OWNER'S MANUAL 2027

READY TO RACE

450 SX-F FACTORY EDITION

ITEM NO.: 3240385EN



Dear KTM customer,

Congratulations on your decision to purchase a KTM motorcycle. You are now the owner of a state-of-the-art sports vehicle which, with proper care, will bring you pleasure for a long time to come.

We hope you enjoy your bike and have a safe journey at all times!

You can enter the serial numbers of your vehicle below to find the serial numbers more quickly if required:

Vehicle identification number (p. 16)	Stamp of the contractual partner
Engine number (p. 16)	

The owner's manual contained the latest information for this model series at the time of publication. However, minor differences due to further developments in design cannot be ruled out completely.

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Table of contents

1 Means of representation 9

1.1 Conventions 9
1.1.1 Icons 9
1.1.2 Formatting 9
1.1.3 Abbreviations 9

2 Safety 10

2.1 Safety instructions 10
2.2 Ban on tampering 10
2.3 Safe use 11
2.4 Protective clothing 11
2.5 Work rules 11
2.6 Environment 12
2.7 Owner's manual 12
2.8 Use definition – intended use 12
2.9 Improper use 12

3 Important notes 13

3.1 Manufacturer's warranty, implied warranty 13
3.2 Auxiliary material, operating material 13
3.3 Spare parts, accessories 13
3.4 Service 13
3.5 Figures 13
3.6 Customer service 13

4 View of the vehicle 14

4.1 View of vehicle, left side (example) 14
4.2 View of vehicle, right side (example) 14

5 Serial number 16

5.1 Vehicle identification number 16
5.2 Frame label 16
5.3 Engine number 16
5.4 Fork part number 16
5.5 Shock absorber part number 17

6 Controls 18

6.1 Clutch lever 18
6.2 Handbrake lever 18
6.3 Throttle grip 18
6.4 Kill button 18
6.5 Electric starter 19
6.6 Combination switch 19
6.7 Overview of indicator lights 19
6.8 Opening the fuel tank cap 20
6.9 Closing the fuel tank cap 21
6.10 Cold start button 21
6.11 Idle speed adjustment screw 22
6.12 Gear shift lever 22
6.13 Brake pedal 23
6.14 Plug-in stand 23
6.15 Factory Start 23

7 Combination instrument 24

7.1 Combination instrument 24
7.2 Combination instrument button 24
7.3 Indicator lamp 25
7.4 Operating hours 25
7.5 Warnings 25
7.6 Service indicator 26
7.7 Menu 26
7.7.1 Brightness 26
7.7.2 Set service 27

8 Preparing for use 28

8.1 Notes on preparing for first use 28
8.2 Running in the engine 29
8.3 Starting performance of lithium-ion batteries at low temperatures 29
8.4 Preparing the vehicle for difficult operating conditions 30
8.5 Preparing the vehicle for rides on dry sand 30
8.6 Preparing the vehicle for rides on wet sand 31
8.7 Preparing for rides on wet and muddy surfaces 31
8.8 Preparing vehicle for rides at high temperature or slow speed 32
8.9 Preparing the vehicle for low temperatures or snow 32

9 Riding instructions 33

9.1 Checks and maintenance measures when preparing for use 33
9.2 Starting the vehicle 33
9.3 Activating launch control 34
9.4 Activating traction control 35
9.5 Activating the Factory Start 35
9.6 Starting off 36
9.7 Quickshifter 36
9.8 Activate the Quickshifter 36
9.9 Shifting, riding 37
9.10 Braking 38
9.11 Stop, park 38
9.12 Transportation 39
9.13 Refueling 39

10 Service schedule 41

10.1 Service schedule 41

11 Tuning the chassis 44

11.1 Checking the basic chassis setting with the rider's weight 44
11.2 Compression damping of the shock absorber 44
11.3 Adjusting the low-speed compression damping of the shock absorber 44
11.4 Adjusting the high-speed compression damping of the shock absorber 45
11.5 Adjusting the rebound damping of the shock absorber 45
11.6 Measuring the dimension of the unloaded rear wheel 46
11.7 Checking the static sag of the shock absorber 47
11.8 Checking the rider sag of the shock absorber 47
11.9 Adjusting the preload for the shock absorber 48
11.10 Adjusting the rider sag 49
11.11 Checking the basic setting of the fork 50
11.12 Adjusting the compression damping of the fork 50
11.13 Adjusting the rebound damping of the fork 50
11.14 Handlebar position 51
11.15 Adjusting the handlebar position 51

12 Service work on the chassis 54

12.1 Raising the motorcycle with a lift stand 54
12.2 Removing the motorcycle from the lift stand 54
12.3 Bleeding the fork legs 54
12.4 Cleaning the dust boots of the fork legs 55
12.5 Removing the fork protection 56
12.6 Installing the fork protection 56
12.7 Removing the skid plate 57
12.8 Installing the skid plate 57
12.9 Removing the frame protector 58
12.10 Installing the frame protector 58
12.11 Removing the fork legs 58
12.12 Installing the fork legs 59
12.13 Removing the lower triple clamp 60
12.14 Installing the lower triple clamp 61
12.15 Checking the steering head bearing play 63
12.16 Adjusting the steering head bearing play 64
12.17 Lubricating the steering head bearing 64
12.18 Removing the number plate 65
12.19 Mounting the number plate 65
12.20 Removing the front top fender 65
12.21 Installing the front top fender 66
12.22 Removing the shock absorber 66
12.23 Installing the shock absorber 68
12.24 Removing the seat 69
12.25 Mounting the seat 70
12.26 Removing air filter box cover 70
12.27 Installing air filter box cover 71
12.28 Preparing the air filter box cover for securing 72
12.29 Removing the air filter. 73
12.30 Installing the air filter 74
12.31 Cleaning the air filter and air filter box 74
12.32 Removing the muffler 75
12.33 Installing muffler 75
12.34 Changing the damping material on the main silencer 76
12.35 Removing the fuel tank 77
12.36 Installing the fuel tank 78
12.37 Checking the chain for dirt 80
12.38 Cleaning the chain 80
12.39 Checking the chain tension 81
12.40 Adjusting the chain tension 81
12.41 Checking the chain, rear sprocket, front sprocket, and chain guide 82
12.42 Checking the frame 85
12.43 Checking the swingarm 85
12.44 Checking the throttle cable routing 85
12.45 Checking the rubber grips 86
12.46 Program the Quickshifter 87
12.47 Adjusting the basic position of the clutch lever 87
12.48 Checking/correcting the fluid level of hydraulic clutch 88
12.49 Changing the hydraulic clutch fluid 88

13 Brake system 90

13.1 Checking the free travel on the hand brake lever 90
13.2 Adjusting the basic position of the hand brake lever 90
13.3 Checking the brake discs 90

Table of contents

13.4 Checking the brake fluid level for the front brake 91
13.5 Adding brake fluid for the front brake 92
13.6 Checking that the brake pads of the front brake are secured 93
13.7 Changing the brake pads of the front brake 94
13.8 Checking the free travel of the brake pedal 96
13.9 Adjusting the basic position of the brake pedal 96
13.10 Checking the brake fluid level for the rear brake 97
13.11 Adding brake fluid for the rear brake 98
13.12 Checking that the brake pads of the rear brake are secured 99
13.13 Changing the rear brake pads 99

14 Wheels, tires 102

14.1 Removing the front wheel 102
14.2 Installing the front wheel 103
14.3 Removing the rear wheel 104
14.4 Installing the rear wheel 104
14.5 Checking the tire condition 106
14.6 Checking the tire pressure 106
14.7 Checking the spoke tension 107

15 Electrics 108

15.1 Removing the 12 V battery 108
15.2 Installing the 12 V battery 109
15.3 Charging the 12 V battery 110
15.4 Changing the main fuse 112
15.5 Changing the fuse of the fuel pump 114
15.6 Diagnostic connector 115

16 Cooling system 116

16.1 Cooling system 116
16.2 Checking the frost protection and coolant level 116
16.3 Checking the coolant level 117
16.4 Draining the coolant 118
16.5 Refilling the coolant 118
16.6 Changing the coolant 119

17 Tuning the engine 121

17.1 Checking the play in the throttle cable 121
17.2 Adjusting the throttle cable play 121
17.3 Adjusting the characteristic map of the throttle response 122
17.4 Changing the mapping 124
17.5 adjusting the idle speed 124
17.6 Checking the basic position of the gear shift lever 125
17.7 Adjusting the basic position of the gear shift lever 126

18 Service work on the engine 127

18.1 Changing the fuel screen 127
18.2 Checking the engine oil level 128
18.3 Changing the engine oil and oil filter, cleaning the oil screen 129
18.4 Adding engine oil 131

19 Cleaning, care 133

19.1 Cleaning the motorcycle 133

20 Storage 135

20.1 Storage 135
20.2 Preparing for use after storage 136

21 Troubleshooting 137

21.1 troubleshooting 137

22 Trouble codes 139

22.1 Trouble codes 139

23 Technical specifications 140

23.1 Engine 140
23.1.1 Technical data - engine 140
23.2 Chassis 141
23.2.1 Technical data - chassis 141
23.2.2 Technical data - tires 142
23.2.3 Capacities - vehicle 142
23.3 Electrics 142
23.3.1 Battery 142
23.3.2 Fuses 142
23.3.3 Lamps 143
23.4 Fork 143
23.4.1 Technical data - fork 143
23.4.2 Capacities - fork 143
23.5 Shock absorber 143
23.5.1 Technical data - shock absorber 143
23.5.2 Capacities 144
23.6 Tightening torque 144
23.6.1 Engine tightening torques 144
23.6.2 Chassis tightening torques 147

24 Recycling 152

24.1 Recycling 152

Notes 153

A Technical terms 153

B Fuels 154

C Operating supplies 155

D Electrics 157

E Cleaning agents 158

F Icons 159

F.1 Symbol colors 159
F.1.1 Yellow and orange symbols 159
F.1.2 Green and blue symbols 159
F.1.3 White symbols 159

Index 160

Table of contents

1.1 Conventions

1.1.1 Icons

✓	Indicates a desired result (e.g. of a work step or a function).
✗	Indicates an undesired result (e.g. of a work step or a function).
	All work marked with this symbol requires specialist knowledge and technical understanding. Ensure that this work is carried out or supervised by trained personnel from an authorized contractual partner, and that any special tools required are used.
	Indicates a page reference.
	Indicates information with more details.
	Indicates a tip, e.g. to simplify work.
»	Indicates the result from a test step.
	Indicates the end of an activity, including any rework.

1.1.2 Formatting

Proprietary name	Indicates a proprietary name.
Name ®	Indicates a protected name.
Brand ™	Indicates a brand available on the open market.
Underlined terms	Refer to technical details of the vehicle or indicate technical terms that are explained in the glossary.

1.1.3 Abbreviations

2–pc.	two-part
Part no.	Part number
or	respectively
approx.	circa
etc.	et cetera
poss.	possibly/possible
if necessary	if necessary
cmpl.	complete
min.	at least
no.	number
no fig.	no figure
s.	see
among others	among others/not limited to
and the like	and the like
etc.	et cetera
cf.	compare
e.g.	for example

2.1 Safety instructions

Function of the safety instruction

Safety instruction brings attention to dangers when handling the product. Hazards are classified, named, described, and supplemented with information on how to avoid them.

- If there is a safety instruction before a list of instructions, the danger exists throughout the entire activity.
- If there is a safety instruction immediately before an instruction, the next step presents a danger.

Safety instruction layout

All safety instructions are identified by a signal word and a warning symbol. The combination of signal word and warning symbol determines the degree of danger.



DANGER
Indicates an imminent danger that leads to serious injury or death.



WARNING
Indicates a potentially imminent danger that could lead to serious injury or death.



CAUTION
Indicates a potentially imminent danger that can lead to minor or slight injuries.



NOTE
Indicates a situation that can lead to damage to the product or the product environment.



NOTE
Indicates a situation that can lead to environmental damage.

2.2 Ban on tampering

No changes may be made to the noise control equipment and components.

Tampering that is prohibited

- Removing or disabling any devices or components used for noise control before the new vehicle is sold or delivered to the end customer.
- Removing or disabling any device or component used for noise control for purposes other than service, repair, or replacement during the service life of the vehicle.
- Use of the vehicle after a device or component used for noise control has been removed, disabled, or inadequately maintained.

Examples of prohibited tampering

- Removing or drilling through rear mufflers, baffle plates, manifolds, or other components that conduct exhaust gases.
- Removing or puncturing parts of the intake system.
- Replacing moving parts of the vehicle, or parts of the exhaust system or intake system, with parts other than those specified by the manufacturer.

2.3 Safe use

DANGER

Danger of accidents A rider who is not fit to ride poses a danger to themself and to others.

– Do not operate the vehicle if you are not fit to ride due to alcohol, drugs, or medication.
– Do not operate the vehicle if you are physically or mentally incapable of doing so.

DANGER

Danger of poisoning Exhaust gases are toxic and inhaling them may result in unconsciousness and death.

– Always ensure that there is sufficient ventilation when running the engine.
– Use suitable exhaust extraction when starting or running the engine in an enclosed space.

WARNING

Danger of burns Some vehicle components become hot when the vehicle is operated.

– Do not touch any parts such as the exhaust system, radiator, engine, damper, or brake system before the vehicle parts have cooled down.
– Allow the vehicle parts to cool down before performing any work on the vehicle.

The vehicle should only be used when it is in perfect technical condition, for its intended purpose, and in a safe and environmentally-friendly manner.

The vehicle must only be used by trained persons.

Have any faults that impair safety immediately remedied by an authorized contractual partner.

Observe the information and warning stickers on the vehicle.

2.4 Protective clothing

WARNING

Risk of injury Missing or inadequate protective clothing increases the risk of injury.

– Wear appropriate protective clothing such as helmet, boots, gloves as well as pants and a jacket with protectors on all rides.
– Always wear protective clothing that is in good condition and meets the legal regulations.

In the interest of your own safety, KTM recommends that you only operate the vehicle while wearing suitable protective clothing.

2.5 Work rules

Unless specified otherwise, the ignition must be switched off during all work (models with ignition lock, models with transponder key) or the engine must be at a standstill (models without ignition lock or transponder key).

Special tools are required for some work. The tools are not part of the vehicle, but can be ordered using the number in parentheses. Example: bearing puller (15112017000)

Unless otherwise noted, normal conditions apply to all tasks and descriptions.

Ambient temperature	20 °C (68.0 °F)
Ambient air pressure	1,013 mbar (14.69 psi)
Relative air humidity	60 ±5 %

During assembly, use new parts to replace parts which cannot be reused (e.g. self-locking screws and nuts, expansion screws, seals, sealing rings, O-rings, pins, and lock washers).

A thread lock (e.g. **Loctite®**) is required for some screw connections. Observe the manufacturer's specific instructions for use.

If thread lock (e.g. **Precote®**) has already been applied to a new part, do not apply any additional thread lock.

After disassembly, clean the parts that are to be reused and check them for damage and wear. Replace damaged or worn parts.

After completing a repair or service, check the operating safety of the vehicle.

2.6 Environment

Handling the vehicle responsibly reduces the risk of conflict with other road users and the surrounding area. The future of motorcycling also depends on using motorcycles legally, being environmentally conscious and respecting the rights of others.

When disposing of used oil, other operating and auxiliary fluids, and used components, the laws and regulations of the respective country must be observed.

As motorcycles are not subject to the EU regulations governing the disposal of end-of-life vehicles, there are no legal regulations that pertain to the disposal of an end-of-life motorcycle. More information is available from the authorized contractual partner.

2.7 Owner's manual

Read this owner's manual carefully and in full before riding off for the first time. The owner's manual contains information and tips on how to operate, handle, and service your vehicle, as well as advice on optimum tuning and how to avoid injuries.

Tip

Save this owner's manual on your smartphone, for example, so that you can access it at any time.

An authorized contractual partner will be happy to assist you if you are unsure.

The owner's manual is an important component of the vehicle. If the vehicle is sold, the owner's manual must be downloaded again by the new owner.

The owner's manual can be downloaded multiple times using the QR code or the link on the delivery certificate.

The owner's manual is also available for download from your authorized contractual partner and on the KTM website.

International KTM Website: https://www.ktm.com

A printed copy can be ordered from the following address.

Website for printed copy: https://print.ktm.com

2.8 Use definition – intended use

This vehicle has been designed and built to withstand the typical stresses and strains of racing. This vehicle complies with the currently valid regulations and categories of the top international motorsports organizations.

Note

Only use this vehicle on designated tracks away from public roads.

2.9 Improper use

The vehicle may only be used as intended.

Improper use can result in danger to people, property and the environment.

Any use of the vehicle beyond the intended and defined use constitutes misuse.

Improper use includes the use of operating and auxiliary materials that do not meet the required specifications for the respective use.

3.1 Manufacturer's warranty, implied warranty

The work prescribed in the service schedule must only be carried out by an authorized contractual partner and then confirmed in the electronic proof of service, as otherwise all warranty claims will be void. Damage or secondary damage caused by tampering with and/or conversions on the vehicle are not covered by the manufacturer's warranty.

3.2 Auxiliary material, operating material

Use operating materials and auxiliary materials in accordance with the operating instructions and specifications.

3.3 Spare parts, accessories

For safety reasons, only spare parts and accessories approved by KTM may be used. They may only be installed by an authorized contractual partner. KTM accepts no liability for other products and any resulting damage or loss.

Certain spare parts and accessory products are specified in parentheses in the descriptions. Authorized contractual partners will be happy to help.

The current **KTM PowerParts** are listed for each vehicle on the KTM website.

International KTM Website: https://www.ktm.com

3.4 Service

A prerequisite for perfect operation and prevention of premature wear is that the service, care, and tuning work on the engine and chassis is properly carried out as described in the owner's manual. An incorrect suspension setting can lead to damage and breakage of chassis components.

Use of the vehicle under arduous conditions, such as on sand or on wet, dusty and muddy surfaces, can result in significantly increased wear of components, such as the powertrain, brake system, air filter, or suspension components. For this reason, it may be necessary to inspect or replace parts before the next scheduled service interval.

Please adhere to the prescribed run-in times and service intervals at all times. Strictly adhering to this will ensure a much longer service life for your motorcycle.

The relevant mileage or time interval is whichever occurs first.

A list of services that have already been carried out on the vehicle as well as technical information on product improvement can be found in the Service area on the international KTM website:

International KTM Website: https://www.ktm.com

Authorized contractual partners will be happy to answer any questions regarding the services performed.

A list of authorized contractual partners can be found on the KTM website.

3.5 Figures

Some of the figures in this document contain optional extras.

For clarity, some components may be shown disassembled or may not be shown at all. Disassembly is not always absolutely necessary in order to carry out the activities described. The textual information takes precedence.

3.6 Customer service

Authorized contractual partners will be happy to answer questions about the vehicle and KTM.

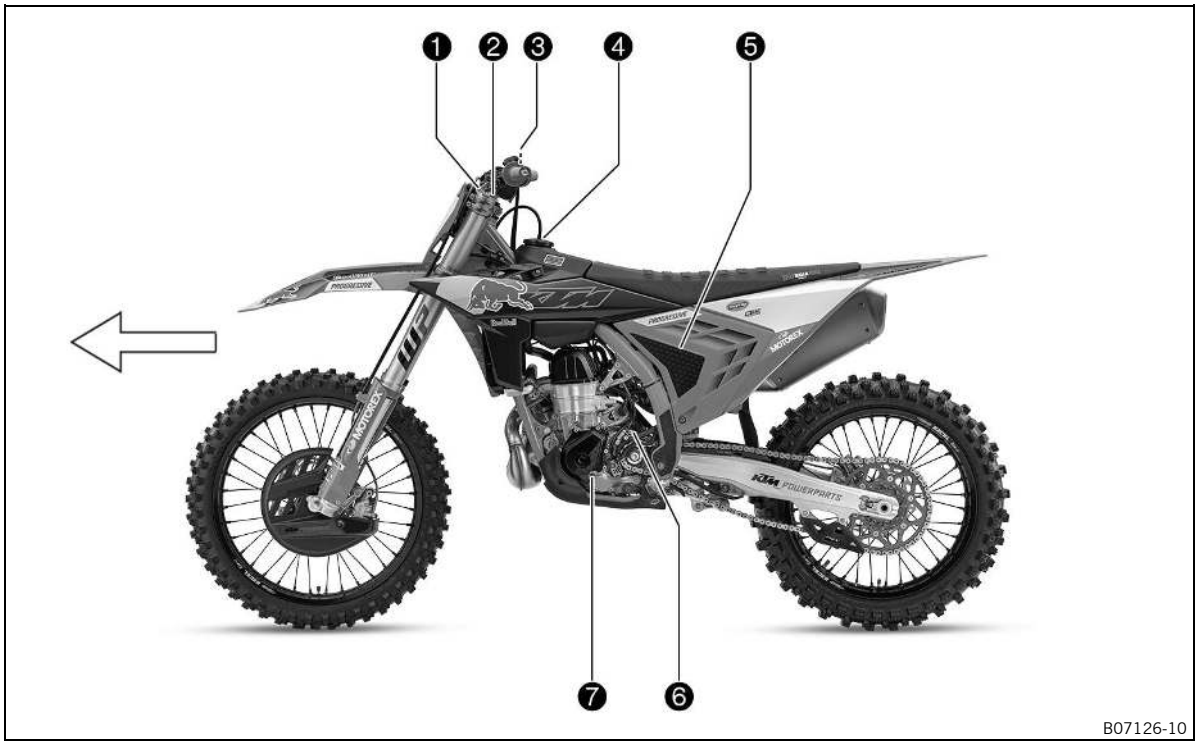
A list of authorized contractual partners can be found on the KTM website.

International KTM Website: https://www.ktm.com

4 View of the vehicle

4.1 View of vehicle, left side (example)

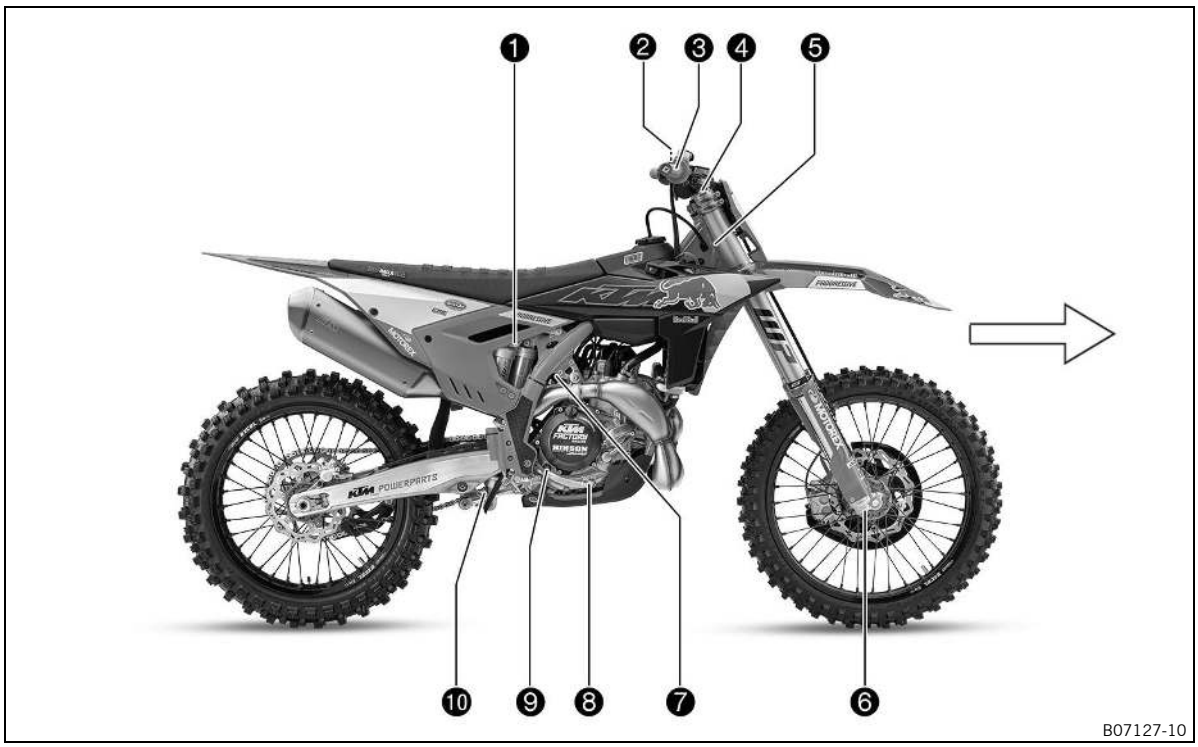
Note
Arrow faces in the direction of forward travel.



1. Clutch lever (p. 18)
2. Fork compression damping adjustment
3. Combination switch (p. 19)
4. Fuel tank cap
5. Air filter box cover
6. Engine number (p. 16)
7. Gear shift lever (p. 22)

4.2 View of vehicle, right side (example)

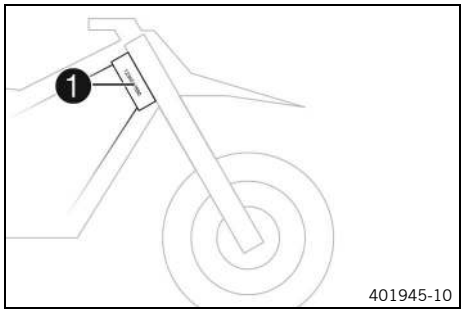
Note
Arrow faces in the direction of forward travel.



1. Shock absorber compression adjustment
2. Electric starter (p. 19)
2. Kill button (p. 18)
3. Throttle grip (p. 18)
4. Handbrake lever (p. 18)
5. Vehicle identification number (p. 16)
5. Frame label (p. 16)
6. Fork rebound adjustment
7. Idle speed adjustment screw (p. 22)
8. Brake pedal (p. 23)
9. Engine oil level viewer
10. Shock absorber rebound adjustment

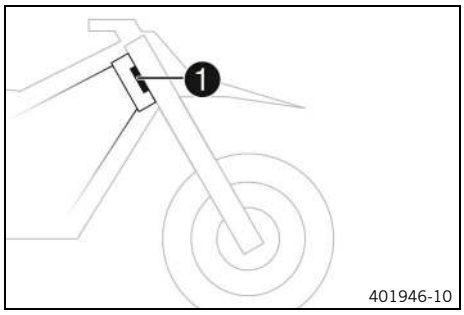
5 Serial number

5.1 Vehicle identification number



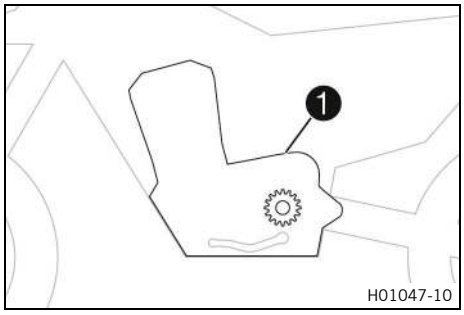
The vehicle identification number ❶ is stamped on the right-hand side of the steering head.

5.2 Frame label



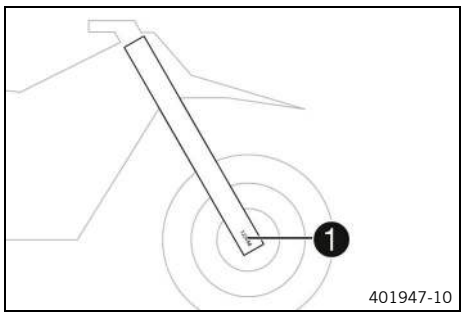
The frame label ❶ is attached to the front of the steering head.

5.3 Engine number



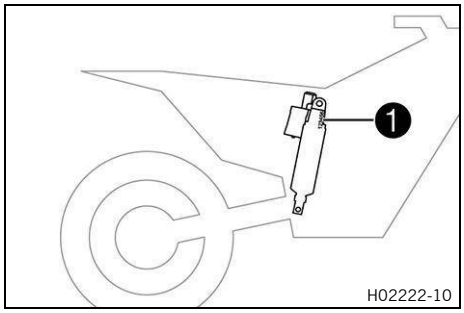
The engine number ❶ is stamped on the left side of the engine above the front sprocket.

5.4 Fork part number



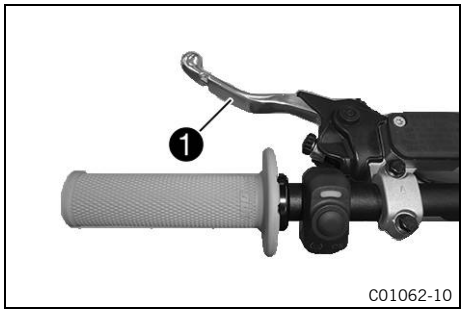
Fork part number ❶ is stamped on the inside of the fork shoe.

5.5 Shock absorber part number



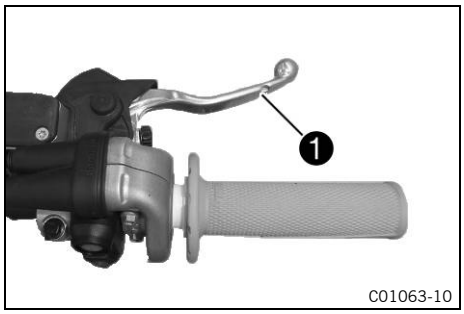
Shock absorber part number ❶ is stamped on the top right of the shock absorber.

6.1 Clutch lever



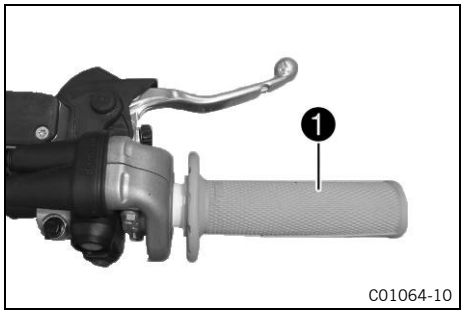
Clutch lever ❶ is fitted on the handlebar on the left.
The clutch is activated hydraulically and adjusts itself automatically.

6.2 Handbrake lever



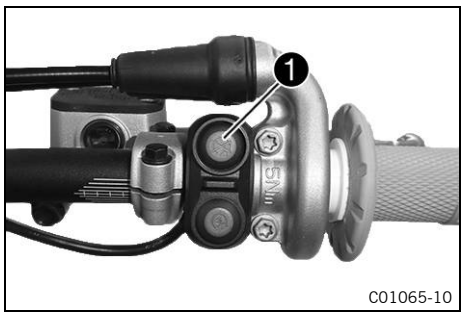
Hand brake lever ❶ is located on the right side of the handlebar.
The front brake is engaged using the hand brake lever.

6.3 Throttle grip



The throttle grip ❶ is fitted on the right side of the handlebar.

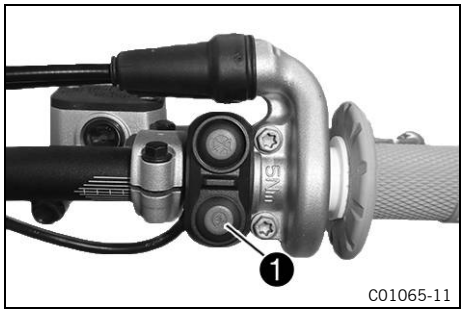
6.4 Kill button



The stop button ❶ is located on the right side of the handlebar.

Condition	Meaning
Kill button ⊗ is not pressed.	In this position, the ignition circuit is closed, and the engine can be started.
The kill button ⊗ is pressed and held.	In this position, the ignition circuit is interrupted, a running engine stops, and an engine at a standstill will not start.

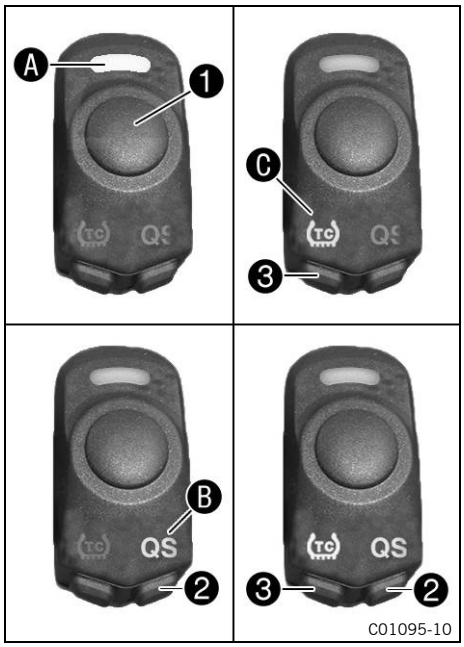
6.5 Electric starter



Start button ❶ is fitted on the right side of the handlebar.

Condition	Meaning
Electric starter in the basic position	No function
Electric starter pressed	In this position, the starter motor is actuated.

6.6 Combination switch



The combination switch is fitted on the left side of the handlebar.

The engine characteristic can be changed using button ❶ on the combination switch. The selected mapping is indicated by the color of indicator lamp Ⓐ.

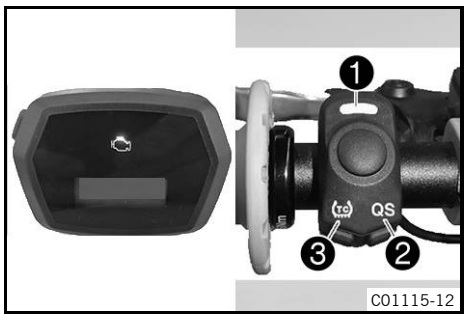
The **Quickshifter** can be activated and deactivated using button ❷ on the combination switch.

Traction control can be activated and deactivated using button ❸ on the combination switch.

In addition, **launch control** can be activated by simultaneously pressing buttons ❷ and ❸.

Condition	Meaning
Indicator light Ⓐ lights up blue.	STANDARD mapping is active.
Indicator light Ⓐ lights up green.	AGGRESSIVE mapping is active.
The indicator lamp Ⓑ lights up.	The Quickshifter is active.
The indicator lamp Ⓒ lights up.	TC is not enabled or is currently intervening.
Indicator lamps Ⓑ and Ⓒ flash.	Launch control is active.

6.7 Overview of indicator lights



Mapping indicator lamp ❶, QC indicator lamp ❷ and TC indicator lamp ❸ are located on the left combination switch.

Condition		Meaning
	Malfunction indicator lamp lights up orange.	The **OBD** has detected a malfunction in the vehicle electronics. Come safely to a halt, and contact an authorized contractual partner.
	Indicator lamp lights up blue.	STANDARD mapping is active.
	Indicator lamp lights up green.	AGGRESSIVE mapping is active.
	The TC indicator lamp lights up.	The TC indicator light lights up if traction control is active or intervening.
	The TC indicator lamp flashes.	The TC indicator lamp flashes if **launch control** is active.
	The QS indicator lamp lights up.	The QS indicator lamp lights up if the **Quickshifter** is active.
	The QS indicator lamp flashes.	The QS indicator lamp flashes if **launch control** is active.

6.8 Opening the fuel tank cap



DANGER

Fire hazard Fuel is highly flammable.

The fuel in the fuel tank expands when warm and can escape if overfilled.

- Do not refuel the vehicle in the vicinity of open flames, glowing, or smoldering objects.
- Make sure that nobody smokes in the vicinity of the vehicle during the refueling process.
- Switch off the engine for refueling.
- Make sure that no fuel is spilled; particularly not on hot parts of the vehicle.
- If any fuel is spilled, wipe it up immediately.
- Do not overfill the fuel tank.



WARNING

Danger of poisoning Fuel is harmful to health.

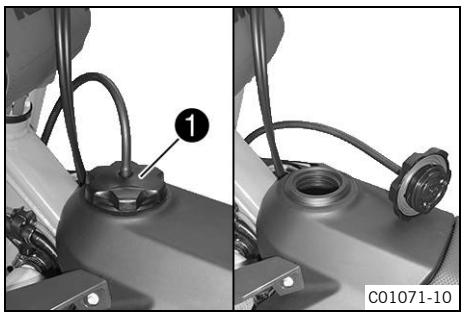
- Do not allow fuel to come into contact with skin, eyes, or clothing.
- Consult a doctor immediately if fuel has been ingested.
- Do not inhale fuel vapors.
- Rinse the affected area immediately with plenty of water in the event of contact with skin.
- Rinse eyes thoroughly with water and consult a doctor immediately if fuel comes into contact with eyes.
- If fuel spills on to your clothing, change the clothing.
- Store fuel properly in a suitable container and keep out of the reach of children.



NOTE

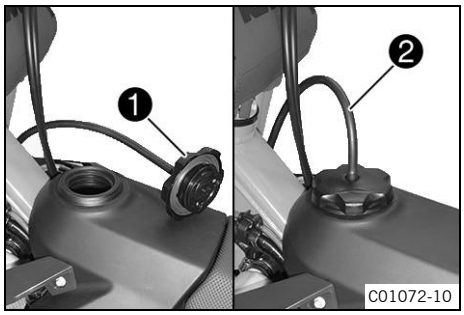
Environmental hazard Improper handling of fuel is dangerous to the environment.

- Do not allow fuel to enter the groundwater, the soil, or the sewage system.



– Turn fuel tank filler cap ❶ counterclockwise and lift it off.

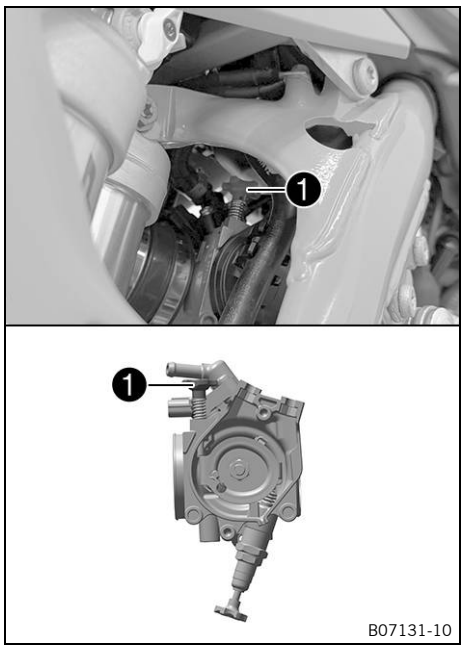
6.9 Closing the fuel tank cap



– Mount fuel tank filler cap ❶ and turn it clockwise until the fuel tank is tightly closed.

Route fuel tank breather hose ❷ without kinks.

6.10 Cold start button



Cold start button ❶ is fitted to the bottom of the throttle body.

The electronic fuel injection extends the injection time when the engine is cold and the ambient temperature is low. To help the engine burn the increased amount of fuel, it must be supplied with additional oxygen by pushing the cold start button.

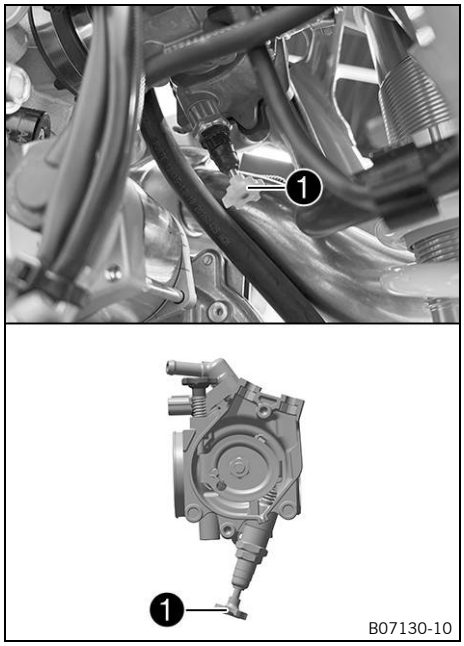
After briefly opening up the throttle and then releasing the throttle twist grip again, or turning the throttle twist grip towards the front, the cold start button returns to its original position.

Note

Check whether the cold start button has returned to its basic position.

Condition	Meaning
The cold start button is pushed in all the way to the stop.	Cold start button activated
The cold start button is in the basic position.	Cold start button deactivated

6.11 Idle speed adjustment screw



The idle setting of the throttle body substantially influences the vehicle's starting behavior, a stable idle speed, and the vehicle's response when the throttle is opened.

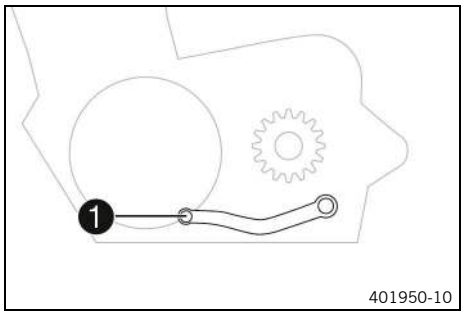
An engine with a correctly set idle speed is easier to start than an engine with the idle speed set incorrectly.

The idle speed is adjusted using idle speed adjustment screw ❶.

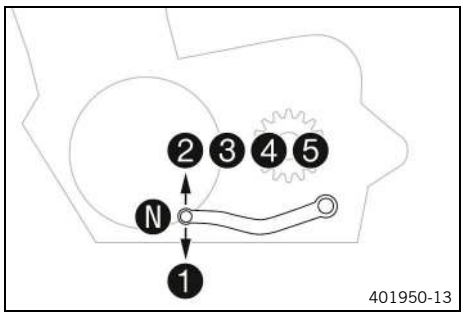
Increase the idle speed by turning the idle speed adjustment screw clockwise.

Decrease the idle speed by turning the idle speed adjustment screw counterclockwise.

6.12 Gear shift lever



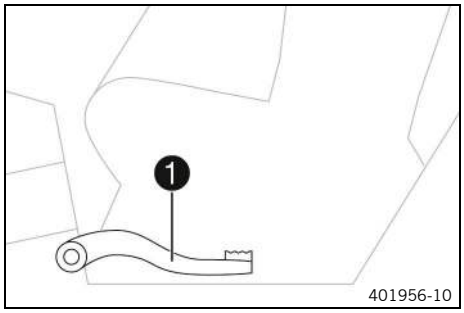
Gear shift lever ❶ is mounted on the left of the engine.



The gear positions can be seen in the figure.

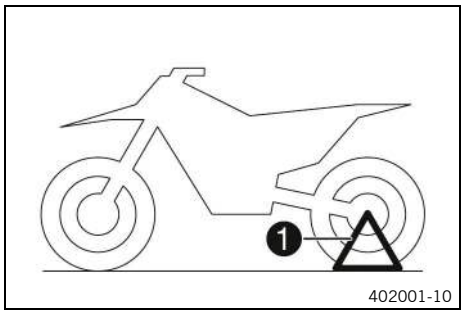
The neutral or idle position is between the first and second gears.

6.13 Brake pedal



Brake pedal ❶ is located in front of the right footpeg.
The rear brake is operated with the brake pedal.

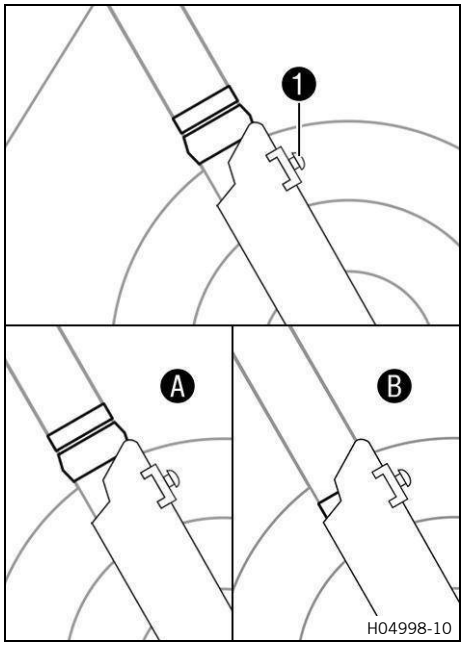
6.14 Plug-in stand



The support for plug-in stand ❶ is the left side of the wheel spindle.
The plug-in stand is used for parking the motorcycle.

Note
The plug-in stand must be removed before riding.

6.15 Factory Start



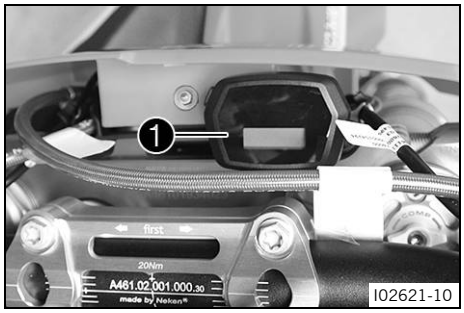
The Factory Start ❶ is mounted on the right fork protector.

Condition	Meaning
Ⓐ - The fork is in the normal operating state.	Factory Start Device deactivated
Ⓑ - The fork is compressed and the front of the motorcycle is lowered.	Factory Start Device activated

Activating the Factory Start lowers the front of the motorcycle, which then causes the front wheel to lift off the ground when accelerating.
When the fork compresses for the first time, the Factory Start lock button is released automatically. From this point on, the fork operates as if the Factory Start were deactivated or not installed.

7 Combination instrument

7.1 Combination instrument



The combination instrument ❶ is attached in front of the handlebar.

The combination instrument shows the total operating hours of the engine.

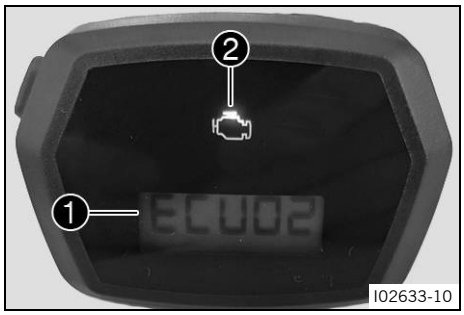
The operating hours are counted when the engine is started and stopped when the engine is switched off.

Note

Nothing can be cleared on the combination instrument.

As soon as the diagnostics tool is connected, the hourmeter starts running.

Before longer diagnostic sessions, unplug the hourmeter behind the number plate.



Display ❶

Indicator lamp (p. 25) ❷

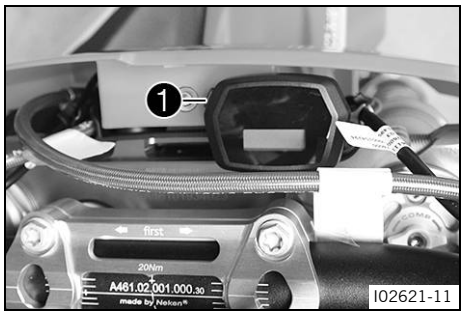
CAUTION

Danger of burns Parts of the combination instrument become hot in certain situations.

The display in particular can heat up considerably at ambient temperatures above 55 °C (131 °F) during long periods of inactivity, e.g. at traffic lights, or in direct sunlight.

- Do not touch the combination instrument with bare hands in the situations referred to.
- Where appropriate protective clothing.
- In the event of burns, rinse the area affected immediately with lukewarm water.

7.2 Combination instrument button



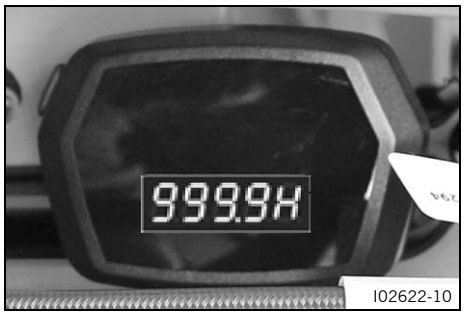
Button ❶ is used to control the combination instrument.

7.3 Indicator lamp



Condition		Meaning
	Malfunction indicator lamp lights up orange.	The **OBD** has detected a malfunction in the vehicle electronics. Come safely to a halt, and contact an authorized dealer.

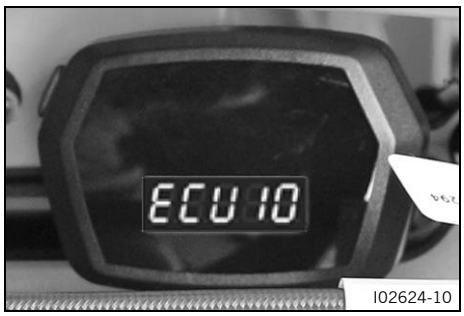
7.4 Operating hours



Press the button on the combination instrument briefly and repeatedly until the operating hours are displayed.

The operating hours display shows the total operating hours of the engine.

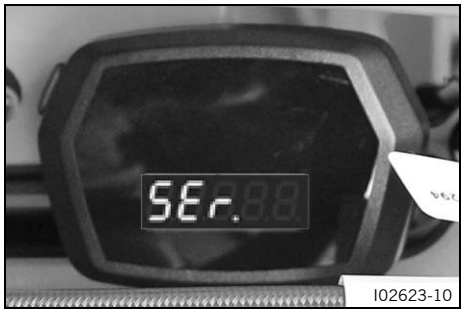
7.5 Warnings



Briefly and repeatedly press the button on the combination instrument until indicator **ECU** appears in the display.

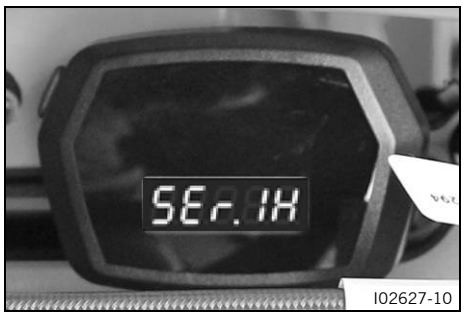
Indicator **ECU** only appears if there is a warning.

7.6 Service indicator



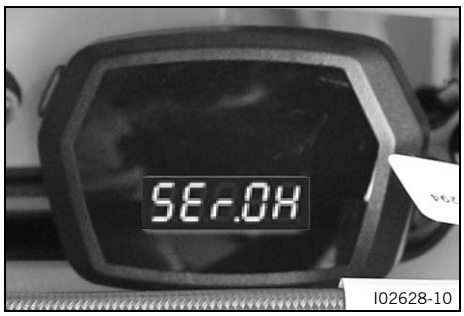
Briefly and repeatedly press the button on the combination instrument until indicator **Ser.** appears in the display.

Indicator **Ser.** shows the hours until the next service.



Briefly and repeatedly press the button on the combination instrument until indicator **Ser.1H** appears in the display.

Indicator **Ser.1H** only appears if the next service is due within the next hour.



Briefly and repeatedly press the button on the combination instrument until indicator **Ser.0H** appears in the display.

Indicator **Ser.0H** only appears when the next service is due.

7.7 Menu

7.7.1 Brightness



– Press the button on the combination instrument for 3 seconds until indicator **Ser. H** appears on the display.
– Briefly and repeatedly press the button on the combination instrument until indicator **HbS** appears in the display.
– Press the button on the combination instrument for 3 seconds until number **8** appears on the display.
– Press the button on the combination instrument briefly and repeatedly until the required value appears on the display.

Note

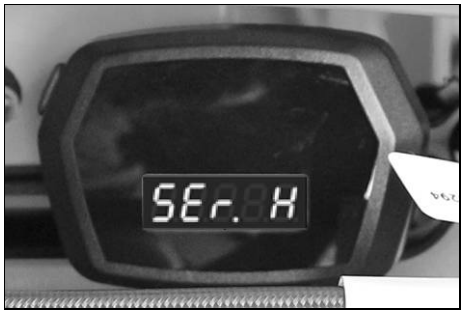
Number **8** represents minimum brightness.

Numbers **88888** represent maximum brightness.

– Press the button on the combination instrument for 3 seconds to confirm the value.

Indicator **HbS** can be used to adjust the brightness of the display.

7.7.2 Set service



– Press the button on the combination instrument for 3 seconds until indicator **Ser. H** appears on the display.
– Press the button on the combination instrument for 3 seconds until indicator **Ser. 5** appears on the display.
– Press the button on the combination instrument briefly and repeatedly until the required value appears on the display.

Note
The value increases by 5 hours each time.
If no button is pressed within 5 seconds, the menu closes without saving the value.

– Press the button on the combination instrument for 3 seconds to confirm the value.

Note
The value flashes until it has been confirmed.

8 Preparing for use

8.1 Notes on preparing for first use

DANGER
Danger of accidents A rider who is not fit to ride poses a danger to themself and to others.
– Do not operate the vehicle if you are not fit to ride due to alcohol, drugs, or medication.
– Do not operate the vehicle if you are physically or mentally incapable of doing so.

WARNING
Danger of accidents The vehicle is not designed to carry passengers.
– Do not ride with a passenger.

WARNING
Danger of accidents The brake system fails in the event of overheating.
If the brake pedal is not released, the brake pads grind continuously.
– Take your foot off the brake pedal when you are not braking.

WARNING
Danger of accidents Not adapting the riding style constitutes a major risk.
– Adapt the vehicle speed to the road conditions and your riding ability.

WARNING
Danger of accidents Total weight and axle loads influence the handling characteristic.
– Do not exceed the maximum permissible total weight or the axle loads.

WARNING
Risk of injury People who act without authorization endanger themselves and others.
– Never leave the vehicle unattended while the engine is running.
– Secure the vehicle against unauthorized access.

WARNING
Danger of accidents Different tire profiles on the front and rear wheels can make it more difficult to control the vehicle.
– Make sure that only tires of the same tread type are mounted to the front and rear wheel.

WARNING
Risk of injury Missing or inadequate protective clothing increases the risk of injury.
– Wear appropriate protective clothing such as helmet, boots, gloves as well as pants and a jacket with protectors on all rides.
– Always wear protective clothing that is in good condition and meets the legal regulations.

Note
When using the motorcycle, remember that others may be disturbed by excessive noise.

– Ensure that the pre–delivery inspection has been carried out by an authorized contractual partner.
  ✓ The delivery certificate is transferred upon vehicle handover.
– Read the entire owner's manual before riding for the first time.
– Get to know the controls.
– Adjust the basic position of the clutch lever. (p. 87)
– Adjust the basic position of the hand brake lever. (p. 90)
– Adjust the basic position of the brake pedal. (p. 96)
– Adjust the basic position of the gear shift lever. (p. 126)

– Get used to the handling characteristics of the motorcycle on suitable terrain before undertaking a more challenging ride.

Note

This vehicle is not approved for use on public roads.

When off-road, it is recommended that you be accompanied by another person with another vehicle so that you can help each other.

– Also, ride as slowly as possible and in a standing position to get a better feel for the motorcycle.
– Do not make any off-road trips that exceed your ability and experience.
– Hold the handlebar firmly with both hands and keep your feet on the footpegs when riding.
– Do not take any luggage.
– The maximum permissible total weight and the maximum permissible axle loads must not be exceeded.

Maximum permissible total weight	335 kg (738.5 lb)
Maximum permissible front axle load	145 kg (319.7 lb)
Maximum permissible rear axle load	190 kg (418.9 lb)

– Check the spoke tension. (p. 107)

The spoke tension must be checked after half an hour of operation.

– Run in the engine. (p. 29)

8.2 Running in the engine

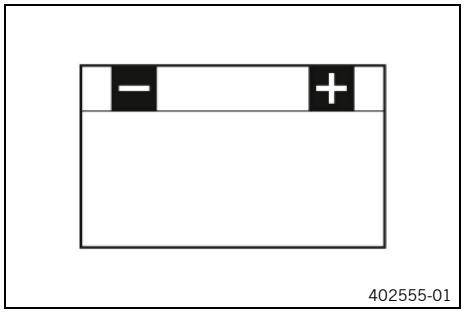
– Do not exceed the specified engine speed and load during the running-in time.

Maximum engine speed	
During the first operating hour	7,000 rpm (116.67 Hz)

Maximum engine power	
during the first 3 operating hours	≤ 75 %

Avoid fully opening the throttle.

8.3 Starting performance of lithium-ion batteries at low temperatures



Lithium-ion batteries are far lighter than lead batteries, have a low self-discharge rate, and have more starting power at temperatures over 6 °C (43 °F).

Several attempts to start may be required. Press the start button for 5 seconds, and wait 15 seconds between attempts. At low temperatures, wait for 30 seconds. The pauses are necessary so that the heat created can be distributed through the lithium-ion battery without damaging the lithium-ion battery.

The starting power increases as the battery warms up.

Always make sure the lithium-ion battery is charged to that there is enough power to spare for starting at low temperatures.

After 6 unsuccessful starting attempts, do not try again, and check the vehicle for other faults instead.

8.4 Preparing the vehicle for difficult operating conditions

Note
Use of the vehicle under difficult conditions, such as on sand or on wet and muddy surfaces, can result in significantly increased wear of components, such as the drive train, brake system, or suspension components. For this reason, it may be necessary to inspect or replace parts before the next scheduled service interval.

– Clean the air filter and air filter box. (p. 74)

Check the air filter approx. every 30 minutes.

– Prepare the air filter box cover for securing. (p. 72)
– Check the electrical socket connector for humidity and corrosion and to ensure it is firmly seated.
  » If moisture, corrosion, or damage is found:
    – Clean and dry the socket connector, or change it if necessary.

Difficult operating conditions are:

– Riding on dry sand. (p. 30)
– Riding on wet sand. (p. 31)
– Rides on wet and muddy surfaces. (p. 31)
– Riding at high temperatures or slow speed. (p. 32)
– Riding at low temperatures and in snow. (p. 32)

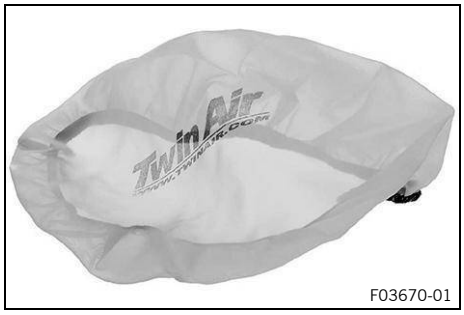
8.5 Preparing the vehicle for rides on dry sand



F03669-01

– Mount the air filter dust protection.

Read the accompanying mounting instructions.
Air filter dust protection cover (A46006920000)



F03670-01

– Mount the air filter sand protection.

Read the accompanying mounting instructions.
Air filter sand protection (A46006922000)


600868-01

– Clean the chain.

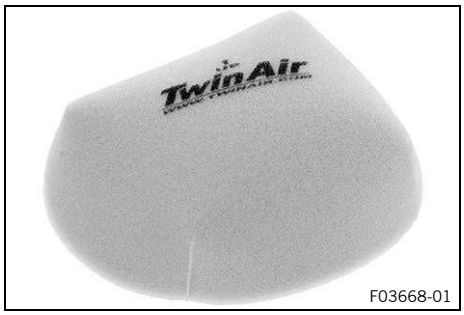
Chain cleaner (p. 158)

– Mount the steel sprocket.
– Grease the chain.

Universal oil spray (p. 155)

– Clean the radiator fins.
– Straighten the bent radiator fins carefully.

8.6 Preparing the vehicle for rides on wet sand



F03668-01

– Mount the air filter water protection.

Read the accompanying mounting instructions.

Air filter water protection (A46006921000)


600868-01

– Clean the chain.

Chain cleaner (p. 158)

– Mount the steel sprocket.
– Grease the chain.

Universal oil spray (p. 155)

– Clean the radiator fins.
– Straighten the bent radiator fins carefully.

8.7 Preparing for rides on wet and muddy surfaces



F03668-01

– Mount the air filter water protection.

Read the accompanying mounting instructions.

Air filter water protection (A46006921000)


600868-01

– Mount the steel sprocket.
– Clean the motorcycle. (p. 133)
– Straighten the bent radiator fins carefully.

8.8 Preparing vehicle for rides at high temperature or slow speed


600868-01

– Adjust the secondary transmission to the road conditions.

Note
The engine oil heats up quickly when the clutch is operated frequently due to an excessively high secondary ratio.


600868-01

– Clean the chain.

Chain cleaner (p. 158)

– Clean the radiator fins.
– Straighten the bent radiator fins carefully.
– Check the coolant level. (p. 117)

8.9 Preparing the vehicle for low temperatures or snow



F03668-01

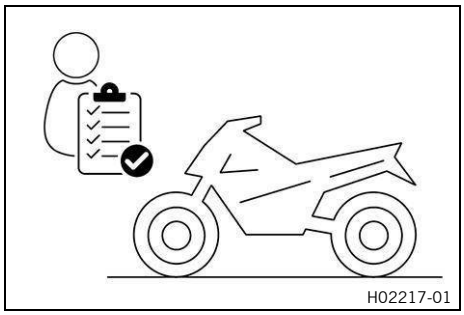
– Mount the air filter water protection.

Read the accompanying mounting instructions.

Air filter water protection (A46006921000)

9.1 Checks and maintenance measures when preparing for use

Note
Before every trip, check the condition of the vehicle and ensure that it is safe to operate.
The vehicle must be in perfect technical condition when it is being operated.


H02217-01

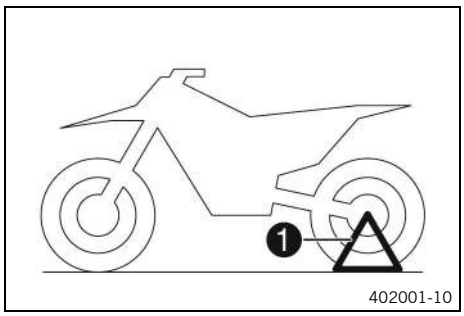
- Check that the electrical equipment is functioning properly.
- Check the engine oil level. (p. 128)
- Check the brake fluid level for the front brake. (p. 91)
- Check the brake fluid level for the rear brake. (p. 97)
- Check that the brake pads of the front brake are secured. (p. 93)
- Check that the brake pads of the rear brake are secured. (p. 99)
- Check the function, condition, and free travel of the brake system.
- Check the coolant level. (p. 117)
- Check the chain for dirt. (p. 80)
- Check the chain, rear sprocket, engine sprocket, and chain guide. (p. 82)
- Check the chain tension. (p. 81)
- Check the tire condition. (p. 106)
- Check the tire pressure. (p. 106)
- Check the spoke tension. (p. 107)

  The spoke tension must be checked regularly as incorrect spoke tension will severely impair riding safety.
- Clean the dust boots of the fork legs. (p. 55)
- Bleed the fork legs. (p. 54)
- Check the air filter and clean if necessary.
- Check the settings of all controls and ensure that they can be operated smoothly.
- Check all screws, nuts, and hose clamps regularly for tightness.
- Check the fuel level.

9.2 Starting the vehicle

DANGER
Danger of poisoning Exhaust gases are toxic and inhaling them may result in unconsciousness and death.
- Always ensure that there is sufficient ventilation when running the engine.
- Use suitable exhaust extraction when starting or running the engine in an enclosed space.

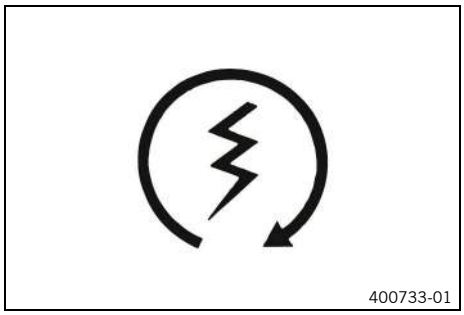
NOTE
Engine failure Running a cold engine at high engine speeds negatively impacts the service life of the engine.
- Always warm up the engine at low engine speeds.



– Remove plug-in stand ❶.
– Shift the transmission into the neutral position.

Condition: Ambient temperature: < 20 °C (< 68.0 °F)

– Press the cold start button in all the way to the stop.



– Press **electric starter** (⚡).

Press the electric starter for a maximum of 5 seconds. Wait for 15 seconds before a further attempt at starting.
After 6 unsuccessful starting attempts, do not try again, and check the vehicle for other malfunctions instead.

Note

At low temperatures, wait for 30 seconds.

At temperatures below 6 °C (43 °F), several attempts at starting may be necessary to warm-up the lithium-ion battery and thereby increase the starting power.

The malfunction indicator light lights up during the starting process.

9.3 Activating launch control

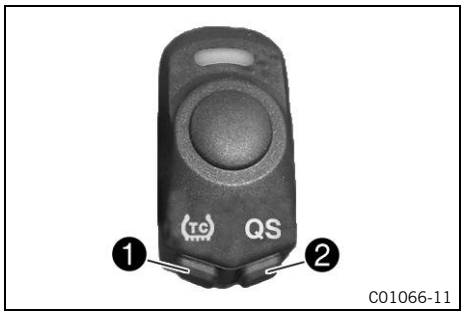
Note

The launch control helps the rider to generate optimum motorcycle acceleration at the beginning of a race. To achieve this, the maximum engine rev is reduced and restored again immediately after startup.

The control unit continuously adjusts ignition and engine torque to achieve an optimal balance between maximum traction and the best possible propulsion.

The clutch must be operated exactly as it would be without launch control activated.

Condition: Motorcycle is stationary, Transmission is in the neutral position



– Carry out the starting procedure. (p. 33)
– Press TC button ❶ and QS button ❷ simultaneously within 60 seconds.
  ✓ The TC indicator lamp and QS indicator light flash quickly.
– Shift into gear.
– Open the throttle twist grip up to a maximum of 50% or until the rev limiter audibly engages.
  ✓ Launch control rev limit active.
– Release the clutch lever and fully open the throttle twist grip.
  ✓ Normal rev release, Performance traction control and Quickshifter active
– Close the throttle twist grip.

✓ Launch control deactivated.

Note

After startup, **launch control** is automatically deactivated as soon as the maximum rev is reached and/or the next gear is engaged.

Launch control is also deactivated in the following cases: if the throttle valve is closed more than 1/3 of the way after full throttle, and/or if there is no start within 3 minutes.

For safety reasons, the engine must be restarted before the launch control can be activated again, regardless of whether the vehicle has been started or not.

If the engine has already been running for some time, the engine must first be restarted before the launch control can be activated.

9.4 Activating traction control

Note

Traction control reduces excessive slip on the rear wheel in favor of more control and propulsion, particularly in wet conditions.

When traction control is switched off, the rear wheel may spin more during high acceleration and on surfaces with low grip.

Traction control can be switched on or off during the ride.

The setting most recently selected is activated again when restarting.



– Press the TC button ❶ to switch traction control on or off.
✓ The TC indicator lamp lights up if traction control is active.

9.5 Activating the Factory Start

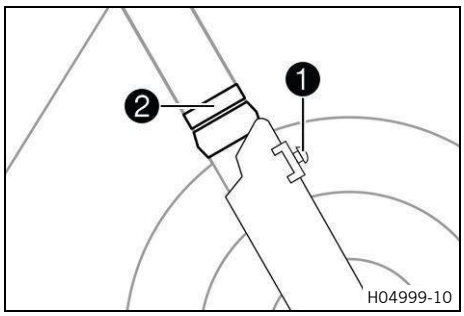
WARNING

Danger of accidents The Factory Start actuator may freeze up in cold weather.

If the actuator freezes while Factory Start is activated, the fork will not decompress fully.

The greatly reduced suspension travel impairs the handling characteristic.

– Check that the actuator moves easily before activating the Factory Start.
– Activate the Factory Start shortly before starting.

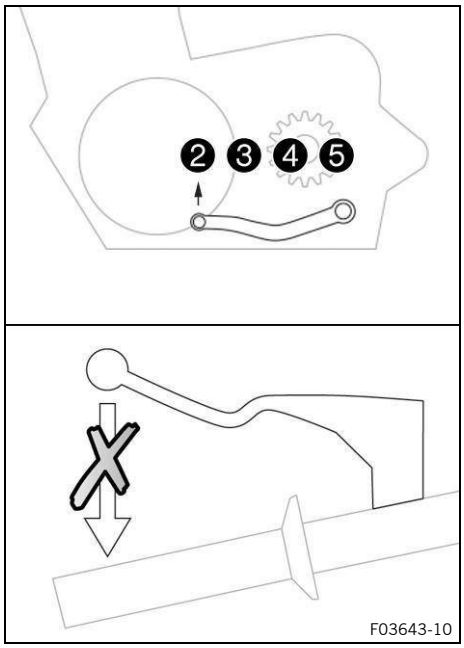


– Check lock button ❶ to ensure it can move easily.
– Bend over the handlebars while sitting on the motorcycle.
– Grip the rim and compress the fork.
– Press lock button ❶ and decompress slowly until the lock button engages in lock ring ❷.
  ✓ When the fork compresses for the first time, the lock button is released automatically.

9.6 Starting off

– Pull the clutch lever, shift into first gear, release the clutch lever slowly and at the same time carefully open the throttle.

9.7 Quickshifter

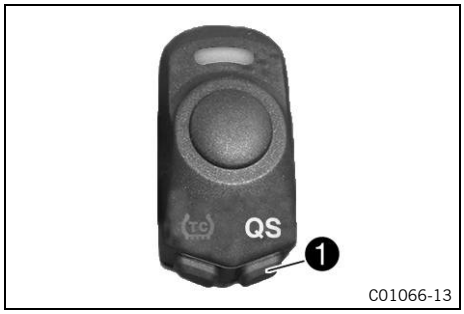


When the **Quickshifter** is active, you can shift up without actuating the clutch lever.

Note
The Quickshifter is already active when shifting up from 1st to 2nd gear.
Even if the Quickshifter is active, you need to actuate the clutch lever to shift down.

Because there is no need to close the throttle grip, uninterrupted gear shifts are possible.
The quickshifter uses the shifter shaft position to check whether or not a shift should be initiated, and sends a corresponding signal to the engine control.
If the Quickshifter is deactivated, the clutch lever needs to be actuated in the normal way for each shift.

9.8 Activate the Quickshifter



– Press the QS button ❶ to switch the Quickshifter on or off.
  ✓ The QS indicator lamp lights up when the Quickshifter is active.

Note
The Quickshifter is already active when shifting up from 1st to 2nd gear.
Even if the Quickshifter is active, you need to actuate the clutch lever to shift down.

9.9 Shifting, riding

WARNING

Danger of accidents If you downshift at high engine speed, the rear wheel blocks and the engine races.

– Do not downshift to a lower gear at high engine speeds.

Note

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

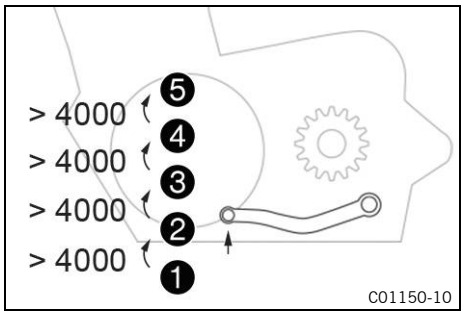
First gear is used for starting off or for steep inclines.

– Shift into a higher gear when conditions allow (incline, riding situation, etc.). To do so, release the throttle while simultaneously pulling the clutch lever, shift into the next gear, release the clutch lever and open the throttle.
– If you pushed the cold start button while starting, open the throttle briefly and release the throttle twist grip or turn the throttle twist grip forward.
  ✓ The cold start button goes to the basic position.
– After reaching maximum speed by fully opening the throttle twist grip, turn the throttle back so that it is ¾ open. This will reduce the speed slightly, but the fuel consumption will be considerably lower.
– Only open the throttle as much as the engine can handle. Abruptly opening the throttle increases fuel consumption.
– To shift down, brake and close the throttle at the same time.
– Pull the clutch lever and shift into a lower gear, release the clutch lever slowly, and either open the throttle or shift again.
– Switch off the engine if you are likely to be running at idle speed or stationary for a long time.

≥ 1 min

– Avoid riding the clutch frequently or for too long. This causes the engine oil, engine and cooling system to heat up.
– Ride at a low engine speed instead of at a high engine speed when riding the clutch.

Condition: Quickshifter activated



– If the **Quickshifter** is active, you can shift up in the rev range shown without actuating the clutch lever.

Note

The Quickshifter is already active when shifting up from 1st to 2nd gear.

Pull the gear shift lever quickly to the stop.

The minimum engine speed in rpm before shifting up is shown in the figure.

Even if the Quickshifter is active, you need to actuate the clutch lever to shift down.

9.10 Braking

WARNING
Danger of accidents A spongy pressure point on the front or rear brake reduces the brake action.
– Do not drive the vehicle if the brake system has a spongy pressure point.

WARNING
Danger of accidents Braking with excessive force locks the wheels.
– Adapt your braking to the riding situation and the road conditions.

WARNING
Danger of accidents Moisture and dirt impair the brake system.
– Brake carefully several times to dry out and remove dirt from the brake pads and the brake discs.

– On sandy, wet, or slippery surfaces, use mostly the rear brake.
– Always finish braking before you go into a bend. Shift into a lower gear that suits the speed.
– Use the brake action of the engine on long downhill stretches. Shift down one or two gears, but do not overrev the engine when doing so. This means that significantly less braking is required and means the brake system does not overheat.

9.11 Stop, park

WARNING
Danger of burns Some vehicle components become hot when the vehicle is operated.
– Do not touch any parts such as the exhaust system, radiator, engine, damper, or brake system before the vehicle parts have cooled down.
– Allow the vehicle parts to cool down before performing any work on the vehicle.

WARNING
Risk of injury People who act without authorization endanger themselves and others.
– Never leave the vehicle unattended while the engine is running.
– Secure the vehicle against unauthorized access.

NOTE
Fire hazard Hot vehicle components pose a fire hazard and explosion risk.
– Do not park the vehicle near materials which are highly flammable or explosive.
– Allow the vehicle to cool down before covering it.

NOTE
Material damage The vehicle may be damaged if parked incorrectly.
Damage can occur if the vehicle rolls away or falls over.
The components for parking the vehicle are designed only for the weight of the vehicle.
– Park the vehicle on a firm and level surface.
– Make sure that nobody sits on the vehicle when it is parked on a stand.

– Brake the motorcycle.
– Shift the transmission into the neutral position.
– Press kill button ⊗ when the engine is at idle speed until the engine stops.
– Park the motorcycle on firm ground.

9.12 Transportation

NOTE

Fire hazard Hot vehicle components pose a fire hazard and explosion risk.

– Do not park the vehicle near materials which are highly flammable or explosive.
– Allow the vehicle to cool down before covering it.

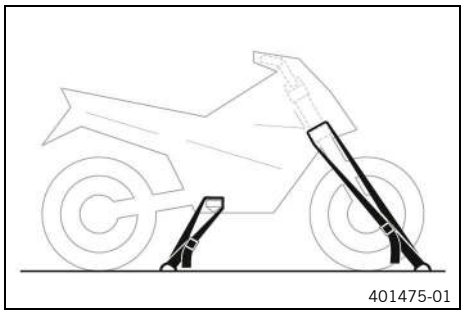
NOTE

Material damage The vehicle may be damaged if parked incorrectly.

Damage can occur if the vehicle rolls away or falls over.

The components for parking the vehicle are designed only for the weight of the vehicle.

– Park the vehicle on a firm and level surface.
– Make sure that nobody sits on the vehicle when it is parked on a stand.



– Switch off the engine.
– Use tension belts or other suitable devices to secure the motorcycle against falling over or rolling away.

9.13 Refueling

DANGER

Fire hazard Fuel is highly flammable.

The fuel in the fuel tank expands when warm and can escape if overfilled.

– Do not refuel the vehicle in the vicinity of open flames, glowing, or smoldering objects.
– Make sure that nobody smokes in the vicinity of the vehicle during the refueling process.
– Switch off the engine for refueling.
– Make sure that no fuel is spilled; particularly not on hot parts of the vehicle.
– If any fuel is spilled, wipe it up immediately.
– Do not overfill the fuel tank.

WARNING

Danger of poisoning Fuel is harmful to health.

– Do not allow fuel to come into contact with skin, eyes, or clothing.
– Consult a doctor immediately if fuel has been ingested.
– Do not inhale fuel vapors.
– Rinse the affected area immediately with plenty of water in the event of contact with skin.
– Rinse eyes thoroughly with water and consult a doctor immediately if fuel comes into contact with eyes.
– If fuel spills on to your clothing, change the clothing.
– Store fuel properly in a suitable container and keep out of the reach of children.

NOTE

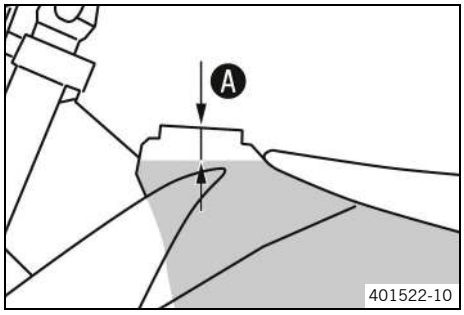
Material damage Inadequate fuel quality can lead to losses in performance and consequential damage.

– Refuel only with clean fuel that meets the specified standards.

NOTE

Environmental hazard Improper handling of fuel is dangerous to the environment.

– Do not allow fuel to enter the groundwater, the soil, or the sewage system.



– Switch off the engine.
– Open the fuel tank cap. (p. 20)
– Fill the fuel tank with fuel up to a maximum of level A.

Dimension A	35 mm (1.38 in)

Total fuel tank capacity, approx.	
Super unleaded (ROZ 95) (p. 154)	7.3 l (1.93 liq. gal_{US})
Total fuel tank capacity, approx.	
Super unleaded (ROZ 98) (p. 154)	7.3 l (1.93 liq. gal_{US})

– Close the fuel tank cap. (p. 21)

10.1 Service schedule

Any further work that results from the service work must be ordered separately and invoiced separately.

Different service intervals may apply in your country, depending on the local operating conditions.

If the vehicle is used in particularly harsh conditions such as heavy rain, mud, sand, snow, extreme temperatures, frequent full load etc., shorter service intervals than those in the table may be necessary.

Individual service intervals and scopes may change in the course of technical developments. The most up-to-date service schedule is available for authorized contractual partners for the electronic proof of service. Your authorized contractual partner will be happy to advise you.

	After one operating hour	Every 15 operating hours	Every 45 operating hours	Every 90 operating hours	Every 24 months
Read out the fault memory using the diagnostics tool.	○	●	●	●	●
Check that the electrical equipment is functioning properly.	○	●	●	●	
Check and charge the 12 V battery.	○	●	●	●	●
Check that the brake pads of the front brake are secured. (p. 93)	○	●	●	●	●
Check that the brake pads of the rear brake are secured. (p. 99)	○	●	●	●	●
Check the brake discs. (p. 90)	○	●	●	●	●
Check the brake lines for damage and tightness.	○	●	●	●	●
Check the brake fluid level for the front brake. (p. 91)	○	●	●		
Change the brake fluid for the front brake.				●	●
Check the brake fluid level for the rear brake. (p. 97)	○	●	●		
Change the brake fluid for the rear brake.				●	●
Check/correct the fluid level of the hydraulic clutch. (p. 88)			●		
Change the hydraulic clutch fluid. (p. 88)				●	●
Check the free travel on the hand brake lever. (p. 90)	○	●	●	●	●
Check the free travel of the brake pedal. (p. 96)	○	●	●	●	●
Check the idle setting using the KTM diagnostics tool.	○	●	●	●	●
Change the engine oil and oil filter, clean the oil screen.	○	●	●	●	●
Check all hoses (e.g. fuel, cooling, bleeder, drainage, etc.) and boots for cracking, leaks, and correct routing.	○	●	●	●	●
Check the cables for damage and that there are no kinks in the routing.		●	●	●	●
Check that the clutch cables are undamaged, routed without kinks, and set correctly.		●	●	●	●
Check the frame. (p. 85)		●	●	●	
Check the swingarm. (p. 85)		●	●	●	
Check the swingarm bearing for play.			●	●	
Check the heim joint on the shock absorber for play.			●	●	
Check the shock absorber linkage.		●	●	●	
Check the tire condition. (p. 106)		●	●	●	●
Check the tire pressure. (p. 106)		●	●	●	●

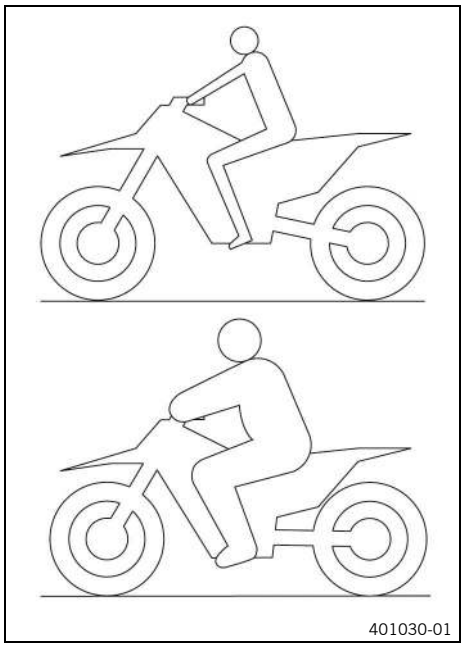
	After one operating hour	Every 15 operating hours	Every 45 operating hours	Every 90 operating hours	Every 24 months
Check the wheel bearing for play.		●	●	●	
Check the hubs.		●	●	●	
Check the rim run-out.	○	●	●	●	
Check the spoke tension. (p. 107)	○	●	●	●	
Check the chain, rear sprocket, engine sprocket, and chain guide. (p. 82)	○	●	●	●	
Check the chain tension. (p. 81)	○	●	●	●	●
Grease all moving parts (e.g., hand lever, chain, etc.) and check for smooth operation.	○	●	●	●	●
Change the spark plug and spark plug connector.			●	●	
Check the valve clearance.	○		●	●	
Change the fuel filter.				●	●
Check the clutch.		●	●	●	
Clean the air filter and air filter box. (p. 74)		●	●	●	●
Change the damping material on the main silencer. (p. 76)			●	●	
Carry out fork service.			●	●	
Service the shock absorber.			●	●	
Check all screws, nuts, and hose clamps for a tight fit.	○	●	●	●	●
Change the fuel screen. (p. 127)	○	●	●	●	●
Check the fuel pressure.	○		●	●	●
Check the frost protection and coolant level. (p. 116)			●	●	
Check the coolant level. (p. 117)	○	●			
Change the coolant. (p. 119)					●
Check the steering head bearing play. (p. 63)	○	●			
Lubricate the steering head bearing. (p. 64)			●	●	●
Perform minor engine service including removing and installing the engine. (Change the piston, check/measure the cylinder. Check the cylinder head. Check the camshaft and valve train components. Check the timing assembly. Change the radial shaft seal rings of the water pump. Change the radial shaft seal for the crankshaft in the inner clutch cover. Change the intake flange. Change the intake snorkel fastening.)			●	●	
Perform major engine service, engine is removed. (Change valves, valve springs, valve spring seats, and valve spring retainer. Change the connecting rod, big end bearing and crank pin. Check the transmission and shift mechanism. Check the oil pressure control valve. Change the suction pump. Check the force pump and lubrication system. Change the timing chain, timing chain rails and timing chain tensioner. Change all engine bearings and all seals. Change the freewheel.)				●	
Final check: check vehicle for operating safety.	○	●	●	●	●
Take a test ride.	○	●	●	●	●
Read out the fault memory after the test ride using the diagnostics tool.	○	●	●	●	●
Enter the electronic proof of service in the contractual partner portal.	○	●	●	●	●

○ One-time interval
● Periodic interval

11 Tuning the chassis

11.1 Checking the basic chassis setting with the rider's weight

Note
When adjusting the basic chassis setting, first adjust the shock absorber and then the fork.



– For optimal motorcycle riding characteristics and to avoid damage to forks, shock absorbers, swingarm, and frame, the basic settings of the suspension components must match the rider's weight.
– As delivered, KTM offroad motorcycles are adjusted for an average rider's weight (with full protective clothing).

Standard rider's weight	75 kg ... 85 kg (165.3 lb ... 187.4 lb)

– If the rider's weight is above or below this range, the basic setting of the suspension components must be adjusted accordingly.
– Small weight differences can be compensated by adjusting the spring pretension of the shock absorber, but in the case of large weight differences, the springs must be replaced.

11.2 Compression damping of the shock absorber

The compression damping of the shock absorber is divided into two ranges: high-speed and low-speed.

High-speed and low-speed refer to the compression speed of the rear wheel suspension and not to the vehicle speed.

The high-speed compression damping adjustment has an effect, for example, when landing after a jump: the rear wheel suspension compresses quickly.

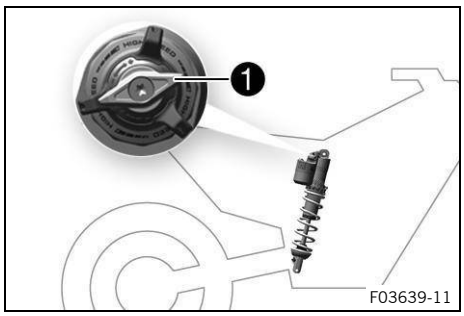
The low-speed compression has an effect, for example, when riding over long bumps: the rear wheel suspension compresses slowly.

These two ranges can be adjusted separately, although the transition between high-speed and low-speed is floating. As a result, changes in the high-speed range affect the compression damping in the low-speed range and vice versa.

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

CAUTION
Risk of injury Parts of the shock absorber will move erratically if the shock absorber is detached incorrectly.
The shock absorber is filled with highly compressed nitrogen.
– Please follow the description provided.

Note
The effect of the low-speed compression adjustment can be seen in slow to normal compression of the shock absorber.



– Turn adjuster ❶ clockwise all the way to the stop.
– Turn counterclockwise by the number of clicks corresponding to the shock absorber type.

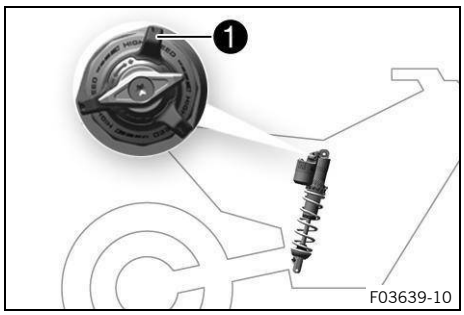
Low-speed compression damping	
Comfort	17 clicks
Standard	15 clicks
Sport	13 clicks

Note
Turning clockwise increases damping; turning anticlockwise reduces damping.

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

CAUTION
Risk of injury Parts of the shock absorber will move erratically if the shock absorber is detached incorrectly. The shock absorber is filled with highly compressed nitrogen.
– Please follow the description provided.

Note
The effect of the high-speed compression adjustment can be seen in the fast compression of the shock absorber.



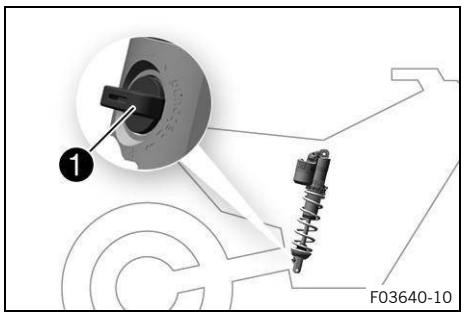
– Turn adjuster ❶ clockwise all the way to the stop.
– Turn counterclockwise by the number of turns corresponding to the shock absorber type.

High-speed compression damping	
Comfort	20 clicks
Standard	15 clicks
Sport	10 clicks

Note
Turning clockwise increases damping; turning anticlockwise reduces damping.

11.5 Adjusting the rebound damping of the shock absorber

CAUTION
Risk of injury Parts of the shock absorber will move erratically if the shock absorber is detached incorrectly. The shock absorber is filled with highly compressed nitrogen.
– Please follow the description provided.



– Turn adjuster ❶ clockwise up to the last perceptible click.
– Turn counterclockwise by the number of clicks corresponding to the shock absorber type.

Rebound damping	
Comfort	17 clicks
Standard	15 clicks
Sport	13 clicks

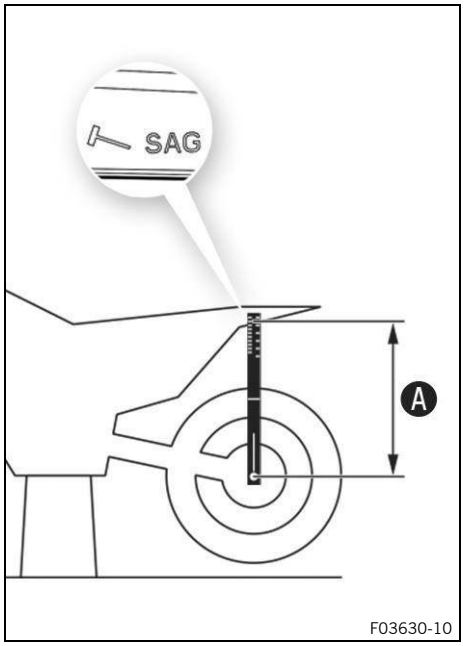
Note
Turning clockwise increases damping; turning anticlockwise reduces damping on rebound.

11.6 Measuring the dimension of the unloaded rear wheel

Preparatory work

– Raise the motorcycle with a lift stand. (p. 54)

Main work



– Position the sag scale in the rear axle and measure the distance to marking **SAG** on the rear fender.

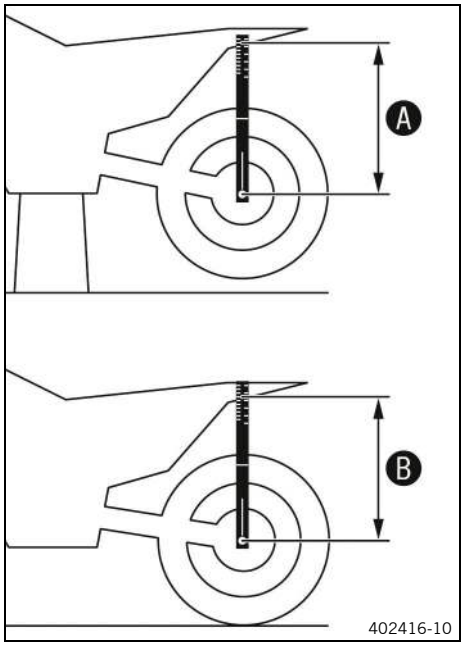
Sag scale (00029090200)

– Note the value as dimension Ⓐ.

Reworking

– Remove the motorcycle from the lift stand. (p. 54)

11.7 Checking the static sag of the shock absorber



– Measure dimension Ⓐ of rear wheel unloaded. (p. 46)
– Hold the motorcycle upright with aid of an assistant.
– Measure the distance again between the rear axle and marking **SAG** on the rear fender using the sag gage.
– Note the value as dimension Ⓑ.

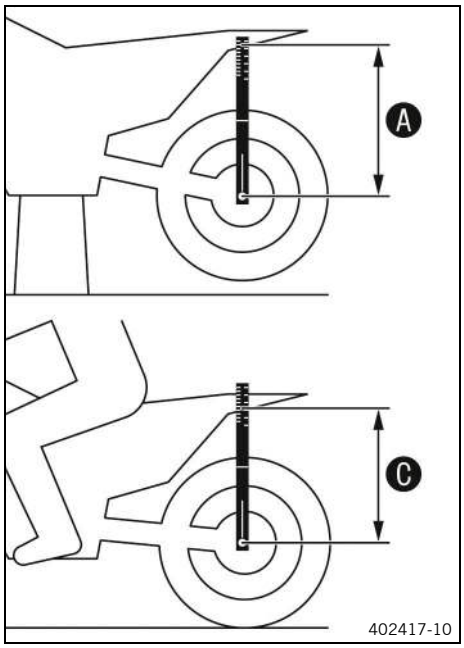
Note
The static sag is the difference between measurements Ⓐ and Ⓑ.

– Check the static sag.

Static sag	35 mm (1.38 in)

» If the static sag is more or less than the specified value:
– Adjust the preload for the shock absorber. (p. 48)

11.8 Checking the rider sag of the shock absorber



– Measure dimension Ⓐ of rear wheel unloaded. (p. 46)
– With another person holding the motorcycle, sit on the saddle with full protective clothing in a normal sitting position (feet on footrests) and bounce up and down a few times.
✓ The rear wheel suspension levels out.
– With the help of another person, remeasure the distance between the rear axle and marking **SAG** on the rear fender using the sag scale.
– Note the value as dimension Ⓒ.

Note
The rider sag is the difference between measurements Ⓐ and Ⓒ.

– Check the rider sag.

Rider sag	105 mm (4.13 in)

» If the rider sag differs from the specified measurement:
– Adjust the rider sag. (p. 49)

11.9 Adjusting the preload for the shock absorber

CAUTION

Risk of injury Parts of the shock absorber will move erratically if the shock absorber is detached incorrectly. The shock absorber is filled with highly compressed nitrogen.

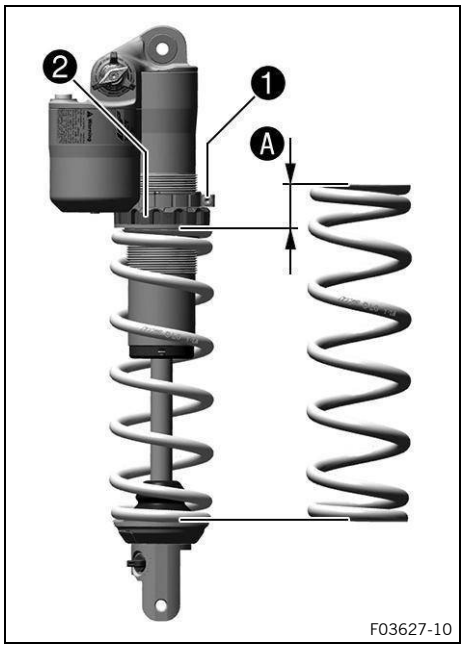
– Please follow the description provided.

Note

Note the current adjustment before changing the spring preload - e.g. measure the spring length.

Preparatory work

– Remove the muffler. (p. 75)
– Remove the frame protector. (p. 58)
– Raise the motorcycle with a lift stand. (p. 54)
– Remove the shock absorber. (p. 66)
– After removing the shock absorber, clean it thoroughly.



Main work

– Loosen screw ❶.
– Turn adjusting ring ❷ counterclockwise all the way until the spring is fully relieved of tension.

Hook wrench (90129051000)

Note

If the spring cannot be fully released, the spring must be removed to accurately measure the spring length.

– Measure the total spring length while the spring is not under tension.
– Tension the spring by turning adjusting ring ❷ to specified dimension Ⓐ.

Preload	8 mm (0.31 in)

Note

Depending on the static sag and/or the rider sag, it may be necessary to increase or decrease the spring preload.

– Tighten screw ❶.

Screw, shock absorber adjusting ring	
M5×20	5 Nm (3.7 ft·lb$_f$)

Make sure that the adjusting ring does not touch any other components when installed.

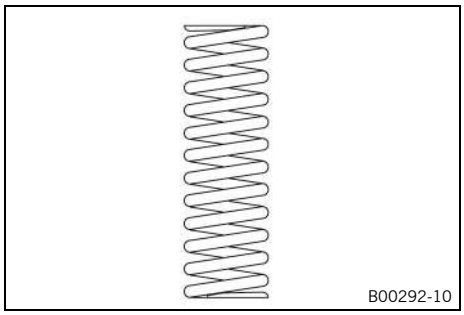
Reworking

- Install the shock absorber. (p. 68)
- Check the free travel of the brake pedal. (p. 96)
- Remove the motorcycle from the lift stand. (p. 54)
- Install the frame protector. (p. 58)
- Install the muffler. (p. 75)

11.10 Adjusting the rider sag

Preparatory work

- Remove the muffler. (p. 75)
- Remove the frame protector. (p. 58)
- Raise the motorcycle with a lift stand. (p. 54)
- Remove the shock absorber. (p. 66)
- After removing the shock absorber, clean it thoroughly.



Main work

- Select and mount a suitable spring.

Spring rate	
Weight of rider: 65 kg ... 75 kg (143.3 lb ... 165.3 lb)	45 N/mm (257.0 lb_f/in)
Weight of rider: 75 kg ... 85 kg (165.3 lb ... 187.4 lb)	48 N/mm (274.1 lb_f/in)
Weight of rider: 85 kg ... 95 kg (187.4 lb ... 209.4 lb)	51 N/mm (291.2 lb_f/in)

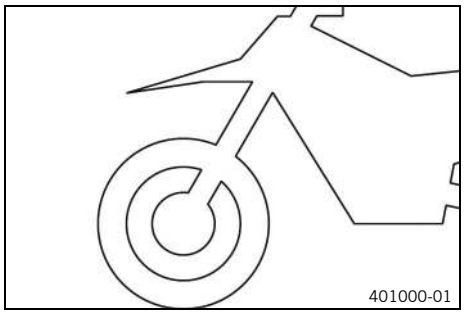
Note
The spring rate is shown on the outside of the spring.

Reworking

- Install the shock absorber. (p. 68)
- Check the free travel of the brake pedal. (p. 96)
- Remove the motorcycle from the lift stand. (p. 54)
- Install the frame protector. (p. 58)
- Install the muffler. (p. 75)
- Check the static sag of the shock absorber. (p. 47)
- Check the rider sag of the shock absorber. (p. 47)
- Adjust the rebound damping of the shock absorber. (p. 45)

11.11 Checking the basic setting of the fork

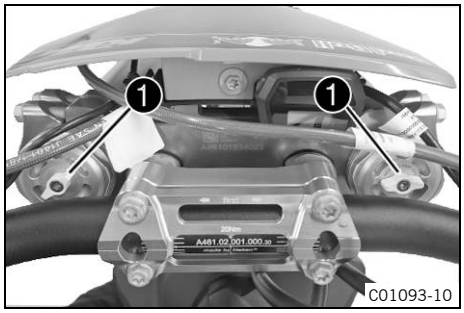
Note
For various reasons, no exact rider sag can be determined for the fork.



- As with the shock absorber, smaller differences in the rider's weight can be compensated by the spring preload.
- However, if the fork frequently bottoms out (hard end stop on compression), harder springs must be fitted to avoid damage to the fork and frame.
- If the fork feels unusually hard after extended periods of operation, the fork legs need to be bled.

11.12 Adjusting the compression damping of the fork

Note
The hydraulic compression damping determines the fork suspension behavior.



- Turn adjusters ❶ clockwise all the way to the stop.

Note
Adjusters ❶ are located at the top end of the fork legs.

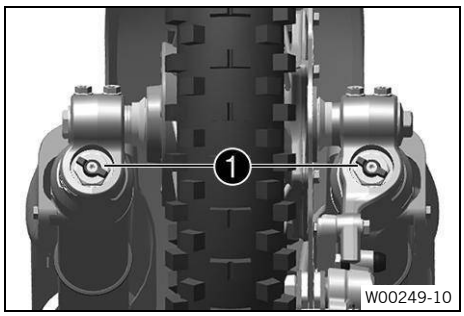
- Turn counterclockwise by the number of clicks corresponding to the fork type.

Compression damping	
Comfort	17 clicks
Standard	12 clicks
Sport	7 clicks

Note
Turning clockwise increases damping; turning counterclockwise reduces damping during compression.

11.13 Adjusting the rebound damping of the fork

Note
The hydraulic rebound damping determines the fork suspension behavior.



– Turn adjusters ❶ clockwise all the way to the stop.

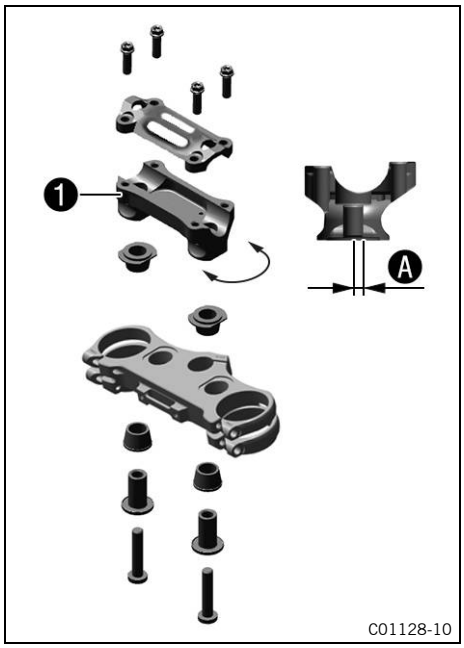
Note
Adjusters ❶ are located at the bottom end of the fork legs.

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

Rebound damping	
Comfort	20 clicks
Standard	15 clicks
Sport	10 clicks

Note
Turning clockwise increases damping; turning anticlockwise reduces damping on rebound.

11.14 Handlebar position



The holes on the handlebar support ❶ are placed at a distance of Ⓐ from the center.

Hole distance Ⓐ	3.5 mm (0.138 in)

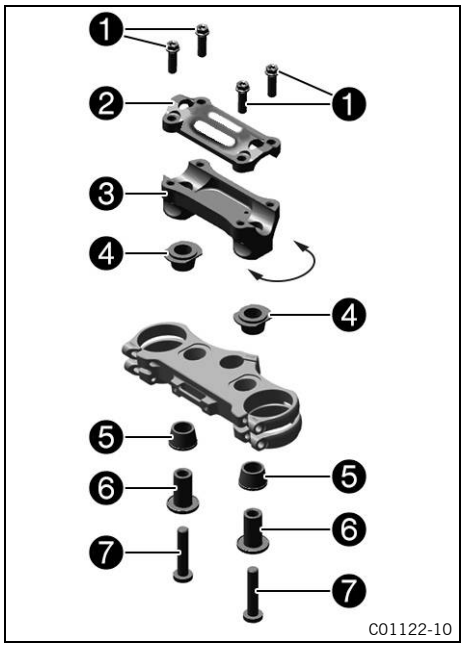
The handlebar can be mounted in 2 different positions. This allows the handlebar to be mounted in the most comfortable position for the rider.

Note
In addition, the handlebar can be mounted rigidly or on a rubber support.

11.15 Adjusting the handlebar position

WARNING
Danger of accidents A repaired handlebar poses a safety risk.
If the handlebar is bent or straightened, the material becomes fatigued. The handlebar may break as a result.
– Change the handlebar if the handlebar is damaged or bent.

Note
The handlebar can be mounted rigidly or on a rubber bearing.



Preparatory work

– Remove the handlebar pad.

Main work

– Remove screws ❶.
– Take off handlebar clamp ❷.
– Remove the handlebar and lay it to one side.
– Remove screws ❼ and bushings ❻.
– Take off handlebar mounting ❸.

Protect the components against damage by covering them.
Do not kink the cables or lines.

– Select one of the following alternatives.

Adjusting the handlebar position with handlebar clamp with rubber bushings

– Position the rubber bushings ❹ and ❺.
– Place the handlebar mount in the required position.

Note
The handlebar mounting is longer and higher on one side.

– Mount and tighten the screws ❼ with the bushings ❻.

Screw, handlebar mount	
M10×50	40 Nm (29.5 ft·lb$_f$) **Loctite® 243**

– Position the handlebar.

Make sure the cables and wiring are positioned correctly.

– Position handlebar clamp ❷.
– Mount screws ❶, but do not tighten yet.

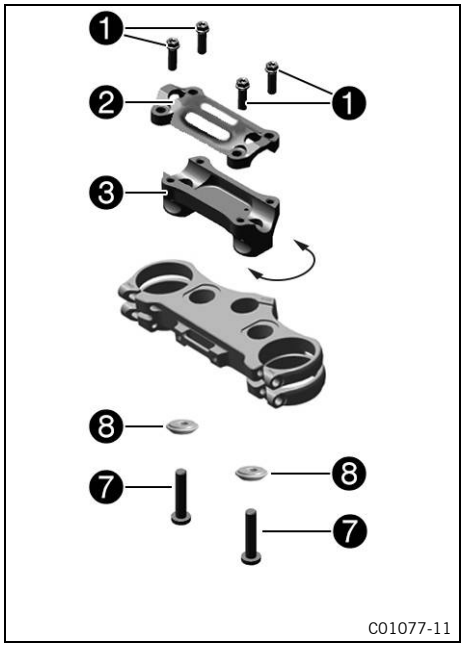
Screw, handlebar clamp	
M8×25	20 Nm (14.8 ft·lb$_f$)

– Tighten screws ❶ evenly.

First bolt the handlebar clamp with screws ❶ onto the longer, higher side of the handlebar mounting so that both parts touch.

Screw, handlebar clamp	
M8×25	20 Nm (14.8 ft·lb$_f$)

Adjusting the handlebar position with the rigid handlebar clamp



– Place the handlebar mounting ❸ in the required position.

Note
The handlebar mounting is longer and higher on one side.

– Mount and tighten the screws ❼ with the bushings ❽.

Screw, handlebar mount	
M10×50	40 Nm (29.5 ft·lb$_f$) **Loctite® 243**

Rigid handlebar clamp bushing (A46001038010)

✓ The conical side of the bushing faces downward.

– Position the handlebar.

Make sure the cables and wiring are positioned correctly.

– Position handlebar clamp ❷.
– Mount screws ❶, but do not tighten yet.

Screw, handlebar clamp	
M8×25	20 Nm (14.8 ft·lb$_f$)

– Tighten screws ❶ evenly.

First bolt the handlebar clamp with screws ❶ onto the longer, higher side of the handlebar mounting so that both parts touch.

Screw, handlebar clamp	
M8×25	20 Nm (14.8 ft·lb$_f$)

Reworking

– Mount the handlebar pad.

12.1 Raising the motorcycle with a lift stand

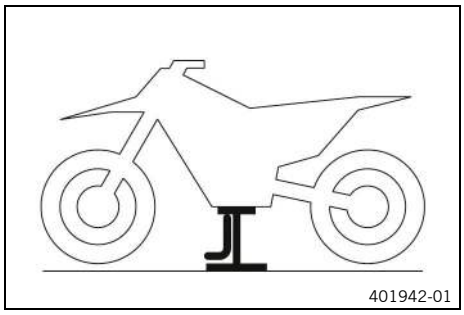
NOTE

Material damage The vehicle may be damaged if parked incorrectly.

Damage can occur if the vehicle rolls away or falls over.

The components for parking the vehicle are designed only for the weight of the vehicle.

– Park the vehicle on a firm and level surface.
– Make sure that nobody sits on the vehicle when it is parked on a stand.


401942-01

– Remove the plug-in stand and lift up the motorcycle by the motor guard underneath the engine.

Lift stand (78129955100)

✓ Neither wheel is in contact with the ground.
– Secure the motorcycle against falling over.

12.2 Removing the motorcycle from the lift stand

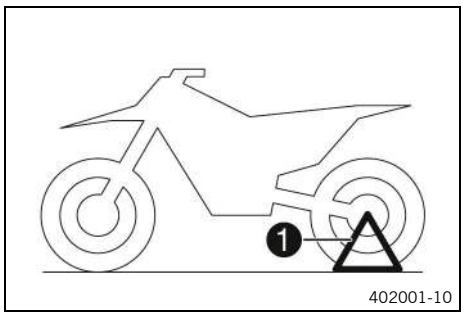
NOTE

Material damage The vehicle may be damaged if parked incorrectly.

Damage can occur if the vehicle rolls away or falls over.

The components for parking the vehicle are designed only for the weight of the vehicle.

– Park the vehicle on a firm and level surface.
– Make sure that nobody sits on the vehicle when it is parked on a stand.



402001-10

– Remove the motorcycle from the lift stand.
– Remove the lift stand.
– To park the motorcycle, insert plug-in stand ❶ into the left side of the wheel spindle.

The plug-in stand must be removed before riding.

Plug-in stand (A46103020000)

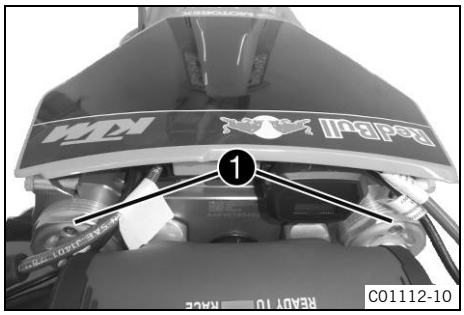
Note

The plug-in stand is included in the scope of supply.

12.3 Bleeding the fork legs

Preparatory work

– Raise the motorcycle with a lift stand. (p. 54)



Main work

– Loosen bleeder screw 1.
  ✓ Any excess pressure escapes from the inner fork.
– Tighten the bleeder screw.

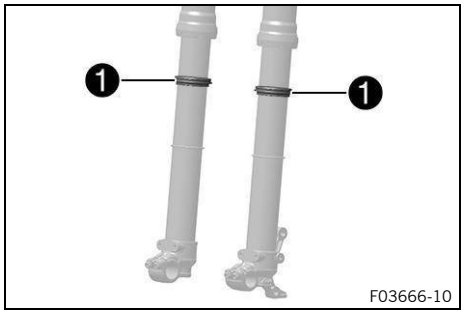
Reworking

– Remove the motorcycle from the lift stand. (p. 54)

12.4 Cleaning the dust boots of the fork legs

Preparatory work

– Raise the motorcycle with a lift stand. (p. 54)
– Remove the front wheel. (p. 102)
– Remove the fork protection. (p. 56)



Main work

– Push dust boots 1 of both fork legs downward.

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

WARNING
Danger of accidents Oil, grease or wax on the brake discs reduces the brake action.
– Always keep the brake discs free of oil, fat and wax.
– Clean the brake discs with brake cleaner when necessary.

– Clean and oil the dust boots and the inner fork tube of both fork legs.

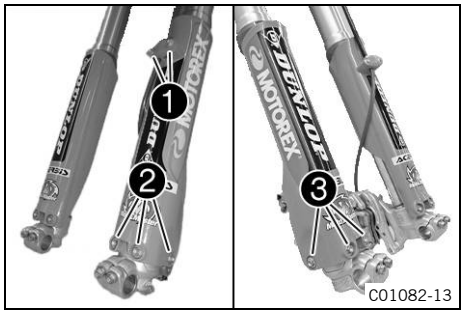
Universal oil spray (p. 155)

– Press the dust boots back into their installation position.
– Remove excess oil.

Reworking

– Install the fork protection. (p. 56)
– Install the front wheel. (p. 103)
– Remove the motorcycle from the lift stand. (p. 54)

12.5 Removing the fork protection



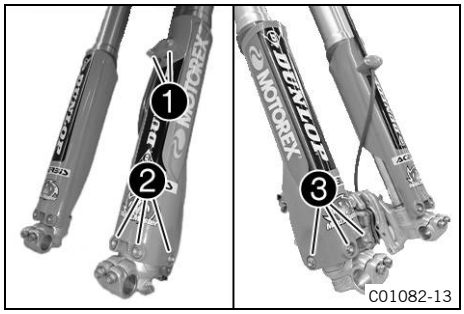
Preparatory work

– Raise the motorcycle with a lift stand. (p. 54)
– Remove the front wheel. (p. 102)

Main work

– Remove screws ❶.
– Take off the clamp.
– Remove screws ❷.
– Take off the left fork protection.
– Remove screws ❸.
– Remove the right fork protection.

12.6 Installing the fork protection



Main work

– Position the fork protection with the brake line and clamp on the left fork leg.
– Mount and tighten screws ❶.

Remaining screws on chassis	
M6	10 Nm (7.4 ft·lb$_f$)

– Mount and tighten screws ❷.

Remaining screws on chassis	
EJOT PT® – K60×25 – Z	2 Nm (1.5 ft·lb$_f$)

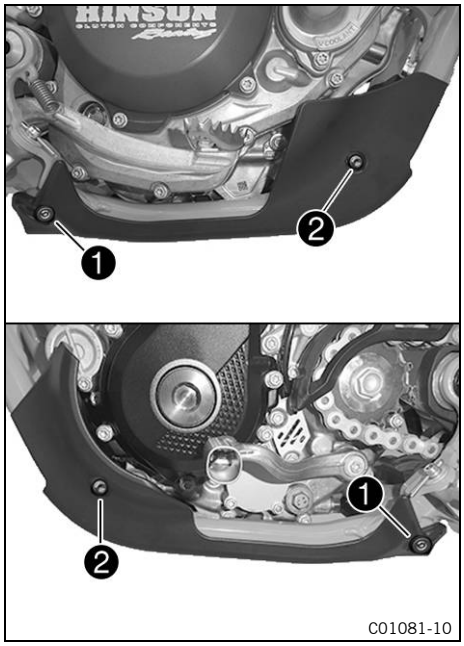
– Position the fork protection on the right fork leg.
– Mount and tighten screws ❸.

Remaining screws on chassis	
M6	10 Nm (7.4 ft·lb$_f$)

Reworking

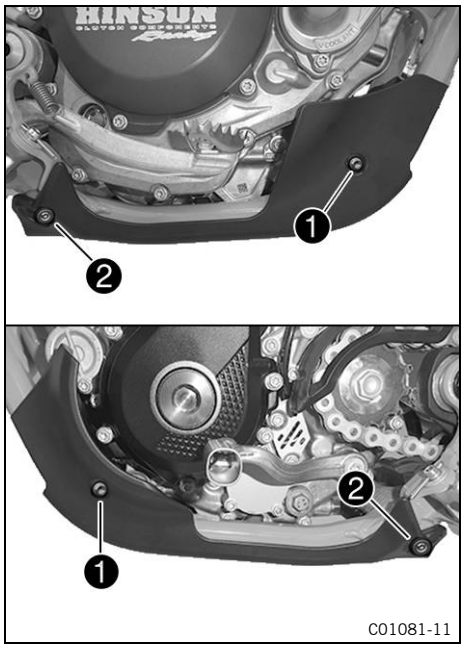
– Install the front wheel. (p. 103)
– Remove the motorcycle from the lift stand. (p. 54)

12.7 Removing the skid plate



– Remove screws ❶ and bushings.
– Remove screws ❷.
– Take off the skid plate.

12.8 Installing the skid plate



– Position the skid plate on the frame.
  ✓ The retaining pins on the inside of the skid plate clip onto the frame.
– Mount screws ❶, but do not tighten yet.

Remaining screws on chassis	
M6	10 Nm (7.4 ft·lb$_f$)

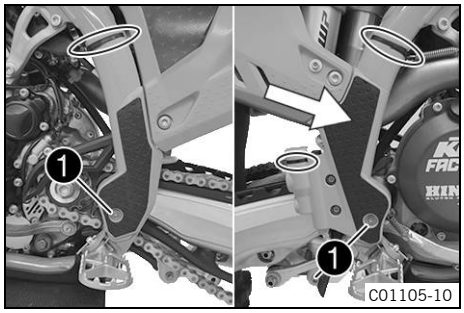
– Mount screws ❷ with bushings, but do not tighten yet.

Remaining screws on chassis	
M6	10 Nm (7.4 ft·lb$_f$)

  ✓ The skid plate is directed evenly toward the front.
– Tighten all the screws of the skid plate.

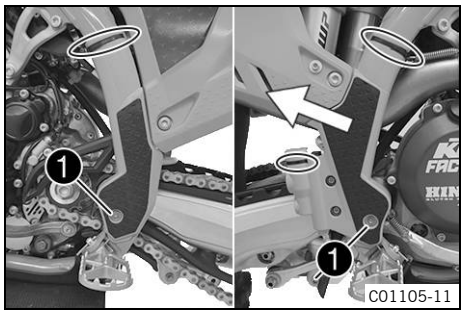
Remaining screws on chassis	
M6	10 Nm (7.4 ft·lb$_f$)

12.9 Removing the frame protector



– Remove the cable ties.
– Remove screws ❶ and bushings.
– Take off the left frame protector.
– Push the right frame protector to the front and take off at the bottom.

12.10 Installing the frame protector



– Position the left frame protector.
– Insert the right frame protector from below and push it to the rear.
– Mount screws ❶ with the bushings and tighten.

Screw, frame protector	
M5×10	3 Nm (2.2 ft·lb$_f$)

– Secure the frame protector with cable ties.

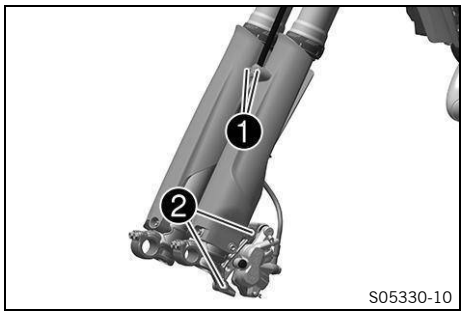
> Turn the head of the cable tie so far back that it does not touch any other components.

12.11 Removing the fork legs

Preparatory work

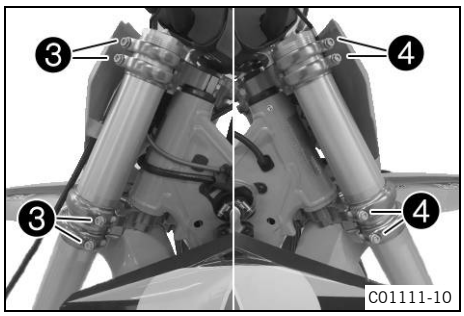
– Raise the motorcycle with a lift stand. (p. 54)
– Remove the front wheel. (p. 102)

Main work



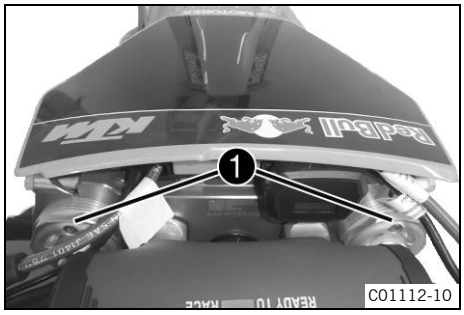
– Remove screws ❶ and take off the clamp.
– Remove screws ❷ and take off the brake caliper.
– Allow the brake caliper and the brake line to hang loosely to the side.

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



– Loosen screws ❸.
– Remove the left fork leg.
– Loosen screws ❹.
– Remove the right fork leg.

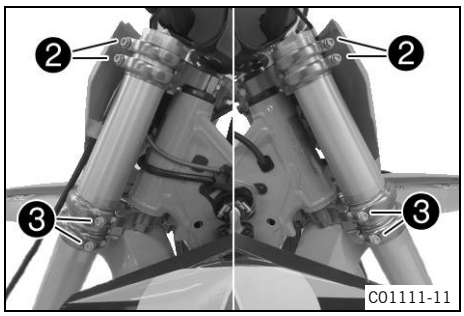
12.12 Installing the fork legs



Main work

– Position the fork legs.
  ✓ Bleeder screws ❶ of the fork legs are positioned toward the front.

Note
Grooves are milled into the side of the upper end of the fork legs. The second milled groove (from the top) must be flush with the upper edge of the upper triple clamp.

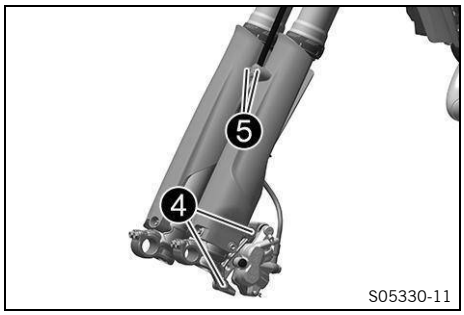


– Tighten screws ❷.

Screw, top triple clamp	
M8×40	17 Nm (12.5 ft·lb$_f$)

– Tighten screws ❸.

Screw, bottom triple clamp	
M8×40	12 Nm (8.9 ft·lb$_f$)



– Position the brake caliper.
– Mount and tighten screws ❹.

Screw, front brake caliper	
M8×30	25 Nm (18.4 ft·lb$_f$) **Loctite® 243**

– Position the brake line and the clamp.
– Mount and tighten screws ❺.

Remaining screws on chassis	
EJOT PT® – K60×25 – Z	2 Nm (1.5 ft·lb$_f$)

Reworking

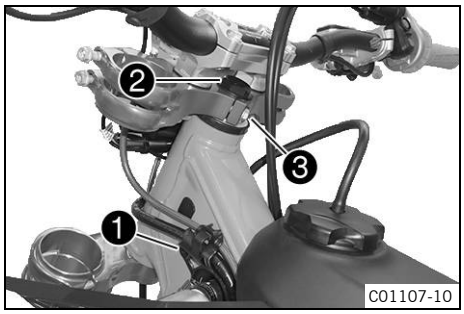
– Install the front wheel. (p. 103)
– Remove the motorcycle from the lift stand. (p. 54)

12.13 Removing the lower triple clamp

Preparatory work

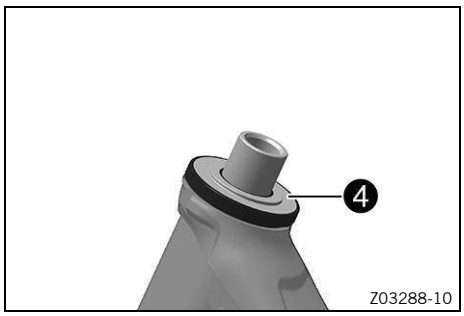
- Raise the motorcycle with a lift stand. (p. 54)
- Remove the front wheel. (p. 102)
- Remove the fork legs. (p. 58)
- Remove the number plate. (p. 65)
- Remove the front top fender. (p. 65)
- Remove the handlebar pad.

Main work



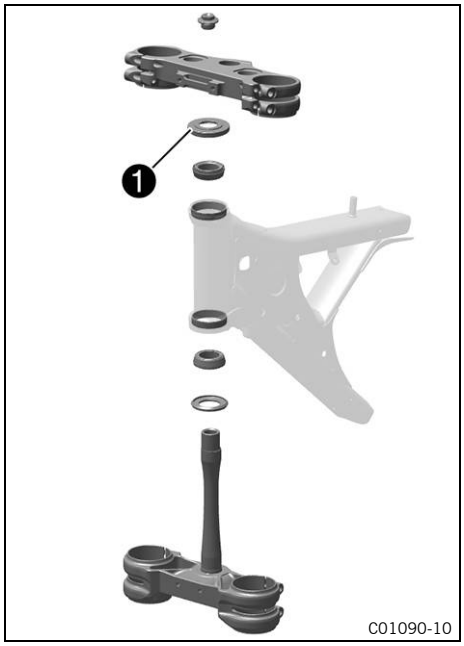
- Remove screw ❶.
- Detach the wiring harness.
- Remove screw ❷.
- Remove screw ❸.
- Take off the upper triple clamp with the handlebar and place to one side.

Protect the components against damage by covering them.
Do not kink the cables or lines.



- Remove steering head seal ❹.
- Remove the steering stem from the lower triple clamp.
- Remove the upper steering head bearing.

12.14 Installing the lower triple clamp

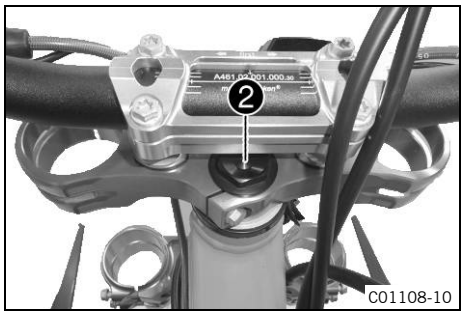


Main work

– Clean the bearing and sealing elements, check for damage, and grease.

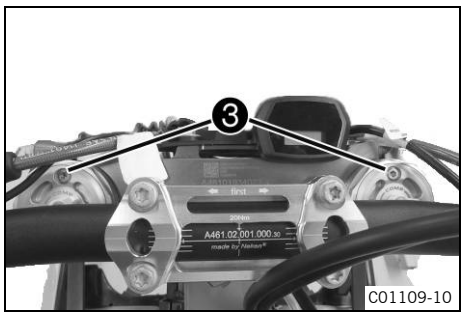
High viscosity grease (p. 155)

– Insert the lower triple clamp with the steering stem.
– Mount the upper steering head bearing.
– Push on steering head seal ❶.



– Position the upper triple clamp and handlebar.
– Mount screw ❷, but do not tighten it yet.

Screw, top steering head	
M20×1.5	12 Nm (8.9 ft·lb$_f$)



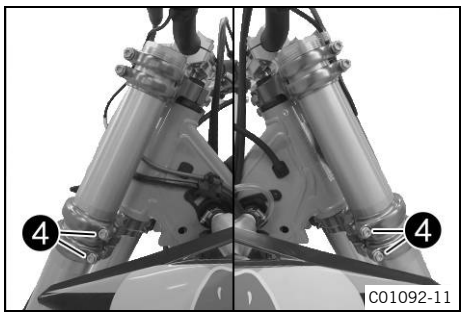
– Position the fork legs.

✓ Bleeder screws ❸ of the fork legs are positioned toward the front.

Note

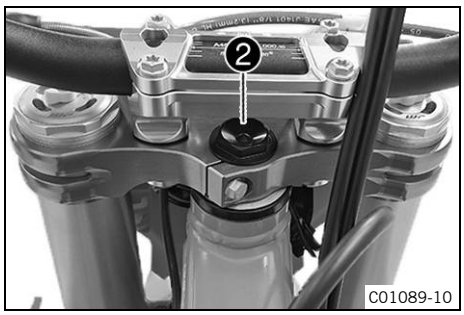
Grooves are milled into the side of the upper end of the fork legs. The second milled groove (from the top) must be flush with the upper edge of the upper triple clamp.

The pressure and rebound damping is located in the left and right fork leg.



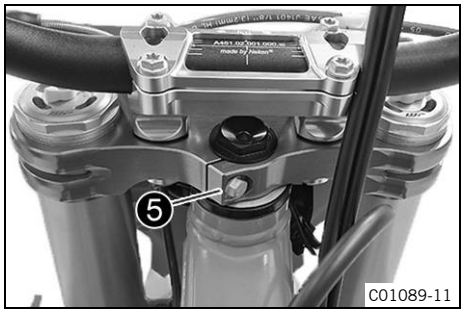
– Tighten screws ❹.

Screw, bottom triple clamp	
M8×40	12 Nm (8.9 ft·lb$_f$)



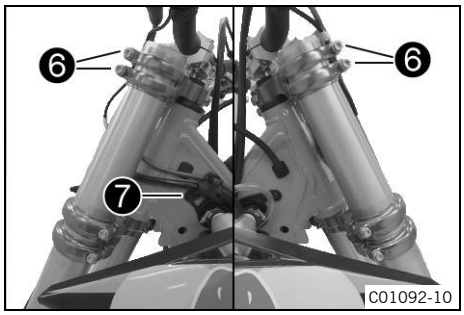
– Tighten screw ❷.

Screw, top steering head	
M20×1.5	12 Nm (8.9 ft·lb$_f$)



– Mount and tighten screw ❺.

Screw, upper steering stem	
M8×25	20 Nm (14.8 ft·lb$_f$) **Loctite® 243**

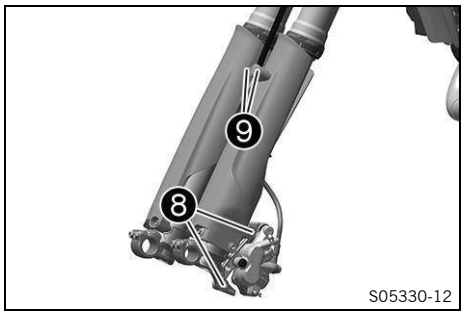


– Using a plastic hammer, tap lightly on the upper triple clamp to avoid stresses.
– Tighten screws ❻.

Screw, top triple clamp	
M8×40	17 Nm (12.5 ft·lb$_f$)

– Secure the wiring harness with the left cable bracket.
– Mount and tighten screw ❼.

Remaining screws on chassis	
EJOT PT® – K60×25 – Z	2 Nm (1.5 ft·lb$_f$)



– Position the brake caliper.
– Mount and tighten screws ❽.

Screw, front brake caliper	
M8×30	25 Nm (18.4 ft·lb$_f$) **Loctite® 243**

– Position the brake line and the clamp.
– Mount and tighten screws ⑨.

Remaining screws on chassis	
EJOT PT® – K60×25 – Z	2 Nm (1.5 ft·lb$_f$)

Reworking

– Install the front top fender. 📖 (p. 66)
– Mount the number plate. 📖 (p. 65)
– Install the front wheel. 🔧 📖 (p. 103)
– Check the wiring harness, cables, and brake and clutch lines for freedom of movement and correct routing.
– Check the steering head bearing play. 📖 (p. 63)
– Mount the handlebar pad.
– Remove the motorcycle from the lift stand. 📖 (p. 54)

12.15 Checking the steering head bearing play

WARNING

Danger of accidents Incorrect steering head bearing play can impair the handling characteristic and damage components.

– Correct incorrect steering head bearing play immediately.

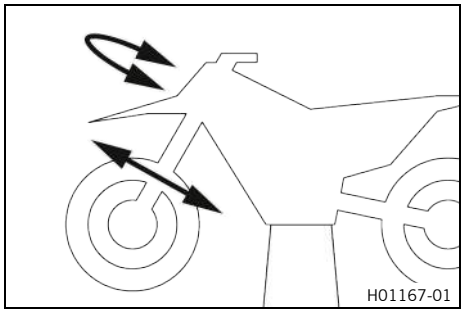
Note

If the vehicle is operated for a lengthy period with play in the steering head bearing, the bearings and the bearing seats in the frame can become damaged.

Preparatory work

– Raise the motorcycle with a lift stand. 📖 (p. 54)
– Remove the handlebar pad.

Main work



– Move the handlebar to the straight-ahead position. Move the fork legs to and fro in the direction of travel.

Play should not be detectable on the steering head bearing.

» If there is detectable play:
– Adjust the steering head bearing play. 🔧 📖 (p. 64)

– Move the handlebar back and forth over the entire steering range.

It must be possible to move the handlebar easily over the entire steering range. There should be no detectable detent positions.

» If detent positions are detected:
– Adjust the steering head bearing play. 🔧 📖 (p. 64)
– Check the steering head bearing and adjust if necessary.

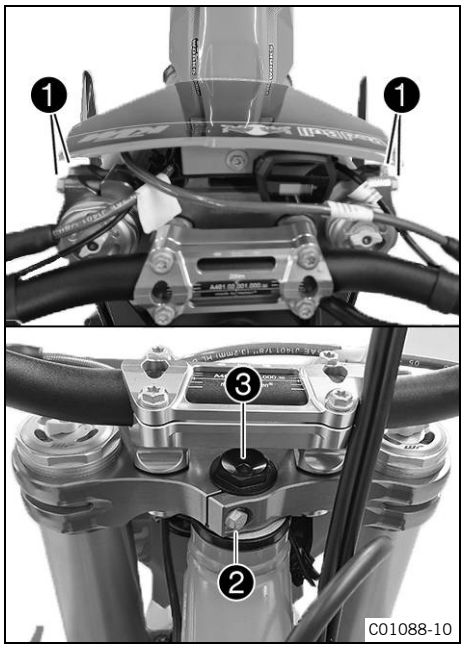
Reworking

– Mount the handlebar pad.
– Remove the motorcycle from the lift stand. (p. 54)

12.16 Adjusting the steering head bearing play

Preparatory work

– Raise the motorcycle with a lift stand. (p. 54)
– Remove the handlebar pad.



Main work

– Loosen screws 1.
– Remove screw 2.
– Loosen and retighten screw 3.

Screw, top steering head	
M20×1.5	12 Nm (8.9 ft·lb$_f$)

– Using a plastic hammer, tap lightly on the upper triple clamp to avoid stresses.
– Mount and tighten screw 2.

Screw, upper steering stem	
M8×25	20 Nm (14.8 ft·lb$_f$) **Loctite® 243**

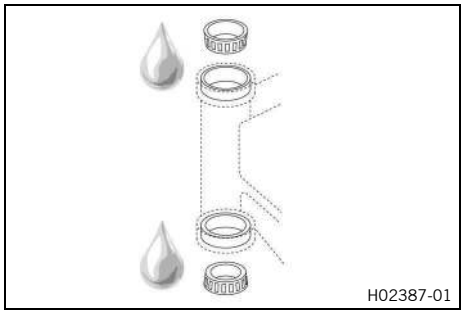
– Tighten screws 1.

Screw, top triple clamp	
M8×40	17 Nm (12.5 ft·lb$_f$)

Reworking

– Check the steering head bearing play. (p. 63)
– Mount the handlebar pad.
– Remove the motorcycle from the lift stand. (p. 54)

12.17 Lubricating the steering head bearing

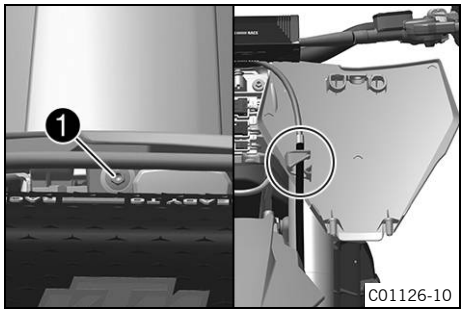


– Remove the lower triple clamp. (p. 60)
– Install the lower triple clamp. (p. 61)

Note

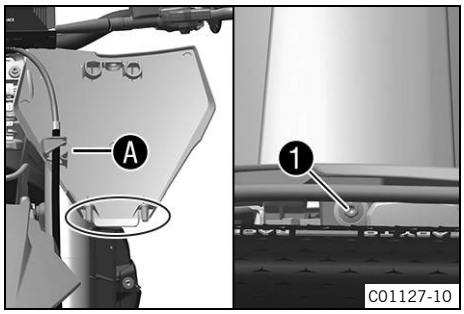
The steering head bearing is cleaned and lubricated in the course of removal and installation of the lower triple clamp.

12.18 Removing the number plate



– Remove screw ❶.
– Unhook the number plate from the brake line and remove it.

12.19 Mounting the number plate



– Position the brake line in bracket Ⓐ on the number plate.
– Position the number plate.
  ✓ The retaining pins engage in the fender.
– Mount and tighten screw ❶.

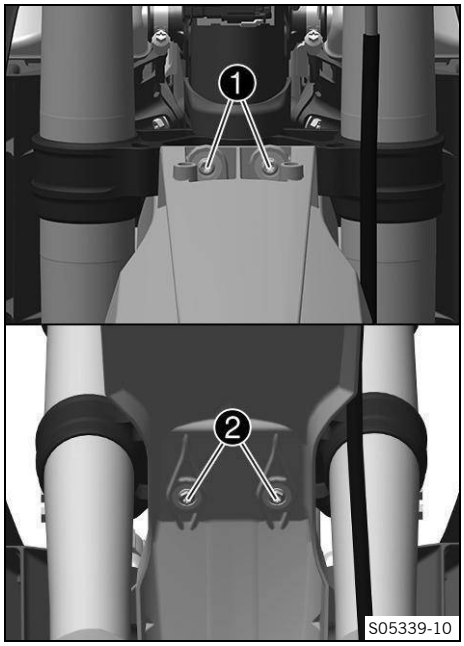
Remaining screws on chassis	
M6	10 Nm (7.4 ft·lb$_f$)

12.20 Removing the front top fender

Preparatory work

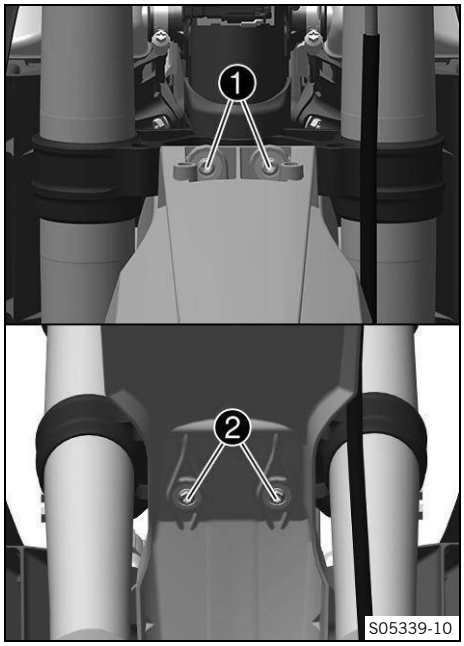
– Remove the number plate. (p. 65)

Main work



– Remove screws ❶ and ❷.
– Remove the front fender.

12.21 Installing the front top fender



Main work

– Position the front fender.
– Mount and tighten screws ❶ and ❷.

Screw, fender	
M6×16	12 Nm (8.9 ft·lb$_f$)

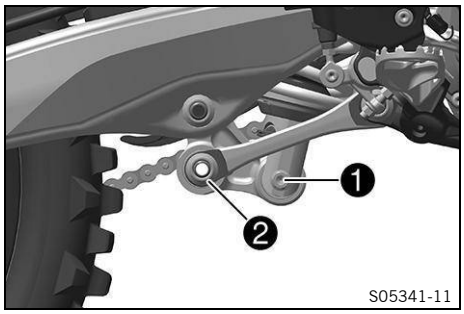
Reworking

– Mount the number plate. (p. 65)

12.22 Removing the shock absorber

Preparatory work

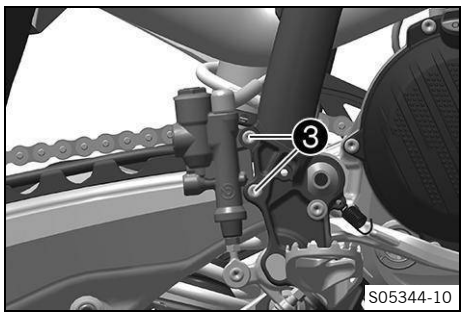
– Remove the muffler. (p. 75)
– Remove the frame protector. (p. 58)
– Raise the motorcycle with a lift stand. (p. 54)



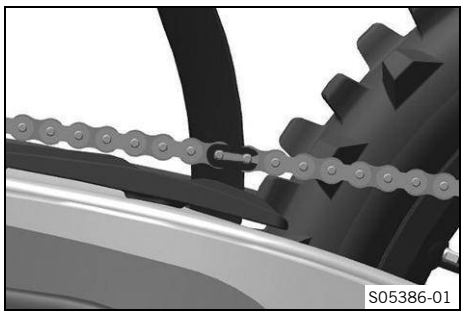
Main work

– Remove screw ❶.
– Remove screw connection ❷.

Tip
Raise the swingarm slightly to be able to remove the screws more easily.

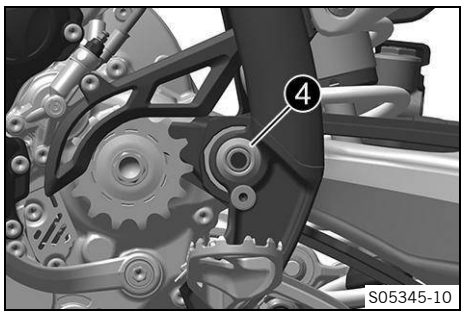


– Remove screws ❸.
– Pull brake cylinder off of the push rod.

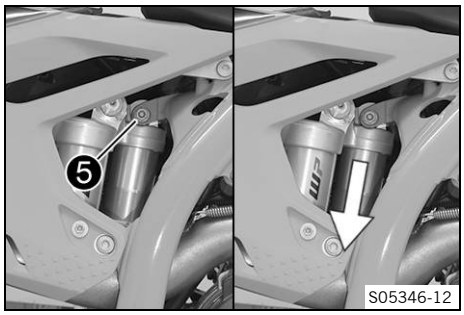


– Remove the connecting link on the chain.
– Take off the chain.

Protect the components against damage by covering them.

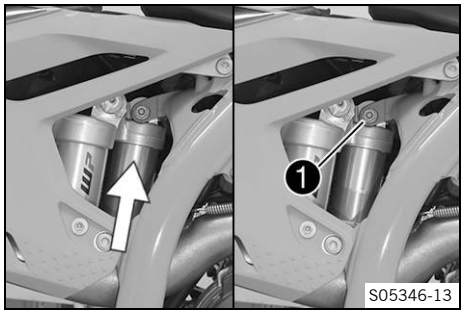


– Remove nut ❹ and the swingarm pivot.
– Push the swingarm back and secure it against falling over.



– Hold the shock absorber and remove screw ❺.
– Remove the shock absorber carefully at the bottom.

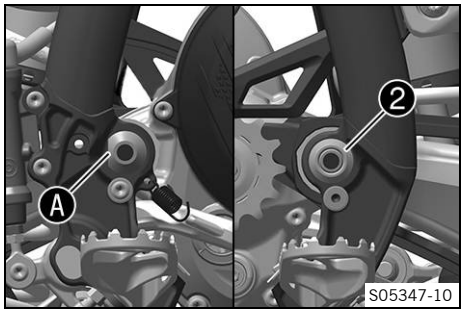
12.23 Installing the shock absorber



Main work

– Carefully position the shock absorber into the vehicle from the bottom.
– Mount and tighten screw ❶.

Top shock absorber screw	
M10×52	60 Nm (44.3 ft·lb$_f$) **Loctite® 2701**

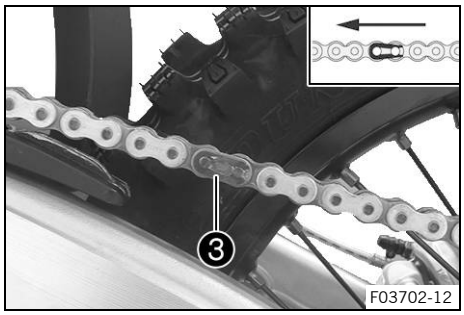


– Position the swingarm and fit the swingarm pivot.

Pay attention to flat area Ⓐ.

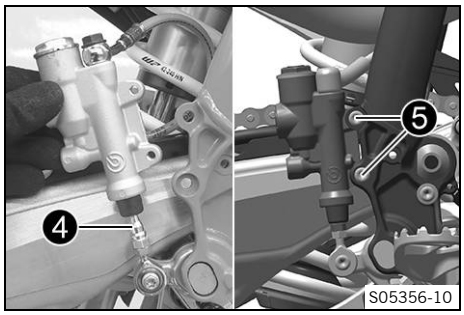
– Mount and tighten nut ❷.

Nut, swingarm pivot	
M16×1.5	100 Nm (73.8 ft·lb$_f$)



– Mount the chain.
– Connect the chain with connecting link ❸.

The closed side of the master link clip must face in the direction of travel.

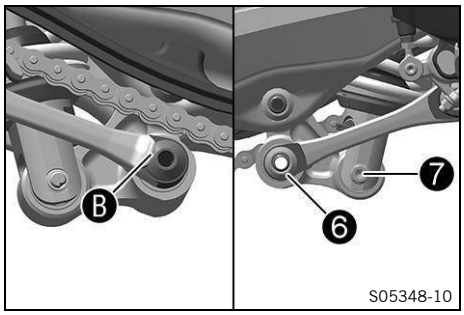


– Position the brake cylinder.

Ensure that the dust boot is properly seated.

✓ Push rod ❹ engages in the brake cylinder.
– Mount and tighten screws ❺.

Remaining screws on chassis	
M6	10 Nm (7.4 ft·lb$_f$)



– Position the power valve control lever and linkage lever.
– Mount and tighten screw connection ❻.

Nut, linkage lever on angle lever	
M14×1.5	60 Nm (44.3 ft·lb$_f$)

Pay attention to flat area Ⓑ.

Tip
Raise the swingarm slightly to be able to mount the screw more easily.

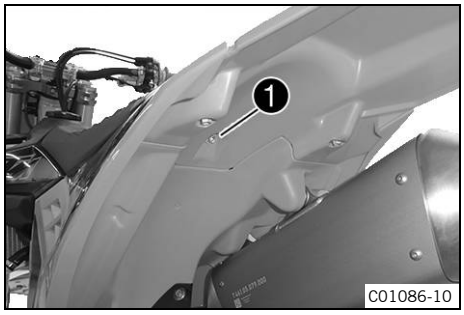
– Mount and tighten screw ❼.

Bottom shock absorber screw	
M10×52	60 Nm (44.3 ft·lb$_f$) **Loctite® 2701**

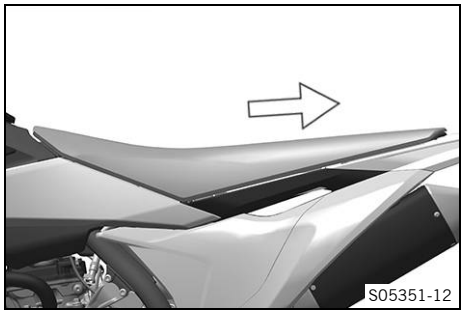
Reworking

– Check the free travel of the brake pedal. (p. 96)
– Remove the motorcycle from the lift stand. (p. 54)
– Install the frame protector. (p. 58)
– Install the muffler. (p. 75)

12.24 Removing the seat

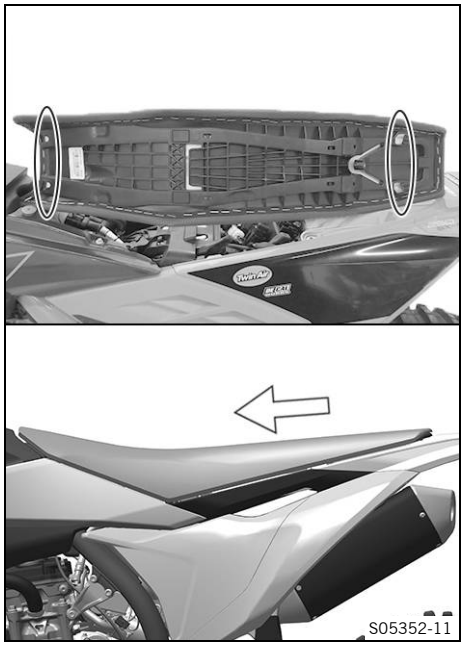


– Remove screw ❶.

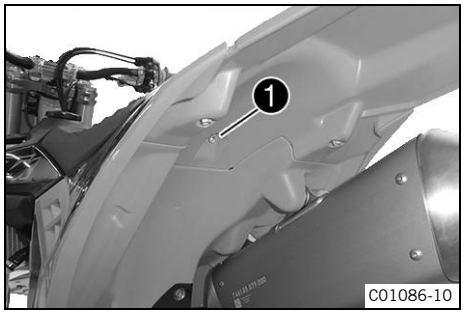


– Pull the seat toward the tail section and lift it off.

12.25 Mounting the seat



– Attach the seat to the collar bushings at the front and simultaneously push it toward the tank.
  ✓ The retaining pins engage in the recesses at the back.
– Make sure the seat is latched in place correctly.

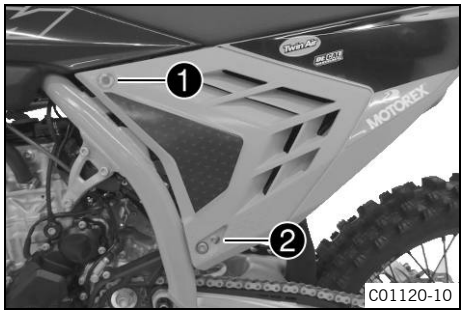


– Mount and tighten screw ❶.

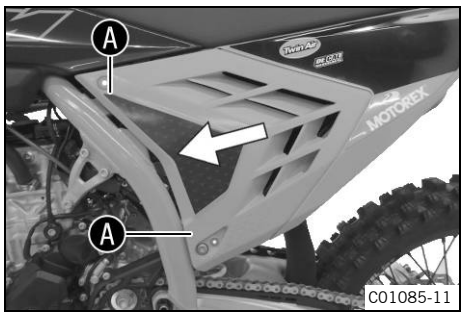
Screw, seat installation	
M6×25	8 Nm (5.9 ft·lb$_f$)

12.26 Removing air filter box cover

Condition: Air filter box cover secured

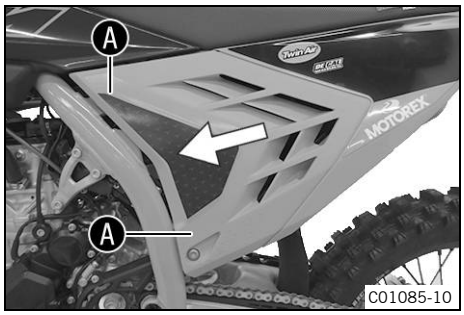


– Remove screws ❶ and ❷.



– Pull off the air filter box cover in areas Ⓐ and push it sideways and forward.
– Take off the air filter box cover.

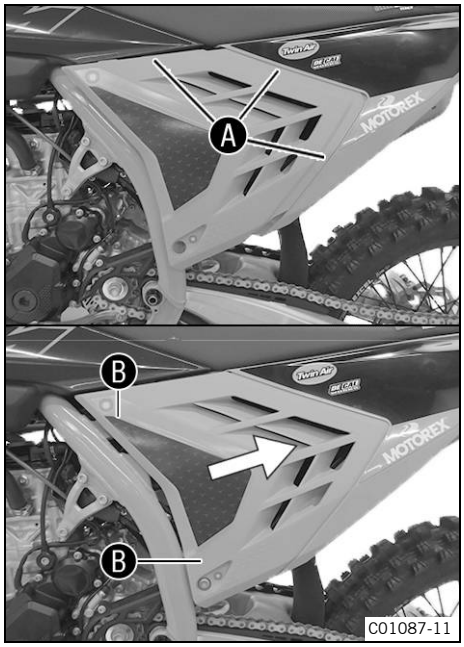
Condition: Air filter box cover not secured



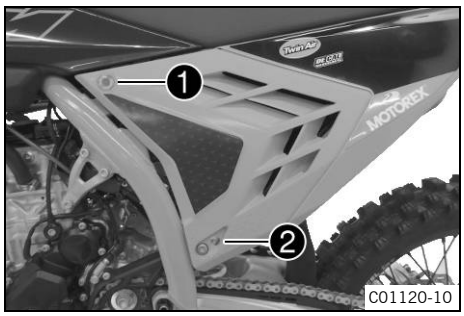
– Pull off the air filter box cover in areas Ⓐ and push it sideways and forward.
– Remove air filter box cover.

12.27 Installing air filter box cover

Condition: Air filter box cover secured



– Attach the air filter box cover in areas Ⓐ and clip in areas Ⓑ.



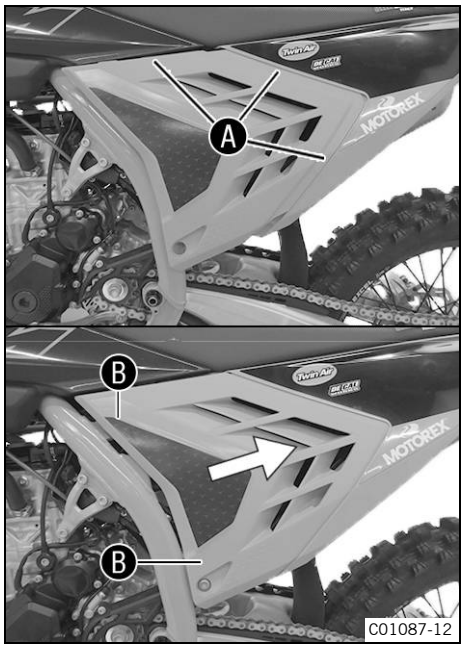
– Mount and tighten screw ❶.

Screw, air filter box cover	
EJOT PT® – K60×20	5 Nm (3.7 ft·lb$_f$)

– Mount and tighten screw ❷.

Remaining screws on chassis	
M6	10 Nm (7.4 ft·lb$_f$)

Condition: Air filter box cover not secured



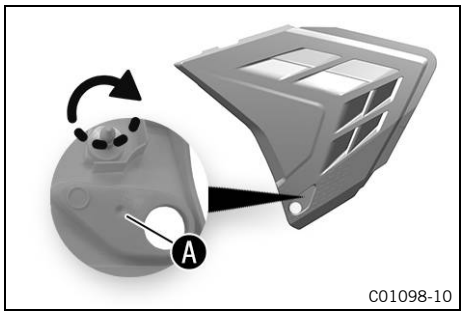
– Attach the air filter box cover in areas Ⓐ and clip in areas Ⓑ.

12.28 Preparing the air filter box cover for securing

Preparatory work

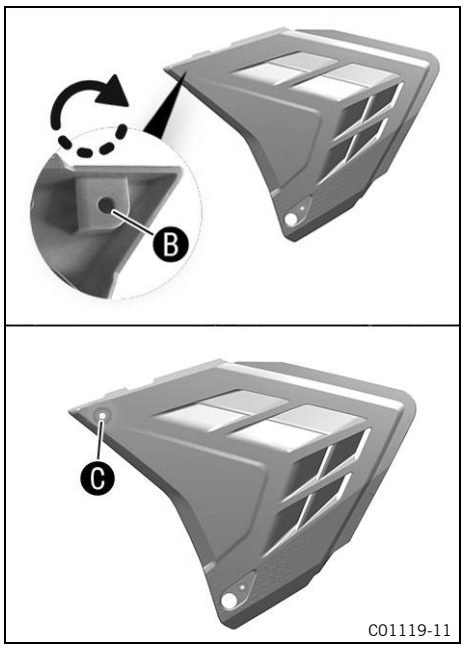
– Remove air filter box cover. (p. 70)

Main work



– Drill a hole at marking Ⓐ.

Diameter	6.5 mm (0.256 in)



– Drill a hole at marking B.

Diameter	6.5 mm (0.256 in)

– Use a drill to enlarge drill hole C from the outside.

Diameter	12 mm (0.47 in)
Enlarge drill hole C only enough to allow the screw head to be countersunk.	

Reworking

– Install the air filter box cover. (p. 71)

12.29 Removing the air filter.

NOTE

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

Dust and dirt can enter the engine if there is no air filter or if the air filter is mounted incorrectly.

– Only operate the vehicle if an air filter is correctly fitted.

NOTE

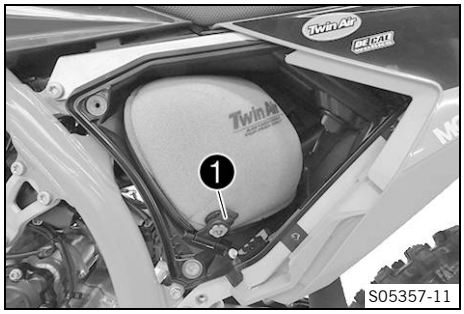
Environmental hazard Hazardous substances cause environmental damage.

– Dispose of oils, grease, filters, fuel, cleaning agents, brake fluid, etc. correctly and in accordance with the applicable regulations.

Preparatory work

– Remove air filter box cover. (p. 70)

Main work

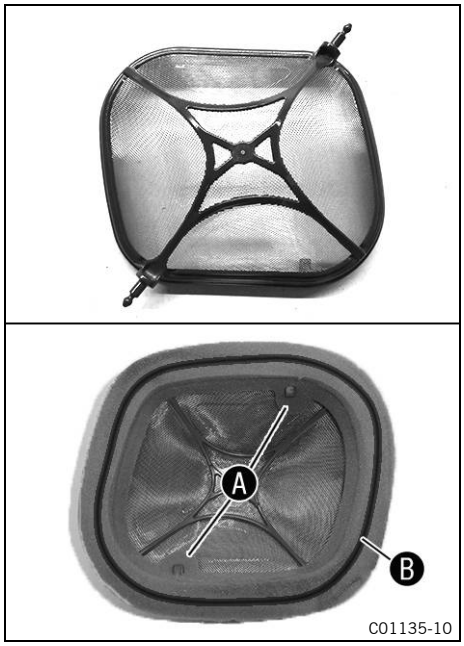


– Detach retaining tab 1.
– Remove air filter with air filter support.

Pay attention to the topfeeder injector.

– Remove the air filter with the air filter support.

12.30 Installing the air filter



Main work

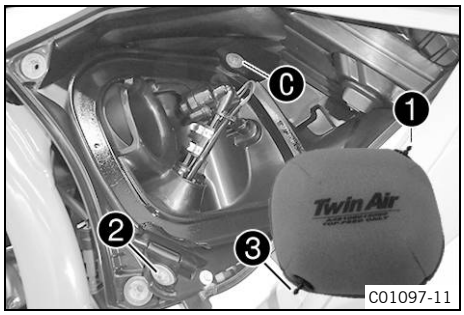
– Mount the clean air filter on the air filter support.

Observe the direction of installation.

– Attach the air filter onto the two retaining pins Ⓐ on the air filter support.

– Grease the air filter in area Ⓑ.

Long-life grease (p. 155)



– Insert air filter and position retaining pin ❶ in bushing Ⓒ.

Pay attention to the topfeeder injector.

– Insert retaining tab ❷.

✓ Retaining pin ❸ is secured by retaining tab ❷.

Note
If the air filter is not mounted correctly, dust and dirt may enter the engine and result in damage.

Reworking

– Install the air filter box cover. (p. 71)

12.31 Cleaning the air filter and air filter box

NOTE

Environmental hazard Hazardous substances cause environmental damage.

– Dispose of oils, grease, filters, fuel, cleaning agents, brake fluid, etc. correctly and in accordance with the applicable regulations.

Preparatory work

– Remove air filter box cover. (p. 70)

– Remove the air filter. (p. 73)



Main work

– Wash the air filter thoroughly in special cleaning liquid and allow it to dry properly.

Do not clean the air filter with fuel or petroleum as these substances will damage the foam rubber.
Only press the air filter to dry it, do not wring it out.

Air filter cleaning agent (p. 158)

– Oil the dry air filter with a high-grade air filter oil.

Oil for foam air filter (p. 156)

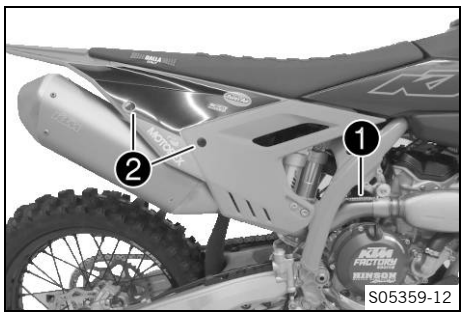
– Clean the air filter box.
– Clean the intake flange and check it for damage and that it is firmly seated.

Reworking

– Install the air filter. (p. 74)
– Install the air filter box cover. (p. 71)

12.32 Removing the muffler

WARNING
Danger of burns The exhaust system gets hot when the vehicle is driven.
– Allow the exhaust system to cool down before performing any work on the vehicle.

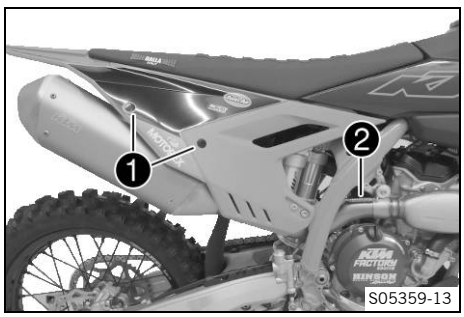


– Detach spring ❶.

Spring hook (50305017000C1)

– Remove screws ❷ with the washers and take off the main silencer.

12.33 Installing muffler



– Position the main silencer.
– Mount screws ❶ with washers, but do not tighten yet.

Remaining screws on chassis	
M6	10 Nm (7.4 ft·lb$_f$)

– Attach spring ❷.

Spring hook (50305017000C1)

– Tighten screws ❶.

Remaining screws on chassis	
M6	10 Nm (7.4 ft·lb$_f$)

12.34 Changing the damping material on the main silencer

WARNING

Danger of burns The exhaust system gets hot when the vehicle is driven.

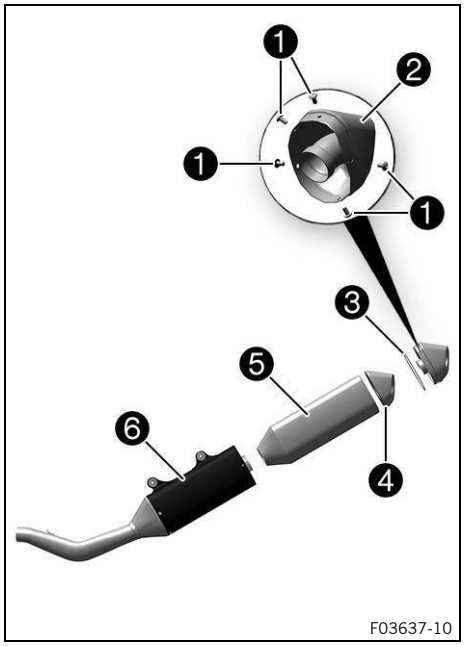
– Allow the exhaust system to cool down before performing any work on the vehicle.

Note

Over time, the damping material fibers disappear, and the main silencer "burns out".
Not only does this make the noise level higher, but the performance characteristics also change.

Preparatory work

– Remove the muffler. (p. 75)



Main work

– Remove the screws ❶ on the main silencer.
– Take off silencer cap ❷ and O-ring ❸.
– Pull damping material ❹ out of the silencer cap.
– Pull damping material ❺ off the inner tube.
– Clean the parts that need to be reinstalled and check for damage.
– Mount new damping material ❺ on the inner tube.
– Position new damping material ❹ in the silencer cap.
– Slide outer tube ❻ over the inner tube with the new damping material.
– Slide O-ring and silencer cap onto the outer tube.
– Mount and tighten screws ❶.

Remaining screws on chassis	
M5	5 Nm (3.7 ft·lb$_f$)

Reworking

– Install the muffler. (p. 75)

12.35 Removing the fuel tank

DANGER

Fire hazard Fuel is highly flammable.

The fuel in the fuel tank expands when warm and can escape if overfilled.

- Do not refuel the vehicle in the vicinity of open flames, glowing, or smoldering objects.
- Make sure that nobody smokes in the vicinity of the vehicle during the refueling process.
- Switch off the engine for refueling.
- Make sure that no fuel is spilled; particularly not on hot parts of the vehicle.
- If any fuel is spilled, wipe it up immediately.
- Do not overfill the fuel tank.

WARNING

Danger of poisoning Fuel is harmful to health.

- Do not allow fuel to come into contact with skin, eyes, or clothing.
- Consult a doctor immediately if fuel has been ingested.
- Do not inhale fuel vapors.
- Rinse the affected area immediately with plenty of water in the event of contact with skin.
- Rinse eyes thoroughly with water and consult a doctor immediately if fuel comes into contact with eyes.
- If fuel spills on to your clothing, change the clothing.
- Store fuel properly in a suitable container and keep out of the reach of children.

NOTE

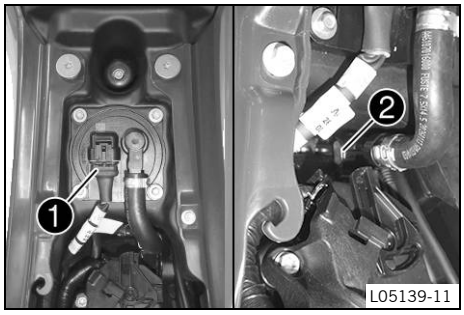
Environmental hazard Improper handling of fuel is dangerous to the environment.

- Do not allow fuel to enter the groundwater, the soil, or the sewage system.

Preparatory work

- Remove the seat. (p. 69)

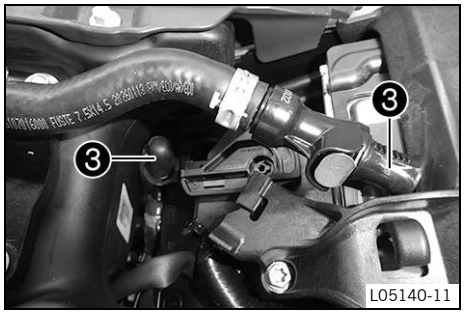
Main work



- Unplug socket connector ❶ of the fuel pump.
- Clean quick-lock coupling ❷ thoroughly with compressed air.

Dirt must not enter into the fuel line.

Note
Dirt in the fuel line clogs the injector!

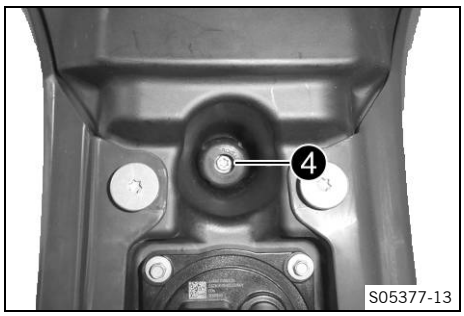


- Disconnect the quick-lock coupling.

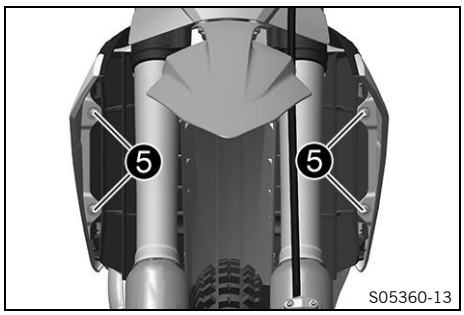
Note
Pressurized residual fuel may escape from the fuel hose.

- Mount wash cap set ❸.

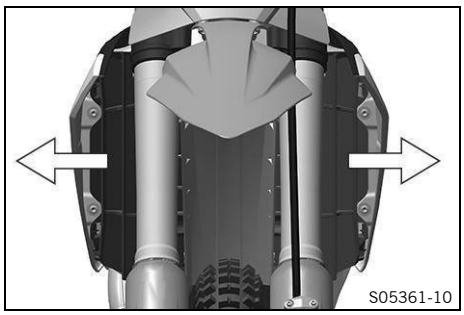
Wash cap set (81212016100)



– Remove screw ❹ with the rubber bushing.
– Pull the fuel tank vent hose off the fuel tank cap.



– Remove screws ❺.



– Pull both spoilers laterally off the radiator and lift off the fuel tank.

12.36 Installing the fuel tank

DANGER

Fire hazard Fuel is highly flammable.

The fuel in the fuel tank expands when warm and can escape if overfilled.

– Do not refuel the vehicle in the vicinity of open flames, glowing, or smoldering objects.
– Make sure that nobody smokes in the vicinity of the vehicle during the refueling process.
– Switch off the engine for refueling.
– Make sure that no fuel is spilled; particularly not on hot parts of the vehicle.
– If any fuel is spilled, wipe it up immediately.
– Do not overfill the fuel tank.

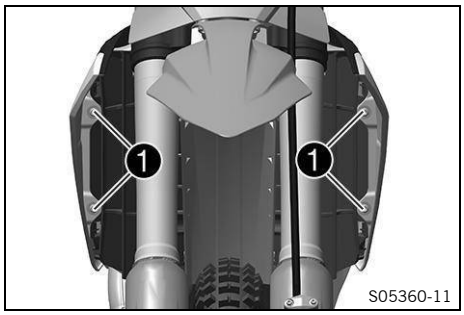
WARNING

Danger of poisoning Fuel is harmful to health.

– Do not allow fuel to come into contact with skin, eyes, or clothing.
– Consult a doctor immediately if fuel has been ingested.
– Do not inhale fuel vapors.
– Rinse the affected area immediately with plenty of water in the event of contact with skin.
– Rinse eyes thoroughly with water and consult a doctor immediately if fuel comes into contact with eyes.
– If fuel spills on to your clothing, change the clothing.
– Store fuel properly in a suitable container and keep out of the reach of children.

Main work

– Check the throttle cable routing. (p. 85)

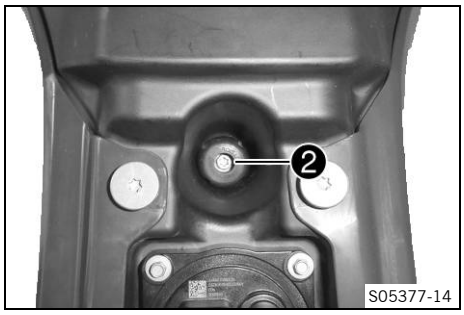


– Position the fuel tank and fit both spoilers to the side of the radiator.

Make sure that no wires or cables are trapped or damaged.

– Mount and tighten screws ❶.

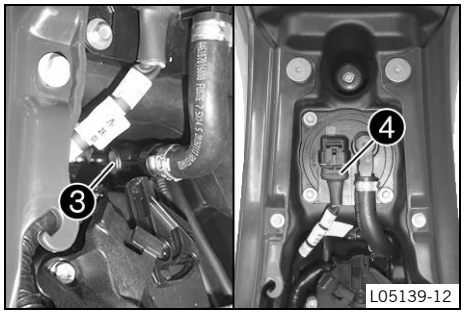
Screw, fuel tank spoiler on radiator	
M6×12	6 Nm (4.4 ft·lb$_f$)



– Mount and tighten screw ❷ with the rubber bushing.

Remaining screws on chassis	
M6	10 Nm (7.4 ft·lb$_f$)

– Attach the fuel tank vent hose to the fuel tank cap.



– Remove the wash cap set. Clean the quick release coupling thoroughly with compressed air.

Dirt must not enter into the fuel line.

Note
Dirt in the fuel line clogs the injector!

– Spray silicone spray onto a lint-free cleaning cloth and lightly lubricate the O-ring of the quick-lock coupling.

Silicone spray (p. 156)

– Join quick-lock coupling ❸ of the fuel line.

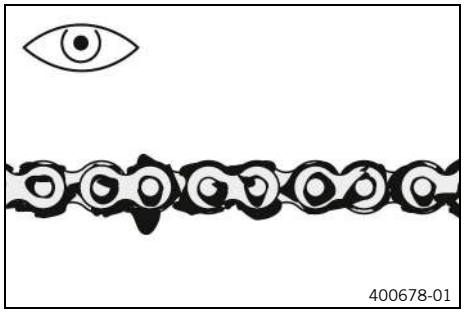
– Plug in fuel pump socket connector ❹.

Route the wire and fuel line at a safe distance from the exhaust system.

Reworking

– Mount the seat. (p. 70)

12.37 Checking the chain for dirt



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

12.38 Cleaning the chain

WARNING
Danger of accidents Oil, grease or wax on the brake discs reduces the brake action.
– Always keep the brake discs free of oil, fat and wax.
– Clean the brake discs with brake cleaner when necessary.

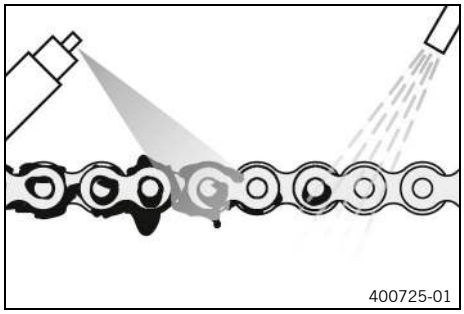
WARNING
Danger of accidents Lubricants on the tires reduces the road grip.
– Remove lubricants from the tires using a suitable cleaning agent.

NOTE
Environmental hazard Hazardous substances cause environmental damage.
– Dispose of oils, grease, filters, fuel, cleaning agents, brake fluid, etc. correctly and in accordance with the applicable regulations.

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

Preparatory work
– Raise the motorcycle with a lift stand. (p. 54)

Main work



– Rinse off the loose dirt with a gentle jet of water.
– Remove old grease residues with a chain cleaner.

Chain cleaner (p. 158)

– After drying, apply chain spray.

Off-road chain spray (p. 155)

Reworking
– Remove the motorcycle from the lift stand. (p. 54)

12.39 Checking the chain tension

WARNING

Danger of accidents Incorrect chain tension can damage components and result in an accident.

If the chain is tension is too high, the chain, front sprocket, rear sprocket, transmission, and rear wheel bearings wear more quickly. Some components may break if overloaded.

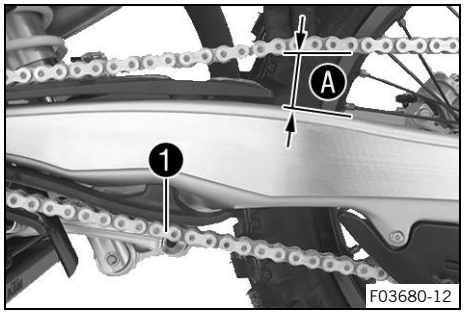
If the chain is too loose, the chain may fall off the front sprocket or the rear sprocket. This can damage the rear wheel or the engine.

– Check the chain tension regularly.
– Set the chain tension in accordance with the specification.

Preparatory work

– Raise the motorcycle with a lift stand. (p. 54)

Main work



– Pull the chain at the end of the chain slider upward to measure chain tension Ⓐ.

Lower chain section ❶ must be taut.	
Chain tension	63 mm ... 66 mm (2.48 in ... 2.60 in)
Chain wear is not always even, so repeat this measurement at different positions on the chain.	

» If the chain tension does not meet the specification:
– Adjust the chain tension. (p. 81)

Reworking

– Remove the motorcycle from the lift stand. (p. 54)

12.40 Adjusting the chain tension

WARNING

Danger of accidents Incorrect chain tension can damage components and result in an accident.

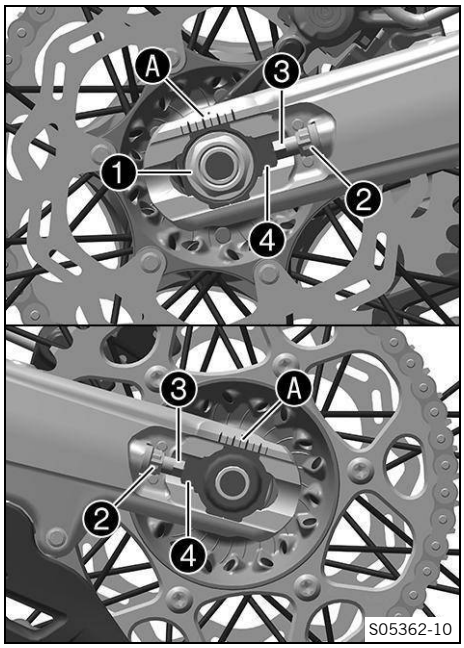
If the chain is tension is too high, the chain, front sprocket, rear sprocket, transmission, and rear wheel bearings wear more quickly. Some components may break if overloaded.

If the chain is too loose, the chain may fall off the front sprocket or the rear sprocket. This can damage the rear wheel or the engine.

– Check the chain tension regularly.
– Set the chain tension in accordance with the specification.

Preparatory work

– Raise the motorcycle with a lift stand. (p. 54)
– Check the chain tension. (p. 81)



Main work

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

Chain tension	63 mm ... 66 mm (2.48 in ... 2.60 in)
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 reference markings Ⓐ.	

– Tighten nuts ❷.
– Make sure that chain adjusters ❹ are fitted correctly on adjusting screws ❸.
– Tighten nut ❶.

Nut, wheel spindle, rear	
M22×1.5	80 Nm (59.0 ft·lb$_f$)

Note

The wide adjustment range of the chain adjusters enables different secondary ratios with the same chain length.

Chain adjusters ❹ can be turned by 180°.

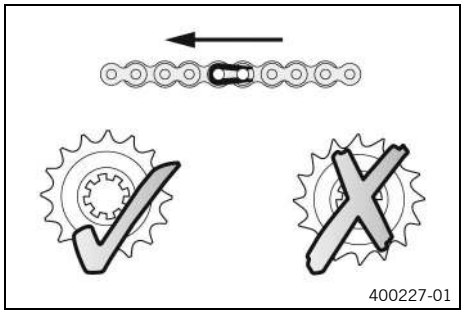
Reworking

– Remove the motorcycle from the lift stand. (p. 54)

12.41 Checking the chain, rear sprocket, front sprocket, and chain guide

Preparatory work

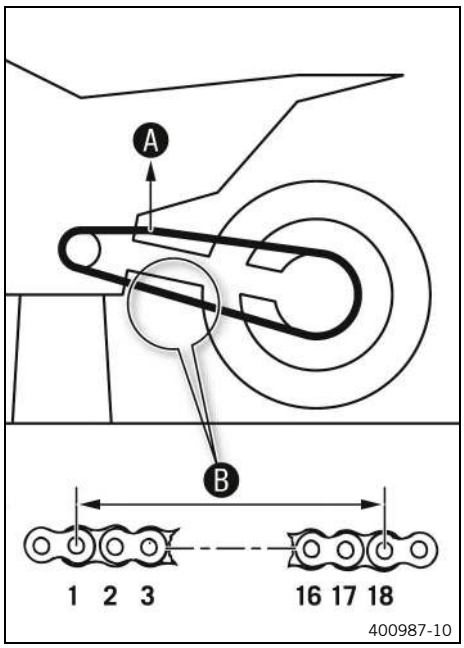
– Raise the motorcycle with a lift stand. (p. 54)



Main work

– Shift the transmission into the neutral position.
– Check the chain, rear sprocket, and front sprocket for wear.
  » If the chain, rear sprocket, or front sprocket is worn:
    – Change the drivetrain kit.

Always replace the front sprocket, rear sprocket, and chain together.



– Pull on the top section of the chain with the specified weight Ⓐ.

Weight, chain wear measurement	10 kg ... 15 kg (22.0 lb ... 33.1 lb)

– Measure distance Ⓑ of chain rollers in the lower chain section.

Maximum distance Ⓑ of chain rollers at the longest chain section	272 mm (10.71 in)
Chain wear is not always even, so repeat this measurement at different positions on the chain.	

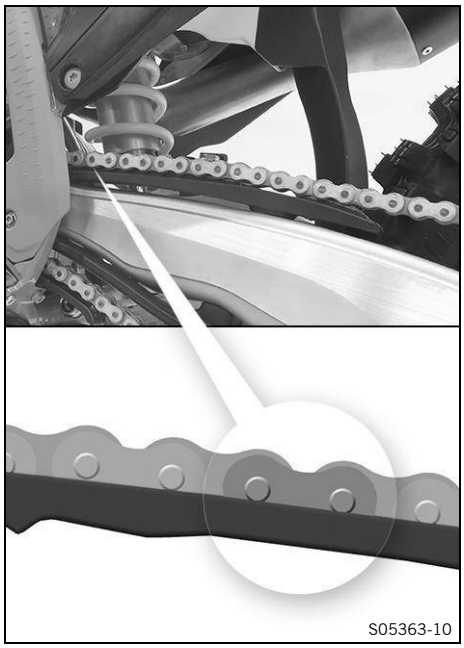
» If distance Ⓑ is greater than the specified measurement:

– Change the drivetrain kit.

When installing a new chain, also replace the rear sprocket and front sprocket.

Note

New chains wear out faster on old, worn front or rear sprockets.



– Check the chain slider at the top for wear.

» If the lower edge of the chain pins is in line with, or below, the chain slider:

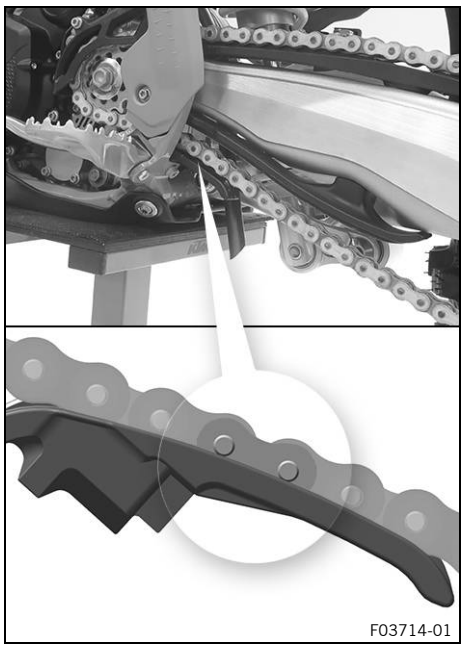
– Change the chain slider.

– Check that the chain slider is firmly seated.

» If the chain slider is loose:

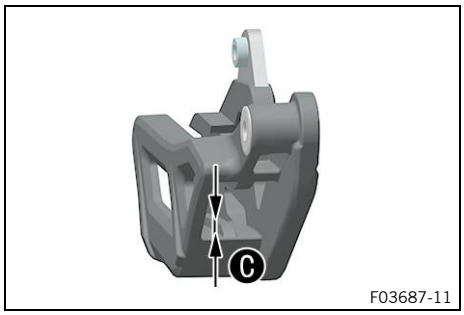
– Tighten the screws of the chain slider.

Screw, chain sliding guard on link fork	
M6×16	6 Nm (4.4 ft·lb$_f$) **Loctite® 243**



– Check the chain slider for wear.
  » If the lower edge of the chain pins is in line with or below the chain slider:
    – Change the chain slider.
– Check that the chain slider is firmly seated.
  » If the chain slider is loose:
    – Tighten the screws of the chain slider.

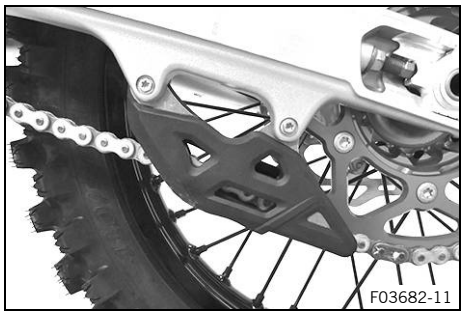
Screw, chain slider	
M8×20	15 Nm (11.1 ft·lb$_f$)



– Check the chain guide with a slide gage for dimension C.

Minimum thickness C of the chain guide	6 mm (0.24 in)

  » If the specifications have not been met:
    – Change the chain guide.



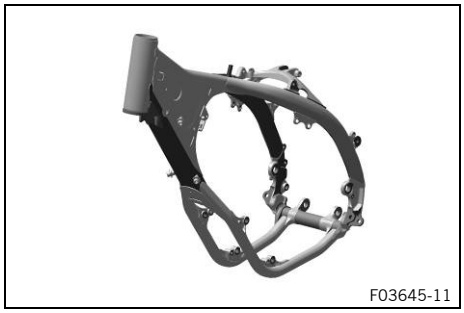
– Check that the chain guide is firmly seated.
  » If the chain guide is loose:
    – Tighten the screws on the chain guide.

Screw, chain guide on swingarm, front	
M6×45	10 Nm (7.4 ft·lb$_f$)
Screw, chain guide on swingarm, rear	
M6×16	10 Nm (7.4 ft·lb$_f$) **Loctite® 243**

Reworking

– Remove the motorcycle from the lift stand. (p. 54)

12.42 Checking the frame


F03645-11

– Check the frame for damage, cracks, and deformation.
  » If the frame shows signs of damage, cracks, or deformation:
    – Change the frame.

Repairs on the frame are not permitted.

12.43 Checking the swingarm


F03646-11

– Check the swingarm for damage, cracks, and deformation.
  » If the swingarm shows signs of damage, cracks, or deformation:
    – Change the swingarm.

Repairs on the swingarm are not permitted.

12.44 Checking the throttle cable routing

WARNING

Danger of accidents The throttle cable can become kinked, jammed, or blocked if it has been routed incorrectly.

If the throttle cable is kinked, jammed or blocked, the speed can no longer be controlled.

– Make sure that the throttle cable routing and the play in the throttle cable complies with the specification.

Preparatory work

– Remove the seat. (p. 69)
– Remove the fuel tank. (p. 77)


C01117-10

Main work

– Check the throttle cable routing.

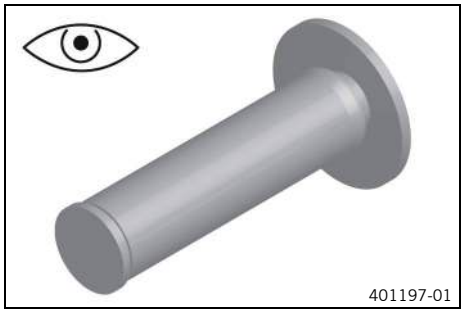
Both throttle cables must be routed to the throttle valve body side by side on the back of the handlebars and above the fuel tank roller. Both throttle cables must be secured behind the rubber strap of the fuel tank support.

» If the throttle cable routing is not as specified:
  – Correct the throttle cable routing.

Reworking

– Install the fuel tank. (p. 78)
– Mount the seat. (p. 70)

12.45 Checking the rubber grips


401197-01

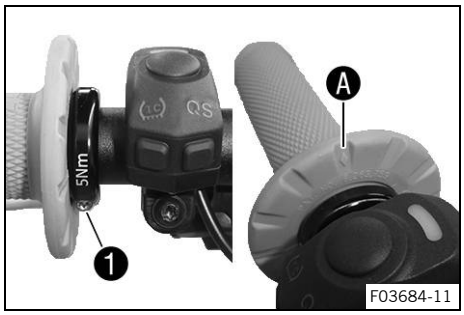
– Check the hand grips on the handlebar for damage, wear, and that they are firmly seated.

Note

The hand grips are vulcanized onto a sleeve on the left and onto the grip tube of the throttle grip on the right. The left sleeve is clamped onto the handlebar.

The hand grip can only be replaced with the sleeve or the gas pipe.

» If a hand grip is damaged or worn:
  – Replace the hand grip.



F03684-11

– Check that screw 1 is firmly seated.

Screw, fixed grip	
M4×12	5 Nm (3.7 ft·lb$_f$) **Loctite® 243**

Diamond A must be positioned visibly as shown in the figure.

12.46 Program the Quickshifter

Note
The gears have already been programmed at the factory. However, if difficulties occur when shifting, the Quickshifter can be reprogrammed.



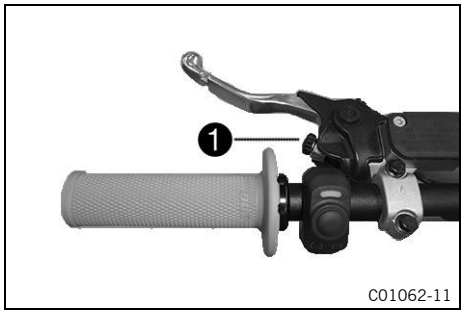
– Carry out the starting procedure. (p. 33)
– Make sure that the gearbox is in neutral position.
– Press and hold the QS button 1 for at least 10 seconds.
  ✓ The QS indicator lamp flashes.
– Wait 2 seconds in neutral position.
– Actuate the clutch lever, engage 1st gear and set off.
– Shift smoothly and completely through all gears up to 5th gear.

After each shift, actuate the clutch lever completely and release it again. Each gear must be engaged for at least 2 seconds.

– The teaching procedure was successful if all indicator lamps on the combination switch flash three times.

Note
If the QS indicator lamp continues to flash, shift back from 5th gear to neutral position (5-4-3-2-1-neutral).
If problems occur, repeat the entire programming procedure. Make sure that gear changes are smooth and complete.

12.47 Adjusting the basic position of the clutch lever



– Adjust the basic position of the clutch lever to your hand size by turning adjusting screw 1.

Only turn the adjusting screw by hand, and do not use force.
Do not make any adjustments while riding.

Note
When the adjusting screw is turned counterclockwise, the clutch lever moves closer to the handlebar.
When the adjusting screw is turned clockwise, the clutch lever moves away from the handlebar.
The range of adjustment is limited.

12.48 Checking/correcting the fluid level of hydraulic clutch

WARNING

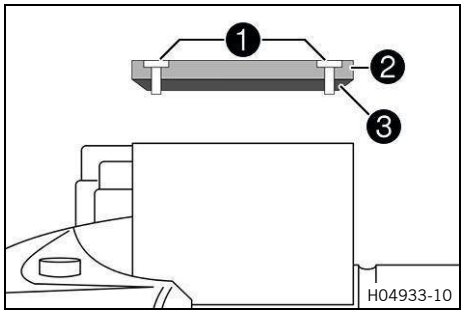
Health hazard Brake fluid is a harmful substance.

- Keep brake fluid out of the reach of children.
- Wear suitable protective clothing and safety glasses.
- Do not allow brake fluid to come into contact with the skin, the eyes, or clothing.
- Consult a doctor immediately if brake fluid has been ingested.
- Rinse the affected area with plenty of water in the event of contact with the skin.
- Rinse eyes thoroughly with water immediately and consult a doctor if brake fluid comes into contact with the eyes.
- If brake fluid spills on to your clothing, change the clothing.

Note

The fluid level rises with increasing wear of the friction plates.

Avoid contact between brake fluid and painted parts. Brake fluid corrodes paint.



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

Fluid level below reservoir rim	4 mm (0.16 in)

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

Brake fluid DOT 5.1 (p. 156)

- Position cover ❷ with membrane ❸.
- Mount and tighten screws ❶.

Immediately clean up any brake fluid that has overflowed or spilled using water.

12.49 Changing the hydraulic clutch fluid

WARNING

Health hazard Brake fluid is a harmful substance.

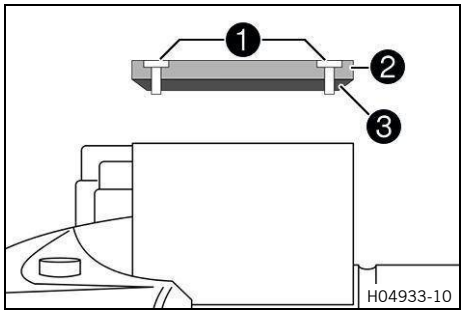
- Keep brake fluid out of the reach of children.
- Wear suitable protective clothing and safety glasses.
- Do not allow brake fluid to come into contact with the skin, the eyes, or clothing.
- Consult a doctor immediately if brake fluid has been ingested.
- Rinse the affected area with plenty of water in the event of contact with the skin.
- Rinse eyes thoroughly with water immediately and consult a doctor if brake fluid comes into contact with the eyes.
- If brake fluid spills on to your clothing, change the clothing.

NOTE

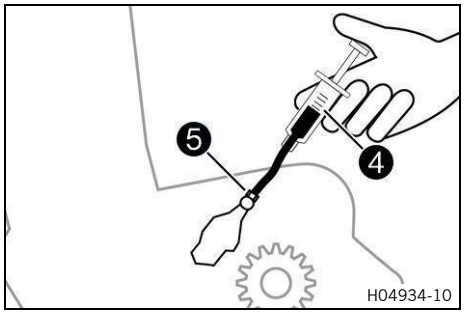
Environmental hazard Hazardous substances cause environmental damage.

– Dispose of oils, grease, filters, fuel, cleaning agents, brake fluid, etc. correctly and in accordance with the applicable regulations.

Note
The fluid level rises with increasing wear of the friction plates.
Avoid contact between brake fluid and painted parts. Brake fluid corrodes paint.



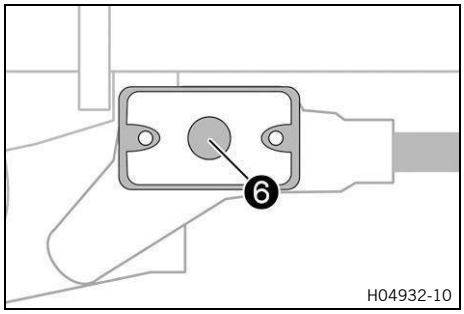
– Move the hydraulic clutch fluid reservoir mounted on the handlebar into a horizontal position.
– Remove screws ❶.
– Take off cover ❷ with membrane ❸.



– Fill bleeding syringe ❹ with the appropriate hydraulic fluid.

Syringe (50329050000)
Brake fluid DOT 5.1 (p. 156)

– On the clutch slave cylinder, remove the protection cap and mount bleeding syringe ❹ with an appropriate hose piece on bleeder screw ❺.
– Only loosen bleeder screw ❺ on the clutch slave cylinder until filling is possible.



– Inject the liquid into the system until it escapes from bore ❻ of the master cylinder without bubbles.
– Occasionally extract the fluid from the master cylinder reservoir to prevent overflowing.
– Tighten the bleed screw and remove the bleeding syringe with the hose.
– Mount the protection cap.
– Correct the fluid level of the hydraulic clutch.

Fluid level below reservoir rim	4 mm (0.16 in)

– Position cover ❷ with membrane ❸.
– Mount and tighten screws ❶.

Immediately clean up any brake fluid that has overflowed or spilled using water.

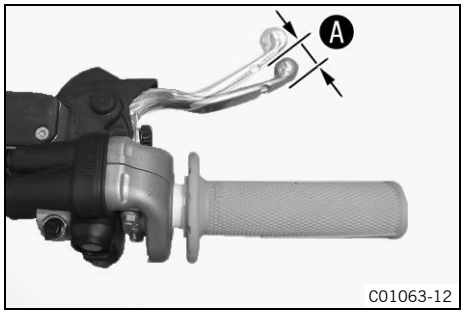
13.1 Checking the free travel on the hand brake lever

WARNING

Danger of accidents The brake system fails in the event of overheating.

If there is no free travel on the brake lever, pressure builds up in the brake system.

– Set the free travel on the brake lever as specified.



– Push the hand brake lever forward and check free travel Ⓐ.

Free travel of hand brake lever	≥ 3 mm (≥ 0.12 in)

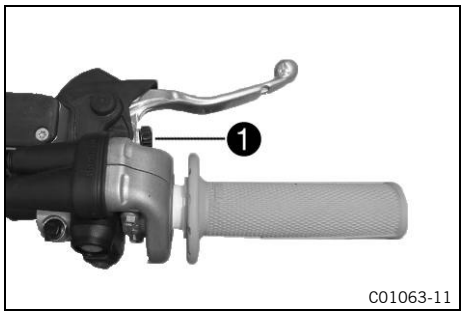
» If the free travel does not meet the specifications:

– Adjust the basic position of the hand brake lever. (p. 90)

13.2 Adjusting the basic position of the hand brake lever

Preparatory work

– Check the free travel on the hand brake lever. (p. 90)



Main work

– Adjust the basic position of the hand brake lever to your hand size by turning adjusting screw ❶.

Only turn the adjusting screw by hand, and do not use force.
Do not make any adjustments while riding.

Note

Turn the adjusting screw clockwise to increase the distance between the hand brake lever and the handlebar.

Turn the adjusting screw counterclockwise to decrease the distance between the hand brake lever and the handlebar.

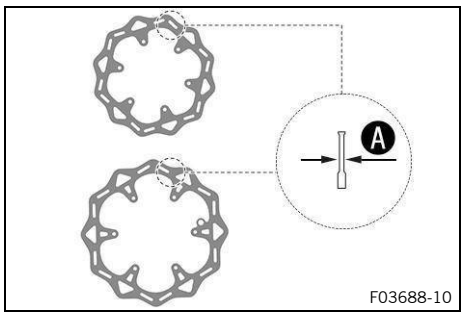
The range of adjustment is limited.

13.3 Checking the brake discs

WARNING

Danger of accidents Worn-out brake discs reduce the braking action.

– Make sure that worn-out brake discs are replaced immediately.



– Check the brake disc thickness of the front and rear brake disc at several places on the disc to see if they conform to measurement Ⓐ.

Brake disc wear limit	
front	2.5 mm (0.098 in)
rear	3.5 mm (0.138 in)

Note
Wear reduces the thickness of the brake discs at the contact surface of the brake pads.

» If the brake disc thickness is less than the specification:
  – Change the brake discs of the front brake.
  – Change the brake discs on the rear brake.

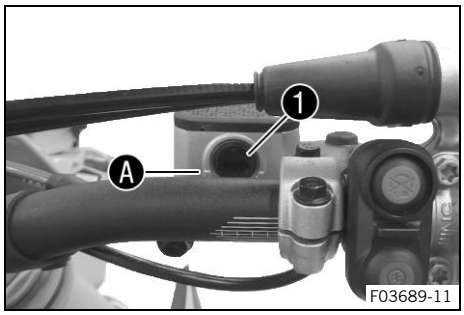
– Check the front and rear brake discs for damage, cracks, and deformation.
  » If the brake disc shows signs of damage, cracks, or deformation:
    – Change the brake discs of the front brake.
    – Change the brake discs on the rear brake.

13.4 Checking the brake fluid level for the front brake

WARNING
Danger of accidents Brake fluid which is too old or of the wrong type impairs the function of the brake system.
– Make sure that brake fluid for the front and rear brake is changed in accordance with the service schedule.
– Make sure that only clean, approved brake fluid from a tightly sealed container is used.

WARNING
Danger of accidents An insufficient brake fluid level will cause the brake system to fail.
If the brake fluid level drops below the specified marking or the specified value, the brake system has a leak or the brake pads are worn down.
– Have the brake system checked and make sure that the problem has been eliminated before the vehicle is used again.

Preparatory work
– Check that the brake pads of the front brake are secured.
(p. 93)



Main work

– Move the brake reservoir mounted on the handlebar to a horizontal position.
– Check the brake fluid level in sight glass 1.
  » If the brake fluid level has fallen below marking A:
    – Add brake fluid for the front brake. (p. 92)

13.5 Adding brake fluid for the front brake

WARNING

Danger of accidents Brake fluid which is too old or of the wrong type impairs the function of the brake system.

– Make sure that brake fluid for the front and rear brake is changed in accordance with the service schedule.
– Make sure that only clean, approved brake fluid from a tightly sealed container is used.

WARNING

Danger of accidents An insufficient brake fluid level will cause the brake system to fail.

If the brake fluid level drops below the specified marking or the specified value, the brake system has a leak or the brake pads are worn down.

– Have the brake system checked and make sure that the problem has been eliminated before the vehicle is used again.

WARNING

Health hazard Brake fluid is a harmful substance.

– Keep brake fluid out of the reach of children.
– Wear suitable protective clothing and safety glasses.
– Do not allow brake fluid to come into contact with the skin, the eyes, or clothing.
– Consult a doctor immediately if brake fluid has been ingested.
– Rinse the affected area with plenty of water in the event of contact with the skin.
– Rinse eyes thoroughly with water immediately and consult a doctor if brake fluid comes into contact with the eyes.
– If brake fluid spills on to your clothing, change the clothing.

NOTE

Environmental hazard Hazardous substances cause environmental damage.

– Dispose of oils, grease, filters, fuel, cleaning agents, brake fluid, etc. correctly and in accordance with the applicable regulations.

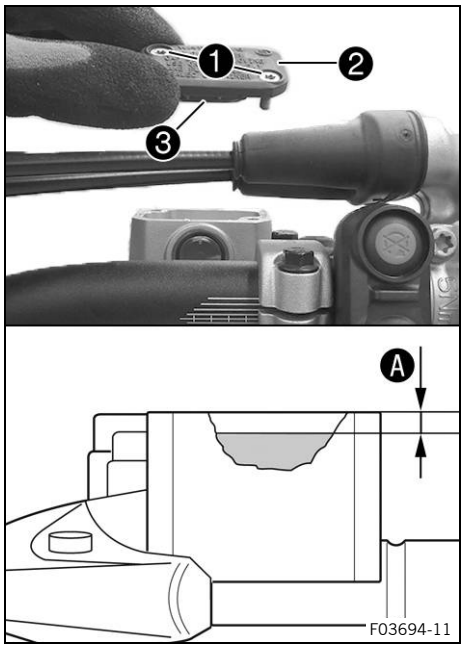
Note

Avoid contact between brake fluid and painted parts. Brake fluid corrodes paint.

Preparatory work

– Check that the brake pads of the front brake are secured. (p. 93)

Main work



– Move the brake reservoir mounted on the handlebar to a horizontal position.
– Remove screws ❶.
– Take off cover ❷ with diaphragm ❸.
– Add brake fluid up to level Ⓐ.

Level Ⓐ (brake fluid level below reservoir rim)	5 mm (0.20 in)

Brake fluid DOT 5.1 (p. 156)

– Position cover ❷ with diaphragm ❸.
– Mount and tighten screws ❶.

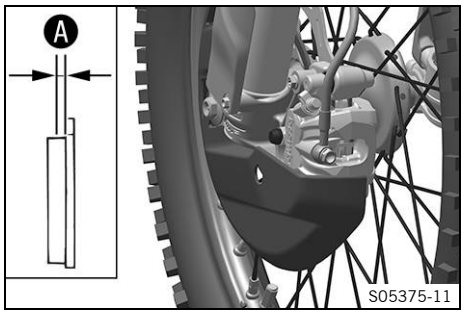
Immediately clean up any brake fluid that has overflowed or spilled with water.

13.6 Checking that the brake pads of the front brake are secured

WARNING

Danger of accidents Worn brake pads reduce the brake action.

– Make sure that worn brake pads are replaced immediately.



– Check all brake pads on both brake calipers for their lining thickness Ⓐ.

Minimum pad thickness Ⓐ	≥ 1 mm (≥ 0.04 in)

» If it is less than the minimum thickness:
– Change the front brake pads. (p. 94)

– Check the brake pads for damage and cracking.
» If there is damage or cracking:
– Change the front brake pads. (p. 94)

– Check that the brake pads are secured.
» If the brake pads are not secured correctly:
– Secure brake pads, replace with new parts if necessary.

13.7 Changing the brake pads of the front brake

WARNING
Danger of accidents Brake pads which have not been approved alter the braking action.
– Only use brake pads approved and recommended by the vehicle manufacturer.

WARNING
Danger of accidents Incorrect servicing will cause the brake system to fail.
– Ensure that service work and repairs are performed professionally.

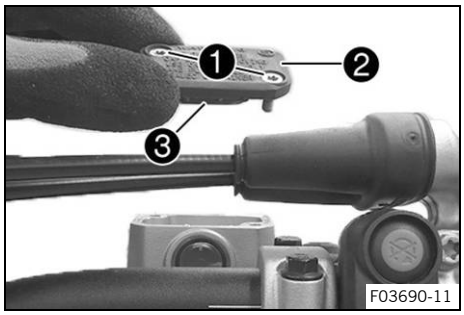
WARNING
Danger of accidents Brake fluid which is too old or of the wrong type impairs the function of the brake system.
– Make sure that brake fluid for the front and rear brake is changed in accordance with the service schedule.
– Make sure that only clean, approved brake fluid from a tightly sealed container is used.

WARNING
Danger of accidents Oil, grease or wax on the brake discs reduces the brake action.
– Always keep the brake discs free of oil, fat and wax.
– Clean the brake discs with brake cleaner when necessary.

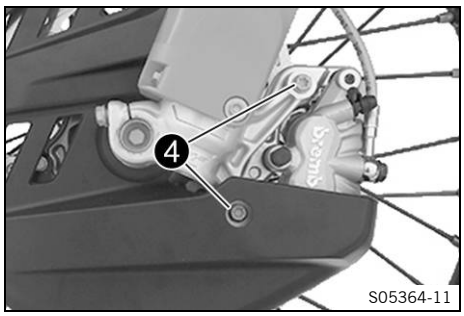
WARNING
Health hazard Brake fluid is a harmful substance.
– Keep brake fluid out of the reach of children.
– Wear suitable protective clothing and safety glasses.
– Do not allow brake fluid to come into contact with the skin, the eyes, or clothing.
– Consult a doctor immediately if brake fluid has been ingested.
– Rinse the affected area with plenty of water in the event of contact with the skin.
– Rinse eyes thoroughly with water immediately and consult a doctor if brake fluid comes into contact with the eyes.
– If brake fluid spills on to your clothing, change the clothing.

NOTE
Environmental hazard Hazardous substances cause environmental damage.
– Dispose of oils, grease, filters, fuel, cleaning agents, brake fluid, etc. correctly and in accordance with the applicable regulations.

Note
Avoid contact between brake fluid and painted parts. Brake fluid corrodes paint.

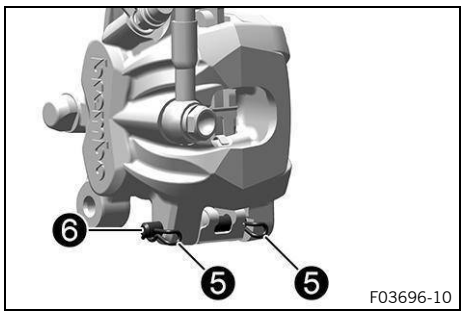


– Move the brake reservoir mounted on the handlebar to a horizontal position.
– Remove screws ❶.
– Take off cover ❷ with membrane ❸.

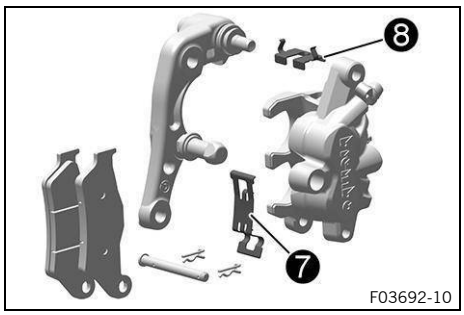


– Remove screws ❹.
– Press the brake pads back by slightly tilting the brake caliper laterally on the brake disc.
– Carefully pull the brake caliper up and off the brake disc.
– Press the brake piston back to its basic position and make sure that no brake fluid overflows from the brake reservoir, extract some brake fluid if necessary.

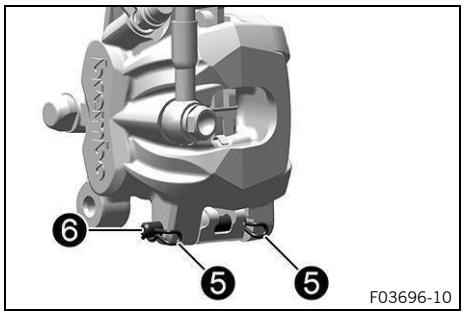
Do not operate the hand brake lever if the brake caliper has been removed.



– Remove cotter pins ❺, pull out bolt ❻, and remove the brake linings.
– Clean brake caliper and brake caliper support.



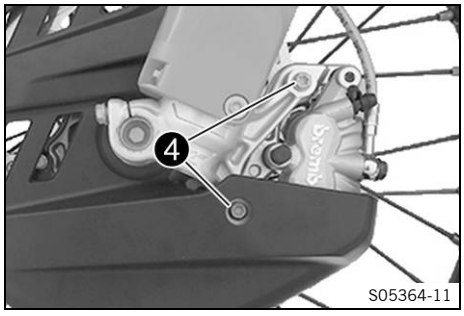
– Check that spring steel clip ❼ in the brake caliper and brake pad guide plate ❽ in the brake caliper support are properly seated.



– Insert the new brake linings, insert bolt ❻, and mount cotter pins ❺.

Make sure the brake pads and retaining spring are properly seated.
Mount the outer cotter pins from the front to the rear. Mount the inner cotter pins from the rear to the front.
Always replace brake pads in sets.

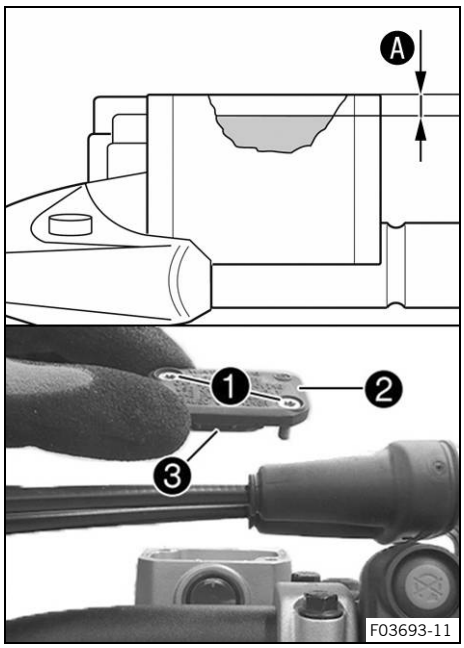
Tip
To make it easier to mount the bolt, push the brake pads upward against the retaining spring.



– Position the brake caliper.
– Mount and tighten screws ❹.

Screw, front brake caliper	
M8×30	25 Nm (18.4 ft·lb$_f$) **Loctite® 243**

– Operate the hand brake lever repeatedly until the brake pads are in contact with the brake disc and a pressure point is reached.



– Add brake fluid up to level Ⓐ.

Level Ⓐ (brake fluid level below reservoir rim)	5 mm (0.20 in)

Brake fluid DOT 5.1 (p. 156)

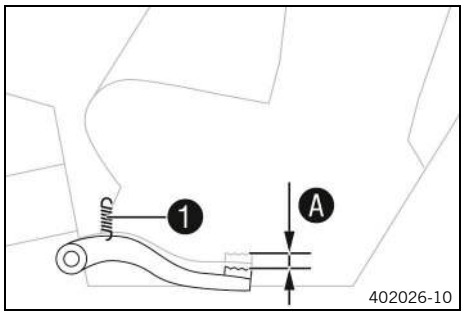
– Position cover ❷ with membrane ❸.
– Mount and tighten screws ❶.

Immediately clean up any brake fluid that has overflowed or spilled using water.

– Check the hand brake lever for a firm pressure point.

13.8 Checking the free travel of the brake pedal

WARNING
Danger of accidents The brake system fails in the event of overheating.
If there is no free travel on the brake lever, pressure builds up in the brake system.
– Set the free travel on the brake lever as specified.



– Detach spring ❶.
– Move the brake pedal back and forth between the end stop and the brake pedal cylinder piston actuation and check free travel Ⓐ.

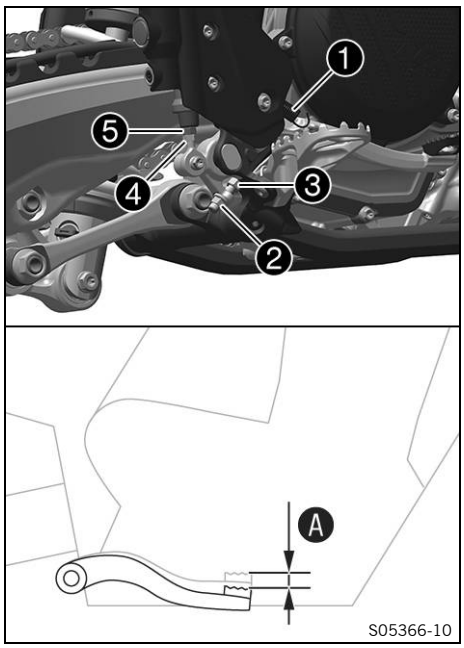
Free travel of brake pedal	3 mm ... 5 mm (0.12 in ... 0.20 in)

» If the free travel does not meet the specifications:
– Adjust the basic position of the brake pedal. (p. 96)

– Attach spring ❶.

13.9 Adjusting the basic position of the brake pedal

WARNING
Danger of accidents The brake system fails in the event of overheating.
If there is no free travel on the brake lever, pressure builds up in the brake system.
– Set the free travel on the brake lever as specified.



– Detach spring ❶.
– Loosen nut ❹ and, with push rod ❺, turn it back until you have maximum free travel.
– To adjust the basic position of the foot brake lever to individual requirements, loosen nut ❷ and turn screw ❸ accordingly.

Note
The range of adjustment is limited.

– Turn push rod ❺ accordingly until you have free travel Ⓐ.

Free travel of brake pedal	3 mm ... 5 mm (0.12 in ... 0.20 in)

– If necessary, adjust the basic position of the brake pedal.
– Hold push rod ❺ and tighten nut ❹.

Remaining nuts on chassis	
M6	10 Nm (7.4 ft·lb$_f$)

– Hold screw ❸ and tighten nut ❷.

Brake pedal stop nut	
M8	20 Nm (14.8 ft·lb$_f$)

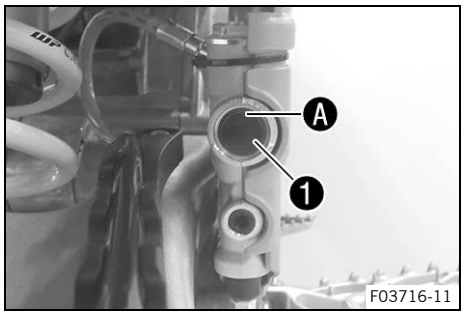
– Attach spring ❶.

13.10 Checking the brake fluid level for the rear brake

WARNING
Danger of accidents Brake fluid which is too old or of the wrong type impairs the function of the brake system.
– Make sure that brake fluid for the front and rear brake is changed in accordance with the service schedule.
– Make sure that only clean, approved brake fluid from a tightly sealed container is used.

WARNING
Danger of accidents An insufficient brake fluid level will cause the brake system to fail.
If the brake fluid level drops below the specified marking or the specified value, the brake system has a leak or the brake pads are worn down.
– Have the brake system checked and make sure that the problem has been eliminated before the vehicle is used again.

Preparatory work
– Check that the brake pads of the rear brake are secured.
(p. 99)



Main work

– Stand the vehicle upright.
– Check the brake fluid level in sight glass 1.
  » If the brake fluid level has fallen below marking A:
    – Add brake fluid for the rear brake. (p. 98)

13.11 Adding brake fluid for the rear brake

WARNING

Danger of accidents Brake fluid which is too old or of the wrong type impairs the function of the brake system.

– Make sure that brake fluid for the front and rear brake is changed in accordance with the service schedule.
– Make sure that only clean, approved brake fluid from a tightly sealed container is used.

WARNING

Danger of accidents An insufficient brake fluid level will cause the brake system to fail.

If the brake fluid level drops below the specified marking or the specified value, the brake system has a leak or the brake pads are worn down.

– Have the brake system checked and make sure that the problem has been eliminated before the vehicle is used again.

WARNING

Health hazard Brake fluid is a harmful substance.

– Keep brake fluid out of the reach of children.
– Wear suitable protective clothing and safety glasses.
– Do not allow brake fluid to come into contact with the skin, the eyes, or clothing.
– Consult a doctor immediately if brake fluid has been ingested.
– Rinse the affected area with plenty of water in the event of contact with the skin.
– Rinse eyes thoroughly with water immediately and consult a doctor if brake fluid comes into contact with the eyes.
– If brake fluid spills on to your clothing, change the clothing.

NOTE

Environmental hazard Hazardous substances cause environmental damage.

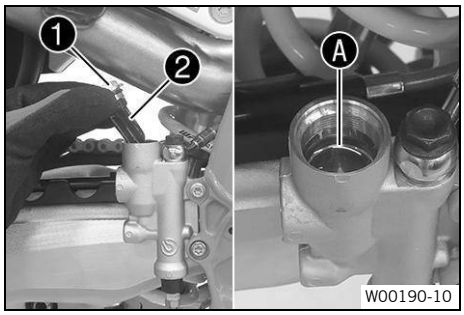
– Dispose of oils, grease, filters, fuel, cleaning agents, brake fluid, etc. correctly and in accordance with the applicable regulations.

Note

Avoid contact between brake fluid and painted parts. Brake fluid corrodes paint.

Preparatory work

– Check that the brake pads of the rear brake are secured. (p. 99)
– Remove the frame protector. (p. 58)



Main work

– Stand the vehicle upright.
– Remove screw cap ❶ with diaphragm ❷ and the O-ring.
– Add brake fluid up to the marking Ⓐ.

Brake fluid DOT 5.1 (p. 156)

– Mount and tighten screw cap ❶ with membrane ❷ and the O-ring.

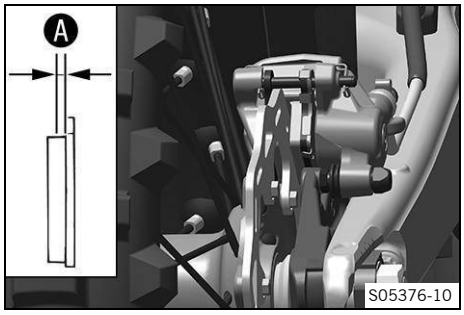
Immediately clean up any brake fluid that has overflowed or spilled using water.

Reworking

– Install the frame protector. (p. 58)

13.12 Checking that the brake pads of the rear brake are secured

WARNING
Danger of accidents Worn brake pads reduce the brake action.
– Make sure that worn brake pads are replaced immediately.



– Check all brake pads on both brake calipers for their lining thickness Ⓐ.

Minimum pad thickness Ⓐ	≥ 1 mm (≥ 0.04 in)

» If it is less than the minimum thickness:
– Change the rear brake pads. (p. 99)
– Check the brake pads for damage and cracking.
» If there is damage or cracking:
– Change the rear brake pads. (p. 99)
– Check that the brake pads are secured.
» If the brake pads are not secured correctly:
– Secure brake pads, replace with new parts if necessary.

13.13 Changing the rear brake pads

WARNING
Danger of accidents Brake pads which have not been approved alter the braking action.
– Only use brake pads approved and recommended by the vehicle manufacturer.

WARNING
Danger of accidents Incorrect servicing will cause the brake system to fail.
– Ensure that service work and repairs are performed professionally.

WARNING

Danger of accidents Brake fluid which is too old or of the wrong type impairs the function of the brake system.

– Make sure that brake fluid for the front and rear brake is changed in accordance with the service schedule.
– Make sure that only clean, approved brake fluid from a tightly sealed container is used.

WARNING

Danger of accidents Oil, grease or wax on the brake discs reduces the brake action.

– Always keep the brake discs free of oil, fat and wax.
– Clean the brake discs with brake cleaner when necessary.

WARNING

Health hazard Brake fluid is a harmful substance.

– Keep brake fluid out of the reach of children.
– Wear suitable protective clothing and safety glasses.
– Do not allow brake fluid to come into contact with the skin, the eyes, or clothing.
– Consult a doctor immediately if brake fluid has been ingested.
– Rinse the affected area with plenty of water in the event of contact with the skin.
– Rinse eyes thoroughly with water immediately and consult a doctor if brake fluid comes into contact with the eyes.
– If brake fluid spills on to your clothing, change the clothing.

NOTE

Environmental hazard Hazardous substances cause environmental damage.

– Dispose of oils, grease, filters, fuel, cleaning agents, brake fluid, etc. correctly and in accordance with the applicable regulations.

Note

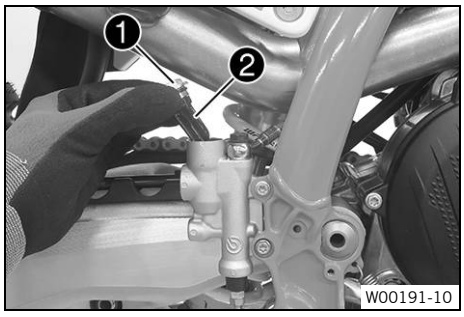
Avoid contact between brake fluid and painted parts. Brake fluid corrodes paint.

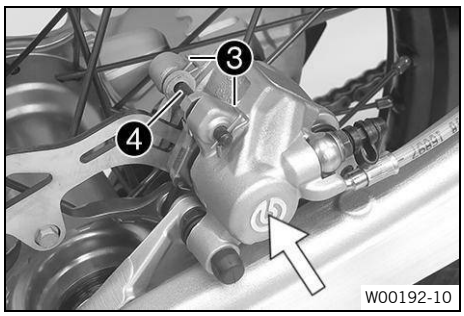
Preparatory work

– Remove the frame protector. (p. 58)

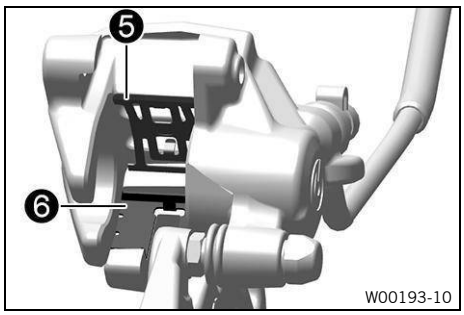
Main work

– Stand the vehicle upright.
– Remove screw cap ❶ with diaphragm ❷ and the O-ring.

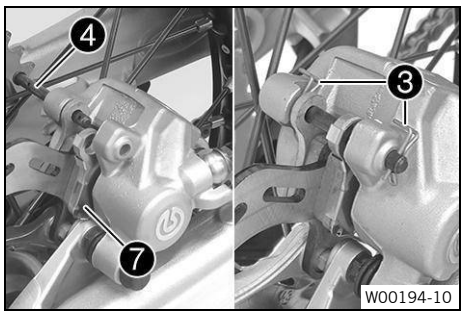




– Manually press the brake caliper toward the brake disc to push back the brake piston. Ensure that brake fluid does not flow out of the brake reservoir, and siphon off excess if required.
– Remove cotter pins ❸, pull out bolt ❹, and remove the brake linings.
– Clean brake caliper and brake caliper support.



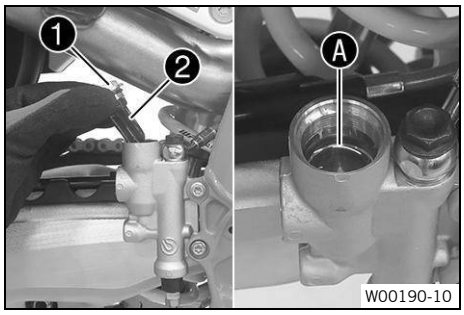
– Check that spring steel clip ❺ in the brake caliper and brake pad guide plate ❻ in the brake caliper support are properly seated.
  ✓ The arrow on the spring steel clip points in the rotation direction of the brake disc.



– Insert the new brake linings, insert bolt ❹, and mount cotter pins ❸.

Make sure the brake pads and retaining spring are properly seated.
Always replace brake pads in sets.
Make sure that decoupling plate ❼ is mounted on the piston side brake lining.

– Actuate the brake disc repeatedly until the brake pads are in contact with the brake disc and a pressure point is achieved.



– Correct brake fluid level to marking Ⓐ.

Brake fluid DOT 5.1 (p. 156)

– Mount and tighten screw cap ❶ with membrane ❷ and the O-ring.

Immediately clean up any brake fluid that has overflowed or spilled using water.

Reworking

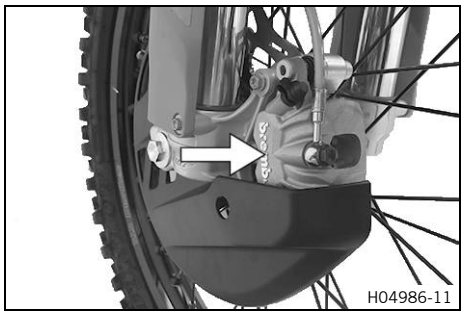
– Install the frame protector. (p. 58)

14.1 Removing the front wheel

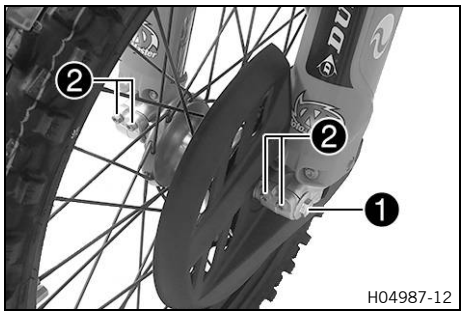
Preparatory work

– Raise the motorcycle with a lift stand. (p. 54)

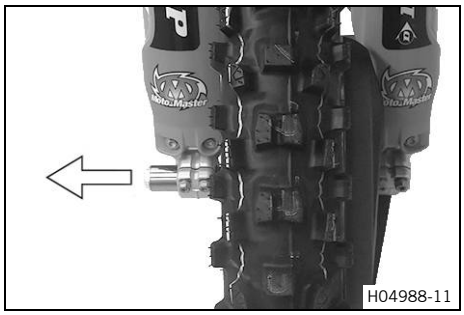
Main work



– Manually press the brake caliper toward the brake disc to push back the brake pistons.



– Loosen screw ❶ by four turns.
– Loosen screws ❷.
– Press on screw ❶ to push the wheel spindle out of the axle clamp.
– Remove screw ❶.



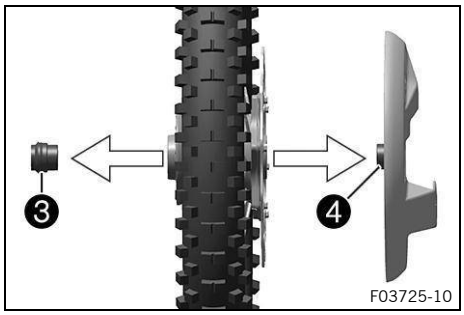
WARNING

Danger of accidents Damaged brake discs reduce the braking action.

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

– Hold front wheel and remove wheel spindle.
– Take the front wheel out of the fork.

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



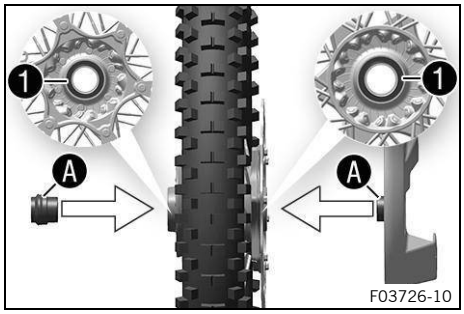
– Remove spacer ❸ and brake disc guard with spacer ❹.

14.2 Installing the front wheel

WARNING

Danger of accidents Oil, grease or wax on the brake discs reduces the brake action.

– Always keep the brake discs free of oil, fat and wax.
– Clean the brake discs with brake cleaner when necessary.



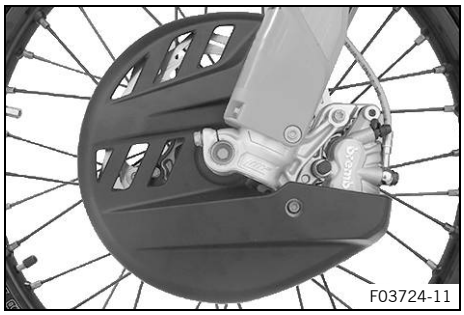
– Check the wheel bearing for damage and wear.
  » If the wheel bearing is damaged or worn:
    – Change the front wheel bearing.
– Clean and grease radial shaft seal ❶ and contact surfaces Ⓐ on the spacers.

Long-life grease (p. 155)

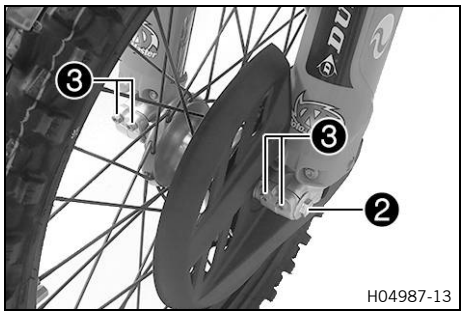
– Insert spacers.
– Clean and lightly grease the wheel spindle.

Long-life grease (p. 155)

– Position the front wheel and insert the wheel spindle.
  ✓ The brake pads are positioned correctly.



– Position the brake disc guard.



– Mount and tighten screw ❷.

Screw, wheel spindle, front	
M20×1.5	35 Nm (25.8 ft·lb$_f$)

– Operate the hand brake lever several times until the brake pads are in contact with the brake disc.
– Remove the motorcycle from the lift stand. (p. 54)
– Operate the front brake and compress the fork a few times firmly.
  ✓ The fork legs straighten.
– Tighten screws ❸.

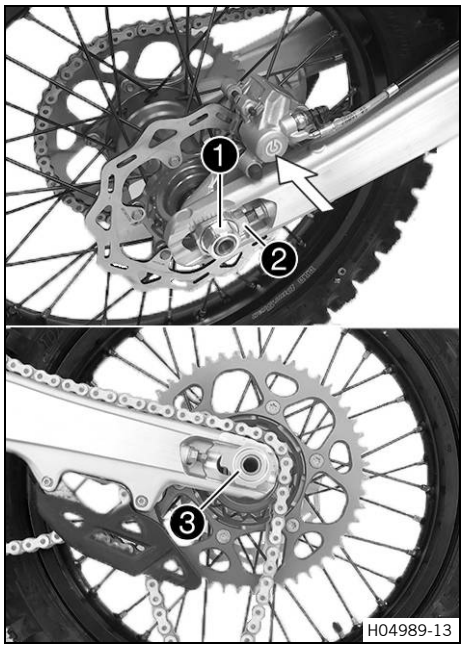
Screw, fork shoe	
M8×25	15 Nm (11.1 ft·lb$_f$)

14.3 Removing the rear wheel

Preparatory work

– Raise the motorcycle with a lift stand. (p. 54)

Main work



– Manually press the brake caliper toward the brake disc to push back the brake pistons.
– Remove nut ❶.
– Take off chain adjuster ❷.
– Pull out wheel spindle ❸ far enough to allow the rear wheel to be pushed forward.
– Push the rear wheel forward as far as possible.
– Remove the chain from the rear sprocket.

Protect the components against damage by covering them.

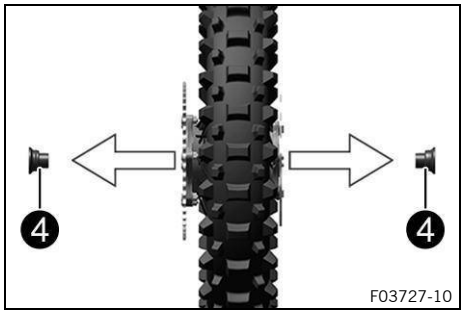
WARNING

Danger of accidents Damaged brake discs reduce the braking action.

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

– Hold the rear wheel and remove wheel spindle.
– Take the rear wheel out of the swingarm.

Do not actuate the brake pedal when the rear wheel is removed.



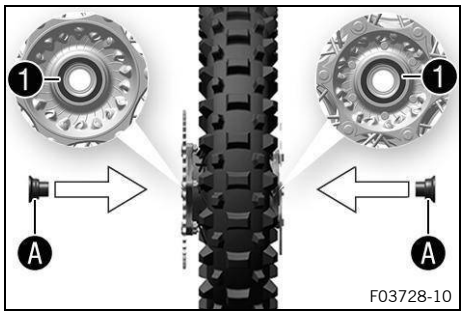
– Remove spacers ❹.

14.4 Installing the rear wheel

WARNING

Danger of accidents Oil, grease or wax on the brake discs reduces the brake action.

– Always keep the brake discs free of oil, fat and wax.
– Clean the brake discs with brake cleaner when necessary.

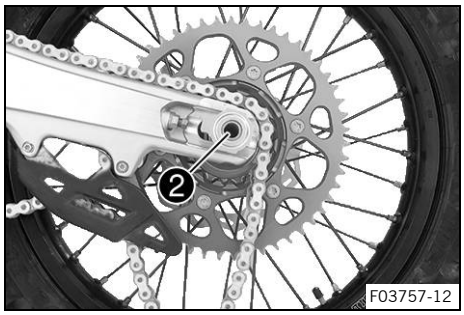


Main work

– Check the wheel bearing for damage and wear.
  » If the wheel bearing is damaged or worn:
    – Change the rear wheel bearing.
– Clean and grease radial shaft seal ❶ and contact surfaces Ⓐ on the spacers.

Long-life grease (p. 155)

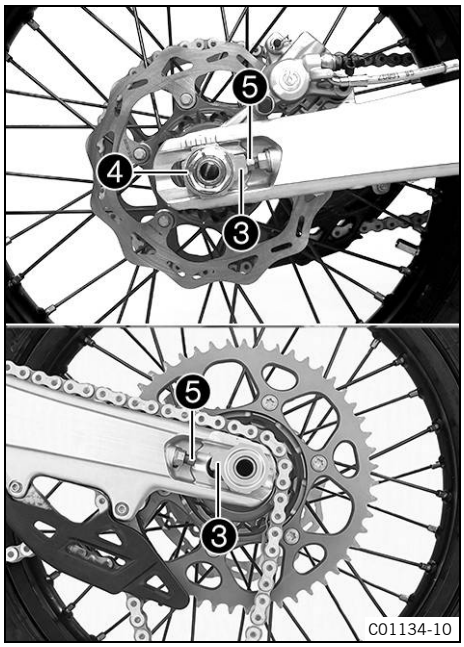
– Insert spacers.



– Clean and lightly grease the wheel spindle.

Long-life grease (p. 155)

– Position rear wheel and insert wheel spindle ❷.
  ✓ The brake pads are positioned correctly.
– Attach the chain.



– Position chain adjuster ❸.
– Mount nut ❹ but do not tighten yet.
– Make sure that chain adjusters ❸ are fitted correctly on adjusting screws ❺.
– Check the chain tension. (p. 81)
– Tighten nut ❹.

Nut, wheel spindle, rear	
M22×1.5	80 Nm (59.0 ft·lb$_f$)

Note

The wide adjustment range of the chain adjusters enables different secondary ratios with the same chain length.

Chain adjusters ❸ can be turned by 180°.

– Actuate the brake disc repeatedly until the brake pads are in contact with the brake disc and a pressure point is achieved.

Reworking

– Remove the motorcycle from the lift stand. (p. 54)

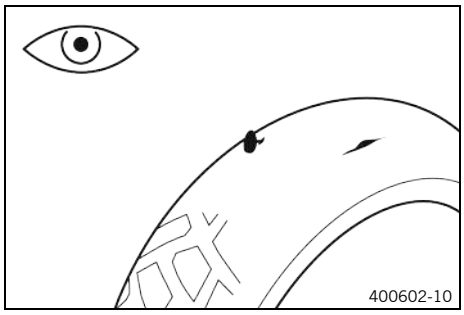
14.5 Checking the tire condition

Note
Only mount tires approved and/or recommended by KTM.
Other tires could have a negative effect on handling characteristics.
The type, condition, and pressure of the tires all have a major impact on the handling of the motorcycle.
The tires mounted on the front and rear wheels must have a similar profile.
Worn tires have a negative effect on handling characteristics, especially on wet surfaces.

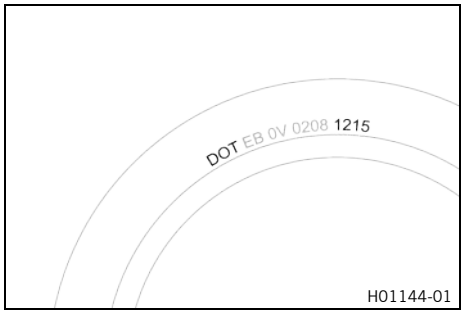
Preparatory work

– Raise the motorcycle with a lift stand. (p. 54)

Main work



– Check the front and rear tires for cuts, embedded objects, and other damage.
  » If the tires have cuts, run-in objects, or other damage:
    – Change the tires.



– Check the tire age.

Note
The tire date of manufacture is usually contained in the tire label and is indicated by the last four digits of the **DOT** number. The first two digits indicate the week of manufacture and the last two digits the year of manufacture.
KTM recommends that the tires be changed after 5 years at the latest, regardless of the actual state of wear.

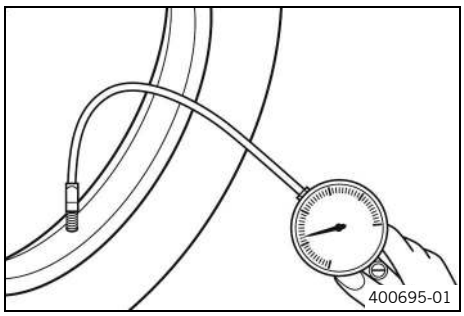
  » If the tires are older than five years:
    – Change the tires.

Reworking

– Remove the motorcycle from the lift stand. (p. 54)

14.6 Checking the tire pressure

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



– Remove the protection cap.
– Check the tire pressure when the tires are cold.

Off-road tire pressure	
front	1.0 bar (14.5 psi)
rear	1.0 bar (14.5 psi)

» If the tire pressure does not meet specifications:
  – Correct tire pressure.
– Mount the protection cap.

14.7 Checking the spoke tension

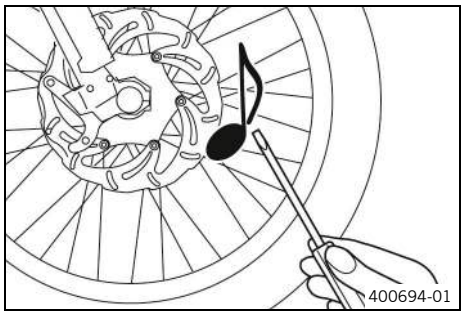
WARNING

Danger of accidents Incorrectly tensioned spokes impair the handling characteristic and can result in secondary damage.

If the spokes are too tight, they can break due to being overloaded.

Loose spokes can cause lateral or radial run-out in the wheel and other spokes will loosen as a result.

– Check the spoke tension regularly, especially on a new vehicle.



– Briefly tap each spoke with a screwdriver.

You should hear a high-pitched sound.

Note

The frequency of the sound depends on 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.

» If the spoke tension differs:
  – Correct the spoke tension.
– Check the spoke torque.

Spoke nipple, front wheel	
M4,5	6 Nm (4.4 ft·lb$_f$) **Loctite® 243**
Spoke nipple, rear wheel	
M4,5	6 Nm (4.4 ft·lb$_f$) **Loctite® 243**

Torque wrench kit (58429094000)

15.1 Removing the 12 V battery

WARNING

Risk of injury 12–V batteries contain harmful substances.

– Keep 12–V batteries out of the reach of children.
– Keep the battery away from sparks or open flames.
– Only charge batteries in well-ventilated rooms.
– Maintain a minimum distance from flammable materials when charging 12-V batteries.

Minimum distance	1 m (3 ft – 3 in)

– Do not charge deeply discharged 12– V batteries if the charge is already below the minimum voltage.

Minimum voltage before starting charging	9 V

– Dispose of 12 V batteries correctly if they have less than the minimum voltage.

CAUTION

Danger of burns The regulator rectifier gets very hot when the vehicle is operated.

– Allow the regulator rectifier to cool down before performing any work.

NOTE

Environmental hazard 12–V batteries contain environmentally-hazardous materials.

– Do not dispose of 12–V batteries as household waste.
– Dispose of 12–V batteries at a collection point for used batteries.

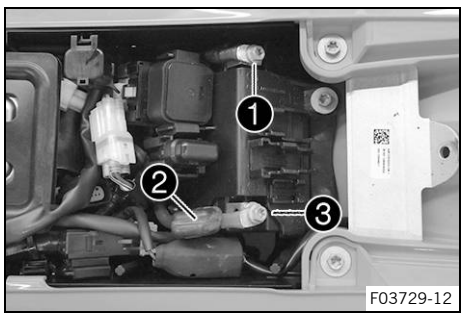
NOTE

Environmental hazard Hazardous substances cause environmental damage.

– Dispose of oils, grease, filters, fuel, cleaning agents, brake fluid, etc. correctly and in accordance with the applicable regulations.

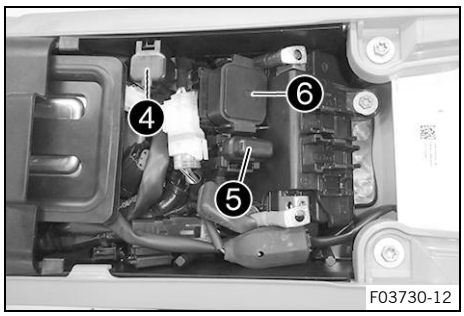
Preparatory work

– Remove the seat. (p. 69)

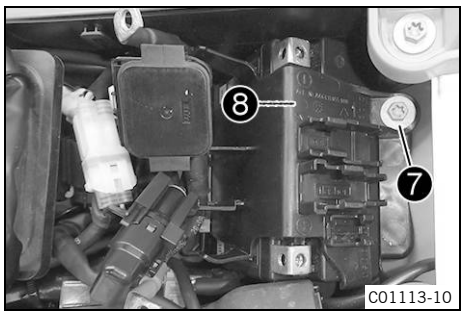


Main work

– Disconnect negative cable ❶ from the 12 V battery.
– Pull back positive terminal cover ❷ and disconnect positive cable ❸ from the 12-V battery.



– Pull socket connector ❹ out of the bracket and hang it to the side.
– Pull fuse housing ❺ off the bracket and hang it to the side.
– Pull starter relay ❻ off the holder and hang to the side.

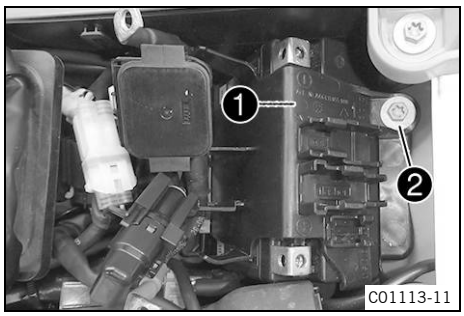


– Remove screw ❼.
– Carefully push battery holding bracket ❽ to the left and lift it off.
– Lift out the 12 V battery.

Pay attention to the wiring harness.

15.2 Installing the 12 V battery

Main work

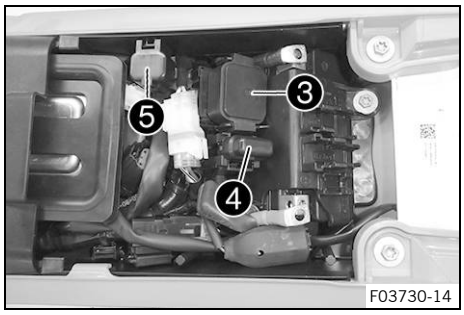


– Insert the 12 V battery into the battery compartment with the terminals facing upward.

12 V battery (HJ21L-FP) (p. 157)

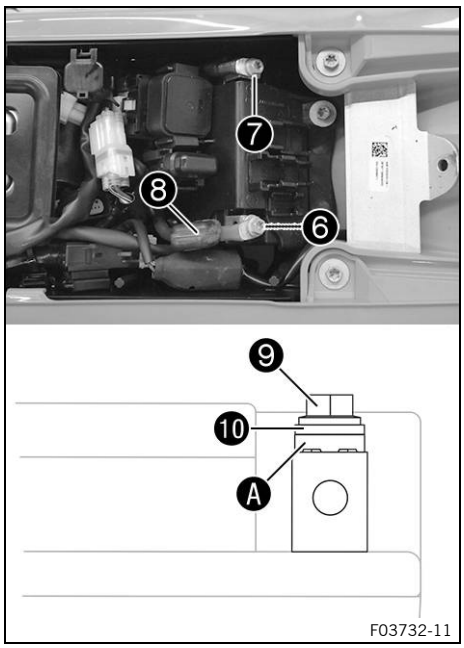
– Insert battery holding bracket ❶ and carefully push it to the right.
– Mount and tighten screw ❷.

Screw, battery holding bracket on subframe	
M6×12	6 Nm (4.4 ft·lb$_f$)



– Mount starter relay ❸ on the bracket.
– Mount fuse housing ❹ on the bracket.
– Mount socket connector ❺ on the bracket.

Ensure that the cable is routed correctly.



– Connect positive cable ❻ to the 12-V battery.

Screw, battery terminal	
M5	2.5 Nm (1.84 ft·lb$_f$)

– Connect negative cable ❼ to the 12 V battery.

Screw, battery terminal	
M5	2.5 Nm (1.84 ft·lb$_f$)

Contact disks Ⓐ must be mounted under screws ❾ and cable sockets ❿ with the claws toward the battery terminal.

– Slide positive terminal cover ❽ over the positive terminal.

Reworking

– Mount the seat. (p. 70)

15.3 Charging the 12 V battery

WARNING

Risk of injury 12–V batteries contain harmful substances.

– Keep 12–V batteries out of the reach of children.
– Keep the battery away from sparks or open flames.
– Only charge batteries in well-ventilated rooms.
– Maintain a minimum distance from flammable materials when charging 12-V batteries.

Minimum distance	1 m (3 ft – 3 in)

– Do not charge deeply discharged 12– V batteries if the charge is already below the minimum voltage.

Minimum voltage before starting charging	9 V

– Dispose of 12 V batteries correctly if they have less than the minimum voltage.

NOTE

Environmental hazard 12–V batteries contain environmentally-hazardous materials.

– Do not dispose of 12–V batteries as household waste.
– Dispose of 12–V batteries at a collection point for used batteries.

NOTE

Environmental hazard Hazardous substances cause environmental damage.

– Dispose of oils, grease, filters, fuel, cleaning agents, brake fluid, etc. correctly and in accordance with the applicable regulations.

Note

Even when there is no load on the 12 V battery, it discharges steadily each day.

The state of charge and the method of charging are very important for the service life of the 12 V battery.

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

If the charging current, charging voltage, or charging time is exceeded, the 12 V battery will be destroyed.

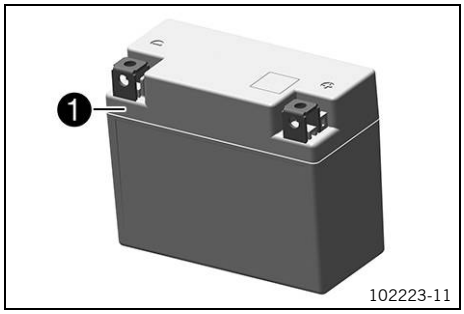
If the 12 V battery is left in a discharged state for an extended period, it will become deeply discharged and suffer a loss of capacity, destroying the battery.

The 12 V battery is maintenance-free.

Preparatory work

– Remove the seat. (p. 69)

Main work



– Do not remove cover 1.
– Check the battery voltage.
  » Battery voltage:
    • < 9 V
    – Do not charge the 12 V battery.
    – Replace the 12 V battery and dispose of the old 12 V battery properly.
  » If the specifications have been met:
    Battery voltage:
    • ≥ 9 V
    – Connect a charger to the 12 V battery. Switch the charger on.

Read the accompanying instructions.	
Maximum charging voltage	14.4 ±0.5 V
Minimum charging voltage	10.0 A
Maximum charging time	12 h
The charging current, charging voltage, and charging time must not be exceeded.	
Recharge the 12 V battery regularly when the motorcycle is not being used.	3 months
If the 12 V battery is depleted from starting the vehicle repeatedly, the battery must be charged immediately.	

(EU) battery charger (79629974000)
(US) battery charger (79629974500)

Note

This battery charger tests whether the 12 V battery retains its voltage. It is also impossible to overcharge the 12 V battery with this battery charger. The charging time may be longer at low temperatures.

This battery charger is only suitable for lithium iron phosphate batteries.

– Switch off the charger after charging and disconnect from the 12 V battery.

Reworking

– Mount the seat. (p. 70)

15.4 Changing the main fuse

WARNING

Fire hazard Incorrect fuses overload the electrical system.

– Use only fuses with the prescribed amperage.
– Do not bypass or repair fuses.

CAUTION

Danger of burns The regulator rectifier gets very hot when the vehicle is operated.

– Allow the regulator rectifier to cool down before performing any work.

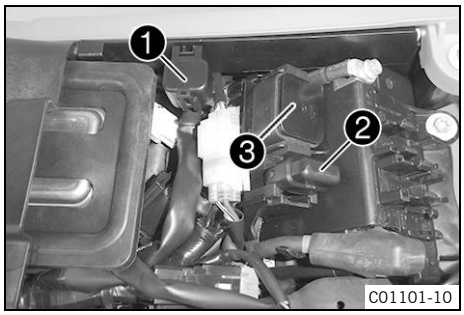
Note

The main fuse protects all electrical power loads of the vehicle. It is located in the starter relay housing under the seat.

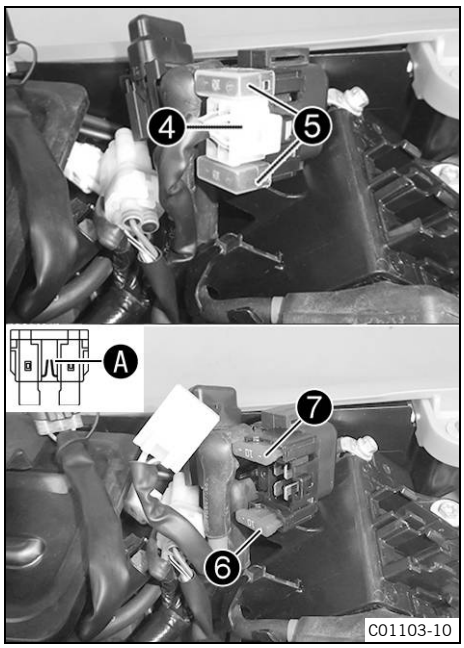
Preparatory work

– Remove the seat. (p. 69)

Main work



– Pull socket connector ❶ off the bracket and hang it to the side.
– Pull fuse housing ❷ off the bracket and hang it to the side.
– Pull starter relay ❸ off the holder and hang to the side.



– Unplug socket connector ❹.
– Take off protection caps ❺.
– Remove faulty main fuse ❻.

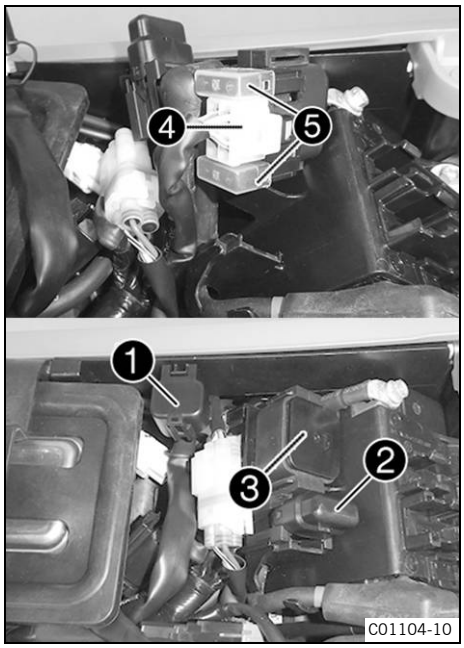
Note
A faulty fuse has a burned-out fuse wire Ⓐ.
A spare fuse ❼ is located in the starter relay.

– Insert the main fuse.

Fuse (58011109110) 📖 (p. 157)

– Check that the electrical equipment is functioning properly.

Tip
Insert a new spare fuse so that it is available if needed.



– Attach protection caps ❺.
– Plug in connector ❹.
– Mount starter relay ❸ on the bracket.
– Mount fuse housing ❷ on the bracket.
– Mount socket connector ❶ on the bracket.

Ensure that the cable is routed correctly.

Reworking

– Mount the seat. 📖 (p. 70)

15.5 Changing the fuse of the fuel pump

WARNING

Fire hazard Incorrect fuses overload the electrical system.

– Use only fuses with the prescribed amperage.
– Do not bypass or repair fuses.

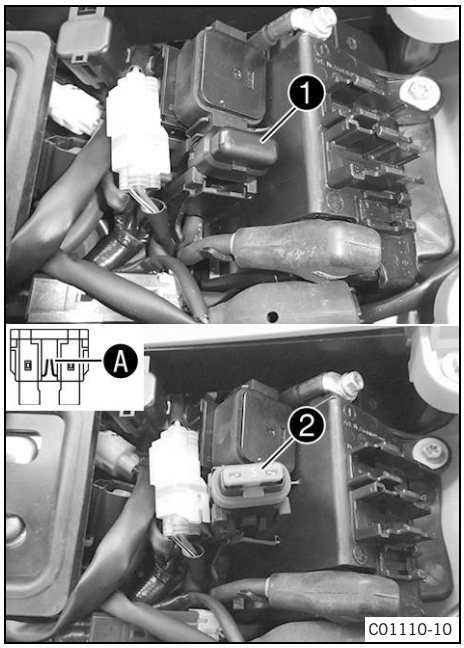
CAUTION

Danger of burns The regulator rectifier gets very hot when the vehicle is operated.

– Allow the regulator rectifier to cool down before performing any work.

Note

The fuel pump is protected by the fuel pump fuse. This is located under the seat.



Preparatory work

– Remove the seat. (p. 69)

Main work

– Pull fuse housing ❶ off the bracket and remove the protection cap.
– Remove the faulty fuse ❷.

Note

A faulty fuse has a burned-out fuse wire Ⓐ.

– Put in the new fuse for the fuel pump.

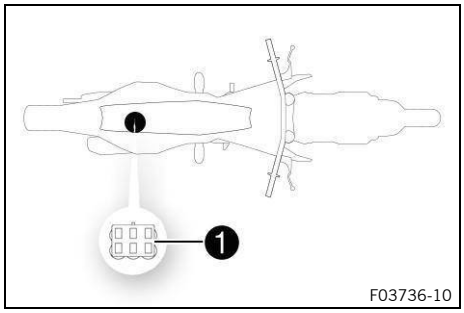
Fuse (58011109105)

– Check that the electrical equipment is functioning properly.
– Attach the protection cap.
– Mount the fuse housing on the bracket.

Reworking

– Mount the seat. (p. 70)

15.6 Diagnostic connector



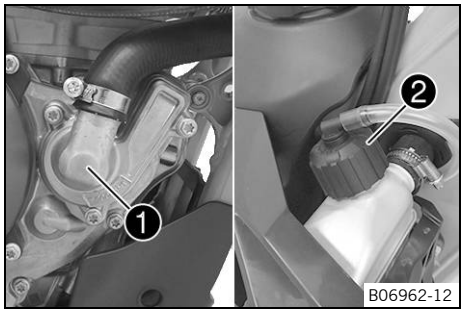
Diagnostics connector ❶ is located under the seat.

Note

As soon as the diagnostics tool is connected, the hourmeter starts running.

Before longer diagnostic sessions, unplug the hourmeter behind the number plate.

16.1 Cooling system



Water pump ❶ in the engine circulates the coolant.

The pressure resulting from the warming of the cooling system is regulated by a valve in radiator cap ❷.

The coolant is cooled by the air stream.

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

16.2 Checking the frost protection and coolant level

WARNING

Health hazard Coolant is harmful to health.

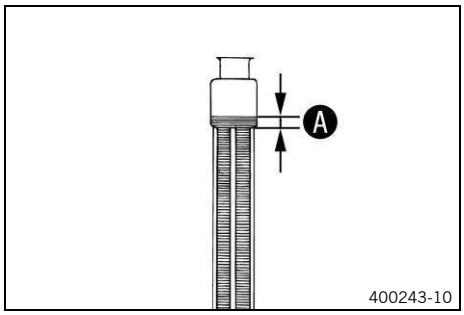
- Keep coolant out of the reach of children.
- Do not allow coolant to come into contact with skin, eyes, or clothing.
- Consult a doctor immediately if coolant has been ingested.
- Rinse the affected area immediately with plenty of water in the event of contact with skin.
- Rinse eyes thoroughly with water and consult a doctor immediately if coolant comes into contact with eyes.
- If coolant spills on to your clothing, change the clothing.
- Store coolant properly in a suitable container and keep out of the reach of children.

WARNING

Danger of scalding The coolant heats up and is under high pressure when the vehicle is operated.

- Do not open the radiator, the radiator hoses, or other cooling system components if the engine or the cooling system are at operating temperature.
- Allow the cooling system and the engine to cool down before you open the radiator, the radiator hoses, or other components of the cooling system.
- In the event of scalding, rinse the area affected immediately with lukewarm water.

Condition: The engine is cold



- Stand the motorcycle upright on a level surface.
- Take off the radiator cap.
- Check the frost protection in the coolant.

−45 °C ... −25 °C (−49.0 °F ... −13.0 °F)

  » If the frost protection in the coolant does not match the specified value:
    - Correct the frost protection in the coolant.
- Check the coolant level in the radiator.

Coolant level Ⓐ above the radiator fins	10 mm (0.39 in)

» If the coolant level does not meet the specifications:
– Correct the coolant level.

coolant	
Coolant (p. 156) Antifreeze protection to at least: −25 °C (−13.0 °F)	0.95 l (0.251 liq. gal_{US})

– Mount the radiator cap.

16.3 Checking the coolant level

WARNING

Health hazard Coolant is harmful to health.

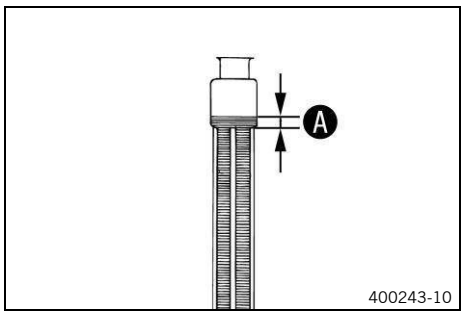
– Keep coolant out of the reach of children.
– Do not allow coolant to come into contact with skin, eyes, or clothing.
– Consult a doctor immediately if coolant has been ingested.
– Rinse the affected area immediately with plenty of water in the event of contact with skin.
– Rinse eyes thoroughly with water and consult a doctor immediately if coolant comes into contact with eyes.
– If coolant spills on to your clothing, change the clothing.
– Store coolant properly in a suitable container and keep out of the reach of children.

WARNING

Danger of scalding The coolant heats up and is under high pressure when the vehicle is operated.

– Do not open the radiator, the radiator hoses, or other cooling system components if the engine or the cooling system are at operating temperature.
– Allow the cooling system and the engine to cool down before you open the radiator, the radiator hoses, or other components of the cooling system.
– In the event of scalding, rinse the area affected immediately with lukewarm water.

Condition: The engine is cold



– Stand the motorcycle upright on a level surface.
– Take off the radiator cap.
– Check the coolant level in the radiator.

Coolant level Ⓐ above the radiator fins	10 mm (0.39 in)

» If the coolant level does not meet the specifications:
– Correct the coolant level.

coolant	
Coolant (p. 156) Antifreeze protection to at least: −25 °C (−13.0 °F)	0.95 l (0.251 liq. gal_{US})

– Mount the radiator cap.

16.4 Draining the coolant

WARNING

Health hazard Coolant is harmful to health.

- Keep coolant out of the reach of children.
- Do not allow coolant to come into contact with skin, eyes, or clothing.
- Consult a doctor immediately if coolant has been ingested.
- Rinse the affected area immediately with plenty of water in the event of contact with skin.
- Rinse eyes thoroughly with water and consult a doctor immediately if coolant comes into contact with eyes.
- If coolant spills on to your clothing, change the clothing.
- Store coolant properly in a suitable container and keep out of the reach of children.

WARNING

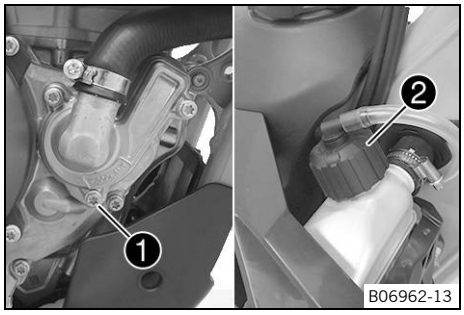
Danger of scalding The coolant heats up and is under high pressure when the vehicle is operated.

- Do not open the radiator, the radiator hoses, or other cooling system components if the engine or the cooling system are at operating temperature.
- Allow the cooling system and the engine to cool down before you open the radiator, the radiator hoses, or other components of the cooling system.
- In the event of scalding, rinse the area affected immediately with lukewarm water.

Condition: The engine is cold

Preparatory work

- Remove the skid plate. (p. 57)



Main work

- Stand the motorcycle upright.
- Place an appropriate container under the water pump cover.
- Remove screw 1.
- Take off radiator cap 2.
- Completely drain the coolant.
- Mount screw 1 with the new sealing ring and tighten.

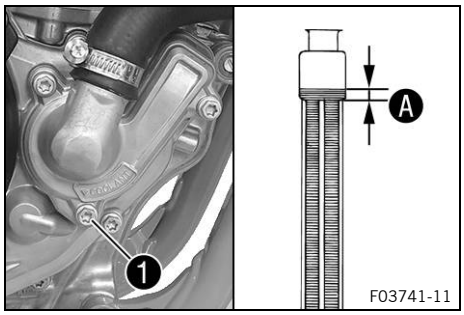
Screw, water pump cover	
M6	10 Nm (7.4 ft·lb$_f$)

16.5 Refilling the coolant

WARNING

Health hazard Coolant is harmful to health.

- Keep coolant out of the reach of children.
- Do not allow coolant to come into contact with skin, eyes, or clothing.
- Consult a doctor immediately if coolant has been ingested.
- Rinse the affected area immediately with plenty of water in the event of contact with skin.
- Rinse eyes thoroughly with water and consult a doctor immediately if coolant comes into contact with eyes.
- If coolant spills on to your clothing, change the clothing.
- Store coolant properly in a suitable container and keep out of the reach of children.



Main work

– Make sure that screw ❶ is tightened.
– Stand the motorcycle upright.
– Pour coolant in up to level Ⓐ above the radiator fins.

Distance Ⓐ above the radiator fins	10 mm (0.39 in)

coolant	
Coolant (p. 156) Antifreeze protection to at least: −25 °C (−13.0 °F)	0.95 l (0.251 liq. gal_{US})

– Mount the radiator cap.
– Go for a short test ride.
– Check the coolant level. (p. 117)

Reworking

– Install the skid plate. (p. 57)

16.6 Changing the coolant

WARNING

Health hazard Coolant is harmful to health.

– Keep coolant out of the reach of children.
– Do not allow coolant to come into contact with skin, eyes, or clothing.
– Consult a doctor immediately if coolant has been ingested.
– Rinse the affected area immediately with plenty of water in the event of contact with skin.
– Rinse eyes thoroughly with water and consult a doctor immediately if coolant comes into contact with eyes.
– If coolant spills on to your clothing, change the clothing.
– Store coolant properly in a suitable container and keep out of the reach of children.

WARNING

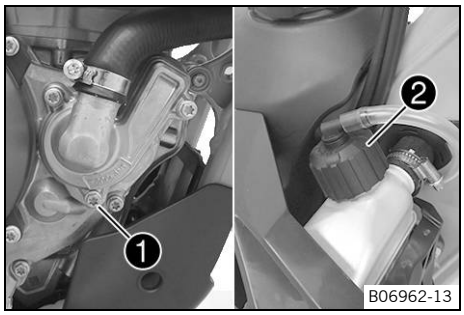
Danger of scalding The coolant heats up and is under high pressure when the vehicle is operated.

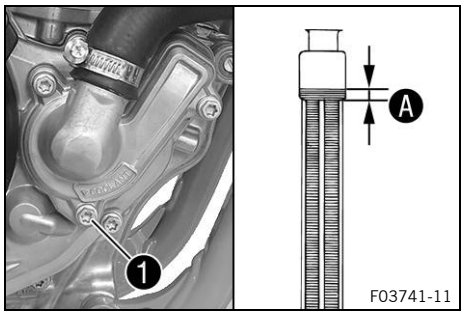
– Do not open the radiator, the radiator hoses, or other cooling system components if the engine or the cooling system are at operating temperature.
– Allow the cooling system and the engine to cool down before you open the radiator, the radiator hoses, or other components of the cooling system.
– In the event of scalding, rinse the area affected immediately with lukewarm water.

Condition: The engine is cold

Preparatory work

– Remove the skid plate. (p. 57)





Main work

– Stand the motorcycle upright.
– Place an appropriate container under the water pump cover.
– Remove screw ❶.
– Take off radiator cap ❷.
– Completely drain the coolant.

– Mount screw ❶ with the new sealing ring and tighten.

Screw, water pump cover	
M6	10 Nm (7.4 ft·lb$_f$)

– Pour coolant in up to level Ⓐ above the radiator fins.

Distance Ⓐ above the radiator fins	10 mm (0.39 in)

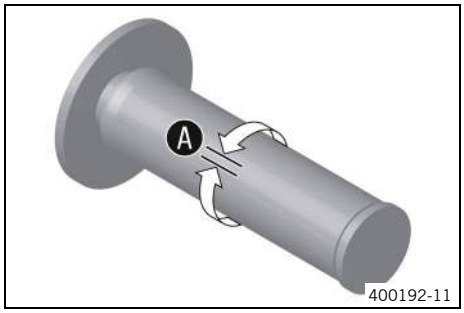
coolant	
Coolant (p. 156) Antifreeze protection to at least: −25 °C (−13.0 °F)	0.95 l (0.251 liq. gal$_{US}$)

– Mount the radiator cap.
– Go for a short test ride.
– Check the coolant level. (p. 117)

Reworking

– Install the skid plate. (p. 57)

17.1 Checking the play in the throttle cable



– Check the throttle grip for smooth operation.
– Move the handlebar to the straight-ahead position. Turn the throttle twist grip back and forth slightly and determine the play in throttle cable Ⓐ.

Throttle cable play	3 mm … 5 mm (0.12 in … 0.20 in)

» If the throttle cable play does not meet the specified value:
– Adjust the throttle cable play. (p. 121)

– Press the cold start button in all the way to the stop.
✓ When the throttle twist grip is turned forward, the cold start button jumps back to the start position.
» If the cold start button does not return to its original position:
– Adjust the throttle cable play. (p. 121)

DANGER
Danger of poisoning Exhaust gases are toxic and inhaling them may result in unconsciousness and death.
– Always ensure that there is sufficient ventilation when running the engine.
– Use suitable exhaust extraction when starting or running the engine in an enclosed space.

– Start the engine and let it run at idle speed. Move the handlebar back and forth over the entire steering range.

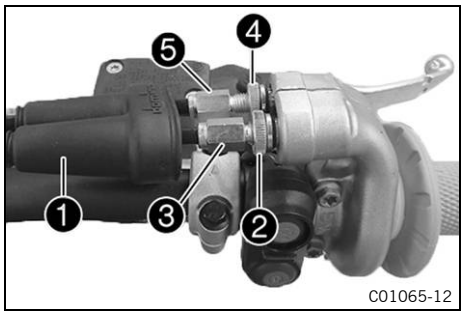
The idle speed must not change.

» If the idle speed changes:
– Adjust the throttle cable play. (p. 121)

17.2 Adjusting the throttle cable play

Note
If the correct routing of the throttle cables has already been secured, the fuel tank does not need to be removed.

Preparatory work
– Remove the seat. (p. 69)
– Remove the fuel tank. (p. 77)
– Check the throttle cable routing. (p. 85)



Main work

– Move the handlebar to the straight-ahead position.
– Push back sleeve ❶.
– Loosen nut ❷.
– Turn adjusting screw ❸ in as far as possible.
– Loosen nut ❹.
– Turn adjusting screw ❺ in as far as possible.
– Turn adjusting screw ❸ so that there is play in the throttle cable at the throttle grip.

Throttle cable play	3 mm ... 5 mm (0.12 in ... 0.20 in)

– Unscrew the adjusting screw ❺ until the smooth operation or play in throttle cable is worsened.
– Turn adjusting screw ❺ approx. two turns further.
– Tighten nut ❹.
– Tighten nut ❷.
– Slide on sleeve ❶.
– Check the throttle grip for smooth operation.

Reworking

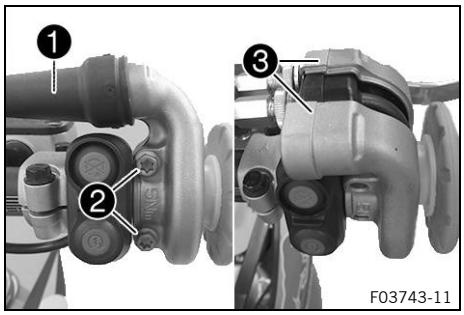
– Check the play in the throttle cable. (p. 121)
– Install the fuel tank. (p. 78)
– Mount the seat. (p. 70)

17.3 Adjusting the characteristic map of the throttle response

Note

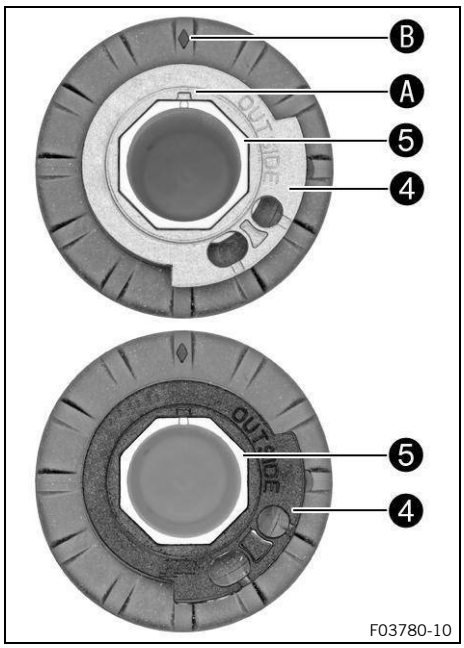
On the throttle twist grip, the characteristic map of the throttle response is changed by changing the guide plate.

A guide plate with a different characteristic map is supplied.



Main work

– Push back sleeve ❶.
– Remove screws ❷ and half-shells ❸.
– Detach the throttle cables and take off the grip tube.



– Remove guide plate ❹ from handle tube ❺.
– Position the required guide plate on the grip tube.

The label **OUTSIDE** must be visible. Marking Ⓐ must be positioned at marking Ⓑ.

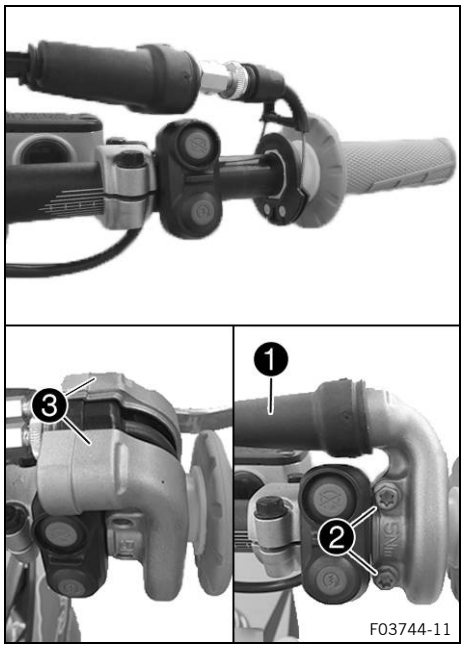
Gray guide plate (A48002014000)
Work material (Alternative 1 / 1)
Black guide plate (A46002014000)

Note

The gray guide plate opens the throttle valve more slowly.

The black guide plate opens the throttle valve more quickly.

The black guide plate is already mounted when the vehicle is delivered.



– Clean the outside of the handlebar and the inside of the grip tube. Mount the grip tube on the handlebar.
– Attach the throttle cables to the guide plate and route correctly.
– Position half-shells ❸, mount and tighten screws ❷.

Screw, throttle twist grip	
M6×20	5 Nm (3.7 ft·lb$_f$)

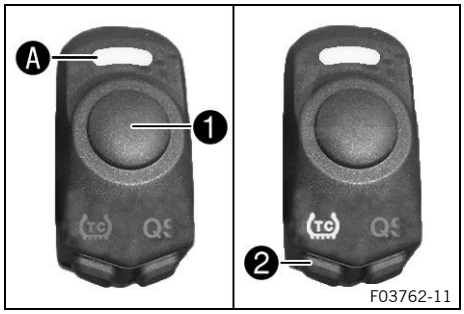
– Slide on sleeve ❶ and check the throttle grip for ease of movement.

Reworking

– Check the play in the throttle cable. (p. 121)

17.4 Changing the mapping

Note
The desired engine characteristic can be activated using the combination switch.
The setting most recently selected is activated again when restarting.
Traction control can also be activated in each mapping.
The mapping can also be changed during the ride.

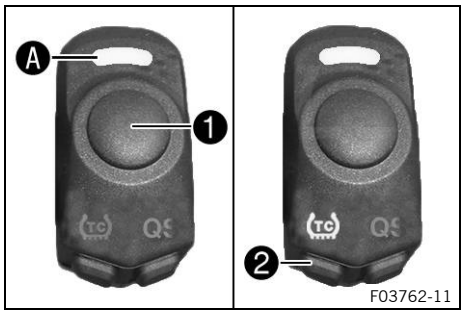


– Select one of the following alternatives.

Activating STANDARD mapping

– Press button 1.
  ✓ Indicator light A lights up blue.
  ✓ STANDARD: balanced response

Note
Traction control can be activated additionally using TC button 2.



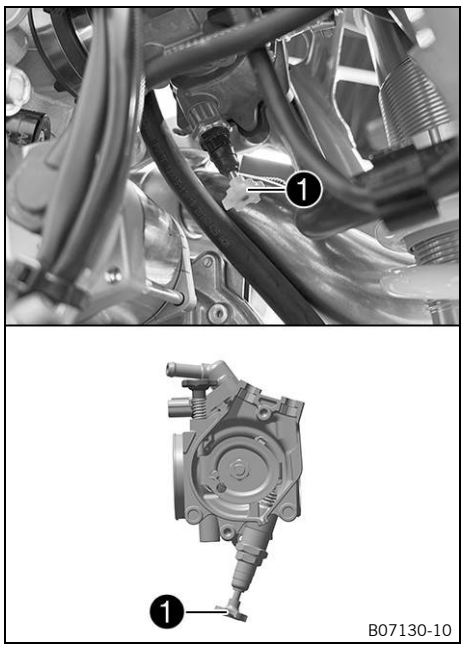
Activating AGGRESSIVE mapping

– Press button 1.
  ✓ Indicator light A lights up green.
  ✓ AGGRESSIVE: direct response

Note
Traction control can be activated additionally using TC button 2.

17.5 adjusting the idle speed

WARNING
Danger of accidents The engine may suddenly come to a halt if the idle speed is set too low.
– Set the idle speed to the specified value.



– Run the engine until warm.
– Check whether the cold start button has returned to its basic position.

DANGER

Danger of poisoning Exhaust gases are toxic and inhaling them may result in unconsciousness and death.

– Always ensure that there is sufficient ventilation when running the engine.
– Use suitable exhaust extraction when starting or running the engine in an enclosed space.

– Adjust the idle speed by turning idle speed adjustment screw 1 using a suitable rpm gauge.

Make the adjustment in small steps.	
Idle speed	2,100 rpm … 2,200 rpm (35.00 Hz … 36.67 Hz)

Note

Turning counterclockwise lowers the idle speed.

Turning clockwise increases the idle speed.

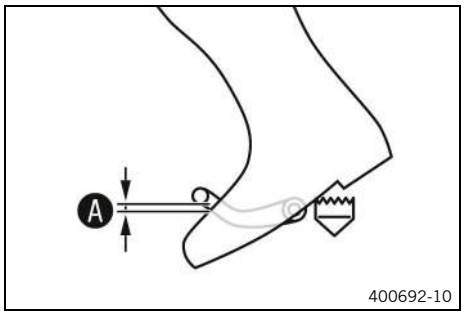
An incorrect idle speed can have a negative impact on overall engine running.

17.6 Checking the basic position of the gear shift lever

Note

When driving, the gear shift lever must not touch the rider's boot when in the basic position.

If the shift lever is permanently touching the boot, the transmission will be subject to excessive load; this can cause a malfunction of the quickshifter.

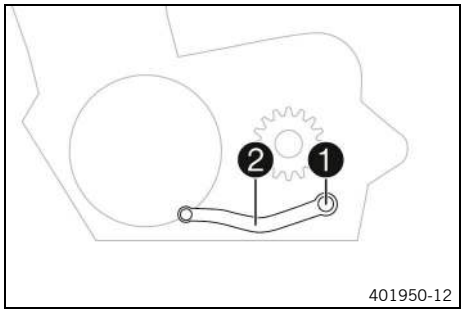


– Sit on the vehicle in the riding position and measure the distance A between the upper edge of your boot and the shift lever.

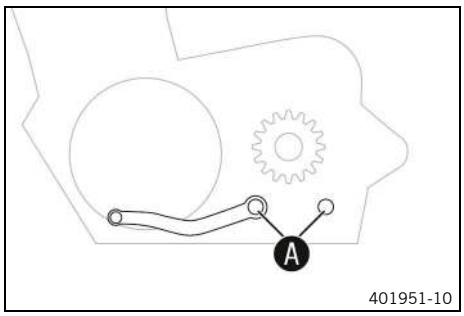
Distance between the gear shift lever and upper edge of boot	10 mm … 20 mm (0.39 in … 0.79 in)

» If the distance does not meet the specifications:
– Adjust the basic position of the gear shift lever. (p. 126)

17.7 Adjusting the basic position of the gear shift lever



– Remove screw ❶ with the washers and take off shift lever ❷.



– Clean gear teeth Ⓐ of the shift lever and shift shaft.
– Mount the gear shift lever on the shift shaft in the desired position and engage the toothing.

The gear shift lever must not come into contact with any other vehicle components during the shift procedure.

Note
The range of adjustment is limited.

– Mount and tighten screw ❶ with washers.

Screw, shift lever	
M6×16	14 Nm (10.3 ft·lb$_f$) **Loctite® 243**

18.1 Changing the fuel screen

DANGER

Fire hazard Fuel is highly flammable.

The fuel in the fuel tank expands when warm and can escape if overfilled.

- Do not refuel the vehicle in the vicinity of open flames, glowing, or smoldering objects.
- Make sure that nobody smokes in the vicinity of the vehicle during the refueling process.
- Switch off the engine for refueling.
- Make sure that no fuel is spilled; particularly not on hot parts of the vehicle.
- If any fuel is spilled, wipe it up immediately.
- Do not overfill the fuel tank.

WARNING

Danger of poisoning Fuel is harmful to health.

- Do not allow fuel to come into contact with skin, eyes, or clothing.
- Consult a doctor immediately if fuel has been ingested.
- Do not inhale fuel vapors.
- Rinse the affected area immediately with plenty of water in the event of contact with skin.
- Rinse eyes thoroughly with water and consult a doctor immediately if fuel comes into contact with eyes.
- If fuel spills on to your clothing, change the clothing.
- Store fuel properly in a suitable container and keep out of the reach of children.

NOTE

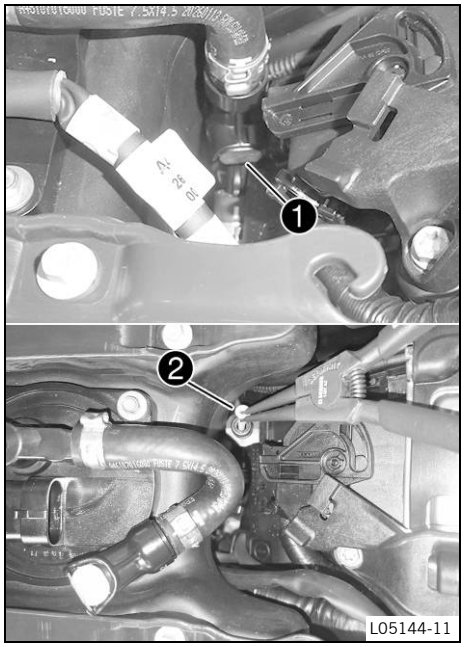
Environmental hazard Improper handling of fuel is dangerous to the environment.

- Do not allow fuel to enter the groundwater, the soil, or the sewage system.

Preparatory work

- Remove the seat. (p. 69)

Main work



- Clean quick-lock coupling ❶ thoroughly with compressed air.

  Dirt must not enter into the fuel line. Dirt in the fuel line clogs the injector!

- Disconnect the quick-lock coupling.

  Note
  Pressurized residual fuel may escape from the fuel hose.

- Pull fuel screen ❷ out of the connecting piece.
- Slide the new fuel screen all the way into the connecting piece.
- Spray silicone spray onto a lint-free cleaning cloth and lightly lubricate the O-ring of the quick-lock coupling.

  Silicone spray (p. 156)

– Join quick-lock coupling ❶ of the fuel line.

DANGER

Danger of poisoning Exhaust gases are toxic and inhaling them may result in unconsciousness and death.

– Always ensure that there is sufficient ventilation when running the engine.
– Use suitable exhaust extraction when starting or running the engine in an enclosed space.

– Start the engine and check the response.

Reworking

– Mount the seat. (p. 70)

18.2 Checking the engine oil level

Note

The engine oil level can be checked when the engine is cold or warm.

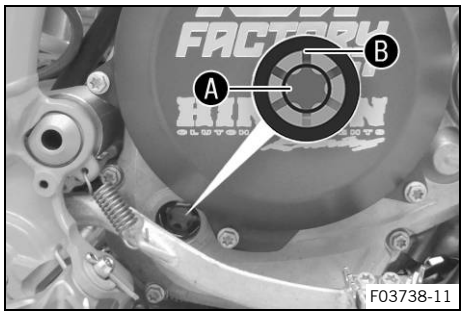
Preparatory work

– Stand the motorcycle upright on a level surface.

Main work

– Select one of the following alternatives.

Condition: The engine is cold



– Check the engine oil level.

The engine oil reaches the middle of viewer Ⓐ.

» If the engine oil does not reach the middle of level viewer Ⓐ:

– Add engine oil. (p. 131)

Condition: The engine is at operating temperature

– Check the engine oil level.

After switching off the engine, wait one minute before checking the level.
The engine oil must be between the Ⓐ and Ⓑ markings .

» If the engine oil is not between the Ⓐ and Ⓑ markings:

– Add engine oil. (p. 131)

18.3 Changing the engine oil and oil filter, cleaning the oil screen

WARNING

Danger of scalding Engine and gear oil heat up when the motorcycle is operated.

– Wear suitable protective clothing and safety gloves.
– In the event of scalding, rinse the area affected immediately with lukewarm water.

NOTE

Environmental hazard Hazardous substances cause environmental damage.

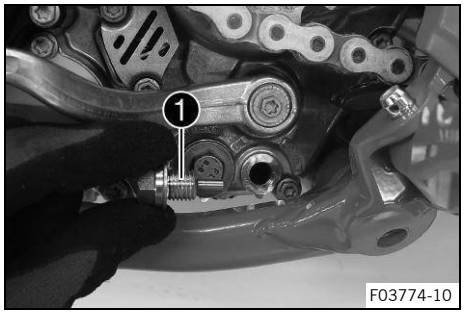
– Dispose of oils, grease, filters, fuel, cleaning agents, brake fluid, etc. correctly and in accordance with the applicable regulations.

Condition: The engine is at operating temperature

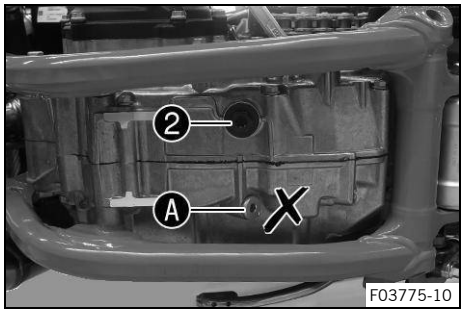
Preparatory work

– Park the motorcycle on a level surface.
– Remove the skid plate. (p. 57)

Main work

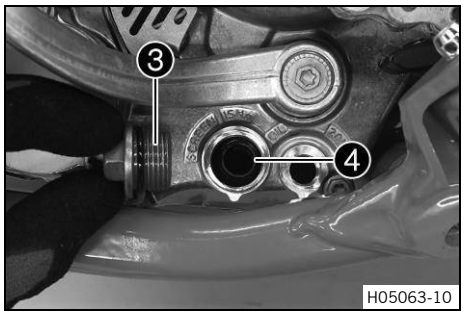


– Position an appropriate container under the engine.
– Remove oil drain plug ❶ with the magnet and seal ring.

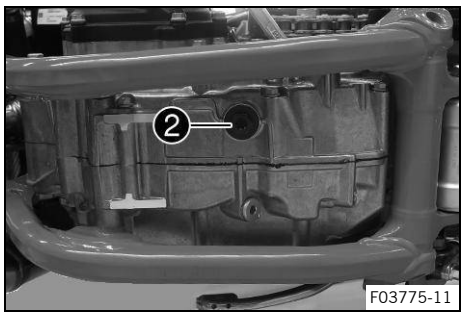


– Remove screw plug ❷ with O-ring.

Do not remove screw Ⓐ.

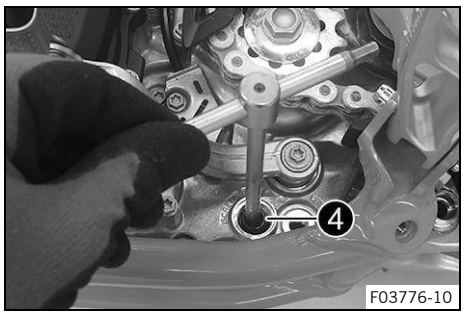


– Remove screw plug ❸ with long oil screen ❹ and the O-rings.
– Allow the engine oil to drain completely.
– Thoroughly clean the parts and the sealing surfaces.

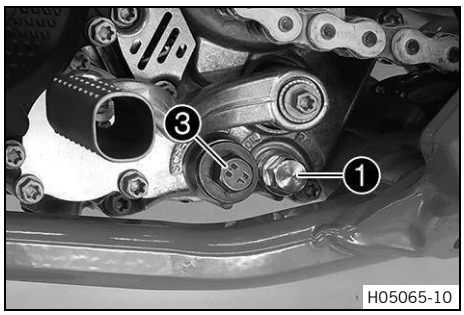


– Mount and tighten screw plug ❷ with new O-ring.

Screw plug, crankcase	
M16×1.5	15 Nm (11.1 ft·lb$_f$)



– Position long oil screen ❹ with the O-rings on a pin wrench.
– Position the pin wrench through the drill hole of the screw plug in the opposite section of the engine case.
– Push the oil screen all the way into the engine case.

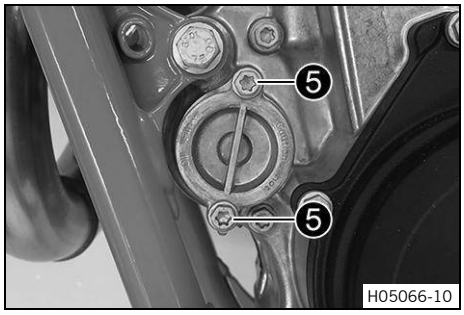


– Mount and tighten screw plug ❸ with O-ring.

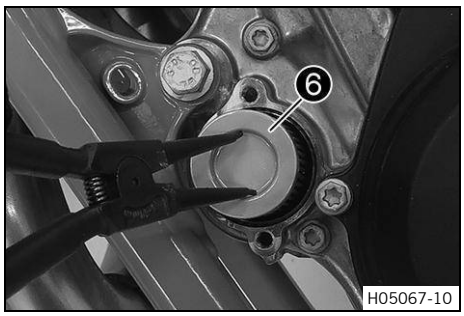
Plug, oil screen	
M20×1.5	15 Nm (11.1 ft·lb$_f$)

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

Oil drain plug with magnet	
M12×1.5	20 Nm (14.8 ft·lb$_f$)



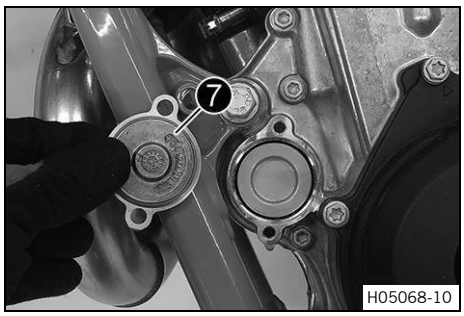
– Remove screws ❺.
– Take off the oil filter cover with the O-ring.



– Pull oil filter ❻ out of the oil filter housing.

Lock ring plier (51012011000)

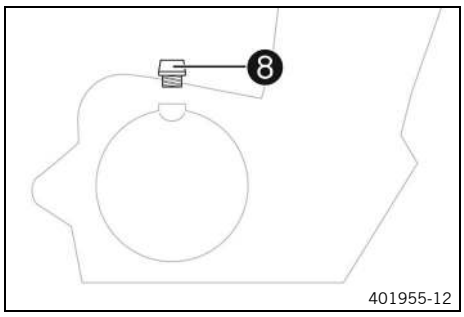
– Allow the engine oil to drain completely.
– Thoroughly clean the parts and the sealing surfaces.



– Lay the motorcycle on its side and fill the oil filter housing to about ⅓ full with engine oil.
– Place the oil filter into the oil filter housing.
– Lubricate the O-ring of the oil filter cover and mount it with oil filter cover ❼.
– Mount and tighten the screws.

Screw, oil filter cover	
M6×16	10 Nm (7.4 ft·lb$_f$)

– Stand the motorcycle upright.



– Remove filler plug ❽ with the O-ring, and fill up with engine oil.

engine oil	
Engine oil (10W/50) 📖 (p. 155) fully synthetic	1.20 l (0.317 liq. gal$_{US}$)

Note
Too little engine oil or poor-quality engine oil will result in premature wear of the engine.

– Mount and tighten the oil plug together with the O-ring.

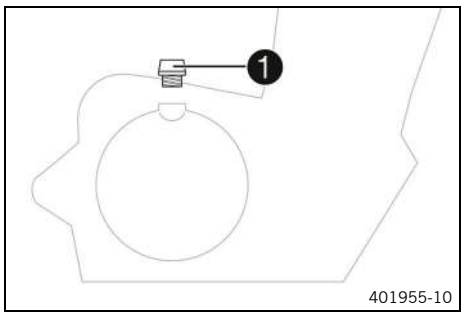
DANGER
Danger of poisoning Exhaust gases are toxic and inhaling them may result in unconsciousness and death.
– Always ensure that there is sufficient ventilation when running the engine.
– Use suitable exhaust extraction when starting or running the engine in an enclosed space.

– Start the engine and check it for leaks.

Reworking
– Install the skid plate. 📖 (p. 57)
– Check the engine oil level. 📖 (p. 128)

18.4 Adding engine oil

Note
Too little engine oil or poor-quality engine oil will result in premature wear of the engine.



– Remove filler plug 1 with the O-ring.
– Add the same engine oil used when the last oil change was carried out.

engine oil	
Engine oil (10W/50) (p. 155) fully synthetic	1.20 l (0.317 liq. gal_{US})

Note

In order to achieve optimal engine oil performance, it is not advisable to mix different engine oils.

KTM recommends changing the engine oil if necessary.

– Mount and tighten the oil plug together with the O-ring.

DANGER

Danger of poisoning Exhaust gases are toxic and inhaling them may result in unconsciousness and death.

– Always ensure that there is sufficient ventilation when running the engine.
– Use suitable exhaust extraction when starting or running the engine in an enclosed space.

– Start the engine and check it for leaks.

19.1 Cleaning the motorcycle

NOTE

Material damage Components can be damaged or destroyed if a high-pressure cleaner is used incorrectly.

The high pressure forces water into the electrical components, socket connectors, clutch cables, and bearings, etc.

Too high a pressure can cause malfunctions and destroy components.

– Do not direct the water jet directly on to electrical components, socket connectors, clutch cables, or bearings.
– Maintain a minimum distance between the nozzle of the high-pressure cleaner and the component.

Minimum distance	60 cm (23.6 in)

NOTE

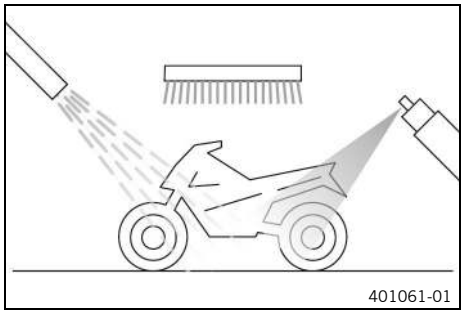
Environmental hazard Hazardous substances cause environmental damage.

– Dispose of oils, grease, filters, fuel, cleaning agents, brake fluid, etc. correctly and in accordance with the applicable regulations.

Note

To maintain the value and appearance of the motorcycle over a long period, clean it regularly.

Avoid direct sunshine when cleaning the motorcycle.



– Seal the exhaust system to prevent water from entering into it.
– Remove loose dirt first with a soft jet of water.
– Spray the heavily soiled parts with a standard commercial motorcycle cleaner and clean using a brush.

Never apply motorcycle cleaner to a dry vehicle; always rinse the vehicle with water first.

Environmentally neutral universal cleaning agent (p. 158)

Note

Use warm water containing standard motorcycle cleaner and a soft sponge.

– After rinsing the motorcycle with a gentle spray of water, allow it to dry thoroughly.
– Remove the cover from the exhaust system.

WARNING

Danger of accidents Moisture and dirt impair the brake system.

– Brake carefully several times to dry out and remove dirt from the brake pads and the brake discs.

– After cleaning, ride the vehicle a short distance until the engine warms up.

Note

The heat produced causes water to evaporate at inaccessible locations in the engine and on the brake system.

– Push back the protection caps of the handlebar controls to allow any water that has penetrated to evaporate.
– After the motorcycle has cooled off, lubricate all moving parts and pivot points.
– Clean the chain. (p. 80)

WARNING

Danger of accidents Oil, grease or wax on the brake discs reduces the brake action.

– Always keep the brake discs free of oil, fat and wax.
– Clean the brake discs with brake cleaner when necessary.

– Treat bare metal (except for brake discs and the exhaust system) with an anticorrosive.

Preserving materials (p. 158)

– Treat all plastic parts and powder-coated parts with a mild cleaning and care product.

Cleaning agents for plastics, glass, lacquers, metals, windshields and visors (p. 158)

20.1 Storage

WARNING

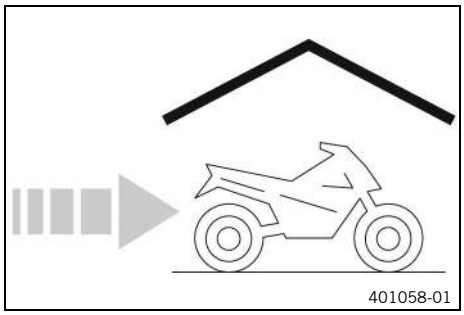
Danger of poisoning Fuel is harmful to health.

- Do not allow fuel to come into contact with skin, eyes, or clothing.
- Consult a doctor immediately if fuel has been ingested.
- Do not inhale fuel vapors.
- Rinse the affected area immediately with plenty of water in the event of contact with skin.
- Rinse eyes thoroughly with water and consult a doctor immediately if fuel comes into contact with eyes.
- If fuel spills on to your clothing, change the clothing.
- Store fuel properly in a suitable container and keep out of the reach of children.

Note

If the vehicle will not be ridden for an extended period, additional steps are recommended.

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 overload of the authorized partner). This allows you to avoid long waiting periods when the next season starts.



- When refueling for the last time before taking the motorcycle out of service, add fuel additive.

Fuel additive (p. 154)

- Refuel. (p. 39)

Tip

Fill the fuel tank completely as specified, using fuel with the lowest possible ethanol content.

- Clean the motorcycle. (p. 133)
- Change the engine oil and oil filter, clean the oil screen. (p. 129)
- Check the frost protection and coolant level. (p. 116)
- Check the tire pressure. (p. 106)
- Remove the 12 V battery. (p. 108)
- Charge the 12 V battery. (p. 110)

Ideal charging and storage temperature of the lithium-ion battery	10 °C ... 20 °C (50.0 °F ... 68.0 °F)

- Store the vehicle in a dry location that is not subject to large fluctuations in temperature.

Note

KTM recommends jacking up the motorcycle.

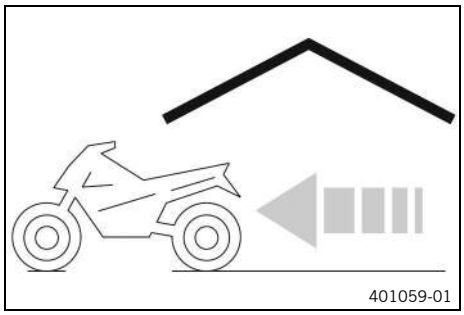
- Raise the motorcycle with a lift stand. (p. 54)

Cover the motorcycle with a tarp or cover that is permeable to air.
Do not use non-porous materials because they prevent humidity from escaping and thus cause corrosion.

Note

Avoid running the engine of a motorcycle in storage for a short time only. Because the engine will not warm up sufficiently, the water vapor produced during combustion will condense, causing engine parts and the exhaust system to rust.

20.2 Preparing for use after storage



- Install the 12 V battery. (p. 109)
- Remove the motorcycle from the lift stand. (p. 54)
- Perform checks and maintenance measures when preparing for use. (p. 33)
- Take a test ride.

21.1 troubleshooting

Cause	Finding	Remedy
The engine does not turn over when the start button is actuated	Operating error 12 V battery discharged Plug-in connector of the start button disconnected or oxidized Cable connection on starter motor disconnected, loose or oxidized Main fuse blown Starter relay defective Starter motor defective	– Carry out the starting procedure. (p. 33) – Charge the 12 V battery. (p. 110) – Check the charging voltage. – Check the open-circuit current. – Check the stator winding of the alternator. – Check the plug-in connector of the start button. – Check the cable connection on the starter motor. – Change the main fuse. (p. 112) – Check the starter relay. – Check the starter motor.
The engine turns but does not start	Quick-lock coupling not joined Lack of fuel Fuel screen in the quick-lock coupling is clogged Idle speed is not set correctly Spark plug sooty or wet Crankshaft speed sensor disconnected Ground connection of the ignition coil loose or oxidized Electrode distance of spark plug too wide Short-circuit cable in wiring harness frayed, kill switch faulty Malfunction in the electronic fuel injection	– Join quick-lock couplings. – Refuel. (p. 39) – Change the fuel screen. (p. 127) – Adjust the idle speed. (p. 124) – Clean and dry the spark plug and spark plug connector, or change if necessary. – Check plug-in connector of the crankshaft speed sensor. – Check the ground connection of the ignition coil. – Adjust plug gap. Plug gap of spark plug: 1.0 mm (0.039 in) – Check the wiring harness. (Visual check). – Check the electrical system. – Read out the fault memory using the diagnostics tool.
Engine does not speed up	Malfunction in the electronic fuel injection	– Read out the fault memory using the diagnostics tool.
Engine has too little power	Air filter is very dirty Fuel filter is very dirty Malfunction in the electronic fuel injection Exhaust system leaks, deformed or too little damping material in the silencer Valve clearance too little	– Clean the air filter and air filter box. (p. 74) – Change the fuel filter. – Read out the fault memory using the diagnostics tool. – Check exhaust system for damage. – Change the damping material on the main silencer. (p. 76) – Adjust the valve clearance.
The engine dies during the trip	Lack of fuel	– Refuel. (p. 39)

Cause	Finding	Remedy
	Faulty contacts in ignition coil or stator	– Check ignition coil and stator cables.
Engine overheats	Too little coolant in cooling system Too little air stream Radiator fins very dirty Foam formation in the cooling system Bent radiator hose	– Check the transmission and cooling system for leaks. – Check the coolant level. (p. 117) – Switch off the engine when standing. – Clean the radiator fins. – Drain the coolant. (p. 118) – Refill the coolant. (p. 118) – Change the radiator hose.
Malfunction indicator lamp lights up or flashes	Malfunction in the electronic fuel injection	– Check wiring for damage and electrical plug-in connectors for corrosion and damage. – Read out the fault memory using the diagnostics tool.
High oil consumption	Engine vent hose bent The engine oil level is too high The engine oil is too thin (low viscosity) Piston or cylinder worn Engine case is leaking	– Route the vent hose without bends or change it if necessary. – Check the engine oil level. (p. 128) – Change the engine oil and oil filter, clean the oil screen. (p. 129) – Measure the piston/cylinder mounting clearance. – Check the engine case for loss of oil.
12 V battery discharged	12 V battery is not charging unwanted electrical load	– Check the charging voltage. – Check the stator winding of the alternator. – Check the open-circuit current.

22.1 Trouble codes

Cause	Finding	Remedy
ECU 1	The engine was stopped due to a signal from the tilt sensor.	– Check the tilt sensor.
ECU 3	Transport lock activated	– Deactivate transport lock.
ECU 4	Transport lock temporarily de-activated	– Activate transport lock.
ECU 5	Crankshaft position sensor error	– Check the crankshaft position sensor.
ECU 6	Accelerator position sensor error	– Check the accelerator position sensor.
ECU 7	Air pressure sensor error	– Check the air pressure sensor.
ECU 9	Ambient air pressure sensor error	– Check the ambient air pressure sensor.
ECU 10	Coolant temperature sensor error	– Check coolant temperature sensor.
ECU 11	Intake air temperature sensor error	– Check the intake air temperature sensor.
ECU 12	Rollover sensor error	– Check the tilt sensor.
ECU 13	Gear position sensor error	– Check the gear position sensor.
ECU 15	Battery voltage error	– Check the battery voltage.
ECU 16	Control unit 5-V sensor output 1 error	– Check 5-V sensor output 1 of the control unit.
ECU 17	Control unit 5-V sensor output 2 error	– Check 5-V sensor output 2 of the control unit.
ECU 18	Injector 1 error	– Check injector 1.
ECU 19	Injector 2 error	– Check injector 2.
ECU 20	Ignition coil error	– Check the ignition coil.
ECU 21	Fuel pump error	– Check the fuel pump.
ECU 28	Knock sensor error	– Check the knock sensor.

23.1 Engine

23.1.1 Technical data - engine

Design	1-cylinder 4-stroke engine, water-cooled
Displacement	449.9 cm³ (27.455 in³)
Stroke	63.4 mm (2.496 in)
Bore	95 mm (3.74 in)
Compression ratio	14.0:1
Control	OHC, 4 valves controlled via rocker arm
Valve clearance	
Intake at: 20 °C (68.0 °F)	0.10 mm ... 0.15 mm (0.0039 in ... 0.0059 in)
Exhaust at: 20 °C (68.0 °F)	0.12 mm ... 0.17 mm (0.0047 in ... 0.0067 in)
Valve diameter, intake	40 mm (1.57 in)
Valve diameter, exhaust	33 mm (1.30 in)
Idle speed	2,200 rpm ... 2,300 rpm (36.67 Hz ... 38.33 Hz)
Crankshaft bearing	2-cylinder roller bearing
Big (bottom) end bearing	Plain bearing
Wrist pin bearing	Bearing bush
Piston	Forged light alloy
Piston rings	1 compression ring, 1 oil scraper ring
Engine lubrication	Pressure circulation lubrication with 2 trochoidal pumps
Primary transmission	29:72
Alternator	• 14 V • 77 W (0.103 hp)
Clutch	Multidisc clutch in oil bath, hydraulically activated
Transmission	5 speed transmission, claw shifted
Gear ratios	
1st gear	14:28
2nd gear	16:26
3rd gear	18:25
4th gear	21:24
5th gear	22:21
Ignition system	Contactless controlled fully electronic ignition with digital ignition adjustment
Spark plug	NGK LMAR9AI-10
Plug gap of spark plug	1.0 mm (0.039 in)

Cooling	Liquid cooling, permanent circulation of coolant by water pump
Starting aid	Starter motor

23.1.1.1 Capacities - engine

engine oil	
Engine oil (10W/50) 📖 (p. 155) fully synthetic	1.20 l (0.317 liq. gal_{US})
coolant	
Coolant 📖 (p. 156) Antifreeze protection to at least: −25 °C (−13.0 °F)	0.95 l (0.251 liq. gal_{US})

23.2 Chassis

23.2.1 Technical data - chassis

Frame	Central tube frame made of chrome molybdenum steel tubing
Fork	WP XACT Closed Cartridge
Shock absorber	**WP XACT LDS**
Suspension travel:	
front	312.5 mm (12.303 in)
rear	317 mm (12.48 in)
Triple clamp offset	33 mm (1.30 in)
Brake system	Disc brakes, floating brake calipers
Brake discs - diameter	
front	260 mm (10.24 in)
rear	220 mm (8.66 in)
Brake disc wear limit	
front	2.5 mm (0.098 in)
rear	3.5 mm (0.138 in)
Off-road tire pressure	
front	1.0 bar (14.5 psi)
rear	1.0 bar (14.5 psi)
Final drive	13:49
Chain	520
Rear sprockets available	• 49

Steering head angle	63.9° (1.115 rad)
Wheelbase	1,498 ±10 mm (58.98 ±0.39 in)
Ground clearance unloaded	340 ±5 mm (13.39 ±0.20 in)
Seat Height unloaded	955 ±5 mm (37.60 ±0.20 in)
Weight without fuel approx.	105.6 kg (232.81 lb)
Maximum permissible front axle load	145 kg (319.7 lb)
Maximum permissible rear axle load	190 kg (418.9 lb)
Maximum permissible total weight	335 kg (738.5 lb)

23.2.2 Technical data - tires

Tire front	Rear tire
80/100 - 21 51M TT Dunlop MX34F	**120/80 - 19 62M TT** Dunlop MX34
The tires specified represent one of the possible series production tires. For alternative manufacturers, if any, contact an authorized manufacturer or qualified tire dealership. If local road approval regulations apply, these and the respective technical specifications must be observed.	

23.2.3 Capacities - vehicle

Total fuel tank capacity, approx.	
Super unleaded (ROZ 95) (p. 154)	7.3 l (1.93 liq. gal_{US})
Total fuel tank capacity, approx.	
Super unleaded (ROZ 98) (p. 154)	7.3 l (1.93 liq. gal_{US})

23.3 Electrics

23.3.1 Battery

12 V battery	HJ21L-FP	Lithium-ion battery Battery voltage: 12 V Nominal capacity: 2.0 Ah Maintenance-free

23.3.2 Fuses

Fuse	58011109105	5 A
Fuse	58011109110	10 A

23.3.3 Lamps

Dashboard illumination and indicator lights	LED

23.4 Fork

23.4.1 Technical data - fork

Fork part number	A461C159B402000

Fork	WP XACT Closed Cartridge
Compression damping	
Comfort	17 clicks
Standard	12 clicks
Sport	7 clicks
Rebound damping	
Comfort	20 clicks
Standard	15 clicks
Sport	10 clicks
Fork length	940 mm (37.01 in)
Spring rate	
Weight of rider: 65 kg ... 75 kg (143.3 lb ... 165.3 lb)	4.6 N/mm (26.27 lb_f/in)
Weight of rider: 75 kg ... 85 kg (165.3 lb ... 187.4 lb)	4.8 N/mm (27.41 lb_f/in)
Weight of rider: 85 kg ... 95 kg (187.4 lb ... 209.4 lb)	5.0 N/mm (28.55 lb_f/in)

23.4.2 Capacities - fork

Oil capacity, outer assembly	
Fork oil (48601166S1) (SAE 4) (p. 155)	350 ml (11.83 fl. oz_{US})
Oil capacity, cartridge	
Fork oil (48601166S1) (SAE 4) (p. 155)	175 ml (5.92 fl. oz_{US})

23.5 Shock absorber

23.5.1 Technical data - shock absorber

Shock absorber part number	A461C459B408000

Shock absorber	**WP XACT LDS**
Low-speed compression damping	
Comfort	17 clicks
Standard	15 clicks
Sport	13 clicks

High-speed compression damping	
Comfort	20 clicks
Standard	15 clicks
Sport	10 clicks
Rebound damping	
Comfort	17 clicks
Standard	15 clicks
Sport	13 clicks
Preload	8 mm (0.31 in)
Spring rate	
Weight of rider: 65 kg ... 75 kg (143.3 lb ... 165.3 lb)	45 N/mm (257.0 lb_f/in)
Weight of rider: 75 kg ... 85 kg (165.3 lb ... 187.4 lb)	48 N/mm (274.1 lb_f/in)
Weight of rider: 85 kg ... 95 kg (187.4 lb ... 209.4 lb)	51 N/mm (291.2 lb_f/in)
Spring length	240 mm (9.45 in)
Gas assisted	10 bar (145 psi)
Static sag	35 mm (1.38 in)
Rider sag	105 mm (4.13 in)
Installation position	456.3 mm (17.965 in)

23.5.2 Capacities

Oil capacity, shock absorber	
Shock absorber oil (50180751S1) (SAE 2.5) (p. 156)	Fill to the maximum mark

23.6 Tightening torque

23.6.1 Engine tightening torques

Screw, oil jet (bent) for piston cooling	M4	2 Nm (1.5 ft·lb_f) **Loctite® 243**
Oil nozzle for the clutch lubrication (alternator cover sealing surface)	M4	0.8 Nm (0.59 ft·lb_f)
Screw, gear position sensor	M5×14	5 Nm (3.7 ft·lb_f) **Loctite® 243**

Oil nozzle for piston cooling M5	2 Nm (1.5 ft·lb$_f$) **Loctite® 243**
Detent arm screw M5	6 Nm (4.4 ft·lb$_f$) **Loctite® 243**
Screw, pressure pump cover M5×14	6 Nm (4.4 ft·lb$_f$) **Loctite® 243**
Screw, bearing retainer M5	6 Nm (4.4 ft·lb$_f$) **Loctite® 243**
Screw, suction pump cover M5×14	6 Nm (4.4 ft·lb$_f$) **Loctite® 243**
Stator screw M5	6 Nm (4.4 ft·lb$_f$) **Loctite® 2701**
Crankshaft speed sensor screw and cable retainer M5	6 Nm (4.4 ft·lb$_f$) **Loctite® 243**
Oil nozzle for timing chain lubrication M5	2 Nm (1.5 ft·lb$_f$) **Loctite® 243**
Screw, lock washer, oil pump idler gear M5×10	6 Nm (4.4 ft·lb$_f$) **Loctite® 243**
Screw, clutch adjusting ring M5×16	6 Nm (4.4 ft·lb$_f$)
Screws, main bearing lock washer, transmission bearings M5×12	6 Nm (4.4 ft·lb$_f$)
Nut, water pump impeller M6	6 Nm (4.4 ft·lb$_f$) **Loctite® 243**
Exhaust flange screw M6×16	10 Nm (7.4 ft·lb$_f$) **Loctite® 243**
Screw, torque governor M6	10 Nm (7.4 ft·lb$_f$) **Loctite® 243**
Screw, starter motor M6×25	10 Nm (7.4 ft·lb$_f$)
Screw, clutch cover M6	10 Nm (7.4 ft·lb$_f$)
Screw, engine case M6	10 Nm (7.4 ft·lb$_f$)
Screw, oil filter cover M6×16	10 Nm (7.4 ft·lb$_f$)

Shift star screw M6×30	10 Nm (7.4 ft·lb$_f$) **Loctite® 243**
Screw, shift lever M6×16	14 Nm (10.3 ft·lb$_f$) **Loctite® 243**
Timing chain-securing guide screw M6	10 Nm (7.4 ft·lb$_f$) **Loctite® 243**
Screw, timing chain tensioner M6	10 Nm (7.4 ft·lb$_f$)
Slide rail screw M6	10 Nm (7.4 ft·lb$_f$) **Loctite® 243**
Screw, valve cover M6	10 Nm (7.4 ft·lb$_f$)
Screw, clutch slave cylinder M6	10 Nm (7.4 ft·lb$_f$)
Screw, water pump cover M6×25	10 Nm (7.4 ft·lb$_f$) **Loctite® 243**
Screw, water pump cover M6×45	10 Nm (7.4 ft·lb$_f$)
Water pump cover screw (balancer shaft gear) M6×20	10 Nm (7.4 ft·lb$_f$) **Loctite® 222**
Screw, ignition cover M6	10 Nm (7.4 ft·lb$_f$)
Screw, cylinder head M6×75	10 Nm (7.4 ft·lb$_f$)
Screw, rocker arm bearing M7×1	15 Nm (11.1 ft·lb$_f$)
Oil channel screw plug M7	9 Nm (6.6 ft·lb$_f$) **Loctite® 243**
Crankshaft clamp screw plug M8	10 Nm (7.4 ft·lb$_f$)
Screw plug, timing chain tensioner M8	8 Nm (5.9 ft·lb$_f$)
Knock sensor screw M8	20 Nm (14.8 ft·lb$_f$)
Coolant temperature sensor M10×1.25	12 Nm (8.9 ft·lb$_f$)
Front sprocket screw M10	60 Nm (44.3 ft·lb$_f$) **Loctite® 2701**

Oil channel screw plug M10		15 Nm (11.1 ft·lb$_f$) **Loctite® 243**
Screw, cylinder head M10×1.25 Engine oil	1.	10 Nm (7.4 ft·lb$_f$)
	2.	30 Nm (22.1 ft·lb$_f$)
	3.	50 Nm (36.9 ft·lb$_f$)
Spark plug M10×1		10 Nm ... 12 Nm (7.4 ft·lb$_f$ ... 8.9 ft·lb$_f$)
Screw, rotor M10×1		70 Nm (51.6 ft·lb$_f$)
Oil drain plug with magnet M12×1.5		20 Nm (14.8 ft·lb$_f$)
Screw plug, oil pressure control valve M12×1.5		20 Nm (14.8 ft·lb$_f$)
Screw plug, crankcase M16×1.5		15 Nm (11.1 ft·lb$_f$)
Nut, inner clutch hub M18×1.5		100 Nm (73.8 ft·lb$_f$)
Nut, primary gear wheel M18LH×1.5		120 Nm (88.5 ft·lb$_f$)
Plug, oil screen M20×1.5		15 Nm (11.1 ft·lb$_f$)
Screw plug, alternator cover M24×1.5		18 Nm (13.3 ft·lb$_f$)

23.6.2 Chassis tightening torques

Air boot on throttle body	2.8 Nm (2.07 ft·lb$_f$)
Screw, radiator hoses clip	2.4 Nm (1.77 ft·lb$_f$)
Screw, spoiler and seat installation **EJOT PT®**	2.5 Nm (1.84 ft·lb$_f$)
Remaining screws on chassis **EJOT PT®**	2 Nm (1.5 ft·lb$_f$)
Screw, fixed grip M4×12	5 Nm (3.7 ft·lb$_f$) **Loctite® 243**
Screw, hose clamp, throttle body M4	5 Nm (3.7 ft·lb$_f$)
Screw, throttle body cover M5×8	2.6 Nm (1.92 ft·lb$_f$)
Remaining nuts on chassis M5	5 Nm (3.7 ft·lb$_f$)

Remaining screws on chassis M5	5 Nm (3.7 ft·lb$_f$)
Screw, shock absorber adjusting ring M5×20	5 Nm (3.7 ft·lb$_f$)
Screw, battery terminal M5	2.5 Nm (1.84 ft·lb$_f$)
Screw, frame protector M5×10	3 Nm (2.2 ft·lb$_f$)
Nut, throttle cable on throttle body M6	3 Nm (2.2 ft·lb$_f$)
Screw, fuel tank spoiler on radiator M6×12	6 Nm (4.4 ft·lb$_f$)
Screw, battery holding bracket on subframe M6×12	6 Nm (4.4 ft·lb$_f$)
Screw, starter cable to starter relay M6	6 Nm (4.4 ft·lb$_f$)
Screw, chain guide on swingarm, rear M6×16	10 Nm (7.4 ft·lb$_f$) **Loctite® 243**
Screw, hand lever M6	5 Nm (3.7 ft·lb$_f$)
Nut, starter cable on starter motor M6	4 Nm (3.0 ft·lb$_f$)
Remaining nuts on chassis M6	10 Nm (7.4 ft·lb$_f$)
Remaining screws on chassis M6	10 Nm (7.4 ft·lb$_f$)
Screw, rear brake disc M6×13	14 Nm (10.3 ft·lb$_f$) **Loctite® 243**
Screw, front brake disc M6×13	14 Nm (10.3 ft·lb$_f$) **Loctite® 243**
Screw, push rod ball joint on the rear brake cylinder M6×20	10 Nm (7.4 ft·lb$_f$) **Loctite® 243**
Screw, chain guide on swingarm, rear M6×16	10 Nm (7.4 ft·lb$_f$) **Loctite® 243**
Screw, throttle twist grip M6×20	5 Nm (3.7 ft·lb$_f$)
Screw, chain sliding guard on link fork M6×16	6 Nm (4.4 ft·lb$_f$) **Loctite® 243**
Screw, chain guide on swingarm, front M6×45	10 Nm (7.4 ft·lb$_f$)
Screw, ground wire on frame M6×13	10 Nm (7.4 ft·lb$_f$)

Screw, seat installation M6×25	8 Nm (5.9 ft·lb$_f$)
Brake line guide screw on swingarm M6	4.5 Nm (3.32 ft·lb$_f$) **Loctite® 243**
Screw, connector support incl. dashboard M6×15	5 Nm (3.7 ft·lb$_f$)
Screw, fender M6×16	12 Nm (8.9 ft·lb$_f$)
Screw, front sprocket cover M8×25	15 Nm (11.1 ft·lb$_f$)
Brake pedal stop nut M8	20 Nm (14.8 ft·lb$_f$)
Nut, rear sprocket screw M8	35 Nm (25.8 ft·lb$_f$) **Loctite® 2701**
Nut, rim lock M8	12 Nm (8.9 ft·lb$_f$)
Remaining nuts on chassis M8	25 Nm (18.4 ft·lb$_f$)
Remaining screws on chassis M8	25 Nm (18.4 ft·lb$_f$)
Screw, front brake caliper M8×30	25 Nm (18.4 ft·lb$_f$) **Loctite® 243**
Screw, top triple clamp M8×40	17 Nm (12.5 ft·lb$_f$)
Screw, bottom triple clamp M8×40	12 Nm (8.9 ft·lb$_f$)
Screw, fork shoe M8×25	15 Nm (11.1 ft·lb$_f$)
Screw, upper steering stem M8×25	20 Nm (14.8 ft·lb$_f$) **Loctite® 243**
Screw, handlebar clamp M8×25	20 Nm (14.8 ft·lb$_f$)
Screw, subframe, top M8×15	35 Nm (25.8 ft·lb$_f$) **Loctite® 243**
Screw, chain slider M8×20	15 Nm (11.1 ft·lb$_f$)
Screw, manifold on engine brace M8×25	15 Nm (11.1 ft·lb$_f$)
Screw, subframe, bottom M8×18	30 Nm (22.1 ft·lb$_f$) **Loctite® 2701**
Bushing, brake pedal M10	45 Nm (33.2 ft·lb$_f$)

Engine mounting bolt M10×123	60 Nm (44.3 ft·lb$_f$)
Remaining nuts on chassis M10	45 Nm (33.2 ft·lb$_f$)
Remaining screws on chassis M10	45 Nm (33.2 ft·lb$_f$)
Top shock absorber screw M10×52	60 Nm (44.3 ft·lb$_f$) **Loctite® 2701**
Bottom shock absorber screw M10×52	60 Nm (44.3 ft·lb$_f$) **Loctite® 2701**
Screw, handlebar mount M10×50	40 Nm (29.5 ft·lb$_f$) **Loctite® 243**
Screw, sprocket M10×18	60 Nm (44.3 ft·lb$_f$) **Loctite® 2701**
Nut, frame on linkage lever M14×1.5	60 Nm (44.3 ft·lb$_f$)
Nut, linkage lever on angle lever M14×1.5	60 Nm (44.3 ft·lb$_f$)
Nut, angle lever to link fork M14×1.5	60 Nm (44.3 ft·lb$_f$)
Nut, swingarm pivot M16×1.5	100 Nm (73.8 ft·lb$_f$)
Screw, wheel spindle, front M20×1.5	35 Nm (25.8 ft·lb$_f$)
Screw, top steering head M20×1.5	12 Nm (8.9 ft·lb$_f$)
Nut, wheel spindle, rear M22×1.5	80 Nm (59.0 ft·lb$_f$)
Screw-in nozzle, cooling system M24×1.5	7.5 Nm (5.53 ft·lb$_f$)
Spoke nipple, rear wheel M4,5	6 Nm (4.4 ft·lb$_f$) **Loctite® 243**
Spoke nipple, front wheel M4,5	6 Nm (4.4 ft·lb$_f$) **Loctite® 243**
Screw, intake air temperature sensor **EJOT PT®** – K50×18	0.7 Nm (0.52 ft·lb$_f$)
Screw, start button/kill switch **EJOT PT®** – K50×18	2 Nm (1.5 ft·lb$_f$)
Screw, MAP switch **EJOT PT®** – K50×18	2 Nm (1.5 ft·lb$_f$)
Screw, air filter box cover **EJOT PT®** – K60×20	5 Nm (3.7 ft·lb$_f$)

Screw, fuel pump on fuel tank **EJOT PT®** – K60×30	2.5 Nm (1.84 ft·lb$_f$)
Screw, air filter box, on subframe **EJOT PT®** – K60×20	5 Nm (3.7 ft·lb$_f$)
Remaining screws on chassis **EJOT PT®** – K60×25 – Z	2 Nm (1.5 ft·lb$_f$)
Screw, fuel pump **EJOT PT®** – MK60×30	2.3 Nm (1.70 ft·lb$_f$)

24.1 Recycling



I02045-10

Further information is available at the following website.
Recycling information website: https://www.quefairedemesdechets.fr

A Technical terms

	Launch control	Vehicles electronics functions for achieving the best possible acceleration from a standing position
OBD	On-board diagnosis	Vehicle system, which monitors the specified parameters of the vehicle electronics
	Quickshifter	Function of the engine electronics for shifting up without clutch actuation

B Fuels

Super unleaded

Standards

• ROZ 95	→ DIN EN 228

Super unleaded

Standards

• ROZ 98	→ DIN EN 228

Fuel additive

Recommended supplier

MOTOREX®

- **FUEL STABILIZER**

C Operating supplies

Off-road chain spray

Recommended supplier

MOTOREX®

- **CHAINLUBE OFF ROAD**

Fork oil

Order details

- 48601166S1

Standards

- SAE 4 → SAE

Universal oil spray

Recommended supplier

MOTOREX®

- **JOKER 440 SYNTHETIC**

Long-life grease

Recommended supplier

MOTOREX®

- **Bike Grease 2000**

Engine oil

Recommended supplier

MOTOREX®

- **CROSS POWER 4T**

Standards

→ JASO T903 MA2

- 10W/50 → SAE

Properties

- fully synthetic

High viscosity grease

Recommended supplier

SKF®

- **LGHB 2**

Silicone spray

Recommended supplier

MOTOREX®

- **SILICONE SPRAY**

Shock absorber oil

Order details

- 50180751S1

Standards

• SAE 2.5	→ SAE

Oil for foam air filter

Recommended supplier

MOTOREX®

- **RACING BIO AIR FILTER OIL**

Brake fluid DOT 5.1

Recommended supplier

MOTOREX®

- **BRAKE FLUID DOT 5.1**

Standards

→ DOT

Coolant

Recommended supplier

MOTOREX®

- **COOLANT M3.0**

Properties

• Antifreeze protection to at least	−25 °C (−13.0 °F)

D Electrics

12 V battery (HJ21L-FP)

Product code	
• HJ21L-FP	
Properties	
• Lithium-ion battery	
• Battery voltage	12 V
• Nominal capacity	2.0 Ah
• Maintenance-free	

Dashboard illumination and indicator lights (LED)

Product code
• LED

Fuse (58011109110)

Product code
• 58011109110
Properties
• 10 A

Fuse (58011109105)

Product code
• 58011109105
Properties
• 5 A

E Cleaning agents

Chain cleaner

Recommended supplier
MOTOREX®
• CHAIN CLEAN

Preserving materials

Recommended supplier
MOTOREX®
• MOTO PROTECT

Air filter cleaning agent

Recommended supplier
MOTOREX®
• RACING BIO AIR FILTER CLEANER

Cleaning agents for plastics, glass, lacquers, metals, windshields and visors

Recommended supplier
MOTOREX®
• QUICK CLEANER

Environmentally neutral universal cleaning agent

Recommended supplier
MOTOREX®
• MOTO CLEAN UNIVERSAL

F Icons

F.1 Symbol colors

F.1.1 Yellow and orange symbols

Yellow and orange symbols indicate a malfunction status that requires prompt intervention. Active driving aids are also represented by yellow or orange symbols.

	Malfunction indicator lamp lights up orange.

F.1.2 Green and blue symbols

Green and blue symbols convey information.

	Indicator lamp lights up blue.
	Indicator lamp lights up green.

F.1.3 White symbols

White symbols convey information.

	The QS indicator lamp lights up.
	The QS indicator lamp flashes.
	The TC indicator lamp lights up.
	The TC indicator lamp flashes.

1

12 V battery
- charging . . . 110
- installation . . . 109
- removing . . . 108

12 V battery
- starting power . . . 29

A

Accessories . . . 13

Air filter
- cleaning . . . 74
- installation . . . 74
- removing . . . 73

Air filter box
- cleaning . . . 74

Air filter box cover
- installation . . . 71
- preparing for securing . . . 72
- removing . . . 70

Auxiliary substances . . . 13

B

Brake discs
- checking . . . 90

Brake fluid
- adding front brake . . . 92
- adding to rear brake . . . 98

Brake fluid level
- checking on front brake . . . 91
- checking on rear brake . . . 97

Brake lining retainers
- checking on front brake . . . 93
- checking on rear brake . . . 99

Brake linings (brake pads)
- changing on the rear brake . . . 99
- of the front brake, changing . . . 94

Brake pad
- checking on front brake . . . 93

Brake pads
- checking on rear brake . . . 99

Brake pedal . . . 23
- checking the free travel . . . 96

C

Chain
- checking . . . 82
- cleaning . . . 80

Chain guide
- checking . . . 82

Chain tension
- adjusting . . . 81
- checking . . . 81

Characteristic map of the throttle response
- adjusting . . . 122

Checking basic chassis setting with
- rider's weight . . . 44

Clothing . . . 11

Clutch
- changing fluid . . . 88
- checking/correcting fluid level . . . 88

Clutch lever . . . 18
- adjusting the basic position . . . 87

Cold start button . . . 21

Combination instrument . . . 24
- Combination instrument button . . . 24
- Operating hours . . . 25
- Service indicator . . . 26
- Warnings . . . 25

Compression damping
- adjusting the fork . . . 50

Coolant
- antifreeze and coolant level, checking . . . 116
- draining . . . 118
- level, checking . . . 117
- refilling . . . 118

Cooling system . . . 116

Customer service . . . 13

D

Defined use . . . 12

Diagnostic connector . . . 115

Difficult operating conditions . . . 30
- dry sand . . . 30
- high temperatures . . . 32
- low temperature . . . 32
- muddy surfaces . . . 31
- slow speed . . . 32
- snow . . . 32
- wet sand . . . 31
- wet surfaces . . . 31

E

Electric starter . . . 19

Engine
- running in . . . 29

Engine number . . . 16

engine oil
adding 131
changing 129
Engine oil level
checking 128
Engine sprocket
checking 82
Environment 12

F

Factory Start 23
activating 35
Fender
installation 66
removing 65
Figures 13
Footbrake lever
adjusting the basic position 96
Fork legs
adjusting the rebound damping 50
bleeding 54
checking basic setting 50
cleaning the dust boots 55
compression damping, adjusting 50
installation 59
removing 58
Fork protection
installation 56
removing 56
Frame
checking 85
Frame protector
installation 58
removing 58
Front wheel
installing 103
removing 102
Frost protection
checking 116
Fuel screen
changing 127
Fuel tank
installation 78
removing 77
Fuel tank cap
closing 21
opening 20
Fuse
Changing the main fuse 112
of the fuel pump, changing 114

G

Gear shift lever 22
adjusting the basic position 126
checking the basic position 125

H

Hand brake lever
adjusting the basic position 90
Handbrake lever 18
checking the free travel 90
Handlebar position 51
adjusting 51
High-speed compression damping
adjusting the shock absorber 45

I

Idle speed
adjusting 124
Idle speed adjustment screw 22
implied warranty 13
Improper use 12
Intended use 12

K

Kill button 18

L

Launch control
activating 34
Lithium-ion battery
starting power 29
Lower triple clamp
installation 61
removing 60
Low-speed compression damping
adjusting the shock absorber 44

M

Main fuse
changing 112
Main silencer
changing damping material 76
installation 75
removing 75
Manufacturer's warranty 13
Mapping
changing 124

Motorcycle
cleaning 133
raising with lift stand 54
removing from lift stand 54

N

Number plate
removing 65

O

Oil filter
changing 129
Oil screen
cleaning 129
Operation 11
Owner's manual 12

P

Plug-in stand 23
Preparing for use
after storage 136
checks and maintenance measures when preparing for use 33
notes on preparing for first use 28
Protective clothing 11

Q

Quickshifter 36
activating 36
programming 87

R

Rear sprocket
checking 82
Rear wheel
installation 104
removing 104
Rebound damping
adjusting the fork 50
adjusting the shock absorber 45
Recycling 152
Refueling
fuel 39
Resources 13
Rider sag
adjusting 49
Rubber grips
checking 86

S

Safe use 11
Seat
mounting 70
removing 69
Service 13
Shock absorber
adjusting the high-speed compression damping 45
adjusting the low-speed compression damping 44
adjusting the rebound damping 45
adjusting the spring preload 48
checking static sag 47
checking the rider sag 47
compression damping, general 44
installation 68
removing 66
Skid plate
installation 57
removing 57
spare parts 13
Spoke tension
checking 107
Start number plate
installation 65
Starting 33
starting power
lithium-ion batteries at low temperatures 29
Steering head bearing
lubricating 64
Steering head bearing play
adjusting 64
checking 63
Storage 135
Swingarm
checking 85

T

Tampering 10
Throttle cable play
adjusting 121
checking 121
Throttle cable routing
checking 85
Throttle grip 18
Tire condition
checking 106
Tire pressure
checking 106

Traction control
activating 35
Transportation 39
Trouble codes 139

V

Vehicle identification number 16
View of the vehicle
front left 14
rear right 14
VIN 16

W

Work rules 11

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