– This is not an automatic-shift system.
– The rider is the most important part of the system and decides when to shift gears.
– The sensor **1** on the gearshift shaft registers the gearshift request and triggers shift assistance.

» When riding at a steady speed in a low gear at high engine rpm, an attempt to shift gear without pulling the clutch can cause a severe load-change reaction.
– BMW Motorrad recommends disengaging the clutch for shifts in these circumstances.
– It is advisable to avoid using Gear Shift Assistant Pro at engine speeds close to the limits at which the governor cuts in to limit engine rpm.

» Shift assistance is not available in the following situations:
– With clutch lever pulled.
– Gearshift lever not in its initial position
– Upshifts with the throttle valve closed (engine overrun) and when slowing.
– Downshifts with throttle valve open and when accelerating.

• Once the gearshift has completed, the gearshift lever has to be fully released before another gearshift with the Pro can take place.
• For more information on Gear Shift Assistant Pro see the section headed "Engineering details" (➠ 182).

BRAKES

How can stopping distance be minimised?

Each time the brakes are applied, a load distribution shift takes place with the load shifting forward from the rear to the front wheel. The sharper the motorcycle decelerates, the more load is shifted to the front wheel. The higher the wheel load, the more braking force can be transmitted without the wheel locking.
To optimise stopping distance, apply the front brakes rapidly and keep on increasing the force you apply to the brake lever. This makes the best possible use of the dynamic increase in load at the front wheel. Remember to pull the clutch at the same time. In the "emergency braking situations" that are trained so frequently, braking force is applied as rapidly as possible and with the rider's full force applied to the

brake levers; under these circumstances the dynamic shift in load distribution cannot keep pace with the increase in deceleration and the tyres cannot transmit the full braking force to the surface of the road. BMW Motorrad Integral ABS Pro prevents the front wheel from locking up.

Emergency braking

If you brake sharply from a speed in excess of >50 km/h, the brake light flashes rapidly as a warning for road users behind you.

If you brake until your speed is less than <15 km/h, the hazard warning lights start to flash as well. The hazard warning lights switch off automatically as soon as you start to accelerate and vehicle speed reaches 20 km/h.

Descending mountain passes

WARNING

Braking mostly with the rear brake on mountain descents

Brake fade, destruction of the brakes due to overheating

- Use both front and rear brakes, and make use of the engine's braking effect as well.

Wet and dirty brakes

Wetness and dirt on the brake discs and the brake pads diminish braking efficiency. Delayed braking action or poor braking efficiency must be reckoned with in the following situations:

- Riding in the rain or through puddles of water.
- After the vehicle has been washed.
- Riding on salted or gritted roads.
- After work has been carried on the brakes, due to traces of oil or grease.
- Riding on dirt-covered surfaces or off-road.

WARNING

Wetness and dirt result in diminished braking efficiency

Risk of accident

- Apply the brakes lightly while riding to remove wetness and dirt, or dismount and clean the brakes.
- Think ahead and brake in good time until full braking efficiency is restored.

ABS Pro

Physical limits applicable to motorcycling

WARNING

Braking when cornering

Risk of crash despite ABS Pro

- Invariably, it remains the rider's responsibility to adapt riding style to riding conditions.
- Do not take risks that would negate the additional safety offered by this system.

ABS Pro and the assisting function of the Dynamic Brake Control are available in all riding modes except Enduro PRO.

Possibility of a fall not precluded

Although ABS Pro and Dynamic Brake Control provide the rider with valuable assistance and constitute a huge advance in safety for braking with the motorcycle banked for cornering, they cannot under any circumstances be considered as redefining the physical limits that apply to motorcycling. It is still possible for these limits to be overshot due to misjudgement or rider error. In extreme cases this can result in a crash.

Use on public roads

ABS Pro and Dynamic Brake Control help make the motorcycle even safer for riding on public roads. When the brakes are applied because of an unforeseen hazard when the motorcycle is banked for cornering, within the physical limits that apply to motorcycling the ABS Pro system prevents the wheels from locking and skidding away. In emergency braking, Dynamic Brake Control increases the braking effect and intervenes if the throttle grip is accidentally turned during braking.

ABS Pro was not developed to enhance individual braking performance with the motorcycle banked into corners.

PARKING YOUR MOTORCYCLE

Side stand

- Switch off the ignition. (➠ 65)

ATTENTION

Poor ground underneath the stand
Risk of damage to parts if vehicle topples
- Always check that the ground under the stand is level and firm.

ATTENTION

Additional weight placing strain on the side stand
Risk of damage to parts if vehicle topples
- Do not sit or lean on the vehicle while it is propped on the side stand.

- Extend the side stand and prop the motorcycle on the stand.
- Turn the handlebars all the way to left.
- On a gradient, the motorcycle should always face uphill; select 1st gear.

Centre stand

- Switch off the ignition. (➠ 65)

ATTENTION

Poor ground underneath the stand
Risk of damage to parts if vehicle topples
- Always check that the ground under the stand is level and firm.

ATTENTION

Centre stand retracts due to severe movements
Risk of damage to parts if vehicle topples
- Do not lean or sit on the vehicle with the centre stand extended.

- Extend the centre stand and lift the motorcycle on to the stand.
- On a gradient, the motorcycle should always face uphill; select 1st gear.

REFUELLING

Fuel grade

Requirement

For optimum fuel consumption, fuel should be sulphur-free or as low-sulphur as possible.

ATTENTION

Engine operation with leaded fuel

Damage to catalytic converter

- Do not attempt to run the vehicle on leaded fuel or fuel with metallic additives (e.g. manganese or iron).

- Observe the maximum ethanol content of the fuel.

Fuel additives clean the fuel injection system and the combustion zone. It is advisable to use fuel additives when the engine is operated with low-grade fuel or if the vehicle is to be out of use for a lengthy period of time. More information is available from your authorised BMW Motorrad retailer.

	Recommended fuel grade
E5 E10	Super unleaded (max 15 % ethanol, E10/E15) 95 ROZ/RON 90 AKI
	Alternative fuel grade
E5 E10	Normal unleaded (power- and consumption-related restrictions.) (max 15 % ethanol, E10/E15) 91 ROZ/RON 87 AKI

» Look for these symbols on the fuel filler cap and on the fuel pump:

E5

E10

» After refuelling with fuels of poor-quality, sporadic knocking noises may be perceptible.

Refuelling

WARNING

Fuel is highly flammable
Risk of fire and explosion
- Do not smoke. Never bring a naked flame near the fuel tank.

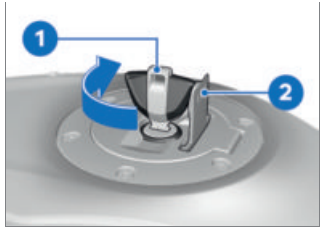
ATTENTION

Component damage
Component damage caused by overfilled fuel tank
- Overfilling the fuel tank will cause excess fuel to penetrate the carbon canister and cause component damage.
- Fill the fuel tank up to the lower edge of the filler neck only.

ATTENTION

Wetting of plastic surfaces by fuel
Damage to the surfaces (surfaces become unsightly or dull)
- Clean plastic surfaces immediately after contact with fuel.

- Make sure the ground is level and firm and place the motorcycle on its centre stand.



- Open the protective cap **2**.
- Unlock the cap of the fuel tank by turning vehicle key **1** clockwise in the lock and pop the cap open.

- Do not fill the tank past the bottom edge of the filler neck.

When refuelling after running on reserve, make sure that you top up the tank to a level above reserve, so that the new level is detected and the fuel reserve indicator light is switched off.

The "usable fuel capacity" specified in the technical data is the quantity that the

fuel tank could hold if refilled after it had been run dry and the engine had cut out due to a lack of fuel.

 Usable fuel capacity
approx. 20 l

 Reserve fuel
approx. 4 l

- Press the fuel tank cap down firmly to close.
- Remove the ignition key and close the protective cap.

Refuelling

–with Keyless Ride[OE]

Requirement

The steering lock is disengaged.

WARNING

Fuel is highly flammable

Risk of fire and explosion

- Do not smoke. Never bring a naked flame near the fuel tank.

WARNING

Escape of fuel due to heat-induced expansion if fuel tank is overfilled

Risk of falling

- Do not overfill the fuel tank.

ATTENTION

Wetting of plastic surfaces by fuel

Damage to the surfaces (surfaces become unsightly or dull)

- Clean plastic surfaces immediately after contact with fuel.

- Make sure the ground is level and firm and place the motorcycle on its centre stand.

–with Keyless Ride[OE]

- Switch off the ignition. (➠ 67)

The fuel filler cap can be opened within the defined waiting time after the ignition has been switched off, without the radio-operated key being within range.

 Waiting time for opening the fuel filler cap
2 min

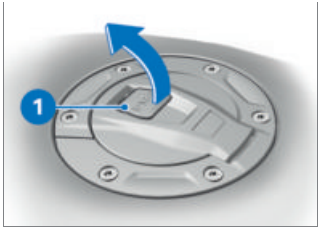
» There are **two variant ways** of opening the fuel filler cap:
– Within the waiting time.
– After the waiting time has expired.

Variant 1

– with Keyless Ride OE

Requirement

Within the waiting time



- Slowly pull tab **1** on the fuel filler cap up.
» Fuel filler cap unlocks.
- Fully open the fuel filler cap.

Variant 2

– with Keyless Ride OE

Requirement

After the waiting time has expired

- Bring the radio-operated key into range.
- Slowly pull tab **1** up.
» The indicator light for the radio-operated key flashes while the search for the radio-operated key is in progress.
- Slowly pull tab **1** on the fuel filler cap up again.
» Fuel filler cap unlocks.
- Fully open the fuel filler cap.

- Refuel with fuel of the grade stated above; do not fill the tank past the bottom edge of the filler neck.

When refuelling after running on reserve, make sure that you top up the tank to a level above reserve, so that the new level is detected and the fuel reserve indicator light is switched off.

The "usable fuel capacity" specified in the technical data is the quantity that the fuel tank could hold if refilled after it had been run dry and the engine had cut out due to a lack of fuel.

Usable fuel capacity
approx. 20 l

Reserve fuel
approx. 4 l

- Press down firmly on the filler cap of the fuel tank.

» The fuel filler cap engages with an audible click.

» The fuel filler cap locks automatically when the waiting time expires.

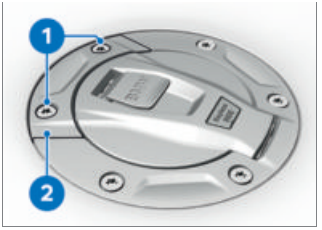
» The engaged fuel filler cap locks immediately when you secure the steering lock or switch on the ignition.

Opening fuel filler cap emergency release

–with Keyless Ride OE

Fuel filler cap cannot be opened.

- Have the fault rectified as quickly as possible by a specialist workshop, preferably an authorised BMW Motorrad retailer.



- Remove screws **1**.
- Remove emergency release **2**.

» Fuel filler cap unlocks.

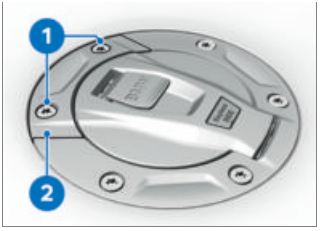
- Fully open the fuel filler cap.
- Refuel. (➠ 160)
- Close the fuel filler cap emergency release. (➠ 162)

Closing fuel filler cap emergency release

–with Keyless Ride OE

Requirement

Fuel filler cap is in closed position.



- Hold emergency release **2** in position.
- Install screws **1**.

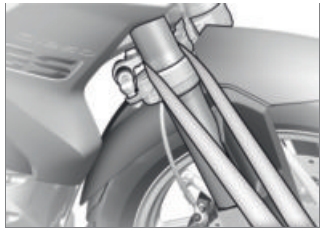
SECURING MOTORCYCLE FOR TRANSPORTATION

- Make sure that all components that might come into contact with straps used to secure the motorcycle are adequately protected against scratching. Use adhesive tape or soft cloths, for example, for this purpose.

ATTENTION

Vehicle topples to side when being lifted on to stand
Risk of damage to parts if vehicle topples
- Secure the vehicle to prevent it toppling, preferably with the assistance of a second person.

- Push the motorcycle on to the transportation flat and hold it in position: do not place it on the side stand or centre stand.



ATTENTION

Trapping of components
Component damage
- Do not trap components such as brake lines or cable legs.

- Pass the straps on left and right through the fork bridge and strap the motorcycle down.

- At the rear, secure the straps to the holders for the passenger footrests on both sides and tighten the straps.

- Tension all the straps uniformly to hold the vehicle securely.

ENGINEERING DETAILS

08

GENERAL NOTES

To find out more about engineering, go to **bmw-motorrad.com/technik**.

ANTILOCK BRAKE SYSTEM (ABS)

Partially integral brakes

Your motorcycle is equipped with partially integral brakes. Both front and rear brakes are applied when you pull the handbrake lever. The foot-brake lever acts only on the rear brake.

When actively intervening in the braking process, BMW Motorrad Integral ABS Pro adapts braking-force distribution between front and rear brakes to suit the load on the motorcycle.

ATTENTION

Attempted burn-out despite Integral braking function

Damage to rear brake and clutch

- Do not burn out tyres.

How does ABS work?

The amount of braking force that can be transferred to the road depends on factors that include the coefficient of friction of the road surface. Loose stones, ice and snow or a wet road all have much lower coefficients of friction than a clean and dry asphalt surface. The lower the coefficient of friction, the longer the braking distance. If the rider increases braking pressure to the extent that braking force exceeds the maximum transferable limit, the wheels start to lock and the vehicle loses its directional stability; a fall is imminent. Before this situation occurs the ABS will be activated and the brake pressure adapted to the maximally transferable braking force. The wheels continue to turn and the driving stability is retained irrespective of the road condition.

What are the effects of surface irregularities?

Humps and surface irregularities can cause the wheels to lose contact temporarily with the road surface; if this happens the braking force that can be transmitted to the road can drop to zero. If

the brakes are applied under these circumstances the ABS has to reduce braking force to ensure that directional stability is maintained when the wheels regain contact with the road surface. At this instant the BMW Motorrad Integral ABS Pro must assume an extremely low coefficient of friction (gravel, ice, snow), so that the wheels will continue to rotate under all imaginable circumstances, because this is the precondition for ensuring directional stability. As soon as is registers the actual circumstances, the system reacts instantly and adjusts braking force accordingly to achieve optimum braking.

What feedback does the rider receive from the BMW Motorrad Integral ABS Pro?

If the ABS system has to reduce braking force on account of the circumstances described above, vibration is perceptible through the handbrake lever. When the handbrake lever is pulled, brake pressure is also built up at the rear wheel by the integral function. If the brake pedal is depressed after the handbrake lever is pulled, the brake pressure built up beforehand is perceptible as counter-pressure sooner than is the case when the brake pedal is depressed either before or at the same time as the brake lever is pulled.

Rear wheel lift

Under very severe and sudden deceleration, however, under certain circumstances it is possible that the BMW Motorrad Integral ABS Pro will be unable to prevent the rear wheel from lifting clear of the ground. If this happens the outcome can be a highsiding situation in which the motorcycle can flip over.

WARNING

Rear wheel lift due to severe braking

Risk of falling

- When you brake sharply, bear in mind that ABS control cannot always be relied on to prevent the rear wheel from lifting clear of the ground.

What is the design baseline for BMW Motorrad Integral ABS Pro?

Within the limits imposed by physics, BMW Motorrad Integral ABS Pro ensures directional stability on any surface. The system is not optimised for special requirements that apply under extreme competitive conditions off-road or on the track. The driving behaviour should be adapted to actual driving skills and the road conditions.

Special situations

The speeds of the front and rear wheels are compared as one means of detecting a wheel's incipient tendency to lock. If the system registers implausible values for a lengthy period the ABS function is deactivated for safety reasons and an ABS fault message is issued. Self-diagnosis has to complete before fault messages can be issued.
In addition to problems with the BMW Motorrad ABS, exceptional riding conditions can also cause a fault message to be issued:

– Heating up with the motorcycle on the centre stand or an auxiliary stand, engine idling or with a gear engaged.
– Rear wheel locked by the engine brake for a lengthy period, for example while descending on a loose or slippery surface.

If a fault message is issued on account of exceptional riding conditions, you can reactivate the ABS function by switching the ignition off and on again.

What significance devolves on regular maintenance?

WARNING

Brake system not regularly serviced.
Risk of accident
- In order to ensure that the ABS is always maintained in optimum condition, it is essential for you to comply strictly with the specified inspection intervals.

Safety reserves

The potentially shorter braking distances which BMW Motorrad Integral ABS Pro permits must not be used as an excuse for careless riding. The system is

primarily a means of ensuring a safety margin in genuine emergencies.

WARNING

Braking when cornering
Risk of accident despite ABS
- Invariably, the rider bears responsibility for assessing road and traffic conditions and adopting his or her style of riding accordingly.
- Do not take risks that would negate the additional margin of safety offered by this system.

Evolution of ABS to ABS Pro

Until now, the BMW Motorrad ABS helped ensure a very high degree of safety for braking with the motorcycle upright and travelling in a straight line. Now ABS Pro offers enhanced safety for braking in corners as well. ABS Pro prevents the wheels from locking even under sharp braking. ABS Pro reduces abrupt changes in steering force, particularly in panic-braking situations, counteracting the vehicle's otherwise natural but undesirable tendency to straighten up.

ABS intervention

Technically speaking, depending on the riding situation ABS Pro adapts ABS intervention to the motorcycle's bank angle. Signals for rate of roll and rate of yaw and lateral acceleration are used to calculate bank angle.
As the motorcycle is heeled over more and more as it banks into a corner, an increasingly strict limit is imposed on the brake-pressure gradient for the start of brake application. This slows the build-up of brake pressure to a corresponding degree. Additionally, pressure modulation is more uniform across the range of ABS intervention.

Advantages for the rider

The advantages of ABS Pro for the rider are sensitive response and high braking and directional stability combined with best-case deceleration of the motorcycle, even when cornering.

DYNAMIC TRACTION CONTROL (DTC)

How does traction control work?

Traction control compares the front and rear wheel circumferential velocities. The differential is used to compute slip as a measure of the reserves of stability available at the rear wheel. If slip exceeds a certain limit, the electrical machine management system intervenes and adapts torque accordingly. Dynamic Traction Control (DTC) takes bank angle into consideration and on account of this additional bank-angle and acceleration data, its intervention is more precise and more comfortable for the rider.

BMW Motorrad DTC is designed as an assistant system for the rider and for use on public roads. The extent to which the rider affects DTC control can be considerable (weight shifts when cornering, items of luggage loose on the vehicle), especially when the style of riding takes rider and machine close to the limits imposed by physics.

Activate ENDURO riding mode for off-roading. This mode delays DTC intervention slightly in order to permit controlled drifting.

The system is not optimised for special requirements that apply under extreme competitive conditions off-road or on the track. The BMW Motorrad DTC can be deactivated in these cases.

WARNING

Risky riding

Risk of accident despite DTC

- Invariably, the rider bears responsibility for assessing road and traffic conditions and adopting his or her style of riding accordingly.
- Do not take risks that would negate the additional safety offered by this system.

Special situations

In accordance with the laws of physics, the ability to accelerate is restricted more and more as the angle of heel increases. Consequently, there can be a perceptible reduction in acceleration out of very tight bends.

If the electronic processor receives values for the bank angle that it considers implausible over a lengthy period, a dummy value is used for the bank angle or the DTC function is switched off. Under these circumstances the indicator for a DTC fault shows. Self-diagnosis has to complete before fault messages can be issued.
The BMW Motorrad Traction Control can shut down automatically under the exceptional riding conditions outlined below.

Exceptional riding conditions:

- Riding for a lengthy period with the front wheel lifted off the ground (wheelie).
- Rear wheel rotating with the vehicle held stationary by application of the front brake (burn-out).
- Heating up with the motorcycle on an auxiliary stand, in neutral or with a gear engaged.

If the front wheel lifts clear of the ground under severe acceleration, the DTC reduces engine torque in the RAIN and ROAD riding modes until the front wheel regains contact with the ground.
In the DTC settings DYNAMIC and ENDURO, front wheel lift-off detection allows short wheelies.
In the DTC settings DYNAMIC PRO and ENDURO PRO, front-wheel lift-off detection is switched off.
The ENDURO and ENDURO PRO riding modes are set up for off-road riding and are not suitable for on-road riding.
In ECO riding mode, the DTC setting corresponds to the ROAD riding mode.
in RAIN, ROAD, DYNAMIC, DYNAMIC PRO, ENDURO and ENDURO PRO riding modes, the DTC setting corresponds to the riding mode.
In DYNAMIC PRO and ENDURO PRO riding modes, DTC can be set up differently (➠ 86).
BMW Motorrad recommends turning the throttle grip back slightly when lifting the front wheel in order to reach a stable driving condition again as soon as possible.

When riding on a slippery surface, never snap the throttle twistgrip fully closed without pulling the clutch at the same time. Engine braking torque can cause the rear wheel to skid, with a corresponding loss of stability. The BMW Motorrad DTC is unable to control a situation of this nature. With dynamic engine brake control, this loss of stability can be prevented.

DYNAMIC ENGINE BRAKE CONTROL (MSR)

–with riding modes Pro[OE]

How does dynamic engine brake control work?

The purpose of dynamic engine brake control is to prevent the unstable riding states that can be produced by excessive engine braking moment acting on the rear wheel. Depending on the road condition and riding dynamic, excessive braking torque can produce a sharp rise in rear-wheel slip and impair directional stability. Dynamic engine brake control limits this slip at the rear wheel to a safe mode-dependent and bank-angle-dependent regulated slip.

Causes for excessive slip at the rear wheel:

–Riding with engine overrun on a surface with a low coefficient of friction (e.g. wet leaves).
–Rear-wheel hop when rider downshifts.
–Sharp braking during sporty riding.

In the same way as DTC traction control, dynamic engine brake control compares the wheel circumferential velocities of the front and rear wheels. Additional information on the bank angle enables dynamic engine brake control to calculate slip and the reserve of stability at the rear wheel.
If slip overshoots the applicable limit, the throttle valves are opened very slightly to increase engine torque. Slip is reduced and the vehicle is stabilised.

Effect of dynamic engine brake control

–In ECO, RAIN and ROAD riding modes: Maximum stability.
–In DYNAMIC and DYNAMIC PRO riding modes: High stability.
–In ENDURO riding mode: Minimum stability.

–in ENDURO PRO riding mode, dynamic engine brake control is inactive.

DYNAMIC ESA

–with Dynamic ESA[OE]

Riding position equaliser

Dynamic ESA is an electronic system that enables your motorcycle's suspension to adjust automatically to suit the load the vehicle is carrying. When spring preload is set to `Auto`, the rider does not have to adjust the suspension to suit the load.

When driving off and when riding, the system monitors the suspension on the rear wheel and corrects the spring preload in order to set the riding position correctly. The damping is also adjusted automatically to the load.

By interpreting ride height sensor signals, Dynamic ESA detects movements in the suspension and responds by adjusting the damper valves. This enables the suspension to adapt to the terrain.

Dynamic ESA calibrates itself at regular intervals to ensure the system functions correctly.

Possibilities for adjustment

Damping modes

–Road: Damping for comfortable on-road riding
–Dynamic: Damping for dynamic on-road riding
–Enduro: Damping for off-road riding

Load settings

–Auto: Active ride compensation with automatic adjustment of spring preload and damping
–Min: Minimum spring preload
–Max: Maximum spring preload (for off-road use)
–The Min and Max spring preloads can be selected by the rider but not changed. The ride compensation function is inactive in the Min and Max settings.

RIDING MODE

Selection

To adjust the motorcycle to the road condition and the desired driving experience, the following riding modes can be selected:

–ECO
–RAIN
–ROAD (default mode)

–with riding modes Pro OE
–ENDURO
–DYNAMIC
–ENDURO PRO
–DYNAMIC PRO

With the Riding modes Pro option installed, the ROAD, RAIN, ECO and ENDURO riding modes are activated by default. The other riding modes can be selected in the riding modes preselection. A maximum of four riding modes can be preselected at any given time.

For each of these riding modes, there is a matching setting for the DTC, ABS and MSR systems and for the engine characteristic.

–with Dynamic ESA OE
The adjustment of the Dynamic ESA also depends on the riding mode selected.

DTC can be switched off in each riding mode. The explanations below always refer to the dynamic safety systems that are switched on.

Throttle response

–In ECO riding mode: Very restrained
–In RAIN and ENDURO riding modes: Restrained
–In ROAD and ENDURO PRO riding modes: Optimum
–In DYNAMIC and DYNAMIC PRO riding modes: Direct
–In DYNAMIC PRO and ENDURO PRO riding modes, throttle response can be set up differently in SETUP (➠ 82).

ABS

Adjustment

–In ROAD, DYNAMIC, ENDURO and ENDURO PRO riding modes, the ABS setting corresponds to the individual riding mode.
–In ECO and RAIN riding modes, the ABS setting corresponds to the ROAD riding mode.
–In DYNAMIC PRO riding mode, the ABS setting corresponds to the DYNAMIC riding mode.
–In DYNAMIC PRO and ENDURO PRO riding modes, the ABS can be set up differently via SETUP (➠ 86).

Tuning setup

–In ECO, RAIN, ROAD, DYNAMIC and DYNAMIC PRO riding modes, the ABS is set up for on-road riding.

– In ENDURO riding mode, the ABS is set up for off-road riding with road tyres.
– In ENDURO PRO riding mode, there is no ABS control at the rear wheel when the foot-brake lever is operated. The ABS is set up for off-road riding with cleated tyres.

Rear-wheel lift-off detection

– In ECO, RAIN, ROAD and ENDURO riding modes, the rider has maximum assistance from rear-wheel lift-off detection.
– In DYNAMIC and DYNAMIC PRO riding modes, rear-wheel lift-off detection offers reduced assistance and allows slight lift-off of the rear wheel.
– Rear wheel lift-off detection is inactive in ENDURO PRO riding mode.

ABS Pro

– In ECO, RAIN and ROAD riding modes, ABS Pro is fully available.
– In DYNAMIC, DYNAMIC PRO and ENDURO riding modes, ABS Pro assistance is reduced by comparison with ECO, RAIN and ROAD riding modes.
– In the ABS setting DYNAMIC PRO, ABS Pro is not available.
– In the ABS setting ENDURO PRO, ABS Pro is not available. It can be switched on by changing to the ABS setting ENDURO.

DTC

Tyres

– In the DTC settings RAIN, ROAD and DYNAMIC, DTC is set up for on-road riding with road tyres.
– In the DTC setting ENDURO, DTC is set up for off-road riding with road tyres.
– In the DTC setting ENDURO PRO, DTC is set up for off-road riding with cleated tyres.

Riding stability

– In the DTC setting RAIN, DTC intervenes early enough to achieve maximum riding stability.
– In the DTC settings of the ECO and ROAD riding modes, DTC intervenes later than in RAIN riding mode. This prevents the rear wheel from spinning whenever possible.
– In the DTC settings ECO, RAIN and ROAD, the front wheel is prevented from lifting off.
– In the DTC setting DYNAMIC, DTC intervenes later than in the DTC setting ROAD, so

slight drift can be induced when exiting corners and brief wheelies are also possible.
– In the DTC setting ENDURO, DTC intervenes even later than in the other modes and the set-up is for off-road riding, so lengthy drifts and short wheelies when exiting corners are possible.
– In the DTC setting ENDURO PRO, DTC control assumes that the vehicle is being ridden off-road and is fitted with cleated tyres. Front wheel lift-off detection is switched off, so that wheelies of any length and angle are possible. In extreme cases, the vehicle can flip over backwards!

In RAIN, ROAD, DYNAMIC and ENDURO riding modes, the DTC setting corresponds to the riding mode.
In the ENDURO PRO and DYNAMIC PRO riding modes, DTC can be set up differently (➠ 86).

Mode changes

The riding mode can be changed while the vehicle is stationary with the ignition on. Under the following precondition, it is also possible to change modes while riding:
– No drive torque on the rear wheel.
– No brake pressure in the brake system.

The following steps must be taken to change the riding mode:
– Close the throttle twistgrip.
– Release the brake levers.
– Deactivate adaptive cruise control.

The desired riding mode is initially preselected. The mode change does not take place until the systems in question are all in the appropriate state. The selection menu does not disappear from the display until the mode change has taken place.

ECO mode

ShiftCam technology is the bridge-builder between ultra-high dynamism and maximum efficiency. The full-load cams allow full valve lift for maximum combustion-chamber charge

and high power, whereas the part-load cams considerably shorten the lift of the intake valves and open the valves to different extents. Charge-cycle losses are lessened by de-throttling, friction is reduced, the mixture is swirled more vigorously and combusted more effectively, fuel consumption goes down.
The ECO mode assists the rider with ECO indicator and engine characteristic (parametrisation of the electromotive throttle controller) to keep the engine in the operating range of the consumption-oriented part-load cam, so as to maximise the distance travelled with a given quantity of fuel.
The length of the green bar in the ECO indicator in the TFT display visualises whether the drive is operating in the consumption-optimised range of the part-load cam and the margin from the switch-over threshold to full-load cam operation. The length of the bar represents the load reserve left before the switch-over point for full-load cam operation is reached. The colour changes to grey when load requirement increases and the engine switches to the full-load cam. The reading shown by the ECO indicator varies depending on the gear selected by the rider, the load requirement input via the throttle grip, and engine rpm. Even outside the operating range of the part-load cam, when the bar is grey, the ECO offers benefits for an economical style of riding by reducing maximum available torque and peak power.

Because of the reduced acceleration ability in ECO mode, changing to a different riding mode is recommended prior to critical overtaking manoeuvres with the motorcycle heavily loaded or when riding two-up.

Rider can further reduce consumption by riding with fuel economy in mind (➠ 185).

DYNAMIC BRAKE CONTROL

–with riding modes Pro[OE]

How Dynamic Brake Control works

The Dynamic Brake Control function is active in all riding modes. It can be deactivated in the DYNAMIC PRO and ENDURO PRO

riding modes only, by custom parametrisation of the ABS.

The Dynamic Brake Control function assists the rider in emergency braking situations.

Detection of emergency braking

– Sudden, sharp application of the front brake is interpreted as emergency braking.

Behaviour in emergency braking

– If emergency braking occurs at a speed in excess of min 10 km/h, the ABS function is further assisted by Dynamic Brake Control.
– When partially integral braking at a high brake pressure gradient is initiated, Dynamic Brake Control increases the integral brake pressure at the rear wheel. The stopping distance shortens and controlled braking is possible.

Behaviour during accidental actuation of the throttle grip

– If the throttle is accidentally opened (throttle grip position > 5 %) during emergency braking, Dynamic Brake Control ensures the desired braking effect by ignoring actuation of the throttle grip. The effectiveness of emergency braking is ensured.
– If the throttle is closed (throttle grip position < 5 %) while Dynamic Brake Control is in action, the engine torque requested by the ABS brake system is restored.
– If emergency braking ceases and the rider still has not changed the position of the throttle grip, Dynamic Brake Control steadily ramps engine torque back to the rider's requested level.

TYRE PRESSURE CONTROL (RDC)

– with tyre pressure control (RDC) OE

Function

A sensor integrated into each tyre measures the air temperature and the air pressure inside the tyre and transmits this information to the control unit. The sensors are fitted with a centrifugal-force tripswitch which allows the measured values to be transmitted after the minimum speed is exceeded the first time.

 Minimum speed for transmission of the RDC measured values:
min 30 km/h

The display shows –– for each tyre until the tyre-pressure signal is received for the first time. The sensors continue to transmit the measured-value signals for some time after the vehicle comes to a stop.

 Transmission duration of the measured values after vehicle standstill:
min 15 min

An error message is issued if wheels without sensors are fitted to a vehicle equipped with an RDC control unit.

Tyre pressure ranges

The RDC control unit distinguishes between three tyre pressure ranges matched to the vehicle:

– Filling pressure within the permissible tolerance
– Filling pressure in the limit range of the permissible tolerance
– Filling pressure outside permitted tolerance

Temperature compensation

Tyre pressure is a temperature-sensitive variable: pressure increases as tyre-air temperature rises and decreases as tyre-air temperature drops. Tyre air temperature depends on ambient temperature as well as on the style of riding and the duration of the ride.

The tyre-pressure readings in the multifunction display are temperature-compensated and are always referenced to a tyre-air temperature of 20 °C.

The air lines available to the public in petrol stations and motorway service areas have gauges that do not compensate for temperature; the reading shown by a gauge of this nature is the temperature-dependent tyre-air pressure. As a result, the values displayed there usually do not correspond to the values displayed in the display.

Pressure adaptation

Compare the RDC value on the TFT display with the value in the table on the back cover of the Rider's Manual. Then use the air-line gauge at a service station to compensate for the difference between the RDC

reading and the value in the table.

 Example
According to the rider's manual, the tyre pressure should be the following value:
2.5 bar
The following display is shown in the TFT display:
2.3 bar
Missing:
0.2 bar
The tester on the filling station shows:
2.4 bar
The tyre pressure must be increased to the following value to reach the correct tyre pressure:
2.6 bar

GEAR SHIFT ASSISTANT

–with shift assistant Pro OE

Gear Shift Assistant Pro

Your vehicle is equipped with Gear Shift Assistant Pro, a system originally developed for racing and now adapted for the touring sector. It permits upshifts and downshifts without declutching or closing the throttle in virtually all load and rpm ranges.

Advantages

–70-80 % of all gearshifts on a trip can be done without using the clutch.
–Less relative movement between rider and passenger because the shift pauses are shorter.
–It is not necessary to close the throttle valve when shifting under acceleration.
–When braking and downshifting (throttle valve closed), engine speed is adjusted by blipping the throttle.
–Shift time is shorter than a gearshift with clutch actuation.

In order for the system to identify a request for a gearshift, the rider has to move the shift lever from its idle position in the desired direction against the force of the spring through a certain "overtravel" at ordinary speed or rapidly and keep the shift lever in this position until the gearshift is completed. It is not necessary to increase the force applied to the gearshift lever while shifting is in progress. Once the gearshift has completed

the shift lever has to be fully released before another gearshift with the Pro shift assistant can take place. When shifting gears with the Gear Shift Assistant Pro, the rider has to keep load state (throttle twistgrip position) constant before and during the gearshift. A change in the position of the throttle twistgrip during a gearshift can cause the function to abort and/or lead to a missed shift. Gear Shift Assistant Pro provides no assistance for the gearshift if the rider declutches.

Downshifting

– Downshifting is assisted until maximum rpm for the target gear to be selected is reached. This prevents overrevving.

 Maximum engine speed
max 9000 min^{-1}

Upshifting

– Upshifting is only possible when the current speed is higher than the respective release threshold of the next higher gear.
– This prevents the engine from dropping below idle speed.

 Idle speed
1050 min^{-1} (Engine at regular operating temperature)

 Release thresholds
1st gear
min 1350 min^{-1}
2nd gear
min 1400 min^{-1}
3rd gear
min 1450 min^{-1}
4th gear
min 1500 min^{-1}
5th gear
min 1550 min^{-1}
6th gear
min 1600 min^{-1}

HILL START CONTROL

Hill Start Control function

Hill Start Control is a pullaway assistant that operates on the partially integral ABS system to prevent the vehicle from rolling back on a gradient, without the rider having to keep pressure applied to the brake lever. When Hill Start Control is activated, pressure is built up in the rear brake system to keep the machine at a standstill on a gradient.

The brake pressure in the brake system is dependent on the gradient.

Effect of an incline on brake pressure and drive-off behaviour

– If the motorcycle is stopped on a gentle incline, only low brake pressure is built up. In this case, the brakes are quickly released when driving off. The motorcycle can be moved off more gently. It is not necessary to turn the throttle grip again.
– If the motorcycle is stopped on a steep incline, high brake pressure is built up. In this case, the brakes take longer to release when driving off. More torque is required for driving off which also requires the rider to turn the throttle grip again.

Behaviour when the motorcycle rolls or slips

– If the vehicle starts to roll while Hill Start Control is active, brake pressure is increased.
– If the rear wheel slips, the brake is released again after approx. 1 m. This prevents the vehicle slipping with a locked rear wheel, for example.

Brake release when engine is stopped or after time-out

Hill Start Control is deactivated if the rider stops the engine by hitting the emergency-off switch (kill switch) or when the side stand is extended, or after time-out (10 minutes).
In addition to the indicator and warning lights, the rider should be made aware that Hill Start Control has been deactivated by the following behaviour:

Brake warning jolt

– The brake is released briefly and reactivated immediately.
– This creates a jolt which the rider feels.
– The partial integral ABS brake system limits the speed of movement to approx. 1...2 km/h.
– The rider must brake the motorcycle manually.
– After two minutes, or when the brake is actuated, Hill Start Control is completely deactivated.

The holding pressure is released immediately without a brake warning jolt as

soon as the ignition is switched off.

SHIFTCAM

Functional principle of ShiftCam

The vehicle features BMW ShiftCam technology for varying valve timing and valve lift on the intake side. The heart of this technology is a one-piece shifting intake camshaft that has two lobes for each valve: a partial-load cam and a full-load cam. The partial-load cam is fine-tuned for consumption optimisation and engine smoothness. As well as adapting valve timing, the partial-load cam also reduces intake-valve lift. With the partial-load cams activated, moreover, the lobes for the cylinder's left and right intake valves produce staggered valve lift and offset angles of rotation. Consequently the two intake valves open at very slightly different times and the distance to which they open also differs. The advantage: The fuel/air mixture flowing into the combustion chamber is swirled more thoroughly and combusted effectively - so all in all the fuel is utilised more efficiently and engine operation is perceptibly smoother. The full-load cam is designed for optimised engine power and it maximises intake valve lift. The intake camshaft is shifted axially to vary valve timing and valve lift. The pins of an electromechanical actuator engage a shift gate on the intake camshaft. This permits load-dependent and speed-dependent actuation of the intake valves and, consequently, a no-compromises combination of performance and low fuel consumption.

ADAPTIVE HEADLIGHT

–with adaptive head light OE

How does the adaptive cornering headlight work?

The low-beam unit installed as standard in the headlight consists of two reflectors that produce a low beam from an LED light source. Ride height sensors on front and rear suspension supply data for permanent beam throw adjustment. While the motorcycle is moving straight ahead, pitch compensation keeps the throw of the headlight beam constantly in the optimum, preset range, regardless of

ride and load state. With the Adaptive headlight function, the low-beam unit is additionally rotated about an axis to a degree that varies with the bank angle, compensating for the vehicle's angle of lean. The angle of rotation is 70° (± 35°). Along with pitch compensation, therefore, the throw of the low-beam headlight also compensates for the rider's chosen bank angle through corners. The two movements are superimposed, so as the motorcycle is steered through a bend the headlight beam is directed into the bend for better illumination of the road ahead. The results are considerably better illumination of the road ahead when the vehicle corners, and a huge increase in active riding safety.

MAINTENANCE

09

GENERAL NOTES

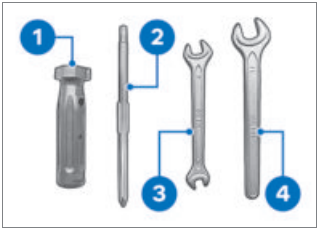
The Maintenance chapter describes straightforward procedures for checking and replacing certain wear parts.
Special tightening torques are listed as applicable. The tightening torques for the threaded fasteners on your vehicle are listed in the section entitled "Technical data".

Microencapsulated screws

The microencapsulation is a chemical thread-locker. An adhesive compound creates a secure connection between bolt and nut or between screw and component. Consequently, microencapsulated screws are for once-only use and are not intended for re-installation after being slackened.
After removal of the screw, clean the internal thread to remove all traces of thread-locking compound. Always use new microencapsulated screws when re-assembling. Consequently, prior to disassembly make sure that you have suitable tools for cleaning the threads and a new replacement for each screw to be removed. If the job is not done correctly there is no guarantee that the screw will remain secure, which means that you would be putting yourself at risk!

Some of the work calls for special tools and a thorough knowledge of the technology involved. If you are in doubt, consult a specialist workshop, preferably your authorised BMW Motorrad retailer.

TOOLKIT



1 Screwdriver handle
–Use with screwdriver insert
–Topping up the engine oil. (➠ 193)

2 Reversible screwdriver blade
Phillips PH1 and Torx T25
–Remove the battery cover. (➠ 217)

3 Open-ended spanner Width across flats 8/ 10 mm
–Removing battery (➠ 217).

4 Open-ended spanner Width across flats 14 mm
–Adjust the mirror arm. (➠ 126)

FRONT-WHEEL STAND

Installing front-wheel stand

ATTENTION

Use of the BMW Motorrad front-wheel stand without accompanying use of centre stand or auxiliary stand
Risk of damage to parts if vehicle topples
- Place the motorcycle on its centre stand or another auxiliary stand before lifting the front wheel with the BMW Motorrad front-wheel stand.

- Make sure the motorcycle is standing firmly.
- Make sure the ground is level and firm and place the motorcycle on its centre stand.

- See the instructions issued with the front-wheel stand for the details of the correct procedure for installation.
- BMW Motorrad offers an auxiliary stand suitable for every vehicle. Your BMW Motorrad retailer will be happy to help you with the selection of a suitable auxiliary stand.

ENGINE OIL

Checking engine oil level

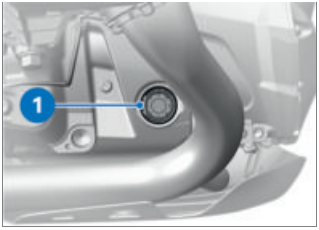
- Make sure the ground is level and firm and with the engine at operating temperature, place the motorcycle on the centre stand.

ATTENTION

Misinterpretation of oil level reading, because oil level is temperature-dependent (the higher the temperature, the higher the oil level)
Engine damage
- Check the oil level only after a lengthy ride or when the engine is at operating temperature.

- Allow the engine to idle until the fan cuts in.
- Switch off the engine when it is at operating temperature.
- Wait five minutes for the oil to drain into the oil pan.

As a contribution to reducing environmental impact, BMW Motorrad recommends checking the engine oil on occasion after a trip of min 50 km.



ATTENTION

Vehicle toppling sideways
Risk of damage to parts if vehicle topples
- Secure the vehicle, preferably with the assistance of a second person, so that it cannot topple sideways.

- Check the oil level in the display **1**.

	Engine oil, specified level
Between **MIN** and **MAX** marks	

If the oil level is below the **MIN** mark:

- Topping up the engine oil. (➠ 193)

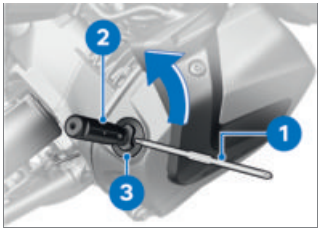
If the oil level is above the **MAX** mark:

- Have the oil level corrected by a specialist workshop, preferably an authorised BMW Motorrad retailer.

Topping up engine oil

- Make sure the ground is level and firm and place the motorcycle on its stand.
- Checking engine oil level

Incorrect interpretation of the oil capacity is possible because the oil level is temperature-dependent.



- Wipe the area around the oil filler opening clean.
- Insert Torx end of reversible screwdriver insert **1** into screwdriver handle **2** (toolkit) for additional leverage.
- Engage this tool in cap **3** of the oil filler opening and turn anti-clockwise to remove.
- Check the engine oil level. (➠ 191)

ATTENTION

Use of insufficient engine oil or too much engine oil
Engine damage
- Always make sure that the oil level is correct.

- Top up the engine oil to the specified level.

Engine oil, quantity for topping up
max 0.8 l (Difference between **MIN** and **MAX**)

- Check the engine oil level. (➠ 191)
- Install cap **3** of the oil filler opening.

BRAKE SYSTEM

Check operation of the brakes

- Pull the handbrake lever.
» The pressure point must be clearly perceptible.
- Press the footbrake lever.
» The pressure point must be clearly perceptible.

If pressure points are not clearly perceptible:

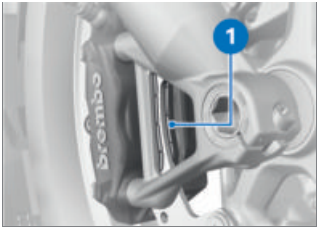
ATTENTION

Work on brake system not in compliance with correct procedure
Risk to operational reliability of the brake system
- Have all work on the brake system undertaken by trained and qualified specialists.

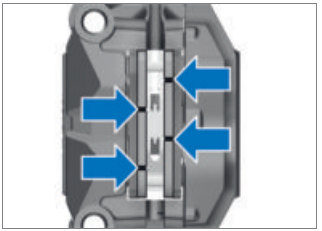
- Have the brakes checked by a specialist workshop, preferably an authorised BMW Motorrad retailer.

Checking brake pad thickness, front brakes

- Make sure the ground is level and firm and place the motorcycle on its stand.



- Visually inspect the left and right brake pads to ascertain their thickness. Viewing direction: Between wheel and front suspension toward brake pads **1**.



Brake-pad wear limit, front	
1.0 mm (Friction pad only, without backing plate. The wear indicators (grooves) must be clearly visible.)	

If the wear indicating marks are no longer clearly visible:

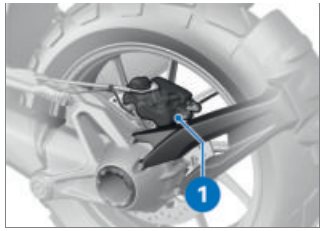
WARNING

Brake-pad thickness less than permissible minimum
Diminished braking effect, damage to the brakes
- In order to ensure the dependability of the brake system, do not permit the brake pads to wear past the minimum permissible thickness.

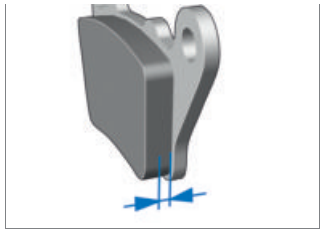
- Have the brake pads replaced by a specialist workshop, preferably an authorised BMW Motorrad retailer.

Checking brake pad thickness, rear brakes

- Make sure the ground is level and firm and place the motorcycle on its stand.



- Visually inspect the brake pads to ascertain their thickness. Viewing direction: Between spray guard and rear wheel toward brake pads **1**.



	Brake-pad wear limit, rear
1.0 mm (Friction pad only, without backing plate.)	

If the wear limit has been reached:

WARNING

Brake-pad thickness less than permissible minimum
Diminished braking effect, damage to the brakes
- In order to ensure the dependability of the brake system, do not permit the brake pads to wear past the minimum permissible thickness.

- Have the brake pads replaced by a specialist workshop, preferably an authorised BMW Motorrad retailer.

Checking brake-fluid level, front brakes

WARNING

Not enough brake fluid in brake fluid reservoir, or contaminants in brake fluid
Considerably reduced braking power due to presence of air, contaminants or water in the brake system
- Cease operation of the vehicle immediately and do not ride it until the fault has been rectified.
- Check the brake-fluid levels at regular intervals.
- Always make sure that the lid of the brake fluid reservoir and the area around the lid are cleaned before opening.
- Make sure that only fresh brake fluid from a sealed container is used.

- Make sure the ground is level and firm and place the motorcycle on its centre stand.
- Move the handlebars to the straight-ahead position.

- Check the brake fluid level in brake fluid reservoir for front wheel brake **1**.

Wear of the brake pads causes the brake fluid level in the reservoir to sink.

Brake fluid level, front
Brake fluid, DOT4
The brake fluid level may not drop below the **MIN** mark. (Brake-fluid reservoir horizontal, motorcycle upright)

If the brake fluid level drops below the permitted level:

- Have the fault rectified as quickly as possible by a specialist workshop, preferably an authorised BMW Motorrad retailer.

Checking brake-fluid level, rear brakes

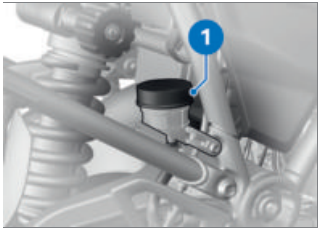
WARNING

Not enough brake fluid in brake fluid reservoir, or contaminants in brake fluid

Considerably reduced braking power due to presence of air, contaminants or water in the brake system

- Cease operation of the vehicle immediately and do not ride it until the fault has been rectified.
- Check the brake-fluid levels at regular intervals.
- Always make sure that the lid of the brake fluid reservoir and the area around the lid are cleaned before opening.
- Make sure that only fresh brake fluid from a sealed container is used.

- Make sure the ground is level and firm and place the motorcycle on its centre stand.



- Check the brake fluid level in brake fluid reservoir for rear wheel brake **1**.

Wear of the brake pads causes the brake fluid level in the reservoir to sink.

Brake fluid level, rear
Brake fluid, DOT4
The brake fluid level may not drop below the **MIN** mark. (Brake-fluid reservoir horizontal, motorcycle upright)

If the brake fluid level drops below the permitted level:

- Have the fault rectified as quickly as possible by a specialist workshop, preferably an authorised BMW Motorrad retailer.

CLUTCH

Checking operation of the clutch

- Pull the clutch lever.

» The pressure point must be clearly perceptible.

If the pressure point is not clearly perceptible:

- Have the clutch checked by a specialist workshop, preferably an authorised BMW Motorrad retailer.

COOLANT

Check the coolant level

- Make sure the ground is level and firm and place the motorcycle on its stand.
- Allow the engine to cool down.

- Check the coolant level in expansion tank **1**.

	Coolant, specified level
between **MIN** and **MAX** mark on the expansion tank (Engine cold)	

If the coolant drops below the permitted level:

- Top up the coolant. (➠ 199)

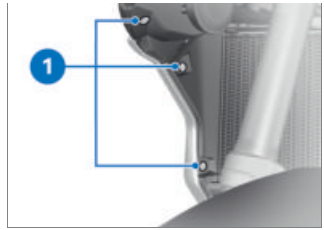
Topping up coolant

WARNING

Opening radiator cap

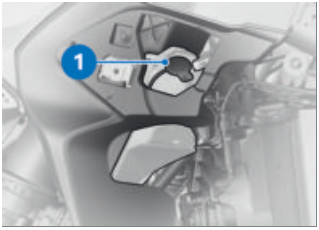
Risk of burning

- Do not open the radiator cap when the system is hot.
- Check and, if necessary, top up the coolant in the expansion tank only.



- Remove screws **1**.

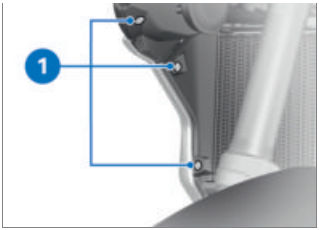
- Remove screws **1**.
- Pull and remove side trim panel **2** from the clamp **3**.



- Open cap **1**.
- Top up coolant to specified level.
- Check the coolant level. (➠ 198)
- Close the cap of the expansion tank.

- Insert side panel **1** into slots **2**.
- Engage clamp **3**.

- Install screws **1**.



- Install screws **1**.

TYRES

Check the tyre pressures

WARNING

Incorrect tyre pressure
Impaired handling characteristics of the motorcycle, shorter useful tyre life
- Always check that the tyre pressures are correct.

WARNING

Tendency of valve inserts installed vertically to open by themselves at high riding speeds

Sudden loss of tyre pressure

- Install valve caps fitted with rubber sealing rings and tighten firmly.

- Make sure the ground is level and firm and place the motorcycle on its stand.
- Check tyre pressures against the data below.

 Tyre pressure, front
2.5 bar (Tyre cold)

 Tyre pressure, rear
2.9 bar (Tyre cold)

If tyre pressure is too low:

- Correct tyre pressure.

Tyre pressures can be determined with tyre pressure control (RDC). The tyre-pressure readings shown in the instrument cluster are temperature-compensated and are always referenced to a tyre air temperature of 20 °C. The gauges on forecourt air lines do not compensate for temperature. Consequently, the values they show do not usually tally with the pressure readings shown by the TFT display.

Check the tyre tread depth

WARNING

Riding with badly worn tyres

Risk of accident due to impaired handling

- If applicable, have the tyres changed in good time before they wear to the minimum tread depth permitted by law.

- Make sure the ground is level and firm and place the motorcycle on its stand.
- Measure the tyre tread depth in the main tread grooves with wear marks.

Wear indicators are built into the main profile grooves on each tyre. The tyre is worn out when the tyre tread has worn down to the level of the marks. The locations of the marks are indicated on the edge of the tyre, e.g. by the letters TI, TWI or by an arrow.

If the tyre tread is worn to minimum:
- Replace tyre or tyres, as applicable.

WHEEL RIMS

Checking rims

- Make sure the ground is level and firm and place the motorcycle on its stand.
- Visually inspect the rims for defects.
- Have damaged rims checked and, if necessary, replaced by a specialist workshop, preferably an authorised BMW Motorrad retailer.

Check the spokes

–with cross-spoked wheels OE
or
–with cross-spoked wheels II OE

- Make sure the ground is level and firm and place the motorcycle on its stand.
- Draw the handle of a screwdriver or a similar instrument across the spokes and listen to the sequence of sounds made by the individual spokes.

If there is a variation in the sequence of sounds:
- Have the spokes checked by a specialist workshop, preferably an authorised BMW Motorrad retailer.

WHEELS

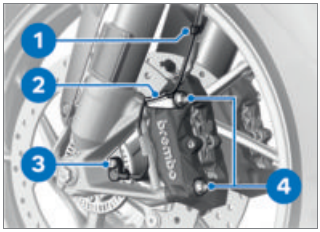
Effect of wheel size on chassis and suspension control systems

Wheel size is very important as a parameter for the ABS running-gear control system. In particular, the diameter and the width of a vehicle's wheels are programmed into the control unit and are fundamental to all calculations. Any change in these influencing variables, caused for example by a switch to wheels other than those installed ex-works, can have serious effects on the performance of the control systems.
The sensor rings are essential for correct road-speed calculation, and they too must match the motorcycle's control systems and consequently cannot be changed.
If you decide that you would like to fit non-standard wheels to your motorcycle, it is very important to consult a specialist workshop

beforehand, preferably an authorised BMW Motorrad retailer. In some cases, the data programmed into the control units can be changed to suit the new wheel sizes.

Removing front wheel

- Make sure the ground is level and firm and place the motorcycle on its centre stand.



- Disengage the cable for the wheel speed sensor from holding clips **1** and **2**.
- Remove screw **3** and remove the wheel speed sensor from its bore.
- Mask off the parts of the wheel rim that could be scratched in the process of removing the brake calipers.

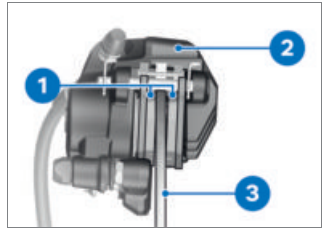
ATTENTION

Unwanted inward movement of the brake pads

Component damage on attempt to install the brake caliper or because brake pads have to be forced apart

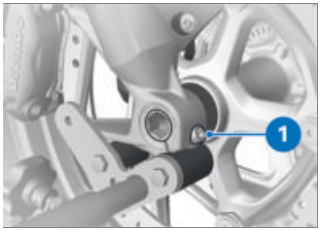
- Do not operate the brakes with a brake caliper not correctly secured.

- Remove mounting bolts **4** of the left and right brake calipers.

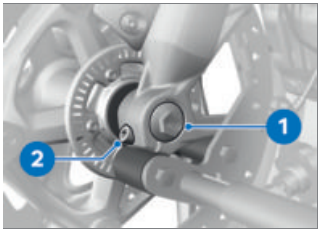


- Force brake pads **1** slightly apart by rocking brake caliper **2** back and forth against brake disc **3**.
- Carefully pull the brake calipers back and out until clear of the brake discs.

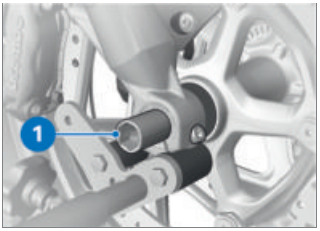
- Lift the front of the motorcycle until the front wheel is clear of the ground, preferably using a BMW Motorrad front-wheel stand.
- Installing front-wheel stand (➠ 191)



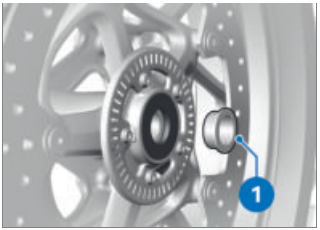
- Undo right axle clamping screw **1**.



- Remove screw **1**.
- Undo left axle clamping screw **2**.
- Press quick-release axle slightly toward the inside, so as to be better able to grip it on the right-hand side.



- Withdraw quick-release axle **1**, support the front wheel when doing this.
- Set down front wheel and roll forwards out of the front suspension.



- Remove spacer bushing **1** from the wheel hub.

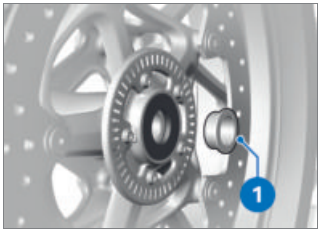
Installing front wheel

WARNING

Use of a non-standard wheel
Malfunctions in operation of ABS and DTC
- See the information on the effect of wheel size on the ABS and DTC systems at the start of this chapter.

ATTENTION

Tightening threaded fasteners to incorrect tightening torque
Damage, or threaded fasteners work loose
- Always have the security of the fasteners checked by a specialist workshop, preferably an authorised BMW Motorrad dealer.



- Lubricate the friction face of spacer bushing **1**.

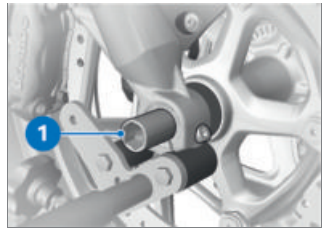
Lubricant
Optimoly TA

- Insert spacer bushing **1** into the wheel hub on the left-hand side.

ATTENTION

Front wheel installed wrong way round
Risk of accident
- Note direction-of-rotation arrows on tyre or rim.

- Roll the front wheel into position between the forks of the front suspension.

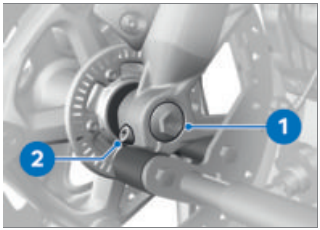


- Lubricate quick-release axle **1**.

Lubricant
Optimoly TA

- Lift the front wheel slightly and install quick-release axle **1**.

- Remove front-wheel stand and firmly compress front forks several times. Do not operate the handbrake lever in this process.
- Installing front-wheel stand (➠ 191)

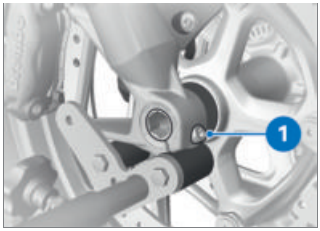


- Install screw **1** and tighten to specified torque. In this process, counter-hold the quick-release axle on the right side.

Quick-release axle in telescopic forks
M12 x 20
30 Nm

- Tighten left axle clamping screw **2** to specified torque.

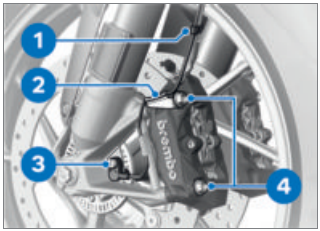
Clamping screw for quick-release axle in telescopic fork
M8 x 35
19 Nm



- Tighten right axle clamping screw **1** to specified torque.

Clamping screw for quick-release axle in telescopic fork
M8 x 35
19 Nm

- Remove the front-wheel stand.
- Position left and right brake calipers on the brake discs.



- Install securing screws **4** on left and right and tighten to specified tightening torque.

Radial brake caliper on telescopic forks
M10 x 65
38 Nm

- Remove the adhesive tape from the wheel rim.

WARNING

Brake pads not lying against the brake disc
Risk of accident due to delayed braking effect.
- Before driving, check that the brakes respond without delay.

- Operate the brake several times until the brake pads are bedded.
- Insert the cable for the wheel speed sensor into holding clips **1** and **2**.
- Insert the wheel speed sensor into the bore hole and install screw **3**.

Wheel-speed sensor to fork leg
M6 x 16
Joining compound: Micro-encapsulated
8 Nm

Removing rear wheel
- Make sure the ground is level and firm and place the motorcycle on its centre stand.
- Engage first gear.

CAUTION

Hot exhaust system
Risk of burn injury
- Do not touch a hot exhaust system.

- Allow rear silencer to cool down.

- Remove bolts **1** from the rear wheel, while supporting the wheel.
- Roll the rear wheel out toward the rear.

Installing rear wheel

WARNING

Use of a non-standard wheel
Malfunctions in operation of ABS and DTC
- See the information on the effect of wheel size on the ABS and DTC systems at the start of this chapter.

ATTENTION

Tightening threaded fasteners to incorrect tightening torque
Damage, or threaded fasteners work loose
- Always have the security of the fasteners checked by a specialist workshop, preferably an authorised BMW Motorrad dealer.

- Seat the rear wheel on the rear-wheel adapter.

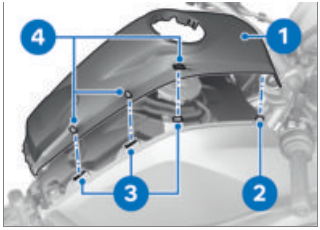
- Install wheel bolts **1** and tighten to specified torque.

Rear wheel to wheel flange
Tightening sequence: tighten in diagonally opposite sequence
M10 x 1.25 x 40
60 Nm

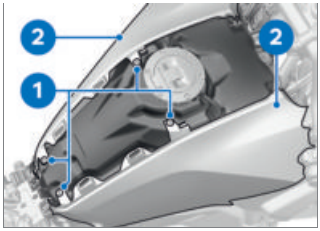
AIR FILTER

Removing air filter element

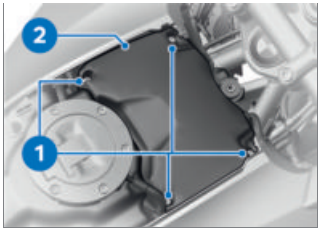
- Remove the front seat. (➠ 135)
- Remove screws **1**, **2** and **3**.



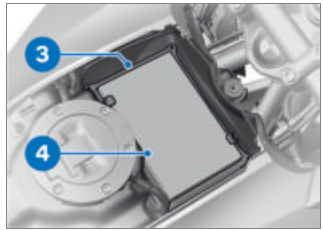
- When removing, note retaining lugs **2** and disengage holders **4** from retaining lugs **3**.
- Remove centre trim panel **1**.



- Remove screws **1**.
- Undo cover **2** on both sides.



- Remove screws **1**.
- Remove air filter cover **2**.



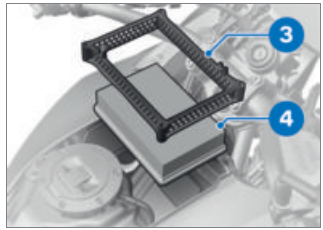
- Remove frame **3**.
- Remove air filter insert **4**.

Check air-filter element

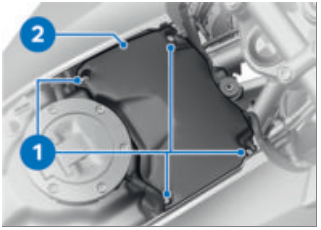
- Check the air filter element, clean as necessary.

» Replace the air-filter element if it is badly dirtied.

Installing air filter element

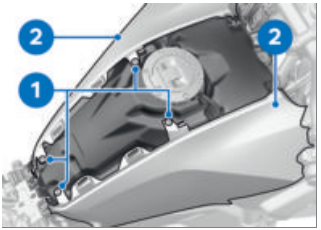


- Insert air filter element **4** and frame **3**.

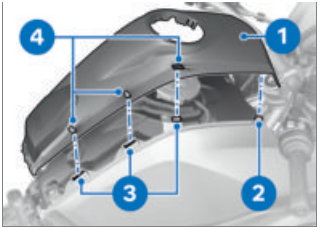


- Place air filter cover **2** in position.
- Install screws **1**.

	Air filter cover to intake air silencer
Tightening sequence: in diagonally opposite sequence	
M5 x 50	
3 Nm	



- Position cover **2** on both sides.
- Install screws (short collar) **1**.



- When installing, note retaining lugs **2** and make sure that holders **4** engage in retaining lugs **3**.
- Install tank cover **1**.

- Install screw **1**.

	Centre tank cover on frame
M6 x 24,5	
8 Nm	

- Install screws (short collar) **2**.
- Install screws (without collar) **3**.
- Install the rider's seat. (➠ 137)

LIGHTING

Replacing LED light sources

–without control for headlight OE

WARNING

Vehicle overlooked in traffic due to failure of the lights on the vehicle

Safety risk

- Always replace a faulty bulb at the earliest possible opportunity. Consult a specialist workshop, preferably an authorised BMW Motorrad Retailer.

All light sources of the vehicle are LED light sources. The service life of the LED light sources is longer than the presumed vehicle service life. If an LED light source is faulty contact a specialist workshop, preferably an authorised BMW Motorrad retailer.

Replacing bulb for low-beam and high-beam headlight

–with control for headlight OE

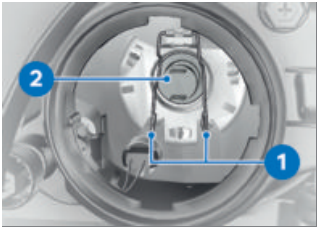
- Make sure the ground is level and firm and place the motorcycle on its stand.
- Switch off the ignition.

The arrangements of the connectors and the light sources may differ from the following figures.

- Remove cover **1** by turning it counter-clockwise to replace the bulb for the low-beam headlight.

- Remove cover **1** by turning it counter-clockwise to replace the bulb for the high-beam headlight.

- Disconnect connector **1**.

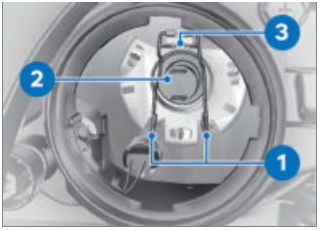


- Disengage spring clips **1** and swing them aside.
- Remove bulb **2**.
- Replace the defective bulb.

Bulbs for the low-beam headlight
–without control for headlight OE
LED◁
–with control for headlight OE
H7 / 12 V / 55 W◁

Bulb for high-beam headlight
–without control for headlight OE
LED◁
–with control for headlight OE
H7 / 12 V / 55 W◁

- Hold the bulb by the base only, in order to keep the glass free of foreign matter.



- Insert bulb **2**, making sure that tab **3** is correctly positioned.

The bulb might face in a direction other than that shown here.

- Engage spring clips **1**.

- Connect connector **1**.
- Place cover in position and fit by turning clockwise.◁

Replacing bulb for side light

–with control for headlight OE

- Make sure the ground is level and firm and place the motorcycle on its stand.
- Switch off the ignition.

- Turn cover **1** counter-clockwise to remove.

- Pull socket **1** out of the headlight housing.

- Remove bulb **1** from the socket.
- Replace the defective bulb.

Bulb for parking light
–without control for headlight OE
LED◁
–with control for headlight OE
W5W / 12 V / 5 W◁

- Use a clean, dry cloth to hold the bulb in order to keep the glass free of foreign matter.

- Insert bulb **1** into the socket.

- Install socket **1** in the headlight housing.
- Place cover in position and fit by turning clockwise.◁

JUMP-STARTING

CAUTION

Touching live parts of the ignition system when the engine is running
Electric shock
- Do not touch parts of the ignition system when the engine is running.

ATTENTION

Excessive current flowing when the motorcycle is jump-started
Wiring smoulders/ignites or damage to the on-board electronics
- If the motorcycle has to be jump-started connect the leads to the battery terminals; never attempt to jump-start the engine by connecting leads to the on-board socket.

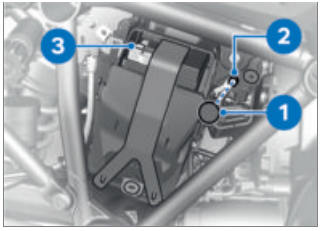
ATTENTION

Contact between crocodile clips of jump leads and vehicle
Risk of short-circuit
- Use jump leads fitted with fully insulated crocodile clips at both ends.

ATTENTION

Jump-starting with a voltage greater than 12 V
Damage to the on-board electronics
- Make sure that the battery of the donor vehicle has a voltage rating of 12 V.

- Make sure the ground is level and firm and place the motorcycle on its stand.
- Remove the battery cover. (➠ 217)
- When jump-starting the engine, do not disconnect the battery from the on-board electrical system.



- Remove protective cap **1**.
- Use the red jump lead to connect remote positive terminal **2** of the discharged battery to the positive terminal of the donor battery.
- Connect one end of the black jump lead to the negative terminal of the donor battery, then connect the other end to negative terminal **3** of the discharged battery.
- Run the engine of the donor vehicle during jump-starting.
- Start the engine of the vehicle with the discharged battery in the usual way; if the engine does not start, wait a few minutes before repeating the attempt in order to protect the starter motor and the donor battery.

Do not use proprietary start-assist sprays or other products to start the engine.

- Allow both engines to idle for a few minutes before disconnecting the jump leads.
- Disconnect the jump lead from the negative terminals first, then disconnect the second lead from the positive terminals.
- Install the protective cap.
- Install the battery cover. (➠ 219)

BATTERY

Maintenance instructions

Correct upkeep, recharging and storage will prolong the life of the battery and are essential if warranty claims are to be considered.

Compliance with the points below is important in order to maximise battery life:

– Keep the surface of the battery clean and dry.
– Do not open the battery.
– Do not top up with water.
– Be sure to read and comply with the instructions for char-

ging the battery on the following pages.
– Do not turn the battery upside down.

ATTENTION

On-board electronics (e.g. clock) draining connected battery
Battery is deep-discharged; this voids the guarantee
- Connect a float charger to the battery if the motorcycle is to remain out of use for more than four weeks.

BMW Motorrad has developed a float charger specially designed for compatibility with the electronics of your motorcycle. Using this charger, you can keep the battery charged during long periods of disuse, without having to disconnect the battery from the motorcycle's on-board systems. You can obtain additional information from your authorised BMW Motorrad dealer.

Charging battery when connected

ATTENTION

Charging the battery that is connected to the vehicle via the battery terminals
Damage to the on-board electronics
- Disconnect the battery at the battery terminals before charging.

ATTENTION

Recharging a fully discharged battery via the power socket or extra socket
Damage to the vehicle electronics
- If a battery has discharged to the extent that it is completely flat (battery voltage less than 12 V, indicator lights and multifunction display remain off when the ignition is switched on) always charge the **disconnected** battery with the charger connected directly to the battery terminals.

ATTENTION

Unsuitable chargers connected to a socket
Damage to charger and vehicle electronics
- Use suitable BMW chargers. The suitable charger is available from your authorised BMW Motorrad dealer.

- With the battery connected to the vehicle's on-board electrical system, charge via the power socket.

The motorcycle's on-board electronics know when the battery is fully charged. The on-board socket is switched off when this happens.

- Comply with the operating instructions of the charger.

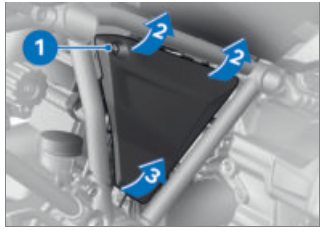
If you are unable to charge the battery through the on-board socket, you may be using a charger that is not compatible with your motorcycle's electronics. In this case, directly charge the battery at the terminals of the battery that has been disconnected from the vehicle.

Charge the battery when disconnected

- Charge the battery using a suitable charger.
- Comply with the operating instructions of the charger.
- Once the battery is fully charged, disconnect the charger's terminal clips from the battery terminals.

The battery has to be recharged at regular intervals in the course of a lengthy period of disuse. See the instructions for caring for your battery. Always fully recharge the battery before restoring it to use.

Removing battery

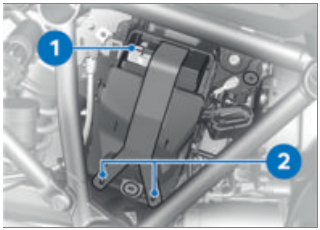


- Switch off the ignition.
- Remove screw **1**.
- Pull the battery cover slightly forward at the top at positions **2**.
- In order not to damage the battery cover or the mounting,

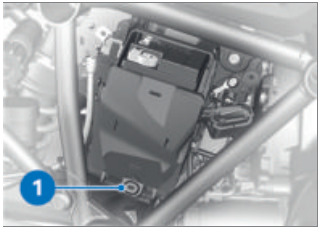
work the battery cover up at position **3** to remove.

– with anti-theft alarm (DWA) OE

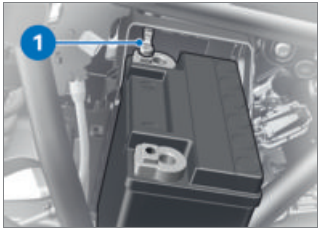
- If applicable, switch off the anti-theft alarm.◁



- Disconnect battery earth lead **1** and disengage rubber strap **2**.
- Wrap the end of negative battery cable **1** with insulating tape.



- Pull retaining panel in position **1** outwards and remove in an upward direction.
- Slightly lift the battery and ease it clear of the holder until the battery positive terminal is accessible.



- Disconnect battery negative lead **1** and remove the battery.

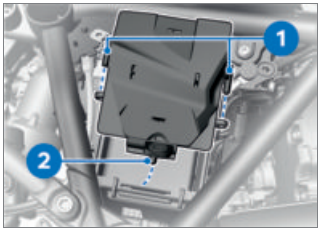
Installing battery

If the 12 V battery is not correctly installed or if the polarity of the terminals is reversed (e.g. in an attempt to jump-start the vehicle), this can cause the fuse for the alternator regulator to blow.

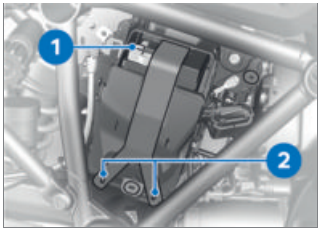
- Secure positive battery cable **1**.

Wiring harness to battery
M6 x 11
8 Nm

- Push battery into the mounting.



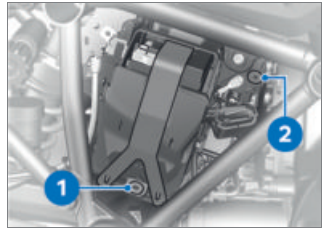
- First insert retaining plate into the mountings **1** and then push under the battery in position **2**.



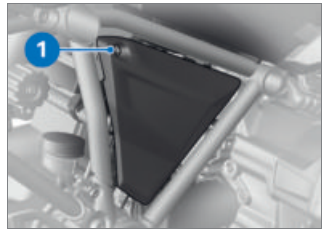
- Remove the insulating tape from negative battery cable **1**.
- Secure negative battery cable **1**.

Wiring harness to battery
M6 x 11
8 Nm

- Secure the battery with rubber strap **2**.



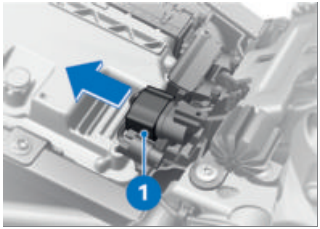
- Place battery cover into the mounting **1** and press into the mounting **2**.



- Install screw **1**.
- Set the clock. (➠ 111)
- Set the date. (➠ 111)

FUSES

Replacing fuses



- Switch off the ignition.
- Remove the front seat. (➠ 135)
- Disconnect connector **1**.

ATTENTION

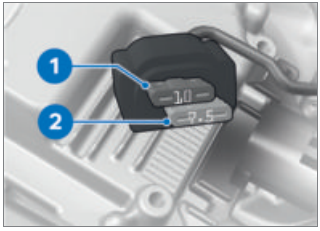
Jumpering of blown fuses
Risk of short-circuit and fire
- Never attempt to jumper a blown fuse.
- Always replace a defective fuse with a new fuse of the same amperage.

- Replace faulty fuse in accordance with the fuse allocation diagram.

If fuse defects recur frequently have the electric circuits checked by a specialist workshop, preferably an authorised BMW Motorrad dealer.

- Install plug **1**.
- Install the rider's seat. (➠ 137)

Fuse assignment



1 10 A
Instrument cluster
Anti-theft alarm (DWA)
Ignition switch
Socket for onboard diagnosis
Coil, isolating relay

2 7.5 A
Multifunction switch, left
Tyre pressure control (RDC)
Sensor box
Seat heating

Fuse for alternator regulator

1 50 A
Alternator regulator

Have the fuse replaced by a specialist workshop, preferably an authorised BMW Motorrad retailer.

DIAGNOSTIC CONNECTOR

Disengaging diagnostic socket

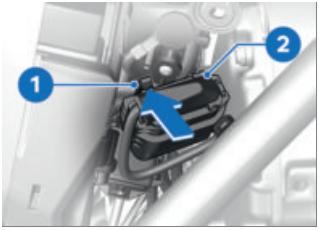
CAUTION

Incorrect disconnection of the diagnostic socket for on-board diagnosis

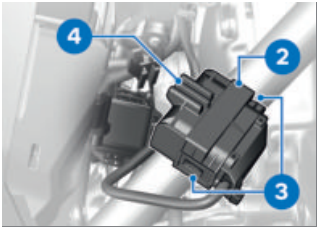
Malfunctions of the vehicle

- Do not disconnect the diagnostic socket or allow it to be disconnected except in the course of a BMW Motorrad service by a specialist workshop or by other authorised persons.
- Have the work carried out by appropriately trained personnel.
- Comply with the stipulations of the vehicle manufacturer.

- Remove the battery cover. (➠ 217)



- Press hook **1** and pull diagnostic socket **2** up to remove.

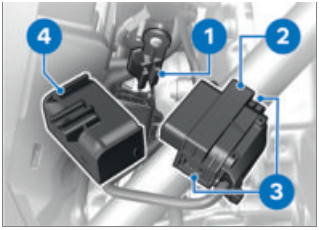


- Press locks **3** on both sides.
- Disengage diagnostic socket **2** from holder **4**.

» The interface to the diagnosis and information system can be connected to the diagnostic connector **2**.

Securing diagnostic socket

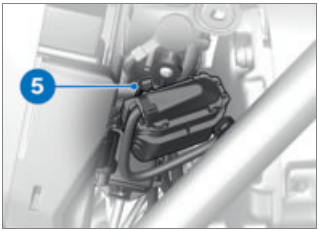
- Disconnect the interface for the diagnosis and information system.



- Insert diagnostic socket **2** into holder **4**.

» Locks **3** engage on both sides.

- Seat bracket **4** on mounting **1**.



- Make sure that hook **5** engages.
- Install the battery cover. (➠ 219)

ACCESSORIES

10

GENERAL NOTES

CAUTION

Use of other-make products
Safety risk
- BMW Motorrad cannot examine or test each product of outside origin to ensure that it can be used on or in connection with BMW vehicles without constituting a safety hazard. Country-specific official authorisation does not suffice as assurance. Tests conducted by these instances cannot make provision for all operating conditions experienced by BMW vehicles and, consequently, they are not sufficient in some circumstances.
- Use only parts and accessories approved by BMW for your vehicle.

BMW has conducted extensive testing of the parts and accessory products to establish that they are safe, functional and suitable. Consequently, BMW accepts responsibility for the products. BMW accepts no liability whatsoever for parts and accessories that it has not approved.

All modifications must be in compliance with legal requirements. Make sure that the vehicle does not infringe the national road-vehicle construction and use regulations applicable in your country.
Your authorised BMW Motorrad retailer can offer expert advice on the choice of genuine BMW parts, accessories and other products. To find out more about accessories go to: **bmw-motorrad.com/equipment**.

POWER SOCKETS

Connection of electrical devices

– You can start using electrical devices connected to the motorcycle's sockets only when the ignition is switched on.

Cable routing

– The cables from the power sockets to the auxiliary devices must be routed in such a way that they do not impede the rider.
– The cable routing should not restrict the steering angle or obstruct handling.

–The cables must not be trapped.

Automatic shutdown

–The sockets will be automatically switched off during the start procedure.
–The power supply to the sockets is switched off 60 seconds after the ignition is switched off, in order to prevent overloading of the on-board electrics. Low-wattage electrical accessories might not be recognised by the vehicle's electronics. In such cases, power sockets are switched off very shortly after the ignition is turned off.
–If the battery charge state is too low to maintain the motorcycle's start capability, the power sockets are switched off.
–The power sockets are also switched off when the maximum load capability as stated in the technical data is exceeded.

USB CHARGING SOCKET

Notes on use:

Charge current

This is a 5 V USB charging interface that provides a maximum charge current of 2.4 A.

Automatic shutdown

The USB charging sockets are shut down automatically under the following circumstances:
–If battery charge state is too low, to maintain the vehicle's start capability.
–If the maximum load capacity as stated in the technical data is exceeded.
–During the starting operation.

Connection of electrical devices

You can start using electrical devices connected to the USB charging sockets only when the ignition is switched on. The power supply to the sockets is switched off no more than 60 seconds after the ignition is switched off, in order to prevent overloading of the on-board electrics.
While riding in the rain, you should disconnect the device from the interface in order to protect against damage.
To prevent dirtying, keep the protective cover closed when no device is connected.

Cable routing

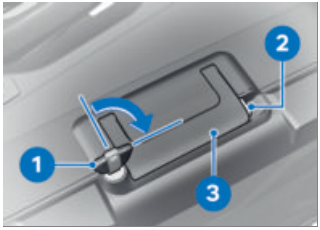
Note the following with regard to the routing of cables from USB charging sockets to items of electronic equipment:

– Make sure that cables do not impede the rider.
– Make sure that cables do not restrict the steering angle or obstruct handling.
– Make sure that cables cannot be trapped.

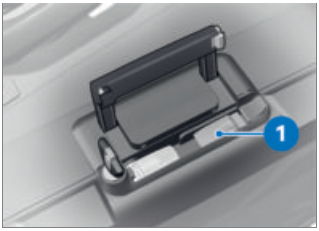
CASES

– with case OA

Opening cases



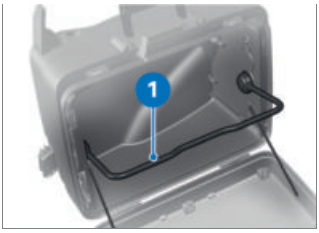
- Turn key **1** clockwise.
- Press and hold down yellow latch **2** and pull out carry handle **3**.



- Push yellow button **1** down, simultaneously opening the case lid.

Adjust the case volume

- Open the case and remove all its contents.

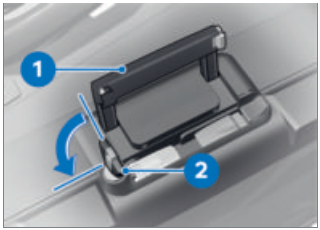


- Engage lever **1** in the upper end position to obtain the smaller volume.
- Engage lever **1** in the lower end position to obtain the larger volume.
- Close the case.

Closing cases

- Turn the lock with the key until it is at right angles to the forward direction of travel.
- Close the case lid.

» The lid engages with an audible click.



ATTENTION

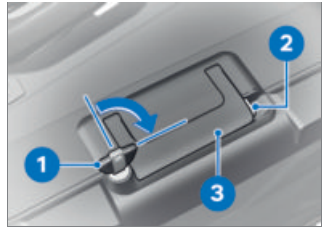
Closure of carrying handle with case lock latched

Damage to locking tab

- Make sure that the case lock is at right angles to the forward direction of travel when you close the carry handle.

- Close carry handle **1**.
- Turn key **2** anti-clockwise and withdraw.

Removing cases



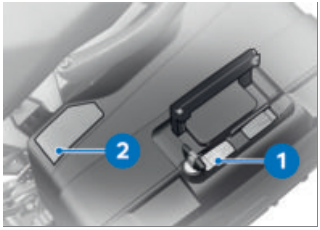
- Turn key **1** clockwise.
- Press and hold down yellow latch **2** and pull out carry handle **3**.

- Pull red release lever **1** up.

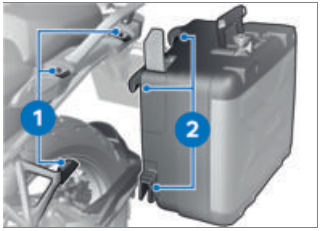
» Latching flap **2** pops up.

- Fully open the latching flap.
- Take a firm grip of the carry handle and lift the case out of the holder.

Installing cases

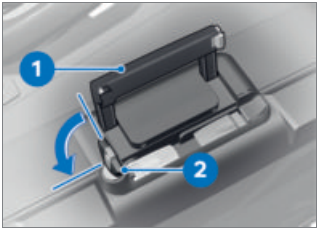


- Pull red release lever **1** up.
» Latching flap **2** pops up.
- Fully open the latching flap.



- Insert case into brackets **1** and **2** from above.

- Push locking flap **1** down until you feel some resistance.
- Then push locking flap and red release lever **2** down simultaneously.
» The locking flap engages.



ATTENTION

Closure of carrying handle with case lock latched

Damage to locking tab

- Make sure that the case lock is at right angles to the forward direction of travel when you close the carry handle.

- Close carry handle **1**.
- Turn key **2** anti-clockwise and withdraw.

Maximum payload and maximum speed

Note the maximum payload and the maximum permissible speed.

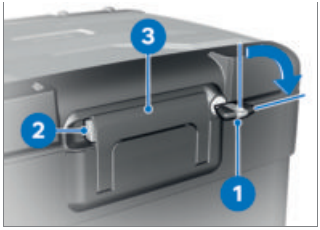
The values for the combination described here are as follows:

Maximum permissible speed for riding with Vario cases fitted to the motorcycle
max 180 km/h
Payload per Vario case
max 10 kg

TOPCASE

Opening topcase

–with topcase OA



- Turn key **1** clockwise.
- Press and hold down yellow latch **2** and pull out carry handle **3**.

- Push yellow button **1** forwards, simultaneously opening the topcase lid.

Adjust the topcase volume

–with topcase OA

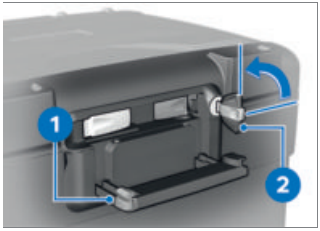
- Open the topcase and remove all its contents.

- Engage lever **1** in the forwards end position to obtain the larger volume.
- Engage lever **1** in the rearwards end position to obtain the smaller volume.
- Close the topcase.

Closing topcase

–with topcase OA

- Press down firmly on the topcase lid to close.



ATTENTION

Closure of carrying handle with case lock latched

Damage to locking tab

- Make sure that the topcase lock is vertical when you close the carry handle.

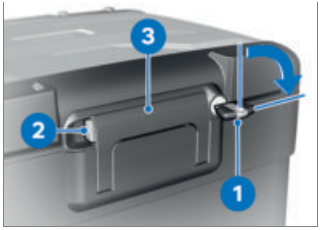
- Close carry handle **1**.

» The handle engages with an audible click.

- Turn key **2** anti-clockwise and withdraw.

Removing topcase

–with topcase OA



- Turn key **1** clockwise.
- Press and hold down yellow latch **2** and pull out carry handle **3**.

- Pull red lever **1** to the rear.

» Latching flap **2** pops up.

- Fully open the latching flap.
- Take a firm grip of the handle and lift the topcase out of the holder.

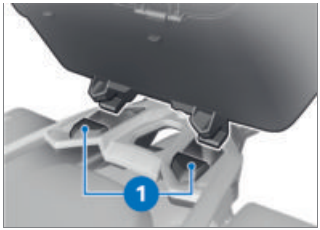
Installing topcase

–with topcase OA

- Pull red lever **1** to the rear.

» Latching flap **2** pops up.

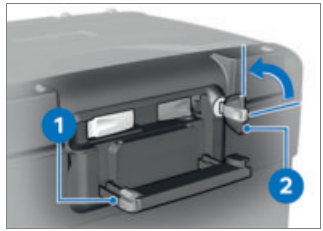
- Fully open the latching flap.



- Engage the topcase in front holders **1** of the topcase carrier plate.
- Press the rear of the topcase on to the topcase carrier plate.

- Push locking flap **1** forwards until you feel some resistance.
- Then push locking flap and red release lever **2** forwards simultaneously.

» The locking flap engages.



ATTENTION

Closure of carrying handle with case lock latched

Damage to locking tab

- Make sure that the topcase lock is vertical when you close the carry handle.

- Close carry handle **1**.

» The handle engages with an audible click.

- Turn key **2** anti-clockwise and withdraw.

Maximum payload and maximum speed

–with topcase [OA]

Note the maximum payload and the maximum permissible speed.
The values for the combination described here are as follows:

Maximum speed for riding with a laden Vario topcase
max 180 km/h
Payload of Vario topcase
max 5 kg

Installing topcase

–with topcase 2, large, 50 l [OA]

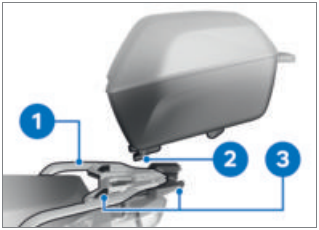
WARNING

Topcase not properly secured

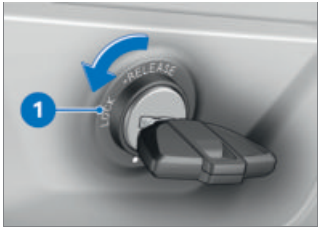
Driving safety is impaired

- The topcase must not wobble and must be secured free from play.

- Pull carry handle **1** up as far as it will go.



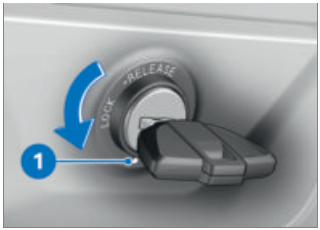
- Hook the topcase into position on luggage carrier **1**. Make sure that hooks **2** are securely seated in keepers **3**.
- Push the carry handle down until it engages.



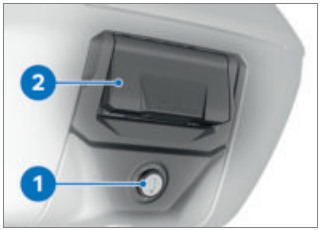
- Turn the key in the topcase lock to position **1** and remove the key from the lock.

Opening topcase

–with topcase 2, large, 50 l[OA]



- Turn the key in the topcase lock to position **1**.



- Push lock barrel **1** forward.

» Release lever **2** pops up.

- Pull the release lever all the way up.

» The lid of the topcase opens.

Closing topcase

–with topcase 2, large, 50 l[OA]

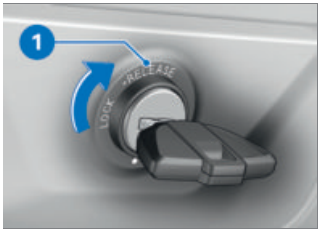
- Pull release lever **1** all the way up.
- Close the lid of the topcase and hold it down. Check that nothing is trapped between the lid and the case.

The topcase can also be closed when the lock is in the **LOCK** position. Make sure that the ignition key is not left inside the topcase.

- Push release lever **1** down until it engages.
- Turn the key in the topcase lock to the **LOCK** position and remove the key from the lock.

Removing topcase

–with topcase 2, large, 50 l[OA]



- Turn the key in the topcase lock to position **1**.

» The handle pops out.

- Pull carry handle **1** up as far as it will go.
- Lift the topcase at the rear and remove it from the luggage carrier.

Maximum payload and maximum speed

–with topcase 2, large, 50 l[OA]

Note the maximum payload and the maximum permissible speed.
The values for the combination described here are as follows:

Maximum speed for riding with Topcase 2 large, 50 l
max 180 km/h

Payload of Topcase 2 large, 50 l
max 5 kg

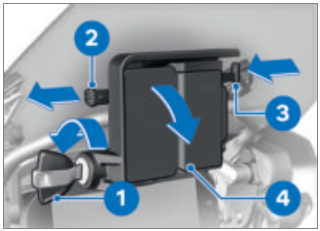
NAVIGATION SYSTEM

–with preparation for navigation system OE

Secure the navigation device

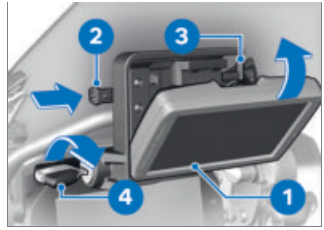
Navigation preparation is suitable from BMW Motorrad Navigator IV.

The latching system of the Mount Cradle is not designed to protect against theft.
Always remove the navigation system and stow it away safely as soon as you finish your ride.



- Turn ignition key **1** counterclockwise.
- Pull the lock retainer **2** to the **left**.
- Press the lock **3** in.

» The Mount Cradle is unlocked and cover **4** can be pivoted forward and removed.



- Insert navigation device **1** at bottom and pivot it toward the rear.

» The navigation device engages with an audible click.

- Push the lock retainer **2** all the way to the **right**.

» Lock **3** is locked.

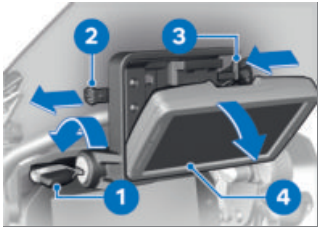
- Turn ignition key **4** clockwise.

» The navigation device is secured and the ignition key can be removed.

Remove the navigation device and install cover

ATTENTION

Dust and dirt on the Mount Cradle contacts
Damaged contacts
- Always reinstall the cover as soon as you finish your ride.



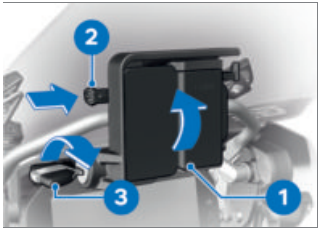
- Turn ignition key **1** anti-clockwise.
- Pull the lock retainer **2** all the way to the **left**.

» Lock **3** is unlocked.

- Push lock **3** all the way to the **left**.

» The navigation device **4** is unlocked.

- Tilt the navigation device **4** down and remove.



- Insert cover **1** in the lower section and swing to the top with a rotational movement.

» The cover engages with an audible click.

- Push lock retainer **2** to the **right**.
- Turn ignition key **3** clockwise.

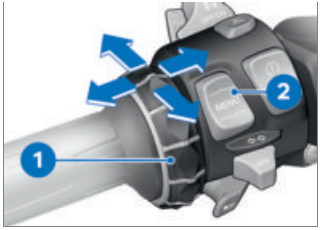
» The cover **1** is secured.

Operating navigation system

The description below is based on the BMW Motorrad Navigator V and the BMW Motorrad Navigator VI. The BMW Motorrad Navigator IV does not support all the options described here.

Only the latest version of the BMW Motorrad communication system is supported. A software update of the BMW Motorrad communication system may be necessary. If this is the case, consult your authorised BMW Motorrad dealer.

If the BMW Motorrad Navigator is installed and the operating focus is switched to the Navigator (➠ 107), some of its functions can be operated without the rider removing a hand from the handlebars.



The navigation system is operated using Multi-Controller **1** and MENU rocker button **2**.

Turning Multi-Controller 1 up and down

On the Compass and Mediaplayer pages: Increase or decrease the volume of a Bluetooth-connected BMW Motorrad communication system.
In the BMW special menu: Select menu item.

Short-tilting Multi-Controller 1 to the left and right

Switch between the main pages of the Navigator:
–Map view
–Compass
–Mediaplayer
–BMW special menu
–My Motorcycle page

Long-tilting Multi-Controller 1 to the left and right

Activate certain functions on the Navigator display. An arrow to the right or to the left above the corresponding button area on the display indicates a function that can be activated in this way.

Long-push to the right to activate this function.

Long-push to the left to activate this function.

Pressing bottom section of MENU rocker button 2

Switch operating focus to Pure Ride view.

In detail, the following functions can be controlled:
Map view
–Turn up: Zoom in.
–Turn down: Zoom out.

Compass page
–Turning increases or decreases the volume of a BMW Motorrad communication system connected via Bluetooth.

BMW special menu

–Speak: Repeat most recent navigation announcement.
–Waypoint: Save current location as a favourite.
–Home: Starts navigation to home address (greyed if no home address has been defined).
–Mute: Switch automatic navigation announcements off or on (off: a crossed-out lips symbol appears in the top line of the display). "Speak" will still activate navigation announcements. All other acoustic outputs remain switched on.
–Switch off display: Deactivate the display.
–Dial home number: Dials the home phone number saved in the Navigator (not shown unless a communication system and a telephone are connected).
–Diversion: Activates the diversion function (not shown unless a route is active).
–Skip: Skips the next waypoint (not shown unless the route has waypoints).

My Motorcycle

–Turn: Changes the number of data shown.
–Touch a data field on the display to open the menu for selecting data.
–The values available fr selection depend on the optional extras installed on the vehicle.

Mediaplayer

–Long-push to the left: Play preceding track.
–Long-push to the right: Play next track.
–Turning increases or decreases the volume of a BMW Motorrad communication system connected via Bluetooth.

The Mediaplayer function is only available when a Bluetooth device complying with the A2DP standard is used, for example a BMW Motorrad communication system.

Indicator and warning messages

Indicator and warning messages from the motorcycle are indicated by an appropriate symbol **1** which appears at the top left in the map view.

If a BMW Motorrad communication system is connected, warnings are accompanied by an acoustic signal.

If there are two or more active warnings the number appears below the warning triangle. Touching the warning triangle when more than one warning is active opens a list of all the warnings.
Additional information appears as soon as a message is selected.

Detailed information cannot be displayed for all warnings.

Special functions

Integration of the BMW Motorrad Navigator has produced a number of deviations from the descriptions in the operating instructions for the Navigator.

Reserve fuel level warning

The settings for the fuel gauge are not available, because the reserve warning is transmitted from the vehicle to the Navigator. Touch the message when it is active to view the locations of the nearest filling stations.

Security settings

The BMW Motorrad Navigator V and the BMW Motorrad Navigator VI can be secured against unauthorised use with a four-digit PIN (Garmin Lock). If this function is activated, while the Navigator is cradled on the vehicle and the ignition is switched on you are prompted to add the vehicle to the list of secured vehicles. If you answer "Yes" at this prompt, the Navigator saves the VIN of this vehicle in its internal memory. A maximum of five VINs can be saved in this way.
It is then no longer necessary to enter the PIN when the Navigator is switched on by

ignition ON on any of these vehicles.
If the Navigator is removed from the vehicle while switched on, a security prompt is issued asking for the PIN to be entered.

Screen brightness

Screen brightness is adjusted by the motorcycle while the unit is cradled. Manual input is not necessary.
Automatic setting can be switched off in the display settings for the Navigator if desired.

CARE

11

CARE PRODUCTS

BMW Motorrad recommends that you use the cleaning and care products you can obtain from your authorised BMW Motorrad Retailer. The substances in BMW Care Products have been tested in laboratories and in practice; they provide optimised care and protection for the materials used in your vehicle.

ATTENTION

Use of unsuitable cleaning and care products

Damage to vehicle parts

- Do not use solvents such as cellulose thinners, cold cleaners, fuel or the like, and do not use cleaning products that contain alcohol.

ATTENTION

Use of strongly acidic or strongly alkaline cleaning agents

Damage to vehicle parts

- Dilute in accordance with the dilution ratio stated on the packaging of the cleaning agent.
- Do not use strongly acidic or strongly alkaline cleaning agents.

WASHING THE VEHICLE

BMW Motorrad recommends that you use BMW insect remover to soften and wash off insects and stubborn dirt on painted parts prior to washing the vehicle.

To prevent stains, do not wash the vehicle immediately after it has been exposed to strong sunlight and do not wash it in the sun.

Remove dirt from the fork legs at regular intervals.

Make sure that the vehicle is washed frequently, especially during the winter months.

To remove road salt, clean the vehicle and mounted parts, as applicable, with cold water immediately after every trip.

After a ride in the rain, when humidity is high or after the vehicle has been washed, condensation might form inside the headlight. This can cause temporary fogging on the headlight lens. If moisture is constantly present inside the headlight consult a specialist workshop, preferably an authorised BMW Motorrad retailer.

WARNING

Wet brake discs and brake pads after vehicle wash, after riding through water and in rainy conditions
Diminished braking effect, risk of accident
- Apply the brakes in good time to allow the friction and heat to dry the brake discs and brake pads.

ATTENTION

Effect of road salt intensified by warm water
Corrosion
- Use only cold water to wash off road salt.

ATTENTION

Damage due to high water pressure from high pressure cleaners or steam cleaners
Corrosion or short circuit, damage to labels, seals, hydraulic brake system, electrical system and the motorcycle seat
- Exercise restraint when using a steam jet or high pressure cleaning equipment.

CLEANING EASILY DAMAGED COMPONENTS

Plastics

ATTENTION

Use of unsuitable cleaning agents
Damage to plastic surfaces
- Do not use cleaning agents that contain alcohol, solvents or abrasives.
- Do not use insect-remover pads or cleaning pads with hard, scouring surfaces.

Clean the plastic parts with water and BMW plastic care product. This includes in particular:

–Windscreen and slipstream deflectors
–Headlight lens made of plastic
–Glass cover of the instrument cluster
–Black, unpainted parts

Soften stubborn dirt and insects by covering the affected areas with a wet cloth.

TFT display

Clean the TFT display with warm water and washing-up liquid. Then dry it with a clean cloth, e.g. a paper towel.

Chrome

Carefully clean chrome parts with plenty of water and motorcycle cleaner from the BMW Motorrad Care Products range. This is particularly important to counter the effects of road salt.
For an additional treatment, use BMW Motorrad metal polish.

Radiator

Clean the radiator regularly to prevent overheating of the engine due to inadequate cooling. For example, use a garden hose with low water pressure.

ATTENTION

Bending of radiator fins
Damage to radiator fins
• Take care not to bend the radiator fins when cleaning.

Rubber

Treat rubber components with water or BMW rubber-care products.

ATTENTION

Application of silicone sprays to rubber seals
Damage to the rubber seals
• Do not use silicone sprays or care products that contain silicon.

CARE OF PAINTWORK

Washing the vehicle regularly will help counteract the long-term effects of substances that can damage the paint, especially if your vehicle is ridden in areas with high air pollution or natural sources of dirt, for example tree resin or pollen. Remove particularly aggressive substances immediately, however, as otherwise the paint can be affected or become discoloured. Substances of this nature include spilt fuel,

oil, grease, brake fluid and bird droppings. For this, we recommend BMW Motorrad solvent cleaner followed by BMW Motorrad gloss polish for preservation.
Marks on the paintwork are particularly easy to see after the motorcycle has been washed. Remove stains of this kind at the earliest possible opportunity, using benzine or petroleum spirit on a clean cloth or ball of cotton wool. BMW Motorrad recommends using BMW tar remover for removing specks of tar. Then apply preserving agent to the areas treated in this way.

ATTENTION

Damage to paintwork due to metal polish
Risk of damage
- Do not treat painted surfaces and chrome-painted surfaces with metal polish.

PAINT PRESERVATION

If water no longer rolls off the paint, the paint must be preserved.
For paint preservation, BMW Motorrad recommends the use of BMW Motorrad gloss polish or agents containing carnauba wax or synthetic wax.

Do not use chrome polish to preserve chrome paints. Use only the agents recommended by BMW Motorrad.

LAYING UP THE MOTORCYCLE

- Clean the motorcycle.
- Fill the motorcycle's fuel tank.

Fuel additives clean the fuel injection system and the combustion zone. It is advisable to use fuel additives when the engine is operated with low-grade fuel or if the vehicle is to be out of use for a lengthy period of time. More information is available from your authorised BMW Motorrad retailer.

- Removing battery (➠ 217).
- Spray the brake and clutch lever pivots and the sidestand and centre-stand pivot mounts with a suitable lubricant.
- Coat bright metal and chrome-plated parts with an acid-free grease (e.g. Vaseline).

- Stand the motorcycle in a dry room in such a way that there is no load on either wheel (preferably using front-wheel and rear-wheel stands from BMW Motorrad).

RESTORING MOTORCYCLE TO USE

- Remove the protective wax coating.
- Clean the motorcycle.
- Install the battery.
- Note the checklist (➠ 147).

TECHNICAL DATA

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TROUBLESHOOTING CHART

The engine does not start.

Possible cause	Rectification
Side stand extended and gear engaged	Retract the side stand.
Gear engaged and clutch not disengaged	Select neutral or pull the clutch lever.
No fuel in tank	Refuel. (➠ 159)
Battery flat	Charge the battery when connected. (➠ 216)
Overheating protection for starter motor has been activated. Starter motor can only be operated for a limited period of time.	Allow the starter motor to cool down for approx. 1 minute before using it again.

The Bluetooth connection is not established.

Possible cause	Rectification
The steps required for pairing were not carried out.	Check the necessary steps for pairing in the operating instructions for the communication system.
The communication system was not connected automatically despite successful pairing.	Switch off the helmet's communication system and reconnect it after a minute or two.
Too many Bluetooth devices are saved on the helmet.	All pairing entries on the helmet are deleted (see the communication system operating instructions).
There are other vehicles with Bluetooth-capable devices in the vicinity.	Avoid simultaneously pairing with more vehicles.

Bluetooth connection is interrupted.

Possible cause	Rectification
The Bluetooth connection to the mobile end device is interrupted.	Switch off energy saving mode.
The Bluetooth connection to the helmet is interrupted.	Switch off the helmet's communication system and reconnect it after a minute or two.
The volume in the helmet cannot be adjusted.	Switch off the helmet's communication system and reconnect it after a minute or two.

The phonebook is not displayed in the TFT display.

Possible cause	Rectification
The phone book was not transmitted to the vehicle.	When pairing the mobile end device, confirm transmission of the phone data (➠ 122).

Active route guidance is not displayed in the TFT display.

Possible cause	Rectification
Navigation from the BMW Motorrad Connected App was not transmitted.	The BMW Motorrad Connected App is opened on the connected mobile end device prior to departure.
The route guidance cannot be started.	Secure the mobile device's data connection and check the map data on the mobile end device.

THREADED FASTENERS

Front wheel	Value	Valid
Quick-release axle in telescopic forks		
M12 x 20	30 Nm	
Clamping screw for quick-release axle in telescopic fork		
M8 x 35	19 Nm	
Radial brake caliper on telescopic forks		
M10 x 65	38 Nm	
Wheel-speed sensor to fork leg		
M6 x 16 Micro-encapsulated	8 Nm	

Rear wheel	Value	Valid
Rear wheel to wheel flange		
M10 x 1.25 x 40	**Tightening sequence: tighten in diagonally opposite sequence**	
	60 Nm	

Mirrors	Value	Valid
Mirror (locknut) to adapter		
M10 x 1.25	Left-hand thread, 22 Nm	

Mirrors	Value	Valid
Adapter to clamping block		
M10 x 14 - 4,8	25 Nm	
Mirror on handlebars		
M10 x 30	25 Nm	
M10 x 50	25 Nm	–with hand protector OE

Gearshift lever	Value	Valid
Peg to gearshift lever		
M6 x 20 micro-encapsulated	10 Nm	

Footbrake lever	Value	Valid
Peg to footbrake lever		
M6 x 20 micro-encapsulated	10 Nm	

Footrests	Value	Valid
Clamping block on footrest hinge		
M8 x 25	20 Nm	
Footrest on clamping block		
M6 x 20 / M6 x 12	10 Nm	

Handlebars	Value	Valid
Clamping block (handlebar clamp) to fork bridge		
M8 x 35	**Tightening sequence: in the forward direction of travel, tighten until seated**	
	19 Nm	
M8 x 65	**Tightening sequence: in the forward direction of travel, tighten until seated**	– with handlebar extension OE
	19 Nm	

FUEL

Recommended fuel grade	E5 Super unleaded (max 15 % ethanol, E10/E15) E10 95 ROZ/RON 90 AKI
Alternative fuel grade	E5 Normal unleaded (power- and consumption-related E10 restrictions.) (max 15 % ethanol, E10/E15) 91 ROZ/RON 87 AKI
Usable fuel capacity	approx. 20 l
Reserve fuel	approx. 4 l
Fuel consumption	4.8 l/100 km, according to WMTC
–with power reduction OE	4.9 l/100 km, according to WMTC
CO2 emission	110 g/km, following world-wide harmonised motorcycle test cycle (WMTC)
–with power reduction OE	113 g/km, following world-wide harmonised motorcycle test cycle (WMTC)
Exhaust emissions standard	EU5

ENGINE OIL	
Engine oil, capacity	max 4 l, with filter change
Specification	SAE 5W-40, API SL / JASO MA2, Additives (e.g. molybdenum-based) are not permissible because they can attack coated components of the engine, BMW Motorrad recommends BMW Motorrad ADVANTEC Ultimate oil.
Engine oil, quantity for topping up	max 0.8 l, Difference between **MIN** and **MAX**

BMW recommends ADVANTEC ORIGINAL BMW ENGINE OIL

ENGINE	
Engine number location	Crankcase, bottom right, below starter motor
Engine type	A74B12M
Engine design	Air/liquid-cooled, two-cylinder four-stroke opposed-twin engine with two overlying, spur-gear-driven camshafts, a counterbalance shaft and BMW ShiftCam variable intake camshaft control
Displacement	1254 cm^3
Cylinder bore	102.5 mm
Piston stroke	76 mm
Compression ratio	12.5:1

Nominal capacity	100 kW, at engine speed: 7750 min^{-1}
–with power reduction OE	79 kW, at engine speed: 7750 min^{-1}
Torque	143 Nm, at engine speed: 6250 min^{-1}
–with power reduction OE	140 Nm, at engine speed: 5000 min^{-1}
Maximum engine speed	max 9000 min^{-1}
Idle speed	1050 min^{-1}, Engine at regular operating temperature

CLUTCH

Clutch type	Multiplate oil-bath clutch, anti-hopping

TRANSMISSION

Type of transmission	Claw-shift 6-speed gearbox with helical gearing
Gearbox transmission ratios	1.000 (60:60 teeth), Primary transmission ratio 1.650 (33:20 teeth), Transmission input ratio 2.438 (39:16 teeth), 1st gear 1.714 (36:21 teeth), 2nd gear 1.296 (35:27 teeth), 3rd gear 1.059 (36:34 teeth), 4th gear 0.943 (33:35 teeth), 5th gear 0.848 (28:33 teeth), 6th gear 1.061 (35:33 teeth), Transmission output ratio

FINAL DRIVE	
Type of final drive	Shaft drive with bevel gears
Gear ratio of final drive	2.91 (32/11 teeth)
Rear axle differential oil	SAE 70W-80, above 5 °C and below 5 °C

FRAME	
Frame type	Tubular steel frame with supporting drive unit, steel pipe rear frames
Type plate location	Frame, front left at steering head
Position of the vehicle identification number	Frame, front right below steering head

CHASSIS AND SUSPENSION

Front wheel	
Type of front suspension	BMW Telelever, with anti-dive top fork bridge, leading link pivot-mounted on engine and telescopic forks, central spring strut supported by leading link and frame
Design of front wheel suspension	Central shock absorber with helical spring
–with Dynamic ESA OE	Central shock absorber complete with torsion spring and header tank, electrically adjustable decompression and compression-stage damping
Spring travel, front	190 mm, at front wheel
–with sport suspension OE	210 mm, at front wheel
–with low-slung OE	158 mm, at front wheel

Rear wheel	
Type of rear suspension	Cast aluminium single swinging arm featuring BMW Motorrad Paralever
Type of rear-wheel suspension	Central spring strut with coil spring, adjustable rebound stage damping and spring preload
–with Dynamic ESA OE	Central spring strut with coil spring and reservoir, electrically adjustable rebound-stage and compression-stage damping, electrically adjustable spring preload
Spring travel at rear wheel	200 mm, at rear wheel
–with sport suspension OE	220 mm, at rear wheel
–with low-slung OE	170 mm, at rear wheel

BRAKES

Front wheel	
Type of front brake	Twin disc brake, floating brake discs, diameter 305 mm, 4-piston radial brake caliper
Brake-pad material, front	Sintered metal
Brake disc thickness, front	4.5 mm, When new min 4.0 mm, Wear limit
Play of brake controls (Front brake)	1.6...2.1 mm, on the piston

Rear wheel	
Type of rear brake	Single-disc brake, diameter 276 mm, 2-piston floating caliper
Brake-pad material, rear	Sintered metal
Brake disc thickness, rear	5.0 mm, When new min 4.5 mm, Wear limit
Blow-by clearance of the footbrake lever	1...1.5 mm, between the frame and the footbrake lever

WHEELS AND TYRES	
Recommended tyre combinations	Your authorised BMW Motorrad retailer will be happy to supply an up-to-date list of the approved wheel/tyre combinations.
Speed category, front/rear tyres	V, required at least: 240 km/h
Front wheel	
Front-wheel type	Aluminium cast wheel
–with cross-spoked wheels[OE] or –with cross-spoked wheels II[OE]	Cross-spoked wheel
Front-wheel rim size	3.00'' x 19''
Tyre designation, front	120/70 R 19
Load index, front tyre	min 60
Permissible front-wheel imbalance	max 5 g

Rear wheel	
Rear-wheel type	Aluminium cast wheel
–with cross-spoked wheels [OE] or –with cross-spoked wheels II [OE]	Cross-spoked wheel
Rear wheel rim size	4.50'' x 17''
Tyre designation, rear	170/60 R 17
Load index, rear tyre	min 72
Permissible rear-wheel imbalance	max 5 g
Tyre pressures	
Tyre pressure, front	2.5 bar, Tyre cold
Tyre pressure, rear	2.9 bar, Tyre cold

ELECTRICAL SYSTEM	
Electrical rating of on-board sockets	max 5 A, total for all sockets
Fuse 1	10 A, KOMBI, alarm system (DWA), ignition switch, OBD socket, coil cut-off relay
Fuse 2	7.5 A, Multifunction switch left, tyre pressure control (TPM), sensor box, seat heating
Fuse holder	50 A, Fuse 1: Voltage regulator

Battery	
Battery type	AGM battery (Absorbent Glass Mat), maintenance-free
–with M Lightweight battery[OE]	Lithium-ion battery
Battery rated voltage	12 V
–with M Lightweight battery[OE]	12 V
Battery rated capacity	14 Ah
–with M Lightweight battery[OE]	10 Ah
Spark plugs	
Spark plugs, manufacturer and designation	NGK LMAR8AI-10
Lighting	
Bulb for high-beam headlight	
–without control for headlight[OE]	LED
–with control for headlight[OE]	H7 / 12 V / 55 W
Bulbs for the low-beam headlight	
–without control for headlight[OE]	LED
–with control for headlight[OE]	H7 / 12 V / 55 W
Bulb for parking light	
–without control for headlight[OE]	LED
–with control for headlight[OE]	W5W / 12 V / 5 W
Bulb for tail light/brake light	LED
Bulbs for turn indicators	LED

ANTI-THEFT ALARM

Activation time on arming	approx. 30 s
Alarm duration	approx. 26 s
Battery type (For Keyless Ride radio-operated key)	CR 2032

DIMENSIONS

Length of motorcycle	2207 mm, over spray guard
Height of motorcycle	1430...1490 mm, over windscreen, at DIN vehicle kerb weight
–with Rallye style OE –with low-slung OE or –with Edition OE –with low-slung OE	1330...1380 mm, over windscreen, at DIN vehicle kerb weight
–with Rallye style OE –with Rallye seat, low OE or –with Edition OE –with Rallye seat, low OE	1350...1400 mm, over windscreen, at DIN vehicle kerb weight
–with Rallye style OE –with sport suspension OE –with Rallye seat, low OE	1370...1420 mm, over windscreen, at DIN vehicle kerb weight
–with low-slung OE	1410...1470 mm, over windscreen, at DIN vehicle kerb weight
–with Rallye style OE –with two-up riding package OE –with sport suspension OE	1450...1510 mm, over windscreen, at DIN vehicle kerb weight

Width of motorcycle	952 mm, with mirrors 895 mm, without mounted parts
–with hand protector OE	980 mm, with hand protectors
Height of rider's seat	850...870 mm, without rider, at DIN unladen weight
–with low-slung OE –with rider's seat, low OE	800...820 mm, without rider, at DIN unladen weight
–with low-slung OE –with rider's seat, low OE –with seat heating OE	805...825 mm, without rider, at DIN unladen weight
–with rider's seat, low OE	820...840 mm, without rider, at DIN unladen weight
–with rider's seat, low OE –with seat heating OE	825...845 mm, without rider, at DIN unladen weight
–with low-slung OE	830...850 mm, without rider, at DIN unladen weight
–with low-slung OE –with Rallye seat, low OE	840 mm, without rider, at DIN unladen weight
–with Rallye seat, low OE	860 mm, without rider, at DIN unladen weight
–with two-up riding package OE –with sport suspension OE	870...890 mm, without rider, at DIN unladen weight
–with sport suspension OE –with Rallye seat, low OE	880 mm, without rider, at DIN unladen weight

Rider's inside-leg arc, heel to heel	1870...1910 mm, without rider, at DIN vehicle kerb weight
–with low-slung OE –with rider's seat, low OE	1790...1830 mm, without rider, at DIN vehicle kerb weight
–with rider's seat, low OE	1820...1860 mm, without rider, at DIN vehicle kerb weight
–with low-slung OE	1830...1870 mm, without rider, at DIN vehicle kerb weight
–with low-slung OE –with Rallye seat, low OE	1840 mm, without rider, at DIN vehicle kerb weight
–with low-slung OE –with rider's seat, low OE –with seat heating OE	1840...1860 mm, without rider, at DIN vehicle kerb weight
–with Rallye seat, low OE	1880 mm, without rider, at DIN vehicle kerb weight
–with low-slung OE –with seat heating OE or –with rider's seat, low OE –with seat heating OE	1880...1900 mm, without rider, at DIN vehicle kerb weight
–with two-up riding package OE –with sport suspension OE	1910...1950 mm, without rider, at DIN vehicle kerb weight
–with sport suspension OE –with Rallye seat, low OE	1920 mm, without rider, at DIN vehicle kerb weight
–with seat heating OE	1920...1940 mm, without rider, at DIN vehicle kerb weight

WEIGHTS	
Vehicle kerb weight	249 kg, DIN unladen weight, ready for road 90 % load of fuel, without OE
Permissible gross vehicle weight	465 kg
Maximum payload	216 kg

PERFORMANCE FIGURES	
Top speed	>200 km/h
–with power reduction OE	204 km/h
–with case OA	180 km/h
–with topcase OA	180 km/h

SERVICE

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REPORTING SAFETY-RELEVANT DEFECTS

–with Canada export NV

If you think that your motorcycle has a fault which may cause an accident, injury or death, you must inform the NHTSA (National Highway Traffic Safety Administration) immediately and BMW of North America, LLC.

If the NHTSA receives other similar complaints, it may open an investigation. If it finds that a safety defect exists in a group of vehicles, the NHTSA may order the manufacturer to perform a recall and remedy campaign. However, the NHTSA cannot become involved in individual problems between you, your retailer, or BMW of North America, LLC.

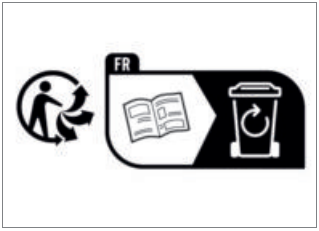
You can contact the NHTSA by calling the Vehicle Safety hotline on 1–888–327–4236 (teletypewriter TTY for the hearing impaired: 1–800–424–9153) for free, by visiting the website at http:// www.safercar.gov or by writing to Administrator, NHTSA, 400 Seventh Street, SW., Washington, DC 20590. Further information on vehicle safety is available at http:// www.safercar.gov.

Canadian customers who wish to report a safety-related defect to Transport Canada, Defect Investigations and Recalls can call the toll-free hotline 1–800–333–0510. You can also obtain other information about motor vehicle safety from http:// www.tc.gc.ca/ roadsafety.

RECYCLING

–with France export[NV]

Disposal of the rider's manual



Dispose of this rider's manual by depositing it in the container provided for the purpose.

BMW MOTORRAD SERVICE

BMW Motorrad has an extensive network of retailers in place to look after you and your motorcycle in more than 100 countries. Authorised BMW Motorrad retailers have the technical information and the technical know-how to carry out reliably all preventive maintenance and repair work on your BMW.
You can locate the nearest authorised BMW Motorrad retailer by visiting our website: **bmw-motorrad.com**.

WARNING

Maintenance and repair work not in compliance with correct procedure
Risk of accident due to consequential damage
- BMW Motorrad recommends having work of this nature carried out on the vehicle by a specialist workshop, preferably an authorised BMW Motorrad dealer.

In order to help ensure that your BMW is always in optimum condition, BMW Motorrad recommends compliance with the maintenance intervals specified for your motorcycle.
Have all preventive maintenance and repair work carried out confirmed in the "Service" chapter in this manual.
Evidence of regular preventive maintenance is essential for generous treatment of claims submitted after the warranty period has expired.

Your authorised
BMW Motorrad retailer
can provide information on
BMW Motorrad services and
the work undertaken as part of
each service.

BMW MOTORRAD SERVICE HISTORY

Entries

Maintenance work that has
been carried out is entered in
the proof of maintenance. The
entries are like a Service Book-
let and provide proof of regular
maintenance.
When an entry is made in the
electronic service booklet of
the vehicle, service-relevant
data is saved in the central IT
systems of BMW AG, Munich,
Germany.
If there is a change in vehicle
ownership, the data saved
in the electronic service
booklet can also be viewed
by the new vehicle owner. A
BMW Motorrad retailer or a
specialist workshop can also
view data that is stored in the
electronic service booklet.

Objection

The vehicle owner can object
to entries being made by the
BMW Motorrad retailer or a
specialist workshop in the elec-
tronic service booklet along
with the corresponding storage
of data in the vehicle and trans-
fer of data to the vehicle man-
ufacturer for the period of time
that they are the vehicle owner.
In this instance, no entry is
made in the electronic service
booklet of the vehicle.

BMW MOTORRAD MOBILITY SERVICES

As owner of a new BMW
vehicle, in circumstances in
which assistance is required
you can benefit from the
protection afforded by the
various BMW Motorrad
mobility services (e.g. Mobile
Service, breakdown service,
vehicle recovery service).
Your authorised
BMW Motorrad retailer
will be happy to provide
information about the mobility
services available to you.

MAINTENANCE WORK

BMW pre-delivery check

Your authorised BMW Motorrad retailer conducts the BMW pre-delivery check before handing over the vehicle to you.

BMW Running-in Check

The BMW running-in check has to be performed when the motorcycle has covered between 500 km and 1200 km.

BMW Motorrad Service

The BMW Motorrad Service is carried out once a year; the extent of servicing can vary, depending on the age of the vehicle and the distance it has covered. Your authorised BMW Motorrad retailer confirms that the service work has been carried out and enters the date when the next service will be due.
Riders who cover long distances in a year might have to bring in their vehicles for service before the next scheduled date. It is to allow for these cases that a maximum odometer reading is entered as well in the confirmation of service. Servicing has to be brought forward if this odometer reading is reached before the next scheduled date for the service.

The service display in the multifunction display reminds you about one month or 1000 km in advance when the time for a service is approaching, on the basis of the programmed values.

To find out more about service go to:
bmw-motorrad.com/service

The maintenance tasks necessary for your vehicle are set out in the maintenance schedule below.

MAINTENANCE SCHEDULE

	500 - 1200 km 300 - 750 mls	10 000 km 6 000 mls	20 000 km 12 000 mls	30 000 km 18 000 mls	40 000 km 24 000 mls	50 000 km 30 000 mls	60 000 km 36 000 mls	70 000 km 42 000 mls	80 000 km 48 000 mls	90 000 km 54 000 mls	100 000 km 60 000 mls	12 months	24 months
1	x												
2		x	x	x	x	x	x	x	x	x	x	x[a]	
3		x	x	x	x	x	x	x	x	x	x	x[a]	
4			x		x		x		x		x		x[b]
5			x		x		x		x		x		
6			x		x		x		x		x		
7			x		x		x		x		x		
8		x	x	x	x	x	x	x	x	x	x	x[c]	
9												x[d]	x[d]

1 BMW running-in check (including oil change and oil filter change)
2 BMW Motorrad Service, standard scope
3 Engine-oil change, with filter
4 Oil change in bevel gears rear
5 Check valve clearances
6 Replace all spark plugs
7 Replace air-filter element
8 Check or replace air filter element (if vehicle is used off-road)
9 Change brake fluid, entire system

a annually or every 10000 km (whichever comes first)
b every two years or every 20000 km (whichever comes first)
c if vehicle is used off-road, annually or every 10000 km (whichever comes first)
d for the first time after one year, then every two years

BMW MOTORRAD RUNNING-IN CHECK

BMW Motorrad running-in check

The tasks included in the BMW Motorrad running-in check are listed below. The actual scope of work applicable for your vehicle may vary.

–Set service date and remaining distance
–Performing vehicle test with BMW Motorrad diagnostic system
–Engine-oil change, with filter
–Changing oil in bevel gears
–Check the brake-fluid level, front wheel brake
–Check the brake-fluid level, rear wheel brake
–Check the coolant level
–Checking tyre tread depth and tyre pressures
–Check the lighting and signalling system
–Function test, engine start suppression
–Final inspection and check for road safety
–Performing vehicle test with BMW Motorrad diagnostic system
–Confirm the BMW service in the on-board literature

MAINTENANCE CONFIRMATIONS

BMW Motorrad Service standard scope

The tasks included in the BMW Motorrad Service standard scope are listed below. The actual scope of maintenance work applicable for your vehicle may vary.

- Performing vehicle test with BMW Motorrad diagnostic system
- Visual inspection of clutch system
- Visual inspection of the brake lines, brake hoses and connections
- Check the front brake pads and brake discs for wear
- Check the brake-fluid level, front wheel brake
- Check the rear brake pads and brake disc for wear
- Check the brake-fluid level, rear wheel brake
- Check the coolant level
- Check the side stand's ease of movement
- Check the ease of movement of the centre stand
- Check the tyre pressures and tread depth
- Check the tension of the spokes, adjust if necessary
- Check the lighting and signalling system
- Function test, engine start suppression
- Final inspection and check for road safety
- Performing vehicle test with BMW Motorrad diagnostic system
- Setting service-due date and countdown distance with BMW Motorrad diagnostic system
- Check the battery state of charge
- Confirm the BMW Motorrad service in the on-board literature

BMW Motorrad pre-delivery check

carried out

on_____

Stamp, signature

BMW Motorrad running-in check

carried out

on_____

odometer reading_____

Next service

at the latest

on_____

or, when reached earlier

odometer reading_____

Stamp, signature

BMW Motorrad service
carried out

on_____
odometer reading_____

Next service
at the latest
on_____
or, when reached earlier
odometer reading_____

Work performed

	Yes	No
BMW Motorrad service	☐	☐
Engine oil change with filter	☐	☐
Oil change in rear angular gearbox	☐	☐
Checking valve clearance	☐	☐
Renewing all spark plugs	☐	☐
Checking or replacing the air filter element (during service)	☐	☐
Replacing the air filter element	☐	☐
Changing the oil in the telescopic fork	☐	☐
Changing the brake fluid in the entire system	☐	☐

Notes

Stamp, signature

BMW Motorrad service
carried out

on_____
odometer reading_____

Next service
at the latest
on_____
or, when reached earlier
odometer reading_____

Work performed

	Yes	No
BMW Motorrad service	☐	☐
Engine oil change with filter	☐	☐
Oil change in rear angular gearbox	☐	☐
Checking valve clearance	☐	☐
Renewing all spark plugs	☐	☐
Checking or replacing the air filter element (during service)	☐	☐
Replacing the air filter element	☐	☐
Changing the oil in the telescopic fork	☐	☐
Changing the brake fluid in the entire system	☐	☐

Notes

Stamp, signature

BMW Motorrad service
carried out

on_____
odometer reading_____

Next service
at the latest
on_____
or, when reached earlier
odometer reading_____

Work performed

	Yes	No
BMW Motorrad service	☐	☐
Engine oil change with filter	☐	☐
Oil change in rear angular gearbox	☐	☐
Checking valve clearance	☐	☐
Renewing all spark plugs	☐	☐
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Changing the brake fluid in the entire system	☐	☐

Notes

Stamp, signature

SERVICE CONFIRMATIONS

The table is intended as a record of maintenance and repair work, the installation of optional accessories and, if appropriate, technical campaign work.

Work performed	odometer reading	Date

Work performed	odometer reading	Date

DECLARATION OF CONFORMITY

Manufacturer

Bayerische Motoren Werke Aktiengesellschaft
Petuelring 130, 80809 Munich, Germany

Hereby, BMW AG declares that the radio equipment components listed below are in compliance with Directive 2014/53/EU and with Radio Equipment Regulations 2017 of the United Kingdom. The full text of the EU/UK declarations of conformity are available at the following internet address:
bmw-motorrad.com/certification

Simplified UK Declaration of Conformity according to Radio Equipment Regulations 2017 of the United Kingdom.

Simplified EU Declaration of Conformity according to EU RED (2014/53/EU).

Technical information

Radio equipment	Component	Frequency band	Output/ Transmission Power
EWS4	EWS	134 kHz	50 dBµV/m
HUF5750	Keyless Ride	434,42 MHz	10 mW
HUF8465	Keyless Ride	134,45 kHz	42 dBµV/m
HUF5794	Keyless Ride	433,92 MHz	10 mW
HUF8485	Keyless Ride	134,45 kHz	42 dBµV/m
ZB001	Keyless Ride	134.5 kHz	allowed 66 dBµA/ m@ 10m
ZB002	Keyless Ride	433.92 MHz	max. 10 dBm e.r.p
TXBM-WMR	DWA	433.05 MHz - 434.79 MHz	18,8 dBm
RDC3	RDC	433.92 MHz	<13 mW
Wus Moto gen 3	RDC	433,05 MHz - 434,79 MHz	<10 mW e.r.p.
MC24MA4	RDC		
WCA Motorrad-Ladestaufach	Charging compartment	110 kHz - 115 kHz	< 6 W
ICC6.5inB	Instrument Cluster	Bluetooth: 2400 MHz -2480 MHz WLAN: 2400 MHz – 2480 MHz	Bluetooth: < 10 mW WLAN: < 100 mW

Radio equipment	Component	Frequency band	Output/ Transmission Power
ICC10in	Instrument Cluster	Bluetooth: 2402 MHz - 2480 MHz WLAN: 2402 MHz – 2472 MHz	Bluetooth: < +4 dBm WLAN: < +14 dBm
MRR e14FCR	ACC	76 - 77 GHz	Peak max. 32 dBm Nom max. 27 dBm
TL1P22	Intelligent emergency call	832 MHz - 862 MHz 880 MHz - 915 MHz 1710 MHz - 1785 MHz 1920 MHz - 1980 MHz 2500 MHz - 2570 MHz 2570 MHz - 2620 MHz GNSS: 1559 MHz-1610 MHz	23 dBm 33 dBm 30 dBm 24 dBm 23 dBm 23 dBm
MCR001	Audio system		

4 Certification

RADIO EQUIPMENT TFT INSTRUMENT CLUSTER

For all Countries without EU

ICC65V2

Manufacturer

Robert Bosch GmbH
Robert-Bosch-Platz 1, 70839 Gerlingen, Germany

Technical Information

BT operating frq. Range: 2402 - 2480 MHz
BT version: 4.2 (no BTLE)
BT output power: < 4 dBm
WLAN operating frq. Range: 2412 - 2462 MHz
WLAN standards: IEEE 802.11 b/g/n
WLAN output power: < 20 dBm

Country

Argentina

X-00000

Canada

Thi s device complies with Industry Canada's licence-exempt RSSs and part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause interference, and
(2) this device must accept any interference, including interference that may cause undesired operation of the device.
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :
(1) l'appareil ne doit pas produire de brouillage, et
(2) l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.
Radio Frequency (RF) Exposure Information
The radiated output power of the Wireless Device is below the Industry Canada (IC) radio frequency exposure limits. The Wireless Device should be used in such a manner such that the potential for human contact during normal operation is minimized. This device has also been evaluated and

shown compliant with the IC RF Exposure limits under mobile exposure conditions.
Informations concernant l'exposition aux fréquences radio (RF)
La puissance de sortie émise par l'appareil de sans fil est inférieure à la limite d'exposition aux fréquences radio d'Industry Canada (IC). Utilisez l'appareil de sans fil de façon à minimiser les contacts humains lors du fonctionnement normal. Ce périphérique a également été évalué et démontré conforme aux limites d'exposition aux RF d'IC dans des conditions d'exposition à des appareils mobiles (antennes sont supérieures à 20 cm à partir du corps d'une personne).

Japan

Modelname: xxxxxxxx
Approval ID:
電波法 (RL): xyx-xxxxxx
電気通信事業法 (TBL): D yy-xxxx xxx
This device is granted pursuant to the Japanese Radio Law (電波法) and the Japanese Telecommunications Business Law (電気通信事業法)
本製品は、電波法と電気通信事業法に基づく適合証明を受けております。
This device should not be modified (otherwise the granted designation number will become invalid)
本製品の改造は禁止されています。(適合証明番号などが無効となります。)

Mexico

La operación de este equipo está sujeta a las siguientes dos condiciones:
(1) es posible que este equipo o dispositivo no cause interferencia perjudicial y
(2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.

Paraguay

CONATEL

NR.: xxxx-xx-x-xxxx

Taiwan

經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

6 Certification

低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。
前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

Thailand

Class A

เครื่องโทรคมนาคมและอุปกรณ์นี้มีความสอดคล้องตามมาตรฐานหรือข้อกำหนดของ กสทช.
(This telecommunication equipments is in compliance with NBTC requirements)

United States (USA)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.
CAUTION:
Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment.
This device complies with Industry Canada's licence-exempt

RSSs and part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause interference, and
(2) this device must accept any interference, including interference that may cause undesired operation of the device.
RF exposure warning
This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

Details described or illustrated in this booklet may differ from the vehicle's actual specification as purchased, the accessories fitted or the national-market specification. No claims will be entertained as a result of such discrepancies.
Dimensions, weights, fuel consumption and performance data are quoted to the customary tolerances.
The right to modify designs, equipment and accessories is reserved.
Errors and omissions excepted.

Original rider's manual, printed in Germany.

Important data for refuelling:

Fuel	
Recommended fuel grade	E5 E10 Super unleaded (max 15 % ethanol, E10/E15) 95 ROZ/RON 90 AKI
Alternative fuel grade	E5 E10 Normal unleaded (power- and consumption-related restrictions.) (max 15 % ethanol, E10/E15) 91 ROZ/RON 87 AKI
Usable fuel capacity	approx. 20 l
Reserve fuel	approx. 4 l
Tyre pressures	
Tyre pressure, front	2.5 bar, Tyre cold
Tyre pressure, rear	2.9 bar, Tyre cold

For further information on all aspects of your vehicle, visit: **bmw-motorrad.com**

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