

# OWNER'S MANUAL 2009

**990 Adventure EU**

**990 Adventure AUS/UK**

**990 Adventure R EU**

**990 Adventure R AUS/UK**

**990 Adventure R FR**

ART. NO. 3211362en



**KTM**



# DEAR KTM CUSTOMER

Congratulations on your decision to buy a KTM motorcycle. You are now the owner of a state-of-the-art sports motorcycle that will give you enormous pleasure if you service and maintain it accordingly.

We wish you a lot of enjoyment riding this vehicle!

Please enter the serial numbers of your vehicle below.

Chassis number (☛ p. 16)	Dealer's stamp
Engine number (☛ p. 17)	
Key number (☛ p. 17)	

The owner's manual corresponded to the latest state of this series at the time of printing. Slight deviations resulting from continuing development and design of our motorcycles cannot, however, be completely excluded.

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KTM-Sportmotorcycle AG  
5230 Mattighofen, Austria

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## Symbols used

The meaning of specific symbols is described below.



Indicates an expected reaction (e.g. of a work step or a function).



Indicates an unexpected reaction (e.g. of a work step or a function).



All work marked with this symbol requires specialist knowledge and technical understanding. In the interest of your own safety, have these jobs performed in an authorized KTM workshop! There, your motorcycle will be serviced optimally by specially trained experts using the specialist tools required.



Identifies a page reference (more information is provided on the specified page).

## Formats used

The typographical formats used in this document are explained below.

**Specific name** Identifies a proprietary name.

**Name®** Identifies a protected name.

**Brand™** Identifies a trademark.

## Use definition

KTM sport motorcycles are designed and constructed to meet the normal demands of regular road and light offroad operation (dirt roads), but not for use on race courses.



### Info

The motorcycle is authorized for public road traffic in the homologous version only.

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## Maintenance

A prerequisite for fault-free operation and avoiding premature wear is compliance with the maintenance, care and adjustments to the engine and chassis described in the owner's manual. Poor adjustment and tuning of the engine and suspension can lead to damage and breakage of components.

Using the motorcycle in extreme conditions such as very muddy or wet roads can lead to above-average wear of components such as the transmission train or the brakes. For this reason, it may be necessary to service or replace worn parts before the limit specified in the service schedule is reached.

Pay careful attention to the prescribed running-in period and inspection and maintenance intervals. Close adherence to these periods will significantly lengthen the service life of your motorcycle.

## Warranty

The work prescribed in the service schedule must be carried out in an authorized KTM workshop only and confirmed in the customer's service record; otherwise, all warranty claims will be void. No warranty claim can be honored for damage resulting from manipulation and/or other changes to the vehicle.

## Materials

The fuels and lubricants named in the owner's manual must be used according to specifications.

## Spare parts, accessories

For your own safety, only use spare parts and accessory products that have been approved and/or recommended by KTM and have them installed by an authorized KTM workshop. KTM accepts no liability for other products and any resulting damage.

Some of the spare parts and accessory products are specified in parentheses under the respective descriptions. Your KTM dealer will be glad to advise you.

You will find the current **KTM PowerParts** for your vehicle on the KTM website.

International KTM Website: <http://www.ktm.com>

## Work rules

Special tools are necessary for some of the work. These are not included with the vehicle and can be ordered under the number in parentheses. Ex: valve spring mounter (59029019000)

During assembly, non-reusable parts (e.g. self-locking screws and nuts, seals and seal rings, O-rings, pins, lock washers) must be replaced by new parts.

If a thread lock (e.g. **Loctite**<sup>®</sup>) is used for screw connections, be sure to comply with the manufacturer's specific instructions on its usage. Parts that you want to reuse following repairs and servicing should be cleaned and checked for damage and wear. Change damaged or worn parts.

Following repairs or servicing, the vehicle must be checked for roadworthiness.

## Transport

### Note

**Danger of damage** The parked vehicle can roll away or fall over.

- Always place the vehicle on a firm and even surface.

### Note

**Fire hazard** Some vehicle components get very hot when the machine is driven.

- Do not place the vehicle where there are flammable or explosive substances. Do not place objects over the vehicle while it is still warm from being run. Always let the vehicle cool first.

- Switch off the engine and remove the ignition key.
- Secure the motorcycle against falling over or rolling away using straps or other suitable devices.

## Environment

Motorcycling is a wonderful sport and we naturally hope that you can enjoy it to the full. However, it can also lead to problems with the environment and conflict with other persons. Responsible behavior in handling the motorcycle can help to avoid such problems and conflicts. To protect the future of motorcycle sport, make sure that you use your motorcycle legally, display environmental consciousness, and respect the rights of others.

## Notes/warnings

Pay close attention to the notes/warnings.



### Info

Various information and warning labels are affixed to the vehicle. Do not remove information/warning labels. If they are missing, you or others may not recognize sources of danger and may therefore be injured.

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## Grades of risks

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### **Danger**

Identifies a danger that will immediately and invariably lead to fatal or serious permanent injury if the appropriate measures are not taken.



### **Warning**

Identifies a danger that is likely to lead to fatal or serious injury if the appropriate measures are not taken.



### **Caution**

Identifies a danger that may lead to minor injuries if the appropriate measures are not taken.

### **Note**

Identifies a danger that will lead to considerable machine and material damage if the appropriate measures are not taken.



### **Warning**

Identifies a danger that will lead to environmental damage if the appropriate measures are not taken.

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## Owner's manual

- Be sure to read this owner's manual carefully and completely before taking your first ride. It contains useful information and tips to help you operate and handle your motorcycle. Only then will you find out how to best customize the motorcycle for your own use and how you can protect yourself from injury. The owner's manual also contains important information on servicing the motorcycle.
- The owner's manual is an important component of the motorcycle and should be handed over to the new owner if the vehicle is sold.

View of vehicle, front left side (vehicle differs slightly from photo)



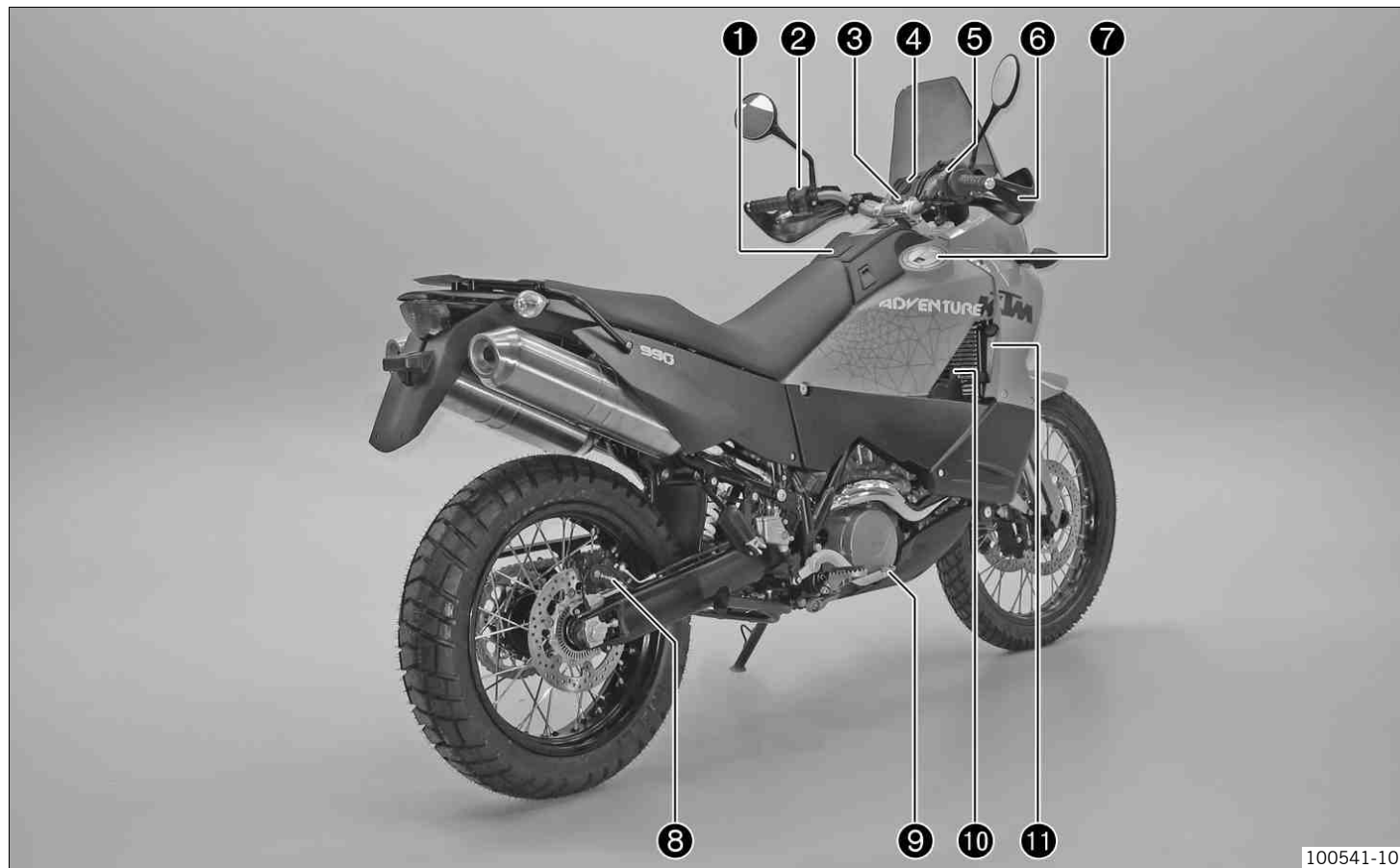
# VIEW OF VEHICLE

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1	Clutch lever
2	Seat
3	Seat lock
4	Luggage rack plate
5	Handrail
6	Front brake caliper
7	Underride guard
8	Side stand
9	Shift lever
10	Footrest
11	Center stand
12	Passenger footrest

---

View of vehicle, rear right side (vehicle differs slightly from photo)





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1	Storage compartment
2	Light switch, turn signal switch, horn button, headlight flasher switch
3	Hazard warning flasher switch
4	Accessories socket
5	Emergency OFF switch, electric starter button
6	Hand brake lever
7	Filler cap
8	Rear brake caliper
9	Foot brake pedal
10	Oil dipstick
11	Cooling system compensating tank

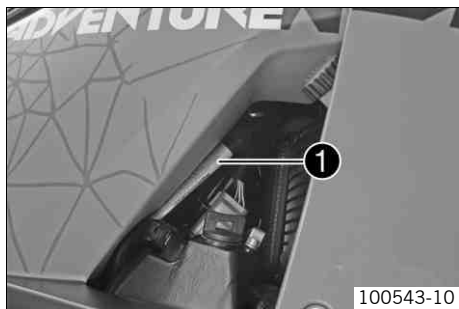
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## Chassis number



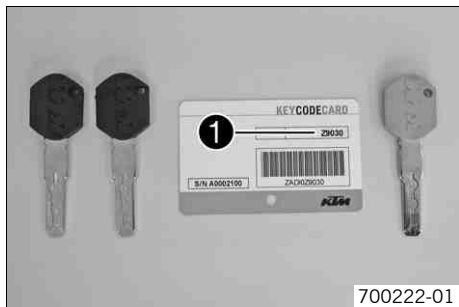
The chassis number ❶ is stamped on the right side of the steering head.  
The chassis number is also found on the type label.

## Type label



The type label ❶ is located on the right frame tube in the vicinity of the oil tank.

## Key number



The key number **Code number ❶** can be found on the **KEYCODECARD**.

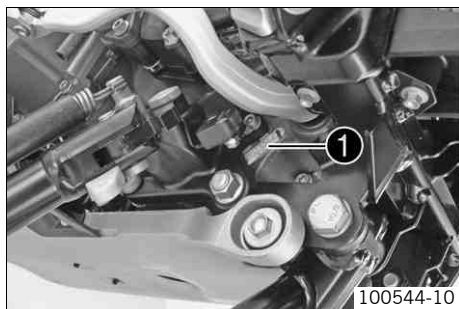


### Info

You need the key number to order a spare key. Keep the **KEYCODECARD** in a safe place.

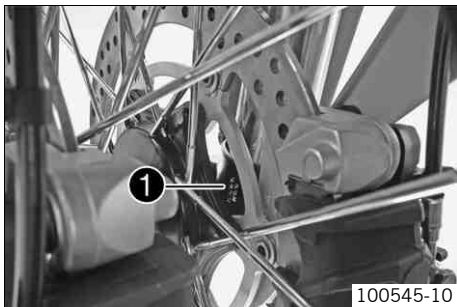
Use the orange programming key to activate and deactivate the black ignition key. Keep the orange programming key in a safe place: it must only be used for learning and programming functions.

## Engine number



The engine number **❶** is stamped on the left side of the engine under the engine sprocket.

## Fork part number



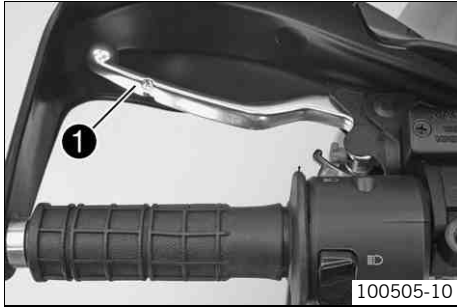
The fork part number ❶ is stamped on the inner side of the fork stub.

## Shock absorber part number



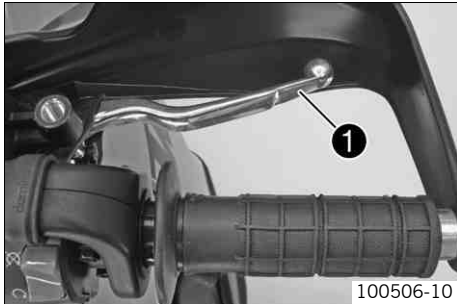
The shock absorber part number ❶ is stamped on the upper part of the shock absorber.

## Clutch lever



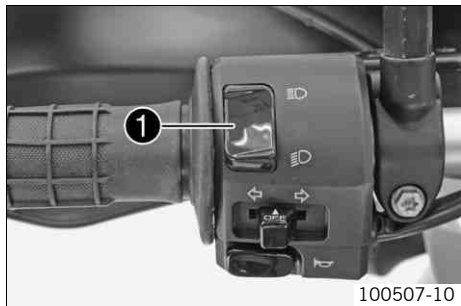
The clutch lever ❶ is fitted on the left side of the handlebar.  
The clutch is hydraulically operated and self-adjusting.

## Hand brake lever



The hand brake lever ❶ is fitted on the right side of the handlebar.  
The front brake is engaged using the hand brake lever.

## Light switch

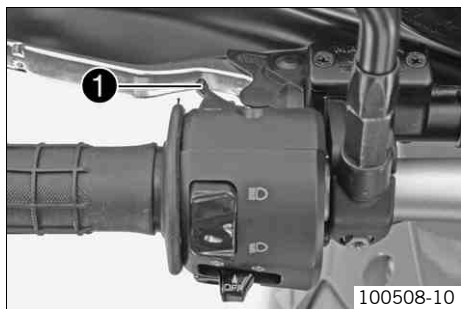


The light switch ❶ is fitted on the left side of the handlebar.

### Possible states

	<p>Low beam on – The light switch is turned downwards. In this position, the low beam and tail light are switched on.</p>
	<p>High beam on – The light switch is turned upwards. In this position, the high beam and tail light are switched on.</p>

## Headlight flasher switch



The headlight flasher switch ❶ is fitted on the left side of the handlebar.

### Possible states



- Headlight flasher switch in neutral position
- Headlight flasher switch pressed – The headlight flasher switch (high beam) is operated in this position.

## Turn signal switch



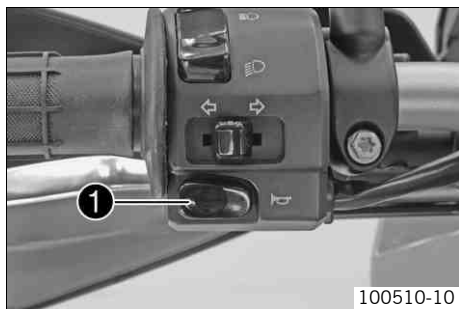
The turn signal switch ❶ is fitted on the left side of the handlebar.

### Possible states

	Turn signal off
	Turn signal, left, on – The turn signal switch is pressed to the left. The turn signal switch automatically returns to the central position after use.
	Turn signal, right, on – The turn signal switch is pressed to the right. The turn signal switch automatically returns to the central position after use.



To switch off the turn signal, press the turn signal switch towards the switch case.

## Horn button

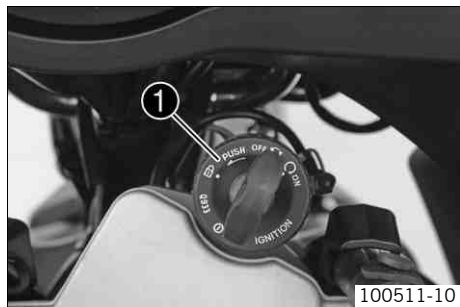


The horn button ❶ is fitted on the left side of the handlebar.

### Possible states

- Horn button  in neutral position
- Horn button  pressed – The horn is operated in this position.

## Ignition/steering lock



100511-10

The ignition/steering lock ❶ is in front of the upper triple clamp.



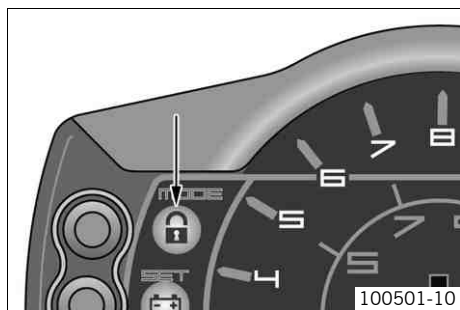
### Info

The ignition may only be switched on using a black ignition key.  
Use the orange programming key to activate and deactivate the black ignition key.

### Possible states

	<p>Ignition <b>OFF</b> – In this position, the ignition circuit is interrupted, a running engine stops, and a non-running engine will not start. The black ignition key can be removed.</p>
	<p>Ignition <b>ON</b> – In this position, the ignition circuit is closed and the engine can be started.</p>
	<p>Steering locked – In this position, the ignition circuit is interrupted and the steering locked. The black ignition key can be removed.</p>

## Immobilizer



100501-10

The electronic immobilizer secures the vehicle against unauthorized use. The immobilizer is activated automatically and the engine electronics are locked when the ignition key is withdrawn. The red warning lamp ❸ flashes at 15 second intervals after one minute. The red warning lamp can also indicate errors by flashing.



### Info

The ignition key contains electronic components. Never attach multiple ignition keys to a single key ring; this may cause mutual interference and lead to problems.



A lost black ignition key must be deactivated to prevent unauthorized persons from operating the vehicle.

The second black ignition key is activated when the vehicle is shipped.

Two additional spare ignition keys (key number on the **KEYCODECARD**) can be ordered from an authorized KTM workshop, but they must be activated before use.

## Emergency OFF switch

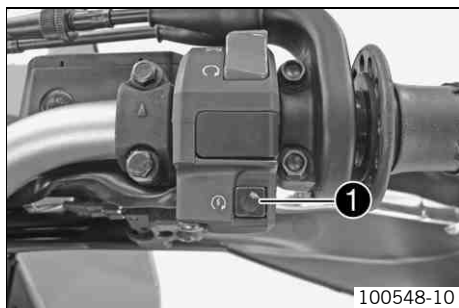


The emergency OFF switch ❶ is fitted on the right side of the handlebar.

### Possible states

	<p>Emergency OFF switch off – In this position, the ignition circuit is interrupted, a running engine stops, and the engine cannot be started.</p>
	<p>Emergency OFF switch on – This position is necessary for operation as it closes the ignition circuit.</p>

## Electric starter button

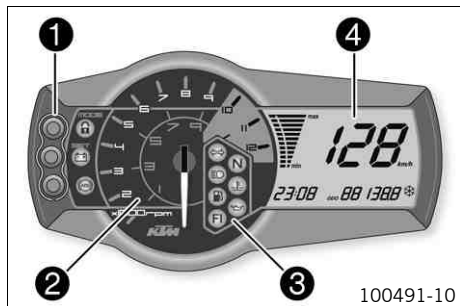


The electric starter button ❶ is fitted on the right side of the handlebar.

### Possible states

- Electric starter button ❸ in basic position
- Electric starter button ❸ is pressed – The electric starter is actuated in this position.

## Combination instrument

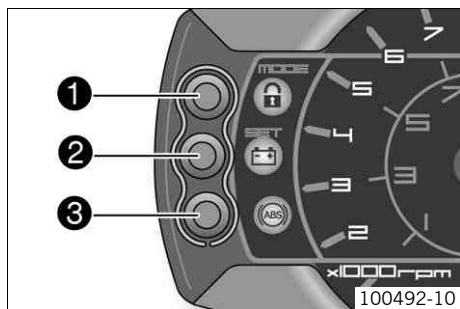


The combination instrument is installed in front of the handlebar.

The combination instrument is divided into 4 function areas.

- ❶ Function buttons
- ❷ Tachometer
- ❸ Indicator lamps
- ❹ Display

## Combination instrument - function buttons



You can change the display mode with the **MODE** button ❶.

Possible display modes are the distance traveled (**ODO**), trip master 1 (**TRIP 1**), trip master 2 (**TRIP 2**) and the ambient temperature.

Press the **SET** button ❷ to reset the trip master 1 function (**TRIP 1**) and trip master 2 function (**TRIP 2**) to **0.0**.

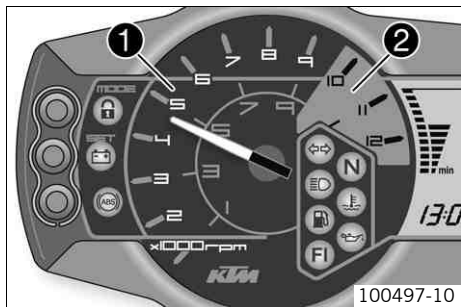
### (990 Adventure)

Button ❸ is used to switch off the ABS.

### (990 Adventure R)

Button ❸ has no function.

## Combination instrument - tachometer



100497-10

The tachometer ❶ shows the engine speed in revolutions per minute.  
The red marking ❷ shows the overspeed range of the engine.






## Combination instrument - indicator lamps








100498-10

The indicator lamps offer additional information about the operating state of the motorcycle.

### Possible states

	The turn signal indicator lamp flashes green simultaneously with the turn signals – The turn signal is switched on.
	The idle speed indicator lamp lights up green – The transmission is switched to idle.
	The high beam indicator lamp lights up blue – The high beam is switched on.
	The temperature warning lamp lights up red – Coolant has reached a critical value.
	The fuel level warning lamp lights up orange – Fuel level has reached the reserve mark. The display switches to <b>TRIP F</b> .

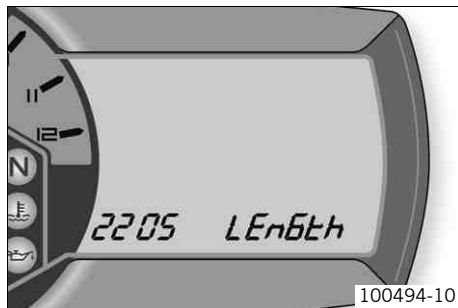
	<p>The oil indicator lamp lights up red – The oil pressure is too low.</p>
	<p>The <b>FI</b> warning lamp (<b>MIL</b>) lights up/flashes orange – The OBD has detected an emission- or safety-critical fault.</p>
	<p>The immobilizer indicator lamp lights up or flashes red – Status or error message for immobilizer / alarm system.</p>
	<p>The battery warning lamp lights up red – The voltage in vehicle system is too low.</p>
	<p>The ABS warning lamp lights up/flashes red – ABS status or error messages (antilock brake system).</p>

## Combination instrument - display



100493-10

When you switch on the ignition, all display segments light up for one second as a function test.



## LEnGth

Following the display function test, the wheel circumference **LEnGth** is shown for one second.



## Info

2205 mm equals the circumference of the 21" front wheel with a series production tire.

The display then changes to the last selected mode.

## Combination instrument - speedometer



The speed ❶ is shown in kilometers per hour **km/h** or in miles per hour **mph**.

## Setting kilometers or miles



## Info

If you change the unit, the value **ODO** is retained and converted accordingly. Making the setting according to the country.

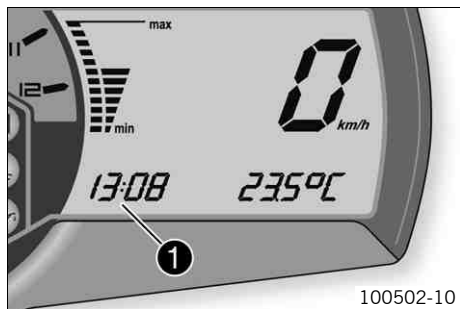
## Condition

The motorcycle is standing.

- Switch on the ignition by turning the black ignition key to the position  $\odot$ .
- Press the **MODE** button repeatedly until the **ODO** mode is active.
- Keep the **MODE** button pressed until the display mode changes from **km/h** to **mph** or from **mph** to **km/h**.



## Combination instrument - time



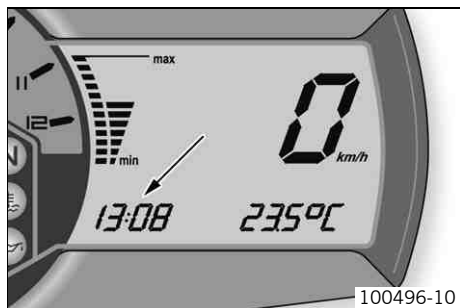
The time is shown in area ❶ of the display.



## Info

The time must be reset after the battery is reconnected or when the fuse is changed.

## Setting the clock

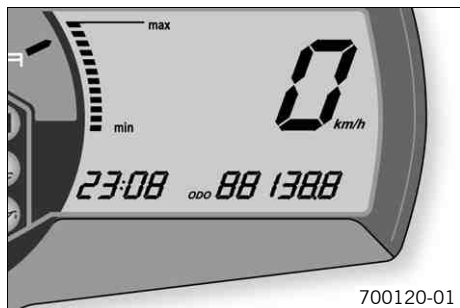


### Condition

The motorcycle is standing.

- Switch on the ignition by turning the black ignition key to the position  $\odot$ .
- Press the **MODE** button repeatedly until the **ODO** mode is active.
- Keep the **MODE** button and the **SET** button pressed simultaneously.
  - ✓ The time display begins to flash.
- Press the **MODE** button to set the hour.
- Press the **SET** button to set the minute.
- Keep the **MODE** button and the **SET** button pressed simultaneously.
  - ✓ The time is set.

## Combination instrument - display ODO



In the **ODO** display mode, the total distance traveled is shown in kilometers or miles.

### **i** Info

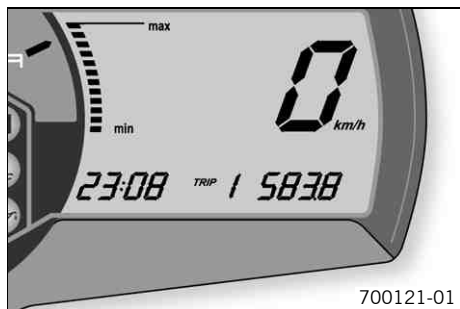
This value is retained, even if the battery is disconnected and/or the fuse blows.

## Combination instrument - setting/resetting TRIP 1

### **i** Info

The **TRIP 1** trip counter is always running and counts up to **999.9**.

The trip counter can be used to measure the distance covered during trips or between two refueling stops. After the value **999.9** is reached, the trip counter starts at **0.0** again.



- Switch on the ignition by turning the black ignition key to the position  $\odot$ .
- Press the **MODE** button repeatedly until the **TRIP 1** mode is active.
- Keep the **SET** button pressed.
- ✓ The **TRIP 1** display is set to **0.0**.

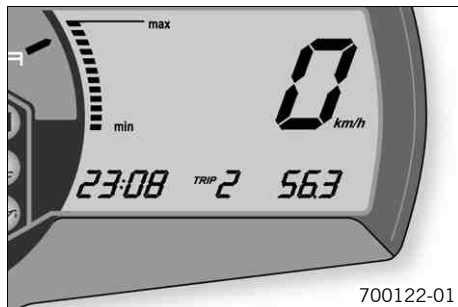
## Combination instrument - setting/resetting TRIP 2

### **i** Info

The **TRIP 2** trip counter is always running and counts up to **999.9**.

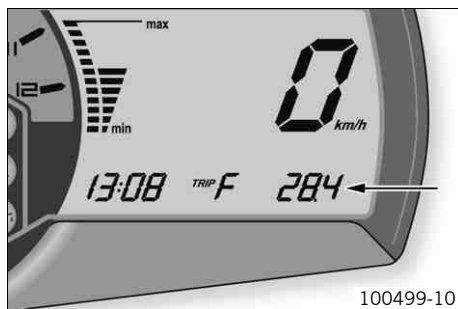
The trip counter can be used to measure the distance covered during trips or between two refueling stops. After the value **999.9** is reached, the trip counter starts at **0.0** again.





- Switch on the ignition by turning the black ignition key to the position  $\odot$ .
- Press the **MODE** button repeatedly until the **TRIP 2** mode is active.
- Keep the **SET** button pressed.
  - ✓ The **TRIP 2** display is set to **0.0**.

## Combination instrument - TRIP F display



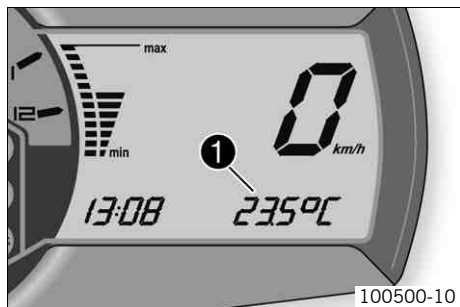
If the fuel level drops to the reserve mark, the display automatically changes to **TRIP F** and starts to count from **0.0**, regardless of the previous display mode.



### Info

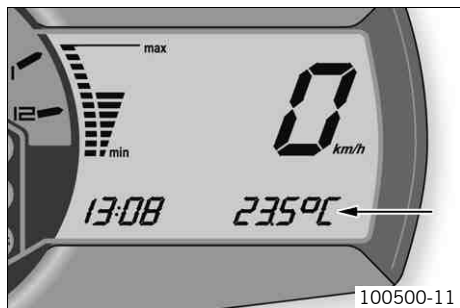
Parallel to the **TRIP F** display, the fuel warning light switches on.

## Combination instrument - ambient temperature display



The ambient temperature ❶ is displayed in °C or °F.

## Setting the temperature unit of measure

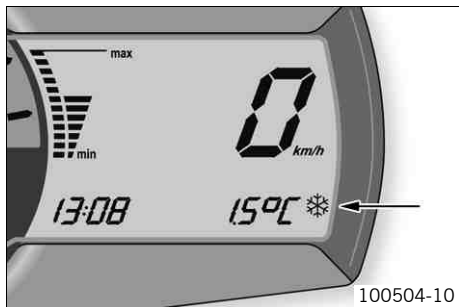


### Condition

The motorcycle is standing.

- Switch on the ignition by turning the black ignition key to the position  $\odot$ .
- Press the **MODE** button repeatedly until the ambient temperature is active.
- Keep the **MODE** button pressed until the display mode changes from °C to °F or from °F to °C.

## Combination instrument - warning of slippery roads



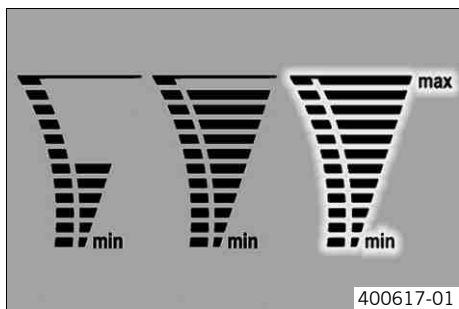
The ice symbol ❄ lights up to indicate an increased danger of slippery roads. The ice symbol ❄ appears in the display when the ambient temperature drops below the specified value.

Temperature	3 °C (37 °F)
-------------	--------------

The ice symbol ❄ goes out in the display when the ambient temperature rises above the specified value again.

Temperature	4 °C (39 °F)
-------------	--------------

## Combination instrument - coolant temperature indicator



The temperature display consists of 12 bars. The more bars that light up, the hotter the coolant. When the upper bar lights up, all bars in the display begin to flash and the temperature warning lamp lights up.

### Possible states

- Engine cold – Up to five bars light up.
- The engine is warm – Six to eleven bars light up.
- Engine hot – All twelve bars flash.

## Socket for electrical accessories



100512-10

The socket ❶ for electrical accessories is located to the left of the combination instrument. It is connected to the battery without an additional switch.

Socket for electrical accessories	
Voltage	12 V
Maximum current consumption	10 A

## Hazard warning flasher switch/hazard warning flasher



100513-10

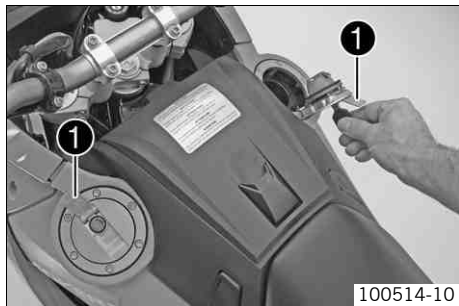
The hazard warning flasher switch ❶ is found to the left of the combination instrument. The hazard warning flasher is used to signal an emergency situation and to warn other road users.

**i Info**  
 Activate/deactivate the hazard warning flasher with the ignition switched on or no more than 30 seconds after the ignition is switched off.  
 To spare battery power, only press the hazard warning flasher as long as necessary.

### Possible states

	Hazard warning flasher off
	Hazard warning flasher on – All four turn signals, the hazard warning flasher switch and the green turn signal indicator lamp in the combination instrument flash.

## Opening the filler caps



- Lift the cover ❶ of the filler cap and insert the ignition key in the lock.
- Turn the ignition key clockwise until the filler cap opens.
- Raise the filler cap, withdraw the ignition key and open the second filler cap.
- Remove the ignition key.



### Info

The motorcycle is equipped with two fuel tanks and two filler necks. The fuel tanks are connected to each other with a fuel line that equalizes the fuel level. The two filler caps are equipped with a ventilation system.

## Closing the filler caps

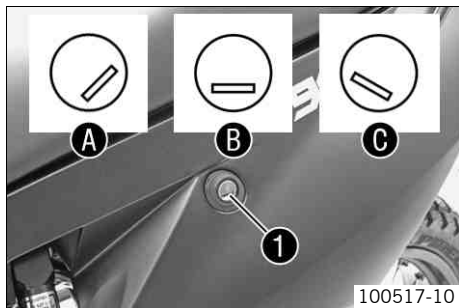


### Warning

**Fire hazard** Fuel is highly flammable, poisonous and harmful to your health.

- When closing the filler cap, ensure that it is closed correctly. Change clothing that came into contact with fuel. Immediately clean skin that came into contact with fuel using soap and water.
- Push the filler caps closed until the locks engage.
- Close the covers.

## Seat lock



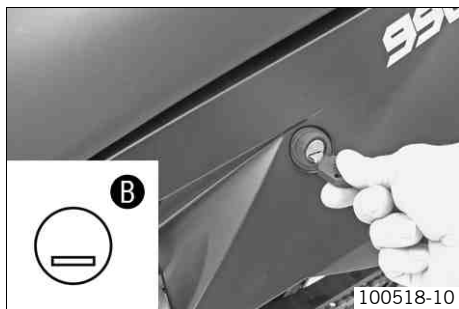
The seat lock ❶ is located in the left side cover below the seat.  
The seat lock unlocks the seat and locks and unlocks the storage compartment.

### Possible states

- **A** Storage compartment locked
- **B** Storage compartment unlocked
- **C** Seat unlocked

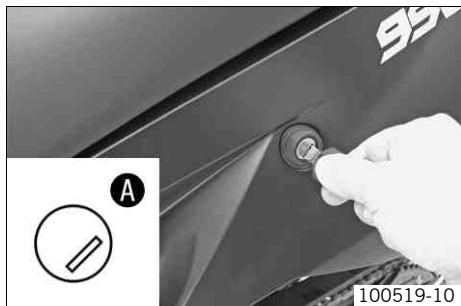
The seat lock can be locked with the ignition key.

## Unlocking the storage compartment



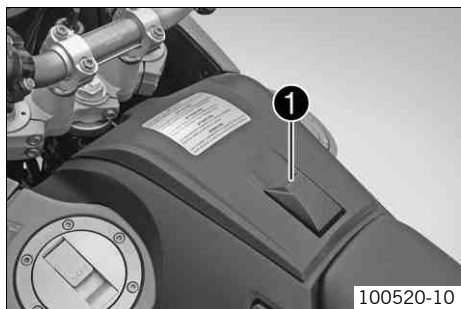
- Insert the ignition key into the seat lock.
- Turn the ignition key to position **B**.
- Remove the ignition key.

## Locking the storage compartment



- Insert the ignition key into the seat lock.
- Turn the ignition key to position **A**.
- Remove the ignition key.

## Opening the storage compartment



- Unlock the storage compartment. (☛ p. 36)
- Press button **1** toward the seat and raise the cover at the same time.

---

### **i** Info

The storage compartment can only be opened if it was first unlocked using the seat lock.

---

## Closing the storage compartment



- Push down on the rear of the cover until it audibly engages.



### Info

The storage compartment can be opened again as long as it has not been locked using the seat lock.

- Lock the storage compartment. (🔑 p. 37)

## Handrails



The handrails ❶ are used for moving the motorcycle around.  
When you have a passenger, the passenger can hold on the handrails during the trip.



## Luggage rack plate



The luggage rack plate ❶ is located behind the seat.  
 The base plate of a luggage system (optional) can be attached to the luggage rack plate.  
 The luggage rack plate may not be loaded with more than the specified weight.

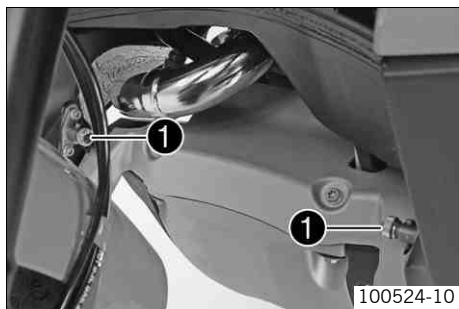
Maximum permissible load on luggage rack plate	8 kg (18 lb.)
--	---------------



### Info

Note the information provided by the luggage manufacturer.

## Fuel taps



There is a fuel tap ❶ on every fuel tank.



### Info

The fuel taps must be open during operation.  
 The fuel taps are only closed when dismantling the fuel tank.

### Possible states

- Fuel supply closed – The knurled screws are turned clockwise as far as possible. The level cannot be compensated and no fuel can flow out of the fuel tank.
- Fuel tap open – The knurled screws are turned counterclockwise as far as possible. The level can be compensated and the fuel can flow out of the fuel tank.

## Foot brake pedal

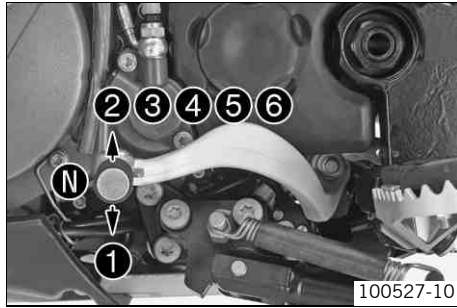


Foot brake pedal ❶ is located in front of the right footrest.  
The rear brake is activated using the foot brake pedal.

## Shift lever

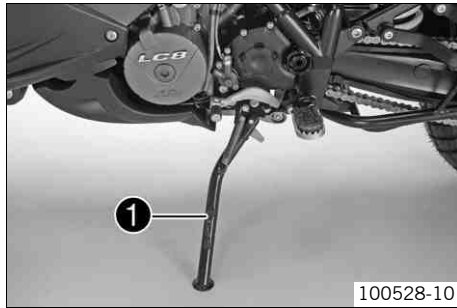


Shift lever ❶ is mounted on the left side of the engine.



The gear positions can be seen in the photograph.  
The neutral or idle position is between the first and second gears.

## Side stand

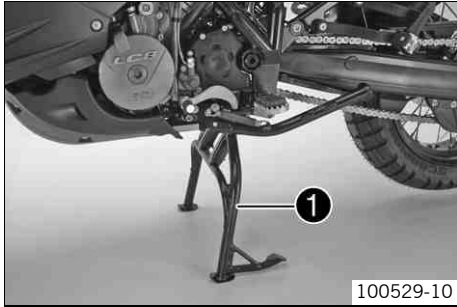


Side stand ❶ is coupled with the safety start system; see the riding instructions.

### Possible states

- Side stand folded out – The vehicle can be leaned on the side stand. The safety start system is active.
- Side stand folded in – This position is mandatory for all trips. The safety start system is inactive.

## Center stand



The vehicle is equipped with a center stand ❶ in addition to a side stand.

## Passenger footrests

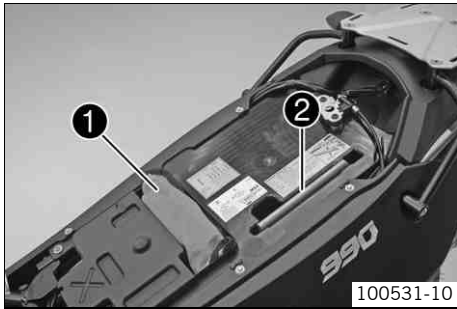


The passenger footrests can be folded up and down.

### Possible states

- Passenger footrests folded up – For operation without a passenger.
- Passenger footrests folded down – For operation with a passenger.

## Tool set



The tool set ❶ is located in the storage compartment under the seat.  
The extension ❷ can be mounted on several of the wrenches in the tool set.

## Information on first use



### **Danger**

**Danger of accidents** Danger arising from the rider's judgement being impaired.

- Do not use the vehicle if you are inexperienced or if you have consumed alcohol or drugs.



### **Warning**

**Risk of injury** Missing or insufficient protective clothing increases the risk of injury.

- Wear protective clothing (helmet, boots, gloves, pants and jacket with protectors) every time you ride the vehicle. Always wear protective clothing, which must be in perfect condition and meet legal requirements.



### **Warning**

**Danger of crashing** Impairment of ride behavior due to different tire tread patterns on front and rear wheels.

- The front and rear wheels must be fitted with tires with similar tread patterns to prevent loss of control over the vehicle.



### **Warning**

**Danger of accidents** Uncontrollable handling characteristics due to non-approved and/or non-recommended tires/wheels.

- Only tires/wheels approved by KTM and with the corresponding speed index should be used.



### **Warning**

**Danger of accidents** Reduced road grip with new tires.

- New tires have a smooth rolling surface and therefore cannot provide full road grip. The entire rolling surface must be roughened in the first 200 kilometers (124.3 miles) by moderate riding at alternating angles. The full grip levels are not achieved until the tires have been run in.



### **Warning**

**Danger of accidents** Brake system failure.

- If the foot brake pedal is not released, the brake linings drag permanently. The rear brake can fail due to overheating. Take your foot off the foot brake pedal if you do not want to brake.



## Info

When using your vehicle, remember that others may feel disturbed by excessive noise.

- Make sure that the pre-delivery inspection work has been carried out by an authorized KTM workshop.
  - ✓ You receive a delivery certificate and the service record at vehicle handover.
- Before your first trip, read the entire operating instructions carefully.
- Get to know the controls.
- Adjust the basic setting of the clutch lever. (☛ p. 151)
- Adjust the free travel of the handbrake lever. (☛ p. 88)
- Adjust the basic position of the footbrake lever. ☛
- Get used to handling the motorcycle on a suitable piece of land before making a longer trip. Try also to ride as slowly as possible and in a standing position to get a better feeling for the vehicle.
- Hold the handlebar firmly with both hands and keep your feet on the footrests when riding.
- Run the engine in.

## Running in the engine

- Do not exceed the specified engine speed and load during the running-in period.

Guideline

Maximum engine speed	
During the first: 1,000 km (621.4 mi)	6,500 rpm
After the first: 1,000 km (621.4 mi)	9,500 rpm

- Avoid full-throttle operation!

## Loading the vehicle



### Warning

**Danger of accidents** Unstable riding behavior.

- Do not exceed the maximum permitted weight and axle loads. The overall weight consists of: motorcycle operational and with a full tank, driver and passenger with protective clothing and helmet, baggage.



### Warning

**Danger of accidents** Unstable handling characteristics due to incorrect mounting of suitcase and/or tank rucksack.

- Mount and secure suitcase and tank rucksack according to the manufacturer's instructions.



### Warning

**Danger of accidents** Unstable handling characteristics at high speed.

- Adapt your speed according to your payload. Ride more slowly if your motorcycle is loaded with cases or other baggage.  
Maximum speed with luggage 130 km/h (80.8 mph)



### Warning

**Danger of accidents** Risk of breakage of suitcase system.

- If you have fitted suitcases on your motorcycle, read the manufacturer's specifications concerning the maximum payload.



### Warning

**Danger of accidents** Poor visibility for other road users due to slipped baggage.

- If the tail light is covered, you are less visible to traffic behind you, especially in the dark. Check that your baggage is fixed properly at regular intervals.



### Warning

**Danger of accidents** Changed handling characteristics and longer stopping distance with excessive payload.

- Adapt your speed according to your payload.



**Warning**

**Danger of accidents** Unstable handling characteristics due to slipped baggage.

- Check the way your baggage is fixed regularly.

**Warning**

**Danger of burns** A hot exhaust system can burn baggage.

- Fasten your baggage in such a way that it cannot be burned or singed by the hot exhaust system.

- 
- If you are carrying baggage, make sure it is fixed firmly as close as possible to the center of the vehicle and ensure even weight distribution between the front and rear wheels.
  - Do not exceed the maximum permitted total weight and the axle loads.

## Guideline

Maximum permissible total weight	430 kg (948 lb.)
Maximum permissible front axle load	200 kg (441 lb.)
Maximum permissible rear axle load	250 kg (551 lb.)

## Checks before putting into operation



### Info

Make sure that the motorcycle is in perfect technical condition before use.  
In the interests of riding safety, make a habit of making a general check before you ride.

- Check the engine oil level. (☛ p. 153)
- Check the engine for loss of oil.
- Check the fuel level.
- Bleed the fork legs. (☛ p. 78)

### Guideline

All	1,000 km (621.4 mi)
-----	---------------------

- Check the chain tension. (☛ p. 81)
- Clean the chain. (☛ p. 80)
- Check the tire condition. (☛ p. 106)
- Check the tire air pressure. (☛ p. 107)
- Check the brake fluid level of the front brake. (☛ p. 89)
- Check the rear brake fluid level. (☛ p. 93)
- Check the front brake linings. (☛ p. 92)
- Check the rear brake linings. (☛ p. 96)
- Check that the brake system is functioning properly.
- Check the coolant level in the compensating tank. (☛ p. 141)
- Check that all operating elements are correctly adjusted and free to move.
- Check that the electrical equipment is functioning properly.
- Check that baggage is correctly secured.

- Sit on the motorcycle and check the rear mirror setting.

## Starting



### **Danger**

**Danger of poisoning** Exhaust gases are poisonous and can result in unconsciousness and/or death.

- When running the engine, always make sure there is sufficient ventilation, and do not start or run the engine in a closed space without an effective exhaust extraction system.



### **Caution**

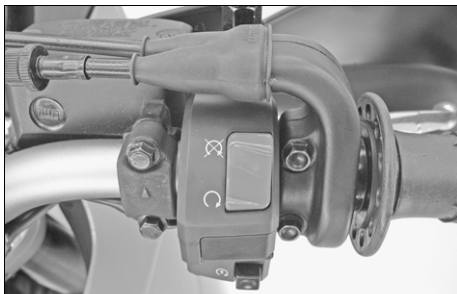
**Danger of accidents** If the vehicle is operated with a discharged battery or without a battery, electronic components and safety equipment may be damaged.

- Never operate the vehicle with a discharged battery or without a battery.



## **Note**

**Engine failure** High engine speeds in cold engines have a negative effect on the service life of the engine.


- Always warm up the engine at low engine speeds.



800108-10

- Turn the emergency OFF switch to the position .
- Switch on the ignition by turning the black ignition key to the position .
- ✓ After you switch on the ignition, you can hear the fuel pump working for about two seconds. The function test of the combination instrument is run at the same time.

**(990 Adventure)**

- ✓ The ABS warning lamp lights up and goes back out when you start riding.
- Shift the transmission to neutral.
- ✓ The green idling speed indicator lamp **N 1** lights up.
- Press the electric starter button .

**i Info**

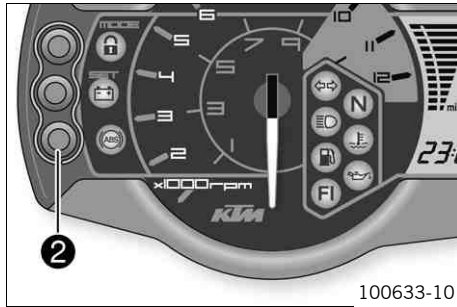
Do not press the electric starter button until the function test of the combination instrument is finished.

When starting, **DO NOT** open the throttle. If you open the throttle during the starting procedure, fuel is not injected by the engine management system and the engine cannot start.

Press the starter for a maximum of 5 seconds. Wait for at least 5 seconds before trying again.

This motorcycle is equipped with a safety start system. You can only start the engine if the transmission is in neutral or if the clutch is pulled when a gear is engaged. If you engage a gear with the side stand folded down, the engine stops.

- Take the motorcycle off of the main stand or side stand.



## Switching off ABS (990 Adventure)

KTM recommends always riding with ABS switched on. However, there may be situations in which riding with ABS is not advantageous.

### Condition

Vehicle is standing, engine is running.

- Press button ② for 3 - 5 seconds.
- ✓ The ABS warning lamp begins flashing to indicate that ABS is deactivated.

## Starting up

- Pull the clutch lever, engage 1st gear, release the clutch lever slowly and simultaneously open the throttle carefully.

## Shifting, riding



### Warning

**Danger of accidents** Abrupt load alterations can cause the vehicle to get out of control.

- Avoid abrupt load alterations and sudden braking actions, and adapt your speed to the road conditions.



### Warning

**Danger of accidents** If you shift down at high engine speed, the rear wheel can lock up.

- Do not shift into a low gear at high engine speed. The engine races and the rear wheel can lock up.



### Warning

**Danger of accidents** Malfunctions caused by incorrect ignition key position.

- Do not change the ignition key position during a journey.



## Warning

**Danger of accidents** Distraction from traffic activity by adjustments to the vehicle.

- Make all adjustments when the vehicle is at a standstill.



## Warning

**Risk of injury** The passenger must be capable of sitting correctly on the passenger seat.

- The passenger must hold on to the rider or the handrails and place his feet on the passenger footrests. Note the regulations governing the minimum age of passengers in your country.



## Warning

**Danger of accidents** Danger of accidents caused by dangerous driving.

- Observe the traffic regulations and ride defensively and with foresight in order to recognize danger as early as possible.



## Warning

**Danger of accidents** Reduced road grip with cold tires.

- On every journey, take the first miles carefully at moderate speed until the tires reach operating temperature and optimal road grip is ensured.



## Warning

**Danger of accidents** Reduced road grip with new tires.

- New tires have a smooth rolling surface and therefore cannot provide full road grip. The entire rolling surface must be roughened in the first 200 kilometers (124.3 miles) by moderate riding at alternating angles. The full grip levels are not achieved until the tires have been run in.



## Warning

**Danger of accidents** Unstable riding behavior.

- Do not exceed the maximum permitted weight and axle loads. The overall weight consists of: motorcycle operational and with a full tank, driver and passenger with protective clothing and helmet, baggage.

**Warning**

**Danger of accidents** Unstable handling characteristics due to slipped baggage.

- Check the way your baggage is fixed regularly.

**Warning**

**Danger of accidents** After a fall, check the vehicle.

- After a fall, check the vehicle as usual before putting it into operation.

**Note**

**Engine failure** Unfiltered intake air has a negative effect on the service life of the engine.

- Never ride the vehicle without an air filter since dust and dirt can get into the engine and result in increased wear.

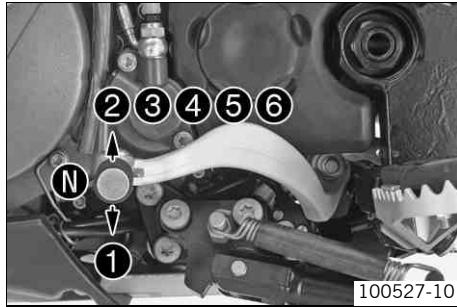
**Note**

**Engine failure** Overheating of engine.

- If the coolant temperature warning lamp lights up, stop and switch off the engine. Allow the engine to cool down and check the coolant level in the radiator, and top up if necessary. If you continue with the coolant temperature warning lamp alight, you may have engine failure.

**Info**

If you hear unusual noises while riding, stop immediately, switch off the engine and contact an authorized KTM workshop.



- When conditions allow (incline, road situation, etc.), you can shift into a higher gear.
- Release the throttle while simultaneously pulling the clutch lever, shift into the next gear, release the clutch and open the throttle.

**i Info**

You can see the positions of the six forward gears in the figure. The neutral or idle position is between the first and second gears. First gear is used for starting off or for steep inclines.

The operating temperature is reached when 6 bars of the temperature indicator light up.

- After reaching maximum speed by fully opening the throttle grip, turn the throttle back so it is  $\frac{3}{4}$  open. This will barely reduce the speed but fuel consumption will be considerably lower.
- Accelerate only up to a speed suitable for the road surface and weather conditions. When traveling in bends, do not shift, and accelerate very carefully.
- To shift down, brake if necessary and close the throttle at the same time.
- Pull the clutch lever and shift into a lower gear, release the clutch lever slowly and open the throttle or shift again.
- If the engine stalls (e.g. at a crossroads), pull the clutch lever only and press the starter button. You do not need to shift into neutral.
- Switch off the engine if you expect to be standing for a long time.
- If the **FI** warning lamp (**MIL**) lights up during a trip, stop immediately. When you shift to neutral, the **FI** warning lamp (**MIL**) starts to flash.

**i Info**

From the flashing rhythm, you can derive a two-digit number, the so-called flashing code. The flashing code tells you which component has a fault.

- If the ice symbol ❄ appears in the combination instrument, the roads may be icy. Adapt your speed to the changed road conditions.



## Braking



### Warning

**Danger of accidents** Reduced braking efficiency due to wet or dirty brakes.

- Clean or dry dirty or wet brakes by riding and braking gently.



### Warning

**Danger of accidents** Reduced braking efficiency caused by spongy pressure point of front or rear brake.

- Check the brake system and do not continue riding. (Your authorized KTM workshop will be pleased to help.)



### Warning

**Danger of accidents** Brake system failure.

- If the foot brake pedal is not released, the brake linings drag permanently. The rear brake can fail due to overheating. Take your foot off the foot brake pedal if you do not want to brake.



### Warning

**Danger of accidents** Longer stopping distance due to higher overall weight.

- Take the longer stopping distance into account when carrying a passenger and baggage.



### Warning

**Danger of accidents** Delayed brake action on salted roads.

- There may be salt deposits on the brake discs. In order to restore the normal braking efficiency, you will need to remove the deposits from the discs by carefully applying the brakes.

---

## (990 Adventure)



### Warning

**Danger of accidents** Greater stopping distance due to ABS.

- Braking should be appropriate to the driving situation and the road conditions.

**Warning**

**Danger of accidents** Excessively hard braking causes the wheels to lock.

- ABS must be switched on to be effective.

- 
- When braking, first throttle back and then apply the front and rear brakes at the same time.

**Info**

ABS lets you apply the brakes fully during emergency braking and in situations where road grip is compromised, such as on sandy, wet or slippery surfaces, without the danger of the wheels locking.

**Warning**

**Danger of accidents** Locking of the wheels due to braking action of the engine.

- Pull the clutch during emergency braking, full brake application and when braking on a slippery surface.

**Warning**

**Danger of accidents** Road grip is reduced when braking with the motorcycle at an angle or on a laterally inclined surface.

- Braking should be completed before you enter into a bend.

- 
- Braking should always be completed before you enter a bend. Shift down to a lower gear that is appropriate to your speed.
  - On long downhill stretches, use the braking effect of the engine. Do this by changing down two gears, but do not race the engine. You will require less braking force and the brakes will not overheat.

**(990 Adventure R)****Warning**

**Danger of accidents** If you brake too hard, the wheels can lock.

- Adapt your braking to the traffic situation and the road conditions.

- 
- When braking, first throttle back and then apply the front and rear brakes at the same time.
  - On sandy, wet or slippery surfaces, use the rear brake.

- Braking should always be completed before you enter a bend. Change down to a lower gear that is appropriate for your speed.
- On long downhill stretches, use the braking effect of the engine. Do this by changing down two gears, but do not race the engine. You will require less braking force and the brakes will not overheat.

## Stopping, parking



### Warning

**Risk of misappropriation** Usage by unauthorized persons.

- Never leave the vehicle while the engine is running. Secure the vehicle against use by unauthorized persons. If you leave the vehicle, lock the steering and remove the ignition key.



### Warning

**Danger of burns** Some vehicle components get very hot when the machine is driven.

- Do not touch hot components such as exhaust system, radiator, engine, shock absorber and brakes. Allow these components to cool down before starting work on them.

### Note

**Danger of damage** The parked vehicle can roll away or fall over.

- Always place the vehicle on a firm and even surface.

### Note

**Fire hazard** Some vehicle components get very hot when the machine is driven.

- Do not place the vehicle where there are flammable or explosive substances. Do not place objects over the vehicle while it is still warm from being run. Always let the vehicle cool first.

### Note

**Material damage** Damage and destruction of components due to excessive load.

- The side stand is designed for the weight of the motorcycle only. Do not sit on the motorcycle when it is supported by the side stand only. The side stand and/or the frame could be damaged and the motorcycle could fall over.

## Note

**Material damage** Damage and destruction of components from excessive load.

- The center stand is only designed for the weight of the motorcycle and luggage. Do not sit on the motorcycle while it is resting on the center stand. The center stand or frame could be damaged and the motorcycle could fall over.
  - Pull the motorcycle up onto the center stand using the handrail and not the handwheel of the shock absorber adjustment. The shock absorber could become leaky.
- 

- Apply the brakes.
  - Shift the transmission to neutral.
  - Switch off the ignition by turning the black ignition key to the position ☒.
- 



## Info

If you switch off the engine with the emergency OFF switch but the ignition remains switched on at the ignition lock, power continues to flow to most power consumers and the battery is soon discharged. Therefore, always switch off the engine with the ignition key; the emergency OFF switch is provided for emergency situations only.

---

- Park the motorcycle on a firm surface.

## Alternative 1

- Swing the side stand to the front with your foot as far as it will go and rest the vehicle on it.

## Alternative 2

- Jack up the vehicle on the center stand. (☛ p. 66)
- Lock the steering by moving the handlebar to the left, pressing down the black ignition key to the position ☒ and turning it to the position ☒. To make the steering lock engage more easily, move the handlebar back and forth slightly. Remove the black ignition key.

## Refueling

---



### **Danger**

**Fire hazard** Fuel is highly flammable.

- Never fill up the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilled, especially on hot vehicle components. Clean up spilled fuel immediately.
- Fuel in the fuel tank expands when warm and can escape if the tank is overfilled. See specifications on filling up with fuel.



### **Warning**

**Danger of poisoning** Fuel is poisonous and a health hazard.

- Avoid contact of the fuel with skin, eyes and clothing. Do not inhale fuel vapors. If fuel gets into your eyes, rinse immediately with water and contact a doctor. Wash affected skin areas immediately with soap and water. If fuel is swallowed, contact a doctor immediately. Change clothing that has come into contact with fuel.



### **Warning**

**Environmental hazard** Improper handling of fuel is a danger to the environment.

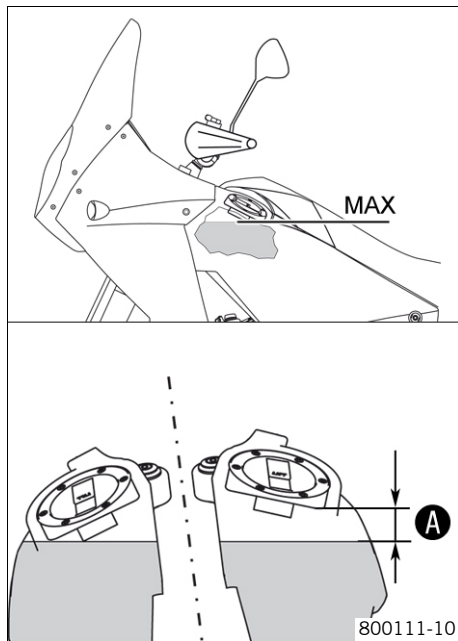
- Do not allow fuel to get into the ground water, the ground, or the sewage system.
- 



### **Info**

This motorcycle is equipped with two regulated catalytic converters. Leaded fuel destroys the catalytic converters. You should therefore use unleaded fuel only.

---



- Switch off the engine.
- Lean the vehicle on the side stand.
- Open the filler caps. (🔧 p. 35)
- Fill the right fuel tank with fuel no higher than level **A**.

Guideline

Level <b>A</b>	75 mm (2.95 in)
----------------	-----------------

- Fill the left fuel tank no higher than the lower edge of the filler neck.

Total fuel tank capacity, approx.	20 l (5.3 US gal)	Super unleaded (ROZ 95 / RON 95 / PON 91) (🔧 p. 201)
-----------------------------------	-------------------	--

**i** **Info**

If the right fuel tank is filled to the filler neck, fuel may flow out if the vehicle is resting on the side stand and the fuel heats up.

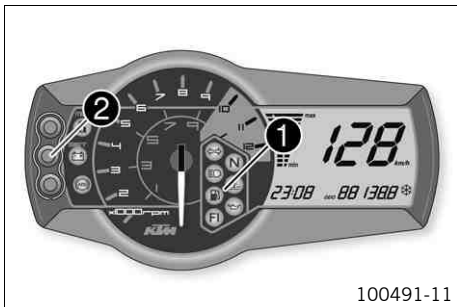
- Close the filler caps. (🔧 p. 35)

**Low octane fuel**

**Note**

**Engine damage** Low-quality fuel damages the engine.

- Operate the vehicle with fuel with an octane rating below 95 (ROZ 95 / RON 95 / PON 91) for no more than one tank full.
  - The ignition curve must be adjusted to low octane fuel.
- 
- Adjust the ignition curve to the fuel quality. (🔧 p. 162)



- Press the **SET** button ② for two seconds.
  - ✓ The fuel level warning lamp ① switches off. **TRIP F** is set to **0.0** and appears in the previous display mode.



## Info

If you do not press the **SET** button ②, the reset takes place automatically after about three minutes.

## Important service tasks to be carried out by an authorized KTM workshop

		K10N	K75A	K150A	J1A	J2A
Engine	Change the engine oil and filter, clean the oil screens. 🛠️ (📖 p. 154)	•	•	•	•	•
	Check the oil lines for damage and kink-free routing. 🛠️	•	•	•	•	•
	Check the valve clearance. 🛠️			•		•
	Change the spark plugs. 🛠️			•		•
	Check the engine fixing screws and other engine screws accessible from outside to ensure that they are tight. 🛠️	•	•	•	•	•
	Check the clutch linings. 🛠️			•		•
	Check the clutch pressure booster. 🛠️			•		•
	Clean the oil jet for clutch lubrication. 🛠️	•		•		•
Fuel injection	Read out the fault memory using the KTM diagnostics tool. 🛠️	•	•	•	•	•
	Perform a status query with the KTM diagnostics tool for the neutral gear, clutch, 2nd/3rd gear and the side stand switch. 🛠️	•	•	•	•	•
	Check the connection boots for cracks and leakage. 🛠️			•		•
	Check the cable harness of the throttle valve body for damage and correct routing. 🛠️			•		•
	Check hoses of vacuum sensors, SLS hoses and vent hoses for damage, correct routing and leaks. 🛠️		•	•	•	•
	Check the fuel hose for damage, correct routing and leaks. 🛠️	•	•	•	•	•
Attachments	Check the cooling system for leaks. 🛠️	•	•	•	•	•
	Check the coolant level in the radiator. (📖 p. 143)	•	•	•	•	•
	Check the antifreeze. 🛠️ (📖 p. 144)	•	•	•	•	•
	Check the functioning of the radiator fan. 🛠️	•	•	•	•	•



		K10N	K75A	K150A	J1A	J2A
Attachments	Check the exhaust system for leaks and correct fitting and check that the exhaust holders are tight. 🛠️	•	•	•	•	•
	Check the Bowden cables for damage, smooth operation, kink-free routing and adjustment. 🛠️	•	•	•	•	•
	Check/rectify the fluid level of the hydraulic clutch. (🔧 p. 151)		•	•	•	•
	Check the air filter and change if necessary. Clean the air filter box. 🛠️			•		•
	Check the cables for damage and kink-free routing. 🛠️	•	•	•	•	•
	Check the headlamp setting. (🔧 p. 131)	•	•	•	•	•
	Check that the electrical equipment is functioning properly.	•	•	•	•	•
	Check the screws and nuts for tightness. 🛠️	•	•	•	•	•
Brakes	Read out the ABS fault memory using the KTM diagnostics tool. (990 Adventure) 🛠️	•	•	•	•	•
	Check the front brake linings. (🔧 p. 92)	•	•	•	•	•
	Check the rear brake linings. (🔧 p. 96)	•	•	•	•	•
	Check the brake discs. (🔧 p. 87)	•	•	•	•	•
	Check the brake fluid level of the front brake. (🔧 p. 89)	•	•	•	•	•
	Check the rear brake fluid level. (🔧 p. 93)	•	•	•	•	•
	Change the brake fluid. 🛠️			•		•
	Check that brake lines are undamaged and free of leaks. 🛠️	•	•	•	•	•
	Check the free travel of the foot brake lever. (🔧 p. 92)	•	•	•	•	•
	Check the braking. 🛠️	•	•	•	•	•
	Check the screws and guide pins of the brake system for tightness. 🛠️	•	•	•	•	•
Chassis	Check the shock absorber and fork for leakage and functioning. 🛠️	•	•	•	•	•

		K10N	K75A	K150A	J1A	J2A
Chassis	Clean dust boots of fork legs. (☞ p. 78)		•	•	•	•
	Bleed the fork legs. (☞ p. 78)	•	•	•	•	•
	Check and adjust the steering head bearing play. 🛠️	•	•	•	•	•
	Check the swingarm bearing. 🛠️	•	•	•	•	•
	Check all screws to make sure they are tight. 🛠️	•	•	•	•	•
Wheels	Check the spoke tension. (☞ p. 108)	•	•	•	•	•
	Check the rim run-out. 🛠️	•	•	•	•	•
	Check the tire condition. (☞ p. 106)	•	•	•	•	•
	Check the tire air pressure. (☞ p. 107)	•	•	•	•	•
	Check the chain wear. (☞ p. 85)		•	•	•	•
	Check the rear sprocket / engine sprocket / chain sliding guard to ensure that they are tight. 🛠️	•	•	•	•	•
	Check the rear sprocket/engine sprocket for wear. (☞ p. 84)		•	•	•	•
	Check the chain tension. (☞ p. 81)	•	•	•	•	•
	Clean the chain. (☞ p. 80)	•	•	•	•	•
	Check the wheel bearing for play. 🛠️	•	•	•	•	•
	Check the rear hub rubber dampers. 🛠️ (☞ p. 105)		•	•	•	•

**K10N:** after 1,000 km (621.4 mi)






**K75A:** every 7,500 km (4,660 mi)

**K150A:** every 15,000 km (9,320 mi) / after every sporting use

**J1A:** annually

**J2A:** every 2 years

**Important service tasks to be carried out by an authorized KTM workshop (as an additional order)**

	K150N	K150A	K300A	J1A	J2N	J2A	J4A
Perform a fork service. 	•		•		•		•
Perform a shock absorber service. 			•				•
Clean and grease the steering head bearing and sealing elements. 		•	•			•	•
Clean the battery poles and treat with contact grease. 				•		•	•
Change the coolant. 						•	•

**K150N:** after 15,000 km (9,320 mi)

**K150A:** every 15,000 km (9,320 mi) / after every sporting use

**K300A:** every 30,000 km (18,640 mi)

**J1A:** annually

**J2N:** after 2 years

**J2A:** every 2 years

**J4A:** every 4 years

## Jacking up the vehicle on the center stand

### Note

**Danger of damage** The parked vehicle can roll away or fall over.

- Always place the vehicle on a firm and even surface.

### Note

**Material damage** Damage and destruction of components from excessive load.

- The center stand is only designed for the weight of the motorcycle and luggage. Do not sit on the motorcycle while it is resting on the center stand. The center stand or frame could be damaged and the motorcycle could fall over.
- Pull the motorcycle up onto the center stand using the handrail and not the handwheel of the shock absorber adjustment. The shock absorber could become leaky.



- Position yourself to the left of the vehicle.
- Hold the handlebar with the left hand and press the center stand onto the ground with your right foot.
- Put your full weight on extension arm ❶ of the center stand while pulling the vehicle up using the left handrail until the center stand folds forward all the way.

## Raising the vehicle off of the center stand

### Note

**Danger of damage** The parked vehicle can roll away or fall over.

- Always place the vehicle on a firm and even surface.



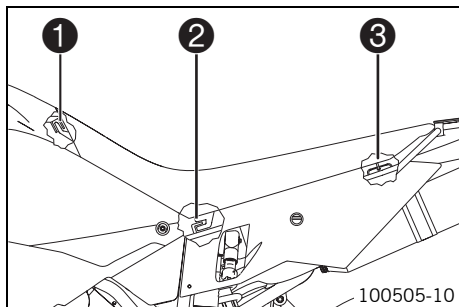
- Unlock the steering and move the vehicle forward with both hands on the handlebar.
- As the vehicle moves off of the center stand, activate the front brake to prevent the vehicle from rolling.
- Check that the center stand is folded all the way up.

## Removing the seat



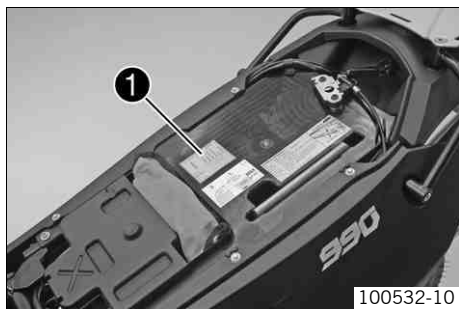
- Insert the ignition key into the seat lock.
- Turn the ignition key to position **C**.
- Lift up the seat at the rear, pull it back and remove from above.
- Remove the ignition key.

## Mounting the seat



- Hook projection ❶ of the seat into the storage compartment, lower the seat at the rear and push it forward at the same time. The two projections ❷ must be inserted into the frame.
- Push locking pin ❸ into the lock housing and push the back of the seat down until the locking pin locks in place with an audible click.
- Finally, check that the seat is correctly mounted.

## Fork/shock absorber



The fork and the shock absorber offer many options of adapting the suspension to your riding style and the payload.



### Info

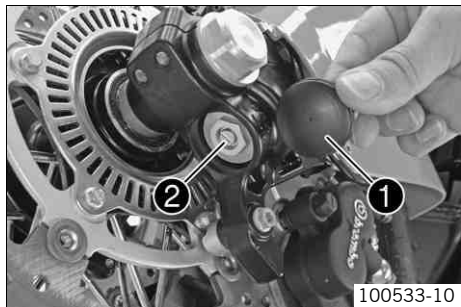
To help you adapt the vehicle, we have summarized our findings in Table ❶. You can find the table under the seat.

These adjustments should be understood as a guideline and should always be the basis of your own personal suspension adaptation. Do not change the adjustments at random or by more than  $\pm 40\%$ , since otherwise the riding characteristics could deteriorate, particularly at high speeds.

## Adjusting the compression damping of the fork

**i** **Info**

The hydraulic compression damping determines the fork suspension behavior.



- Remove protection covers ❶.
- Turn adjusting screws ❷ clockwise until they stop.

**i** **Info**

The adjusting screws are located at the bottom end of the fork legs. Make the same adjustment on both fork legs.

- Turn back counterclockwise by the number of clicks corresponding to the fork type.

Guideline

**(990 Adventure)**

Compression damping	
Comfort	20 clicks
Standard	15 clicks
Sport	10 clicks
Full payload	10 clicks

**(990 Adventure R)**

Compression damping	
Comfort	20 clicks
Standard	15 clicks
Sport	10 clicks
Full payload	10 clicks

---

**i Info**  
Turn clockwise to increase damping, turn counterclockwise to reduce suspension damping.

---

- Mount protection covers ❶.

## Adjusting the rebound damping of the fork

**i Info**  
The hydraulic rebound damping determines the fork rebound behavior.



- Turn adjusting screws ❶ clockwise until they stop.

**i Info**  
The adjusting screws are located at the top end of the fork legs. Make the same adjustment on both fork legs.

- Turn back counterclockwise by the number of clicks corresponding to the fork type.

Guideline

**(990 Adventure)**

Rebound damping	
Comfort	23 clicks
Standard	18 clicks
Sport	13 clicks
Full payload	13 clicks



## (990 Adventure R)

Rebound damping	
Comfort	23 clicks
Standard	18 clicks
Sport	13 clicks
Full payload	13 clicks



### Info

Turn clockwise to increase suspension damping; turn counterclockwise to reduce damping.

## Adjusting the spring preload of the fork



100535-10

- Turn the adjusting screws counterclockwise until they stop.



### Info

Make the same adjustment on both fork legs.

- Turn back clockwise by the number of turns corresponding to the fork type.

Guideline

## (990 Adventure)

Spring preload - <b>Preload Adjuster</b>	
Comfort	5 turns
Standard	5 turns
Sport	8 turns
Full payload	7 turns

## (990 Adventure R)

Spring preload - <b>Preload Adjuster</b>	
Comfort	5 turns
Standard	5 turns
Sport	8 turns
Full payload	7 turns



### Info

Turn clockwise to increase the spring preload; turn counterclockwise to reduce the spring preload.

Adjusting the spring preload has no effect on the rebound damping setting. Generally, however, greater spring preload should be accompanied by a higher rebound damping setting.

## Compression damping of the shock absorber

The shock absorber can regulate compression damping separately in the low and high speed ranges (Dual Compression Control). The terms low speed and high speed refer to the movement of the shock absorber during compression and not the riding speed of the motorcycle.

Changes in the settings in the low-speed range have an impact on the high-speed range and vice versa.

## Adjusting the low-speed compression damping of the shock absorber

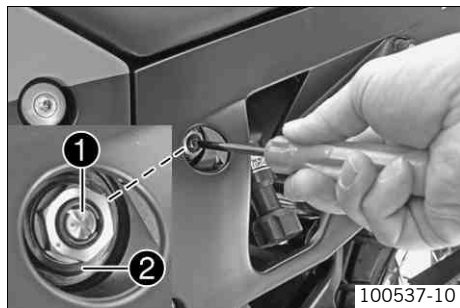


### Danger

**Danger of accidents** Disassembly of pressurized parts can lead to injury.

- The shock absorber is filled with high density nitrogen. Adhere to the description provided. (Your authorized KTM workshop will be pleased to help.)

**i Info**  
The low-speed setting can be seen during the slow to normal compression of the shock absorber.



- Turn adjusting screw ❶ clockwise with a screwdriver as far as the last perceptible click.

**i Info**  
Do not loosen nut ❷!

- Turn back counterclockwise by the number of clicks corresponding to the shock absorber type.

Guideline

**(990 Adventure)**

Compression damping, low-speed	
Comfort	25 clicks
Standard	20 clicks
Sport	15 clicks
Full payload	15 clicks

**(990 Adventure R)**

Compression damping, low-speed	
Comfort	25 clicks
Standard	20 clicks
Sport	15 clicks
Full payload	15 clicks

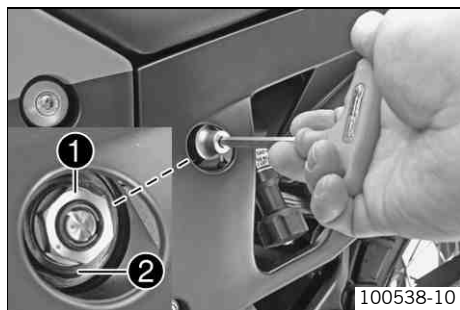
- 
- i Info**  
Turn clockwise to increase damping, turn counterclockwise to reduce suspension damping.
- 

## Adjusting the high-speed compression damping of the shock absorber

- ! Danger**  
**Danger of accidents** Disassembly of pressurized parts can lead to injury.

- The shock absorber is filled with high density nitrogen. Adhere to the description provided. (Your authorized KTM workshop will be pleased to help.)
- 

- i Info**  
The high-speed setting can be seen during the fast compression of the shock absorber.
- 



- Turn adjusting screw **1** clockwise as far as it will go using an open end wrench.
- 

- i Info**  
Do not loosen nut **2**!
- 

- Turn back counterclockwise the number of turns corresponding to the shock absorber type.

Guideline

## (990 Adventure)

Compression damping, high-speed	
Comfort	2 turns
Standard	1.5 turns
Sport	1 turn
Full payload	1 turn

## (990 Adventure R)

Compression damping, high-speed	
Comfort	2 turns
Standard	1.5 turns
Sport	1 turn
Full payload	1 turn



### Info

Turn clockwise to increase damping, turn counterclockwise to reduce suspension damping.

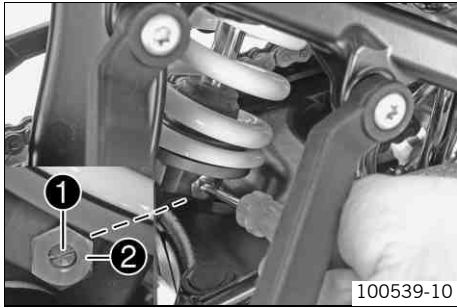
## Adjusting the rebound damping of the shock absorber



### Danger

**Danger of accidents** Disassembly of pressurized parts can lead to injury.

- The shock absorber is filled with high density nitrogen. Adhere to the description provided. (Your authorized KTM workshop will be pleased to help.)



100539-10

- Turn adjusting screw ❶ clockwise up to the last perceptible click.
- Turn back counterclockwise by the number of clicks corresponding to the shock absorber type.

Guideline

**(990 Adventure)**

Rebound damping	
Comfort	20 clicks
Standard	15 clicks
Sport	10 clicks
Full payload	10 clicks

**(990 Adventure R)**

Rebound damping	
Comfort	20 clicks
Standard	15 clicks
Sport	10 clicks
Full payload	10 clicks



**Info**

Turn clockwise to increase suspension damping; turn counterclockwise to reduce damping.

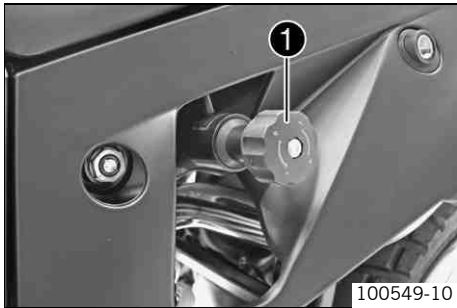
## Adjusting the spring preload of the shock absorber



### Danger

**Danger of accidents** Disassembly of pressurized parts can lead to injury.

- The shock absorber is filled with high density nitrogen. Adhere to the description provided. (Your authorized KTM workshop will be pleased to help.)



- Turn handwheel ❶ counterclockwise as far as it will go.
- Turn it clockwise by the number of turns corresponding to the shock absorber type and use.

Guideline

### (990 Adventure)

Spring preload - <b>Preload Adjuster</b>	
Comfort	4 turns
Standard	4 turns
Sport	8 turns
Full payload	16 turns

### (990 Adventure R)

Spring preload - <b>Preload Adjuster</b>	
Comfort	4 turns
Standard	4 turns
Sport	8 turns
Full payload	10 turns

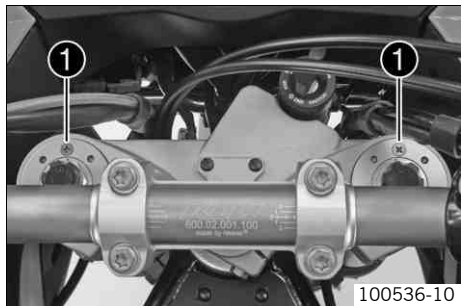
---

**i** **Info**

The handwheel can be swung out to make settings.  
Turn clockwise to increase the spring preload; turn counterclockwise to reduce the spring preload.

---

## Bleeding the fork legs



- Jack up the vehicle on the center stand. (☛ p. 66)
  - Remove bleeder screws ❶ briefly.
    - ✓ Any excess pressure escapes from the interior of the fork.
  - Mount and tighten the bleeder screws.
- 

**i** **Info**

Carry out this operation on both fork legs.

---

## Cleaning the dust boots of the fork legs

- Jack up the vehicle on the center stand. (☛ p. 66)





- Push dust boot ❶ of both fork legs downwards.

## **i** Info

The dust boots should remove dust and coarse dirt particles from the fork tubes. Over time, dirt can penetrate behind the dust boots. If this dirt is not removed, the oil seals behind can start to leak.



## **Warning**

**Danger of accidents** Reduced braking efficiency due to oil or grease on the brake discs.

- Always keep the brake discs free of oil and grease, and clean them with brake cleaner when necessary.
- 
- Clean and oil the dust boots and inner fork tube of both fork legs.

Universal oil spray (☛ p. 203)

- Press the dust boots back into their normal position.
- Remove excess oil.
- Raise the vehicle off of the center stand. (☛ p. 67)

## Checking for chain dirt

- Check the chain for coarse dirt accumulation.
  - » If the chain is very dirty:
    - Clean the chain. (☛ p. 80)

## Cleaning the chain



### Warning

**Danger of accidents** Oil or grease on the tires reduces their grip.

- Remove oil and grease with a suitable cleaning material.



### Warning

**Danger of accidents** Reduced braking efficiency due to oil or grease on the brake discs.

- Always keep the brake discs free of oil and grease, and clean them with brake cleaner when necessary.



### Warning

**Environmental hazard** Hazardous substances cause environmental damage.

- Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.



### Info

The service life of the chain depends largely on its maintenance.

- Clean the chain regularly.
- Rinse off loose dirt with a soft jet of water.
- Remove old grease remains with chain cleaner.

Chain cleaner (☛ p. 202)

- After drying, apply chain spray.

Chain lube for road use (☛ p. 202)

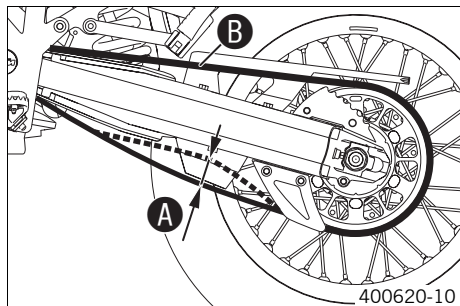
## Checking the chain tension



### Warning

**Danger of accidents** Danger caused by incorrect chain tension.

- If the chain is over tensioned, the components of the secondary power train (chain, engine sprocket, rear sprocket, bearings in transmission and rear wheel) are under additional load. Apart from premature wear, in extreme cases the chain may snap or the countershaft of the transmission can break. On the other hand, if the chain is loose, it may jump off the engine sprocket or the rear sprocket, causing the rear wheel to lock or damage the engine. Check for correct chain tension and adjust if necessary.



- Lean the motorcycle on the side stand.
- Shift the transmission to neutral.
- Push the chain upwards near the lower chain guard screw and measure chain tension **A**.

### **i** Info

The upper chain section **B** must be taut.

Chain wear is not always even, so you should repeat this measurement at different chain positions.

Chain tension	35... 40 mm (1.38... 1.57 in)
---------------	-------------------------------

- » If the chain tension does not meet specifications:
  - Adjust the chain tension. (🔧 p. 82)

## Adjusting the chain tension

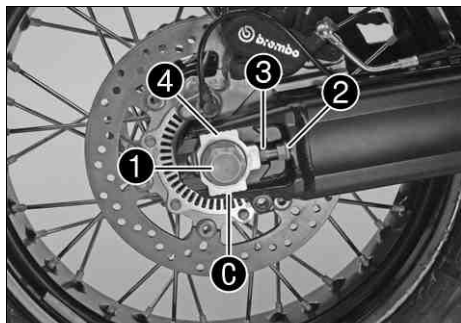


### Warning

**Danger of accidents** Danger caused by incorrect chain tension.

- If the chain is over tensioned, the components of the secondary power train (chain, engine sprocket, rear sprocket, bearings in transmission and rear wheel) are under additional load. Apart from premature wear, in extreme cases the chain may snap or the countershaft of the transmission can break. On the other hand, if the chain is loose, it may jump off the engine sprocket or the rear sprocket, causing the rear wheel to lock or damage the engine. Check for correct chain tension and adjust if necessary.

- Check the chain tension. (👉 p. 81)



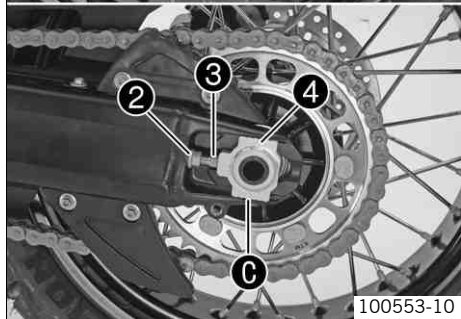
- Loosen nut ❶.
- Loosen nuts ❷.
- Adjust the chain tension by turning the adjusting screws ❸ on the left and right.

Guideline

Chain tension	35... 40 mm (1.38... 1.57 in)
Turn adjusting screws ❸ on the left and right so that the markings on the left and right chain adjuster ❹ are in the same position in relation to reference marks ❷. The rear wheel is then correctly aligned.	

**i Info**

The upper chain section must be taut. Chain wear is not always even, so you should check the setting at different chain positions.



- Tighten nuts ❷.
- Make sure that chain adjusters ❹ are resting against adjusting screws ❸.
- Tighten nut ❶.

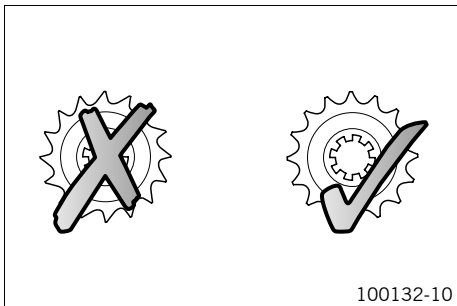
Guideline

Nut, rear wheel spindle	M25x1.5	90 Nm (66.4 lbf ft)	Thread greased
-------------------------	---------	------------------------	----------------

**i Info**

Chain adjusters ❹ can be turned through 180°.

## Checking the rear sprocket/engine sprocket for wear



- Check the rear sprocket/engine sprocket for wear.
  - » If the rear sprocket/engine sprocket are worn:
    - Change the rear sprocket/engine sprocket.

---

### Info

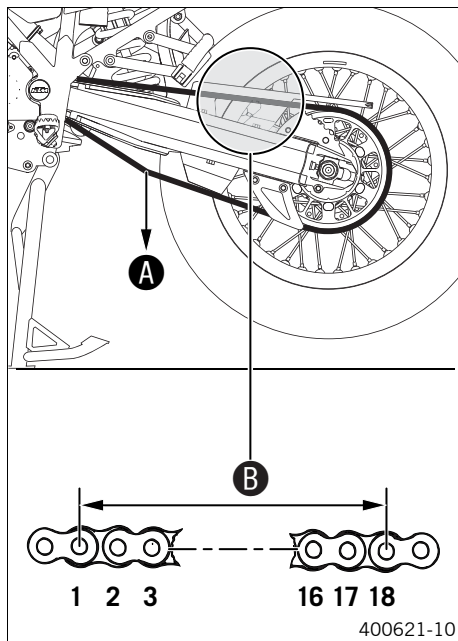
The engine sprocket, rear sprocket and chain should always be changed together.

For safety reasons, the chain has no chain joint.

---

- Check the chain guides for firm seating and wear.

## Checking chain wear



- Jack up the vehicle on the center stand. (☛ p. 66)
- Shift the transmission to neutral.
- Pull the lower chain section with specified weight **A**.

### Guideline

Weight, chain wear measurement	15 kg (33 lb.)
--------------------------------	----------------

- Measure distance **B** of 18 chain links in the upper chain section.

### **i** Info

Chain wear is not always even, so you should repeat this measurement at different chain positions.

Maximum distance <b>B</b> at the longest chain section	272 mm (10.71 in)
--	-------------------

- » If distance **B** is greater than the specified measurement:
  - Change the chain.

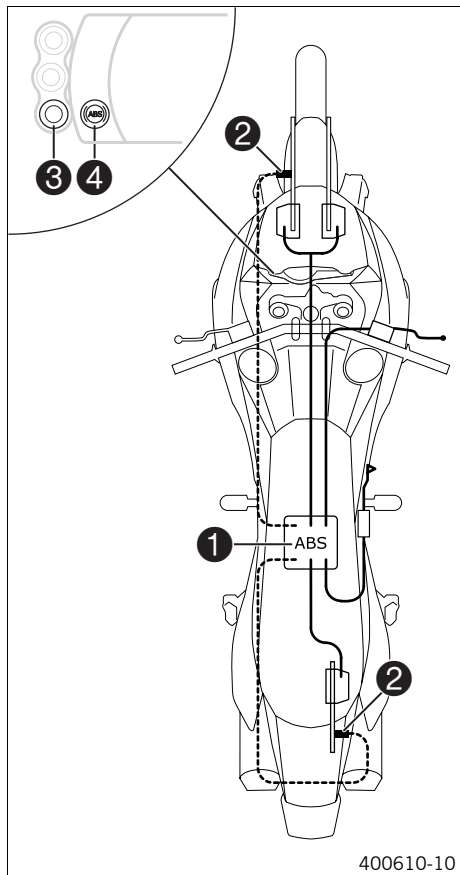
### **i** Info

When the chain is replaced, the rear sprocket and engine sprocket should also be changed.

New chains wear out faster on old, worn sprockets.

For safety reasons, the chain has no chain joint.

## ABS / antilock brake system (990 Adventure)



The ABS unit ❶, which consists of a hydraulic unit, an ABS control unit and a return pump, is located under the seat. One wheel speed sensor ❷ is located on the front wheel and one on the rear wheel.



### Warning

**Danger of accidents** Impaired ABS function

- The ABS cannot function properly if certain modifications have been made such as shorter or longer suspension travel, other rim diameters, other tires, an incorrect tire air pressure, other brake linings, etc.
- The ABS will only function correctly if the spare parts used in the brake system and the tires have been approved and/or recommended by KTM.
- Maintenance work and repairs must be carried out professionally. (Your authorized KTM workshop will be pleased to help.)


The ABS is a safety system that prevents locking of the wheels when traveling straight ahead without the action of lateral forces.

ABS works with two mutually independent brake circuits (front and rear brake). Under normal conditions, the brake system works like a conventional brake without ABS. When the ABS control unit detects the tendency of a wheel to lock, ABS begins controlling the braking pressure. The control process causes a light pulsation in the brake lever.

The ABS warning lamp ❹ must light up after the ignition is switched on and go out after you start riding. If it does not go out after you start riding or lights up during the trip, this indicates an error in the ABS system. In this case, the ABS is no longer active and the wheels may lock during braking. The brake system itself remains functional; only the ABS control system is not operational.

The ABS warning lamp can light up if the rotational speeds of the front and rear wheels differ greatly in extreme riding situations, e.g. during wheelies or when the rear wheel spins. This switches off ABS.



To reactivate ABS, stop the vehicle and switch off the ignition. ABS is reactivated when the vehicle is started up again. The ABS warning lamp goes out after you start riding. Button  can be used to switch the ABS off manually (see Starting).

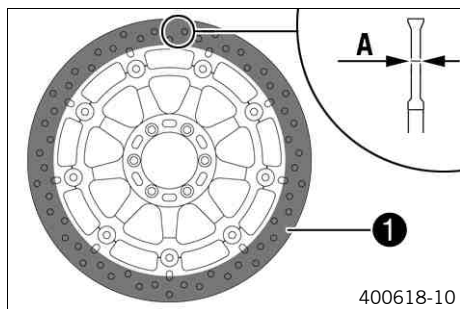
## Checking the brake discs




### Warning

**Danger of accidents** Reduced braking efficiency due to worn brake disc(s).

- Change the worn brake disc(s) without delay. (Your authorized KTM workshop will be pleased to help.)



- Check the thickness of the front and rear brake discs in several places to ensure that it conforms to measurement .



### Info

Wear reduces the thickness of the brake disc in area  of the brake disc.

Brake discs - wear limit	
Front	4.5 mm (0.177 in)
Brake disc - wear limit	
Rear	4.5 mm (0.177 in)

- » If the brake disc thickness is less than the specified value:
  - Change the brake disc.
- Check the front and rear brake discs for damage, cracks and deformation.
  - » If damage, cracks or deformation are visible on the brake disc:
    - Change the brake disc.

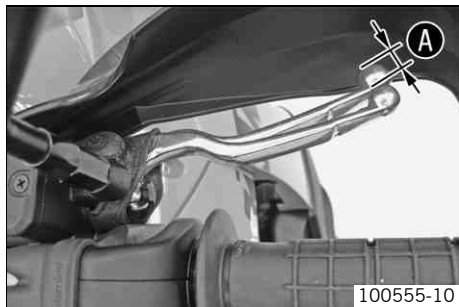
## Checking the free travel of the hand brake lever



### Warning

**Danger of accidents** Brake system failure.

- If there is no free travel on the hand brake lever, pressure builds up on the front brake in the brake system. The front brake can fail due to overheating. Adjust free travel on hand brake lever according to specifications.



- Push the hand brake to the handlebar and check the free travel **A**.

Free travel of hand brake lever	$\geq 3 \text{ mm } (\geq 0.12 \text{ in})$
---------------------------------	---

- » If the free travel does not meet specifications:
  - Adjust the free travel of the handbrake lever. (☛ p. 88)

## Adjusting the free travel of the handbrake lever



- Check the free travel of the hand brake lever. (☛ p. 88)
- Adjust the free travel of the handbrake lever with the adjustment screw **1**.



## Info

Turn the adjustment screw clockwise to reduce free travel. The pressure point moves away from the handlebar.

Turn the adjustment screw counterclockwise to increase free travel. The pressure point moves towards the handlebar.

The range of adjustment is limited.

Turn the adjusting screw by hand only, and do not apply any force.

Do not make any adjustments while riding!

## Checking the brake fluid level of the front brake



### Warning

**Danger of accidents** Failure of the brake system.

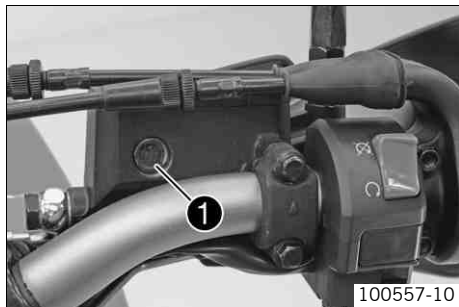
- If the brake fluid level falls below the **MIN** mark, this indicates a leakage in the brake system or worn-out brake linings. Check the brake system and do not continue riding. (Your authorized KTM workshop will be pleased to help.)



### Warning

**Danger of accidents** Reduced braking efficiency due to old brake fluid.

- Change the brake fluid of the front and rear brakes according to the service schedule. (Your authorized KTM workshop will be pleased to help.)



- Move the brake fluid reservoir mounted on the handlebar to a horizontal position.
- Check the brake fluid level in the viewer ❶.
  - » If the brake fluid level is below the **MIN** mark:
    - Add front brake fluid. 🛠️ (📖 p. 90)

## Adding front brake fluid 🛠️



### Warning

**Danger of accidents** Failure of the brake system.

- If the brake fluid level falls below the **MIN** mark, this indicates a leakage in the brake system or worn-out brake linings. Check the brake system and do not continue riding. (Your authorized KTM workshop will be pleased to help.)



### Warning

**Skin irritation** Brake fluid can cause skin irritation on contact.

- Avoid contact with skin and eyes, and keep out of the reach of children.
- Wear suitable protective clothing and goggles.
- If brake fluid gets into your eyes, rinse thoroughly with water and contact a doctor immediately.



### Warning

**Danger of accidents** Reduced braking efficiency due to old brake fluid.

- Change the brake fluid of the front and rear brakes according to the service schedule. (Your authorized KTM workshop will be pleased to help.)



## Warning

**Environmental hazard** Hazardous substances cause environmental damage.

- Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

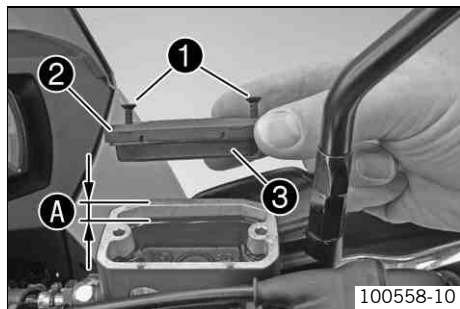


## Info

Never use DOT 5 brake fluid! This is based on silicone oil and is colored purple. Oil seals and brake lines are not designed for DOT 5 brake fluid.

Avoid contact between brake fluid and painted parts. Brake fluid attacks paint!

Use only clean brake fluid from a sealed container!



- Move the brake fluid reservoir mounted on the handlebar to a horizontal position.
- Remove screws ❶.
- Remove cover ❷ with membrane ❸.
- Add brake fluid to level ❸.

Guideline

Measurement of ❸	5 mm (0.2 in)
------------------	---------------

Brake fluid DOT 4 / DOT 5.1 (☞ p. 198)
--

- Position the cover with the membrane. Mount and tighten the screws.



## Info

Clean up overflowed or spilt brake fluid immediately with water.

## Checking the front brake linings



### Warning

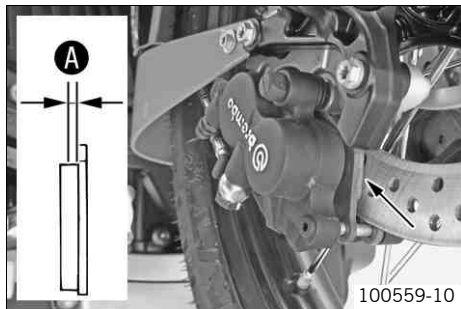
**Danger of accidents** Reduced braking efficiency caused by worn brake linings.

- Change worn brake linings immediately. (Your authorized KTM workshop will be pleased to help.)

### Note

**Danger of accidents** Reduced braking efficiency caused by damaged brake discs.

- If the brake linings are not changed in time, the steel brake lining carriers grind on the brake disc. The braking effect is greatly reduced and the brake discs are rendered unserviceable. Check the brake linings regularly.



- Check the brake linings for minimum thickness **A**.

Minimum thickness <b>A</b>	$\geq 1 \text{ mm } (\geq 0.04 \text{ in})$
----------------------------	---

- » If the minimum thickness is less than specified:
  - Change the front brake linings. 🛠️
- Check the brake linings for damage and cracking.
  - » If there is wear or tearing:
    - Change the front brake linings. 🛠️

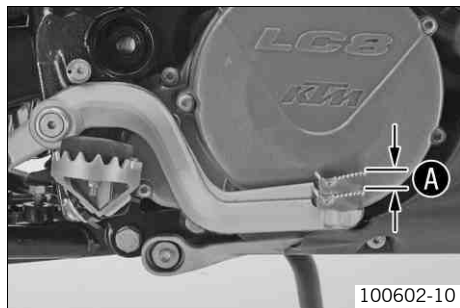
## Checking the free travel of the foot brake lever



### Warning

**Danger of accidents** Brake system failure.

- If there is no free travel on the foot brake pedal, pressure builds up on the rear brake in the brake system. The rear brake can fail due to overheating. Adjust free travel on foot brake pedal according to specifications.




- Move the foot brake lever back and forth between the end stop and the contact to the foot brake cylinder piston and check free travel **A**.

Guideline

Free travel at foot brake lever	3... 5 mm (0.12... 0.2 in)
---------------------------------	----------------------------

## **i** Info

You will know that contact has been made with the foot brake cylinder piston when there is increased resistance when you activate the foot brake pedal.

- » If the free travel does not meet specifications:
  - Adjust the basic position of the footbrake lever. 

## Checking the rear brake fluid level



### Warning

**Danger of accidents** Failure of the brake system.

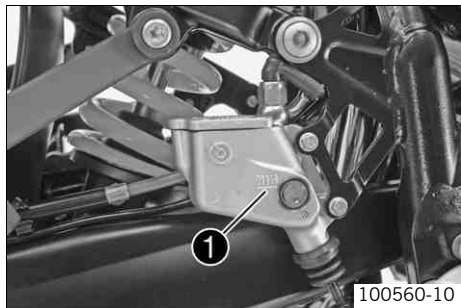
- If the brake fluid level falls below the **MIN** mark, this indicates a leakage in the brake system or worn-out brake linings. Check the brake system and do not continue riding. (Your authorized KTM workshop will be pleased to help.)



### Warning

**Danger of accidents** Reduced braking efficiency due to old brake fluid.

- Change the brake fluid of the front and rear brakes according to the service schedule. (Your authorized KTM workshop will be pleased to help.)



- Jack up the vehicle on the center stand. (🔧 p. 66)
- Check the brake fluid level of the brake fluid reservoir.
  - » If the fluid level reaches the **MIN** mark ❶:
    - Add rear brake fluid. 🛠️ (🔧 p. 94)

## Adding rear brake fluid 🛠️



### Warning

**Danger of accidents** Failure of the brake system.

- If the brake fluid level falls below the **MIN** mark, this indicates a leakage in the brake system or worn-out brake linings. Check the brake system and do not continue riding. (Your authorized KTM workshop will be pleased to help.)



### Warning

**Skin irritation** Brake fluid can cause skin irritation on contact.

- Avoid contact with skin and eyes, and keep out of the reach of children.
- Wear suitable protective clothing and goggles.
- If brake fluid gets into your eyes, rinse thoroughly with water and contact a doctor immediately.



### Warning

**Danger of accidents** Reduced braking efficiency due to old brake fluid.

- Change the brake fluid of the front and rear brakes according to the service schedule. (Your authorized KTM workshop will be pleased to help.)





## Warning

**Environmental hazard** Hazardous substances cause environmental damage.

- Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

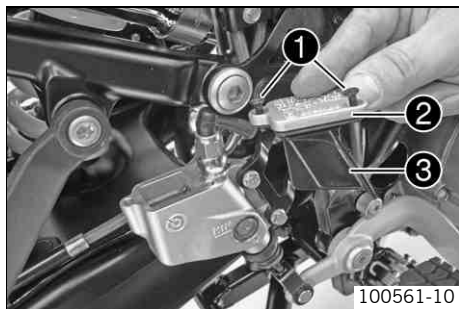


## Info

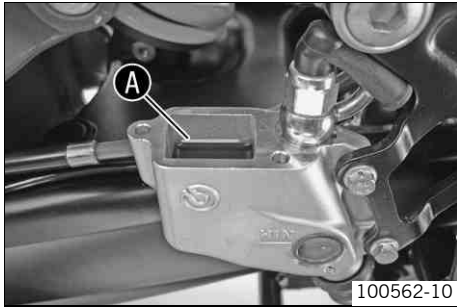
Never use DOT 5 brake fluid! This is based on silicone oil and is colored purple. Oil seals and brake lines are not designed for DOT 5 brake fluid.

Avoid contact between brake fluid and painted parts. Brake fluid attacks paint!

Use only clean brake fluid from a sealed container!



- Jack up the vehicle on the center stand. (🔧 p. 66)
- Remove screws ❶.
- Remove cover ❷ with membrane ❸.



- Add brake fluid to level **A**.

Brake fluid DOT 4 / DOT 5.1 (☛ p. 198)

- Position the cover with the membrane. Mount and tighten the screws.

**i** **Info**

Clean up overflowed or spilt brake fluid immediately with water.

## Checking the rear brake linings



**Warning**

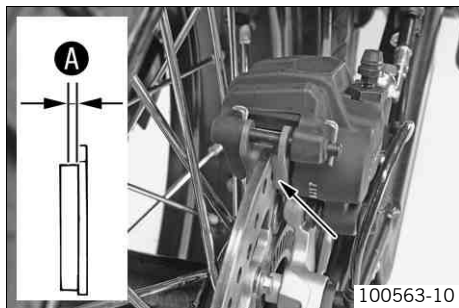
**Danger of accidents** Reduced braking efficiency caused by worn brake linings.

- Change worn brake linings immediately. (Your authorized KTM workshop will be pleased to help.)

**Note**

**Danger of accidents** Reduced braking efficiency caused by damaged brake discs.


- If the brake linings are not changed in time, the steel brake lining carriers grind on the brake disc. The braking effect is greatly reduced and the brake discs are rendered unserviceable. Check the brake linings regularly.



- Check the brake linings for minimum thickness **A**.


Minimum thickness <b>A</b>	$\geq 1 \text{ mm } (\geq 0.04 \text{ in})$
----------------------------	---

- » If the minimum thickness is less than specified:


- Change the rear brake linings. 

- Check the brake linings for damage and cracking.

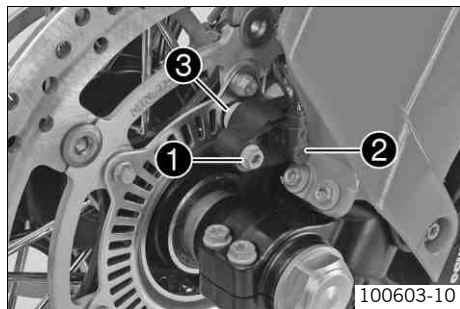
- » If there is wear or tearing:

- Change the rear brake linings. 

## Removing the front wheel

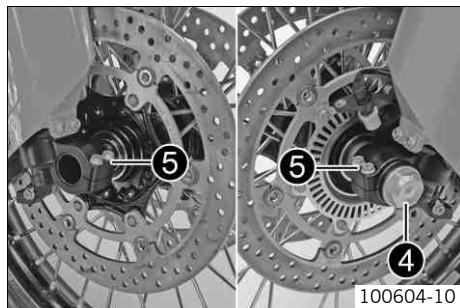
- Jack up the vehicle on the center stand. ( p. 66)
- Load the vehicle down at the rear or jack it up on the underride guard.
  - ✓ The front wheel has no ground contact.
- Press the brake calipers by hand on to the brake discs in order to press back the brake pistons.





## (990 Adventure)

- Remove screw ① and pull wheel speed sensor ② out of the hole with sleeve ③.



- Loosen screw ④ and screws ⑤.
- Unscrew screw ④ by about 6 turns and press your hand on the screw to push the wheel spindle out of the fork stub.



### Warning

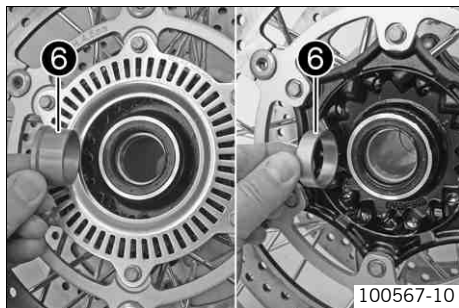
**Danger of accidents** Reduced braking effect caused by damaged brake discs.

- Always lay the wheel down in such a way that the brake discs are not damaged.
- 
- Holding the front wheel, withdraw the wheel spindle. Swing the brake calipers outward slightly and take the front wheel out of the fork.



### Info

Do not pull the hand brake lever when the front wheel is removed.



- Remove distance bushings ⑥.

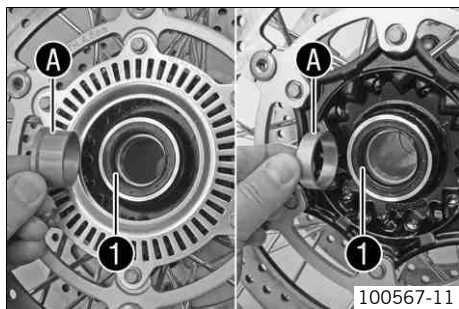
## Installing the front wheel ↗



### Warning

**Danger of accidents** Reduced braking efficiency due to oil or grease on the brake discs.

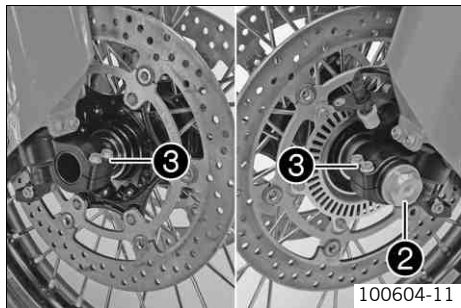
- Always keep the brake discs free of oil and grease, and clean them with brake cleaner when necessary.



- Clean and grease the shaft seal rings ① and bearing surface **A** of the distance bushings.

Long-life grease (↗ p. 203)

- Insert the distance bushings.



- Lift the front wheel into the fork, engage the brake discs into the brake calipers and insert the wheel spindle.

**(990 Adventure)**

✓ The ABS sensor wheel is located on the left in the direction of travel.

- Mount and tighten screw ②.

Guideline

Screw, front wheel spindle	M25x1.5	45 Nm (33.2 lbf ft)
----------------------------	---------	------------------------

- Raise the vehicle off of the center stand. (☛ p. 67)
- Pull the front wheel brake and push down hard on the fork several times to align the fork legs.
- Fully tighten screws ③.

Guideline

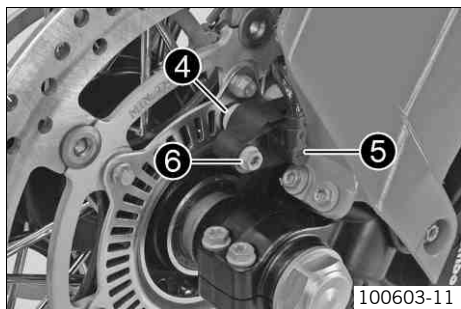
Screw, fork stub	M8	15 Nm (11.1 lbf ft)
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**(990 Adventure)**


- Slide sleeve ④ onto the wheel speed sensor ⑤ and push them into the hole together. Mount and tighten screw ⑥.

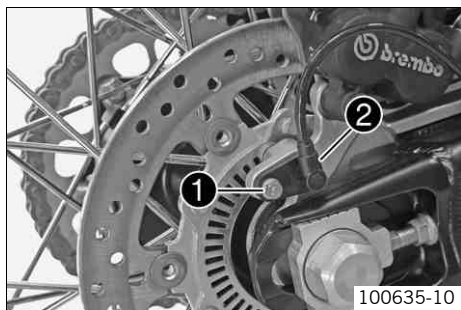
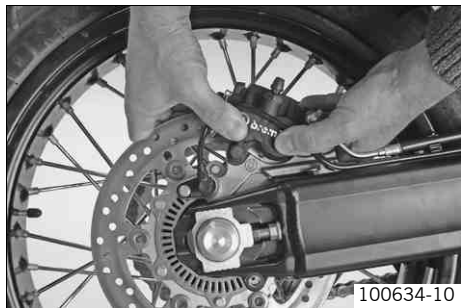
Guideline

Screw connection, wheel speed sensor, front	M6	6 Nm (4.4 lbf ft)
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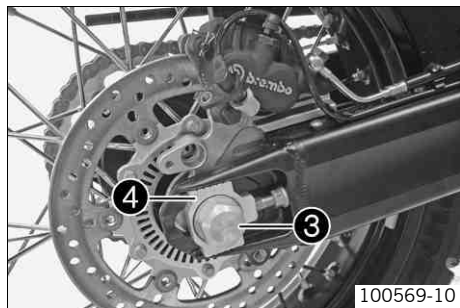
## Removing the rear wheel

- Jack up the vehicle on the center stand. ( p. 66)
- Press the brake caliper by hand on to the brake disc in order to press back the brake pistons.

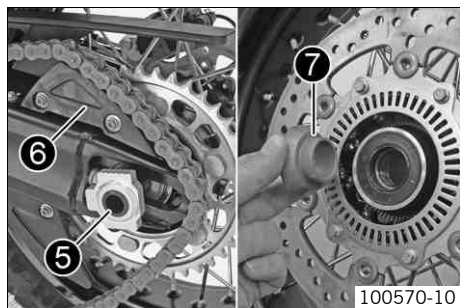


### (990 Adventure)

- Remove screw **1** and pull wheel speed sensor **2** out of the hole.



- Remove nut ③. Remove chain adjuster ④.



- Pull out wheel spindle ⑤ only far enough to allow the rear wheel to be pushed forward.
- Push the rear wheel forward as far as possible. Take the chain off of the rear sprocket and place it on chain sprocket guard ⑥.



## Warning

**Danger of accidents** Reduced braking due to damaged brake discs.

- Always lay the wheel down in such a way that the brake disc is not damaged.

- Holding the rear wheel, withdraw the wheel spindle. Take the rear wheel out of the swing arm.



## Info

Do not operate the foot brake when the rear wheel is removed.

- Remove the distance bushing ⑦.



## Installing the rear wheel



### Warning

**Danger of accidents** Reduced braking efficiency due to oil or grease on the brake discs.

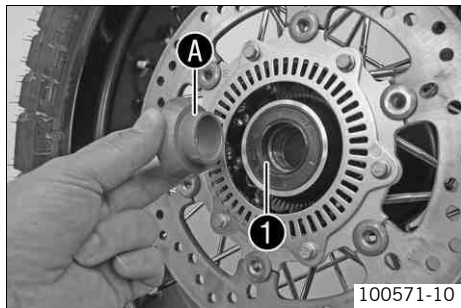
- Always keep the brake discs free of oil and grease, and clean them with brake cleaner when necessary.






### Warning

**Danger of accidents** No braking effect when operating the rear brake.


- After installing the rear wheel, always operate the footbrake until the pressure point is reached.



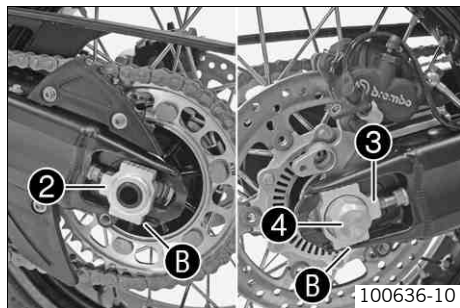
- Check the rear hub rubber dampers.  ( p. 105)
- Clean and grease shaft seal ring **1** and bearing surface **A** of the distance bushing.

Long-life grease ( p. 203)

- Clean and grease the thread of the wheel spindle and nut.

Long-life grease ( p. 203)

- Mount the rubber dampers and rear sprocket carrier in the rear wheel.
- Place the rear wheel in the swingarm and bring the brake disc on the brake caliper into contact.



- Mount the wheel spindle but do not push it in all the way.
- Push the rear wheel forward as far as possible and lay the chain on the rear sprocket.
- Push the wheel spindle in all the way and mount chain adjuster ② and nut ④.

## **i** Info

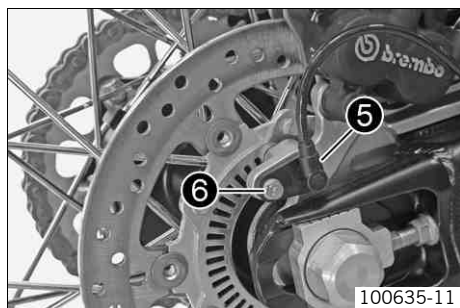
Mount chain adjuster ② and ③ in the same position.

- Push the rear wheel forward so that the chain adjusters are in contact with the adjusting screws, and tighten nut ④.

### Guideline

In order for the rear wheel to be correctly aligned, the markings on the left and right chain adjusters must be in the same position relative to the reference marks ⑤.

Nut, rear wheel spindle	M25x1.5	90 Nm (66.4 lbf ft)	Thread greased
-------------------------	---------	------------------------	----------------



### (990 Adventure)

- Insert wheel speed sensor ⑤ into the hole. Mount and tighten screw ⑥.

### Guideline

Screw, wheel speed sensor, rear	M6	8 Nm (5.9 lbf ft)	<b>Loctite® 243™</b>
---------------------------------	----	----------------------	----------------------

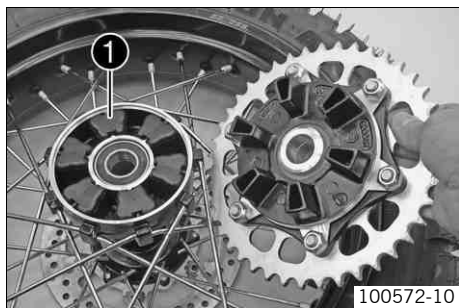
- Operate the foot brake lever repeatedly until the brake linings lie on the brake disc and there is a pressure point.
- Raise the vehicle off of the center stand. (☛ p. 67)

## Checking the rear hub rubber dampers 🛠️

### **i** Info

The engine power is transmitted from the rear sprocket to the rear wheel via 6 rubber dampers. They eventually wear out during operation. If the rubber dampers are not changed in time, the rear sprocket carrier and the rear hub will be damaged.

- Remove the rear wheel. 🛠️ (📄 p. 101)
- Check the rubber dampers ❶ of the rear hub for damage and wear.
  - » If the rubber dampers of the rear hub are damaged or worn:
    - Change all rubber dampers in the rear hub.



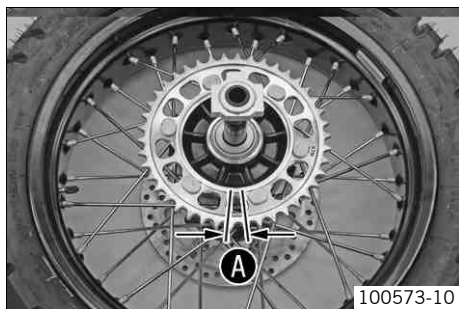
- Lay the rear wheel on a workbench with the rear sprocket facing upwards and insert the wheel spindle in the hub.
- To check the play ❷, hold the rear wheel tight and try to rotate the rear sprocket.

### **i** Info

Measure the play on the outside of the rear sprocket.

Play in rubber dampers, rear wheel	≤ 5 mm (≤ 0.2 in)
------------------------------------	-------------------

- » If clearance ❷ is larger than the specified value:
  - Change all rubber dampers in the rear hub.
- Install the rear wheel. 🛠️ (📄 p. 103)



## Checking the tire condition



### Warning

**Danger of accidents** Uncontrollable handling behavior caused by a flat tire.

- For your own safety, have damaged tires changed immediately.



### Warning

**Danger of crashing** Impairment of ride behavior due to different tire tread patterns on front and rear wheels.

- The front and rear wheels must be fitted with tires with similar tread patterns to prevent loss of control over the vehicle.



### Warning

**Danger of accidents** Uncontrollable handling characteristics due to non-approved and/or non-recommended tires/wheels.

- Only tires/wheels approved by KTM and with the corresponding speed index should be used.



### Warning

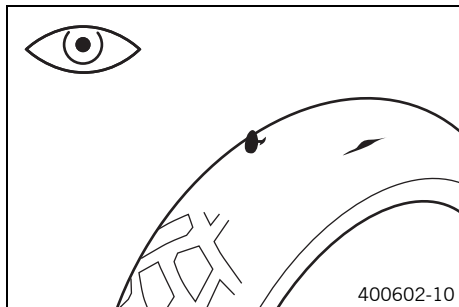
**Danger of accidents** Reduced road grip with new tires.

- New tires have a smooth rolling surface and therefore cannot provide full road grip. The entire rolling surface must be roughened in the first 200 kilometers (124.3 miles) by moderate riding at alternating angles. The full grip levels are not achieved until the tires have been run in.



### Info

The type, condition and air pressure of the tires all have an impact on the braking and riding response of the vehicle. Worn tires have a negative effect on vehicle handling, especially on wet surfaces.



- Check the front and rear tires for cuts, run-in objects and other damage.
  - » If the tires exhibit cuts, run-in objects or other damage:
    - Change the tires.
- Check the depth of the tread.

## **i** Info

Note local national regulations concerning the minimum tread depth.

Minimum tread depth	$\geq 2 \text{ mm } (\geq 0.08 \text{ in})$
---------------------	---

- » If the tread depth is less than the minimum permissible depth:
  - Change the tires.
- Check the age of the tires.

## **i** Info

The tire's date of the manufacture is usually part of the tire markings and is indicated by the last four digits of the **DOT** marking. The first two digits refer to the week of manufacture and last two digits refer to the year of manufacture. KTM recommends that the tires are changed regardless of the actual wear, at the latest after 5 years.

- » If a tire is more than 5 years old:
  - Change the tires.

## Checking the tire air pressure

### **i** Info

Low tire air pressure leads to abnormal wear and overheating of the tire. Correct tire air pressure ensures optimal riding comfort and maximum tire service life.



- Remove the dust cap.
- Check the tire air pressure when the tires are cold.

Tire air pressure, Solo	
Front	2.4 bar (35 psi)
Rear	2.6 bar (38 psi)

Tire air pressure with passenger/full payload	
Front	2.4 bar (35 psi)
Rear	2.8 bar (41 psi)

- » If the tire pressure does not meet specifications:
  - Correct the tire pressure.
- Mount the dust cap.

## Checking spoke tension



### Warning

**Danger of accidents** Instable handling due to incorrect spoke tension.

- Ensure that the spoke tension is correct. (Your authorized KTM workshop will be pleased to help.)



### Info

A loose spoke can cause wheel imbalance, leading to more loose spokes in a short time. If the spokes are too tight, they can break due to local overload. Check the spoke tension regularly, especially on a new motorcycle.



- Strike each spoke briefly using a screwdriver blade.

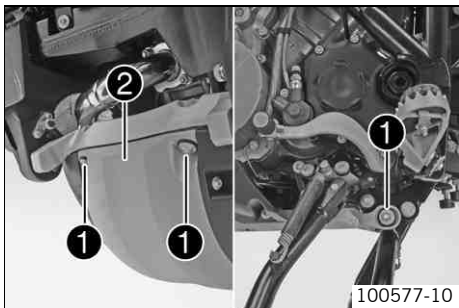
## **i** Info

The frequency of the sound is a function of the spoke length and spoke diameter.  
If spokes of the same length and diameter vibrate with a different tone, this is an indication that the spoke tensions differ.

You should hear a high note.

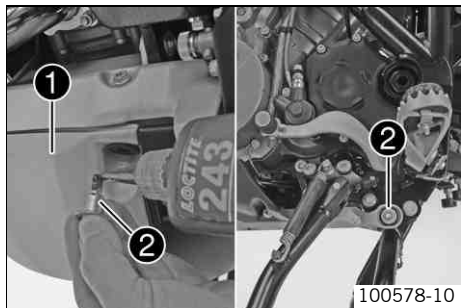
- » If the spoke tension differs:
  - Correct the spoke tension. 🛠️

## Removing the underride guard 🛠️



- Jack up the vehicle on the center stand. (👉 p. 66)
- Swing the side stand downward.
- Remove all four screws ❶ and take off underride guard ❷.


## Installing the underride guard



- Position underride guard ❶. Mount and tighten screws ❷.

Guideline

Screw, underride guard	M8	25 Nm (18.4 lbf ft)	<b>Loctite® 243™</b>
------------------------	----	------------------------	----------------------

- Swing up the side stand.
- Raise the vehicle off of the center stand. ( p. 67)



## Removing the battery



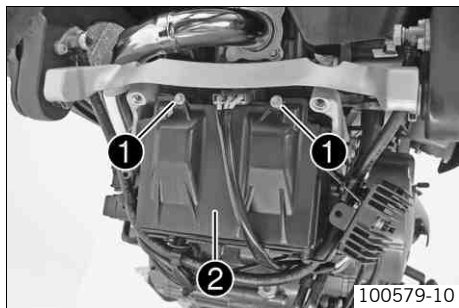
### Warning

**Risk of injury** Battery acid and battery gases cause serious chemical burns.

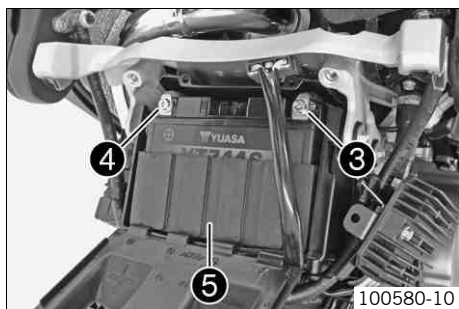
- Keep batteries out of the reach of children.
- Wear suitable protective clothing and goggles.
- Avoid contact with battery acid and battery gases.
- Keep the battery away from sparks or open flames. Charge only in well-ventilated areas.
- In the event of skin contact, rinse with large amounts of water. If battery acid gets in the eyes, rinse with water for at least 15 minutes and contact a physician.

- Switch off all power consumers and the engine.
- Remove the underride guard.  ( p. 109)





- Remove screws ①. Fold cover ② down.



- Disconnect the negative (minus) cable ③ of the battery.
- Disconnect the positive (plus) cable ④ of the battery.
- Take the battery out of the battery compartment with battery tray ⑤.

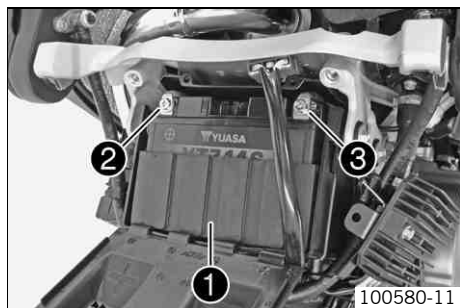
---

**i** **Info**

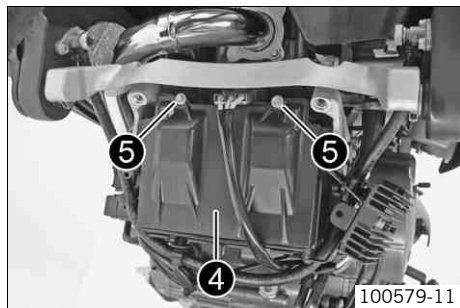
Never operate the motorcycle with a discharged battery or without a battery. In both cases, electrical components and safety equipment can be damaged. The vehicle is then no longer safe to ride.




---

## Installing the battery



- Insert the battery into battery tray ❶.
- Slide the battery with the battery tray into the battery compartment.
- Connect plus cable ❷.
- Connect minus cable ❸.



- Hook cover ❹ into the battery compartment at the bottom and swing up.
- Mount and tighten screws ❺.
- Install the underide guard.  (  p. 110)
- Set the clock. (  p. 29)

## Recharging the battery



### Warning

**Risk of injury** Battery acid and battery gases cause serious chemical burns.

- Keep batteries out of the reach of children.
- Wear suitable protective clothing and goggles.
- Avoid contact with battery acid and battery gases.
- Keep the battery away from sparks or open flames. Charge only in well-ventilated areas.
- In the event of skin contact, rinse with large amounts of water. If battery acid gets in the eyes, rinse with water for at least 15 minutes and contact a physician.



### Warning

**Environmental hazard** Battery parts and acid are harmful to the environment.

- Do not discard batteries with the household trash. Dispose of a defective battery in an environmentally compatible manner. Give the battery to your KTM dealer or to a recycling center that accepts used batteries.



### Warning

**Environmental hazard** Hazardous substances cause environmental damage.

- Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

---

**i** **Info**

Even when there is no load on the battery, it still loses power steadily.

The charge state and the type of charge are very important for the service life of the battery.

Rapid recharging with a high charging current shortens the battery's service life.

If the charging current, charging voltage and charging time are exceeded, electrolyte escapes through the safety valves. This reduces the battery capacity.

If the battery is depleted from starting the vehicle repeatedly, the battery must be charged immediately.

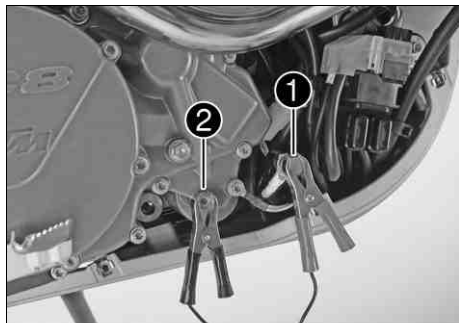
If the battery is left in a discharged state for an extended period, it will become over-discharged and sulfate, destroying the battery.

The battery is maintenance-free, i.e., the acid level does not have to be checked.

If the battery is not charged using the KTM battery charger, the battery must be removed for charging. Otherwise, overvoltage may damage electronic components. Charge the battery according to the instructions on the battery casing.

---

- Switch off all power consumers and the engine.
- Remove the right underide guard. (☛ p. 116)
- Pull off the red protective cover of the positive terminal extension.



- Clamp the plus cable of the battery charger to the positive terminal extension ❶ and the minus cable to an unpainted location on the engine ❷. Switch on the battery charger.

Battery charger (58429074000)
-------------------------------

You can also use the battery charger to test rest potential and start potential of the battery, and to test the generator. With this device, you cannot overcharge the battery.

- Switch off and disconnect the charger after charging.

Guideline

Charge the battery regularly when the motorcycle is not in use
--

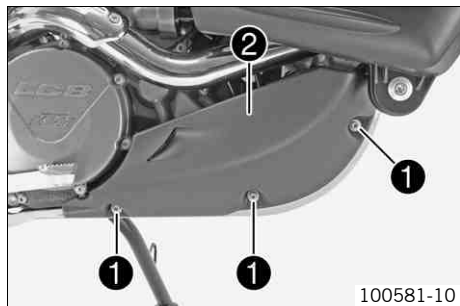
3 months
----------

- Mount the red protective cover of the positive terminal extension.
- Install the right underride guard. (🔍 p. 116)



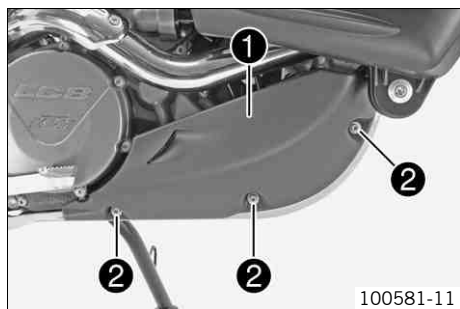
100582-10

## Removing the right underride guard



- Remove screws ❶. Remove the right underride guard ❷.

## Installing the right underride guard



- Position right underride guard ❶. Mount and tighten screws ❷.

Guideline

Remaining chassis screws	M6	10 Nm (7.4 lbf ft)
--------------------------	----	--------------------

## Changing the main fuse



### Warning

**Fire hazard** The electrical system can be overloaded by the use of incorrect fuses.

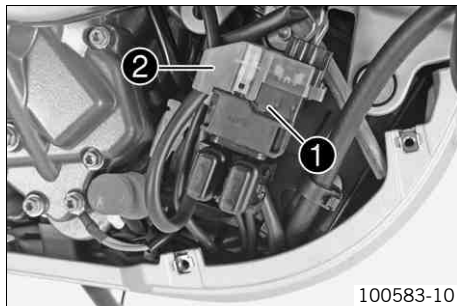
- Use only fuses with the prescribed amperage. Never by-pass or repair fuses.

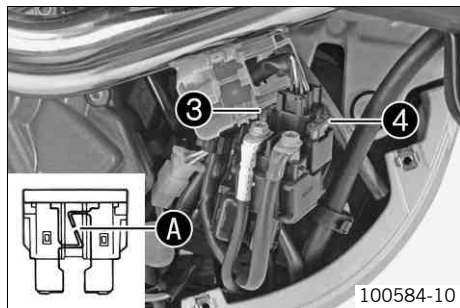


### Info

The main fuse is located in the starter relay under the right underride guard.

- Switch off all power consumers and the engine.
- Remove the right underride guard. (☛ p. 116)
- Pull starter relay ❶ off of the holder and remove protective cover ❷.





## (990 Adventure)

- Remove the faulty main fuse ③.



### Info

A defective fuse can be identified by the burned-out fuse wire **A**.  
A reserve fuse **4** is located in the starter relay.  
The main fuse protects all power consumers in the vehicle except for the ABS unit.

## (990 Adventure R)

- Remove the faulty main fuse ③.



### Info

A defective fuse can be identified by the burned-out fuse wire **A**.  
A reserve fuse **4** is located in the starter relay.  
The main fuse protects all power consumers of the vehicle.

- Install a new main fuse.

Fuse (58011109130) (☞ p. 187)

- Check that the electrical equipment is functioning properly.
- Mount the protective cover and place the starter relay onto the holder.



### Tip

Place the spare fuse in the starter relay so that it is available if needed.

- Install the right underride guard. (☞ p. 116)
- Set the clock. (☞ p. 29)



## Changing the ABS fuses (990 Adventure)



### Warning

**Fire hazard** The electrical system can be overloaded by the use of incorrect fuses.

- Use only fuses with the prescribed amperage. Never by-pass or repair fuses.



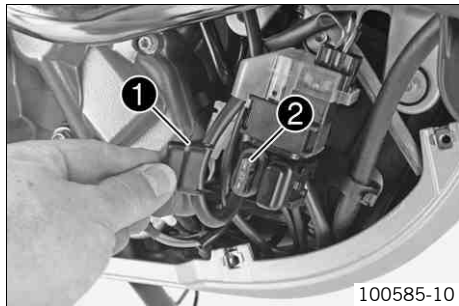
### Info

Two fuses for the ABS are located under the right underride guard. These fuses protect the return pump and the hydraulic unit of the ABS. The third fuse, which protects the ABS control unit, is located in the fuse box.

- Switch off all power consumers and the engine.
- Remove the right underride guard. (☞ p. 116)

### Changing the fuse of the ABS hydraulic unit:

- Remove protective cover ❶ and remove fuse ❷.



### Info

A spare fuse is located next to the fuse box in the storage compartment.

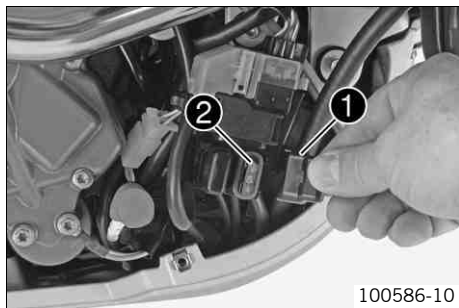
- Install the new fuse.

Fuse (58011109125) (☞ p. 186)

- Check whether the ABS warning lamp is still lit.
- Mount the protective cover.

### Tip

Place the spare fuse in the storage compartment so that it is available if needed.



## Changing the fuse of the ABS return pump:

- Remove protective cover ❶ and remove fuse ❷.

### Info

A spare fuse is located next to the fuse box in the storage compartment.

- Install the new fuse.

Fuse (58011109140) (☛ p. 187)

- Check whether the ABS warning lamp is still lit.
- Mount the protective cover.

### Tip

Place the spare fuse in the storage compartment so that it is available if needed.

- Install the right underride guard. (☛ p. 116)

## Changing the fuses in the fuse box



### Warning

**Fire hazard** The electrical system can be overloaded by the use of incorrect fuses.

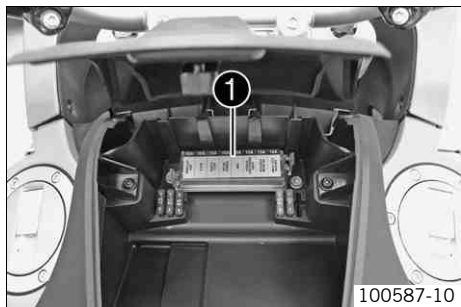
- Use only fuses with the prescribed amperage. Never by-pass or repair fuses.



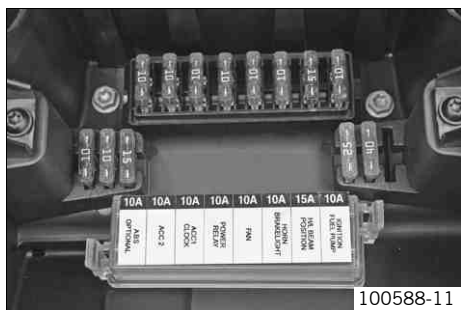
### Info

The fuse box containing the fuses of remaining power consumers is located in the storage compartment.

- Switch off all power consumers and the engine.
- Open the storage compartment. (☛ p. 37)



- Remove fuse box cover ❶.



- Remove the faulty fuse.

### Guideline

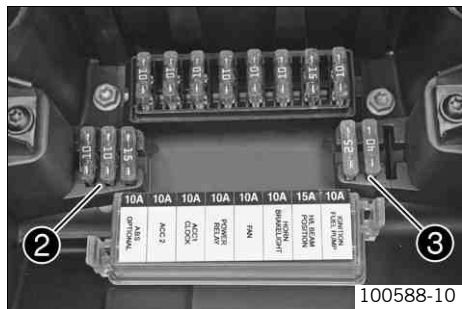
Fuse <b>IGNITION, FUEL PUMP</b> - 10A - ignition, fuel pump, immobilizer, alarm system (optional)
Fuse <b>H/L BEAM, POSITION</b> - 15A - high beam, low beam, parking light, license plate lamp
Fuse <b>HORN, BRAKE LIGHT</b> - 10A - horn, brake light, hazard warning flasher
Fuse <b>FAN</b> - 10A - radiator fan
Fuse <b>POWER RELAY</b> - 10A - ignition (EFI control unit)
Fuse <b>ACC1, CLOCK</b> - 10A - combination instrument, socket, supplementary devices (permanent positive), alarm system (optional)
Fuse <b>ACC2</b> - 10A - supplementary equipment (accessories connected to the ignition switch)

### (990 Adventure)

Fuse **ABS, OPTIONAL** - 10A - ABS

### (990 Adventure R)

Fuse **ABS, OPTIONAL** - not used



## (990 Adventure)

- Use spare fuses with the correct rating only.

Fuse (58011109110) (☛ p. 186)
-------------------------------

Fuse (58011109115) (☛ p. 186)
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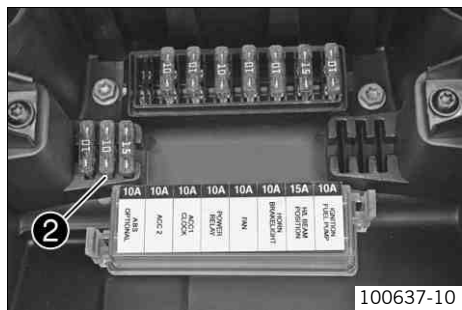
### Info

Spare fuses ② are located next to the fuse box.  
The spare fuses ③ are for the ABS.



### Tip

Replace the spare fuse in the fuse box so that it is available if needed.



## (990 Adventure R)

- Use spare fuses with the correct rating only.

Fuse (58011109110) (☛ p. 186)
-------------------------------

Fuse (58011109115) (☛ p. 186)
-------------------------------



### Info

Spare fuses ② are located next to the fuse box.



### Tip

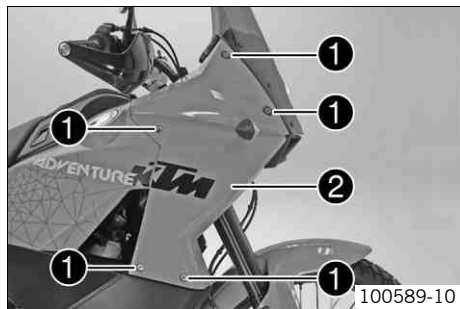
Replace the spare fuse in the fuse box so that it is available if needed.

- Check that the power consumers are functioning.
- Close the fuse box cover.
- Close the storage compartment. (☛ p. 38)

## Removing the front side cover

### **i** Info

The operations are the same on the left and right sides.

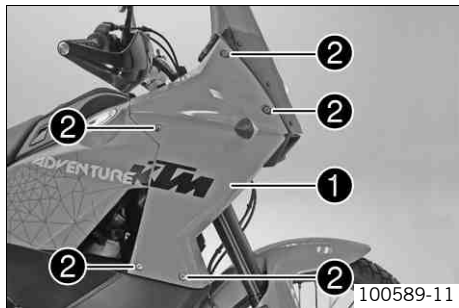


- Remove screws ❶.
- Carefully swing out the side cover ❷ at the top and disconnect the plug-in connectors of the turn signal cables.
- Pull off the overflow hose of the fuel tank and take off the trim.

## Installing the front side cover

### **i** Info

The operations are the same on the left and right sides.



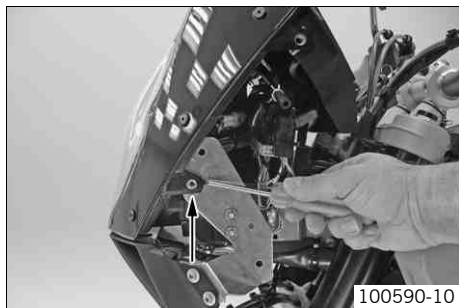
- Position side cover ❶ at the fuel tank on the bottom and hold it at an angle.
- Attach the overflow hose of the fuel tank to the connector.
- Connect the plug-in connectors of the turn signal cables and swing the side cover up toward the vehicle.
- Mount and tighten screws ❷ with the washers.

## Guideline

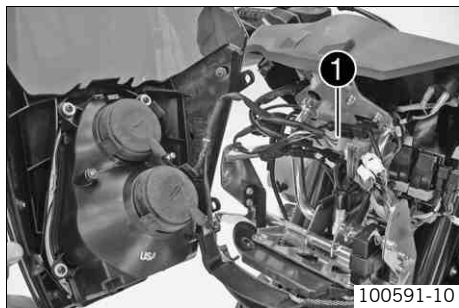
Remaining chassis nuts	M6	15 Nm (11.1 lbf ft)
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- Check the function of turn signal.

## Removing the headlight mask with the headlight

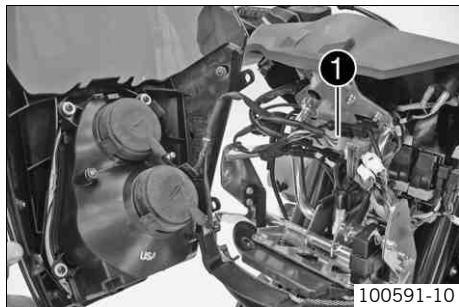


- Switch off all power consumers and the engine.
- Remove the front side cover. (☛ p. 123)
- Unhook the headlight mask from the cockpit holder and remove it toward the front.



- Disconnect plug-in connector ❶.
- Place the headlight mask down on a soft cloth to prevent the headlight and trim disc from being damaged.

## Installing the headlight mask with the headlight



- Connect plug-in connector ❶.
- Check the lighting function.
- Position the headlight mask.
- Install the front side cover. (➔ p. 123)
- Check the headlamp setting. (➔ p. 131)

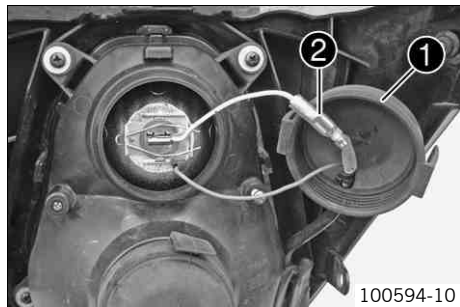
## Changing the high beam bulb

### Note

**Damage to reflector** Reduced luminance.

- Grease on the bulb will evaporate due to the heat and be deposited on the reflector. Clean the bulb and keep it free of grease before mounting.

- Remove the headlight mask with the headlight. (☛ p. 124)
- Remove rubber cap ❶ and disconnect plug-in connector ❷.



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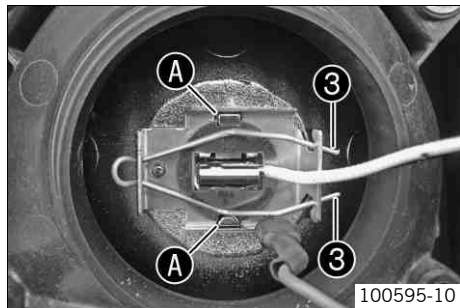
- Detach spring bar ❸ and remove the bulb from the headlight.
- Position the new bulb in the headlight and attach the spring bar.

High beam (H3 / socket PK22s) (☛ p. 187)

### **i** Info

The bulb must be correctly seated at projections A.

- Connect the plug-in connector and mount the rubber cap.
- Install the headlight mask with the headlight. (☛ p. 125)



100595-10

## Changing the low beam bulb

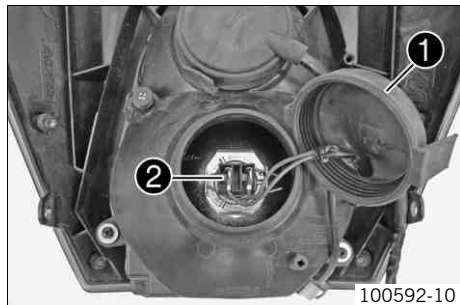
### Note

**Damage to reflector** Reduced luminance.

- Grease on the bulb will evaporate due to the heat and be deposited on the reflector. Clean the bulb and keep it free of grease before mounting.



- Remove the headlight mask with the headlight. (☛ p. 124)
- Remove rubber cap ❶ and connector ❷ from the bulb.



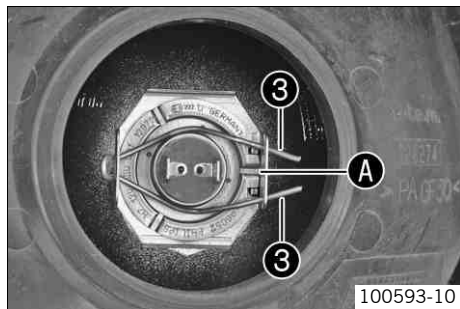
- Detach spring bar ❸ and remove the bulb from the headlight.
- Position the new bulb in the headlight and attach the spring bar.

Low beam (H7 / socket PX26d) (☛ p. 187)

**i Info**

The bulb must be positioned with projection **A** in the recess.

- Attach the connector to the bulb and mount the rubber cap.
- Install the headlight mask with the headlight. (☛ p. 125)



## Changing the parking light bulb in the headlight

**Note**

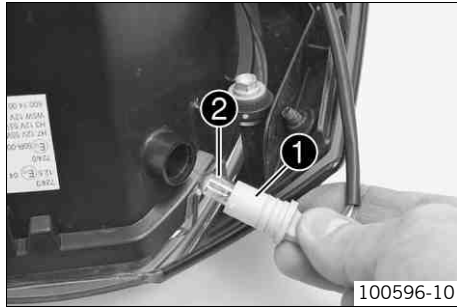
**Damage to reflector** Reduced luminance.

- Grease on the bulb will evaporate due to the heat and be deposited on the reflector. Clean the bulb and keep it free of grease before mounting.

- Remove the headlight mask with the headlight. (☞ p. 124)
- Pull socket ❶ out of the headlight and pull bulb ❷ out of the socket.
- Insert the new bulb into the socket and insert the socket into the headlight.

Parking light (W5W / socket W2.1x9.5d) (☞ p. 187)

- Install the headlight mask with the headlight. (☞ p. 125)

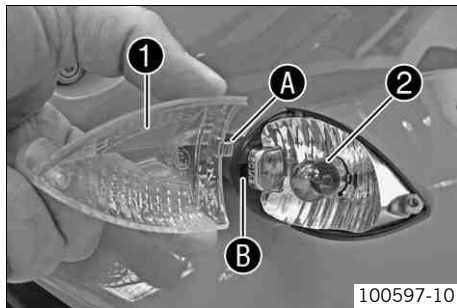


## Changing the turn signal bulb

### Note

**Damage to reflector** Reduced luminance.

- Grease on the bulb will evaporate due to the heat and be deposited on the reflector. Clean the bulb and keep it free of grease before mounting.



- Remove the screw on the rear of the turn signal housing.
- Carefully remove diffuser ❶.
- Press bulb ❷ carefully into the socket, turn it counterclockwise by about 30°, and pull it out of the socket.

### **i** Info

Do not touch the reflector with your fingers, and keep it free from grease.

- Press the new bulb carefully into the socket and turn it clockwise until it stops.

Turn signal (RY10W / socket BAU15s) (☛ p. 187)

- Check the turn signal to make sure it is functioning properly.
- Position the diffuser.

## **i** Info

Hook in projection **A** at recess **B**.

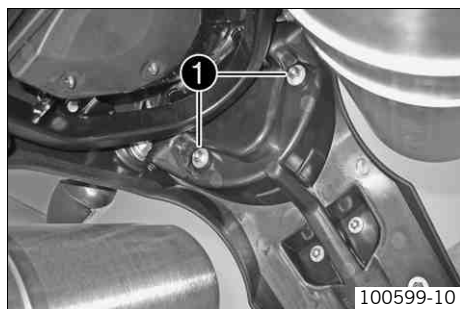
- Insert the screw and first turn it counterclockwise until it engages in the thread. Tighten the screw slightly.

## Changing the tail light bulb

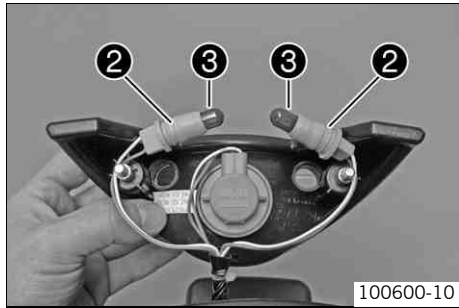
### Note

**Damage to reflector** Reduced luminance.

- Grease on the bulb will evaporate due to the heat and be deposited on the reflector. Clean the bulb and keep it free of grease before mounting.



- Remove nuts **1** at the bottom of the rear fender and pull out the tail light toward the rear.



- Pull bulb sockets ② out of the tail light.
- Pull bulbs ③ out of the sockets.
- Insert new bulbs into the sockets.

Tail light (WR5W / socket W2.1x9.5d) (☛ p. 187)

- Insert the bulb sockets into the tail light.
- Check the lighting function.
- Position the tail light. Mount and tighten the nuts with the washers.

Guideline

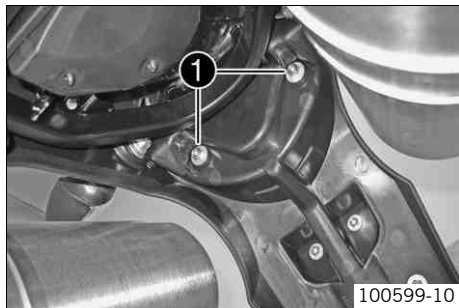
Nut, tail light	M6	8 Nm (5.9 lbf ft)
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## Changing the brake light bulb

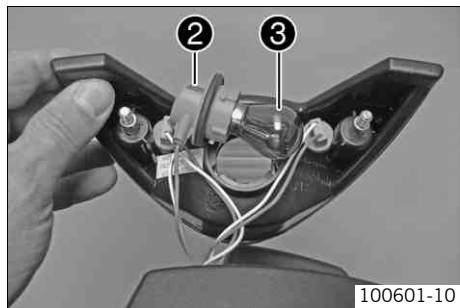
**Note**

**Damage to reflector** Reduced luminance.

- Grease on the bulb will evaporate due to the heat and be deposited on the reflector. Clean the bulb and keep it free of grease before mounting.



- Remove nuts ① at the bottom of the rear fender and pull out the tail light toward the rear.



- Turn bulb socket ② counterclockwise all the way and take it out of the tail light.
- Press bulb ③ carefully into the socket, turn it counterclockwise by about 30°, and pull it out of the socket.
- Press the new bulb carefully into the socket and turn it clockwise until it stops.

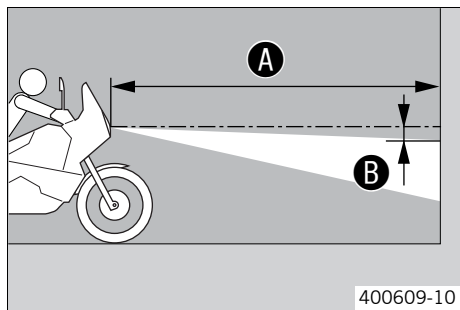
Brake light (PR21W / socket BAW15s) (☛ p. 187)
--

- Insert the bulb socket into the tail light and turn clockwise until it stops.
- Check the lighting function.
- Position the tail light. Mount and tighten nuts with the washers.

Guideline

Nut, tail light	M6	8 Nm (5.9 lbf ft)
-----------------	----	-------------------

## Checking the headlamp setting



- On a light-colored wall behind a horizontal area, make a mark as high as the center of the low beam headlight.
- Make another mark at a distance of ⑤ under the first mark.

Guideline

Distance ⑤	5 cm (2 in)
------------	-------------

- Position the motorcycle at a distance of ④ away from the wall. The rider, with luggage and passenger if applicable, now mounts the motorcycle.

Guideline

Distance ④	5 m (16 ft)
------------	-------------

- Switch on the low beam. Check the headlamp setting.

The light-dark boundary must lie exactly on the lower mark when the motorcycle is ready to operate with the rider mounted along with any luggage and a passenger if applicable.
---

- » If the boundary between light and dark does not meet specifications:
  - Adjust the headlight range. (☛ p. 132)

## Adjusting the headlight range



- Check the headlamp setting. (☛ p. 131)
- Turn adjusting screw ❶ to adjust the headlight range.

### Guideline

For a motorcycle with rider, and with luggage and a passenger if applicable, the light/dark boundary must be exactly on the lower mark (applied in: Checking headlight adjustment).

### **i** Info

Turn clockwise to increase the light range, turn counterclockwise to reduce the light range.

If you have a heavy payload, you will need to correct the headlight range.

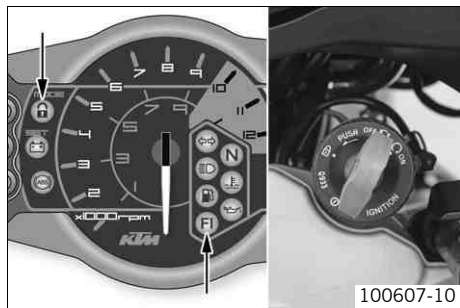
## Activating/deactivating the ignition key

### **i** Info

The orange programming key must only be used for activating and deactivating!

If a black ignition key is lost or replaced, the black ignition keys must be activated/deactivated using the orange programming key. This will also prevent the vehicle from being operated without authorization with the lost black ignition key.

You can activate or deactivate up to four black ignition keys. Only the black ignition keys trained during an activation procedure are valid. All black ignition keys not trained in the activation procedure are invalid, but can be retrained in a further activation procedure.



## Loss of a black ignition key (second black ignition key available):

The following procedure deactivates all activated black ignition keys that are not included in the procedure.

- Turn the emergency OFF switch to the position ○.
- Insert the orange programming key in the ignition lock.
- Switch on the ignition by turning the orange programming key to the position ○.
  - ✓ **FI** Warning lamp ① (**MIL**) lights up, switches off, and then starts to flash.
  - ✓ Immobilizer indicator lamp ② lights up.
- Switch off the ignition by turning the orange programming key to the position ☒.
- Pull out the programming key.
- Insert the black ignition key in the ignition lock.
- Switch on the ignition by turning the black ignition key to the position ○.
  - ✓ **FI** Warning lamp ① (**MIL**) lights up, switches off, and then starts to flash.
  - ✓ Immobilizer indicator lamp ② lights up, switches off briefly, and lights up again.
- Switch off the ignition by turning the black ignition key to the position ☒.
- Remove the black ignition key.
- Insert the orange programming key in the ignition lock.
- Switch on the ignition by turning the orange programming key to the position ○.
  - ✓ **FI** Warning lamp ① (**MIL**) lights up, switches off, and then starts to flash.
  - ✓ Immobilizer indicator lamp ② lights up, switches off briefly and flashes; the number of flashes equals the number of functional black ignition keys including the orange programming key. In this case, twice.
- Switch off the ignition by turning the orange programming key to the position ☒.
- Pull out the programming key.
  - ✓ The lost black ignition key is deactivated.

- ✓ The existing black ignition key is reactivated.

## **Loss of both black ignition keys (no black ignition key available):**

This procedure is important to prevent misuse of the lost black ignition key.

- Turn the emergency OFF switch to the position ○.
- Insert the orange programming key in the ignition lock.
- Switch on the ignition by turning the orange programming key to the position ○.
- ✓ **FI** Warning lamp Ⓢ (**MIL**) lights up, switches off, and then starts to flash.
- ✓ Immobilizer indicator lamp Ⓢ lights up.
- Switch off the ignition by turning the orange programming key to the position ⊗.
- Switch on the ignition by turning the orange programming key to the position ○.
- ✓ **FI** Warning lamp Ⓢ (**MIL**) lights up, switches off, and then starts to flash.
- ✓ Immobilizer indicator lamp Ⓢ lights up, switches off briefly and flashes; the number of flashes equals the number of functional black ignition keys including the orange programming key. In this case once, since all black ignition keys are deactivated.
- Switch off the ignition by turning the orange programming key to the position ⊗.
- Pull out the programming key.
- ✓ All black ignition keys are deactivated.
- Order a new black ignition key according to the key number on the **KEYCODECARD** and activate it.


## **Activating the ignition key:**

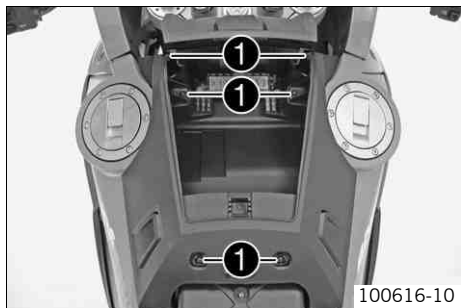
- Turn the emergency OFF switch to the position ○.
- Insert the orange programming key in the ignition lock.
- Switch on the ignition by turning the orange programming key to the position ○.
- ✓ **FI** Warning lamp Ⓢ (**MIL**) lights up, switches off, and then starts to flash.
- ✓ Immobilizer indicator lamp Ⓢ lights up.



- Switch off the ignition by turning the orange programming key to the position ☒.
- Pull out the programming key.
- Insert the black ignition key in the ignition lock.
- Switch on the ignition by turning the black ignition key to the position ○.
- ✓ **FI** Warning lamp ⑤ (**MIL**) lights up, switches off, and then starts to flash.
- ✓ Immobilizer indicator lamp ⑥ lights up, switches off briefly, and lights up again.
- Switch off the ignition by turning the black ignition key to the position ☒.
- Remove the black ignition key.
- To activate further ignition keys, repeat the last 4 steps with the respective ignition key.
- Insert the orange programming key in the ignition lock.
- Switch on the ignition by turning the orange programming key to the position ○.
- ✓ **FI** Warning lamp ⑤ (**MIL**) lights up, switches off, and then starts to flash.
- ✓ Immobilizer indicator lamp ⑥ lights up, switches off briefly and flashes; the number of flashes equals the number of functional black ignition keys including the orange programming key.
- Switch off the ignition by turning the orange programming key to the position ☒.
- Pull out the programming key.
- ✓ All black ignition keys are activated included in this job sequence are activated.

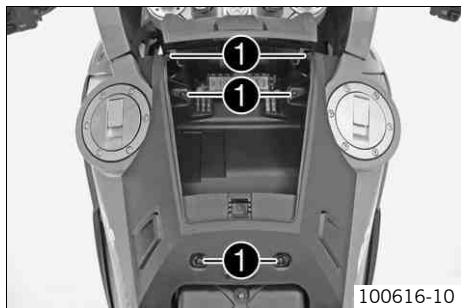
## Removing the storage compartment and hanging it to one side

- Remove the seat. ( p. 67)



- Open the storage compartment. (☛ p. 37)
- Remove screws ❶.
- Carefully remove the storage compartment and swing it to the right. Place a cloth between the right fuel tank and the storage compartment to prevent damage.

## Installing the storage compartment ☛



- Remove the cloth and position the storage compartment.
- Mount and tighten screws ❶.
- Close the storage compartment. (☛ p. 38)
- Mount the seat. (☛ p. 68)

## Removing the left fuel tank



### **Danger**

**Fire hazard** Fuel is highly flammable.





- Never fill up the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
- Fuel in the fuel tank expands when warm and can escape if the tank is overfilled. See specifications on filling up with fuel.

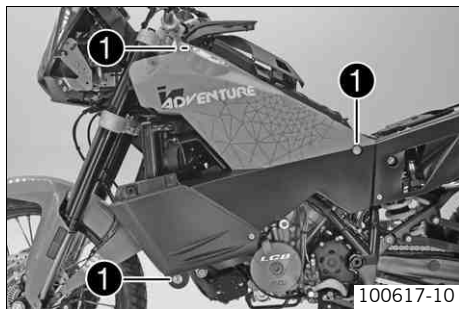


### **Warning**

**Danger of poisoning** Fuel is poisonous and a health hazard.

- Avoid contact between fuel and skin, eyes and clothing. Do not inhale fuel vapors. If fuel gets into your eyes, rinse immediately with water and contact a doctor. Wash affected skin areas immediately with soap and water. If fuel is swallowed, contact a doctor immediately. Change clothing that has come into contact with fuel. Store fuel in a suitable canister according to regulations and keep it out of the reach of children.

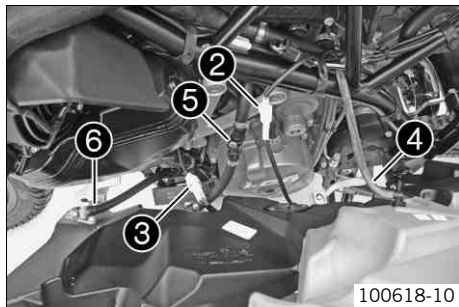
- Switch off all power consumers and the engine.
- Jack up the vehicle on the center stand. ( p. 66)
- Turn the knurled screws on both fuel taps clockwise as far as possible.
- Remove the front side cover. ( p. 123)
- Remove the storage compartment and hang it to one side.  ( p. 135)



- Remove screws ❶.
- Raise the fuel tank slightly at the front, detach from the upper holder and swing the top away from the vehicle.

## **i** Info

Hold the fuel tank at about the same height as when it is mounted. Before removing the fuel tank entirely, a number of hoses and plug-in connectors need to be detached.



- Disconnect the plug-in connectors from fuel level indicator ❷ and fuel pump ❸.
- Pull off hose ❹.
- Disconnect fuel hose connection ❺.

## **i** Info

Remaining fuel may run out of the fuel hose.

- Push the hose clamp back and pull fuel hose ❻ off of the fuel tap.
- Take off the fuel tank.

## Installing the left fuel tank



### **Danger**

**Fire hazard** Fuel is highly flammable.

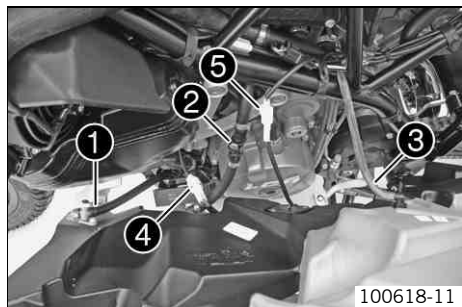
- Never fill up the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
- Fuel in the fuel tank expands when warm and can escape if the tank is overfilled. See specifications on filling up with fuel.



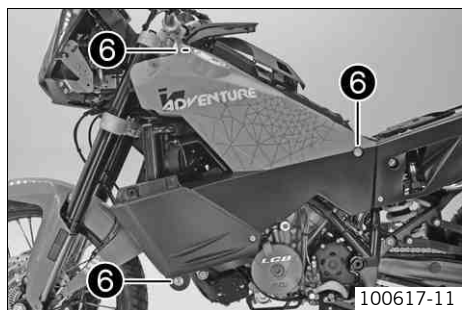
## Warning

**Danger of poisoning** Fuel is poisonous and a health hazard.

- Avoid contact between fuel and skin, eyes and clothing. Do not inhale fuel vapors. If fuel gets into your eyes, rinse immediately with water and contact a doctor. Wash affected skin areas immediately with soap and water. If fuel is swallowed, contact a doctor immediately. Change clothing that has come into contact with fuel. Store fuel in a suitable canister according to regulations and keep it out of the reach of children.



- Clean the fuel hose connection and check the O-ring for damage.
- Position the fuel tank at about the same height as when mounted to connect the hoses and plug-in connectors.
- Attach fuel hose ① to the fuel tap and push the hose clamp forward.
- Connect the fuel hose connection ②.
- Attach hose ③ to the connector.
- Connect the plug-in connector of fuel pump ④ and fuel level indicator ⑤.



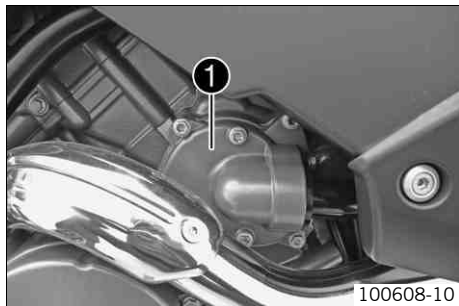
- Raise the fuel tank slightly and attach it to the upper holder.
- Mount and tighten screws ⑥.

### Guideline

Screw, fuel tank	M8	15 Nm (11.1 lbf ft)
------------------	----	------------------------

- Install the storage compartment. (🔧 (🔧 p. 136)
- Install the front side cover. (🔧 p. 123)
- Turn the knurled screws on both fuel taps counterclockwise as far as possible.
- Check the fuel system for leaks.

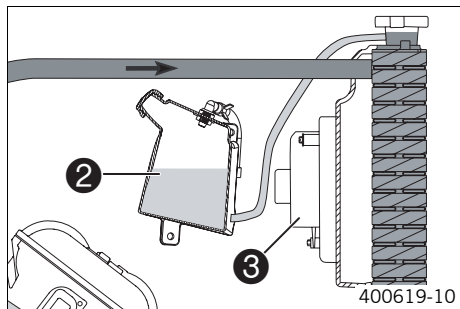
## Cooling system



The water pump ❶ in the engine forces the coolant to flow.

The pressure in the cooling system resulting from heat is regulated by a valve in the radiator cap. This permits the specified coolant temperature without causing any malfunctions.

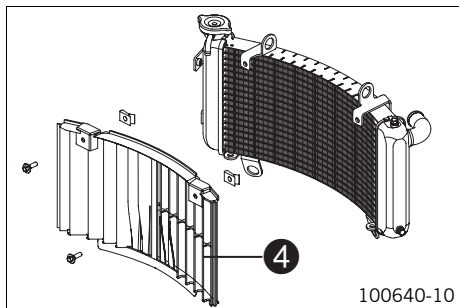
125 °C (257 °F)



Cooling takes place by means of the air stream and a radiator fan ❸, which is controlled by a thermostitch.

The lower the speed, the less the cooling effect. Dirty cooling fins also reduce the cooling effect.

The heat expansion causes the surplus coolant to flow into the compensating tank ❷. When the temperature falls, this surplus coolant is sucked back into the cooling system.



A radiator guard ④ is included with the vehicle. The radiator guard should be mounted when operating the vehicle offroad. It prevents damage to the radiator from flying stones and similar causes.

## Checking the coolant level in the compensating tank



### Warning

**Scalding hazard** During motorcycle operation, the coolant gets very hot and is under pressure.

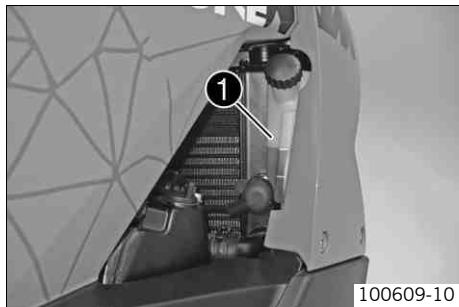
- Do not open the radiator, the radiator hoses or other components of the cooling system when the engine is hot. Allow the engine and radiator to cool down. If you are scalded, hold the affected part under cold water immediately.



### Warning

**Danger of poisoning** Coolants are poisonous and a health hazard.

- Avoid contact between coolants and skin, eyes and clothing. If fuel gets into your eyes, rinse immediately with water and contact a doctor. Wash affected skin areas immediately with soap and water. If coolant is swallowed, contact a doctor immediately. Change clothes that have come into contact with coolants. Keep coolants out of the reach of children.



## Condition

The engine is cold.

The radiator is completely full.

- Stand the motorcycle on a horizontal surface.
- Check the coolant level in the compensating tank ①.

The coolant level must be between **MIN** and **MAX**.

- » If there is no coolant in the compensating tank:
  - Check the cooling system for leaks. 🛠️



## Info

Do not start up the motorcycle!

- Fill/bleed the cooling system. 🛠️ (👉 p. 147)
- » If the coolant level in the compensating tank does not meet specifications, but the tank is not empty:
  - Remove the compensating tank cap.
  - Add coolant to the **MAX** marking.

## Alternative 1

Coolant (👉 p. 198)

## Alternative 2

Coolant (mixed ready to use) (👉 p. 198)

- Mount the cap of the compensating tank.



## Checking the coolant level in the radiator



### Warning

**Scalding hazard** During motorcycle operation, the coolant gets very hot and is under pressure.

- Do not open the radiator, the radiator hoses or other components of the cooling system when the engine is hot. Allow the engine and radiator to cool down. If you are scalded, hold the affected part under cold water immediately.



### Warning

**Danger of poisoning** Coolants are poisonous and a health hazard.

- Avoid contact between coolants and skin, eyes and clothing. If fuel gets into your eyes, rinse immediately with water and contact a doctor. Wash affected skin areas immediately with soap and water. If coolant is swallowed, contact a doctor immediately. Change clothes that have come into contact with coolants. Keep coolants out of the reach of children.

- Check the coolant level in the compensating tank. (☞ p. 141)
- Jack up the vehicle on the center stand. (☞ p. 66)
- Remove the front side cover. (☞ p. 123)  
Only dismantle the right side cover.

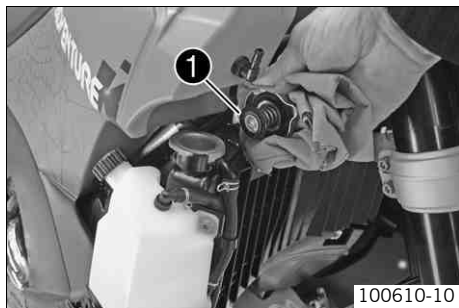
### Condition

The engine is cold.

- Remove radiator cap ❶.
- Check the coolant level in the radiator.

The radiator must be completely filled.

- » If the coolant level does not meet specifications:  
Coolant loss: < 0.50 l (< 0.53 qt.)
  - Check the cooling system for leaks. ☞



100610-10

**Info**

Do not start up the motorcycle!

- Correct the coolant level.

**Alternative 1**

Coolant (☞ p. 198)

**Alternative 2**

Coolant (mixed ready to use) (☞ p. 198)

- » If the coolant level does not meet specifications:  
Coolant loss: > 0.50 l (> 0.53 qt.)
  - Check the cooling system for leaks. ☞

**Info**

Do not start up the motorcycle!

- Fill/bleed the cooling system. ☞ (☞ p. 147)
- Mount the radiator cap.

## Checking the antifreeze ☞

**Warning**

**Scalding hazard** During motorcycle operation, the coolant gets very hot and is under pressure.

- Do not open the radiator, the radiator hoses or other components of the cooling system when the engine is hot. Allow the engine and radiator to cool down. If you are scalded, hold the affected part under cold water immediately.



## Warning

**Danger of poisoning** Coolants are poisonous and a health hazard.

- Avoid contact between coolants and skin, eyes and clothing. If fuel gets into your eyes, rinse immediately with water and contact a doctor. Wash affected skin areas immediately with soap and water. If coolant is swallowed, contact a doctor immediately. Change clothes that have come into contact with coolants. Keep coolants out of the reach of children.

## Condition

The engine is cold. The right side cover has been removed.

- Rest the motorcycle on its side stand on a horizontal surface.
- Remove radiator cap ❶ and the plug from the compensating tank.
- Check the coolant antifreeze.

-25... -45 °C (-13... -49 °F)
-------------------------------

» If the coolant antifreeze does not meet specifications:

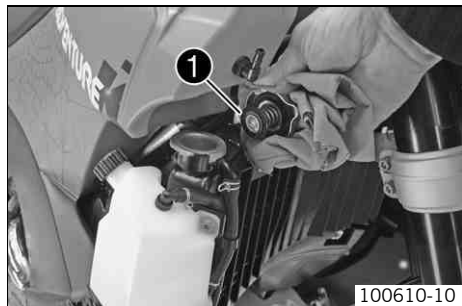
- Correct the coolant antifreeze.
- Add coolant to the specified level.

## Guideline

The radiator must be completely filled.
---

The coolant level in the compensating tank must be between <b>MIN</b> and <b>MAX</b> .
--

- Replace the compensating tank cap and the radiator cap.



## Draining the coolant



## Warning

**Scalding hazard** During motorcycle operation, the coolant gets very hot and is under pressure.

- Do not open the radiator, the radiator hoses or other components of the cooling system when the engine is hot. Allow the engine and radiator to cool down. If you are scalded, hold the affected part under cold water immediately.



## Warning

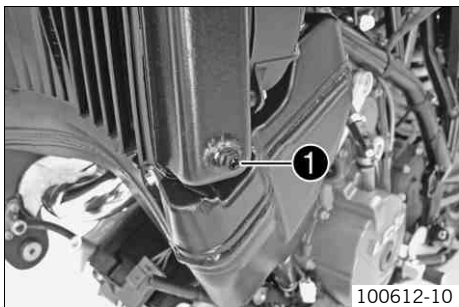
**Danger of poisoning** Coolants are poisonous and a health hazard.

- Avoid contact between coolants and skin, eyes and clothing. If fuel gets into your eyes, rinse immediately with water and contact a doctor. Wash affected skin areas immediately with soap and water. If coolant is swallowed, contact a doctor immediately. Change clothes that have come into contact with coolants. Keep coolants out of the reach of children.

- Jack up the vehicle on the center stand. (☞ p. 66)
- Remove the left fuel tank. ☞ (☞ p. 137)
- Place a suitable container under the radiator.
- Remove screw ❶.
- Remove the radiator cap.
- Completely drain the coolant.
- Mount screw ❶ with a new seal ring and tighten it.

### Guideline

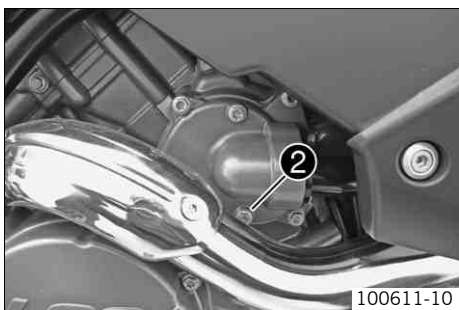
Remaining chassis screws	M6	10 Nm (7.4 lbf ft)
--------------------------	----	--------------------



- Place a suitable container under the engine.
- Remove screw ❷.
- Completely drain the coolant.
- Mount screw ❷ with a new seal ring and tighten it.

### Guideline

Screw, water pump cover	M6	10 Nm (7.4 lbf ft)
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## Filling/bleeding the cooling system ↩



### Warning

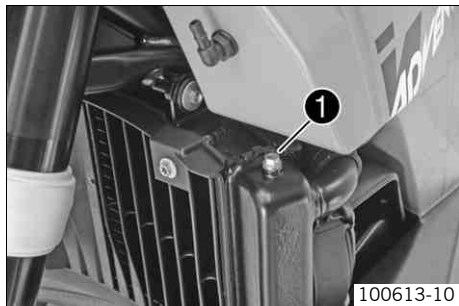
**Danger of poisoning** Coolants are poisonous and a health hazard.

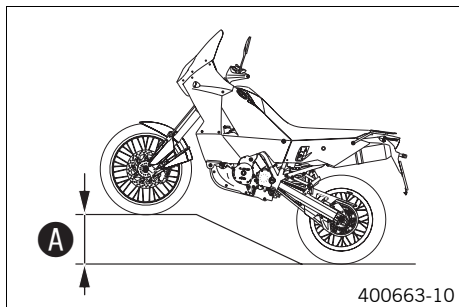
- Avoid contact between coolants and skin, eyes and clothing. If fuel gets into your eyes, rinse immediately with water and contact a doctor. Wash affected skin areas immediately with soap and water. If coolant is swallowed, contact a doctor immediately. Change clothes that have come into contact with coolants. Keep coolants out of the reach of children.

### Condition

The front side cover has been removed.

- Ensure that the drain plug on the radiator and the water pump cover are tightened.
- Remove bleeder screw ❶.





- Position the vehicle as shown and secure it against rolling. Height difference **A** must be reached.

Guideline

Height difference <b>A</b>	50 cm (19.7 in)
----------------------------	-----------------

**i** **Info**

To make sure that all of the air can escape from the cooling system, raise the front of the vehicle. A poorly bled cooling system is less effective at cooling and the engine can overheat.



- Pour in coolant until it emerges without bubbles at the vent hole, and then mount and tighten the bleeder screw immediately.

**Alternative 1**

Coolant (☞ p. 198)
--------------------

**Alternative 2**

Coolant (mixed ready to use) (☞ p. 198)
---

- Fill the radiator completely with coolant. Mount the radiator cap.
- Lean the vehicle on the side stand.
- Check the coolant level in the compensating tank. (☞ p. 141)

**!** **Danger**

**Danger of poisoning** Exhaust gases are poisonous and can result in unconsciousness and/or death.

- When running the engine, always make sure there is sufficient ventilation, and do not start or run the engine in a closed space without an effective exhaust extraction system.
- 
- Start the engine and run it until it reaches operating temperature.

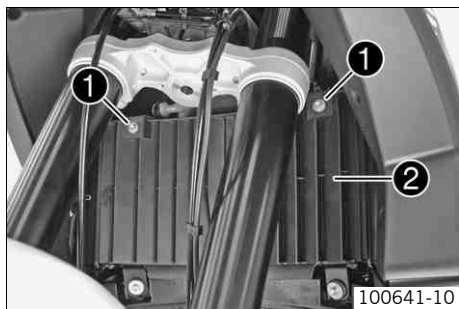
✓ Six bars of the temperature display light up.

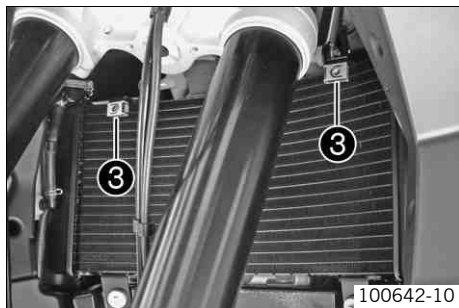
- Stop the engine and allow it to cool down.
- When the engine is cool, check the coolant level in the radiator and, if necessary, add coolant.
- Check the coolant level in the compensating tank and, if necessary, add coolant to marking **MAX**.



## Removing the radiator guard

- Remove screws ❶ and radiator guard ❷.





100642-10

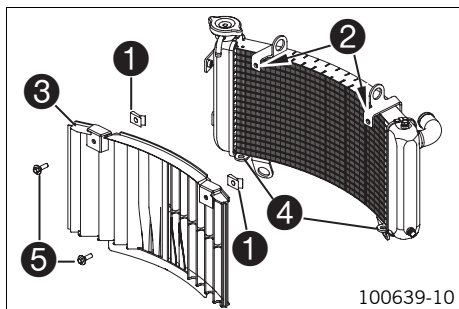
- Pull nuts ❸ off of the radiator.



**Tip**

Insert the screws into the holes of the radiator guard and mount the nuts. This ensures that all required parts are available when needed.

## Installing the radiator guard



100639-10

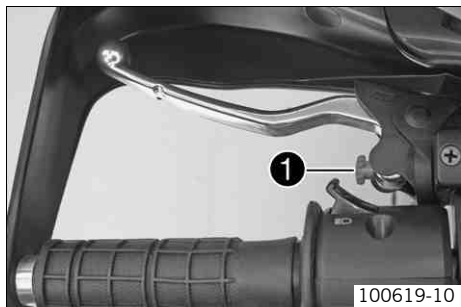
- Place nuts ❶ onto tabs ❷ of the radiator.
- Hook radiator guard ❸ into holes ❹ at the bottom and swing up to the radiator.
- Mount and tighten screws ❺.

Guideline

Remaining chassis nuts	M6	15 Nm (11.1 lbf ft)
------------------------	----	------------------------



## Adjusting the basic setting of the clutch lever



100619-10

- Adjust the basic setting of the clutch lever to your hand size by turning adjusting screw ❶.

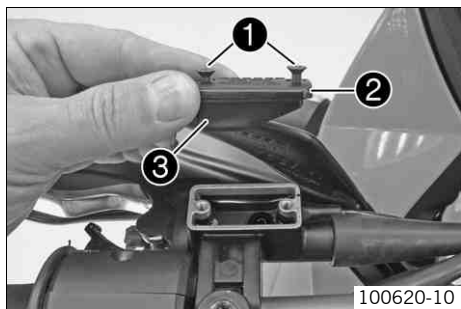
### **i** Info

Turn the adjusting screw clockwise to increase the distance between the clutch lever and the handlebar.  
Turn the adjusting screw counterclockwise to decrease the distance between the clutch lever and the handlebar.  
The range of adjustment is limited.  
Turn the adjusting screw by hand only, and do not apply any force.  
Do not make any adjustments while riding!

## Checking/rectifying the fluid level of the hydraulic clutch

### **i** Info

The fluid level rises with increasing wear of the clutch lining disc.  
Do not use brake fluid.



100620-10

- Move the clutch fluid reservoir mounted on the handlebar to a horizontal position.
- Remove screws ❶.
- Remove cover ❷ with membrane ❸.
- Check the fluid level.

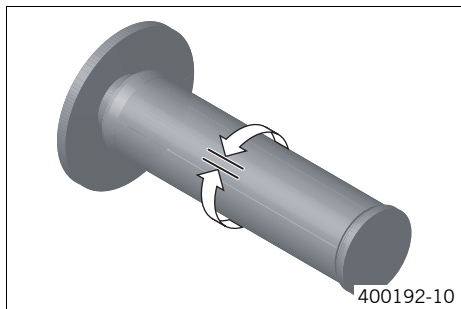
Fluid level below top edge of container	4 mm (0.16 in)
---	----------------

- » If the coolant level does not meet specifications:
  - Correct the fluid level of the hydraulic clutch.

Hydraulic fluid (15) (☛ p. 200)
---------------------------------

- Position the cover with the membrane. Mount and tighten the screws.

## Checking the play in the gas Bowden cable



- Move the handlebar to the straight-ahead position. Move the throttle grip backwards and forwards to ascertain the play in the gas Bowden cable.

Play in gas Bowden cable	3... 5 mm (0.12... 0.2 in)
--------------------------	----------------------------

- » If the gas Bowden cable play does not meet specifications:
  - Adjust the play in the gas Bowden cable. 🛠️ (📖 p. 153)



### **Danger**

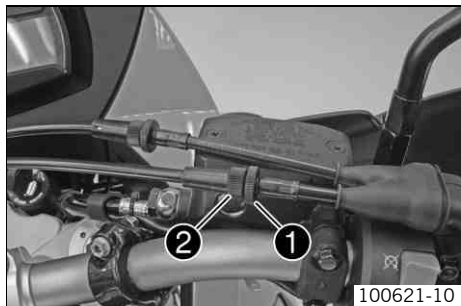
**Danger of poisoning** Exhaust gases are poisonous and can result in unconsciousness and/or death.

- When running the engine, always make sure there is sufficient ventilation, and do not start or run the engine in a closed space without an effective exhaust extraction system.
- Start the engine and let it run idle. Move the handlebar to and fro over the entire steering range.

The idle speed must not change.
---------------------------------

- » If the idle speed changes:
  - Adjust the play in the gas Bowden cable. 🛠️ (📖 p. 153)

## Adjusting the play in the gas Bowden cable




- Move the handlebar to the straight-ahead position.
- Use the KTM diagnostics tool to set the throttle stepper motor to the neutral position.
- Loosen counter nut ❶.
- Set the play in the gas Bowden cable by turning adjusting screw ❷.

### Guideline

Play in gas Bowden cable	3... 5 mm (0.12... 0.2 in)
--------------------------	----------------------------

- Tighten counter nut ❶.

## Checking the engine oil level

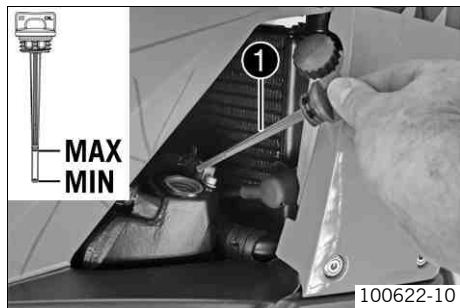
- Jack up the vehicle on the center stand. ( p. 66)



### Danger

**Danger of poisoning** Exhaust gases are poisonous and can result in unconsciousness and/or death.

- When running the engine, always make sure there is sufficient ventilation, and do not start or run the engine in a closed space without an effective exhaust extraction system.
- 
- Start the engine and run it until it reaches operating temperature.
    - ✓ Six bars of the temperature display light up.



- Switch off the engine.
- Unscrew oil dipstick ❶, wipe it off with a cloth and screw it back in all the way. Unscrew the oil dipstick and read off the engine oil level.

The engine oil level must be between the **MIN** and the **MAX** marking on the dipstick.

- » If the engine oil level is not at the specified level:
  - Add engine oil. (☞ p. 161)
- Replace the oil dipstick.

## Changing the engine oil and filter, cleaning the oil screens ☞

- Drain engine oil, clean oil screens. ☞ (☞ p. 154)
- Install the oil filter. ☞ (☞ p. 159)
- Install the left fuel tank. ☞ (☞ p. 138)
- Fill up with engine oil. ☞ (☞ p. 159)
- Install the underride guard. ☞ (☞ p. 110)

## Draining engine oil, cleaning oil screens ☞



### Warning

**Danger of scalding** Engine oil and gear oil get very hot when the motorcycle is driven.

- Wear suitable protective clothing and gloves. If you scald yourself, hold the affected area under cold water immediately.



### Warning

**Environmental hazard** Hazardous substances cause environmental damage.

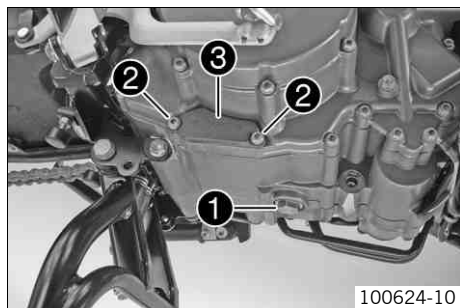
- Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.



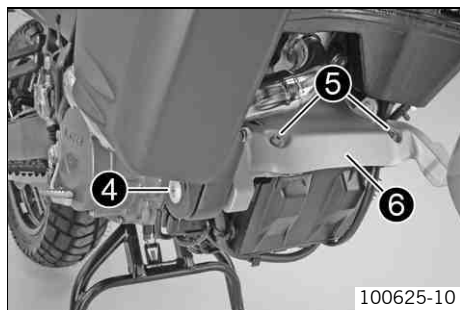
## Info

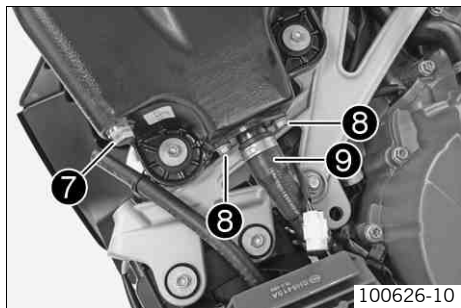
Drain the engine oil only when the engine is warm.

- Remove the underride guard. (🔧 p. 109)
- Remove the left fuel tank. (🔧 p. 137)
- Place a suitable container under the engine.
- Remove the oil drain plug **1** with the magnet and seal ring.
- Fully drain the engine oil out of the engine.
- Remove screws **2** and take off cover **3**.
- Pull the oil screen out of the engine case with pliers.



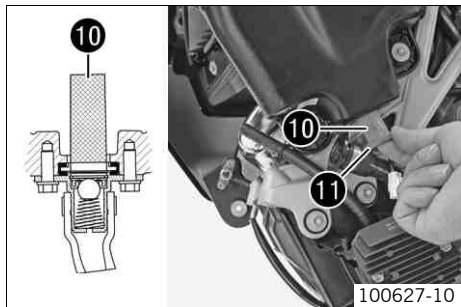
- Remove screw **4** on the right fuel tank and remove screws **5**. Remove holder **6**.





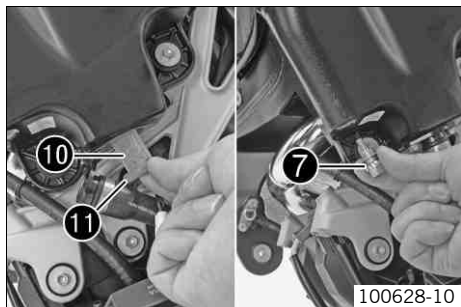
100626-10

- Raise the vehicle off of the center stand. (☞ p. 67)
- Place the vehicle on the side stand.
- Place a suitable container under the engine.
- Remove oil drain plug 7.
- Fully drain the engine oil out of the engine.
- Remove screws 8 and move oil line 9 to one side.



100627-10

- Pull oil sieve 10 out of the oil tank.
- Remove the oil filter. ☞ (☞ p. 158)
- Clean all oil screens and oil drain plugs with a magnet.
- Clean all sealing surfaces.



100628-10

- Check seal ring 11 of the oil sieve for damage and correct seating.
- Insert oil sieve 10 into the oil tank.
- Position the oil line. Mount and tighten the screws.

Guideline

Remaining chassis screws	M6	10 Nm (7.4 lbf ft)
--------------------------	----	--------------------

- Mount oil drain plug 7 with the magnet and new seal and tighten.

### Guideline

Oil drain plug with magnet	M12x1.5	25 Nm (18.4 lbf ft)
----------------------------	---------	------------------------

- Mount oil drain plug ❶ with the magnet and new seal ring and tighten.

### Guideline

Oil drain plug with magnet	M22x1.5	35 Nm (25.8 lbf ft)
----------------------------	---------	------------------------

- Slide oil sieve ❷ into the engine case with the **TOP** marking facing up.
- Check the form ring in cover ❸ for damage and correct seating.
- Position cover ❸. Mount and tighten the screws.

### Guideline

Screw, clutch cover	M6	10 Nm (7.4 lbf ft)
---------------------	----	--------------------

- Position the bracket ❹. Mount and tighten screws ❺.

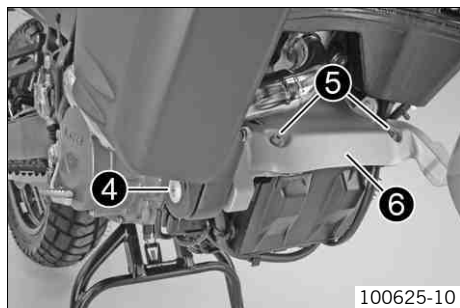
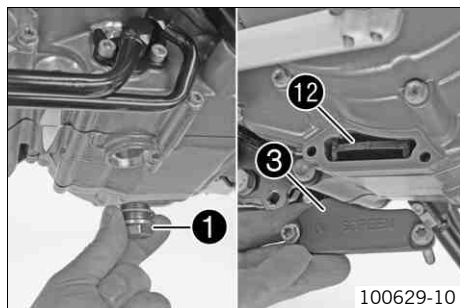
### Guideline

Remaining chassis screws	M8	25 Nm (18.4 lbf ft)
--------------------------	----	------------------------

- Mount and tighten screw ❻ on the right fuel tank.

### Guideline

Screw, fuel tank	M8	15 Nm (11.1 lbf ft)
------------------	----	------------------------



## Removing the oil filter



### Warning

**Danger of scalding** Engine oil and gear oil get very hot when the motorcycle is driven.

- Wear suitable protective clothing and gloves. If you scald yourself, hold the affected area under cold water immediately.



### Warning

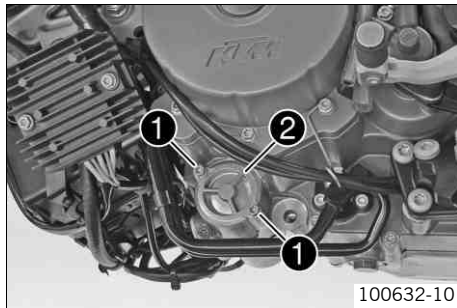
**Environmental hazard** Hazardous substances cause environmental damage.

- Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

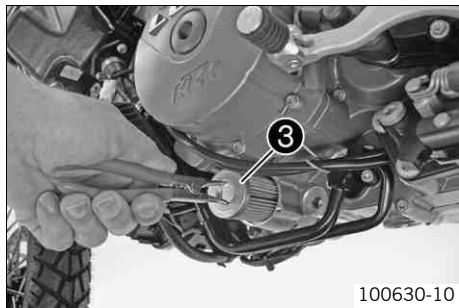
### Condition

The underride guard has been removed.

- Place a suitable container under the engine.
- Remove screws **1**. Take off oil filter cover **2** with the O-ring.





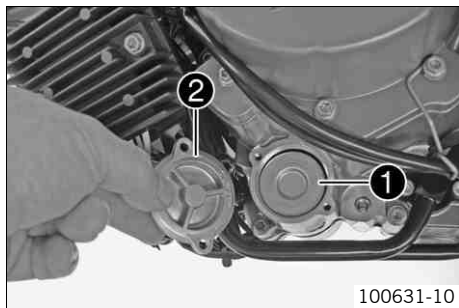


- Pull oil filter ③ out of the oil filter housing.

Circlip pliers reverse (51012011000)

- Completely drain the engine oil.
- Thoroughly clean the parts and sealing surface.

## Installing the oil filter ↗



- Insert oil filter ①.
- Lubricate the O-ring of the oil filter cover. Install oil filter cover ②.
- Mount and tighten the screws.

Guideline

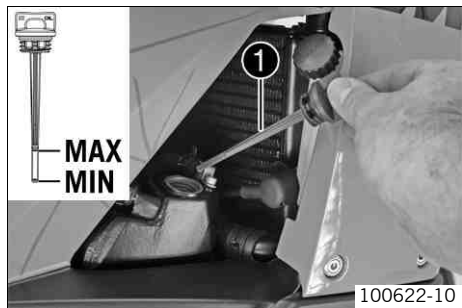
Remaining engine screws

M5

6 Nm (4.4 lbf ft)

## Filling up with engine oil ↗

- i** **Info**  
Too little engine oil or poor-quality engine oil results in premature wear to the engine.



- The oil must be added in two steps.

Engine oil	3.0 l (3.2 qt.)	External temperature: ≥ 0 °C (≥ 32 °F)	Engine oil (SAE 10W/50) (☛ p. 199)
		External temperature: < 0 °C (< 32 °F)	Engine oil (SAE 5W/40) (☛ p. 199)

- Remove the dipstick ❶ and add engine oil.

Engine oil (1st quantity) approx.	2.50 l (2.64 qt.)	External temperature: ≥ 0 °C (≥ 32 °F)	Engine oil (SAE 10W/50) (☛ p. 199)
		External temperature: < 0 °C (< 32 °F)	Engine oil (SAE 5W/40) (☛ p. 199)

- Replace the oil dipstick.
- Jack up the vehicle on the center stand. (☛ p. 66)



### Danger

**Danger of poisoning** Exhaust gases are poisonous and can result in unconsciousness and/or death.

- When running the engine, always make sure there is sufficient ventilation, and do not start or run the engine in a closed space without an effective exhaust extraction system.
- 
- Start the engine and run it until it reaches operating temperature.
    - ✓ Six bars of the temperature display light up.
  - Check the lubrication system for leaks.

- Switch off the engine.
- Remove the oil dipstick and wipe it off with a cloth.
- Add engine oil to the **MAX** marking on the oil dipstick.

Engine oil (2nd quantity) approx.	0.50 l (0.53 qt.)	External temperature: ≥ 0 °C (≥ 32 °F)	Engine oil (SAE 10W/50) (☛ p. 199)
		External temperature: < 0 °C (< 32 °F)	Engine oil (SAE 5W/40) (☛ p. 199)

- Replace the oil dipstick.

## Adding engine oil



### Info

Too little engine oil or poor-quality engine oil results in premature wear to the engine. The engine oil level must be corrected when the engine is warm.

- Remove oil dipstick ❶ and add engine oil to the **MAX** marking.

### Condition

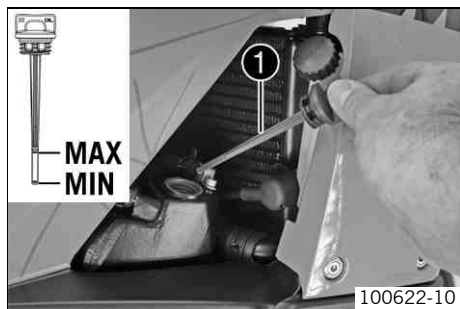
External temperature: ≥ 0 °C (≥ 32 °F)

Engine oil (SAE 10W/50) (☛ p. 199)

### Condition

External temperature: < 0 °C (< 32 °F)

Engine oil (SAE 5W/40) (☛ p. 199)



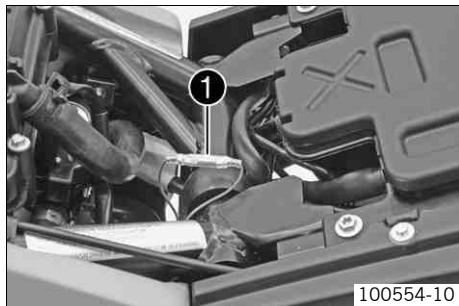
## **i** Info

For optimal performance of the engine oil, do not mix different types of engine oil.

We recommend changing the engine oil, if necessary.

- Replace the oil dipstick.

## Ignition curve plug-in connector



Plug-in connector ❶ is located under the seat close to where the top of the shock absorber is attached.

By disconnecting the plug-in connector, the ignition curve for fuel with an octane rating below 95 (ROZ 95 / RON 95 / PON 91) is activated. While the engine will have a slightly lower power output, this setting prevents engine damage by hindering spark knocking due to poor fuel quality.

### Possible states

- Plug-in connector disconnected – Fuel with an octane rating of 80 to 94 (RON) can be used for one tank full.
- Plug-in connector connected – Fuel with an octane rating of 95 or higher can be used.

## Adjusting the ignition curve to the fuel quality

- Switch off the ignition by turning the black ignition key to the position ☒.
- Remove the seat. (🔧 p. 67)

### To activate the ignition curve for low octane fuel:

#### Note






**Engine damage** Low-quality fuel damages the engine.





- Operate the vehicle with fuel with an octane rating below 95 (ROZ 95 / RON 95 / PON 91) for no more than one tank full.
- The ignition curve must be adjusted to low octane fuel.





- Disconnect plug-in connector ❶. (Figure 100554-10☞ p. 162)
  - ✓ Plug-in connector disconnected – Fuel with an octane rating of 80 to 94 (RON) can be used for one tank full. (☞ p. 162)

**Activate the ignition curve for fuel with an octane rating of 95 or higher (ROZ 95 / RON 95 / PON 91):**






- Connect plug-in connector ❶. (Figure 100554-10☞ p. 162)
  - ✓ Plug-in connector connected – Fuel with an octane rating of 95 or higher can be used. (☞ p. 162)
- Mount the seat. (☞ p. 68)






<b>Flash code of immobilizer indicator lamp</b>	 <p>12 Immobilizer indicator lamp flashes 1x short, 1 second pause, 2x short</p>
<b>Error level condition</b>	<p>All ignition keys inactive</p>
<b>Flash code of immobilizer indicator lamp</b>	 <p>13 Immobilizer indicator lamp flashes 1x short, 1 second pause, 3x short</p>
<b>Error level condition</b>	<p>Malfunction, antenna of immobilizer control unit</p>
<b>Flash code of immobilizer indicator lamp</b>	 <p>14 Immobilizer indicator lamp flashes 1x short, 1 second pause, 4x short</p>
<b>Error level condition</b>	<p>Malfunction in transponder of black ignition key</p>
<b>Flash code of immobilizer indicator lamp</b>	 <p>15 Immobilizer indicator lamp flashes 1x short, 1 second pause, 5x short</p>
<b>Error level condition</b>	<p>Black ignition key inactive</p>
<b>Flash code of immobilizer indicator lamp</b>	 <p>16 Immobilizer indicator lamp flashes 1x short, 1 second pause, 6x short</p>
<b>Error level condition</b>	<p>Malfunction, encryption, immobilizer control unit to black ignition key</p>






<b>Flash code of immobilizer indicator lamp</b>	 <p>21 Immobilizer indicator lamp flashes 2x short, 1 second pause, 1x short</p>
<b>Error level condition</b>	Immobilizer control unit not activated
<b>Flash code of immobilizer indicator lamp</b>	 <p>31 Immobilizer indicator lamp flashes 3x short, 1 second pause, 1x short</p>
<b>Error level condition</b>	Malfunction, encryption query from EFI control unit to immobilizer control unit
<b>Flash code of immobilizer indicator lamp</b>	 <p>32 Immobilizer indicator lamp flashes 3x short, 1 second pause, 2x short</p>
<b>Error level condition</b>	Malfunction in CAN bus communication
<b>Flash code of immobilizer indicator lamp</b>	 <p>60 Immobilizer indicator lamp flashes 6x short</p>
<b>Error level condition</b>	<b>E<sup>2</sup>PROM</b> malfunction






<b>Flash code of warning lamp FI (MIL)</b>	 <p>45 Warning lamp <b>FI (MIL)</b> flashes 4x long, 5x short</p>
<b>Error level condition</b>	Heating lambda sensor cylinder 1, sensor 1 - interruption/short circuit to ground
	Heating lambda sensor cylinder 1, sensor 1 - input signal too high
<b>Flash code of warning lamp FI (MIL)</b>	 <p>46 Warning lamp <b>FI (MIL)</b> flashes 4x long, 6x short</p>
<b>Error level condition</b>	Heating lambda sensor cylinder 2, sensor 1 - interruption/short circuit to ground
	Heating lambda sensor cylinder 2, sensor 1 - input signal too high
<b>Flash code of warning lamp FI (MIL)</b>	 <p>09 Warning lamp <b>FI (MIL)</b> flashes 9x short</p>
<b>Error level condition</b>	Manifold absolute pressure sensor cylinder 1 - input signal too low
	Manifold absolute pressure sensor cylinder 1 - input signal too high
<b>Flash code of warning lamp FI (MIL)</b>	 <p>13 Warning lamp <b>FI (MIL)</b> flashes 1x long, 3x short</p>
<b>Error level condition</b>	Intake air temperature sensor - input signal too low
	Intake air temperature sensor - input signal too high






<b>Flash code of warning lamp FI (MIL)</b>	 12 Warning lamp <b>FI (MIL)</b> flashes 1x long, 2x short
<b>Error level condition</b>	Coolant temperature sensor - input signal too low Coolant temperature sensor - input signal too high
<b>Flash code of warning lamp FI (MIL)</b>	 06 Warning lamp <b>FI (MIL)</b> flashes 6x short
<b>Error level condition</b>	Throttle valve sensor circuit A - input signal too low Throttle valve sensor circuit A - input signal too high
<b>Flash code of warning lamp FI (MIL)</b>	 17 Warning lamp <b>FI (MIL)</b> flashes 1x long, 7x short
<b>Error level condition</b>	Lambda sensor cylinder 1, sensor 1 - malfunction in circuit
<b>Flash code of warning lamp FI (MIL)</b>	 18 Warning lamp <b>FI (MIL)</b> flashes 1x long, 8x short
<b>Error level condition</b>	Lambda sensor cylinder 1, sensor 1 - malfunction in circuit
<b>Flash code of warning lamp FI (MIL)</b>	 33 Warning lamp <b>FI (MIL)</b> flashes 3x long, 3x short
<b>Error level condition</b>	Injection valve cylinder 1 - malfunction in circuit

<b>Flash code of warning lamp FI (MIL)</b>	 34 Warning lamp <b>FI (MIL)</b> flashes 3x long, 4x short
<b>Error level condition</b>	Injection valve cylinder 2 - malfunction in circuit
<b>Flash code of warning lamp FI (MIL)</b>	 07 Warning lamp <b>FI (MIL)</b> flashes 7x short
<b>Error level condition</b>	Throttle position sensor circuit B - input signal too low
	Throttle position sensor circuit B - input signal too high
<b>Flash code of warning lamp FI (MIL)</b>	 02 Warning lamp <b>FI (MIL)</b> flashes 2x short
<b>Error level condition</b>	Circuit ignition pulse generator - malfunction in circuit
<b>Flash code of warning lamp FI (MIL)</b>	 37 Warning lamp <b>FI (MIL)</b> flashes 3x long, 7x short
<b>Error level condition</b>	Ignition coil cylinder 1 - malfunction in circuit
<b>Flash code of warning lamp FI (MIL)</b>	 38 Warning lamp <b>FI (MIL)</b> flashes 3x long, 8x short
<b>Error level condition</b>	Ignition coil cylinder 2 - malfunction in circuit

Flash code of warning lamp FI (MIL)	 54 Warning lamp <b>FI (MIL)</b> flashes 5x long, 4x short
Error level condition	Secondary air valve - interruption/short circuit to ground
	Secondary air valve - input signal too high
Flash code of warning lamp FI (MIL)	 49 Warning lamp <b>FI (MIL)</b> flashes 4x long, 9x short
Error level condition	Idle control system - malfunction in circuit
Flash code of warning lamp FI (MIL)	 24 Warning lamp <b>FI (MIL)</b> flashes 2x long, 4x short
Error level condition	Power supply - malfunction in circuit
Flash code of warning lamp FI (MIL)	 50 <b>FI</b> Warning lamp ( <b>MIL</b> ) flashes 5x long
Error level condition	Throttle position sensor actuator circuit B - malfunction in circuit
Flash code of warning lamp FI (MIL)	 68 Warning lamp <b>FI (MIL)</b> flashes 6x long, 8x short
Error level condition	Manifold absolute pressure sensor cylinder 1 - connection leaks

<b>Flash code of warning lamp FI (MIL)</b>	 69 Warning lamp <b>FI (MIL)</b> flashes 6x long, 9x short
<b>Error level condition</b>	Manifold absolute pressure sensor cylinder 2 - connection leaks
<b>Flash code of warning lamp FI (MIL)</b>	 14 Warning lamp <b>FI (MIL)</b> flashes 1x long, 4x short
<b>Error level condition</b>	Ambient air pressure sensor - input signal too low
	Ambient air pressure sensor - input signal too high
<b>Flash code of warning lamp FI (MIL)</b>	 41 Warning lamp <b>FI (MIL)</b> flashes 4x long, 1x short
<b>Error level condition</b>	Fuel pump control - interruption/short circuit to ground
	Fuel pump control - input signal too high
<b>Flash code of warning lamp FI (MIL)</b>	 25 Warning lamp <b>FI (MIL)</b> flashes 2x long, 5x short
<b>Error level condition</b>	Side stand (A/D type) - malfunction in circuit
<b>Flash code of warning lamp FI (MIL)</b>	 15 Warning lamp <b>FI (MIL)</b> flashes 1x long, 5x short
<b>Error level condition</b>	Rollover sensor (A/D type) - input signal too low
	Rollover sensor (A/D type) - input signal too high

Flash code of warning lamp FI (MIL)	 81 Warning lamp <b>FI (MIL)</b> flashes 8x long, 1x short
Error level condition	Immobilizer control unit - malfunction in circuit
Flash code of warning lamp FI (MIL)	 11 Warning lamp <b>FI (MIL)</b> flashes 1x long, 1x short
Error level condition	Manifold absolute pressure sensor cylinder 2 - input signal too low
	Manifold absolute pressure sensor cylinder 2 - input signal too high
Flash code of warning lamp FI (MIL)	 91 Warning lamp <b>FI (MIL)</b> flashes 9x long, 1x short
Error level condition	Malfunction in CAN bus communication

Faults	Possible cause	Action
The engine does not turn when the starter button is pressed	Operating error	– Carry out the start procedure. (☞ p. 49)
	Battery discharged	– Recharge the battery. 🛠️ (☞ p. 113) – Check the closed current. 🛠️
	<b>IGNITION, FUEL PUMP, or POWER RELAY</b> fuse blown	– Change the fuses in the fuse box. (☞ p. 120)
	Main fuse burned out	– Change the main fuse. (☞ p. 117)
	Ignition/steering lock or emergency OFF switch defective	– Check the emergency OFF switch. 🛠️ – Check the ignition/steering lock. 🛠️
	Defect in safety start system	– Check the safety start system. 🛠️
	Immobilizer control unit not activated	– Activate the immobilizer control unit. 🛠️
	Malfunction in CAN bus communication	– Check the CAN bus communication. 🛠️
	Combination instrument defective	– Check the combination instrument. 🛠️
	Control unit for electric start lock defective	– Check the control unit of the electric start lock. 🛠️
Engine turns only if the clutch lever is drawn	The vehicle is in gear	– Shift the transmission to neutral.
	Defect in safety start system	– Check the safety start system. 🛠️
Engine turns although a gear is engaged	Defect in safety start system	– Check the safety start system. 🛠️
Engine turns but does not start	Coupling of fuel hose connection not connected	– Reconnect coupling of fuel hose connection.
	Socket connector of cable harness oxidized	– Clean the socket connector and treat it with contact spray.
	Defect in fuel injection system	– Read out the fault memory using the KTM diagnostics tool. 🛠️

Faults	Possible cause	Action
Engine has too little power	Air filter very dirty	– Change the air filter. 🛠️
	Defect in fuel injection system	– Read out the fault memory using the KTM diagnostics tool. 🛠️
	Ignition curve for low octane fuel activated	– Refuel with fuel with an octane rating of 95 or higher. – Connect plug-in connector ❶. (Figure 100554-10 📄 p. 162)
Engine overheats	Too little coolant in cooling system	– Check the cooling system for leaks. 🛠️ – Check the coolant level in the radiator. (📄 p. 143)
	Radiator fins very dirty	– Clean radiator fins.
	Foam formation in cooling system	– Drain the coolant. 🛠️ (📄 p. 145) – Fill/bleed the cooling system. 🛠️ (📄 p. 147)
	Buckled or damaged radiator hose	– Change the radiator hose. 🛠️
	Fuse <b>FAN</b> blown	– Change the fuses in the fuse box. (📄 p. 120)
	Thermostat defective	– Check the thermostat. 🛠️
	Defect in radiator fan system	– Check the radiator fan system. 🛠️
	Air in cooling system	– Fill/bleed the cooling system. 🛠️ (📄 p. 147)
Warning lamp <b>FI (MIL)</b> lights up/flashes	Defect in fuel injection system	– Read out the fault memory using the KTM diagnostics tool. 🛠️
Engine dies during a trip	Lack of fuel	– Refuel. (📄 p. 59)
	<b>IGNITION, FUEL PUMP, or POWER RELAY</b> fuse blown	– Change the fuses in the fuse box. (📄 p. 120)
ABS warning lamp lights up (990 Adventure)	ABS fuse blown	– Change the ABS fuses. (📄 p. 119)

Faults	Possible cause	Action
ABS warning lamp lights up (990 Adventure)	Wheel speeds of front and rear wheels differ greatly	– Stop, switch off the ignition, start again.
	Malfunction in ABS	– Read out the ABS fault memory using the KTM diagnostics tool. 🛠️
High oil consumption	Engine oil level too high	– Check the engine oil level. (🔧 p. 153)
	Engine oil too thin (low viscosity)	– Change the engine oil and filter, clean the oil screens. 🛠️ (🔧 p. 154)
Headlight and parking light not functioning	Fuse <b>H/L BEAM, POSITION</b> blown	– Change the fuses in the fuse box. (🔧 p. 120)
Turn signal, hazard warning flasher, brake light and horn are not functional	Fuse <b>HORN, BRAKE LIGHT</b> blown	– Change the fuses in the fuse box. (🔧 p. 120)
Battery discharged	Ignition not switched off when vehicle was parked	– Recharge the battery. 🛠️ (🔧 p. 113)
	Battery is not charged by generator	– Check the charging voltage. 🛠️
Combination instrument shows nothing in the display	Fuse <b>ACC1, CLOCK</b> blown	– Change the fuses in the fuse box. (🔧 p. 120)
Speedometer in combination instrument not functioning	Wiring harness of wheel revolution counter damaged or plug-in connector oxidized	– Check the wheel speed sensor. 🛠️



## Cleaning motorcycle

### Note

**Material damage** Damage and destruction of components by high-pressure cleaning equipment.

- Never clean the vehicle with high-pressure cleaning equipment or a strong water-jet. The excessive pressure can penetrate electrical components, socket connects, throttle cables, and bearings, etc., and can damage or destroy these parts.



### Warning

**Environmental hazard** Hazardous substances cause environmental damage.

- Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.



### Info

If you clean the motorcycle regularly, its value and appearance are maintained over a long period.  
Avoid direct sunshine on the motorcycle during cleaning.

- Before you clean the motorcycle, close off the exhaust system to prevent penetration by water.
- First remove coarse dirt particles with a gentle water spray.
- Spray very dirty areas with a normal motorcycle cleaner and then clean with a paintbrush.

Motorcycle cleaner (☛ p. 203)



### Info

Use warm water containing normal motorcycle cleaner and a soft sponge.  
If the vehicle was operated in road salt, clean it with cold water. Warm water would enhance the corrosive effects of salt.

- After the motorcycle has been thoroughly cleaned with a gentle jet of water, it should be dried with compressed air and a cloth.



## Warning

**Danger of accidents** Reduced braking efficiency due to wet or dirty brakes.

- Clean or dry dirty or wet brakes by riding and braking gently.

- After cleaning, ride the vehicle a short distance until the engine warms up, and then apply the brakes.



## Info

The heat produced causes water at inaccessible positions in the engine and on the brakes to evaporate.

- After the motorcycle has cooled off, lubricate all moving parts and bearings.
- Clean the chain. (🔧 p. 80)
- Treat bare metal parts (except for brake discs and exhaust system) with anti-corrosion materials.

Cleaning and polishing materials for metal, rubber and plastic (🔧 p. 202)

- Treat all painted parts with a mild paint polish.

High-luster polish for paint (🔧 p. 202)

- Oil the ignition/steering lock, tank lock, and seat lock.

Universal oil spray (🔧 p. 203)

## Conserving for winter operation

### Info

If you use the motorcycle in winter, you must expect salt on the roads. You should therefore take precautions against aggressive road salt.

If the vehicle was operated in road salt, clean it with cold water. Warm water would enhance the corrosive effects of salt.

- 
- Clean the motorcycle. (🔧 p. 175)
  - Treat the engine, the swingarm, and all other bare or galvanized parts (except brake discs) with a wax-based anti-corrosion substance.

### Info

To prevent serious reduction of the braking efficiency, make sure no anti-corrosion substance gets on to the brake discs. After use on salted roads, clean the motorcycle thoroughly with cold water and dry it properly.

- 
- Clean the chain. (🔧 p. 80)

## Storage

**i** Info

If you want to garage the motorcycle for a longer period, take the following actions.

Before storing the motorcycle, check all parts for function and wear. If service, repairs or replacements are necessary, you should do this during the storage period (less workshop overload). In this way, you can avoid long workshop waiting times at the start of the new season.

- Make sure the fuel tanks are as empty as possible so that you can fill up with fresh fuel when you put the motorcycle back into operation.
- Clean the motorcycle. (🔧 p. 175)
- Change the engine oil and filter, clean the oil screens. 🛠️ (🔧 p. 154)
- Check the antifreeze. 🛠️ (🔧 p. 144)
- Check the tire air pressure. (🔧 p. 107)
- Remove the battery. 🛠️ (🔧 p. 110)
- Recharge the battery. 🛠️ (🔧 p. 113)

## Guideline

Storage temperature of battery without direct sunshine	0... 35 °C (32... 95 °F)
--	--------------------------

- The storage place should be dry and not subject to large temperature differences.
- Jack up the vehicle on the center stand. (🔧 p. 66)
- Cover the motorcycle with a tarp or cover that is permeable to air.

**i** Info

Do not use non-porous materials since they prevent humidity from escaping, thus causing corrosion.

Avoid running the engine for a short time only. Since the engine cannot warm up properly, the water vapor produced during combustion condenses and causes valves and exhaust system to rust.

## Putting into operation after storage

- Raise the vehicle off of the center stand. (🔧 p. 67)
- Recharge the battery. 🔌 (🔧 p. 113)
- Install the battery. 🔌 (🔧 p. 112)
- Set the clock. (🔧 p. 29)
- Refuel. (🔧 p. 59)
- Carry out checks before putting into operation. (🔧 p. 48)
- Take a test ride.

Design	2-cylinder 4-stroke Otto motor, 75° V arrangement, water-cooled
Displacement	999 cm <sup>3</sup> (60.96 cu in)
Stroke	62.4 mm (2.457 in)
Bore	101 mm (3.98 in)
Compression ratio	11.5:1
Control	DOHC, 4 valves per cylinder, chain-driven
Valve - diameter	
Exhaust	33 mm (1.3 in)
Intake	38 mm (1.5 in)
Valve clearance	
Exhaust at: 20 °C (68 °F)	0.25... 0.30 mm (0.0098... 0.0118 in)
Intake at: 20 °C (68 °F)	0.10... 0.15 mm (0.0039... 0.0059 in)
Crankshaft bearing	Sleeve bearing
Conrod bearing	Sleeve bearing
Piston	Forged light alloy
Piston ring	1 L-ring, 1 tapered compression piston ring, 1 oil scraper ring
Engine lubrication	Pressure circulation lubrication with 2 rotor pumps
Primary transmission	35:67
Clutch	Multidisc clutch in oil bath/hydraulically activated
Transmission	6-gears, claw-shifted
Transmission ratio	
1st gear	12:35
2nd gear	15:32
3rd gear	18:30
4th gear	20:27

5th gear	24:27
6th gear	27:26
Mixture preparation	Electronic fuel injection
Ignition system	Contactless controlled fully electronic ignition with digital ignition adjustment
Generator	12 V, 450 W
Spark plug	NGK LKAR8BI9
Spark plug electrode gap	0.8 mm (0.031 in)
Cooling	Water cooling, permanent circulation of coolant by water pump
Cold start device	Electric starter

## Capacity- engine oil

Engine oil	3.0 l (3.2 qt.)	External temperature: $\geq 0\text{ }^{\circ}\text{C}$ ( $\geq 32\text{ }^{\circ}\text{F}$ )	Engine oil (SAE 10W/50) (☛ p. 199)
		External temperature: $< 0\text{ }^{\circ}\text{C}$ ( $< 32\text{ }^{\circ}\text{F}$ )	Engine oil (SAE 5W/40) (☛ p. 199)

## Capacity - coolant

Coolant	2.10 l (2.22 qt.)	Coolant (☛ p. 198)
		Coolant (mixed ready to use) (☛ p. 198)

# TECHNICAL DATA - ENGINE TIGHTENING TORQUES

Hose clip, intake flange	M4	1.5 Nm (1.11 lbf ft)	–
Oil jet	M4	6 Nm (4.4 lbf ft)	<b>Loctite® 243™</b>
Remaining engine screws	M5	6 Nm (4.4 lbf ft)	–
Screw, bearing retainer	M5	6 Nm (4.4 lbf ft)	<b>Loctite® 243™</b>
Screw, connecting angle on valve cover	M5	3 Nm (2.2 lbf ft)	<b>Loctite® 243™</b>
Screw, gear sensor	M5	3 Nm (2.2 lbf ft)	<b>Loctite® 243™</b>
Screw, locking lever	M5	6 Nm (4.4 lbf ft)	<b>Loctite® 243™</b>
Nut, cylinder head	M6	8 Nm (5.9 lbf ft)	–
Plug, vacuum connection	M6	5 Nm (3.7 lbf ft)	<b>Loctite® 243™</b>
Remaining engine screws	M6	10 Nm (7.4 lbf ft)	–
Screw, bearing bolt in generator cover	M6	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>
Screw, camshaft bearing support	M6	10 Nm (7.4 lbf ft)	–
Screw, clutch cover	M6	10 Nm (7.4 lbf ft)	–
Screw, clutch spring	M6	10 Nm (7.4 lbf ft)	–
Screw, engine case	M6	10 Nm (7.4 lbf ft)	–
Screw, freewheel holder	M6	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>
Screw, freewheel ring	M6	13 Nm (9.6 lbf ft)	<b>Loctite® 648™</b>
Screw, generator cover	M6	10 Nm (7.4 lbf ft)	–
Screw, oil pump housing	M6	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>
Screw, pulse generator	M6	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>
Screw, shift drum locating	M6	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>
Screw, shift lever	M6	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>
Screw, starter motor	M6	10 Nm (7.4 lbf ft)	–
Screw, stator	M6	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>



# TECHNICAL DATA - ENGINE TIGHTENING TORQUES

Screw, valve cover	M6	10 Nm (7.4 lbf ft)	–
Screw, water pump cover	M6	10 Nm (7.4 lbf ft)	–
Screw, water pump wheel	M6	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>
Stud, cylinder head in cylinder	M6		<b>Loctite® 243™</b>
Stud, cylinder head in engine case	M6	10 Nm (7.4 lbf ft)	–
Vacuum connection	M6	5 Nm (3.7 lbf ft)	<b>Loctite® 243™</b>
Oil jet	M6x0.75	4 Nm (3 lbf ft)	<b>Loctite® 243™</b>
Bearing bolt, timing chain guide rail	M8	15 Nm (11.1 lbf ft)	<b>Loctite® 243™</b>
Bearing bolt, timing chain tensioning rail	M8	20 Nm (14.8 lbf ft)	<b>Loctite® 243™</b>
Screw, camshaft bearing support	M8	Step 1 10 Nm (7.4 lbf ft) Step 2 18 Nm (13.3 lbf ft)	–
Screw, clutch cover	M8	15 Nm (11.1 lbf ft)	–
Stud, exhaust flange	M8	15 Nm (11.1 lbf ft)	–
Bearing bolt, timing gears	M10	30 Nm (22.1 lbf ft)	–
Nut, cylinder head (exterior)	M10	Step 1 23 Nm (17 lbf ft) Step 2 34 Nm (25.1 lbf ft)	Only applies when using: Box wrench attachment 13mm (60029081000)
Nut, cylinder head on chain shaft	M10	Step 1 25 Nm (18.4 lbf ft) Step 2 38 Nm (28 lbf ft)	lubricated with engine oil
Plug, clutch lubrication	M10	15 Nm (11.1 lbf ft)	–

# TECHNICAL DATA - ENGINE TIGHTENING TORQUES

Screw, cylinder head	M10	Step 1 25 Nm (18.4 lbf ft) Step 2 38 Nm (28 lbf ft)	<b>Loctite® 243™</b>
Stud, cylinder head in engine case	M10	20 Nm (14.8 lbf ft)	–
Oil pressure sensor	M10x1	10 Nm (7.4 lbf ft)	–
Screw, conrod bearing	M10x1	Step 1 25 Nm (18.4 lbf ft) Step 2 30 Nm (22.1 lbf ft) Step 3 60°	–
Coolant temperature sensor	M12x1.5	12 Nm (8.9 lbf ft)	–
Plus, cylinder head (2nd cylinder)	M12x1.5	25 Nm (18.4 lbf ft)	–
Spark plug	M12x1.5	12 Nm (8.9 lbf ft)	–
Plug, oil filter housing	M14x1.5	15 Nm (11.1 lbf ft)	<b>Loctite® 243™</b>
Bleeder flange, generator cover	M16x1.5	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>
Plug, timing-chain tensioner	M16x1.5	20 Nm (14.8 lbf ft)	–
Rotor screw	M16x1.5	150 Nm (110.6 lbf ft)	<b>Loctite® 243™</b>
Nut, balancer shaft	M20x1.5	120 Nm (88.5 lbf ft)	<b>Loctite® 243™</b>
Nut, engine sprocket	M20x1.5	100 Nm (73.8 lbf ft)	<b>Loctite® 243™</b>
Screw-in fitting, cooling system	M20x1.5	10 Nm (7.4 lbf ft)	<b>Loctite® 577</b>
Nut, inner clutch hub	M22x1.5	130 Nm (95.9 lbf ft)	<b>Loctite® 243™</b>
Oil drain plug with magnet	M22x1.5	35 Nm (25.8 lbf ft)	–
Screw in generator cover	M24x1.5	8 Nm (5.9 lbf ft)	–
Nut, primary gear	M33LHx1.5	130 Nm (95.9 lbf ft)	<b>Loctite® 243™</b>

Frame	Lattice frame made of chrome molybdenum steel tubing, powder-coated
Fork	<b>WP Suspension</b> Up Side Down 4860 MXMA PA
Shock absorber	<b>WP Suspension</b> PDS 5018 DCC PA
Suspension travel (990 Adventure)	
Front	210 mm (8.27 in)
Suspension travel (990 Adventure R)	
Front	265 mm (10.43 in)
Suspension travel (990 Adventure)	
Rear	210 mm (8.27 in)
Suspension travel (990 Adventure R)	
Rear	265 mm (10.43 in)
Brake system	
Front	Double disk brake with floating brake calipers and brake discs
Rear	Single disc brake with floating brake caliper and brake disc
Brake system (990 Adventure)	Two separate brake circuits with ABS (antilock brake system) - Brembo/Bosch
Brake system (990 Adventure R)	Two separate brake circuits without ABS (antilock brake system)
Brake discs - diameter	
Front	300 mm (11.81 in)
Rear	240 mm (9.45 in)
Brake discs - wear limit	
Front	4.5 mm (0.177 in)
Brake disc - wear limit	
Rear	4.5 mm (0.177 in)

# TECHNICAL DATA - CHASSIS

Tire air pressure, Solo	
Front	2.4 bar (35 psi)
Rear	2.6 bar (38 psi)
Tire air pressure with passenger/full payload	
Front	2.4 bar (35 psi)
Rear	2.8 bar (41 psi)
Secondary drive ratio	16:42
Chain	5/8 x 5/16" X-ring
Steering head angle	63.4°
Wheelbase	1,570 mm (61.81 in)
Seat height, unloaded (990 Adventure)	880 mm (34.65 in)
Seat height, unloaded (990 Adventure R)	920 mm (36.22 in)
Ground clearance, unloaded (990 Adventure)	261 mm (10.28 in)
Ground clearance, unloaded (990 Adventure R)	316 mm (12.44 in)
Weight without fuel, approx. (990 Adventure)	209 kg (461 lb.)
Weight without fuel, approx. (990 Adventure R)	207 kg (456 lb.)
Maximum permissible front axle load	200 kg (441 lb.)
Maximum permissible rear axle load	250 kg (551 lb.)
Maximum permissible total weight	430 kg (948 lb.)

Battery	YTZ14S	Battery voltage: 12 V Nominal capacity: 11.2 Ah maintenance-free
Fuse	58011109110	10 A
Fuse	58011109115	15 A
Fuse	58011109125	25 A

Fuse	58011109130	30 A
Fuse	58011109140	40 A

## Lighting equipment

Low beam	H7 / socket PX26d	12 V 55 W
High beam	H3 / socket PK22s	12 V 55 W
Parking light	W5W / socket W2.1x9.5d	12 V 5 W
Instrument lights and indicator lamps	LED	
Turn signal	RY10W / socket BAU15s	12 V 10 W
Tail light	WR5W / socket W2.1x9.5d	12 V 5 W
Brake light	PR21W / socket BAW15s	12 V 21 W
License plate lamp	W5W / socket W2.1x9.5d	12 V 5 W

## Tires

Front tire	Rear tire	Condition
<b>90/90 - 21 M/C 54V TL</b> Pirelli SCORPION MT 90 A/T	<b>150/70 R 18 M/C 70V TL</b> Pirelli SCORPION MT 90 A/T	
<b>90/90 - 21 M/C 54S M+S TT</b> Continental TKC 80	<b>150/70 B 18 M/C 70Q M+S TT</b> Continental TKC 80	Alternative tires to max.: 160 km/h (99.4 mph)
Additional information is available in the Service section under: <a href="http://www.ktm.com">http://www.ktm.com</a>		

## Capacity - fuel

Total fuel tank capacity, approx.	20 l (5.3 US gal)	Super unleaded (ROZ 95 / RON 95 / PON 91) (☛ p. 201)
Fuel reserve, approx.	4 l (1.1 US gal)	

## 990 Adventure

Fork part number	14.18.7E.24
Fork	<b>WP Suspension</b> Up Side Down 4860 MXMA PA
Compression damping	
Comfort	20 clicks
Standard	15 clicks
Sport	10 clicks
Full payload	10 clicks
Rebound damping	
Comfort	23 clicks
Standard	18 clicks
Sport	13 clicks
Full payload	13 clicks
Spring preload - <b>Preload Adjuster</b>	
Comfort	5 turns
Standard	5 turns
Sport	8 turns
Full payload	7 turns
Spring length with preload spacer(s)	468 mm (18.43 in)
Spring rate	
Soft	4.6 N/mm (26.3 lb/in)
Medium (standard)	4.8 N/mm (27.4 lb/in)
Hard	5.0 N/mm (28.6 lb/in)
Fork length	880 mm (34.65 in)

Air chamber length	100 <sup>+30</sup> <sub>-20</sub> mm (3.94 <sup>+1.18</sup> <sub>-0.79</sub> in)	
Fork oil	655 ml (22.15 fl. oz.)	Fork oil (SAE 5) (☛ p. 200)

## 990 Adventure R

Fork part number	14.18.7E.25	
Fork	<b>WP Suspension</b> Up Side Down 4860 MXMA PA	
Compression damping		
Comfort	20 clicks	
Standard	15 clicks	
Sport	10 clicks	
Full payload	10 clicks	
Rebound damping		
Comfort	23 clicks	
Standard	18 clicks	
Sport	13 clicks	
Full payload	13 clicks	
Spring preload - <b>Preload Adjuster</b>		
Comfort	5 turns	
Standard	5 turns	
Sport	8 turns	
Full payload	7 turns	
Spring length with preload spacer(s)	488 mm (19.21 in)	
Spring rate		
Soft	4.6 N/mm (26.3 lb/in)	



# TECHNICAL DATA - FORK

Medium (standard)	4.8 N/mm (27.4 lb/in)	
Hard	5.0 N/mm (28.6 lb/in)	
Fork length	935 mm (36.81 in)	
Air chamber length	100 <sup>+30</sup> <sub>-20</sub> mm (3.94 <sup>+1.18</sup> <sub>-0.79</sub> in)	
Fork oil	655 ml (22.15 fl. oz.)	Fork oil (SAE 5) (☛ p. 200)

## 990 Adventure

Shock absorber part number	12.18.7E.08
Shock absorber	<b>WP Suspension</b> PDS 5018 DCC PA
Compression damping, low-speed	
Comfort	25 clicks
Standard	20 clicks
Sport	15 clicks
Full payload	15 clicks
Compression damping, high-speed	
Comfort	2 turns
Standard	1.5 turns
Sport	1 turn
Full payload	1 turn
Rebound damping	
Comfort	20 clicks
Standard	15 clicks
Sport	10 clicks
Full payload	10 clicks
Spring preload - <b>Preload Adjuster</b>	
Comfort	4 turns
Standard	4 turns
Sport	8 turns
Full payload	16 turns
Spring rate	

Soft	140 N/mm (799 lb/in)
Medium (standard)	150 N/mm (857 lb/in)
Spring length	225 mm (8.86 in)
Gas pressure	10 bar (145 psi)
Static sag	25 mm (0.98 in)
Fitted length	372 mm (14.65 in)
Shock absorber oil (☛ p. 200)	SAE 2.5

## 990 Adventure R

Shock absorber part number	12.18.7E.09
Shock absorber	<b>WP Suspension</b> PDS 5018 DCC PA
Compression damping, low-speed	
Comfort	25 clicks
Standard	20 clicks
Sport	15 clicks
Full payload	15 clicks
Compression damping, high-speed	
Comfort	2 turns
Standard	1.5 turns
Sport	1 turn
Full payload	1 turn
Rebound damping	
Comfort	20 clicks
Standard	15 clicks

Sport	10 clicks
Full payload	10 clicks
Spring preload - <b>Preload Adjuster</b>	
Comfort	4 turns
Standard	4 turns
Sport	8 turns
Full payload	10 turns
Spring rate	
Soft	130 N/mm (742 lb/in)
Medium (standard)	140 N/mm (799 lb/in)
Hard	150 N/mm (857 lb/in)
Spring length	265 mm (10.43 in)
Gas pressure	10 bar (145 psi)
Static sag	25 mm (0.98 in)
Fitted length	392 mm (15.43 in)
Shock absorber oil (☛ p. 200)	SAE 2.5

# TECHNICAL DATA - CHASSIS TIGHTENING TORQUES

Screw, side stand switch	M4	2 Nm (1.5 lbf ft)	–
Screw, cable guide, wheel speed sensor, rear	M5	3 Nm (2.2 lbf ft)	–
Screw, filler cap	M5	5 Nm (3.7 lbf ft)	–
Screw, footbrake pedal stub	M5	6 Nm (4.4 lbf ft)	<b>Loctite® 243™</b>
Screw, fuel level indicator	M5	3 Nm (2.2 lbf ft)	–
Screw, wheel speed sensor bracket, front	M5	4 Nm (3 lbf ft)	<b>Loctite® 243™</b>
Spoke nipple	M5	5 Nm (3.7 lbf ft)	–
Nut, ABS unit fixation	M6	8 Nm (5.9 lbf ft)	–
Nut, positive terminal extension	M6	4 Nm (3 lbf ft)	–
Nut, tail light	M6	8 Nm (5.9 lbf ft)	–
Remaining chassis nuts	M6	15 Nm (11.1 lbf ft)	–
Remaining chassis screws	M6	10 Nm (7.4 lbf ft)	–
Screw connection, wheel speed sensor, front	M6	6 Nm (4.4 lbf ft)	–
Screw, brake line holder on bottom triple clamp	M6	8 Nm (5.9 lbf ft)	<b>Loctite® 243™</b>
Screw, cable/line guide at top triple clamp	M6	8 Nm (5.9 lbf ft)	<b>Loctite® 243™</b>
Screw, chain sliding guard	M6	6 Nm (4.4 lbf ft)	<b>Loctite® 243™</b>
Screw, exhaust pipe bracket	M6	12 Nm (8.9 lbf ft)	<b>Loctite® 243™</b>
Screw, footbrake cylinder	M6	10 Nm (7.4 lbf ft)	<b>Loctite® 243™</b>
Screw, front brake disc	M6	14 Nm (10.3 lbf ft)	<b>Loctite® 243™</b>
Screw, fuel pump	M6	6 Nm (4.4 lbf ft)	–
Screw, fuel tap	M6	6 Nm (4.4 lbf ft)	–

# TECHNICAL DATA - CHASSIS TIGHTENING TORQUES

Screw, heat guard on manifold	M6	8 Nm (5.9 lbf ft)	–
Screw, magnetic holder on side stand	M6	6 Nm (4.4 lbf ft)	<b>Loctite® 243™</b>
Screw, rear brake disc	M6	14 Nm (10.3 lbf ft)	<b>Loctite® 243™</b>
Screw, wheel speed sensor, rear	M6	8 Nm (5.9 lbf ft)	<b>Loctite® 243™</b>
Nut, manifold on cylinder head	M8	Tightening sequence: Tighten the nuts evenly. Do not bend the metal.	–
Remaining chassis nuts	M8	30 Nm (22.1 lbf ft)	–
Remaining chassis screws	M8	25 Nm (18.4 lbf ft)	–
Screw, bottom triple clamp	M8	15 Nm (11.1 lbf ft)	–
Screw, exhaust clamp	M8	8 Nm (5.9 lbf ft)	–
Screw, fork stub	M8	15 Nm (11.1 lbf ft)	–
Screw, front brake caliper	M8	25 Nm (18.4 lbf ft)	<b>Loctite® 243™</b>
Screw, fuel tank	M8	15 Nm (11.1 lbf ft)	–
Screw, handlebar clamp	M8	20 Nm (14.8 lbf ft)	–
Screw, ignition lock (ratchet screw)	M8		<b>Loctite® 243™</b>
Screw, rear footrest bracket	M8	25 Nm (18.4 lbf ft)	<b>Loctite® 243™</b>
Screw, spring holder on side stand bracket	M8	25 Nm (18.4 lbf ft)	<b>Loctite® 243™</b>
Screw, steering stem	M8	20 Nm (14.8 lbf ft)	–
Screw, top triple clamp	M8	20 Nm (14.8 lbf ft)	–
Screw, underride guard	M8	25 Nm (18.4 lbf ft)	<b>Loctite® 243™</b>
Engine carrying screw	M10	45 Nm (33.2 lbf ft)	–
Remaining chassis nuts	M10	50 Nm (36.9 lbf ft)	–
Remaining chassis screws	M10	45 Nm (33.2 lbf ft)	–

# TECHNICAL DATA - CHASSIS TIGHTENING TORQUES

Screw, handlebar support	M10	20 Nm (14.8 lbf ft)	–
Screw, side stand	M10	35 Nm (25.8 lbf ft)	<b>Loctite® 243™</b>
Screw, side stand bracket	M10	45 Nm (33.2 lbf ft)	<b>Loctite® 243™</b>
Screw, side stand holding plate	M10	40 Nm (29.5 lbf ft)	<b>Loctite® 243™</b>
Nut, rear sprocket screw	M10x1.25	50 Nm (36.9 lbf ft)	<b>Loctite® 243™</b>
Screw, subframe	M10x1.25	45 Nm (33.2 lbf ft)	<b>Loctite® 243™</b>
Oil drain plug with magnet	M12x1.5	25 Nm (18.4 lbf ft)	–
Screw, bottom shock absorber	M14x1.5	80 Nm (59 lbf ft)	Thread greased
Screw, top shock absorber	M14x1.5	80 Nm (59 lbf ft)	Thread greased
Nut, socket	M18x1	4 Nm (3 lbf ft)	–
Lambda sensor	M18x1.5	45 Nm (33.2 lbf ft)	–
Nut, swingarm pivot	M19x1.5	130 Nm (95.9 lbf ft)	Thread greased
Screw, top steering head	M20x1.5	12 Nm (8.9 lbf ft)	–
Nut, rear wheel spindle	M25x1.5	90 Nm (66.4 lbf ft)	Thread greased
Screw, front wheel spindle	M25x1.5	45 Nm (33.2 lbf ft)	–

## Brake fluid DOT 4 / DOT 5.1

### According to

- DOT

### Guideline

- Use only brake fluid that complies with the specified standards (see specifications on the container) and that possesses the corresponding properties. KTM recommends **Castrol** and **Motorex®** products.

### Supplier

#### Castrol

- **RESPONSE BRAKE FLUID SUPER DOT 4**

#### Motorex®

- **Brake Fluid DOT 5.1**

## Coolant

### Guideline

- Use only suitable coolant (also in countries with high temperatures). Use of low-quality antifreeze can lead to corrosion and foaming. KTM recommends **Motorex®** products.

### Mixture ratio

Antifreeze protection: -25... -45 °C (-13... -49 °F)	50 % corrosion inhibitor/antifreeze 50 % distilled water
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## Coolant (mixed ready to use)

Antifreeze	-40 °C (-40 °F)
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### Supplier

#### Motorex®

- **Anti Freeze**



## Engine oil (SAE 10W/50)

### According to

- JASO T903 MA (☛ p. 204)
- SAE (☛ p. 204) (SAE 10W/50)

### Guideline

- Use only engine oils that comply with the specified standards (see specifications on the container) and that possess the corresponding properties. KTM recommends **Motorex®** products.

Fully synthetic engine oil

### Supplier

#### Motorex®

- **Power Synt 4T**

## Engine oil (SAE 5W/40)

### According to

- JASO T903 MA (☛ p. 204)
- SAE (☛ p. 204) (SAE 5W/40)

### Guideline

- Use only engine oils that comply with the specified standards (see specifications on the container) and that possess the corresponding properties. KTM recommends **Motorex®** products.

Synthetic engine oil

### Supplier

#### Motorex®

- **Power Synt 4T**

## Fork oil (SAE 5)

### According to

- SAE (☛ p. 204) (SAE 5)

### Guideline

- Use only oils that comply with the specified standards (see specifications on the container) and that possess the corresponding properties. KTM recommends **Motorex®** products.

### Supplier

#### Motorex®

- **Racing Fork Oil**

## Hydraulic fluid (15)

### According to

- ISO VG (15)

### Guideline

- Use only hydraulic fluid that complies with the specified standards (see specifications on the container) and that possesses the corresponding properties. KTM recommends **Motorex®** products.

### Supplier

#### Motorex®

- **Hydraulic Fluid 75**

## Shock absorber oil (SAE 2.5) (50180342S1)

### According to

- SAE (☛ p. 204) (SAE 2.5)

### Guideline

- Use only oils that comply with the specified standards (see specifications on the container) and that possess the corresponding properties.

## **Super unleaded (ROZ 95 / RON 95 / PON 91)**

### **According to**

- DIN EN 228 (ROZ 95 / RON 95 / PON 91)

## Chain cleaner

### Specification

- KTM recommends **Motorex®** products.

### Supplier

**Motorex®**

- **Chain Clean 611**

## Chain lube for road use

### Specification

- KTM recommends **Motorex®** products.

### Supplier

**Motorex®**

- **Chain Lube 622 Strong**

## Cleaning and polishing materials for metal, rubber and plastic

### Specification

- KTM recommends **Motorex®** products.

### Supplier

**Motorex®**

- **Protect & Shine 645**

## High-luster polish for paint

### Specification

- KTM recommends **Motorex®** products.

### Supplier

**Motorex®**

- **Moto Polish**

## Long-life grease

### Specification

- KTM recommends **Motorex®** products.

### Supplier

#### Motorex®

- **Fett 2000**

## Motorcycle cleaner

### Specification

- KTM recommends **Motorex®** products.

### Supplier

#### Motorex®

- **Moto Clean 900**

## Universal oil spray

### Specification

- KTM recommends **Motorex®** products.

### Supplier

#### Motorex®

- **Joker 440 Universal**

## JASO T903 MA

Different technical development directions required a new specification for 4-stroke motorcycles – the JASO T903 MA Standard. Earlier, engine oils from the automobile industry were used for 4-stroke motorcycles because there was no separate motorcycle specification. Whereas long service intervals are demanded for automobile engines, high performance at high engine speeds are in the foreground for motorcycle engines. With most motorcycles, the gearbox and the clutch are lubricated with the same oil as the engine. The JASO MA Standard meets these special requirements.

## SAE

The SAE viscosity classes were defined by the Society of Automotive Engineers and are used for classifying oils according to their viscosity. The viscosity describes only one property of oil and says nothing about quality.

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**KTM-Sportmotorcycle AG**  
5230 Mattighofen/Austria  
<http://www.ktm.com>