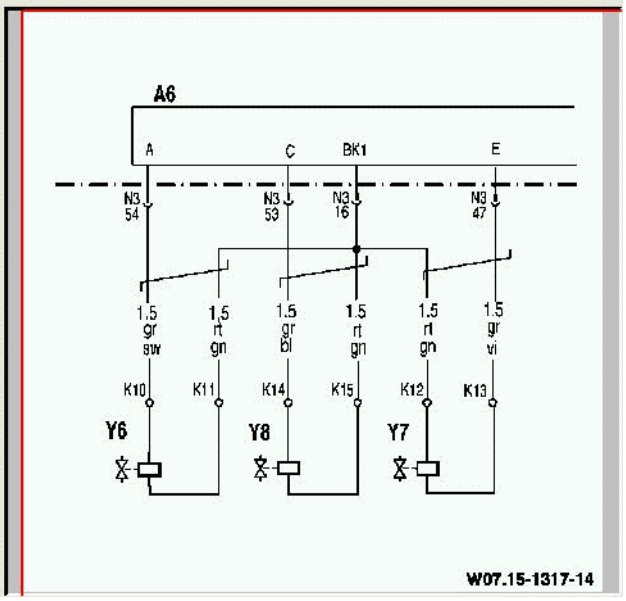


15026 - 15027 Steckpumpe Zylinder 1

15026 : Unit pump for cylinder 1: valve no impact

Figure legend :
- Y6: Unit pump for cylinder 1
- BK1: Bank 1

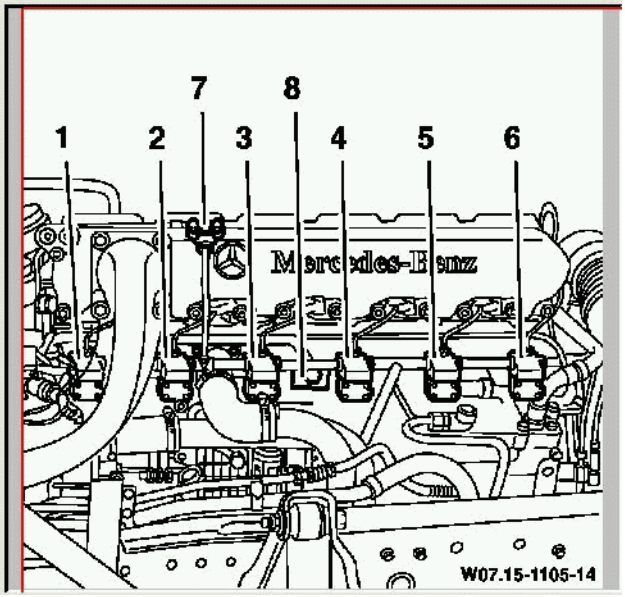
Instruction :
- If fault code 0 75 43 is current, .first of all process this fault code
- Check fuel pressure. (Key F12: Work instructions in WIS)
- After completing work on the fuel system, bleed fuel pipes.
- Fault 15026 still current: Carry out the following tests.
- Corresponding fault code of another cylinder of the same bank current: Test electric leads of affected unit pump(s) for short circuit to each other and repair or replace if necessary.



15027 : Unit pump for cylinder 1: Actuation fault

Figure legend :
- 1: Unit pump for cylinder 1

Instruction :
- If fault code 0 75 43 is current, .first of all process this fault code
- Inspect screw clamps at the relevant unit pump to ensure they are tight.
- Test lead of the relevant unit pump for open circuit.
- Inspect connectors X1 and N3 of control unit MR engine control for good contacts.
- Fault code 15027 still present: Replace unit pump of the cylinder affected with unit pump of a non-affected cylinder. Run engine.
- Fault code switches to other cylinder with unit pump: Replace unit pump which was changed over.

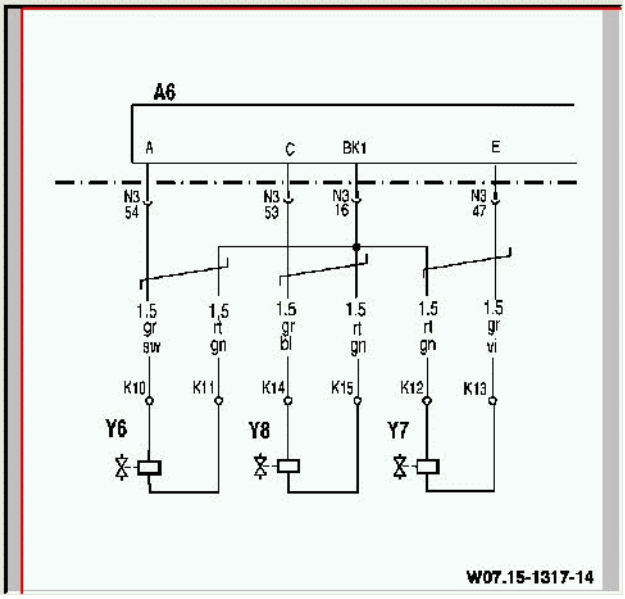


15126 - 15127 Unit pump cylinder 2

15126 : Unit pump for cylinder 2: valve no impact

Figure legend :
- Y7: Unit pump for cylinder 2
- BK1: Bank 1

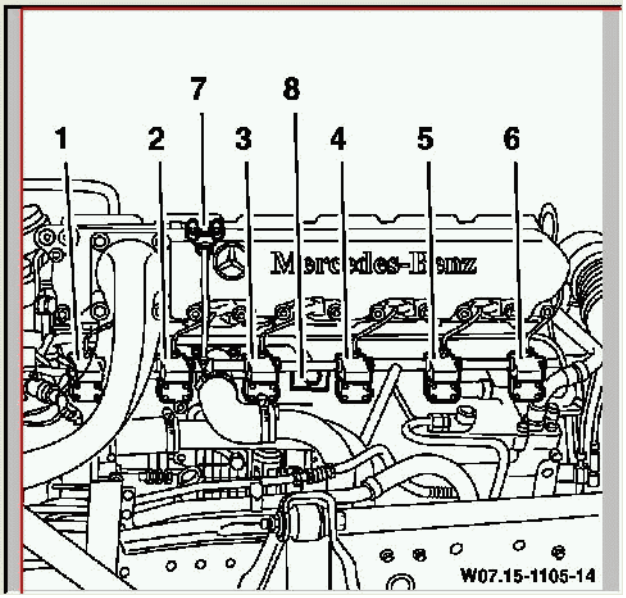
Instruction :
- If fault code 0 75 43 is current, .first of all process this fault code
- Check fuel pressure. (Key F12: Work instructions in WIS)
- After completing work on the fuel system, bleed fuel pipes.
- Fault 15126 still current: Carry out the following tests.
- Corresponding fault code of another cylinder of the same bank current: Test electric leads of affected unit pump(s) for short circuit to each other and repair or replace if necessary.



15127 : Unit pump for cylinder 2: Actuation fault

Figure legend :
- 2: Unit pump for cylinder 2

Instruction :
- If fault code 0 75 43 is current, .first of all process this fault code
- Inspect screw clamps at the relevant unit pump to ensure they are tight.
- Test lead of the relevant unit pump for open circuit.
- Inspect connectors X1 and N3 of control unit MR engine control for good contacts.
- Fault code 15127 still present: Replace unit pump of the cylinder affected with unit pump of a non-affected cylinder. Run engine.
- Fault code switches to other cylinder with unit pump: Replace unit pump which was changed over.

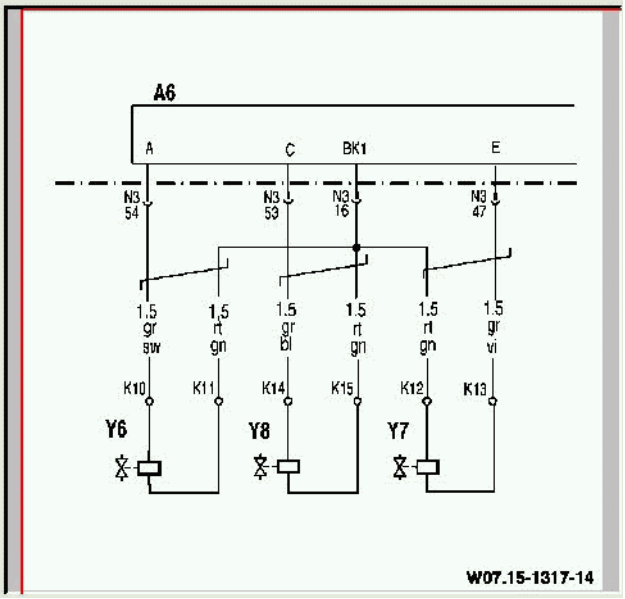


15226 - 15227 Unit pump cylinder 3

15226 : Unit pump for cylinder 3: valve no impact

Figure legend :
- Y8: Unit pump for cylinder 3
- BK1: Bank 1

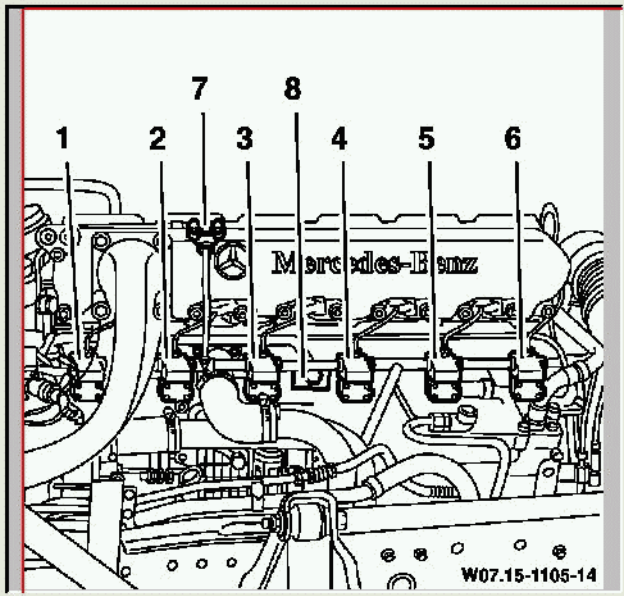
Instruction :
- If fault code 0 75 43 is current, .first of all process this fault code
- Check fuel pressure. (Key F12: Work instructions in WIS)
- After completing work on the fuel system, bleed fuel pipes.
- Fault 15226 still current: Carry out the following tests.
- Corresponding fault code of another cylinder of the same bank current: Test electric leads of affected unit pump(s) for short circuit to each other and repair or replace if necessary.



15227 : Unit pump for cylinder 3: Actuation fault

Figure legend :
- 3: Unit pump for cylinder 3

Instruction :
- If fault code 0 75 43 is current, .first of all process this fault code
- Inspect screw clamps at the relevant unit pump to ensure they are tight.
- Test lead of the relevant unit pump for open circuit.
- Inspect connectors X1 and N3 of control unit MR engine control for good contacts.
- Fault code 15227 still present: Replace unit pump of the cylinder affected with unit pump of a non-affected cylinder. Run engine.
- Fault code switches to other cylinder with unit pump: Replace unit pump which was changed over.

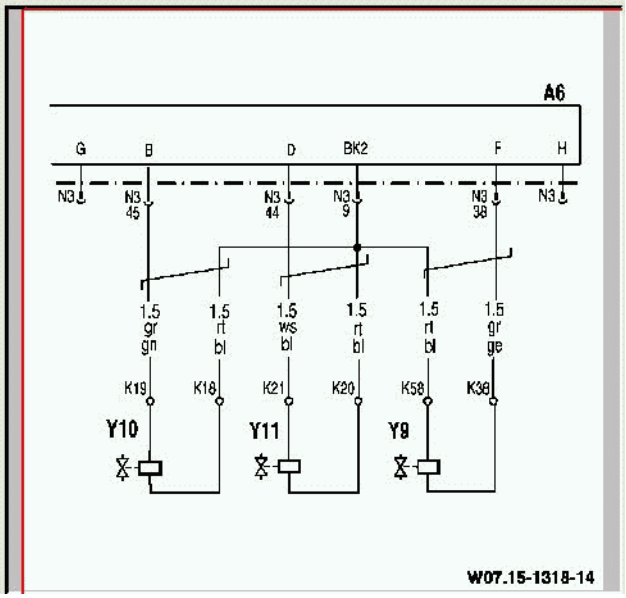


15326 - 15327 Unit pump cylinder 4

15326 : Unit pump for cylinder 4: valve no impact

Figure legend :
- Y9: Unit pump for cylinder 4
- BK2: Bank 2

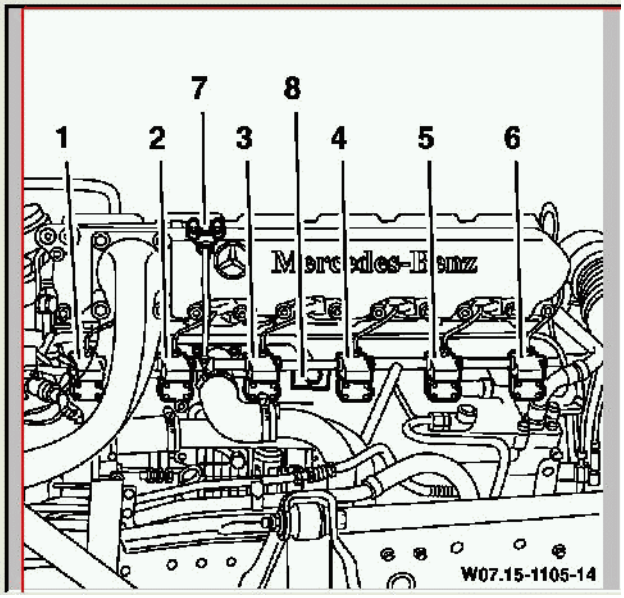
Instruction :
- If fault code 0 75 43 is current, .first of all process this fault code
- Check fuel pressure. (Key F12: Work instructions in WIS)
- After completing work on the fuel system, bleed fuel pipes.
- Fault 15326 still current: Carry out the following tests.
- Corresponding fault code of another cylinder of the same bank current: Test electric leads of affected unit pump(s) for short circuit to each other and repair or replace if necessary.



15327 : Unit pump for cylinder 4: Actuation fault

Figure legend :
- 4: Unit pump for cylinder 4

Instruction :
- If fault code 0 75 43 is current, .first of all process this fault code
- Inspect screw clamps at the relevant unit pump to ensure they are tight.
- Test lead of the relevant unit pump for open circuit.
- Inspect connectors X1 and N3 of control unit MR engine control for good contacts.
- Fault code 15327 still present: Replace unit pump of the cylinder affected with unit pump of a non-affected cylinder. Run engine.
- Fault code switches to other cylinder with unit pump: Replace unit pump which was changed over.

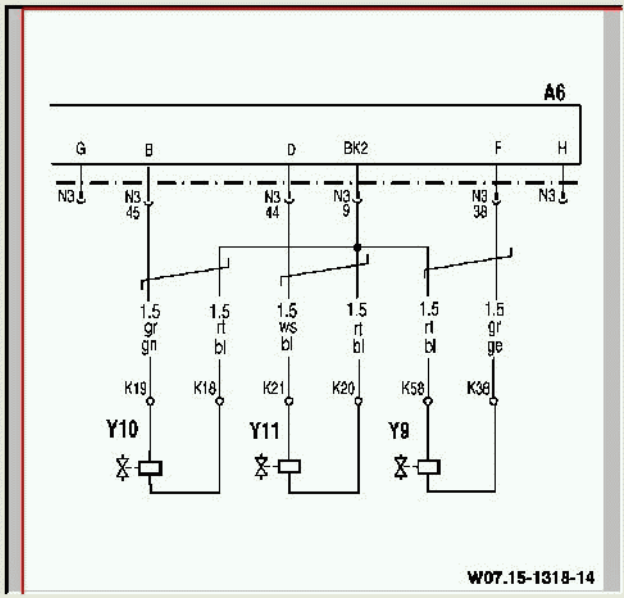


15426 - 15427 Unit pump cylinder 5

15426 : Unit pump for cylinder 5: valve no impact

Figure legend :
- Y10: Unit pump for cylinder 5
- BK2: Bank 2

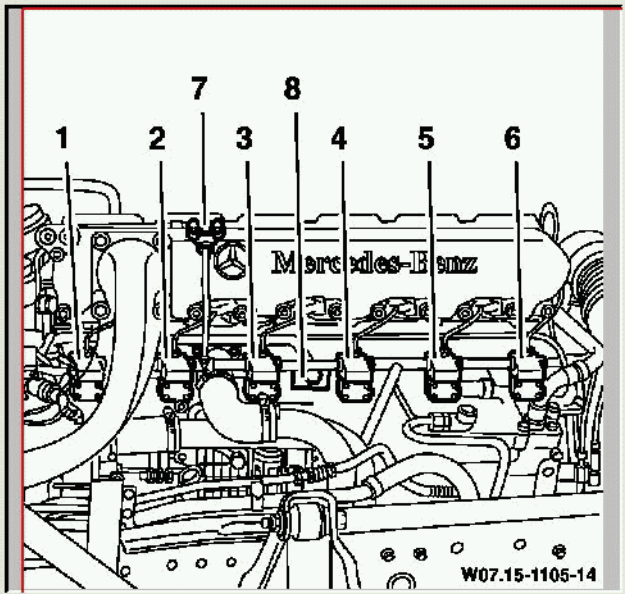
Instruction :
- If fault code 0 75 43 is current, .first of all process this fault code
- Check fuel pressure. (Key F12: Work instructions in WIS)
- After completing work on the fuel system, bleed fuel pipes.
- Fault 15426 still current: Carry out the following tests.
- Corresponding fault code of another cylinder of the same bank current: Test electric leads of affected unit pump(s) for short circuit to each other and repair or replace if necessary.



15427 : Unit pump for cylinder 5: Actuation fault

Figure legend :
- 5: Unit pump for cylinder 5

Instruction :
- If fault code 0 75 43 is current, .first of all process this fault code
- Inspect screw clamps at the relevant unit pump to ensure they are tight.
- Test lead of the relevant unit pump for open circuit.
- Inspect connectors X1 and N3 of control unit MR engine control for good contacts.
- Fault code 15427 still present: Replace unit pump of the cylinder affected with unit pump of a non-affected cylinder. Run engine.
- Fault code switches to other cylinder with unit pump: Replace unit pump which was changed over.

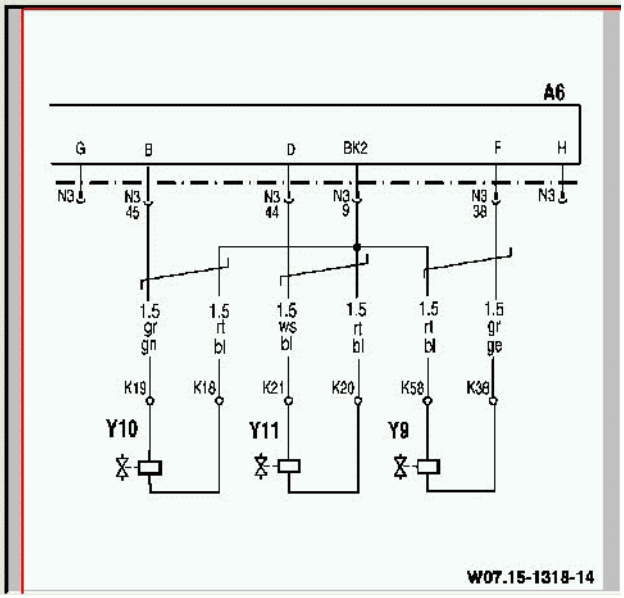


15526 - 15527 Unit pump cylinder 6

15526 : Unit pump for cylinder 6: valve no impact

Figure legend :
- Y11: Unit pump for cylinder 6
- BK2: Bank 2

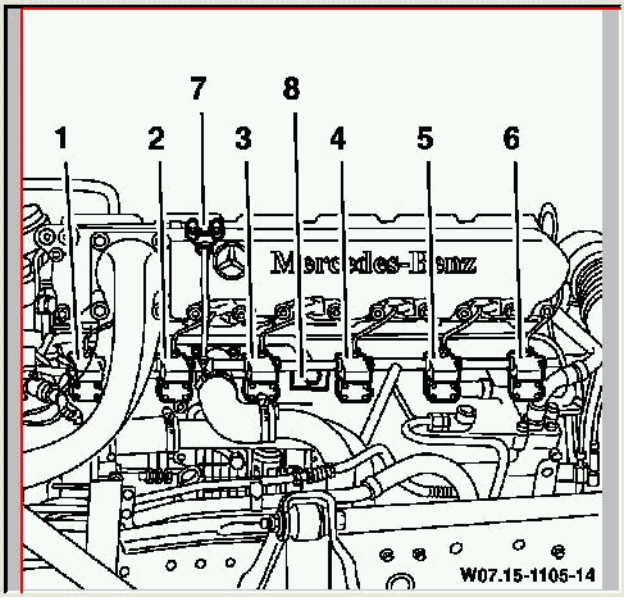
Instruction :
- If fault code 0 75 43 is current, .first of all process this fault code
- Check fuel pressure. (Key F12: Work instructions in WIS)
- After completing work on the fuel system, bleed fuel pipes.
- Fault 15526 still current: Carry out the following tests.
- Corresponding fault code of another cylinder of the same bank current: Test electric leads of affected unit pump(s) for short circuit to each other and repair or replace if necessary.



15527 : Unit pump for cylinder 6: Actuation fault

Figure legend :
- 6: Unit pump for cylinder 6

Instruction :
- If fault code 0 75 43 is current, .first of all process this fault code
- Inspect screw clamps at the relevant unit pump to ensure they are tight.
- Test lead of the relevant unit pump for open circuit.
- Inspect connectors X1 and N3 of control unit MR engine control for good contacts.
- Fault code 15527 still present: Replace unit pump of the cylinder affected with unit pump of a non-affected cylinder. Run engine.
- Fault code switches to other cylinder with unit pump: Replace unit pump which was changed over.



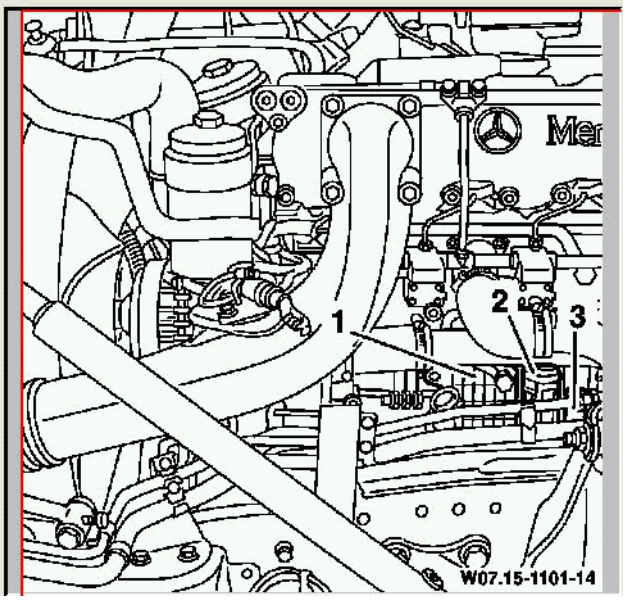
16409 Heater flange

16409 : The heater flange has –//–.

Figure legend :
- 1: Control unit MR engine control
- 2: Connector N3 (55-pin)
- 3: Connector X1 (15- or 16-pin)

Note :
- The component is not fitted to this vehicle.

Instruction :
- Check parameterization, correct if necessary. (Proportioning valve 6 = NOT ACTIVE)
- If fault code 6409 still exists, then replace control unit MR.



17006 - 17009 Proportioning valve 1

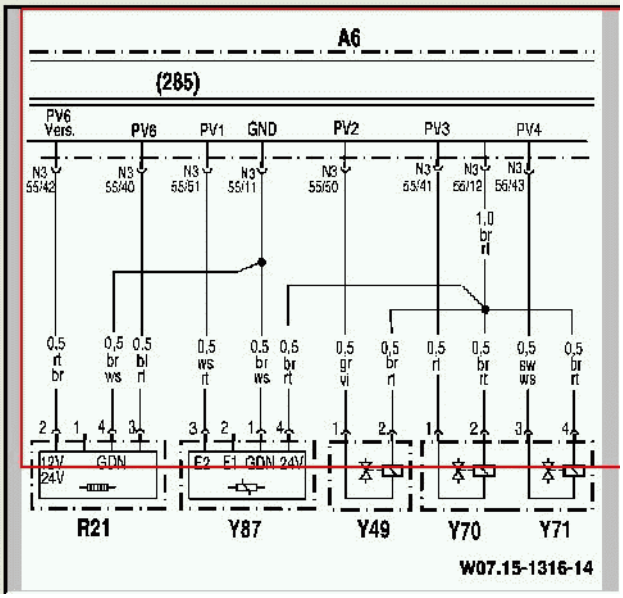
17006 : Proportioning valve 1 has ⌐ ¬ -.

Figure legend :
- A6: Control unit MR engine control
- Y70: Electromagnet of fan stage 1
- Y71: Electromagnet of fan stage 2
- Y87: Electropneumatic converter (EPW)

Possible causes of fault :
- Electropneumatic converter (EPW)
- Line A6 X2 55/51 - Y87 4/3 has ⌐ ¬ -.

Instruction :
- Inspect plug connection Y87 for moisture, dirt and corrosion.

Note :
- If no turbobrake is installed, the parameter 6 must be set to NOT ACTIVE.



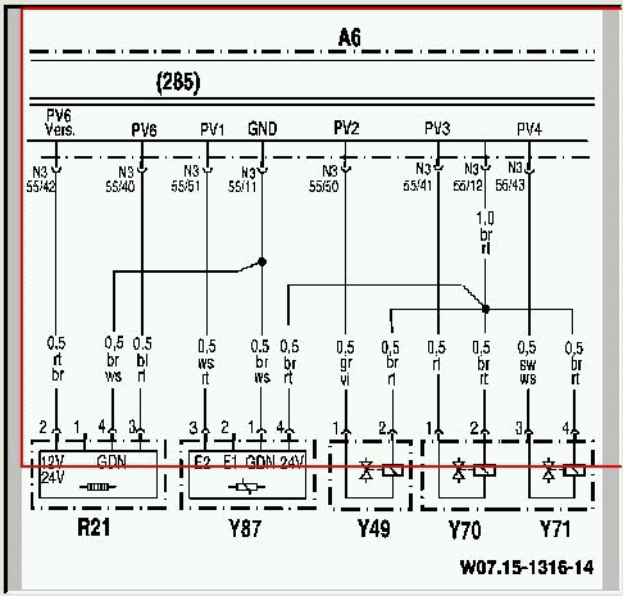
17007 : Proportioning valve 1 has ⌐ ¬ +.

Figure legend :
- A6: Control unit MR engine control
- Y70: Electromagnet of fan stage 1
- Y71: Electromagnet of fan stage 2
- Y87: Electropneumatic converter (EPW)

Possible causes of fault :
- Electropneumatic converter (EPW)
- Line A6 X2 55/51 - Y87 4/3 has ⌐ ¬ +.

Instruction :
- Inspect plug connection Y87 for moisture, dirt and corrosion.

Note :
- If no turbobrake is installed, the parameter 6 must be set to NOT ACTIVE.



17006 - 17009 Proportioning valve 1

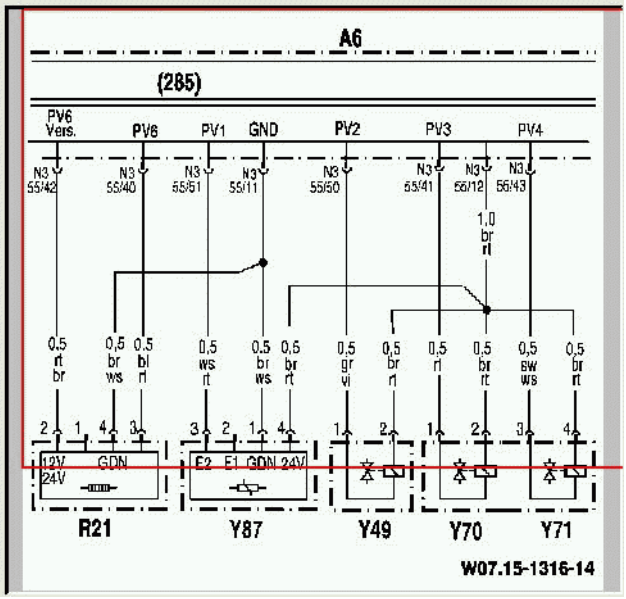
17009 : Proportioning valve 1 has –//–.

Figure legend :
- A6: Control unit MR engine control
- Y70: Electromagnet of fan stage 1
- Y71: Electromagnet of fan stage 2
- Y87: Electropneumatic converter (EPW)

Possible causes of fault :
- Electropneumatic converter (EPW)
- Line A6 X2 55/51 - Y87 4/3 has –//–.

Instruction :
- Inspect plug connection Y87 for moisture, dirt and corrosion.

Note :
- If no turbobrake is installed, the parameter 6 must be set to NOT ACTIVE.



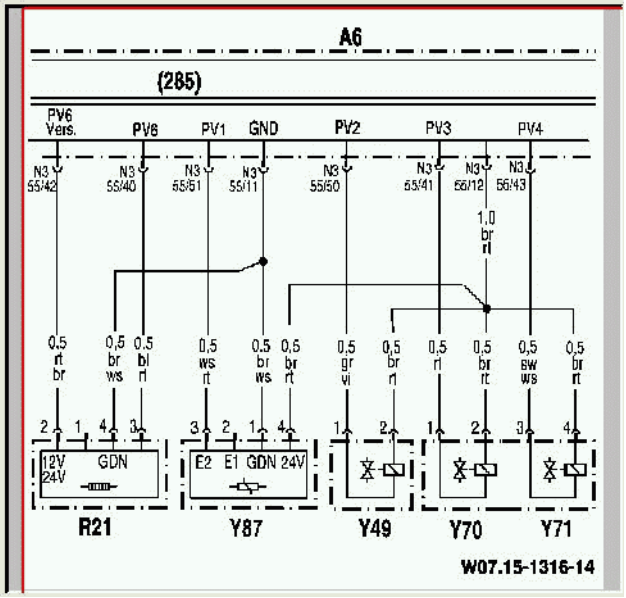
17109 - 17112 Solenoid valve 3

17106 : Solenoid valve 3: Fan stage 1 has ⌐ ¬ –.

Figure legend :
- A6: Control unit MR engine control
- Y70: Electromagnet of fan stage 1
- Y71: Electromagnet of fan stage 2

Possible causes of fault :
- Line N3/41 - Y70/1 has ⌐ ¬ –.

Instruction :
- Test cable N3/41 - Y70/1 for ⌐ ¬ –, repair or replace if necessary.

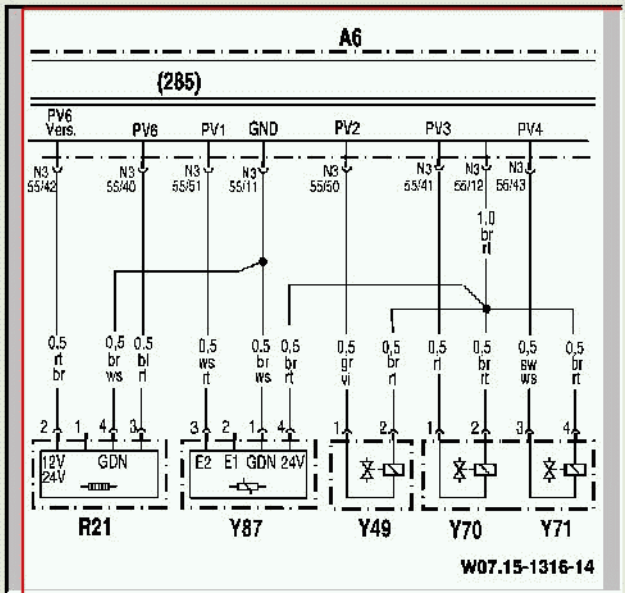


17107 : Proportioning valve 3 has ⌐ ¬ +.

Figure legend :
- A6: Control unit MR engine control
- Y70: Electromagnet of fan stage 1
- Y71: Electromagnet of fan stage 2

Possible causes of fault :
- Electromagnet of fan stage 1
- Line N3/41 - Y70/1 has ⌐ ¬ +.

Note :
- After the test, erase fault memory of control unit MR.
- Read fault memory once again.



17109 - 17112 Solenoid valve 3

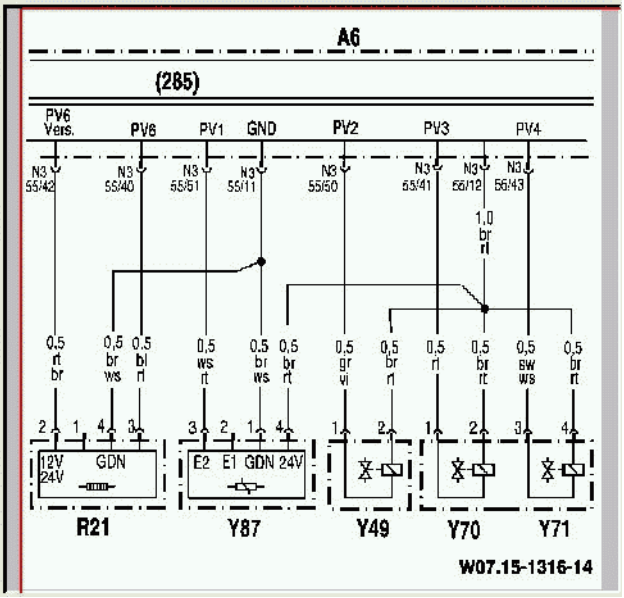
17109 : Solenoid valve 3: Fan stage 1 has –//–.

Figure legend :
- A6: Control unit MR engine control
- Y70: Electromagnet of fan stage 1
- Y71: Electromagnet of fan stage 2

Possible causes of fault :
- Line N3/41 - Y70/1 has –//–.
- Line N3/12 - Y70/2 has –//–.
- Control unit MR engine control incorrectly parameterized

Instruction :
- Check parameterization.
- Test wiring N3/41 - Y70/1 and N3/12 - Y70/2 for –//–, repair or replace if necessary.

Note :
No controlled fan :



17109 - 17112 Solenoid valve 3

17112 : Solenoid valve 3: fan drive, no fan speed

No electrically controlled fan is presently fitted.

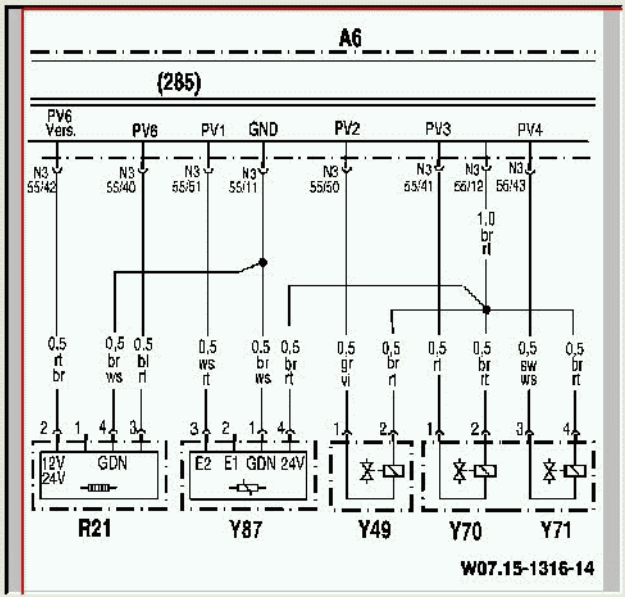
17206 Solenoid valve 4

17206 : Solenoid valve 4: Fan stage 2 has ⌐ ¬ –.

Figure legend :
- A6: Control unit MR engine control
- Y70: Electromagnet of fan stage 1
- Y71: Electromagnet of fan stage 2

Possible causes of fault :
- Line N3/43 - Y70/3 has ⌐ ¬ –.

Instruction :
- Test cable N3/43 - Y70/3 for ⌐ ¬ –, repair or replace if necessary.



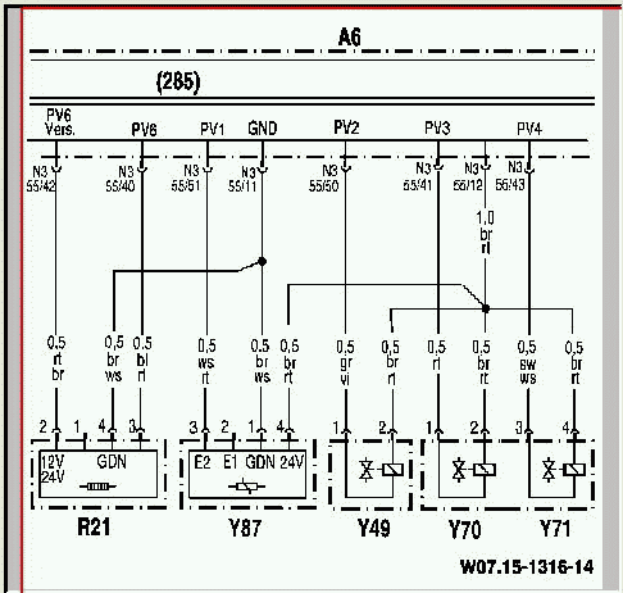
17207 Proportioning valve 4

17207 : Proportioning valve 4 has ⌐ ¬ +.

Figure legend :
- A6: Control unit MR engine control
- Y70: Electromagnet of fan stage 1
- Y71: Electromagnet of fan stage 2

Possible causes of fault :
- Electromagnet of fan stage 2
- Line N3/43 - Y70/3 has ⌐ ¬ +.

Note :
- After the test, erase fault memory of control unit MR.
- Read fault memory once again.



17209 Solenoid valve 4

17209 : Solenoid valve 4: Fan stage 2 has –//–.

- A6: Control unit MR engine control
- Y70: Electromagnet of fan stage 1
- Y71: Electromagnet of fan stage 2

Possible causes of fault :

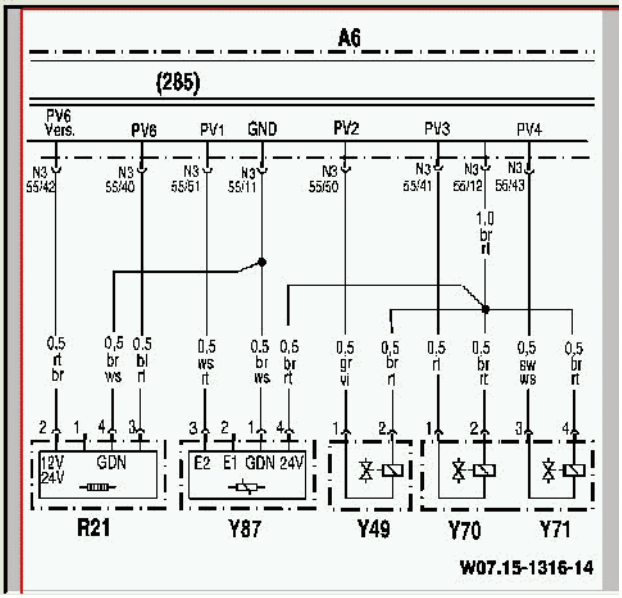
- Line N3/43 - Y71/3 has –//–.
- Line N3/12 - Y71/4 has –//–.
- Control unit MR engine control incorrectly parameterized

Instruction :

- Check parameterization.
- Test wiring N3/43 - Y71/3 and N3/12 - Y71/4 for –//–, repair or replace if necessary.

Note :

- No controlled fan :
- Parameters 8 and 9 should be set to NOT ACTIVE.

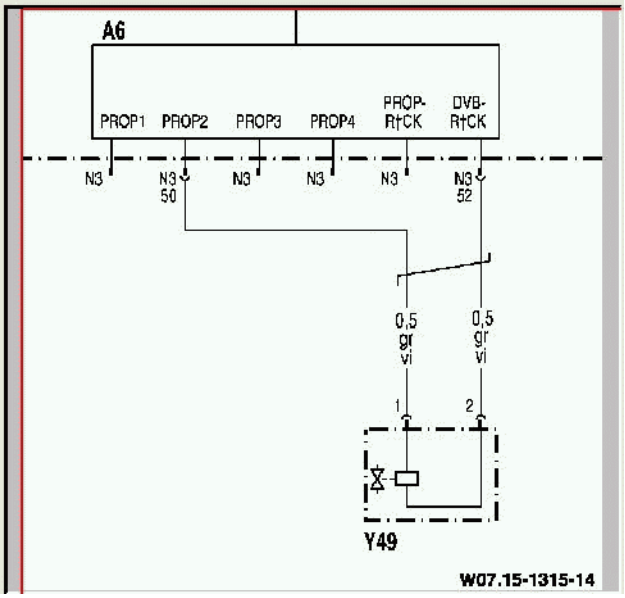


17305 - 17306 Solenoid valve 2

17305 : Solenoid valve 2: hydraulic constant throttle (⌐¬+)

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- Y49: Proportioning solenoid valve 2 (hydraulic constant throttle)

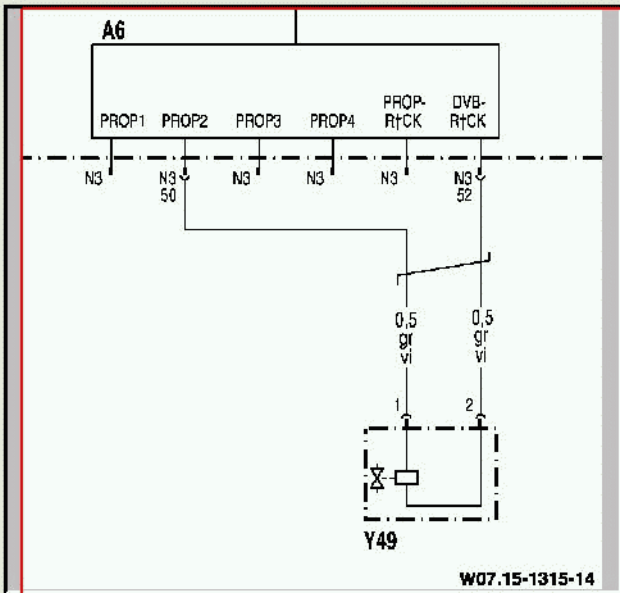
Instruction :
- Test proportioning valve Y49 for ⌐¬+, replace if necessary.
- Test cable N3/50 - Y49/1 for ⌐¬+, repair or replace if necessary.
- Test cable N3/52 - Y49/2 for ⌐¬+, repair or replace if necessary.



17306 : Solenoid valve 2: hydraulic constant throttle (⌐¬-)

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- Y49: Proportioning solenoid valve 2 (hydraulic constant throttle)

Instruction :
- Test proportioning valve Y49 for ⌐¬-, replace if necessary.
- Test cable N3/50 - Y49/1 for ⌐¬-, repair or replace if necessary.
- Test cable N3/50 - Y49/1 for short circuit to cable N3/52 - Y49/2 and repair or replace if necessary.

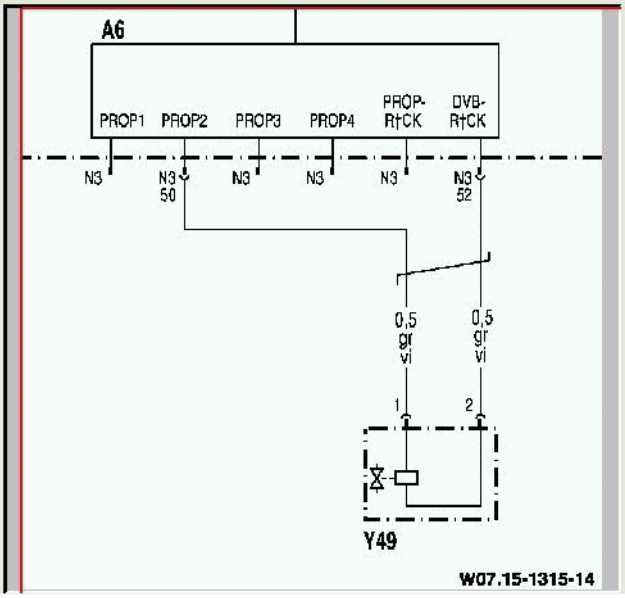


17307 - 17309 Proportioning valve 2

17307 : Proportioning valve 2 has ⌐¬+.

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- Y49: Proportioning solenoid valve 2 (hydraulic constant throttle)

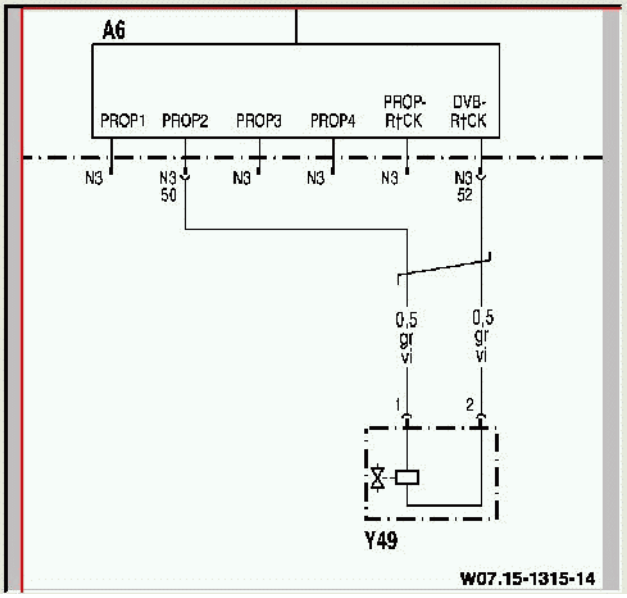
Possible causes of fault :
- 'Constant throttle' solenoid valve
- Line N3 55/50 - Y49/1 has ⌐¬+.



17309 : Proportioning valve 2 has –//–.

Figure legend :
- Y49: Constant throttle
- N3: Connector (55-pin)

Possible causes of fault :
- 'Constant throttle' solenoid valve
- Cable N3 55/50 - Y49/1 has –//– or ⌐¬–.

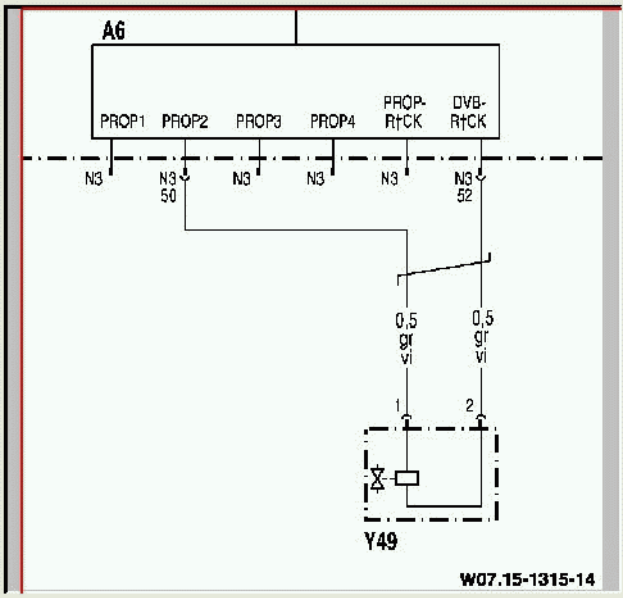


17317 Solenoid valve 2

17317 : Solenoid valve 2: hydraulic constant throttle (Current implausible)

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- Y49: Proportioning solenoid valve 2 (hydraulic constant throttle)

Instruction :
- Test proportioning valve Y49 for –//–, replace if necessary.
- Test wiring N3/50 - Y49/1 and N3/52 - Y49/2 for –//– , repair or replace if necessary.
- Test cable N3/52 - Y49/2 for ⌐ ¬ –, repair or replace if necessary.



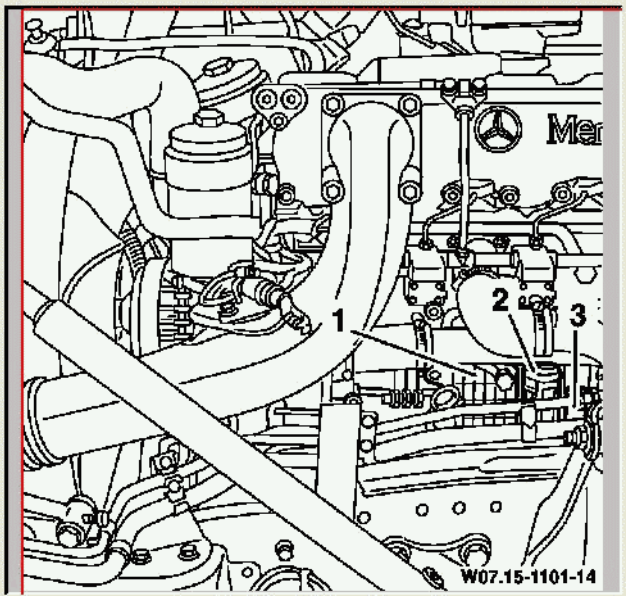
17405 - 17408 Proportioning valve 5

17405 : Proportioning valve 5 has ⌐ ¬ +.

Figure legend :
- 1: Control unit MR engine control

Note :
- Proportioning valve 5 is currently not in use.

Instruction :
- Erase fault memory.
- If fault code 17405 is still present, replace control unit MR engine control and parameterize.

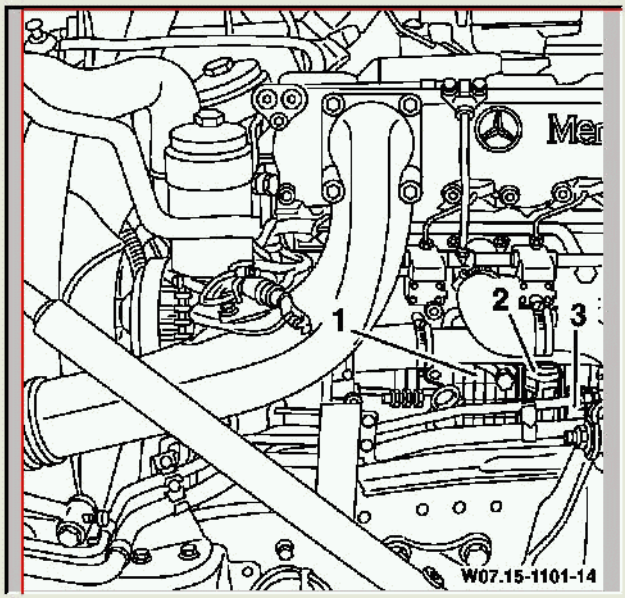


17408 : Proportioning valve 5 has ⌐ ¬ -.

Figure legend :
- 1: Control unit MR engine control

Note :
- Proportioning valve 5 is currently not in use.

Instruction :
- Erase fault memory.
- If fault code 17408 is still present, replace control unit MR engine control and parameterize.



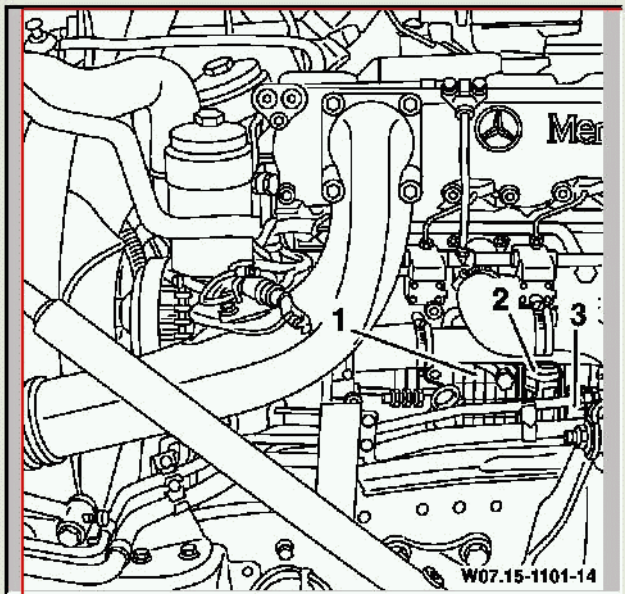
17609 Proportioning valve 6

17609 : Proportioning valve 6 has –//–.

Figure legend :
- 1: Control unit MR engine control

Note :
- Proportioning valve 6 is currently not in use.

Instruction :
- Check parameterization, correct if necessary. (Proportioning valve 6 = NOT ACTIVE)
- Erase fault memory.
- If fault code 17609 is still present, replace control unit MR engine control and parameterize.



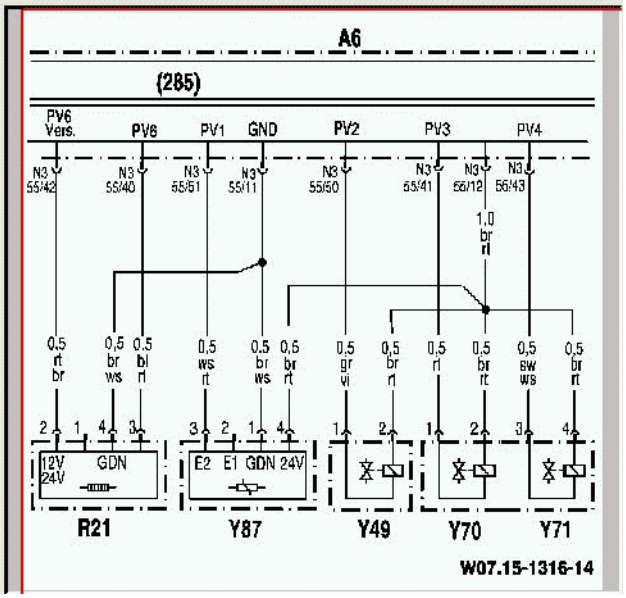
17705 - 17708 Proportioning valve bank 1

17705 : The proportioning valve bank 1 has ⌐¬+.

Figure legend :
- A6: Control unit MR engine control
- Y70: Electromagnet of fan stage 1
- Y71: Electromagnet of fan stage 2

Possible causes of fault :
- Line N3/12 - Y70/2 has ⌐¬+.
- Line N3/12 - Y71/4 has ⌐¬+.
- Ground clip at control unit MR

Note :
- After the test, erase fault memory of control unit MR.
- Read fault memory once again.
- If a ground clip with MB object number A 000 993 30 07 is installed at control unit MR, remove it.

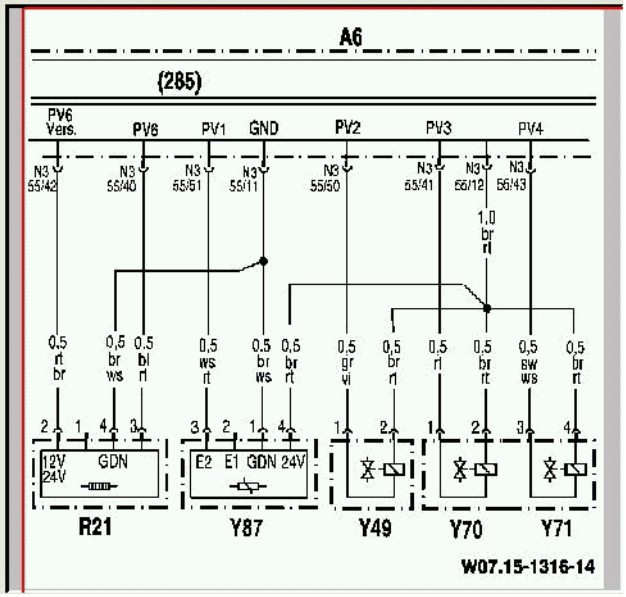


17708 : The proportioning valve bank 1 has ⌐¬-.

Figure legend :
- A6: Control unit MR engine control
- Y70: Electromagnet of fan stage 1
- Y71: Electromagnet of fan stage 2

Possible causes of fault :
- Line N3/12 - Y70/2 has ⌐¬-.
- Line N3/12 - Y71/4 has ⌐¬-.
- Ground clip at control unit MR

Note :
- After the test, erase fault memory of control unit MR.
- Read fault memory once again.
- If a ground clip with MB object number A 000 993 30 07 is installed at control unit MR, remove it.



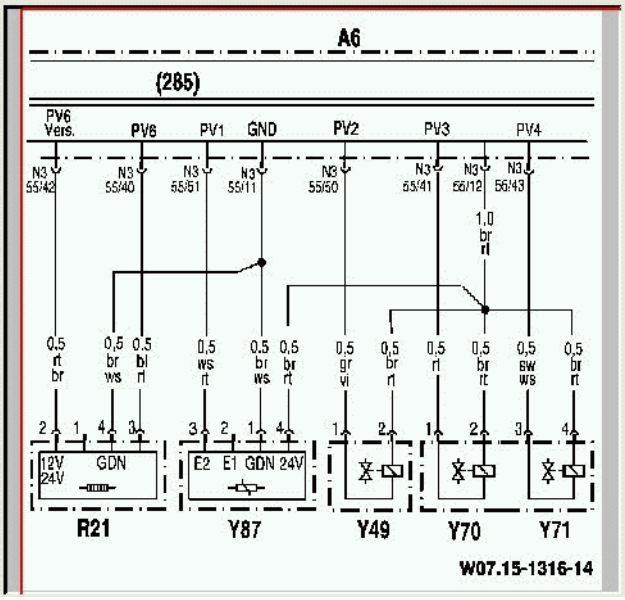
17805 - 17808 Proportioning valve bank 2

17805 : The proportioning valve bank 2 has ⌐¬+.

Figure legend :
- A6: Control unit MR engine control
- Y70: Electromagnet of fan stage 1
- Y71: Electromagnet of fan stage 2

Possible causes of fault :
- Line N3/12 - Y70/2 has ⌐¬+.
- Line N3/12 - Y71/4 has ⌐¬+.
- Ground clip at control unit MR

Note :
- After the test, erase fault memory of control unit MR.
- Read fault memory once again.
- If a ground clip with MB object number A 000 993 30 07 is installed at control unit MR, remove it.

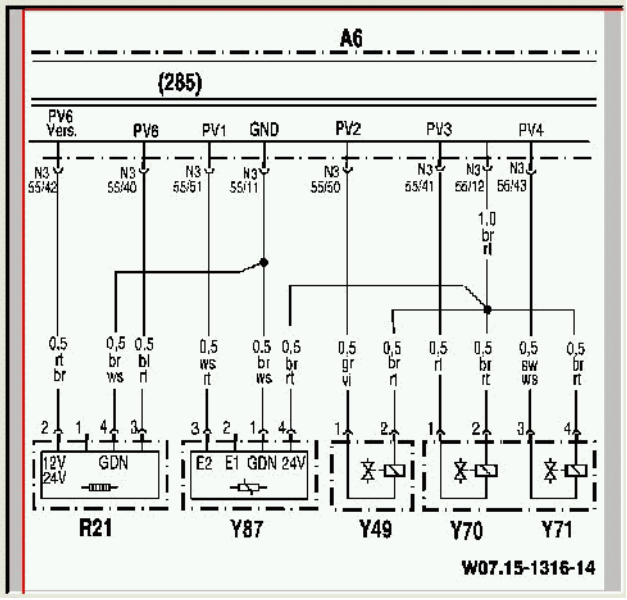


17808 : The proportioning valve bank 2 has ⌐¬–.

Figure legend :
- A6: Control unit MR engine control
- Y70: Electromagnet of fan stage 1
- Y71: Electromagnet of fan stage 2

Possible causes of fault :
- Line N3/12 - Y70/2 has ⌐¬–.
- Line N3/12 - Y71/4 has ⌐¬–.
- Ground clip at control unit MR

Note :
- After the test, erase fault memory of control unit MR.
- Read fault memory once again.
- If a ground clip with MB object number A 000 993 30 07 is installed at control unit MR, remove it.



18005 - 18009 Terminal 50 on series relay

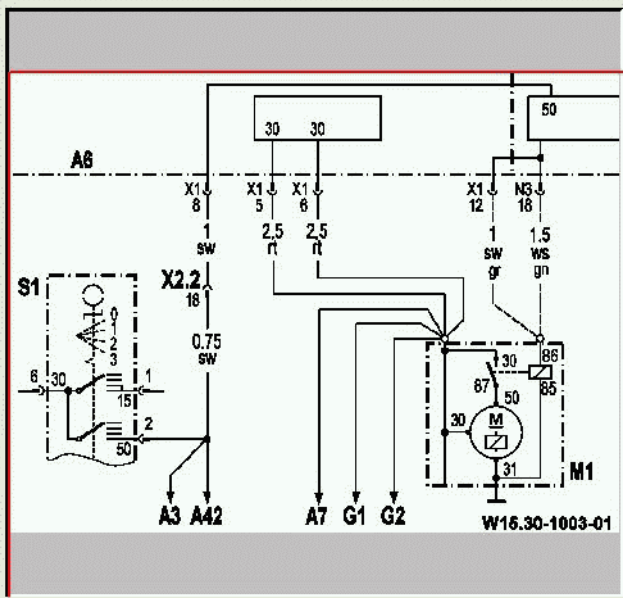
18005 : Terminal 50 on series relay (⌐ ¬ +)

Figure legend :
- A6: Control unit MR engine control
- A6 X1: Plug connection 16 pin
- M1: Starter

⚠ Important note :
- Disconnect battery before carrying out work on the electrical connections of the starter.

Possible causes of fault :
- Series relay defective
- Solenoid switch or starter defective
- Lines from series relay to solenoid switch at starter are defective.
- Line A6 X1 16/12 - M1 (starter) has ⌐ ¬ +.

Note :
- Internal resistance of series relay: 17 ohms

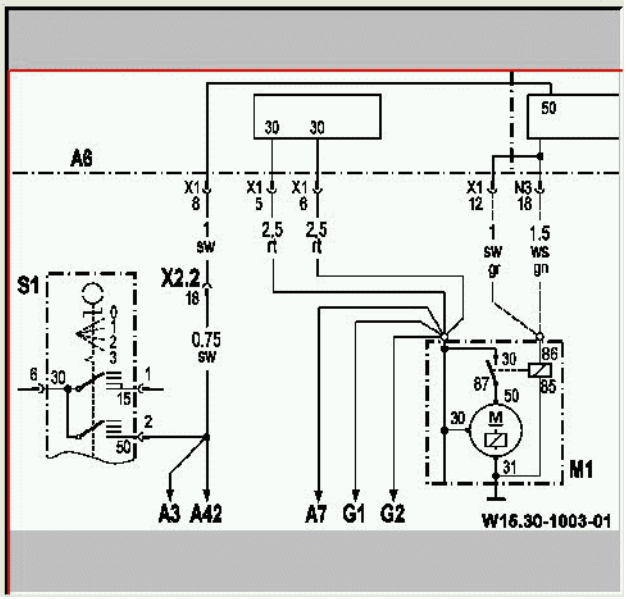


18005 : Terminal 50 on series relay (⌐ ¬ +)

⚠ Important note :
- Disconnect battery before carrying out work on the electrical connections of the starter.

Possible causes of fault :
- Series relay defective
- Solenoid switch or starter defective
- Lines from series relay to solenoid switch at starter are defective.
- Line A6 X1 16/12 - M1 (starter) has ⌐ ¬ +.

Note :
- Internal resistance of series relay: 17 ohms (tolerance +/- 10 %)
- The series relay must be checked and replaced if necessary, otherwise the new control unit will also be irreparably damaged.



18005 - 18009 Terminal 50 on series relay

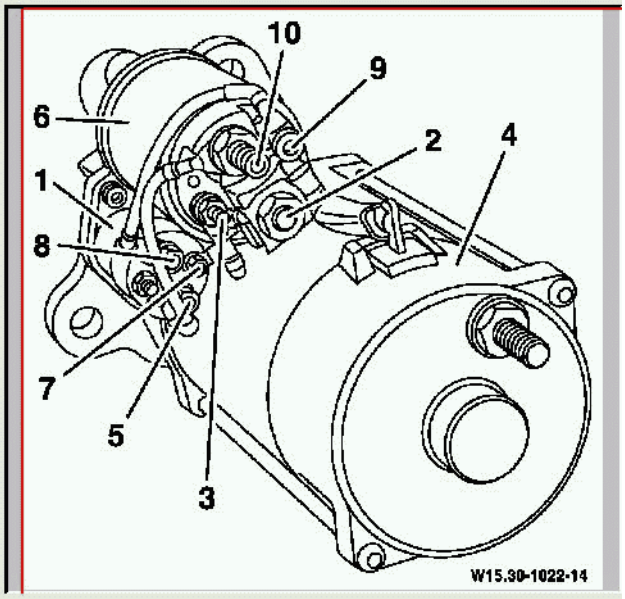
18008 : Terminal 50 on series relay (⌐ ¬ -)

Figure legend :
- 1: Series relay
- 4: Starter
- 6: Solenoid switch
- 7: Terminal 86 on series relay

⚠ Important note :
- Disconnect battery before carrying out work on the electrical connections of the starter.

Possible causes of fault :
- Series relay defective
- Lines from series relay to solenoid switch at starter are defective.
- Line A6 X1 16/12 - M1 (starter) has ⌐ ¬ -.

Note :
- Internal resistance of series relay: 17 ohms

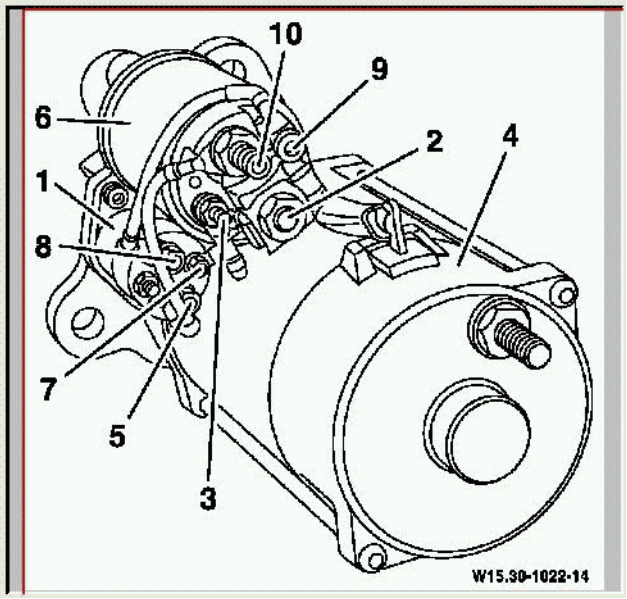


18008 : Terminal 50 on series relay (⌐ ¬ -)

⚠ Important note :
- Disconnect battery before carrying out work on the electrical connections of the starter.

Possible causes of fault :
- Series relay defective
- Lines from series relay to solenoid switch at starter are defective.
- Line A6 X1 16/12 - M1 (starter) has ⌐ ¬ -.

Note :
- Internal resistance of series relay: 17 ohms (tolerance +/- 10 %)
- The series relay must be checked and replaced if necessary, otherwise the new control unit will also be irreparably damaged.
- Fault code 8008 is displayed as CURRENT if the starter is operated for more than 3 s.



18005 - 18009 Terminal 50 on series relay

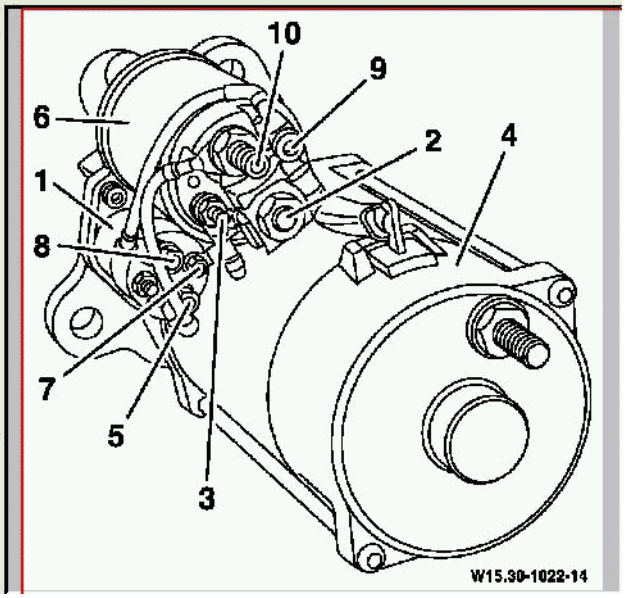
18009 : Terminal 50 on series relay (–//–)

Figure legend :
- 1: Series relay
- 4: Starter
- 6: Solenoid switch
- 7: Terminal 86 on series relay

⚠ Important note :
- Disconnect battery before carrying out work on the electrical connections of the starter.

Possible causes of fault :
- Series relay defective
- Lines from series relay to solenoid switch at starter are defective.
- Line A6 X1 16/12 - M1 (starter) has –//–.

Note :
- Internal resistance of series relay: 17 ohms

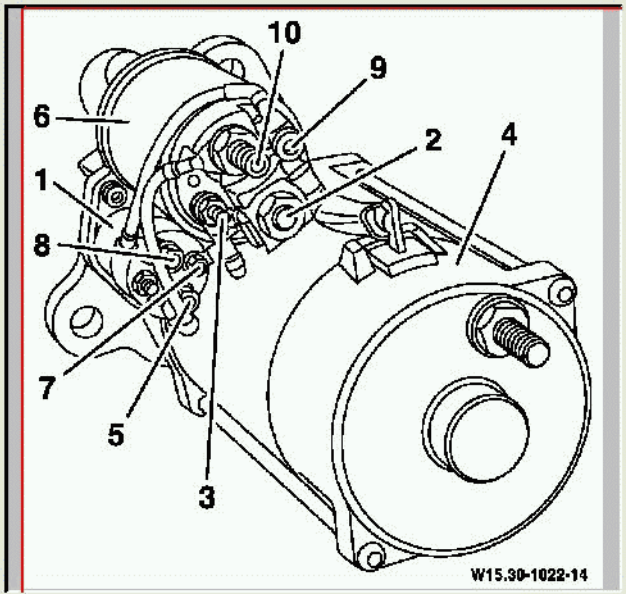


18009 : Terminal 50 on series relay (–//–)

⚠ Important note :
- Disconnect battery before carrying out work on the electrical connections of the starter.

Possible causes of fault :
- Series relay defective
- Lines from series relay to solenoid switch at starter are defective.
- Line A6 X1 16/12 - M1 (starter) has –//–.

Note :
- Internal resistance of series relay: 17 ohms (tolerance +/- 10 %)
- The series relay must be checked and replaced if necessary, otherwise the new control unit will also be irreparably damaged.
- Fault code 8009 is displayed as CURRENT if the starter is operated for more than 3 s.



18033 Series relay defective

18033 : Series relay defective

- 1: Series relay
- 4: Starter
- 6: Solenoid switch
- 8: Output 'Terminal 87' of series relay

⚠ Important note :

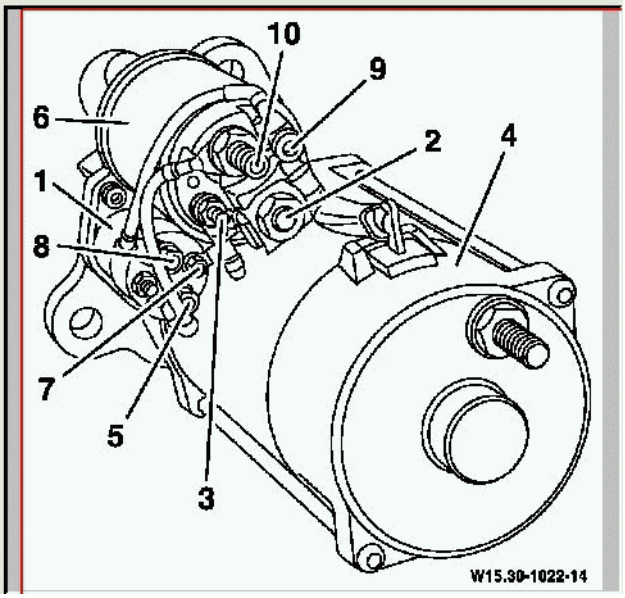
- Disconnect battery before carrying out work on the electrical connections of the starter.

Possible causes of fault :

- Series relay defective
- Solenoid switch or starter defective

Note :

- Internal resistance of series relay: 17 ohms (tolerance +/- 10 %)
- The series relay must be checked and replaced if necessary, otherwise the new control unit will also be irreparably damaged.



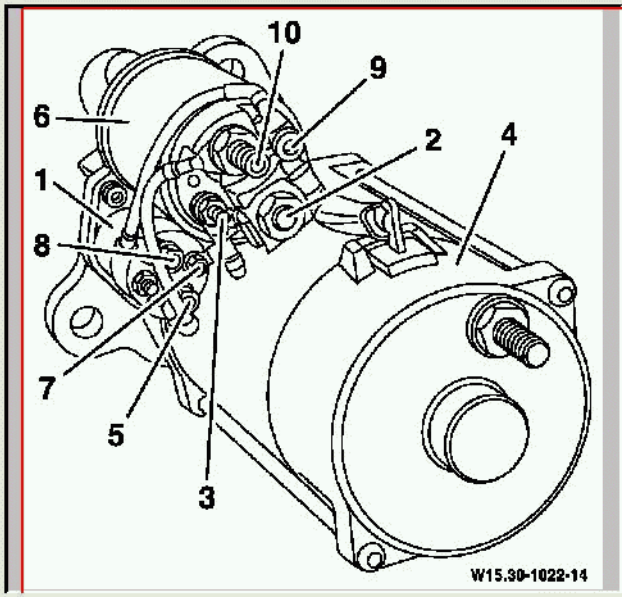
18039 Starter actuation

18039 : Starter actuation (output stage) faulty

Figure legend :
- 1: Series relay
- 3: Control line (terminal 50) from control unit MR
- 4: Starter
- 6: Solenoid switch

Possible causes of fault :
- Series relay is corroded (internal resistance too high).
- Wrong series relay is installed.
- The resistance of line A6 X1 16/12 - M1 (starter) is too high.

Note :
- The series relay must be checked and replaced if necessary, otherwise the new control unit will also be irreparably damaged.
- Internal resistance of series relay: 15 - 19 ohms

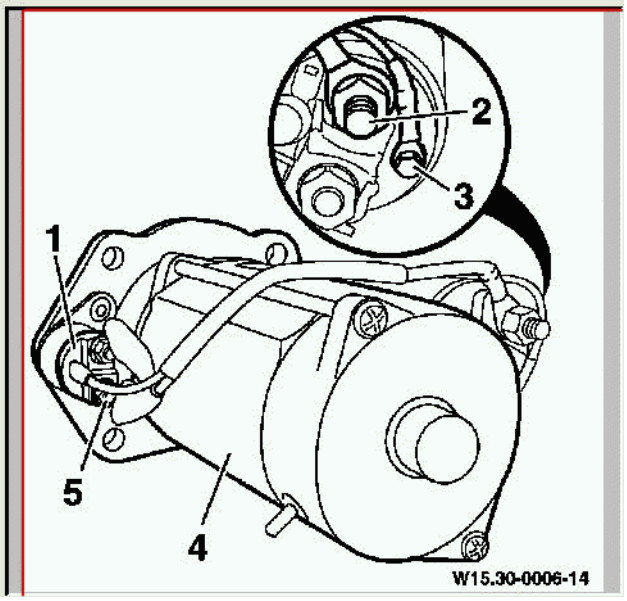


18086 Starter

18086 : Starter does not engage

Figure legend :
- 1: Starter relay
- 4: Starter

Instruction :
- Carry out electrical and mechanical check of starter.

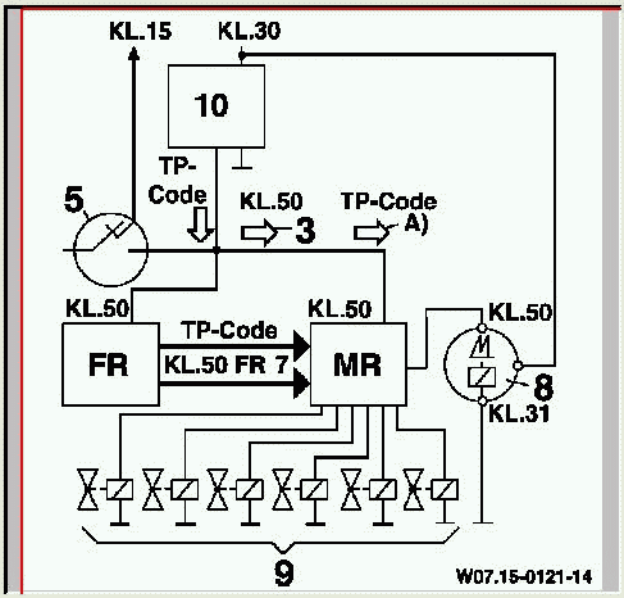


19960 Too many keys

19960 : Too many keys

Instruction :

- Up to eight key transponder codes can be stored in control unit MR engine control.
- If so many keys have already been lost, learn the new keys with selection menu 'Learning transponder keys'. FDOK authorization is required for this step.

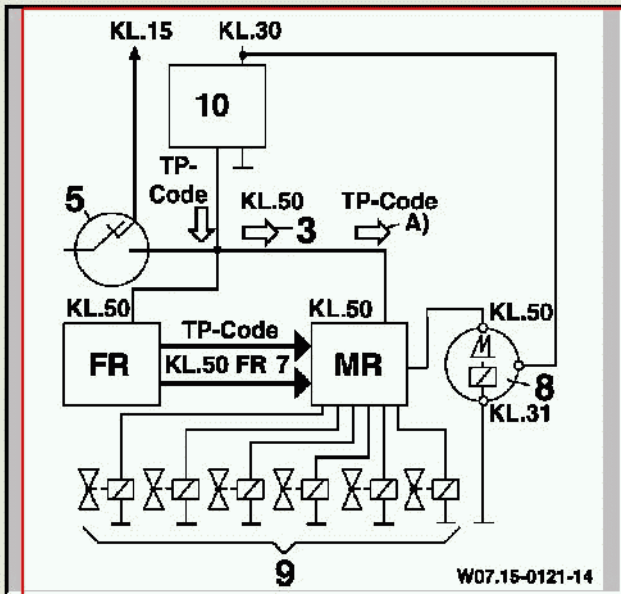


19961 - 19962 Immobilizer guard

19961 : Immobilizer guard function active, control unit MR engine control blocked

Figure legend :
- 5: Drive switch
- 7: Engine CAN bus
- FR: Control unit Drive control
- MR Control unit Engine control

Note :
- Control unit MR engine control is unusable as attempts have been made at the vehicle to decode the transponder codes (immobilizer).

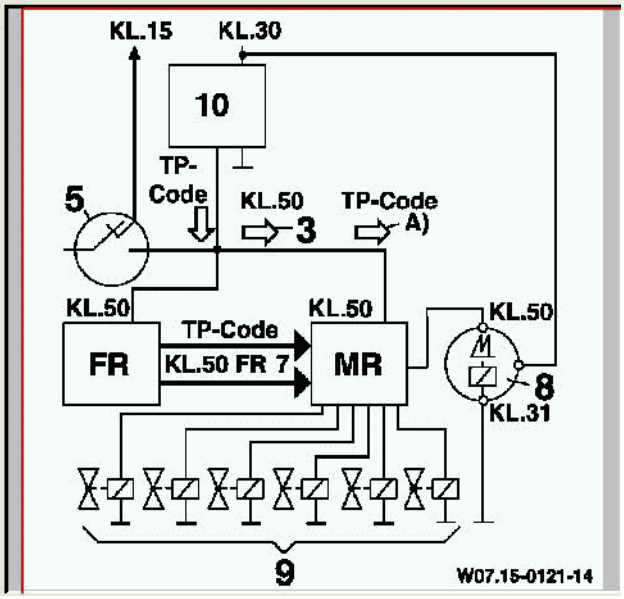


19962 : Immobilizer in MR engine control activated

Figure legend :
- 5: Drive switch
- 10: Reader electronics of immobilizer
- MR: Control unit Engine control

Note :
- A control unit MR engine control for applications without immobilizer has been installed in a vehicle with immobilizer. The control unit has armed itself in this case; in other words it has become unusable for the previous application. The control unit can only be used for operation with an immobilizer.

Instruction :
- Learn transponder keys with selection menu 'Learning transponder keys'. FDOK authorization is required for this step.
- In the event of poor performance or high fuel consumption a new control unit MR engine control matched to the relevant engine has to be fitted.



19963 - 19964 Transponder code

19963 : No transponder code through engine CAN bus

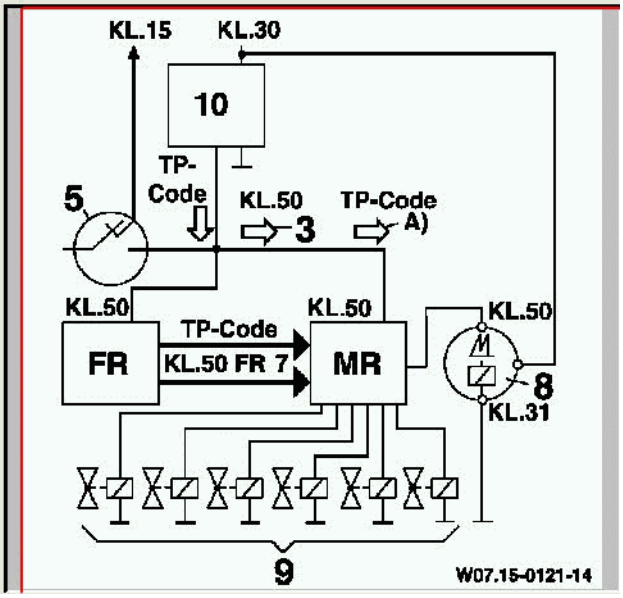
Instruction :
- Fault code 1 99 64 is also current: Use replacement transponder key for starting engine.
- Engine starts with replacement key: Attempt to relearn the faulty transponder key with the selection menu 'Learning transponder keys'. If attempt unsuccessful, order new transponder key and learn (FDOK authorization required).

19964 : No transponder code through terminal 50

Figure legend :
- 5: Drive switch
- 10: Reader electronics of immobilizer
- FR: Control unit Drive control
- MR: Control unit Engine control

Note :
- The reader electronics reads the transponder code contactlessly and transmits it constantly along the tml. 50 line to control units FR drive control and MR engine control.

Instruction :
- If fault code 1 99 63 is current, .first of all process this fault code



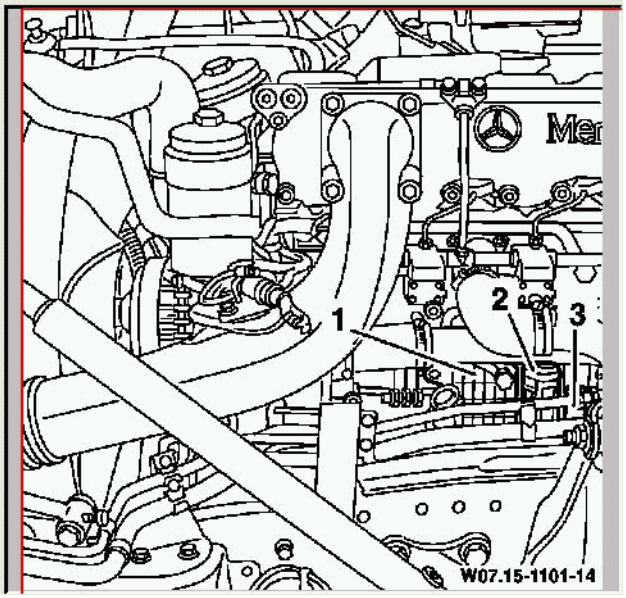
24053 Internal fault

24053 : Internal fault in control unit

Figure legend :
- 1: Control unit MR engine control

Note :
- EEPROM error of control unit

Instruction :
- Check all affected plugs, connectors and electrical components for damage, loose contact, corrosion etc. and repair if necessary. If fault code still exists, replace control unit. Parameterize control unit MR engine control.



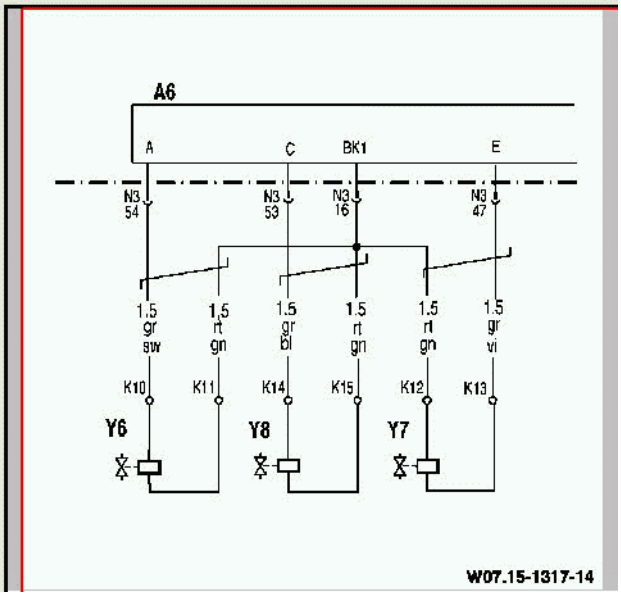
24805 - 24806 Unit pump bank 1

24805 : A unit pump of bank 1 has ⌐¬+.

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- K10, K13, K14: Screw connections of unit pumps for cylinder 1,2 and cylinder 3
- Y6, Y7, Y8: Unit pumps for cylinder 1,2 and cylinder 3

Possible causes of fault :
- Line N3/54 - Y6/K10 has ⌐¬+.
- Line N3/47 - Y7/K13 has ⌐¬+.
- Line N3/53 - Y8/K14 has ⌐¬+.

Instruction :
- Switch off ignition for at least 7 s after each test step, start the engine and read current fault codes.

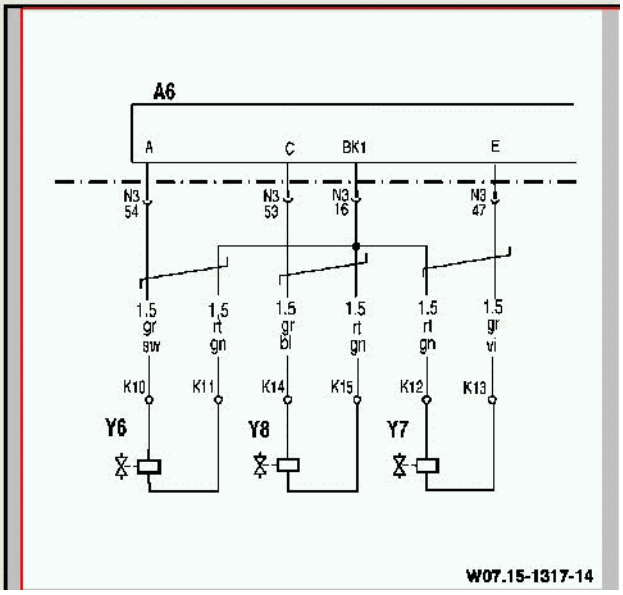


24806 : The return of the unit pumps of bank 1 has ⌐¬–.

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- K11, K12, K15: Screw connections of unit pumps for cylinder 1,2 and cylinder 3
- Y6, Y7, Y8: Unit pumps for cylinder 1,2 and cylinder 3

Possible causes of fault :
- Line N3/16 - Y6/K11 has ⌐¬–.
- Line N3/16 - Y7/K12 has ⌐¬–.
- Line N3/16 - Y8/K15 has ⌐¬–.

Instruction :
- After the test, erase fault memory of control unit MR.
- Reinitialize control module by switching ignition off and on.
- Read fault memory once again.



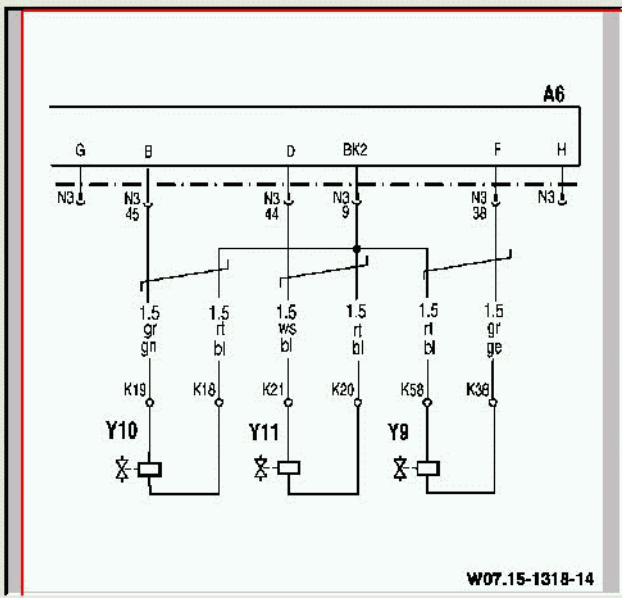
24905 - 24906 Unit pump bank 2

24905 : A unit pump of bank 2 has ⌐¬+.

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- K19, K21, K38: Screw connections of unit pumps for cylinder 4,5 and cylinder 6
- Y9, Y10, Y11: Unit pumps for cylinder 4,5 and cylinder 6

Possible causes of fault :
- Line N3/38 - Y9/K38 has ⌐¬+.
- Line N3/45 - Y10/K19 has ⌐¬+.
- Line N3/44 - Y11/K21 has ⌐¬+.

Instruction :
- Switch off ignition for at least 7 s after each test step, start the engine and read current fault codes.

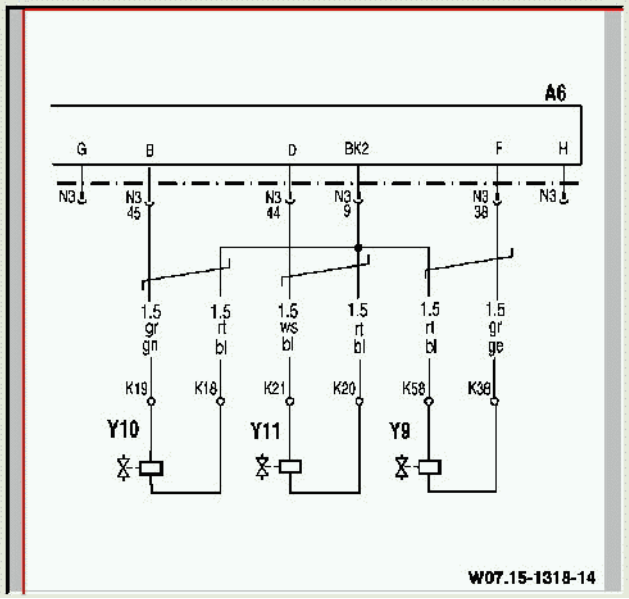


24906 : The return of the unit pumps of bank 2 has ⌐¬–.

Figure legend :
- A6: Control unit MR engine control
- N3: Connector (55-pin)
- K18, K20, K58: Screw connections of unit pumps for cylinder 4,5 and cylinder 6
- Y9, Y10, Y11: Unit pumps for cylinder 4,5 and cylinder 6

Possible causes of fault :
- Line N3/9 - Y9/K58 has ⌐¬–.
- Line N3/9 - Y10/K18 has ⌐¬–.
- Line N3/9 - Y11/K20 has ⌐¬–.

Instruction :
- After the test, erase fault memory of control unit MR.
- Reinitialize control module by switching ignition off and on.



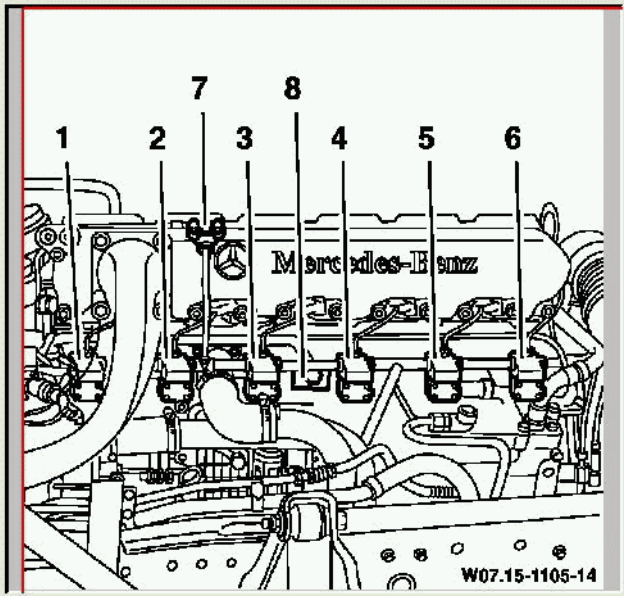
25028 Unit pump cylinder 1

25028 : Unit pump for cylinder 1: short circuit

Figure legend :
- 1: Unit pump for cylinder 1

Note :
- Switch off ignition for at least 10 s after each test step, start the engine and read current fault codes.

Instruction :
- Test electrical screw connections of the affected unit pump for short circuit to each other.
- Separate electrical screw connections of the unit affected.



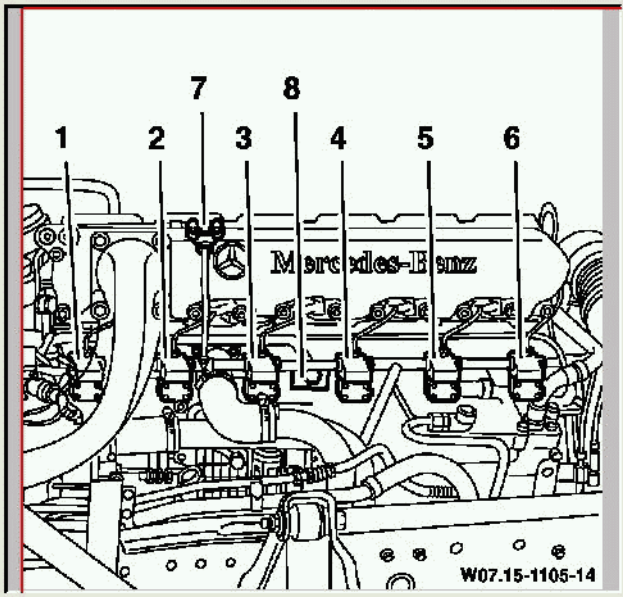
25128 Unit pump cylinder 2

25128 : Unit pump for cylinder 2: short circuit

Figure legend :
- 2: Unit pump for cylinder 2

Note :
- Switch off ignition for at least 10 s after each test step, start the engine and read current fault codes.

Instruction :
- Test electrical screw connections of the affected unit pump for short circuit to each other.
- Separate electrical screw connections of the unit affected.



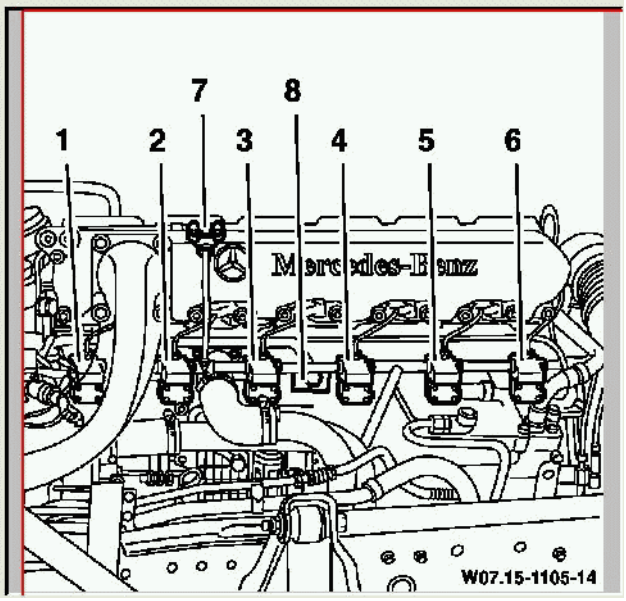
25228 Unit pump cylinder 3

25228 : Unit pump for cylinder 3: short circuit

Figure legend :
- 3: Unit pump for cylinder 3

Note :
- Switch off ignition for at least 10 s after each test step, start the engine and read current fault codes.

Instruction :
- Test electrical screw connections of the affected unit pump for short circuit to each other.
- Separate electrical screw connections of the unit affected.



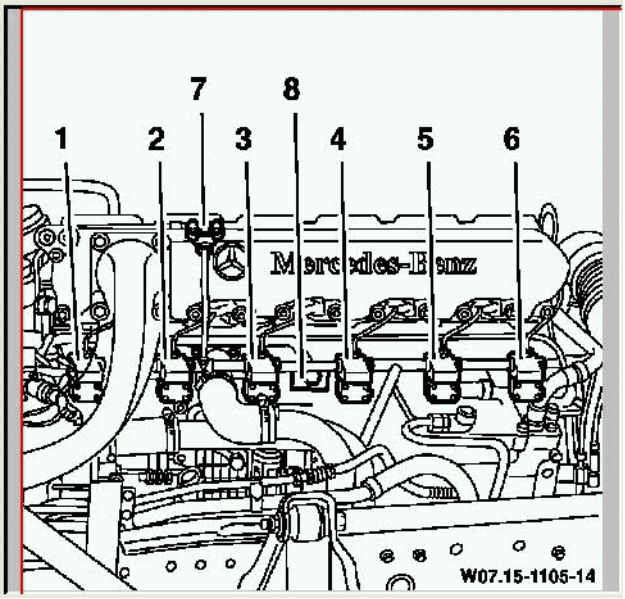
25328 Unit pump cylinder 4

25328 : Unit pump for cylinder 4: short circuit

Figure legend :
- 4: Unit pump for cylinder 4

Note :
- Switch off ignition for at least 10 s after each test step, start the engine and read current fault codes.

Instruction :
- Test electrical screw connections of the affected unit pump for short circuit to each other.
- Separate electrical screw connections of the unit affected.



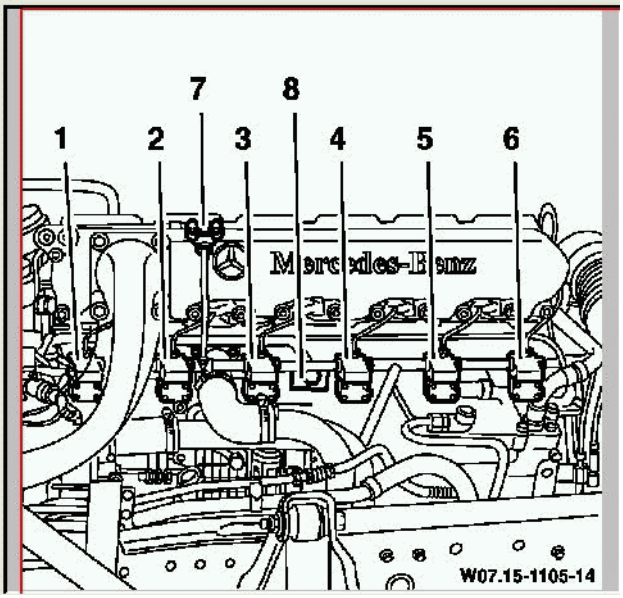
25428 Steckpumpe Zylinder 5

25428 : Unit pump for cylinder 5: short circuit

Figure legend :
- 5: Unit pump for cylinder 5

Note :
- Switch off ignition for at least 10 s after each test step, start the engine and read current fault codes.

Instruction :
- Test electrical screw connections of the affected unit pump for short circuit to each other.
- Separate electrical screw connections of the unit affected.



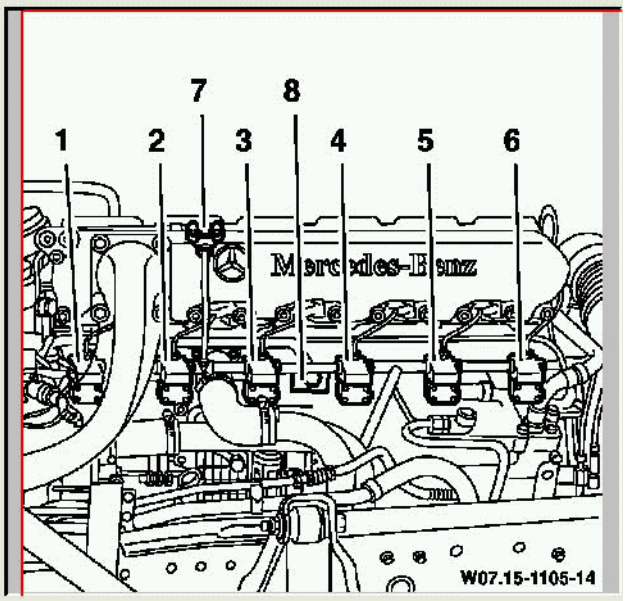
25528 Unit pump cylinder 6

25528 : Unit pump for cylinder 6: short circuit

Figure legend :
- 6: Unit pump for cylinder 6

Note :
- Switch off ignition for at least 10 s after each test step, start the engine and read current fault codes.

Instruction :
- Test electrical screw connections of the affected unit pump for short circuit to each other.
- Separate electrical screw connections of the unit affected.



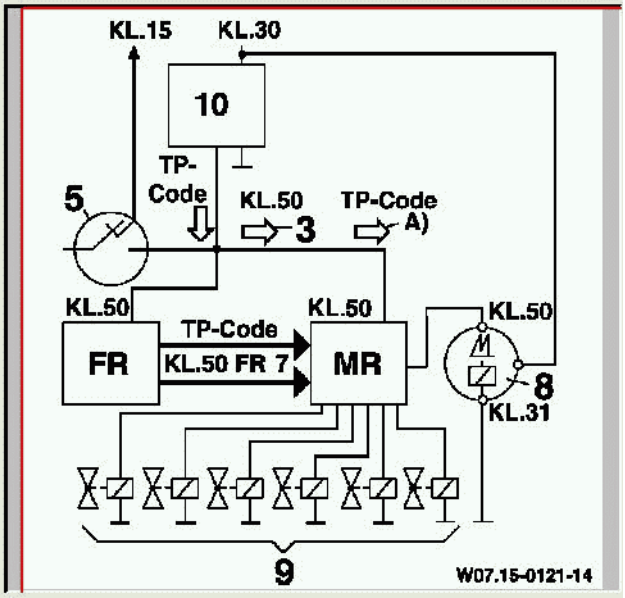
29965 Transponder key

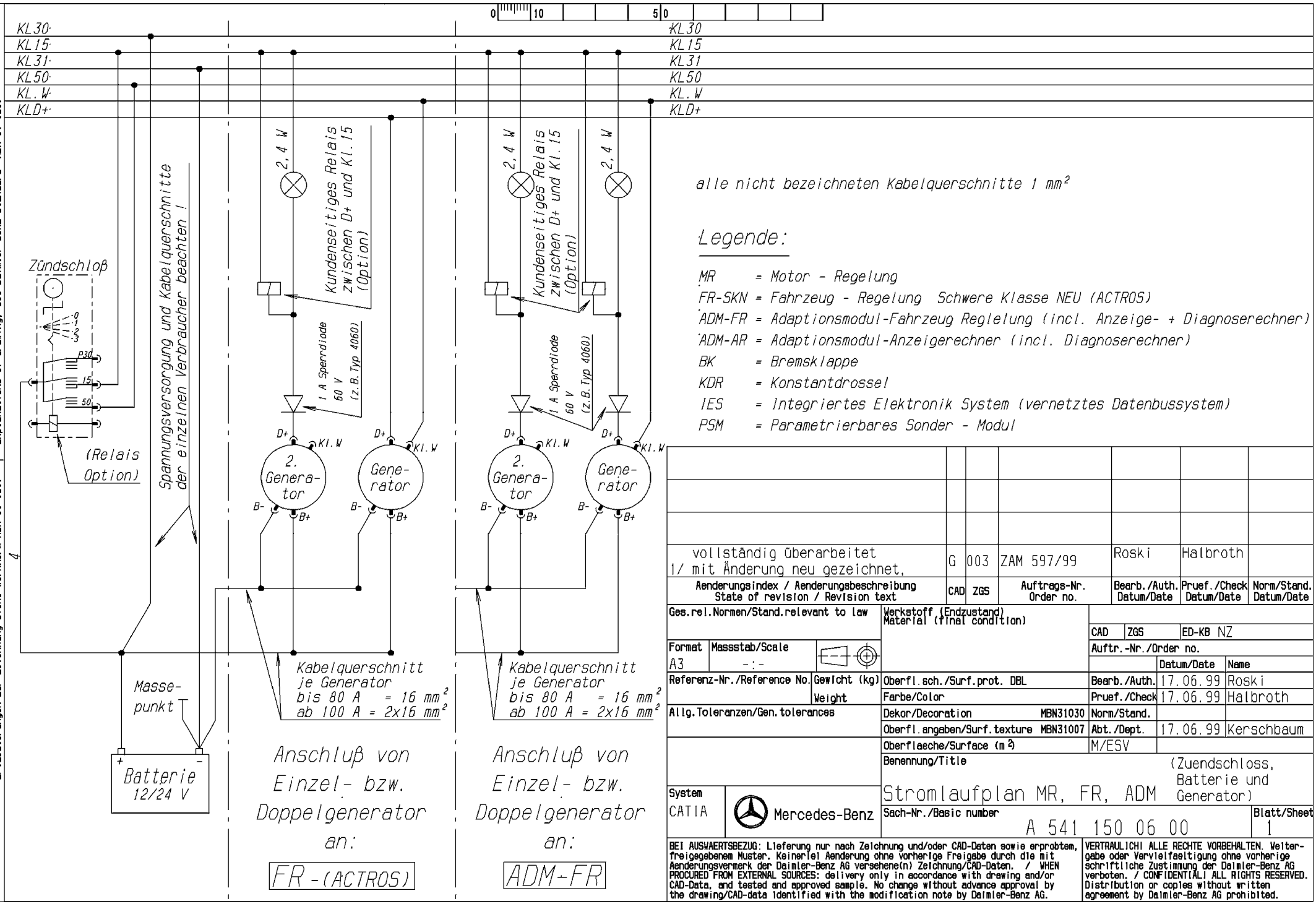
29965 : Incorrect transponder key

Figure legend :
- 5: Drive switch
- 10: Reader electronics of immobilizer
- MR: Control unit Engine control

Note :
- Several attempts have been made to start the vehicle with a key which is not yet programmed.

Instruction :
- Await timeout with ignition switched on, then learn transponder keys with selection menu 'Learning transponder keys'.
- FDOK authorization is required for this step.
- The duration of the timeout depends on the number of preceding attempts at starting.

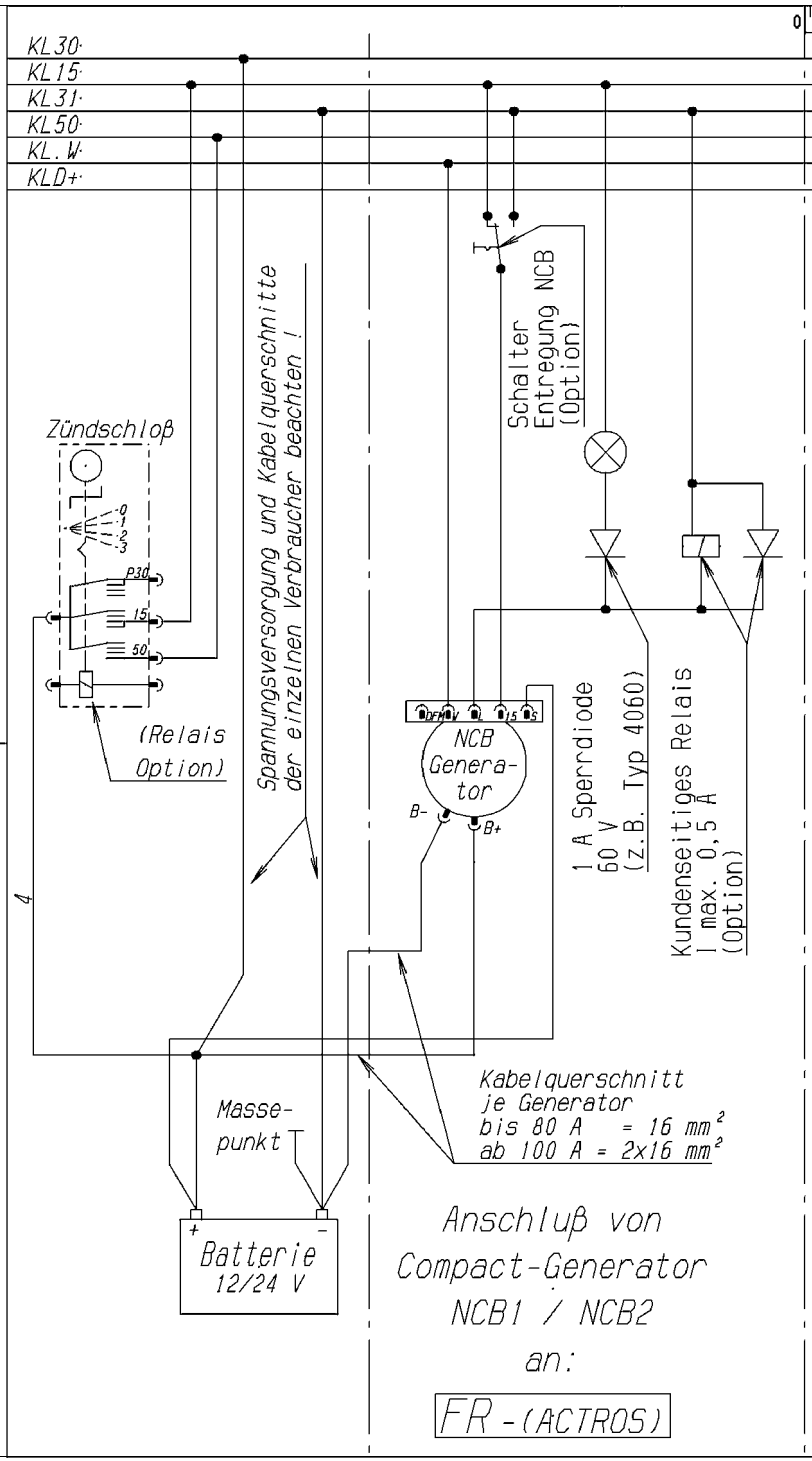




Erlaeuterungen zur Zeichnung siehe Werknorm MBN 31 020. Explanations of drawing, see Daimler-Benz standard MBN 31 020.

vollständig überarbeitet 1/ mit Änderung neu gezeichnet,	G	003	ZAM 597/99	Roski	Halbroth	
Aenderungsindex / Aenderungsbeschreibung State of revision / Revision text	CAD	ZGS	Auftrags-Nr. Order no.	Bearb./Auth. Datum/Date	Pruef./Check Datum/Date	Norm/Stand. Datum/Date

Ges.rel.Normen/Stand.relevant to law	Werkstoff (Endzustand) Material (final condition)	CAD ZGS ED-KB NZ	
Format A3 / Massstab/Scale -:-		Auftr.-Nr./Order no.	
			Datum/Date / Name
Referenz-Nr./Reference No. / Gewicht (kg) / Weight	Oberfl.sch./Surf.prot. DBL	Bearb./Auth.	17.06.99 Roski
	Farbe/Color	Pruef./Check	17.06.99 Halbroth
Allg.Toleranzen/Gen.tolerances	Dekor/Decoration MBN31030	Norm/Stand.	
	Oberfl.angaben/Surf.texture MBN31007	Abt./Dept.	17.06.99 Kerschbaum
	Oberflaeche/Surface (m²)	M/ESV	
	Benennung/Title: Stromlaufplan MR, FR, ADM (Zuendschloss, Batterie und Generator)		
System CATIA / Mercedes-Benz	Sach-Nr./Basic number: A 541 150 06 00		Blatt/Sheet 1



alle nicht bezeichneten Kabelquerschnitte 1 mm²

Legende:

MR = Motor - Regelung
FR-SKN = Fahrzeug - Regelung Schwere Klasse NEU (ACTROS)
ADM-FR = Adaptionsmodul-Fahrzeug Reglelung (incl. Anzeige- + Diagnoserechner)
ADM-AR = Adaptionsmodul-Anzeigerechner (incl. Diagnoserechner)
BK = Bremsklappe
KDR = Konstantdrossel
IES = Integriertes Elektronik System (vernetztes Datenbussystem)
PSM = Parametrierbares Sonder - Modul

Aenderungsindex / Aenderungsbeschreibung state of revision / revision text	CAD	ZGS	Auftrags-Nr. order no.	Bearb./auth. Datum/date	Pruef./check Datum/date	Norm/stand. Datum/date

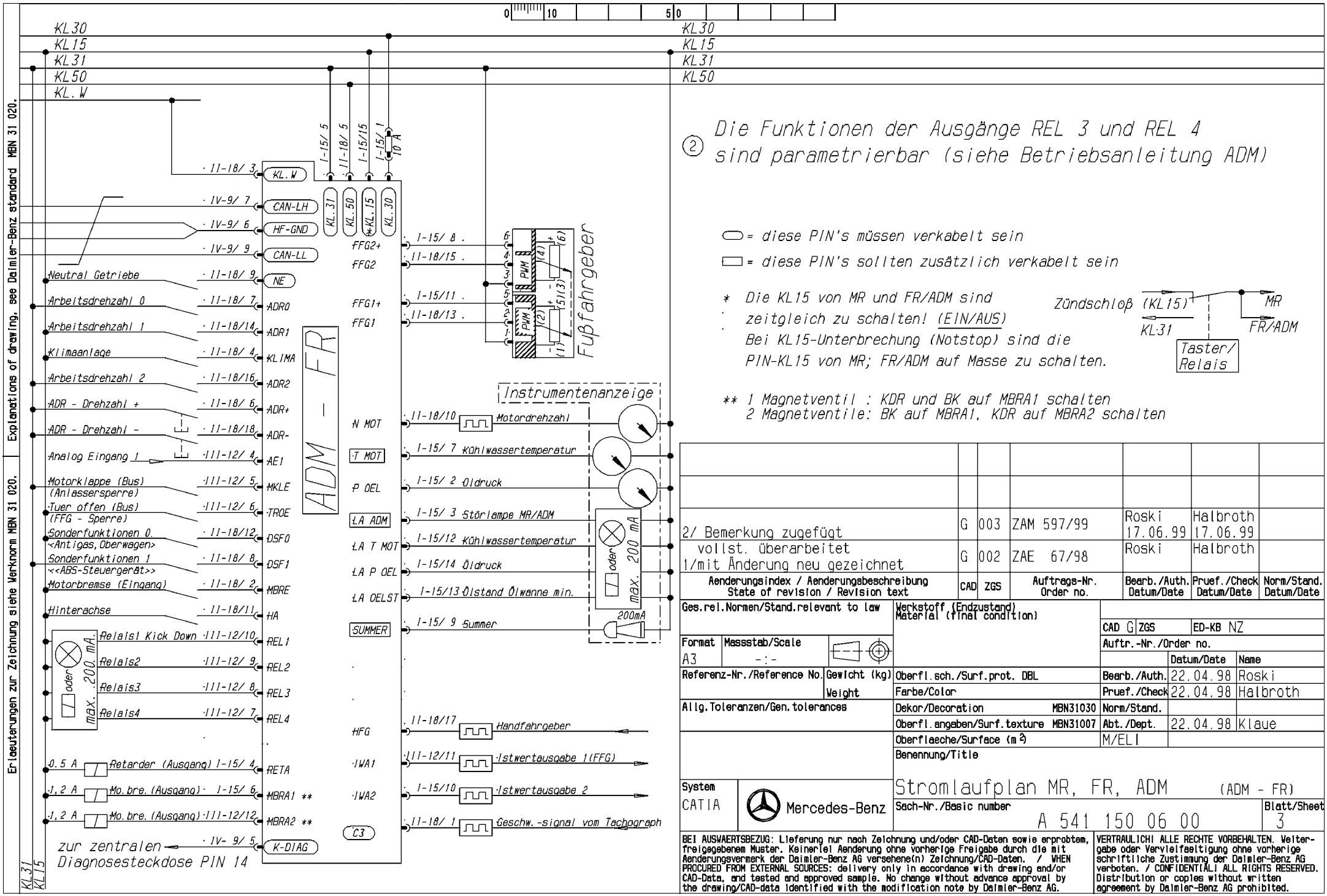
Werkstoff(Endzustand)/material(fi.co.)	Oberfl.sch./surf.prot. DBL		Datum/date	Name/name
	Farbe/color	Bearb./auth.	2001-03-27	Barthelmie
	Dekor/decoration MBN 31030	Pruef./check	2001-03-27	Ebel
	Oberfl.ang./surf.texture ISO 1302	Norm/stand.	2001-03-27	Ebel
	Oberflaeche/surface (m²)	Freig./rel.	2001-03-27	Kerschbaum

Allg.Toleranzen/gen.tolerances	gesetzl.Merkmal/st.ftr.	CAD	ZGS	ED-KB	Auftr.-Nr./order no.	federf.Abt./resp.dep
			004	NZ	ZAM 272/01	PBE/DHV

Referenz-Nr./reference no.	Masse/mass (kg)	Benennung/title
		Stromlaufplan MR, FR, ADM (Zuendschloss, Batterie und Generator)
Massstab/scale	System/system CATIA V4R2.2	
Proj.Methode/ proj.method	1 ISO 5456-2	

Mercedes-Benz

Format/sz. A3 | Blatt/sh. 11 | Sach-Nr./basic number A 541 150 06 00



② Die Funktionen der Ausgänge REL 3 und REL 4 sind parametrierbar (siehe Betriebsanleitung ADM)

⬭ = diese PIN's müssen verkabelt sein

▭ = diese PIN's sollten zusätzlich verkabelt sein

* Die KL15 von MR und FR/ADM sind zeitgleich zu schalten! (EIN/AUS)
Bei KL15-Unterbrechung (Notstop) sind die PIN-KL15 von MR; FR/ADM auf Masse zu schalten.

Zündschloß (KL15) → MR, FR/ADM; KL31 → Taster/Relais

** 1 Magnetventil : KDR und BK auf MBRA1 schalten
2 Magnetventile: BK auf MBRA1, KDR auf MBRA2 schalten

Aenderungsindex / Aenderungsbeschreibung State of revision / Revision text	CAD	ZGS	Auftrags-Nr. Order no.	Bearb./Auth. Datum/Date	Pruef./Check Datum/Date	Norm/Stand. Datum/Date
2/ Bemerkung zugefügt	G	003	ZAM 597/99	Roski 17.06.99	Halbroth 17.06.99	
vollst. überarbeitet 1/mit Änderung neu gezeichnet	G	002	ZAE 67/98	Roski	Halbroth	

Ges.rel.Normen/Stand.relevant to law

Werkstoff (Endzustand) Material (final condition)

Format A3 | Massstab/Scale -:-

Referenz-Nr./Reference No. | Gewicht (kg) Weight

Allg.Toleranzen/Gen.tolerances

Oberfl.sch./Surf.prot. DBL

Farbe/Color

Dekor/Decoration MBN31030

Oberfl.angaben/Surf.texture MBN31007

Oberflaeche/Surface (m²)

CAD G ZGS | ED-KB NZ

Auftr.-Nr./Order no.

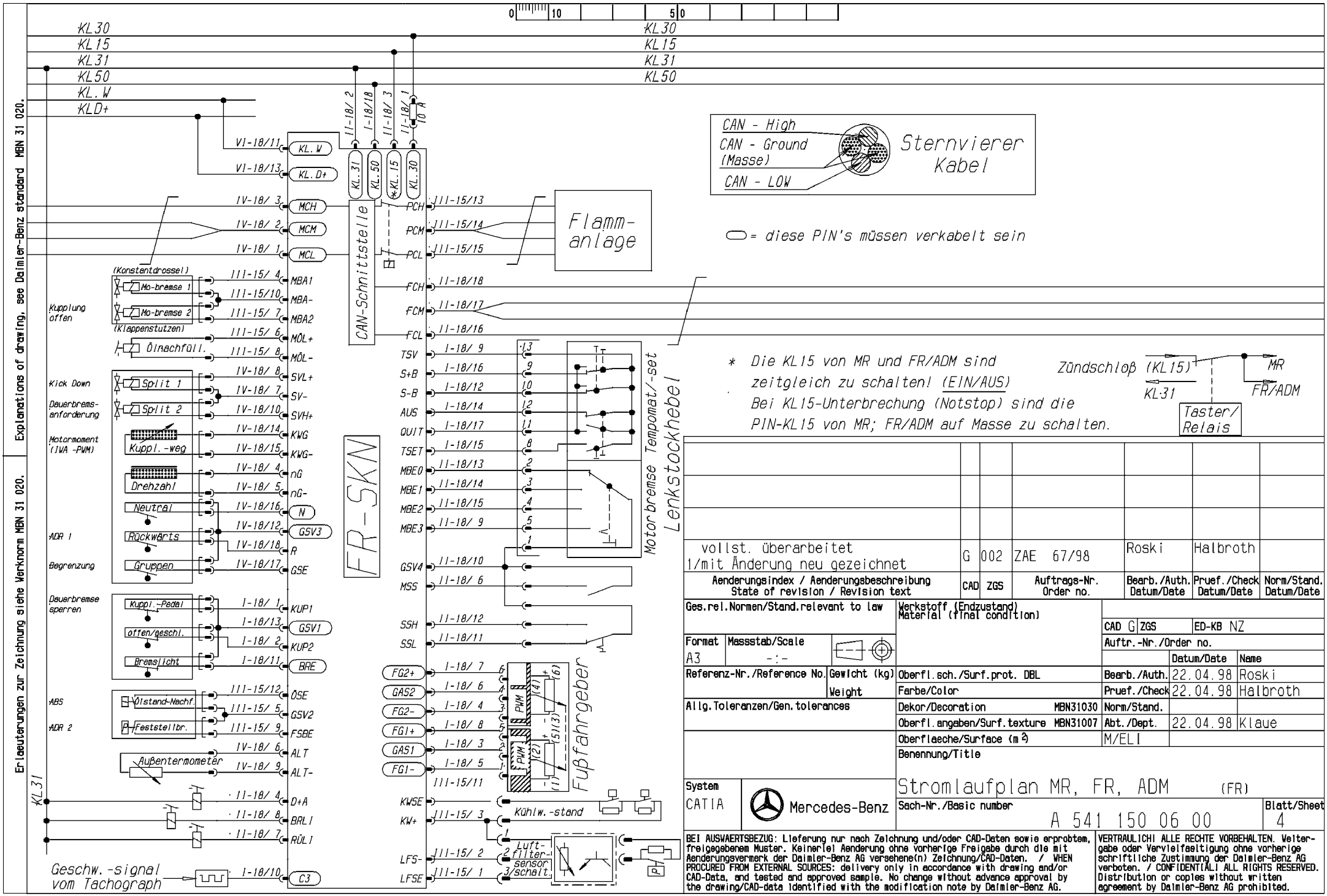
	Datum/Date	Name
Bearb./Auth.	22.04.98	Roski
Pruef./Check	22.04.98	Halbroth
Norm/Stand.		
Abt./Dept.	22.04.98	Klaue
M/ELI		

Benennung/Title: Stromlaufplan MR, FR, ADM (ADM - FR)

System CATIA | Mercedes-Benz

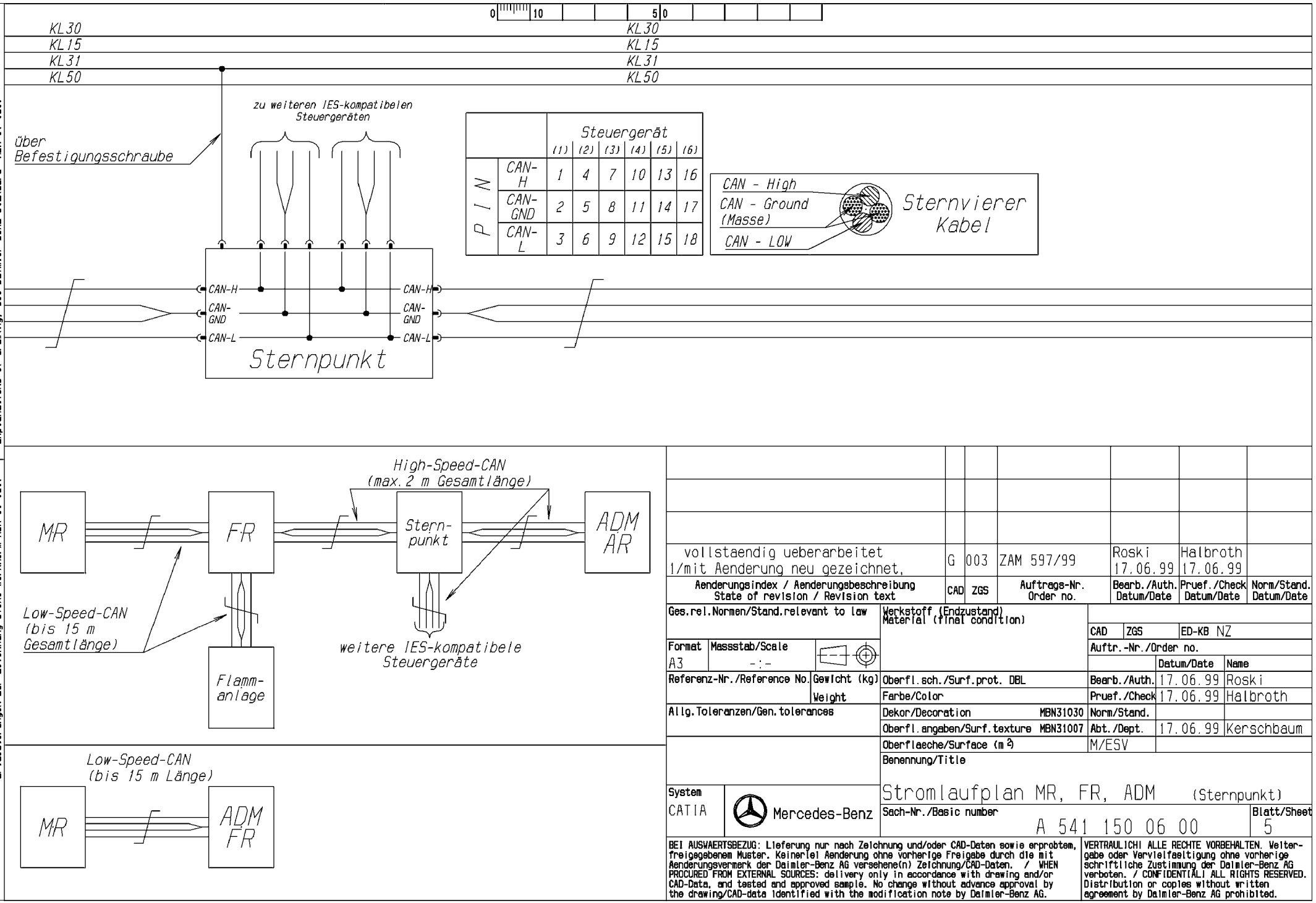
Sach-Nr./Basic number: A 541 150 06 00 | Blatt/Sheet 3

Erlaeuterungen zur Zeichnung siehe Werknorm MBN 31 020. | Explanations of drawing, see Daimler-Benz standard MBN 31 020.



vollst. überarbeitet 1/mit Änderung neu gezeichnet	G	002	ZAE 67/98	Roski	Halbroth	
Aenderungsindex / Aenderungsbeschreibung State of revision / Revision text	CAD	ZGS	Auftrags-Nr. Order no.	Bearb./Auth. Datum/Date	Pruef./Check Datum/Date	Norm/Stand. Datum/Date

Ges.rel.Normen/Stand.relevant to law	Werkstoff (Endzustand) Material (final condition)			
Format A3	Massstab/Scale -:-		CAD G ZGS	ED-KB NZ
			Auftr.-Nr./Order no.	
				Datum/Date Name
Referenz-Nr./Reference No.	Gewicht (kg) Weight	Oberfl.sch./Surf.prot. DBL	Bearb./Auth.	22.04.98 Roski
		Farbe/Color	Pruef./Check	22.04.98 Halbroth
Allg.Toleranzen/Gen.tolerances		Dekor/Decoration MBN31030	Norm/Stand.	
		Oberfl.angaben/Surf.texture MBN31007	Abt./Dept.	22.04.98 Klaue
		Oberflaeche/Surface (m²)	M/ELI	
		Benennung/Title		
System CATIA	Mercedes-Benz	Stromlaufplan MR, FR, ADM (FR)		
		Sach-Nr./Basic number A 541 150 06 00		Blatt/Sheet 4



vollstaendig ueberarbeitet 1/mit Aenderung neu gezeichnet,	G	003	ZAM 597/99	Roski 17.06.99	Halbroth 17.06.99	
Aenderungsindex / Aenderungsbeschreibung State of revision / Revision text	CAD	ZGS	Auftrags-Nr. Order no.	Bearb./Auth. Datum/Date	Pruef./Check Datum/Date	Norm/Stand. Datum/Date

Ges.rel.Normen/Stand.relevant to law

Werkstoff (Endzustand) Material (final condition)

Format A3 | Massstab/Scale -:-

Referenz-Nr./Reference No. | Gewicht (kg) Weight

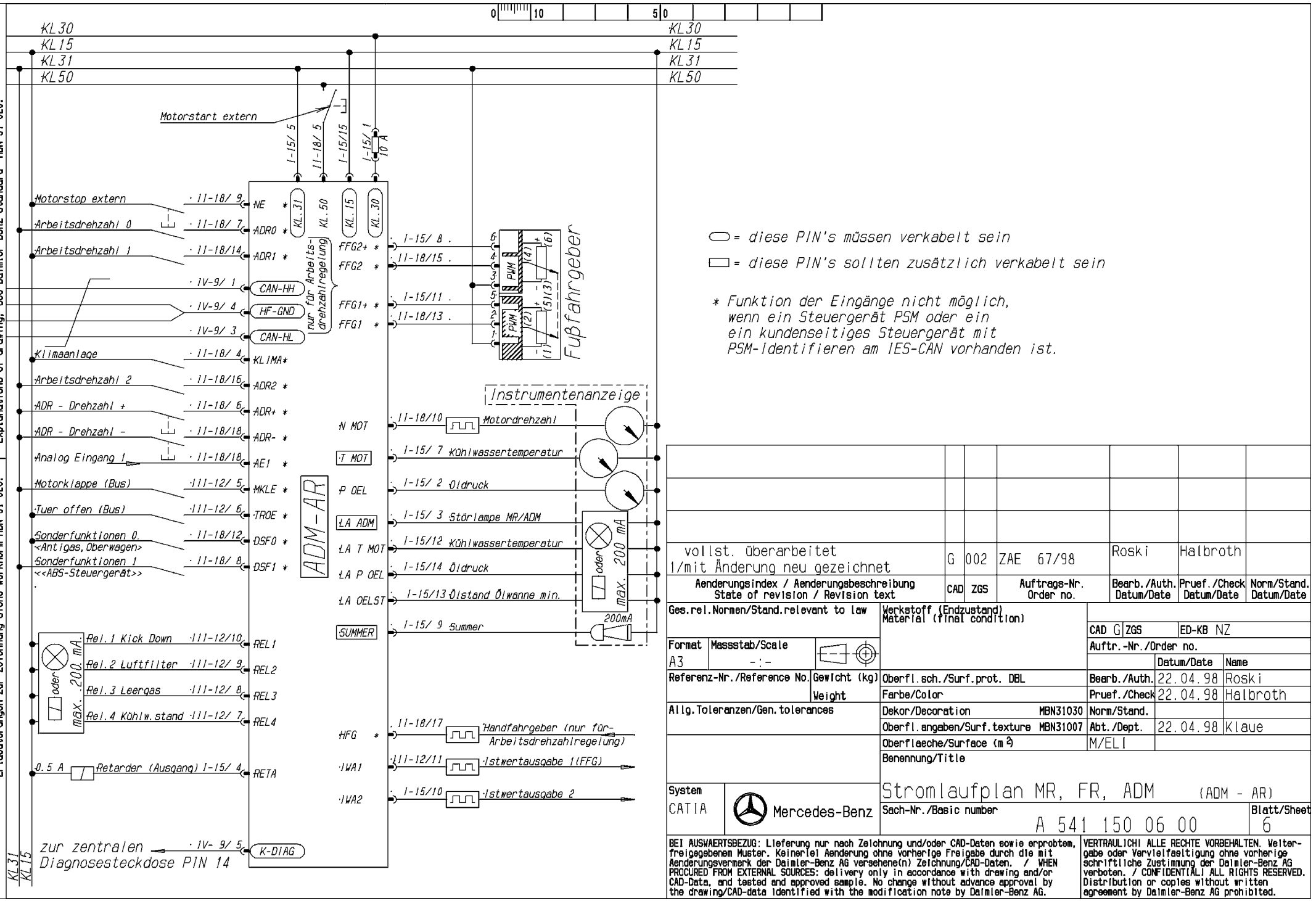
Allg.Toleranzen/Gen.tolerances

CAD	ZGS	ED-KB NZ	
Auftr.-Nr./Order no.			
		Datum/Date	Name
Oberfl.sch./Surf.prot. DBL		Bearb./Auth.	17.06.99 Roski
Farbe/Color		Pruef./Check	17.06.99 Halbroth
Dekor/Decoration MBN31030		Norm/Stand.	
Oberfl.angaben/Surf.texture MBN31007		Abt./Dept.	17.06.99 Kerschbaum
Oberflaeche/Surface (m²)		M/ESV	

Benennung/Title: Stromlaufplan MR, FR, ADM (Sternpunkt)

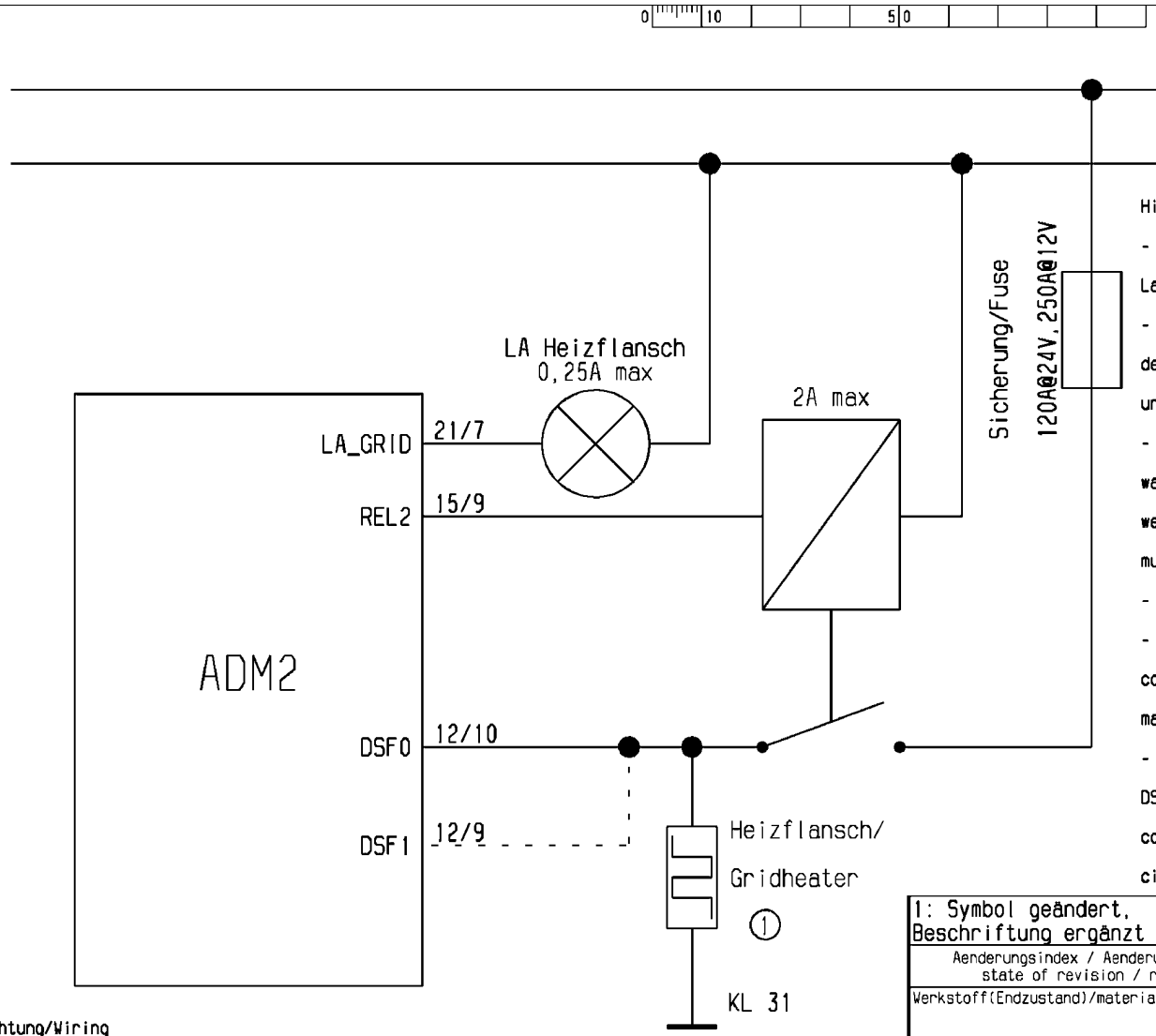
System: CATIA | Mercedes-Benz

Sach-Nr./Basic number: A 541 150 06 00 | Blatt/Sheet: 5



vollst. überarbeitet 1/mit Änderung neu gezeichnet	G	002	ZAE 67/98	Roski	Halbroth	
Aenderungsindex / Aenderungsbeschreibung State of revision / Revision text	CAD	ZGS	Auftrags-Nr. Order no.	Bearb./Auth. Datum/Date	Pruef./Check Datum/Date	Norm/Stand. Datum/Date

Ges.rel.Normen/Stand.relevant to law	Werkstoff (Endzustand) Material (final condition)	CAD G ZGS	ED-KB NZ
Format A3	Massstab/Scale -:-	Auftr.-Nr./Order no.	
Referenz-Nr./Reference No.	Gewicht (kg) Weight		Datum/Date / Name
	Oberfl.sch./Surf.prot. DBL	Bearb./Auth.	22.04.98 Roski
	Farbe/Color	Pruef./Check	22.04.98 Halbroth
Allg.Toleranzen/Gen.tolerances	Dekor/Decoration MBN31030	Norm/Stand.	
	Oberfl.angaben/Surf.texture MBN31007	Abt./Dept.	22.04.98 Klaue
	Oberflaeche/Surface (m²)	M/ELI	
	Benennung/Title		
System CATIA	Stromlaufplan MR, FR, ADM (ADM - AR)		
Mercedes-Benz	Sach-Nr./Basic number A 541 150 06 00		Blatt/Sheet 6



Hinweise/Instruction:

- Die Ansteuerung des MB-Heizflansch erfolgt sets mit einem plusschaltenden Lastrelais.
- Der Einbau von Hochstromsicherungen sowie die Überwachung des Arbeitskontakts des Hochlastrelais liegen in der Verantwortung des Anwenders(Fahrzeughersteller) und wird dringend empfehlen.
- Ein klemmendes Lastrelais (Kontakt öffnet nicht) kann mit der Funktion "Überwachung des Arbeitskontakts des Hochlastrelais" erkannt, jedoch nicht abgestellt werden. In diesem Fall, erkennbar durch eine blinkende Kaltstart-Kontroll-Lampe, muß der stromführende Lastkreis manuell unterbrochen werden.
- The MB-Gridheater is always driven by a load-relay switched to supply voltage.
- The installation of high current fuses as well as the monitoring of the load contacts of the load relay is under the responsibility of the vehicle manufacturer and is strictly recommended.
- A sticking load contact of the load-relay can be monitored via input DSF0 or DSF1, but there is no automatic power cut off. In case of a sticking load contact the Gridheater control Lamp (LA_GRID) is flashing an the Gridheater load circuit must be switched off manually.

Verdrahtung/Wiring

- Der Ausgang LA_GRID (Pin 21/7) steuert die Kalstart-Kontroll-Lampe an.
- Der Ausgang REL2 (Pin 15/9) steuert das Hochlastrelais des Heizflansch an.
- Zur Überwachung des Arbeitskontakts des Hochlastelais kann der Eingang DSF0 (bei plus-) oder DSF1 (bei masseschaltendem Latsrelais) benutzt werden.
- The output LA_GRID (Pin 21/7) is activating the Gridheater control lamp.
- The output REL2 (Pin 15/9) is activating the load-relay for the Gridheater.
- The digital input DSF0 (relay switchs to supply-voltage) or DSF1(relay switchs to ground) can be used for monitoring the load contacts of the load-relay.

1: Symbol geändert, Beschriftung ergänzt	G	006	ZAM 805/03	Rommel 03-08-28	Ebel 03-08-28	Kerschb. 03-08-28
Aenderungsindex / Aenderungsbeschreibung state of revision / revision text	CAD	ZGS	Auftrags-Nr. order no.	Bearb./auth. Datum/date	Pruef./check Datum/date	Norm/stand. Datum/date

Werkstoff(Endzustand)/material(fi.co.)			Datum/date	Name/name
	Oberfl.sch./surf.prot. DBL			
	Farbe/color	Bearb./auth.	2003-06-10	Rommel
	Dekor/decoration MBN 31030	Pruef./check	2003-06-10	Ebel
	Oberfl.ang./surf.texture ISO 1302	Norm/stand.	2003-06-10	Ebel
	Oberflaeche/surface (m^2)	Freig./rel.	2003-06-10	Kerschbaum

Allg.Toleranzen/gen.tolerances	gesetzl.Merkmal/st.ftr.	CAD	ZGS	ED-KB	Auftr.-Nr./order no.	federf.Abt./resp.dep.
		G	005	NZ	ZAM 489/03	PBE/DHV

Referenz-Nr./reference no.	Masse/mass (kg)	Benennung/title
		Stromlaufplan Mr,FR,ADM (Ansteuerung Heizflansch)
Massstab/scale	System/system CATIA V4R2.4	
Proj.Methode/ proj.method 1 ISO 5456-2		

Format/sz.	Blatt/sh.	Sach-Nr./basic number
A3	007	A 541 150 06 00