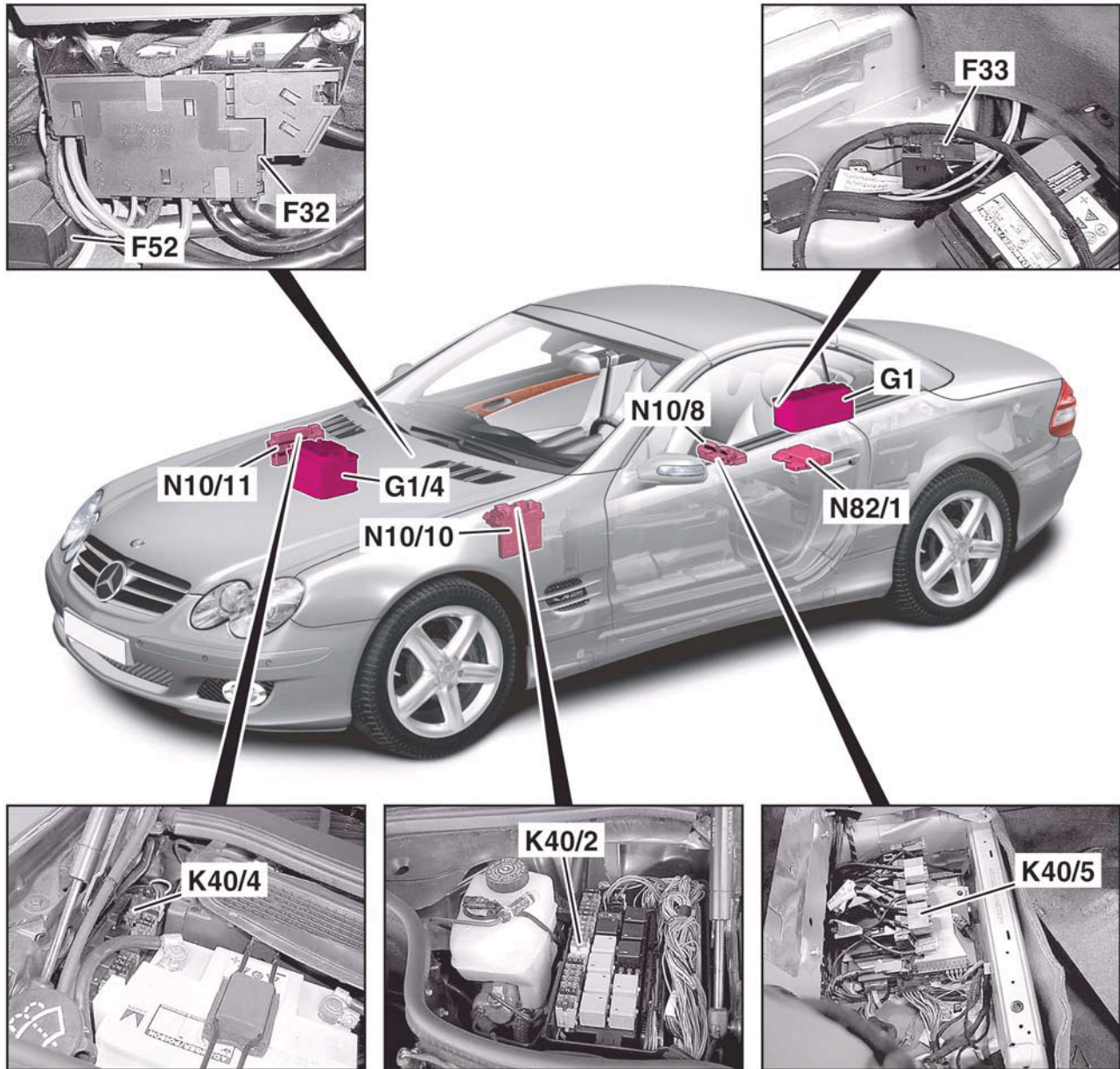


## On-board electrical system components



*F32* Front fuse box  
*F33* Rear fuse box  
*F52* Fuse through-plating  
*G1* On-board electrical system battery  
*G1/4* Starter battery  
*K40/2* Driver-side fuse and relay module

*K40/4* Passenger-side fuse and relay module  
*K40/5* Rear fuse and relay module  
*N10/8* Rear SAM control module  
*N10/10* Driver-side SAM control module  
*N10/11* Passenger-side SAM control module  
*N82/1* Vehicle power supply control module

## On-board electrical system components

### Features of the on-board electrical system

Model 230 has a two-battery electrical system, consisting of a starter battery (G1/4) in the engine compartment and an on-board electrical system battery (G1) in the trunk.

The task of the starter battery (G1/4) in normal operation is to provide the energy required for the starting procedure.

The on-board electrical system battery (G1) supplies all the electrical consumers in the vehicle, even when the vehicle is idle.

The separation of the on-board electrical system into a starter battery circuit and an on-board electrical system battery circuit serves to preserve the starting ability of the vehicle.

### On-board electrical system management

The on-board electrical system in model 230 is managed by the battery control module (N82/1). It uses the measured voltage and temperature values to evaluate the state of the battery and initiates measures to stabilize the on-board electrical system if necessary (e. g. consumer shutoff).

### Fault messages in the on-board electrical

The (white) fault message “Electrical consumers switched off!” (consumer shutoff) is displayed under the following conditions:

- Voltage of on-board electrical system battery (G1) < 10.6 V (shutoff stage 1)
- Voltage of on-board electrical system battery (G1) < 10.2 V (shutoff stage 2)

The (red) fault message “Battery Symbol, Service Required” is displayed under the following conditions:

- Circuit 61 not present (engine running)
- Vehicle power supply control module (N82/1) defective
- Coupling relay defective or wiring harness to coupling relay defective
- Power supply to EIS control module (N73) (circuit 30z) defective
- Fuse in front prefuse box (F32) defective

#### Note

The design and operating principle of the two-battery on-board electrical system is also described in WIS: GF54.10-P-0999R



# Battery

## Overview

### On-board battery electrical system battery (G1)

#### Location

The on-board battery electrical system battery (G1) is located under the spare tire cover on the right.



G1 On-board electrical system battery

### Starter battery (G1/4)

#### Location

The starter battery (G1/4) is located at the rear of the engine compartment on the right in front of the bulk-head



G1/4 Starter battery

| Engine                                   | Battery        | Mat/wet-cell battery | Alternator     |
|--|----------------|----------------------|----------------|
| All                                      | 35 Ah          | Wet                  | -              |
| M113, M113 (AMG), M273, M275, M275 (AMG) | 60 Ah*, 70 Ah* | Mat                  | 150 A*, 180 A* |
| M 113                                    | 70 Ah          | Mat                  | 150 A          |
| M113 (AMG), M275, M275 (AMG)             | 70 Ah*, 95 Ah* | Mat                  | 180 A          |

\* Depending on equipment

## Charging

### Charging

#### On-board electrical system battery (G1)

- Check condition of on-board electrical system battery (G1).
- Connect positive clamp (1) of charger to positive terminal of on-board electrical system battery (G1).
- Connect negative clamp (2) of charger to negative terminal of on-board electrical system battery (G1).
- Charge on-board electrical system battery (G1).

Refer to WIS: AR54.10-P-1130I

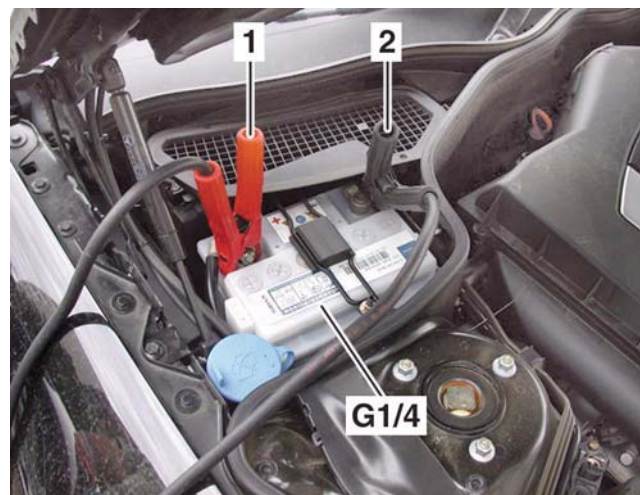


1 Positive clamp  
2 Negative clamp  
G1 On-board electrical system battery

#### Starter battery (G1/4) (external charging)

- Check condition of starter battery (G1/4).
- Connect positive clamp (1) of charger to positive terminal of starter battery (G1/4). Connect negative clamp (2) of charger to negative terminal of starter battery (G1/4).
- Charge starter battery (G1/4).

Refer to WIS: AR54.10-P-1130I



1 Positive clamp  
2 Negative clamp  
G1/4 Starter battery

# Battery

## Charging

### Charging

#### Starter battery (G1/4) (internal charging)

The starter battery (G1/4) is charged by the vehicle power supply control module (N82/1) under the following conditions:

- Engine on (circuit 61 signal present)
- Voltage of on-board electrical system battery (G1) >11 V

Recharging occurs with current and voltage regulation ( $U = 13.5 - 16.6 \text{ V}$ ). The charging current is limited to max. 15 A. The charging time depends on the battery temperature (calculated from outside temperature and engine temperature) within the range of:

12 - 180 min.

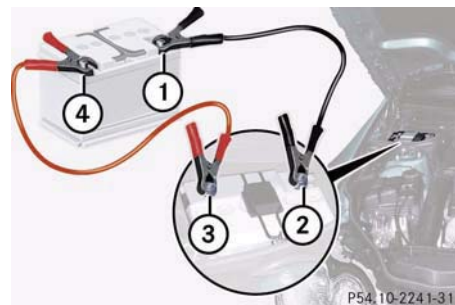
## Jump start

- Connect positive terminals (3) and (4) of the batteries with the jumper cables. Clamp cable to charged battery (4) first.

### CAUTION!

Never invert the terminal connections.

- Start the engine of the vehicle with the charged battery and run at idle speed.
- Connect negative terminals (1) and (2) of the batteries with the jumper cables. Clamp cable to charged battery first.
- Start the engine of the disabled vehicle. (Do not turn on the lights under any circumstances).
- Remove the jumper cables first from the negative terminals (2) and (1) and then from positive terminals (3) and (4). (Lights can now be turned on.)



- 1 Negative terminal of charged battery
- 2 Negative terminal of discharged battery
- 3 Positive terminal of discharged battery
- 4 Positive terminal of charged battery

### **i** Note

Jump starting procedures may vary by model year and specific model in a model line.

Always refer to instructions in Operators Manual prior to connecting jumper cables to vehicles and attempting to jump start a discharged battery.

## Removal/installation

### **i** Note

- Set the Tele Aid to Service mode.
- In vehicles with Keyless Go (code 889), press the Keyless Go start/stop button (S2/3) repeatedly until the ignition is switched off. Remove the transmitter key (A8/1) from the vehicle and keep it outside the range of the transmitter (at least 2 m).

### **On-board electrical system battery (G1)**

Procedure for removing the on-board electrical system battery (G1):

- Switch off ignition and switch off all electrical consumers.
- Remove transmitter key (A8/1) from EIS control module (N73).
- Disconnect ground cable of on-board electrical system battery (G1) and protect it against unintentional contact.
- Disconnect positive cable of on-board electrical system battery (G1).
- Remove on-board electrical system battery (G1).

After removal/installation of the on-board electrical system battery (G1) basic programming (reinitialization) of the vehicle is required.

Read out the fault memory and erase if necessary (up to 1-14-04).

Refer to WIS: AR54.10-P-0005RA

### **Starter battery (G1/4)**

Procedure for removing the starter battery (G1/4):

- Switch off ignition and switch off all electrical consumers.
- Remove transmitter key (A8/1) from EIS control module (N73).
- Disconnect ground cable of on-board electrical system battery (G1) and protect it against unintentional contact.
- Disconnect ground cable of starter battery (G1/4) and protect it against unintentional contact.
- Disconnect positive cable of starter battery (G1/4).
- Remove starter battery (G1/4).

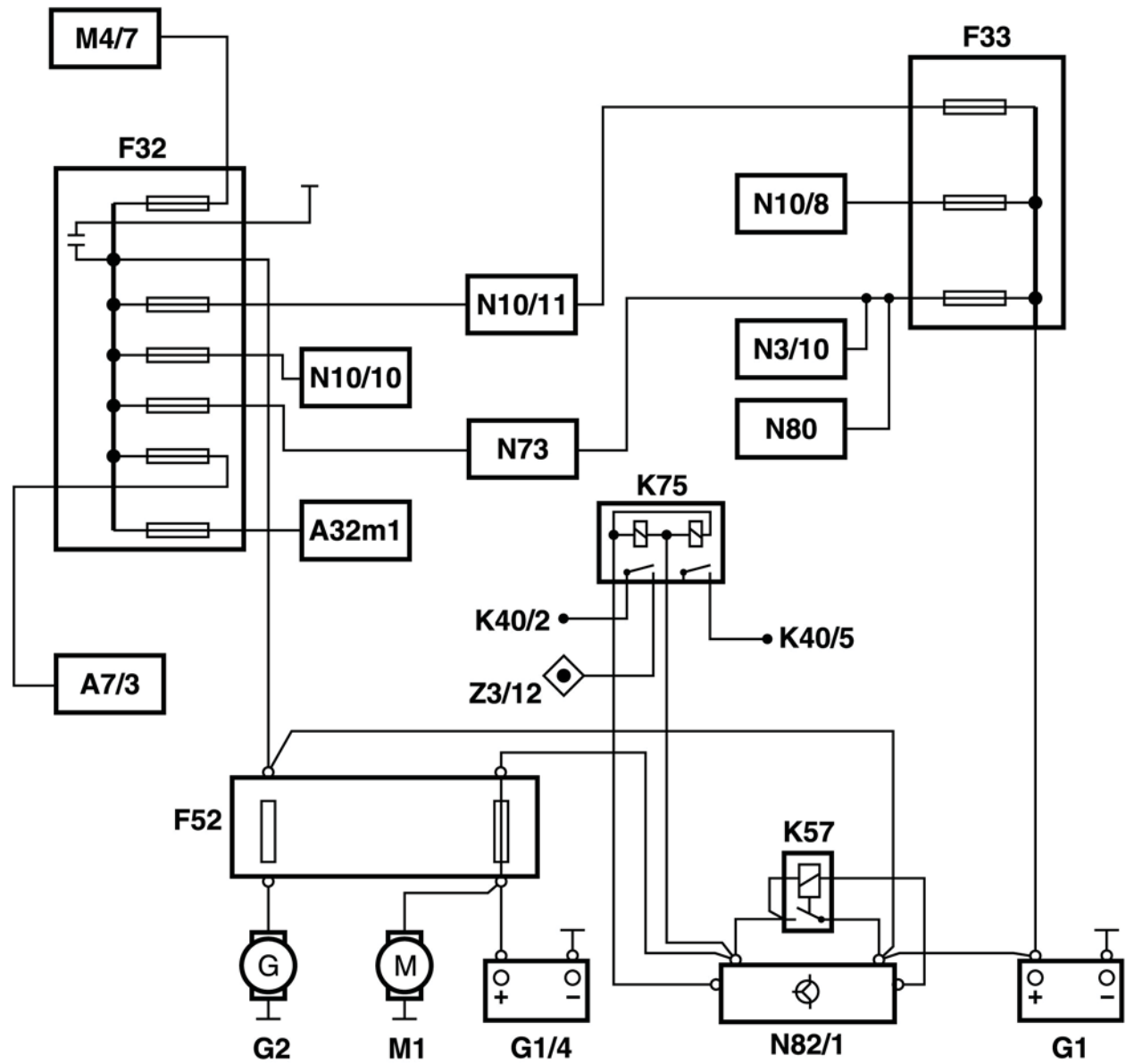
After removal/installation of the starter battery (G1/4) basic programming (reinitialization) of the vehicle is required.

Read out the fault memory and erase if necessary (up to 1-14-04):

Refer to WIS: AR54.10-P-0005RB



# On-board electrical system structure



- |       |                                    |        |   |
|-------|------------------------------------|--------|---|
| A32m1 | Blower motor                       | K75    | Circuit 15R/30 cutoff relay                         |
| A7/3  | SBC hydraulic unit                 | M1     | Starter   |
| F32   | Front prefuse box                  | M4/7   | Engine and A/C electric fan with integrated control |
| F33   | Rear prefuse box                   | N3/10  | ME-SFI control module                               |
| F52   | Fuse through-plating               | N10/8  | Rear SAM control module                             |
| G1    | On-board electrical system battery | N10/10 | Driver-side SAM control module                      |
| G1/4  | Starter battery                    | N10/11 | Passenger-side SAM control module                   |
| G2    | Alternator                         | N73    | EIS control module                                  |
| K40/2 | Driver-side fuse and relay module  | N80    | Steering column module                              |
| K40/5 | Rear fuse and relay module         | N82/1  | Vehicle power supply control module                 |
| K57   | Battery cutoff relay               | Z3/12  | Circuit 15R connector sleeve                        |

## Rest (quiescent) current measurement

### **i** Note

The general procedure is described in the Introduction section “Rest current test, general”, and in WIS: AR54.10-P-1030I

### Measurement for presence of rest current at ground cable of on-board electrical system battery (G1)

Perform the rest current measurement using a current clamp (1) or a multimeter looped in without breaking the circuit.

After about 20 mm the rest current must have fallen to the values listed below.

- If the rest current  $< 50$  mA:
- Read out/erase fault memory and final rest current measurement  $< 50$  mA.
- If the rest current  $> 50$  mA and  $< 1.2$  A:

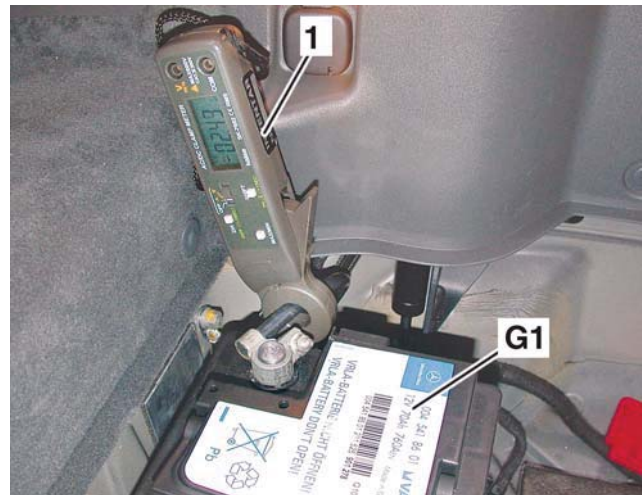
A single component shows rest current.

Via the front prefuse box (F32) and the rear prefuse box (F33), narrow down the rest current path and localize the rest current consumer. The final rest current measurement must be  $< 50$  mA (see Introduction, section “Rest current test, general”, item 1).

- If the rest current  $> 1.2$  A:

Measure CAN activity (see Introduction, section “Rest current test, general, item 2).

The CAN voltage distributors are located in the driver and front passenger footwells and at the rear.



1 Current clamp  
G1 On-board electrical system battery

CAN voltage distributors X30/15 and X30/18:

Refer to WIS: GF00.19-P-1000-04KA

Voltage distributors X30/16 and X30/17:

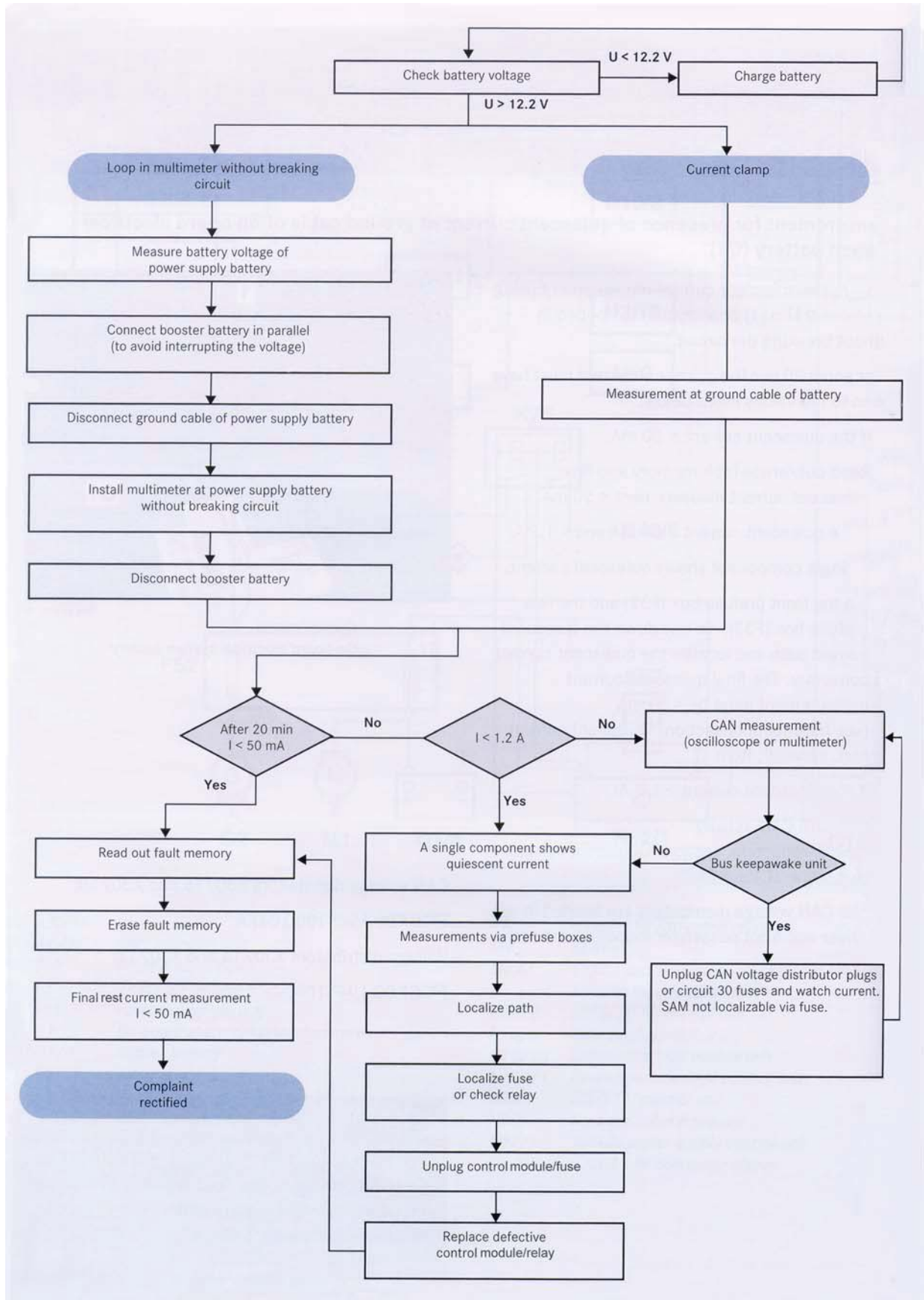
Refer to WIS: GF00.19-P-1000-05KA

### **i** Note

The alarm signal horn (H3) is charged at 20 mA for 14 hrs. after disconnection and reconnections of the on-board electrical system battery (G1). This can result in measurement errors.



# Rest current measurement



## Vehicle power supply control module (N82/1)

Refer to WIS: GF54.21-P-4118R

### Location

The vehicle power supply control module (N82/1) is located in the trunk near the right wheel well.

### Purpose

The vehicle power supply control module (N82/1) is woken by an activation signal from the EIS control module (N73) and checks the operating state of the on-board electrical system.

The base functions of the vehicle power supply control module (N82/1) are:

- Managing the on-board electrical system by generating the consumer shutoff stages
- Controlling the battery cutoff relay (K57) when the state of charge of the on-board electrical system battery (G1) is critical ( $< 9.8\text{ V}$ )
- Charging the starter battery (G1/4) via charge converters

Control of the battery cutoff relay (K57) depends on the state of the on-board electrical system. In normal operation, in normal startup mode and in the shutoff phase the on-board electrical system battery (G1) and the starter battery (G1/4) are separated.



*N82/1 Vehicle power supply control module*

In emergency and emergency starting mode the on-board electrical system battery (G1) and the starter battery (G1/4) are connected in parallel by the battery cutoff relay (K57). The starter battery (G1/4) supplies the on-board electrical system until there is no longer an undervoltage at circuit 30. In addition, an entry is made in the fault memory and a warning indicator appears in the instrument cluster (A1).

The circuit 15R/30 cutoff relay (K75) separates or connects circuit 15R and circuit 30 for the consumer shutoff function.

## Consumer shutoff

### General

One of the most important functions of the vehicle power supply control module (N82/1) is dynamic load management (consumer shutoff) to safeguard the stability of the on-board electrical system.

The vehicle power supply control module (N82/1) transmits the shutoff request or load reduction centrally to all the consumers (control modules) on the on-board electrical system battery circuit as required.

The voltage threshold and the consumer shutoff function differ according to the operating states:

- Consumer shutoff with “Engine ON”
- Consumer shutoff with “Engine OFF”

### Consumer shutoff with “Engine OFF” (emergency starting mode):

- Emergency starting mode is activated when the transmitter key (A8/1) is in the EIS control module (N73) (circuit 15c = ON) and a voltage  $< 10.8$  V is present at the on-board electrical system battery (G1).
- Stage 2 and stage 1 consumers are shut off, and the on-board electrical system battery (G 1) and the starter battery (G1/4) are coupled.
- If the engine is not started within 30 secs., the batteries are separated again. The consumer shutoff stage 2 and stage 1 are preserved.
- When the engine is started from emergency starting mode, the system changes to emergency stage 3; stage 2 and stage 1 consumers remain shutoff, and the on-board electrical system battery (G 1) and the starter battery (G 1/4) remain coupled.

### Consumer shutoff with “Engine ON” (emergency mode):

Emergency mode is activated when the engine is running. There are three different emergency stages:

- Emergency stage 1:  
Starter battery (G1/4)  $< 10.6$  V  
Stage 1 consumers are shut off. The following message is displayed to the customer in the instrument cluster (A1):  
“Battery Symbol, Electrical Consumers Switched Off!”
- Emergency stage 2:  
Starter battery (G1/4)  $< 10.2$  V  
Stage 2 and stage 1 consumers are shut off. The message for the customer in the instrument cluster (A1) remains the same.
- Emergency stage 3:  
Starter battery (G1/4)  $< 9.8$  V  
Stage 2 and stage 1 consumers are shut off, starter battery (G1/4) and on-board electrical system battery (G1) are coupled.

### Cancellation of shutoff stages

Consumer shutoff is canceled with a delay under the following conditions:

Voltage of on-board electrical system battery (G1)  $> 12.5$  V

Stage 3: after approx. 7 mins.

Stage 2: after approx. 3 mins.

Stage 1: after approx. 3 mins.



## Consumer shutoff

### Shutoff stage 1 and shutoff stage 2

For the consumer shutoff stage 2 and stage 1 the following display appears in the instrument cluster (A1):

“Battery Symbol, Electrical Consumers Switched Off!”

**Table of shutoff stage 1 and 2**

| Consumer                    | Cannot be shut off    | Stage 2 | Stage 1 | Special function |
|-----------------------------|-----------------------|---------|---------|------------------|
| Engine A/C electrical fan * |                       |         |         | X                |
| Washer fluid heater         |                       |         | X       |                  |
| Headlamp cleaning system    | X                     |         |         |                  |
| Wiper park position         |                       |         | X       |                  |
| Steering column adjustment  |                       |         | X       |                  |
| Rear defroster              |                       |         | X       |                  |
| Outside mirror heating      |                       | X       |         |                  |
| Power windows               | X                     |         |         |                  |
| Seat adjustment             | X                     |         |         |                  |
| Parktronic                  | X                     |         |         |                  |
| Seat heater stage 1         |                       |         | X       |                  |
| Seat heater stage 2         |                       |         | X       |                  |
| Seat ventilation stage 1    |                       |         | X       |                  |
| Seat ventilation stage 2+3  |                       |         | X       |                  |
| Multicontour backrest       | X                     |         |         |                  |
| Inside rearview mirror      |                       | X       |         |                  |
| Interior lights             |                       |         | X       |                  |
| AAC (interior blower)       |                       | < 47%   | < 31%   |                  |
| ACC (flaps motor)**         |                       | X       | X       |                  |
| Steering wheel heater       |                       |         | X       |                  |
| Soft top ***                | X                     |         | X       |                  |
| Telematics                  | Current-limited (11A) |         |         |                  |

\* With local undervoltage at VCS terminals

\*\* At priority 2: only 4 flaps motors active

\*\*\* Closing sequence cannot be shut off



## Fuse concept

**i Note**

The fuse and relay charts included on following pages of this section are a general overview for this model. The vehicle's specified fuse/relay assignment diagram is located inside the vehicle (check the operator's manual for the location of the diagram). Fuse and relay information can also be found in the ETM. Additionally, fuse and relay charts are available in WIS, however the production break points and components listed may not apply to US vehicles and should be verified for accuracy using the ETM.

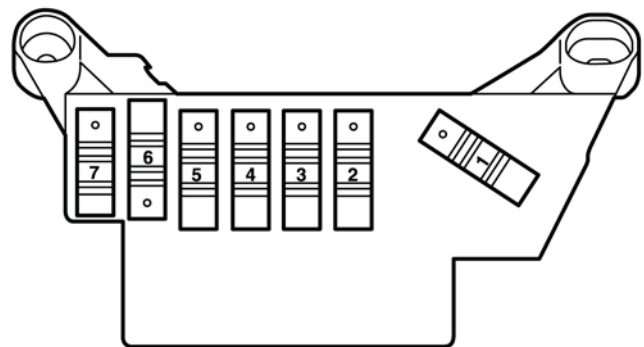
### Front prefuse box (F32)

**Location**

Refer to WIS:

- GF54.45-P-0800R (up to 2-28-06)
- GF54.45-P-0800R (up to 3-1-06)

The front prefuse box (F32) is located in the front passenger footwell under the accessories plate.



**i Note**

Fuse 6 is vacant because it is used as a cable passage.

### Circuit 30 fuse assignments

Refer to WIS:

- GF54.15-P-1256-07R (up to 8-31-03)
- GF54.15-P-1256-07RA (as of 9-1-03 up to 5-31-04)
- GF54.15-P-1256-07RB (as of 6-1-04 up to 2-28-06)
- GF54.15-P-1256-07RC (as of 3-1-06)

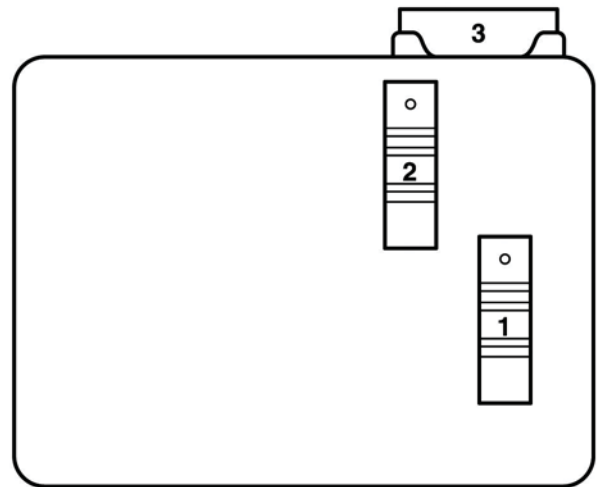
| Fuse | Designation                                   | Amps  |
|------|---|-------|
| 1    | Engine and A/C electric fan (M4/7)            | 100 A |
| 2    | Fuse and relay module front passenger (K40/4) | 200 A |
| 3    | Driver-side fuse and relay module (K40/2)     | 200A  |
| 4    | DI control module (N73)                       | 80 A  |
| 5    | Heating system recirculation unit (A32)       | 40 A  |
| 6    | Not used (harness passage)                    |       |
| 7    | Traction system hydraulic unit (A7/3)         | 40 A  |

## Fuse concept

### Rear prefuse box (F33)

#### Location

The rear prefuse box (F33) is located in front of the on-board electrical system battery (G1) in the trunk.



### Circuit 30z fuse assignments

Refer to WIS GF54.15-P-1256-08R

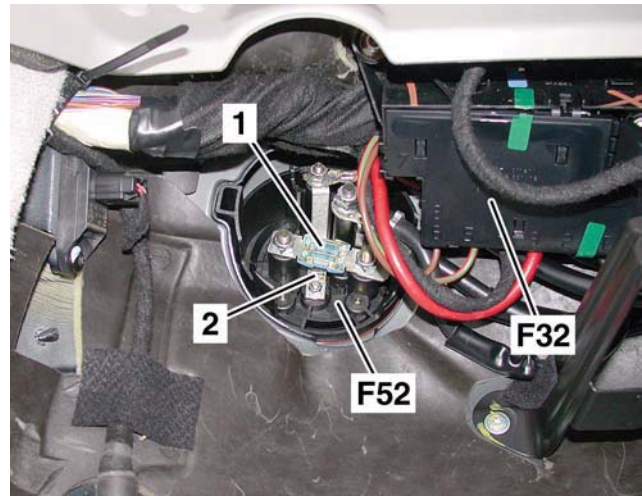
| Fuse | Designation   | Amps  |
|------|---|-------|
| 1    | Fuse and relay module front passenger (K40/4)   | 600 A |
| 2    | Rear fuse and relay module (K40/5)  | 200 A |
| 3    | Steering column module (N80), EIS control module (N73), ME-SFI control module (N3/10) | 7.5 A |

## Overview of fuses/relays

### Fuse through-plating (F52)

#### Location

The fuse through-plating (F52) is located besides the front prefuse box (F32) in the front passenger footwell under the accessories cover.



- 1 Fuse 1
- 2 Fuse 2
- F32 Front prefuse box
- F52 Fuse through-plating

### Fuse assignments

Refer to WIS: GF54.15-P-1256-18R

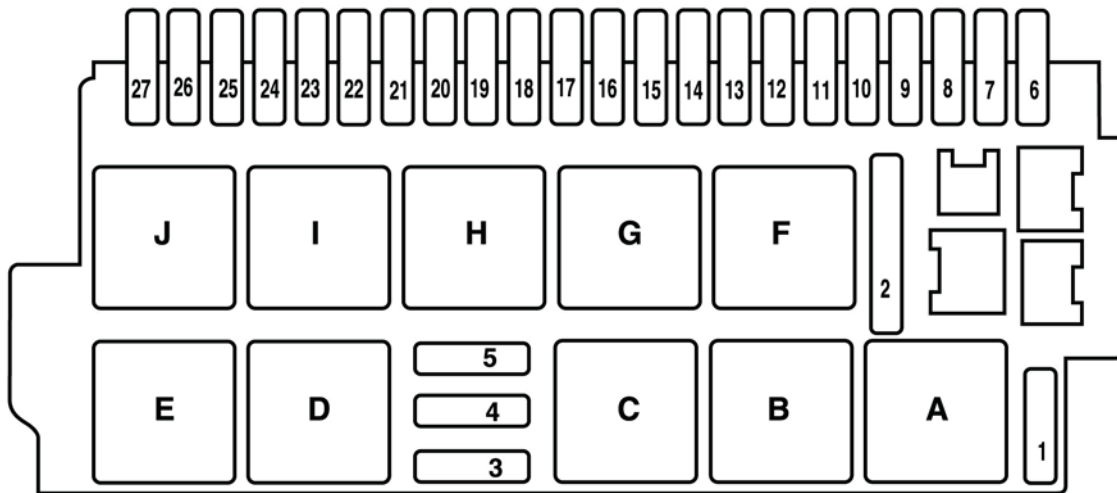
| Fuse | Designation  | Circuit     | Amps  |
|------|--|-------------|-------|
| 1    | Vehicle power supply control module (N82/1)                            | Circuit 30a | 100 A |
| 2    | Front prefuse box (F32)<br>Vehicle power supply control module (N82/1) | Circuit 30  | 200 A |

## Overview of fuses/relays

### Driver-side fuse and relay module (K40/2)

#### Location

The driver-side fuse and relay module (K40/2) is located at the driver-side SAM control module (N10/10) at the rear of the engine compartment on the left.



#### Relay assignments

Refer to WIS: GF54-15-P1257-03R

| Relay | Designation   | Relay | Designation   |
|-------|---|-------|---|
| A     | Wiper park heater relay (K40/2kA)                         | F     | High-pressure and return pump relay (K40/2kF)       |
| B     | Circuit 15 relay (K40/2kB)                                | G     | Wiper position 1 and 2 relay (K40/2kG)              |
| C     | Circuit 15 R relay (K40/2kC)                              | H     | Wipers on and off relay (K40/2kH)                   |
| D     | Steering column longitudinal adjustment relay 1 (K40/2kD) | I     | Steering column height adjustment relay 1 (K40/2kI) |
| E     | Steering column longitudinal adjustment relay 2 (K40/2kE) | J     | Steering column height adjustment relay 2 (K40/2kJ) |



## Overview of fuses/relays

### Circuit 30 fuse assignments

- GF54.15-P-1256-03R (up to 5-31-02)
- GF54.15-P-1256-03RA (as of 6-1-02 up to 8-31-03)
- GF54.15-P-1256-03RB (as of 9-1-03 up to 5-31-04)
- GF54.15-P-1256-03RC (as of 6-1-04 up to 2-28-06)
- GF54.15-P-1256-03RD (as of 3-1-06)

| Fuse | Designation  | Fuse        |
|------|--|-------------|
| 1    | Wiper park position heater relay (K40/2kA)                           | 20 A        |
| 2    | Not used   | -           |
| 3    | Steering column longitudinal adjustment relays (K40/2kD and K40/2kE) | 15 A        |
| 4    | Steering column height adjustment relays (K40/2kI and K40/2kJ)       | 15 A        |
| 8    | CGW control module (N93)   | 5 A or 10 A |
| 9    | Left door control module (N69/1)                                     | 40 A        |
| 13   | ABC control module (N51/2)   | 15 A        |
| 15   | System diagnostic control module (N55)                               | 10 A        |
| 15   | Data link connector (X11/4)  |             |
| 22   | Instrument cluster (A1)  | 5 A         |
| 23   | ACC pushbutton control module (N22), coolant circulation pump (M13)  | 10 A        |
| 24   | Stop lamp switch (S9/1)  | 5 A         |
| 25   | Alarm signal horn (H3)   | 7.5 A       |
| 26   | Lower control panel (LCP) control module (N72)                       | 5 A         |
| 27   | Left front ESA control module (N32/1)                                | 30 A        |

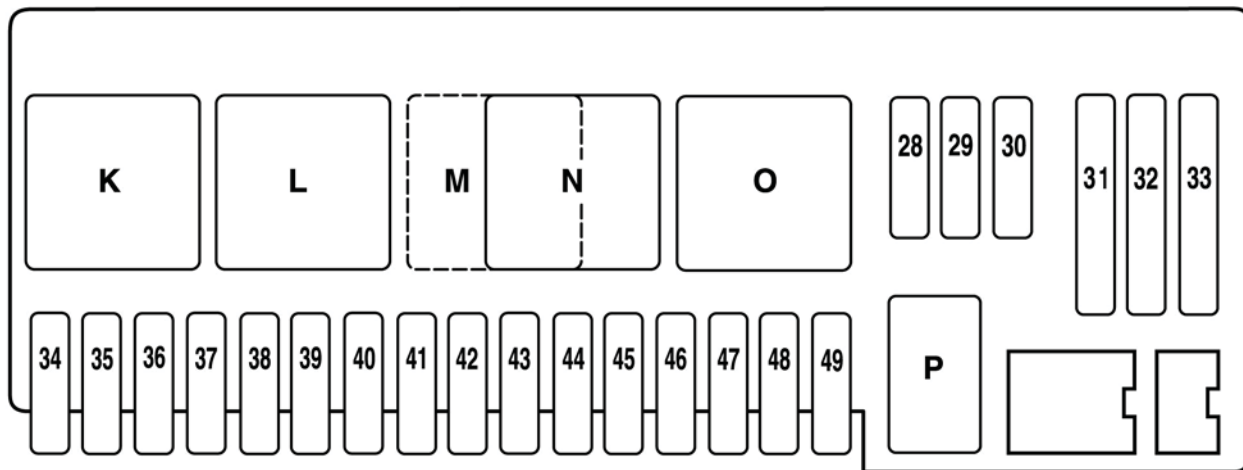


# Overview of fuses/relays

## Passenger-side fuse and relay module

### Location

The passenger-side fuse and relay module (K40/4) is located at the passenger-side SAM control module (N10/11) at the rear of the engine compartment on the right.



### Relay assignments

- GF54.15-P-1257-02R (up to 5-31-02)
- GF54.15-P-1257-02RA (up to 6-1-02 up to 5-31-03)
- GF54.15-P-1257-02RB (as of 6-1-03 up to 5-31-04)
- GF54.15-P-1257-02RC (as of 6-1-04 up to 2-28-06)
- GF54.15-P-1257-02RD (as of 3-1-06)

| Relay | Designation                                | Relay | Designation                         |
|-------|--|-------|-------------------------------------|
| K     | Engine electronics/chassis relay (K40/4kK) | N     | Air pump or Reserve relay (K40/4kN) |
| L     | Starter relay (K40/4kL)                    | O     | Air pump or Reserve relay (K40/4kO) |
| M     | Circuit 30z or Reserve relay (K40/4kM)     | P     | Fanfare horn relay (K40/4kP)        |



## Overview of fuses/relays

### Circuit 30 and 30z fuse assignments

- GF54.15-P-1256-02R (up to 5-1-02)
- GF54.15-P-1256-02RA (as of 6-1-02 up to 8-1-03)
- GF54.15-P-1256-02RB (as of 9-1-03 up to 5-31-04)
- GF54.15-P-1256-02RC (as of 6-1-04 up to 5-31-05)
- GF54.15-P-1256-02RD (as of 6-1-05 up to 2-28-06)
- GF54.15-P-1256-02RE (as of 3-1-06)

| Fuse | Designation   | Circuit    | Amps  |
|------|---|------------|-------|
| 28   | FAN (fanfare horn) relay module (K40/4kP)   | Circuit 30 | 15 A  |
| 29   | ME-SFI control module (N3/10), rear fuse and relay module (K40/5), electronic selector lever control module (N15/5), injectors (Y62)  | Circuit 30 | 20 A  |
| 30   | Purge control valve (Y58/1)   | Circuit 30 | 20 A  |
| 30   | Purge control valve (Y58/1), activated charcoal filter shutoff valve (Y58/4),<br><br>Z Circuit connector sleeves: left O2 sensor upstream TWC (G3/3), right O2 sensor upstream TWC (G3/4), left O2 sensor downstream TWC (G3/5), right O2 sensor downstream TWC (G3/6), variable intake manifold switchover valve (Y22/6), EGR vacuum transducer (Y31/1), AIR pump switchover valve (Y32) | Circuit 30 | 20 A  |
| 31   | Air pump (M33)  | Circuit 30 | 40 A  |
| 32   | AIR pump (M33)  | Circuit 30 | 40 A  |
| 35   | Right front ESA control module (N32/2)  | Circuit 30 | 30 A  |
| 35   | Traction system hydraulic unit (A7/3)   | Circuit 30 | 40 A  |
| 35   | Not used  | -          | -     |
| 35   | Engine oil additional fan unit (A27/1), engine oil additional fan relay (K25)   | Circuit 30 | 20 A  |
| 38   | Overhead control panel control module   | Circuit 30 | 7.5 A |
| 39   | DC/DC converter control module (N99)  | Circuit 30 | 15 A  |
| 41   | Right door control module   | Circuit 30 | 40 A  |



## Overview of fuses/relays

### Circuit 30 and 30z fuse assignments

| Fuse | Designation   | Circuit     | Amps |
|------|---|-------------|------|
| 42   | Traction system hydraulic unit (A7/3)   | Circuit 30  | 25 A |
| 42   | Right door control module (N69/2)   | Circuit 30  | 30 A |
| 43   | Electric engine and A/C fan with integrated control (M4/7)  | Circuit 30z | 20 A |
| 43   | Starter relay (K40/4kL), rear fuse and relay module (K40/5), electric engine and A/C fan with integrated control (M4/7),<br><br>Z Circuit connector sleeves: Air pump or reserve relay (K40/4kO), ME-SFI control module (N3/10), mass air flow sensor (B2/5), injectors (Y62), camshaft hall sensor (B6/1), electronic selector lever control module (N15/5), boost pressure control vacuum transducer (Y31/5), radio interference suppression capacitor(C4), ECI ignition system mains unit (N91)  | Circuit 30z | 20 A |
| 43   | Not used  | -           | -    |
| 44   | Purge control valve (Y58/1), air pump or reserve relay (K40/4kO)<br><br>Z Circuit connector sleeves: Activated charcoal filter shutoff valve (Y58/4), left O2 sensor upstream TWC (G3/3), right O2 sensor upstream TWC (G3/4), left O2 sensor downstream TWC (G3/5), right O2 sensor downstream TWC (G3/6), variable intake manifold switchover valve (Y22/6), intake manifold tumble flap switchover valve (Y22/9), EGR vacuum transducer (Y31/1), AIR pump switchover valve (Y32), three disk thermostat valve (Y110), heating system shutoff valve (Y16/2), divert air switchover valve (Y101), intercooler circulation pump relay (K60) | Circuit 30z | 20 A |
| 44   | Not used  | -           | -    |

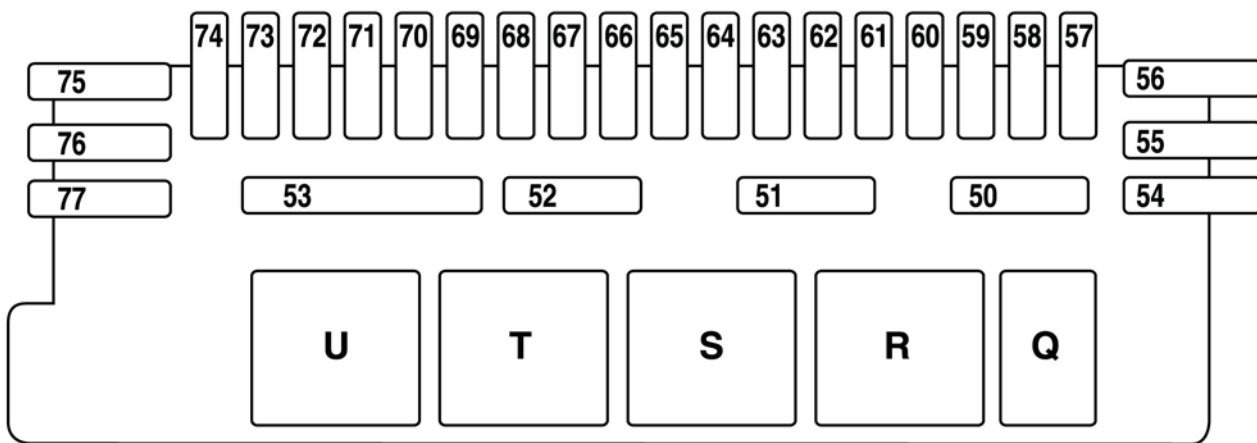


## Overview of fuses/relays

### Rear fuse and relay module (K40/5)

#### Location

The rear fuse and relay module (K40/5) is located at the rear SAM control module (N10/8) under the right luggage box behind the front passenger seat.



#### Relay assignment

GF54.15-P-1257-01R

| Relay | Designation   | Relay | Designation                      |
|-------|---|-------|----------------------------------|
| Q     | Reserve relay (K40/5kQ)   | T     | Fuel pump relay module (K40/5kT) |
| R     | Intercooler circulation pump relay (K40/5kR) for supercharged engines<br>Not used | U     | Rear window defroster (K40/5kU)  |
| S     | Not used  |       |                                  |

## Overview of fuses/relays

### Circuit 30 fuse/relays

- GF54.15-P-1256-01R (up to 5-31-02)
- GF54.15-P-1256-01RA (as of 6-1-02 up to 5-31-04)
- GF54.15-P-1256-01RB (as of 6-1-04 up to 2-28-06)
- GF54.15-P-1256-01RC (as of 3-1-06)

| Fuse | Designation   | Amps  | Remarks       |
|------|---|-------|---------------|
| 50   | Not used  | -     |               |
| 51   | Intercooler circulation pump relay (K40/5kR)  | 7.5 A | <sup>1)</sup> |
| 52   | Fuel pump relay module (K40/5kT)  | 30 A  |               |
| 53   | Rear defroster relay (K40/5kU)  | 30 A  |               |
| 54   | Audio gateway (AGW) control module (N93/1)  | 20 A  | As of 6-01-04 |
| 55   | Not used  | -     |               |
| 56   | Not used  | -     |               |
| 57   | Rear shelf antenna amplifier (A2/67), left and right antenna amplifier modules (A2/64, A2/65) | 5 A   |               |
| 58   | Keyless Go control module (N69/5)   | 7.5 A |               |
| 59   | Navigation processor (N41/1)  | 5 A   | As of 6-01-04 |
| 60   | Intercooler circulation pump relay (K40/5k60)   | 7.5 A | <sup>1)</sup> |
| 61   | Circuit 15R/30 cutoff relay (K40/5k75)  | 30 A  |               |
| 62   | Circuit 15R/30 cutoff relay (K40/5k75)  | 30 A  |               |
| 62   | Retractable hard top control module (N52)   | 5 A   |               |
| 63   | Retractable hard top control module (N52)   | 25 A  |               |
| 64   | SDAR control module (N87/5)   | 5 A   |               |
| 64   | Voice control system control module (A35/11)  | 5 A   | As of 6-01-04 |
| 65   | Emergency call system control module (N123/4)   | 5 A   | As of 6-01-04 |
| 66   | Sound amplifier control module (A2/13)  | 25 A  |               |
| 67   | Parktronic control module (N62)   | 5 A   |               |
| 68   | Roll bar deployment solenoid (Y57/1)  | 25 A  |               |
| 69   | Retractable hard top control module (N52)   | 25 A  |               |

<sup>1)</sup> Supercharged engines

<sup>2)</sup> Refer to ETM for production break points



## Overview of fuses/relays

### Circuit 30 fuse assignments

| Fuse | Designation  | Amps  |
|------|--|-------|
| 70   | Tire pressure monitoring system control module (N88)   | 5 A   |
| 71   | PSE control module (A37)   | 20 A  |
| 72   | Not used   | –     |
| 73   | Roll bar and retractable hardtop hydraulic unit motor (A7/5m1)   | 40 A  |
| 73   | Roll bar and retractable hardtop hydraulic unit (A7/8)   | 40 A  |
| 74   | ATA tow sensor (B33)   | 10 A  |
| 74   | Retractable hard top control module (N52)  | 10 A  |
| 75   | Not used   | –     |
| 76   | Tele Aid control module (A35/8), portable support electronics (PSE) CTEL interface (A34/4), E-net compensator (A28/3), UHI interface control module (N123/1) | 7.5 A |
| 77   | CD changer (A2/6), COMAND operating  | 20 A  |
| 77   | Display and control module (A40/3)   | 20 A  |

