Self-Study Programme 265

Vehicle electrics in Polo Model Year 2002
The range of electrical systems in new vehicles is expanding increasingly as a result of the ever more effective safety systems and enhanced convenience systems. The vehicle electrics in the Polo Model Year 2002 have been reorganised with the aim of retaining a clear arrangement within the comprehensive onboard power supply.

A major role in this connection is played by a onboard power supply control unit. It monitors the capacity utilisation of the onboard power supply and performs functions which, until now, were executed by separate relays and control units. Moreover, the databus diagnostic interface, which permits data transfer between different CAN databus systems, is also integrated in the onboard power supply control unit.
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>4</td>
</tr>
<tr>
<td>Onboard power supply</td>
<td>6</td>
</tr>
<tr>
<td>Onboard power supply control unit</td>
<td>13</td>
</tr>
<tr>
<td>Function diagram</td>
<td>22</td>
</tr>
<tr>
<td>CAN databus</td>
<td>24</td>
</tr>
<tr>
<td>Databus diagnostic interface</td>
<td>26</td>
</tr>
<tr>
<td>Special functions</td>
<td>30</td>
</tr>
<tr>
<td>Convenience and safety electronics</td>
<td>32</td>
</tr>
<tr>
<td>Sliding/tilting roof</td>
<td>37</td>
</tr>
<tr>
<td>Dash panel insert</td>
<td>38</td>
</tr>
<tr>
<td>Lighting</td>
<td>42</td>
</tr>
<tr>
<td>Self-diagnosis</td>
<td>44</td>
</tr>
<tr>
<td>Test your knowledge</td>
<td>46</td>
</tr>
</tbody>
</table>
The vehicle electrics of the Polo Model Year 2002 have been redesigned in terms of its concept and its structure.

The onboard power supply control unit plays a central role in this connection. It performs a wide range of new check, monitoring and relay functions.

The other control units are located decentralized within the vehicle.

In the pages which follow you will be able to familiarize yourself with the following subjects of the electrical system of the Polo Model Year 2002:

- Design of onboard power supply
- Tasks and functions of onboard power supply control unit
- Design of CAN databus system
- Tasks of databus diagnostic interface
- Presentation of convenience and safety electronics
- Design and functions of the dash panel insert
- Lighting concept

Overview of control units in the Polo

Radio or Radio-navigation system

ABS control unit

Climatic/CLIMAtronic control unit

Airbag control unit

Power steering control unit
The onboard power supply is a decentralized design. The most important stations are:

- Coupling stations in A-pillar and B-pillar
- Compact connector
- Main fuse carrier
- Voltage distributor
- Relay carrier
- Onboard power supply control unit
- Onboard power supply control unit
- Fuse holder
Main fuse carrier

The main fuse carrier is located on battery cover.

The number of fuses always depends on the equipment fitted to the particular model.

The main fuse carrier houses up to 6 strip fuses and 10 plug-in fuses. A voltage cable provides the connection to the battery (positive). The fuses protect the individual power circuits immediately downstream of the battery from overloads.

Voltage distributor

The voltage distributor is located on the driver side behind the dash panel cover.

The voltage distributor is responsible for distributing the current of terminal +30 from the main fuse carrier on the battery to the individual electrical components.
Onboard power supply

**Fuse holder**

The fuse holder is located behind the cover in the left side of the dash panel.

There are two types of fuses for protecting the power circuits:

- Mini-fuses up to 15 A
- Little fuses more than 15 A

This combination offers the following advantages:

- greater number of fuses within the same space
- greater number of individually protected circuits

These fuses are identified in the current flow diagram with the abbreviated designation „SB“.

**Relay carrier**

The relay carrier is located on the driver side behind the dash panel cover.

Compared to the design consisting of mini electrical centre and additional relay carrier, the relay carrier of the Polo is a single component with standardized design for accommodating the relays.

<table>
<thead>
<tr>
<th>Position</th>
<th>Relay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Not assigned</td>
</tr>
<tr>
<td>2</td>
<td>Motronic power supply relay</td>
</tr>
<tr>
<td>3</td>
<td>Glow plug relay</td>
</tr>
<tr>
<td>4</td>
<td>Fuel pump relay (diesel engines)</td>
</tr>
<tr>
<td>5</td>
<td>Entry warning light relay</td>
</tr>
<tr>
<td>6</td>
<td>Headlight washer system relay</td>
</tr>
<tr>
<td>7</td>
<td>Starter lockout relay</td>
</tr>
<tr>
<td>8</td>
<td>Low heating capacity relay</td>
</tr>
<tr>
<td>9</td>
<td>High heating capacity relay</td>
</tr>
<tr>
<td>10</td>
<td>Simos control unit power supply relay</td>
</tr>
<tr>
<td>11</td>
<td>Relief relay for X contact</td>
</tr>
<tr>
<td>12</td>
<td>Fuel supply relay</td>
</tr>
<tr>
<td>13</td>
<td>Fuel pump relay (petrol engines)</td>
</tr>
<tr>
<td>14</td>
<td>Fuse carrier for electric auxiliary heater</td>
</tr>
<tr>
<td>15</td>
<td>Diesel direct injection system relay</td>
</tr>
</tbody>
</table>
Coupling stations

The purpose of the coupling stations is to link the electrical components in the doors to the rest of the onboard power supply.

The coupling stations permit:

- easy access
- separation of the wiring looms to the doors
- simplified fault finding

A-pillar coupling station:

It is located close to the top door hinge at the A-pillar.

This coupling station combines the plug connections to the following electrical components in the doors:

- loudspeaker
- exterior mirror
- lock unit
- warning light

B-pillar coupling station:

It is located close to the top door hinge of the rear door at the B-pillar.

This coupling station combines the plug connections to the following electrical components in the doors:

- loudspeaker
- lock unit
Onboard power supply

Compact connector

The compact connector links the part of the onboard power supply in the engine compartment to the part of the onboard power supply in the interior.

The onboard power supply is designed in such a way that all the cables of the components or the two wiring looms (engine compartment, interior) merge in their individual connectors of the modules on the relevant side of the compact connector.

The connection is created by means of the individual connectors of the modules, irrespective of the equipment or version variants.

The connector provides a straightforward means of separating the onboard power supply at this point.

This greatly facilitates test operations as well as removal and installation work.
Design of the compact connector

The compact connector is located in the left of the bulkhead, behind the wiper linkage. It is accessible from the engine compartment as well as from the interior.

View from engine compartment

View from interior
Onboard power supply

The compact connector is subdivided into various modules. The connections are created by means of mechanically coded connectors of different colours for the individual modules.

Compact connector
View from engine compartment

<table>
<thead>
<tr>
<th>Connector assignment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>B</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>D</td>
</tr>
<tr>
<td>E</td>
</tr>
<tr>
<td>F</td>
</tr>
<tr>
<td>G</td>
</tr>
</tbody>
</table>
Onboard power supply control unit J519

Within the vehicle onboard power supply, the control unit plays a central role. It has functions which were previously performed by separate relays and control units.

The onboard power supply control unit performs the following functions:

- Load management
- Interior light control
- Fuel pump feed control
- Windscreens wash and wipe control, intermittent and rain sensor mode
- Exterior mirror and rear window heater
- Rear seat backrest monitoring
- Turn signal and hazard warning light control
- Horn control
- Cruise control system (supplying signals over drivetrain CAN databus)
- Remote release of boot lid/tailgate
- Instrument and switch lighting
- Maintaining operation of sliding roof and power windows

Additional functions on models fitted with automatic gearbox:

- Actuation of selector lever lock solenoid
- Starter lockout
- Actuation of reversing lights

Depending on the level of equipment, functions of differing extent are integrated in the control unit. Consequently, there are also variations in the positioning of the connector mounts.

Implementation of the onboard power supply control unit has made it possible to cut vehicle weight by reducing the extent of wiring and plug connections as well as a number of relays and control units.

Fitting location

The onboard power supply control unit is positioned on the driver side behind the dash panel cover.
Onboard power supply control unit

Load management

The wide range of convenience functions and electrically heated components such as seat heater, rear window heater, exterior mirror heaters and electric auxiliary heater (heating element for auxiliary heater Z35) can result in an overload of the alternator when driving and thus in a drain on the battery.

This is particularly the case when driving extremely short distances and in winter as well as stop- and go journeys and vehicles with a high level of equipment.

The load management of the onboard power supply control unit regularly monitors the battery voltage, while taking into account the power demand of short-term consumers.

If it detects a voltage deficit in the onboard power supply, the control unit initiates measures to maintain vehicle operation and to ensure that the vehicle can be restarted.

Electrical circuit

- A Battery
- C Alternator
- J... Engine control unit
- J131 Heated driver seat control unit
- J132 Heated passenger seat control unit
- J255 CLIMAtronic control unit
- J301 AC control unit
- J519 Onboard power supply control unit
- J533 Databus diagnostic interface
- Z1 Heated rear window
- Z4 Heated exterior mirror, driver side
- Z5 Heated exterior mirror, passenger side
- Z6 Heated driver seat
- Z7 Heated driver backrest
- Z8 Heated passenger seat
- Z9 Heated passenger backrest
Idling speed is increased if onboard power supply voltage drops below 12.7 V. If voltage drops below 12.2 V, onboard power supply control unit additionally switches off the following components:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Increases idling speed</td>
</tr>
<tr>
<td>2</td>
<td>Switches off rear window heater</td>
</tr>
<tr>
<td>3</td>
<td>Switches off seat heaters</td>
</tr>
<tr>
<td>4</td>
<td>Switches off exterior mirror heaters</td>
</tr>
<tr>
<td>5</td>
<td>Reduces AC compressor capacity</td>
</tr>
</tbody>
</table>

If specified voltage is again reached, onboard power supply control unit takes the following measures:

<table>
<thead>
<tr>
<th>Step</th>
<th>Action Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Increases AC compressor capacity</td>
</tr>
<tr>
<td>2</td>
<td>Switches on exterior mirror heaters</td>
</tr>
<tr>
<td>3</td>
<td>Switches on seat heaters</td>
</tr>
<tr>
<td>4</td>
<td>Switches on rear window heater</td>
</tr>
<tr>
<td>5</td>
<td>Reduces idling speed</td>
</tr>
</tbody>
</table>
Onboard power supply control unit

**Interior light control**

If the switches of the front and rear interior lights are in the door contact position, the onboard power supply control unit J519 ensures that

- the interior lights are switched off after 10 minutes when the car is parked with the doors opened, to thus avoid any unnecessary drain on the battery.
- the interior lights are switched on for 30 seconds when the car is unlocked or the ignition key withdrawn. The interior lights are switched off immediately when the car is locked or the ignition is switched on.
- the interior lights are switched on in the event of a crash.

A further task of the interior light control is to switch off any lights which have been switched on manually (front and rear interior lights and reading lights, luggage compartment light, glove box light and vanity mirror lights) about 30 minutes after the ignition is switched off.

This function is likewise a protection for the battery capacity.

If the switches of the interior lights are not in the door contact position, the interior lights are not switched on in the event of a crash.
Electrical circuit

- **CAN-A** Drivetrain CAN databus
- **CAN-K** Convenience CAN databus
- **D** Ignition/start switch
- **F2** Door contact switch, driver side
- **F3** Door contact switch, passenger side
- **F10** Left rear door contact switch
- **F11** Right rear door contact switch
- **F220** Central locking lock unit, driver side
- **F221** Central locking lock unit, passenger side
- **F222** Central locking lock unit, rear left
- **F223** Central locking lock unit, rear right

**J519** Onboard power supply control unit

**W** Front interior light
**W6** Glove box light
**W13** Reading light passenger side
**W14** Illuminated vanity mirror (passenger side)
**W18** Left luggage compartment light
**W19** Reading light driver side
**W20** Illuminated vanity mirror (driver side)
**W43** Rear interior light

* on models not fitted with central locking
** on models fitted with central locking
Fuel pump supply control

The petrol engines in the Polo Model Year 2002 feature a new fuel pump supply control.

Two parallel relays - the fuel pump relay J17 and the fuel supply relay J643 - take the place of the individual fuel pump relays with integrated crash fuel shutoff. Both relays are located on the relay carrier above the onboard power supply control unit J519.

Operating principle

When the driver door is opened, a signal is transmitted by the door contact switch F2 (or by the central locking lock unit F220) to the onboard power supply control unit. This in turn actuates the fuel supply relay J643 and the fuel pump G6 runs for about two seconds.

A time switch in the onboard power supply control unit prevents

- the fuel pump constantly running if the driver door is opened at short intervals.
- the fuel pump again being operated if the driver door remains open for more than 30 minutes.

When the ignition is switched on or the engine started, the fuel pump G6 is operated through the fuel pump relay J17 by the engine control unit.

Electrical circuit

F2  Door contact switch driver side
F220 Central locking lock unit, driver side
G6  Fuel pump
J... Engine control unit
J17 Fuel pump relay
J519 Onboard power supply control unit
J643 Fuel supply relay

* on models not fitted with central locking
** on models fitted with central locking
Activating rear screen wiper

When reverse gear is engaged, the rear screen wiper automatically makes a single sweep. The following conditions must be met for this purpose:

- windscreen wiper switched on with stage 1 or 2
- or
- intermittent wipe (speed-responsive intermittent mode or rain sensor mode) switched on

Electrical circuit

E22  Intermittent wiper switch
F4   Reversing light switch
J519 Onboard power supply control unit
V    Windscreen wiper motor
V12  Rear screen wiper motor

Blocking windscreen wipers

If the windscreen wipers are operating in the intermittent wipe mode (speed-responsive intermittent mode or rain sensor mode) and at the same time the bonnet is opened, a signal is transmitted by the bonnet contact switch F266 to the onboard power supply control unit. The control unit blocks the movement of the windscreen wipers until the bonnet is again closed. This function is intended as a safety measure when carrying out work on the car.

Electrical circuit

E22  Intermittent wiper switch
F266 Bonnet contact switch
J519 Onboard power supply control unit
V    Windscreen wiper motor
Onboard power supply control unit

Exterior mirror and rear window heaters

As a protection for the battery capacity, it is only possible to switch on the exterior mirror and the rear screen heaters when the engine is running. The heaters are switched off automatically again after about 20 minutes.

Electrical circuit

C Alternator
E230 Heated rear window push button
E231 Exterior mirror heater push button
J519 Onboard power supply control unit
Z1 Heated rear window
Z4 Heated exterior mirror, driver side
Z5 Heated exterior mirror, passenger side

Monitoring rear seat backrest

Cars fitted with a three-point inertia reel seat belt for the middle seat of the rear seat bench feature a rear seat backrest monitoring function. If the backrest part for the middle seat of the rear seat bench is not correctly locked, a warning light in the dash panel insert comes on for about 20 seconds after the ignition is switched on.

Electrical circuit

CAN-K Convenience CAN databus
F316 Right backrest contact switch
J285 Control unit with display unit in dash panel insert
J519 Onboard power supply control unit
K Dash panel insert
K193 Backrest lock warning lamp, rear seat
**Turn signal and hazard warning light control**

The following functions are performed by the onboard power supply control unit J519:

- Left, right turn signals
- Hazard warning lights (switched on manually or in the event of crash)
- Anti-theft alarm - flashing lights
- Central locking - flashing lights when car unlocked/locked
- Left, right trailer turn signal lights

**Electrical circuit**

<table>
<thead>
<tr>
<th>CAN-A</th>
<th>CAN-K</th>
<th>E2</th>
<th>E229</th>
<th>J519</th>
<th>M5</th>
<th>M6</th>
<th>M18</th>
<th>M7</th>
<th>M8</th>
<th>M19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drivetrain CAN databus</td>
<td>Convenience CAN databus</td>
<td>Turn signal light switch</td>
<td>Warning light push button</td>
<td>Onboard power supply control unit</td>
<td>Bulb for left front turn signal light</td>
<td>Bulb for left rear turn signal light</td>
<td>Bulb for right front turn signal light</td>
<td>Bulb for right rear turn signal light</td>
<td>Bulb for left side turn signal light</td>
<td>Bulb for right side turn signal light</td>
</tr>
</tbody>
</table>

**Coding**

The extent of the equipment and the national version of the vehicle determine the coding of the onboard power supply control unit. This coding is factory-set.

If any modifications are made to the extent of the equipment in the service sector or when carrying out repairs, for example installing heated seats or attaching trailer coupling, or replacing control unit, it is then necessary to re-code the control unit.

This new code number should be entered using the „Guided fault finding“ mode with the Vehicle Diagnostic, Testing and Information System VAS 5051.

**Equipment which has to be coded:**

- Fuel pump supply control
- Rear window wiper with convenience setting
- Remote release of boot lid/tailgate
- Rain sensor
- Headlight washer system
- Heated exterior mirrors
- Heated windscreen
- Heated seats
- 4-door version
- Interior light control
- Electric load management active
- Towing device
Onboard power supply control unit

Function diagram

Legend

<table>
<thead>
<tr>
<th>A</th>
<th>Battery</th>
<th>J77</th>
<th>Fuel pump relay</th>
</tr>
</thead>
<tbody>
<tr>
<td>C/L</td>
<td>Starter</td>
<td>J39</td>
<td>Headlight washer system relay</td>
</tr>
<tr>
<td>CAN-A/H</td>
<td>Alternator/horn</td>
<td>J57</td>
<td>X-contact relay</td>
</tr>
<tr>
<td>CAN-A/L</td>
<td>Diversion CAN/Mil.</td>
<td>J51</td>
<td>Heated driver seat control unit</td>
</tr>
<tr>
<td>CAN-A/L</td>
<td>Diversion CAN/low</td>
<td>J52</td>
<td>Heated front passenger seat control unit</td>
</tr>
<tr>
<td>CAN-A/K</td>
<td>Convenience CAN/High</td>
<td>J205</td>
<td>Starter inhibitor relay</td>
</tr>
<tr>
<td>CAN-A/</td>
<td>Convenience CAN/low</td>
<td>J207</td>
<td>Sliding roof adjustment control unit</td>
</tr>
<tr>
<td>D/50</td>
<td>Ignition/starter switch/terminal 50</td>
<td>J205</td>
<td>Sliding roof adjustment control unit</td>
</tr>
<tr>
<td>D/75</td>
<td>Ignition/starter switch/terminal 75</td>
<td>J207</td>
<td>Sliding roof adjustment control unit</td>
</tr>
<tr>
<td>D/86s</td>
<td>Ignition/starter switch/terminal 86s</td>
<td>J207</td>
<td>Sliding roof adjustment control unit</td>
</tr>
<tr>
<td>E1/9A</td>
<td>Light switch/terminal FMRS</td>
<td>J39</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>E2/LR</td>
<td>Turn signal switch/positive connection left, right, rear signal</td>
<td>J493</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>E22</td>
<td>Intermittent wiper switch</td>
<td>J493</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>E34</td>
<td>Rear wiper switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>E45</td>
<td>Door contact switch - driver side</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>E54</td>
<td>Door contact switch - front passenger side</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>E227</td>
<td>Intermittent wiper switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>E34</td>
<td>Rear wiper switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>E38</td>
<td>Intermittent wiper control</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>E45</td>
<td>CCS switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>E46</td>
<td>CCS switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>E51</td>
<td>CCS switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>E55</td>
<td>CCS switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>E56</td>
<td>CCS switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>E229</td>
<td>Hazard warning lights button</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>E230</td>
<td>Hazard warning lights button</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>E231</td>
<td>Hazard warning lights button</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F245</td>
<td>Door contact switch - driver side</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F255</td>
<td>Door contact switch - front passenger side</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F256</td>
<td>Door contact switch - front passenger side</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F4</td>
<td>Reversing light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F15</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F16</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F17</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F19</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F20</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F21</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F22</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F23</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F24</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F25</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F26</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F27</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F28</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F29</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F30</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F31</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F32</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F33</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F34</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F35</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F36</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F37</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F38</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F39</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F40</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F41</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F42</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F43</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F44</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F45</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F46</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F47</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F48</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F49</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F50</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F51</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F52</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F53</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F54</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F55</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F56</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F57</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F58</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F59</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F60</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F61</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F62</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F63</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F64</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F65</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F66</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F67</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F68</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F69</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F70</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F71</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F72</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F73</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F74</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F75</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F76</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F77</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F78</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F79</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F80</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F81</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F82</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F83</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F84</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F85</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F86</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F87</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F88</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F89</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F90</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F91</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F92</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F93</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F94</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F95</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F96</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F97</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F98</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>F99</td>
<td>Luggage compartment light switch</td>
<td>J542</td>
<td>Convenience system central control unit</td>
</tr>
<tr>
<td>G0</td>
<td>Fuel pressure sensor</td>
<td>J519</td>
<td>Onboard power supply control unit</td>
</tr>
<tr>
<td>G213</td>
<td>Rain sensor</td>
<td>J519</td>
<td>Onboard power supply control unit</td>
</tr>
<tr>
<td>J201</td>
<td>Fuel pump relay</td>
<td>J39</td>
<td>Headlight washer system relay</td>
</tr>
<tr>
<td>J39</td>
<td>Headlight washer system relay</td>
<td>J39</td>
<td>X-contact relay</td>
</tr>
<tr>
<td>J51</td>
<td>Heated driver seat control unit</td>
<td>J51</td>
<td>Control unit with display in dash panel insert</td>
</tr>
<tr>
<td>J52</td>
<td>Heated front passenger seat control unit</td>
<td>J52</td>
<td>Control unit with display in dash panel insert</td>
</tr>
<tr>
<td>J205</td>
<td>Starter inhibitor relay</td>
<td>J205</td>
<td>Control unit with display in dash panel insert</td>
</tr>
<tr>
<td>J207</td>
<td>Sliding roof adjustment control unit</td>
<td>J207</td>
<td>Control unit with display in dash panel insert</td>
</tr>
<tr>
<td>J205</td>
<td>Starter inhibitor relay</td>
<td>J205</td>
<td>Control unit with display in dash panel insert</td>
</tr>
<tr>
<td>J207</td>
<td>Sliding roof adjustment control unit</td>
<td>J207</td>
<td>Control unit with display in dash panel insert</td>
</tr>
</tbody>
</table>

Function diagram
The Polo features a CAN databus system, consisting of the drivetrain CAN databus and the convenience CAN databus. They differ in terms of their transmission rate and their data content.

The drivetrain CAN databus operates with a transmission rate of 500 kBit/s in order to achieve rapid data transfer within the safety-relevant systems.
Convenience CAN databus

The convenience CAN databus operates with a transmission rate of 100 kBit/s.
**Databus diagnostic interface J533**

The databus diagnostic interface J533 (gateway) is integrated in the onboard power supply control unit J519.

The databus diagnostic interface J533 performs 2 tasks:

1st task

It is responsible for the data transfer between the two CAN databus systems

- drivetrain CAN databus and
- convenience CAN databus.

Direct communication between the systems is not possible because of the different transmission rates.
A link is required for exchanging information between the systems. This link is achieved by means of the databus diagnostic interface J533.

The gateway receives the data arriving from a BUS system and relays the data to each other BUS system.
Example of data transfer between the CAN databus systems

Multiple use of information of different systems over the CAN is a feature of modern vehicle electrics.

For example, data messages from the drivetrain CAN are used in the convenience CAN for controlling the automatic air conditioning (Climatic). The AC control unit is connected to the convenience CAN.

The following example shows the information flow from the drivetrain CAN to the convenience CAN.

- The outside temperature is detected by the temperature sensor in the bumper and relayed to the control unit with display unit in the dash panel insert. This is connected to the drivetrain CAN.

- Specific engine characteristic data, e.g. coolant temperature, engine speed, are detected by the engine control unit and made available to the drivetrain CAN.

The messages from the drivetrain CAN are relayed over the convenience CAN in the databus diagnostic interface (gateway).

The AC control unit is now in a position to read these messages and to use them for controlling the air conditioning system.
2nd task

The databus diagnostic interface J533 receives diagnostic data from the drivetrain CAN databus and from the convenience CAN databus and relays it over the K wire, and vice versa. This makes it possible to use data from the Vehicle Diagnostic, Testing and Information System VAS 5051 for self-diagnosis.

The engine control unit, the automatic gearbox control unit and the convenience system central control unit have a separate K wire.
Example for data exchange for diagnosis

The following example shows the flow of information from the drivetrain CAN over the K wire.

- Because of a fault in the cable connection, the brake light switch does not supply any information to the ABS control unit.

- The ABS control unit is connected to the drivetrain CAN and thereupon sets a fault in its fault memory.

To enable the Vehicle Diagnostic, Testing and Information System VAS 5051 to process such diagnosis data, the databus diagnostic interface in the onboard power supply control unit relays the diagnostic information from the drivetrain CAN databus over the K wire. The data are not changed as a result of this; in other words, the information content transmitted over the K wire and the CAN databus is the same.
Special functions

Special functions in the event of a crash

The safety system of the Polo features automatic circuits which, in the event of a crash, contribute to minimizing the severity of an emergency situation.

The following actions are set in motion:

– central locking system is unlocked
– interior lights are switched on
– hazard warning lights system is switched on
– fuel supply is interrupted

Operating principle

If the airbags are deployed in a crash, the airbag control unit simultaneously transmits a crash signal over the drivetrain CAN. This signal causes the engine control unit to switch off the fuel supply through the fuel pump relay.

The crash signal is relayed over the databus diagnostic interface (gateway) to the convenience CAN and the convenience system central control unit thereupon unlocks all the doors. In addition, the onboard power supply control unit switches on the interior lights (if the switches are in the door contact position) and also the hazard warning lights.
Energy saving functions

Sleep mode

To minimize current consumption when the ignition is switched off, the control units which are connected to the CAN databus are switched into a sleep mode.

In the case of the drivetrain CAN databus, this is the normal situation after the ignition is switched off as data only require to be transmitted in the drivetrain CAN databus if the ignition is on.
In the case of the convenience CAN databus, the sleep mode is activated after the ignition is switched off and provided the following conditions exist:

- hazard warning light system off
- function retention elapsed
- no transfer of diagnostic data
- exterior lights off

Wake-up mode

In the event that the control unit detects a wake-up command resulting from one of the actions listed below, it relays this to the other control units so that these control units are also activated.

In the case of the drivetrain CAN databus, the wake-up command is always relayed after the ignition is switched on.
In the case of the convenience CAN databus, the wake-up command is transmitted after the following actions:

- ignition switched on
- hazard warning light system active
- change in status of doors, tailgate, bonnet and ignition lock
- exterior lights on

Exception:
The control unit with display unit in the dash panel insert, which is connected to the drivetrain CAN databus, also requires data from the convenience CAN databus even when no supply voltage is present (ignition off). For this reason, either a direct convenience CAN connection or a cable connection (wake-up cable) to the onboard power supply control unit is required. This depends on the equipment version of the dash panel insert.

Electrical circuit

J285 Control unit with display unit in dash panel insert
J519 Onboard power supply control unit
J533 Databus diagnostic interface

= CAN databus
= Wake-up cable
Convenience and safety electronics

The convenience system

is a decentralized design. It consists of a central control unit and at least 2 door control units.

You can obtain further information on the interactions of the convenience system in Self-Study Programme 193. Only supplementary details are presented here.

Functions of the central control unit

- Central locking of rear lock
- Convenience closing functions (power windows, sliding roof)
- Single door opening of driver door
- Central locking of doors
- Unlocking and locking of complete vehicle with interior push button (Lock-Unlock)
- Anti-theft alarm system which can be deactivated only with remote control
- Ultrasound interior monitoring with deactivate function
- Self-diagnosis
- Actuation of central locking warning lamp -SAFE-

Functions of the door control units

- Electrically adjustable exterior mirrors with fold-in function
- Power windows with excess force limiter and with gentle opening/closing to minimize noise
Overview of convenience system
(schematic diagram)

J393  Convenience system central control unit
J519  Onboard power supply control unit
A     Door control unit
B     Electrically adjustable rear-view mirror
C     Mirror and heater adjustment switch
D     Driver door operating panel
E     Power window switch
F     Central locking door lock
G     Entry warning lamp
H     Tailgate/boot lid rotary tumbler switch
J     Tailgate push button
K     Central locking warning lamp
     -SAFE-
L     Interior monitor sensor unit
M     Interior monitor push button
N     Alarm horn
R     Relay for warning lights, doors
S     Remote control
T     Sliding roof adjustment control unit

Diagnostic connection
Coupling station
Driver door
Front passenger door
Left rear door
Right rear door
Tailgate/boot lid

265_025
Remote control

Remote release of tailgate/boot lid

Models fitted with a remote control feature an additional push button for separate remote release of the tailgate/boot lid.

If the remote release push button is pressed, only the tailgate/boot lid is unlocked. If the tailgate/boot lid is not opened within two minutes, it is automatically relocked.

This function is coded in the onboard power supply control unit (refer also to Onboard power supply control unit page 21).

Single door opening of driver door

This function is intended for personal safety. If the remote control Unlock button is pressed briefly only once, only the driver door is unlocked. This is indicated by all the turn signal lights flashing briefly.

If the Unlock button is pressed a second time, all the locks of the car are unlocked.

If the car has been completely unlocked and no door or boot lid/tailgate is opened within 30 seconds, the car is locked again.
This prevents the car being left unlocked unintentionally for a lengthy period.
This option is coded in the convenience system central control unit in the delivery state of the vehicle in conformity with the vehicle equipment.
Anti-theft alarm with interior monitoring

The anti-theft alarm

monitors the following areas

– doors,
– bonnet,
– boot lid/tailgate and
– ignition

for unauthorized opening or operation.

Interior monitoring

operates as an ultrasound monitoring system and is used only in combination with the anti-theft alarm. This system additionally monitors the interior of the car for any unauthorized attempt to enter the car.

An audible alarm is provided by the alarm horn of the anti-theft system and a visual alarm by the turn signal lights.

The system is safe against false alarm resulting from:

– knocking on the car roof or against the windows,
– movements of air caused by wind or vehicles passing, temperature changes such as interior of car heating up as a result of extreme sunlight penetration and
– noises of any type (e.g. horns, sirens and bells).
Operating principle of interior monitor

The interior monitor is switched on automatically at the same time as the anti-theft alarm system is activated. The anti-theft alarm is activated and deactivated with the remote control after the car has been locked and unlocked.

The sensor unit consists of a transmitter module, a receiver module and the analysis electronics. The monitoring unit is positioned behind the front interior light in the headlining.

In the armed state, the transmitter module transmits ultrasound waves and receives their echo a short time later with the aid of the receiver module. These ultrasound waves are not perceptible to the human ear. The analysis electronics detect any irregularities in this ultrasound field and triggers the alarm through the convenience system central control unit.

The push button for the interior monitor is located in the bottom half of the left B-pillar. If the button is pressed (button lights up yellow) and the car is locked, the interior monitor is deactivated. The interior monitor is activated again automatically when the car is next closed.
Comfort position

The sliding roof features a comfort position. If the sliding roof adjustment switch in the front interior light is turned into this position, the sliding roof is not opened fully. Consequently, there is scarcely any wind noise inside the car when travelling at higher speeds with the roof set in this position.

The sliding roof adjustment switch cannot be replaced separately in the event of a repair. It is then necessary to replace the complete interior light.

The sliding/tilting roof offers the following additional functions:

- Closing the sliding/tilting roof as part of the convenience closing function by operating the central locking system
- Function maintained for 10 minutes after ignition is switched off provided none of the front doors is opened
- Force limit if the sliding/tilting roof is obstructed because of difficult operation or because of an obstacle during the closing operation
Dash panel insert

The dash panel insert

The following are integrated in the dash panel insert:

- Control unit with display unit in dash panel insert J285
- Immobiliser control unit J362
- Speedometer
- Rev counter
- Fuel gauge
- Coolant temperature display
- Warning lamps
- Multi-function display

All the warning lamps feature LEDs. No provision is made for repairs. If necessary, the complete dash panel insert must be replaced.

All the information relating to the monitoring functions is processed in control unit J285 and transmitted to the warning lamps which causes them to light up, flash or show a steady light. Certain visual information is acoustically reinforced by a warning buzzer.

The connectors of the dash panel insert

8-pin connector
Link to voltage supply

32-pin connector
Link to onboard power supply

If the dash panel insert is replaced, it has to be adapted to the other systems of the car. Refer to the instructions for this in the Workshop Manual.
**Display symbols**

The number and the location of the warning lamps depend on the model and engine version. Warning lamps which are fitted only to certain models are marked with (*).

The symbols are only visible when the corresponding LEDs behind them are illuminated. The ignition must be switched on for this purpose. The table presents new warning lamps which have been added in the Polo Model Year 2002.

<table>
<thead>
<tr>
<th>Display symbol</th>
<th>Designation</th>
<th>Type and meaning of indication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fog lights</td>
<td>come on when fog lights operating; switched on by pulling out light switch as far as first detent into side light or low beam position</td>
</tr>
<tr>
<td>Display symbol</td>
<td>Designation</td>
<td>Type and meaning of indication</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
<td>--------------------------------</td>
</tr>
<tr>
<td></td>
<td>Electrically powered hydraulic steering</td>
<td>lights up for a short time after ignition switched on and goes out after engine started, lights up continuously if fault in steering system; car should be driven to nearest workshop</td>
</tr>
<tr>
<td></td>
<td>Engine oil level (too low)</td>
<td>lights up yellow if engine oil level is too low; check oil level and replenish if necessary; if bonnet remains open for more than 30 seconds, oil level warning is reset; if no oil has been replenished, warning is displayed again after about 100 km</td>
</tr>
<tr>
<td></td>
<td>Engine oil level (engine oil level sensor faulty)</td>
<td>flashes yellow, i.e. engine oil level sensor is faulty; audible signal sounds in addition; drive car to nearest workshop</td>
</tr>
<tr>
<td></td>
<td>Engine oil pressure</td>
<td>flashes red, i.e. engine oil pressure is too low; in addition an audible signal sounds 3 times at engine speeds of more than 1500 rpm; stop; switch engine off! Check oil level and replenish if necessary; if warning lamp continues flashing although oil is at correct level - do not drive car any further!</td>
</tr>
<tr>
<td></td>
<td>Cruise control system</td>
<td>lights up if cruise control system operating</td>
</tr>
<tr>
<td></td>
<td>Rear seat backrest lock</td>
<td>lights up for about 20 seconds when ignition switched on if backrest of rear seat is not correctly locked; lights up and remains on if backrest is unlocked when driving</td>
</tr>
</tbody>
</table>

* Models fitted with optional equipment
<table>
<thead>
<tr>
<th>Display symbol</th>
<th>Designation</th>
<th>Type and meaning of indication</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Electronic immobiliser</td>
<td>lights up for about 3 seconds when ignition switched on; automatic scanning of data of car key performed during this time; if authorized key is detected, car can be started; an alarm activated by the anti-theft system is switched off; if a non-authorized key is detected, car cannot be started and the warning lamp switches to „continuous flashing mode“</td>
</tr>
<tr>
<td></td>
<td>Brake pad wear indicator</td>
<td>lights up if minimum permissible brake pad thickness is reached; car must be driven to nearest workshop to have brake pads inspected or replaced</td>
</tr>
<tr>
<td></td>
<td>Washer fluid level</td>
<td>lights up if insufficient fluid in windscreen washer reservoir; replenish windscreen washer fluid</td>
</tr>
<tr>
<td></td>
<td>Door open</td>
<td>lights up if not all the doors are closed</td>
</tr>
<tr>
<td></td>
<td>Trailer turn signal system</td>
<td>lights up if turn signal system switched on when towing a trailer. If a turn signal light at trailer or car is not operating, warning lamp does not flash.</td>
</tr>
</tbody>
</table>

* Models fitted with optional equipment
Lighting

Headlights

The new headlights are designed as a twin unit and feature clear plastic lenses for the light beams.

The headlight unit has two reflectors. The reflector for main beam and side light is a single chamber, while the reflector for low beam and turn signal light is split into two chambers.

The bulb for the turn signal light is coloured yellow. The light beam is produced by the respective shape of the reflector chamber.

The fog lights are integrated not in the headlight unit but in the bumper.

Rear light units

The reflector is a single unit and is divided into four main chambers; the chamber for the tail light/rear fog light is once again divided internally.

The upper half of the chamber includes a bulb for the tail light. The bottom half of the chamber includes a twin-filament bulb for the tail light/rear fog light.

When the lights are switched on, one filament of this twin-filament bulb is illuminated as a tail light together with the tail light in the top half of the chamber. This provides enhanced safety in the event of one of the tail lights not operating.

When the rear fog light is switched on, the second filament of the twin-filament bulb is also illuminated.

Reflectors are integrated in the full area of the lens of the tail light cluster.
**Entry warning lamp**

The front doors are equipped with entry warning lamps.

The entry warning lamps offer a clear benefit in terms of safety when using the car in flowing traffic.

The entry warning lamp is switched on through the door contact switch in the lock unit in the door lock.

The convenience system central control unit J393 ensures that the entry warning lamp remains on only for 10 minutes when the car is parked with the doors open. This avoids the battery being discharged.

**Electrical circuit (example of driver door)**

- F220: Central locking lock unit, driver side
- J393: Convenience system central control unit
- J519: Onboard power supply control unit
- J533: Databus diagnostic interface
- J560: Relay for warning lamps, doors
- M27: Entry warning lamp - left door

**Colour coding/Legend**

- Green = Input signal
- Blue = Output signal
- Red = Positive
- Brown = Earth
- Yellow = CAN databus
Self-diagnosis

Control units in the Polo with self-diagnosis capability

- ABS control unit
- Airbag control unit
- Power steering control unit
- Automatic gearbox control unit
- Engine control unit
- Onboard power supply control unit with databus diagnostic interface
- Convenience system central control unit
- Control unit in dash panel insert and immobiliser control unit
- Radio or radio/navigation unit
- Climates/CLIMAtronic control unit
- Engine control unit

For diagnosis please use the up-to-date workshop literature and the Vehicle Diagnostic, Testing and Information System VAS 5051 or the Vehicle Diagnostic and Service Information System VAS 5052.

The connection for the diagnostic units is located between the stowage compartment in the dash panel cover on the driver side.
Test your knowledge

Which answers are correct?
Sometimes only one.
But perhaps also more than one – or all of them!

1. The onboard power supply control unit ...
   A. replaces the convenience system central control unit.
   B. is the central monitoring and control unit of the onboard power supply.
   C. controls the power demand of the onboard power supply.

2. The databus diagnostic interface ...
   A. transmits the diagnostic data of the K wire over the CAN and vice versa.
   B. monitors the function of the onboard power supply control unit.
   C. is the connection point of the CAN databus systems.

3. There are two CAN databus systems in the onboard power supply operating ...
   A. each on their own.
   B. together through the connections of the compact connectors.
   C. together through the gateway in the onboard power supply control unit.

4. The tasks of the compact connector in the bulkhead consist of ...
   A. connecting the „engine compartment“ and „interior“ sections of the wiring looms.
   B. facilitating service work.
   C. creating installation space.

5. The code numbers are ...
   A. secret numbers for the operation of the immobiliser.
   B. count numbers transmitted to the control units.
   C. values for coding control units in accordance with the vehicle equipment.
6. The drivetrain CAN databus operates with...
   A. a transmission rate of 500 kBit/s.
   B. a transmission rate of 100 kBit/s.
   C. a transmission rate of 50 kBit/s.

7. The wake-up function is designed to ...
   A. wake up the driver out of the “sleep state”.
   B. wake up the control units connected to the CAN databus systems out of the “sleep state”.
   C. control the fuel pump supply.

8. The entry warning lamp is switched off automatically at a certain time if a door is open ...
   A. by the onboard power supply control unit.
   B. by the databus diagnostic interface.
   C. by the convenience system central control unit.

9. The following conditions must be met in order to create the “sleep state” ...
   A. ignition “Off”.
   B. warning light system “Off”.
   C. exterior light “Off”.

10. The interior monitoring system includes ...
    A. alarm horn.
    B. signal horn control.
    C. sensor unit.
