**Description**

Due to the high level of network functions, a great deal of data is transferred. To assure the effective exchange of data, several data bus systems are necessary that transfer data between each other.

The data bus diagnosis interface connects these data buses together as a gateway interface and makes data transfer possible. This function that was perviously integrated in the dash panel insert or onboard power supply control unit, is now an independent control unit.

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**Data transfer**

- **Diagnosis CAN data bus** connected to **Drive train CAN data bus**
- **Convenience CAN data bus** connected to **Dash panel insert CAN data bus**
- All connected through **data bus diagnosis interface**
**Fitting location**

The data bus diagnosis interface can be found on the left next to the dash panel above the fuse box.
Master functions

The data bus diagnosis interface J533 manages the master functions for terminal 15 run-on on the drive train CAN data bus and control of the sleep and wake-up modes for the data bus systems.

Terminal 15 run-on

Certain control units in the CAN data bus need to exchange information even when terminal 15 is off. For this reason, a message is sent to the CAN data bus for actuation of the run-on mode. The control units make a connection from terminal 30 to terminal 15 internally, which allows them to communicate further. In this way, the power steering control unit J500, for example, can communicate with the other control units.

The run-on mode can last between ten seconds and fifteen minutes. The run-on period depends on the data that is to be sent.

To finish the run-on period, the data bus diagnosis interface initiates the sleep command.

Control units that participate in terminal 15 run-on

Key

G85 Steering angle sender
J104 ABS with EDL control unit
J217 Automatic gearbox control unit
J220 Motronic control unit
J271 Motronic power supply relay

J500 Power steering control unit
J587 Selector lever sensors control unit
J533 Data bus diagnosis interface
Sleep and wake-up modes of the data bus systems

When all of the control units of the convenience and infotainment CAN data bus have announced their readiness for stand-by, a control unit will give the signal to ‘sleep’. The voltage level of the low signal is 12 V and 0 V for the high signal. Furthermore, it also gives the wake-up signal when the data bus has to be activated, for example, when the doors are unlocked.

The data bus diagnosis interface monitors the sleep function.

If the drive train CAN data bus does not go into sleep mode, the convenience and infotainment CAN data buses do not go into sleep mode either.

If the convenience CAN data bus does not go into sleep mode, the infotainment CAN data bus does not go into sleep mode either.
The onboard power supply control unit J519

Fitting location
The onboard power supply control unit can be found underneath the dash panel where it forms a unit with the relay carrier.

Variants
The onboard power supply control unit is available on the Midline and Highline variants.

The Highline variant is installed in vehicles with fog lamps and/or Xenon lights.
All other vehicles are installed with the Midline variant.

Retrofitting of fog lamps is only possible when the onboard power supply control unit of the Midline variant is exchanged with the onboard power supply control unit of the Highline variant.

The following figures are approximate and may differ depending on country variations and software.
Tasks:
The onboard power supply control unit actuates and controls the following functions:

- Electric load management
- Functional readiness
  The onboard power supply control unit activates the function of the electric sliding/tilting sunroof.
- Exterior light control
- Turn signal control
- Windscreen wipers
  Conveyance of data bus signals to wiper motor control unit
- Rear window wiper
- Heated rear window
  Actuation of the heated rear window is via the onboard power supply control unit when the heated rear window button is pressed and if the alternator provides enough voltage.
- Interior light control
  Terminal 30G, via which voltage is supplied to the interior lights, is activated by the onboard power supply control unit.
- Backlight
  The backlight for the footwell is actuated by the onboard power supply control unit via a pulse width modulated signal depending on the position of the dimmer switch for switches and instruments.
- Terminal actuation
  The onboard power supply control unit controls terminal 75x via an X contact relief relay.
  Terminal 15 is actuated via the voltage supply relay for term. 15 in the electrics box and on the onboard power supply control unit relay carrier.
  Terminal 50 is actuated via the power supply relay for terminal 50 in the electrics box.
- Dimmer, instrument backlight
  Term. 58d has a dimming function and supplies the dimmer switches and instruments with voltage.
- Fuel pump readiness
  When the driver’s door is opened, the electrical fuel pump is supplied with power by the onboard power supply control unit. As soon as the engine has started, power is supplied by the engine control unit.
- Alternator readiness
  The alternator is made ready by the onboard power supply control unit.
Onboard power supply control unit

Electrical load management

The electrical load management assures that there is always enough energy in the battery to turn the engine over.

To enable this, the electrical consumers of the convenience system are deactivated. The standard of technical safety remains.

To switch off the consumers, the onboard power supply control unit evaluates the engine speed, the battery voltage and the alternator load via the DF signal (dynamo field).

From this information and from information about which consumers are switched on with short activation periods, the onboard power supply control unit carries out an evaluation of the onboard power supply load state.

Based on this evaluation, the onboard power supply control unit can increase engine speed via the engine control unit. The deactivation of convenience consumers is still possible in the same way.

For load management, three different operating modes are recognised.

Operating mode 1

Terminal 15 on and alternator active

Measures:

At a battery voltage below 12.7 Volt, the onboard power supply control unit demands an increase in the engine idling speed.

At a battery voltage below 12.2 Volt, the following consumers are switched off:

- Heated seats
- Heated windscreen
- Heated exterior mirrors
- Steering wheel heating
- Footwell lighting
- Inner door handle lights
- Reduction and deactivation of Climatronic
- Warning and deactivation of infotainment
**Operating mode 2**
Terminal 15 on and alternator inactive

**Measures:**
At a battery voltage below 12.2 Volt, the following consumers are switched off:

- Reduction and deactivation of air conditioning
- Footwell lighting
- Inner door handle lights
- Entry/exit lights
- Leaving home
- Warning and deactivation of infotainment

**Operating mode 3**
Terminal 15 off and alternator inactive

**Measures:**
At a battery voltage below 11.8 Volt, the following consumers are switched off:

- Interior lights
- Footwell lighting
- Inner door handle lights
- Entry/exit lights
- Leaving home
- Infotainment, e.g. radio

The differences in deactivation in the various operating modes is in the order of individual consumer deactivation.
Furthermore, in operating mode 3, several consumers can be deactivation at once.

Deactivation is cancelled when the conditions for deactivation are no longer met.

When deactivation takes place, this will be shown in the dash panel insert. In addition, an entry will be made in the onboard power supply control unit fault memory.
Exterior light control

The onboard power supply control unit evaluates the signals directly from the light switch. Information about actuation of the turn signals, main beam and headlight flashing is sent via the steering column electronics control unit J527 to the convenience CAN data bus.

Key
D  Ignition/starter switch terminal 15
E1  Light switch
E4  Manual dipped beam and flash switch
E19 Parking light switch
F  Brake light switch
F4  Reverse light switch
JS19 Onboard power supply control unit
JS27 Steering column electronics control unit
M25 High level brake light bulb
X  Number plate light
**Turn signal control**

If the turn signal switch E2 is pressed once briefly, vehicle direction is indicated by three flashes of the lights. If the switch is pressed again briefly, the three flash sequences are repeated. This is referred to as the lane change function.

**Pictorial representation**

![Diagram showing turn signal control](image)

**Key**
- E2  Turn signal switch
- M5  Turn signal bulb, front left
- M6  Turn signal bulb, rear left
- M7  Turn signal bulb, front right
- M8  Turn signal bulb, rear right
Monitoring of light switch positions

Light switch E1 is supplied with power directly from the battery. Therefore, it sends a fixed plausible signal in every position to the onboard power supply control unit. By way of independent signal input, the onboard power supply control unit can detect whether ignition is switched on or not. If the fixed plausible signal is changed by a fault, such as an open circuit in the wiring, it will change to implausible. The onboard power supply control unit will switch to emergency light control.

Signal sequence

Key

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>Light switch</td>
</tr>
<tr>
<td>JS19</td>
<td>Onboard power supply control unit</td>
</tr>
<tr>
<td>Term. 56</td>
<td>Driving lights</td>
</tr>
<tr>
<td>Term. 58</td>
<td>Side lights</td>
</tr>
<tr>
<td>Term. TFL</td>
<td>Daylight driving lights</td>
</tr>
<tr>
<td>Term. NSL</td>
<td>Rear fog lamp</td>
</tr>
<tr>
<td>Term. NL</td>
<td>Fog lights</td>
</tr>
</tbody>
</table>

Function must be coded in onboard power supply control unit
Coding differs in each country.
**Emergency light control**

If the onboard power supply control unit detects a fault with the ignition switched on, the side lights and the dipped beam lights are switched on.

**Example of light switch plausibility with ignition switched on**

<table>
<thead>
<tr>
<th>Switch position</th>
<th>Terminal 58</th>
<th>Terminal 56</th>
<th>Terminal TFL</th>
<th>Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>0 V</td>
<td>0 V</td>
<td>12 V</td>
<td>Plausible</td>
</tr>
<tr>
<td>Side lights on</td>
<td>12 V</td>
<td>0 V</td>
<td>0 V</td>
<td>Plausible</td>
</tr>
<tr>
<td>Driving lights on</td>
<td>0 V</td>
<td>12 V</td>
<td>0 V</td>
<td>Plausible</td>
</tr>
<tr>
<td>Off</td>
<td>0 V</td>
<td>12 V</td>
<td>12 V</td>
<td>Implausible fault detection</td>
</tr>
<tr>
<td>Off</td>
<td>0 V</td>
<td>0 V</td>
<td>0 V</td>
<td>Implausible fault detection</td>
</tr>
<tr>
<td>Off</td>
<td>12 V</td>
<td>12 V</td>
<td>0 V</td>
<td>Implausible fault detection</td>
</tr>
<tr>
<td>Off</td>
<td>12 V</td>
<td>12 V</td>
<td>12 V</td>
<td>Implausible fault detection</td>
</tr>
</tbody>
</table>

In the case of all faults, an entry is made in the fault memory.
Bulb monitoring

The function of the bulbs is monitored constantly. This monitoring takes place when the ignition is off (cold monitoring) and when the ignition is switched on (warm monitoring).

Cold monitoring

The individual bulbs are supplied with a minimal charge four times for 500 ms when the ignition is switched on. This level of voltage enables the onboard power supply control unit to detect whether any of the bulbs are blown.

Warm monitoring

The actuation of the individual bulbs is via semi-conductor components that are housed in the onboard power supply control unit. They can detect overloads, short circuits or open circuits.

Fault detection

With both types of monitoring, once a fault is detected an entry is made in the fault memory and a fault warning is also displayed in the dash panel insert.

A new bulb will be detected by the monitoring system once installed, the fault will be erased and the display cancelled.
Additional bulb functions

Various bulbs are dimmed to take on additional functions. If their proper function is needed, this is given priority.

<table>
<thead>
<tr>
<th>Bulb</th>
<th>Additional function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dipped beam, left and right</td>
<td>Dimmed daylight driving lights, left and right</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bulb</th>
<th>Additional function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brake light, left and right</td>
<td>Dimmed rear lights, left and right approx. 18 %</td>
</tr>
<tr>
<td>Rear fog lamp</td>
<td>Dimmed rear lights, left and right approx. 12 %</td>
</tr>
<tr>
<td>left and right country-specific</td>
<td></td>
</tr>
</tbody>
</table>

Additional function: Brake light as rear light

Please observe the country-specific variations in the rear fog light function.
Windscreen wiper system

Wiper motor actuation

Windscreen wiper motor actuation

The wiper system consists of a twin motor opposing action system without a mechanical connection between the wiper arms.

The switch position of wiper switch E is sent directly to the steering column electronics control unit J527 and then via the convenience CAN data bus to the onboard power supply control unit J519.

Information about the selected wiper stage is sent from the onboard power supply control unit via the LIN data bus to the wiper motor control unit J400 and from there to the wiper control unit, front passenger side J584.

Both control units are located directly on the wiper motors.

The wiper motor control unit J400 manages control of the wiper motion and regulates the wiper control unit, front passenger side J584.

Actuation of wiper motors

Dash panel insert  Drive train CAN dataCAN data bus  busAmbient temperature  Road speed

Key
D  Ignition/starter switch
E  Wiper switch
F266  Bonnet contact switch
J400  Wiper motor control unit
J519  Onboard power supply control unit
J527  Steering column electronics control unit
J533  data bus diagnosis interface
J584  Wiper control unit, front passenger side

S307_025
Wiper functions

The wiper system features the following functions:

- Service and winter position
- Alternating rest position
- Speed dependent wiper stage reset
- Speed dependent intermittent delay
- Bonnet contact
- Synchronisation function
- Tip wiping stage 2
- Prewash
- Follow up wash after wash/wipe function
- Trickle wipe
- Anti-blocking function
- Wiper control for rear window

Service and winter position

If within 10 seconds after switching off the ignition, and with the vehicle stationary, the wiper switch is switched to the tip wiping position, the wipers move to the upper arc position. This function cannot be selected when the bonnet is open.
Windscreen wiper system

**Alternating rest position**

In order to prevent a permanent deformation of the wiper blades, the wiper arms move upwards slightly every second time they are switched off. In this way, the position of the wiper blades is changed. In addition, the rest position can also be altered by switching the ignition off several times.

**Speed dependent wiper stage reset**

If the road speed drops below 4 km/h, the selected wiper speed will be reduced by one stage. When road speeds increases above 8 km/h, the wiper speed is reset to the selected stage.

Resetting:

Stage 2 to stage 1

- Terminal 15 on
- Wiper switch at stage 2
- Road speed \( \leq 4 \text{ km/h} \)

Stage 1 to intermittent operation stage

- Terminal 15 on
- Wiper switch at stage 1
- Road speed \( \leq 4 \text{ km/h} \)
  (Intermittent delay 4 s)
**Speed dependent intermittent delay**

The speed of the four adjustable intermittent phases is dependent on the road speed of the vehicle.
The delays between the individual wiper movements vary from 1.28 seconds in stage 1 at approx. 150 km/h to 24 seconds in stage 4 at approx. 4 km/h.

**Bonnet contact switch F266**

If when the vehicle is stationary the bonnet is opened, the wiper motor control unit J400 switches the wipers off.

If the bonnet was not closed correctly and opens at a speed of 2 km/h to 16 km/h, the wiper motor control unit J400 switches the wipers off in the same way.
The isolation function can be cancelled again by operation of the wiper switch.

At speeds greater than 16 km/h, the isolation function is not active.

The signal is sent from the bonnet contact switch directly to the onboard power supply control unit and is then sent on further via the LIN data bus to the wiper motor control unit.
**Synchronisation function**

If the windscreen wipers are not in their rest position when the ignition is switched off, these will be moved automatically to the rest position when the ignition is switched on and when the wiper switch E4 is actuated. This is either a parallel or individual movement. A system with an unsynchronised rest position is set straight with this procedure.

**Tip wiping stage 2**

If the tip wiping function is actuated for longer than two seconds, the wiper is switched to the second stage.
Prewash
When the wash/wipe function is actuated at speeds less than 120 km/h, the wiper will begin to operate after a prewash period of approx. 0.8 seconds, during which only the washer pump is active.

Follow up wash after wash/wipe function
If the wash/wipe function is actuated for longer than 0.5 seconds, the follow up wiping function is actuated three times. If actuation time is less, follow up wiping is actuated twice.

Trickle wiping
If the road speed of the vehicle is greater than 2 km/h, the wiper function is actuated once more 5 seconds after the last follow up wash (follow up wiping cycle).

Anti-blocking function
The wiper system detects if the wipers are blocked by the amount of current that is drawn. If there is a blockage in area A, it will attempt to remove this a total of five times. If it is unable to move the blockage, the wipers will remain in the rest position. The blockage will have to be removed manually.

If the wiper blades are frozen to the bottom part of the windscreen, the wipers will attempt to break free a total of five times. After the fifth attempt, there will be no wiper motion.
Rear window wiper system

Rear window wiper control
Rear window wiper actuation features three operating modes:

- Reverse wiping
- Rear intermittent wiping
- Rear window wash/wipe operation

Reverse wiping
The reverse wiping function actuates the rear window wiper to clear the screen if, when the front windscreen wiper is switched on, reverse gear is selected.

Intermittent stage
Stage 1 or 2
One wipe
Rear intermittent wipe

Conditions for activation:
- Ignition switched on
- Windscreen wiper is in intermittent stage 1 or stage 2
  Recognition of the selected stage is via the convenience CAN data bus.
  The signal comes from the steering column electronics control unit.
- Reverse gear or R selected
  Recognition is via the reverse light switch or via the gear selector position, the automatic gearbox control unit, the drive train CAN data bus, the data bus diagnosis interface and the convenience CAN data bus.
- Tailgate closed
  Recognition is via the convenience system central control unit.

Signal pattern of rear window wiper

Key
D  Ignition/starter switch
E  Wiper switch
J393  Convenience system central control unit
J519  Onboard power supply control unit
J527  Steering column electronics control unit
J533  Data bus diagnosis interface
V12  Rear window wiper motor
S307_035
**Rear intermittent wiping**

If the rear intermittent wiper stage is selected, the rear window wiper operates in delayed stages.

Conditions for activation:

- Ignition switched on
- Rear window intermittent wiper stage on:
  Recognition is via the wiper switch, the steering column electronics control unit and the convenience CAN data bus.
- Tailgate closed:
  Recognition is via the convenience system central control unit.

**Rear window wash/wipe operation**

In rear window wash/wipe operation, the double washer pump delivers washer water to the rear window and the rear window is cleared.

Conditions for activation:

- Ignition switched on
- Rear window wash/wipe operation stage on:
  Recognition is via the wiper switch, the steering column electronics control unit and the convenience CAN data bus.
- Tailgate closed:
  Recognition is via the convenience system central control unit.
Dash panel insert

Control unit with display unit in dash panel J285

Control lamps and displays

The control unit with display unit in the dash panel insert actuates the display, the analogue display instruments and the control lamps.

Dash panel insert

The coolant temperature display on vehicles with map controlled cooling is at a constant 90 °C at coolant temperatures between 75 °C and 107 °C. The display on vehicles without map controlled cooling is at a constant 90 °C at coolant temperatures between 75 °C and 115 °C. This way, a continually changing figure in the display is avoided.
Display

The following variants are designed for the display:

Lowline with displays for

- Clock
- Mileage reader
- Trip counter
- Selector lever position

Midline with additional displays to Lowline variant

- Ambient temperature
- Multi-function display or
- Warning messages instead of multi-function display and ambient temperature

Highline with additional displays to Midline variant

- Sender display
- Warning symbols instead of multi-function display and ambient temperature

Lowline variant

<table>
<thead>
<tr>
<th>20:14</th>
</tr>
</thead>
<tbody>
<tr>
<td>km</td>
</tr>
<tr>
<td>20375</td>
</tr>
<tr>
<td>P</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>S</td>
</tr>
</tbody>
</table>

Midline variant

<table>
<thead>
<tr>
<th>20:14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 7.8</td>
</tr>
<tr>
<td>13.5</td>
</tr>
<tr>
<td>km</td>
</tr>
<tr>
<td>20375</td>
</tr>
<tr>
<td>P</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>S</td>
</tr>
</tbody>
</table>

Highline variant

<table>
<thead>
<tr>
<th>20:14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 7.8</td>
</tr>
<tr>
<td>13.5</td>
</tr>
<tr>
<td>km</td>
</tr>
<tr>
<td>20375</td>
</tr>
<tr>
<td>P</td>
</tr>
<tr>
<td>N</td>
</tr>
<tr>
<td>S</td>
</tr>
</tbody>
</table>
## Equipment with control lamps

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Control lamp</th>
<th>Lowline</th>
<th>Midline</th>
<th>Highline</th>
<th>Warning message or warning</th>
</tr>
</thead>
</table>
| ![Airbag](airbag.png) | Airbag | X | X | X | Airbag fault  
Airbag belt tensioner deactivated |
| ![ABS](abs.png) | ABS | X | X | X | ABS |
| ![Brake pad wear](brake-pad.png) | Brake pad wear | X | X | Pictogram | Check brake pad |
| ![Low brake fluid level](brake-fluid.png) | Low brake fluid level | X | X | X | Stop - Brake fluid -  
See manual |
| ![Preglow period](preglow.png) | Preglow period  
(diesel engines) | X | X | X | |
| ![Dynamic oil pressure warning](oil-pressure.png) | Dynamic oil pressure warning | Turn signal | Turn signal | Turn signal pictogram | Stop - Oil pressure - Engine off -  
See manual |
| ![EPC](epc.png) | Electronic power control  
EPC | X | X | X | |
| ![Electronic power steering](power-steering.png) | Electronic power steering | X | X | X | |
| ![Electric brake pressure distribution](brake-pressure.png) | Electric brake pressure distribution | X | X | X | Warning buzzer (3 times) |
| ![Parking brake system](parking-brake.png) | Parking brake system | X | X | X | Handbrake applied |
| ![ESP TCS](esp-tcs.png) | ESP  
TCS | X | X | X | |
<p>| <img src="left-turn.png" alt="Left turn signal" /> | Left turn signal | X | X | X | Acoustic check |
| <img src="right-turn.png" alt="Right turn signal" /> | Right turn signal | X | X | X | Acoustic check |
| <img src="trailer-turn.png" alt="Trailer turn signals" /> | Trailer turn signals | X | X | X | |
| <img src="main-beam.png" alt="Main beam headlights" /> | Main beam headlights | X | X | X | |</p>
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Control lamp</th>
<th>Lowline</th>
<th>Midline</th>
<th>Highline</th>
<th>Warning message or warning</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Cruise control system" /></td>
<td>Cruise control system</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Bulb failure" /></td>
<td>Bulb failure</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>e.g. Front left dipped beam light defective</td>
</tr>
<tr>
<td><img src="image" alt="Tailgate door open" /></td>
<td>Tailgate door open</td>
<td>X</td>
<td>X</td>
<td>Pictogram</td>
<td>e.g. Tailgate open</td>
</tr>
<tr>
<td><img src="image" alt="Fuel reserve" /></td>
<td>Fuel reserve</td>
<td>X</td>
<td>X</td>
<td>Pictogram</td>
<td>Please fill up - Warning buzzer (once)</td>
</tr>
<tr>
<td><img src="image" alt="Low coolant level or overheating" /></td>
<td>Low coolant level or overheating</td>
<td>X</td>
<td>X</td>
<td>Pictogram</td>
<td>Stop - Check coolant  See manual - Warning buzzer (3 times)</td>
</tr>
<tr>
<td><img src="image" alt="Alternator" /></td>
<td>Alternator</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Engine check EOBD" /></td>
<td>Engine check EOBD</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Engine fault - Workshop - Exhaust gas - Workshop</td>
</tr>
<tr>
<td><img src="image" alt="Bonnet open" /></td>
<td>Bonnet open</td>
<td>X</td>
<td>X</td>
<td>Pictogram</td>
<td>Door warning! Bonnet! Warning buzzer (once) if v &gt; 6 km/h</td>
</tr>
<tr>
<td><img src="image" alt="Rear fog light" /></td>
<td>Rear fog light</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Oil level" /></td>
<td>Oil level</td>
<td>X</td>
<td>X</td>
<td>Pictogram</td>
<td>Check oil level Oil sensor - Workshop</td>
</tr>
<tr>
<td><img src="image" alt="Tyre pressure monitor" /></td>
<td>Tyre pressure monitor</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Warning buzzer (once)</td>
</tr>
<tr>
<td><img src="image" alt="Shift lock" /></td>
<td>Shift lock</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Seatbelt" /></td>
<td>Seatbelt</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Please apply seatbelt - Gong</td>
</tr>
<tr>
<td><img src="image" alt="Low washer water" /></td>
<td>Low washer water</td>
<td>X</td>
<td>X</td>
<td>Pictogram</td>
<td>Replenish washer water - Warning buzzer (once)</td>
</tr>
<tr>
<td><img src="image" alt="Immobiliser" /></td>
<td>Immobiliser</td>
<td>Turn signal</td>
<td>Turn signal</td>
<td>Turn signal</td>
<td>Immobiliser active - Warning buzzer (once)</td>
</tr>
</tbody>
</table>
The fourth generation immobiliser

Control unit

The immobiliser control unit J362 can be found in the dash panel insert, as with immobilisers of the third generation.
The diagnosis connection is made via address word 25. Communication is only possible via the diagnosis CAN data bus with vehicle diagnosis, testing and information system VAS 5051.

Diagnosis

Key

- J285: Control unit with display unit in dash panel insert
- J533: data bus diagnosis interface
- VAS 5051: Vehicle diagnosis, testing and information system
- VAS 5051/5A: Diagnosis lead 3 m
- T16: Diagnosis connection
Changes compared to the third generation immobiliser

Brand identification
The immobiliser components of all Group brands are different. Adaption of components from other Group brands in Volkswagen vehicles is not possible.

Preprogrammed key
The vehicle keys are preprogrammed by the manufacturer with a basic code. This basic code includes a specific manufacturer code. Matching the key to a vehicle is only possible if it has the correct manufacturer code.
**Matching**

Enabling the matching function is done via the vehicle diagnosis, testing and information system VAS 5051. The personal identification number (PIN) for matching is currently available via the dealer online access system (HOLZ). In future, matching will be carried out via an online connection.

**Exchanging the engine control unit**

The engine control unit is enabled in the same way as the third generation immobiliser. Two of the three adapted components (key and dash panel insert) must remain in the vehicle. For adaption of a new control unit, this can be done without a personal identification number. For adaption of a control unit that was previously installed in a different vehicle, a personal identification number is required.
Exchanging the dash panel insert

Adaption is carried out in the same way as for the third generation immobiliser. Likewise, two of the three adapted components (key and engine control unit) must remain in the vehicle.

For adaption of a new dash panel insert, this can be done without a personal identification number.

A personal identification number is required for a previously used dash panel insert.

Following exchange, the immobiliser control unit J362 will detect an unknown key. For this reason, there is a blocking period of five minutes during which time the engine cannot be started.

With the exchange of more than one component, all three items must be renewed as less than two of the matched components are left in the vehicle.
**Convenience and infotainment settings**

**Personalisation**

The user based settings for different unit functions in the convenience and infotainment system are made via an operating unit and a display.

Operation is via a control lever on the steering wheel. Selection from the menu is made via the display in the dash panel insert. The settings selected are stored in the control unit, which is responsible for the control of each function. Transfer of the necessary information between the control unit with display unit in dash panel insert and the other control units is managed by the CAN data bus.

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**Key**

- **J162** Heater control unit
- **J285** Control unit with display unit in dash panel insert
- **J393** Convenience system central control unit
- **J519** Onboard power supply control unit
- **J527** Steering column electronics control unit
- **J533** Data bus diagnosis interface

For precise details on operation, please refer to the operating instructions.
Headlights

One touch attachment

The H7 bulbs are connected to the reflector by means of a one touch attachment. The old means of attachment with clip and electrical connector has been discontinued.

By means of one touch, the attachment of the bulbs can be released with a twisting action.

Thereafter, the bulb is pulled out of the attachment.

The functional description of the Bi-Xenon headlights that are installed can be found in SSP 251 "The Passat 2001".

The procedure for renewing a bulb can be found in ELSA.
Diagnosis

The transfer of data necessary for diagnosis to vehicle diagnosis, testing and information system VAS 5051 or vehicle diagnosis and service information system VAS 5052 is via the diagnosis CAN data bus.

Data transfer to VAS 5051 is only possible via diagnosis leads VAS 5051/5A or VAS 5051/6A.

For vehicle diagnosis and service information system 5052, diagnosis lead VAS 5052/3 should be used.

These diagnosis leads are suitable for the transfer of data via the diagnosis CAN data bus.

The COM lead used until now is still required for diagnosis of the engine and gearbox control units in OBD mode. Therefore, diagnosis with other diagnosis leads is only possible in the engine control unit and automatic gearbox control unit.

Service

VAS 5051

VAS 5052

VAS 5051/6A
Key

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
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<td>VAS 5051/5A</td>
<td>Diagnosis lead 3 m</td>
</tr>
<tr>
<td>VAS 5051/6A</td>
<td>Diagnosis lead 5 m</td>
</tr>
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<td>VAS 5052</td>
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</tr>
<tr>
<td>VAS 5052/3</td>
<td>Diagnosis lead 3 m</td>
</tr>
</tbody>
</table>
1. Which data bus systems are used in the Volkswagen Touran?
   - a) The CAN data bus and the LIN data bus.
   - b) The MOSFET data bus, the LIN data bus and the MOST bus.
   - c) The D2B data bus, the A data bus and the CAN data bus.

2. Where can the data bus diagnosis interface be found?
   - a) In the dash panel insert.
   - b) Under the centre console next to the airbag control unit.
   - c) Under the dash panel above the relay carrier.

3. Which control units belong to the dash panel insert CAN data bus?
   - a) The onboard power supply control unit, the automatic gearbox control unit and the trailer detector control unit.
   - b) The control unit with display unit in dash panel insert and the data bus diagnosis interface.
   - c) The Motronic control unit and the diagnosis connection.

4. The LIN data bus transfers data at a rate of
   - a) 1 kbit/s to 20 kbit/s.
   - b) 100 kbit/s to 500 kbit/s.
   - c) 21 Mbit/s.
5. Which functions are controlled by the onboard power supply control unit?

- a) Turn signal control, heated rear window, fuel pump readiness.
- b) Windscreen and rear window wipers, central locking, instrument illumination.
- c) Load management, alternator readiness, starter isolator.

6. What is the main role of the load management system?

- a) To ensure that there is always enough electrical power to turn the engine over.
- b) With electronic charge indication, it warns the driver when the vehicle is overcharged.
- c) It prevents overloading of the engine by irregular operation.

7. What must be observed when operating the vehicle diagnosis, testing and information system VAS 5051 on the Touran?

- a) For diagnosis, only diagnosis leads VAS 5051/5A and VAS 5051/6A should be used.
- b) Diagnosis can be carried out in all areas using V.A.G 1551 or V.A.G 1552.
- c) Diagnosis is only possible using VAS 9119.
This paper was manufactured from pulp that was bleached without the use of chlorine.