

Electrically adjustable seats

E63, E64



Introduction

The E63 and E64 will feature electrically adjustable driver's and passenger's seats as standard. Electrically adjustable sports seats will be optionally available. The sports seats additionally feature a manual seat depth adjustment facility, more pronouncedly formed seat upholstery and a lumbar support. The electrical control is identical for both the basic seat and sport seat. In both seat versions, the driver's seats are additionally equipped with a seat memory.

The body bus (K-bus) connects the driver's seat module (SMFA) to the centre console switch cluster (SZM). In the E64, the passenger's seat module (SMBF) is also connected to this K-bus. the centre console switch cluster represents the interface between the K-bus of the seats and the body controller area network (K-CAN). The K-CAN and centre console switch cluster (SZM) therefore connect the seat control units to the control units of the body electronic systems.

[System overview]

Brief description of components

The system features the following switches and sensors:

- **Seat adjustment buttons**

The seat adjustment buttons are located on the outer sides of the seat cushions. They vary in terms of number and function. The E64 seat is additionally equipped with an option for electrically adjusting the head restraints (headrests).

- **Lumbar support button**

A rocker switch is provided on the seat to adjust the lumbar support.

- **Seat memory button**

Only the driver's seat features additional buttons for the seat memory.

- **Seat heating switch**

The buttons for controlling the seat heating are included in the centre console switch cluster.

- **Hall sensors**

Hall sensors are installed for the purpose of detecting the position of the seats. The sensors are integrated in the seat drive units.

- **Temperature sensor for seat heating**

A temperature sensor is installed in each of the seat cushions for the seat heating.

The seats are controlled by the following control units:

- **Centre console switch cluster**

In addition to the switches, the electronic circuits for the heating control and monitoring functions are integrated in the centre console switch cluster (SZM). The SZM is also responsible for the electronic control of the steering column adjustment function. [more ...]

- **E63/E64 Driver's seat module**

The control unit of the driver's seat module (SMFA) communicates via the K-bus with the centre console switch cluster (SZM).

- **Passenger's seat module, E64 only**

The control unit of the passenger's seat module (SMBF) communicates via the K-bus with the centre console switch cluster (SZM).

In the E63 the drive units are controlled directly by a load circuit.

The following actuators are driven to perform the seat functions:

- **Seat heating**

The seat cushion heating and backrest heating are installed such that they cover the entire area. Even the side sections and thigh supports are heated: [more ...]

- **Seat adjustment drive units**

The following drive units are installed in the E63 and E64 seat:

- Drive unit for seat forward/backward adjustment with 2 adjustment speeds
- Drive unit for seat height adjustment
- Drive unit for seat cushion tilt adjustment
- Drive unit for backrest angle adjustment

Additionally installed in the E64:

- Drive unit for head restraint height adjustment

- **Head restraint angle adjustment**

The head restraint angle adjustment as well as the seat depth adjustment on the sports seat are always manual.

- **Lumbar support**

The lumbar support in the seat backrest consists of 2 lumbar cushions as well as an electric air pump with electrically operated valves.

The following displays provide seat status information:

- **Central Information Display**

A corresponding check control message is shown on the central information display (CID) when, for example, a backrest is not locked in correctly (E64 only).

- **Head-up display**

A corresponding check control message and an information text are shown in the head-up display (HUD) when the backrest is not locked in correctly (E64 only).

- **Seat heating LEDs**

3 light emitting diodes (LEDs) in the centre console switch cluster indicate the switched status of the seat heating system.

Seat communication features the following bus systems:

- **Body controller area network**

The body controller area network (K-CAN) is a two-wire bus for communication between all control units connected to the K-CAN.

- **Body bus**

The body bus (K-bus) is a single-wire connection. The centre console switch cluster and the seat modules communicate with each other via the K-bus.

System functions

The system functions of the electrically operated seats include:

- Seat adjustment
- Rear easy-entry facility
- Seat heating

Seat adjustment

The installed seats feature the following seat adjustment options:

- Seat forward/backward adjustment (with electric drive unit, 2 speed stages)
- Seat height adjustment (with electric drive unit)
- Seat depth adjustment (manual only, sports seat only)
- Backrest angle adjustment (with electric drive unit)
- Head restraint height adjustment (E63: manual; E64: with electric drive unit)
- Head restraint angle adjustment (manual only)
- Lumbar support height adjustment (electropneumatic)
- Lumbar support depth adjustment (electropneumatic) [more ...]

The standard seat forward/backward adjustment, seat height adjustment, seat cushion tilt adjustment and backrest angle adjustment facilities are each operated with separate electric drive units in all seats. The head restraint height adjustment is driven by an electric drive unit only on the E64.

All these functions are controlled via the control panel on the outer sides of the seat cushions. Signals from the respective button trigger seat adjustment in the required directions.

A separate rocker switch is used to operate the lumbar support. An electric pump supplies the lumbar support cushion with compressed air. The individual air chambers are filled or emptied via several valves to vary the height and thickness of the lumbar support.

The limit stop is calculated for each drive unit in order to reduce the load of the electric drive units to a minimum. Automatic recognition of the limit stops is integrated in each of the electric drive units. Hall sensors integrated in the drive units register the adjustment distances which are processed in the seat module. In the event of the drive unit blocking, the detected position value is interpreted as the limit stop. All subsequent adjustments are interrupted just before this point.

Once the obstruction has been removed, adjustment can again extend beyond the newly detected limit stop when the seat adjustment button is pressed again.

Rear easy-entry facility

The rear easy-entry facility is controlled by a push-button on the seat backrest. The rear easy-entry facility can be activated only under the following conditions:

- The vehicle must be stationary with no wheels turning
- The door must be opened

Rapid adjustment is achieved with the second speed stage of the drive unit for seat forward/backward adjustment. The seat moves for as long as the button is pressed. At the same time, the backrest can be released manually and folded forward.

The seat moves back to its initial position when the seat adjustment button is pressed back.

Seat heating

The seat heating system heats the seat cushion and backrest including the side sections. Separate seat heating switches (push-buttons) in the centre console switch cluster (SZM) control the driver's seat and passenger's seat.

The centre console switch cluster controls the seat heating electronically. The system is monitored by a temperature sensor. The seat heating is operational as from terminal 15 "ON".

3 LEDs located above the seat heating switches indicate the heating stage currently active in the seat heating system.

Note: The seat heating is not actuated while the steering column is adjusted.

The current at the centre console switch cluster would be too high if the seat heating and steering column adjustment were operated simultaneously. The seat heating is interrupted in order to protect the centre console switch cluster (SZM).

Notes for service staff

Service staff should note the following points:

- General information: ---
- Diagnostics: ---
- Encoding/programming: ---
- Car and key memory [more ...]

Subject to change.