

Maintenance Instructions

F 650 CS



**BMW Motorrad
On-board
documentation**

consisting of
Rider's Manual
and Maintenance
Instructions



Please note



Warning:

This symbol indicates precautions and measures which are essential in protecting the rider or other persons from severe or fatal injury.



Attention:

Specific instructions and safety precautions intended to prevent damage to the motorcycle. Disregarding them may render the warranty invalid.



Note:

Specific instructions on how to operate, control, adjust or look after items of equipment on the motorcycle.

For safety reasons and to maintain the value of your motorcycle, regular maintenance intervals have been laid down. Always keep to the specified maintenance intervals. This is the only way to ensure that warranty claims are not invalidated. The contents of the maintenance schedules are subject to change, for reasons of safety, due to modifications in, among other things, materials.

Your authorised BMW motorcycle dealer can provide information on the currently specified Service, Inspection and Annual Inspection work needed.

Important:

BMW refuses to accept liability for damage or consequential damage due to repairs or service work carried out by other than BMW-authorised workshops.

Have service and inspection work carried out by your authorised BMW motorcycle dealer's specially trained, expert personnel, and confirmed by an entry in the Service and Technical Booklet.

Authorised BMW motorcycle dealers are supplied with the latest technical information and have the necessary technical know-how and specially trained staff.

Please do not hesitate to contact your authorised BMW motorcycle dealer on all matters concerning your motorcycle.

Authorised BMW motorcycle dealers are fully informed about all aspects of your motorcycle and will gladly advise and assist you.

Best wishes,

BMW Motorrad

Important safety information

1

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BMW Service

For your own safety, use only genuine BMW spare parts and accessories approved by BMW.

If you choose genuine BMW accessories and spare parts that have been tested and approved, you can be sure that BMW has carried out the appropriate tests to confirm their suitability for use on your motorcycle. BMW accepts product liability only for these products.

Note, however, that BMW is unable to accept liability for spare parts and accessories which it has not approved.

BMW cannot assess every single product of outside origin in order to decide whether it can be used on or with a BMW vehicle without constituting a safety hazard.

Nor is approval by an official technical inspection authority, or even the granting of a general operating permit necessarily a sufficient guarantee, since these test procedures are not always adequate.

Genuine BMW spare parts, accessories and other products which BMW has approved can be obtained from all authorised BMW motorcycle dealers, together with expert advice on their installation and use.

Maintenance work is divided up into Service, Inspection and Annual Inspection.

BMW Inspection, 1,000 km (600 miles)

BMW running-in check after the first 1,000 km (600 miles).

BMW Service

After the first 10,000 km (6,000 miles) and every further 20,000 km (12,000 miles) (30,000 km..., 50,000 km ..., 70,000 km...) (18,000 miles..., 30,000 miles..., 42,000 miles)

BMW Inspection

After the first 20,000 km (12,000 miles) and every further 20,000 km (40,000 km..., 60,000 km ..., 80,000 km...) (24,000 miles..., 36,000 miles..., 48,000 miles)

BMW Annual Inspection

Certain items of maintenance work depend on elapsed time as well as the distance the motorcycle has covered. These tasks must therefore be performed at least once a year (e.g. changing the brake fluid).

If these items cannot be carried out during a Service or an Inspection, an Annual Inspection must be performed.



Note:

Every authorised BMW motorcycle dealer has a fixed scale of charges based on work times and carefully calculated hourly rates.

Fuel, lubricants and similar substances, filters, gaskets, etc. are charged separately.

Maintenance schedule

If you like, you can view the current maintenance schedule for your motorcycle on the Internet and download the file from www.bmw-motorrad.com/maintenance.

Confirmation of maintenance work

1

4

BMW Service

BMW Pre-delivery Check

Carried out in accordance with
manufacturer's instructions

Odometer reading _____

Date, stamp, signature

BMW Service, 10,000 km (6,000 miles)

Carried out in accordance with
manufacturer's instructions

Odometer reading _____

Date, stamp, signature

BMW Inspection, 1,000 km (600 miles)

Carried out in accordance with
manufacturer's instructions

Odometer reading _____

Date, stamp, signature

BMW Inspection, 20,000 km (12,000 miles)

Carried out in accordance with
manufacturer's instructions

Odometer reading _____

Date, stamp, signature

Confirmation of maintenance work

BMW Service 30,000 km (18,000 miles)

Carried out in accordance with
manufacturer's instructions

Odometer reading _____

Date, stamp, signature

BMW Service 50,000 km (30,000 miles)

Carried out in accordance with
manufacturer's instructions

Odometer reading _____

Date, stamp, signature

BMW Inspection 40,000 km (24,000 miles)

Carried out in accordance with
manufacturer's instructions

Odometer reading _____

Date, stamp, signature

BMW Inspection 60,000 km (36,000 miles)

Carried out in accordance with
manufacturer's instructions

Odometer reading _____

Date, stamp, signature

Confirmation of maintenance work

1

6

BMW Service

BMW Service 70,000 km (42,000 miles)

Carried out in accordance with
manufacturer's instructions

Odometer reading _____

Date, stamp, signature

BMW Service 90,000 km (54,000 miles)

Carried out in accordance with
manufacturer's instructions

Odometer reading _____

Date, stamp, signature

BMW Inspection 80,000 km (48,000 miles)

Carried out in accordance with
manufacturer's instructions

Odometer reading _____

Date, stamp, signature

BMW Inspection 100,000 km (60,000 miles)

Carried out in accordance with
manufacturer's instructions

Odometer reading _____

Date, stamp, signature

Confirmation of maintenance work

BMW Service, 110,000 km (66,000 miles)

Carried out in accordance with
manufacturer's instructions

Odometer reading _____

Date, stamp, signature

BMW Service 130,000 km (78,000 miles)

Carried out in accordance with
manufacturer's instructions

Odometer reading _____

Date, stamp, signature

BMW Inspection, 120,000 km (72,000 miles)

Carried out in accordance with
manufacturer's instructions

Odometer reading _____

Date, stamp, signature

BMW Inspection 140,000 km (84,000 miles)

Carried out in accordance with
manufacturer's instructions

Odometer reading _____

Date, stamp, signature

Confirmation of maintenance work

1

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BMW Service

BMW

Annual Inspection

Carried out in accordance with manufacturer's instructions

Brake fluid changed:

yes ☐ no ☐

Coolant changed:

yes ☐ no ☐

Date, stamp, signature

BMW

Annual Inspection

Carried out in accordance with manufacturer's instructions

Brake fluid changed:

yes ☐ no ☐

Coolant changed:

yes ☐ no ☐

Date, stamp, signature

BMW

Annual Inspection

Carried out in accordance with manufacturer's instructions

Brake fluid changed:

yes ☐ no ☐

Coolant changed:

yes ☐ no ☐

Date, stamp, signature

BMW

Annual Inspection

Carried out in accordance with manufacturer's instructions

Brake fluid changed:

yes ☐ no ☐

Coolant changed:

yes ☐ no ☐

Date, stamp, signature

Confirmation of maintenance work

BMW

Annual Inspection

Carried out in accordance with manufacturer's instructions

Brake fluid changed:

yes ☐

no ☐

Coolant changed:

yes ☐

no ☐

Date, stamp, signature

BMW

Annual Inspection

Carried out in accordance with manufacturer's instructions

Brake fluid changed:

yes ☐

no ☐

Coolant changed:

yes ☐

no ☐

Date, stamp, signature

BMW

Annual Inspection

Carried out in accordance with manufacturer's instructions

Brake fluid changed:

yes ☐

no ☐

Coolant changed:

yes ☐

no ☐

Date, stamp, signature

BMW

Annual Inspection

Carried out in accordance with manufacturer's instructions

Brake fluid changed:

yes ☐

no ☐

Coolant changed:

yes ☐

no ☐

Date, stamp, signature

Confirmation of maintenance work

1

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BMW Service

BMW

Annual Inspection

Carried out in accordance with manufacturer's instructions

Brake fluid changed:

yes ☐ no ☐

Coolant changed:

yes ☐ no ☐

Date, stamp, signature

BMW

Annual Inspection

Carried out in accordance with manufacturer's instructions

Brake fluid changed:

yes ☐ no ☐

Coolant changed:

yes ☐ no ☐

Date, stamp, signature

BMW

Annual Inspection

Carried out in accordance with manufacturer's instructions

Brake fluid changed:

yes ☐ no ☐

Coolant changed:

yes ☐ no ☐

Date, stamp, signature

BMW

Annual Inspection

Carried out in accordance with manufacturer's instructions

Brake fluid changed:

yes ☐ no ☐

Coolant changed:

yes ☐ no ☐

Date, stamp, signature

Confirmation of service

1

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BMW Service

Record of all work carried out in workshop		
Work carried out	km/miles	Date

The list is intended as a record of maintenance, warranty and repair work, the installation of accessories and, if appropriate, special campaign work.

Confirmation of service

Odometer replaced

Odometer reading is not total distance covered.

Odometer reading _____

Date, stamp, signature

Odometer replaced

Odometer reading is not total distance covered.

Odometer reading _____

Date, stamp, signature

Odometer replaced

Odometer reading is not total distance covered.

Odometer reading _____

Date, stamp, signature

Odometer replaced

Odometer reading is not total distance covered.

Odometer reading _____

Date, stamp, signature

Your motorcycle is equipped with a digital electronic engine management system and a high-power ignition system.



Warning:

When the engine is running or the ignition is switched on, do not touch electrically live components, terminals or wiring.

– Risk of fatal accident

Work on the electrical system only when the circuit has been interrupted (ignition and lights switched off). For greater safety, disconnect and insulate the negative battery lead.

If you intend to perform the maintenance and general care work described in the following section yourself, you must possess the necessary knowledge of technical matters and mechanical skills.

Your motorcycle is built to high technological standards. Special tools and purpose-designed diagnosis and testing equipment, together with the appropriate knowledge, are needed to keep your motorcycle in optimum working order. Your authorised BMW motorcycle dealer possesses the necessary technical know-how and employs company-trained staff. They can make sure that your motorcycle is always maintained in a fault-free technical condition.

Remember: the safety and reliability of your motorcycle are the most important considerations.

You should therefore not attempt any complex repair or maintenance tasks.

Keep to the specified Inspection and Service intervals. BMW refuses to accept liability for damage or consequential damage due to repairs or service work carried out by other than BMW-authorised workshops.

Technical modifications



Warning:

The data stored in the control unit of the electronic engine management system is the result of extensive experimental and testing work. Tampering with the control unit of the engine management system represents an increased safety risk for the rider.



Note:

Manipulation of the electronic engine management system voids the warranty in all instances of damage consequential to such manipulation.

There is only limited scope for technical modifications to the motorcycle.

Whenever you are planning such modifications, comply with all the legal requirements. The motorcycle must not infringe your national road-vehicle construction and use regulations.

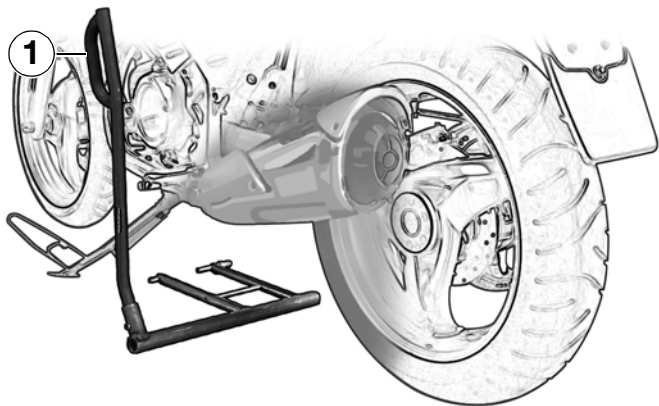
Your authorised BMW motorcycle dealer will gladly advise you on technical requirements, the manufacturer's recommendations and the overall benefit likely to be obtained.

Genuine BMW parts

For reasons of safety, use only genuine BMW parts and accessories.

Genuine BMW parts are identical with those fitted to your motorcycle as original equipment.

BMW Motorrad refuses to accept any liability whatsoever for other-make spare parts and accessories.



Installing and removing the auxiliary stand



Attention:

Switch off the engine before installing the stand.

Make sure that there is a firm surface under the stand.



Note:

When removing a front or rear wheel, you are recommended to use the auxiliary stand, special tool No. 00 1 620, which is available from your authorised BMW motorcycle dealer.

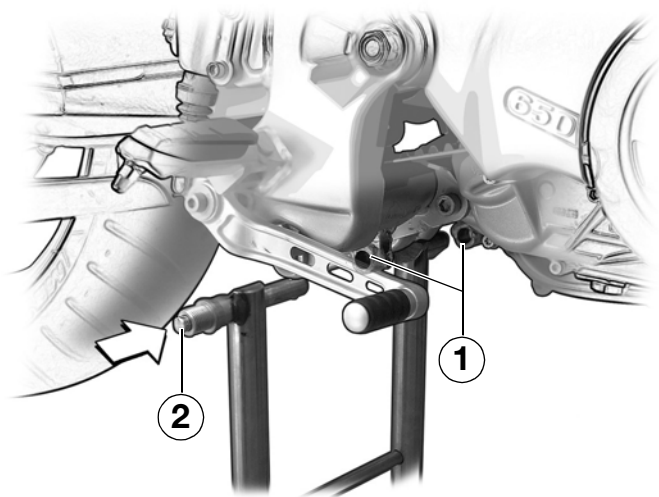
- Prop the motorcycle on its side stand
- Place the auxiliary stand beneath the motorcycle
 - Handle **1** on the left-hand side of the motorcycle

Auxiliary stand

2

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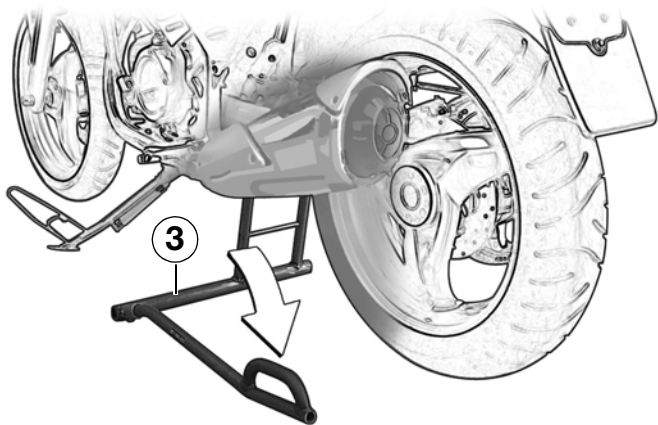
Maintenance and care



- Press the auxiliary stand into sockets **1** and release pin **2**
 - The ball latch engages
- Check that the auxiliary stand is firmly secured

Removing the auxiliary stand

- Position the auxiliary stand at sockets **1** on left and right
 - Press and hold down pin **2**
 - The ball latch is disengaged
- Extend the side stand before removing the auxiliary stand
 - Removal of the auxiliary stand is the reverse of the installation procedure



Placing the motorcycle on the auxiliary stand



Warning:

For safety reasons, never sit on the motorcycle when the auxiliary stand is extended.



Attention:

Make sure that there is a firm surface under the stand.

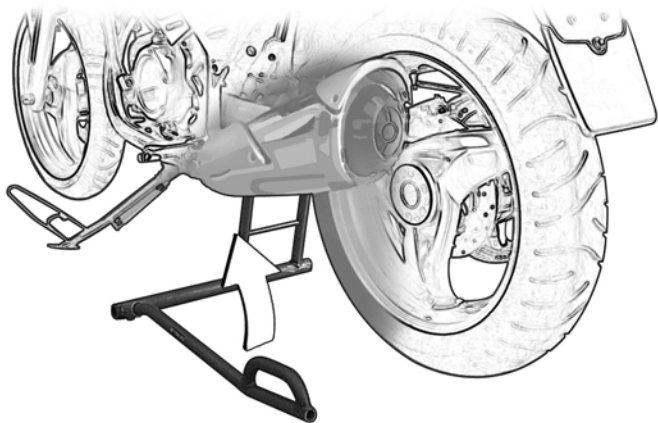
- Hold the left handlebar grip with your left hand
- Hold the handle of the auxiliary stand with your right hand
- Lift the motorcycle into the upright position and hold it in this position until foot **3** of the stand is in contact with the ground
- Slowly press the stand handle down to the ground (arrow)
- Check that the motorcycle is firmly supported
- Retract the side stand

Auxiliary stand

2

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Maintenance and care



Pushing the motorcycle off the auxiliary stand



Warning:

The auxiliary stand must be removed before the motorcycle is ridden.

- Extend the side stand
- Hold the left handlebar grip with your left hand
- Hold the handle of the auxiliary stand with your right hand
- Pull the handle up slowly (arrow) until the weight is removed from the auxiliary stand
- Prop the motorcycle on the side stand
- Remove the auxiliary stand

Troubleshooting chart

Fault: Engine does not start or is very difficult to start

Possible cause	Remedy	See ➡ Page
Wrong ignition key position	Operation	Rider's Manual ➡ Chapter 1
Kill switch is off	Operation	Rider's Manual ➡ Chapter 3
Power supply interrupted	Blown fuse	➡ 44
Gear engaged, clutch not disengaged	Select neutral or pull clutch lever	Rider's Manual ➡ Chapter 3
Side stand extended and gear engaged	Select neutral or retract side stand	Rider's Manual ➡ Chapter 3
No fuel in tank	Refuel	Rider's Manual ➡ Chapter 2
Fuel pump not working	Blown fuse	➡ 44
Incorrect operation of twistgrip	Operation	Rider's Manual ➡ Chapter 3

Troubleshooting chart

Fault: Engine does not start or is very difficult to start

Possible cause	Remedy	See ➡ Page
Blocked air filter element	Replace	
Defective/wet spark plug	Replace	
Spark plug/lead or coil wet	Blow out/dry with compressed air	
Insufficient battery charge	Recharge battery	➡ 47
Electronic engine management system not initialised	Ignition off, wait for 3 seconds, switch ignition on and wait until warning light for coolant temperature stops flashing	Rider's Manual ➡ Chapter 3



Note:

It is advisable to have other faults – not described on pages 14... 58 – attended to by a specialist workshop, preferably an authorised BMW motorcycle dealer.



Note:

More detailed technical information is available in the following publications:

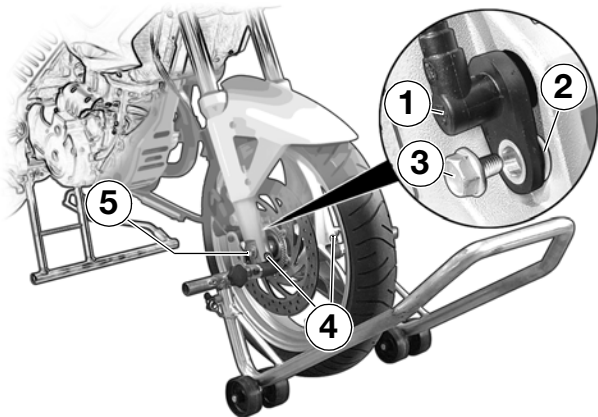
- Repair Manual
- Electrical Circuit Diagrams

Removing the front wheel

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Maintenance and care



Warning:

Make sure that the motorcycle is standing firmly and cannot topple forward or to either side.



Note:

Mark the installed position on the tyre or ABS sensor ring^{OE} or note the direction-of-rotation arrow if it is marked on the tyre.



Attention:

If a spacer 2 is installed to compensate component tolerances, make sure that it is reinstalled on reassembly.

- Place the motorcycle on the auxiliary stand
- Remove securing screw **3**
- Pull ABS sensor^{OE} **1** out of its bore
- Slacken axle clamp screws **4** on the left and right
- Remove axle screw **5**
- Raise the front wheel with front wheel stand, BMW special tool No. 36 3 970



Note:

Make sure that the front-wheel stand is set to the correct width and height.

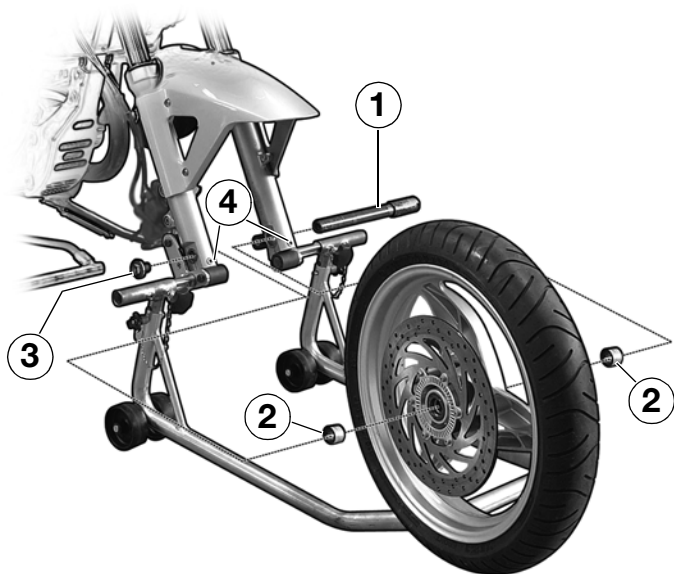
OE Optional extra

Removing the front wheel

2

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Maintenance and care



Attention:

Do not damage brake lines, disc and pads when removing the wheel.

Do not damage the ABS sensor cable^{OE}, ABS sensor ring^{OE} and the ABS sensor^{OE}.

Never pull the brake lever when the wheel has been removed. Keep dirt and moisture away from the wheel bearings.

- Pull out quick-release axle **1** to the left, turning it slightly at the same time
- Carefully roll the front wheel forward and out
- Remove spacers **2** on left and right
- Take care not to damage the brake disc when laying the wheel aside

^{OE} Optional extra



Warning:

Make sure that the motorcycle is standing firmly and cannot topple forward or to either side.



Attention:

Do not damage the brake disc and brake pads when installing. Do not damage the ABS sensor cable^{OE}, ABS sensor ring^{OE} and the ABS sensor^{OE}.

- Roll the front wheel into position between the fork legs, carefully slipping the brake disc into the brake caliper
- Grease left and right spacers **2** and insert them into the wheel hub
- Grease quick-release axle **1** and insert it from the left (raising the wheel slightly as necessary)
- Hand-tighten axle screw **3**
- Hand-tighten axle clamp screws **4**
- Remove front-wheel stand
- Compress the front forks firmly several times
- Tighten axle screw **1** to its specified torque
- Tighten axle clamp screws **2** on left and right to their specified torque

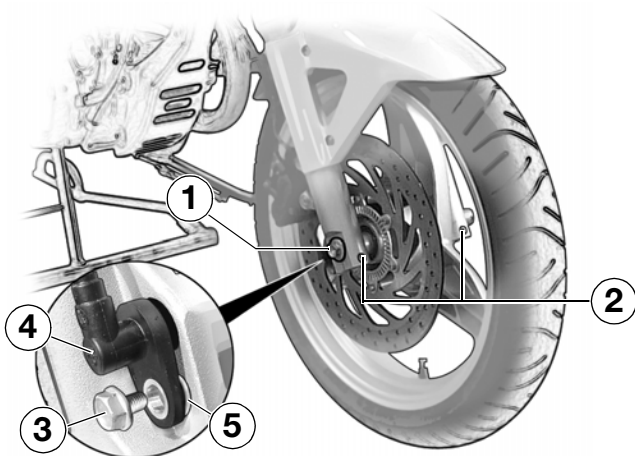
^{OE} Optional extra

Installing the front wheel

2

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Maintenance and care



- Insert ABS sensor^{OE} **4** until approx. 2/3 of its length are inside the bore
- Insert spacer **5** (if originally fitted)
- Insert securing screw **3** and tighten to specified tightening torque
- Remove the auxiliary stand



Attention:

Always have the tightening torques checked by a specialist workshop, preferably an authorised BMW motorcycle dealer.



Tightening torque:

Quick-release axle **1**..... 30 Nm
Axle clamp screw **2**..... 23 Nm
Securing screw,
ABS sensor **3**..... 9 Nm

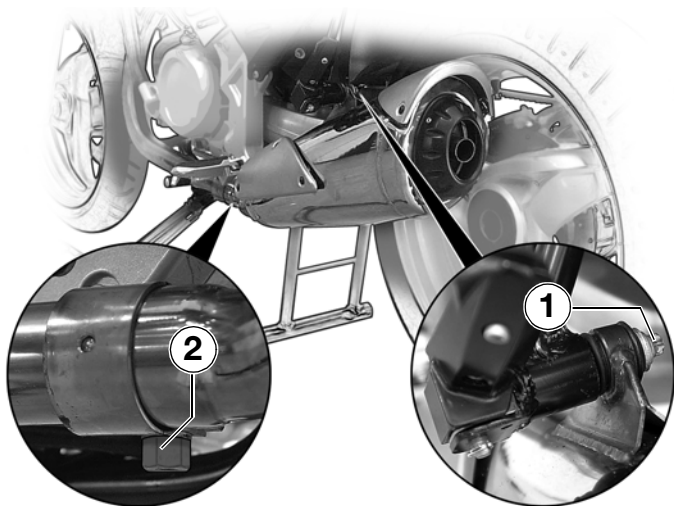


Warning:

When assembly work has been completed, pull the brake lever firmly several times to check that the front brake is operating correctly.

^{OE} Optional extra

Removing rear wheel



Note:

When removing the silencer, do not damage the wheel rim; apply masking tape to the rim if necessary.



Warning:

Remove the silencer only when it is cold.
Make sure that the motorcycle is standing firmly and cannot topple to the rear or to either side.

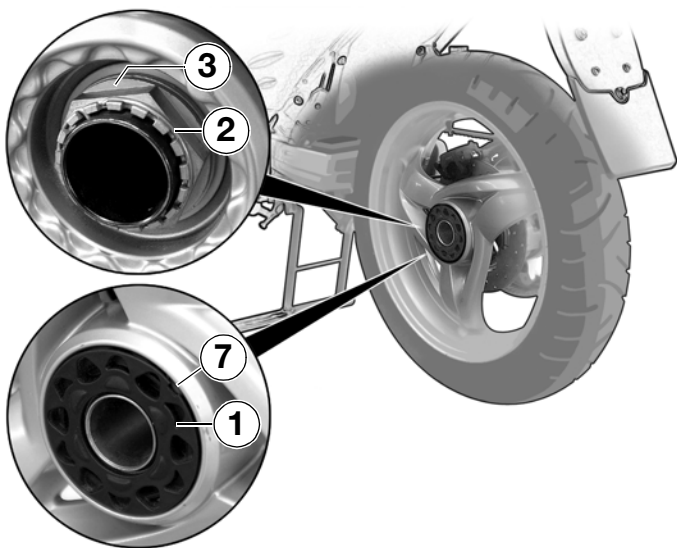
- Place the motorcycle on the auxiliary stand
 - Make sure the ground is level and firm.
- Unfasten securing screw **2** of clamp
- Remove securing screw **1** from frame
- Remove silencer

Removing rear wheel

2

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Maintenance and care

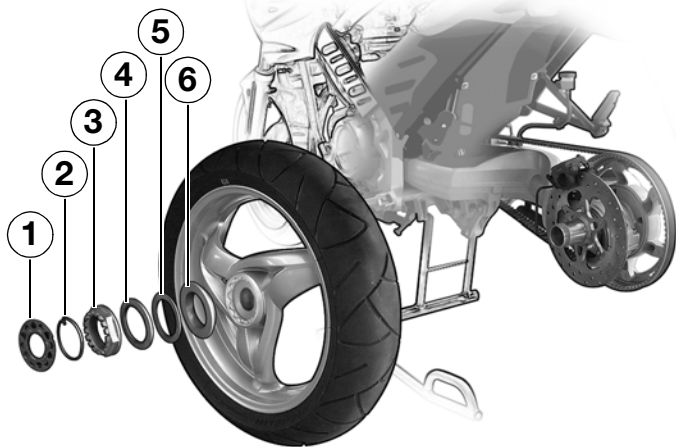


Attention:

Take care to keep the adapter square when removing the wheel nut.

- Insert tip of screwdriver in groove **7** and carefully pry off wheel cover **1**
- Using screwdriver, pry out split pin **2**
- Using adapter, remove wheel nut **3**
- Remove cup spring **4**, thrust washer **5** and taper ring **6** from the rear axle
- Remove the rear wheel from the centring spigot

Installing the rear wheel



- Slide the rear wheel onto the centring spigot
- Slip taper ring **6** into position with the taper toward the wheel
- Slip thrust washer **5** into position
- Slip cup spring **4** into position with wording "OUTSIDE" toward the outside



Attention:

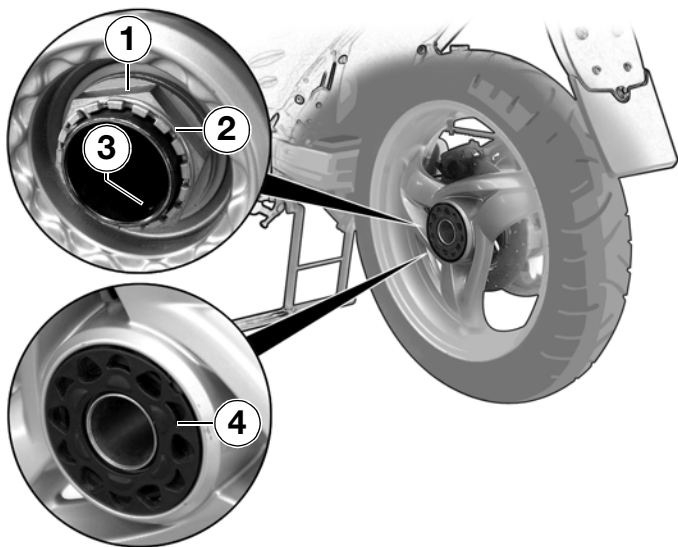
Take care to keep the adapter square when tightening the wheel nut.

Installing the rear wheel

2

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Maintenance and care



- Grease the threads of wheel nut **1** with Optimoly TA
- Install wheel nut **1** and tighten to specified tightening torque



Note:

If necessary, tighten wheel nut **1** slightly past the specified torque until a bore for the split pin is in line.

- Engage split pin **2** in one of the two bores **3** and snap it into the groove
- Firmly press wheel cover **4** into the wheel hub

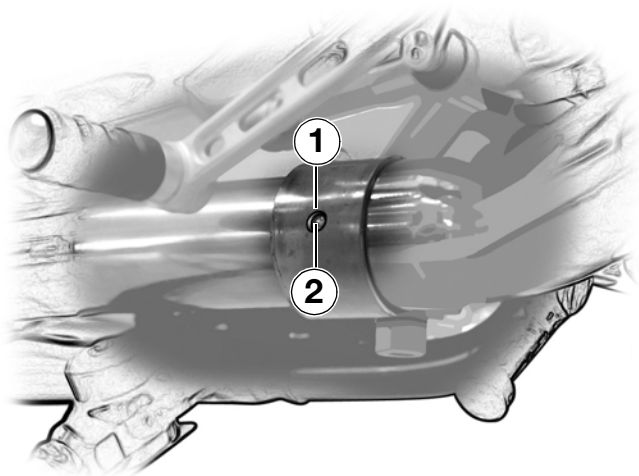


Note:

Grease surface between inside of clamp and union with Optimoly TA.

When installing the silencer, do not damage the wheel rim; apply masking tape to the rim if necessary.

Installing the rear wheel



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Maintenance and care

- Slip the silencer onto the exhaust elbow
- Align hole **1** in clamp with locating mark **2** on the silencer
- Position the silencer against the frame and hand-tighten the securing screw
- Tighten the clamp to the specified tightening torque
- Tighten the securing screw on the frame to the specified tightening torque
- Remove the auxiliary stand



Warning:

Always have the security of the fasteners checked by a specialist workshop, preferably an authorised BMW motorcycle dealer.



Tightening torque:

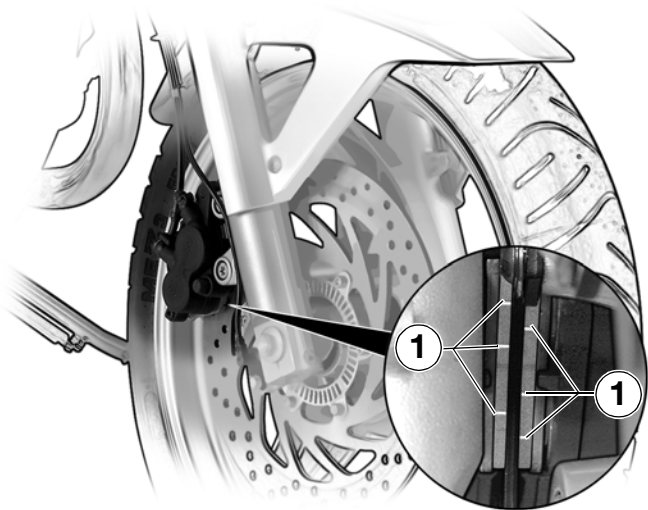
Wheel nut 1	160 Nm
Clamp	55 Nm
Securing screw, silencer to frame	41 Nm

Checking brake pads

2

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Maintenance and care



Front brake



Attention:

Have brake pads replaced before the minimum permitted thickness is reached.



Note:

For your safety, we recommend having work on the brake system performed by a specialist workshop, preferably an authorised BMW motorcycle dealer.

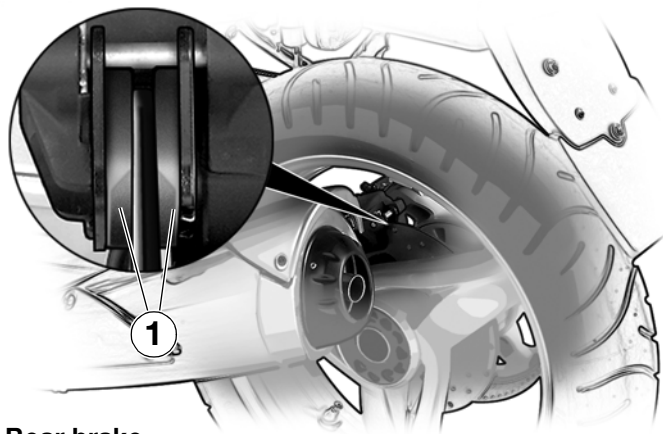
- Visually inspect from in front
- Check the thickness of the brake pads

Minimum pad thickness:

The brake pads must have clearly visible wear indicating marks 1 (slots).

- If the wear indicating mark is no longer clearly visible:

have the brake pads replaced by a specialist workshop, preferably an authorised BMW motorcycle dealer.



Rear brake



Attention:

Have brake pads replaced before the minimum permitted thickness is reached.



Note:

For your safety, we recommend having work on the brake system performed by a specialist workshop, preferably an authorised BMW motorcycle dealer.

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

- Visually inspect from behind
- Check the thickness of the brake pads

Minimum pad thickness:

Angled wear indicating mark 1 must be clearly visible on the pads.

– If the wear indicating mark is no longer visible:

have the brake pads replaced by a specialist workshop, preferably an authorised BMW motorcycle dealer.



Attention:

Your motorcycle has one bulb for the low-beam headlight and one for the high-beam headlight, one for the parking light, one for the brake light and one for the rear light and one for the number-plate light, plus four bulbs for the turn indicators.

If any of these bulbs should fail, you may have problems in seeing and being seen.

You should therefore always carry spare bulbs on the motorcycle.



Note:

Do not touch new bulbs with your fingers.

Use a clean, dry cloth to hold the bulbs when inserting them. Dirt deposits, in particular oil and grease, interfere with heat radiation from the bulb. This leads to overheating and shortens the bulb's operating life.

Your motorcycle is equipped with a digital electronic engine management system and a high-power ignition system.



Warning:

Work on the electrical system only when the circuit has been interrupted (ignition and lights switched off). For greater safety, disconnect and insulate the negative battery lead.

When the engine is running or the ignition is switched on, do not touch electrically live components, terminals or wiring.

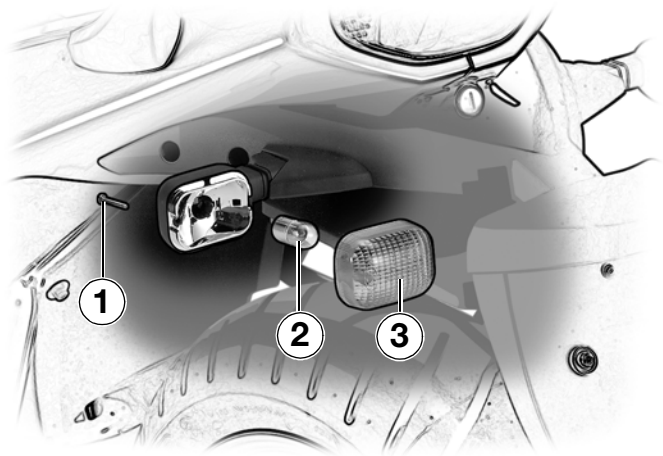
– Risk of fatal accident

Changing bulbs

2

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Maintenance and care



Flashing turn indicators



Attention:

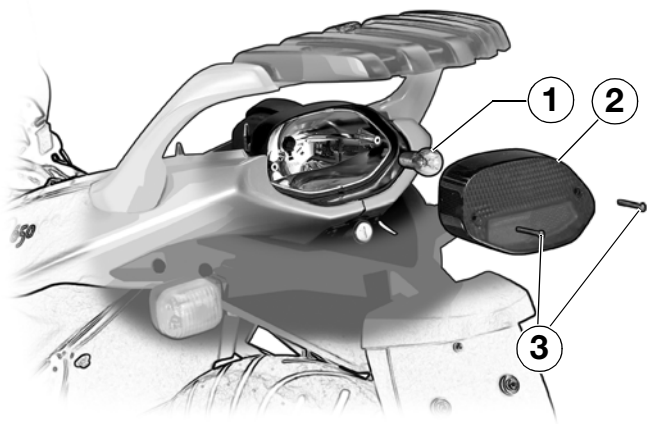
Switch off the ignition before changing a bulb.



Note:

Do not touch new bulbs with your fingers.
Use a clean, dry cloth to hold the bulbs when inserting them.

- Prop the motorcycle on its side stand
 - Make sure the ground is level and firm.
- Remove securing screw **1**
- Remove flashing turn indicator glass **3**
- Press bulb **2** into the socket, turn it counter-clockwise to disengage it and remove
- Installation is the reverse of the removal procedure
 - Flashing turn indicator bulbs **2** front/rear: **12 V 10 W**



Rear/brake light



Attention:

Switch off the ignition before changing a bulb.



Note:

Do not touch new bulbs with your fingers.
Use a clean, dry cloth to hold the bulbs when inserting them.

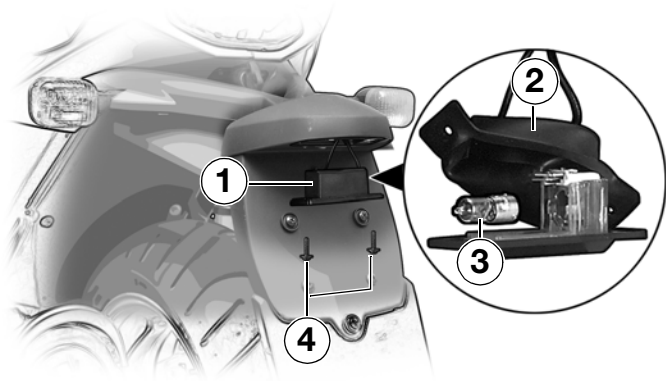
- Prop the motorcycle on its side stand
 - Make sure the ground is level and firm.
- Remove two screws **3**
- Pull rear light glass **2** to the rear and remove
- Press bulb **1** in the forward direction of travel and turn it counter-clockwise to disengage it from its socket
- Remove the bulb
- Installation is the reverse of the removal procedure
 - Brake/rear light bulb:
12 V 21/5 W

Changing bulbs

2

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Maintenance and care



Number-plate light



Attention:

Switch off the ignition before changing a bulb.



Note:

Do not touch new bulbs with your fingers.
Use a clean, dry cloth to hold the bulbs when inserting them.

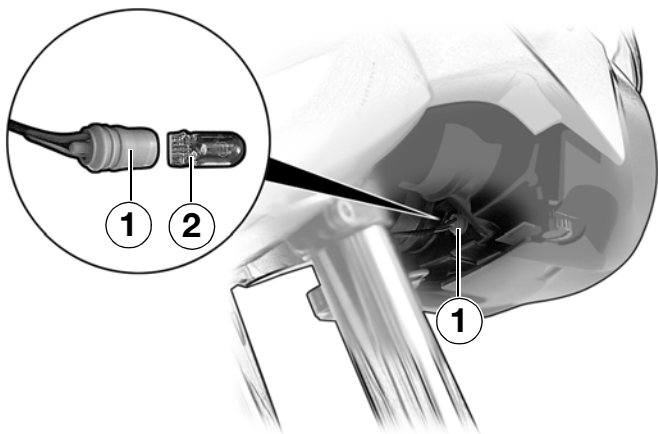
- Prop the motorcycle on its side stand
- Remove two retaining screws **4**
- Carefully remove number-plate light **1** from below

- Remove cap **2**.
- Press bulb **3** into its socket, and disengage it by turning it counter-clockwise
- Remove the bulb
- Installation is the reverse of the removal procedure
- Number-plate light bulb **3**:
12 V 6 W



Note:

When installing the bulb, make sure the pins on the base are correctly aligned with the recesses in the socket.
Make sure that cap **2** is correctly seated.



Parking light



Attention:

Switch off the ignition before changing a bulb.



Note:

Do not touch new bulbs with your fingers.
Use a clean, dry cloth to hold the bulbs when inserting them.

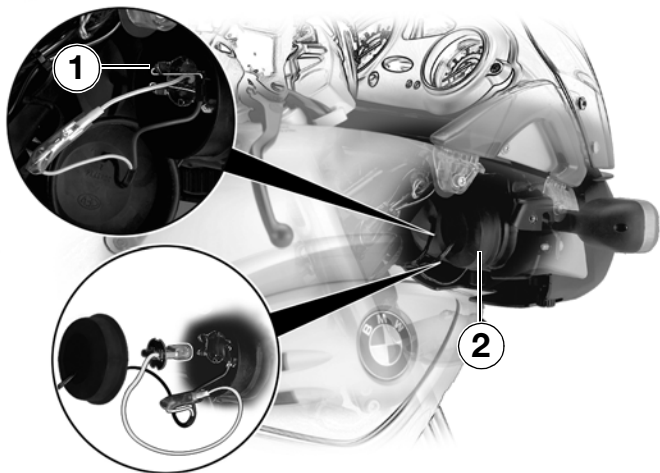
- Prop the motorcycle on its side stand
 - Make sure the ground is level and firm.
 - Pull the cables to ease socket **1** out of the headlight housing
 - Pull bulb **2** out of the socket
- Installation is the reverse of the removal procedure
- Parking light bulb **2: 12 V 5 W**

Changing bulbs

2

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Maintenance and care



Note:

Do not touch new bulbs with your fingers.
Use a clean, dry cloth to hold the bulbs when inserting them.

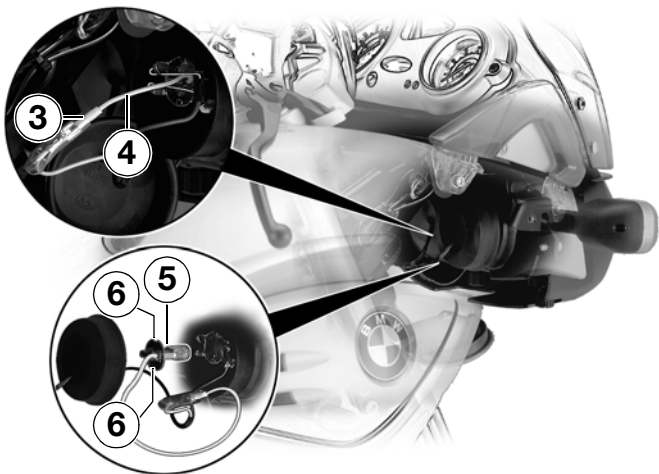
Low-beam headlight



Attention:

Switch off the ignition before changing a bulb.
Route the cable in such a way as to ensure that it cannot be trapped or pinched.

- Prop the motorcycle on its side stand
 - Make sure the ground is level and firm.
- Remove rubber cap **2**
- Squeeze clip **1** and push it down at the same time to disengage it



- Remove bulb **5**
- Pull cable **4** with connector from housing **3**
- Installation is the reverse of the removal procedure

**Note:**

Align recesses **6** in the base of the bulb with the guides in the bulb socket.

Make sure that the holes in rubber cap **2** are at the bottom

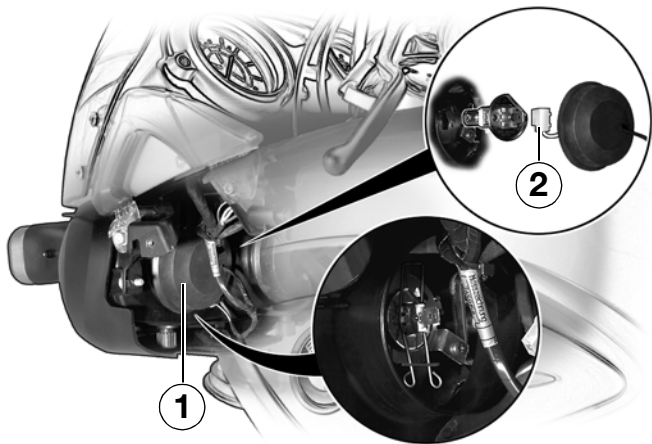
– Low-beam headlight **5**:
H3 12 V 55 W

Changing bulbs

2

42

Maintenance and care



Note:

Do not touch new bulbs with your fingers.
Use a clean, dry cloth to hold the bulbs when inserting them.

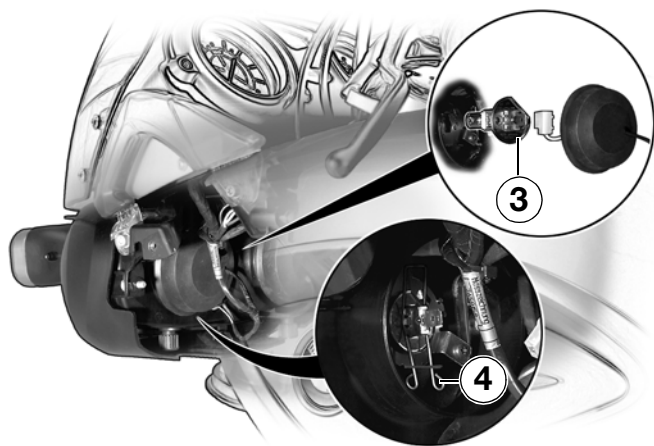
High-beam headlight



Attention:

Switch off the ignition before changing a bulb.

- Prop the motorcycle on its side stand
 - Make sure the ground is level and firm.
- Remove rubber cap **1**
- Disconnect flat plug **2**



Note:

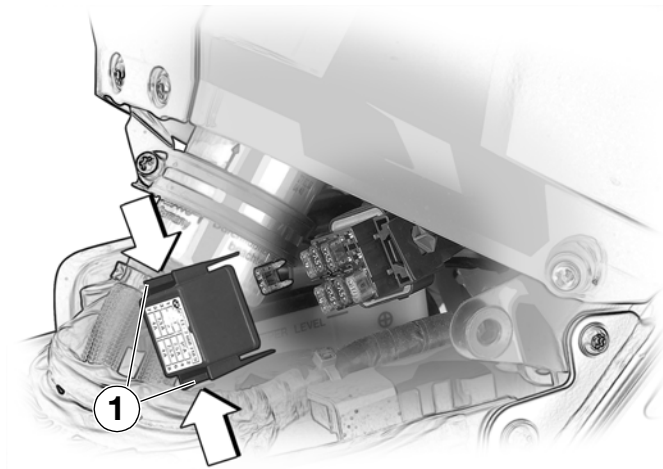
Align the bulb base with the socket.

Make sure that the holes in rubber cap **1** are at the bottom

- Squeeze retainer **4** and push it down at the same time to disengage it

- Remove bulb **3**
- Installation is the reverse of the removal procedure

– High-beam headlight **3**:
H1 12 V 55 W



Changing fuses

- Prop the motorcycle on its side stand
 - Make sure the ground is level and firm.
- Remove the seat
- Squeeze clips **1** together and remove the cover of the fuse box
- Remove the blown fuse from its socket
- Insert a new fuse of the correct rating
- Close the fuse box lid
- Close and lock the seat



Attention:

Before changing a fuse, switch off the ignition.

Never attempt to repair a blown fuse – risk of fire

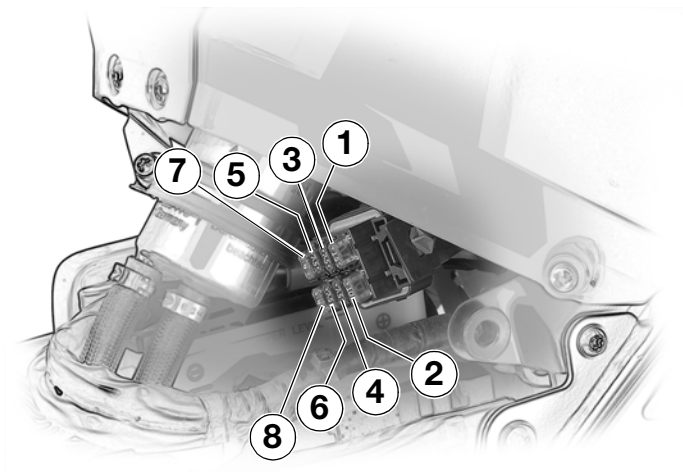
For this reason, always carry a number of spare fuses in the toolkit.

Use only fuses of the specified rating and type.



Note:

It is advisable to have the electrical system checked by a specialist workshop, preferably an authorised BMW motorcycle dealer, if fuses blow frequently.



Equipment connected to fuses

- | | |
|---|--|
| 1 Engine electronics 15 A | 5 High-beam headlight 7.5 A |
| 2 Optional accessories plug, on-board socket, instrument panel, diagnosis plug, hazard warning flashers 10 A | 6 Brake light, flashing turn indicators, instrument panel, instrument lighting, optional accessories plug 7.5 A |
| 3 Horn, headlight flasher 7.5 A | 7 Parking light, tail light 4 A |
| 4 Low-beam headlight, number-plate light 7.5 A | 8 Heated handlebar grips 4 A |

Battery safety instructions

2

46

Maintenance and care



Warning:

Battery acid is highly caustic. Do not allow it to contact the eyes, face, hands, clothing or paintwork.

KEEP OUT OF REACH OF CHILDREN

Never create sparks or bring a naked flame or a glowing cigarette near the battery. Batteries generate explosive gases.

Charge batteries only in well-ventilated areas. Be sure to open the plugs of all the battery cells.



Warning:

Always wear protective goggles and protective gloves when performing work associated with the battery.

If anyone comes into contact with battery acid or is exposed to toxic fumes from the battery, have them examined by a physician without delay.

First aid prior to treatment by a physician:

- Contact with skin: rinse with plenty of clean water
- Acid swallowed: victim must drink plenty of water or milk (into which a raw egg should be stirred). Avoid vomiting
- Eyes attacked by battery acid or fumes from battery: Rinse the eyes out several times with plenty of clean water. Hold eyelids open
- If clothing is wetted by battery acid, thoroughly rinse it immediately in a copious supply of water



If the motorcycle will be out of use for a lengthy period:

- Check battery acid level
- Store the battery in a cool, dry room



Attention:

If the battery is not recharged at regular intervals while out of use it will self-discharge until it is completely flat, in which case the guarantee is voided.

- Trickle-charge the battery from time to time during the storage period
- The battery can be recharged with the BMW battery trickle charger^{OA}.
- Charge the battery prior to lay-ups and before restoring to use – always comply with the instructions for charging.
- In case of doubt ask a specialist workshop, preferably an authorised BMW motorcycle dealer, to prepare the vehicle for laying up and to undertake the necessary battery maintenance and storage

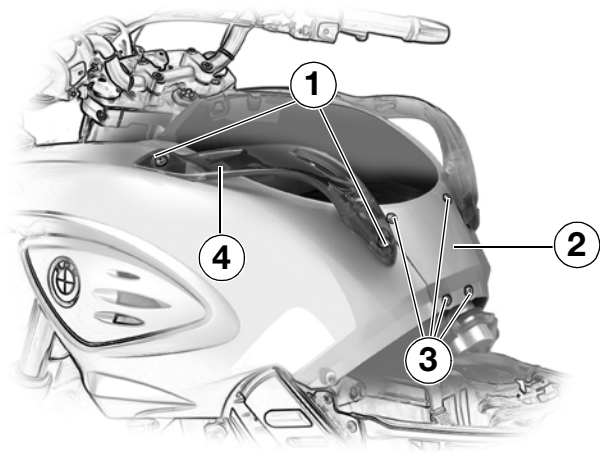
^{OA} Optional accessory

Removing the battery

2

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Maintenance and care



Warning:
Do not, under any circumstances, set the battery on the motorcycle.

Removing the battery



Warning:

Do not damage cables and hoses when removing.

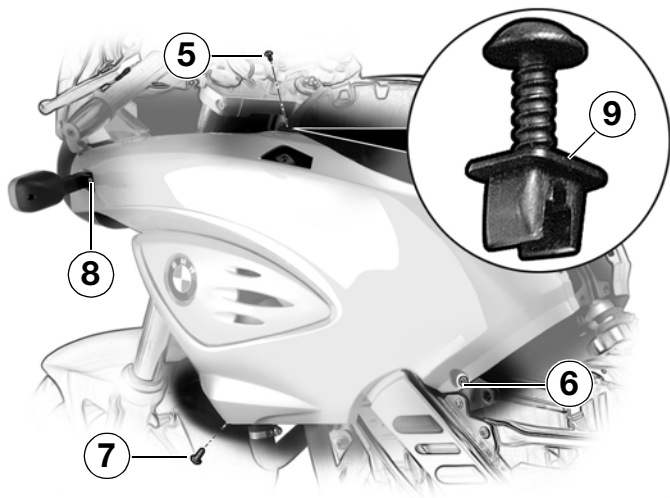
Before disconnecting the battery, switch off the ignition.

To avoid short-circuits:

- Disconnect the **negative** battery lead (-) first,
- then the **positive** battery lead (+).

- Prop the motorcycle on its side stand
 - Make sure the ground is level and firm.
- Remove the seat
- Remove four screws **3** and remove centre panel **2**
- Remove two threaded fasteners **1**
- Remove left stowage-compartment rail **4**

Removing the battery



- Remove screw **8** of flashing turn indicator
- Disconnect the plug of the flashing turn indicator
- Remove three screws **5**, **6**, and **7**
- Remove the left cover from the motorcycle



Note:

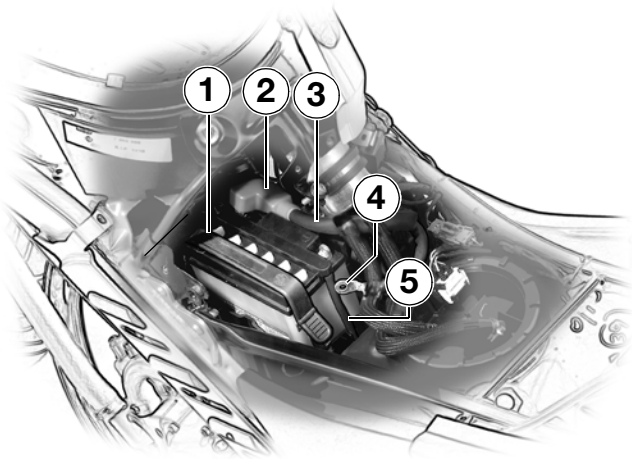
When removing and installing the cover, note expansion nut **9** on screw **5**.

Removing the battery

2

50

Maintenance and care



- Remove battery breather hose **5**
- Disconnect **negative** battery lead **4** and swing it away from the **negative** post of the battery or insulate it
- Release battery retaining strap **1**
- Push aside protective cap **2** for the positive terminal of the battery
- Disconnect **positive** battery lead **3**
- Remove the battery

Installing the battery



Warning:

Before connecting the battery, make sure the ignition is switched off.

To avoid short-circuits:

- **Connect the positive battery lead (+) 3 first**
- **Press protective cap 2 into position on the battery positive terminal**
- **Never install the battery without the protective cap**
- **Connect negative battery lead (–) 4**

- Grease the battery posts
- Installation is the reverse of the removal procedure



Attention:

Make sure that breather hose **5** for the battery is routed free of kinks and is not clogged and that the positive and negative leads from the battery are routed underneath the fuel lines.



- Remove the seat
- Remove the left cover
(➡ 48-49)
- Check the acid level at the **MIN/MAX** marks
- Top up with distilled water only as far as the **MAX** mark

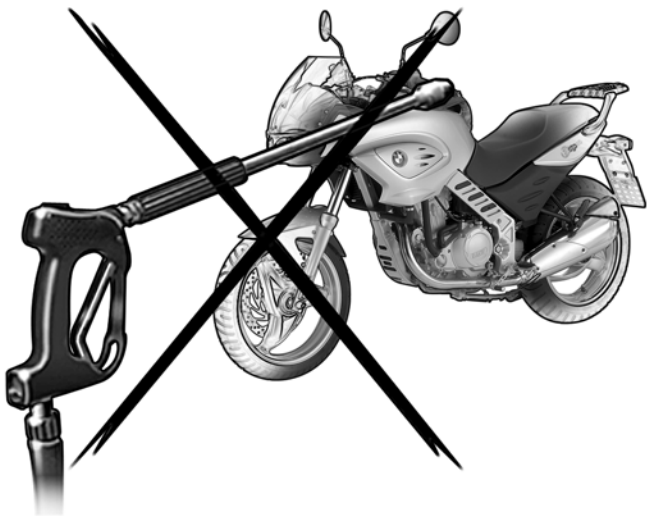
Checking battery acid level

- Check the level of acid in the battery every three months or more frequently if ambient temperatures are high



Attention:

Do not set the battery on the motorcycle when you are toping up the acid level. Use only distilled water: do not top up with battery acid.

**Note:**

Regular cleaning, using the correct methods, is an important factor in maintaining the value of your motorcycle.

It also ensures that safety-relevant parts remain in full working order.

**Attention:**

Do not use aggressive or penetrating cleaning agents or solvents, as they would cause damage to rubber and plastic parts.

Do not use a steam jet or high-pressure cleaning equipment. High water pressure can damage seals, the hydraulic brake system or the complete electrical system.



Washing the motorcycle



Warning:

After cleaning and before starting a journey, always test the brakes.



Note:

When cleaning, use only the cleaning agents recommended by your specialist workshop or your authorised BMW motorcycle dealer.

- Apply a mild cleaning agent to the wheels, engine block and swinging arm, in accordance with the manufacturer's instructions
 - Thoroughly dry all wet surfaces
 - Do not use solvents or cleaning products on the instrument cluster, switches or windscreen
 - Remove tar splashes only with an approved product – rinse thoroughly with water afterwards.
 - Clean flies and other insects off the fork stanchions
 - Treat painted and chrome-plated surfaces regularly with the approved care products
- Prop the motorcycle on its side stand



Removing road salt

- When the journey is over, wash the motorcycle immediately with cold water



Note:

Do not use warm water – this aggravates the effect of the salt.

- Thoroughly dry the motorcycle
- Apply a wax-based corrosion-proofing product to chrome-plated parts
- Coat/polish fairing elements after cleaning and drying with a recommended wax

Cleaning the windscreen

- Remove dirt and dead insects with a soft sponge and plenty of water



Note:

Soften stubborn dirt or insects by soaking with a wet kitchen tissue.



Attention:

Do not use cleaning agents. Fuel or chemical solvents attack the windscreen material.



Care of drive belt

- Use nothing other than mild soapy water to clean the drive belt



Attention:

Do not soak the drive belt.

Touching up minor damage

- Minor damage caused by stones striking the painted surface can be touched up with a BMW touch-up pencil of the correct colour



Attention:

Comply with the manufacturer's working instructions and safety precautions.

Care of exhaust silencer

- Changes in the appearance of the exhaust system during operation or as a result of environmental influences can be treated with a polish available from your authorised BMW motorcycle dealer.



Note:

The colour is indicated on the label under the seat. It is advisable to have more extensive paint damage repaired by your authorised BMW motorcycle dealer.



Laying up

- Clean the motorcycle (➡ 54)
- Remove the battery (➡ 48)
Comply with the maintenance instructions (➡ 47)
- Spray the brake and clutch lever pivots and the side stand pivots with a suitable lubricant
- Coat bright metal/chrome-plated parts with an acid-free grease (e.g. Vaseline)
- Park the motorcycle out of use in a dry room

- Support the motorcycle under the engine so that the wheels are not taking any weight



Note:

Before laying the motorcycle up out of use, it is advisable to have the engine oil changed by your authorised BMW motorcycle dealer.

Work needed in conjunction with laying up or restoring to use can best be combined with the Service or Inspection work performed when due by the authorised BMW motorcycle dealer.



Restoring to use

- If necessary, remove protective wax coating
- Clean the motorcycle (➡ 54)
- Install a charged battery (➡ 51)
- Coat the battery terminals with grease suitable for battery posts
- Check/correct tyre pressures (➡ Rider's Manual, Chapter 2)
- Check brakes (➡ Rider's Manual, Chapter 2)
- Run all safety checks (➡ Rider's Manual, Chapter 2)

Type	F 650 CS [37 kW]	F 650 CS [25 kW]
	Liquid-cooled single-cylinder four-stroke engine with 4 valves with bucket tappets, 2 overhead camshafts, dry-sump lubrication	
Displacement	652 cc	652 cc
Max. output to DIN 70 020		
	37 kW	25 kW
– at engine speed	6,500 rpm	6,000 rpm
Max. torque	62 Nm	50 Nm
– at engine speed	5,500 rpm	3,000 rpm
Permissible engine speeds		
Engine speed, maximum	7,400 rpm	7,400 rpm
Idle speed	1,400 rpm	1,400 rpm
Bore/stroke	100/83 mm	100/83 mm
Compression ratio	11.5 ± 0.3:1	11.5 ± 0.3:1
Fuel grade	Regular unleaded, minimum octane number 91 (RON)	
Fuel tank capacity usable	15.0 l including approx. 4 l reserve	
Fuel consumption		
constant 90 km/h	3 l/100 km	
constant 120 km/h	4.1 l/100 km.	

Power train

3

60

Technical data

F 650 CS

Clutch	Multiplate clutch in oil bath
Primary transmission ratio	$37/72 = 1:1.946$
Gearbox	5-speed gearbox with dog-clutch engagement mechanism, integrated into engine block
Gear ratios	1st gear = 2.75 2nd gear = 1.75 3rd gear = 1.31 4th gear = 1.05 5th gear = 0.84
Transmission from gearbox to rear wheel drive	Belt drive with damping in separate housing
Rear wheel drive	
Belt designation	Poly Chain GT 11M -1892-26 Pitch-length-width
Number of teeth on belt	172 teeth
Transmission ratio of belt drive	$28/82 = 1:2.929$

Frame and suspension

F 650 CS

Frame

Bridge-type tubular frame with integral oil tank and bolt-on rear frame

Location
of type plate

On rear frame, front right

Location
of vehicle identification
number (VIN)

On steering head, at right

Front brake

Hydraulically actuated single-disc
brake with 2-piston floating caliper

Brake pads

Sintered metal

Rear brake

Hydraulically actuated single-disc
brake with 1-piston floating caliper

Brake pads

Organic material

Frame and suspension

F 650 CS

Suspension

Front	Telescopic forks
Total suspension travel	125 mm
Fixed tube diameter	41 mm
Rear	Aluminium single swinging arm with rear axle adjustable by means of eccentric

Steering lock angle	37°
----------------------------	-----

Front wheel castor

in normal-load position (with rider)	86 mm
---	-------

Wheels and tyres

Cast light-alloy wheel,
3 double spokes



Note:

You can obtain detailed information on approved tyre sizes and makes from your authorised BMW motorcycle dealer or by visiting www.bmw-motorrad.com on the Internet

Frame and suspension

F 650 CS

Front wheel

Size and designation	3.00" x 17"
Tyre size and designation	110/70 ZR 17

Rear wheel

Size and designation	4.50" x 17" MT
Tyre size and designation	160/60 ZR 17 or 150/60 ZR17 ^{OE}

Tyre pressures (with tyres cold)

One-up	Front	2.2 bar
	Rear	2.5 bar
Fully loaded	Front	2.2 bar
	Rear	2.5 bar

Recommended minimum tyre tread depth

Front wheel	2 mm
Rear wheel	3 mm



Warning:

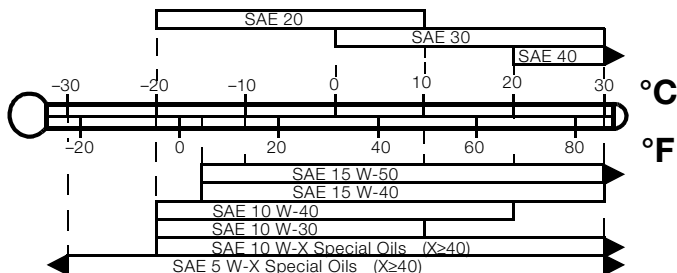
Comply with local legal requirements concerning minimum tread depth.

Fuel and lubricants

F 650 CS

Engine oil

Brand-name HD oil of API classification SF, SG or SH; CD or CE amendments are permissible; or brand-name HD oil of CCMC classification G4 or G5; amendment PD2 is permissible.



The viscosity class depends on outside temperatures. Temperatures above or below the limits quoted for the individual SAE classifications are permitted for brief periods only. All engine oils supplied by BMW are subject to regular BMW quality assurance checks. BMW does not approve the use of any upper-cylinder lubricants or similar oil additives.

Engine oil capacity

With filter change 2.5 l

Maximum oil consumption 1 l/1,000 km



Attention:

Do not use synthetic oils.

F 650 CS

Telescopic-fork oil
approved oil grades

BMW telescopic-fork oil

**Battery-post
oxidation protection**

Acid-free grease,
e.g. Vaseline

**Bearing lubrication and
lubricating points**

Brand-name anti-friction bearing
grease, usable temperature range
-30 °C...+140 °C ,
drip point 150 °C...230 °C,
high corrosion protection,
good resistance to water and
oxidation;
e.g. Staburags NBU 30 PTM

Fuel and lubricants

3

66

Technical data

Brake fluid

F 650 CS

DOT 4

We recommend BMW brake fluids



Attention:

Use only new brake fluid to DOT 4 specification.

Coolant

Brand-name long-life antifreeze and corrosion inhibitor



Attention:

Use only nitrite-free antifreeze and corrosion inhibitor.

Capacity

1.3 l

(0.1 l in expansion tank)

F 650 CS

Spark plugs

Approved makes/types	NGK DR8 EB
Electrode gap	0.6 – 0.7 mm
Wear limit	0.9 mm

Ignition-coil type

Rod-type coil (Bremi)

Fuses

“Minifuse”
flat-socket fuses

Load ratings 4 A, 7.5 A, 10 A, 15 A

Headlight type

Low-beam headlight	Ellipsoid reflector
High-beam headlight	Free-form reflector

Bulbs

High-beam headlight	Halogen bulb H1 12 V 55 W
Low-beam headlight	Halogen bulb H3 12 V 55 W
Parking light	12 V 5 W
Rear light	
Brake light/tail light	12 V 21/5 W
Flashing turn indicators	12 V 10 W
Number-plate light	12 V 6 W
Other telltale and warning lights and instrument lighting	12 V 1.2 W

Dimensions and weights

3

68

Technical data

F 650 CS

Overall length	2,142 mm
-----------------------	----------

Width

across mirrors	915 mm
----------------	--------

across handlebars (with weights)	824 mm
-------------------------------------	--------

across front footrests	586 mm
------------------------	--------

Overall height

(without mirrors, at unladen weight)	1,158 mm
---	----------

Height of seat at unladen weight	780/750 mm
---	------------

Wheelbase

– in normal-load position	1,493 mm
---------------------------	----------

Ground clearance

at unladen weight	150 mm
-------------------	--------

– in normal-load position	130 mm
---------------------------	--------

Unladen weight

(ready to ride, tank full)	189 kg
----------------------------	--------

Dry weight	169.6 kg
-------------------	----------

Permitted gross weight	370 kg
-------------------------------	--------

Permissible wheel loads

Front	200 kg
-------	--------

Rear	270 kg
------	--------

Performance data

	F 650 CS [37 kW]	F 650 CS [25 kW]
Top speed		
as per type test km/h	178	147
Power/weight ratio		
ready for road + rider 85 kg/187 lbs	7.41 kg/kW	10.96 kg/kW
at gross weight limit	10 kg/kW	14.80 kg/kW
Elasticity		
4th gear 80 – 120 km/h (50 – 75 mph)	4.2 s	7.1 s
5th gear 80 – 120 km/h (50 – 75 mph)	6.3 s	9.1 s
4th gear 60 – 140 km/h (37 – 87 mph)	9.5 s	20 s
5th gear 60 – 140 km/h (37 – 87 mph)	12.9 s	27 s
Ride-past noise level		
to 78/1015/EEC. mod. (dB(A))	79	77
Stationary noise level		
to 78/1015/EEC. mod. (dB(A))	88	89

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Motorcycle data

Model

VIN

Colour no.

First registered on

License plate no.**Dealer data**

Person of contact for Service work

Ms./Mr.

Tel. no.

Dealer's address with telephone no. (company stamp)

Details described or illustrated in this booklet may differ from the motorcycle'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.

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BMW recommends Castrol



**BMW Motorrad
Printed information**

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05.2004
2nd edition GB / RF



**The Ultimate
Driving Machine**