

# Maintenance Instructions

F 650 GS

F 650 GS Dakar



**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 is best placed to 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.

Consequently, we advise you to have service and maintenance work carried out by your authorised BMW motorcycle dealer's specially trained, expert personnel, and confirmed by an entry in the Maintenance Instructions.

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

It is advisable to contact your authorised BMW motorcycle dealer if you have any questions regarding 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

2

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](http://www.bmw-motorrad.com/maintenance).

# Confirmations 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

8

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

10

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

[illegible]

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

# Confirmation of service

1

12

BMW Service

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

The list is intended as a record of maintenance, warranty and repair work, the installation of optional 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 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 guarantee 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 work shops.

## Technical modifications



### Warning:

**The data stored in the electronic engine management system is the result of extensive experimental and testing work.**

**Tampering with the electronic 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.

Technical modifications are only permitted to a limited extent.

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.



- Vehicle toolkit under the seat

## Contents

- |   |  |
|---|--|
| 1 wallet  |  |
| 1 screwdriver, reversible blade   |  |
| 1 cross-head screwdriver, small   | 1 Allen key  |
|   | w/f* 8 mm (0.31 in)  |
| 4 open-ended spanners, w/f* 8 x 10 mm (0.39 in), 14 x 19 mm (0.75 in), 15 mm (0.59 in), 24 mm (0.94 in) | 4 Torx screwdrivers T25, T30, T40, T45   |
|   | 4 fuses 4 A, 7.5 A, 10 A, 15 A   |
| 1 spark plug wrench   | 1 puller for fuses   |
|   | * w/f  width across flats |

# 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	➡ 42
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	➡ 42
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	➡ 53
Spark plug defective/wet	Replace	➡ 54
Spark plugs/leads or caps wet	Dry	➡ 54
Insufficient battery charge	Recharge battery	➡ 49
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 ...62 – attended to by a specialist workshop, preferably an authorised BMW motorcycle dealer.



## Note:

More detailed technical information is available in the following publications:

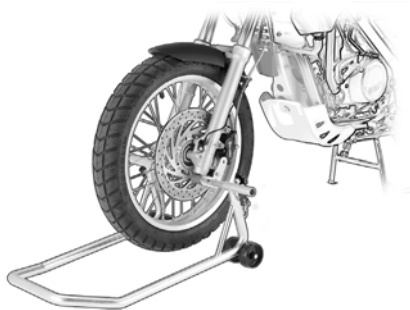
- Repair Manual
- Electrical circuit diagrams

# Removing the front wheel

2

20

Maintenance and care



- Place the motorcycle on its main stand (Dakar: use auxiliary stand, BMW special tool number 00 1 610, or some other, suitable auxiliary stand)
  - Make sure the ground is level and firm.
- Raise the front wheel with front wheel stand, BMW special tool No. 36 3 970, or a suitable auxiliary stand



## Note:

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



## Attention:

When removing, avoid damage to brake pipes, brake discs, brake pads and the wheel rim (mask off with tape if necessary).

Do not scratch the rim when forcing back the brake pads or removing the calipers (apply masking tape if necessary).

To prevent damage to the brake caliper and possible difficulty when assembling: never pull the brake lever when the brake calipers have been removed.

Motorcycle equipped with ABS<sup>OE</sup>:

Do not damage the ABS sensor cable, the ABS sensor ring and the ABS sensor.

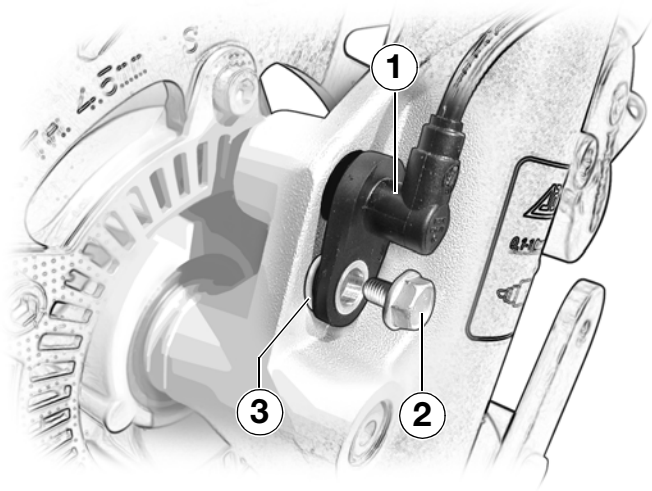
OE Optional extra

# Removing the front wheel

2

21

Maintenance and care



## Warning:

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



## Attention:

Remove ABS sensor<sup>OE</sup> **1**, so that it cannot be damaged by the brake disc.

- Remove securing screw **2**, using w/f 10 open-ended spanner (➡ 17)

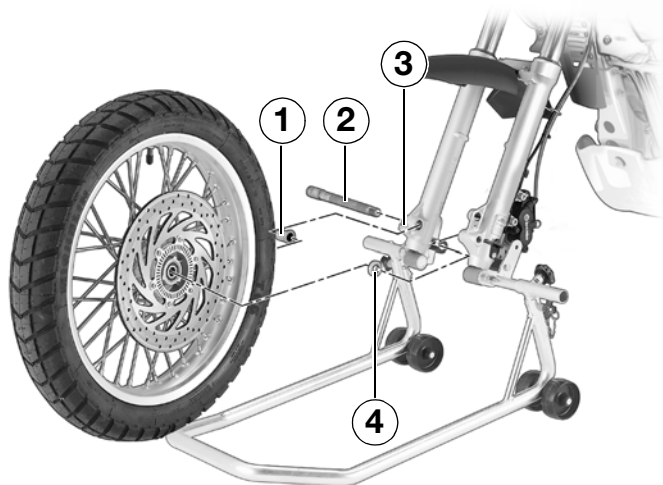


## Attention:

If a spacer **3** is installed to compensate component tolerances, make sure that it is reinstalled on reassembly.

- Pull ABS sensor<sup>OE</sup> **1** out of its bore in the front fork

# Removing the front wheel



## Warning:

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

- Slacken axle clamp screw **3** with a Torx T25 bit (➡ 17)
- Remove quick-release axle **2** using w/f 8 Allen key (➡ 17)
- Roll the front wheel forward and out
- Remove spacer bushing **1** and spacer **4**



## Note:

Check the brake pads (➡ 33) (have them replaced if necessary).



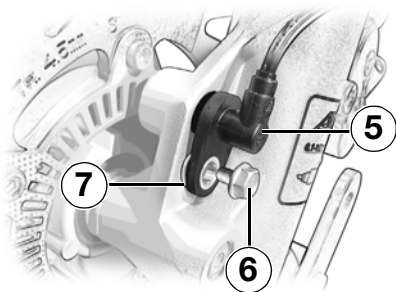
## Attention:

When setting down the front wheel, take care not to damage brake discs and the ABS sensor ring<sup>OE</sup>. Keep dirt and moisture away from the wheel bearings.

<sup>OE</sup> Optional extra



# Installing the front wheel



## Note:

Note the installed position of the ABS sensor ring<sup>OE</sup> or the direction-of-rotation arrow on the tyre.



## Attention:

Do not damage the brake disc or pads when fitting the wheel. Motorcycle equipped with ABS<sup>OE</sup>:

Do not damage the ABS sensor cable, the ABS sensor ring and the ABS sensor.

- Roll the front wheel between the forks and carefully position the brake disc in the brake caliper.

- Clean and grease spacer bushing **1** and spacer **4** and insert them into the wheel hub.

As viewed in forward direction of travel:

- left: spacer **4** on  
right: spacer bushing **1** with collar toward the wheel hub

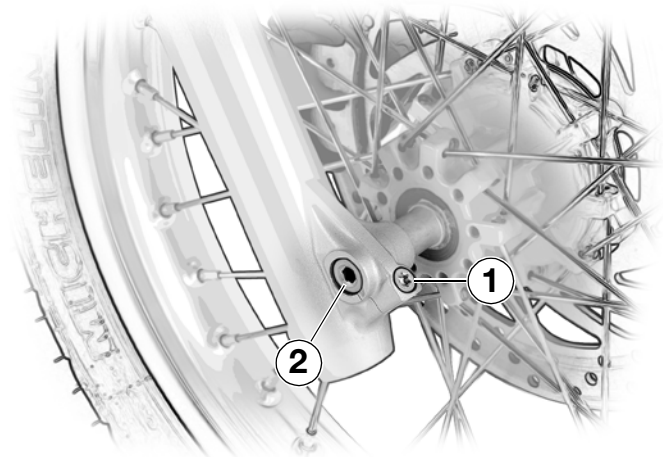
- Clean quick-release axle **2**, grease it and insert it from the right (raising the wheel slightly as necessary) and hand-tighten
- Insert ABS sensor<sup>OE</sup> **5** until approx. 2/3 of its length are inside the bore
- Insert spacer **7** (if originally fitted)
- Install securing screw **6** and tighten to specified torque

# Installing the front wheel

2

24

Maintenance and care



- Remove front-wheel stand
- With the handbrake applied, compress the telescopic forks firmly several times
- Tighten quick-release axle **2** to the specified tightening torque
- Tighten axle clamping screws **1** to the specified tightening torque



## Attention:

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



## Tightening torques

Quick-release axle **2** ..... 45 Nm  
Axle clamp screw **1** ..... 23 Nm  
Securing screw,  
ABS sensor<sup>OE</sup> ..... 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.**

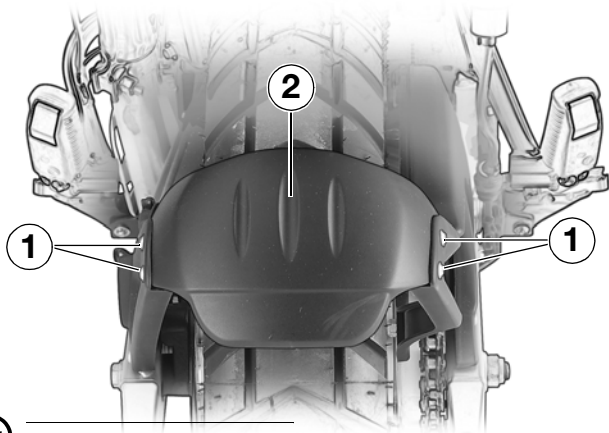
<sup>OE</sup> Optional extra

# Removing the rear wheel

2

25

Maintenance and care



## Warning:

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



## Attention:

Avoid damage to brake lines, disc and pads when removing the wheel.

Do not damage the ABS sensor cable<sup>OE</sup>, ABS sensor ring<sup>OE</sup> and the speedometer sensor

Do not press the brake pedal down when the wheel is removed.

Keep dirt and moisture away from the wheel bearings.

- Place the motorcycle on its main stand (Dakar: use auxiliary stand, BMW special tool number 00 1 610, or some other, suitable auxiliary stand)
  - Make sure the ground is level and firm.
- Remove 4 retaining screws **1**
- Remove rear wheel cover **2**

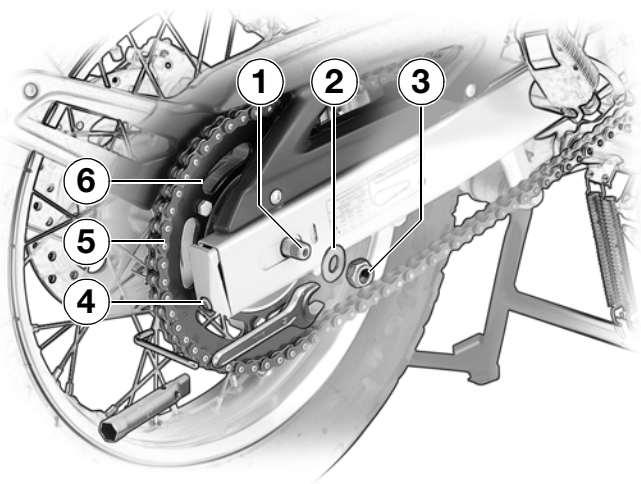
<sup>OE</sup> Optional extra

# Removing the rear wheel

2

26

Maintenance and care



- Remove axle nut **3** using w/f 24 mm (0.94 in) socket and spark-plug wrench as extension (➡ 17)
- Remove axle nut **3** with washer **2**
- Using Torx T45 bit, back off chain tensioning screws **4** on left and right a few turns
- Pull out quick-release axle **1**
- Lift chain **5** off sprocket **6**

- Hold the brake caliper and roll the wheel out toward the rear

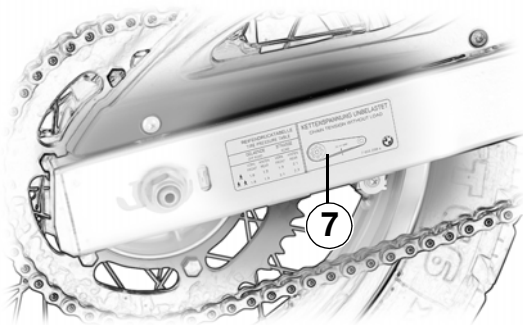


## Attention:

Sprocket **6** sits loosely in the wheel. If the wheel is laid down, make sure that the brake disc and sprocket are not damaged. Do not damage the ABS sensor cable<sup>OE</sup>, ABS sensor ring<sup>OE</sup> and the speedometer sensor

<sup>OE</sup> Optional extra

# Installing the rear wheel



## Attention:

When tensioning the chain, note correct wheel alignment (marks on swinging fork arms). To avoid damaging the chain or more extensive damage, always adjust the chain so that it has the correct amount of slack.

Do not damage the brake disc or pads when fitting the wheel. Do not damage the ABS sensor cable<sup>OE</sup>, ABS sensor ring<sup>OE</sup> and the speedometer sensor.

- Roll the rear wheel between the rear swinging arm forks and carefully position the brake disc in the brake caliper.
- Lift chain **5** onto sprocket **6**
- Grease quick-release axle **1** and insert it
- Install axle nut **3** with washer **2** and hand-tighten
- Set chain tensioning screws **4** on left and right such that chain sag is correct (setting ➡ 31) as stated on label **7**

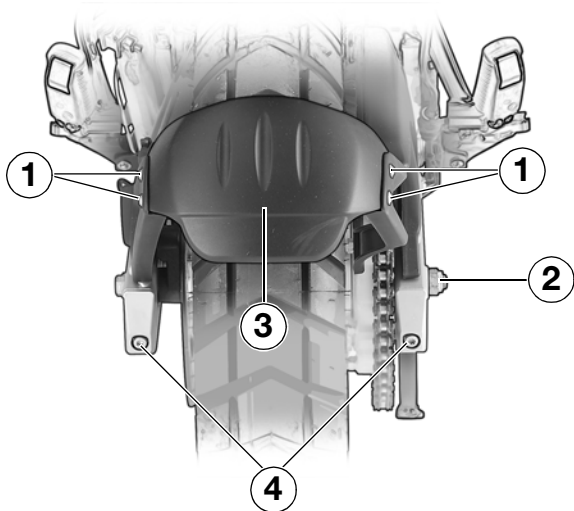
<sup>OE</sup> Optional extra

# Installing the rear wheel

2

28

Maintenance and care



- Make sure that the same number of notches has been reached at marking point **5** on the left and right swinging fork arms
- Tighten axle nut **2** to the specified tightening torque
- Tighten chain tensioning screws **4** to the specified tightening torque



**Warning:**  
**Screws 1 of rear wheel cover are secured with Loctite. Before reinstalling, clean the screw threads and coat them with Loctite No. 243.**

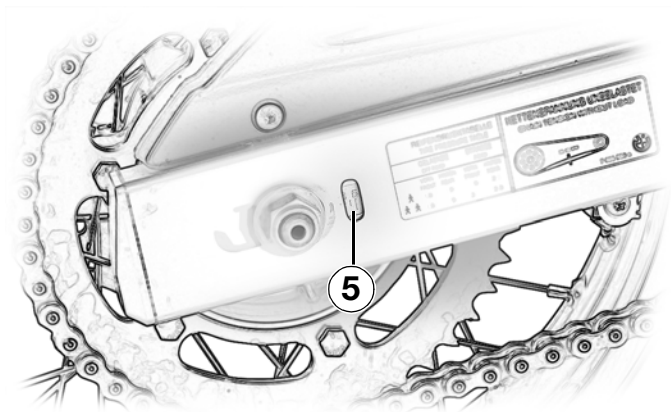
- Install rear wheel cover **3** with four securing screws **1**
- Tighten securing screws **1** to specified torque

# Installing the rear wheel

2

29

Maintenance and care



## Attention:

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



## Tightening torque:

Axle nut <b>3</b> .....	100 Nm
Chain tensioning screws <b>4</b> .....	10 Nm
Rear wheel cover .....	3 Nm



## Warning:

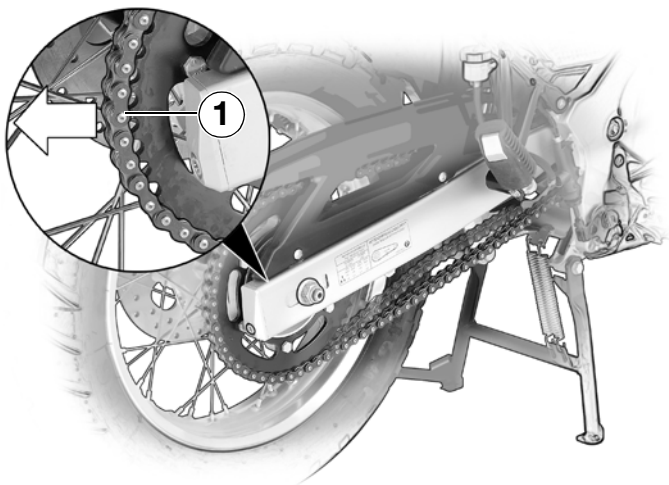
**When assembly work has been completed, depress the brake pedal firmly several times to check that the rear brake is operating correctly.**

# Checking the chain

2

30

Maintenance and care



## Checking the chain for wear



### Attention:

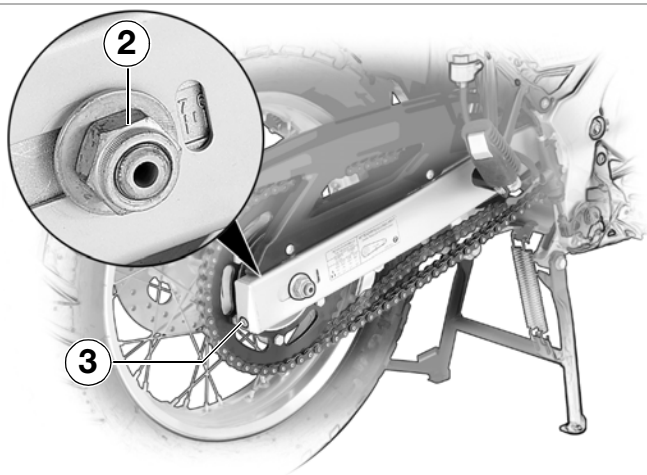
Always replace the chain, chainwheel and sprocket as a complete set.

- Place the motorcycle on its main stand [Dakar: side stand]
  - Make sure the ground is level and firm.
- Grip the chain at the rearmost point of sprocket **1** and pull the chain to the rear, away from the sprocket

- It should not be possible to lift the chain clear of the points of the sprocket teeth
- If the chain can be pulled clear of the points, replace the chain, sprocket and pinion

Have the chain, sprocket and pinion replaced by a specialist workshop, preferably an authorised BMW motorcycle dealer.





## Adjusting the chain



### Attention:

When tensioning the chain, note correct wheel alignment (notches in swinging fork arms). To avoid damaging the chain or more extensive damage, always adjust the chain so that it has the correct amount of slack.

Always make sure that there is no load on the motorcycle when you check the chain.

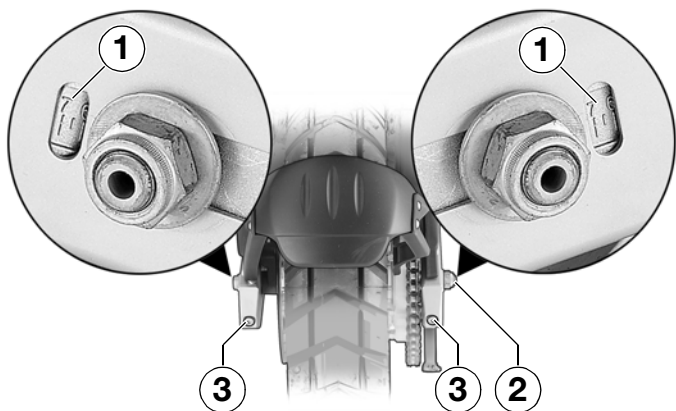
- Place the motorcycle on its main stand [Dakar: side stand]
  - Make sure the ground is level and firm.
- Slacken axle nut **2** using w/f 24 mm (0.94 in) socket and spark-plug wrench as extension (➡ 17)
- Using Torx T45 bit, set chain tensioning screws **3** on left and right such that chain sag is 1.38...1.78 in (35...45 mm) [Dakar: 1.57...1.97 in (40...50 mm)] as stated on the label

# Adjusting the chain

2

32

Maintenance and care



- Make sure that the same number of notches has been reached at marking point **1** on the left and right swinging fork arms
- Tighten axle nut **2**
- Tighten chain tensioning screws **3**



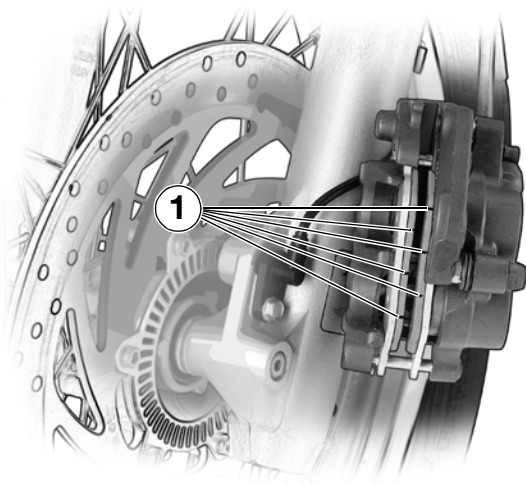
## Attention:

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



## Tightening torques

Axle nut **2** ..... 100 Nm  
Chain tensioning screws **3** ..... 10 Nm



## 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 the brake pads from in front
- Check brake pad thickness

### Minimum pad thickness:

**Wear indicating marks 1 must be clearly visible on the pads.**

- 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.**

# Checking brake pads

2

34

Maintenance and care



## Rear brake



### Attention:

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



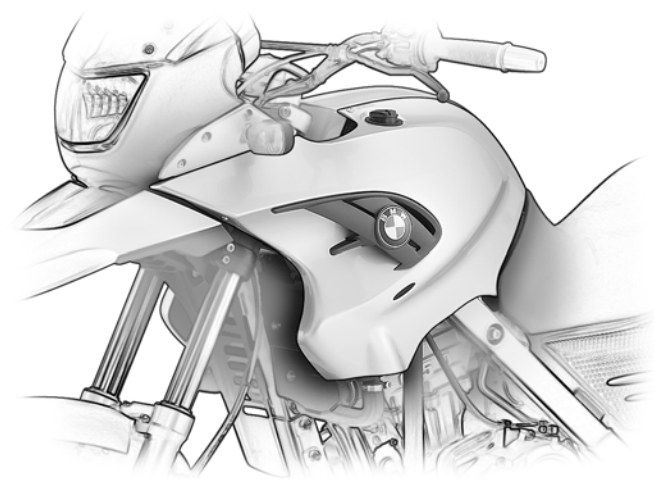
### Note:

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

- Visually inspect from behind and above
- Check brake pad thickness

**Minimum pad thickness:**  
**Angled wear indicating mark 1 must be clearly visible on the pads.**

– 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.**



## Attention:

Use only nitrite-free antifreeze and corrosion inhibitor.

Check coolant level only when the engine is cold.

Top up the fluid in the expansion tank only if the loss of coolant is minor.

Mixing ratio:

- 50% antifreeze
- 50% water

Frost protection down to:  
-25 °C (-13 °F)

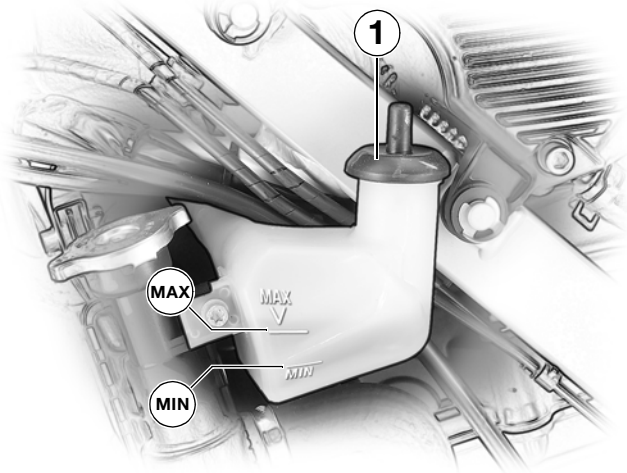
- Place the motorcycle on its main stand [Dakar: side stand]
  - Make sure the ground is level and firm.
- Remove the seat (► Rider's Manual)
- Remove the left side panel (► 44-45)

# Adding coolant

2

36

Maintenance and care



## Note:

Engine cold: do not top up the coolant past the **MIN** mark

- Remove cap **1** from filler neck
- Top up coolant to **MIN** mark
- Place motorcycle on main (centre) stand or hold it upright

- Recheck the coolant level; correct if necessary
- Reinstall the cap of the expansion tank



## Note:

It is advisable to have the coolant changed by a specialist workshop, preferably your authorised BMW motorcycle dealer.

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**

**Attention:**

Your motorcycle has one bulb for the low-beam /high-beam headlight, one for the parking light, one for the brake light and one for the rear 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:**

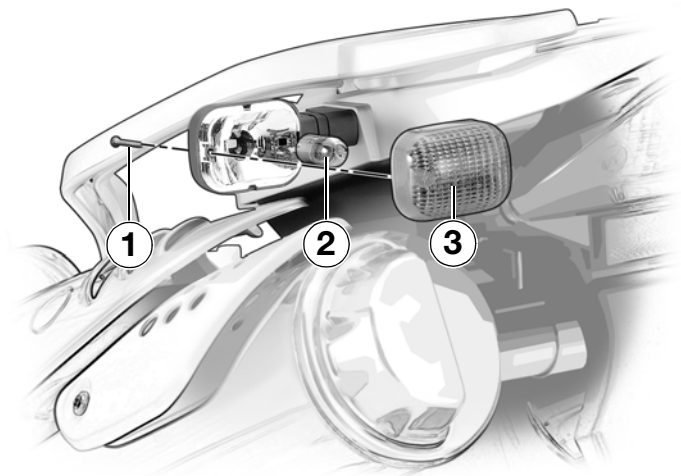
Do not touch the glass of new bulbs with your fingers. Use a clean, dry cloth to hold the bulbs when inserting them. Dirt deposits, in particular oil and grease, interfere with heat radiation from the bulb. This leads to overheating and shortens the bulb's operating life.

# Changing bulbs

2

38

Maintenance and care



## Flashing turn indicators



### Attention:

Switch off the ignition before changing a bulb.

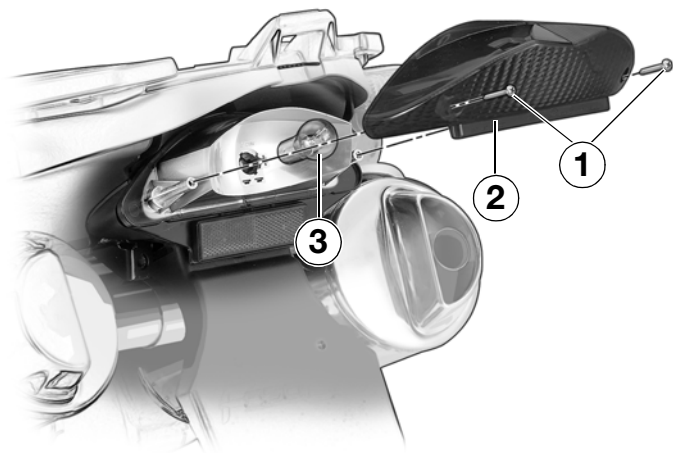


### Note:

Avoid touching the glass of new bulbs with your fingers. Use a clean, dry cloth to hold the bulbs when inserting them.

- Place the motorcycle on its main stand [Dakar: side stand]
  - Make sure the ground is level and firm.
- Remove securing screw **1**
- Remove turn indicator glass **3**
- Press bulb **2** back, turn it counter-clockwise to disengage it and remove
- Installation is the reverse of the removal procedure
  - Bulbs for front/rear turn indicators:  
**12 V 10 W**





## Tail light/brake light

**Note:**

The rear light is also the number-plate light.

**Attention:**

Switch off the ignition before changing a bulb.

**Note:**

Avoid touching the glass of new bulbs with your fingers. Use a clean, dry cloth to hold the bulbs when inserting them.

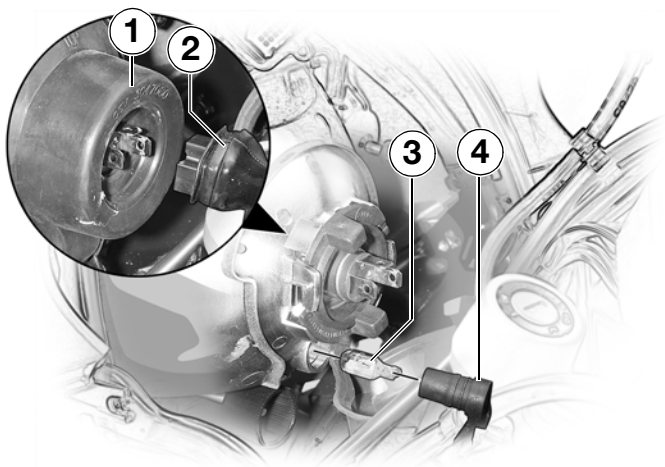
- Place the motorcycle on its main stand [Dakar: side stand]
  - Make sure the ground is level and firm.
- Remove retaining screws **1**
- Remove rear light glass **2**
- Press bulb **3** back, turn it counter-clockwise to disengage it and remove
- Installation is the reverse of the removal procedure
  - Brake/rear light bulb:  
**12 V 21/5 W**

# Changing bulbs

2

40

Maintenance and care



## Parking light



### Attention:

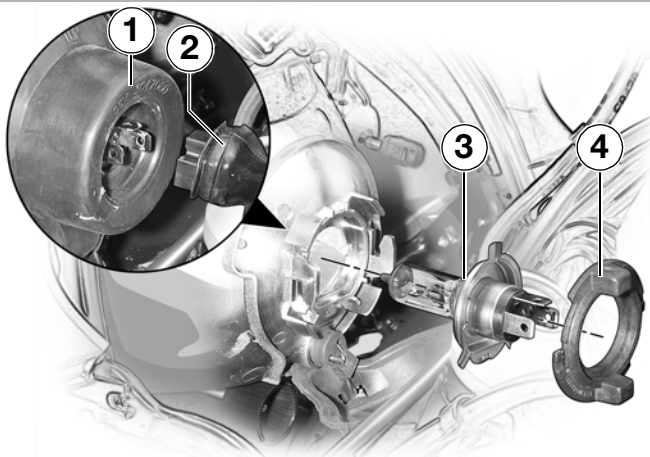
Switch off the ignition before changing a bulb.



### Note:

Avoid touching the glass of new bulbs with your fingers.  
Use a clean, dry cloth to hold the bulbs when inserting them.

- Place the motorcycle on its main stand [Dakar: side stand]
  - Make sure the ground is level and firm.
- Pull off multi-pin plug **2**
- Pull the rubber sleeve **1** to the rear to remove
- Pull bulb holder to the rear and **4** out of the headlight housing
- Pull bulb **3** out of bulb holder **4**
- Installation is the reverse of the removal procedure
  - Parking light bulb: **12 V 5 W**



## High-beam/low-beam headlight



### Attention:

Switch off the ignition before changing a bulb.



### Note:

Avoid touching the glass of new bulbs with your fingers. Use a clean, dry cloth to hold the bulbs when inserting them.

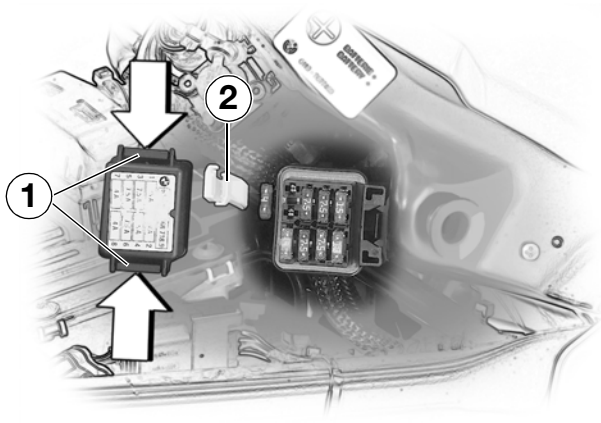
- Place the motorcycle on its main stand [Dakar: side stand]
  - Make sure the ground is level and firm.

- Pull off multi-pin plug **2**
- Pull rubber sleeve **1** to the rear to remove
- Turn retainer **4** counter-clockwise to disengage
- Remove bulb **3**
- Installation is the reverse of the removal procedure
  - Low/high beam headlight bulb: **H4 12 V 55/60 W**



### Note:

The retainer is easy to install if you hold it in the correct position. Insert: at approx. 11 o'clock position  
Lock: by turning to 12 o'clock position



## Changing fuses

- Place the motorcycle on its main stand [Dakar: 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
- Use puller **2** (► 17) to 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

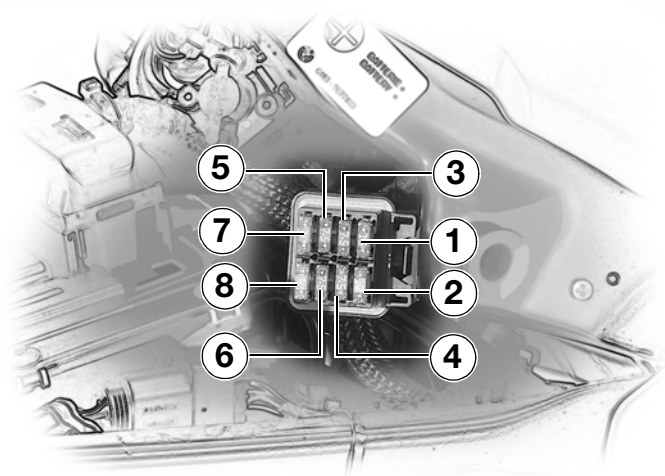
For this reason, always carry a number of spare fuses in the toolkit (► 17).

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

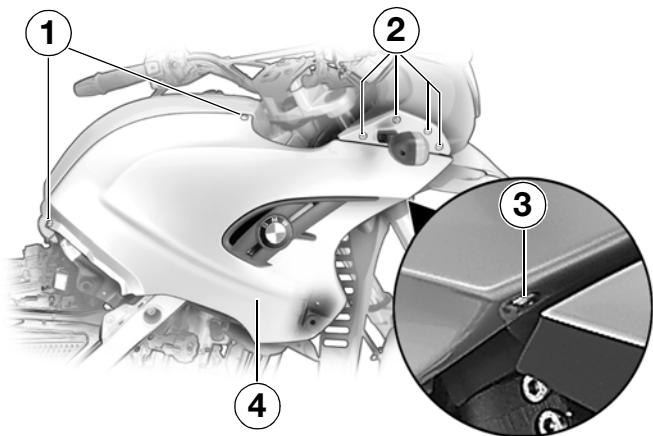
- |  |   |
|--|---|
| <b>1</b> Engine electronics ..... 15 A   |   |
| <b>2</b> Instrument panel, on-board socket, diagnosis plug, OA plug ..... 10 A |   |
| <b>3</b> Horn, headlight flasher ..... 7.5 A                                   | <b>6</b> Brake light, flashing turn indicators, instrument panel, instrument lighting ..... 7.5 A |
| <b>4</b> Low-beam headlight .. 7.5 A   | <b>7</b> Parking light, tail light... 4 A   |
| <b>5</b> High-beam headlight 7.5 A   | <b>8</b> Heated handlebar grips 4 A   |

# Side panel

2

44

Maintenance and care



## Removing and installing side panel

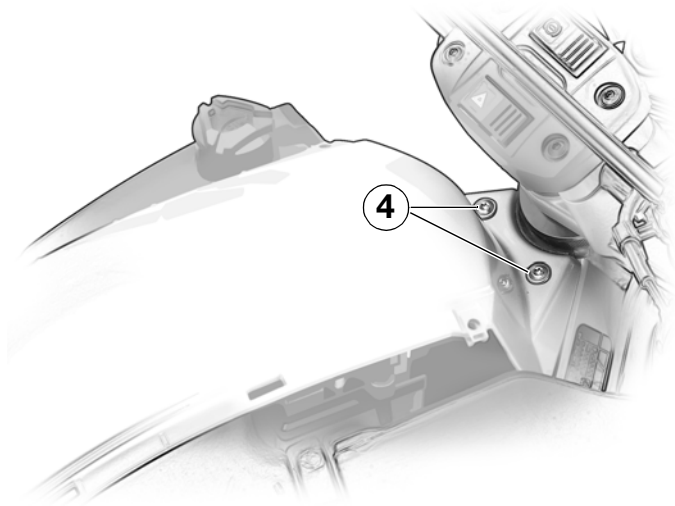
- Place the motorcycle on its main stand [Dakar: side stand]
  - Make sure the ground is level and firm.
- Remove the seat  
(➡ Rider's Manual, Chapter 1)

## Removing right side panel

- Remove the four securing screws **2** holding the turn indicator
- Remove 2 retaining screws **1**
- Slacken securing screw **3**
- Pull right side panel out of locator **4** at bottom and lift it clear of the centre panel at the top

## Installing right side panel

- Installation is the reverse of the removal procedure



## Removing and installing left side panel



### Note:

The procedure for removing and installing the left side panel is analogous to that for the right side panel.

Remove the oil filler plug before removing the left side panel.

When installing the left side panel, note the air duct of the oil tank.

## Removing and installing centre panel

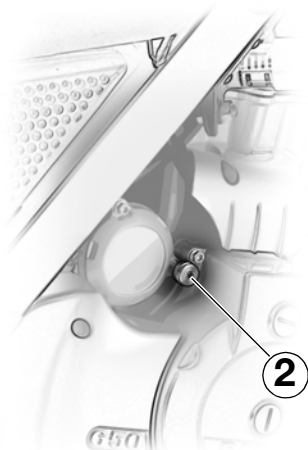
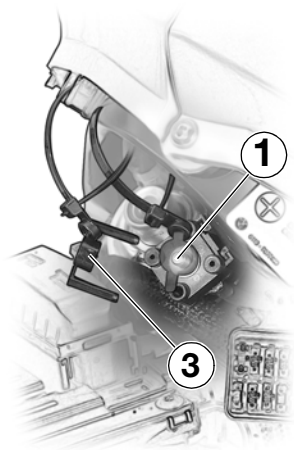
- Remove the remaining two securing screws **4**
- Remove the centre panel
- Installation is the reverse of the removal procedure

# Jump starting

2

46

Maintenance and care



## Battery adapter points

BMW calls an easily accessible battery positive terminal **1** and a defined earthing point **2** the battery adapter points.

The battery adapter points make it easy to recharge the battery and are also convenient for jump starting.



### Attention:

Never establish a direct connection between battery positive terminal **1** and earth (frame/drive).

– Risk of short-circuit

## Jump starting

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

Use only jump leads fitted with fully insulated crocodile clips at both ends for jump starting.



### Attention:

If you switch on the ignition and the telltale lights fail to light up, the battery is completely flat. In this case, do not attempt to jump-start the motorcycle: recharge the battery instead. Risk of damaging the control units.



**Attention:**

Do not attempt to jump-start the motorcycle using the on-board socket

– Risk of fire

The wires leading to the power socket do not have a load-capacity rating adequate for jump-starting the engine.

**Attention:**

Make sure that the battery of the other vehicle has a voltage rating of 12 V.

- On the BMW, battery adapter points **1** and **2** are the connection points for jump starting
  - Remove protective cap **3** from the positive terminal
  - Connect one end of a jump lead to positive terminal **1** of the discharged battery, and the other end to the positive terminal of the donor battery
  - Connect one end of the second jump lead to the negative terminal/earthing point of the donor battery and the other end to negative terminal/earthing point **2** of the discharged battery
  - Start the engine of the donor vehicle and allow it to run at fast idle
  - Start the engine of the vehicle with the discharged battery in the usual way
  - Allow both engines to idle for a few minutes
  - Disconnect the jump leads by reversing the connection sequence, and reinstall cap **3** on the positive terminal
- Switch off the ignition systems of both vehicles
  - Switch off all electrical consumers on both vehicles

# Battery safety instructions

2

48

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). Do not cause the victim to vomit.
- Eyes attacked by battery acid or fumes from battery: Rinse the eyes out several times with plenty of clean water. The eyelid should be held open while doing so.
- Thoroughly rinse clothing wetted by battery acid immediately with water

## If the motorcycle is to be laid up for a lengthy period:

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



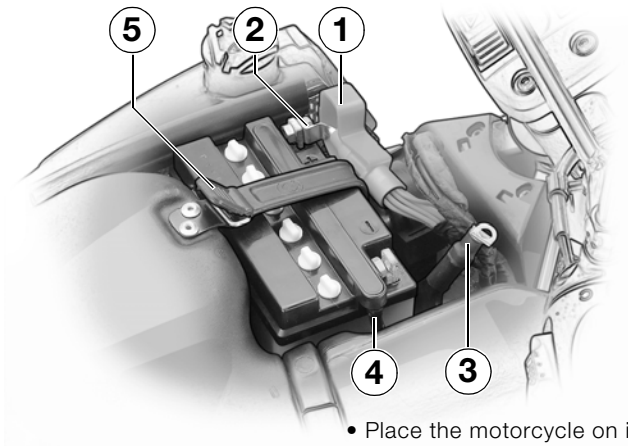
### Attention:

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<sup>OA</sup>.
- 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, preferably an authorised BMW motorcycle dealer, to prepare the vehicle for laying up and to carry out the necessary battery maintenance and storage

<sup>OA</sup> Optional accessory

# 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 **negative** battery lead (-) **3** first,
- then **positive** battery lead (+) **2**.



## Warning:

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

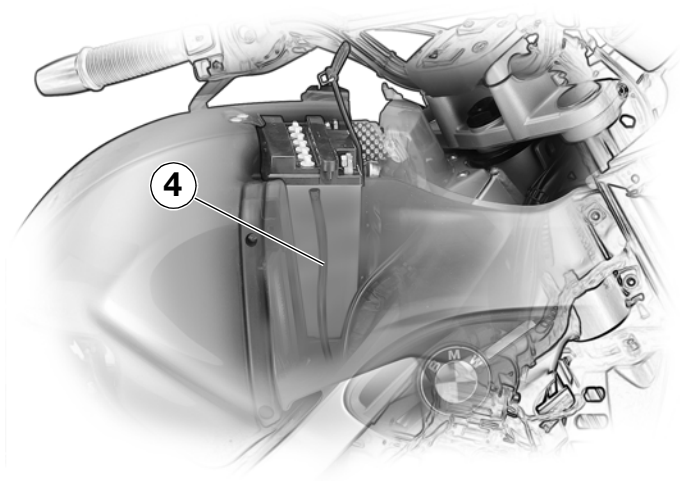
- Place the motorcycle on its main stand [Dakar: side stand]
  - Make sure the ground is level and firm.
- Remove the seat
- Remove the side panel (➡ 44-45)
- Disconnect batt. breather hose **4**
- Disconnect **negative** battery lead **3** and swing it away from the **negative** post of the battery or insulate it
- Push aside protective cap **1** for the positive terminal of the battery
- Disconnect **positive** battery lead **2**
- Release batt. retaining strap **5**
- Take out the battery

# Installing the battery

2

51

Maintenance and care



## Warning:

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

To avoid short-circuits:

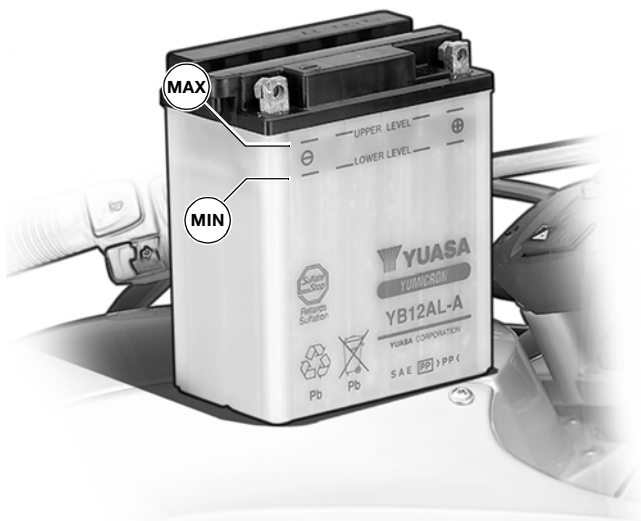
- Connect positive battery lead (+) 2 first
- Seat protective cap 1 on the battery positive terminal
- Never install the battery without the protective cap
- Connect negative battery lead (-) 3



## Attention:

Make sure that breather hose 4 for the battery is routed free of kinks and is not clogged.

- Grease the battery posts
- Installation is the reverse of the removal procedure
- Install the side panel (➡ 44-45)
- Install the seat



- Check the acid level at the MIN/MAX marks  
**MAX** UPPER mark  
**MIN** LOWER mark
- Top up with distilled water only as far as the **MAX** (UPPER) mark

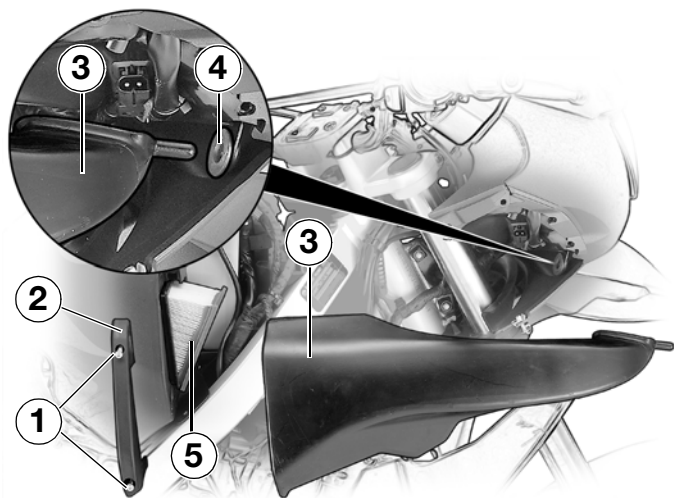
## Checking battery acid level

- Check the level of acid in the battery every three months or more frequently if ambient temperatures are high
- Remove the side panel (➡ 44-45)



### 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.



- Place the motorcycle on its main stand [Dakar: side stand]
  - Make sure the ground is level and firm.
- Remove the seat
- Remove the right side panel (➡ 44-45)
- Remove two securing screws **1**
- Pull bow **2** of the connecting flange off intake stub **3**
- Pull intake stub **3** out of the connecting flange and front holder **4**
- Pull air filter element **5** out of the air filter housing
- Place the new filter element in position inside the air filter housing
- From this point on, installation is the reverse of the removal procedure

**Note:**

When installing intake stub **3**, begin by slipping the projection into front holder **4**.

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



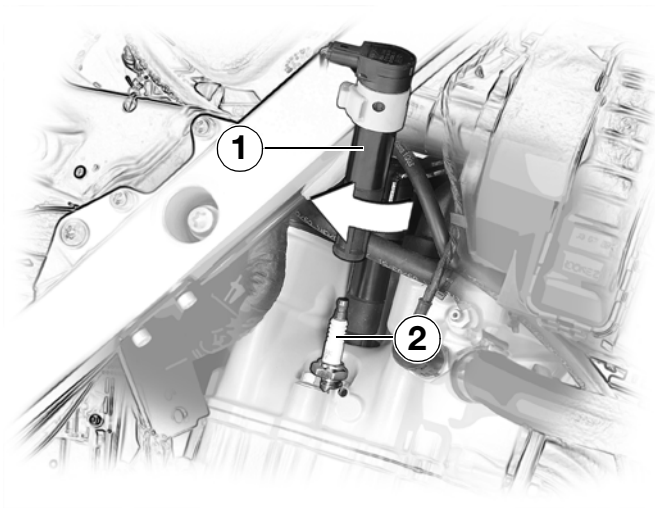
---

**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.**
-





## Changing secondary spark plug

- Turn direct ignition coil **1** up as far as it will go clockwise (arrow)
- Pry direct ignition coil **1** up and off, using w/f 15 open-ended spanner (17)
- Remove spark plug **2**, using spark plug socket wrench (17)
- Installation is the reverse of the removal procedure



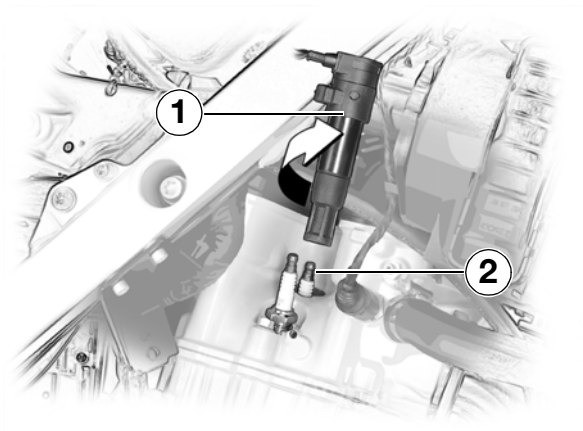
### Attention:

The direct ignition coils have different colour codes: take care not to mix them up. Direct ignition coil of the primary spark plug: black  
secondary spark plug: white



### Tightening torques

Secondary spark plug **2** ..... 20 Nm



## Changing primary spark plug



### Attention:

In order to prevent foreign matter from entering the combustion chamber, allow the secondary spark plug to remain in the cylinder head.

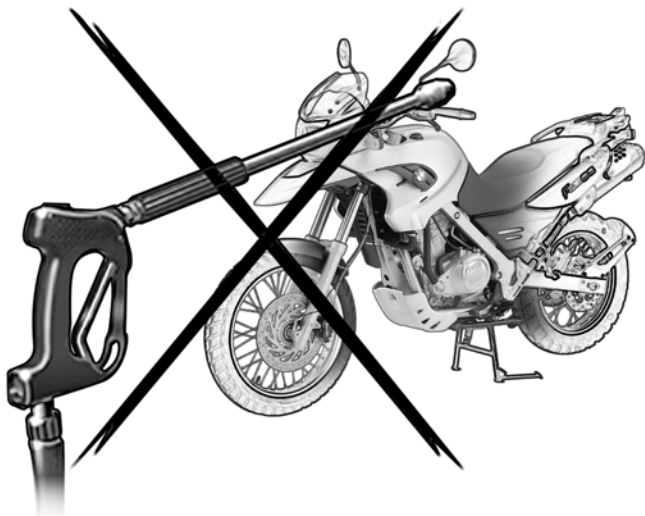
The direct ignition coils have different colour codes: take care not to mix them up. Direct ignition coil of the primary spark plug: black  
secondary spark plug: white

- Remove the direct ignition coil of the secondary spark plug
- Turn direct ignition coil **1** as far as it will go counter-clockwise (arrow)
- Pry direct ignition coil **1** up and off, using w/f 15 open-ended spanner (► 17)
- Remove spark plug **2**, using the spark plug socket wrench and extension (► 17)
- Installation is the reverse of the removal procedure



### Tightening torques

Primary spark plug **2** ... 20 Nm

**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.

**Note:**

Correct and regular cleaning is an important factor in maintaining the value of your motorcycle.

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



## Washing the motorcycle



### Warning:

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

- Place the motorcycle on its main stand [Dakar: side stand] – Make sure the ground is level and firm.
- 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
- Do not scratch the windscreen.
- Remove tar splashes only with an approved product – rinse thoroughly with water afterwards.
- Clean dead flies and other insects or similar dirt deposits off the fork stanchions.
- Treat painted and chrome-plated surfaces regularly with the approved care products.



## Removing road salt

- Wash the motorcycle down immediately with cold water at the end of the journey.



### Note:

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

- Thoroughly dry the motorcycle.
- Apply a wax-based corrosion inhibiting product to chrome-plated parts.
- After cleaning and drying the fairing and trim panels, apply a recommended wax polish.

## Cleaning the windscreen

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



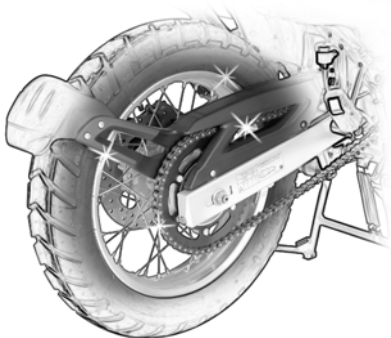
### Note:

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 the chain

- Regularly apply a spray lubricant to the chain; spray lubricants are available from your authorised BMW motorcycle dealer.

## 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.

## Repairing damage to the paintwork

- 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.



### Note:

The correct colour is stated on a 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 (➡ 58)
- Remove the battery (➡ 50) comply with the maintenance instructions (➡ 49).
- Spray the brake and clutch lever pivots and the main and side stand pivots with a suitable lubricant
- Coat bright metal/chrome-plated parts with an acid-free grease (e.g. Vaseline)
- Place the motorcycle on its centre stand in a dry place
- Support it under the engine so that both wheels are clear of the ground.



### 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 (➡ 58)
- 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)



	F 650 GS [37 kW]	F 650 GS [25 kW]
Type	Liquid-cooled single-cylinder four-stroke engine with 4 valves with bucket tappets, 2 overhead camshafts, dry-sump lubrication	
Displacement	652 cc (22.04 fl oz.)	652 cc (22.04 fl oz.)
Maximum rated output in accordance with DIN 70 020		
	37 kW	25 kW
	50 hp	34 hp
- at engine speed	6,500 rpm	5,500 rpm
Maximum torque	60 Nm	51 Nm
- at engine speed	4,800 rpm	4,000 rpm
Permitted speeds		
Maximum engine speed	7,400 rpm	7,400 rpm
Idle speed	1,500 rpm	1,500 rpm
Bore/stroke	100/83 mm (3.94/3.27 in)	100/83 mm (3.94/3.27 in)
Compression ratio	11.5 : 1	11.5 : 1
F 650 GS		
Fuel grade	Regular unleaded fuel to DIN 51607 or equivalent standard, min. octane number 91 (RON) or 81 (MON)	
Tank capacity (usable)	17.3 l (3.8 Imp. gal.), including 4 l (0.9 Imp. gal.) reserve	
Fuel consumption		
constant 90 km/h (56 mph)	3.2 l/100 km (88.27 Imp. mil/gal)	
constant 120 km/h (75 mph)	4.3 l/100 km (65.69 Imp.mil/gal)	

# Power train

## F 650 GS

<b>Clutch</b>	Multi-plate clutch running in oil bath
<b>Primary transmission</b>	$37/72 = 1:1.946$
<b>Gearbox</b>	5-speed, with claw-action shift, integrated into engine block
Gear ratios in the gearbox	1st gear = 2.75 2nd gear = 1.75 3rd gear = 1.31 4th gear = 1.05 5th gear = 0.88
<b>Transmission from gearbox to rear wheel drive</b>	Secondary drive with O-ring chain $5/8 \times 1/4$
Number of chain links	112
<b>Rear wheel drive</b>	
Final drive ratio (pinion/sprocket)	$16/47 = 1:2.938$

# Frame and suspension

## F 650 GS

### Frame

Bridge-type frame with bottom rail

Location  
of type plate

On top rail of main frame, right

Location  
of vehicle identification  
number (VIN)

On right of steering head

### Front brake

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

### Rear brake

Hydraulic disc brake with  
1-piston floating caliper

# Frame and suspension

## F 650 GS

### Suspension

Front	Telescopic fork with stabiliser
Total suspension travel	170 mm (6.69 in)
Dakar version	210 mm (8.27 in)
Fixed tube diameter	41 mm (1.61 in)
Rear	Central suspension strut pivoted to lever system. Spring base point and rebound-phase damping continuously adjustable.
Total suspension travel (at wheel)	165 mm (6.50 in)
Dakar version	210 mm (8.27 in)
Swinging fork	Box swinging fork on each side.
Swinging arm length	564 mm (22.20 in)
<b>Steering lock angle</b>	40°
<b>Front wheel castor</b>	
in normal-load position (with rider)	113 mm (4.45 in)

# Frame and suspension

## Wheels and tyres

### F 650 GS

Spoked wheel

### F 650 Dakar



#### 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](http://www.bmw-motorrad.com) on the Internet

### Front wheel

Size and designation	2.50" x 19" MT	1.6" x 21"
----------------------	----------------	------------

Tyre size and designation	100/90-19	90/90-21
---------------------------	-----------	----------

### Rear wheel

Size and designation	3.00" x 17" MT
----------------------	----------------

Tyre size and designation	130/80 R 17	130/80-17
---------------------------	-------------	-----------

### Tyre pressures (tyres cold)

One-up	Front	1.9 bar (27.56 psi)
--------	-------	---------------------

Rear	2.1 bar (30.46 psi)
------	---------------------

Fully loaded	Front	2.1 bar (30.46 psi)
--------------	-------	---------------------

Rear	2.3 bar (33.36 psi)
------	---------------------

### Recommended minimum tyre tread depth

Front wheel	2 mm (0.08 in)
-------------	----------------

Rear wheel	3 mm (0.12 in)
------------	----------------



#### Warning:

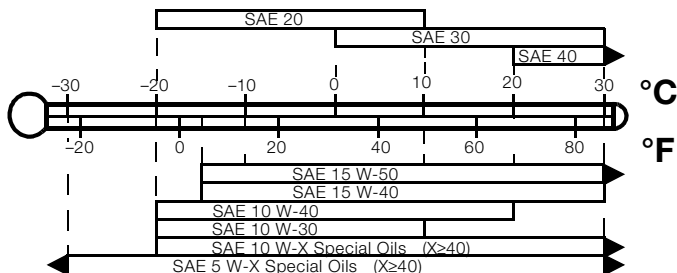
**Comply with local legal requirements concerning minimum tread depth.**

# Fuel and lubricants

## F 650 GS

### 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 capacities

With filter change 2.3 l

**Maximum oil consumption** 1 l/1000 km  
(2824.7 Imp. miles/gal)



#### Attention:

Do not use synthetic oils.

## F 650 GS

### Telescopic fork oil

Approved grades	BMW telescopic fork oil
Refill after disassembly	0.61 l (1.07 Imp. pint)
Dakar version	0.56 l (1.06 Imp. pints)
Oil change	0.60 l (1.06 Imp. pint)
Dakar version	0.55 l (1.06 Imp. pints)

### Battery terminal corrosion 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  
(-22 °F ... +284 °F) ,  
drip point 150 °C ... 230 °C  
(302 °F ... 446 °F),  
high corrosion protection,  
good resistance to water  
and oxidation;  
e.g. Staburags NBU 30 PTM

# Fuel and lubricants

3

70

Technical data

## Brake fluid

### F 650 GS

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 (2.2889 Imp. pints)  
(0.1 l (1.1707 Imp. pints) in expansion tank)



## F 650 GS

### Spark plugs

Approved makes/types	NGK DR8 EB
Electrode gap	0.6 - 0.7 mm (0.02 - 0.03 in)
Wear limit	0.9 mm (0.0354 in)

### Fuses

	"Minifuse" flat-socket fuses
Ratings	4 A, 7.5 A, 10 A and 15 A

### Headlights

Halogen headlight

### Bulbs

High-beam/low-beam headlight	H4 halogen bulb, 12 V, 60/55 W
Parking light	12 V 5 W
Rear light	
Brake/tail light	12 V 21/5 W
Flashing turn indicators	12 V 10 W
Other warning/telltale lights and instrument lighting	12 V 1.2 W

# Dimensions and weights

## F 650 GS

<b>Overall length</b>	2,185 mm (86.02 in)
Dakar version	2,189 mm (86.18 in)

### Width

across mirrors	910 mm (35.82 in)
acr. handlebars (with weights)	805 mm (31.69 in)
Dakar version	895 mm (35.24 in)
across front footrests	568 mm (22.36 in)
across rear footrests	664 mm (26.14 in)

### Overall height

(without mirr., at unlad. weight)	1,320 mm (51.96 in)
Dakar version	1,395 mm (54.92 in)

### Seat height, unladen weight

	780 mm (30.71 in)
Dakar version	870 mm (34.25 in)
Lowered suspension	750 mm (29.53 in)

### Wheelbase

- in normal-load position	1,500 mm (59.06 in)
---------------------------	---------------------

### Ground clearance

at unladen weight	146 mm (5.75 in)
Dakar version	196 mm (7.72 in)
Lowered suspension	116 mm (4.56 in)
in normal-load position	130 mm (5.12 in)
Dakar version	180 mm (7.09 in)
Lowered suspension	100 mm (3.94 in)

# Dimensions and weights

## F 650 GS

### Unladen weight

(ready to ride, tank full)	194 kg (428 lbs)
----------------------------	------------------

### Maximum

### permitted weight

380 kg (838 lbs)
------------------

### Permitted wheel loads

Front	124 kg (273 lbs)
-------	------------------

Rear	256 kg (564 lbs)
------	------------------

# Performance data

3

74

Technical data

## F 650 GS [37 kW]

## F 650 GS [25 kW]

### Maximum speed

acc. to type approval test	170 km/h (105 mph)	145 km/h (90 mph)
two-up	162 km/h (100 mph)	135 km/h (84 mph)

### Power/weight ratio

ready for road +rider (75 kg/165 lbs)	7.24 kg/kW (15.96 lbs/kW)	10.72 kg/kW (23.63 lbs/kW)
at gross weight limit	10.27 kg/kW (22.64 lbs/kW)	15.20 kg/kW (33.51 lbs/kW)

### Flexibility

4th gear 80-120 km/h (50-75 mile/h)	5.4 s	7.9 s
5th gear 80 -120 km/h (50 -75 mph)	6.9 s	10.2 s
4th gear 60-140 km/h (37-87 mile/h)	12.6 s	–
5th gear 60 -140 km/h (37 - 87 mph)	16.6 s	–

### Ride-past noise level

to 97/24-9/EC	79 dB (A)	79 dB (A)
---------------	-----------	-----------

### Stationary noise level

to 97/24-9/EC	86 dB (A)	86 dB (A)
---------------	-----------	-----------

- A**
- Accessories, genuine BMW parts, 16
  - Air filter, 53
  - Annual Inspection
    - Confirmation of maintenance work, 8, 9, 10
  - Annual Inspection, notes, 3
- B**
- Battery
    - Maintenance instructions, 52
    - Preparation for prolonged lay-up, 49
    - Safety instructions, 48
  - Battery acid, 49
  - Battery adapter point, 46
  - Battery trickle charger, 49
  - Bearing lubrication, 69
  - Bore/stroke, 63
  - Brake fluid, 70
  - Brake light bulb
    - Changing, 39
  - Brakes
    - Minimum pad thickness, 33, 34
    - Technical data, 65
  - Bulbs
    - Changing
      - flashing turn indicators, 38
      - high-beam/low-beam headlight, 41
      - number plate light, 39
      - parking light, 40
      - rear light/brake light, 39
    - Technical data, 71
- C**
- Capacity, engine, 68
  - Castor, 66
  - Chain, 31
    - Adjusting, 31
    - Checking, 30
  - Cleaning/care
    - General instructions, 57, 59
    - Paint damage, 60
    - Removing road salt, 59
    - Washing, 58
    - Windscreen, 59
  - Clutch technical data, 64
  - Compression ratio, 63
  - Confirmation of maintenance work
    - Annual Inspection, 8, 9, 10
    - Inspection, 4, 5, 6
    - Service, 4, 5, 6
  - Confirmation of odometer change, 13
  - Confirmation of service work, 11, 12
  - Consumption, 63
  - Coolant, 70
    - Antifreeze, 35
    - Mixture ratio, 35
- D**
- Dimensions and weights, 72, 73
  - Displacement, 63
  - Drive chain
    - Check, 31

## E

Elasticity, 74

Engine oil

Capacity, 68

Consumption, 68

Technical data, 68

Viscosity, 68

Engine speed limit, 63

Engine, type, 63

## F

Frame, 65

Front brake

Checking pads, 33

Technical data, 65

Front wheel

Installing, 23, 24

Removing, 20, 21

Technical data, 67

Front-wheel stand, 20

Fuel

Consumption, 63

Grade, 63

Fuel tank capacity, 63

Fuses

Equipment connected to, 43

Ratings, 71

Replacing, 42

## G

Gear ratios, 64

Gearbox

Ratios, 64

Technical data, 64

General instructions, 14, 15

Ground clearance, 72

## H

Headlights, 71

## I

Idle speed, 63

Inspection

Notes, 3

## J

Jump starting, 46, 47

## L

Lights, technical data, 71

Low-beam/high-beam headlight  
bulb

Changing, 41

## M

Maximum speed, 63, 74

## O

Odometer change,  
confirmation, 13

Oil capacity, engine, 68

## P

Parking light bulb

Changing, 40, 41

Performance data, 74

Permitted gross weight, 73

Plastics, cleaning, 57

Power output, 63

Power/weight ratio, 74  
Pre-delivery check, 4  
Primary drive ratio, 64

## R

Rear brake  
    Checking pads, 34  
    Technical data, 65  
Rear wheel  
    Installing, 27, 28, 29  
    Removing, 25, 26  
    Technical data, 67  
Rear wheel drive, technical data, 64  
Ride-past noise level, 74

## S

Safety information, 2  
Safety instructions, 14, 37, 54  
    Explanation, 82  
Salt damage, 59  
Seat height, 72  
Service, notes, 3  
Spark plug, 54  
    Primary spark plug, 56  
    Secondary spark plug, 55  
Spark plugs, technical data, 71  
Stationary noise level, 74  
Steam-jet/high-pressure cleaning equipment, 57  
Steering lock angle, 66

## T

Technical modifications, 15  
Telescopic forks, 69

Toolkit, 17  
Torque, 63  
Touching up minor damage, 60  
Tread depth, 67  
Type plate, 65  
Tyres, 67  
    Approved sizes, 67  
    Technical data, 67  
    Tread depth, 67  
    Tyre pressures, 67

## U

Unladen weight, 73

## V

VIN, 65

## W

Weights and dimensions, 72, 73  
Wheel loads, 73  
Wheel suspension, technical data, 66  
Wheelbase, 72  
Wheels, technical data, 67  
Windscreen, cleaning, 59







**Motorcycle data**

---

Model

---

Frame No.

---

Colour No.

---

First registered on

---

Registration No.**Dealer data**

Person to contact for Service work

---

Ms./Mr.

---

Tel. No.

---

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

# Maintenance Instructions

F 650 GS

F 650 GS Dakar



**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.

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.

The right to modify designs, equipment and accessories is reserved.

Errors and omissions excepted.

© 2003 BMW Motorrad

Not to be reproduced either wholly or in part without written permission from BMW Motorrad, After Sales.

Printed in Germany

**BMW recommends Castrol**



**BMW Motorrad  
Printed information**

Order No.:  
01 41 7 685 941  
10.2003  
1st edition GB / RF



**The Ultimate  
Driving Machine**

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.

The right to modify designs, equipment and accessories is reserved.

Errors and omissions excepted.

© 2003 BMW Motorrad

Not to be reproduced either wholly or in part without written permission from BMW Motorrad, After Sales.

Printed in Germany

**BMW recommends Castrol**



**BMW Motorrad  
Printed information**

Order No.:  
01 41 7 685 941  
10.2003  
1st edition GB / RF



**The Ultimate  
Driving Machine**