

Multifunction steering wheel (MFL)

With the aid of the multi-function steering wheel (MFL), the driver can operate various vehicle functions from the steering wheel. These functions include:

- Radio functions
- Telephone functions
- Cruise control (tempomat) functions
- Recirculated air function

In addition to a higher degree of comfort, the MFL also offers the driver increased safety: Without taking his/her hands from the steering wheel and without taking his/her eyes away from the traffic situation, the driver can effectively carry out the functions which can be operated from the MFL.

The response time to an MFL function is so fast that no delay in the feedback signal is noticeable.

The multifunction steering wheel (MFL) consists of following components:

- MFL operating unit: Depending on the equipment stage, a button block for the MFL functions is housed in the steering wheel on the right and/or left next to the airbag unit.
- Contact unit: The entered button signals are transferred by means of a coil spring from the MFL operating unit to the MFL control unit.
- MFL control unit: Radio, telephone or recirculated air instructions given by the MFL operating unit are transferred via the information bus (I-bus) to the corresponding control units. The button signals for cruise control (tempomat) operation are sent via a separate line link to the cruise control (tempomat) system.

Important!

The MFL control unit is only installed if radio, telephone or recirculated air can be operated with the multifunction steering wheel (MFL).

Important!

The MFL control unit is not installed if only the cruise control (tempomat) functions can be operated from the MFL operating unit. The cruise control (tempomat) instructions are transferred from the MFL operating unit **directly** to the cruise control (tempomat) system. This variant therefore has no diagnostic capability!

During operation, the MFL control unit monitors the input buttons and the supply voltage. In addition, in the case of safety-relevant functions (e.g. cruise control (tempomat)), the line link between MFL and the control unit implementing the function must be constantly monitored. If a fault occurs in the signals, a defect code is entered in the defect code memory. Diagnosis takes place via the I-bus.

Note

The MFL control unit is connected to the information bus (I-bus). For this reason, not only the diagnosis link is involved in a diagnosis connection between the service tester and the control unit MFL but also the I-bus. In the case of faults in the diagnostic procedure, the diagnosis link between the diagnosis socket and the instrument cluster electronics (IKE) must be checked. In addition, the I-bus link (between IKE and MFL) must also be checked.

If the MFL operating unit is installed without the MFL control unit, safety-relevant connection links must be checked by the connected control unit (e.g. cruise control (tempomat) function).

Variants

Following variants of the multifunction steering wheel (MFL) are available:

Variants **with** MFL control unit:

Variant	Button block, left	Button block, right
1	Radio, telephone	Cruise control (tempomat), recirculated air
2	Radio, telephone	Recirculated air
3	Radio, recirculated air	free
4	Radio	Cruise control (tempomat), recirculated air

Variants **without** MFL control unit:

Variant	Button block, left	Button block, right
5	free	Cruise control (tempomat)

Important!

No MFL control unit is installed in variant 5 (only cruise control (tempomat) functions). The button signals for cruise control (tempomat) operation are sent **directly** from the MFL operating unit to the cruise control (tempomat). This variant therefore has no diagnostic capability!

Cruise control (tempomat) operation

A button block for cruise control (tempomat) operation is provided on the right-hand side of the steering wheel. Description of buttons from top to bottom:

- **Reset:** The vehicle accelerates or decelerates to the speed last stored and retains this speed.
- **Accelerate:** The speed is increased by 1 km/h by briefly pressing this button. If the button is pressed longer, the speed is increased until the button is released.
- **Decelerate:** The speed is decreased by 1 km/h when this button is briefly pressed. If the button is pressed longer, the speed is decreased until the button is released.
- **OFF:** Switching off the cruise control (tempomat) function.

Radio operation

A button block for radio operation is provided on the left-hand side of the steering wheel. Description of buttons from top to bottom:

- **Station search up:** Radio operation: Upward station search. Pressed once during cassette operation: Forward title search. Pressed twice during cassette operation: Forward wind to end of tape. This button is pressed during forward spin, the cassette player assumes PLAY status.
- **Volume +:** Increases volume for as long as the button is pressed.
- **Volume -:** Decreases volume for as long as button is pressed.
- **Station search down:** In radio operation: Downward station search. Pressed once during cassette operation: Backward title search. Pressed twice during cassette operation: Rewind to start of tape. If this button is pressed during rewind, the cassette player assumes the PLAY status.
- **Radio/telephone switchover:** With this button, the search function is alternately switched between the radio and telephone. The relevant radio display (frequency and station) or the telephone display (telephone number or name) appears in the instrument cluster.

Telephone operation

A button block for telephone operation is provided on the left-hand side of the steering wheel. Description of buttons from top to bottom:

- **Search up:** Selection of next telephone display (telephone number or name). Display in instrument cluster.
- **Volume +:** Increases volume for as long as button is pressed. Only possible when "hands-free mode" is switched on.
- **Volume -:** Decreases volume for as long as button is pressed. Only possible when "hands-free mode" is switched on.
- **Search up:** Selection of previous telephone display (telephone number or name). Display in instrument cluster.
- **Radio/telephone switchover:** With this button, the search function is alternately switched between the radio and telephone. The relevant radio display (frequency or station) or the telephone display (telephone number or name) appears in the instrument cluster.
- **Hands-free mode:** Selection of telephone number displayed in the instrument cluster.

Recirculation air operation

The recirculation air button is located on the right or left button block depending on the MFL version. The recirculated air function is alternately switched on and off.

Defect code memory

The defect detection facility for the MFL control unit detects following defects and stores them as defect codes in the defect code memory:

- **Data interruption:** A defect code is stored in the defect code memory if an interruption occurs in the data link between the MFL operating unit and MFL control unit.
- **Buttons on right:** If the MFL control unit detects that both buttons of the right-hand rocker switch are depressed, this indicates a defect in the button unit and a corresponding defect code is stored in the defect code memory.
- **Buttons on left:** If the MFL control unit detects that both buttons of the left-hand rocker switch are depressed, this indicates a defect in the button unit and a corresponding defect code is stored in the defect code memory.
- **Short circuit in steering wheel supply voltage:** An impermissibly high current flows through the MFL steering wheel if the difference between the supply voltage of the MFL control unit and the supply voltage of the MFL operating unit is more than 3 V.
- **EEPROM write error:** A defect code is stored if a fault occurs when writing data in the non-volatile memory in the MFL control unit.