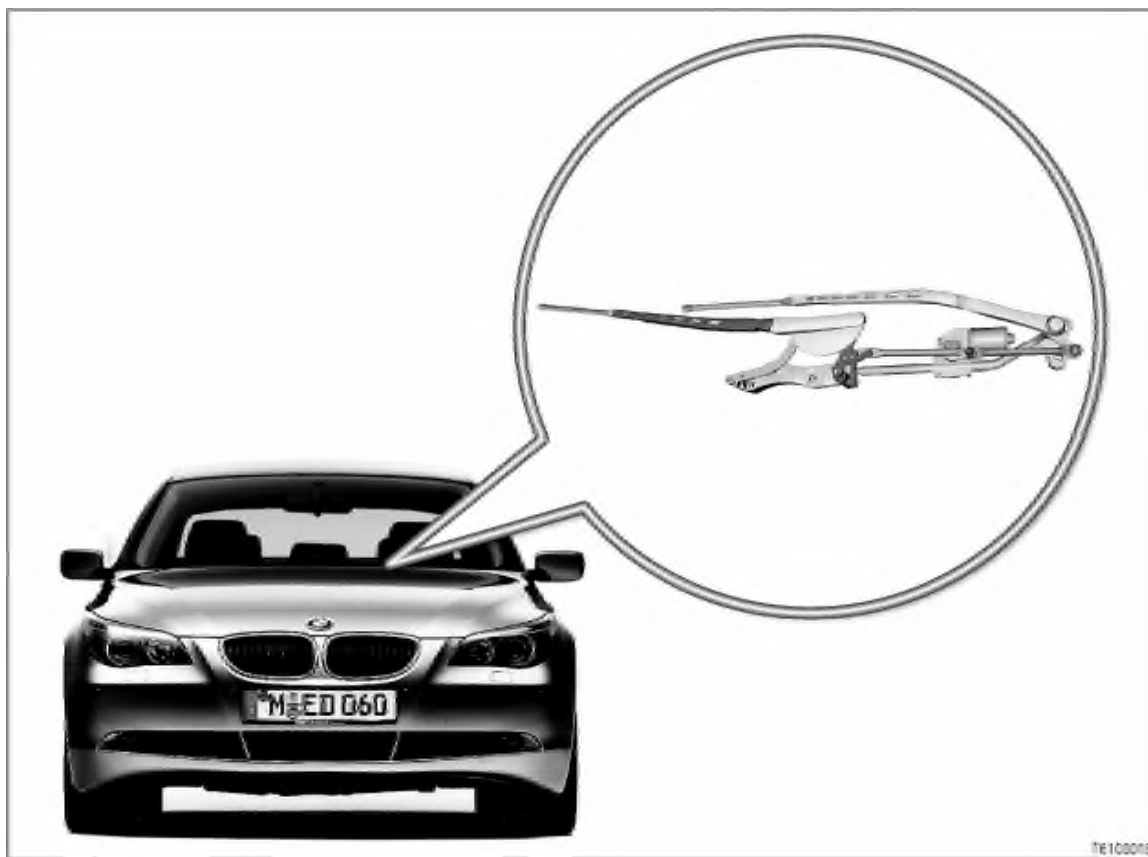


Wash/wipe system

E60, E61, E63, E64



Introduction

The wash/wipe functions are available once Terminal R status is ON.

The windscreen wipers are driven by an electric motor with a reducer gear.

The wiper blades have a new method of attachment to the windscreen-wiper arm.

The wash/wipe system no longer has ball-and-socket type washer jets. Instead, fan-type jets are used (fluidic jets).

The wash/wipe system is controlled by the body basic module (KBM). The washer-jet heater system is an exception, however, as it is controlled by the automatic heating and air-conditioning module (IHKA).

[System Overview ...]

The BMW 5 Series and BMW 6 Series are equipped with a rain-light sensor as standard. This makes automatic mode for the windscreen wiper generally possible.

A headlight cleaning system is offered as an option (option 502).

Option 502 is obligatory for: Option 522 Bi-xenon dipped/main-beam headlights in countries subject to an approval for Europe.

The Touring has a rear window wiper with a separate rear window washer pump as standard.

Brief description of components

The following components supply input signals required for operation of the wash/wipe system:

- Wiper switch

The wiper switch is operated by a brief press (as for the E65). The wiper switch does not lock into place.

The signal from the wiper switch is passed on by the steering-column switch cluster (SZL) to the Safety and gateway module (SGM). The SGM transmits the signal to the body basic module (KBM).

The axial switch on the end of the wiper switch is used to activate automatic mode (automatic control of wipers by rain/light sensor). When automatic mode is not active, intermittent wiper mode is controlled according to vehicle speed.

[more ...]

- **Rain/light sensor**

The rain/light sensor is integrated in the rear-view mirror pedestal attached to the windscreen. The rain/light sensor is a combined rain sensor and ambient-light sensor. It detects the amount of rain falling on the windscreen in order to control the windscreen wipers, and the level of ambient light in order to control the headlights. The rain sensor sends the "Switch on wipers" request to the body basic module (KBM) via the body CAN bus (K-CAN).

The following control units are involved in wash/wipe system functions:

- **Body, basic module**

The body basic module (KBM) controls the wash/wipe system (on the Touring this also includes the wash/wipe system for the rear window).

The body basic module is connected via the K-CAN, for instance, with the:

- Safety and gateway module (SGM)
- Rain-light sensor (RLS)
- Integrated automatic heating and air-conditioning system (IHKA)

[more ...]

- **Steering column switch cluster**

The steering-column switch cluster (SZL) forms the interface between the wiper switch and the Safety and gateway module (SGM). The signals are transmitted via the **byteflight** data bus.

- **Safety and gateway module**

The Safety and gateway module (SGM) forms the gateway between K-CAN and **byteflight**

- **Integrated automatic heating and air-conditioning system**

The integrated automatic heating and air-conditioning module (IHKA) controls the washer-jet heating system.

The following actuators are operated in order to perform wash/wipe system functions:

- **Wiper motor**

The wiper system is a twin-arm synchronous system with reciprocating action (four-bar linkage).

The wiper motor is a rotary motor without an electronic module.

The wiper motor is controlled by the body basic module (KBM) via a double relay.

The wiper motor's end position (off position) is detected by a reset contact integrated in the wiper motor.

The crank is permanently connected to the wiper motor.

Touring (E61):

The rear window wiper motor is mounted on the rear window.

The rear window wiper motor is controlled by the body basic module (KBM) via a relay.

The rear window wiper motor's end position (off position) is detected by a reset contact integrated in the wiper motor.

- **Windscreen and rear window washer pump (on the Touring)**

Both washer pumps are attached to the washer fluid reservoir. The washer pumps are controlled by the body basic module (KBM). The washer jets are not adjustable. The new-design washer jets (fluidic jets) produce a pulsating, fan-shaped jet of fluid.

- **Headlamp-washer pump**

The headlamp washer system is an optional extra (option 502).

For the option 502 the washer fluid reservoir holds 5 litres instead of 3 litres (basic version; the Touring reservoir always holds 5 litres).

The headlamp-washer pump is mounted on the washer-fluid reservoir. The washer pump is controlled by the body basic module (KBM) via a relay.

- **Heated washer jets**

The washer-jet heater system prevents the washer jets freezing in cold weather.

The washer-jet heater system is controlled by the IHKA module on the basis of outside temperature ($< 3\text{ }^{\circ}\text{C}$). The washer-jet heating system consists of heating resistors.

System functions

The wash/wipe system incorporates the following functions:

- Wiper functions
- Windscreen and rear window wash function (on the Touring)
- Headlight washer function
- Safety function

Wiper functions

The windscreen-wiper functions are available as soon as Terminal R status is ON.

The following wiper functions are provided (see also wiper switch system):

- Flick wipe
- Intermittent wipe
- Wiper speed 1
- wiper speed 2
- Automatic wipe controlled by rain-light sensor

For the Touring (E61):

The rear window is wiped intermittently (the customer can program the duration of the intervals, see Owner's Handbook).

No wiper operation is allowed when the rear window is open (via rear window contact switch).

When reverse gear is engaged intermittent operation switches to constant wiping.

Windscreen and rear window wash function (on the Touring)

The windscreen-washer functions are available as soon as Terminal R status is ON.

To operate the windscreen washer, the wiper switch is pulled backwards (towards driver).

Touring: To wash the rear window, the wiper switch must be pushed forwards (away from the driver) (speed 2).

The washer pump continues running as long as the switch is held in that position. If the wiper switch is operated only momentarily ($< 300\text{ ms}$), only the washer pump switches on. If the switch is held in position for longer, the wipers come into action after a short delay. After the washer pump has switched off, the wipers complete three more wipes to dry the windscreen.

Headlamp washer system (option 502)

When the dipped headlights are switched on, the headlamps are washed every 10th time the windscreen washer is operated.

After ignition ON and dipped beam headlights ON:

The headlamps are cleaned at the same time as the first wash movement for the windscreen.

Wash-cycle sequence:

- 0.7 seconds ON
- 1.3 seconds OFF
- 0.7 seconds ON

After the headlamps have been washed, they cannot be washed again for another 10 minutes (repeat lock).

The repeat lock is reset by Terminal R status OFF.

Safety function

The signal from the reset contact on the wiper motor (also the rear window wiper on the E61) is used as an anti-jamming function for the wiper motor. If the signal from the resetting switch is not present when the wiper motor is switched on, the wiper motor is switched off again.

The wiper motor can then only be switched on one more time.

After that, the wiper motor can only be switched on subject to the following conditions:

- 3 minutes have elapsed
- Terminal R OFF followed by Terminal R ON

The wiper motor can only be switched on by operating the wiper switch (not automatically due to risk of injury).

Once the anti-jamming function has been activated, the windscreen-washer and headlamp-washer pumps can be operated 3 more times.

Notes for service staff

Service staff should note the following points:

- General information:[more ...]
- Diagnostics: ---
- Encoding/programming: ---
- Car & Key Memory: ---

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