

Boot Lid Module

Automatic opening and closing of boot lid/tailgate

Function

Automatic opening and closing of the boot lid/tailgate is controlled by the boot lid/tailgate module and the general module of the ZKE III.

The boot lid/tailgate is opened and closed by means of a hydraulic system, consisting of a hydraulic pump and two hydraulic cylinders. The hydraulic system is controlled by the boot lid/tailgate module.

In addition to the hydraulic system, an automatic soft-close facility (fitted as standard on E38) and an electrical rear lid release (fitted as standard on E39) are also fitted on the rear lid. These components are controlled by the general module of the ZKE III.

The general module and boot lid/tailgate module are interlinked via the K-bus.

Boot lid opening procedure

- Release button is pressed.
- The ZKE III general module receives the instruction to open the boot lid/tailgate. It activates the drive for the automatic soft-close facility and the drive for the rear lid release. The rotary latch of the boot lid/tailgate is opened and the lock striker is turned upward.
- The rear lid contact signals "boot lid/tailgate open" to the general module. This signal is routed via the K-bus to the boot lid/tailgate module.
- The boot lid/tailgate module powers the hydraulic valve and the hydraulic pump. The boot lid/tailgate is opened by means of the hydraulic cylinders.

Boot lid closing procedure

- Release button is pressed.
- The boot lid/tailgate module powers the hydraulic valve and the hydraulic pump. The boot lid/tailgate is closed by means of the hydraulic cylinders.
- The boot lid/tailgate module recognizes the opening angle of the boot lid/tailgate by means of the tilt switch mounted on the boot lid/tailgate.
- The hydraulic pump is switched off and the hydraulic valve opened when the opening angle is less than 8°. The boot lid/tailgate falls closed.
- The boot lid/tailgate contact signals "boot lid/tailgate closed" to the general module in the ZKE III.
- The general module activates the drive for the automatic soft-close facility. The lock striker of the boot lid/tailgate is turned down thus pulling the rear lid closed.

Operating buttons

The boot lid/tailgate opening and closing functions are operated by means of three pushbuttons.

- Operating button for boot lid/tailgate closing cylinder
The boot lid/tailgate can be opened and closed by pressing the lock cylinder in the boot lid/tailgate. The pushbutton is connected both to the boot lid/tailgate module as well as to the general module in the ZKE III.
- Operating button for boot lid/tailgate, inside
The boot lid/tailgate can be opened and closed by pressing this pushbutton. The button is only connected to the boot lid/tailgate module. A closed boot lid/tailgate cannot be opened by means of this button as the signal from this button is not sent to the general module in the ZKE III, consequently the rotary latch is not released.
- Operating button, vehicle interior
The boot lid/tailgate can be released and opened by pressing this button (located in A-pillar on driver's side). The boot lid/tailgate cannot be closed with this button. The pushbutton is only connected to the general module in the ZKE III. Its signal is routed via the K-bus to the boot lid/tailgate module.

All operating buttons switch to ground.

If the buttons are struck briefly the boot lid/tailgate is fully opened (all pushbuttons) or closed (only buttons in boot lid/tailgate).

If the boot lid/tailgate is moving, it is stopped when a button is pressed once more.

Radio remote control

The boot lid/tailgate can be opened via the radio remote control.

The boot lid/tailgate is opened by pressing the key button with the boot lid/tailgate symbol. The opening procedure is stopped by pressing the button once again.

It is possible to close the boot lid/tailgate via the remote control only on vehicles with production date after 9/98 (see display in diagnosis system - coding data).

The button on the key-chain transmitter must be pressed and held in order to close the boot lid/tailgate.

Tilt switches

A tilt sensor with two tilt switches is fitted in the tailgate for the purpose of detecting the opening angle.

The tilt switches are Hall sensors.

The following opening angles can be recognized:

Angle range in degrees	Tilt switch 1	Tilt switch 2
0° to 8° open	active	inactive
8° to 50° open	inactive	inactive
50° open up to stop	inactive	active

The signal output of the tilt switches can be checked in the diagnostic program (test module tilt switches or diagnostic scan).

Influence of tilt on operation

The direction of movement of the boot lid/tailgate (open or close) after pressing a button in the boot lid/tailgate (inside or outside) is controlled dependent on the tilt of the boot lid/tailgate.

As from an opening angle of greater than 8° the direction of movement changes if the boot lid/tailgate movement is stopped by pressing a pushbutton and then reactivated by pressing the button again.

Hydraulic system

Components

The hydraulic system consists of the following components:

- Hydraulic unit
contains the hydraulic pump, relay valve (on E38 Series only) and the pressure relief valves
- Hydraulic lines
Connections between the hydraulic unit and hydraulic cylinders
- Hydraulic cylinders
Mounted on left and right of boot lid/tailgate

The system is operated with a maximum pressure of 100 bar.

The hydraulic system is maintenance-free and self-venting.

Note

The procedures described in the repair instructions must be followed when working on the hydraulic system.

Hydraulic pump

The hydraulic pump is controlled by the boot lid/tailgate module in the directions of rotation "open boot

lid/tailgate" and "close boot lid/tailgate".

Power is supplied by means of two relays integrated in the boot lid/tailgate module.

A repeat lock facility prevents the hydraulic pump overheating. The pump is switched off for approx. 6 minutes if it was in operation for longer than 2 minutes within a short space of time.

Relay valve

The relay valve controls the hydraulic pressure between the hydraulic pump and hydraulic cylinders. It is powered and thus opened and closed by the boot lid/tailgate module.

The maximum possible hydraulic pressure is built up in the hydraulic cylinders when power is applied to the relay valve (valve closed).

Only a low pressure is built up in the hydraulic cylinders when no power is applied to the relay valve (valve open).

The relay valve is closed over the entire opening range when the **boot lid/tailgate is opened**. The boot lid/tailgate is opened with the maximum possible hydraulic pressure.

On E38 vehicles, when the **boot lid/tailgate is closed**, the relay valve and the hydraulic pump are controlled by the boot lid/tailgate module dependent on the opening angle of the boot lid/tailgate.

- Boot lid open up to 50°:
The hydraulic pump operates in the "close boot lid/tailgate" direction of rotation.
Power is applied to the relay valve (valve closed).
The boot lid/tailgate is closed with the maximum possible hydraulic pressure.
- Boot lid open 50° to 8° :
The hydraulic pump operates in the "close boot lid/tailgate" direction of rotation.
Power is not applied to the relay valve (valve open).
Only a low pressure is built up in the hydraulic cylinders. The boot lid/tailgate is closed without force.
- Boot lid open less than 8°:
The hydraulic pump is switched off.
Power is not applied to the relay valve (valve open).
The boot lid/tailgate falls closed under its own weight.

The opening angle of the boot lid/tailgate is recognized by means of the tilt switches.

Note on E39 Series

The hydraulic unit of the E39 Series does not contain a relay valve. When closing the tailgate, the hydraulic pump continues to operate until the tailgate contact signals that the tailgate is closed.

Pressure relief valves

The pressure relief valves are integrated in the hydraulic unit and limit the maximum possible pressure in the hydraulic cylinders.

The pressure is limited to maximum 100 bar to open the boot lid/tailgate and to maximum 60 bar to close the boot lid/tailgate.

Emergency mode

In the event of system failure, the boot lid/tailgate can be opened and closed manually by exerting little pressure.

An emergency valve is additionally integrated in the hydraulic unit which, in the event of system failure, maintains a system pressure of 40 bar thus ensuring the boot lid/tailgate movement is dampened.