

Multifunction steering wheel 2nd generation (MFL II)

With the aid of the multifunction 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 control functions
- Steering wheel heater

In addition to a high degree of convenience, the multifunction steering wheel also offers the driver increased safety: The driver can activate the functions which can be controlled from the MFL without having to take his/her hands off the steering wheel and without being distracted from the traffic situation.

The response times to MFL functions are so fast that no delay in feedback is noticeable.

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

- MFL operating unit: A keypad for MFL functions is arranged both on the right and left next to the airbag unit.
- MFL control unit: The MFL control unit is integrated in the right-hand keypad. Radio, telephone, steering wheel heater or recirculated air control instructions received by the MFL operating unit are transferred via the information bus (I-bus) to the corresponding control units. The key signals for cruise control (Tempomat) operation are transferred to the Tempomat via a separate link.
- Contact unit: The power supply and I-bus link are connected to the MFL control unit by way of the coil spring.

Variants

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

Variants	Left keypad	Right keypad
1	Radio, telephone	Cruise control (Tempomat), recirculated air control
2	Radio, telephone	Cruise control (Tempomat), steering wheel heater
3	Radio	Cruise control (Tempomat), steering wheel heater
4	Radio	Cruise control (Tempomat), recirculated air control

Cruise control (Tempomat) operation

A keypad for cruise control operation is located on the right-hand side of the steering wheel. Description of operating keys 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 hitting this key. If pressed longer, the speed is increased until the key is released again.
- **Decelerate:** The speed is decreased by 1 km/h by briefly hitting this key. If pressed longer, the speed is decreased until the key is released again.
- **OFF:** Switching off cruise control (Tempomat) function.

Radio operation

A keypad for radio operation is located on the left-hand side of the steering wheel. Description of operating keys from top to bottom:

- **'Up' search:** Radio operation: Upward radio station search function. Pressed once during cassette operation: Forward track search. Pressed twice during cassette operation: Fast forward to end of tape. If this key is pressed during fast forward, the cassette drive switches over to PLAY.
- **Volume +:** Increase volume for as long as key is pressed.
- **Volume -:** Decrease volume for as long as key is pressed.
- **'Down' search:** Radio operation: Downward radio station search function. Pressed once during cassette operation: Backward track search. Pressed twice during cassette operation: Rewind to start of tape. If this key is pressed during rewind, the cassette drive switches over to PLAY.
- **Radio/telephone changeover:** With this key, the search functions are switched between the radio and telephone. The radio display (frequency or station) or the telephone display (telephone number or name) appear in the instrument cluster.

Telephone operation

A keypad for telephone operation is located on the left-hand side of the steering wheel. Description of operating keys from top to bottom:

- **'Up' search:** Selection of next telephone display (telephone number or name). Display in instrument cluster.
- **Volume +:** Increase volume for as long as key is pressed. Only possible if "hands-free" is switched on.
- **Volume -:** Decrease volume for as long as key is pressed. Only possible if "hands-free" is switched on.
- **'Up' search:** Selection of previous telephone display (telephone number or name). Display in instrument cluster.
- **Radio/telephone changeover:** With this key, the search functions are switched between the radio and telephone. The radio display (frequency or station) or the telephone display (telephone number or name) appear in the instrument cluster.
- **Hand-free operation:** Selection of telephone number displayed in instrument cluster.

Recirculated air control

The key for the recirculated air function is located on the right-hand keypad. The recirculated air function can be alternately switched on and off.

The recirculated air control button is not fitted if a steering wheel heater is installed.

Steering wheel heater

The steering wheel heater is ready for operation as of terminal 15. It is switched on by pressing the key once on the multifunction steering wheel. The steering wheel heater is switched off again by pressing the key a second time.

Temperature control

The steering wheel temperature is measured by a temperature sensor which is located on the heating element. The electronic control ensures the steering wheel heats up as fast as possible to the specified temperature of 36 °C. The heating capacity of the steering wheel is reduced just before reaching this temperature.

Once the set temperature has been reached, the steering wheel temperature is controlled by a pulse width modulated signal. When the steering wheel temperature is greater than the setpoint, the heating element is operated at 10% of its heating cycle. The steering wheel heater remains switched on and the control is still active.

The heating element and the switch-on monitor are switched off in the event of a break or short in the temperature sensor.

The steering wheel heating system is monitored. The monitoring functions checks whether the steering wheel heats up within the defined temperature limits. The steering wheel heater and function indicator are switched off if there is no temperature increase within this period of time.

Voltage characteristics

The steering wheel heating element is switched off in the event of undervoltage or overvoltage.

The heating element is switched off if the supply voltage at the switch drops below 11.6 V for 5 sec. The switch-on monitor in the switch remains active. The status of the steering wheel heating system is retained. The steering wheel heater is switched on again when the supply voltage increases to above 12.4 V for 5 sec.

The heating element is switched off if the supply voltage at the switch increases to above 16.5 V for 5 sec. The switch-on monitor in the switch remains active. The status of the steering wheel heating system is retained. The steering wheel heater is switched on again when the supply voltage drops below 15.5 V for 5 sec.