

790 ADVENTURE

ITEM NO.: 3206663EN



KTM

Read the repair manual carefully and completely before starting work.

The vehicle will only be able to meet the demands placed on it in the long run if the specified service work is performed regularly and properly.

The repair manual was written on the basis of the latest information for this model series. We reserve the right to make changes in the interest of technical advancement without updating this repair manual at the same time.

A description of general workshop instructions will be omitted. Safety rules applicable for day-to-day workshop use are also not mentioned. It is assumed that the repair work will be carried out by a trained mechanic.

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REG.NO. 12 100 6061

12 100 6061

Issuing institution:

TÜV SÜD Management Service GmbH

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Stallhofnerstraße 3
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This document is valid for:

790 ADVENTURE EU (F9603Z1, F9603Z2)

790 ADVENTURE D.D. EU (F9603Z3, F9603Z4)

790 ADVENTURE UK (F9622Z3, F9622Z4)

790 ADVENTURE AR (F9642Z4, F9642Z2)

790 ADVENTURE BR (F9640Z1, F9640Z2)

790 ADVENTURE CN (F9687Z6, F9687Z7)

790 ADVENTURE US (F9675Z5, F9675Z6)



3206663en

08/06/2026

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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.
<u>Underlined terms</u>	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 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.

2.3 Repair Manual

It is essential that you read this repair manual carefully and completely before starting work. It contains lots of information and tips that will make it easier for you to repair and service your vehicle.

This manual assumes that the necessary special KTM tools and workplace and workshop equipment are available.

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didier LEPRINCE, grolifoualex@gmail.com, 075676/080232

3 Important notes

3.1 Manufacturer's warranty, implied warranty

The work prescribed in the service schedule must only be carried out in an authorized contractual partner and confirmed in the **KTM Dealer.net**, 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 according to the instructions and specifications.

3.3 Spare parts, technical accessories

Only use spare parts and accessories approved and/or recommended by KTM. KTM accepts no liability for other products and any resulting damage or loss.

The latest news **KTM PowerParts** on your vehicle can be found on the KTM website.

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

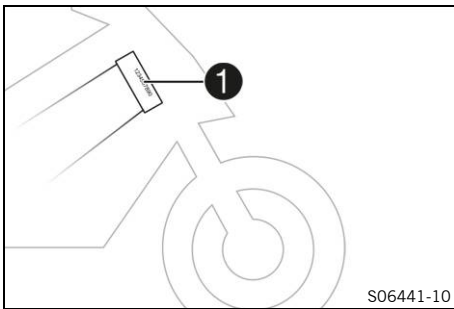
3.4 Figures

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.

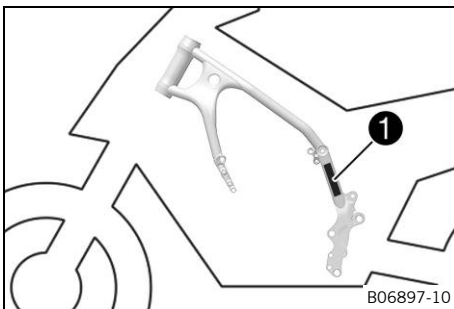
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4.1 Vehicle identification number



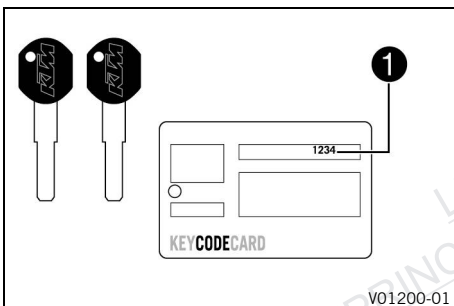
The vehicle identification number ❶ is stamped on the right-hand side of the steering head.

4.2 Type approval label



The type label ❶ is located on the frame on the left.

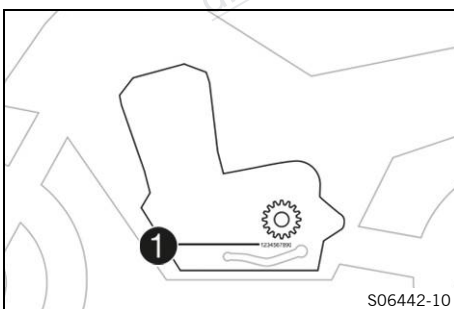
4.3 Key number



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

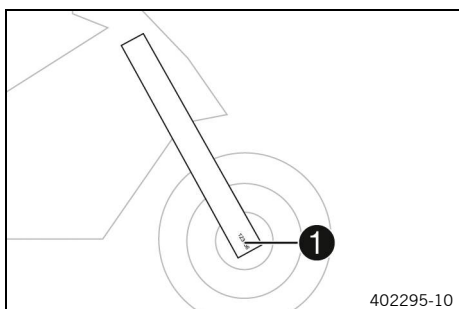
Note
The key number is needed to order a replacement key. Keep **KEYCODECARD** in a safe place.

4.4 Engine number



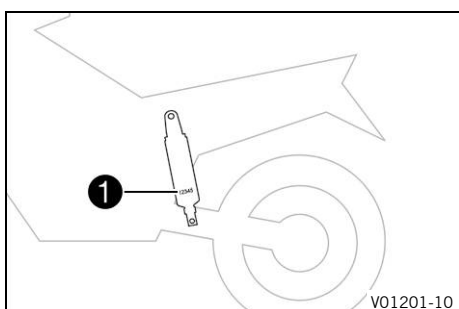
The engine number ❶ is stamped onto the engine case at the top.

4.5 Fork part number



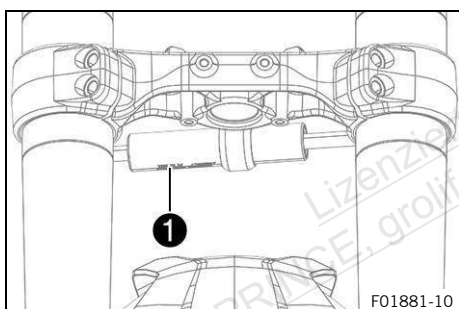
Fork part number ❶ is stamped on the inside of the fork shoe.

4.6 Shock absorber part number



Shock absorber article number ❶ is on the left side of the shock absorber.

4.7 Steering damper article number



Steering damper article number ❶ is embossed on the underside of the steering damper.

5.1 Lifting the motorcycle with the front lifting gear



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.

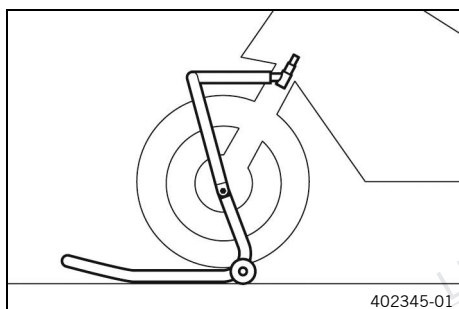
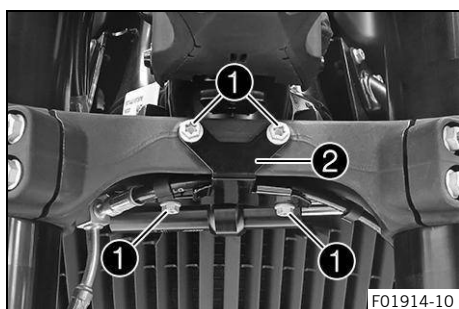
- Park the vehicle on a firm and level surface.
- Make sure that nobody sits on the vehicle when it is parked on a stand.

Preparatory work

- Raise the motorcycle with the rear lifting gear. (p. 18)

Main work

- Remove screws ①.
- Take off retaining bracket ②.



- Move the handlebar to the straight-ahead position.
- Use suitable lifting gear when attaching the steering stem.
- Align the front lifting gear with the fork legs.

Always raise the motorcycle at the rear first.

- Lift the motorcycle at the front.



5.2 Taking the motorcycle off the front lifting gear



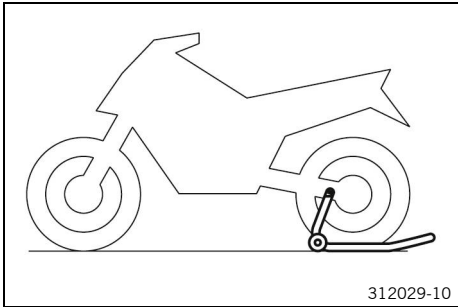
NOTE

Material damage The vehicle may be damaged if parked incorrectly.

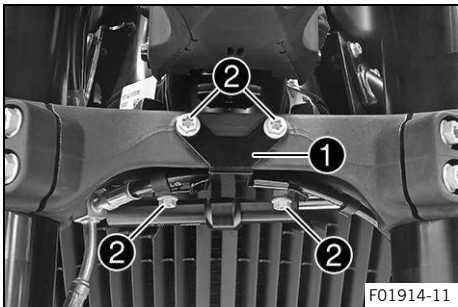
Damage can occur if the vehicle rolls away or falls over.

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.



- Secure the motorcycle against falling over.
- Remove the front lifting gear.



- Position retaining bracket ①.
- Mount and tighten screws ②.

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

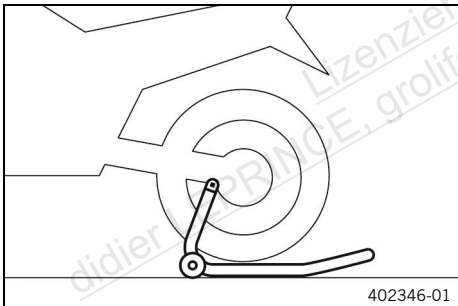
5.3 Raising the motorcycle with rear lifting gear



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.



- Mount retaining adapter on the link fork.
- Insert the adapter in the rear wheel stand.

Retaining adapter (61029955144) (p. 488)
Rear wheel work stand (69329955000) (p. 492)

- Stand motorcycle upright, align lifting gear to the link fork with the adapters, and raise motorcycle.

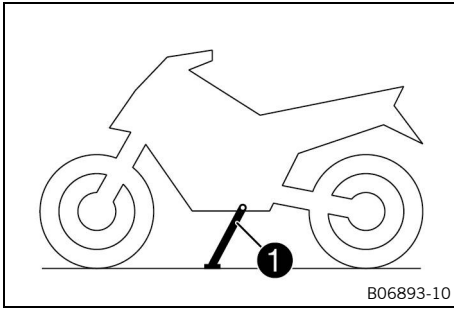
5.4 Removing the rear of the motorcycle from the lifting gear



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.



- Secure the motorcycle against falling over.
- Remove the rear lifting gear and lean the vehicle on side stand **1**.
- Remove the retaining adapter from the link fork.



5.5 Raising the motorcycle with the work stand (center)



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.

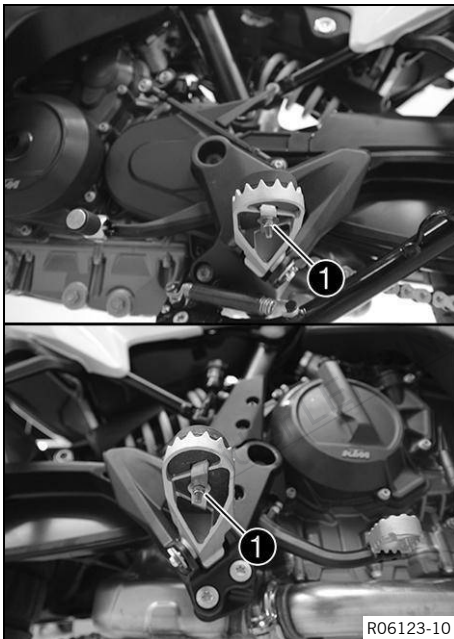
- Park the vehicle on a firm and level surface.
- Make sure that nobody sits on the vehicle when it is parked on a stand.

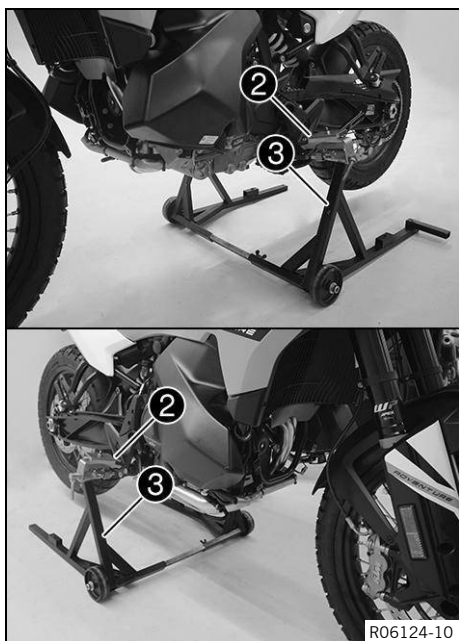
Preparatory work

- Remove the muffler.  (p. 83)

Main work

- Remove nut **1**.
- Take off footrest rubber and holder.





- Mount special tool ②.

Work stand attachments (75029036000) (p. 492)

- Repeat these steps on the opposite side.
- Mount special tool ③.

Work stand (62529055200) (p. 490)

- Position the motorcycle vertically, align the special tool, and raise the motorcycle.

5.6 Removing the motorcycle from the work stand (center)



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.

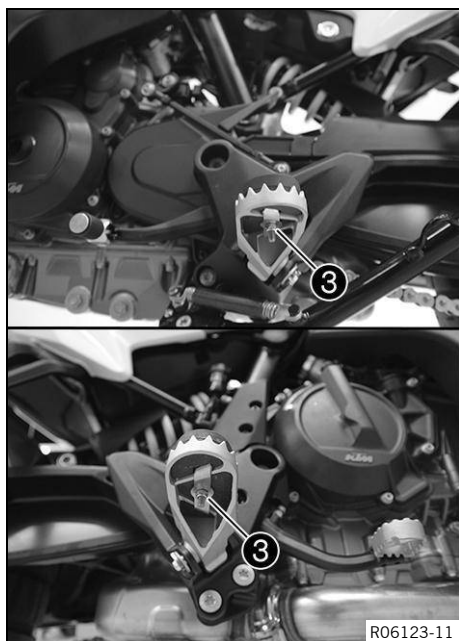
Main work

- Secure the motorcycle against falling over.
- Remove special tool ① and ②.

Work stand (62529055200) (p. 490)

Work stand attachments (75029036000) (p. 492)





- Position footrest rubber with holder.
- Mount and tighten nut ③.

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

- Repeat these steps on the opposite side.

Reworking

- Install the muffler. 📖 (p. 83)

5.7 Raising the motorcycle at the front using the work stand



NOTE

Material damage The vehicle may be damaged if parked incorrectly.

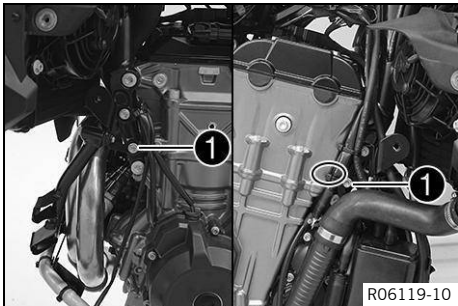
Damage can occur if the vehicle rolls away or falls over.

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.

Preparatory work

- Remove the passenger seat. 📖 (p. 99)
- Remove the front rider's seat. 📖 (p. 100)
- Remove the left side cover. 📖 (p. 118)
- Remove the battery cover. 📖 (p. 120)
- Remove left fuel tank spoiler. 📖 (p. 121)
- Remove the right side fairing. 📖 (p. 119)
- Remove right fuel tank spoiler. 📖 (p. 123)
- Remove the skid plate. 📖 (p. 125)
- Remove the fuel tank. 📖 (p. 100)



Main work

- Remove the cable ties.
- Remove screws ①.



- Mount the special tool.
Work stand (62529055200) (p. 490)
- Position the motorcycle vertically, align the special tool, and raise the motorcycle.

5.8 Removing the motorcycle from the work stand at the front



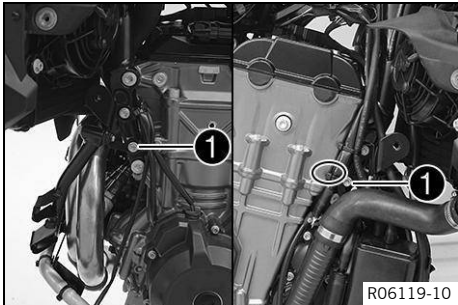
NOTE

- 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.

Main work

- Secure the motorcycle against falling over.
- Remove the special tool.

Work stand (62529055200) (p. 490)



- Mount and tighten screws ①.

Remaining screws on chassis	
M8	25 Nm (18.4 ft·lb _f)

- Mount cable ties.

Reworking

- Install the fuel tank.  (p. 103)
- Install the skid plate.  (p. 126)
- Install the right fuel tank spoiler.  (p. 124)
- Install the right side cover.  (p. 119)
- Install the left fuel tank spoiler.  (p. 122)
- Install the battery cover.  (p. 120)
- Install the left side fairing  (p. 118)
- Mount the front rider's seat.  (p. 100)
- Mount the passenger seat.  (p. 99)



5.9 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.



WARNING

Danger of accidents Electronic components and safety devices will be damaged if the 12-V battery is discharged or missing.

If the 12-V battery is discharged or defective, malfunctions in the vehicle electronics can occur, especially when starting.

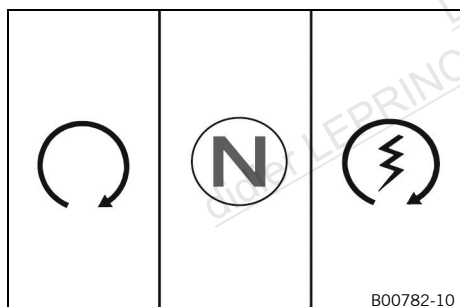
- Never operate the vehicle with a discharged 12-V battery or without a 12-V battery.



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.



- Take the motorcycle off the side stand and sit on the motorcycle.
- Make sure that the start button/kill switch is in the middle position .
- Switch on the ignition by turning the ignition key to position .

To avoid malfunctions in the control unit communication, do not switch the ignition off and on in rapid succession.

- ✓ After you switch on the ignition, you can hear the fuel pump working for about two seconds. The function check of the combination instrument is run at the same time.
- ✓ The ABS warning light lights up and goes out again after starting off.
- Shift the transmission into neutral **N**.
- ✓ The green idle indicator lamp **N** lights up.
- Briefly press the start button/kill switch into lower position .

Only press the start button/kill switch into lower position (⌘) when the dashboard function check has been completed.
Do not open the throttle to start.
If the starting attempt is unsuccessful, wait for 15 seconds before making another attempt at starting.
After 6 unsuccessful starting attempts, do not try again, and check the vehicle for faults instead.

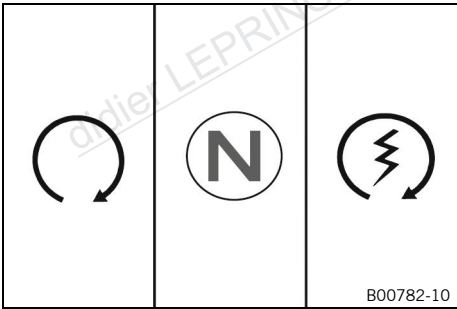
Note
This motorcycle is equipped with a safety starting system. The engine can only be started if the transmission is in the neutral position. If the side stand is folded out and you shift into gear, the engine stops.

5.10 Starting the motorcycle to check the function

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 accidents Electronic components and safety devices will be damaged if the 12-V battery is discharged or missing.
If the 12-V battery is discharged or defective, malfunctions in the vehicle electronics can occur, especially when starting.
– Never operate the vehicle with a discharged 12-V battery or without a 12-V battery.

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.



- Make sure that the start button/kill switch is in the middle position (○).
 - Switch on the ignition by turning the ignition key to position (○).
- To avoid malfunctions in the control unit communication, do not switch the ignition off and on in rapid succession.

 - ✓ After you switch on the ignition, you can hear the fuel pump working for about two seconds. The function check of the combination instrument is run at the same time.
 - ✓ The ABS warning light lights up and goes out again after starting off.
 - Shift the transmission into neutral **N**.
 - ✓ The green idle indicator lamp **N** lights up.
 - Briefly press the start button/kill switch into lower position (⌘).

Only press the start button/kill switch into lower position (🔌) when the dashboard function check has been completed.

Do not open the throttle to start.

If the starting attempt is unsuccessful, wait for 15 seconds before making another attempt at starting.

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



Note

This motorcycle is equipped with a safety starting system. The engine can only be started if the transmission is in the neutral position. If the side stand is folded out and you shift into gear, the engine stops.



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6.1 Adjusting the compression damping of the fork

i Note
The hydraulic compression damping determines the fork suspension behavior.



- Turn white adjuster **1** clockwise as far as it will go.

i Note
Adjuster **1 COMP** is located at the upper end of the left fork leg.

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

Compression damping	
Standard	15 clicks

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

6.2 Adjusting the rebound damping of the fork

i Note
The hydraulic rebound damping determines the fork suspension behavior.



- Turn red adjuster **1** clockwise as far as it will go.

i Note
Adjuster **1 REB** is located at the upper end of the right fork leg.

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

Rebound damping	
Standard	15 clicks

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

6.3 Cleaning the dust boots of the fork legs

Preparatory work

- Raise the motorcycle with the rear lifting gear.  (p. 18)
- Lift the motorcycle with the front lifting gear.  (p. 17)
- Remove the front top fender.  (p. 127)

Main work

- Push dust boot **1** downward on both fork legs.



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. 500)

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

Reworking

- Install the front top fender.  (p. 127)
- Take the motorcycle off the front lifting gear.  (p. 17)
- Remove the rear of the motorcycle from the lifting gear.  (p. 18)

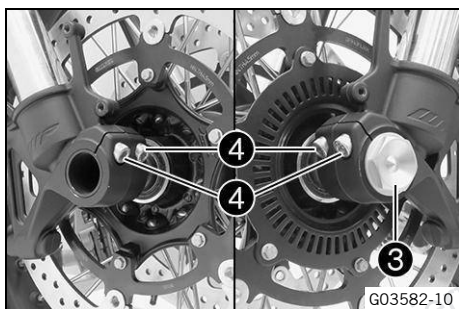
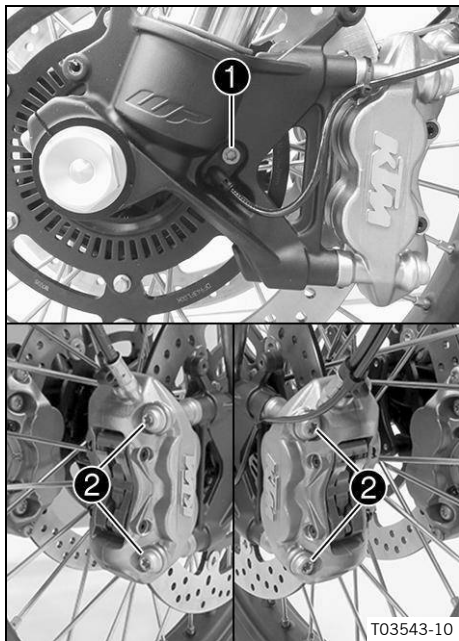


6.4 Removing the fork legs

Preparatory work

- Remove the muffler.  (p. 83)
- Raise motorcycle with the work stand (center).  (p. 19)
- Place a load on the rear of the vehicle.
 - ✓ The front wheel is not in contact with the ground.
- Remove the front top fender.  (p. 127)

6 Fork, triple clamp



Main work

- Remove screw ❶.
- Hang the wheel speed sensor to the side.
- Remove screws ❷.
- Press back the brake linings by slightly tilting the brake calipers laterally on to the brake discs. Pull brake calipers carefully back from the brake discs and hang to the side.

Do not operate the hand brake lever if the brake calipers have been removed.

- Loosen screw ❸ by several rotations.
- Loosen screws ❹.
- Press on screw ❸ to push the wheel spindle out of the axle clamp.
- Remove screw ❸.

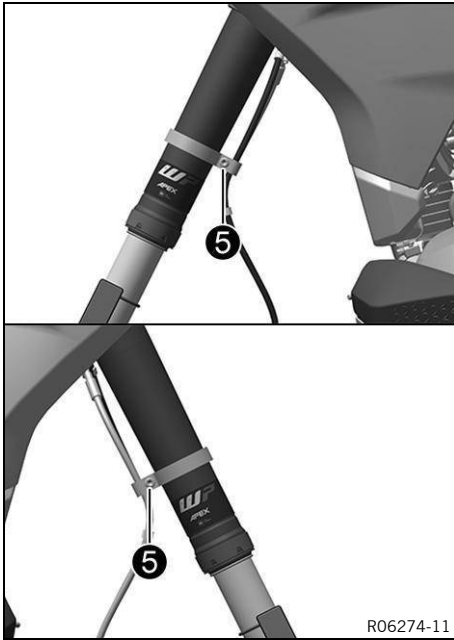


WARNING

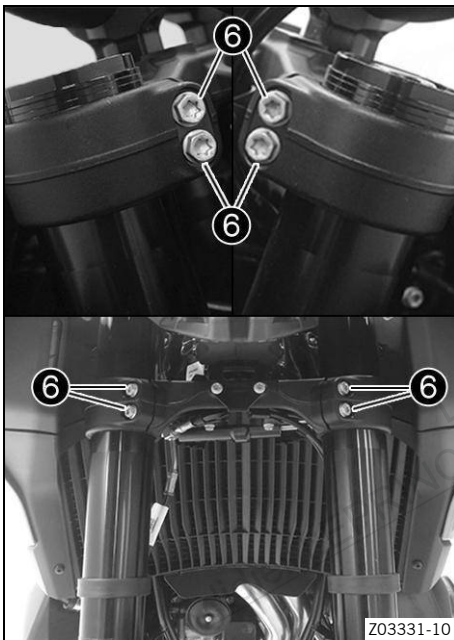
Danger of accidents Damaged brake discs reduce the braking action.

- 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.



- Loosen screws ⑤.
- Take the brake lines out of the clamps and hang to the side.



- Loosen screws ⑥.
- Remove the fork legs downwards.

6.5 Installing the fork legs

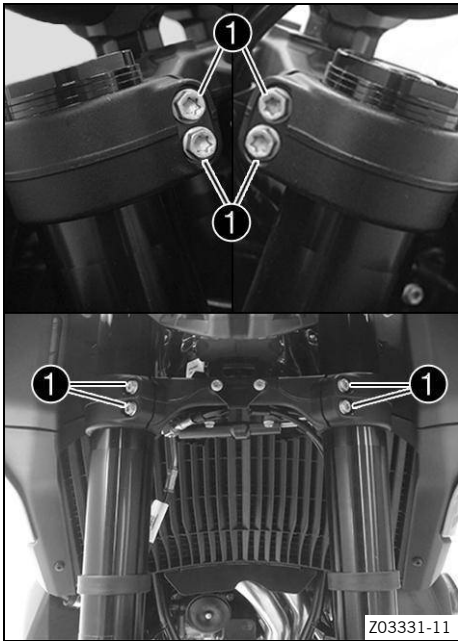


WARNING

Danger of accidents Modifications to the suspension settings that are not properly coordinated can impair the handling and overload components.

- Only make adjustments within the recommended range.
- Ride slowly to start with after making adjustments to get the feel of the new handling characteristics.

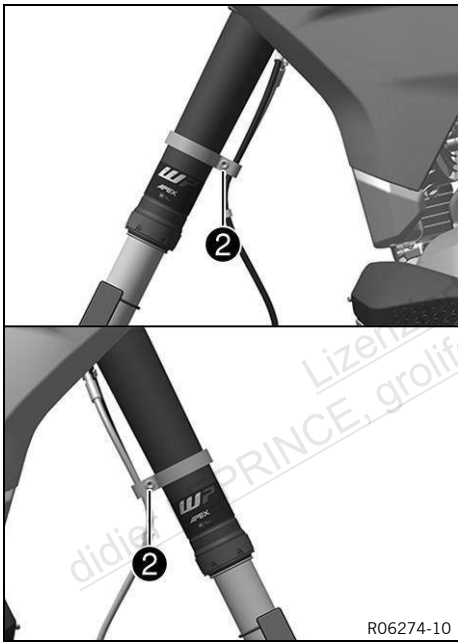
6 Fork, triple clamp



Main work

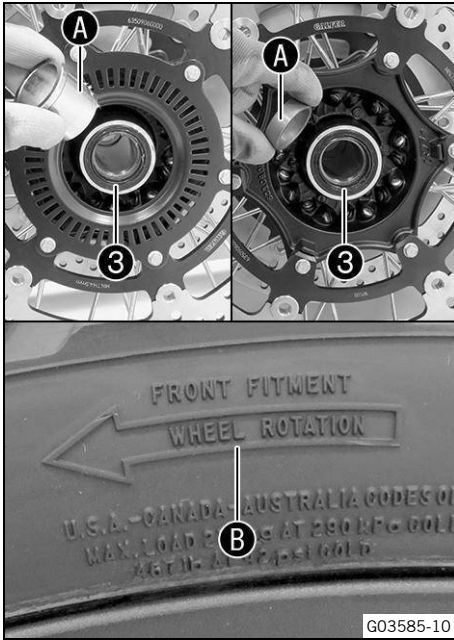
- Push the fork legs into the triple clamps.
- Align the fork legs in the required position using the fork rings.
- Tighten screws **1**.

Screw, top triple clamp	
M8	15 Nm (11.1 ft·lb _f)
Screw, bottom triple clamp	
M8	12 Nm (8.9 ft·lb _f)



- Position the brake lines in the clamps.
- Tighten screws **2**.

Brake line holder on fork screw	
M5	1 Nm (0.7 ft·lb _f)



- Check the wheel bearing for damage and wear.
 - » If the wheel bearing is damaged or worn:
 - Change the front wheel bearing. (p. 137)
- Remove the spacers.
- Clean and grease radial shaft seal **3** and contact surfaces **A** on the spacers.

Long-life grease (p. 500)

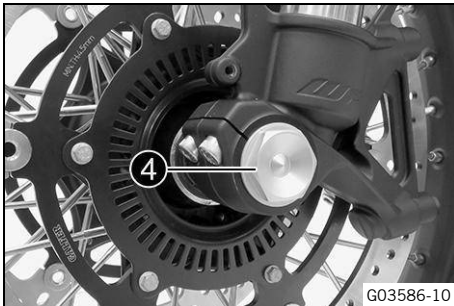
- Insert wide spacer on the left in the direction of travel.
- Insert narrow spacer on the right in the direction of travel.



Note

Arrow **B** indicates the direction of travel of the front wheel.

The wheel speed sensor wheel is on the left viewed in the direction of travel.



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 screw **4** and the wheel spindle.
- Grease wheel spindle lightly.

Long-life grease (p. 500)

- Jack up the front wheel into the fork, position it, and insert the wheel spindle.
- Mount and tighten screw **4**.

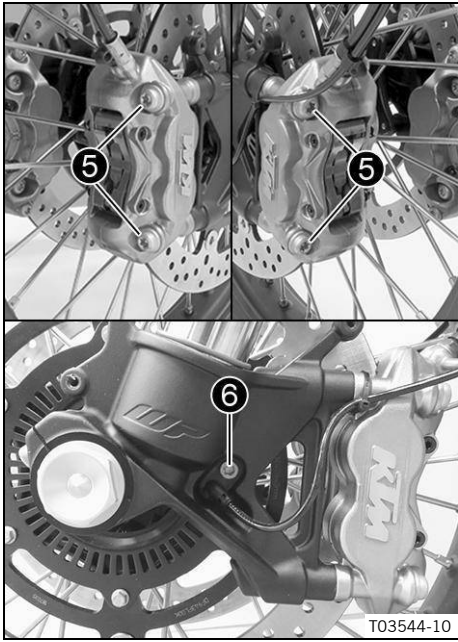
Screw, wheel spindle, front

M25×1.5

45 Nm
(33.2 ft·lb_r)

Long-life grease

6 Fork, triple clamp



- Position brake calipers.
✓ The brake linings are correctly positioned.
- Mount screws 5, but do not tighten yet.
- Operate the hand brake lever repeatedly until the brake pads are in contact with the brake disc and a pressure point is reached. Secure the hand brake lever in the activated position.
✓ The brake calipers straighten.
- Tighten screws 5.

Screw, front brake caliper	
M10×1.25	45 Nm (33.2 ft·lb _f) Loctite® 243

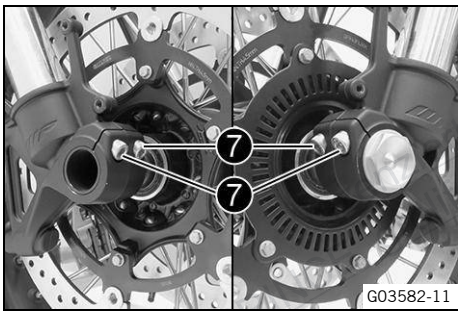
Screw, front brake caliper	
M10×1.25	45 Nm (33.2 ft·lb _f) Loctite® 243

- Position the wheel speed sensor in the hole.
- Mount and tighten screw 6.

Screw, front wheel speed sensor	
M6	6 Nm (4.4 ft·lb _f)

- Remove the locking piece of the hand brake lever.
- Remove the load from the rear of the vehicle.
- Operate the front brake and compress the fork a few times firmly.
✓ The fork legs straighten.
- Tighten screws 7.

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

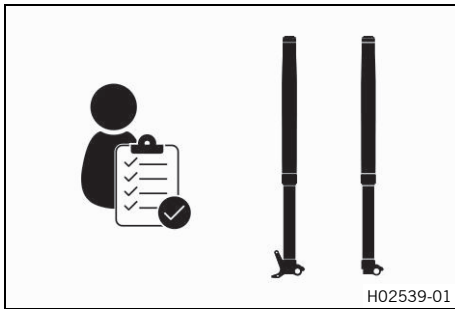


Reworking

- Install the front top fender. (p. 127)
- Remove the motorcycle from the work stand (center). (p. 20)
- Install the muffler. (p. 83)

6.6 Service the fork

Condition: The fork legs have been removed

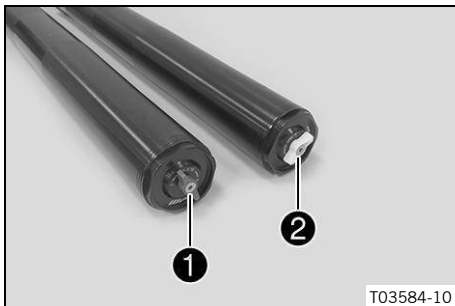


- Disassemble the fork legs. (p. 33)
- Remove the spring. (p. 35)
- Check the fork legs. (p. 36)
- spring, installing (p. 37)
- Assemble the fork legs. (p. 38)

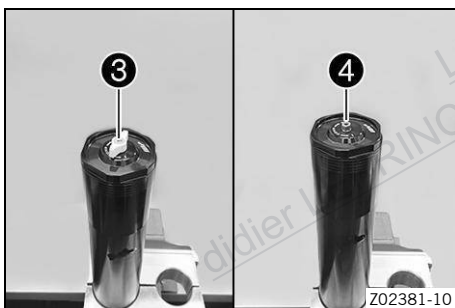
6.7 Disassembling the fork legs

Note
The operations are the same on both fork legs.

Condition: The fork legs have been removed



- Make a note of the present state of rebound **1** and compression damping **2**.
- Open the adjusters of the rebound and compression damping completely.



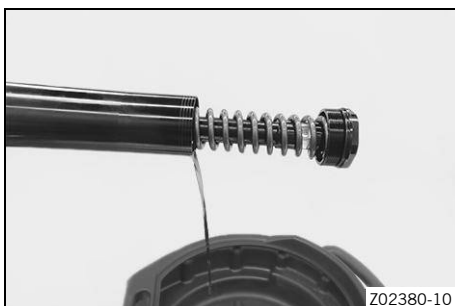
- Clamp the fork leg in the area of the lower triple clamp.

Clamping stand (T1403S) (p. 497)

- Remove screw **3**. Remove the adjuster.
- Loosen screw cap **4**.

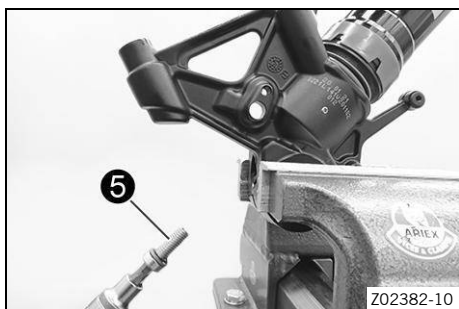
Ring wrench (T14017) (p. 497)

Note
The screw cap cannot be removed yet.



- Unclamp the fork leg.
- Drain the fork oil.

6 Fork, triple clamp



- Unclamp the fork leg with the fork shoe.

Use soft jaws.

- Remove screw 5 with the washer.

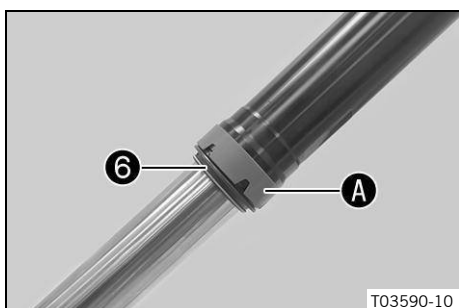


Note

Place an expansion tank underneath as some oil will usually still run out.



- Remove the cartridge.

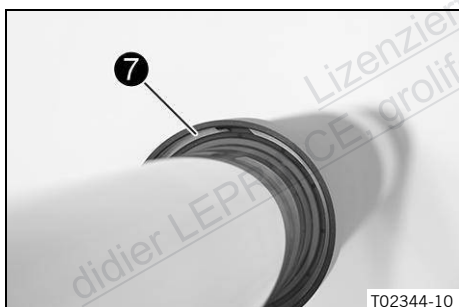


- Remove dust boot 6.
- Remove fork protection ring A.



Note

The fork protection ring does not necessarily need to be removed for repair work.

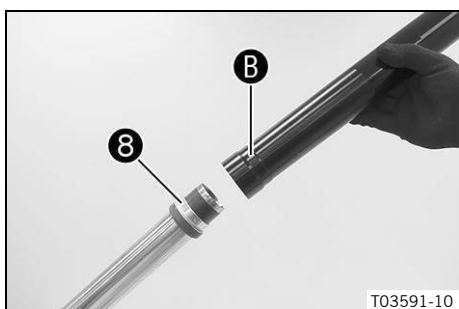


- Remove lock ring 7.



Note

The lock ring has a beveled end against which a screwdriver can be placed.

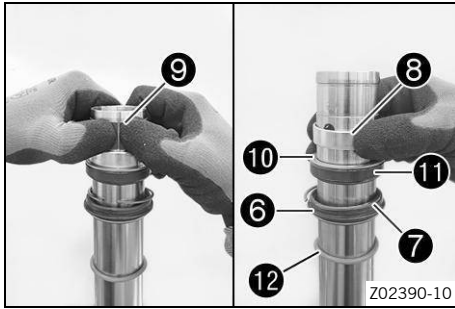


- Warm up the outside fork tube in area B of the lower sliding bushing.

50 °C
(122.0 °F)

- Pull the outer fork tube off the inner fork tube with a jerk.

Lower sliding bushing 8 must be drawn from its bearing seat.



- Remove upper sliding bushing ⑨.

Without using a tool, pull the stack slightly apart by hand.

- Take off lower sliding bushing ⑧.
- Take off support ring ⑩.
- Take off seal ring ⑪.
- Take off lock ring ⑦.
- Take off dust boot ⑥.
- Take off lift indicator ⑫.
- Unclamp the fork leg.

6.8 spring, removing

Note

The operations are the same on both fork legs.

Preparatory work

- Disassemble the fork legs. (p. 33)

Main work

- Clamp the cartridge with the special tool.

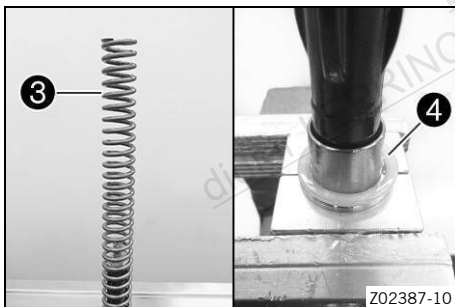
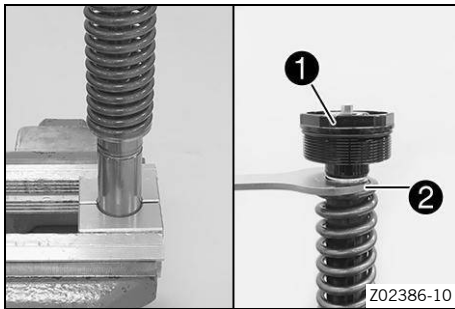
Clamping stand (T14015S) (p. 496)

- Pull the spring downward.
- Mount the special tool.

Open end wrench (T14032) (p. 497)

- Hold nut ② and remove screw cap ①.
- Remove the special tool.

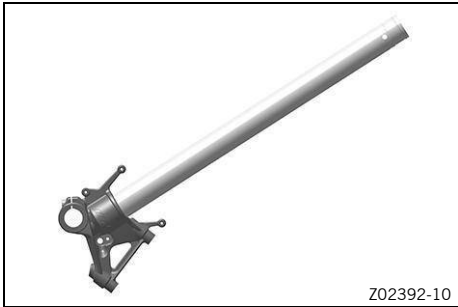
Open end wrench (T14032) (p. 497)



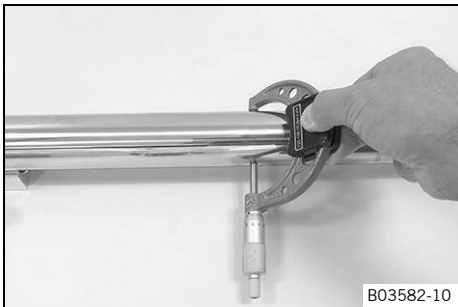
- Remove spring ③.
- Remove preload spacers ④.
- Release the cartridge.

6.9 Checking the fork legs

Condition: The fork legs have been disassembled



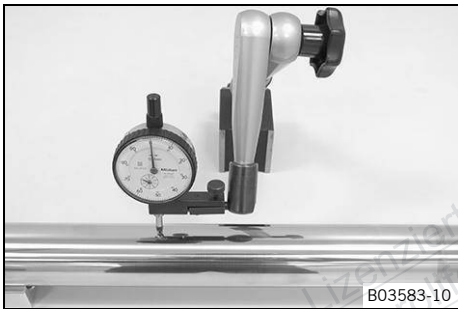
- Check the inside fork tube and the axle clamp for damage.
 - » If damage is found:
 - Change the inner fork tube.



- Measure the outside diameter of the inside fork tube at several places.

Outside diameter of the inside fork tube	42.975 mm ... 43.005 mm (1.69193 in ... 1.69311 in)
--	--

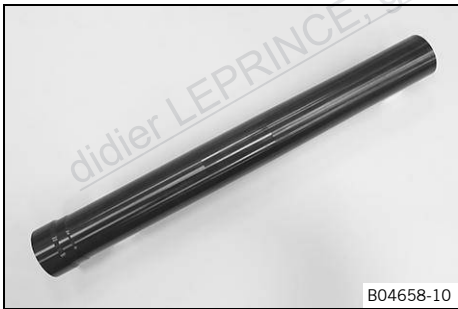
- » If the measured value is less than the specified value:
 - Change the inner fork tube.



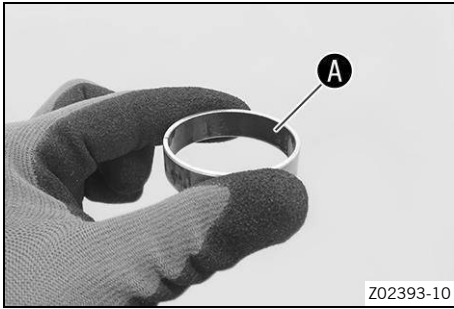
- Measure the run-out of the inner fork tube.

Run-out of the inside fork tube	≤ 0.20 mm (≤ 0.0079 in)
---------------------------------	----------------------------

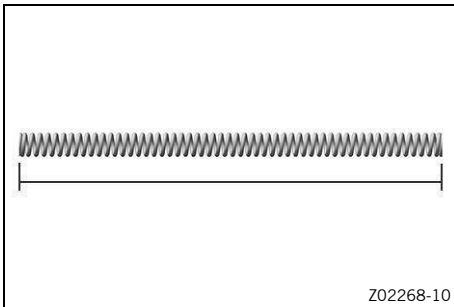
- » If the measured value is greater than the specified value:
 - Change the inner fork tube.



- Check the outer fork tube for damage.
 - » If damage is found:
 - Change the outer fork tube.



- Check the surface of the sliding bushings.
 - » If the dark layer **A** is worn off:
 - Change the sliding bushings.



- Check the spring length.

Spring length with preload spacer(s)	493.5 mm (19.429 in)
--------------------------------------	-------------------------

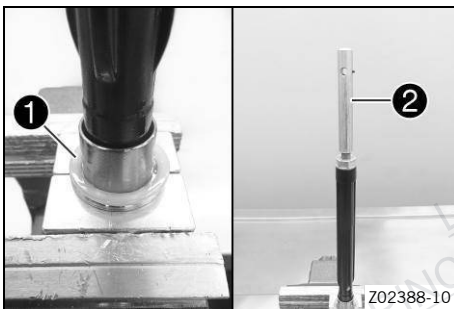
- » If the measured value is greater than the specified value:
 - Reduce the thickness of the preload spacers.
- » If the measured value is less than the specified value:
 - Increase the thickness of the preload spacers.

6.10 installing the spring



Note

The operations are the same on both fork legs.

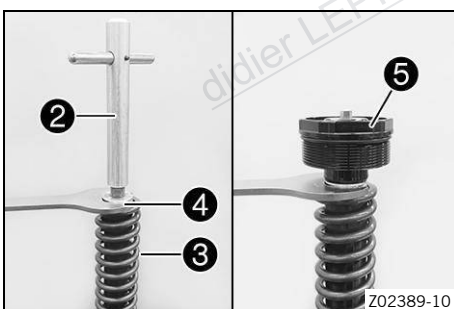


- Clamp the cartridge with the special tool.

Clamping stand (T14015S) (p. 496)

- Position preload spacers **1**.
- Mount special tool **2**.

Support tool (T14026S) (p. 497)



- Position spring **3**.
 - ✓ The tight coil of the spring is mounted at the bottom.
- Pull the spring downward.
- Mount the special tool.

Open end wrench (T14032) (p. 497)

- Remove special tool **2**.
- Mount screw cap **5**.

The screw cover must be screwed to the stop before the piston rod starts to turn. If the thread on the piston rod is tight, it must be held to keep it from turning.

6 Fork, triple clamp

Note
If the screw cover is not screwed to the stop, the compression adjuster will not work correctly.

- Hold nut ④ and tighten screw cap ⑤.

Nut, piston rod on screw cap	
M12×1	25 Nm (18.4 ft·lb _f)

6.11 Assembling the fork legs

Note
The operations are the same on both fork legs.

Preparatory work

- Check the fork legs. (p. 36)

Main work

- Clamp the inner fork tube using a fork shoe.

Use soft jaws.

- Mount the special tool.

Protecting sleeve (T512) (p. 498)

- Position lift indicator ①.
- Grease and push on dust boot ②.

Always change the dust boot, sealing ring, lock ring, and support ring.

Mount the sealing lip at the bottom.

Lubricant (T14034) (p. 501)

- Push on lock ring ③.
- Grease and push on seal ring ④.

Lubricant (T14034) (p. 501)

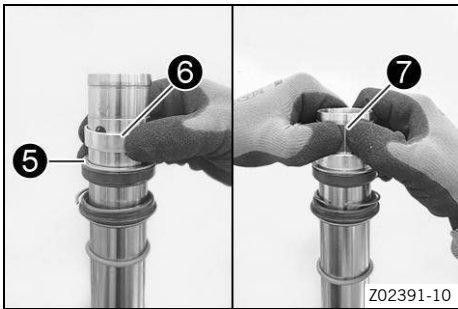
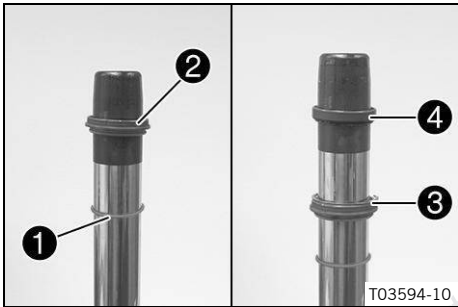
- ✓ The sealing lip points downward, the open side upward.
- Remove the special tool.

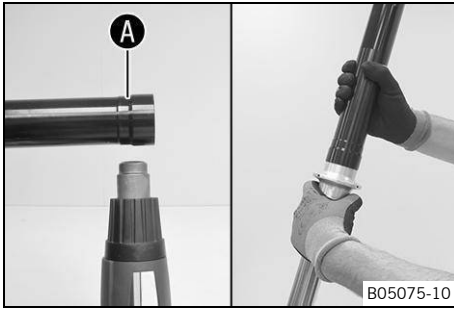
- Push on support ring ⑤.
- Sand edges of the sliding bushings with 600 grit sandpaper; then clean and grease the bushings.

Fork oil (SAE 5) (p. 500)

- Push on lower sliding bushing ⑥.
- Mount upper sliding bushing ⑦.

Without using a tool, pull the stack slightly apart by hand.





- Warm up the outside fork tube in area **A** of the lower sliding bushing.

50 °C
(122.0 °F)

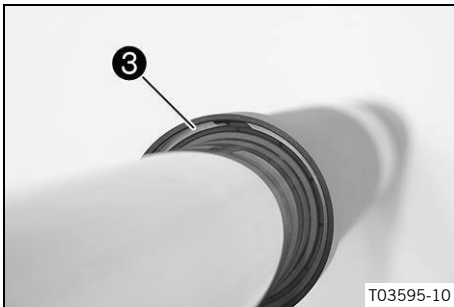
- Hold the lower sliding bushing with the longer side of the special tool.

Mounting tool (T528S)  (p. 498)

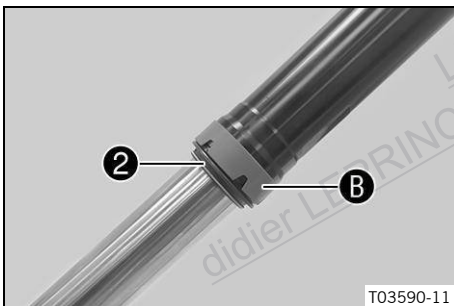
- Slide on the outer fork tube.
- Press the sliding bushing all the way into the outer fork tube.
- Position the support ring.
- Hold the sealing ring with shorter side of the special tool.

Mounting tool (T528S)  (p. 498)

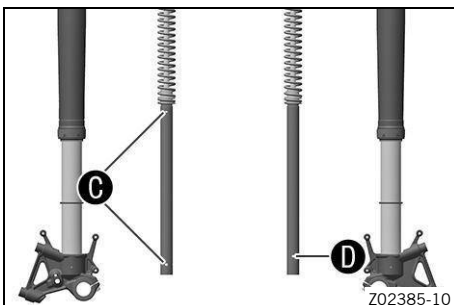
- Press the sealing ring and support ring all the way into the outer fork tube.



- Mount lock ring **3**.
- ✓ The lock ring engages audibly.



- Mount dust boot **2**.
- Mount fork protection ring **B**.

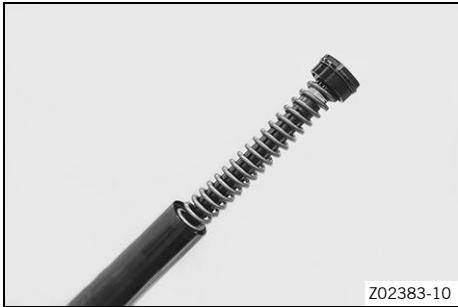


- Assemble the individual components that belong together.

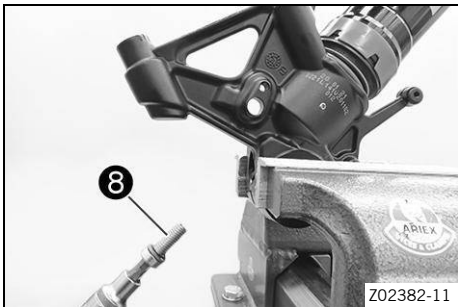
Compression damping side: cartridge with upper and lower oil hole **C**, white adjuster, axle clamp with hole for wheel speed sensor.

Rebound damping side: cartridge with lower oil hole **D**, red adjuster, axle clamp without hole for wheel speed sensor.

6 Fork, triple clamp



- Slide the cartridge into the inner fork tube.



- Mount and tighten screw **8** with the washer.

Cartridge screw	
M10×1.25	25 Nm (18.4 ft·lb _f)



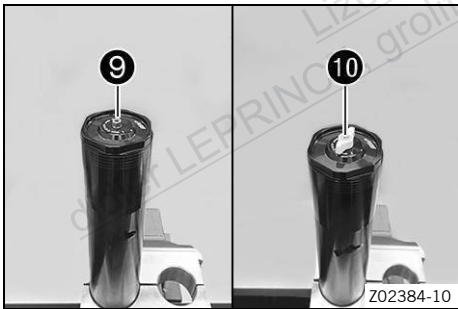
- Clamp the fork leg vertically.

Use soft jaws.

- Fill with fork oil.

After approx. half the oil capacity has been filled, screw in the screw cap of the outside fork tube, unclamp the fork and bounce a number of times so that the cartridge fills with oil. Then add the remaining amount.
--

Fork oil per fork leg	
Fork oil (SAE 5) (p. 500)	460 ±5 ml (15.55 ±0.17 fl. oz _{US})



- Push the outer fork tube upward.
- Clamp the outer fork tube in the area of the lower triple clamp.

Clamping stand (T1403S) (p. 497)

- Grease the O-ring of the screw cap.

Lubricant (T159) (p. 501)

- Mount and tighten screw cap **9**.

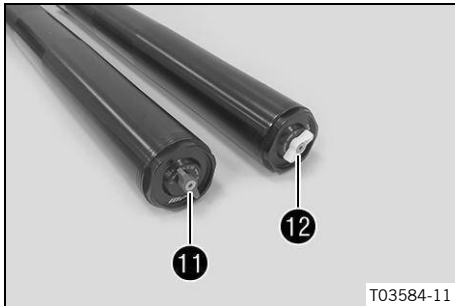
Screw cap on outside fork tube	
M51×1.5	40 Nm (29.5 ft·lb _f)

Ring wrench (T14017) (p. 497)

- Mount the adjuster.
- Mount and tighten screw **10**.

Adjuster	
M4×0.7	1.5 Nm (1.11 ft·lb _f)

- Select one of the following alternatives.



Restoring to standard mode

- Turn the adjuster of the rebound 11 and the adjuster of the compression damping 12 clockwise as far as possible.
- Turn counterclockwise by the number of clicks corresponding to the fork type.

Rebound damping	
Standard	15 clicks
Compression damping	
Standard	15 clicks

Restoring an initially determined position



WARNING

Danger of accidents Modifications to the suspension settings that are not properly coordinated can impair the handling and overload components.

- Only make adjustments within the recommended range.
- Ride slowly to start with after making adjustments to get the feel of the new handling characteristics.

- Set the adjusters to the positions determined upon removal.

6.12 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

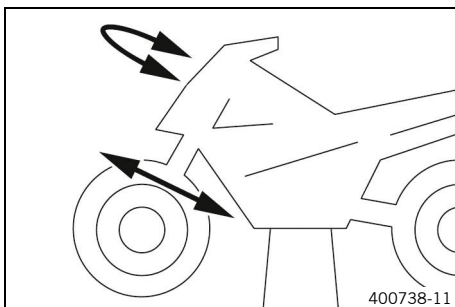
- Remove the muffler. (p. 83)
- Raise motorcycle with the work stand (center). (p. 19)

Main work

- Place a load on the rear of the vehicle.
 - ✓ The front wheel is not in contact with the ground.
- Move the handlebar to the straight-ahead position. Move the fork legs back and forth 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. 42)



6 Fork, triple clamp

- 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. 42)
 - Check the steering head bearing and adjust if necessary.

Reworking

- Remove the motorcycle from the work stand (center).
 (p. 20)
- Install the muffler.  (p. 83)

6.13 Adjusting the steering head bearing play

Preparatory work

- Remove the muffler.  (p. 83)
- Raise motorcycle with the work stand (center).  (p. 19)
- Place a load on the rear of the vehicle.
- ✓ The front wheel is not in contact with the ground.

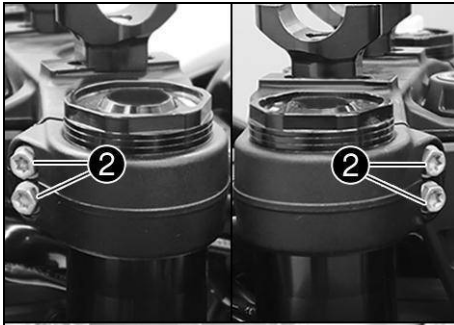
Main work

- Remove screws .
- Take off the handlebar clamps.
- Take off the handlebar and place it at the front.

Protect the components against damage by covering them.

Do not kink the cables or lines.





- Loosen screws ②.
- Remove screw ③.
- Loosen and retighten screw ④.

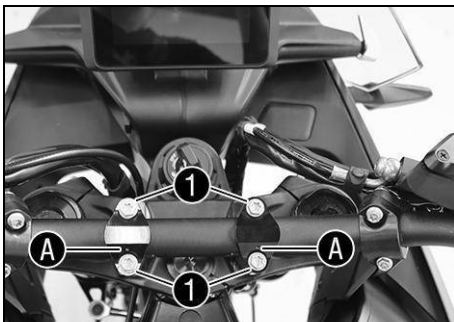
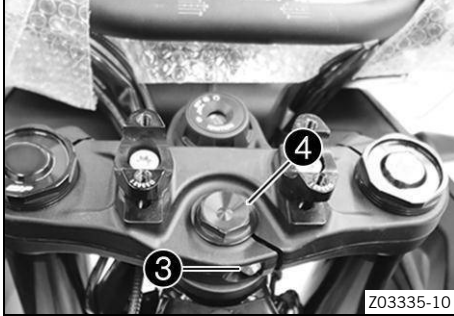
Screw, steering head	
M20×1.5	18 Nm (13.3 ft·lb _r)

- Using a plastic hammer, tap lightly on the upper triple clamp to avoid stresses.
- Tighten screws ②.

Screw, top triple clamp	
M8	15 Nm (11.1 ft·lb _r)

- Mount and tighten screw ③.

Screw, steering stem	
M8	20 Nm (14.8 ft·lb _r) Loctite® 243



- Position the handlebar.

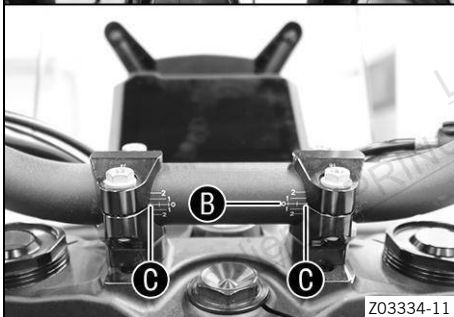
Make sure the cables and wiring are positioned correctly.

- Position the handlebar clamps. Mount the screws, but do not tighten them yet.

- ✓ Markings ① face backward.
- ✓ The horizontal marking ② on the handlebar scale is aligned with the center of the handlebar clamp.
- ✓ The vertical markings ③ on the handlebar scale are aligned equally on both sides.

- Tighten screws ① evenly.

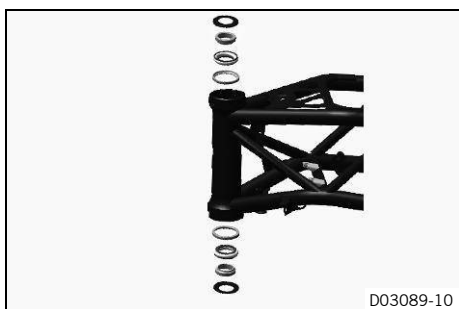
Handlebar clamp screw	
M8	20 Nm (14.8 ft·lb _r)



Reworking

- Check the steering head bearing play. 📖 (p. 41)
- Remove the motorcycle from the work stand (center). 📖 (p. 20)
- Install the muffler. 📖 (p. 83)

6.14 Lubricating the steering head bearing



- Remove the lower triple clamp. (p. 44)
- Install the lower triple clamp. (p. 46)



Note

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

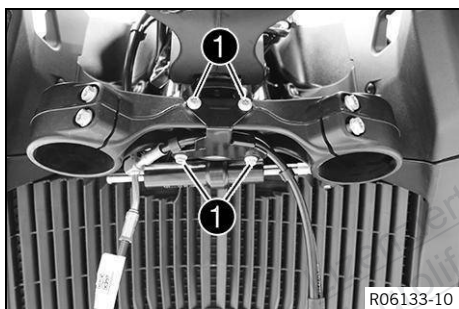
6.15 Removing the lower triple clamp

Preparatory work

- Remove the muffler. (p. 83)
- Raise motorcycle with the work stand (center). (p. 19)
- Place a load on the rear of the vehicle.
 - ✓ The front wheel is not in contact with the ground.
- Remove the front top fender. (p. 127)
- Remove the fork legs. (p. 27)

Main work

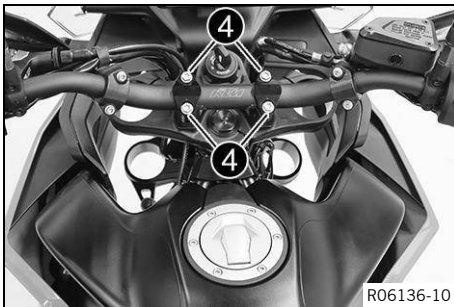
- Remove screws **1**.
- Take off the retaining bracket.



- Remove screw **2**.
- Hang the brake line to the side.



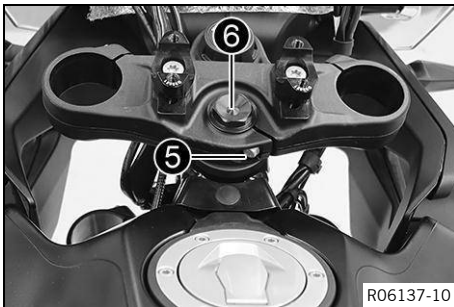
- Remove screw ③.



- Remove screws ④.
- Take off the handlebar clamps.
- Take off the handlebar and place it at the front.

Protect the components against damage by covering them.

Do not kink the cables or lines.



- Remove screw ⑤.
- Remove screw ⑥ with the washer.
- Loosen the upper triple clamp and place it to one side.

Hold the lower triple clamp.

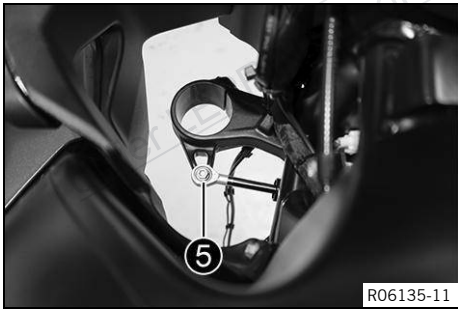
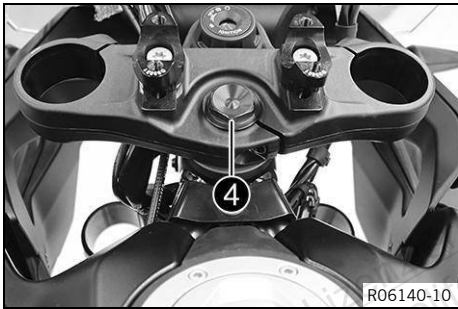
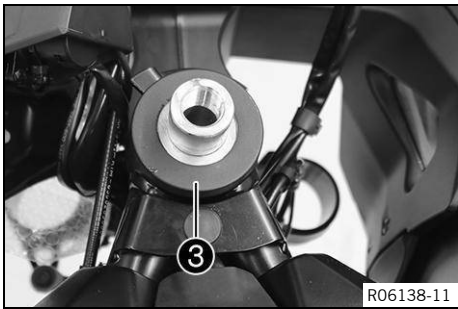


- Remove protective ring ⑦.



- Remove the steering stem from the lower triple clamp.
- Remove seal ring retainer ⑧.
- Remove upper steering head bearing ⑨.

6.16 Installing the lower triple clamp



Main work

- Grease the bearing, clean the sealing elements, and check for damage.
- Insert the lower triple clamp with the steering stem.
- Mount upper steering head bearing 1.
- Mount seal ring retainer 2.
- Mount protective ring 3.

High viscosity grease (p. 501)

- Position the upper triple clamp.
- Mount screw 4 with washer, but do not tighten yet.

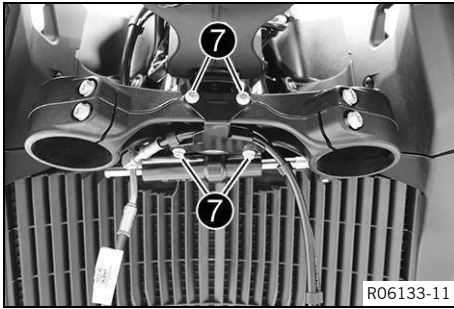
Screw, steering head	
M20×1.5	18 Nm (13.3 ft·lb _f)

- Position the steering damper.
- Mount and tighten screw 5.

Screw, steering damper on triple clamp	
M8	8 Nm (5.9 ft·lb _f) Loctite® 243

- Position the brake line.
- Mount and tighten screw 6.

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



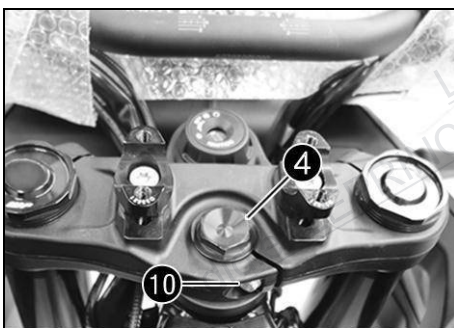
- Position the brake line and the retaining bracket.
- Mount and tighten screws 7.

Screw, bottom triple clamp	
M8	12 Nm (8.9 ft·lb _r)



- Push the fork legs into the triple clamp.
- Align the fork legs in the required position using the fork rings.
- Tighten screws 8 of the lower triple clamp.

Screw, bottom triple clamp	
M8	12 Nm (8.9 ft·lb _r)



- Tighten screw 4.

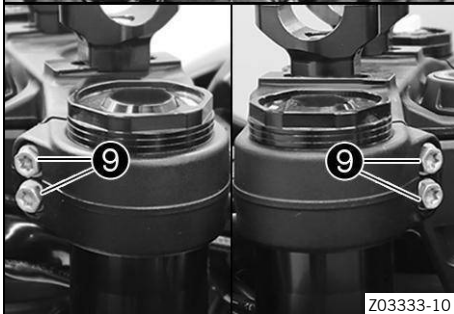
Screw, steering head	
M20×1.5	18 Nm (13.3 ft·lb _r)

- Using a plastic hammer, tap lightly on the upper triple clamp to avoid stresses.
- Tighten screws 9 of the upper triple clamp.

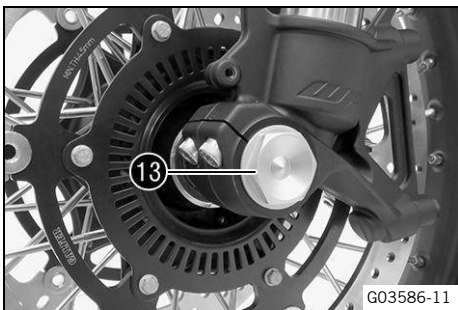
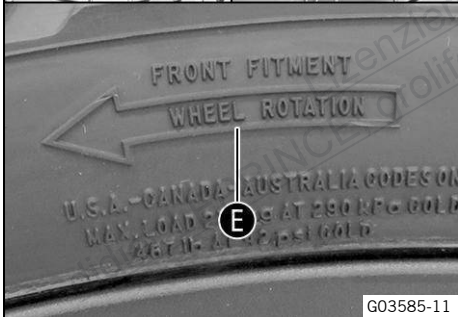
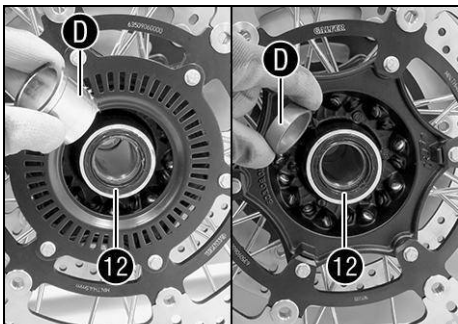
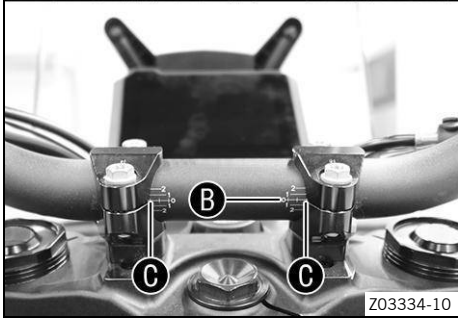
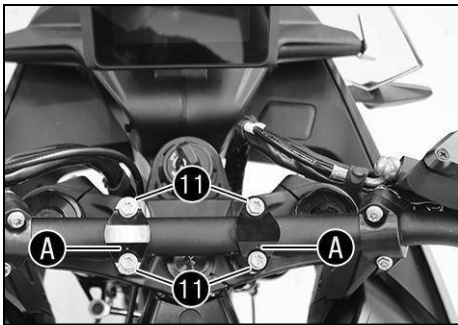
Screw, top triple clamp	
M8	15 Nm (11.1 ft·lb _r)

- Mount and tighten screw 10.

Screw, steering stem	
M8	20 Nm (14.8 ft·lb _r) Loctite® 243



6 Fork, triple clamp



- Position the handlebar.

Make sure the cables and wiring are positioned correctly.
- Position the handlebar clamps. Mount the screws, but do not tighten them yet.
 - ✓ Markings **A** face backward.
 - ✓ The horizontal marking **B** on the handlebar scale is aligned with the center of the handlebar clamp.
 - ✓ The vertical markings **C** on the handlebar scale are aligned equally on both sides.
- Tighten screws **11** evenly.

Handlebar clamp screw	
M8	20 Nm (14.8 ft·lb _f)

- Check the wheel bearing for damage and wear.
 - » If the wheel bearing is damaged or worn:
 - Change the front wheel bearing. (p. 137)
- Remove the spacers.
- Clean and grease radial shaft seal **12** and contact surfaces **D** on the spacers.

Long-life grease (p. 500)

- Insert wide spacer on the left in the direction of travel.
- Insert narrow spacer on the right in the direction of travel.

Note
Arrow **E** indicates the direction of travel of the front wheel.
The wheel speed sensor wheel is on the left viewed in the direction of travel.

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

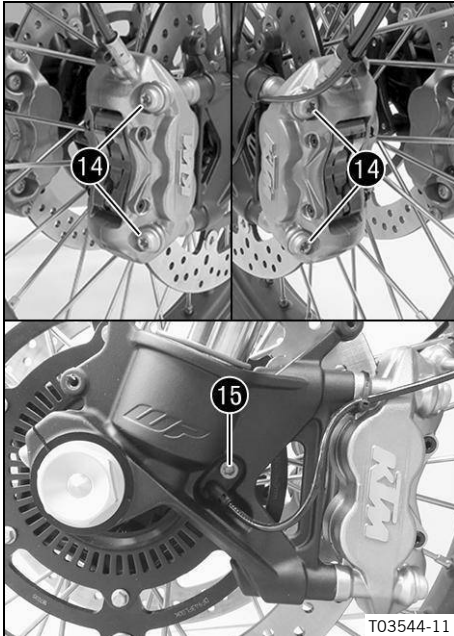
- Always keep the brake discs free of oil, fat and wax.
- Clean the brake discs with brake cleaner when necessary.

- Clean screw **13** and the wheel spindle.
- Grease wheel spindle lightly.

Long-life grease (p. 500)

- Jack up the front wheel into the fork, position it, and insert the wheel spindle.
- Mount and tighten screw **13**.

Screw, wheel spindle, front	
M25×1.5	45 Nm (33.2 ft·lb _f) Long-life grease



- Position brake calipers.
✓ The brake linings are correctly positioned.
- Mount screws **14**, but do not tighten yet.

Screw, front brake caliper	
M10×1.25	45 Nm (33.2 ft·lb _f) Loctite® 243

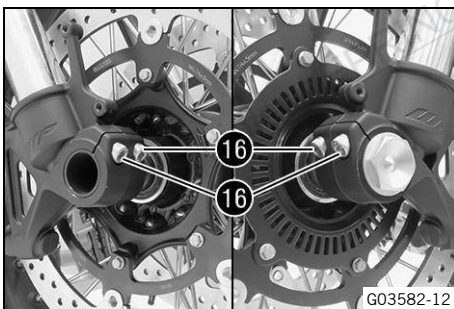
- Operate the hand brake lever repeatedly until the brake pads are in contact with the brake disc and a pressure point is reached. Secure the hand brake lever in the activated position.
✓ The brake calipers straighten.
- Tighten screws **14**.

Screw, front brake caliper	
M10×1.25	45 Nm (33.2 ft·lb _f) Loctite® 243

- Position the wheel speed sensor in the hole.
- Mount and tighten screw **15**.

Screw, front wheel speed sensor	
M6	6 Nm (4.4 ft·lb _f)

- Remove the locking piece of the hand brake lever.
- Remove the load from the rear of the vehicle.
- Operate the front brake and compress the fork a few times firmly.
✓ The fork legs straighten.
- Tighten screws **16**.



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

Reworking

- Install the front top fender. 📖 (p. 127)
- Check the steering head bearing play. 📖 (p. 41)

6 Fork, triple clamp

- Remove the motorcycle from the work stand (center).  (p. 20)
- Install the muffler.  (p. 83)

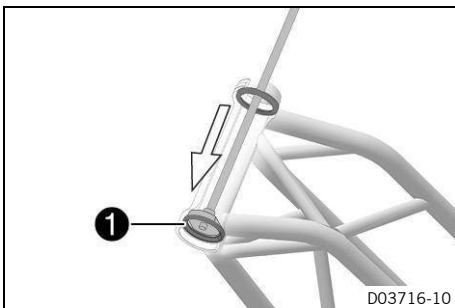
6.17 Changing the steering head bearing

Preparatory work

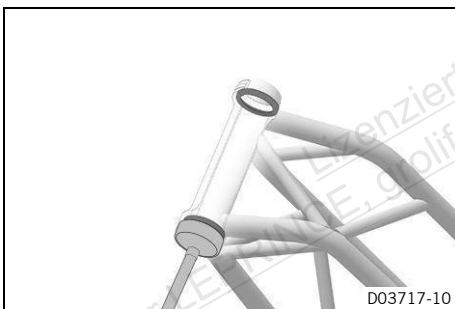
- Remove the muffler.  (p. 83)
- Raise motorcycle with the work stand (center).  (p. 19)
- Place a load on the rear of the vehicle.
 - ✓ The front wheel is not in contact with the ground.
- Remove the front top fender.  (p. 127)
- Remove the fork legs.  (p. 27)
- Remove the lower triple clamp.  (p. 44)

Main work

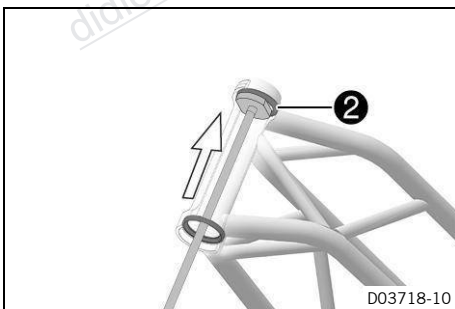
- Remove lower bearing ring **1** using a suitable tool.

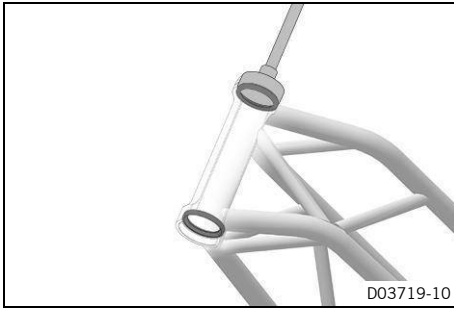


- Press in the new bearing ring all the way using a suitable tool.



- Remove upper bearing ring **2** using a suitable tool.





- Press in the new bearing ring all the way using a suitable tool.

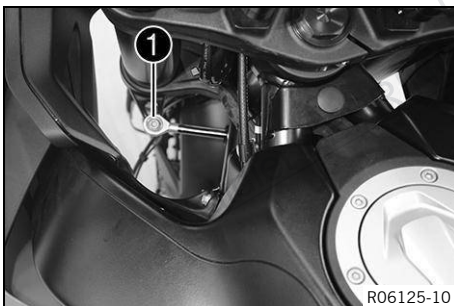


- Remove lower steering head bearing **3**.
- Remove the seal ring.
- Grease and mount the new seal ring.
- Mount a new bearing.

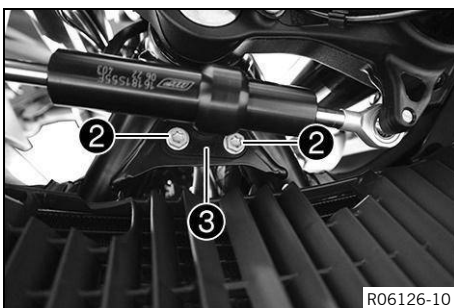
Reworking

- Install the lower triple clamp. (p. 46)
- Install the front top fender. (p. 127)
- Check the steering head bearing play. (p. 41)
- Remove the motorcycle from the work stand (center). (p. 20)
- Install the muffler. (p. 83)

6.18 Changing the steering damper



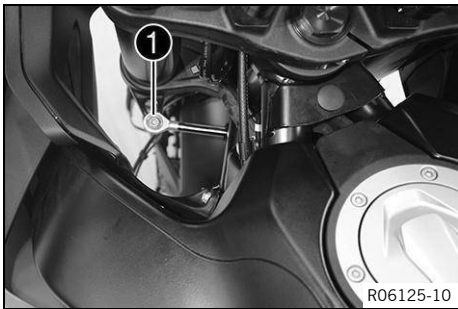
- Remove screw **1**.



- Remove screws **2**.
- Take off bracket **3** with steering damper.
- Position bracket with new steering damper.
- Mount and tighten screws **2**.

Screw, steering damper on holder	
M8	8 Nm (5.9 ft·lb _f)
Loctite® 243	

6 Fork, triple clamp

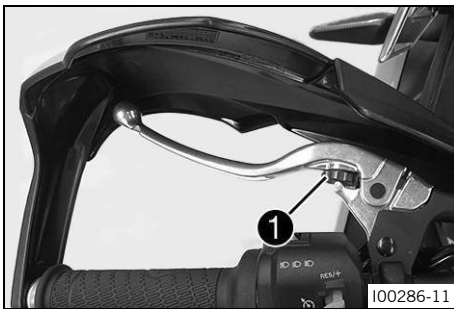


- Mount and tighten screw ❶.

Screw, steering damper on triple clamp	
M8	8 Nm (5.9 ft·lb _r) Loctite® 243

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7.1 Adjusting the basic position of the clutch lever



- Push clutch lever forward.
- 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 clockwise, the clutch lever moves closer to the handlebar.

When the adjusting screw is turned counterclockwise, the clutch lever moves away from the handlebar.

The range of adjustment is limited.

7.2 Checking the free travel of the clutch lever



NOTE

Clutch damage If there is no free travel by the clutch lever, the clutch will slip.

- Check the free travel of the clutch lever each time before using the vehicle.
- Adjust the free travel of the clutch lever when necessary in accordance with the specification.



- Check the clutch lever for smooth operation.
- Move the handlebar to the straight-ahead position.
- Pull the clutch lever until resistance is perceptible, and determine the free travel ①.

Free travel ① of clutch lever	5 mm (0.20 in)
-------------------------------	-------------------

» If the free travel of the clutch lever does not meet specifications:

- Set the free travel of the clutch lever. (p. 54)

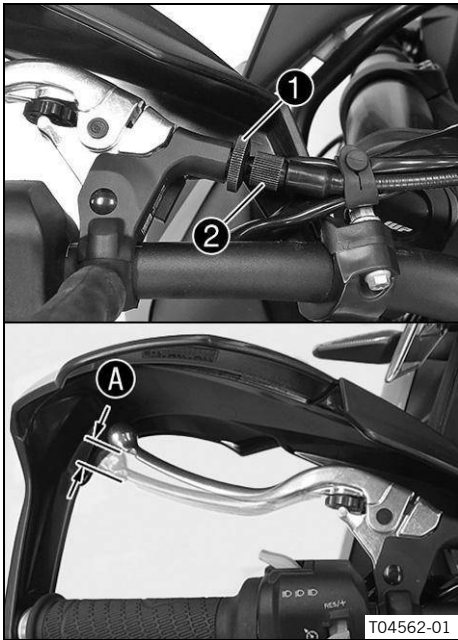
- Move the handlebar back and forth over the entire steering range.

The free travel of the clutch lever must not change.

» If the free travel of the clutch lever changes:

- Check the routing of the clutch cable.

7.3 Adjusting the free travel of the clutch lever



- Move the handlebar to the straight-ahead position.
- Loosen lock nut 1.
- Adjust the free travel A by turning adjusting screw 2.

Free travel A of clutch lever	5 mm (0.20 in)
-------------------------------	-------------------

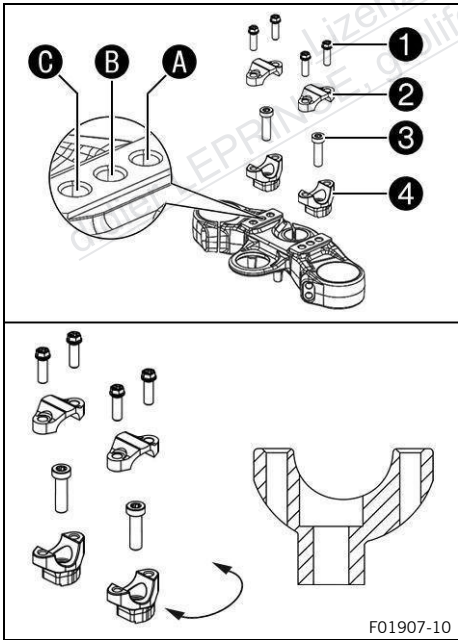
- Tighten lock nut 1.

7.4 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.



- Remove screws 1. Take off the handlebar clamps 2. Position the handlebar so that screws 3 are accessible.

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

- Remove screws 3. Take off handlebar supports 4.
- Move the handlebar supports into the desired position B, A or C. Mount and tighten screws 3.

Mount the left and right handlebar supports in the same position.

Screw, handlebar mount	
M10	45 Nm (33.2 ft·lb _f) Loctite® 243

- Position the handlebar.

Make sure the cables and wiring are routed correctly.

- Position the handlebar clamp. Mount screws ❶ and tighten evenly.

Handlebar clamp screw	
M8	20 Nm (14.8 ft·lb _f)



7.5 Changing the throttle grip

Preparatory work

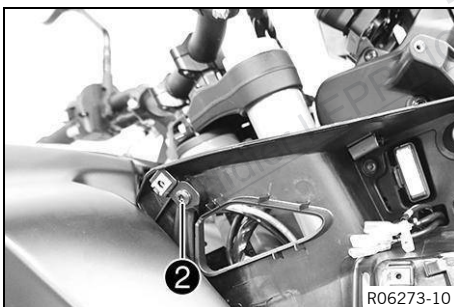
- Remove the passenger seat. (p. 99)
- Remove the front rider's seat. (p. 100)
- Remove the left side cover. (p. 118)
- Remove the battery cover. (p. 120)
- Remove left fuel tank spoiler. (p. 121)
- Remove the right side fairing. (p. 119)
- Remove right fuel tank spoiler. (p. 123)
- Remove windshield. (p. 127)
- Remove the headlight. (p. 199)

Main work

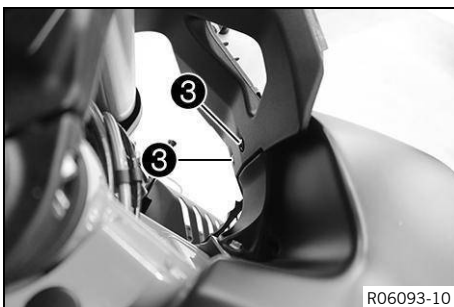
- Remove screw ❶.
- Hang the compensating tank to the side and secure it in a vertical position.



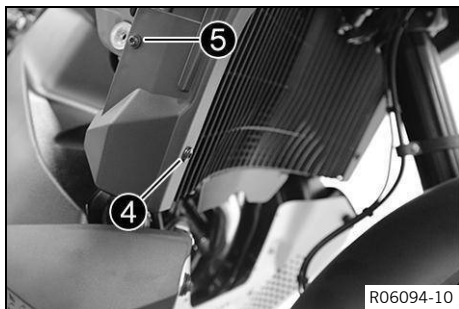
- Remove screw ❷.



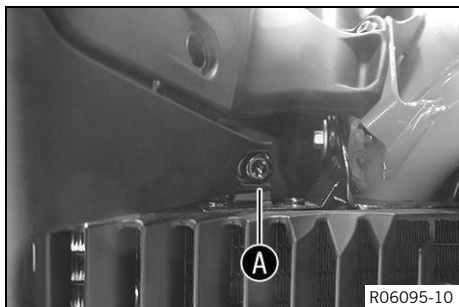
- Remove screws ❸.



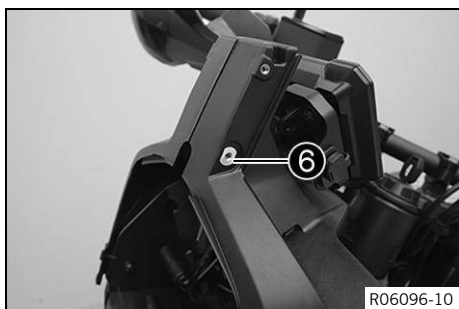
7 Handlebar, controls



- Remove screw ④.
- Remove screw ⑤.



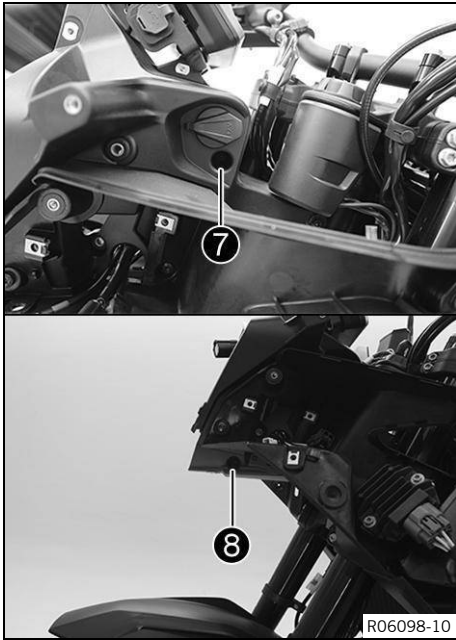
- Detach the inside cover from bracket A.



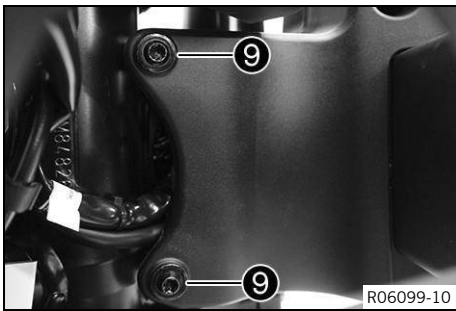
- Remove wheel spindle ⑥.



- Remove the cable ties.



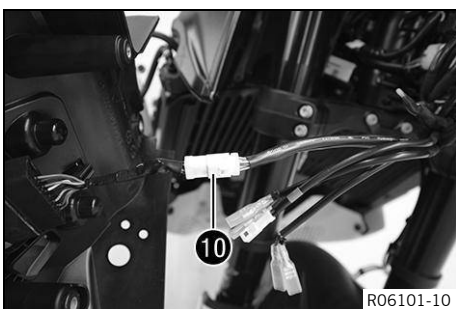
- Remove screw 7.
- Remove screw 8.



- Remove screws 9.

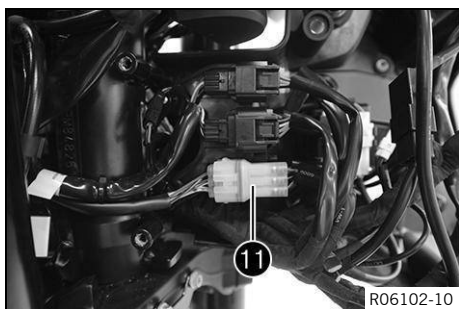


- Remove the mask support with the inside cover facing forwards.

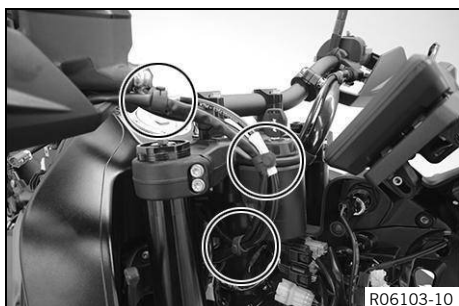


- Disconnect plug-in connector 10.

7 Handlebar, controls



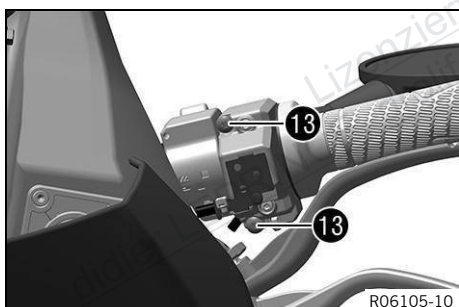
- Loosen plug-in connector 11 from the bracket and disconnect.



- Remove the cable holder.



- Loosen screw 12.
- Push the hand guard slightly to the side.

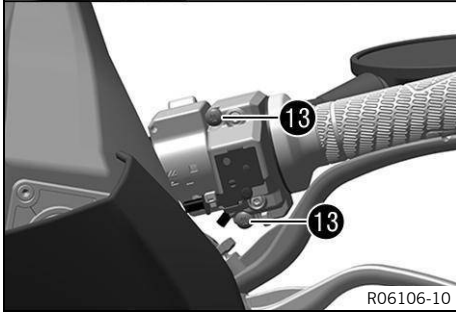


- Loosen screws 13.
- Remove the throttle grip with the sensor unit.



- Position a new throttle grip with a sensor unit.
- Tighten screws 13.

Screw, throttle twist grip	
M5	3.5 Nm (2.58 ft·lb _r)



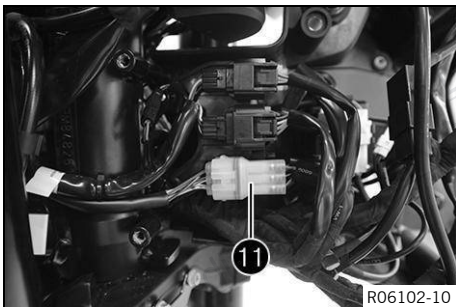
R06106-10



- Position the handguard.
- Tighten screw 12.

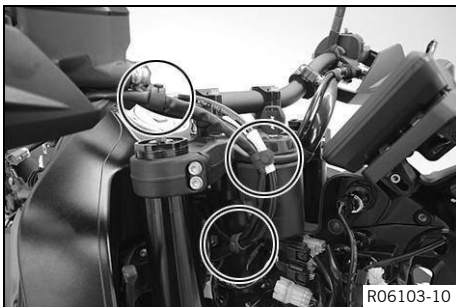
Screw, handguard	
M8	25 Nm (18.4 ft·lb _r)

R06104-10



R06102-10

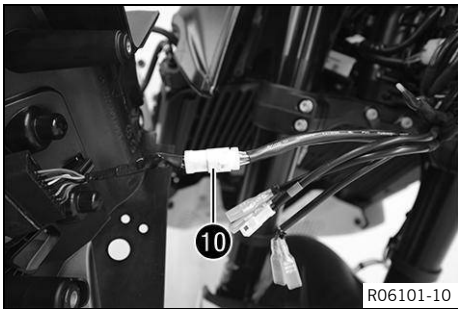
- Join plug-in connector 11 and position in the holder.



R06103-10

- Route the cables without tension and secure with the cable holders.

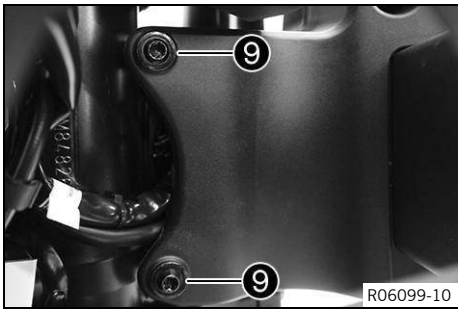
7 Handlebar, controls



- Join plug-in connector 10.

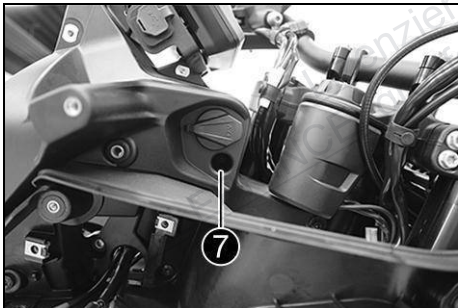


- Position the mask support with the inside cover.



- Mount and tighten screws 9.

Screw, mask support on steering head		
M6	10 Nm (7.4 ft·lb _f)	Loctite® 243

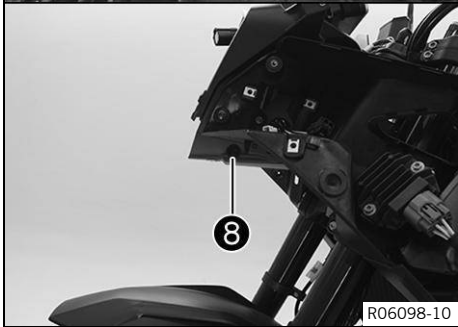


- Mount and tighten screw 7.

Screw, headlight mask support		
M6	10 Nm (7.4 ft·lb _f)	Loctite® 243

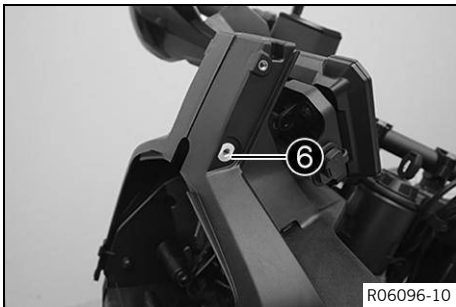
- Mount and tighten screw 8.

Screw, headlight mask support		
M6	10 Nm (7.4 ft·lb _f)	Loctite® 243

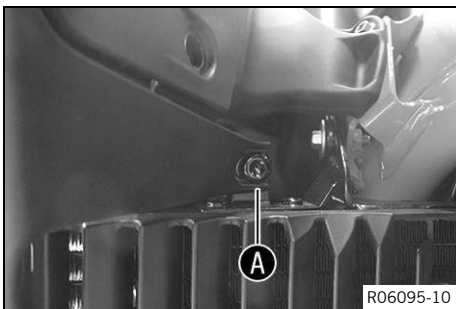




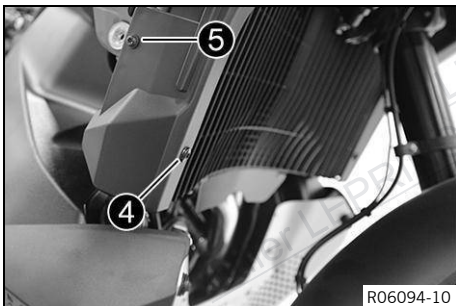
- Fasten new cable ties.



- Mount wheel spindle ⑥.



- Attach inside cover to bracket A.

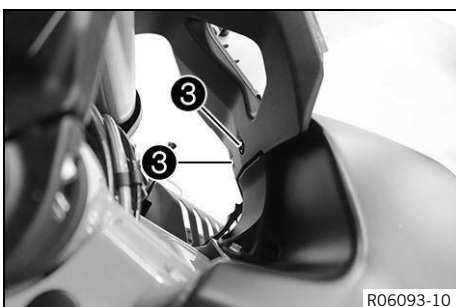


- Mount and tighten screw ④.

Screw, trim	
M5	3 Nm (2.2 ft·lb _f)

- Mount and tighten screw ⑤.

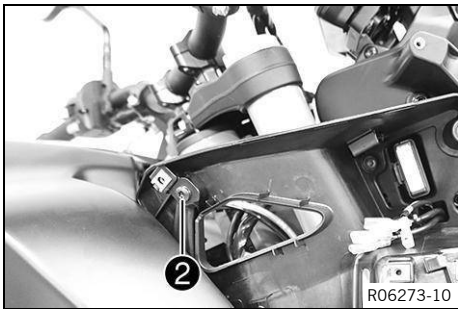
Remaining screws on chassis	
EJOT PT®	1 Nm (0.7 ft·lb _f)



- Mount and tighten screws ③.

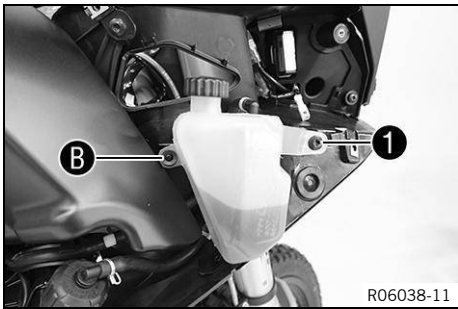
Screw, trim	
M5	3 Nm (2.2 ft·lb _f)

7 Handlebar, controls



- Mount and tighten screw ❷.

Screw, trim	
M5	3 Nm (2.2 ft·lb _f)



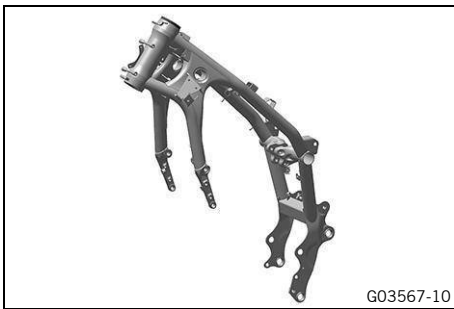
- Hang the compensating tank in guide ❷.
- Mount and tighten screw ❶.

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

Reworking

- Install the headlight. 📖 (p. 202)
- Install windshield. 📖 (p. 128)
- Install the left fuel tank spoiler. 📖 (p. 122)
- Install the left side fairing 📖 (p. 118)
- Install the right fuel tank spoiler. 📖 (p. 124)
- Install the battery cover. 📖 (p. 120)
- Install the right side cover. 📖 (p. 119)
- Mount the front rider's seat. 📖 (p. 100)
- Mount the passenger seat. 📖 (p. 99)

8.1 Checking the frame



- 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.



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9 Shock absorber, swingarm

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

Rebound damping	
Standard	12 clicks



Note

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

9.2 Adjusting the spring preload of the shock absorber



WARNING

Danger of accidents Modifications to the suspension settings that are not properly coordinated can impair the handling and overload components.

- Only make adjustments within the recommended range.
- Ride slowly to start with after making adjustments to get the feel of the new handling characteristics.



Note

The spring preload defines the initial status of the spring operation on the shock absorber.

The best spring preload setting is achieved when it is set for the weight of the rider and that of any luggage and a passenger, thus ensuring an ideal compromise between handling and stability.

Condition: The swingarm is relieved of weight



- Turn adjuster ❶ counterclockwise all the way to the stop.
- Turn it clockwise by the number of turns corresponding to the shock absorber type and use.

Spring preload – preload adjuster	
Standard	4 turns (1,440°)



Note

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

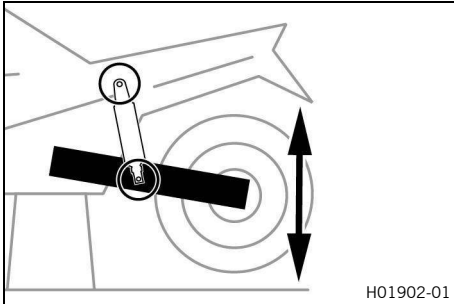
9.3 Checking the heim joint for play

Preparatory work

- Remove the muffler.  (p. 83)
- Raise motorcycle with the work stand (center).  (p. 19)
- Place a load on the front of the vehicle.
- ✓ The rear wheel is not in contact with the ground.

Main work

- Move the link fork up and down.
 - » If there is detectable play:
 - Change the heim joint.  (p. 70)



Reworking

- Remove the motorcycle from the work stand (center).  (p. 20)
- Install the muffler.  (p. 83)

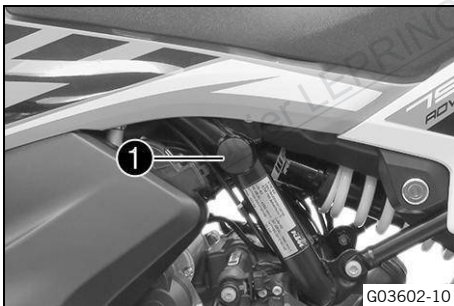
9.4 Removing the shock absorber

Preparatory work

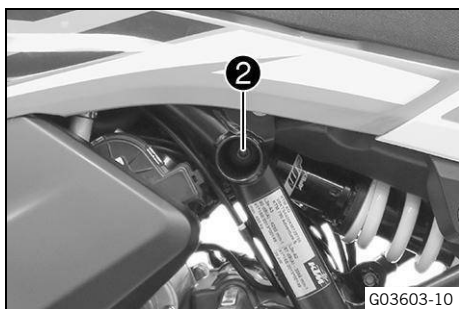
- Remove the muffler.  (p. 83)
- Raise motorcycle with the work stand (center).  (p. 19)

Main work

- Remove protection cap ①.



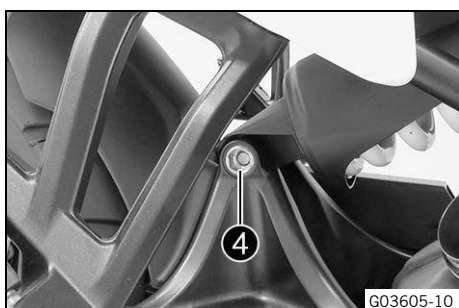
9 Shock absorber, swingarm



- Loosen screw ②, but do not remove it yet.



- Loosen screw ③, but do not remove it yet.

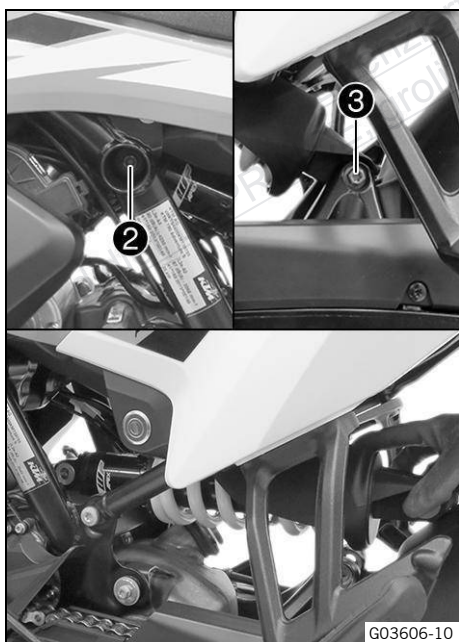


- Loosen bushing ④.

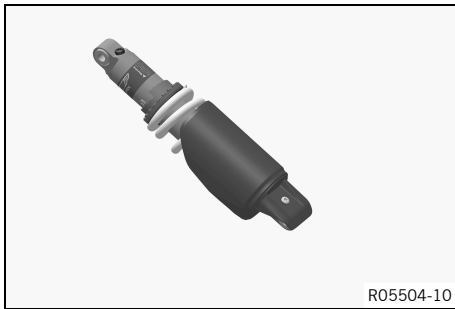


Note

LH thread.

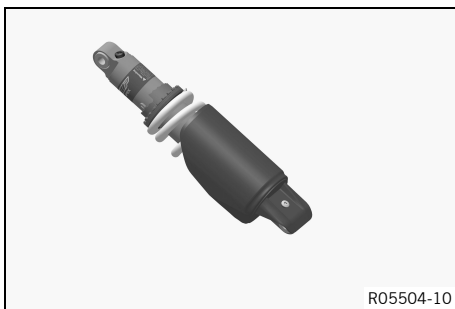


- Raise the rear wheel.
- Remove screw ②.
- Remove screw ③.
- Remove the shock absorber toward the rear.



- Remove the screw and the splash protector.

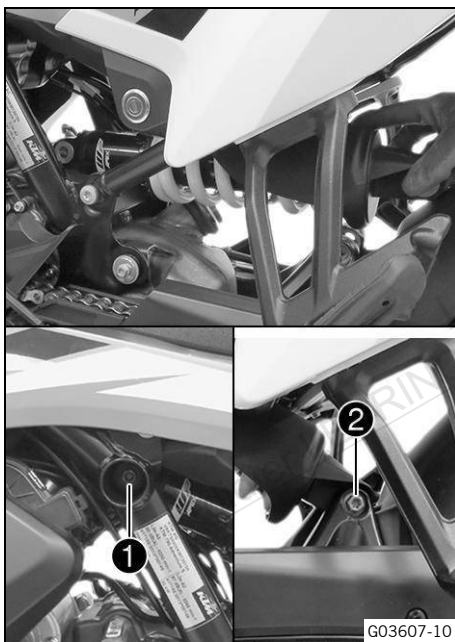
9.5 Installing the shock absorber



Main work

- Position the shock absorber splash protector.
- Mount and tighten the screw.

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



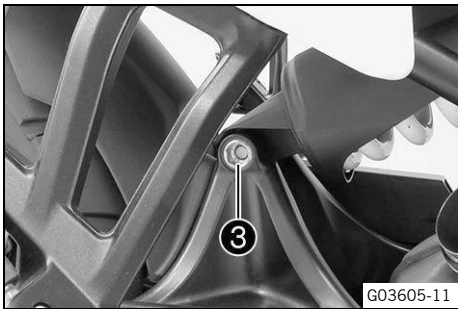
- Position the shock absorber in the frame.
- Mount screw ❶, but do not tighten it yet.

Top shock absorber screw	
M12	80 Nm (59.0 ft·lb _r) Loctite® 2701

- Raise the rear wheel and mount the screw ❷ but do not tighten it yet.

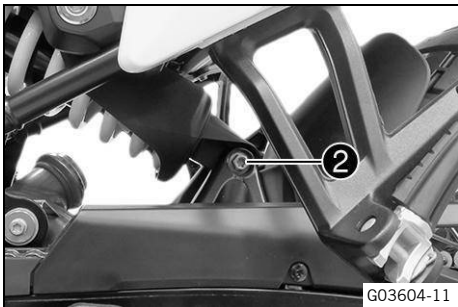
Bottom shock absorber screw	
M12	80 Nm (59.0 ft·lb _r) Loctite® 2701

9 Shock absorber, swingarm



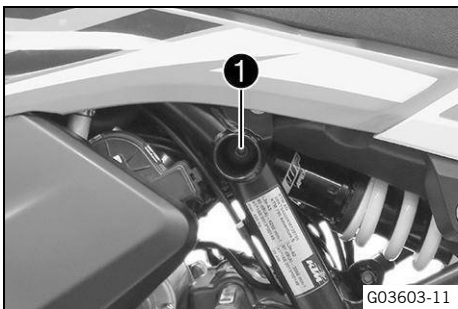
- Tighten bushing 3.

Bushings, shock absorber support	
M20LH×1.5	10 Nm (7.4 ft·lb _f) Long-life grease



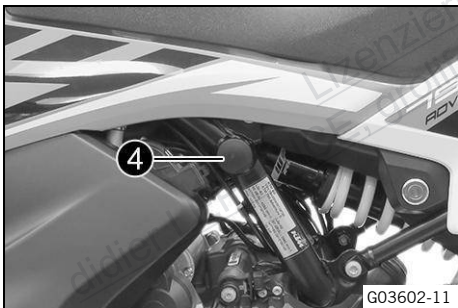
- Tighten screw 2.

Bottom shock absorber screw	
M12	80 Nm (59.0 ft·lb _f) Loctite® 2701



- Tighten screw 1.

Top shock absorber screw	
M12	80 Nm (59.0 ft·lb _f) Loctite® 2701



- Mount protection cap 4.

Reworking

- Remove the motorcycle from the work stand (center).
📖 (p. 20)
- Install the muffler. 📖 (p. 83)

9.6 Shock absorber, servicing

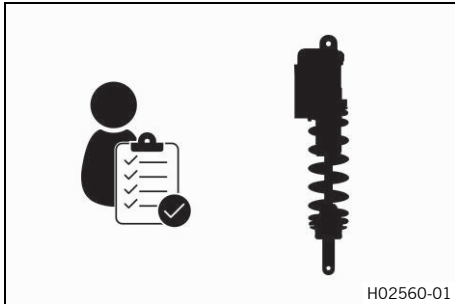


CAUTION

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.

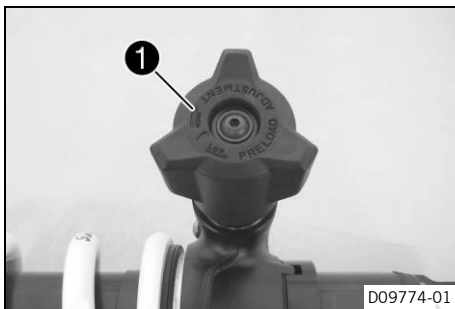
Condition: The shock absorber is removed



- Remove the spring. (p. 69)
- Change the heim joint. (p. 70)
- change preload adjuster (p. 71)
- spring, installing (p. 72)

9.7 spring, removing

Condition: The shock absorber is removed



- Note down the present state of the spring preload.
- Turn preload adjuster **1** all the way counterclockwise.

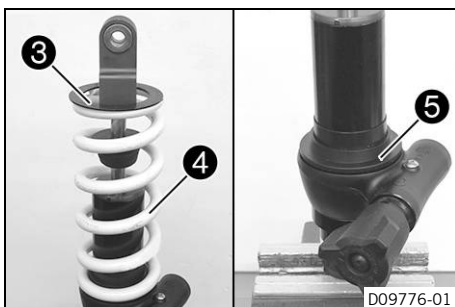


- Clamp the shock absorber into the special tool.

Use the suitable ring of the special tool with the smallest possible inside diameter.

Spring tensioner (T14050S) (p. 498)

- Compress the spring.
- Remove spring seat **2**.
- Release the spring and remove the shock absorber from the special tool.



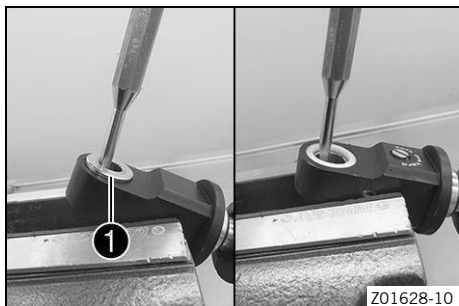
- Remove washer **3**.
- Remove spring **4**.
- Remove spring guide **5** with washer.

9.8 Heim joint, changing

i Note

The operations are the same for the top and bottom heim joints.

Condition: The shock absorber is removed

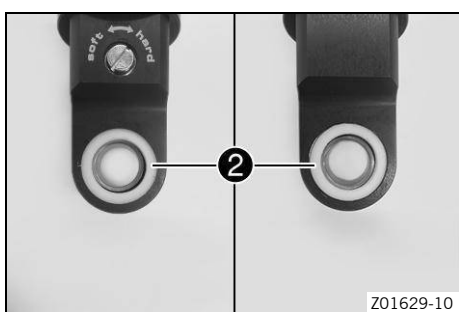


- Clamp the shock absorber into the vise.

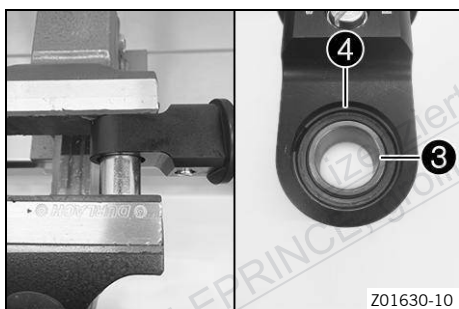
Use soft jaws.

- Remove both collar bushings **1** of the heim joint with a drift.

Drift (T120) (p. 496)



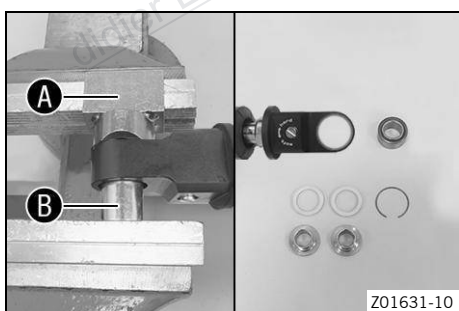
- Remove seal rings **2** on both sides.



- Press heim joint **3** against a lock ring using the special tool.

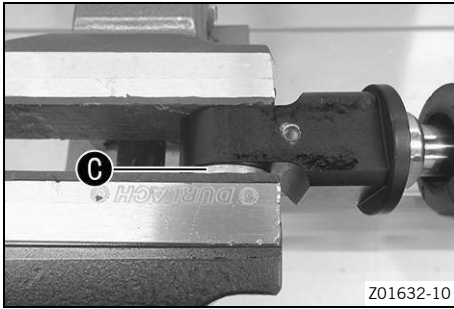
Pressing tool (T1207S) (p. 496)

- Remove second lock ring **4**.



- Place special tool **A** underneath and press out the heim joint with special tool **B**.

Pressing tool (T1207S) (p. 496)

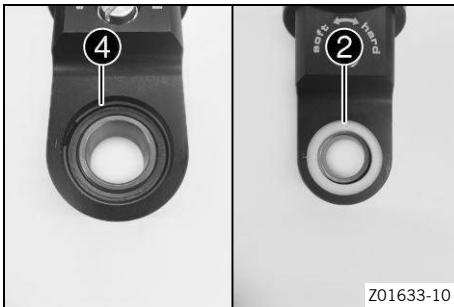


- Push in the new heim joint to the lock ring using special tool **C**.

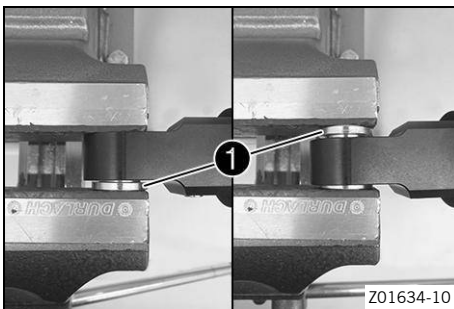
Only press the bearings in via the outer bearing race, otherwise the bearing will be damaged when it is pressed in.

Pressing tool (T1207S) (p. 496)

Pressing tool (T1206) (p. 496)

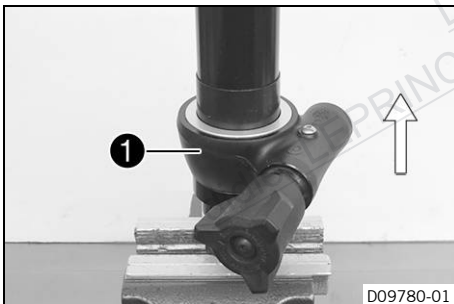


- Mount second lock ring **4**.
- Mount and grease seal rings **2** on both sides.

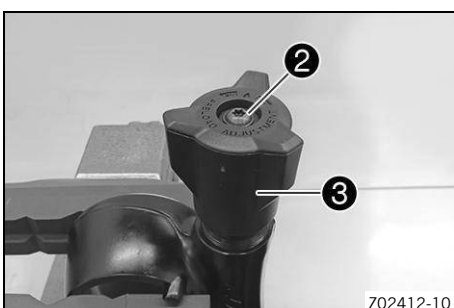


- Press in both collar bushings **1** of the heim joint.

9.9 Changing preload adjuster



- Remove old preload adjuster **1**.

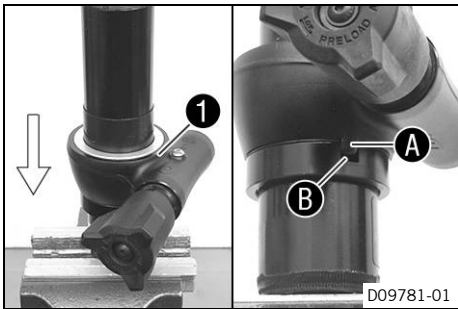


- Remove screw **2** with the washer.
- Remove adjusting wheel **3**.
- Mount new adjusting wheel **3**.
- Mount screw **2** and washer.

Screw, adjusting wheel **Preload Adjuster**

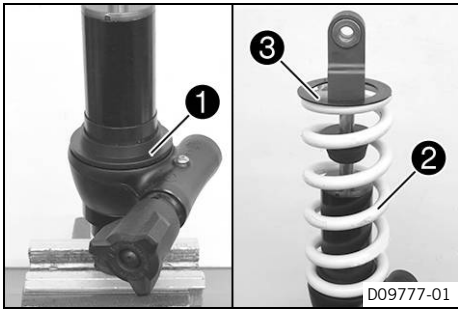
M5	2.5 Nm (1.84 ft·lb _r)
----	--------------------------------------

9 Shock absorber, swingarm

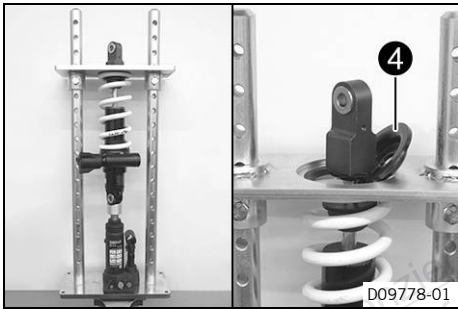


- Mount new preload adjuster 1.
- Position pin A in recess B.

9.10 installing the spring



- Mount spring guide 1 and washer.
- Mount spring 2.
- Position washer 3.



- Clamp the shock absorber into the special tool.

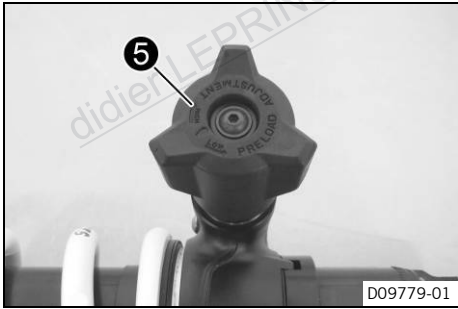
Use the suitable ring of the special tool with the smallest possible inside diameter.

Spring tensioner (T14050S) (p. 498)
- Mount spring seat 4.
 - ✓ The open end is opposite the spring end.
- Release the spring and remove the shock absorber from the special tool.

- Select one of the following alternatives.

Restoring to standard mode

- Tension the spring to the specified position by turning preload adjuster 5.



Spring preload – preload adjuster	
Standard	4 turns (1,440°)

Restoring an initially determined position



WARNING

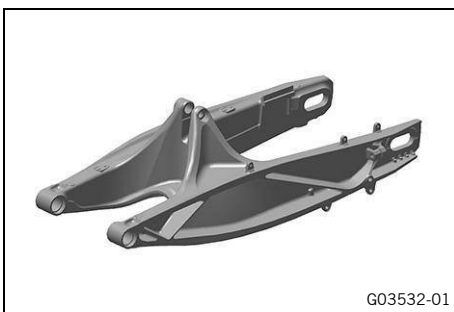
Danger of accidents Modifications to the suspension settings that are not properly coordinated can impair the handling and overload components.

- Only make adjustments within the recommended range.
- Ride slowly to start with after making adjustments to get the feel of the new handling characteristics.

- Tension the spring to the position measured during removal by turning preload adjuster **5**.



9.11 Checking the swingarm



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

Always replace a damaged link fork. Repairing the link fork is not authorized by KTM.



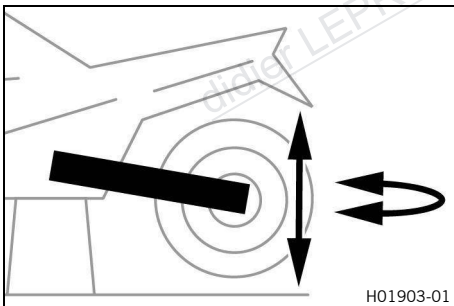
9.12 Checking the fork bearing for play

Preparatory work

- Remove the muffler. 📖 (p. 83)
- Raise motorcycle with the work stand (center). 📖 (p. 19)
- Place a load on the front of the vehicle.
- ✓ The rear wheel is not in contact with the ground.

Main work

- Move the swingarm up and down.
 - » If there is detectable play:
 - Change the link fork bearing. 📖 (p. 76)
- Move the link fork from one side to the other.
 - » If there is detectable play:
 - Change the link fork bearing. 📖 (p. 76)



Reworking

- Remove the motorcycle from the work stand (center). 📖 (p. 20)
- Install the muffler. 📖 (p. 83)



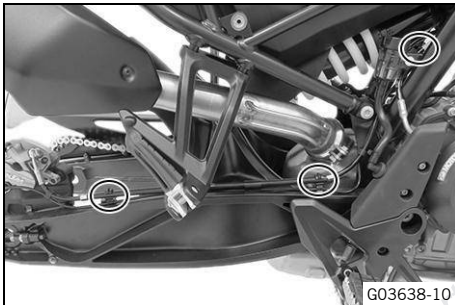
9.13 Removing the swingarm

Preparatory work

- Remove the passenger seat.  (p. 99)
- Remove the front rider's seat.  (p. 100)
- Remove the left side cover.  (p. 118)
- Remove the battery cover.  (p. 120)
- Remove left fuel tank spoiler.  (p. 121)
- Remove the right side fairing.  (p. 119)
- Remove right fuel tank spoiler.  (p. 123)
- Remove the skid plate.  (p. 125)
- Remove the fuel tank.  (p. 100)
- Raise the motorcycle at the front using the work stand.  (p. 21)
- Place a load on the front of the vehicle.
 - ✓ The rear wheel is not in contact with the ground.
- Remove rear wheel (work stand).  (p. 146)

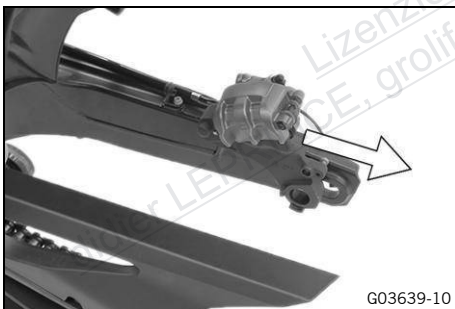
Main work

- Take the brake line and cable out of the holders.

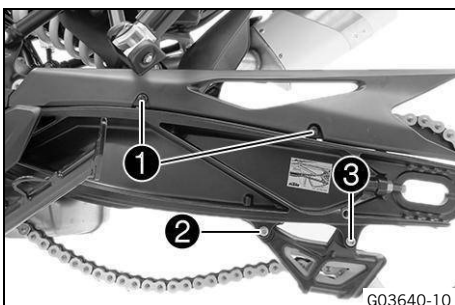


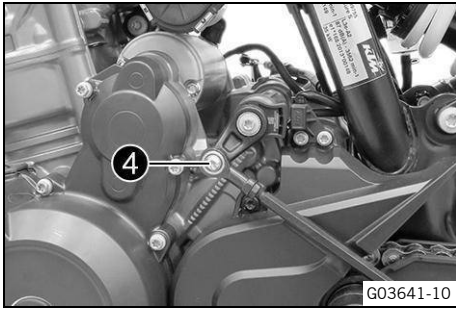
- Take the brake caliper out of the guide and hang it to the side.

Protect the components against damage by covering them.

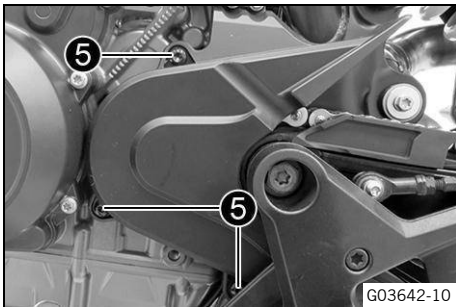


- Remove screws ❶.
- Take off the chain guard.
- Remove fitting ❷.
- Remove screw ❸.
- Hang the chain guide with chain to the side.

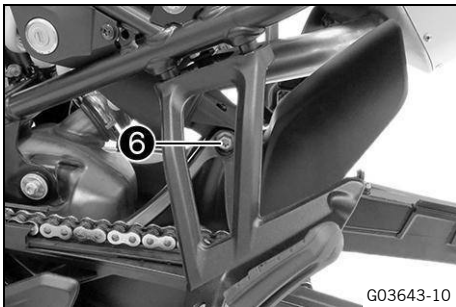




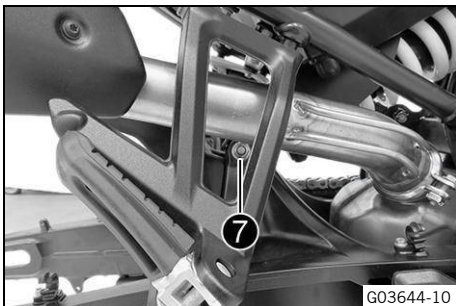
- Remove screw ④ with the washer.
- Lay the shift rod to the side.



- Remove screws ⑤.
- Correct the front sprocket cover.



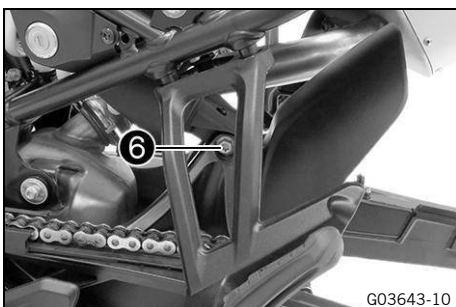
- Loosen screw ⑥, but do not remove it yet.



- Loosen adjusting screw ⑦.

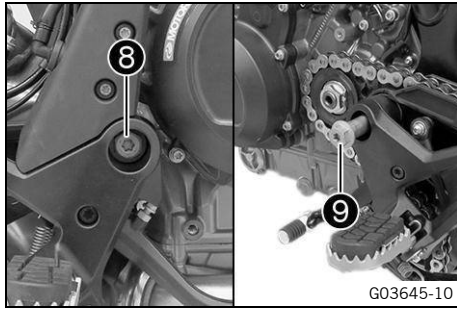


Note
LH thread.



- Lift the link fork.
- Remove screw ⑥.
- Lower the link fork.

9 Shock absorber, swingarm



- Remove screw 8.
- Remove swingarm pivot 9.
- Take off the swingarm.

9.14 Changing the link fork bearing

Preparatory work

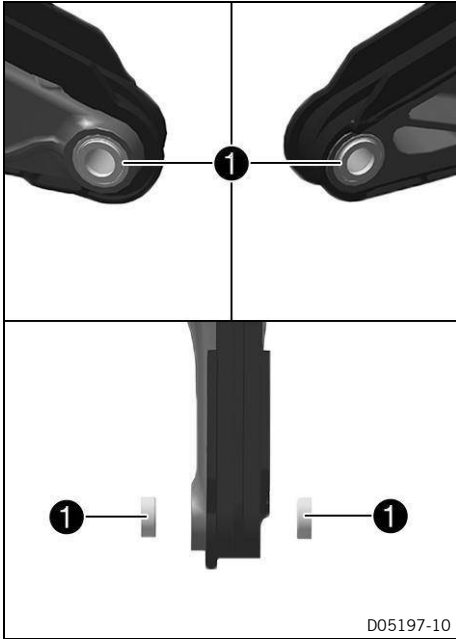
- Remove the passenger seat.  (p. 99)
- Remove the front rider's seat.  (p. 100)
- Remove the left side cover.  (p. 118)
- Remove the battery cover.  (p. 120)
- Remove left fuel tank spoiler.  (p. 121)
- Remove the right side fairing.  (p. 119)
- Remove right fuel tank spoiler.  (p. 123)
- Remove the skid plate.  (p. 125)
- Remove the fuel tank.  (p. 100)
- Raise the motorcycle at the front using the work stand.  (p. 21)
- Place a load on the front of the vehicle.
 - ✓ The rear wheel is not in contact with the ground.
- Remove rear wheel (work stand).  (p. 146)
- Remove the swingarm.  (p. 74)

Main work

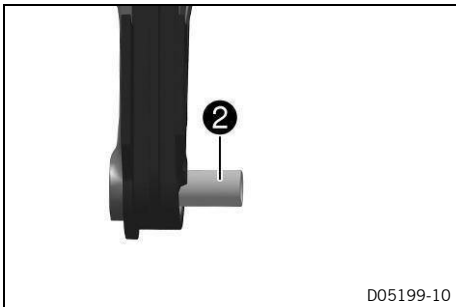
- Select one of the following alternatives.

Left fork bearing

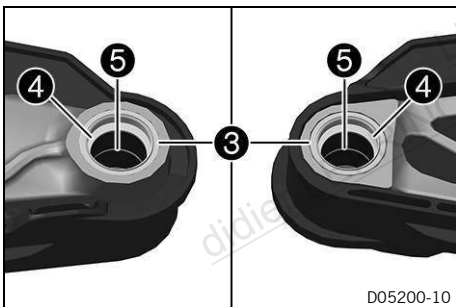
- Remove collar bushings ❶.



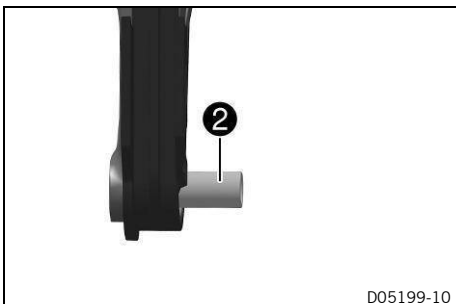
- Remove bushing ❷.



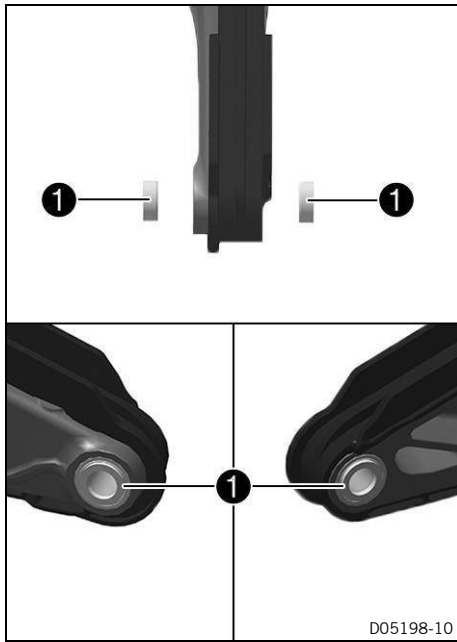
- Remove radial shaft seal rings ❸ using a suitable tool.
- Remove stop disks ❹.
- Press out bearing ❺ using a suitable tool.
- Using a suitable tool, press in new bearing ❺.
- Position the stop disks ❹.
- Press in radial shaft seal rings ❸.



- Mount bushing ❷.



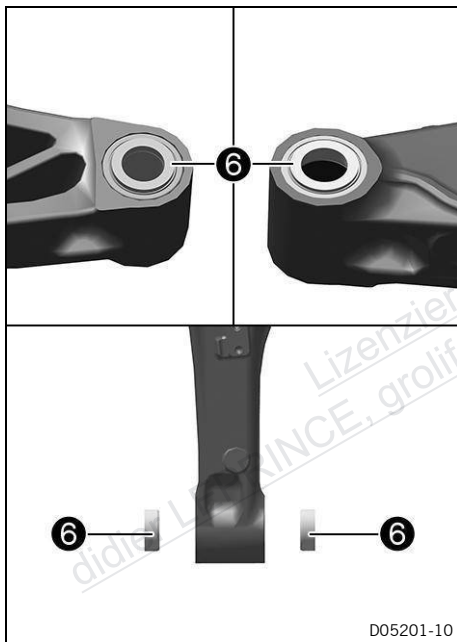
9 Shock absorber, swingarm



- Grease the radial shaft seal rings.

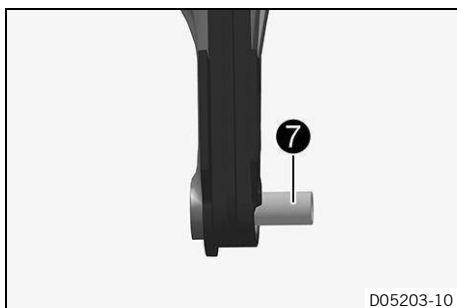
Long-life grease  (p. 500)

- Position the collar bushings **1** with the shoulder facing inward.

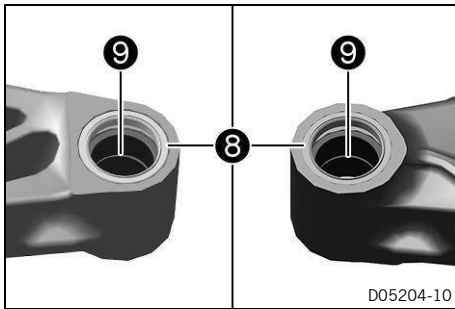


Right fork bearing

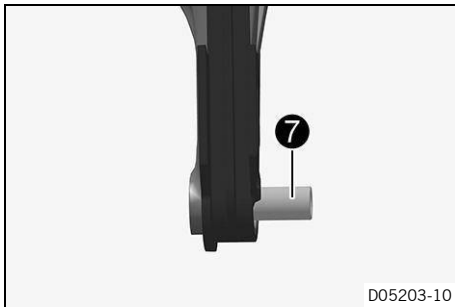
- Remove collar bushings **6**.



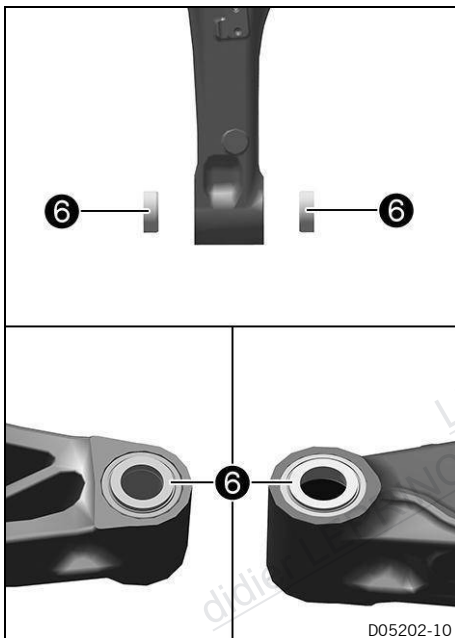
- Remove bushing **7**.



- Remove radial shaft seal rings **8** using a suitable tool.
- Press out bearing **9** using a suitable tool.
- Using a suitable tool, press in new bearing **9**.
- Press in radial shaft seal rings **8**.



- Mount bushing **7**.



- Grease the radial shaft seal rings.

Long-life grease (p. 500)

- Position the collar bushings **6** with the shoulder facing inward.

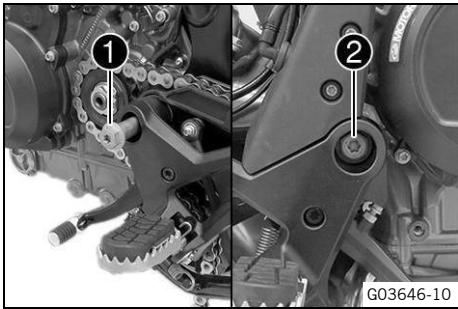
Reworking

- Install the swingarm. (p. 80)
- Install rear wheel (work stand). (p. 147)
- Check the chain tension. (p. 157)
- Remove the motorcycle from the work stand at the front. (p. 22)
- Install the fuel tank. (p. 103)
- Install the skid plate. (p. 126)
- Install the right fuel tank spoiler. (p. 124)
- Install the right side cover. (p. 119)
- Install the left fuel tank spoiler. (p. 122)

9 Shock absorber, swingarm

- Install the battery cover. 📖 (p. 120)
- Install the left side fairing 📖 (p. 118)
- Mount the front rider's seat. 📖 (p. 100)
- Mount the passenger seat. 📖 (p. 99)

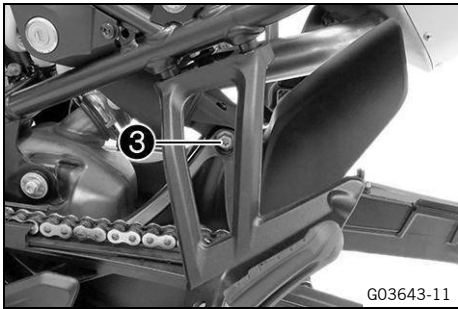
9.15 Installing the swingarm



Main work

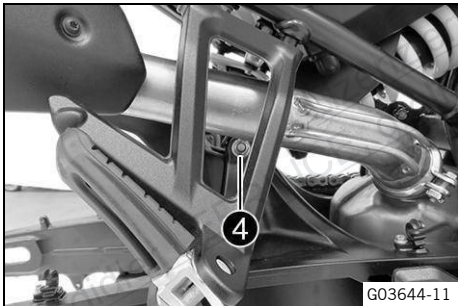
- Position the swingarm.
- Mount swingarm pivot ❶.
- Mount and tighten screw ❷.

Screw, swingarm pivot	
M12	100 Nm (73.8 ft·lb _f)



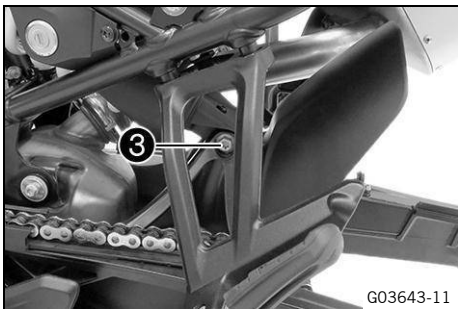
- Lift the link fork and position the shock absorber.
- Mount screw ❸, but do not tighten it yet.

Bottom shock absorber screw	
M12	80 Nm (59.0 ft·lb _f) Loctite® 2701



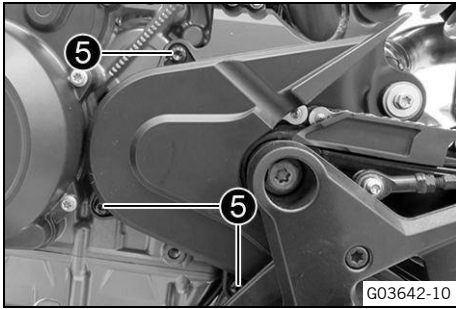
- Tighten adjusting screw ❹.

Bushing, shock absorber support	
M20LH×1.5	10 Nm (7.4 ft·lb _f) Long-life grease



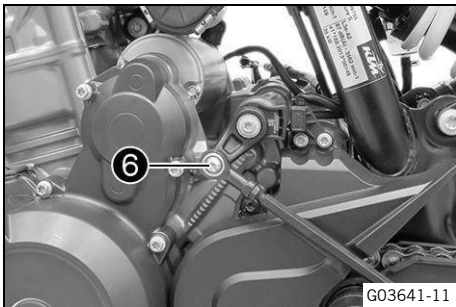
- Tighten screw ❸.

Bottom shock absorber screw	
M12	80 Nm (59.0 ft·lb _f) Loctite® 2701



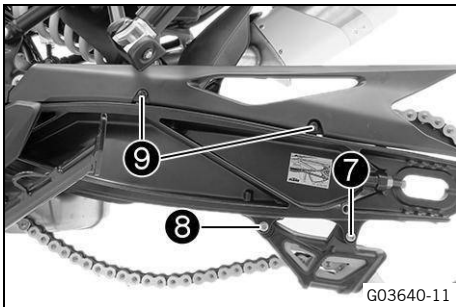
- Position the front sprocket cover.
- Mount and tighten screws ⑤.

Screw, front sprocket cover	
M5	5 Nm (3.7 ft·lb _f) Loctite® 243



- Position the shift rod.
- Mount and tighten screw ⑥.

Screw, shift rod	
M6	10 Nm (7.4 ft·lb _f) Loctite® 243



- Position the chain guide.
- Mount screw ⑦, but do not tighten it yet.

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

- Mount and tighten fitting ⑧.

Fitting, chain guide	
M6	10 Nm (7.4 ft·lb _f)

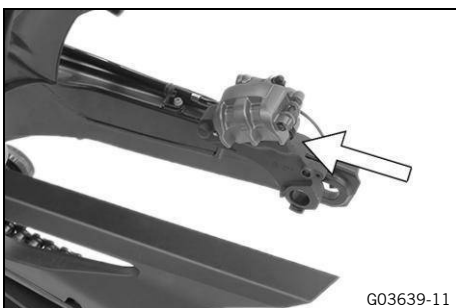
- Tighten screw ⑦.

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

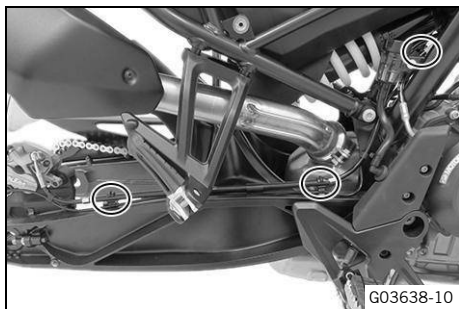
- Position the chain guard.
- Mount and tighten screws ⑨.

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

- Position the brake caliper in the guide.



9 Shock absorber, swingarm

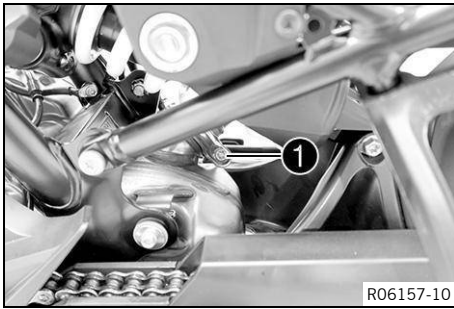


- Secure the brake line and cable in the holders.

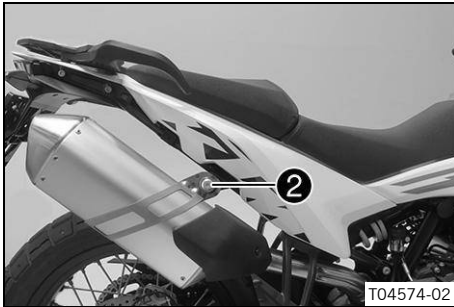
Reworking

- Install rear wheel (work stand).  (p. 147)
- Check the chain tension.  (p. 157)
- Remove the motorcycle from the work stand at the front.  (p. 22)
- Install the fuel tank.  (p. 103)
- Install the skid plate.  (p. 126)
- Install the right fuel tank spoiler.  (p. 124)
- Install the right side cover.  (p. 119)
- Install the left fuel tank spoiler.  (p. 122)
- Install the battery cover.  (p. 120)
- Install the left side fairing  (p. 118)
- Mount the front rider's seat.  (p. 100)
- Mount the passenger seat.  (p. 99)

10.1 Removing the muffler

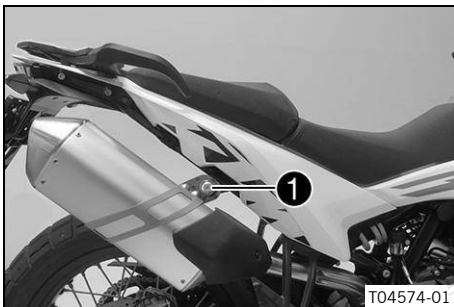


- Remove screw ①.
- Remove the clamp.



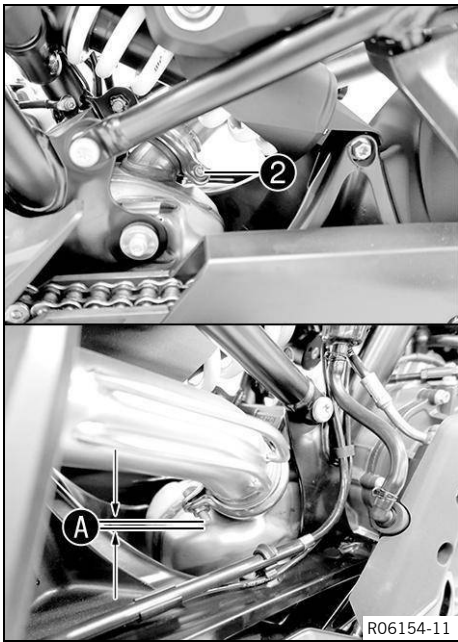
- Remove screw ② with the washer.
- Take off the main silencer.

10.2 Installing muffler



- Position the main silencer with the gasket.
- Mount screw ① with washer, but do not tighten yet.

Screw, exhaust clamp	
M6	8 Nm (5.9 ft·lb _r)

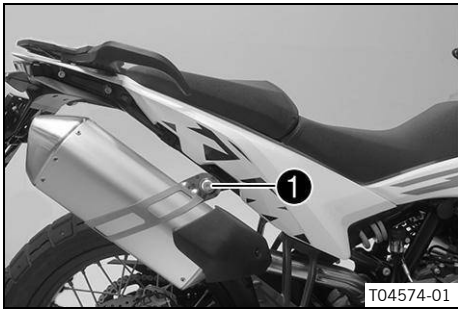


- Position the clamp.

Distance A	1 mm (0.04 in)
The clamp must not touch the brake line when the rear wheel suspension compresses.	

- Mount and tighten screw **2**.

Screw, presilencer exhaust clamp	
M6	8 Nm (5.9 ft·lb _f) Copper paste



- Tighten screw **1**.

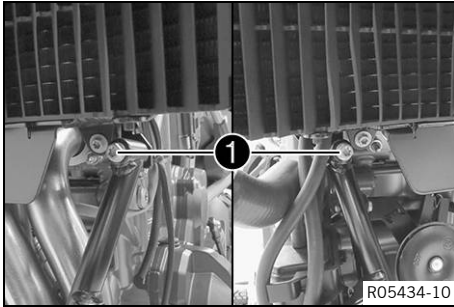
Screw, exhaust clamp	
M6	8 Nm (5.9 ft·lb _f)

10.3 Removing the exhaust system

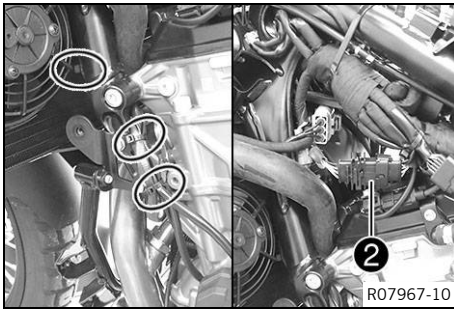
Preparatory work

- Remove the muffler. (p. 83)
- Raise the motorcycle with the rear lifting gear. (p. 18)
- Remove the passenger seat. (p. 99)
- Remove the front rider's seat. (p. 100)
- Remove the left side cover. (p. 118)
- Remove the battery cover. (p. 120)
- Remove left fuel tank spoiler. (p. 121)
- Remove the right side fairing. (p. 119)
- Remove right fuel tank spoiler. (p. 123)
- Remove the skid plate. (p. 125)
- Remove the fuel tank. (p. 100)

Main work



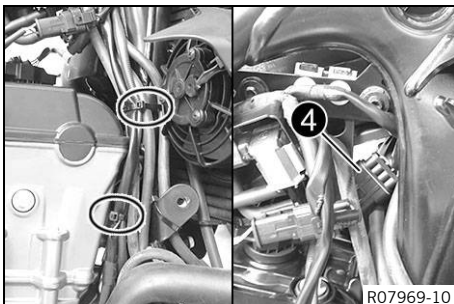
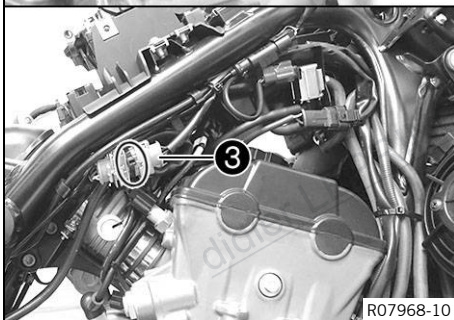
- Remove screws ①.
- Take off the engine guard connection.



- Remove the cable ties.
- Disconnect plug-in connector ②.
- Expose the cable.

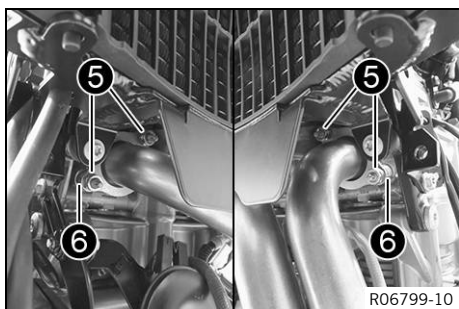


- Remove the cable ties.
- Disconnect plug-in connector ③.
- Expose the cable.



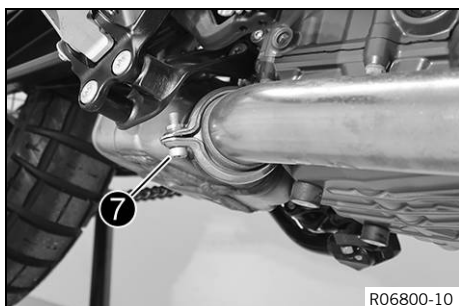
- Remove the cable ties.
- Pull off and disconnect plug-in connector ④ from the holder.
- Expose the cable.

10 Exhaust system

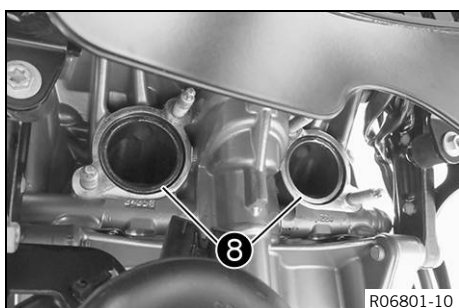


- Remove nuts **5**.

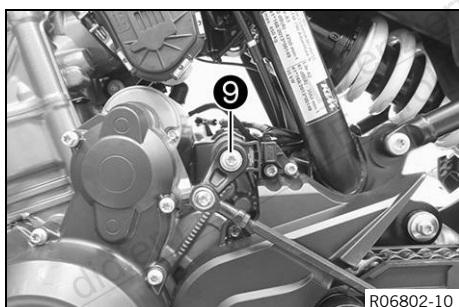
Do not misplace spacers **6**.



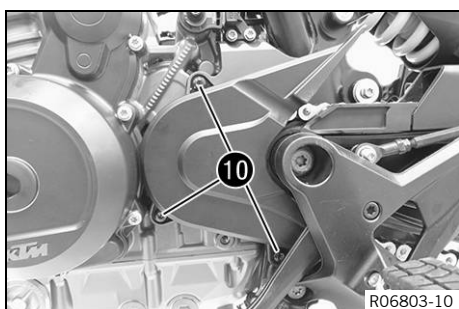
- Remove screw **7**.
- Take off the exhaust clamp.
- Remove manifold with gasket.



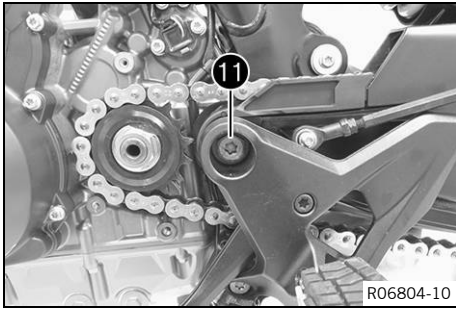
- Remove exhaust gaskets **8**.



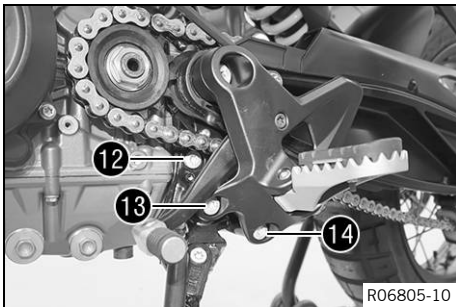
- Remove screw **9** and the washers.
- Hang the bell crank with the shift linkage to the side.



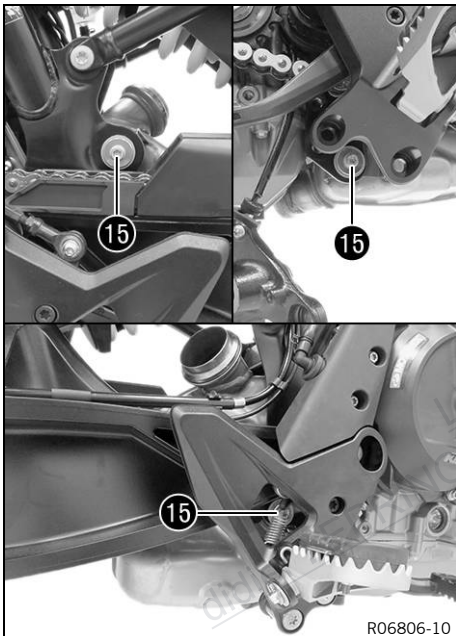
- Remove screws **10**.
- Correct the front sprocket cover.



- Loosen screw 11.



- Remove screw 12.
- Remove screw 13.
- Remove screw 14 and bushing.
- Take off the side stand bracket and allow it to hang tension-free to the side.



- Remove screws 15.
- Take off the pre-silencer by pulling it downward.

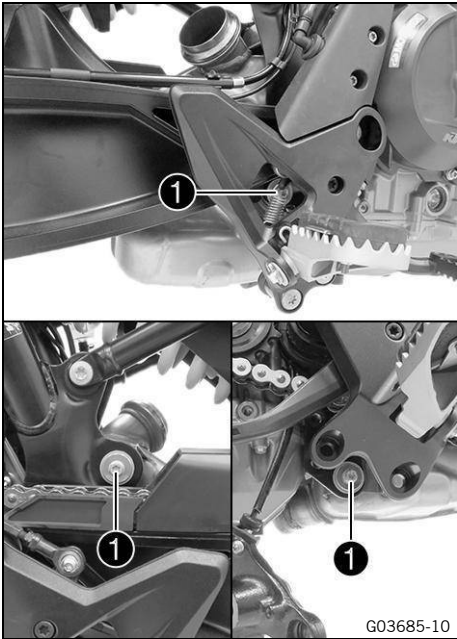
Pay attention to the lambda sensor.

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E. grolifoualex@gmail.com, 075676/080232

10.4 Installing the exhaust system

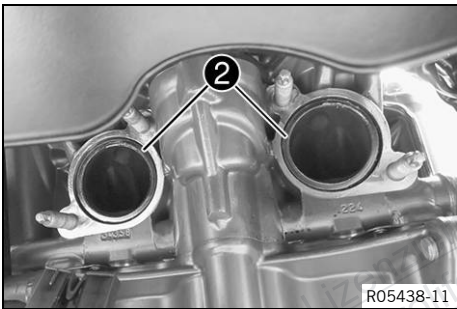
Main work

- Position the presilencer.
- Mount screws 1, but do not tighten yet.

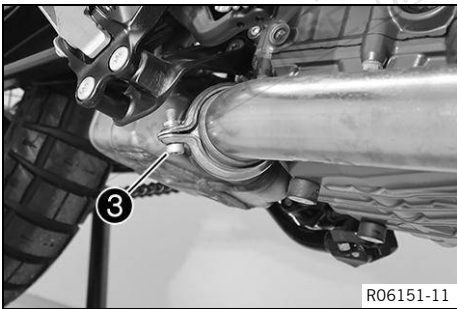


Screw, presilencer on frame	
M8	15 Nm (11.1 ft·lb _f) Loctite® 243

- Position exhaust gaskets 2.

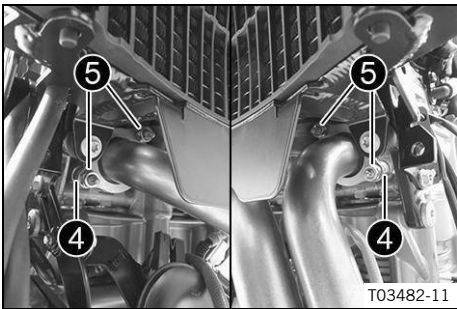


- Position the manifold with the gasket.
- Position the clamp. Mount screw 3, but do not tighten it yet.

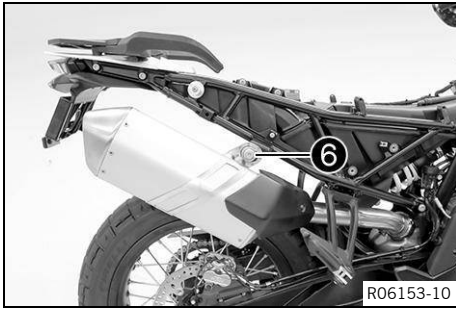


Screw, manifold clamp	
M6	8 Nm (5.9 ft·lb _f) Copper paste

- Position spacers 4.
- Mount nuts 5, but do not tighten yet.



Exhaust flange nut	
M8	15 Nm (11.1 ft·lb _f) Copper paste



- Position the main silencer with the gasket.
- Mount screw **6** with washer, but do not tighten yet.

Screw, main silencer fastening	
M8	15 Nm (11.1 ft·lb _r)

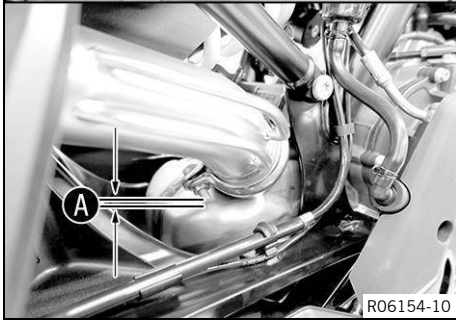


- Position the clamp.

Distance A	1 mm (0.04 in)
The clamp must not touch the brake line when the rear wheel suspension compresses.	

- Mount screw **7**, but do not tighten it yet.

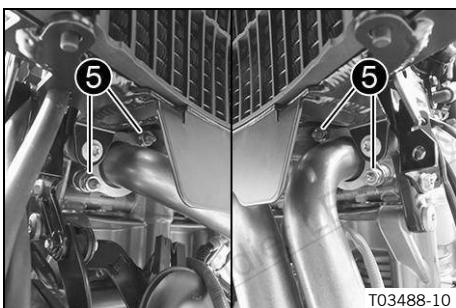
Screw, presilencer exhaust clamp	
M6	8 Nm (5.9 ft·lb _r) Copper paste

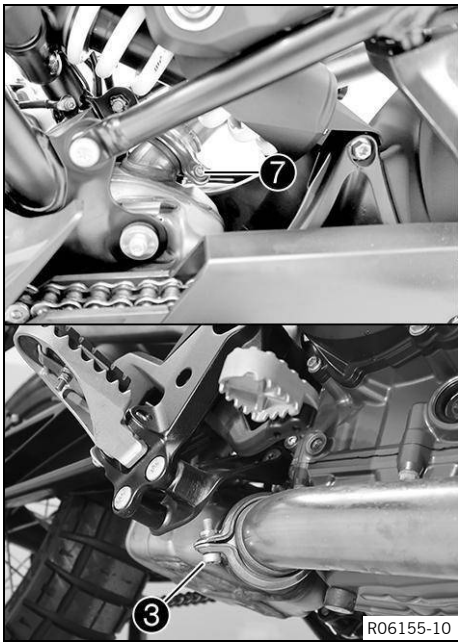


- Tighten nuts **5** evenly.

Exhaust flange nut	
M8	15 Nm (11.1 ft·lb _r) Copper paste

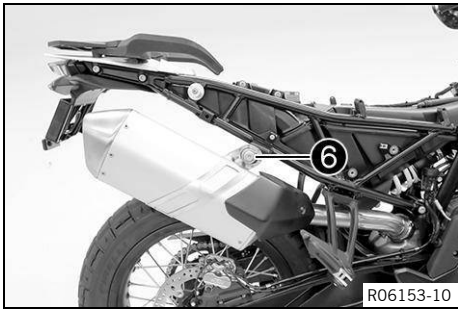
First, tighten the nuts on the bushings.





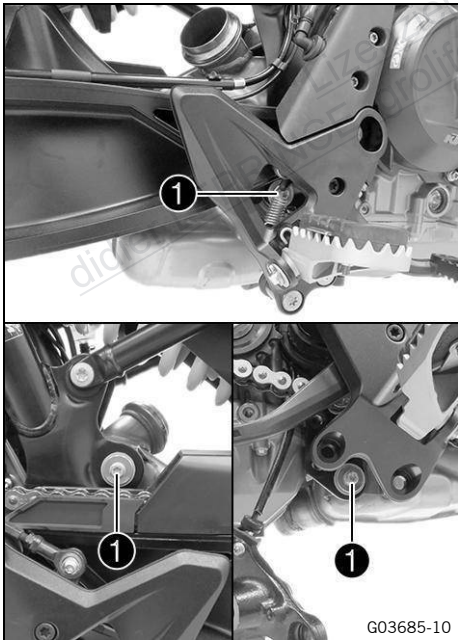
- Tighten screws 7 and 3 evenly.

Screw, presilencer exhaust clamp	
M6	8 Nm (5.9 ft·lb _f) Copper paste
Screw, manifold clamp	
M6	8 Nm (5.9 ft·lb _f) Copper paste



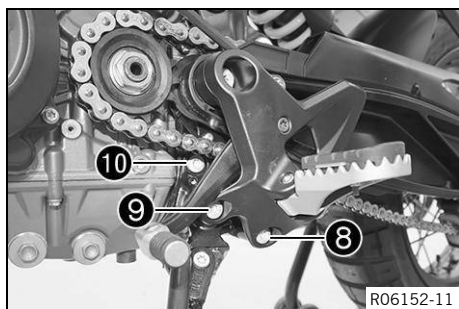
- Tighten screw 6.

Screw, main silencer fastening	
M8	15 Nm (11.1 ft·lb _f)



- Tighten screws 1.

Screw, presilencer on frame	
M8	15 Nm (11.1 ft·lb _f) Loctite® 243



- Position the side stand bracket.
- Mount screw **8** and bushing and tighten.

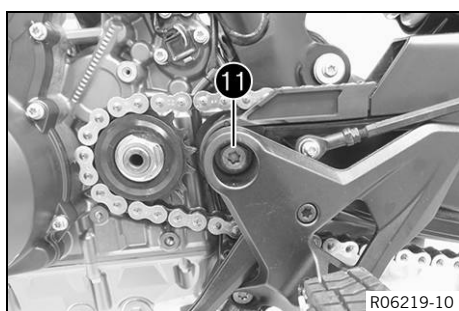
Screw, front footrest bracket	
M10×40	45 Nm (33.2 ft·lb _r) Loctite® 243

- Mount and tighten screw **9**.

Screw, front footrest bracket	
M10×65	45 Nm (33.2 ft·lb _r) Loctite® 243

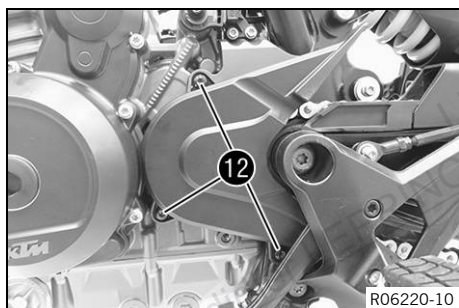
- Mount and tighten screw **10**.

Screw, front footrest bracket	
M10×30	45 Nm (33.2 ft·lb _r) Loctite® 243



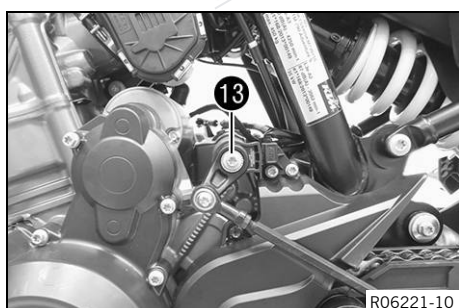
- Tighten screw **11**.

Screw, swingarm pivot	
M12	100 Nm (73.8 ft·lb _r)



- Position the front sprocket cover.
- Mount and tighten screws **12**.

Screw, front sprocket cover	
M5	5 Nm (3.7 ft·lb _r) Loctite® 243



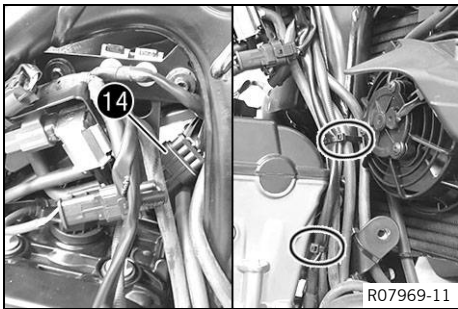
- Position the bell crank.

The gear shift lever must not come into contact with any other vehicle components during the shift procedure.	
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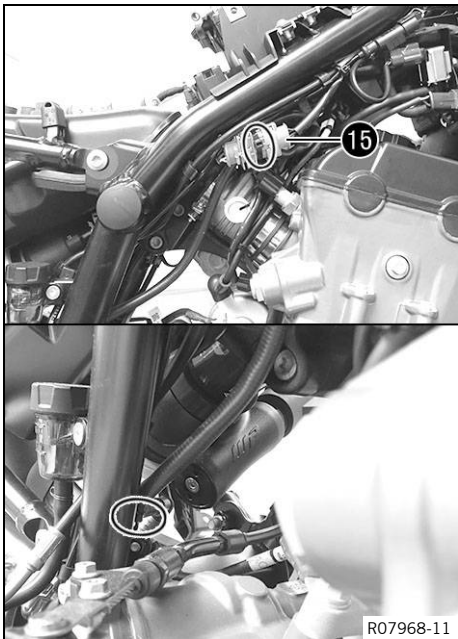
- Mount and tighten screw **13** with washers.

Screw, shift lever	
M6	14 Nm (10.3 ft·lb _r) Loctite® 243

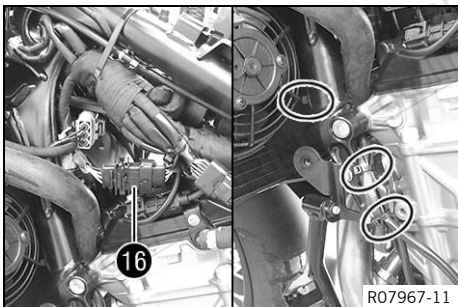
10 Exhaust system



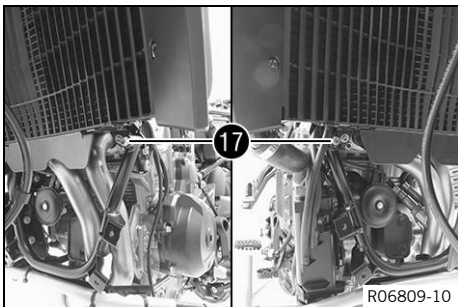
- Route the cable without tension.
- Join plug-in connector 14 and position in the holder.
- Mount the cable ties.



- Route the cable without tension.
- Join plug-in connector 15.
- Secure the cable with cable ties.



- Route the cable without tension.
- Join plug-in connector 16.
- Mount the cable ties.



- Position engine guard connection.
- Mount and tighten screws 17.

Remaining screws on chassis	
M8	25 Nm (18.4 ft·lb _f)

Reworking

- Install the fuel tank.  (p. 103)
- Install the skid plate.  (p. 126)
- Install the right fuel tank spoiler.  (p. 124)
- Install the right side cover.  (p. 119)
- Install the left fuel tank spoiler.  (p. 122)
- Install the battery cover.  (p. 120)
- Install the left side fairing  (p. 118)
- Mount the front rider's seat.  (p. 100)
- Mount the passenger seat.  (p. 99)
- Remove the rear of the motorcycle from the lifting gear.
 (p. 18)



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11.1 Removing the air filter

Preparatory work

- Remove the passenger seat.  (p. 99)
- Remove the front rider's seat.  (p. 100)

Main work

- Remove screws **1**.
- Remove the air filter box lid, loosening the wiring harness from the holder at the same time.



- Remove air filter clamping wedge **2**, pulling it upward.



- Remove air filter frame **3** with the air filter.



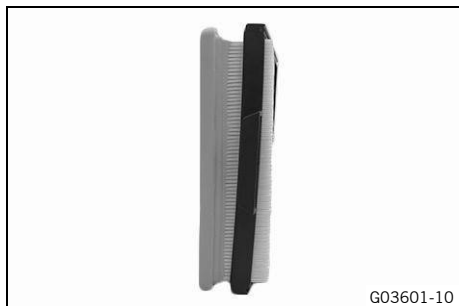
- Remove the air filter from the air filter frame.



11.2 Installing the air filter

Main work

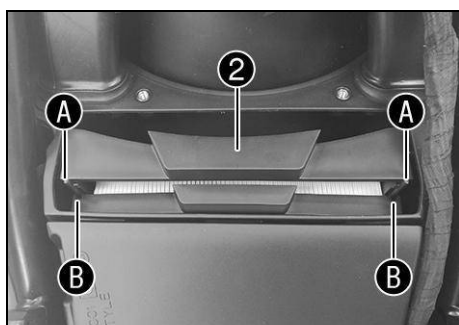
- Position air filter in the air filter frame.



- Clean the air filter box.
- Position air filter frame ① with the air filter.



- Mount air filter clamping wedge ②.
 - ✓ The open side of the air filter clamping wedge faces downward.
 - ✓ Guide rails ① engage in recesses ②.



- Positioning air filter box lid.
 - ✓ Wiring harness is attached with the holder.
- Mount and tighten screws ③.



Screw, air filter box	
M5	3 Nm (2.2 ft·lb _f)

Reworking

- Mount the front rider's seat.  (p. 100)
- Mount the passenger seat.  (p. 99)

11.3 Changing the air filter, cleaning the air filter box

Preparatory work

- Remove the passenger seat.  (p. 99)
- Remove the front rider's seat.  (p. 100)

Main work

- Remove screws **1**.
- Remove the air filter box lid, loosening the wiring harness from the holder at the same time.



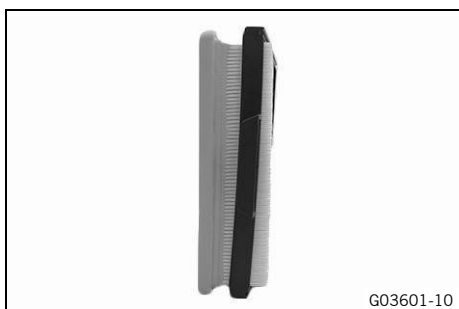
- Remove air filter clamping wedge **2**, pulling it upward.

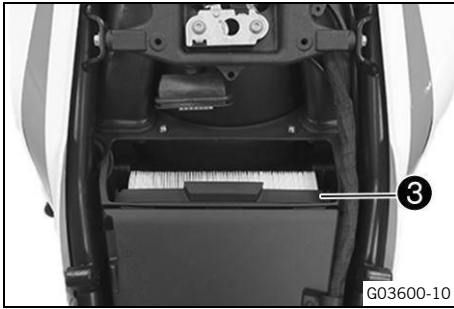


- Remove air filter frame **3** with the air filter.

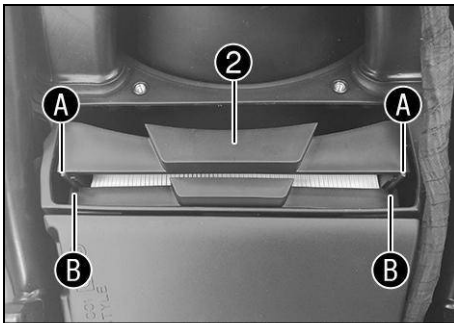


- Remove the air filter from the air filter frame.
- Position the new air filter in the air filter frame.





- Position air filter frame **3** with the air filter.



- Mount air filter clamping wedge **2**.
 - ✓ The open side of the air filter clamping wedge faces downward.
 - ✓ Guide rails **A** engage in recesses **B**.



- Positioning air filter box lid.
 - ✓ Wiring harness is attached with the holder.
- Mount and tighten screws **1**.

Screw, air filter box	
M5	3 Nm (2.2 ft·lb _r)

Reworking

- Mount the front rider's seat. (p. 100)
- Mount the passenger seat. (p. 99)

12.1 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

Danger of damage The ignition key may break if overloaded.

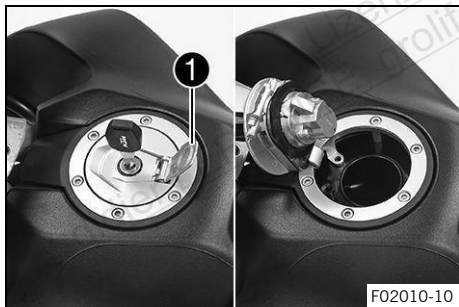
- Push down on the fuel tank filler cap to take pressure off the ignition key.



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.



- Lift cover **1** of the fuel tank filler cap and insert the ignition key into the lock.



NOTE

Danger of damage The ignition key may break if overloaded.

- Push down on the fuel tank filler cap to take pressure off the ignition key.
- Turn the ignition key 90° clockwise.
- Lift the fuel tank filler cap.

12.2 Closing the fuel tank cap



- Fold down the fuel tank filler cap.
- Turn the ignition key 90° clockwise.
- Push down the fuel tank filler cap and turn the ignition key counterclockwise until the lock closes.



WARNING

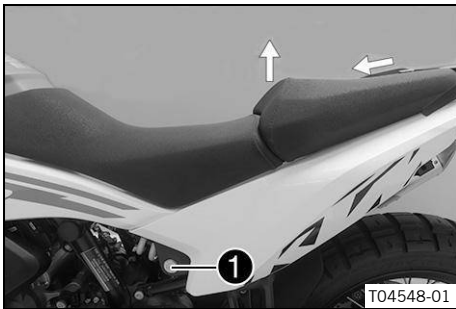
Fire hazard Fuel is highly flammable and a health hazard.

- Check that the fuel tank filler cap is locked correctly after closing.
- If fuel spills on to your clothing, change the clothing.
- Rinse the affected area immediately with plenty of water in the event of contact with skin.

- Remove the ignition key and close the cover.



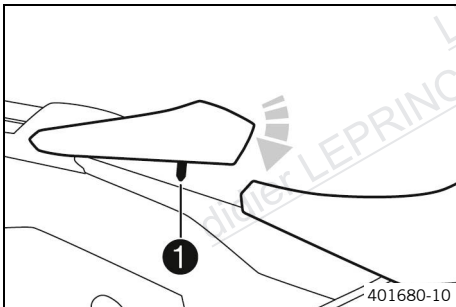
12.3 Removing the passenger seat



- Insert the ignition key in seat lock ❶ and turn it clockwise.
- Raise the front of the passenger seat, pull it toward the fuel tank, and take off from above.
- Remove the ignition key from the seat lock.



12.4 Mounting the passenger seat



- Hook holding lugs of the passenger seat into the bushings on the subframe, lower the front, and simultaneously push backward.
- Insert locking pin ❶ into the lock housing and push down the front of the passenger seat until the locking pin engages with an audible click.



WARNING

Danger of accidents The seat can come loose from the anchoring if it is not mounted correctly.

- After assembly, check whether the seat is correctly locked and cannot be pulled up.

- Check that the passenger seat is mounted correctly.



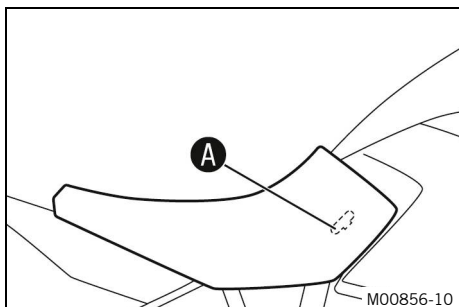
12.5 Remove the front rider's seat

Preparatory work

- Remove the passenger seat.  (p. 99)

Main work

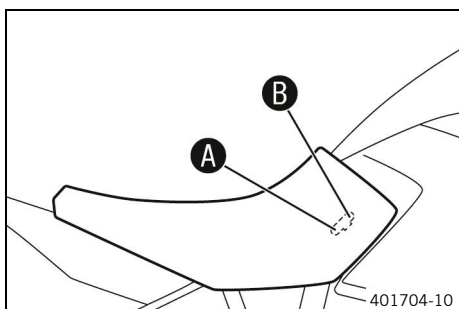
- Lift the rider's seat back and unhook in the **A** area.



12.6 Mounting the front rider's seat

Main work

- Attach the recesses on the front rider's seat to the fuel tank at the desired seat position **A** or **B**, and push the front rider's seat forward while lowering it at the rear.
- Check that the front rider's seat is mounted correctly.



Reworking

- Mount the passenger seat.  (p. 99)

12.7 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.

Preparatory work

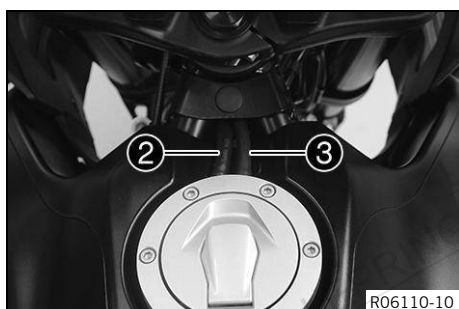
- Remove the passenger seat.  (p. 99)
- Remove the front rider's seat.  (p. 100)
- Remove the left side cover.  (p. 118)
- Remove the battery cover.  (p. 120)
- Remove left fuel tank spoiler.  (p. 121)
- Remove the right side fairing.  (p. 119)
- Remove right fuel tank spoiler.  (p. 123)
- Remove the skid plate.  (p. 125)

Main work

- Remove fuel tank cover **1**.



- Pull off vent hoses **2** and **3**.



- Clean the quick release coupling thoroughly with compressed air.

Dust must not enter the fuel line.



Note

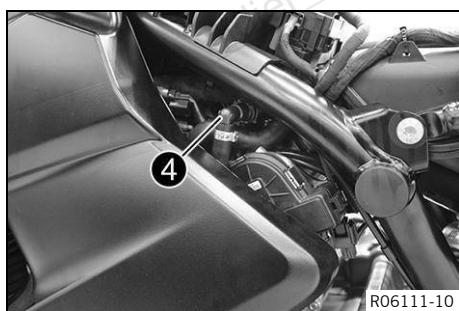
Dirt in the fuel line clogs the injector!

- Disconnect quick release coupling **4**.

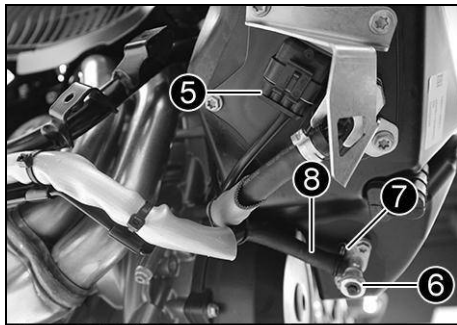


Note

Remaining fuel may flow out of the fuel hose.



12 Fuel tank, seat, fairings



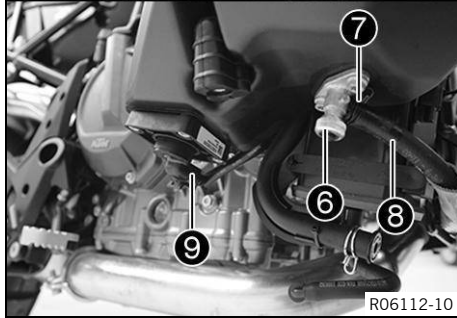
- Unplug connector ⑤.
- Close fuel cocks ⑥.
- Push back hose clips ⑦ and pull off fuel lines ⑧.



Note

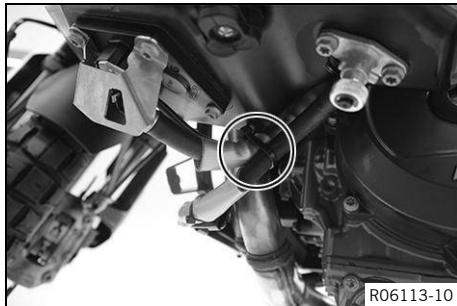
A residue of fuel may run out of the fuel lines.

- Unplug connector ⑨.



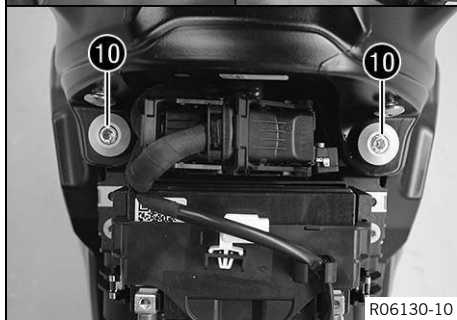
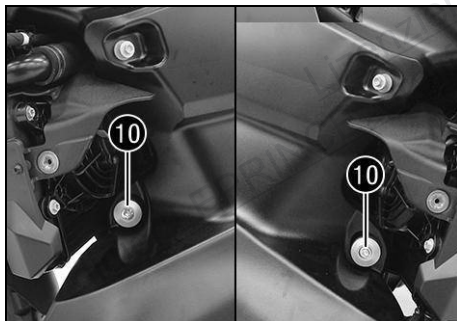
R06112-10

- Remove the cable ties.



R06113-10

- Remove screws ⑩ along with bearing sleeves and rubber bushings.



R06130-10



- Take off the fuel tank.

12.8 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.

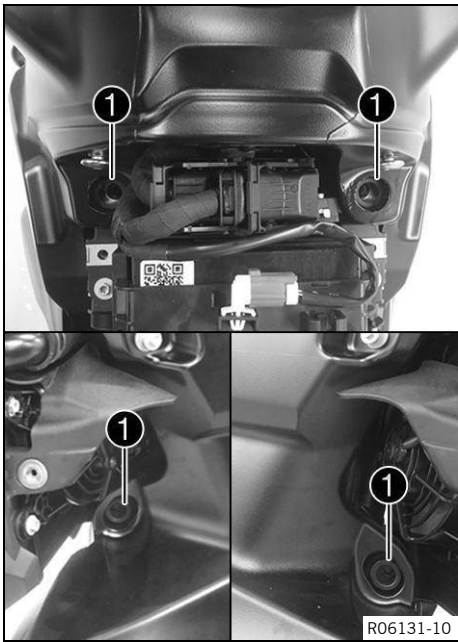
- Do not allow fuel to come into contact with skin, eyes, or clothing.
- Consult a doctor immediately if fuel has been ingested.
- Do not inhale fuel vapors.
- Rinse the affected area immediately with plenty of water in the event of contact with skin.
- Rinse eyes thoroughly with water and consult a 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

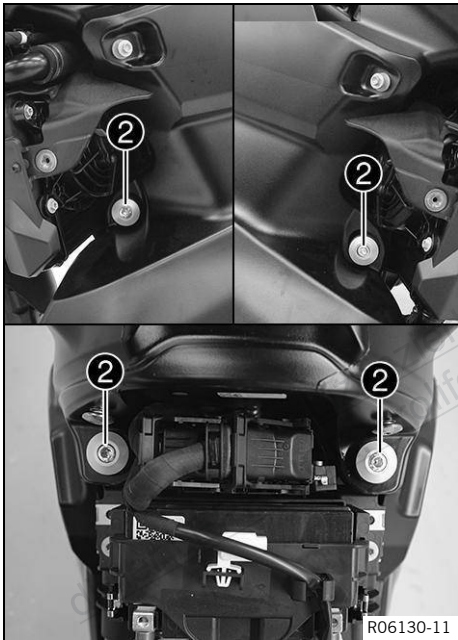
- Position the fuel tank.



12 Fuel tank, seat, fairings

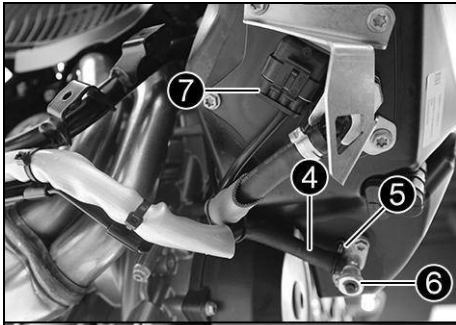


- Check that rubber bushings 1 are seated correctly.

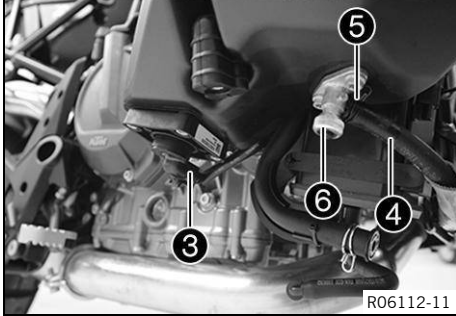


- Mount and tighten screws 2 with the bearing sleeves and the rubber bushings.

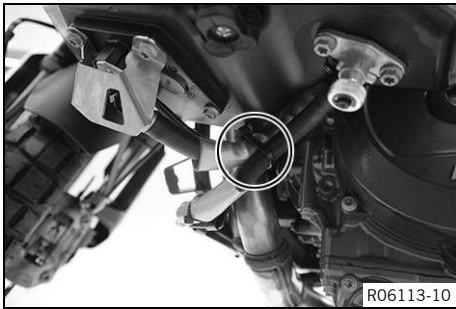
Remaining screws on chassis	
M8	25 Nm (18.4 ft·lb _r)



- Plug in connector ③.
- Mount fuel lines ④.
- Position hose clips ⑤.
- Open fuel cocks ⑥.
- Plug in connector ⑦.

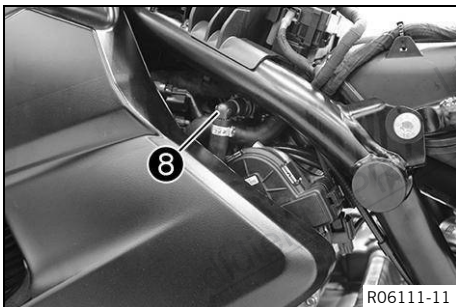


R06112-11



R06113-10

- Mount cable ties.



R06111-11

- Clean the quick release coupling thoroughly with compressed air.

Dust must not enter the fuel line.



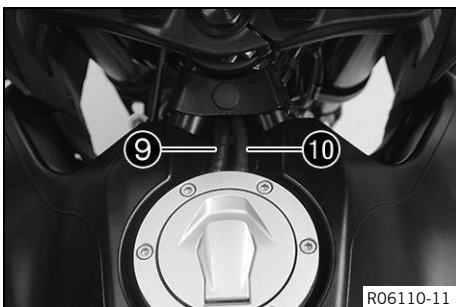
Note

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.

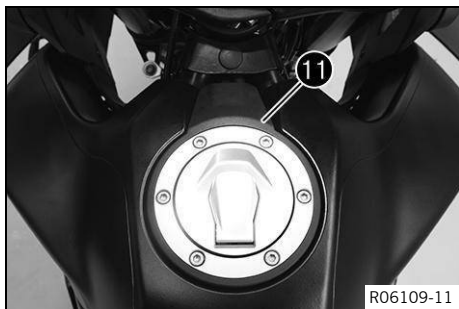
Silicone spray 📖 (p. 501)

- Join quick release coupling ⑧.
- Mount vent hoses ⑨ and ⑩.



R06110-11

12 Fuel tank, seat, fairings



- Mount fuel tank cover 11.

Reworking

- Install the skid plate. (p. 126)
- Install the right fuel tank spoiler. (p. 124)
- Install the right side cover. (p. 119)
- Install the left fuel tank spoiler. (p. 122)
- Install the battery cover. (p. 120)
- Install the left side fairing (p. 118)
- Mount the front rider's seat. (p. 100)
- Mount the passenger seat. (p. 99)

12.9 Checking the fuel pressure



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.

Condition: The fuel tank is completely full, Ensure that the battery voltage does not drop below 12.5 V., Ignition system is off, Diagnostic tool is connected

Preparatory work

- Remove the passenger seat. (p. 99)
- Remove the front rider's seat. (p. 100)
- Remove the left side cover. (p. 118)

- Remove the battery cover.  (p. 120)
- Remove left fuel tank spoiler.  (p. 121)

Main work

- Clean the quick release coupling thoroughly with compressed air.

Dust must not enter the fuel line.



Note

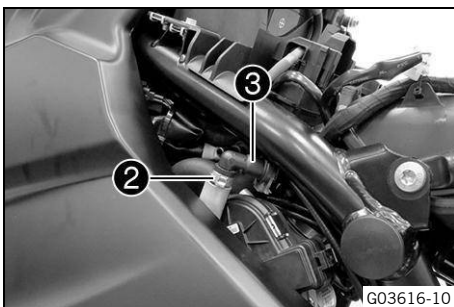
Dirt in the fuel line clogs the injector!

- Disconnect quick release coupling ❶.

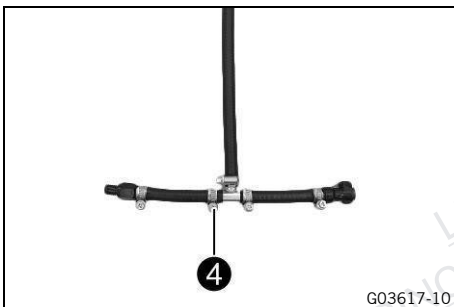


Note

Remaining fuel may flow out of the fuel hose.



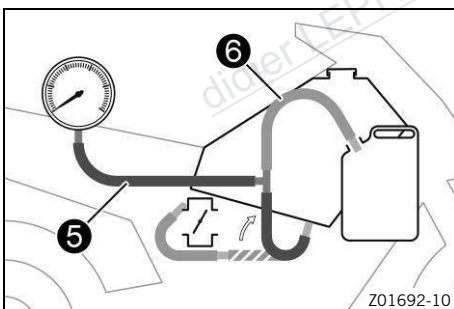
- Remove hose clamp ❷.
- Remove angle piece ❸.



- Remove hose clip ❹.

Pressure testing tool (61029094000)  (p. 488)
--

- Remove the hose.



- Mount special tool ❺ and secure with a hose clip.

Pressure testing tool (61029094000)  (p. 488)
--

- Mount special tool ❻ with nozzle code 1,05.

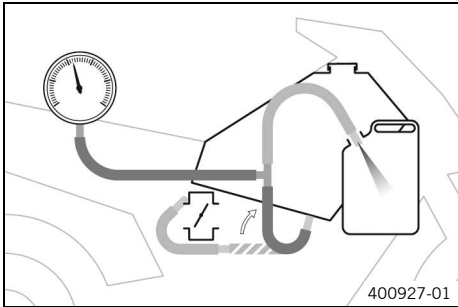
Testing hose (61029093000)  (p. 487)

- Position the hose end in a fuel can.

Minimum size, fuel can	10 l (2.6 liq. gal _{US})
------------------------	---------------------------------------

- Connect and activate diagnostic tool
- Execute «Engine electronics» > «Actuator test» > «Function check of fuel pump controller».

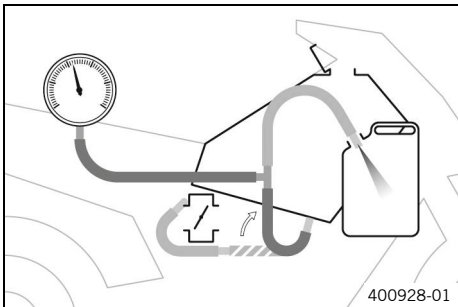
12 Fuel tank, seat, fairings



- Check the fuel pressure with the fuel tank cap closed.

Fuel pressure	
When the fuel pump is active	3.8 bar ... 4.2 bar (55.1 psi ... 60.9 psi)

- » If the specification is not reached:
 - Open the fuel tank cap.
 - Check the fuel tank vent.

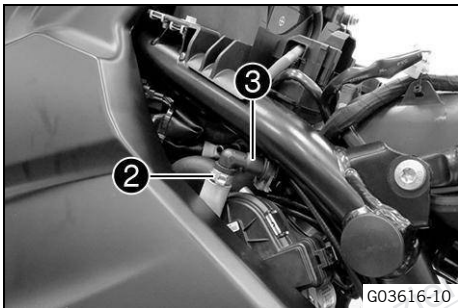


- Check the fuel pressure with the fuel tank cap open.

Fuel pressure	
When the fuel pump is active	3.8 bar ... 4.2 bar (55.1 psi ... 60.9 psi)

- » If the specification is not reached:
 - Check that the fuel line is clear.
 - Change the fuel filter. (p. 111)
 - Change the fuel pump. (p. 110)

- Finish the actuator test.
- Remove the special tools.



- Mount angle piece ③.
- Mount hose clamp ②.

Hose clamp pliers (60029057000) (p. 487)
--



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

Silicone spray (p. 501)

- Join quick release coupling ①.

Reworking

- Install the left fuel tank spoiler. (p. 122)
- Install the battery cover. (p. 120)
- Install the left side fairing (p. 118)
- Mount the front rider's seat. (p. 100)
- Mount the passenger seat. (p. 99)

12.10 Changing the fuel level sensor



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.

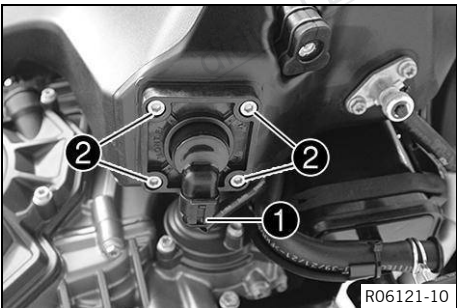
- Do not allow fuel to enter the groundwater, the soil, or the sewage system.

Preparatory work

- Remove the skid plate.  (p. 125)
- Drain the fuel from the fuel tank into a suitable container.

Main work

- Unplug connector ❶.
- Remove screws ❷.
- Remove the fuel level sensor with gasket.
- Position the new fuel level sensor with gasket.
- Mount and tighten screws ❷.



Screw, fuel level sensor	
M5	3 Nm (2.2 ft·lb _r)

- Plug in connector ❶.

Reworking

- Install the skid plate.  (p. 126)

12.11 Changing the fuel pump



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.

Preparatory work

- Remove the skid plate.  (p. 125)
- Drain the fuel from the fuel tank into a suitable container.

Main work

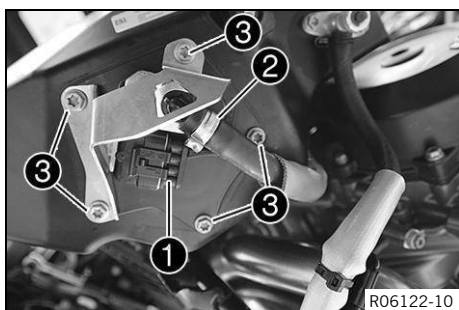
- Unplug connector ①.
- Remove hose clamp ② and pull off the fuel hose.
- Remove screws ③ with the protective plate.
- Remove the fuel pump with the gasket.



Note

Remaining fuel may flow out of the fuel tank.

- Position an appropriate container under the fuel pump.
- Position the new fuel pump with the gasket.
- Mount and tighten screws ③ with protective plate.



Screw, fuel pump	
M6	6 Nm (4.4 ft·lb _f)

- Mount fuel hose.
- Mount hose clamp ②.

Hose clamp pliers (60029057000)  (p. 487)
--

- Plug in connector ①.

Reworking

- Install the skid plate.  (p. 126)



12.12 Changing the fuel filter



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

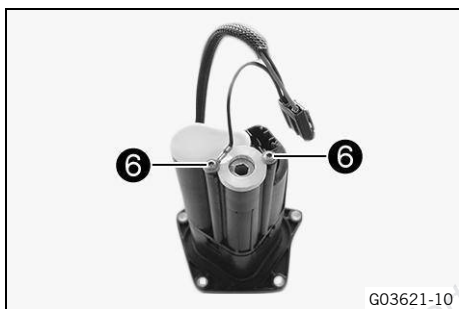
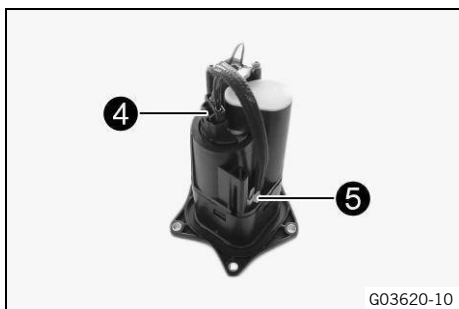
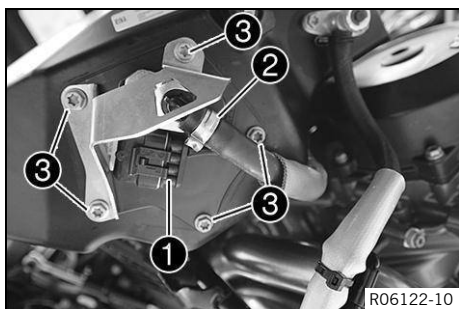
Environmental hazard Improper handling of fuel is dangerous to the environment.

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

Preparatory work

- Remove the skid plate.  (p. 125)
- Drain the fuel from the fuel tank into a suitable container.

12 Fuel tank, seat, fairings



Main work

- Unplug connector ①.
- Remove hose clamp ② and pull off the fuel hose.
- Remove screws ③ with the protective plate.
- Remove the fuel pump with the gasket.



Note

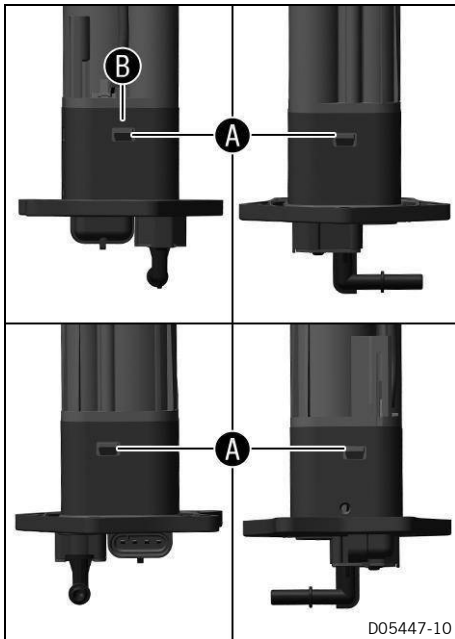
Remaining fuel may flow out of the fuel tank.

- Position an appropriate container under the fuel pump.
- Unplug connectors ④ and ⑤.

- Remove screws ⑥.
- Take off the cables.

- Remove retaining washer ⑦.

- Remove pressure control valve ⑧ with O-ring.



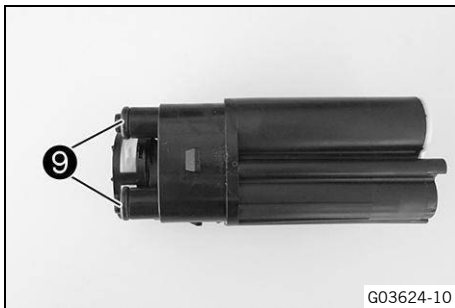
- Disengage locking mechanisms **A** on all sides in area **B**.



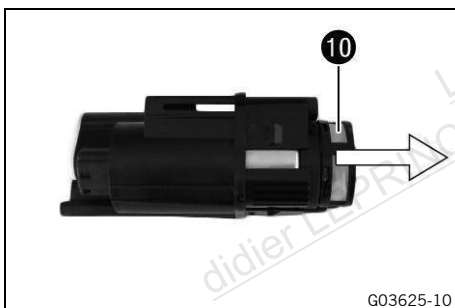
Note

The housing halves are damaged in this step and are contained in the filter set.

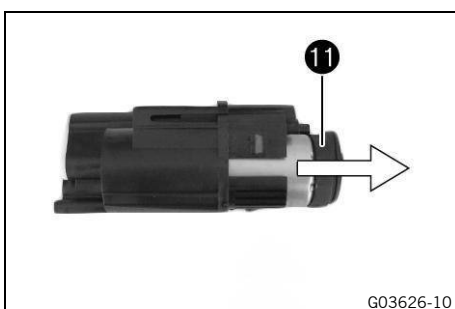
- Disengage housing halves.



- Remove O-rings **9**.

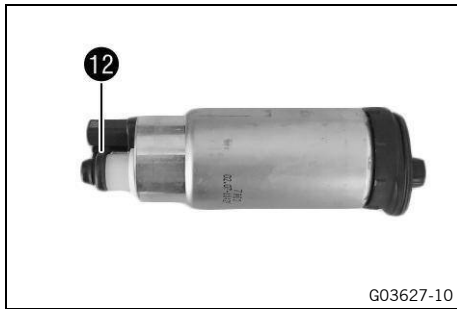


- Pull fuel filter **10** off the fuel pump.

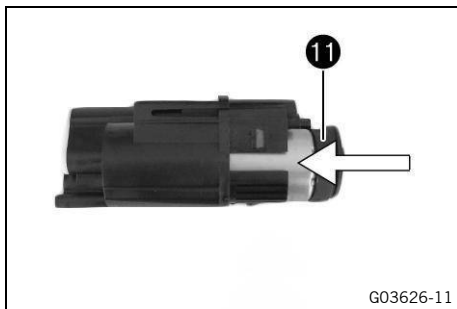


- Pull fuel pump **11** out of the fuel pump housing.

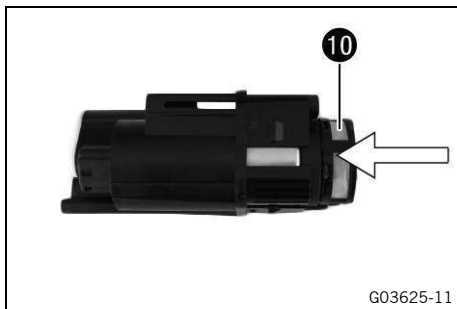
12 Fuel tank, seat, fairings



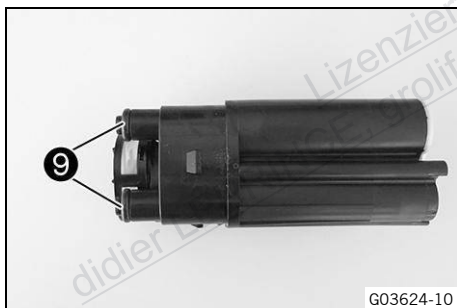
- Remove O-ring 12 and mount new O-ring.



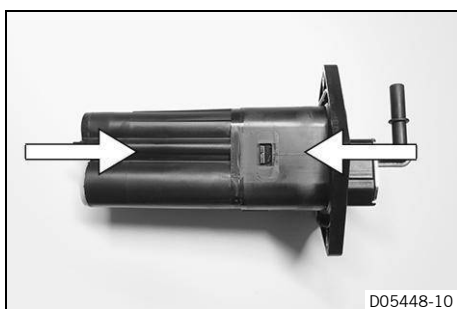
- Mount fuel pump 11 in new fuel pump housing.



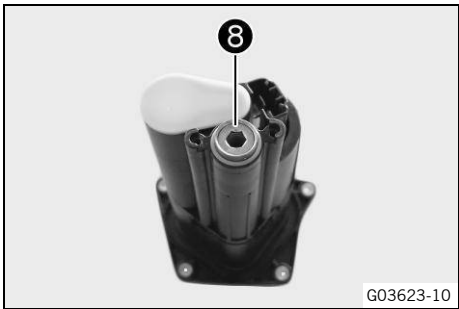
- Mount new fuel filter 10 on the fuel pump.



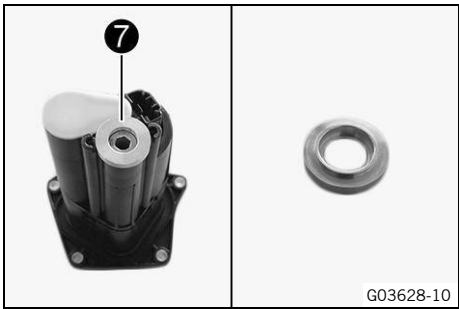
- Mount new O-rings 9.



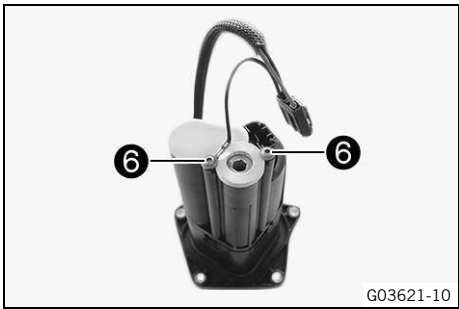
- Join housing halves and allow to click into place.



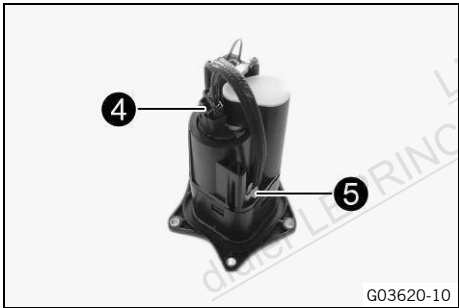
- Mount pressure control valve 8 with new O-ring.



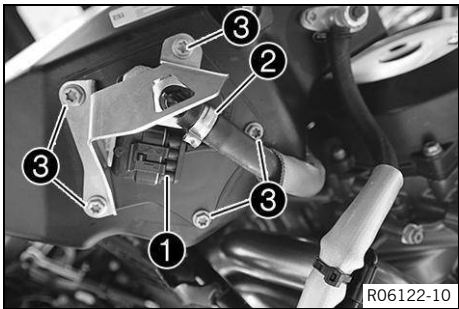
- Position retaining washer 7 with the collar facing downward.



- Position the ground wires.
- Mount and tighten screws 6.



- Plug in connectors 5 and 4.



- Position the fuel pump with the gasket.
- Mount and tighten screws 3 with protective plate.

Screw, fuel pump	
M6	6 Nm (4.4 ft·lb _r)

- Mount fuel hose.
- Mount hose clamp 2.

Hose clamp pliers (60029057000) (p. 487)
--

- Plug in connector 1.

Reworking

- Install the skid plate.  (p. 126)

12.13 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.

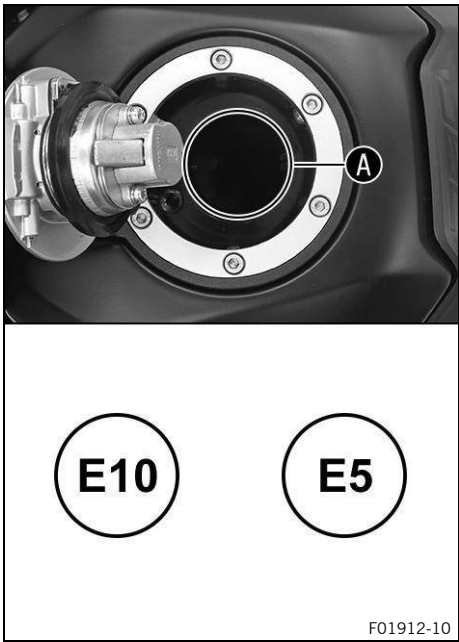
- Refuel only with clean fuel that meets the specified standards.



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. 98)
- Fill the fuel tank with fuel up to the lower edge **A** of the filler neck.

Total fuel tank capacity, approx.	
(790 ADVENTURE US, 790 ADVENTURE AR, 790 ADVENTURE CN, 790 ADVENTURE EU, 790 ADVENTURE D.D. EU, 790 ADVENTURE UK) Super unleaded (ROZ 95) (p. 503)	20 l (5.3 liq. gal _{US})
(790 ADVENTURE BR) Super unleaded, type C (ROZ 95/RON 95/PON 91) (p. 503)	

- Close the fuel tank cap. (p. 99)



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didier LEPRINCE, grolifoualex@gmail.com, 075676/080232

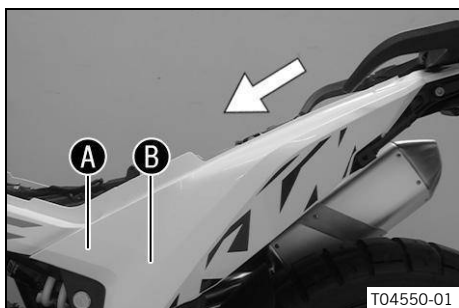
13.1 Removing the left side cover

Preparatory work

- Remove the passenger seat.  (p. 99)
- Remove the front rider's seat.  (p. 100)

Main work

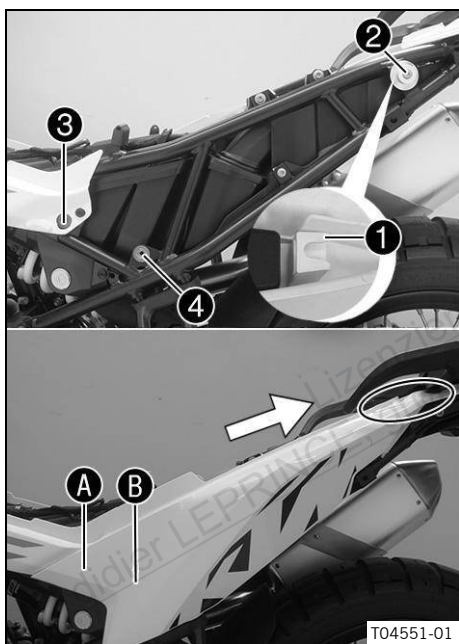
- Remove left side fairing from the rubber bushings in areas **A** and **B**.
- Pull off the left side cover sideways and remove it toward the front.



13.2 Installing the left side fairing

Main work

- Position the left side cover with holding lug **1** on bushing **2** and push backward.
✓ The left side cover engages under the tail part.
- Press the left side fairing in area **A** into rubber bushing **3** and press into rubber bushing **B** in area **4**.



Reworking

- Mount the front rider's seat.  (p. 100)
- Mount the passenger seat.  (p. 99)

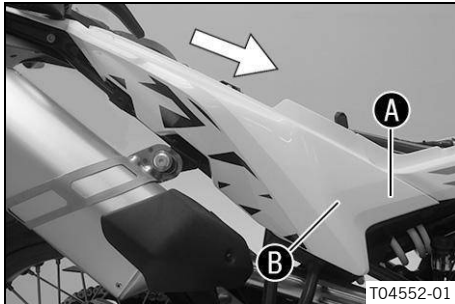
13.3 Removing the right side fairing

Preparatory work

- Remove the passenger seat.  (p. 99)
- Remove the front rider's seat.  (p. 100)

Main work

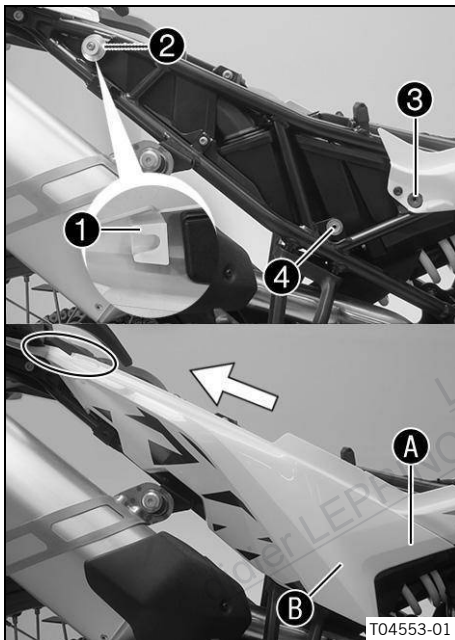
- Remove the side fairing from the rubber bushings in areas **A** and **B**.
- Pull off the right side cover sideways and remove it toward the front.



13.4 Installing the right side cover

Main work

- Position the right side cover with holding lug **1** on bushing **2** and push backward.
✓ The right side cover engages under the tail part.
- Press the right side fairing in area **A** into rubber bushing **3** and press into rubber bushing **B** in area **4**.



Reworking

- Mount the front rider's seat.  (p. 100)
- Mount the passenger seat.  (p. 99)

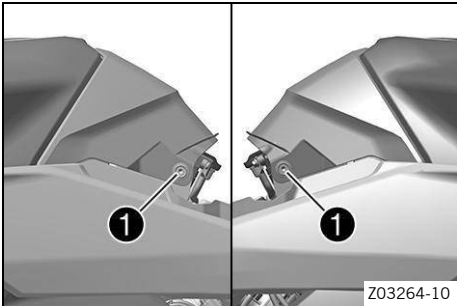
13.5 Removing the battery cover

Preparatory work

- Remove the passenger seat.  (p. 99)
- Remove the front rider's seat.  (p. 100)

Main work

- Remove screws **1** and bushings.
- Remove the battery cover from above.

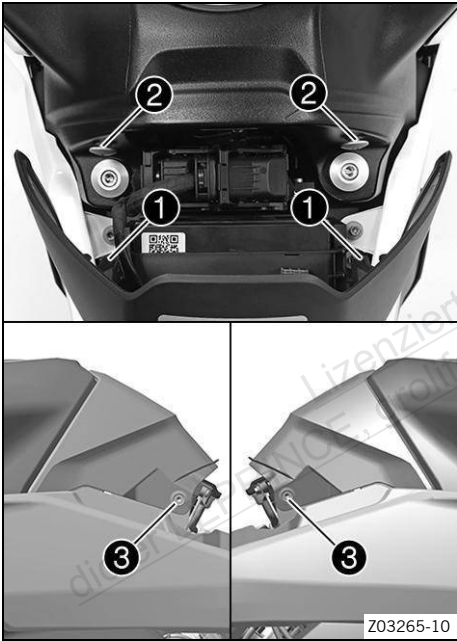


13.6 Installing the battery cover

Main work

- Position the battery cover with holding lugs **1** on bushings **2** and push downward.
✓ The battery cover engages on the left and right under the fuel tank spoiler.
- Mount screw **3** and bushing and tighten.

Screw, seat installation	
M6	6 Nm (4.4 ft·lb _f)



Reworking

- Mount the front rider's seat.  (p. 100)
- Mount the passenger seat.  (p. 99)

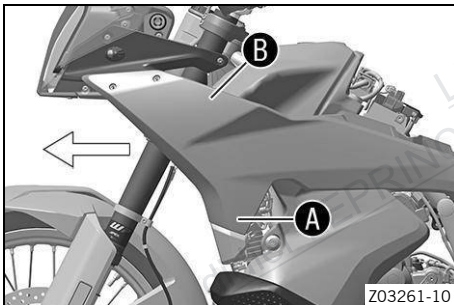
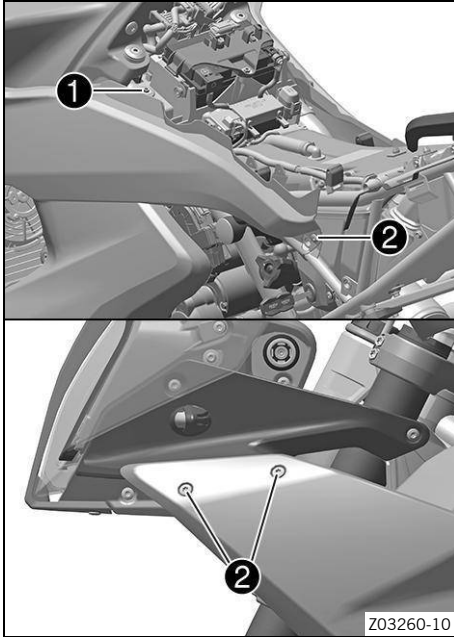
13.7 Removing left fuel tank spoiler

Preparatory work

- Remove the passenger seat.  (p. 99)
- Remove the front rider's seat.  (p. 100)
- Remove the left side cover.  (p. 118)
- Remove the battery cover.  (p. 120)

Main work

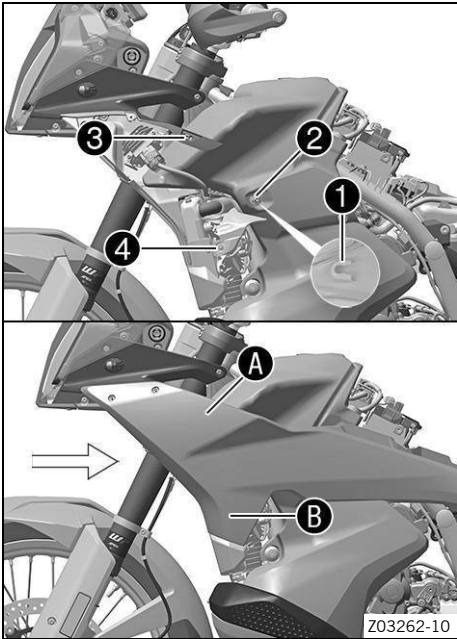
- Remove screw **1**.
- Remove screws **2**.



- Remove the left fuel tank spoiler from the rubber bushing in area **A**.
- Pull the left fuel tank spoiler in area **B** out of the bracket.
- Pull off the left fuel tank spoiler sideways and take it off toward the front.

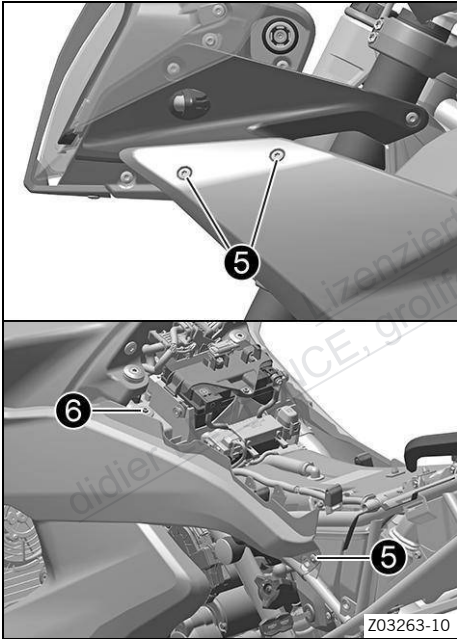


13.8 Installing the left fuel tank spoiler



Main work

- Position the left fuel tank spoiler with holding lug 1 on bushing 2 and push backward laterally.
- Press the left fuel tank spoiler into bracket A in area 3.
- Press the left fuel tank spoiler into rubber bushing 4 in area B.



- Mount screws 5, but do not tighten yet.

Screw, trim	
M5	3 Nm (2.2 ft·lb _f)

- Mount screw 6, but do not tighten yet.

Screw, fuel tank spoiler	
M6	5 Nm (3.7 ft·lb _f)

- ✓ The front edge of the left fuel tank spoiler is evenly aligned.

- Tighten all the screws of the left fuel tank spoiler.

Screw, trim	
M5	3 Nm (2.2 ft·lb _f)
Screw, fuel tank spoiler	
M6	5 Nm (3.7 ft·lb _f)

Reworking

- Install the battery cover. (p. 120)
- Install the left side fairing (p. 118)
- Mount the front rider's seat. (p. 100)
- Mount the passenger seat. (p. 99)

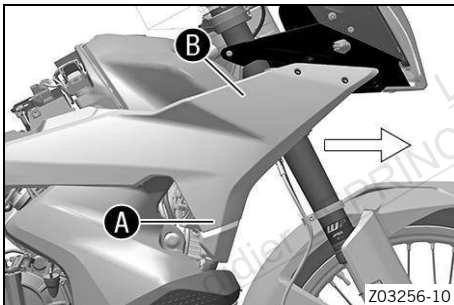
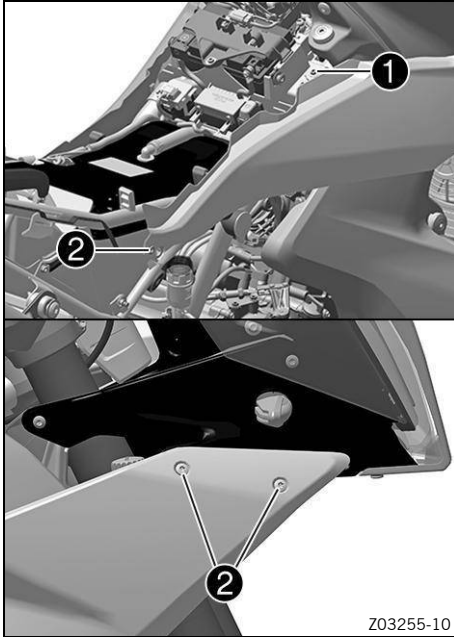
13.9 Removing the right fuel tank spoiler

Preparatory work

- Remove the passenger seat.  (p. 99)
- Remove the front rider's seat.  (p. 100)
- Remove the right side fairing.  (p. 119)
- Remove the battery cover.  (p. 120)

Main work

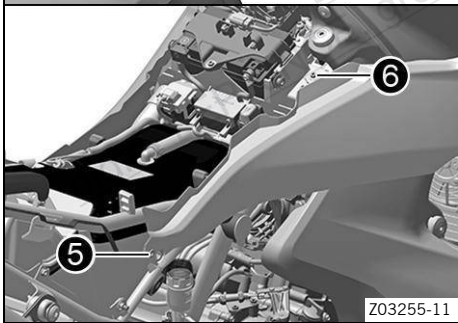
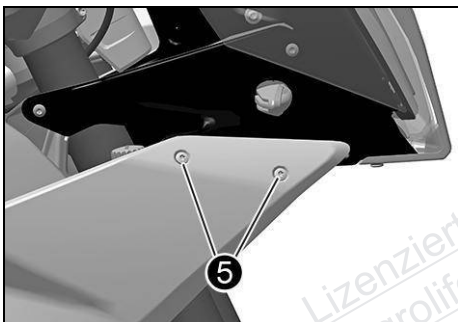
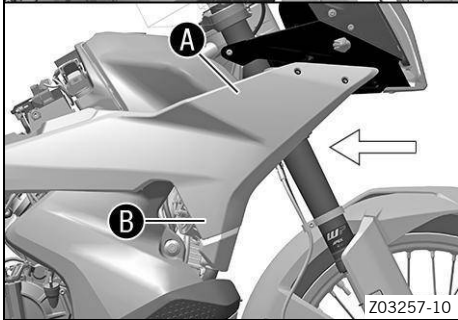
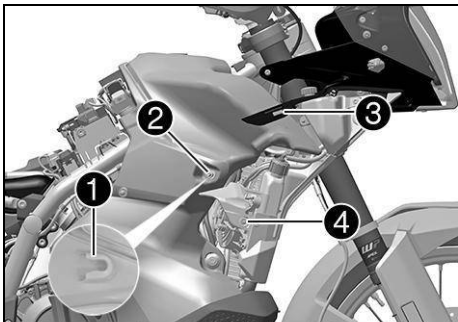
- Remove screw **1**.
- Remove screws **2**.



- Remove the fuel tank spoiler from the rubber bushing in area **A**.
- Pull the right fuel tank guard in area **B** out of the bracket.
- Pull off the right fuel tank spoiler sideways and take off toward the front.



13.10 Installing the right fuel tank spoiler



Main work

- Position the right fuel tank spoiler with holding lug 1 on bushing 2 and push backward laterally.
- Press the right fuel tank spoiler into bracket A in area 3.
- Press the right fuel tank spoiler into rubber bushing 4 in area B.

- Mount screws 5, but do not tighten yet.

Screw, trim	
M5	3 Nm (2.2 ft·lb _f)

- Mount screw 6, but do not tighten yet.

Screw, fuel tank spoiler	
M6	5 Nm (3.7 ft·lb _f)

- ✓ The front edge of the right fuel tank spoiler is evenly aligned.

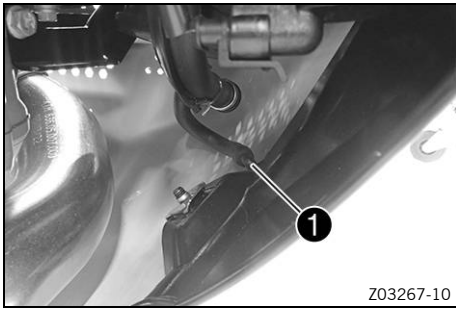
- Tighten all the screws of the right fuel tank spoiler.

Screw, trim	
M5	3 Nm (2.2 ft·lb _f)
Screw, fuel tank spoiler	
M6	5 Nm (3.7 ft·lb _f)

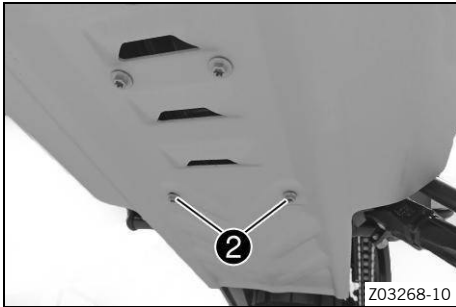
Reworking

- Install the battery cover. (p. 120)
- Install the right side cover. (p. 119)
- Mount the front rider's seat. (p. 100)
- Mount the passenger seat. (p. 99)

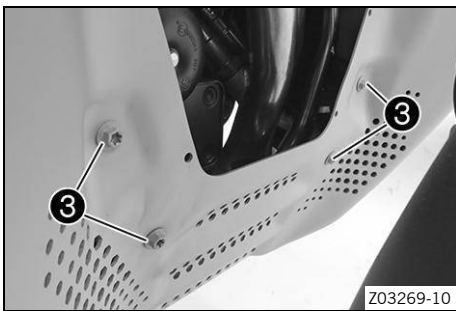
13.11 Removing the skid plate



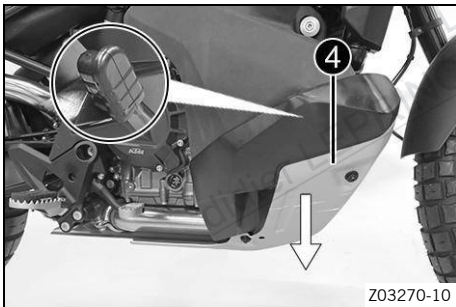
- Pull out hose ① from the angle piece.



- Remove screws ②.

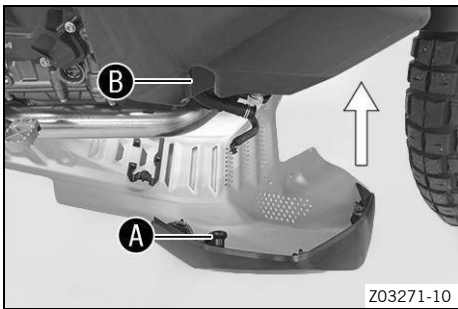


- Remove screws ③.

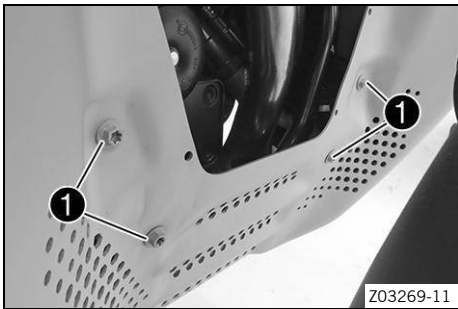


- Remove engine guard ④.
- Pull the damping rubbers out of the cut-outs on both sides.

13.12 Installing the skid plate

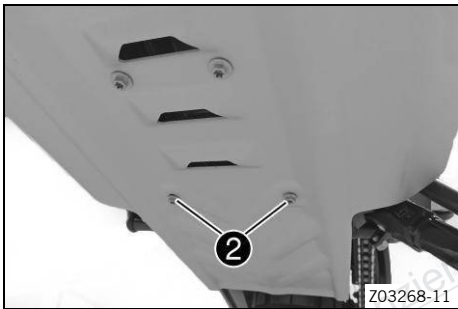


- Position skid plate.
✓ Damping rubbers **A** engage in cut-outs **B** on both sides.



- Mount screws **1**, but do not tighten yet.

Screw, engine guard	
M6×10	10 Nm (7.4 ft·lb _f) Loctite® 243

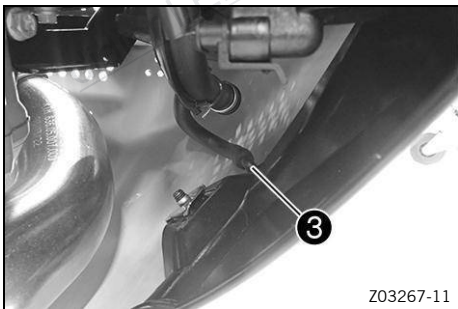


- Mount screws **2**, but do not tighten yet.

Screw, engine guard	
M6×8	8 Nm (5.9 ft·lb _f)

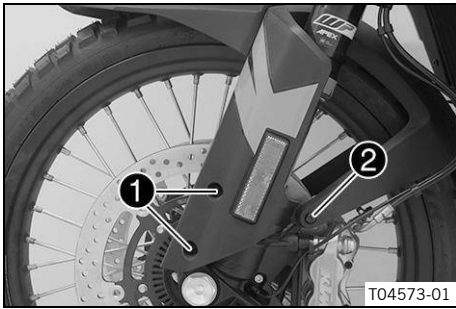
- Tighten all the screws of the skid plate.

Screw, engine guard	
M6×8	8 Nm (5.9 ft·lb _f)
Screw, engine guard	
M6×10	10 Nm (7.4 ft·lb _f) Loctite® 243



- Attach hose **3** to the angle piece.

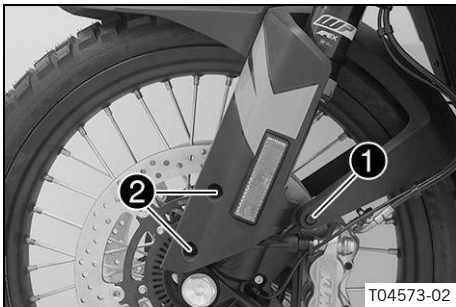
13.13 Removing the front top fender



- Remove screws ① on both sides.
- Remove screws ② on both sides.
- Take the fender off to the front.

Pay attention to the routing of the brake lines and cables.

13.14 Installing the front top fender



- Position the fender.

Pay attention to the routing of the brake lines and cables.

- Mount screws ① on both sides but do not tighten yet.

Screw, fender

M5×12

3 Nm
(2.2 ft·lb_f)

- Mount screws ② on both sides but do not tighten yet.

Screw, fender

M5×12

3 Nm
(2.2 ft·lb_f)

✓ The fender is directed evenly toward the front.

- Tighten all the screws of the fender.

Screw, fender

M5×12

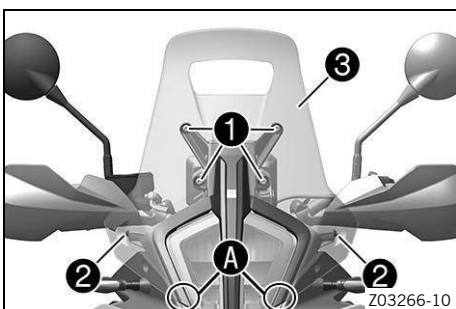
3 Nm
(2.2 ft·lb_f)

Screw, fender

M5×12

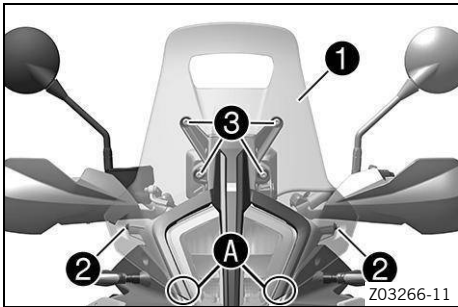
3 Nm
(2.2 ft·lb_f)

13.15 Removing the windshield



- Remove screws ①.
- Remove screws ② and detach windshield ③ in area A.

13.16 Installing the windshield



- Hook windshield 1 into area A.
- Mount and tighten screws 2.

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

- Mount and tighten screws 3.

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

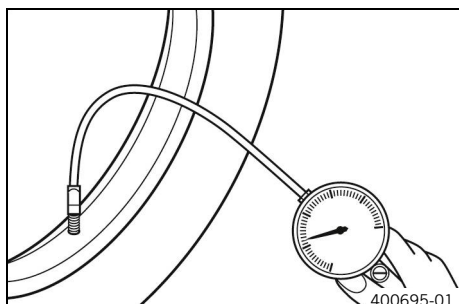
didier LEPRINCE, grolifoualex@gmail.com, 075676/080232
Lizenziert für | Licensed for:

14.1 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.

Tire pressure solo / with passenger	
front	2.4 bar (34.8 psi)
rear	2.4 bar (34.8 psi)

Tire pressure full payload	
front	2.6 bar (37.7 psi)
rear	2.9 bar (42.1 psi)

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



14.2 Checking the tire condition



WARNING

Danger of accidents If a tire bursts while riding, the vehicle becomes uncontrollable.
– Ensure that damaged or worn tires are replaced immediately.



WARNING

Danger of accidents Non-approved or non-recommended tyres and wheels impact the handling characteristic.
– Only use tires and wheels approved and recommended by the vehicle manufacturer with the corresponding speed rating.



WARNING

Danger of accidents New tires have reduced road grip.
The contact surface on new tires is not yet roughened.
– Run in new tires with moderate riding and only gradually increase the lean angle.

Run-in distance	200 km (124.3 mi)
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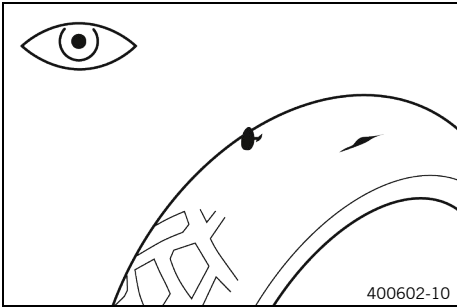
WARNING

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.



Note

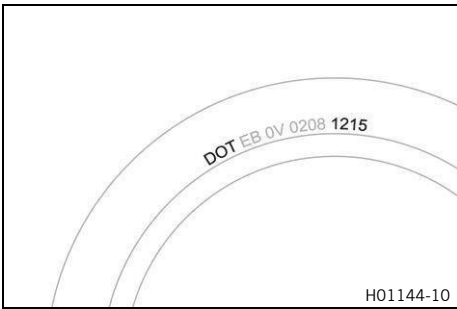
Tire type, tire condition, and tire pressure influence the braking and handling characteristics of the vehicle. Worn tires have a negative effect on handling characteristics, especially on wet surfaces.



- 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 tread depth.

Minimum tread depth	≥ 2 mm (≥ 0.08 in)
Observe the minimum tread depth required by national law.	

- » If the tread depth is less than the minimum tread depth:
 - 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.

14.3 Checking the rim run-out



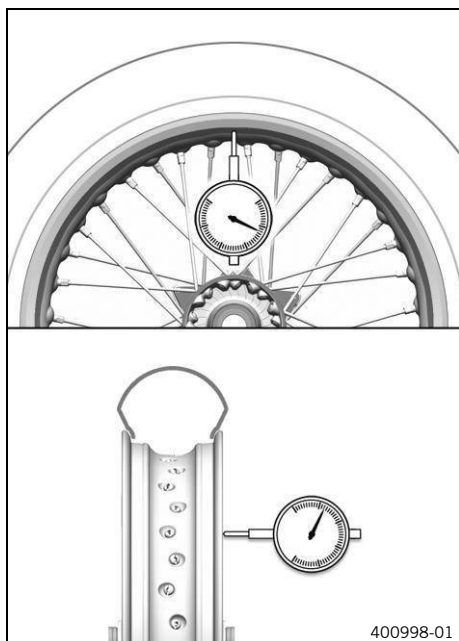
WARNING

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.



- Check for lateral and radial run-out of the rims.

Lateral runout	
Outside the rim joint	< 1.8 mm (< 0.071 in)
Radial runout	
Outside the rim joint	< 1.8 mm (< 0.071 in)

- » If the measured value is greater than the specified value:

- Center the rim.

Center the rim by pulling the spoke nipple on the other side of the rim run-out. If there is significant deformation, change the rim.

- Correct the spoke tension.



14.4 Checking the wheel bearing for play

Preparatory work

- Remove the muffler. 📖 (p. 83)
- Raise motorcycle with the work stand (center). 📖 (p. 19)
- Place a load on the rear of the vehicle.
- ✓ The front wheel is not in contact with the ground.

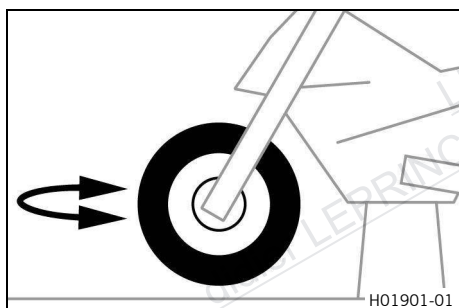
Main work

- Move the front wheel from side to side.

Hold fork leg to check it.

- » If there is detectable play:

- Change the front wheel bearing. 📖 (p. 137)

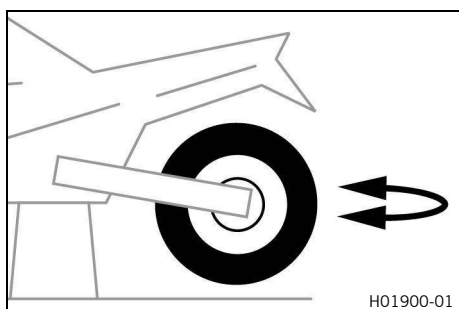


- Place a load on the front of the vehicle.
- ✓ The rear wheel is not in contact with the ground.
- Move the rear wheel from side to side.

Hold the link fork to check it.

- » If there is detectable play:

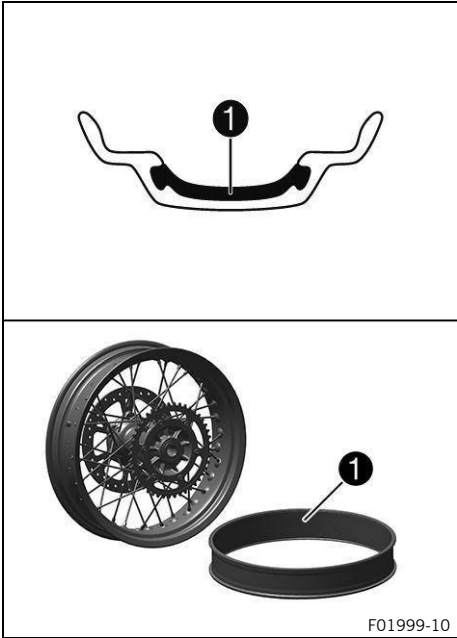
- Change the rear wheel bearing. 📖 (p. 149)



Reworking

- Remove the motorcycle from the work stand (center).  (p. 20)
- Install the muffler.  (p. 83)

14.5 Tubeless tire system



This vehicle uses a tubeless tire system in which a rim seal band ❶ is used instead of the conventional tube.

The advantage of the tubeless system is that there is no danger of a faulty tube. This greatly reduces the risk of a sudden loss in pressure.

The moments of inertia of these wheels are smaller than in conventional spoke wheels with a tube. This results in better handling and riding comfort.

The rigid rim design results in a spoke wheel that is almost entirely maintenance-free.

KTM recommends that the rim seal band be changed after 5 years at the latest, regardless of the actual state of wear.

14.6 Checking the spoke tension



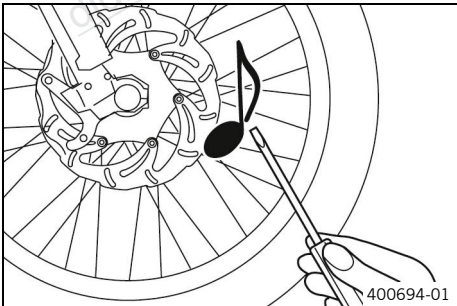
WARNING

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.

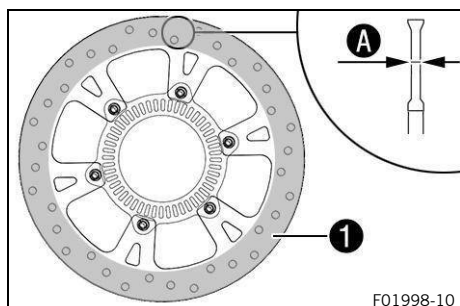
14.7 Checking the brake discs



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 **A**.

Brake disc wear limit	
front	4.5 mm (0.177 in)
rear	4.5 mm (0.177 in)



Note

Wear will reduce the thickness of the brake disc at contact surface **1** of the brake linings.

- » If the brake disc thickness is less than the specified value.
 - Change the front brake discs. (p. 139)
 - Change the brake discs on the rear brake. (p. 152)
- 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 front brake discs. (p. 139)
 - Change the brake discs on the rear brake. (p. 152)



14.8 Program the tire pressure sensor.



Note

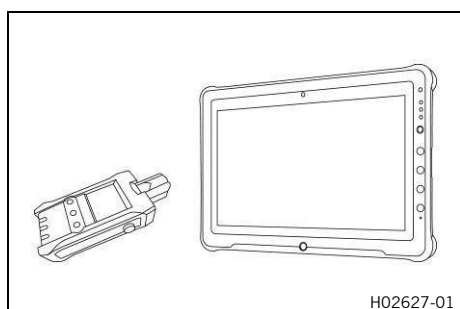
To use the function in the dashboard, the tire pressure display in the dashboard must be enabled with the diagnostic tool.

Condition: Diagnostic tool is connected and active, Software version is up to date.

Configuring the threshold value

- Execute «Tire pressure monitoring system» > «Functions» > «Threshold value configuration».

Follow the instructions in the diagnostic tool.



Programming the transmitter ID – wheel set

- Execute «Tire pressure monitoring system» > «Functions» > «Transmitter ID – wheel set».

Follow the instructions in the diagnostic tool.



Note

The ID number is used to program the tire pressure sensor.

The tire pressure sensor ID can be found on the tire air pressure sensor.

- Clear fault memory with diagnostic tool.
 - » Perform a test ride until the air pressure is displayed in the combination instrument (max. 10 minutes, min. 20 km/h).
 - Read out the fault memory using the diagnostics tool.

14.9 Front wheel

14.9.1 Removing the front wheel

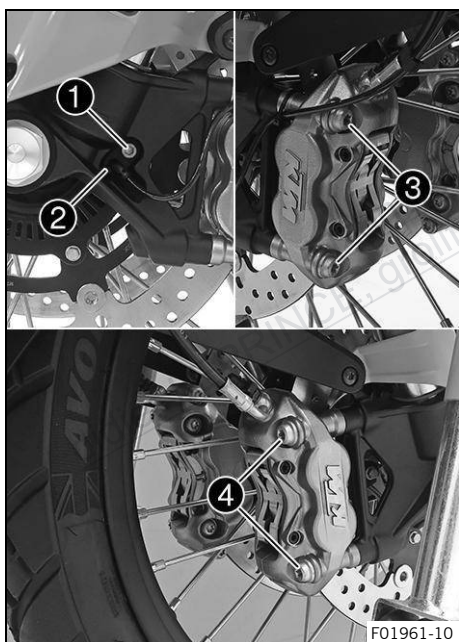
Preparatory work

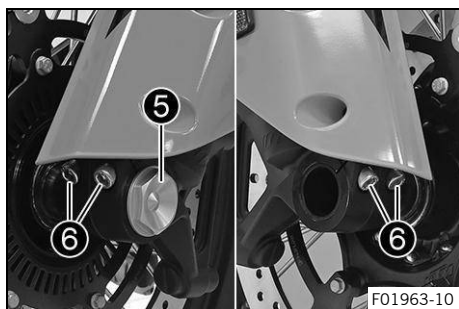
- Raise the motorcycle with the rear lifting gear. (p. 18)
- Lift the motorcycle with the front lifting gear. (p. 17)

Main work

- Remove screw ① and pull wheel speed sensor ② out of the hole.
- Remove screws ③ and ④.
- Press back the brake linings by slightly tilting the left and right brake caliper laterally on the brake disc. Pull the left and right brake caliper carefully back from the brake disc and hang to the side.

Do not operate the hand brake lever if the brake calipers have been removed.





- Loosen screw **5** by four turns.
- Loosen screws **6**.
- Press on screw **5** to push the wheel spindle out of the fork shoe.
- Remove screw **5**.

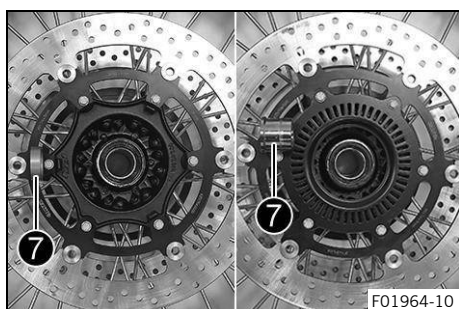


WARNING

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.
- Remove spacers **7**.



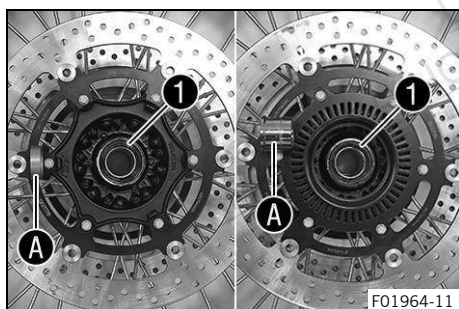
14.9.2 Installing the front wheel



WARNING

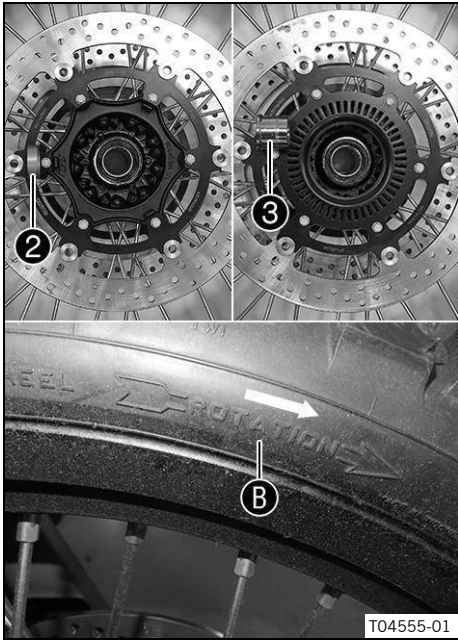
Danger of accidents Oil, grease or wax on the brake discs reduces the brake action.

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



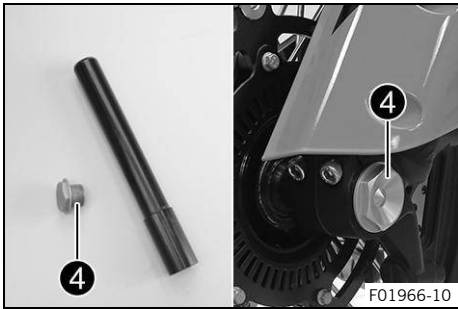
- Check the wheel bearing for damage and wear.
 - » If the wheel bearing is damaged or worn:
 - Change the front wheel bearing. (p. 137)
- Clean and grease radial shaft seal **1** and contact surfaces **A** on the spacers.

Long-life grease (p. 500)



- Insert narrow spacer 2 on the right in the direction of travel.
- Insert wide spacer 3 on the left in the direction of travel.

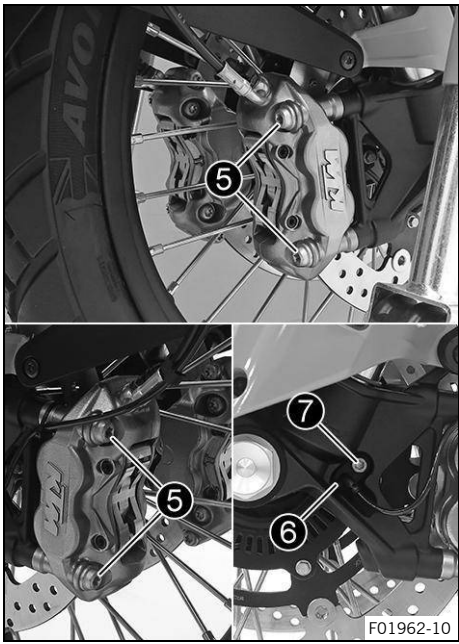
Note
Arrow B indicates the direction of travel of the front wheel.
The wheel speed sensor wheel is on the left viewed in the direction of travel.



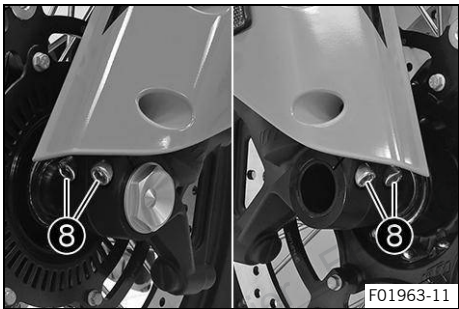
- Clean screw 4 and the wheel spindle.
 - Grease wheel spindle lightly.
- Long-life grease (p. 500)
- Jack up the front wheel into the fork, position it, and insert the wheel spindle.
 - Mount and tighten screw 4.

Screw, wheel spindle, front	
M25×1.5	45 Nm (33.2 ft·lb _f) Long-life grease

Tip
Temporarily tighten one of the axle clamp screws so that the axle does not rotate with it.
Loosen the axle clamp screw again before compression to allow the fork legs to align.



- Position both brake calipers.
✓ The brake linings are correctly positioned.
 - Mount screws 5 on both sides but do not tighten yet.
- | Screw, front brake caliper | |
|----------------------------|--|
| M10×1.25 | 45 Nm
(33.2 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. Secure the hand brake lever in the activated position.
✓ The brake calipers straighten.
 - Tighten screws 5 on both sides.
- | Screw, front brake caliper | |
|----------------------------|--|
| M10×1.25 | 45 Nm
(33.2 ft·lb _f)
Loctite® 243 |
- Position wheel speed sensor 6 in the hole.
 - Mount and tighten screw 7.



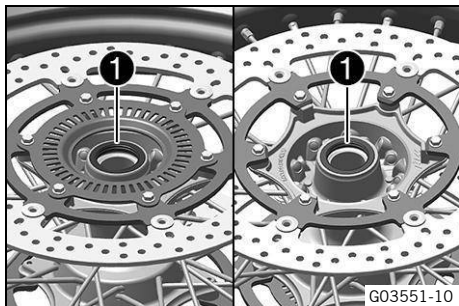
- | Screw, front wheel speed sensor | |
|---------------------------------|-----------------------------------|
| M6 | 6 Nm
(4.4 ft·lb _f) |
- Remove the locking piece of the hand brake lever.
 - Take the motorcycle off the front lifting gear. (p. 17)
 - Remove the rear of the motorcycle from the lifting gear. (p. 18)
 - Operate the front brake and compress the fork a few times firmly.
✓ The fork legs straighten.
 - Tighten screws 8.
- | Screw, fork shoe | |
|------------------|-------------------------------------|
| M8 | 15 Nm
(11.1 ft·lb _f) |

14.9.3 Changing the front wheel bearing

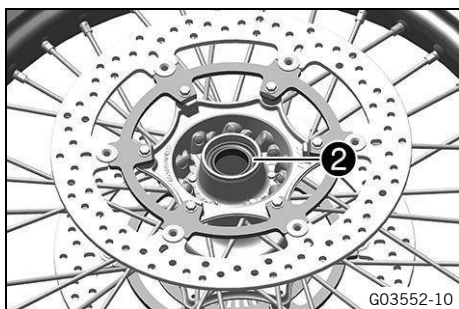
- Preparatory work**
- Raise the motorcycle with the rear lifting gear. (p. 18)
 - Lift the motorcycle with the front lifting gear. (p. 17)
 - Remove the front wheel. (p. 134)

Main work

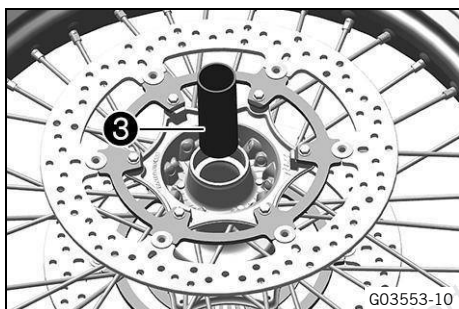
- Remove radial shaft seal rings **1**.



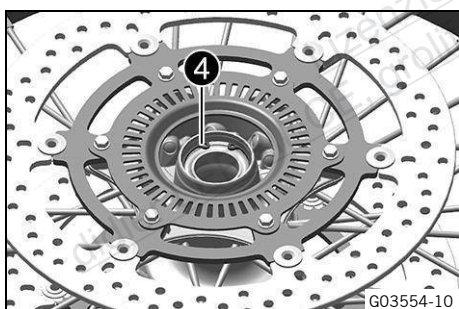
- Using a suitable tool, press out bearing **2** from the inside to the outside.



- Remove spacing tube **3**.

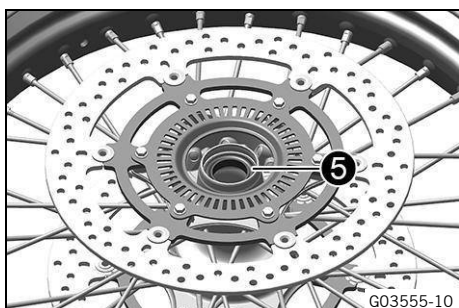


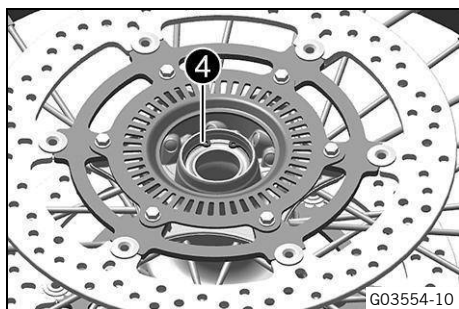
- Remove lock ring **4**.



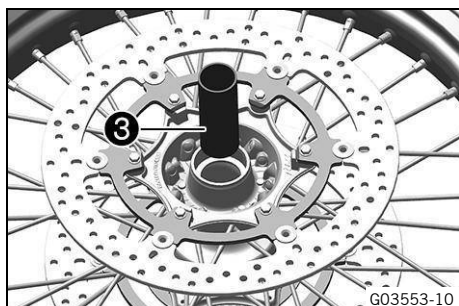
- Using a suitable tool, press out bearing **5** from the inside to the outside.
- Press the new bearing all the way in from the outside to the inside.

Only press the bearings in via the outer bearing race, otherwise the bearing will be damaged when it is pressed in.



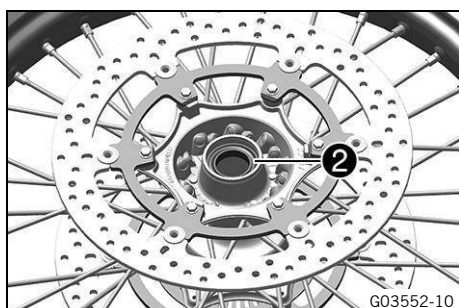


- Mount lock ring **4**.
- ✓ The lock ring engages audibly.



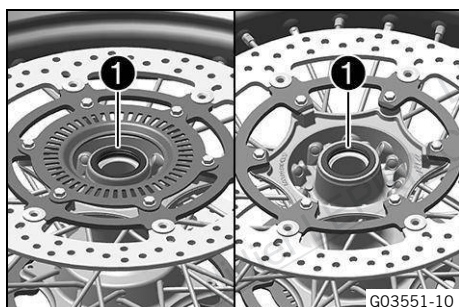
- Clean, grease, and mount spacing tube **3**.

Long-life grease  (p. 500)



- Press new bearing **2** all the way in from the outside to the inside.

Only press the bearings in via the outer bearing race, otherwise the bearing will be damaged when it is pressed in.



- Grease new radial shaft seal rings **1** and press in until flush.

Long-life grease  (p. 500)

Reworking

- Install the front wheel.  (p. 135)



14.9.4 Changing the front brake discs

Note

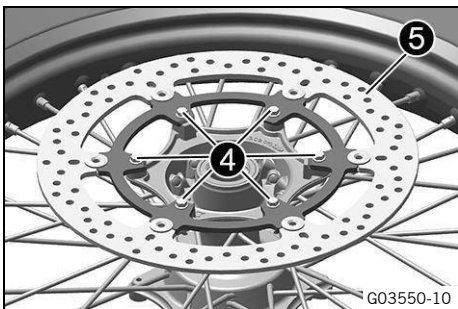
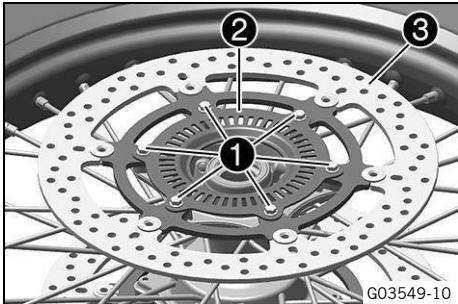
If the brake discs are changed, the brake linings must also be changed.

Preparatory work

- Raise the motorcycle with the rear lifting gear. (p. 18)
- Lift the motorcycle with the front lifting gear. (p. 17)
- Remove the front wheel. (p. 134)

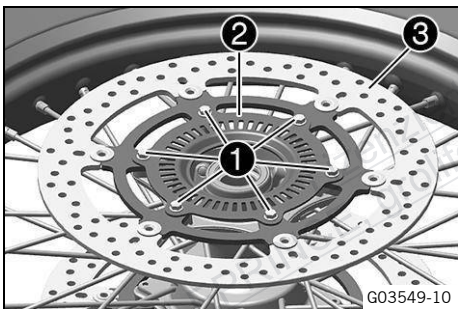
Main work

- Remove screws **1**.
- Take off wheel speed sensor wheel **2**.
- Take off left brake disc **3**.



- Remove screws **4**.
- Remove right brake disc **5**.
- Clean the contact surface of the brake disc.
- Position the new brake disc with the label facing outward.
- Mount and tighten screws **4**.

Screw, front brake disc	
M6	14 Nm (10.3 ft·lb _f) Loctite® 243



- Clean the contact surface of the brake disc.
- Position new brake disc **3** with the label facing outward.
- Position wheel speed sensor wheel **2**.
- ✓ The wheel speed sensor wheel is on the left viewed in the direction of travel.
- Mount and tighten screws **1**.

Screw, front brake disc	
M6	14 Nm (10.3 ft·lb _f) Loctite® 243

Reworking

- Install the front wheel. (p. 135)

14.9.5 Changing the rim seal band at the front

Preparatory work

- Raise the motorcycle with the rear lifting gear. (p. 18)
- Lift the motorcycle with the front lifting gear. (p. 17)
- Remove the front wheel. (p. 134)
- Remove the tire.

Main work



- Remove nut **1**.
- Take off the tire pressure sensor.

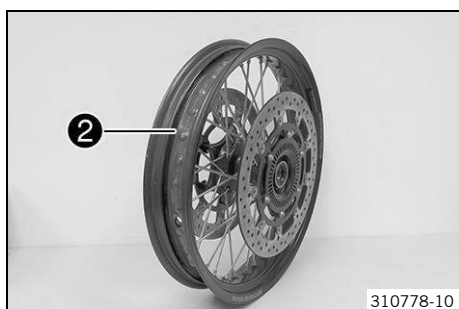


- Carefully cut through the rim seal band and pull it off.



Tip

Raise the rim seal band slightly so that the rim tape is not damaged.

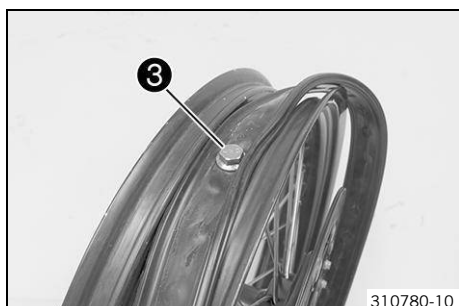


- Take off rim tape **2**.
- Clean the seal groove.
- Check the rim for damage and wear.
 - » If there is damage or wear:
 - Change the rim.
- Check the rim run-out. (p. 130)



- Mount rim tape **2**.

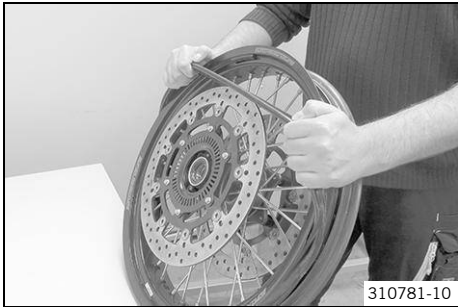
Ensure that the rim tape is in exactly the right position.



- Lubricate the seal groove lightly.

Diluted tire mounting paste (p. 500)
- Position the new rim seal band.
- Using suitable screw **3**, secure the holes of the rim seal band and the rim together.

Do not tighten the screw so that the seal ring is not damaged.



- Pull the rim seal band evenly over the rim.

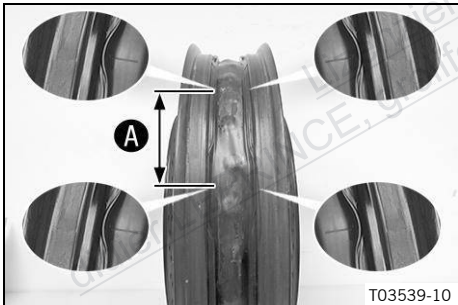
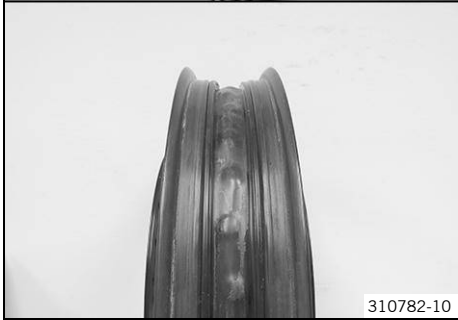


- Align the rim seal band.

Ensure that the rim seal band does not develop folds in the longitudinal direction.

- ✓ Both sides of the rim seal band are positioned in the bottom of the seal groove.
- Grease the rim seal band at the edges.

Diluted tire mounting paste  (p. 500)



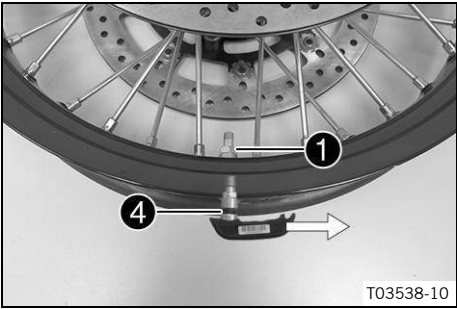
- At distance **A**, press the rim seal band into the seal groove.

Distance A	15 cm (5.9 in)
Press perpendicular to the rim to avoid shifting the profile in a radial direction.	

i Note
This step aids positioning, making it easier to mount the rim seal band.



- Press the rim seal band into the seal groove along the entire circumference.
- Check that the rim seal band is seated correctly around the entire circumference.
- ✓ The valve is straight.



- Grease O-ring 4 lightly.
- | | |
|--------------------------------------|--|
| Diluted tire mounting paste (p. 500) | |
|--------------------------------------|--|
- Position the tire pressure sensor.
 - ✓ Tire air pressure sensor points in the opposite direction to the direction of travel.
 - Mount and tighten nut 1.
- | | |
|---------------------------|--|
| Nut, tire pressure sensor | |
| ISO 10V2 | 12 Nm
(8.9 ft·lb _r)
Loctite® 2701 |

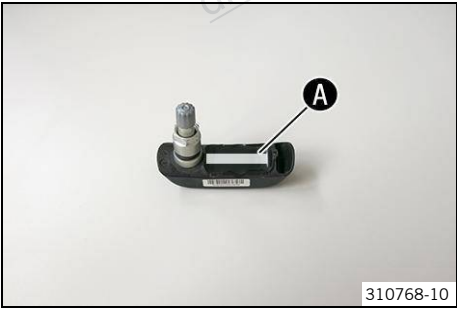
- Reworking**
- Mount and balance the tires.
 - Install the front wheel. (p. 135)
 - Program the tire pressure sensor. (p. 133)

14.9.6 Front tire pressure sensor, changing

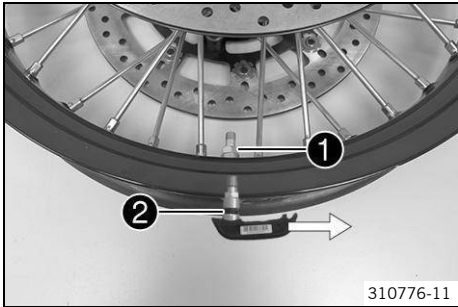
- Preparatory work**
- Raise the motorcycle with the rear lifting gear. (p. 18)
 - Lift the motorcycle with the front lifting gear. (p. 17)
 - Remove the front wheel. (p. 134)
 - Remove wheel.



- Main work**
- Remove nut 1.
 - Take off the tire pressure sensor.



- Note ID number A of the new tire pressure sensor.
- | | |
|----------|---|
| i | Note
The ID number is used to program the tire pressure sensor. |
|----------|---|



- Grease O-ring ② lightly.
- | | |
|--------------------------------------|--|
| Diluted tire mounting paste (p. 500) | |
|--------------------------------------|--|
- Position the new tire pressure sensor.
 - ✓ Tire air pressure sensor points in the opposite direction to the direction of travel.
 - Mount and tighten nut ①.
- | | |
|---------------------------|--|
| Nut, tire pressure sensor | |
| ISO 10V2 | 12 Nm
(8.9 ft·lb _f)
Loctite® 2701 |

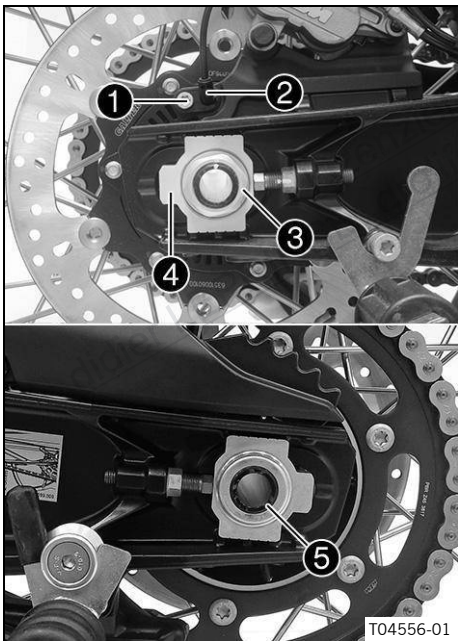
- Reworking**
- Mount and balance the tires.
 - Install the front wheel. (p. 135)
 - Program the tire pressure sensor. (p. 133)

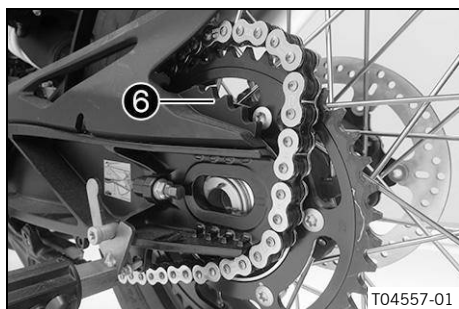
14.10 Rear wheel

14.10.1 Removing the rear wheel

- Preparatory work**
- Raise the motorcycle with the rear lifting gear. (p. 18)

- Main work**
- Manually press the brake caliper toward the brake disc to push back the brake pistons.
 - Remove screw ① and pull wheel speed sensor ② out of the hole.
 - Remove nut ③. Remove chain tension adjuster ④.
 - Pull out wheel spindle ⑤ far enough to allow the rear wheel to be pushed forward.





- Push the rear wheel forward as far as possible. Take the chain off the rear sprocket and place it on chain sprocket guard **6**.

Protect the components against damage by covering them.

- Hold the rear wheel and remove wheel spindle.
- Pull the rear wheel back until the brake caliper bracket is suspended freely between the brake disc and rim.



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.

- Take the rear wheel out of the swingarm.

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



14.10.2 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.



WARNING

Danger of accidents There is no braking effect to start with at the rear brake after installing the rear wheel.

- Actuate the foot brake several times before going on a ride until you can feel a firm pressure point.

Main work

- Check the rear hub damping rubber pieces. (p. 162)
- Check the wheel bearing for damage and wear.
 - » If the wheel bearing is damaged or worn:
 - Change the rear wheel bearing. (p. 149)
- Remove spacer.
- Clean and grease shaft seal ring **1** and contact surface **A** of the spacer.

Long-life grease (p. 500)

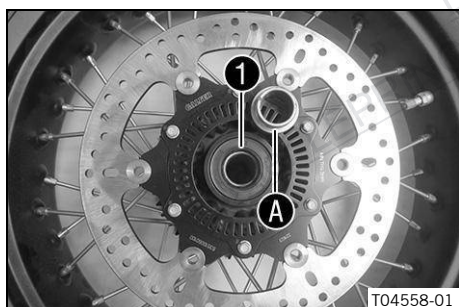
- Insert a spacer.
- Clean and grease the thread of the wheel spindle and nut.

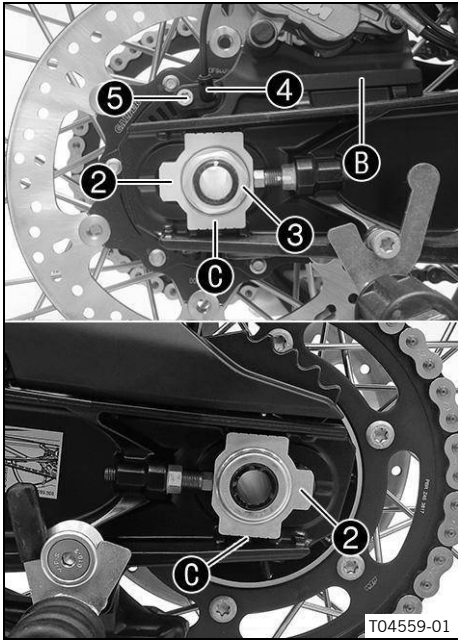
Long-life grease (p. 500)

- Clean and lightly grease the wheel spindle.

Long-life grease (p. 500)

- Clean the contact areas on the brake caliper bracket and link fork.





- Engage the thrust bearing of brake caliper bracket **B** and the link fork.
- Jack up the rear wheel into the link fork, position it, and insert the wheel spindle.
 - ✓ The brake pads are positioned correctly.
- Place the chain on the sprocket.
- Position chain tension adjuster **2**. Mount nut **3** but do not tighten yet.

Mount the left and right chain tension adjuster in the same position.

- Make sure that chain adjusters **2** are fitted correctly on the adjusting screws. Tighten nut **3**.

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 **C**.

Nut, wheel spindle, rear	
M25×1.5	90 Nm (66.4 ft·lb _f) Long-life grease

- Position wheel speed sensor **4** in the hole.
- Mount and tighten screw **5**.

Screw, rear wheel speed sensor	
M6	6 Nm (4.4 ft·lb _f)

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

Reworking

- Check the chain tension. 📖 (p. 157)
- Remove the rear of the motorcycle from the lifting gear.
📖 (p. 18)

14.10.3 Removing the rear wheel (work stand)

Preparatory work

- Remove the passenger seat. 📖 (p. 99)
- Remove the front rider's seat. 📖 (p. 100)
- Remove the left side cover. 📖 (p. 118)
- Remove the battery cover. 📖 (p. 120)
- Remove left fuel tank spoiler. 📖 (p. 121)
- Remove the right side fairing. 📖 (p. 119)
- Remove right fuel tank spoiler. 📖 (p. 123)
- Remove the skid plate. 📖 (p. 125)
- Remove the fuel tank. 📖 (p. 100)
- Raise the motorcycle at the front using the work stand.
📖 (p. 21)

- Place a load on the front of the vehicle.
- ✓ The rear wheel is not in contact with the ground.

Main work

- Manually press the brake caliper toward the brake disc to push back the brake pistons.
- Remove screw ① and pull wheel speed sensor ② out of the hole.
- Remove nut ③. Take off chain adjuster ④.
- Pull out wheel spindle ⑤ far enough to allow the rear wheel to be pushed forward.
- Push the rear wheel forward as far as possible. Take the chain off the rear sprocket and place it on chain sprocket guard ⑥.

Protect the components against damage by covering them.

- Hold the rear wheel and remove wheel spindle.
- Pull the rear wheel back until the brake caliper bracket is suspended freely between the brake disc and rim.



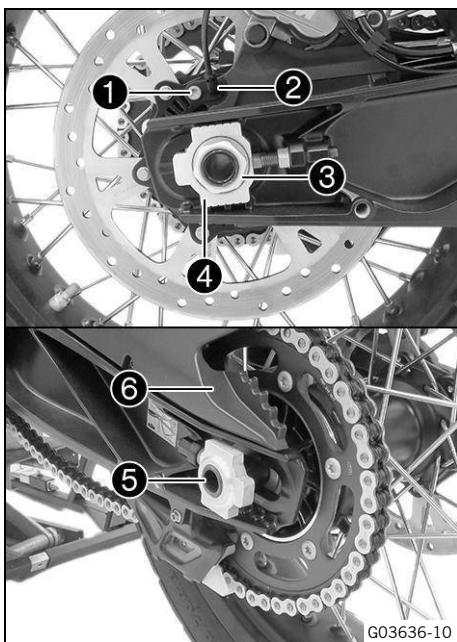
WARNING

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.

- Take the rear wheel out of the swingarm.

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



14.10.4 Installing the rear wheel (work stand)



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.



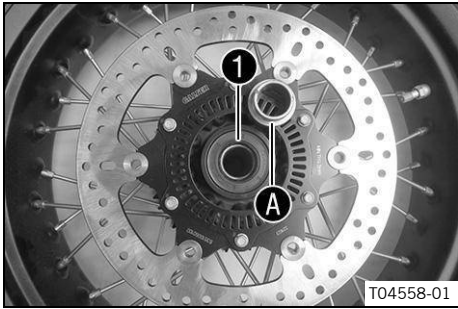
WARNING

Danger of accidents There is no braking effect to start with at the rear brake after installing the rear wheel.

- Actuate the foot brake several times before going on a ride until you can feel a firm pressure point.

Main work

- Check the rear hub damping rubber pieces. (p. 162)



- Check the wheel bearing for damage and wear.
 - » If the wheel bearing is damaged or worn:
 - Change the rear wheel bearing. (p. 149)
- Remove spacer.
- Clean and grease shaft seal ring 1 and contact surface A of the spacer.

Long-life grease (p. 500)

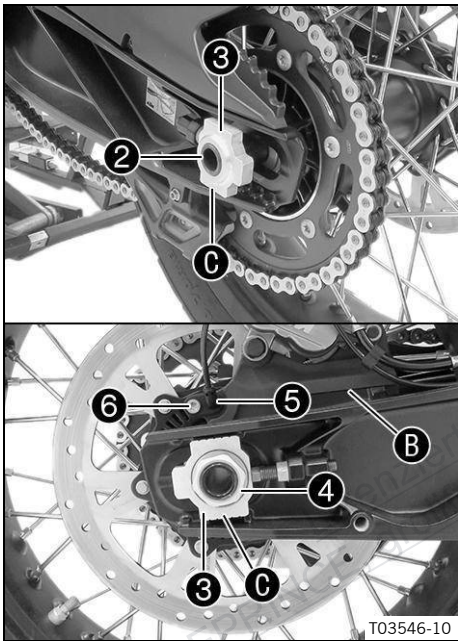
- Insert a spacer.
- Clean and grease the thread of the wheel spindle and nut.

Long-life grease (p. 500)

- Clean and lightly grease the wheel spindle.

Long-life grease (p. 500)

- Clean the contact areas on the brake caliper bracket and link fork.



- Engage the thrust bearing of brake caliper bracket B and the link fork.
- Lift the rear wheel into the link fork, position it, and insert wheel spindle 2.

✓ The brake pads are positioned correctly.

- Place the chain on the sprocket.
- Position chain adjuster 3. Mount nut 4 but do not tighten yet.

Mount the left and right chain tension adjuster in the same position.

- Make sure that chain adjusters 3 are fitted correctly on the adjusting screws. Tighten nut 4.

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 C.

Nut, wheel spindle, rear	
M25×1.5	90 Nm (66.4 ft·lb _f) Long-life grease

- Position wheel speed sensor 5 in the hole.
- Mount and tighten screw 6.

Screw, rear wheel speed sensor	
M6	6 Nm (4.4 ft·lb _f)

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

Reworking

- Check the chain tension. (p. 157)
- Remove the motorcycle from the work stand at the front. (p. 22)
- Install the fuel tank. (p. 103)
- Install the skid plate. (p. 126)

- Install the right fuel tank spoiler.  (p. 124)
- Install the right side cover.  (p. 119)
- Install the left fuel tank spoiler.  (p. 122)
- Install the battery cover.  (p. 120)
- Install the left side fairing  (p. 118)
- Mount the front rider's seat.  (p. 100)
- Mount the passenger seat.  (p. 99)



14.10.5 Changing the rear wheel bearing

Preparatory work

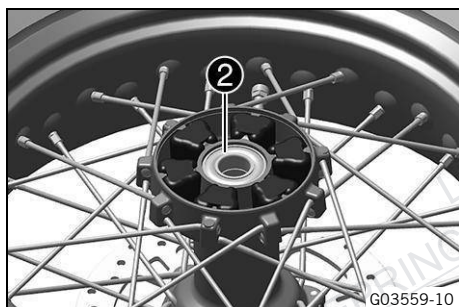
- Raise the motorcycle with the rear lifting gear.  (p. 18)
- Remove the rear wheel.  (p. 144)

Main work

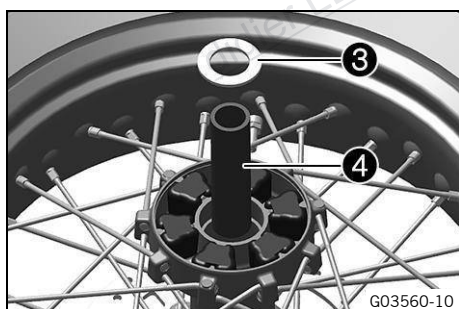
- Remove rear sprocket carrier **1**.

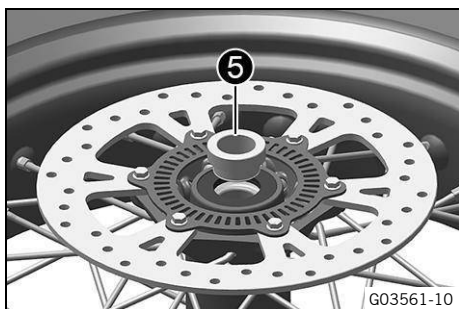


- Using a suitable tool, press out bearing **2** from the inside to the outside.

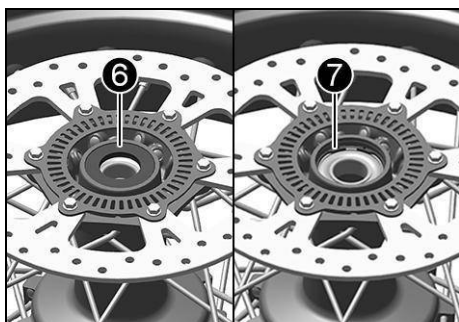


- Remove spacer washer **3**.
- Remove spacing tube **4**.



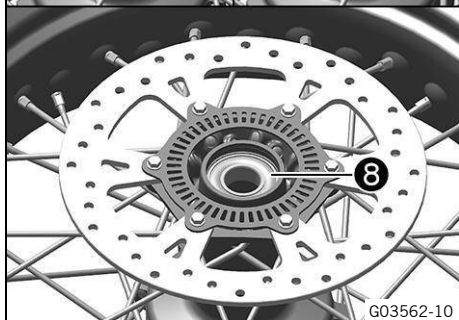


- Remove spacer **5**.



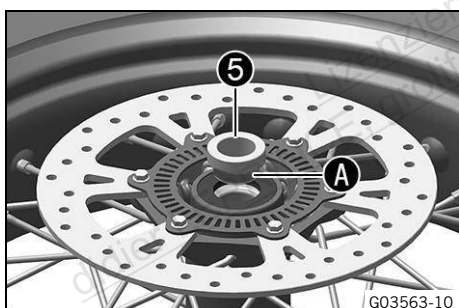
- Remove radial shaft seal **6**.
- Remove lock ring **7**.
- Using a suitable tool, press out bearing **8** from the inside to the outside.
- Press the new bearing all the way in from the outside to the inside.

Only press the bearings in via the outer bearing race, otherwise the bearing will be damaged when it is pressed in.



- Mount the lock ring.
✓ The lock ring engages audibly.
- Grease the new radial shaft seal ring and press it in until flush.

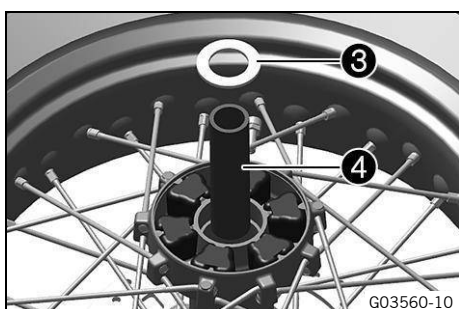
Long-life grease (p. 500)



- Clean and grease the contact surfaces **A** of the spacer.

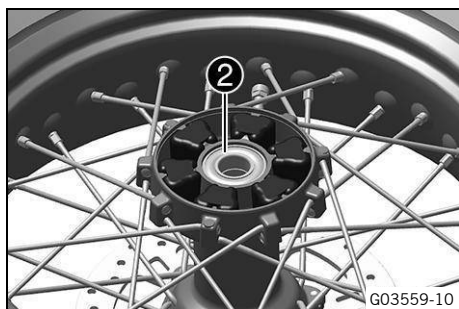
Long-life grease (p. 500)

- Position spacer **5**.



- Check spacer disk **3** for damage and wear.
» If the spacer disk is damaged or worn:
– Replace the spacer disk.
- Mount the spacer washer.
- Clean, grease, and mount spacing tube **4**.

Long-life grease (p. 500)



- Press new bearing **2** all the way in from the outside to the inside.

Only press the bearings in via the outer bearing race, otherwise the bearing will be damaged when it is pressed in.



- Ensure that the damping rubber pieces are correctly seated.
- Mount rear sprocket carriers **1**.

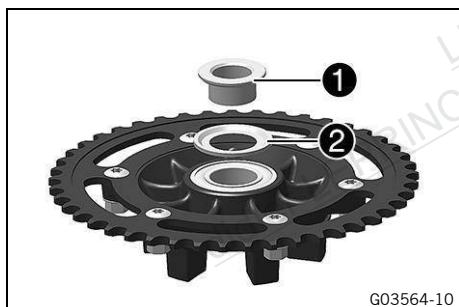
Reworking

- Install the rear wheel. (p. 145)
- Check the chain tension. (p. 157)
- Remove the rear of the motorcycle from the lifting gear. (p. 18)

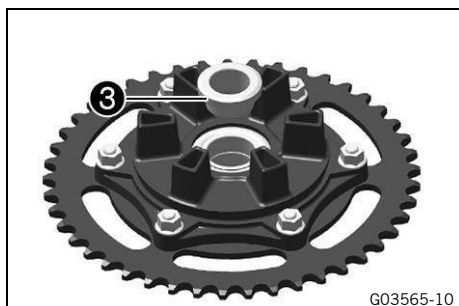


14.10.6 Changing the bearing of the rear sprocket carrier

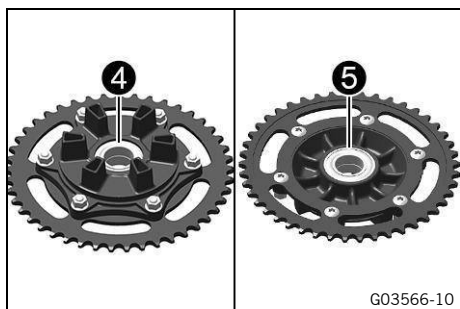
Condition: Rear sprocket carrier has been removed



- Remove spacer **1** with washer **2**.



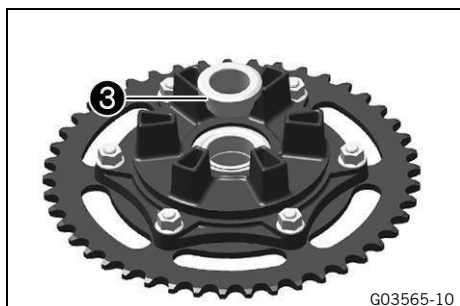
- Remove collar bushing **3**.



G03566-10

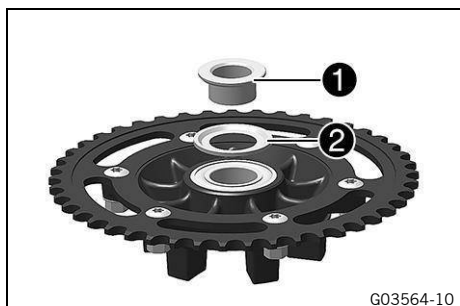
- Using a suitable tool, press bearings 4 and 5 out from the inside to the outside.
- Using a suitable tool, press in new bearings 5 and 4 from the outside to the inside until they are flush.

Only press the bearings in using the outer bearing race; otherwise, the bearings will be damaged when they are pressed in.



G03565-10

- Mount collar bushing 3.



G03564-10

- Mount spacer 1 with washer 2.

14.10.7 Changing the brake discs on the rear brake



Note

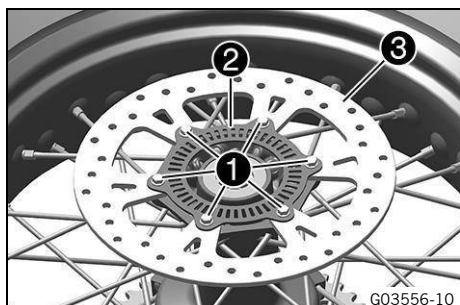
If the brake discs are changed, the brake pads must also be changed.

Preparatory work

- Raise the motorcycle with the rear lifting gear. (p. 18)
- Remove the rear wheel. (p. 144)

Main work

- Remove screws 1.
- Take off wheel speed sensor wheel 2.
- Take off brake disc 3.
- Clean the contact surface of the brake disc.
- Position the new brake disc with the label facing outward.



G03556-10

- Position the wheel speed sensor wheel.
- Mount and tighten the screws.

Screw, rear brake disc	
M6	14 Nm (10.3 ft·lb _f) Loctite® 243

Reworking

- Install the rear wheel.  (p. 145)
- Check the chain tension.  (p. 157)
- Remove the rear of the motorcycle from the lifting gear.  (p. 18)



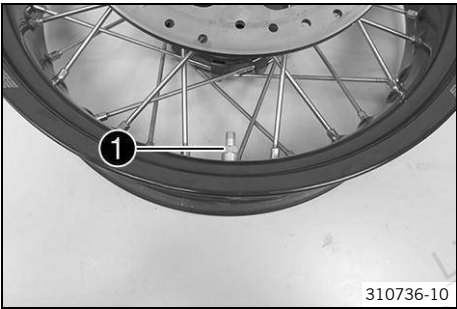
14.10.8 Changing the rim seal band at the rear

Preparatory work

- Raise the motorcycle with the rear lifting gear.  (p. 18)
- Remove the rear wheel.  (p. 144)
- Take off the rear sprocket carrier and the damping rubbers.
- Remove the tire.

Main work

- Remove nut .
- Take off the tire pressure sensor.

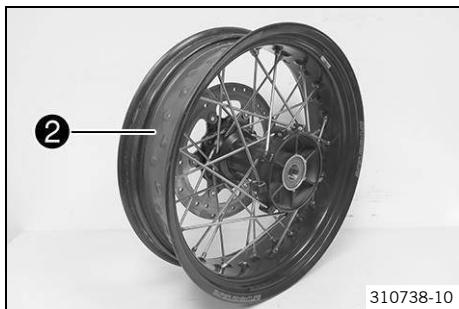


- Carefully cut through the rim seal band and pull it off.

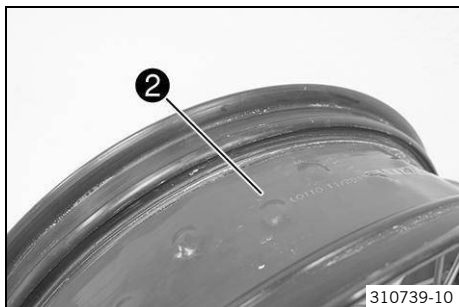


Tip

Raise the rim seal band slightly so that the rim tape is not damaged.

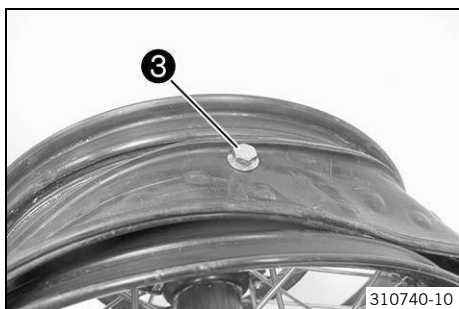


- Take off rim tape ②.
- Clean the seal groove.
- Check the rim for damage and wear.
 - » If there is damage or wear:
 - Change the rim.
- Check the rim run-out. 📖 (p. 130)



- Mount rim tape ②.

Ensure that the rim tape is in exactly the right position.



- Lubricate the seal groove lightly.

Diluted tire mounting paste 📖 (p. 500)

- Position the new rim seal band.
- Using suitable screw ③, secure the holes of the rim seal band and the rim together.

Do not tighten the screw so that the seal ring is not damaged.



- Pull the rim seal band evenly over the rim.



- Align the rim seal band.

Ensure that the rim seal band does not develop folds in the longitudinal direction.

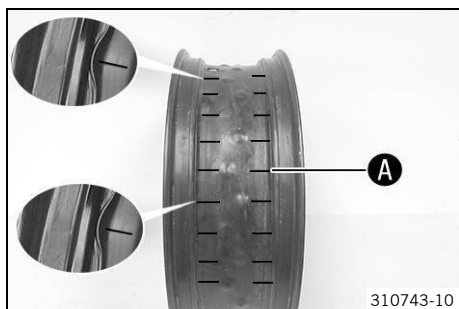
- ✓ Both sides of the rim seal band are positioned in the bottom of the seal groove.
- ✓ Markings **A** are aligned along the total circumference of the rim.

- Grease the rim seal band at the edges.

Diluted tire mounting paste (p. 500)



310742-10



310743-10

- Press the rim seal band into the seal groove at intervals that are 5 markings **A** apart.

Press perpendicular to the rim to avoid shifting the profile in a radial direction.



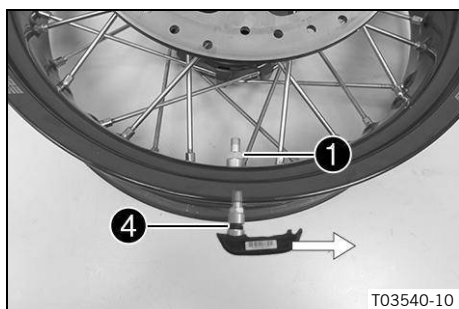
Note

This step aids positioning, making it easier to mount the rim seal band.



310744-10

- Press the rim seal band into the seal groove along the entire circumference.
- Check that the rim seal band is seated correctly around the entire circumference.
- ✓ The valve is straight.



T03540-10

- Grease O-ring **4** lightly.

Diluted tire mounting paste (p. 500)

- Position the tire pressure sensor.

- ✓ Tire air pressure sensor points in the opposite direction to the direction of travel.

- Mount and tighten nut **1**.

Nut, tire pressure sensor

ISO 10V2

12 Nm
(8.9 ft-lb_r)

Loctite® 2701

Reworking

- Mount and balance the tires.
- Mount the damping rubbers and rear sprocket carrier.
- Install the rear wheel. 📖 (p. 145)
- Check the chain tension. 📖 (p. 157)
- Remove the rear of the motorcycle from the lifting gear. 📖 (p. 18)
- Program the tire pressure sensor. 📖 (p. 133)

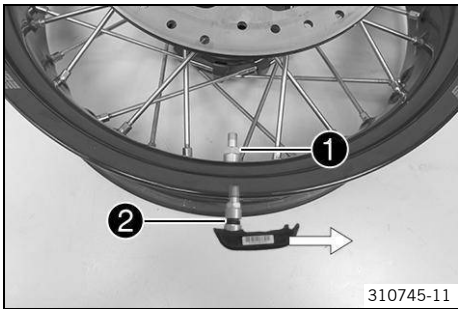
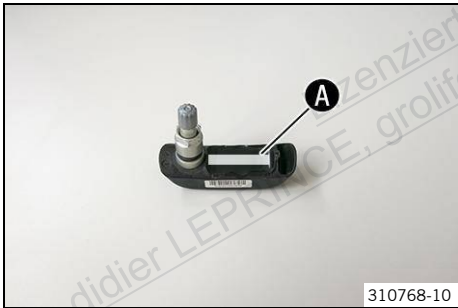
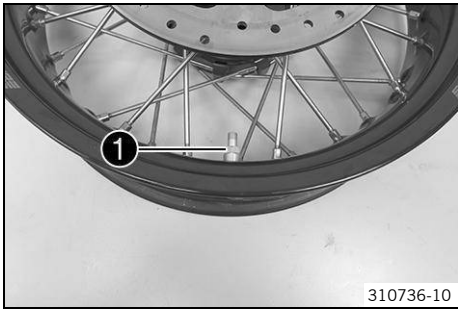
14.10.9 Changing the rear tire pressure sensor

Preparatory work

- Raise the motorcycle with the rear lifting gear. 📖 (p. 18)
- Remove the rear wheel. 📖 (p. 144)
- Take off the rear sprocket carrier and the damping rubbers.
- Remove wheel.

Main work

- Remove nut ❶.
- Take off the tire pressure sensor.



- Note ID number A of the new tire pressure sensor.



Note

The ID number is used to program the tire pressure sensor.

- Grease O-ring ❷ lightly.

Diluted tire mounting paste 📖 (p. 500)

- Position the new tire pressure sensor.
 - ✓ The tire air pressure sensor points away from the direction of travel.
- Mount and tighten nut ❶.

Nut, tire pressure sensor

ISO 10V2

12 Nm
(8.9 ft·lb_r)

Loctite® 2701

Reworking

- Mount and balance the tires.
- Mount the damping rubbers and rear sprocket carrier.
- Install the rear wheel. 📖 (p. 145)
- Check the chain tension. 📖 (p. 157)
- Remove the rear of the motorcycle from the lifting gear. 📖 (p. 18)
- Program the tire pressure sensor. 📖 (p. 133)



14.10.10 Checking the chain tension



WARNING

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

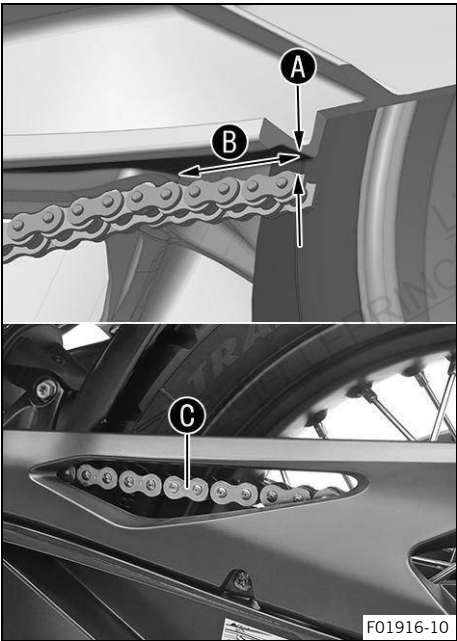
- Check the chain tension regularly.
- Set the chain tension in accordance with the specification.

Preparatory work

- Raise the motorcycle with the rear lifting gear. 📖 (p. 18)

Main work

- Shift the transmission into neutral **N**.
- Push the chain behind the chain sliding piece up and determine the chain tension **A** between the link fork and the upper edge of the chain.



F01916-10

Distance B from the chain sliding piece	2.5 cm (0.98 in)
Measure the distance from the flat part of the link fork directly above the chain, not from the edge of the link fork.	
Chain tension	2 mm ... 5 mm (0.08 in ... 0.20 in)
The top part of chain C must be taut.	
Chain wear is not always even. Repeat this measurement at different chain positions.	

- » If the chain tension does not meet the specification:
 - Adjust the chain tension. 📖 (p. 158)
- Remove the rear of the motorcycle from the lifting gear. 📖 (p. 18)



14.10.11 Adjusting the chain tension



WARNING

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

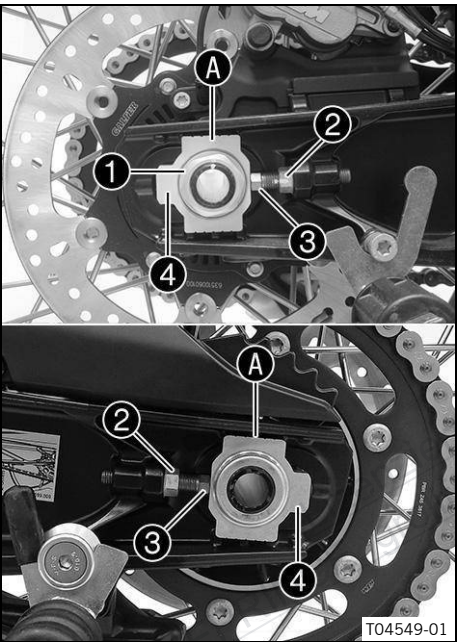
If the chain tension is too high, the chain, front sprocket, rear sprocket, transmission, and rear wheel bearings wear more quickly. Some components may break if overloaded.

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 the rear lifting gear.  (p. 18)
 - Check the chain tension.  (p. 157)

- Main work**
- Loosen nut **1**.
 - Loosen nuts **2**.
 - Adjust the chain tension by turning adjusting screws **3** on the left and right.



Chain tension	2 mm ... 5 mm (0.08 in ... 0.20 in)
Turn adjusting screws 3 on the left and right so that the markings on left and right chain adjusters 4 are in the same position relative to reference marks A . The rear wheel is then correctly aligned.	
The upper part of the chain must be taut.	
Chain wear is not always even. Repeat this measurement at different chain positions.	

- Tighten nuts **2**.
- Make sure that chain tension adjusters **4** are fitted correctly on adjusting screws **3**.
- Tighten nut **1**.

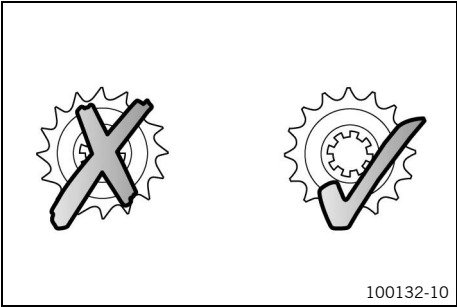
Nut, wheel spindle, rear	
M25×1.5	90 Nm (66.4 ft·lb _r) Long-life grease

- Reworking**
- Check the chain tension.  (p. 157)

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

- Preparatory work**
- Raise the motorcycle with the rear lifting gear.  (p. 18)

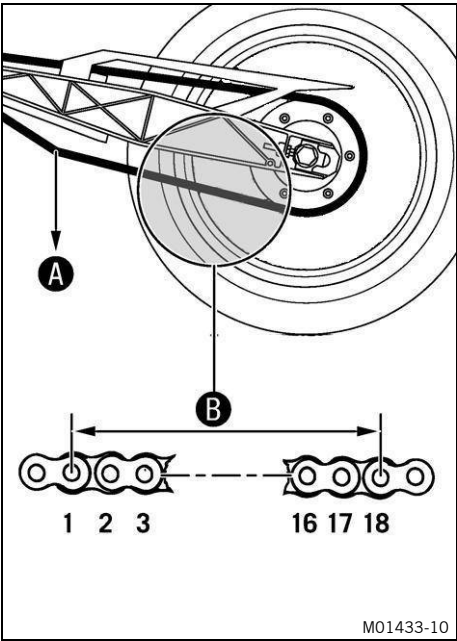
Main work



100132-10

- Check the chain, rear sprocket, and front sprocket for wear.
 - » If the chain, rear sprocket, or front sprocket is worn:
 - Change the drivetrain kit. (p. 164)

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



M01433-10

- Shift the transmission into neutral **N**.
- Pull on the lower chain section with specified weight **A**.

Weight, chain wear measurement	15 kg (33.1 lb)
--------------------------------	--------------------

- Measure distance **B** of chain rollers in the lower chain section.

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

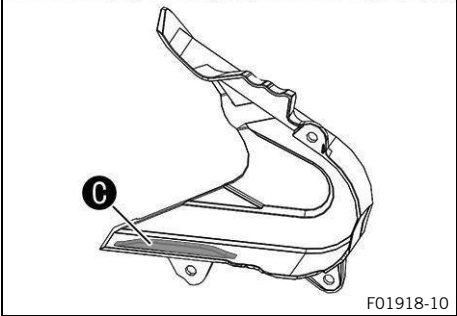
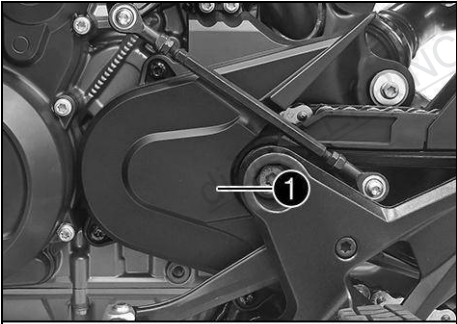
- » If distance **B** is greater than the specified measurement:
 - Change the drivetrain kit. (p. 164)

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

i Note

New chains wear out faster on old, worn sprockets.

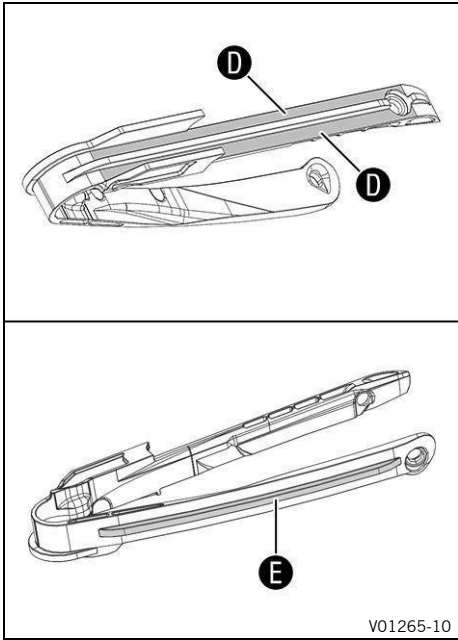
For safety reasons, the chain has no chain joint.



F01918-10

- Check the engine sprocket cover **1** for wear.
 - » If the engine sprocket cover is highly worn in the marked area **C**:
 - Change the front sprocket cover.
- Check the engine sprocket cover **1** for tightness.
 - » If the engine sprocket cover is loose:
 - Tighten the screws on the engine sprocket cover.

Screw, front sprocket cover	
M5	5 Nm (3.7 ft·lb _r) Loctite® 243



- Check the chain slider at the top for wear.
 - » If continuous signs of wear to the chain are visible on the chain sliding guard in the area **D** marked:
 - Change the chain slider.
 - » If the chain sliding guard is highly worn on the underside in the marked area **E**:
 - 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.

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

Reworking

- Remove the rear of the motorcycle from the lifting gear. (p. 18)

14.10.13 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.

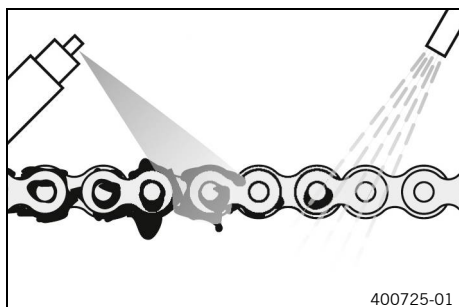
- Dispose of oils, grease, filters, fuel, cleaning agents, brake fluid, etc. correctly and in accordance with the applicable regulations.

Note

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

Preparatory work

- Raise the motorcycle with the rear lifting gear. (p. 18)



Main work

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

Chain cleaner (p. 504)

- After drying, apply chain spray.

Street chain spray (p. 500)

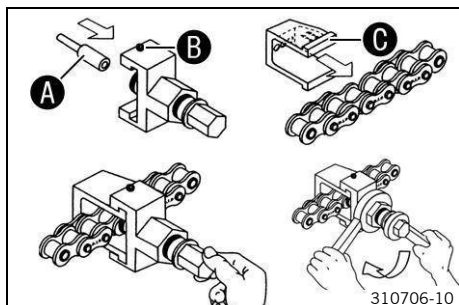
Reworking

- Remove the rear of the motorcycle from the lifting gear.

(p. 18)



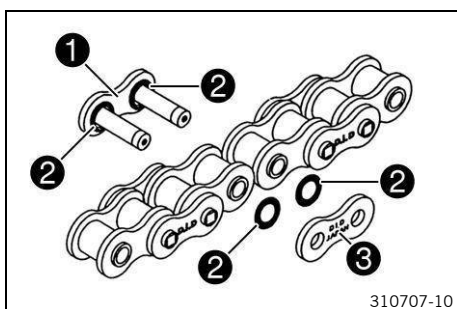
14.10.14 Opening the chain



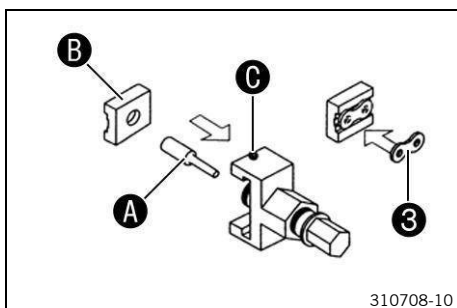
- Mount mandrel **A** with the larger diameter in the spindle of the special tool. Turn the spindle counterclockwise.
- Chain rivet tool (60029020000) (p. 487)
- Make the connecting link of the chain accessible. Fret the riveting point.
 - Position the special tool with the mandrel on one of the 2 pins of the connecting link of the chain.
 - ✓ Blocking screw **B** points upwards.
 - Position retaining clamp **C** of the special tool on the chain from the rear.
 - ✓ Markings **A** and **B** point upwards.
 - Slide retaining clamp **C** of the special tool into the pressing tool.
 - ✓ The arrow of marking **A** points to blocking screw **B**.
 - Screw the blocking screw hand-tight as far as it will go.
 - ✓ The retaining clamp is fixed.
 - Hold the special tool and screw in the spindle.
 - ✓ The chain pin is pressed out through the retaining clamp drill hole.
 - Unscrew the blocking screw and remove the special tool.
 - Repeat the process on the second pin of the chain link.



14.10.15 Riveting the chain



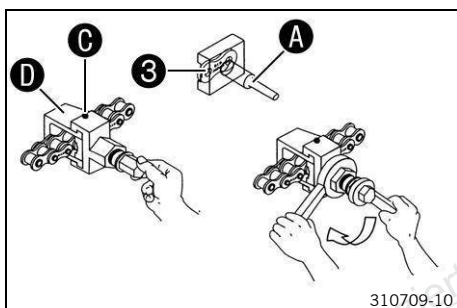
- Grease new connecting link **1** and position an X-ring **2** on each pin.
- Connect the chain ends with a connecting link.
- Position another X-ring **2** on each pin.



- Mount mandrel **A** with the smaller diameter in the spindle of the special tool. Turn the spindle counterclockwise.

Chain rivet tool (60029020000) (p. 487)

- Position press plate **B** of the special tool on the mandrel.
- Position chain joint plate **3** in the press plate.



- Position the special tool on the chain.
 - ✓ Blocking screw **C** points upwards.
- Position retaining clamp **D** of the special tool on the chain from the rear.
 - ✓ Markings **A** and **B** point upwards.
- Slide retaining clamp **D** of the special tool into the pressing tool.
 - ✓ The arrow of marking **A** points to blocking screw **C**.
- Screw the blocking screw hand-tight as far as it will go.
 - ✓ The retaining clamp is fixed.
- Hold the special tool and screw in the spindle.
 - ✓ Mandrel **A** of the special tool presses against the center of chain joint plate **3**.
 - ✓ The chain joint plate is pressed on.
- Unscrew the blocking screw and remove the special tool.
- Rivet the two pins of the connecting link with special tool.

Chain rivet tool (60029020000) (p. 487)

14.10.16 Checking the rear hub damping rubber pieces

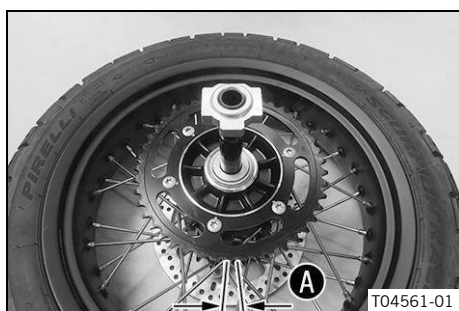
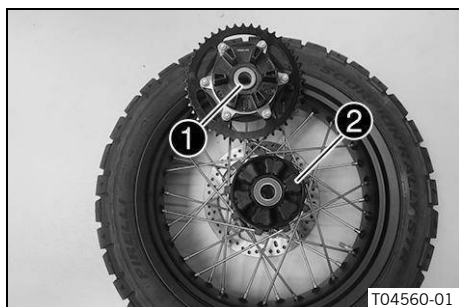


Note

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

Preparatory work

- Raise the motorcycle with the rear lifting gear. (p. 18)
- Remove the rear wheel. (p. 144)



Main work

- Check bearing ①.
 - » If the bearing is damaged or worn:
 - Change the bearing of the rear sprocket carrier. (p. 151)
- Check damping rubber pieces ② of the rear hub for damage and wear.
 - » If the damping rubber pieces of the rear hub are damaged or worn:
 - Change all the damping rubber pieces of the rear hub.
- Lay the rear wheel on a workbench with the rear sprocket facing upwards and insert the wheel spindle in the hub.
- To check play ①A, hold the rear wheel tight and try to turn the rear sprocket with your hand.

Play of damping rubber pieces on rear wheel	≤ 5 mm (≤ 0.20 in)
Measure the play on the outside of the rear sprocket.	

- » If clearance ①A is larger than the specified value:
 - Change all the damping rubber pieces of the rear hub. (p. 163)

Reworking

- Install the rear wheel. (p. 145)
- Check the chain tension. (p. 157)
- Remove the rear of the motorcycle from the lifting gear. (p. 18)



14.10.17 Changing all the damping rubber pieces of the rear hub

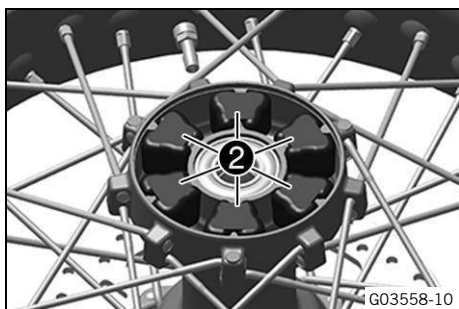
Preparatory work

- Raise the motorcycle with the rear lifting gear. (p. 18)
- Remove the rear wheel. (p. 144)

Main work

- Remove rear sprocket carrier ①.





- Remove all damping rubber pieces ②.
- Position new damping rubber pieces.



- Mount rear sprocket carriers ①.

Reworking

- Install the rear wheel. 📖 (p. 145)
- Check the chain tension. 📖 (p. 157)
- Remove the rear of the motorcycle from the lifting gear. 📖 (p. 18)

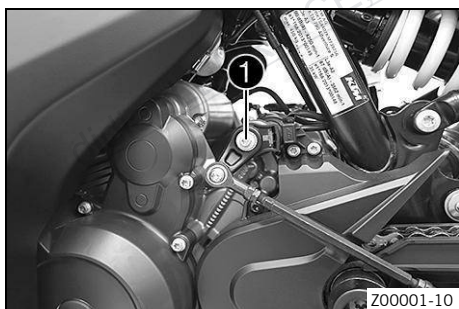
14.10.18 Changing the drivetrain kit

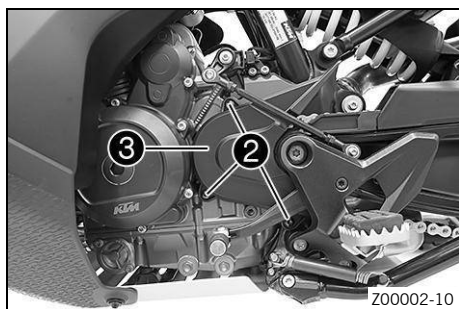
Preparatory work

- Raise the motorcycle with the rear lifting gear. 📖 (p. 18)

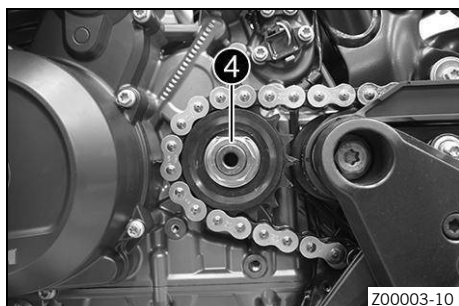
Main work

- Remove screw ① and the washers.
- Hang the bell crank with the shift linkage to the side.

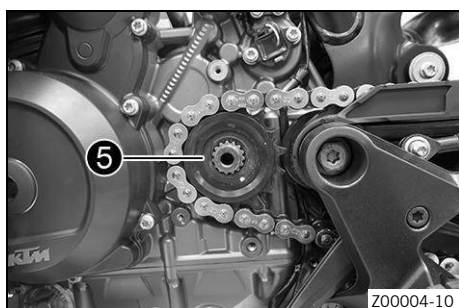




- Remove screws **2**.
- Take off engine sprocket cover **3**.



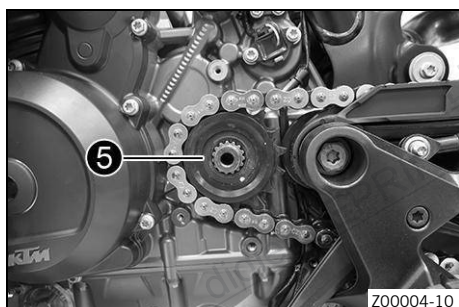
- Bend up the lock washer.
- Have an assistant operate the rear brake.
- Remove nut **4** with the lock washer.
- Remove the rear wheel. (p. 144)



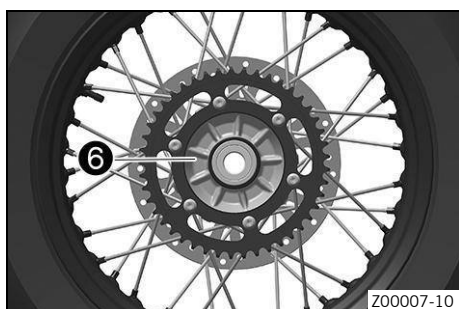
- Remove front sprocket **5**.
- Open the chain. (p. 161)
- Take off the chain.

Protect the components against damage by covering them.

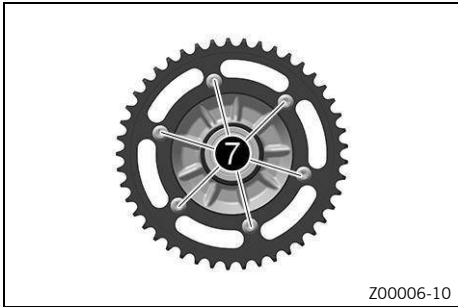
- Mount the new chain.
- Rivet the chain. (p. 162)



- Position new engine sprocket **5** in the chain and mount on the countershaft.



- Remove rear sprocket carrier **6**.



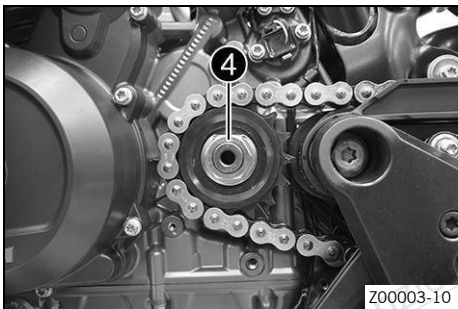
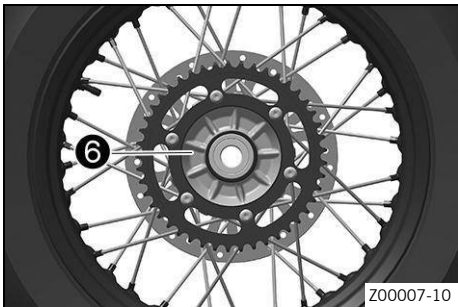
- Fix the rear sprocket carrier in the vise.

Use soft jaws.

- Remove fittings 7 and take off the rear sprocket.
- Clean the contact area of the rear sprocket.
- Position the new rear sprocket.
- Mount and tighten fittings 7.

Nut, rear sprocket screw	
M8	35 Nm (25.8 ft·lb _f) Loctite® 2701

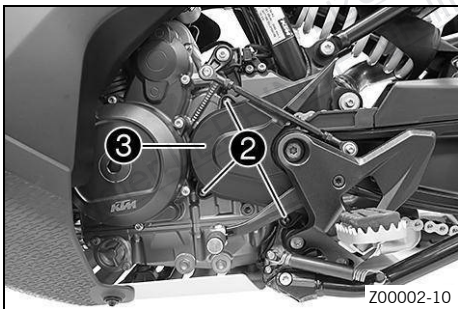
- Mount rear sprocket carriers 6.



- Install the rear wheel. (p. 145)
- Have an assistant operate the rear brake.
- Mount nut 4 with lock washer and tighten.

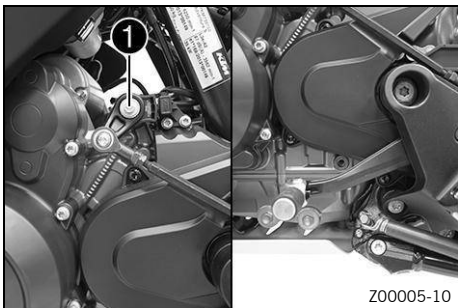
Nut, engine sprocket	
M20×1.5	100 Nm (73.8 ft·lb _f) Loctite® 243

- Secure the nut with a lock washer.



- Position engine sprocket cover 3.
- Mount and tighten screws 2.

Screw, front sprocket cover	
M5	5 Nm (3.7 ft·lb _f) Loctite® 243



- Position the bell crank.

The gear shift lever must not come into contact with any other vehicle components during the shift procedure.

- Mount and tighten screw 1 with the washers.

Screw, shift lever	
M6	14 Nm (10.3 ft·lb _f) Loctite® 243

Reworking

- Check the chain tension.  (p. 157)



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15.1 Removing the 12 V battery



WARNING

Danger of accidents Electronic components and safety devices will be damaged if the 12-V battery is discharged or missing.

If the 12-V battery is discharged or defective, malfunctions in the vehicle electronics can occur, especially when starting.

- Never operate the vehicle with a discharged 12-V battery or without a 12-V battery.



WARNING

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

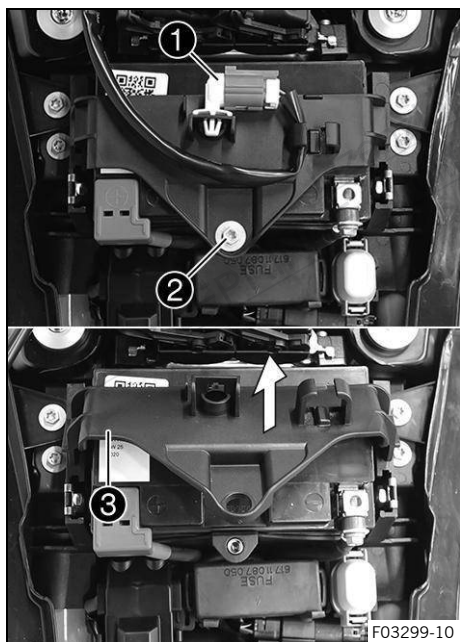
- Keep 12-V batteries out of the reach of children.
- Wear suitable protective clothing and safety glasses.
- Avoid contact with battery acid and battery gases.
- Keep sparks or open flames away from the 12 V battery.
- Only charge 12 V batteries in well-ventilated rooms.
- Rinse the affected area immediately with plenty of water in the event of contact with skin.
- Rinse eyes with water for at least 15 minutes and consult a doctor immediately if battery acid and battery gases get into the eyes.

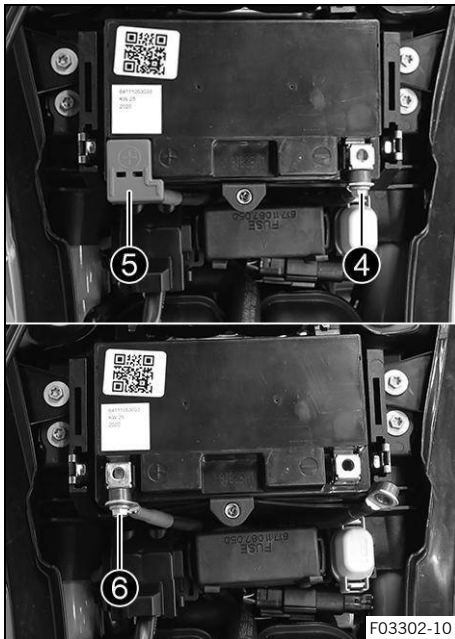
Preparatory work

- Remove the passenger seat. (p. 99)
- Remove the front rider's seat. (p. 100)
- Remove the battery cover. (p. 120)

Main work

- Pull the diagnostics connector **1** out of the bracket and hang to the side.
- Remove screw **2**.
- Raise the battery mounting element **3** at the rear and remove in upward direction.





- Disconnect negative cable ④ from the 12 V battery.
- Remove positive terminal cover ⑤.
- Disconnect positive cable ⑥ from the 12-V battery.
- Pull the 12-V battery upwards and out of the battery compartment.

15.2 Installing the 12 V battery



WARNING

Danger of accidents Electronic components and safety devices will be damaged if the 12-V battery is discharged or missing.

If the 12-V battery is discharged or defective, malfunctions in the vehicle electronics can occur, especially when starting.

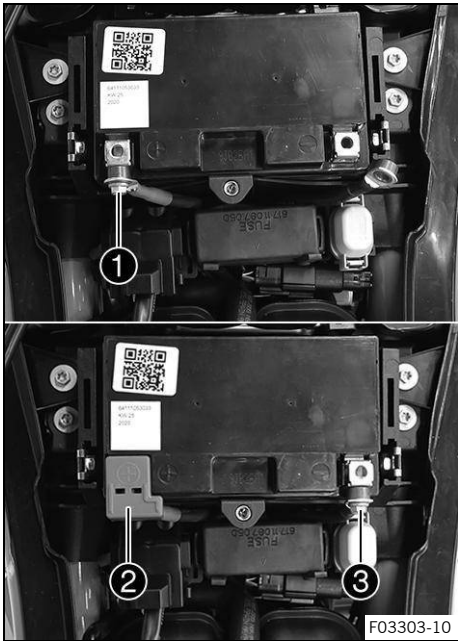
- Never operate the vehicle with a discharged 12-V battery or without a 12-V battery.



WARNING

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

- Keep 12-V batteries out of the reach of children.
- Wear suitable protective clothing and safety glasses.
- Avoid contact with battery acid and battery gases.
- Keep sparks or open flames away from the 12 V battery.
- Only charge 12 V batteries in well-ventilated rooms.
- Rinse the affected area immediately with plenty of water in the event of contact with skin.
- Rinse eyes with water for at least 15 minutes and consult a doctor immediately if battery acid and battery gases get into the eyes.



Main work

- Position the 12-V battery in the battery compartment.

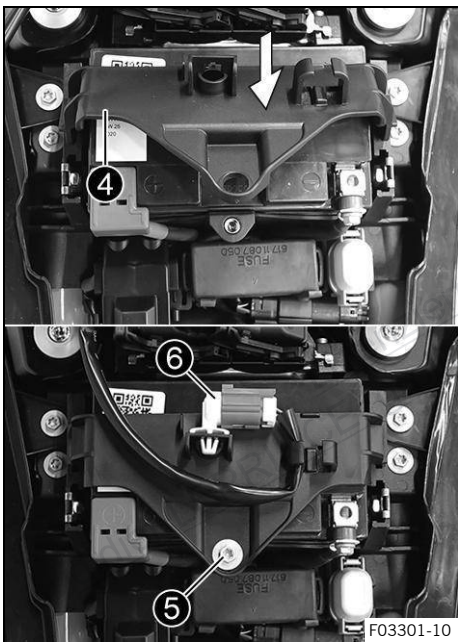
12 V battery (HTZ12A-BS)

- ✓ The battery terminals face opposite the direction of travel.
- Connect positive cable 1 to the 12 V battery.

Screw, battery terminal	
M6	4.5 Nm (3.32 ft·lb _f)

- Mount positive terminal cover 2.
- Connect negative cable 3 to the 12 V battery.

Screw, battery terminal	
M6	4.5 Nm (3.32 ft·lb _f)



- Hang battery holding bracket 4 to the left and right in the holding lugs and push downward at the rear.
- Mount and tighten screw 5.

Screw, battery holding bracket	
M6	4.5 Nm (3.32 ft·lb _f)

- Position the diagnostics connector 6 in the holder.

Reworking

- Install the battery cover. 📖 (p. 120)
- Mount the front rider's seat. 📖 (p. 100)
- Mount the passenger seat. 📖 (p. 99)
- Set the time and date. 📖 (p. 238)

15.3 Disconnecting the negative cable of the 12 V battery



WARNING

Danger of accidents Electronic components and safety devices will be damaged if the 12-V battery is discharged or missing.

If the 12-V battery is discharged or defective, malfunctions in the vehicle electronics can occur, especially when starting.

- Never operate the vehicle with a discharged 12-V battery or without a 12-V battery.



WARNING

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

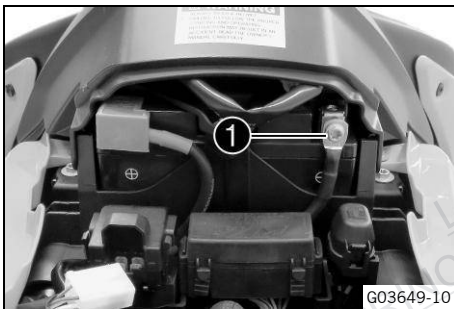
- Keep 12-V batteries out of the reach of children.
- Wear suitable protective clothing and safety glasses.
- Avoid contact with battery acid and battery gases.
- Keep sparks or open flames away from the 12 V battery.
- Only charge 12 V batteries in well-ventilated rooms.
- Rinse the affected area immediately with plenty of water in the event of contact with skin.
- Rinse eyes with water for at least 15 minutes and consult a doctor immediately if battery acid and battery gases get into the eyes.

Preparatory work

- Remove the passenger seat. (p. 99)
- Remove the front rider's seat. (p. 100)

Main work

- Disconnect negative cable ① from the 12 V battery.



15.4 Connecting the negative cable of the 12 V battery



WARNING

Danger of accidents Electronic components and safety devices will be damaged if the 12-V battery is discharged or missing.

If the 12-V battery is discharged or defective, malfunctions in the vehicle electronics can occur, especially when starting.

- Never operate the vehicle with a discharged 12-V battery or without a 12-V battery.

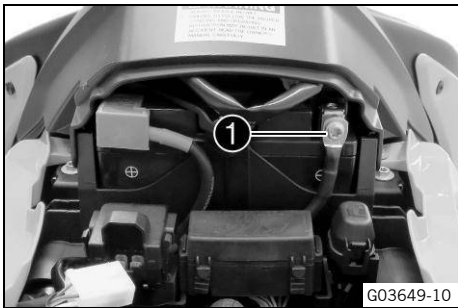


WARNING

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

- Keep 12-V batteries out of the reach of children.
- Wear suitable protective clothing and safety glasses.
- Avoid contact with battery acid and battery gases.
- Keep sparks or open flames away from the 12 V battery.

- Only charge 12 V batteries in well-ventilated rooms.
- Rinse the affected area immediately with plenty of water in the event of contact with skin.
- Rinse eyes with water for at least 15 minutes and consult a doctor immediately if battery acid and battery gases get into the eyes.



Main work

- Connect negative cable ① to the 12 V battery.

Screw, battery terminal	
M6	4.5 Nm (3.32 ft·lb _f)

Reworking

- Mount the front rider's seat. 📖 (p. 100)
- Mount the passenger seat. 📖 (p. 99)
- Set the time and date.

15.5 Charging the 12 V battery

WARNING

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

- Keep 12-V batteries out of the reach of children.
- Wear suitable protective clothing and safety glasses.
- Avoid contact with battery acid and battery gases.
- Keep sparks or open flames away from the 12 V battery.
- Only charge 12 V batteries in well-ventilated rooms.
- Rinse the affected area immediately with plenty of water in the event of contact with skin.
- Rinse eyes with water for at least 15 minutes and consult a doctor immediately if battery acid and battery gases get into the eyes.

NOTE

Danger of damage An incorrectly selected charging mode will damage the 12-V battery.

- Always select a charging mode that is compatible with the type of battery.

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

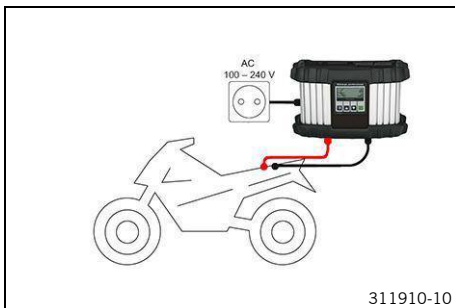
Even when there is no load on the 12-V battery, it discharges steadily each day. The state of charge and the method of charging are very important for the service life of the 12 V battery. Rapid recharging with a high charging current shortens the service life of the battery. If the charging current, charging voltage, or charging time is exceeded, electrolyte escapes through the safety valves. This reduces the capacity of the 12-V battery. If the 12-V battery is left in a discharged state for an extended period, it will become deeply discharged and sulfating occurs, destroying the battery. The 12 V battery is maintenance-free. The acid level does not have to be checked.

Preparatory work

- Remove the passenger seat. (p. 99)
- Remove the front rider's seat. (p. 100)
- Disconnect the negative cable of the 12 V battery. (p. 171)

Main work

- Connect a charger to the 12 V battery.
- Adjust the battery charger.



Follow the instructions of the charger and the manual.

EU battery charger **XCharge–professional** (00029095050) (p. 483)

US battery charger **XCharge–professional** (00029095051) (p. 484)

UK battery charger **XCharge–professional** (00029095052) (p. 484)

EU battery charger **TecMATE Optimate PRO** (A61029974044) (p. 494)

USA/CA battery charger **TecMATE Optimate PRO** (A61029974144) (p. 495)

Battery charger **TecMATE Optimate PRO UK** (A61029974244) (p. 495)

- Disconnect the battery charger after charging the 12 V battery.

The charging current, charging voltage, and charging time must not be exceeded.

If the 12 V battery is depleted from starting the vehicle repeatedly, the battery must be charged immediately.

Recharge the 12 V battery regularly when the motorcycle is not being used.	6 months
--	----------

Reworking

- Connect the negative cable of the 12 V battery. (p. 171)
- Mount the front rider's seat. (p. 100)
- Mount the passenger seat. (p. 99)
- Set the time and date.

15.6 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.

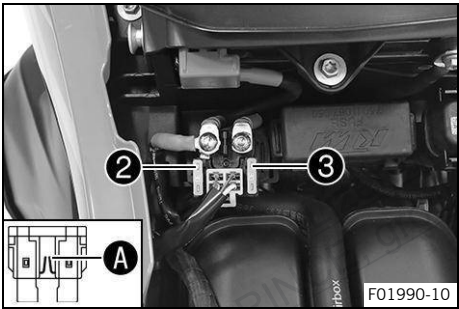
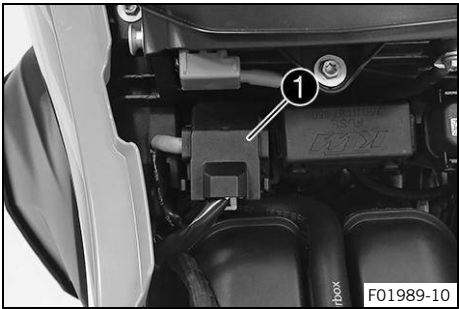


Note

The main fuse protects all electrical power loads of the vehicle. The main fuse is under the passenger seat.

- Preparatory work**
- Remove the passenger seat.  (p. 99)

- Main work**
- Remove protection cap **1**.



- Remove faulty main fuse **2**.
- 

Note

A faulty fuse has a burned-out fuse wire **A**.
A spare fuse **3** is located in the starter relay.

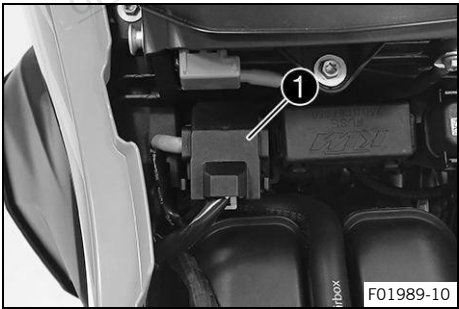
- Insert the main fuse.
- | |
|--------------------|
| Fuse (58011109130) |
|--------------------|



Tip

Insert a new spare fuse into the starter relay to have it available when needed.

- Mount protection cap **1**.



Reworking

- Mount the front rider's seat.  (p. 100)
- Mount the passenger seat.  (p. 99)
- Set the time and date.  (p. 238)



15.7 Changing the ABS fuses



WARNING

Fire hazard Incorrect fuses overload the electrical system.

- Use only fuses with the prescribed amperage.
- Do not bypass or repair fuses.



Note

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

Preparatory work

- Remove the passenger seat.  (p. 99)
- Remove the front rider's seat.  (p. 100)

Main work

- Select one of the following alternatives.

To change the fuse of the ABS hydraulic unit:

- Remove the protection cap and fuse ①.



Note

A faulty fuse has a burned-out fuse wire **A**.

- Insert the spare fuse with the correct rating.

Fuse (75011088015)



Tip

Insert spare fuse ② in the fuse box so that it is available if needed.

- Mount the protection cap.

To change the fuse of the ABS return pump:

- Remove the protection cap and fuse ③.



Note

A faulty fuse has a burned-out fuse wire **A**.

- Insert the spare fuse with the correct rating.

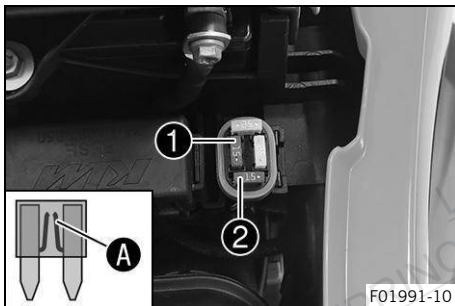
Fuse (75011088025)



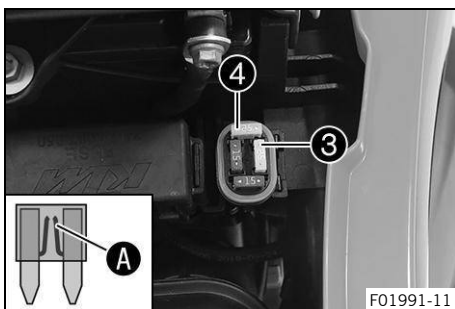
Tip

Insert spare fuse ④ in the fuse box so that it is available if needed.

- Mount the protection cap.



F01991-10



F01991-11

Reworking

- Mount the front rider's seat. (p. 100)
- Mount the passenger seat. (p. 99)

15.8 Changing the fuses of individual electrical power consumers



WARNING

Fire hazard Incorrect fuses overload the electrical system.

- Use only fuses with the prescribed amperage.
- Do not bypass or repair fuses.



Note

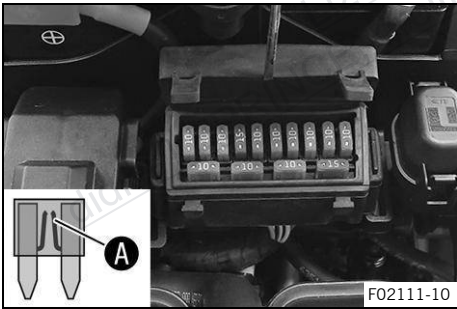
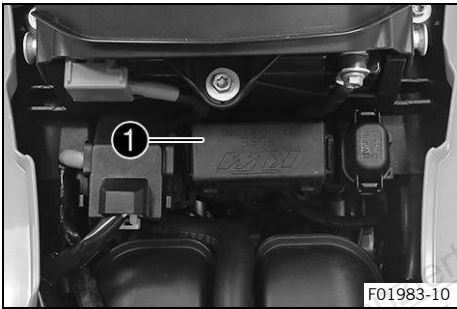
The fuse box containing the fuses of individual electrical power consumers is located under the seat.

Preparatory work

- Remove the passenger seat. (p. 99)
- Remove the front rider's seat. (p. 100)

Main work

- Open fuse box cover 1.



- Remove the faulty fuse.

Fuse 1 - 10 A - ignition, alarm system (optional)
Fuse 2 - 10 A - ignition, engine control unit, electronic fuel injection, fuel vapor retention system, lambda sensor, immobilizer
Fuse 3 - 10 A - fuel pump
Fuse 4 - 15 A - radiator fan
Fuse 5 - 10 A - horn, combination instrument, brake light
Fuse 6 - 10 A - high beam, low beam, position light, tail light, license plate lamp
Fuse 7 - 10 A - ACC1
Fuse 8 - 15 A - ACC2, HCU (optional)
Fuse 9 - 10 A - ABS control unit, diagnostics connector, 5D sensor, TPMS (function optional)
Fuse 10 - 10 A - light control unit
Fuse SPARE - 10 A - spare fuses
Fuse SPARE - 15 A - spare fuses



Note

A faulty fuse has a burned-out fuse wire **A**.

- Insert the spare fuse with the correct rating.

Fuse (75011088010)

Fuse (75011088015)



Tip

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

- Check the function of the electrical power consumer.
- Close the fuse box cover.

Reworking

- Mount the front rider's seat. (p. 100)
- Mount the passenger seat. (p. 99)



15.9 Checking the charging voltage

Condition: The 12 V battery must be fully functional and completely charged.

Preparatory work

- Remove the passenger seat. (p. 99)
- Remove the front rider's seat. (p. 100)
- Remove the battery cover. (p. 120)

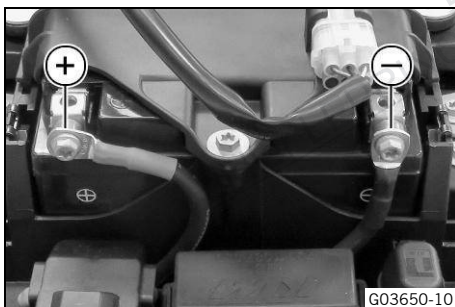
Main work

- Take off positive terminal cover.
- Start the motorcycle to check the function. (p. 24)
- Take the measurement.



Voltage measurement points

Measuring point **Plus (+)** – Measuring point **Ground (–)**



Charging voltage	13.5 V ... 15.0 V
------------------	-------------------

- » If the displayed value is greater than the specified value:
 - Change regulator rectifier.
- Mount the positive terminal cover.

Reworking

- Install the battery cover.  (p. 120)
- Mount the front rider's seat.  (p. 100)
- Mount the passenger seat.  (p. 99)

15.10 Checking the open-circuit current

Preparatory work

- Remove the passenger seat.  (p. 99)
- Remove the front rider's seat.  (p. 100)
- Disconnect the negative cable of the 12 V battery.  (p. 171)



Main work

- Measure the current between the 12 V battery ground (–) and the negative cable.

A Measuring points for the current measurement

maximum open-circuit current	< 1.0 mA
After switching off the ignition, wait one minute until the measurement.	

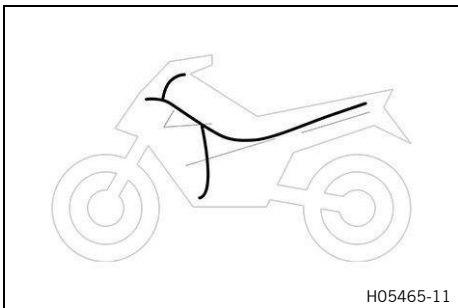
i **Note**
The value of the closed-circuit current only applies to vehicles in their original state without additional electrical loads.

- » If the measured value is greater than the specified value:
 - Disconnect the regulator rectifier from the wiring harness and perform the measurement again.

Reworking

- Connect the negative cable of the 12 V battery.  (p. 171)
- Mount the front rider's seat.  (p. 100)
- Mount the passenger seat.  (p. 99)
- Set the time and date.

15.11 Checking the main wiring harness



- Check that the main wiring harness has been routed without kinks.
 - » If the main wiring harness is kinked or trapped/pinched:
 - Correct the routing of the main wiring harness.

- Check the main wiring harness for damage.
 - » If the main wiring harness is damaged:
 - Change the main wiring harness.

**Note**

Repair of the main wiring harness is not recommended by KTM.



Lizenziert für | Licensed for:
didier LEPRINCE, grolifoualex@gmail.com, 075676/080232

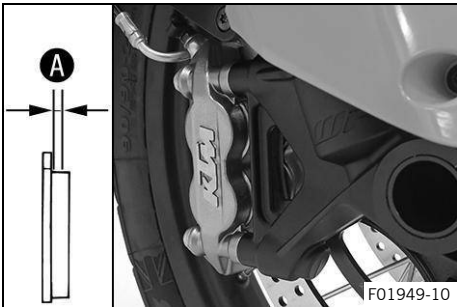
16.1 Checking that the brake pads of the front brake are secured

**WARNING**
Danger of accidents Worn brake pads reduce the brake action.

- Make sure that worn brake pads are replaced immediately.

**WARNING**
Danger of accidents Damaged brake discs reduce the braking action.
If the brake linings are not changed in time, the brake lining carriers grind against the brake disc. As a consequence, the brake action is greatly reduced and the brake discs are destroyed.

- Check the brake linings regularly.



- Check all brake linings on both brake calipers to ensure they have the minimum thickness **A**.
- | | |
|--------------------------------|---|
| Minimum pad thickness A | $\geq 1\text{ mm}$
($\geq 0.04\text{ in}$) |
|--------------------------------|---|
- » If the minimum thickness is less than specified:
 - Change the front brake pads.  (p. 180)
 - Check all the brake linings on both the brake calipers for damage and cracking.
 - » If there is damage or cracking:
 - Change the front brake pads.  (p. 180)
 - Check that the brake pads are secured.
 - » If the brake pads are not secured correctly:
 - Secure brake pads, replace with new parts if necessary.

16.2 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

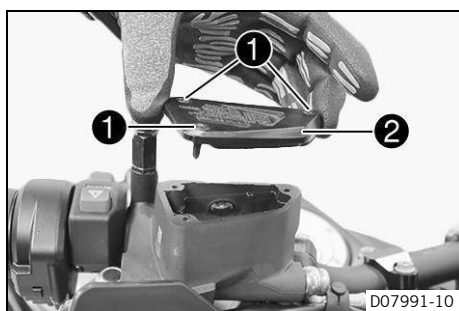
Environmental hazard Hazardous substances cause environmental damage.

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

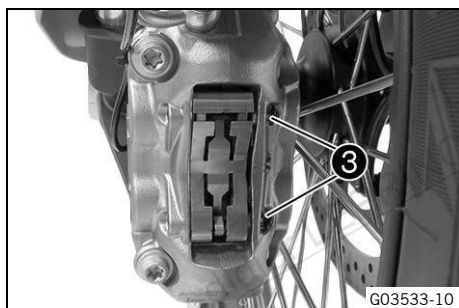


Note

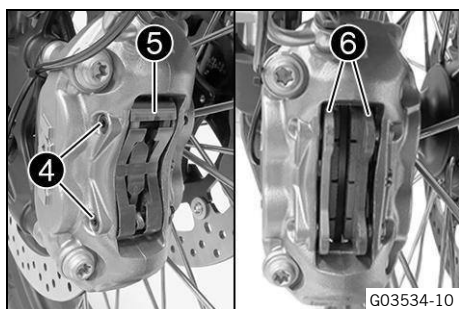
Avoid contact between brake fluid and painted parts. Brake fluid corrodes paint.



- Move the brake reservoir mounted on the handlebar to a horizontal position.
- Remove screws ①.
- Take off cover ② with membrane.



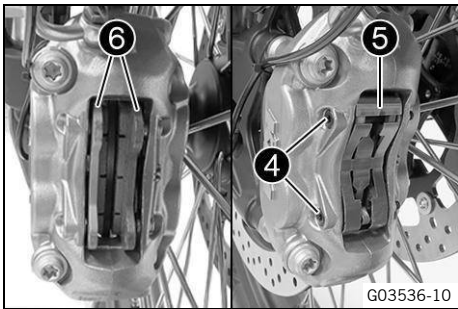
- Remove lock rings ③.



- Remove pins ④.
- Take off plate ⑤.
- Push the brake piston back into the basic position.

Ensure that brake fluid does not flow out of the brake fluid reservoir; extract some if necessary.

- Remove brake linings ⑥.
- Clean the brake caliper.

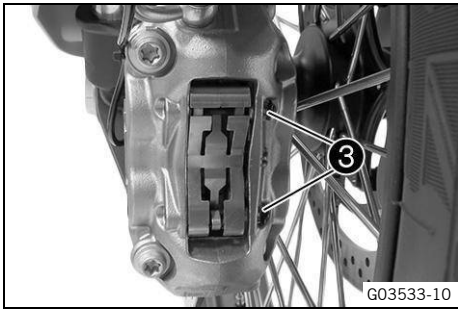


- Position new brake linings **6**.

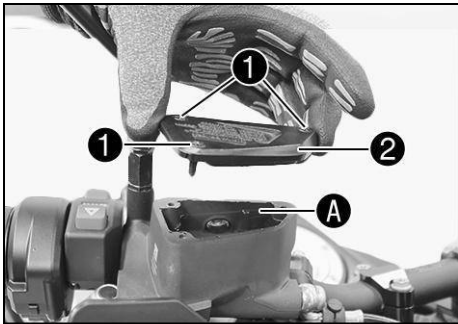
Always change the brake linings in sets and on both sides.

- Position plate **5**.
✓ The arrow faces upward.
- Mount pins **4**.

Securing bolt for brake pads	
M8	10 Nm (7.4 ft·lb _f)



- Mount lock rings **3**.
- Repeat these steps on the opposite side.
- Operate the hand brake lever repeatedly until the brake pads are in contact with the brake disc and a pressure point is reached.



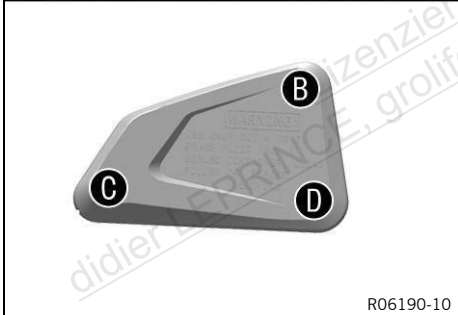
- Correct the brake fluid to the **MAX** marking **A**.

Brake fluid DOT 5.1 (p. 502)

- Position cover **2** with the membrane.
- Mount screws **1** and tighten in the order **B C D**.

Brake fluid reservoir cover, front	
	1 Nm (0.7 ft·lb _f)

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



16.3 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.

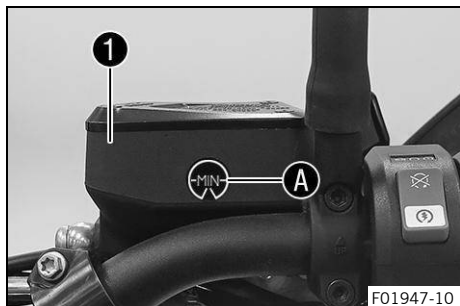
- Make sure that brake fluid for the front and rear brake is changed in accordance with the service schedule.
- Make sure that only clean, approved brake fluid from a tightly sealed container is used.



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.



- Move the brake reservoir mounted on the handlebar to a horizontal position.
- Check brake fluid level in brake fluid reservoir ①.
 - » If the brake fluid level has dropped below **MIN** marking **A**:
 - Add brake fluid for the front brake. (p. 183)



16.4 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. 180)

Main work

- Move the brake reservoir mounted on the handlebar to a horizontal position.
- Remove screws **1**.
- Take off cover **2** with diaphragm **3**.
- Add brake fluid to mark **4**.

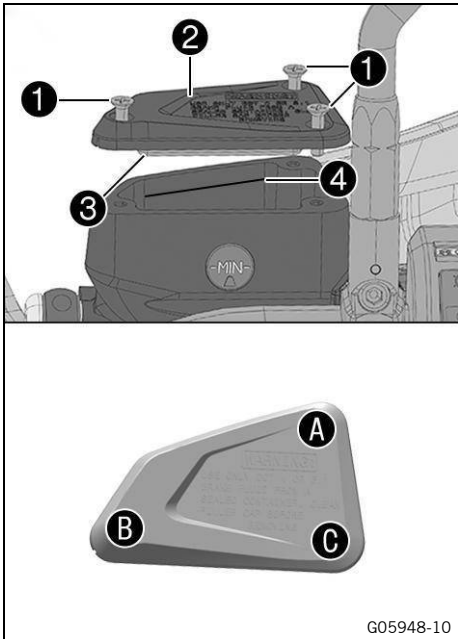
Brake fluid DOT 5.1 (p. 502)

- Position cover **2** with diaphragm **3**.
- Mount screws **1** and tighten in the order **A B C**.

Brake fluid reservoir cover, front

1 Nm
(0.7 ft·lb_f)

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



16.5 Changing the front brake 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

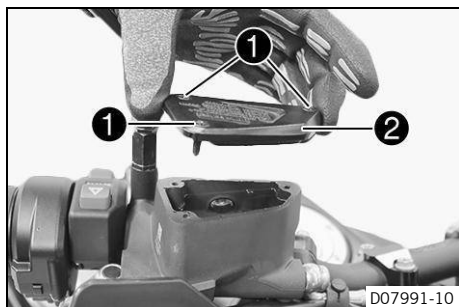
Environmental hazard Hazardous substances cause environmental damage.

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



Note

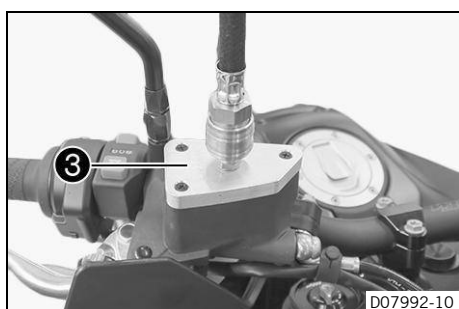
Avoid contact between brake fluid and painted parts. Brake fluid corrodes paint.



- Move the brake reservoir mounted on the handlebar to a horizontal position.
- Cover the painted parts.
- Remove screws **1**.
- Take off cover **2** with membrane.
- Extract the old brake fluid from the brake reservoir using a syringe and fill with fresh brake fluid.

Syringe (50329050000) (p. 485)

Brake fluid DOT 5.1 (p. 502)

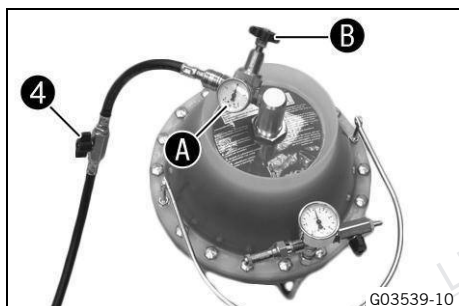


- Fit appropriate bleeder cover **3**.

Bleeder cover (00029013021) (p. 483)

- Connect the bleeding device.

Bleeding device (00029013100) (p. 483)

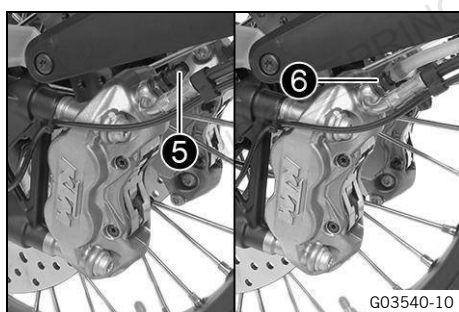


- Open shut-off valve **4**.

Follow the instructions in the Owner's Manual of the bleeding device.

- Ensure that the inflation pressure is set at pressure gauge **A**. Correct the inflation pressure on pressure regulator **B** if necessary.

Inflation pressure	2 bar ... 2.5 bar (29 psi ... 36.3 psi)
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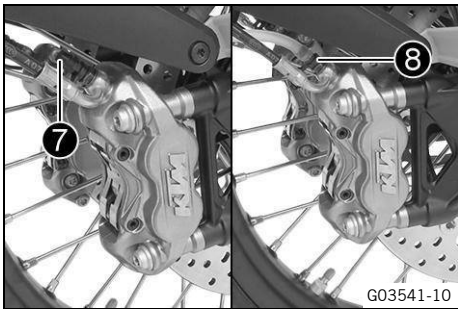
- Pull protection cap **5** off the bleeder screw of the left brake caliper.
- Connect the bleeder bottle hose.

Bleeding device (00029013100) (p. 483)

- Open bleeder screw **6** by approx. one half turn.

Drain until fresh brake fluid emerges in the bleeder bottle hose without bubbles.

- Tighten the bleeder screw. Remove the bleeder bottle hose.
- Mount the protection cap.



- Pull protection cap 7 off the bleeder screw of the right brake caliper.
- Connect the bleeder bottle hose.

Bleeding device (00029013100) (p. 483)

- Open bleeder screw 8 by approx. one half turn.

Drain until fresh brake fluid emerges in the bleeder bottle hose without bubbles.

- Tighten the bleeder screw.
- Close shut-off valve 4.
- Open the bleeder screw again until brake fluid stops emerging.
✓ Overfilling the brake fluid reservoir is prevented.
- Tighten the bleeder screw. Remove the bleeder bottle hose.
- Mount the protection cap.
- Remove brake bleeder.
- Remove the bleeder cover.

- Correct the brake fluid to **MAX** marking C.

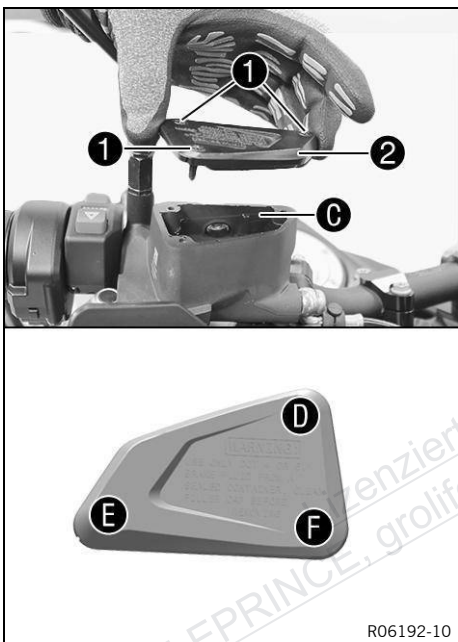
Brake fluid DOT 5.1 (p. 502)

- Position cover 2 with the membrane.
- Mount screws 1 and tighten in the order D E F.

Brake fluid reservoir cover, front	
	1 Nm (0.7 ft·lb _f)

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

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



16.6 Adjusting the basic position of the hand brake lever



- Push hand brake lever forward.
- Adjust the basic position of the hand brake 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

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

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

The range of adjustment is limited.



16.7 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.

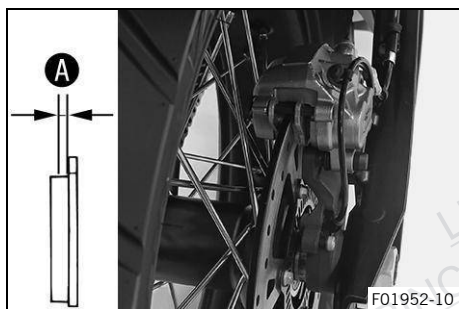


WARNING

Danger of accidents Damaged brake discs reduce the braking action.

If the brake linings are not changed in time, the brake lining carriers grind against the brake disc. As a consequence, the brake action is greatly reduced and the brake discs are destroyed.

- Check the brake linings regularly.



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

Minimum pad thickness A	$\geq 1 \text{ mm}$ $(\geq 0.04 \text{ in})$
--------------------------------	---

- » If the minimum thickness is less than specified:
 - Change the rear brake pads. (p. 187)
- Check the brake pads for damage and cracking.
 - » If there is damage or cracking:
 - Change the rear brake pads. (p. 187)
- Check that the brake pads are secured.
 - » If the brake pads are not secured correctly:
 - Secure brake pads, replace with new parts if necessary.



16.8 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

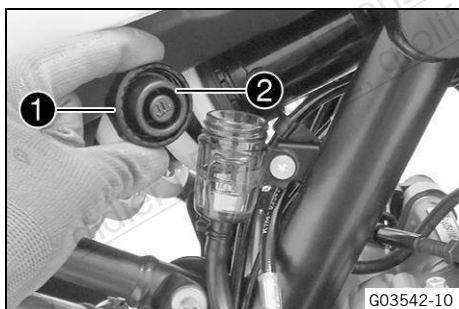
Environmental hazard Hazardous substances cause environmental damage.

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



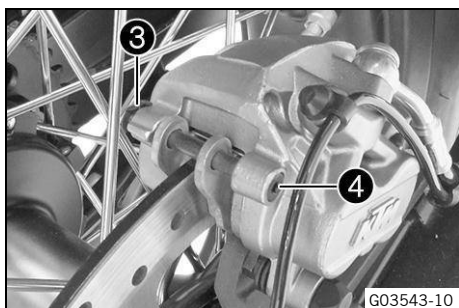
Note

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

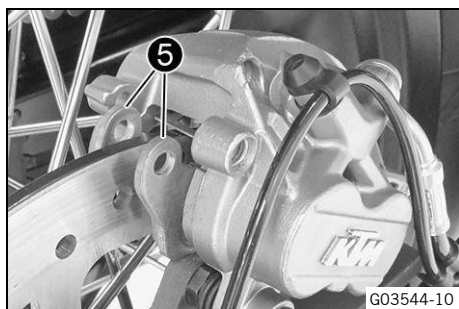


- Stand the vehicle upright.
- Remove screw cover ① with insert and membrane ②.
- Manually press the brake caliper toward the brake disc to push back the brake pistons.

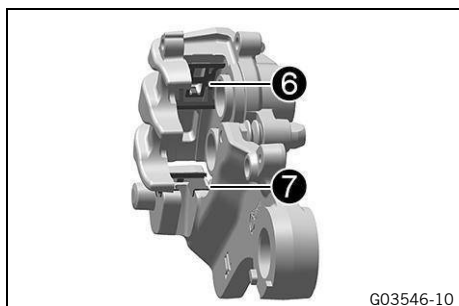
Ensure that brake fluid does not flow out of the brake fluid reservoir; extract some if necessary.



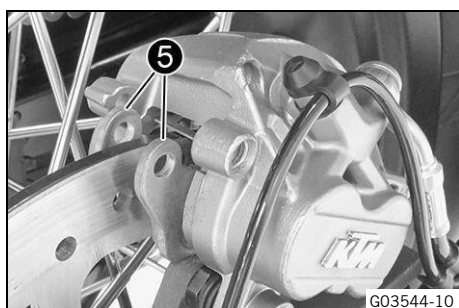
- Remove lock ring ③.
- Remove pin ④.



- Remove brake linings **5**.

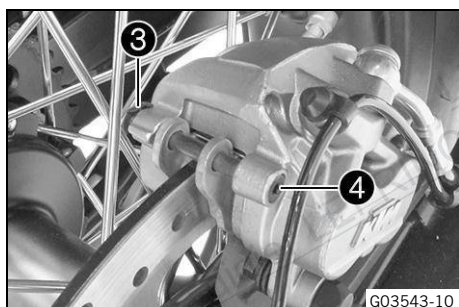


- Clean brake caliper and brake caliper support.
- Check that spring plate **6** and brake pad sliding plate **7** are seated correctly.



- Position new brake linings **5**.

Always replace brake pads in sets.



- Mount and tighten pin **4**.

Pin, rear brake caliper	
M8	22 Nm (16.2 ft·lb _r)
Loctite® 243	

- Mount lock ring **3**.



- Actuate the brake pedal repeatedly until the brake pads are in contact with the brake disc and a pressure point is achieved.
- Correct the brake fluid level to the **MAX** marking **A**.

Brake fluid DOT 5.1 (p. 502)

- Mount and tighten screw cover **1** with the insert and membrane **2**.

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

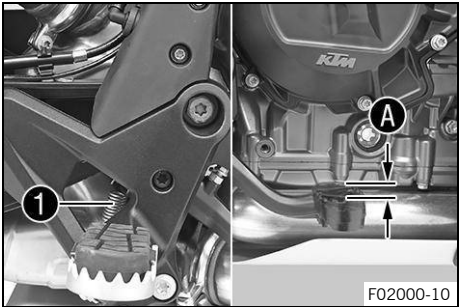
16.9 Checking the free travel of the brake pedal

**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 ①.
- Move the brake pedal back and forth between the end stop and the brake pedal cylinder piston actuation and check free travel ①.

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. 190)
- Attach spring ①.

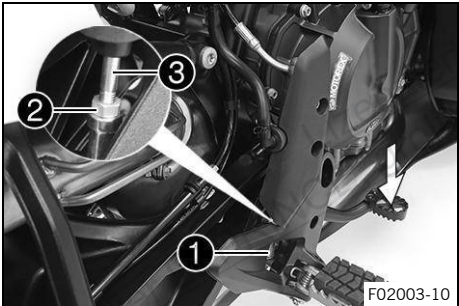
16.10 Adjusting the basic position of the brake pedal

**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 ①.
- Loosen nut ②.



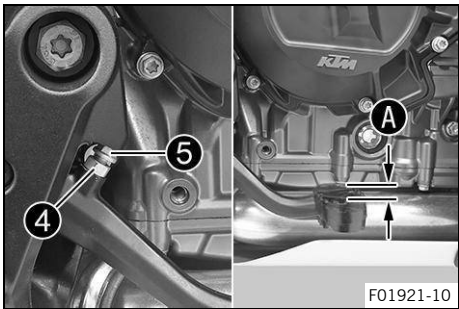
Tip
Press the foot brake lever downwards to make this easier.

- Turn the push rod ③ to set the basic position of the foot brake lever.

The screw must be screwed in by at least five full turns.



Note
The range of adjustment is limited.
Screwing the push rod into the ball joint adjusts the foot brake lever downwards.
Screwing the push rod out of the ball joint adjusts the brake lever upwards.



- Loosen nut 4 and turn screw 5 correspondingly until the free travel A is present. If necessary, adjust the basic position of the brake pedal.

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

- Hold screw 5 and tighten nut 4.

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

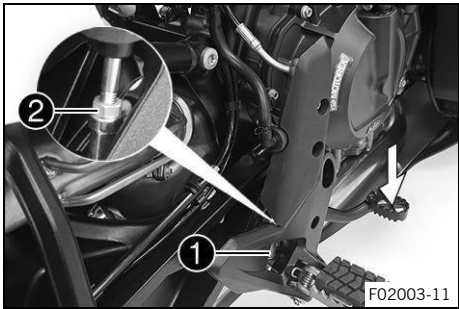
- Tighten nut 2.

Nut, push rod, brake pedal	
M6	6 Nm (4.4 ft·lb _f)

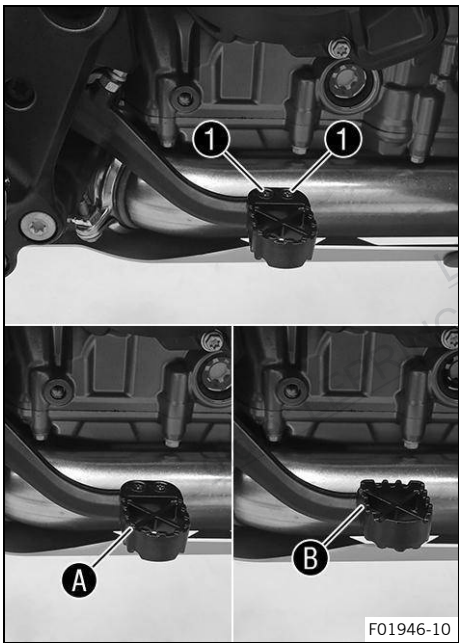


Tip
Press the foot brake lever downwards to make this easier.

- Attach spring 1.



16.11 Adjusting foot brake lever stub



- Remove screws 1 with the foot brake lever stub.
- Move the foot brake lever stub into desired position A or B. Mount and tighten screws 1.

Screw, foot brake lever stub	
M5	10 Nm (7.4 ft·lb _f) Loctite® 243

16.12 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.

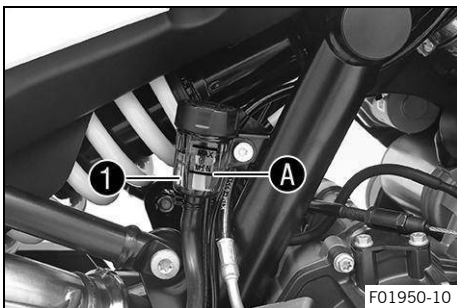


WARNING

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.



- Stand the vehicle upright.
- Check brake fluid level in brake fluid reservoir **1**.
 - » If the fluid level reaches the **MIN** marking **A**:
 - Add brake fluid for the rear brake. (p. 192)

16.13 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. 187)

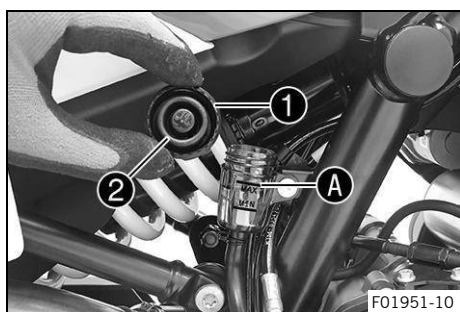
Main work

- Stand the vehicle upright.
- Remove screw cover **1** with insert and membrane **2**.
- Add brake fluid up to the **MAX** marking **A**.

Brake fluid DOT 5.1  (p. 502)

- Mount and tighten screw cover **1** with the insert and membrane **2**.

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



16.14 Changing the rear brake 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

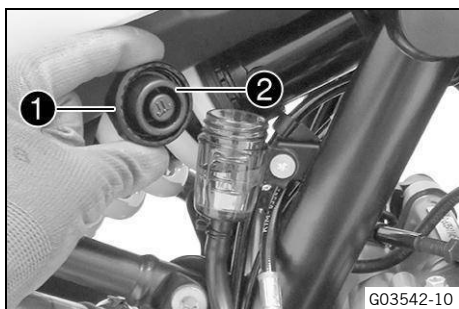
Environmental hazard Hazardous substances cause environmental damage.

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



Note

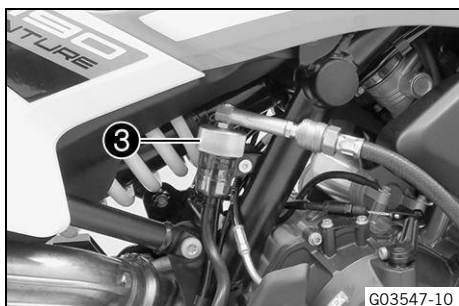
Avoid contact between brake fluid and painted parts. Brake fluid corrodes paint.



- Cover the painted parts.
- Remove screw cover 1 with insert and membrane 2.
- Extract the old brake fluid from the brake reservoir using a syringe and fill with fresh brake fluid.

Syringe (50329050000) (p. 485)

Brake fluid DOT 5.1 (p. 502)

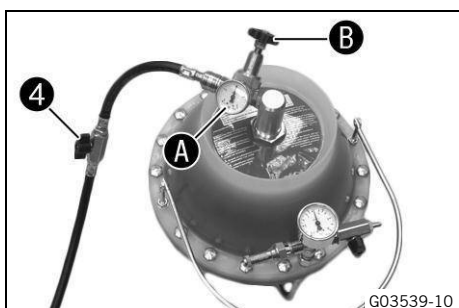


- Mount bleeder cover 3.

Bleeder cover (00029013022) (p. 483)

- Connect the bleeding device.

Bleeding device (00029013100) (p. 483)

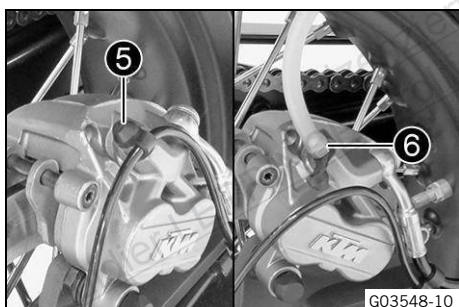


- Open shut-off valve 4.

Follow the bleeding device operating instructions.

- Ensure that the inflation pressure is set at pressure gauge A. Correct the inflation pressure on pressure regulator B if necessary.

Inflation pressure	2 bar ... 2.5 bar (29 psi ... 36.3 psi)
--------------------	--



- Pull off protection cap 5 of the bleeder screw. Hang the cable to the side.

- Connect the bleeder bottle hose.

Bleeding device (00029013100) (p. 483)

- Open bleeder screw 6 by approx. one half turn.

Drain until fresh brake fluid emerges in the bleeder bottle hose without bubbles.

- Tighten the bleeder screw.

- Close shut-off valve 4.

- Open the bleeder screw again until brake fluid stops emerging.
✓ Overfilling the brake fluid reservoir is prevented.

- Tighten the bleeder screw. Remove the bleeder bottle hose.

- Position the cable on the protection cap. Mount the protection cap.

- Remove brake bleeder.

- Remove the bleeder cover.



- Correct the brake fluid to **MAX** marking **C**.

Brake fluid DOT 5.1 (p. 502)

- Mount and tighten screw cover **1** with the insert and membrane **2**.

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

16.15 Changing the ABS module



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.

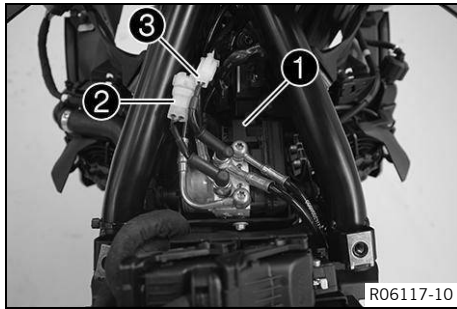


Note

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

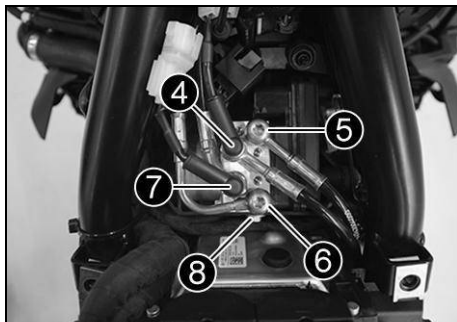
Preparatory work

- Remove the passenger seat. (p. 99)
- Remove the front rider's seat. (p. 100)
- Remove the left side cover. (p. 118)
- Remove the battery cover. (p. 120)
- Remove left fuel tank spoiler. (p. 121)
- Remove the right side fairing. (p. 119)
- Remove right fuel tank spoiler. (p. 123)
- Remove the skid plate. (p. 125)
- Remove the fuel tank. (p. 100)



Main work

- Unplug ABS module connector ①.
- Disconnect plug-in connector ② of the brake pressure switch.
- Disconnect plug-in connector ③ of the brake pressure switch.

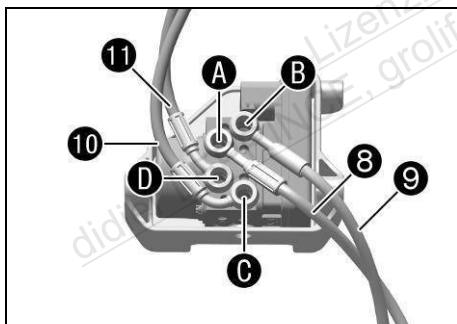


- Remove screws ④, ⑤, ⑥ and ⑦ with sealing washers, take off the brake lines, close them with a suitable object and hang them raised and facing upward.

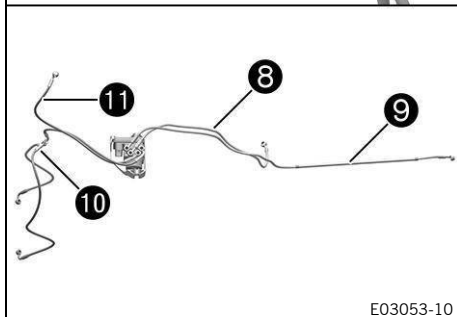
Immediately wash off any leaked brake fluid with water.

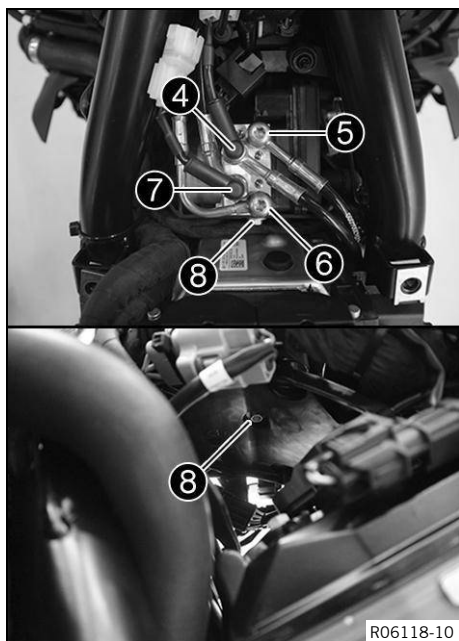
Do not kink the brake lines.

- Remove screws ⑧.
- Carefully remove the ABS module from the vehicle.



- Position the new ABS module on the holder.
- Position brake line ⑧ of the rear brake system in area A of the ABS modulator.
- Position brake line ⑨ of the rear brake caliper in area B of the ABS module.
- Position the brake line ⑩ of the front brake caliper in the area C of the ABS module.
- Position brake line ⑪ of the front brake system in area D of the ABS modulator.



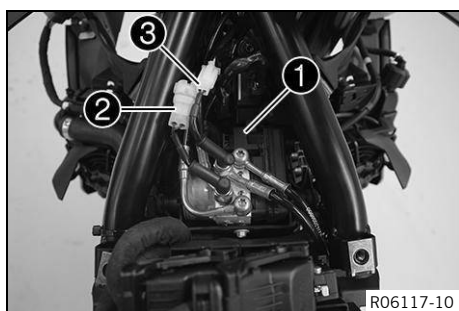


- Mount and tighten screws **8**.

Screw, ABS module	
M6	8 Nm (5.9 ft·lb _f)

- Mount and tighten screws **4**, **5**, **6** and **7** with new sealing washers.

Banjo bolt, brake line	
M10×1	25 Nm (18.4 ft·lb _f)



- Join plug-in connector **3** of the brake pressure switch.
- Join plug-in connector **2** of the brake pressure switch.
- Plug in ABS module connector **1**.

Reworking

- Bleed the brake system. (p. 198)
- Install the fuel tank. (p. 103)
- Install the skid plate. (p. 126)
- Install the right fuel tank spoiler. (p. 124)
- Install the right side cover. (p. 119)
- Install the left fuel tank spoiler. (p. 122)
- Install the battery cover. (p. 120)
- Install the left side fairing (p. 118)
- Mount the front rider's seat. (p. 100)
- Mount the passenger seat. (p. 99)

16.16 Bleeding the brake system



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.

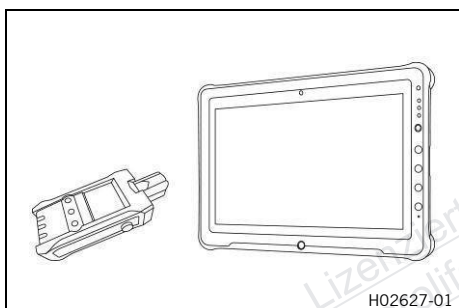
- Dispose of oils, grease, filters, fuel, cleaning agents, brake fluid, etc. correctly and in accordance with the applicable regulations.



Note

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

Condition: Diagnostic tool is connected and active



- Execute **«Brake electronics»** > **«Functions»** > **«Bleed brake system»**.

Follow the instructions in the diagnostic tool.

17.1 Programming the ignition key



Note

If an ignition key is lost or replaced, all ignition keys must be reactivated. This will also prevent the vehicle from being operated without authorization with the lost ignition key.

You can activate up to four ignition keys. All ignition keys that are not programmed in the same teaching procedure are invalid, but can be reprogrammed in a further teaching procedure.

- Switch on the ignition by turning the ignition key to position .
- «Immobilizer» > «Functions» > «Program key» > «Select».

Follow the instructions in the diagnostic tool.

- Select «Start programming procedure».

Follow the instructions in the diagnostic tool.

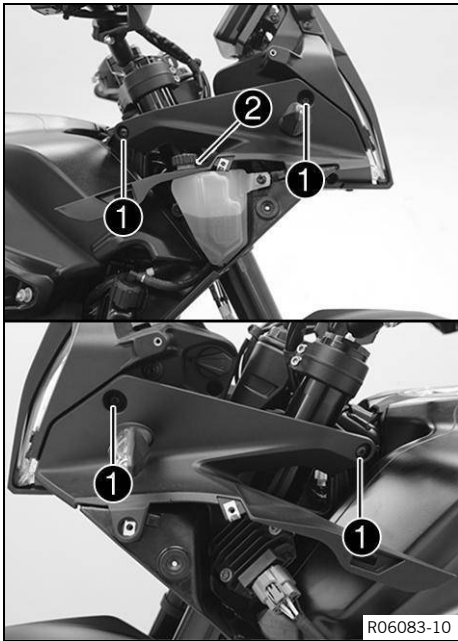
- Clear fault memory with diagnostic tool.
- Switch off the ignition for 20 seconds.
- Read out the fault memory using the diagnostics tool.
 - » If a malfunction is present:
 - Repeat the procedure.



17.2 Removing the headlight

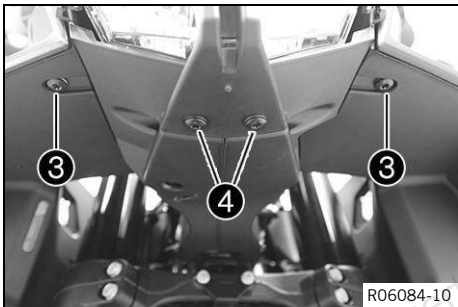
Preparatory work

- Remove the passenger seat.  (p. 99)
- Remove the front rider's seat.  (p. 100)
- Remove the left side cover.  (p. 118)
- Remove the battery cover.  (p. 120)
- Remove left fuel tank spoiler.  (p. 121)
- Remove the right side fairing.  (p. 119)
- Remove right fuel tank spoiler.  (p. 123)
- Remove windshield.  (p. 127)

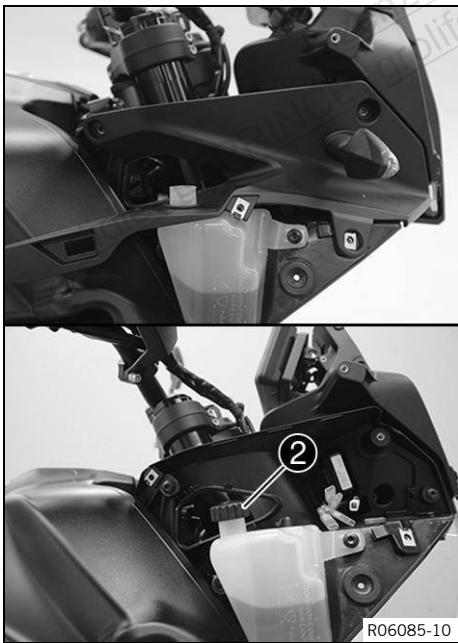


Main work

- Remove screws ❶.
- Remove compensating tank cover ❷.

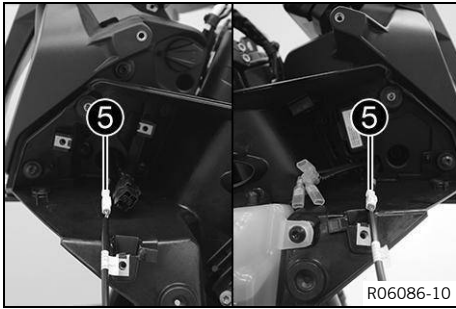


- Remove screws ❸.
- Remove screws ❹.

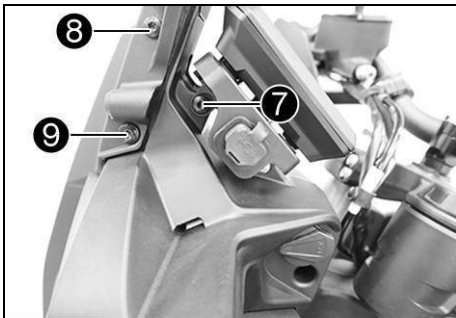


- Pull the right mask spoiler off of the compensating tank and hang to the side.
- Mount cover ❷ of the compensating tank.

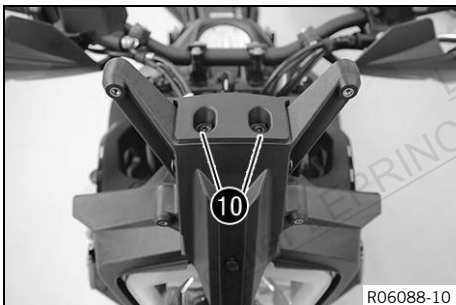
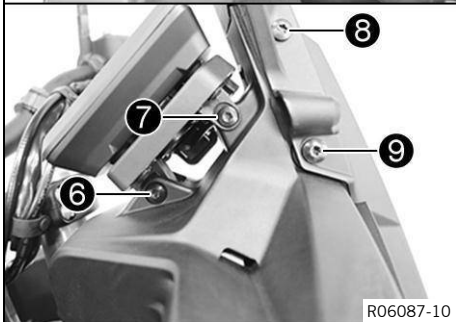
Compensating tank cover	
	1.1 Nm (0.81 ft·lb _f)



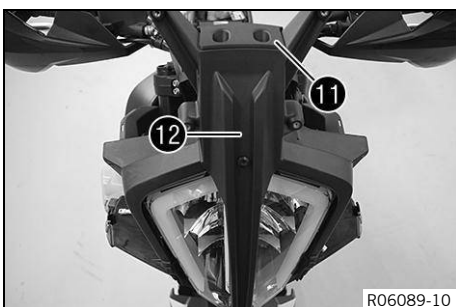
- Disconnect plug-in connectors **5** of the turn signals.
- Remove the mask spoilers.



- Remove screw **6**.
- Remove screws **7**.
- Remove screws **8**.
- Remove screws **9**.

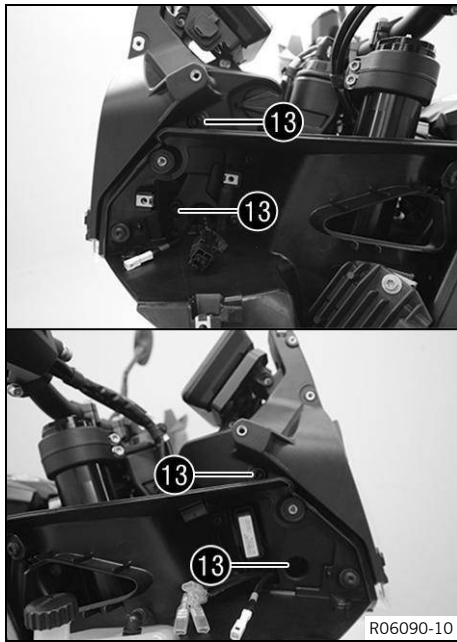


- Remove screws **10**.

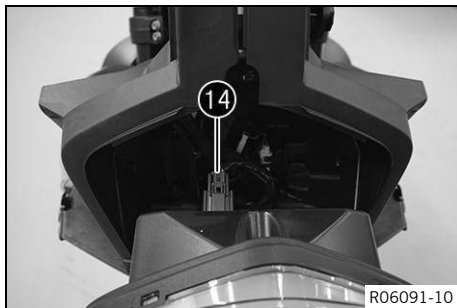


- Remove cover of mask support **11** toward the rear.
- Remove the headlight mask center part **12** toward the front.

17 Lighting system, instruments

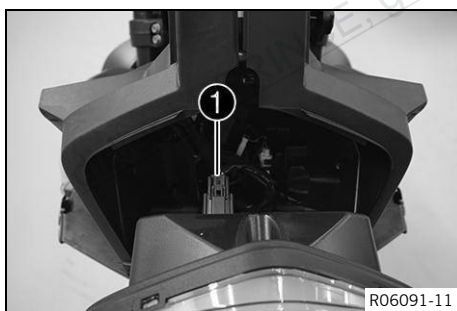


- Remove screws 13.
- Pull the headlight forward.



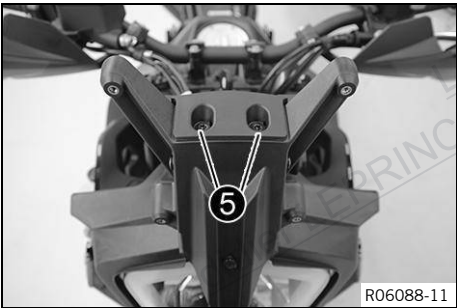
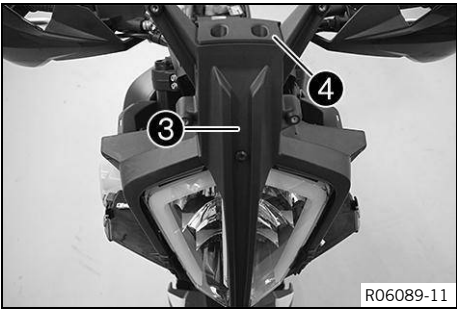
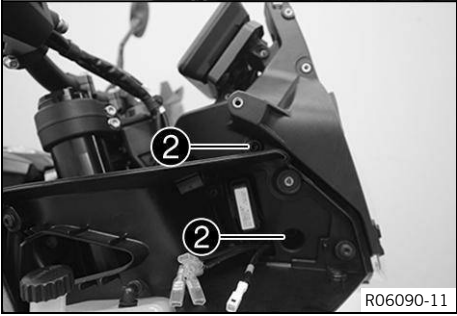
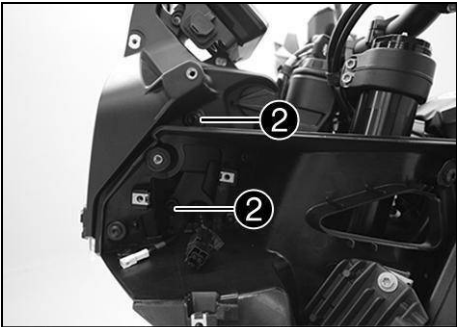
- Unplug connector 14.
- Put down the headlight on a soft cloth.

17.3 Installing the headlight



Main work

- Plug in connector 1 for the headlight.
- Check that the lighting is functioning properly.
- Position the headlight.



- Mount and tighten screws ②.

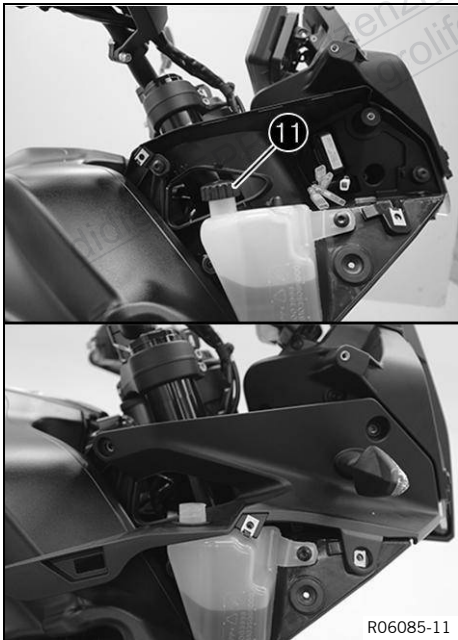
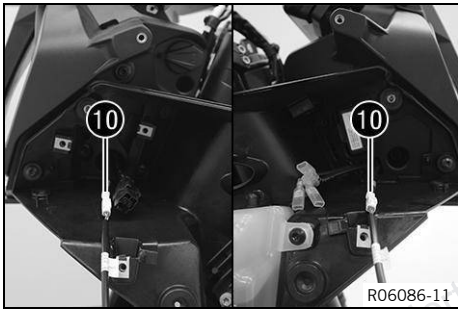
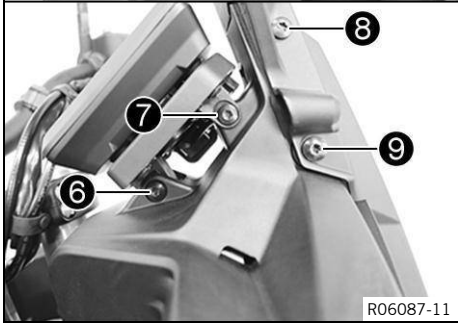
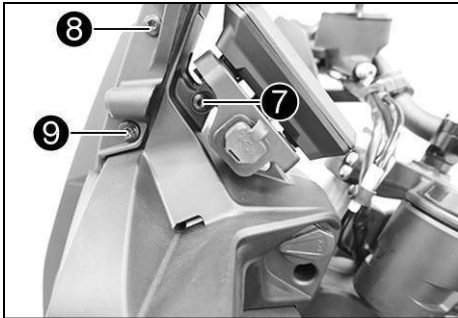
Screw, headlight	
M6	3 Nm (2.2 ft·lb _r)

- Check the headlight adjustment. 📖 (p. 206)

- Position headlight mask center part ③.
- Mount cover of mask support ④.

- Mount and tighten screws ⑤.

Screw, mask support cover	
M5	3.5 Nm (2.58 ft·lb _r)



- Mount and tighten screw 6.

Screw, instrument support on mask support, rear	
M5	5 Nm (3.7 ft·lb _r)

- Mount and tighten screws 7.

Screw, instrument support on mask support, front	
M5	5 Nm (3.7 ft·lb _r)

- Mount and tighten screws 8.

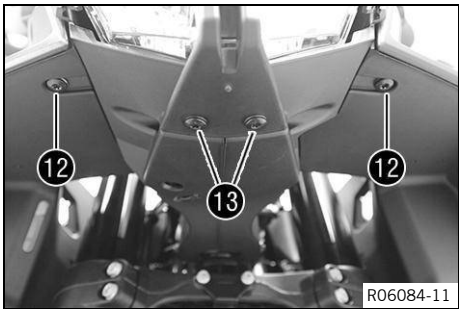
Screw, mask support center part	
M5	3.5 Nm (2.58 ft·lb _r)

- Mount and tighten screws 9.

Screw, brace for mask support center part	
M6	3 Nm (2.2 ft·lb _r)
Loctite® 243	

- Connect plug-in connectors 10 of the turn signals.
- Position the left mask spoiler.

- Remove compensating tank cover 11.
- Position the right mask spoiler on the compensating tank.

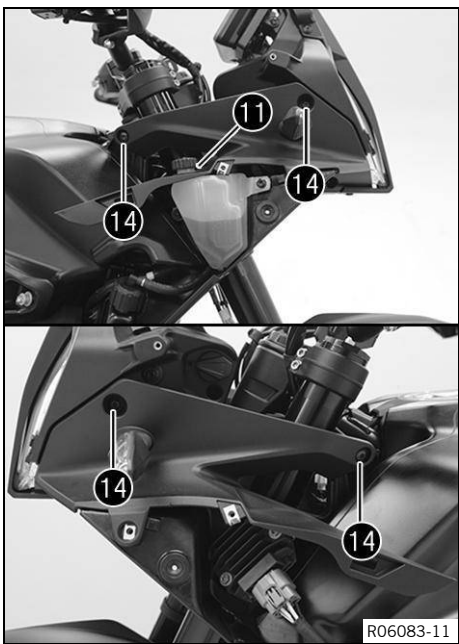


- Mount and tighten screws 12.

Screw, trim	
M5	3 Nm (2.2 ft·lb _f)

- Mount and tighten screws 13.

Screw, mask support center part	
M5	3.5 Nm (2.58 ft·lb _f)



- Mount cover 11 of the compensating tank.

Compensating tank cover	
	1.1 Nm (0.81 ft·lb _f)

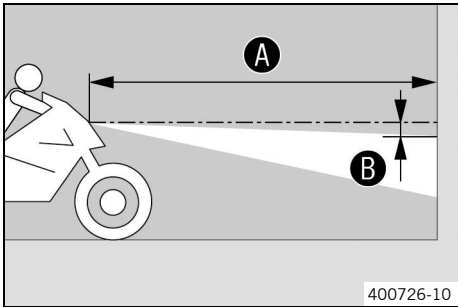
- Mount and tighten screws 14.

Screw, trim	
M5	3 Nm (2.2 ft·lb _f)

Reworking

- Install windshield. 📖 (p. 128)
- Install the left fuel tank spoiler. 📖 (p. 122)
- Install the left side fairing 📖 (p. 118)
- Install the right fuel tank spoiler. 📖 (p. 124)
- Install the battery cover. 📖 (p. 120)
- Install the right side cover. 📖 (p. 119)
- Mount the front rider's seat. 📖 (p. 100)
- Mount the passenger seat. 📖 (p. 99)

17.4 Checking the headlight setting



- Park the vehicle on a horizontal surface in front of a light-colored wall and make a mark at the height of the center of the low beam headlight.
- Make another mark at a distance **B** under the first marking.

Distance B	5 cm (2.0 in)
-------------------	------------------

- Position the vehicle upright at distance **A** from the wall and switch on the low beam.

Distance A	5 m (16 ft – 5 in)
-------------------	-----------------------

- Get on the motorcycle, together with any luggage or passenger.
- Check the headlight adjustment.

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

- » If the boundary between light and dark does not meet specifications:
 - Adjust headlight range. (p. 206)

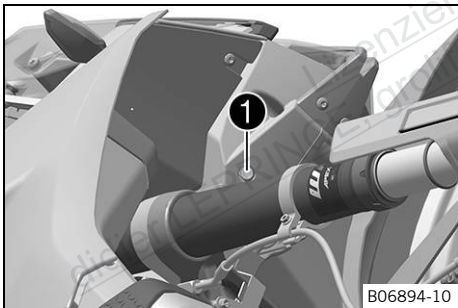
17.5 Adjusting the headlight range

Preparatory work

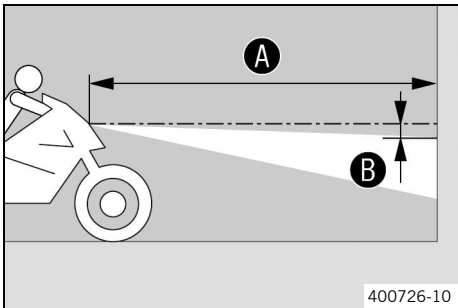
- Check the headlight adjustment. (p. 206)

Main work

- Turn adjusting screw **1** to adjust the headlight range.



i Note
Turn clockwise to reduce the headlight range; turn counterclockwise to increase the headlight range.
If you have a payload, you may have to correct the headlight range.



- Park the vehicle on a horizontal surface in front of a light-colored wall and make a mark at the height of the center of the low beam headlight.
- Make another mark at a distance **B** under the first marking.

Distance B	5 cm (2.0 in)
-------------------	------------------

- Position the vehicle upright at distance **A** from the wall and switch on the low beam.

Distance A	5 m (16 ft – 5 in)
-------------------	-----------------------

- Get on the motorcycle, together with any luggage or passenger.

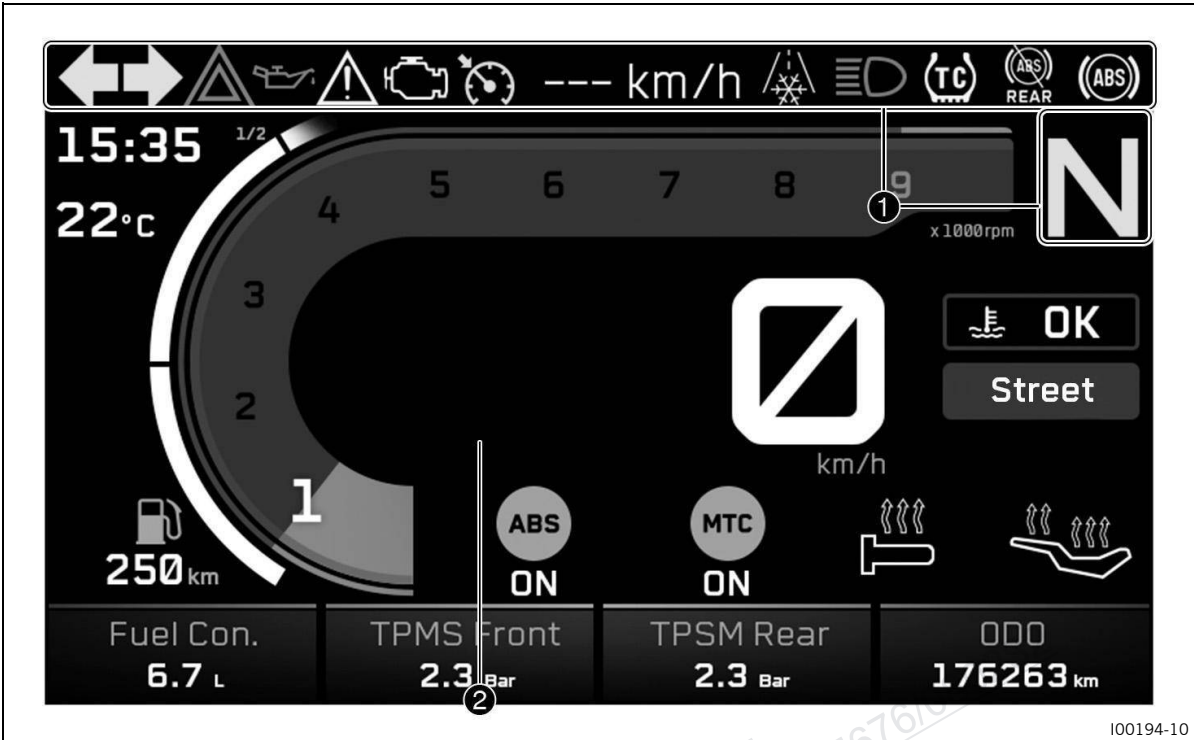
- Check the headlight adjustment.

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



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18.1 dashboard



The combination instrument is attached in front of the handlebar.
The combination instrument is divided into two function areas.

- ① indicator lamps (p. 211)
- Display ②

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.

18.2 activation and testing

18.2.1 Activation



The combination instrument is activated when the ignition is switched on.

Note

The brightness of the displays is controlled by an ambient light sensor in the combination instrument.

18.2.2 Test

The welcome text appears on the display and all the indicator lights are briefly activated for a function check.

Note

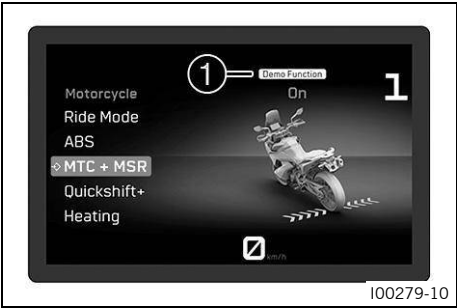
The malfunction indicator lamp always lights up as long as the engine is not running. If the engine is running and the failure indicator light lights up, stop (taking care not to endanger yourself or other road users in the process) and contact an authorized dealer.

The oil pressure warning lamp always lights up as long as the engine is not running. If the engine is running and the oil pressure warning lamp lights up, stop immediately (taking care not to endanger yourself or other road users in the process) and switch off the engine.

The ABS warning lamp and TC indicator lamp light up until a speed of approx. 6 km/h (approx. 4 mph) or faster has been reached.

18.3 demo mode

18.3.1 Activation



Demo mode is activated in the factory and allows you to test optional software functions.
Once a distance has been covered, demo mode is automatically deactivated as soon as the ignition is turned off.

Distance until demo mode is deactivated	1,500 km (932.1 mi)
---	------------------------

The demo functions are shown in area ❶ of the display.

Note

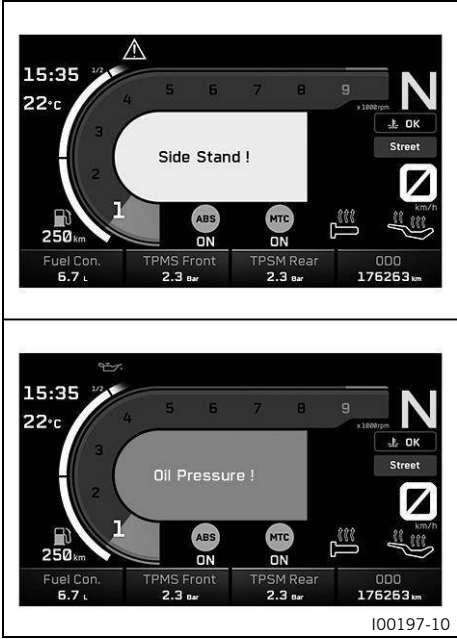
You will regularly be shown messages indicating when demo mode will be ending.

All optional software functions will be deactivated and no longer displayed when demo mode ends. The optional software functions are available from an authorized contractual partner.

Functions included in demo mode

- **RALLY PACK** including riding mode **Rally**, MTC+MSR, deactivatable **ABS** on the rear wheel, adjustable characteristics of the throttle response, adjustable motorcycle traction control
- **QUICKSHIFTER+**
- **ETTC**
- Cruise control

18.4 warnings



Warnings appear in the middle of the display; these are marked yellow or red depending on their relevance.
Yellow warnings indicate a malfunction or information which requires prompt intervention or an adjustment to the riding style.
Red warnings indicate a malfunction or information which requires immediate intervention.

Note
Warnings can be hidden by pressing any button.
All the existing warnings are displayed in the **Warning** sub-menu until they are no longer active.

18.5 ice warning



The **ice warning**  goes on when there is an increased risk of ice on the roads.
The **ice warning**  appears on the display when the ambient temperature has fallen to or below the specified value.

Temperature	$\leq 4\text{ }^{\circ}\text{C}$ ($\leq 39.2\text{ }^{\circ}\text{F}$)
-------------	---

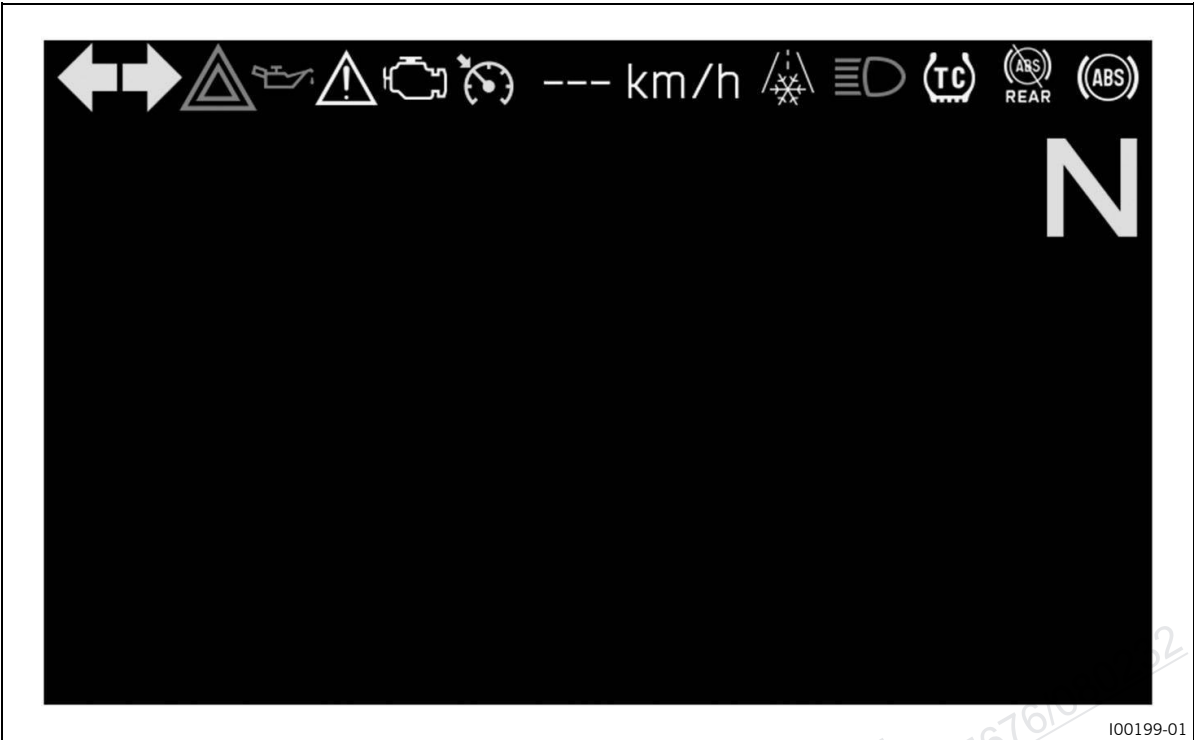
The **ice warning**  disappears from the display when the ambient temperature has risen to or above the specified value again.

Temperature	$\geq 6\text{ }^{\circ}\text{C}$ ($\geq 42.8\text{ }^{\circ}\text{F}$)
-------------	---

Note
When the **ice warning**  lights up, a text warning also appears.

18.6

indicator lamps



The indicator lamps offer additional information about the operating state of the motorcycle.
When the ignition is switched on, all indicator lamps light up briefly, except for the TC indicator lamp .

Note

The malfunction indicator lamp  always lights up as long as the engine is not running. If the engine is running and the failure indicator light  lights up, stop (taking care not to endanger yourself or other road users in the process) and contact an authorized dealer.

The oil pressure warning lamp  always lights up as long as the engine is not running. If the engine is running and the oil pressure warning lamp  lights up, stop immediately (taking care not to endanger yourself or other road users in the process) and switch off the engine.

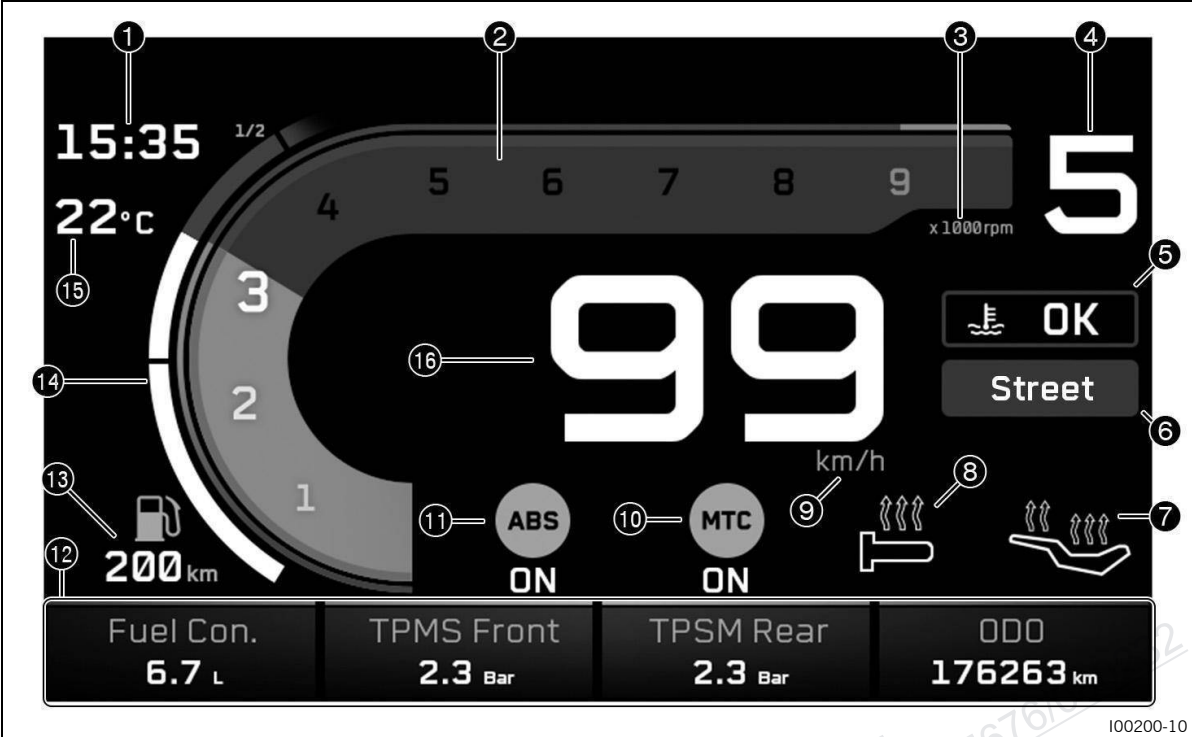
The ABS warning lamp  and TC indicator lamp  light up until a speed of approx. 6 km/h (approx. 4 mph) or faster has been reached.

Condition		Meaning
	The turn signal indicator light flashes green with a steady blinking interval	The turn signal is switched on.
	The malfunction indicator light lights up yellow	The OBD has detected a malfunction in the vehicle electronics. Come safely to a halt, and contact an authorized dealer.
	ABS warning light lights up yellow	Status or error messages relating to ABS .
	The ABS rear warning light lights up yellow	ABS is deactivated on the rear wheel.

18 Combination instrument

Condition		Meaning
	The idle indicator lamp lights up green	The transmission is in the neutral position.
	TC indicator lamp lights up/flashes yellow	MTC is not enabled or is currently intervening. The TC indicator lamp also lights up if a malfunction is detected. Contact an authorized contractual partner. The TC indicator lamp flashes, if MTC or MSR (optional) actively engage.
	The oil pressure warning light lights up red	The oil pressure is too low. Stop immediately, taking care not to endanger yourself or other road users in the process, and switch off the engine.
	The alarm system indicator lamp lights up or flashes red	Status or error message of the alarm system.
	The cruise control system indicator lamp (optional) lights up yellow	The cruise control system function is switched on, but cruise control is not activated.
	The cruise control system indicator lamp (optional) lights up green	The cruise control system function is switched on and cruise control is activated.
	The high beam indicator lamp lights up blue	The high beam is switched on.
	General warning light lights up yellow	A note/warning note on operating safety has been detected. This is also shown in the display.
	Hazard warning flasher indicator lamps	The hazard warning flasher is switched on.
	Ice warning is active on the display.	The warning lamp lights up when there is increased risk of icy roads.

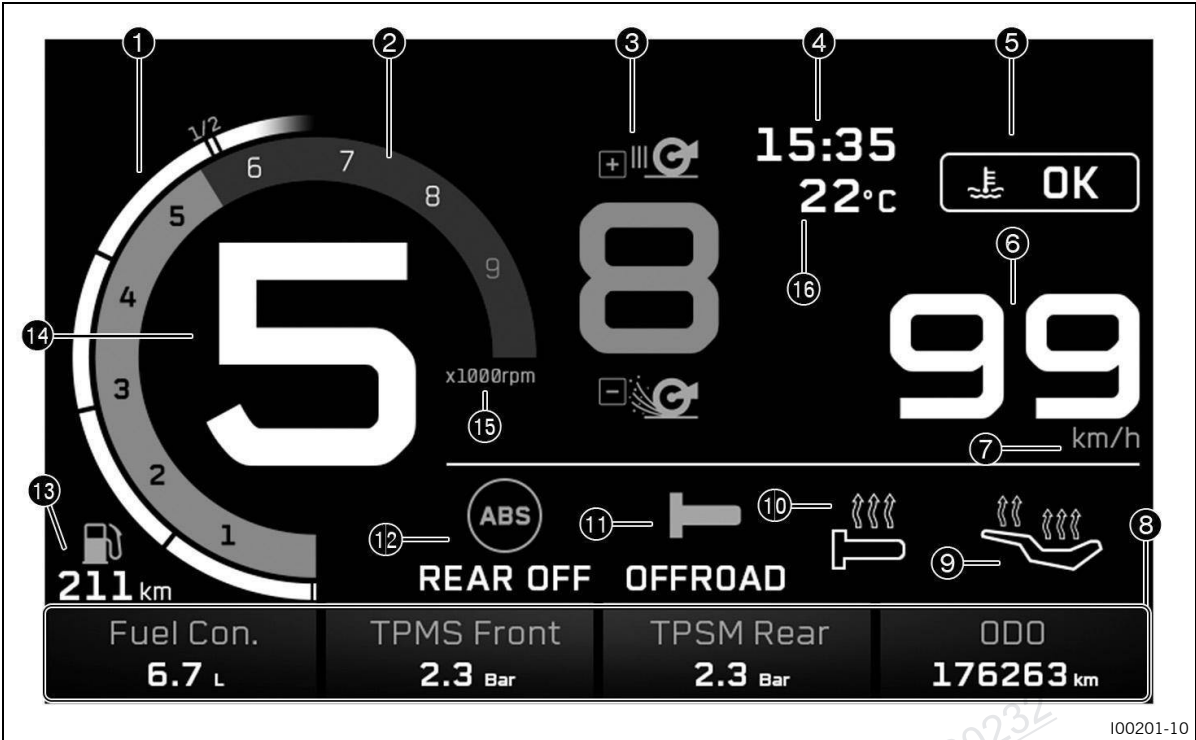
18.7 display



- | | |
|---|---|
| 1 time (p. 216) | 8 heated grip (optional) (p. 218) |
| 2 speed (p. 214) | 9 Unit of speed |
| 2 shift light (p. 215)
The shift light is integrated in the rpm gauge display. | 10 MTC display (p. 217) |
| 3 Unit for the engine speed display | 11 ABS display (p. 217) |
| 4 Gear display | 12 Favorites display (p. 219) |
| 5 coolant temperature indicator (p. 217) | 13 Fuel range display |
| 6 Ride-Mode display (p. 216) | 14 fuel level display (p. 218) |
| 7 Front rider's seat heating (optional) (p. 218) | 15 ambient air temperature indicator (p. 216) |
| | 16 speed display (p. 215) |

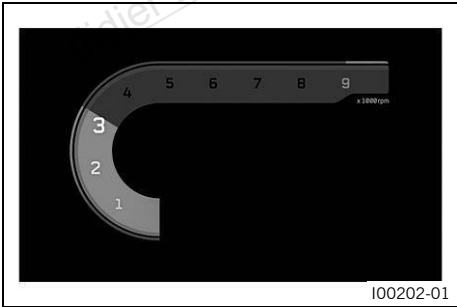
18.8 Rally Display (optional)

Note
The figure shows the start screen of the combination instrument in active riding mode **Rally** (optional). If the menu is open, the speed and the selected gear are still displayed.



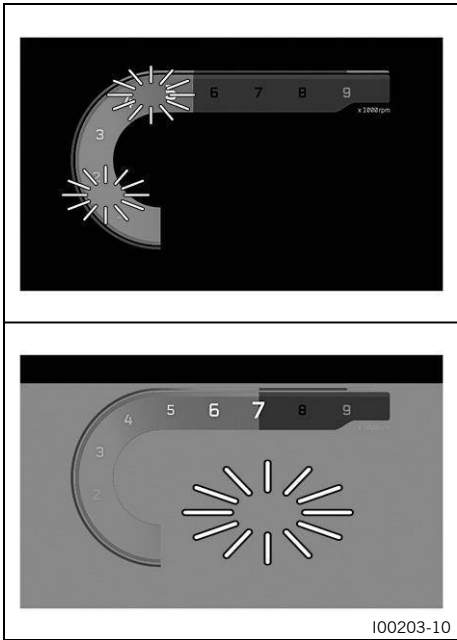
- 1 fuel level display (p. 218)
- 2 speed (p. 214)
- 2 shift light (p. 215)
The shift light is integrated in the rpm gauge display.
- 3 slip adjustment (optional)
- 4 time (p. 216)
- 5 coolant temperature indicator (p. 217)
- 6 speed display (p. 215)
- 7 Unit of speed
- 8 Favorites display (p. 219)
- 9 Front rider's seat heating (optional) (p. 218)
- 10 heated grip (optional) (p. 218)
- 11 Throttle Response (optional)
- 12 ABS display (p. 217)
- 13 Fuel range display
- 14 Gear display
- 15 Unit for the engine speed display
- 16 ambient air temperature indicator (p. 216)

18.9 speed



The engine speed is displayed in revolutions per minute.

18.10 shift light



The shift light is integrated in the rpm gauge display.

In the **Shift Light** submenu, the engine speed for the shift warning light can be set. During the run-in time (up to 1000 km / 621 miles), the shift light is always active. The shift warning light can only be deactivated, and the values for **RPM1** and **RPM2** can only be adjusted after this. At **RPM1**, the engine speed display flashes red and at **RPM2**, the entire display flashes red.

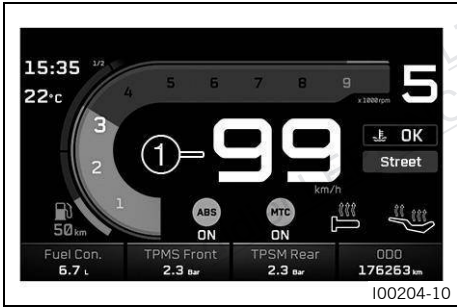
Note

After the first service, the shift warning light is deactivated when the engine is warm and in sixth-gear.

Coolant temperature	≤ 35 °C (≤ 95.0 °F)
ODO	< 1,000 km (< 621.4 mi)
The shift warning light always flashes at	6,500 rpm (108.33 Hz)

Coolant temperature	> 35 °C (> 95.0 °F)
ODO	> 1,000 km (> 621.4 mi)
RPM1 shift warning light	flashes
RPM2 shift warning light	flashes and changes color

18.11 speed display

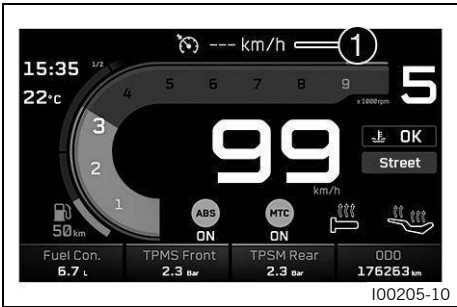


The speed is shown in area ❶ of the display.

Speed is shown in kilometers per hour **km/h** or in miles per hour **mph**.

The unit of speed can be configured in the **Distance** submenu.

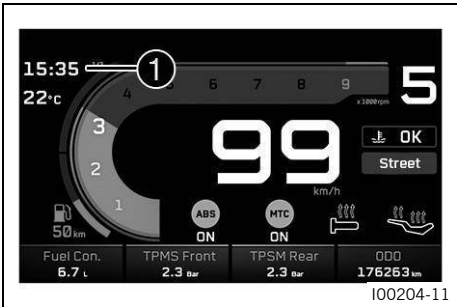
18.12 cruise control indicator (optional)



The operating state of the active cruise control is shown in the area **1** of the display.
Cruise control is operated using the cruise control tip switch.

Note
If the cruise control system function is switched on but cruise control is not activated, the cruise control system indicator lamp lights up yellow.
If the cruise control system function is switched on and cruise control is activated, the cruise control system indicator lamp lights up green.

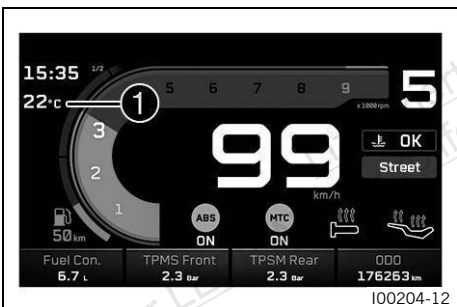
18.13 time



The time is shown in area **1** of the display.
The time can be displayed in 24-hour format or 12-hour format in all languages.
The format of the time can be configured in the **Clock Format** menu.

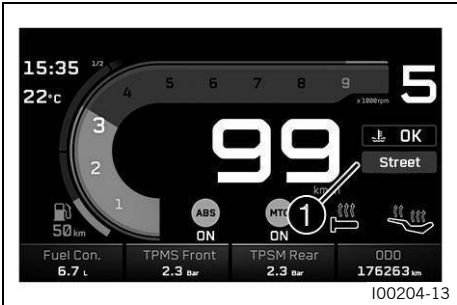
Note
The time must be reset if the 12-V battery was disconnected from the vehicle or the fuse was removed.

18.14 ambient air temperature indicator



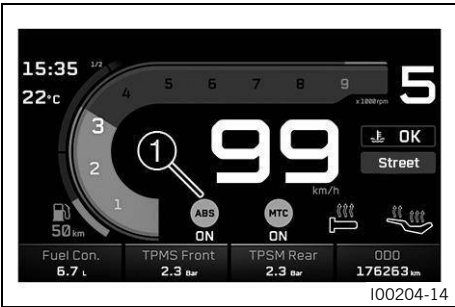
The ambient temperature is shown in area **1** of the display.
The ambient air temperature is displayed in °C or °F.
The unit of the ambient air temperature can be configured in the **Temperature** submenu.

18.15 Ride-Mode display



The **Ride Mode** setting is shown in area **1** of the display.
The drive mode can be configured in the **Ride Mode** submenu.

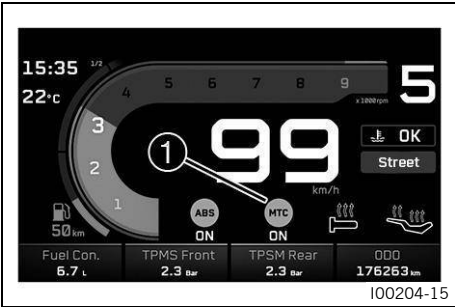
18.16 ABS display



The ABS mode setting is shown in the ❶ area of the display. When the **Ride Mode Rally** is activated, the ABS can be configured in the **ABS** submenu.

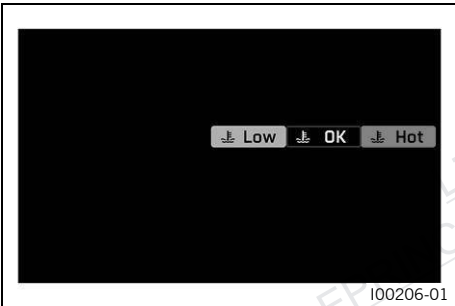
Note
When the ABS mode **Road** is active, ABS controls both wheels.
When the **Offroad** ABS mode is active, ABS only controls the front wheel. The rear wheel is not controlled by ABS and may lock during braking maneuvers.

18.17 MTC display



The ❶ area of the display indicates whether **MTC** is switched on or off.
The motorcycle traction control can be switched on or off in the **MTC** submenu (optional).

18.18 coolant temperature indicator



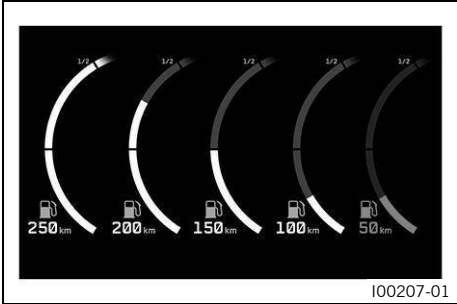
The coolant temperature is displayed by a symbol. The symbol changes between **LOW**, **OK** and **HOT** depending on the temperature.

NOTE
Engine failure Overheating damages the engine.
– If the coolant temperature warning is displayed, stop immediately and take care not to endanger yourself or other traffic participants in the process.
– Allow the engine and cooling system to cool down.
– Check and, if necessary, correct the coolant level on the cooling system while it is in a cooled state.

Note
If the coolant temperature indicator shows **HOT**, the indicator also starts to flash.
If the cooling system overheats, the maximum engine speed is limited.

Condition	Meaning
The engine is cold	The coolant temperature indicator shows LOW .
Engine warm	The coolant temperature indicator shows OK .
Engine hot	The coolant temperature indicator shows HOT .

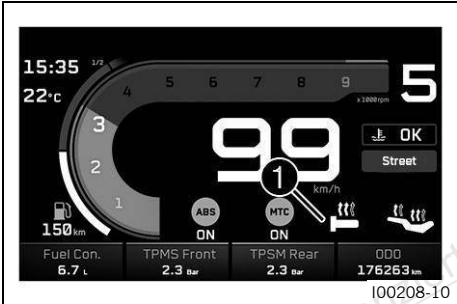
18.19 fuel level display



The fuel level display consists of the fuel range display and a bar. The higher the bar is filled, the more fuel is in the fuel tank

Note
Measurement of the fuel supply only becomes active after reaching half of the fuel tank content. Up to half of the fuel tank content, the fuel level display will be shown as full. If the fuel level is getting low, the last segment flashes red and the following warning **LOW FUEL** also appears. The fuel level is displayed with a slight delay to prevent the indicator from constantly moving while riding. The fuel level display is not updated while the side stand is folded out or the emergency OFF switch is switched off. Once the side stand is folded up and the kill switch is switched on, the fuel level display is next updated after 2 minutes. The fuel level display flashes if the combination instrument does not receive a signal from the fuel level sensor.

18.20 heated grip (optional)



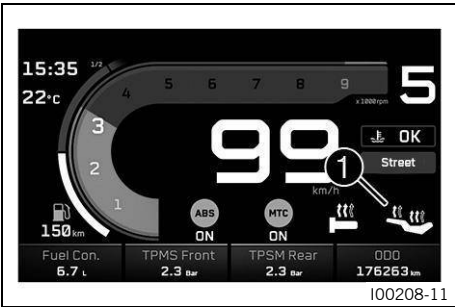
The status of the heated grip is shown in area 1 of the display. The heated grip can be configured in the **Heated Grip** menu.

18.21 Front rider's seat heating (optional)



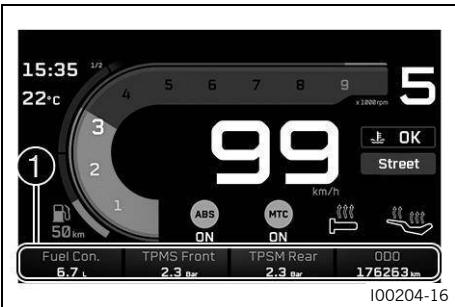
The status of the front rider's seat heating is shown in area 1 of the display. The front rider's seat heating can be configured in the **Seat Heating Rider** submenu.

18.22 Passenger seat heating (optional)



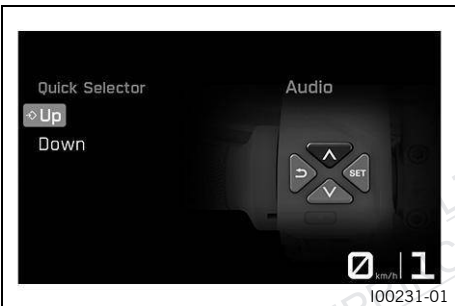
The status of the passenger seat heating is shown in area 1 of the display.
The seat heating can be configured in the **Seat Heating Pillion** sub-menu.

18.23 Favorites display



Up to four items of information are shown on the **Favorites** indicator.
The **Favorites** display can be freely configured in the **Favorites** sub-menu.

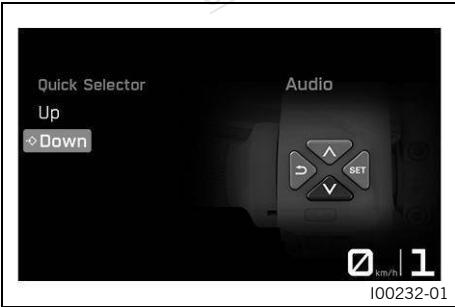
18.24 Quick Selector 1 display



When the menu is closed, the **Quick Selector 1** display is opened by pressing the **UP** button.
Press the **BACK** button to close the **Quick Selector 1** display.

Note
The **Quick Selector 1** display can be configured in the **Settings** menu under **Quick Selector 1**. Any information can be selected.

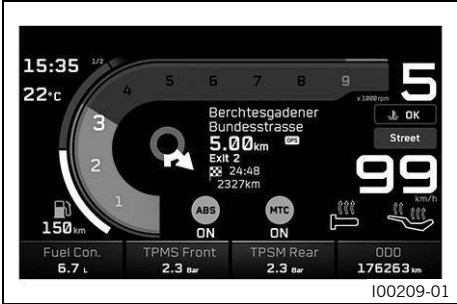
18.25 Quick Selector 2 display



When the menu is closed, the **Quick Selector 2** display is opened by pressing the **DOWN** button.
Press the **BACK** button to close the **Quick Selector 2** display.

Note
The **Quick Selector 2** display can be configured in the **Settings** menu under **Quick Selector 2**. Any information can be selected.

18.26 Navigation display

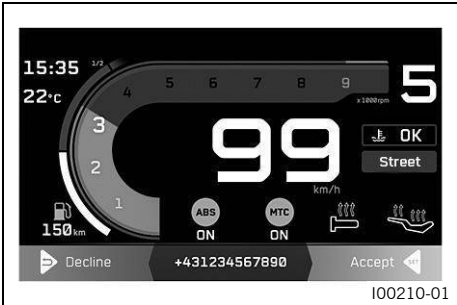


The **Navigation** indicator appears when the navigation function is activated.

Display **Navigation** shows the direction arrow, the distance to the destination, the estimated time of arrival of the cell phone, the distance to the next waypoint and the street name.

The **Navigation** display can be switched on or off in the **Navigation** submenu.

18.27 Call display



WARNING

Danger of accidents Headphone volume which is too high distracts attention from traffic activity.

- Always select headphone volume which is low enough for you to still clearly hear acoustic signals.

The **Call** indicator appears for incoming or active calls.

Press the **SET** button to accept an incoming call.

Press the **BACK** button to reject an incoming call.

Press the **UP** button to increase the audio volume.

Press the **DOWN** button to reduce the audio volume.

i Note

It is not possible to change the audio volume using the combination switch with every cell phone.

The call duration and contact are displayed. Depending on the cell phone settings, the contact is shown by name.

You cannot navigate in the menu during an active phone conversation.

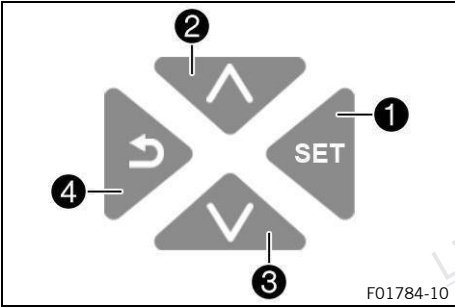
18.28 Programming the cruise control system (optional)



- Switch on the ignition.
✓ The **cruise control indicator light**  flashes.
- Press the **cruise control tip switch**  to the left for 3 seconds.
- Press the **cruise control tip switch**  to position **RES/+** for 3 seconds.
- Press the **cruise control tip switch**  to position **SET/-** for 3 seconds.
- Turn the throttle grip forward past the basic position.
✓ The **cruise control indicator light**  goes out.
- Switch off the ignition.



18.29 Menu



- Note**
- Press the **SET** button **1** in the start screen to open the menu.
- Navigate through the menu using the **UP** button **2** or the **DOWN** button **3**.
- By pressing the **BACK** button **4**, the menu structure jumps one step back, or the menu is closed.

18.29.1 Motorcycle



- Press the **SET** button when the menu is closed.
 - Press the **UP** or **DOWN** button until **Motorcycle** is highlighted. Pressing the **SET** button opens the menu.
- In **Motorcycle**, you can set the riding mode, ABS mode, traction control, engine traction torque control, QUICKSHIFTER+, seat heating, and the heated grip.
- When riding mode **Rally** (optional) is activated, the characteristics of the throttle response, the slip on the rear wheel and the **ABS** can also be configured.

18.29.2 Ride Mode



- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Motorcycle** is highlighted. Pressing the **SET** button opens the menu.



WARNING
Danger of accidents An incorrectly selected ride mode makes it more difficult to control the vehicle. The riding modes are each only suitable for certain conditions.

- Always select a riding mode that suits the surface on which you are riding, the weather and the riding situation.

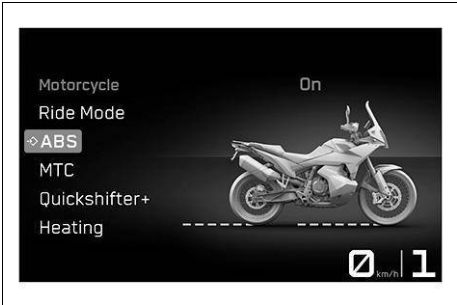
- Press the **UP** or **DOWN** button until **Ride Mode** is highlighted. Pressing the **SET** button opens the menu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to select the riding mode, which changes coordinated settings for the engine and motorcycle traction control.

Only use riding modes Street and Rain on asphalt.
Only use riding modes Offroad and Rally (optional) on unpaved roads.

- ✓ **Street** - Homologated performance with balanced response; the Motorcycle Traction Control allows normal slip on the rear wheel. ABS regulates both wheels.
- ✓ **Rain** - Reduced homologated performance with soft response for improved rideability on surfaces with low road grip; the motorcycle traction control allows very little slip on the rear wheel. ABS regulates both wheels.
- ✓ **Offroad** - Reduced homologated performance for better rideability on unpaved roads; the motorcycle traction control allows high slip on the rear wheel. ABS only controls the front wheel.
- ✓ **Rally** (optional) - Setting with homologated performance and extremely direct response. The motorcycle traction control and the characteristics of the throttle response can be set individually. ABS can be configured separately.

The riding mode of the vehicle can be configured in the **Ride Mode** menu.

18.29.3 ABS



Condition: Model with **RALLY PACK**, Ride mode **Rally** (optional) is activated

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Motorcycle** is highlighted. Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until **ABS** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.



WARNING

Danger of accidents An incorrectly selected ABS mode makes it more difficult to control the vehicle.

The ABS modes are each only suitable for certain conditions.

- Always select an ABS mode that suits the ground and the riding situation.

- Press the **SET** button to select the desired ABS mode.



Note

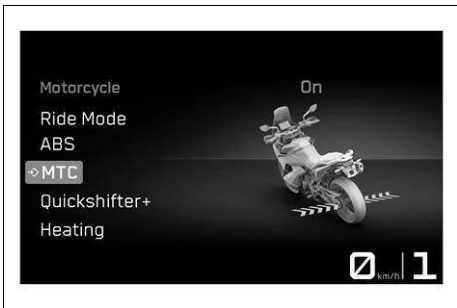
The ABS mode can be switched during the journey.

Do not open the throttle during the selection.

When the ABS mode **Road** is active, ABS controls both wheels.

When the **Offroad** ABS mode is active, ABS only controls the front wheel. The rear wheel is no longer controlled by ABS and may lock during braking maneuvers. The indicator lamp **ABS REAR** lights up.

18.29.4 MTC



Condition: Cruise control function (optional) deactivated

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Motorcycle** is highlighted. Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until **MTC** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- Switch **SET** on or off by pressing the **MTC** button.



Note

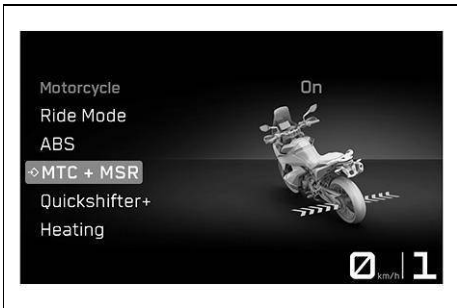
Do not open the throttle when switching on or off.

Press the **SET** button briefly when activating the motorcycle traction control.

Hold down the **SET** button when switching off the motorcycle traction control.

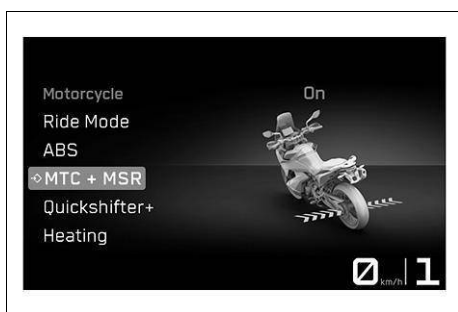
After the ignition is switched on, motorcycle traction control is enabled again.

18.29.5 MTC+MSR (optional)



Condition: Model with **MTC+MSR**, Cruise control function (optional) deactivated

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Motorcycle** is highlighted. Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until **MTC+MSR** is highlighted. Press the **SET** button to open the menu.
- Activate the menu item using the **UP** or **DOWN** button.
- Switch **SET** on or off by pressing the **MTC+MSR** button.



Note

Do not open the throttle when switching on or off.

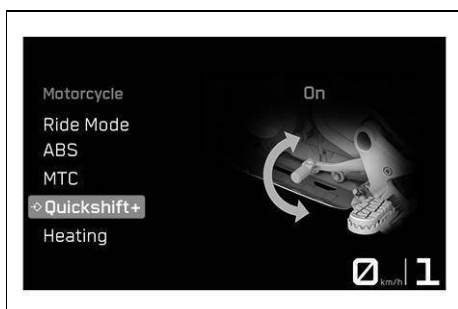
Press the **SET** button briefly when activating the motorcycle traction control and the engine traction torque control.

Hold down the **SET** button when switching off the motorcycle traction control and engine traction torque control.

When ABS mode **Offroad** is active, the **MSR** is not active.

After the ignition is switched on, the motorcycle traction control and engine traction torque control are enabled again.

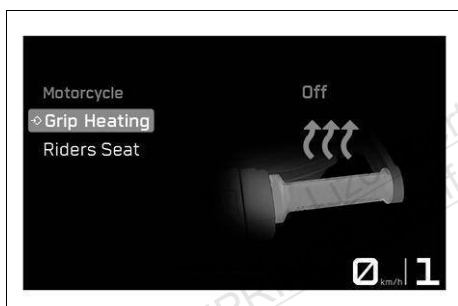
18.29.6 Quickshift+ (optional)



Condition: Model with QUICKSHIFTER+

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Motorcycle** is highlighted. Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until **Quickshift+** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to switch **QUICKSHIFTER+** button on or off.

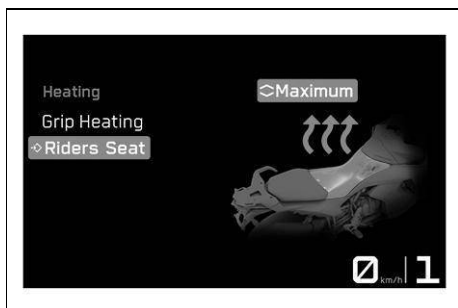
18.29.7 Grip Heating (function optional)



Condition: Model with grip heater, Menu **Heated Grip** (optional function) activated

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Motorcycle** is highlighted. Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until **Heating** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Grip Heating** is highlighted. Press the **SET** button to open the menu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to select the heating level or to switch the heated grip on or off.

18.29.8 Riders Seat (function optional)



Condition: Model with seat heating, Menu **Seat Heating Rider** (optional function) activated

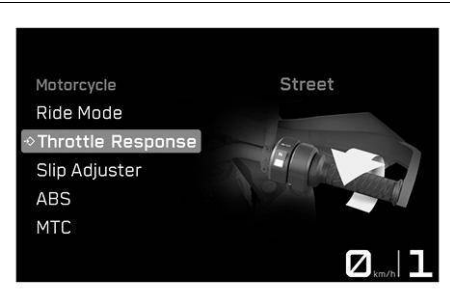
- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Motorcycle** is highlighted. Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until **Heating** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Riders Seat** is highlighted. Press the **SET** button to open the menu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to select the heating level or to switch the front rider's seat heating on or off.



Note

The heating level for the passenger seat heating is selected using the switch next to the right grab handle.

18.29.9 Throttle Response (optional)



Condition: Model with **RALLY PACK**, Ride mode **Rally** (optional) is activated

- Press the **SET** button when the menu is closed.



WARNING

Danger of accidents An incorrectly selected ride mode makes it more difficult to control the vehicle. The riding modes are each only suitable for certain conditions.

- Always select a riding mode that suits the surface on which you are riding, the weather and the riding situation.

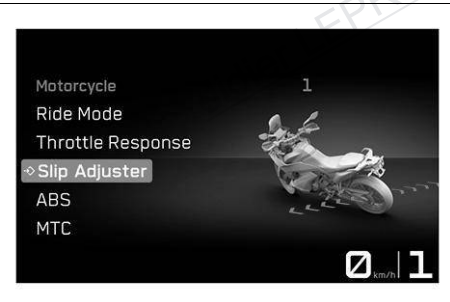
- Press the **UP** or **DOWN** button until **Motorcycle** is marked on the display. Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until **Throttle Response** is marked on the display. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- The characteristic map of the throttle response can be adjusted by pressing the **SET** button.
 - ✓ Street – balanced response.
 - ✓ Rally – extremely direct response.
 - ✓ Offroad – very direct response.



Note

Do not open the throttle when adjusting the throttle response.

18.29.10 Slip Adjuster (optional)



Condition: Ride mode **Rally** (optional) is activated, **MTC+MSR** is activated

- Press the **SET** button when the menu is closed.

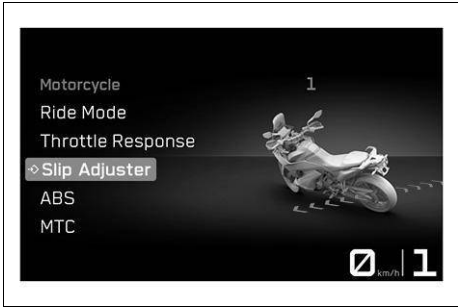


WARNING

Danger of accidents An incorrectly selected ride mode makes it more difficult to control the vehicle. The riding modes are each only suitable for certain conditions.

- Always select a riding mode that suits the surface on which you are riding, the weather and the riding situation.

- Press the **UP** or **DOWN** button until **Motorcycle** is marked on the display. Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until **Slip Adjuster** is highlighted. Press the **SET** button to open the menu.
- Activate the menu item using the **UP** or **DOWN** button.



- Press the **SET** button to set the maximum permitted slip for the motorcycle traction control.

Note
Do not open the throttle during the selection.

The spin adjuster is a motorcycle traction control function. The slip adjustment allows the motorcycle traction control to be tuned through nine levels to the desired characteristic map. Level 0 allows maximum slip on the rear wheel, and level 9 allows the minimum. If the cruise control function is deactivated, the **UP** and **DOWN** buttons in the main display or in the **Slip Adjuster** menu can be used to adjust the **Slip Adjuster**.

Note
The slip adjustment is only available in **Rally** riding mode (optional).
The spin adjuster is only available when motorcycle traction control is activated.

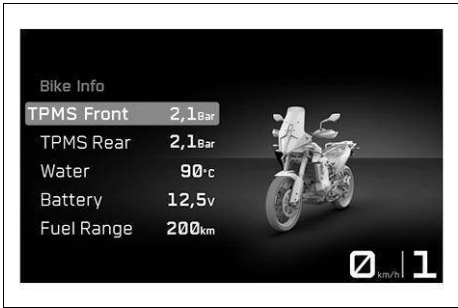
– DOWN Press and hold button for approximately 2 seconds.	Slip adjustment level 0 is activated.
---	---------------------------------------

18.29.11 Bike info



- Press the **SET** button when the menu is closed.
 - Press the **UP** or **DOWN** button until **Bike Info** is highlighted. Pressing the **SET** button opens the menu.
- General information and warnings that may be present can be called up in **Bike Info**.

18.29.12 Bike info



- Press the **SET** button when the menu is closed.
 - Press the **UP** or **DOWN** button until **Bike Info** is highlighted. Press the **SET** button to open the menu.
- Tire Pressure** (optional) shows the current tire pressure of the front and rear tire.
Water displays the coolant temperature.
Fuel Range indicates the possible fuel range you can cover with the fuel reserve.
Battery displays the battery voltage.
Odometer displays the total mileage.
Service displays when the next service is due.

Warnings displays warnings that have occurred until they are no longer active.

18.29.13 Warning



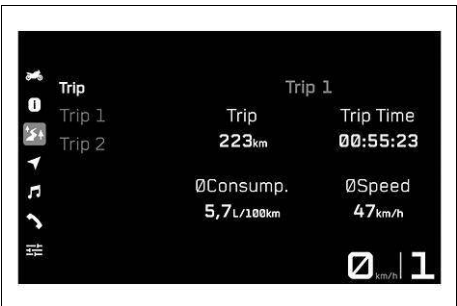
Condition: Message or warning is present

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Bike Info** is highlighted. Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until **Warning** is highlighted. Press the **SET** button to open the submenu.
- Use the **UP** or **DOWN** button to navigate through the warnings.

 **Note**

The warnings that have occurred are saved in the display until they are no longer active.

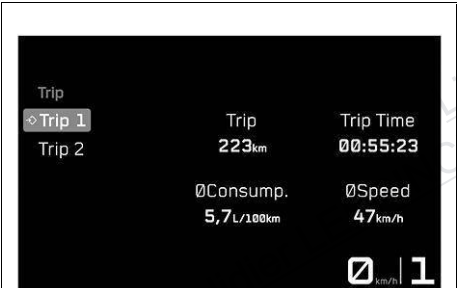
18.29.14 Trip info



- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Trip** is highlighted. Pressing the **SET** button opens the menu.

General information on the odometer, riding time, average fuel consumption, and average speed can be accessed in the menu **Trip**.

18.29.15 Trip 1

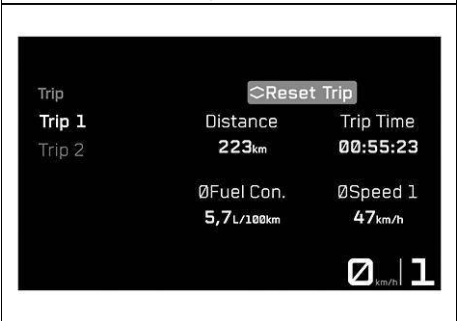


- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Trip** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Trip 1** is highlighted. Press the **SET** button to open the submenu.

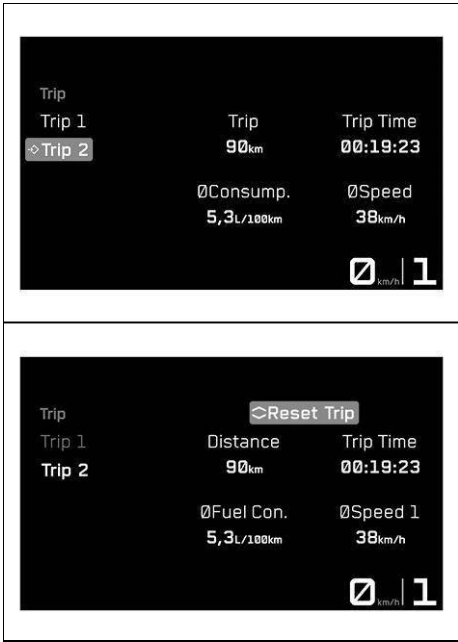
Information on **Trip 1** can be viewed in the **Trip 1** submenu.

 **Note**

Trip displays the distance since the last reset, e.g. between two refueling stops. **Trip** runs along and counts to **9999**.
Trip Time shows the riding time on the basis of **Trip** and runs as soon as a speed signal is received.
ØConsump. indicates the average fuel consumption based on **Trip**.
ØSpeed indicates the average speed based on **Trip** and **Trip Time**.
Press **Reset Trip** to reset all entries in the **Trip 1** menu.



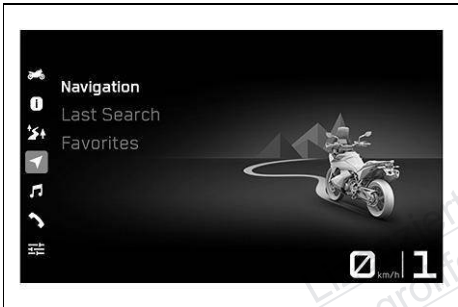
18.29.16 Trip 2



- Press the **SET** button when the menu is closed.
 - Press the **UP** or **DOWN** button until **Trip** is highlighted. Press the **SET** button to open the menu.
 - Press the **UP** or **DOWN** button until **Trip 2** is highlighted. Press the **SET** button to open the submenu.
- Information on **Trip 2** can be viewed in the **Trip 2** submenu.

Note
Trip displays the distance since the last reset, e.g. between two refueling stops. **Trip** runs along and counts to **9999**.
Trip Time shows the riding time on the basis of **Trip** and runs as soon as a speed signal is received.
ØConsump. indicates the average fuel consumption based on **Trip**.
ØSpeed indicates the average speed based on **Trip** and **Trip Time**.
Press **Reset Trip** to reset all entries in the **Trip 2** menu.

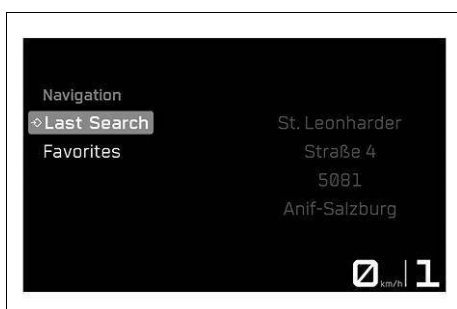
18.29.17 Navigation (optional)



- Condition: Function **Bluetooth®** activated, **KTMconnect** app (optional) is installed and opened on a suitable cell phone (Android devices from version 7.0, iOS devices from version 13), The dashboard is connected to a suitable cell phone, GPS function is activated on the connected cell phone, For voice navigation: The dashboard is connected to a suitable communication system and an appropriate language package has been downloaded in the **KTM-connect Navigation** app (optional)
- Press the **SET** button when the menu is closed.
 - Press **UP** or **DOWN** button until **Navigation** is highlighted. Press the **SET** button to open the submenu.
 - Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to switch the visual navigation on or off.

Note
Voice navigation remains switched on if it has been activated.
The volume of the activated voice navigation is identical to the volume of the audio player on the cell phone. If the volume on the cell phone is changed, the volume of the activated voice navigation also changes.

18.29.18 Last search (optional)



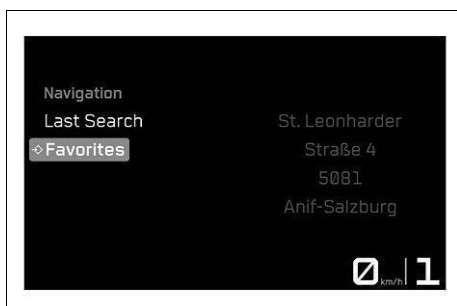
Condition: Function **Bluetooth®** activated, **KTMconnect** app (optional) is installed and opened on a suitable cell phone (Android devices from version 7.0, iOS devices from version 13), The dashboard is connected to a suitable cell phone, GPS function is activated on the connected cell phone

- Press the **SET** button when the menu is closed.
- Press **UP** or **DOWN** button until **Navigation** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press **UP** or **DOWN** button until **Last search** is highlighted. Press the **SET** button to open the submenu.
- Press the **UP** or **DOWN** button to select an address.
- Press the **SET** button to confirm the selection and start navigation.

**Note**

The last 10 addresses searched for in the **Last search** app (optional) are saved in **KTMconnect**.

18.29.19 Favorites (optional)



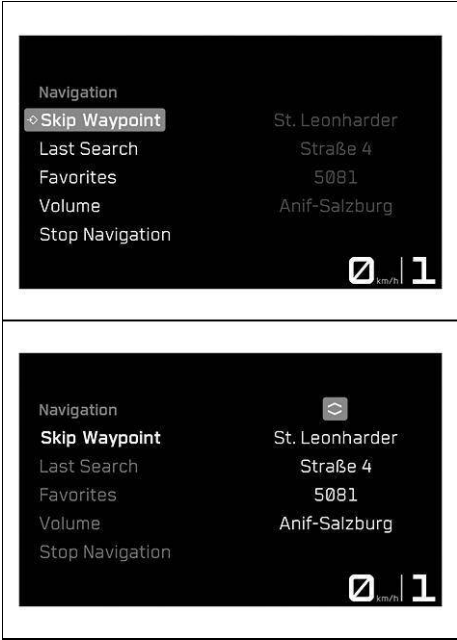
Condition: Function **Bluetooth®** activated, **KTMconnect** app (optional) is installed and opened on a suitable cell phone (Android devices from version 7.0, iOS devices from version 13), The dashboard is connected to a suitable cell phone, GPS function is activated on the connected cell phone, Favorites are saved in the **KTMconnect** app (optional)

- Press the **SET** button when the menu is closed.
- Press **UP** or **DOWN** button until **Navigation** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press **UP** or **DOWN** button until **Favorites** is highlighted. Press the **SET** button to open the submenu.
- Press the **UP** or **DOWN** button to select an address.
- Press the **SET** button to confirm the selection and start navigation.

**Note**

10 addresses in the **Favorites** app (optional) can be stored in **KTMconnect**.

18.29.20 Skip Waypoint (optional)



Condition: Function **Bluetooth®** activated, **KTMconnect** app (optional) is installed and opened on a suitable cell phone, The dashboard is connected to a suitable cell phone, GPS function is activated on the connected cell phone, Navigation with at least one interim destination has been started in the **KTMconnect** app (optional)

- Press the **SET** button when the menu is closed.
- Press **UP** or **DOWN** button until **Navigation** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press **UP** or **DOWN** button until **Skip Waypoint** is highlighted. Press **SET** to select the waypoint.
- Press the **SET** button again to confirm the selection and the waypoint is removed.

18.29.21 Volume (optional)



Condition: **KTMconnect** app (optional) is installed and opened on a suitable cell phone (Android devices from version 7.0, iOS devices from version 13), Dashboard is connected to a suitable cell phone, For voice navigation: The dashboard is connected to a suitable communication system and an appropriate language package has been downloaded in the **KTMconnect** app (optional)

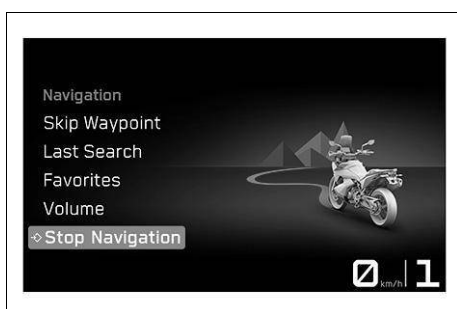
- Press the **SET** button when the menu is closed.
- Press **UP** or **DOWN** button until **Navigation** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.

**WARNING**
Danger of accidents Headphone volume which is too high distracts attention from traffic activity.

- Always select headphone volume which is low enough for you to still clearly hear acoustic signals.

- Press **UP** or **DOWN** button until **Volume** is highlighted. Press the **SET** button to open the submenu.
- Press the **UP** button to increase the volume of the activated voice navigation.
- Press the **DOWN** button to reduce the volume of the activated voice navigation.

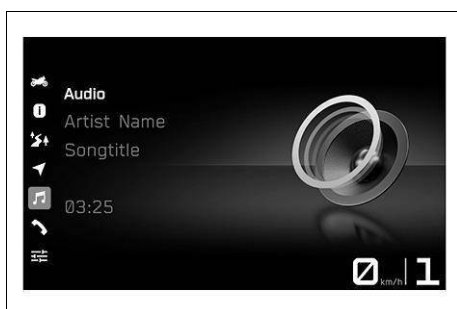
18.29.22 Stop Navigation (optional)



Condition: Function **Bluetooth®** activated, **KTMconnect** app (optional) is installed and opened on a suitable cell phone (Android devices from version 7.0, iOS devices from version 13), Dashboard is connected to a suitable cell phone

- Press the **SET** button when the menu is closed.
- Press **UP** or **DOWN** button until **Navigation** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press **UP** or **DOWN** button until **Stop Navigation** is highlighted. Press the **SET** button to confirm the selection.
- Press the **SET** button again to confirm the selection and end navigation.

18.29.23 audio



Condition: Function **Bluetooth®** activated, The dashboard is connected to a suitable cell phone., The dashboard is connected to a suitable communication system or the **Headset Type Corded** is selected

- Press the **SET** button when the menu is closed.

**WARNING**

Danger of accidents Headphone volume which is too high distracts attention from traffic activity.

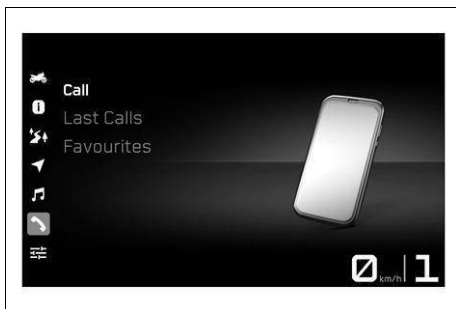
- Always select headphone volume which is low enough for you to still clearly hear acoustic signals.

- Press the **UP** or **DOWN** button until **Audio** is highlighted. Press the **SET** button to open the submenu.
- Press and hold **UP** button to increase the audio volume.
- Press and hold **DOWN** button to reduce the audio volume.
- Press **UP** button briefly to change to the next audio track.
- Briefly pressing the **DOWN** button once or twice replays the current audio track from the start or changes to the previous audio track, depending on the cell phone model.
- Press **SET** button to play or pause the audio track.

**Note**

With some cell phones, the cell phone audio player needs to be started before playback is possible.
The audio function can be added to **Quick Selector 1** or **Quick Selector 2** for easier operation.

18.29.24 call



Condition: Function **Bluetooth®** activated, Function **Bluetooth®** also activated on the device that is to be paired, Dashboard is connected to a suitable cell phone, Dashboard is connected to a suitable communication system



WARNING

Danger of accidents Headphone volume which is too high distracts attention from traffic activity.

- Always select headphone volume which is low enough for you to still clearly hear acoustic signals.

- Press the **SET** button to accept an incoming call.
- Press the **BACK** button to reject an incoming call.
- Press and hold **UP** button to increase the audio volume.
- Press and hold **DOWN** button to reduce the audio volume.



Note

It is not possible to change the audio volume using the combination switch with every cell phone.

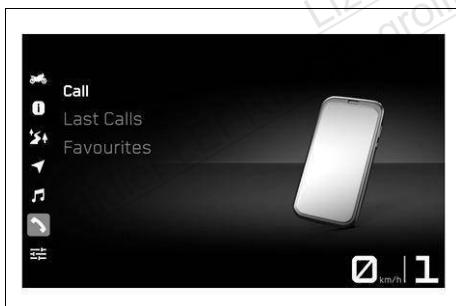
The call duration and contact are displayed. Depending on the cell phone settings, the contact is shown by name.

If necessary, accessing contacts must be enabled on the cell phone.

An incoming call is shown in a small window at the top of the combination instrument display when the navigation function is active.

You cannot navigate in the menu during an active phone conversation.

18.29.25 Call out



Condition: Function **Bluetooth®** activated, Dashboard is connected to a suitable cell phone, Dashboard is connected to a suitable communication system

- Press the **SET** button when the menu is closed.
- Press **UP** or **DOWN** button until **Call** appears. Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until **Last Calls** or **Favorites** is marked. Press the **SET** button to open the submenu.
- Press the **UP** or **DOWN** button until the desired person is marked.
- Press the **SET** button.
- ✓ The selected person is called.



Note

It is not possible to change the audio volume using the combination switch with every cell phone.

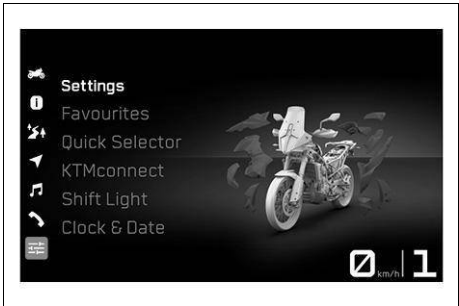
The call duration and contact are displayed. Depending on the cell phone settings, the contact is shown by name.

Accessing contacts must be enabled on the cell phone.

An incoming call is shown in a small window at the top of the combination instrument display when the navigation function is active.

You cannot navigate in the menu during an active phone conversation.

18.29.26 Settings



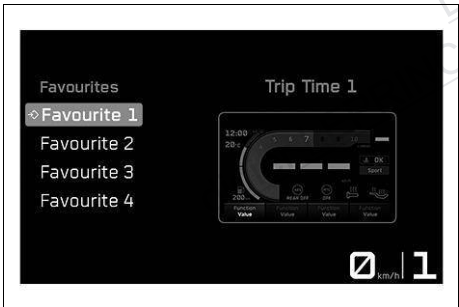
- Condition: Motorcycle is stationary
- Press the **SET** button when the menu is closed.
 - Press the **UP** or **DOWN** button until **Settings** is highlighted. Pressing the **SET** button opens the menu.
- In the **Settings** menu, favorites, quick selections, **KTMconnect** (optional), and the shift warning light can be configured. Settings can be made for units or various values. Several functions can be enabled or disabled.

18.29.27 favorites



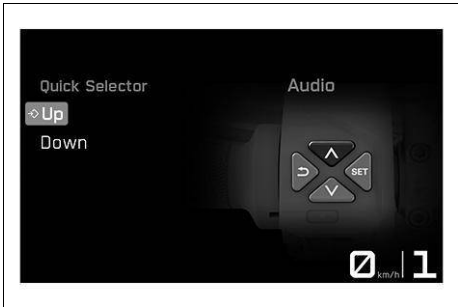
- Condition: Motorcycle is stationary
- Press the **SET** button when the menu is closed.
 - Press the **UP** or **DOWN** button until **Settings** is highlighted.
 - Press the **SET** button to open the menu.
 - Press the **UP** or **DOWN** button until **Favorites** is highlighted. Press the **SET** button to open the submenu.
 - Access menu item with the **UP** or **DOWN** button, and add the selected information to the **SET** display using the **Favorites** button.
- Up to four sets of information can be selected in the **Favorites** menu.

18.29.28 Favorites–display 1–4



- Condition: Motorcycle is stationary
- Press the **SET** button when the menu is closed.
 - Press the **UP** or **DOWN** button until **Settings** is highlighted.
 - Press the **SET** button to open the menu.
 - Press the **UP** or **DOWN** button until **Favorites** is highlighted. Pressing the **SET** button opens the menu.
 - Press the **UP** or **DOWN** button to select **Favorite 1**, **Favorite 2**, **Favorite 3**, or **Favorite 4**. Press the **SET** button to open the menu.
 - Press the **UP** or **DOWN** button to select the desired information. Press the **SET** button to confirm the selection.

18.29.29 Quick Selector 1

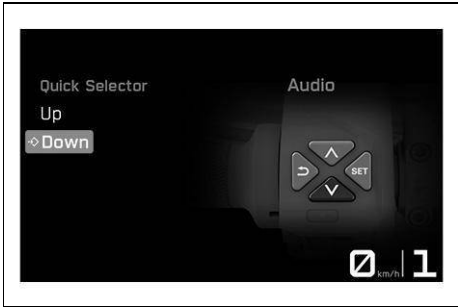


Condition: Motorcycle is stationary

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted.
- Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Quick Selector 1** is highlighted. Press the **SET** button to open the menu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to set a direct selection submenu for **Quick Selector 1**.

Note
When the menu is closed, the submenu defined in **UP** is opened by pressing the **Quick Selector 1** button.

18.29.30 Quick selector 2



Condition: Motorcycle is stationary

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted.
- Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Quick Selector 2** is highlighted. Press the **SET** button to open the menu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to set a direct selection submenu for **Quick Selector 2**.

Note
When the menu is closed, the submenu defined in **DOWN** is opened by pressing the **Quick Selector 2** button.

18.29.31 KTMconnect (optional)



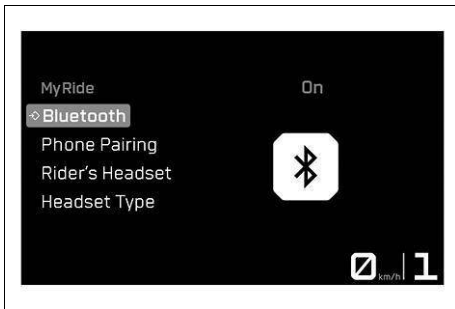
Condition: Motorcycle is stationary, Function **Bluetooth®** activated

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **KTMconnect** (optional) is marked. Pressing the **SET** button opens the menu.

A suitable cell phone or communication system can be paired with the dashboard via **Bluetooth®** in menu **KTMconnect** (optional) and the audio function and navigation function can be configured.

Note
Not every cell phone and communication system is suitable for pairing with the dashboard.
The standard **Bluetooth®** 2.1 must be supported.

18.29.32 Bluetooth



Condition: Motorcycle is stationary

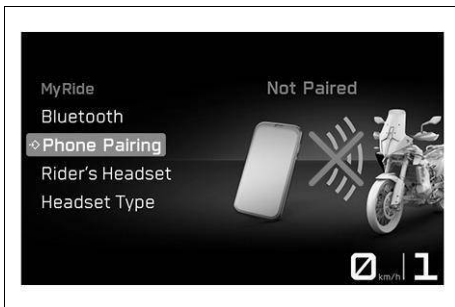
- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted.
- Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **KTMconnect** (optional) is marked. Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until **Bluetooth** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to switch the **Bluetooth®** function on or off.

i Note

The function **Bluetooth®** must be activated to pair a suitable cell phone or communication system with the vehicle.

Not every cell phone and communication system is suitable for pairing with the dashboard.

18.29.33 Phone Pairing



Condition: Motorcycle is stationary, Function **Bluetooth®** activated, Function **Bluetooth®** also activated on the device that is to be paired

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **KTMconnect** (optional) is marked. Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until **Phone Pairing** is highlighted. Press the **SET** button to open the submenu.

i Note

Only one cell phone can be paired with the vehicle at a time.

- Press the **UP** or **DOWN** button until **New Pairing** is marked. Pressing the **SET** button opens the menu.
- The vehicle starts the search for a suitable cell phone. If the search is successful, the name of the cell phone is displayed in menu **New Pairing**. Press the **SET** button to start the pairing.

i Note

The cell phone must be visible via **Bluetooth®** in order for the cell phone to be found by the vehicle.

Not every cell phone is suitable for pairing with the vehicle.

- A message appears on the combination instrument indicating that the vehicle is now ready for pairing. The pairing is successfully completed by confirming the **Passkey** on the cell phone and on the dashboard.
- Press the **UP** or **DOWN** button until **Delete Pairing** is highlighted. The paired device can be deleted by pressing the **SET** button.



- Move the previously paired device into the range of the vehicle while the **Bluetooth®** function is active.
- ✓ The device is automatically connected with the vehicle.
- ✗ If the device is not automatically connected with the vehicle after approx. 30 seconds:
 - Switch on the vehicle again or repeat the **New Pairing** procedure.

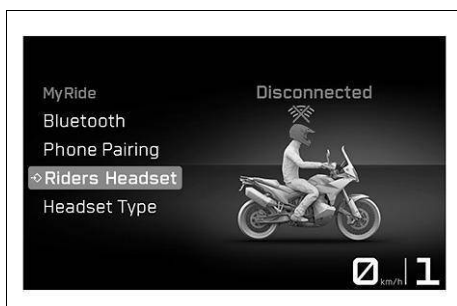
In submenu **Phone Pairing**, a suitable cell phone can be paired with the dashboard via **Bluetooth®**.

Note

Not every cell phone and communication system is suitable for pairing with the dashboard.

Make sure the end device is in the correct pairing mode for call management. If the end device is only paired for media playback, the call function may not work.

18.29.34 Riders Headset (optional)



Condition: Motorcycle is stationary, Function **Bluetooth®** activated, Function **Bluetooth®** also activated on the device that is to be paired

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **KTMconnect** (optional) is marked. Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until **Riders Headset** is highlighted. Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until **New Pairing** is marked. Pressing the **SET** button opens the menu.
- The vehicle starts searching for a suitable communication system. If the search was successful, the name of the rider's audio device is displayed in the **New Pairing** submenu. Press the **SET** button to start the pairing.

Note

The communication system must be in pairing mode for the communication system to be found by the vehicle. Follow the instructions in the communication system owner's manual.

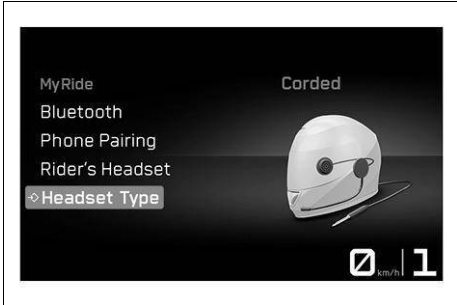
Press the **UP** or **DOWN** button until **Delete Pairing** is highlighted. The paired device can be deleted by pressing the **SET** button.

Not every communication system is suitable for pairing with the vehicle.

- Move the previously paired device into the range of the vehicle while the **Bluetooth®** function is active.
- ✓ The device is automatically connected with the vehicle.
- ✗ If the device is not automatically connected with the vehicle after approx. 30 seconds:
 - Switch on the vehicle again or repeat the **New Pairing** procedure.

In the **Riders Headset** menu, a suitable rider communication system can be paired with the vehicle.

18.29.35 Headset Type (optional)



Condition: Motorcycle is stationary

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **KTMconnect** (optional) is marked. Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until **Headset Type** is highlighted. Press the **SET** button to change the rider audio device type.

The connection mode for the rider headset can be selected in the **Headset Type** menu.

The communication system is connected to the vehicle wirelessly via **Bluetooth Headset** in **Bluetooth®** mode.

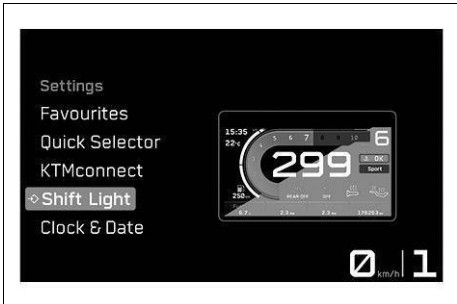
The communication system is connected directly to the smart-phone in **Corded Headset** mode.



Note

The **Riders Headset** menu item is only available in **Headset Type Bluetooth**.

18.29.36 Shift Light

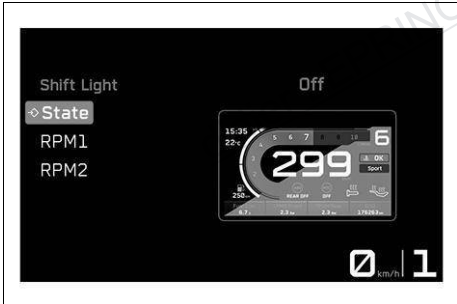


Condition: Motorcycle is stationary, **ODO** > 1,000 km (621 miles)

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Shift Light** is highlighted. Press the **SET** button to open the submenu.

The shift warning light can be configured in the **Shift Light** submenu.

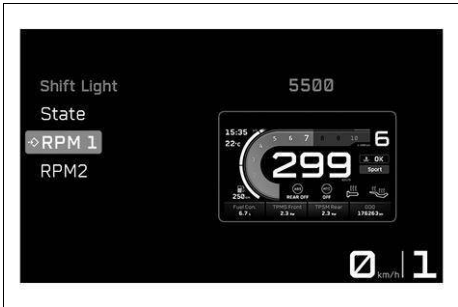
18.29.37 Shift light state



Condition: Motorcycle is stationary, **ODO** > 1,000 km (621 miles)

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Shift Light** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to switch the shift warning light on or off.

18.29.38 RPM1

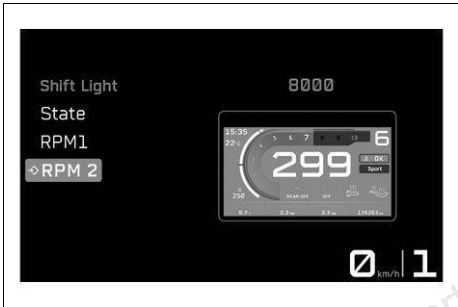


Condition: Motorcycle is stationary, **ODO** > 1,000 km (621 miles)

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Shift Light** is highlighted. Press the **SET** button to open the submenu.
- Press the **UP** or **DOWN** button until **RPM1** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- Set the value for **SET** by pressing the **RPM1** button.

Note
RPM1 can be set in intervals of 500 between 5,500 and 10,000 rpm.
RPM1 must not be larger than **RPM2**.
If the engine speed reaches the set value **RPM1**, the shift warning light flashes.

18.29.39 RPM2



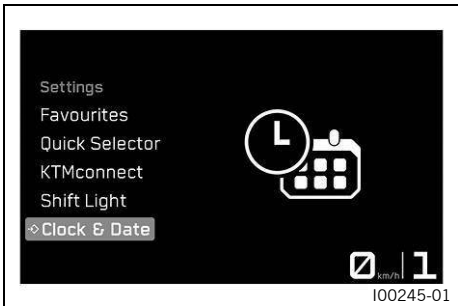
Condition: Motorcycle is stationary, **ODO** > 1,000 km (621 miles)

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Shift Light** is highlighted. Press the **SET** button to open the submenu.
- Press the **UP** or **DOWN** button until **RPM2** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- Set the value for **SET** by pressing the **RPM2** button.

Note
RPM2 can be set in intervals of 500 between 7,000 and 10,000 rpm.
RPM2 must not be smaller than **RPM1**.
If the engine speed reaches the set value **RPM2**, the shift warning light flashes and the color changes.

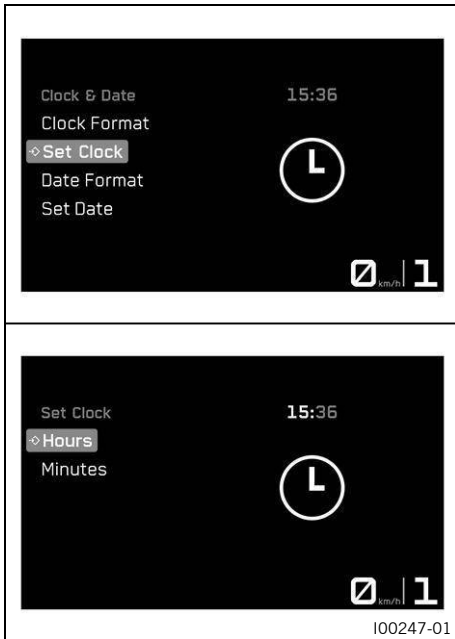
18.29.40 Setting the time and date

Condition: Motorcycle is stationary



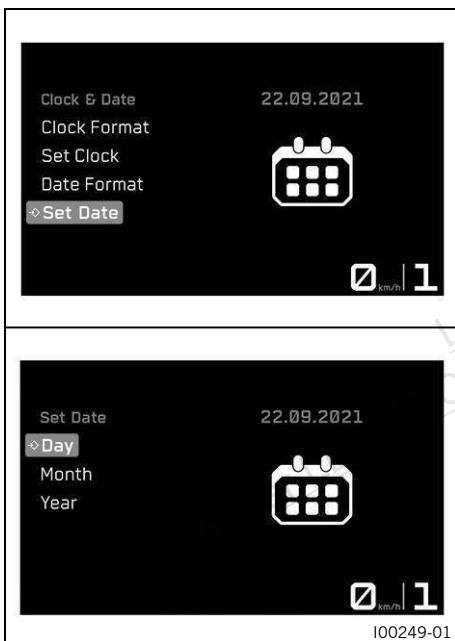
- Press the **SET** button when the menu is closed.
- Press **UP** or **DOWN** button until **Settings** appears. Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until **Clock & Date** is highlighted. Press the **SET** button to open the submenu.

Setting the clock



- Press **UP** or **DOWN** button until **Set Clock** is highlighted.
- Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until **Hours** is highlighted.
- Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until the current hour is set. Press the **SET** button to select the hour.
- Press the **UP** or **DOWN** button until **Minutes** is highlighted.
- Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until the current minute is set. Press the **SET** button to select the minute.
- Press the **BACK** button to exit the menu.

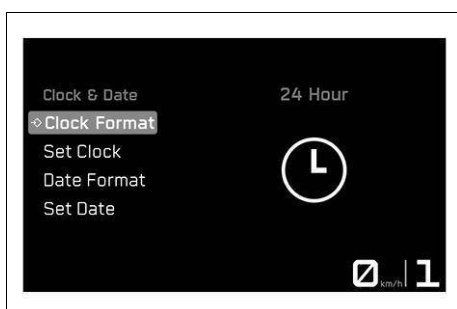
Setting the date



- Press **UP** or **DOWN** button until **Set Date** is highlighted.
- Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until **Day** is highlighted.
- Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until the current day is set. Press the **SET** button to select the day.
- Press the **UP** or **DOWN** button until **Month** is highlighted.
- Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until the current month is set. Press the **SET** button to select the month.
- Press the **UP** or **DOWN** button until **Year** is highlighted.
- Pressing the **SET** button opens the menu.
- Press the **UP** or **DOWN** button until the current year is set. Press the **SET** button to select the year.
- Press the **BACK** button to exit the menu.



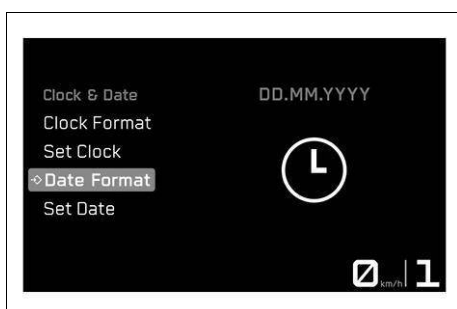
18.29.41 Clock format



Condition: Motorcycle is stationary

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Clock & Date** is highlighted. Press the **SET** button to open the submenu.
- Press the **UP** or **DOWN** button until **Clock Format** is highlighted. Press the **SET** button to open the menu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to select the time format.

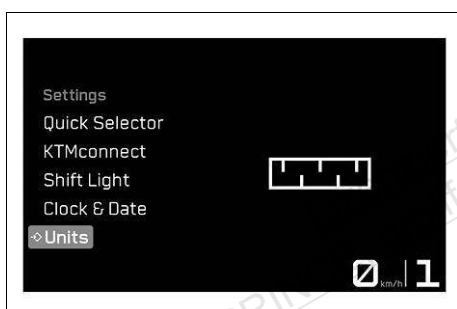
18.29.42 Date format



Condition: Motorcycle is stationary

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Clock & Date** is highlighted. Press the **SET** button to open the submenu.
- Press the **UP** or **DOWN** button until **Date Format** is highlighted. Press the **SET** button to open the menu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to select the date format.

18.29.43 Units

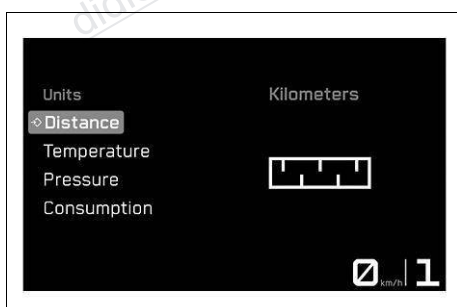


Condition: Motorcycle is stationary

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Units** is highlighted. Press the **SET** button to open the submenu.

The **Units** submenu allows settings to be made for units or various values.

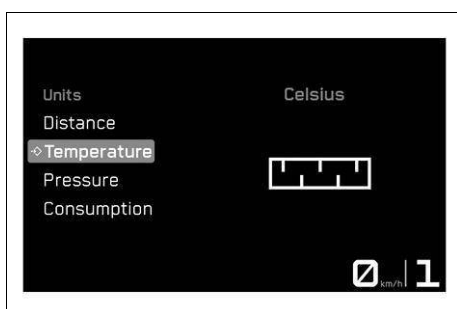
18.29.44 Distance



Condition: Motorcycle is stationary

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Units** is highlighted. Press the **SET** button to open the submenu.
- Press **UP** or **DOWN** button until **Distance** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to confirm the desired unit.

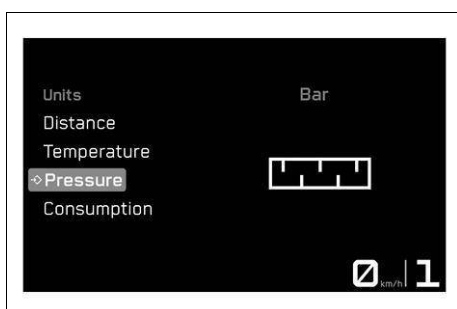
18.29.45 Temperature



Condition: Motorcycle is stationary

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Units** is highlighted. Press the **SET** button to open the submenu.
- Press **UP** or **DOWN** button until **Temperature** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to confirm the desired unit.

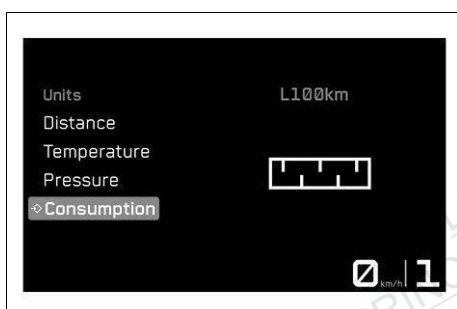
18.29.46 Pressure



Condition: Motorcycle is stationary

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Units** is highlighted. Press the **SET** button to open the submenu.
- Press **UP** or **DOWN** button until **Pressure** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to confirm the desired unit.

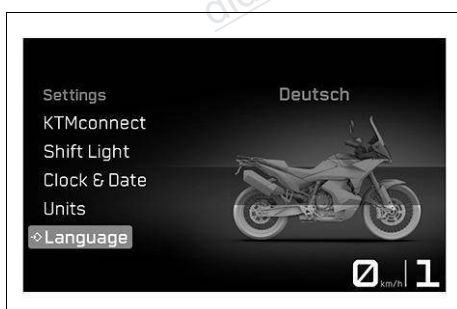
18.29.47 Consumption



Condition: Motorcycle is stationary

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Units** is highlighted. Press the **SET** button to open the submenu.
- Press **UP** or **DOWN** button until **Consumption** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to confirm the desired unit.

18.29.48 Language



Condition: Motorcycle is stationary

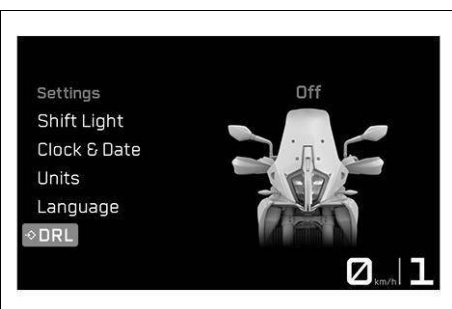
- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted.
- Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Language** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to confirm the desired language.



Note

The menu languages are US English, UK English, German, Italian, French, and Spanish.

18.29.49 DRL



Condition: Motorcycle is stationary

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted.
- Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **DRL** is highlighted. Press the **SET** button to open the submenu.



WARNING

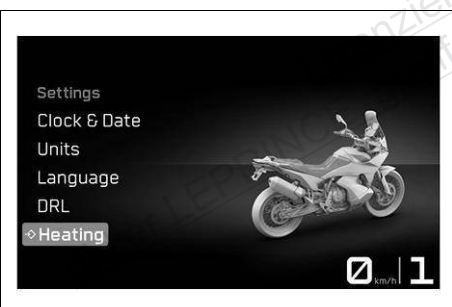
Danger of accidents When visibility is poor, the daytime running light is not a substitute for the low beam.

Automatic switching between the daytime running light and low beam may only be partially available when visibility is impaired due to fog, snow or rain.

- Ensure that the appropriate type of lighting is always selected.
- If necessary switch off the daytime running lights using the menu before going on a ride or when stopped so that the low beam is switched on permanently.
- Make sure that the daytime running light is deactivated with the diagnostic tool when the menu item is not available, but the low beam is required.
- Note the legal regulations regarding the daytime running light.

- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to switch the daytime running light on or off.

18.29.50 Heating (function optional)



Condition: Motorcycle is stationary

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Heating** is highlighted. Press the **SET** button to open the submenu.

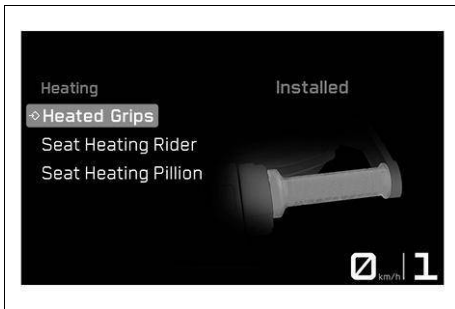
The heated grip, rider seat heating and passenger seat heating can be configured in the **Heating** submenu.



Note

In the **Settings** menu, the **Heating** submenu solely controls the visibility of **Heated Grips** and **Seat Heating** in the **Motorcycle** menu.

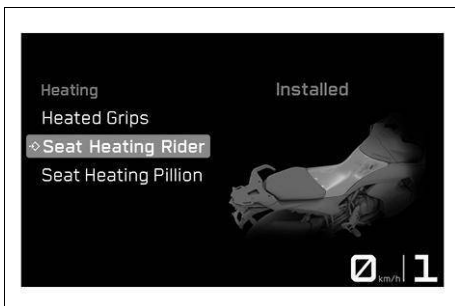
18.29.51 Heated Grips (function optional)



Condition: Model with grip heater, Motorcycle is stationary

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Heating** is highlighted. Press the **SET** button to open the submenu.
- Press **UP** or **DOWN** button until **Heated Grips** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to switch the heated grip on or off.

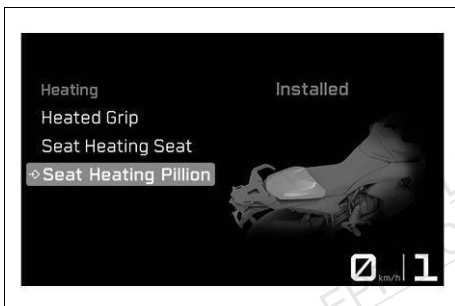
18.29.52 Seat Heating Rider (function optional)



Condition: Model with seat heating, Motorcycle is stationary

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Heating** is highlighted. Press the **SET** button to open the submenu.
- Press **UP** or **DOWN** button until **Seat Heating Rider** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to switch the front rider's seat heating on or off.

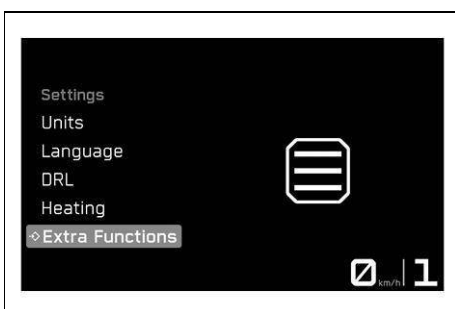
18.29.53 Seat Heating Pillion (function optional)



Condition: Model with seat heating, Motorcycle is stationary

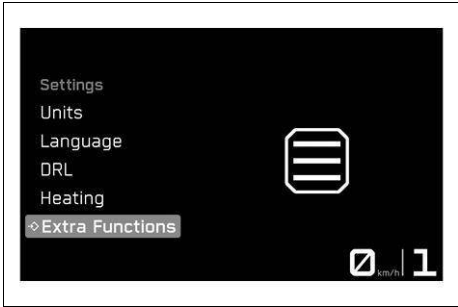
- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted. Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Heating** is highlighted. Press the **SET** button to open the submenu.
- Press **UP** or **DOWN** button until **Seat Heating Pillion** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button.
- Press the **SET** button to switch the passenger seat heating on or off.

18.29.54 Extra Functions



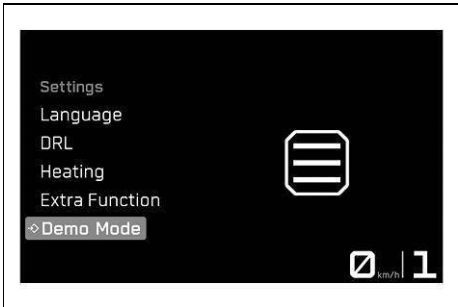
Condition: Motorcycle is stationary, Motorcycle with optional supplementary function

- Press the **SET** button when the menu is closed.
- Press the **UP** or **DOWN** button until **Settings** is highlighted.
- Press the **SET** button to open the menu.
- Press the **UP** or **DOWN** button until **Extra Functions** is highlighted. Press the **SET** button to open the submenu.
- Use the **UP** or **DOWN** button to navigate through the extra functions.



Note
The optional extra functions are listed.
The current **KTM PowerParts** and available software are listed on the KTM website.

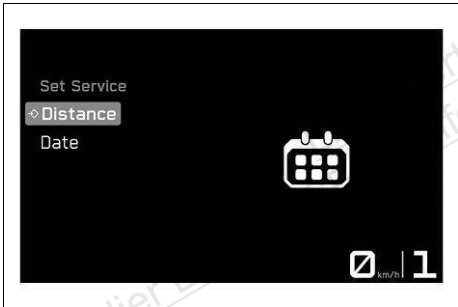
18.29.55 Demo mode



- Condition: Motorcycle is stationary, Motorcycle with demo mode
- Press the **SET** button when the menu is closed.
 - Press the **UP** or **DOWN** button until **Settings** is highlighted.
 - Press the **SET** button to open the menu.
 - Press the **UP** or **DOWN** button until **Demo Mode** is highlighted. Press the **SET** button to open the submenu.
 - Use the **UP** or **DOWN** button to navigate through the demo mode functions.

Note
The activated demo mode functions (p. 209) are listed.
Once the demo mode expires, the optional software functions are available from an authorized dealer.

18.29.56 Set service



- Condition: Motorcycle is stationary
- Press the **SET** button when the menu is closed.
 - Press the **UP** or **DOWN** button until **Settings** is highlighted.
 - Press the **UP** and **DOWN** button for 3 seconds until **Set Service** is opened.
 - Press the **UP** or **DOWN** button until **Distance** is highlighted. Press the **SET** button to open the submenu.
 - Activate the menu item using the **UP** or **DOWN** button. Press the **SET** button to save the selected distance.

Note
Distance can only be changed in 500 km intervals.

- Press the **UP** or **DOWN** button until **Date** is highlighted. Press the **SET** button to open the submenu.
- Activate the menu item using the **UP** or **DOWN** button. Press **SET** button to save the selected number of months.

Note
Date can only be changed in one-month intervals.

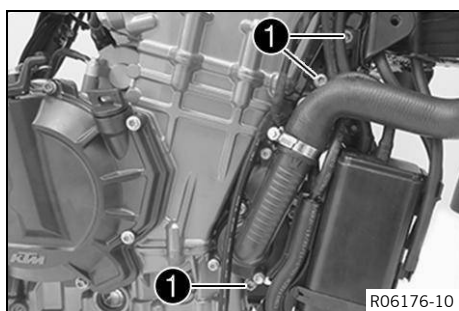
19.1 Removing the engine

Preparatory work

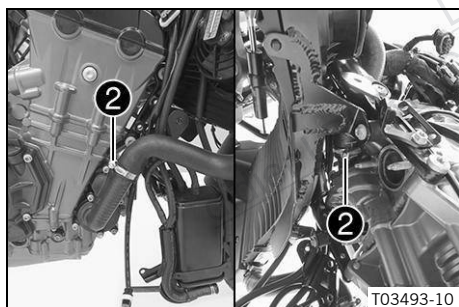
- Remove the passenger seat.  (p. 99)
- Remove the front rider's seat.  (p. 100)
- Disconnect the negative cable of the 12 V battery.  (p. 171)
- Remove the muffler.  (p. 83)
- Raise the motorcycle with the rear lifting gear.  (p. 18)
- Remove the left side cover.  (p. 118)
- Remove the battery cover.  (p. 120)
- Remove left fuel tank spoiler.  (p. 121)
- Remove the right side fairing.  (p. 119)
- Remove right fuel tank spoiler.  (p. 123)
- Remove the skid plate.  (p. 125)
- Remove the fuel tank.  (p. 100)
- Remove the exhaust system.  (p. 84)
- Drain the coolant.  (p. 375)

Main work

- Remove screws .
- Hang the activated charcoal filter to the side.

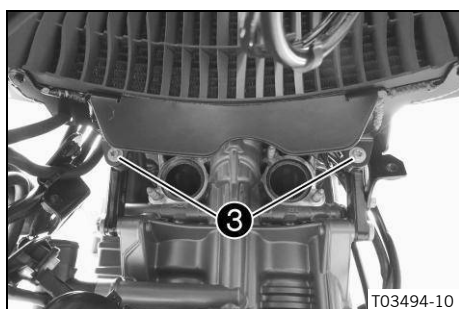


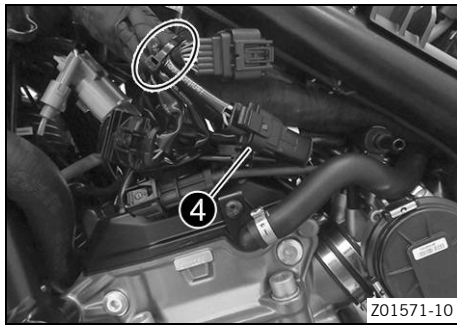
- Release hose clips .
- Pull off the radiator hoses.



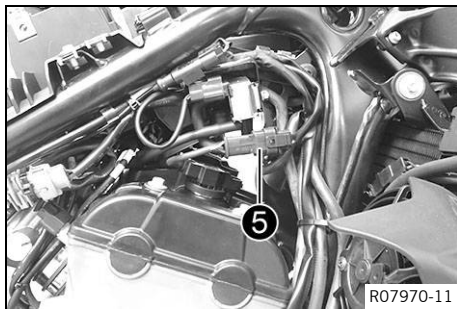
- Remove screws .
- Swing the radiator forward.

Pay attention to the cooling fins.

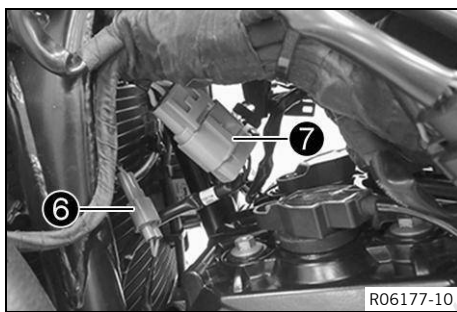




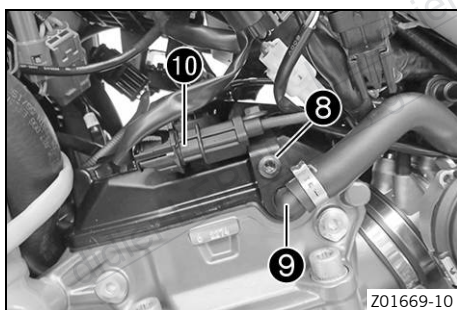
- Remove the cable ties.
- Disconnect plug-in connector 4.



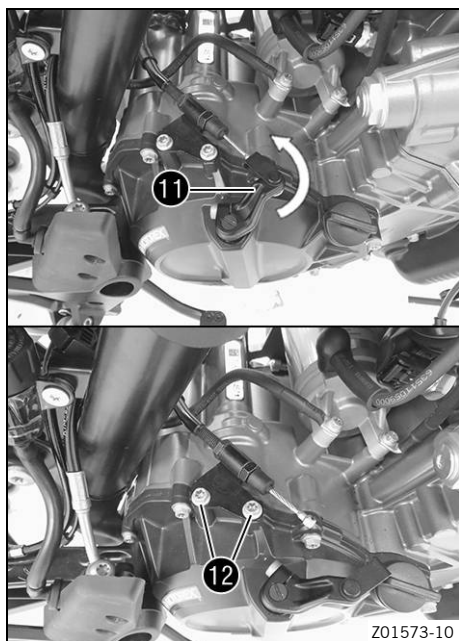
- Remove the cable ties.
- Pull off and disconnect plug-in connector 5 from the holder.



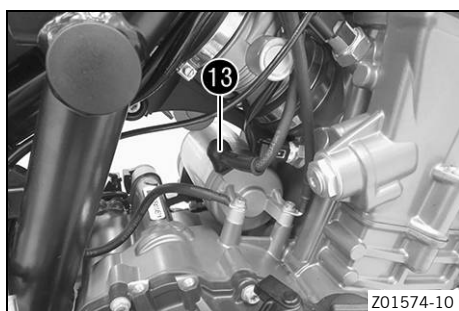
- Disconnect plug-in connectors 6 and 7.



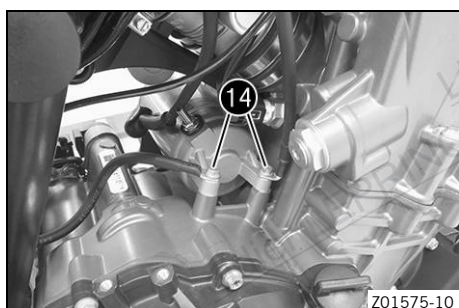
- Remove screw 8 and take off the retaining bracket.
- Pull off vent hose 9.
- Disconnect plug-in connector 10.



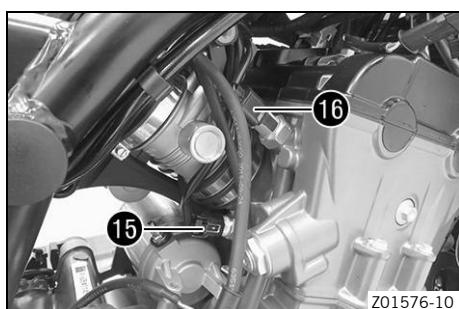
- Swivel clutch release lever **11** counterclockwise and detach the inner clutch cable.
- Remove screws **12**.
- Hang the inner clutch cable with bracket to the side.



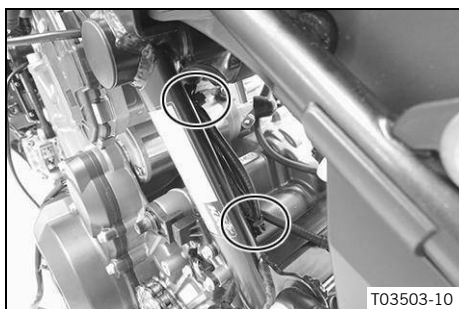
- Push back protection cap **13** and remove the nut.
- Hang the positive cable to the side.



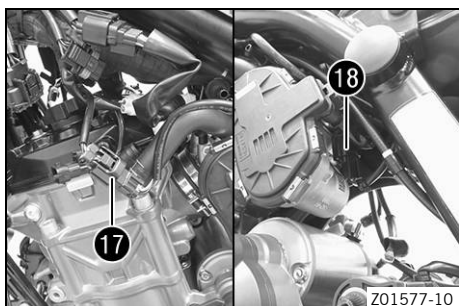
- Remove screws **14**.
- Hang the ground wire to the side.



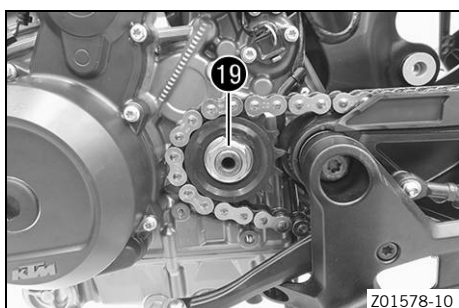
- Disconnect connector **15** of the coolant temperature sensor.
- Unplug connector **16** of the oil pressure sensor.



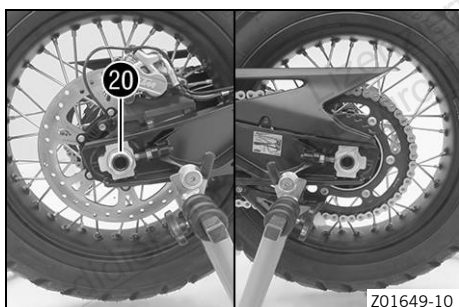
- Remove the cable ties.



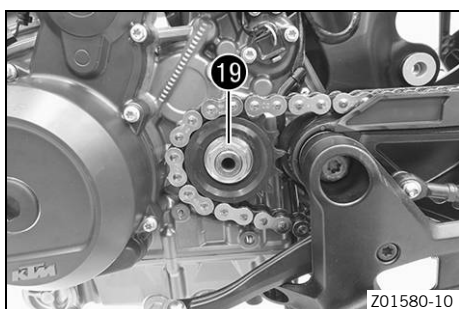
- Disconnect plug-in connectors 17 and 18.
- Expose the cable.



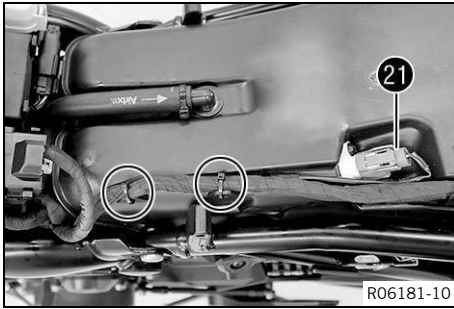
- Bend up the lock washer.
- Have an assistant operate the rear brake.
- Loosen nut 19.



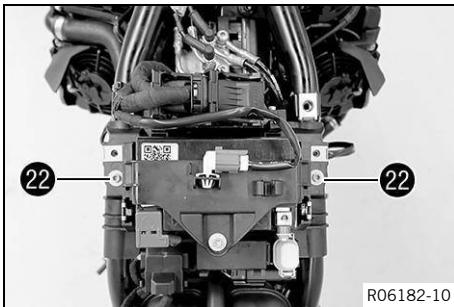
- Remove nut 20.
- Remove the chain adjuster.
- Push the rear wheel into the foremost position.



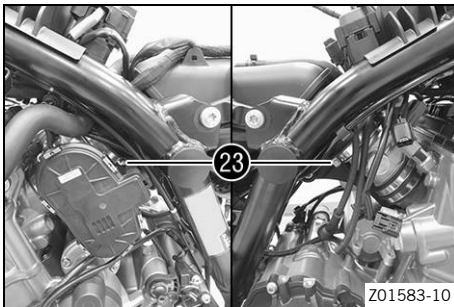
- Remove nut 19 with the lock washer.
- Take off the engine sprocket.



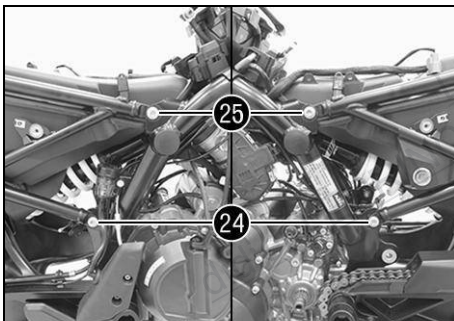
- Remove the cable ties.
- Unplug connector 21.



- Remove screws 22.



- Release hose clips 23.

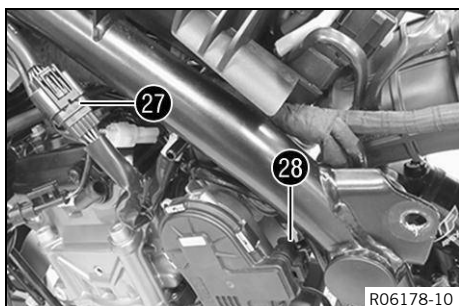


- Loosen screws 24.
- Remove screws 25.
- Swivel the subframe downward.

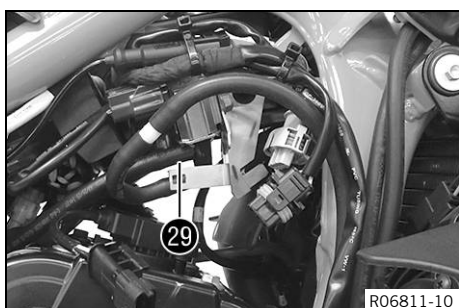




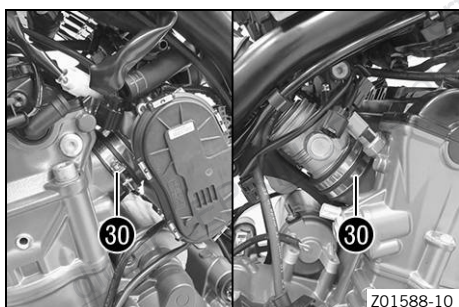
- Remove hose clips 26.



- Disconnect plug-in connector 27.
- Unplug connector 28.



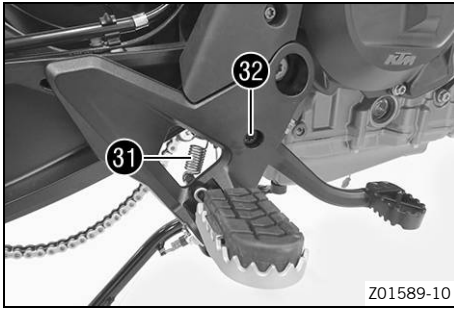
- Pull off hose 29.



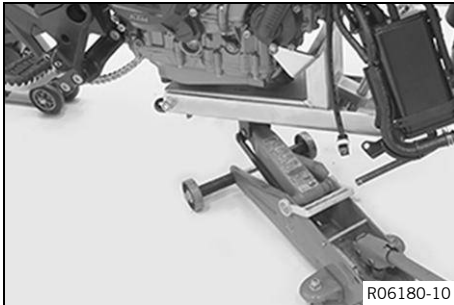
- Release hose clips 30.



- Pull off the throttle valve body toward the rear and remove to the side.



- Detach spring 31.
- Remove fitting 32.
- Remove the foot brake lever.



- Position the floor jack with the special tool.

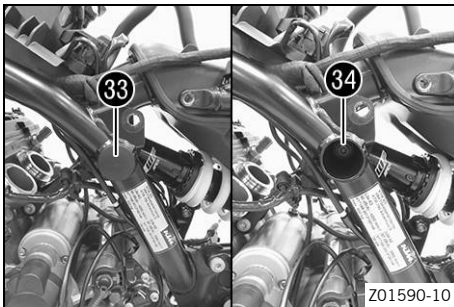
Floor jack attachment (63529055000) (p. 490)



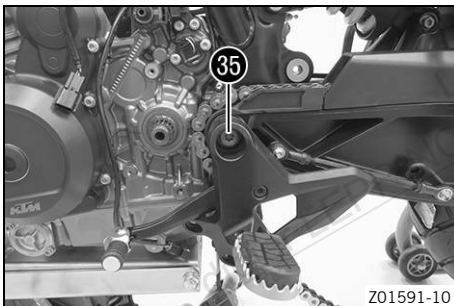
Tip

It is a good idea to have assistance when carrying out the following steps.

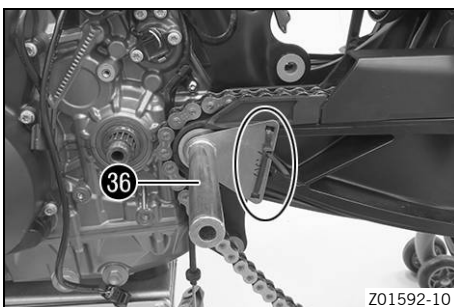
- Mount floor jack with suitable screws on the engine and align with the rubber supports.



- Remove protection cap 33.
- Loosen screw 34.

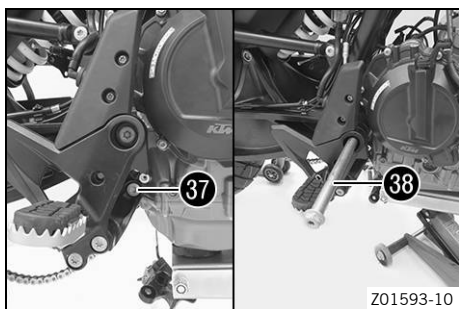


- Remove screw 35.
- Remove the footrest bracket.

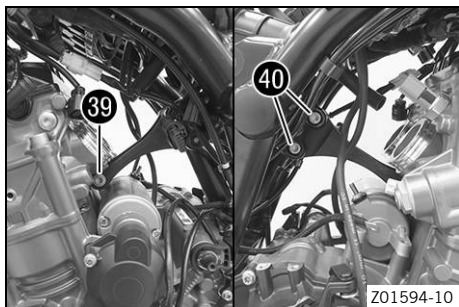


- Mount special tool 36 and secure with a cable tie.

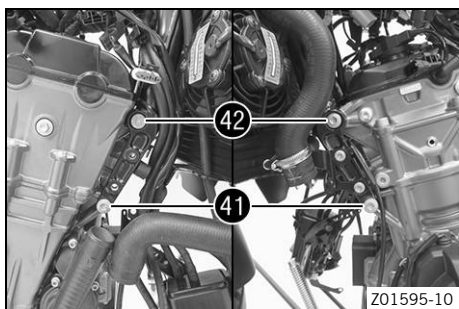
Socket pin (63529055090) (p. 491)



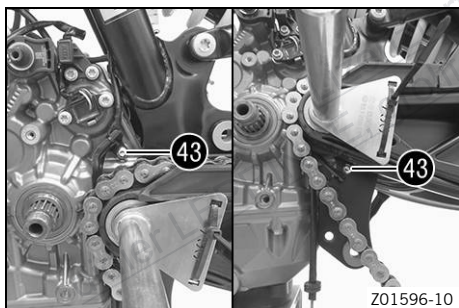
- Remove screw 37.
- Pull out swingarm pivot 38 far enough so that the engine is released but the link fork remains secured.



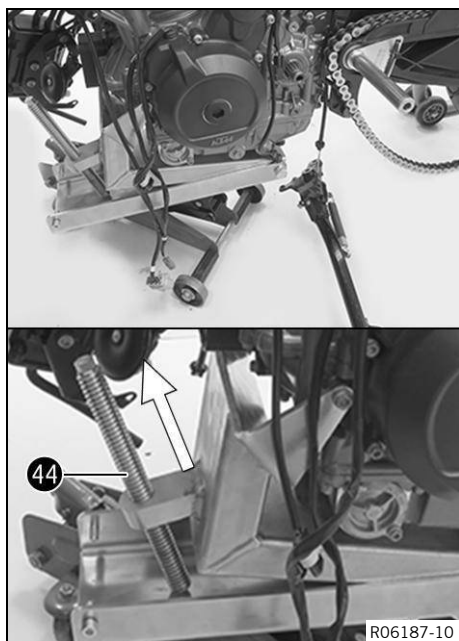
- Remove screw 39.
- Remove screws 40.
- Take off the engine bearer.



- Remove screws 41.
- Remove screws 42.



- Remove screws 43.



- Turn screw **44** to swivel the engine so that it is released from the frame.
- Lower the engine.
- Turn engine and remove it by pulling it to the side.

Make sure that the motorcycle is sufficiently secured against falling over.

Protect the components against damage by covering them.



Tip

It is a good idea to have assistance when carrying out these steps.



19.2 Installing the engine

Preparatory work

- Lift the engine onto the special tool and secure it.

Floor jack attachment (63529055000)  (p. 490)

Main work

- Position the engine in the frame.

Make sure that the motorcycle is sufficiently secured against falling over.

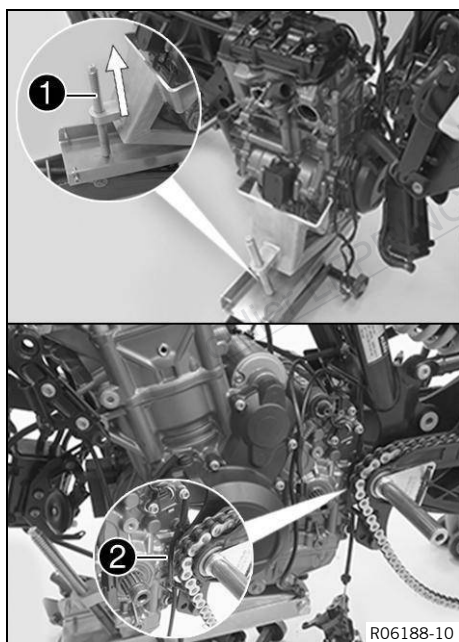
Protect the components against damage by covering them.

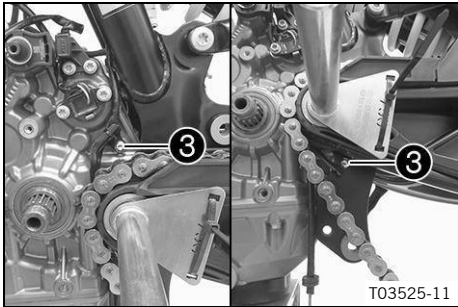


Tip

It is a good idea to have assistance when carrying out the following steps.

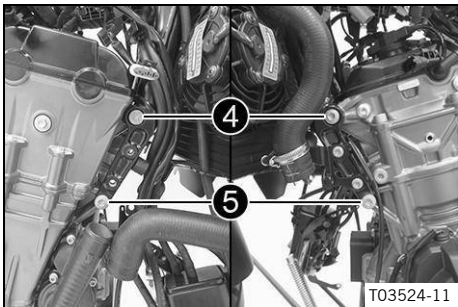
- Turn screw **1** to swivel the engine and position in the frame.
- Position cable guide **2** between the engine and the link fork.





- Mount and tighten screws 3.

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

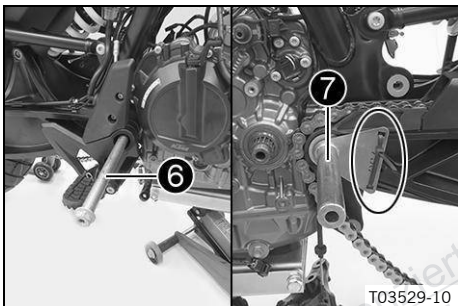


- Mount screws 4, but do not tighten yet.

Engine mounting bolt	
M10	45 Nm (33.2 ft·lb _f) Loctite® 243

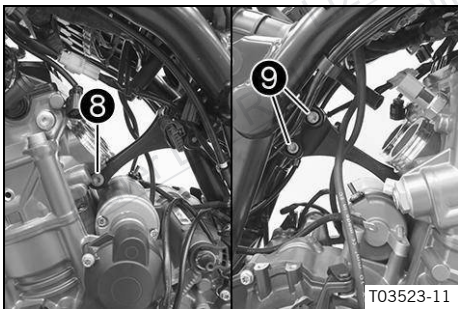
- Mount screws 5, but do not tighten yet.

Engine mounting bolt	
M10	45 Nm (33.2 ft·lb _f) Loctite® 243



- Remove the cable ties.
- Mount swingarm pivot 6 and remove special tool 7.

Socket pin (63529055090)  (p. 491)	
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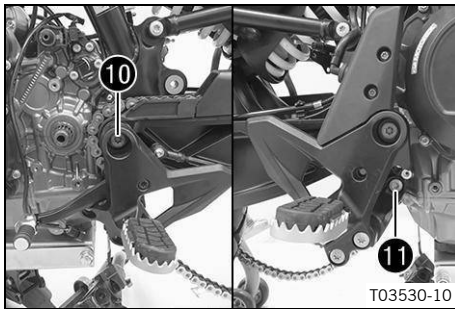


- Position the engine bearer.
- Mount screw 8, but do not tighten it yet.

Engine mounting bolt	
M10	45 Nm (33.2 ft·lb _f) Loctite® 243

- Mount screws 9, but do not tighten yet.

Screw, engine fixing arm linkage bracket	
M8	25 Nm (18.4 ft·lb _f) Loctite® 243



- Position the footrest support.
- Mount screw 10, but do not tighten it yet.

Screw, swingarm pivot	
M12	100 Nm (73.8 ft·lb _r)

Tighten the left screw of the swingarm pivot after installing the exhaust system.

- Mount and tighten screw 11.

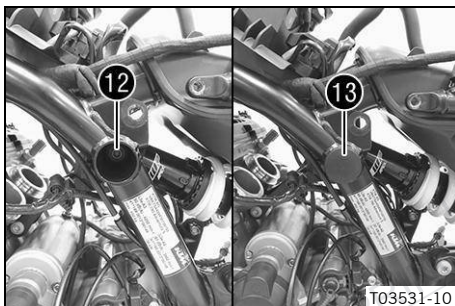
Screw, front footrest bracket	
M10×40	45 Nm (33.2 ft·lb _r) Loctite® 243

- Tighten screws 9.

Screw, engine fixing arm linkage bracket	
M8	25 Nm (18.4 ft·lb _r) Loctite® 243

- Tighten screws 8, 5, and 4.

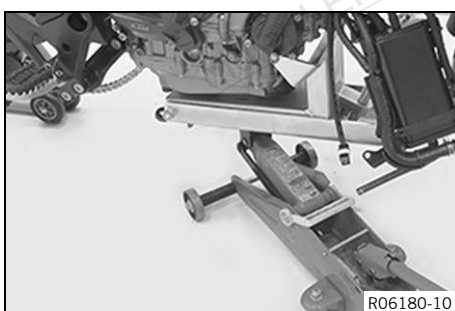
Engine mounting bolt	
M10	45 Nm (33.2 ft·lb _r) Loctite® 243



- Remove screw 12.
- Mount and tighten screw 12.

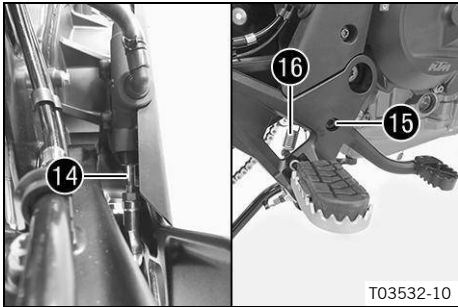
Top shock absorber screw	
M12	80 Nm (59.0 ft·lb _r) Loctite® 2701

- Mount protection cap 13.



- Remove the floor jack with the special tool.

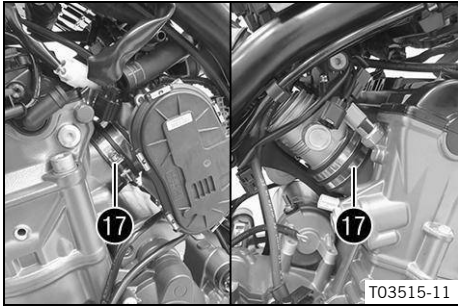
Floor jack attachment (63529055000)  (p. 490)



- Position the rear brake lever.
✓ Push rod 14 engages in the foot brake cylinder.
- Mount and tighten fitting 15.

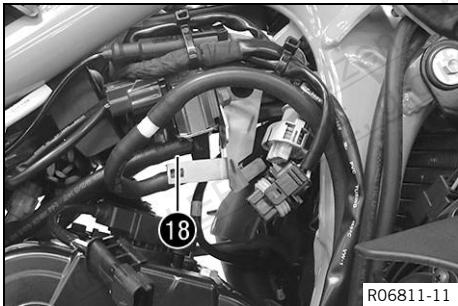
Foot brake lever, fitting	
M8	25 Nm (18.4 ft·lb _f) Loctite® 2701

- Attach spring 16.
- Position the throttle body.

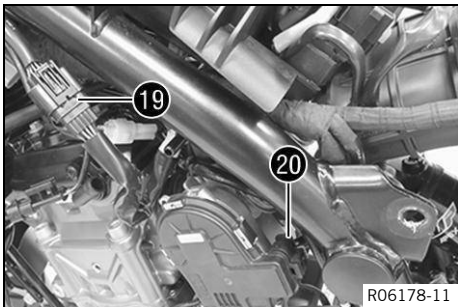


- Tighten hose clips 17.

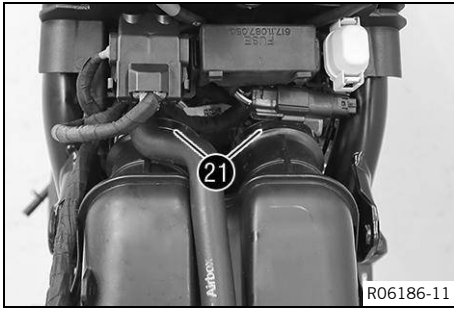
Hose clip, intake flange	
M4	2.5 Nm (1.84 ft·lb _f)



- Mount hose 18.



- Join plug-in connector 19.
- Plug in connector 20.



- Position hose clips **21**.



- Position the subframe.

Watch out for the intake flanges.

- Mount and tighten screws **22**.

Subframe screw

M10

50 Nm
(36.9 ft·lb_f)

Loctite® 243

- Remove screws **23**.

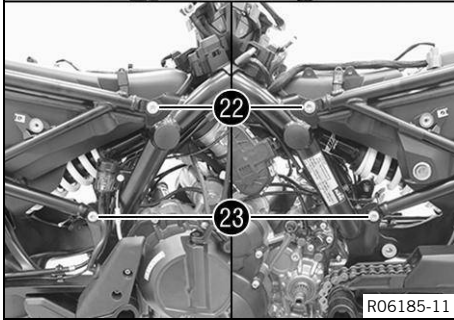
- Mount and tighten screws **23**.

Subframe screw

M10

50 Nm
(36.9 ft·lb_f)

Loctite® 243

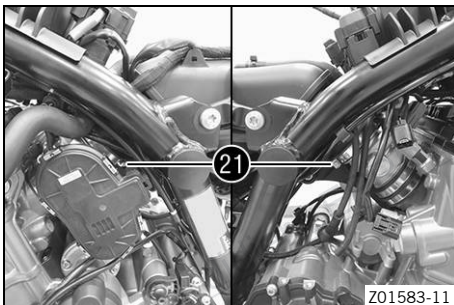


- Tighten hose clips **21**.

Hose clip, intake flange

M4

2.5 Nm
(1.84 ft·lb_f)

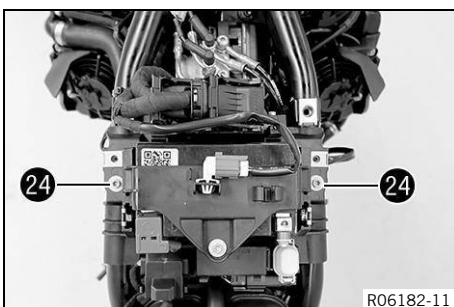


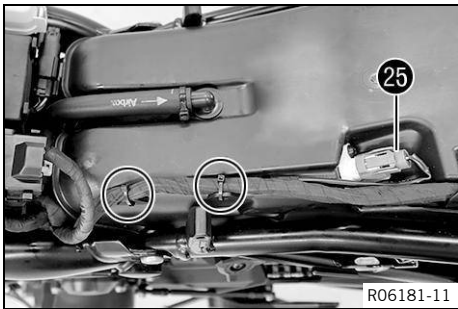
- Mount and tighten screws **24**.

Remaining screws on chassis

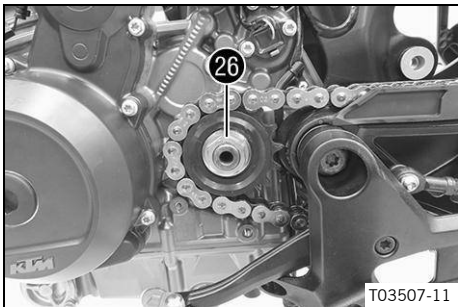
M6

10 Nm
(7.4 ft·lb_f)



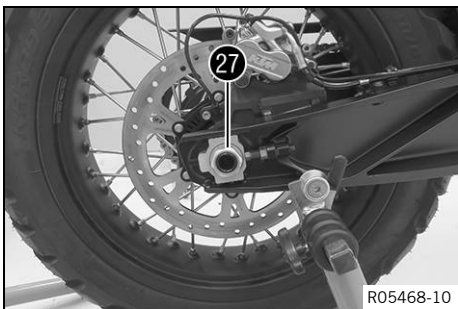


- Plug in connector 25.
- Mount the cable ties.



- Mount the engine sprocket.
- Lay a chain over the engine sprocket.
- Mount nut 26 with the lock washer, but do not tighten yet.

Nut, engine sprocket	
M20×1.5	100 Nm (73.8 ft·lb _f) Loctite® 243

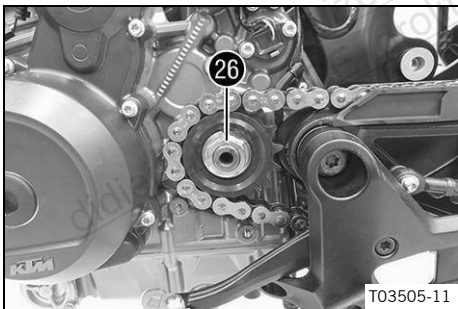


- Slide the wheel spindle in as far as it will go.
- Mount the chain adjuster.
- Push the rear wheel forward so that the chain adjusters are in contact with the screws, and mount and tighten nut 27.

Nut, wheel spindle, rear	
M25×1.5	90 Nm (66.4 ft·lb _f) Long-life grease

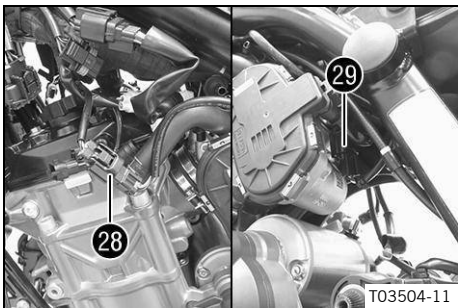
Grease the thread and contact surface of the wheel spindle.

- Check the chain tension. (p. 157)
- Have an assistant operate the rear brake.
- Tighten nut 26.

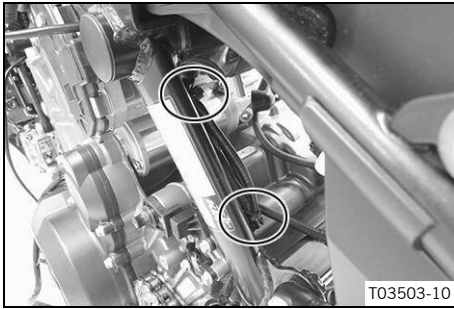


Nut, engine sprocket	
M20×1.5	100 Nm (73.8 ft·lb _f) Loctite® 243

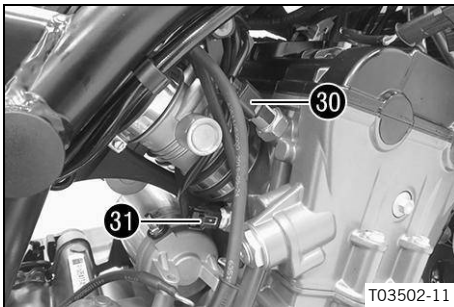
- Secure the nut with a lock washer.



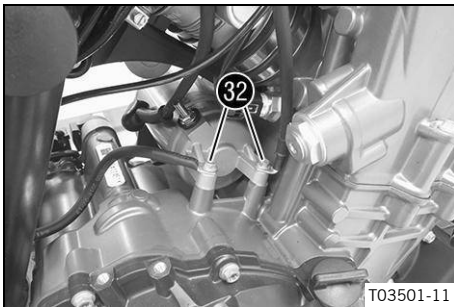
- Route the cables without tension.
- Join plug-in connectors 28 and 29.



- Mount the cable ties.

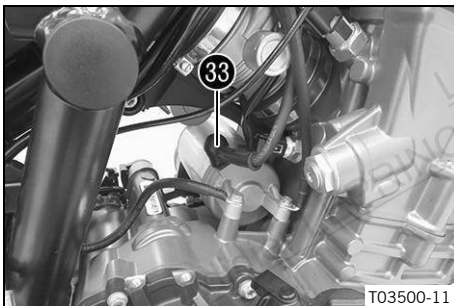


- Plug in connector **30** of the oil pressure sensor.
- Plug in connector **31** of the coolant temperature sensor.



- Position the ground wire.
- Mount and tighten screws **32**.

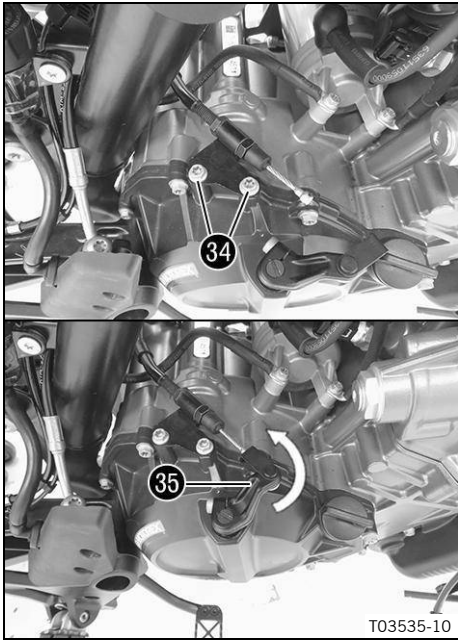
Screw, starter motor	
M6	10 Nm (7.4 ft·lb _r)



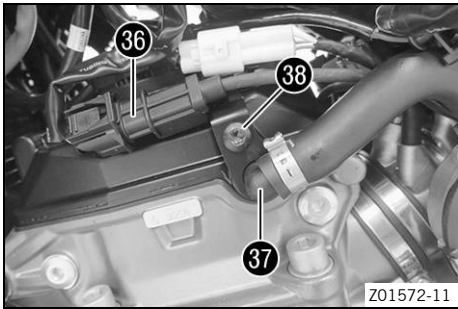
- Position the positive cable on the starter motor.
- Mount and tighten the nut.

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

- Position protection cap **33**.

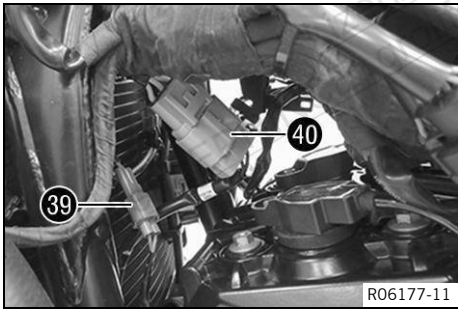


- Position the inner clutch cable with bracket.
 - Mount and tighten screws 34.
- | Remaining screws for engine | |
|-----------------------------|------------------------------------|
| M6 | 10 Nm
(7.4 ft·lb _f) |
- Swivel clutch release lever 35 counterclockwise and hook in the inner clutch cable.
 - Adjust the clutch release lever. (p. 358)

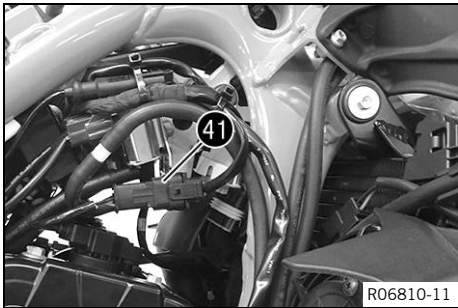


- Join plug-in connector 36.
 - Grease the O-ring of bleeder flange 37.
- | Long-life grease (p. 500) | |
|--|--|
| Position the bleeder flange in the valve cover. | |
| Position retaining bracket and mount and tighten screw 38. | |

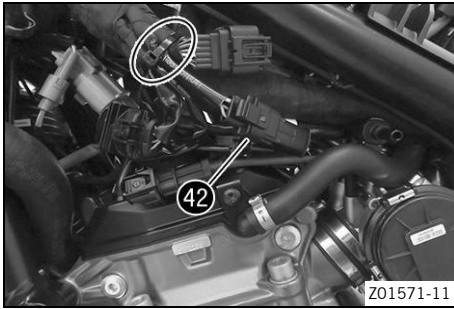
Screw, bleeder flange	
EJOT ALtracs® – M6×12	8 Nm (5.9 ft·lb _f)
Loctite® 243	



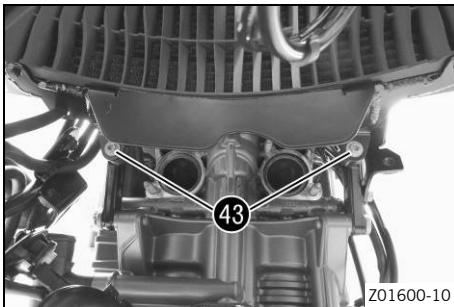
- Join plug-in connectors 39 and 40.



- Join plug-in connector 41 and position in the holder.



- Join plug-in connector 42.
- Mount cable ties.



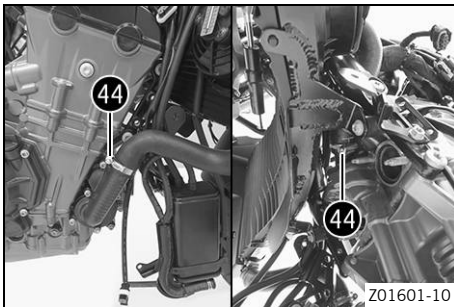
- Position the radiator.

Pay attention to the cooling fins.

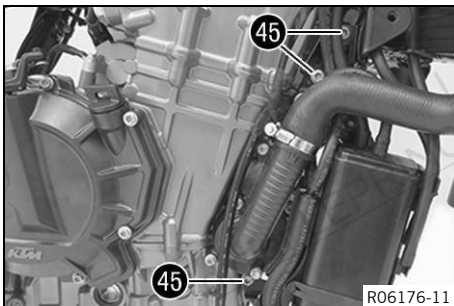
- Mount and tighten screws 43.

Screw, radiator bracket, bottom

M6	5 Nm (3.7 ft·lb _r)
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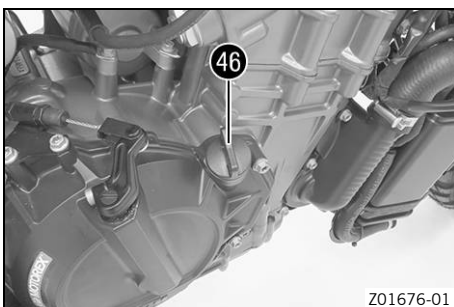
- Mount the radiator hoses.
- Position and tighten hose clips 44.



- Position the activated carbon filter.
- Mount and tighten screws 45.

Remaining screws on chassis

M8	25 Nm (18.4 ft·lb _r)
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- Remove filler plug 46 with the O-ring, and fill up with engine oil.

engine oil	
engine oil (SAE 10W/50) 📖 (p. 500) fully synthetic	2.8 l (0.74 liq. gal _{US})

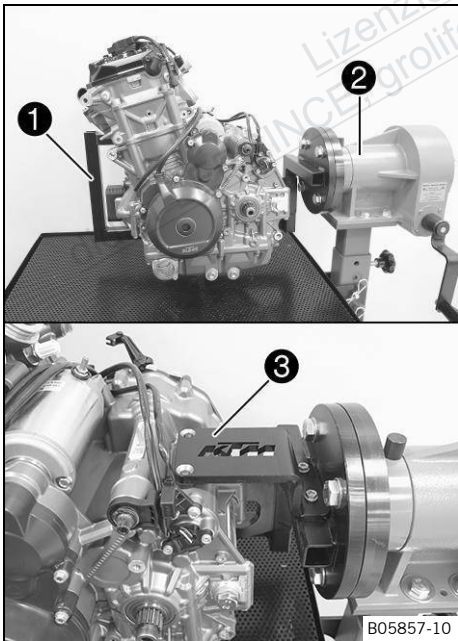
- Mount and tighten filler plug 46 with the O-ring.

Reworking

- Install the exhaust system. (p. 88)
- Install the fuel tank. (p. 103)
- Install the skid plate. (p. 126)
- Install the right fuel tank spoiler. (p. 124)
- Install the right side cover. (p. 119)
- Install the left fuel tank spoiler. (p. 122)
- Install the battery cover. (p. 120)
- Install the left side fairing (p. 118)
- Remove the rear of the motorcycle from the lifting gear. (p. 18)
- Connect the negative cable of the 12 V battery. (p. 171)
- Mount the front rider's seat. (p. 100)
- Mount the passenger seat. (p. 99)
- Set the time and date.
- Fill/bleed the cooling system. (p. 376)
- Read out the fault memory using the diagnostics tool.
- Check the engine oil level. (p. 391)
- Perform the initialization run. (p. 410)
- Go for a short test ride.
- Check the engine for leaks.
- Check the coolant level in the compensating tank. (p. 374)

19.3 Engine disassembly

19.3.1 Clamping the motor into the motor work stand



- Mount special tool 1 on motor work stand 2.

Engine assembly stand (61229001000) (p. 488)

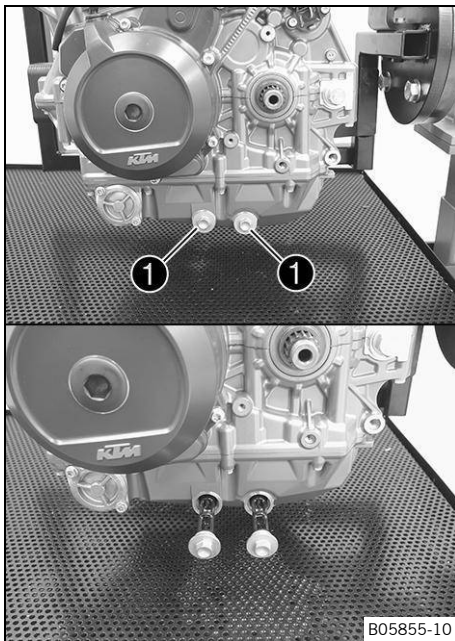
Engine bracket for engine assembly stand (63529002000)
(p. 490)

- Mount the motor on special tool 1.

Work with an assistant or a motorized hoist.

- Mount the retaining bracket 3 on the special tool 1.

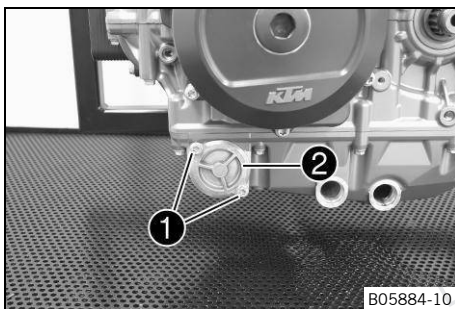
19.3.2 Draining the engine oil



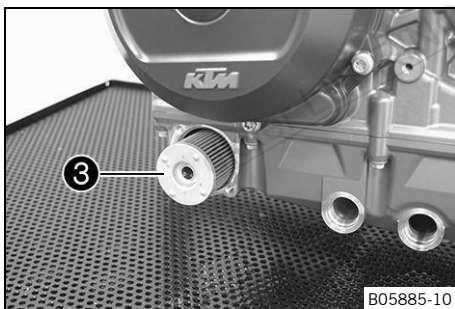
- Remove oil drain plugs ❶ along with the magnets, the O-rings, and the oil screens.
- Allow the engine oil to drain completely.



19.3.3 Oil filter, removing



- Remove screws ❶.
- Take off oil filter cover ❷ with the O-ring.

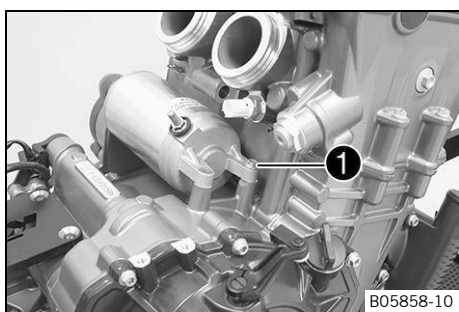


- Remove oil filter ❸.

Lock ring plier (51012011000)  (p. 485)

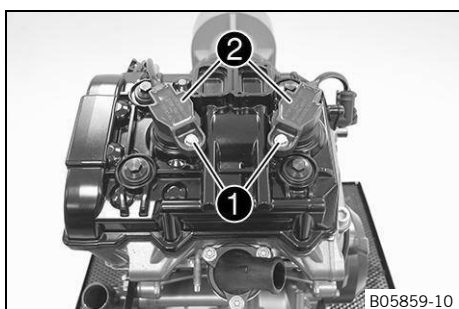


19.3.4 Starter motor, removing

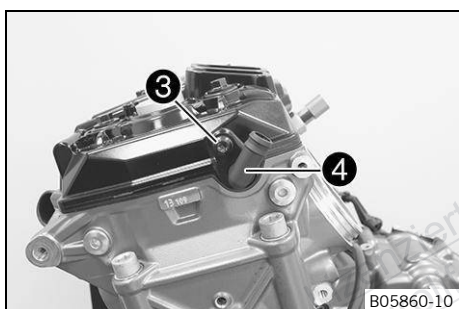


- Remove screw ❶.
- Take off the starter motor.

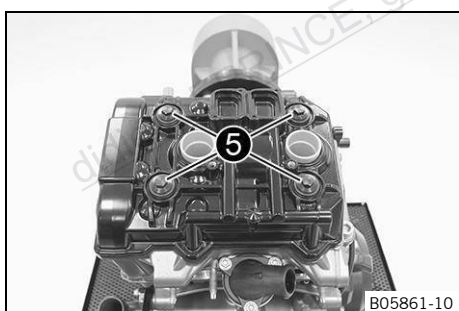
19.3.5 Remove the valve cover



- Remove screws ❶.
- Remove ignition coils ❷.

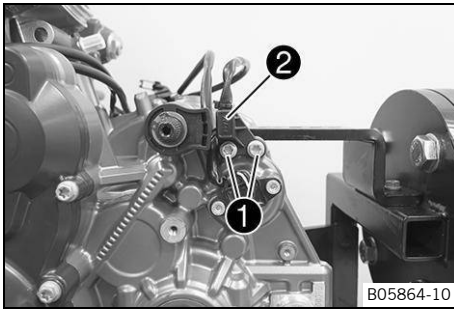


- Remove screw ❸ with the retaining bracket.
- Pull off bleeder flange ❹.

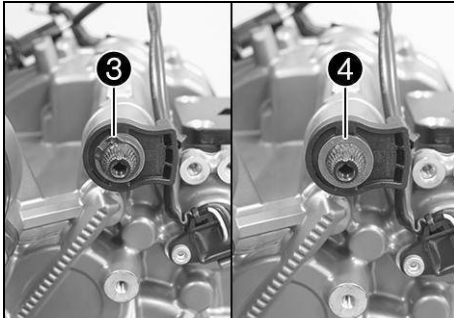


- Remove screws ❺ with the gaskets.
- Take off the valve cover with the valve cover seal.

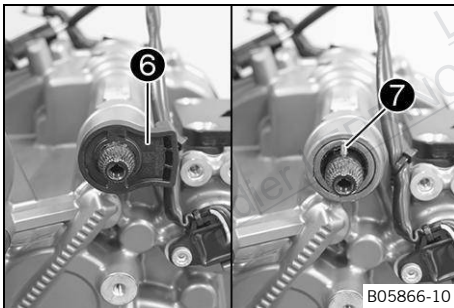
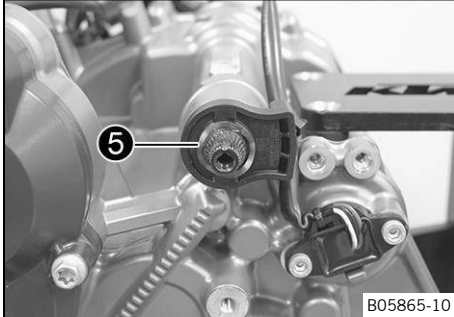
19.3.6 Removing the shift shaft sensor



- Remove screws ①.
- Take off shift shaft sensor ②.

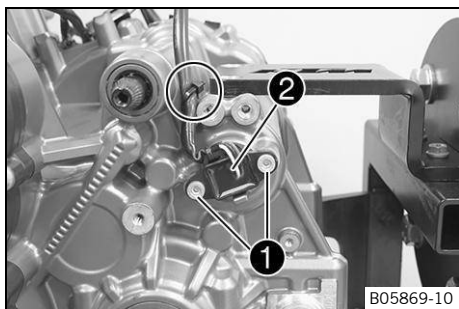


- Remove lock ring ③.
- Remove washer ④.
- Remove locating washer ⑤.



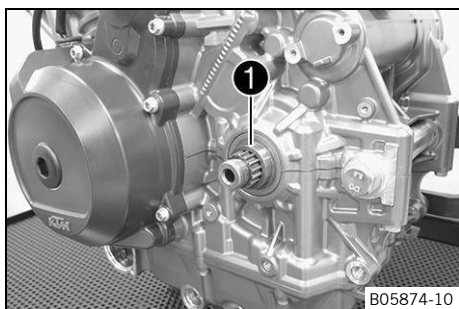
- Take off magnetic holder ⑥.
- Remove pin ⑦.

19.3.7 Removing the gear position sensor



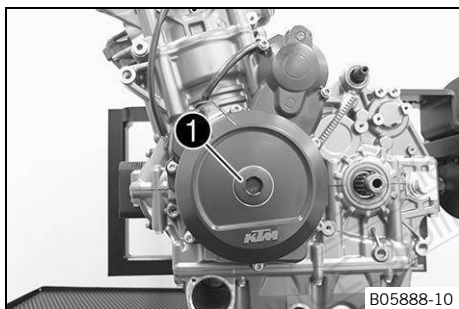
- Remove the cable ties.
- Remove screws ①.
- Take off gear position sensor ②.

19.3.8 Spacer, removing

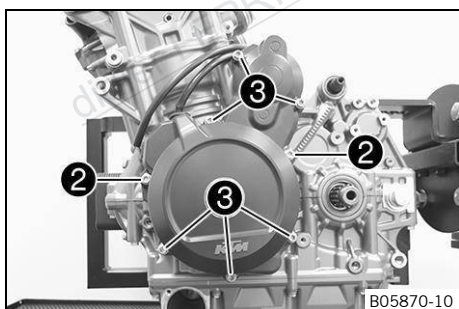


- Remove spacer ① of the countershaft.
- Remove the O-ring.

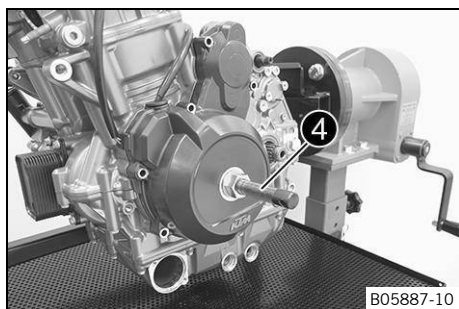
19.3.9 Alternator cover, removing



- Remove screw plug ① with O-ring.

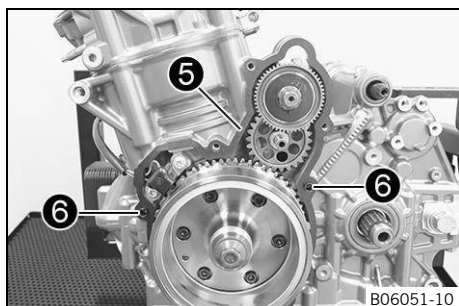


- Remove screws ② and ③.



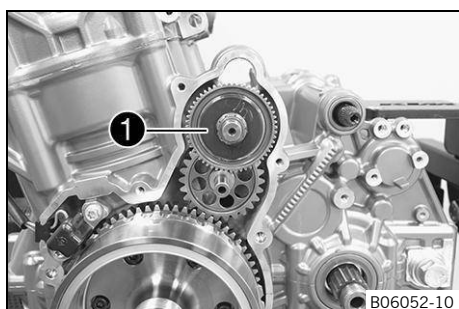
- Mount special tool **4** and pull off the alternator cover.

Puller (61229010000) (p. 489)



- Take off alternator cover gasket **5**.
- Remove dowels **6**.

19.3.10 Removing the torque limiter and the starter intermediate gear

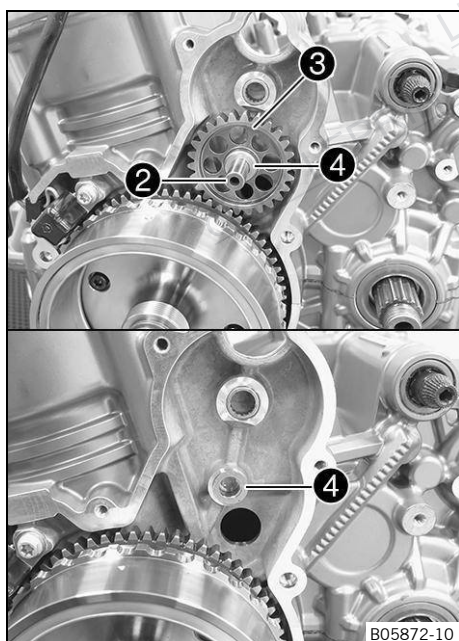


- Take off torque limiter **1** with washer.



Tip

The washer usually sticks to the engine case.



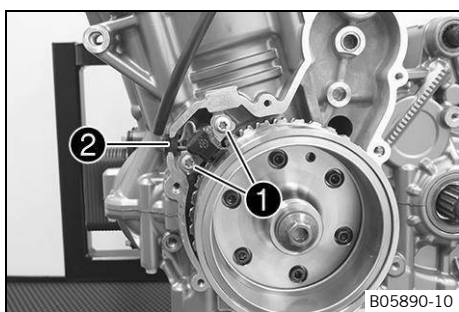
- Take off shaft **2** and starter intermediate gear **3** with needle bearing and washers **4**.



Tip

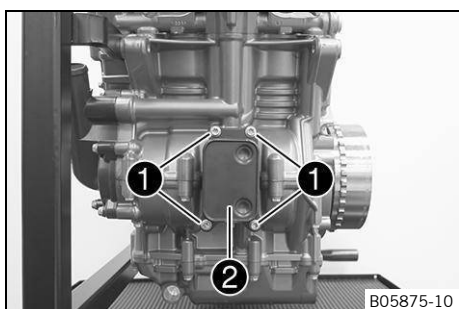
The rear washer usually sticks to the engine case.

19.3.11 Crankshaft speed sensor, removing

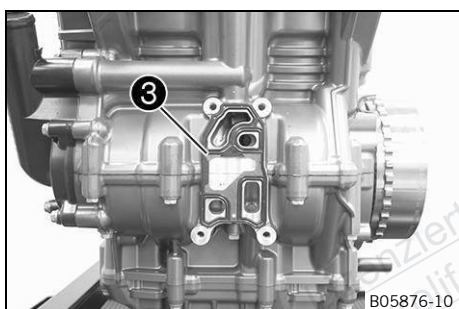


- Remove screws ❶.
- Pull rubber grommet ❷ out of the engine case.
- Remove the crankshaft speed sensor.

19.3.12 Removing the oil/water heat exchanger

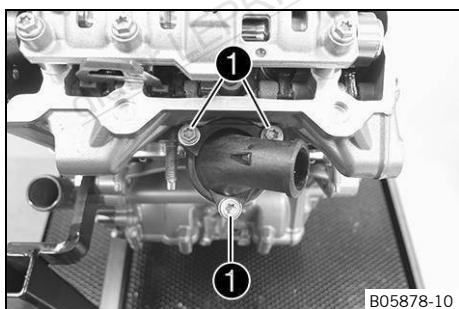


- Remove screws ❶.
- Take off oil/water heat exchanger ❷.

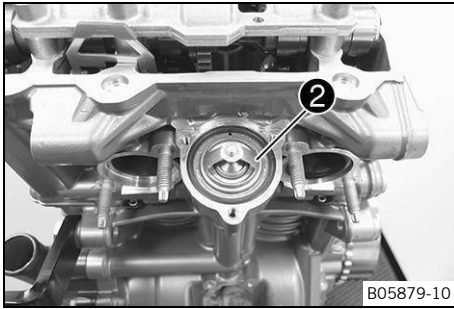


- Remove gasket ❸.

19.3.13 Thermostat, removing



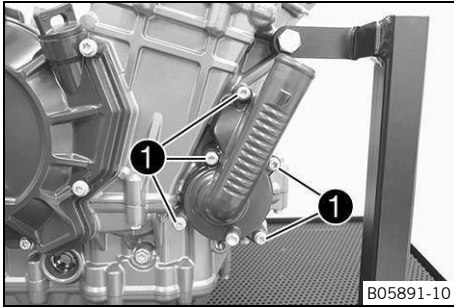
- Remove screws ❶.
- Take off the thermostat case.



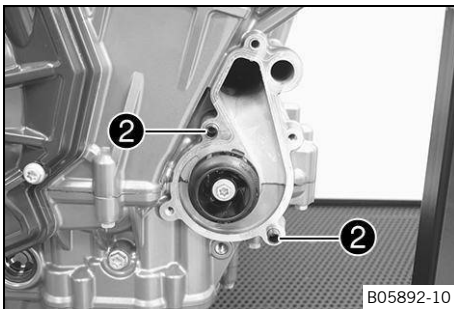
- Remove thermostat ②.



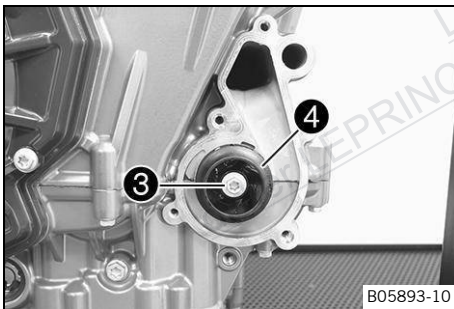
19.3.14 Removing the water pump impeller



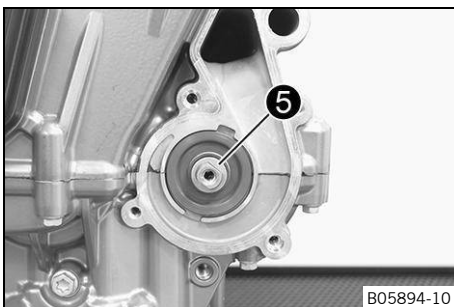
- Remove screws ①.
- Take off the water pump cover with the gasket.



- Remove dowels ②.



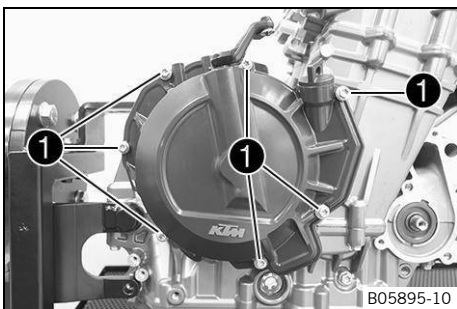
- Remove screw ③.
- Remove water pump impeller ④.



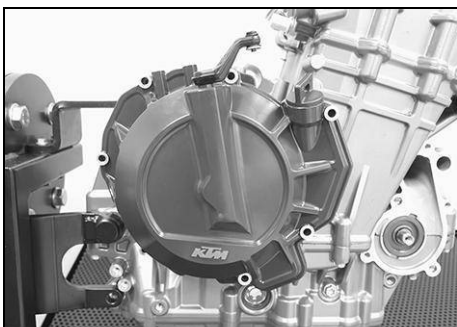
- Remove form washer ⑤.



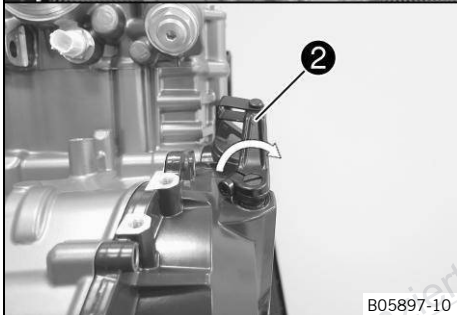
19.3.15 Clutch cover, removing



- Remove screws **1**.

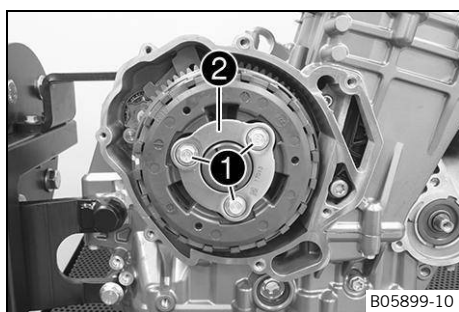


- Swivel the clutch release lever **2** clockwise and take off clutch cover with clutch cover gasket.

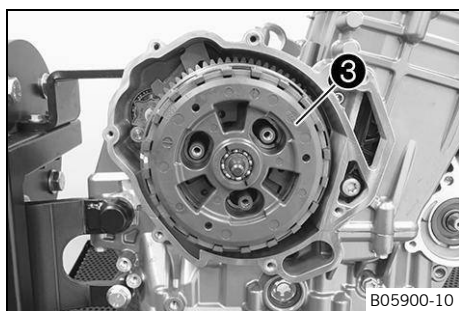


- Remove dowels **3**.

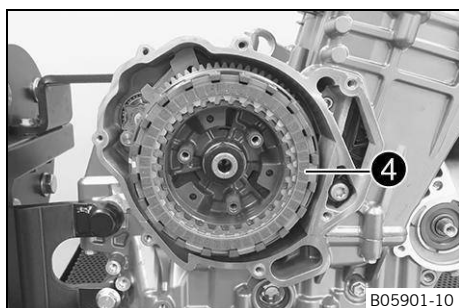
19.3.16 Removing the clutch discs



- Remove screws **1**.
- Take off clutch pressure cap stop **2** and the springs.

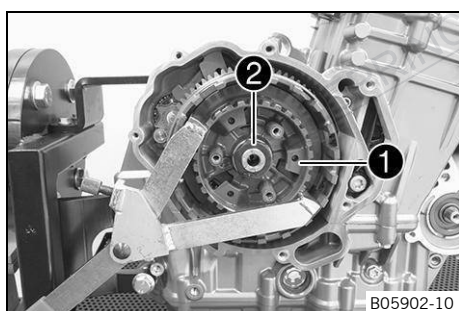


- Take off clutch pressure plate **3**.



- Remove clutch discs **4**, support ring, and pretension ring.

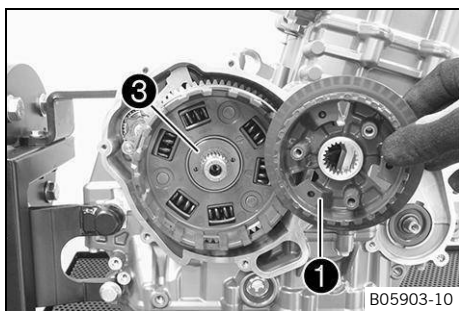
19.3.17 Clutch basket, removing



- Hold the inner clutch hub **1** with the special tool.

Spanner wrench (51129003000)  (p. 486)

- Remove nut **2** with washer.

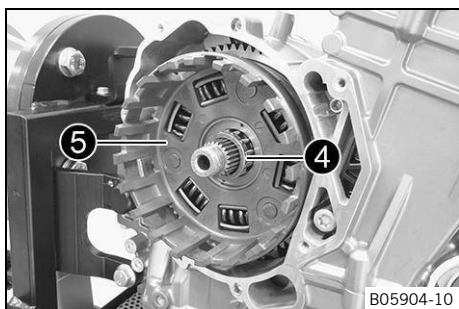


- Take off inner clutch hub **1** and washer **3**.



Tip

The washer usually sticks to the inner clutch hub.



- Remove needle bearing **4**.

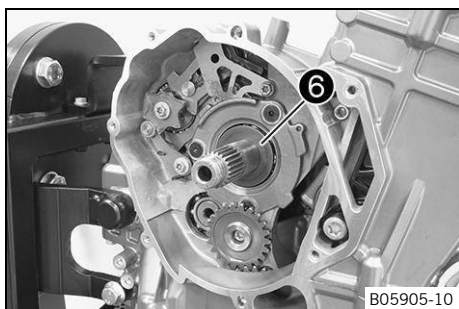


Tip

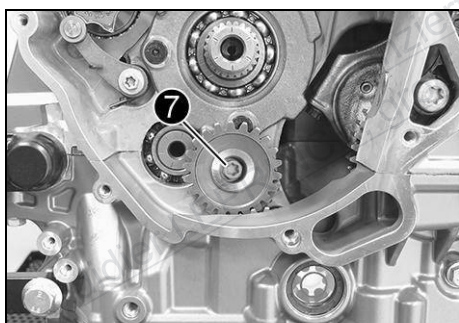
Use a magnetic rod to make disassembly easier.

Do not use pliers, as otherwise the needle bearing will be damaged.

- Take off outer clutch hub **5**.

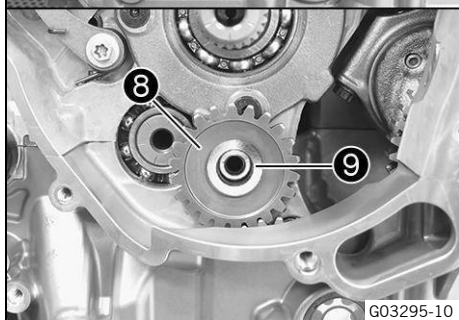


- Remove washer **6**.

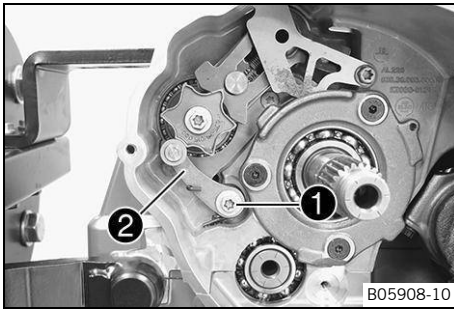


- Remove screw **7**.

- Take off intermediate gear **8** with collar bushing **9**.

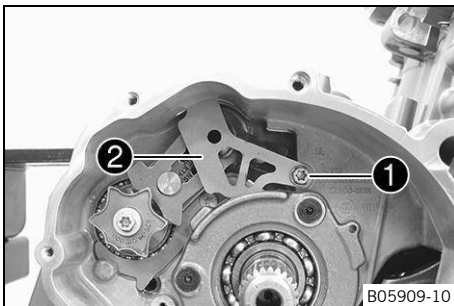


19.3.18 Locking lever, removing

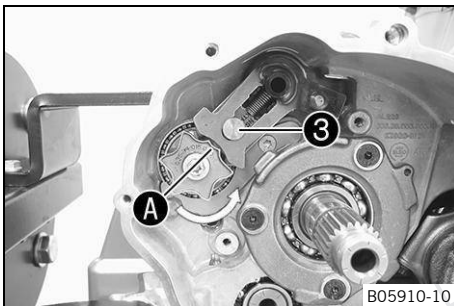


- Remove screw ①.
- Take off locking lever ② with the sleeve and spring.

19.3.19 Shift shaft, removing

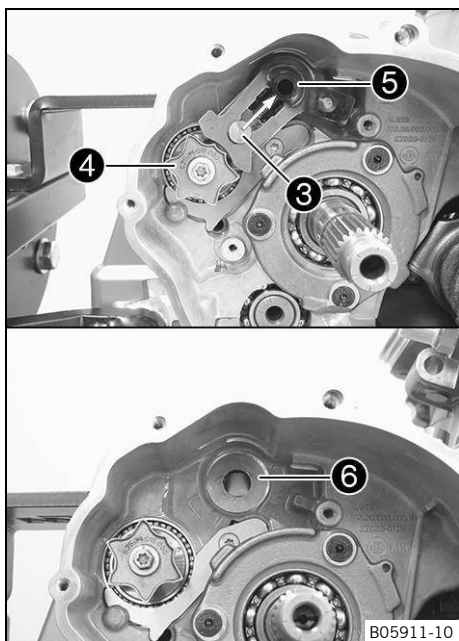


- Remove screw ①.
- Take off retaining bracket ②.



- Twist shift drum until the neutral position A is aligned with the shift shaft sliding plate ③.

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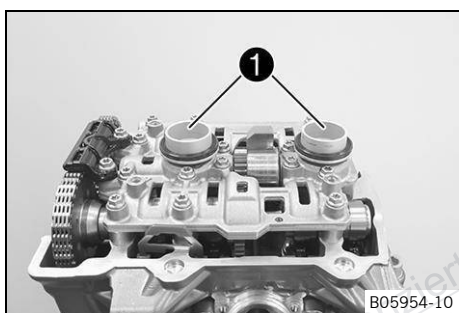
- Push shift shaft sliding plate **3** away from shift drum locating unit **4**.
- Remove shift shaft **5** with washer **6**.



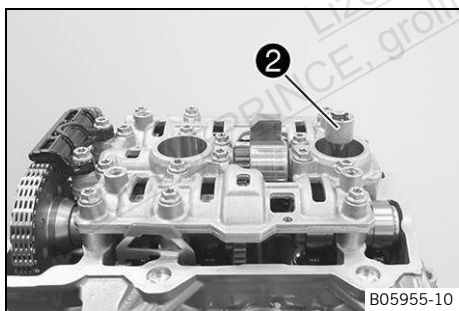
Tip

The washer usually sticks to the engine case.

19.3.20 Removing the spark plugs



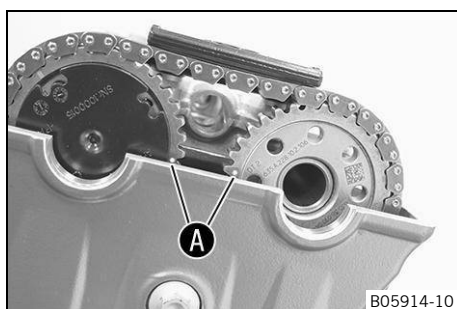
- Remove spark plug shaft inserts **1** with the gaskets.



- Remove the spark plugs using special tool **2**.

Spark plug wrench with link (77229172000) (p. 493)

19.3.21 Camshafts, removing

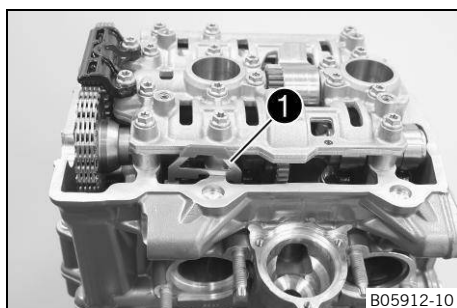


- Turn the crankshaft counterclockwise and set it to ignition top dead center of cylinder 2.
- ✓ The **0T2** markings **A** are aligned with the sealing surface.

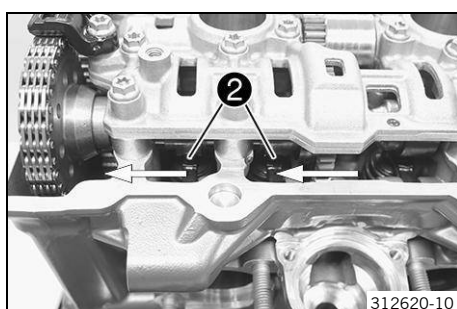


Note

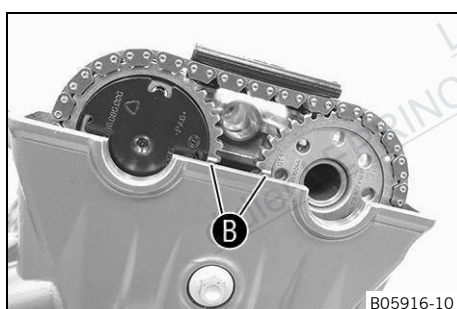
The **0T2** markings are dot markings.



- Remove cam lever clip **1**.



- Push exhaust cam lever **2** on cylinder 2 to the side.

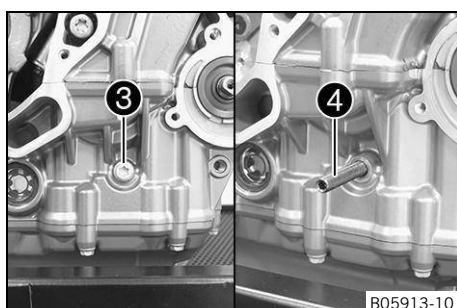


- Set the crankshaft to ignition top dead center of cylinder 1.
- ✓ The **0T1** markings **B** are aligned with the sealing surface.



Note

The **0T1** markings are line markings.

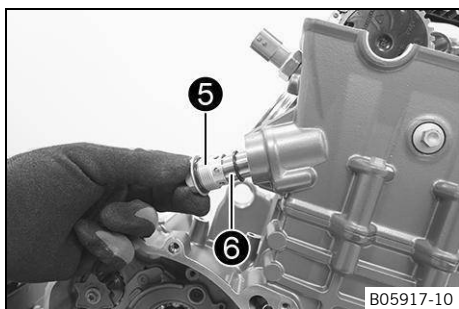


- Remove screw **3** with the washer.

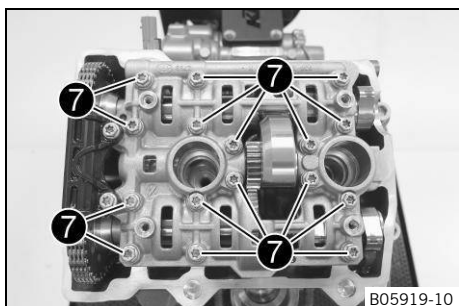
Look through the hole to check that the position hole of the crankshaft is visible.

- Mount special tool **4**.

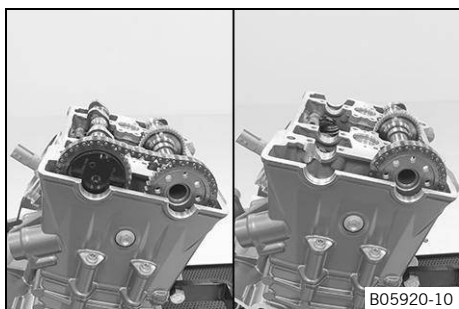
Locking screw (61229015000) (p. 489)



- Remove screw 5 with the O-ring.
- Take off timing chain tensioner 6 with O-ring.

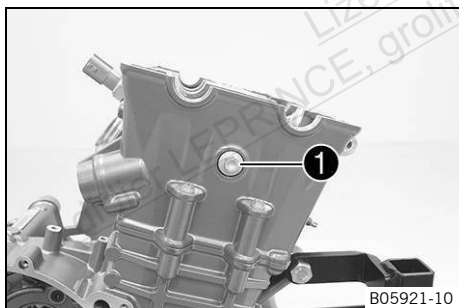


- Loosen and remove screws 7 from the outside to the inside.
- Take off camshaft bearing bridge with balancer shaft.

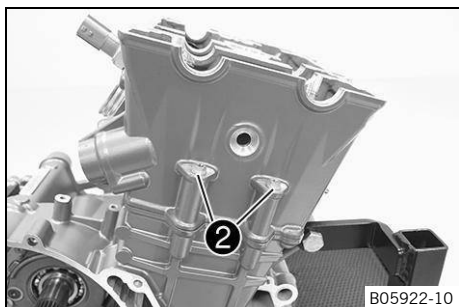


- Raise the camshafts at the rear and take the timing chain off the rear sprocket. Remove camshafts.

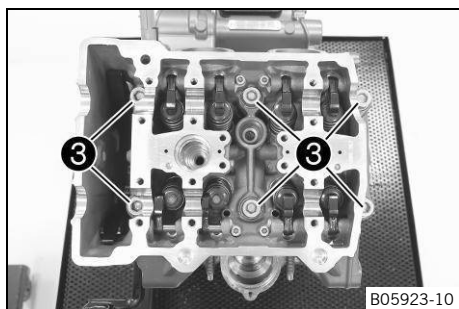
19.3.22 Cylinder head, removing



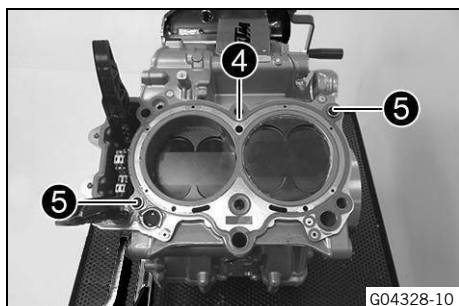
- Remove screw 1 with the gasket.



- Remove screws 2.

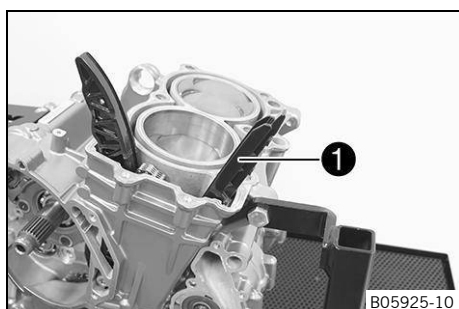


- Loosen screws ③ in a crisscross pattern and remove them with the washers.
- Take off the cylinder head.

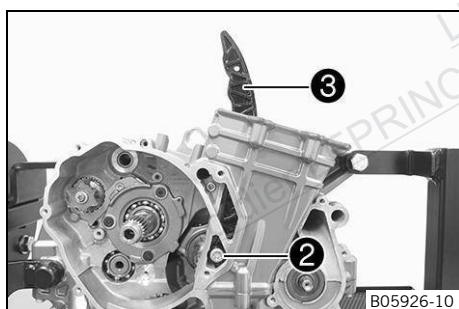


- Take off cylinder head gasket ④.
- Remove dowels ⑤.

19.3.23 Removing the timing chain rails

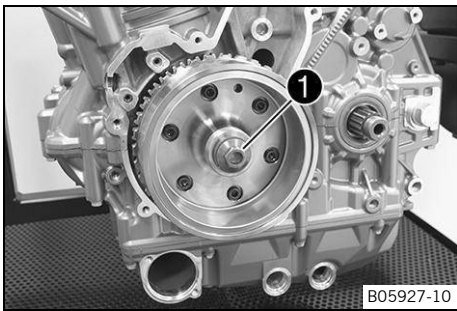


- Remove guide rail ① upward.



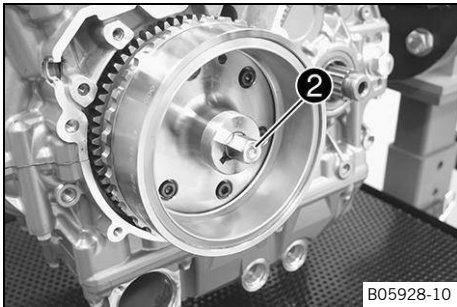
- Remove screw ②.
- Remove tensioning rail ③ with support bushing upward.

19.3.24 Removing the rotor



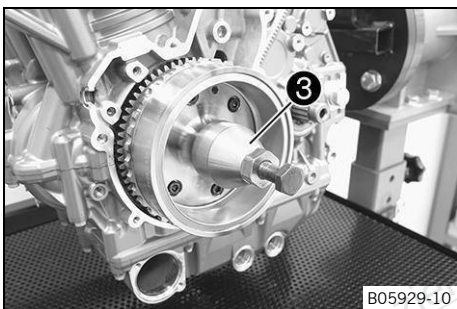
- Remove screw ①.

The crankshaft must be blocked.



- Mount special tool ②.

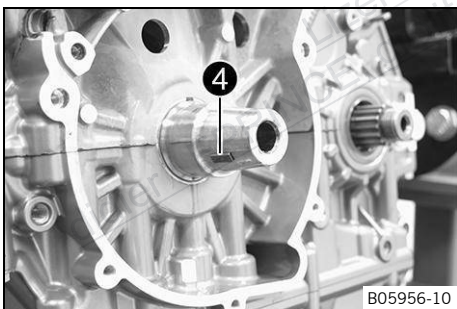
Pressing tool (61229008100)  (p. 488)



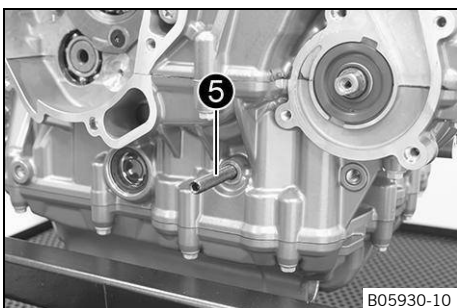
- Mount special tool ③ on the rotor.

Puller (75029021000)  (p. 492)

- Hold it tight using the special tool and pull off the rotor by turning the screw in.
- Remove special tools ② and ③.

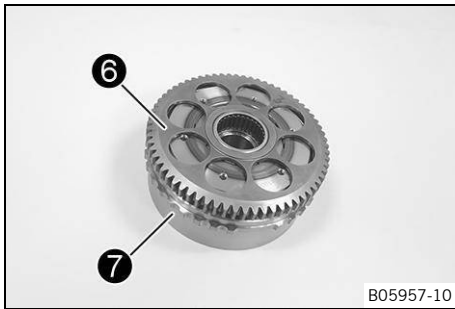


- Remove woodruff key ④.



- Remove special tool ⑤.

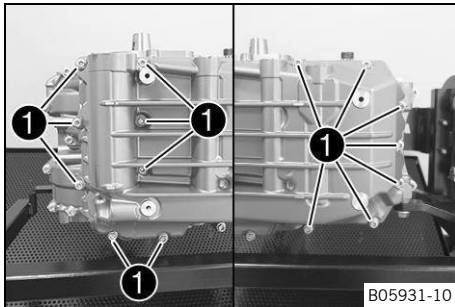
Locking screw (61229015000)  (p. 489)



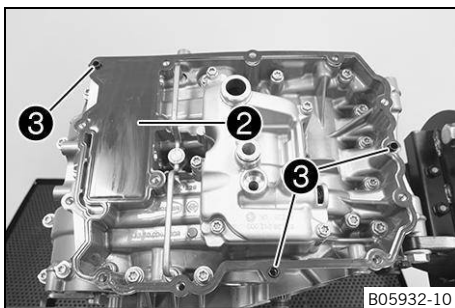
- Take off freewheel gear ⑥ from rotor ⑦.



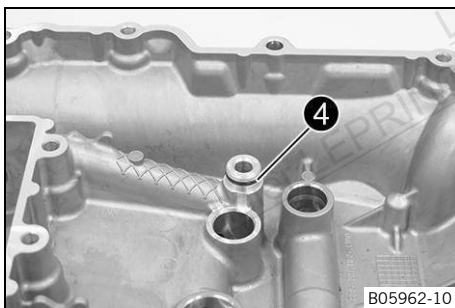
19.3.25 Oil pan, removing



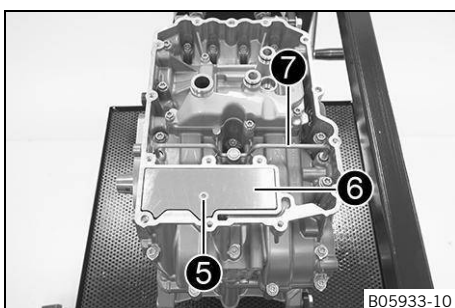
- Remove screws ①.
- Take off oil pan.



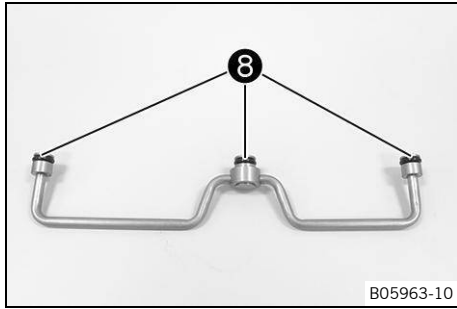
- Take off gasket ②.
- Remove dowels ③.



- Remove O-ring ④.

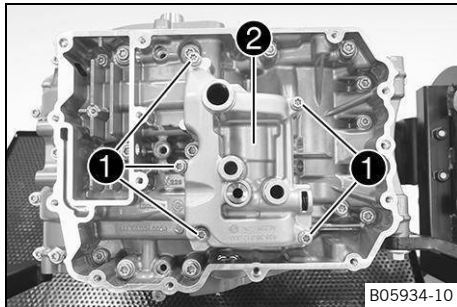


- Remove screw ⑤.
- Remove pressure plate ⑥.
- Take off oil line ⑦.

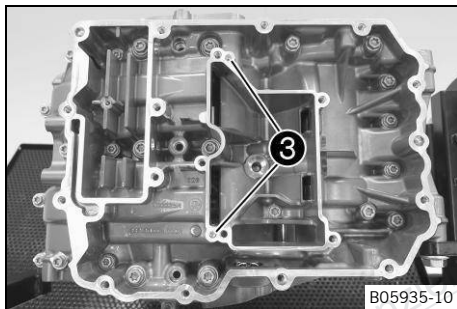


- Take off O-rings **8** from the oil line.

19.3.26 Removing the oil pump unit

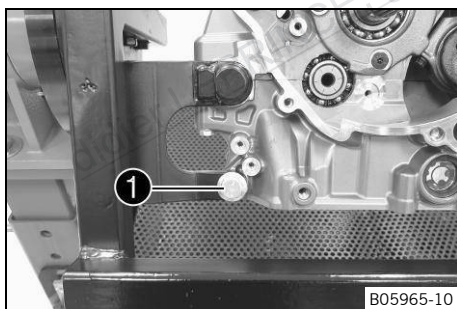


- Remove screws **1**.
- Take off oil pump unit **2**.

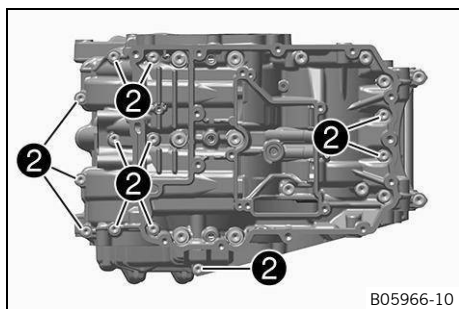


- Remove locating pins **3**.

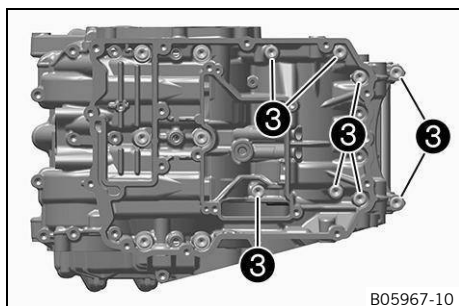
19.3.27 Removing the engine case downwards



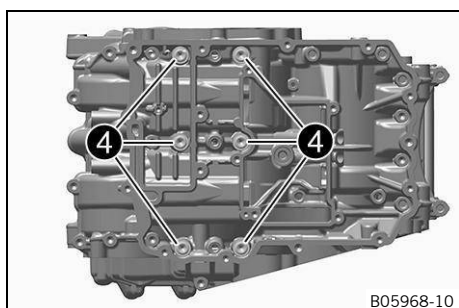
- Remove the screw **1** of the engine fixing arm.
- Swing the lower section of the engine case upward.



- Remove screws ②.

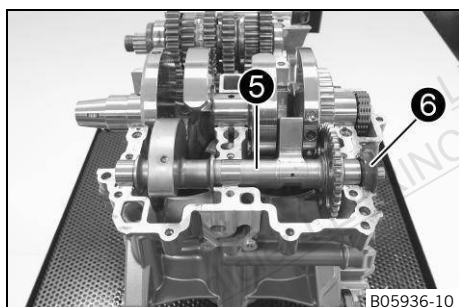


- Remove screws ③.

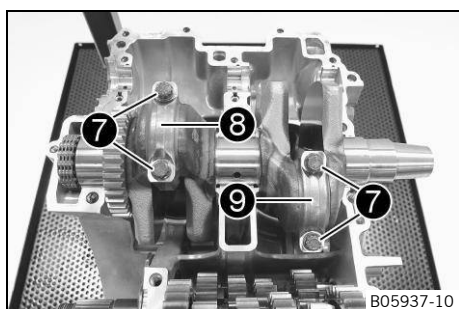


- Loosen screws ④ in a crisscross pattern and remove them with the washers.
- Take off lower section of the engine case.

Ensure that the bearing shells remain in place.

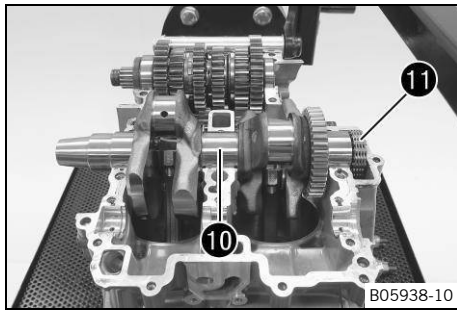


- Remove balancer shaft ⑤ with radial shaft seal ring ⑥.



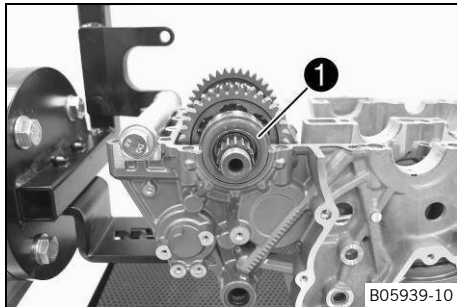
- Remove screws ⑦.
- Take off conrod bearing covers ⑧ and ⑨.

The conrod bearing covers and connecting rods are marked together and must never be mixed up.

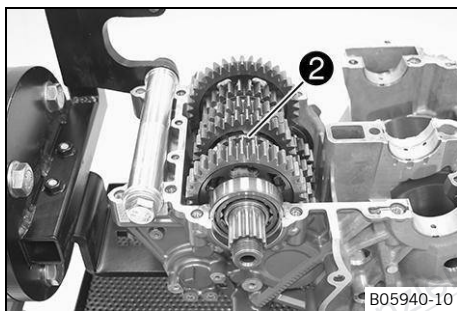


- Remove crankshaft **10** with timing chain **11**.

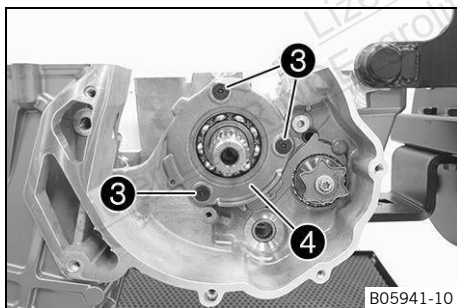
19.3.28 Removing the transmission shafts



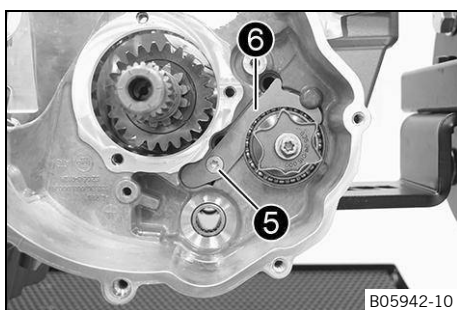
- Remove radial shaft seal ring **1**.



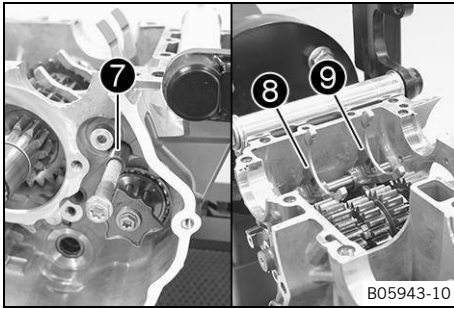
- Take off countershaft **2**.



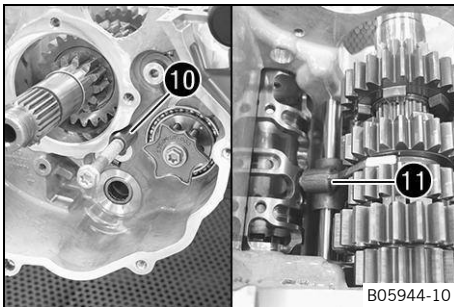
- Remove screws **3**.
- Take off bearing support **4** with bearing.



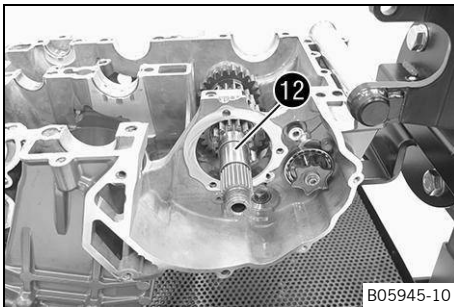
- Remove screw **5**.
- Take off retaining bracket **6**.



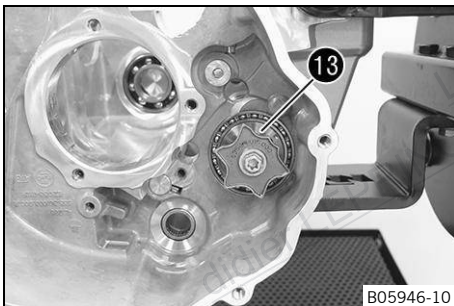
- Mount appropriate M8 screw in the shift rail 7.
- Remove shift rail 7.
- Remove shift forks 8 and 9.



- Mount appropriate M8 screw in the shift rail 10.
- Remove shift rail 10.
- Remove shift fork 11.

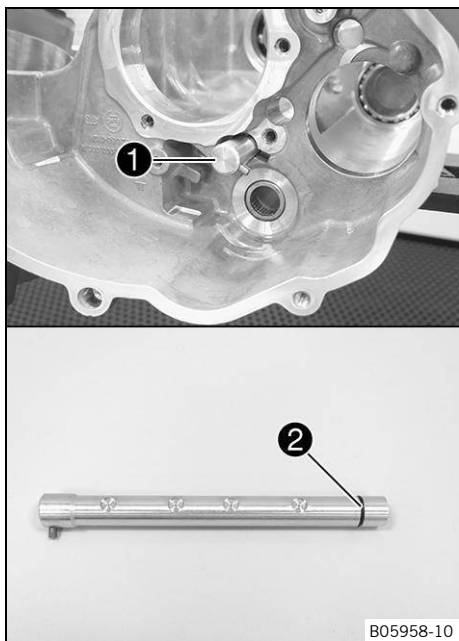


- Remove main shaft 12.



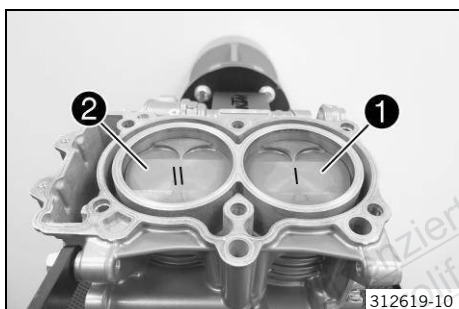
- Remove shift drum 13.

19.3.29 Oil spray tube, removing



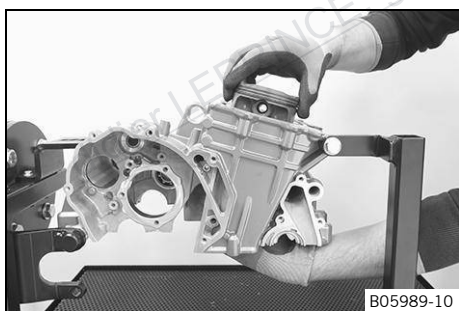
- Remove oil spray tube ①.
- Remove O-ring ②.

19.3.30 Piston, removing

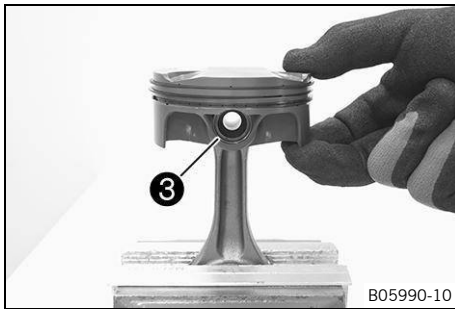


- Swing the upper section of the engine case upward.
- Mark the pistons ① and ②.
- Remove any deposits in the upper area of the cylinders.

Ensure that the cylinders are not damaged.



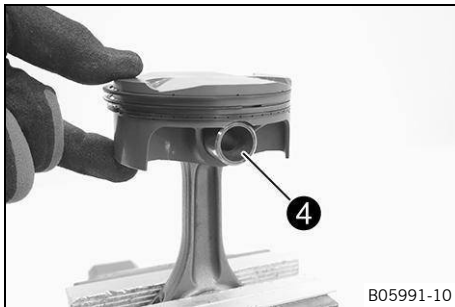
- Remove piston with connecting rod upward out of the cylinder.
- Make sure that the connecting rod does not damage the cylinder.



- Clamp connecting rod in the vise.

Use soft jaws.

- Remove piston ring lock ③.



- Remove piston pin ④.
- Take off the piston.

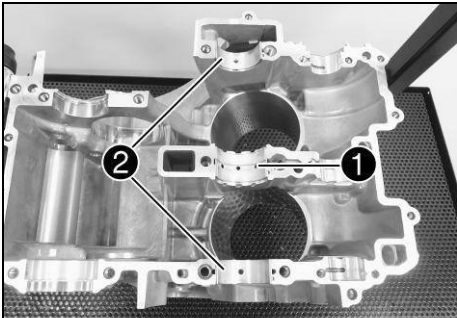


- Mark the pistons and connecting rods belonging together correspondingly.

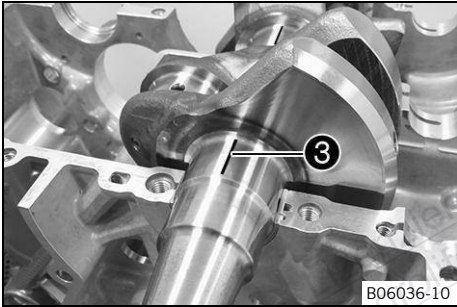
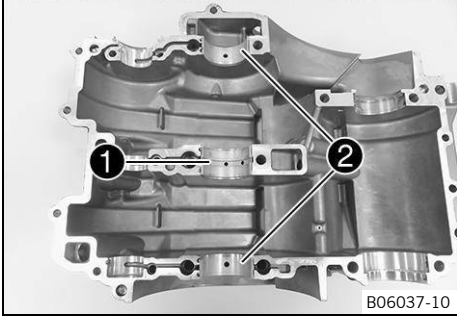


19.4 Working on individual parts

19.4.1 Radial clearance of crankshaft bearings, checking

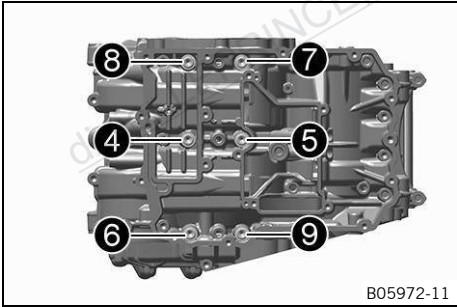


- Remove any remnants of sealing compound and clean the sections of the engine case thoroughly.
- Clean bearing shells 1 and 2.



- Position crankshaft in the upper section of the engine case.
- Insert **Plastigauge** clearance gage 3 90° offset to the bearing joint.

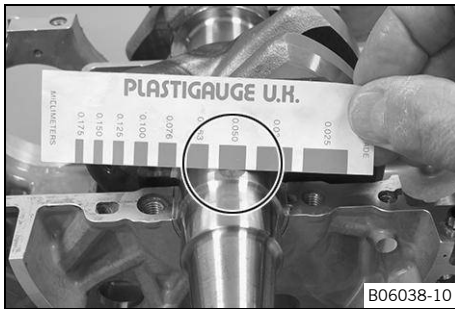
Plastigauge clearance gauge (60029012000) (p. 486)



- Mount lower engine case.
- Mount screws with washers and tighten step by step in the order from 4 to 9.

Screw, engine case	
M8×90	25 Nm (18.4 ft·lb _f) Long-life grease

Do not twist crankshaft.



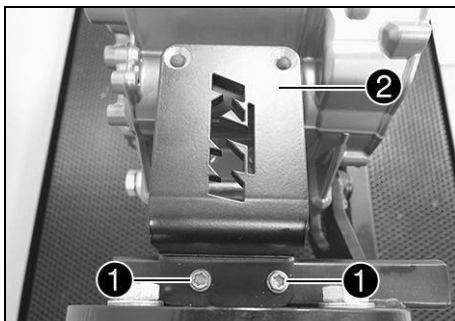
- Remove lower section of the engine case again. Compare **Plastigauge** clearance gauge with the data on the packaging.

Crankshaft bearing	
New condition	0.030 mm ... 0.060 mm (0.00118 in ... 0.00236 in)
Wear limit	0.080 mm (0.00315 in)

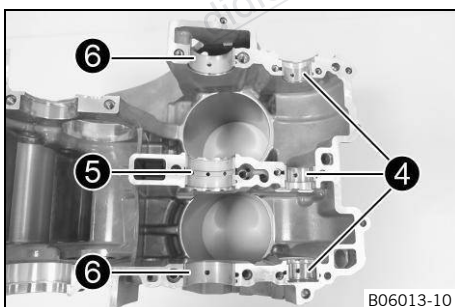
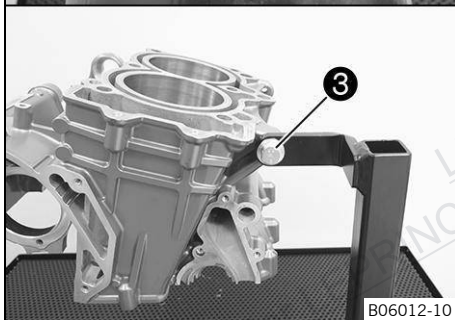
Note
The width of the **Plastigauge** clearance gauge indicates the bearing play.

- Clean the parts.

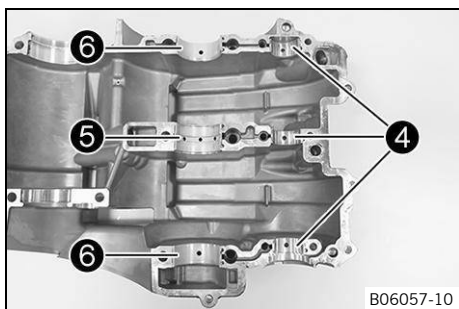
19.4.2 Changing the main bearing shells



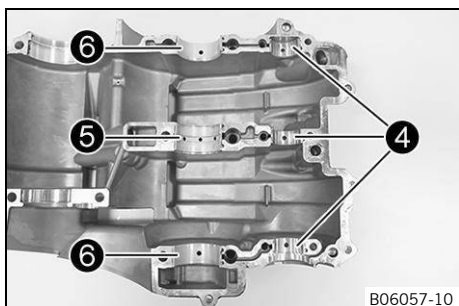
- Remove screws **1**.
- Take off retaining bracket **2**.
- Remove screw **3** and take off upper section of the engine case.



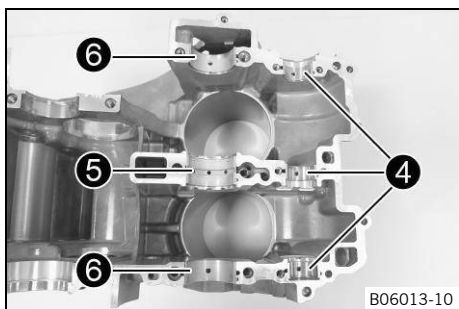
- Remove bearing shells **4** of the balancer shaft from the upper section of the engine case.
- Remove bearing shells **5** and **6** of the crankshaft from the upper section of the engine case.
- Clean seat of the bearing shells.



- Remove bearing shells **4** of the balancer shaft from the lower section of the engine case.
- Remove bearing shells **5** and **6** of the crankshaft from the lower section of the engine case.
- Clean seat of the bearing shells.

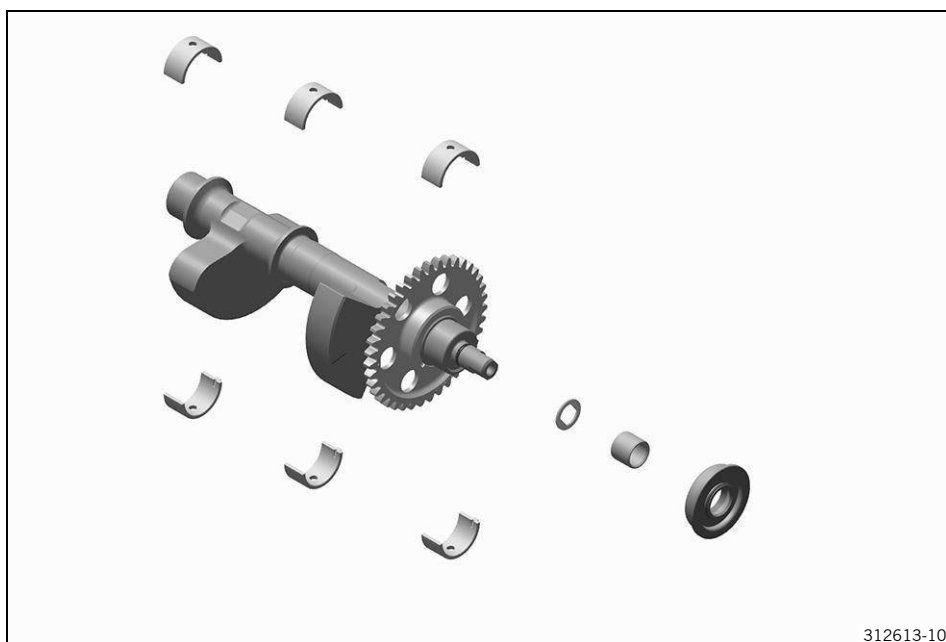


- Select the main bearing shells.  (p. 292)
- Mount new bearing shells **5** and **6** in the lower section of the engine case.
- Mount new bearing shells **4** in the lower section of the engine case.



- Mount new bearing shells **5** and **6** in the upper section of the engine case.
- Mount new bearing shells and **4** in the upper section of the engine case.

19.4.3 Balancer shaft, checking

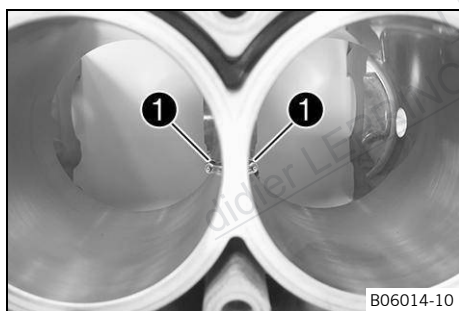


312613-10

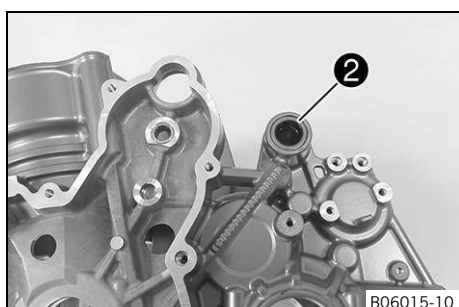
- Clean all parts thoroughly.
- Check the pivot points of the balancer shaft for damage and wear.
 - » If there is damage or wear:
 - Change the balancer shaft.
- Check the bearing shells of the balancer shaft for damage, abrasion and wear.
 - » If there is damage, abrasion or wear:
 - Change bearing shells.



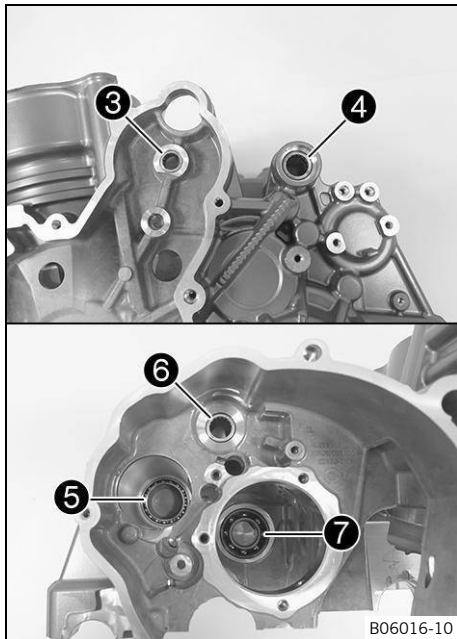
19.4.4 Working on the upper section of the engine case



- Remove oil nozzles ①.



- Remove radial shaft seal ring ② of the shift shaft.



- Remove any remnants of the sealing compound and clean the section of the engine case thoroughly.
- Warm the section of the engine case in an oven.

130 °C
(266.0 °F)

- Knock the left and right sides of the engine case half against a level wooden board. This will cause the bearings to drop out of the bearing seats.

Any bearings that remain in the section of the engine case must be removed using a suitable tool.

A washer is located behind the bearing 7. Make sure that this washer is not damaged.

- Warm the section of the engine case again.

130 °C
(266.0 °F)

- Insert new cold bearings 3 and 4 in the bearing seat on the left side of the heated section of the engine case; if necessary, use a suitable pressing tool to push them all the way in and make them flush.

When pressing in, ensure that the section of the engine case lies flat in order to prevent damage.

Only press the bearings in using the outer bearing race; otherwise, the bearings will be damaged when they are pressed in.

- Insert new cold bearings 5, 6 and 7 in the bearing seat on the right side of the heated section of the engine case; if necessary, use a suitable pressing tool to push them all the way in and make them flush.

Do not forget the washer under the bearing 7.

When pressing in, ensure that the section of the engine case lies flat in order to prevent damage.

Only press the bearings in using the outer bearing race; otherwise, the bearings will be damaged when they are pressed in.

- After the section of the engine case has cooled, check that the bearings are firmly seated.

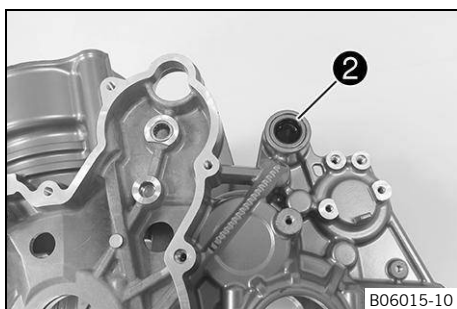


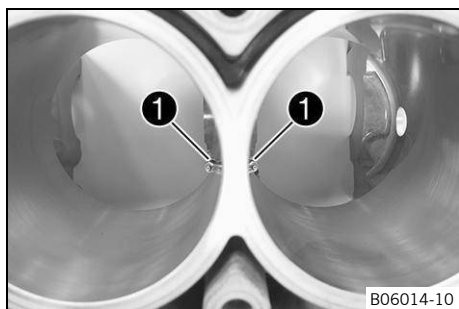
Note

If the bearings are not firmly seated after cooling, it is likely that they will rotate in the engine case when warm. In this case, the engine case must be replaced.

- Press in new radial shaft seal ring 2 of the shift shaft from the outside to the inside with the open side facing in.

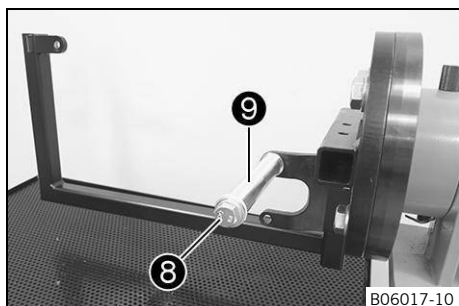
The radial shaft seal ring must be flush on the outside.



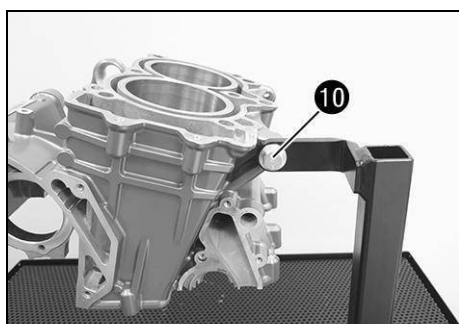


- Blow compressed air through all oil channels and oil nozzles, and check that they are clear.
- Mount and tighten oil nozzles 1.

Oil nozzle for piston cooling	
M5	2 Nm (1.5 ft·lb _f)



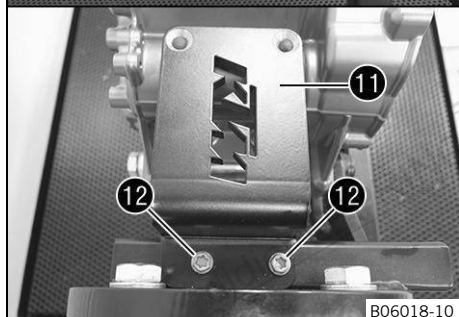
- Remove screw 8.
- Take off case bushing 9.
- Check the case bushing for damage and wear.
 - » If there is damage or wear:
 - Change case bushing.
- Position case bushing 9 on the engine work stand.
- Mount and tighten screw 8.



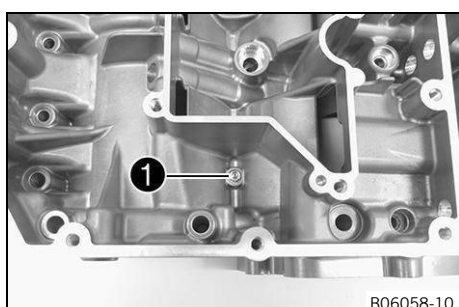
- Position upper section of the engine case in the engine work stand, mount screw 10 and tighten.

Engine assembly stand (61229001000) (p. 488)
Engine bracket for engine assembly stand (63529002000) (p. 490)

- Position retaining bracket 11.
- Mount and tighten screws 12.

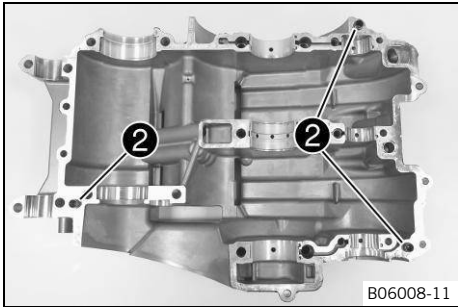


19.4.5 Working on the lower section of the engine case



- Remove oil nozzle 1.
- Blow compressed air through all oil channels and oil nozzles, and check that they are clear.
- Mount and tighten oil nozzle 1.

Engine vent nozzle	
M5	2 Nm (1.5 ft·lb _f)



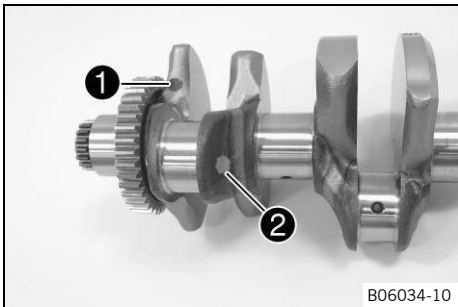
- Swivel section of the engine case.
- Check that dowels 2 are seated correctly.

19.4.6 Selecting the main bearing shells

- Select one of the following alternatives.

New crankshaft

- Select the new bearing shells according to color coding 1.



 **Note**

Color coding 2 refers to the conrod bearing.

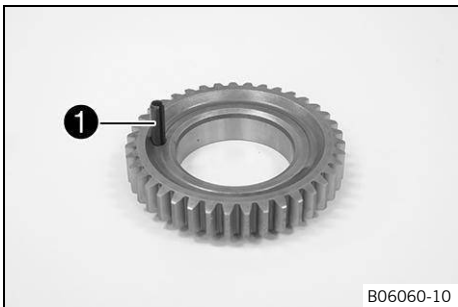
Used crankshaft

- Measure all main bearing shells and select the new bearing shells accordingly.

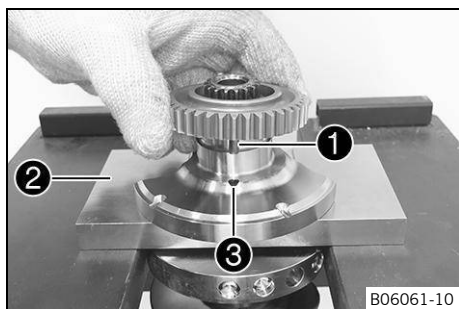


Crankshaft - main bearing diameter	
Blue	37.985 mm ... 37.995 mm (1.49547 in ... 1.49587 in)
Red	37.995 mm ... 38.005 mm (1.49587 in ... 1.49626 in)

19.4.7 Installing the primary gear wheel



- Mount cylinder pin 1 in the primary gear wheel.



- Position the crankshaft with special tool **2** in the press.

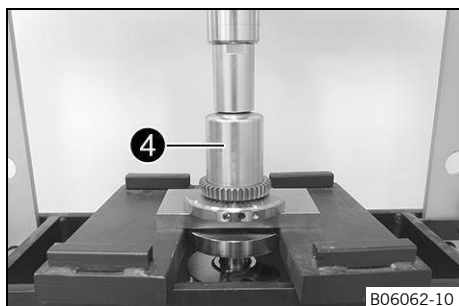
Separator plate (79429009000) (p. 494)

- Heat up primary gear wheel.

150 °C
(302.0 °F)

- Position primary gear wheel on the crankshaft.

✓ Cylinder pin **1** engages in hole **3**.



- Mount primary gear wheel all the way with special tool **4**.

Pressing tool (61229016000) (p. 489)

✓ The marking is visible after mounting.



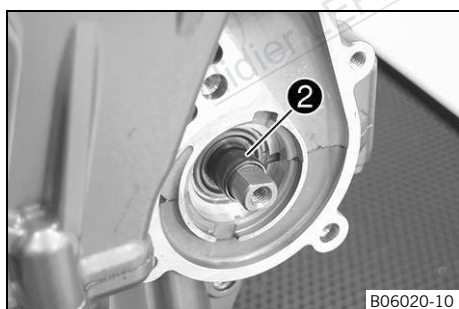
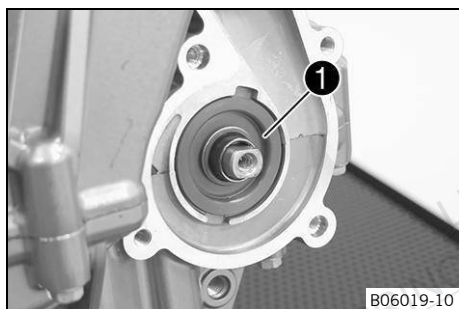
19.4.8 Radial shaft seal ring of the water pump, changing

Preparatory work

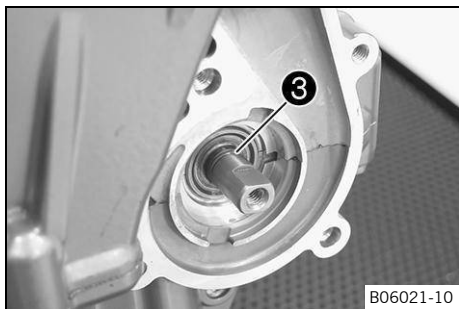
- Remove the water pump impeller. (p. 269)

Main work

- Remove radial shaft seal ring **1** of the water pump.

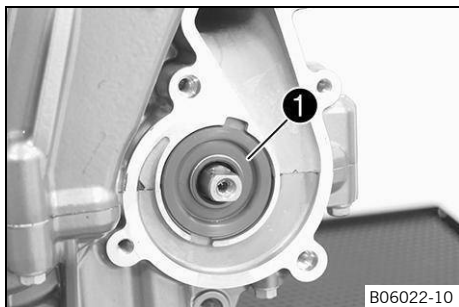


- Remove water pump impeller **2**.



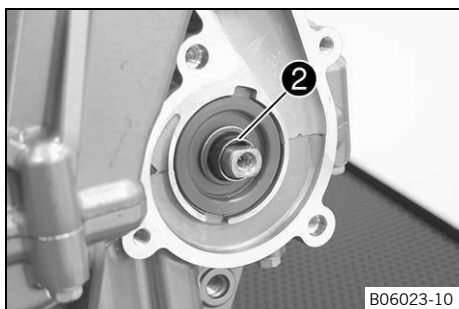
- Remove O-ring **3**.
- Grease and mount the new O-ring **3**.

Long-life grease (p. 500)



- Grease and mount new radial shaft seal ring **1**.

Long-life grease (p. 500)



- Mount the new water pump impeller **2**.

Reworking

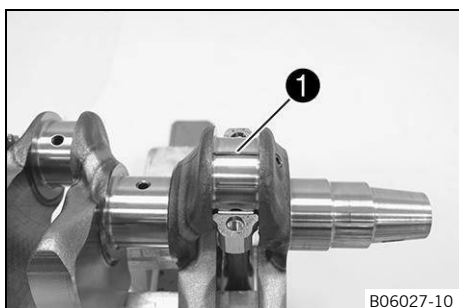
- Mount the water pump cover. (p. 348)

19.4.9 Checking the radial clearance of lower conrod bearing



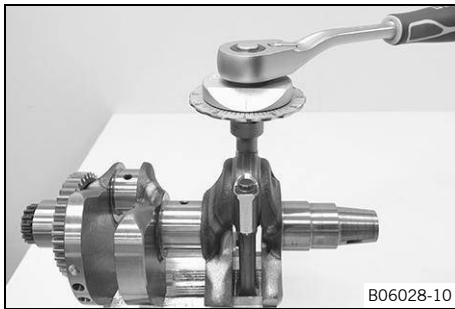
Note

Perform these step on both connecting rods.



- Position the bearing shells. Insert **Plastigauge** clearance gage **1** 90° offset to the bearing joint.

Plastigauge clearance gauge (60029012000) (p. 486)



- Position the conrod bearing cover. Mount and tighten the screws.

Do not twist connecting rod.

Screw, conrod bearing

M8×0.75	1.	5 Nm
	2.	(3.7 ft·lb _f)
	3.	15 Nm (11.1 ft·lb _f) 90° (1.57 rad)
engine oil		

Multi-tooth wrench socket (63529075000) (p. 491)

Angle disc (60029010000) (p. 486)



- Remove the conrod bearing cover again. Compare **Plastigauge** clearance gauge with the data on the packaging.

Connecting rod - radial clearance of lower conrod bearing	
New condition	0.030 mm ... 0.060 mm (0.00118 in ... 0.00236 in)
Wear limit	0.080 mm (0.00315 in)



Note

The width of the **Plastigauge** clearance gauge indicates the bearing play.

- Clean the parts.



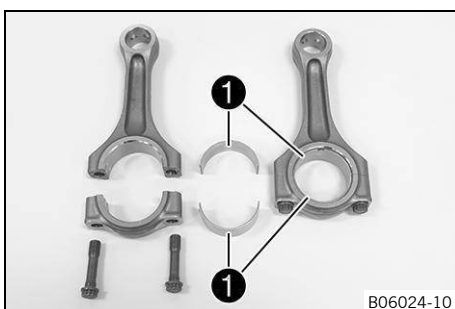
19.4.10 Changing the conrod bearing



Note

Perform these step on both connecting rods.

Condition: Connecting rod removed



Main work

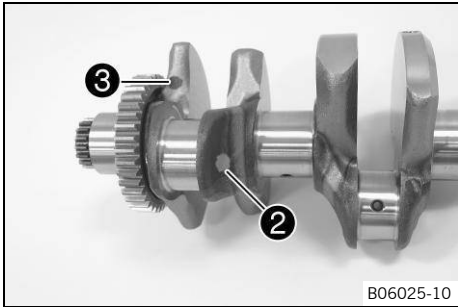
- Take off bearing cover and remove bearing shells **1**.

Make sure that each conrod bearing cover is mounted on the same connecting rod.



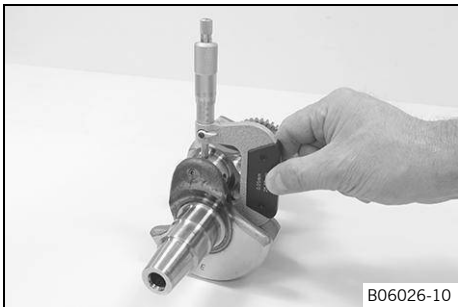
Note

The conrod bearing cover and connecting rod are jointly marked.



- Select the new bearing shells according to color coding ②.

i Note
Color coding ③ refers to the crankshaft bearing.



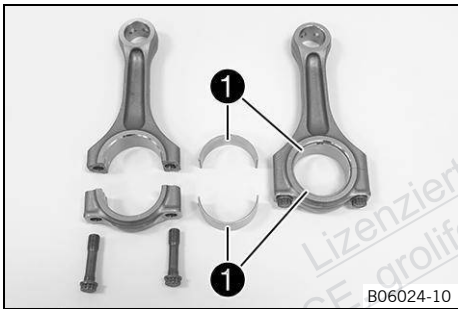
- Measure the crank pin diameter and select the new bearing shells accordingly.

Crankshaft - crank pin diameter	
Blue	37.983 mm ... 37.993 mm (1.49539 in ... 1.49579 in)
Red	37.993 mm ... 38.003 mm (1.49579 in ... 1.49618 in)

- Check pivot points for damage and abrasion.
 - » If damage or abrasion is discernible:
 - Change the crankshaft.
- Mount new bearing shells ① on conrod bearing cover and connecting rod.

Make sure that each conrod bearing cover is mounted on the same connecting rod.

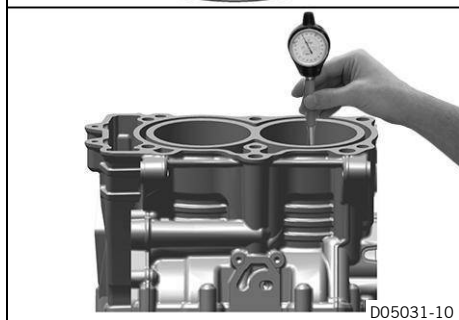
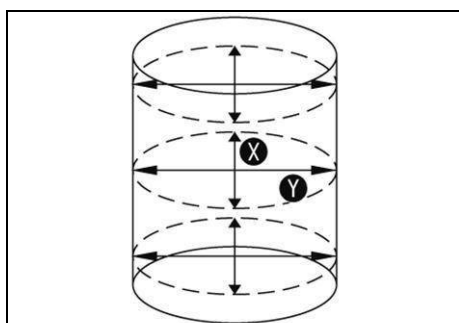
i Note
The conrod bearing cover and connecting rod are jointly marked.



Reworking

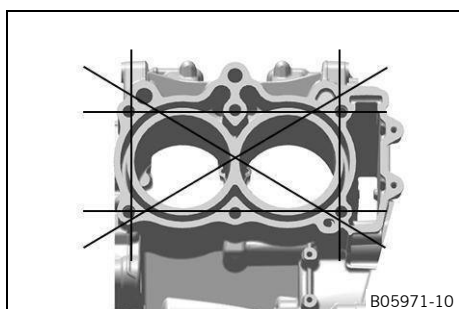
- Check the radial clearance of lower conrod bearing.
 (p. 294)

19.4.11 Cylinder, checking/measuring



- Check the cylinder bearing surface for damage.
 - » If the cylinder bearing surface is damaged:
 - Change the cylinder and piston.
- Measure the bore diameter at several locations on the **X**-axis and **Y**-axis using a micrometer to identify oval wear.

Cylinder - bore diameter	87.992 mm ... 88.040 mm (3.46425 in ... 3.46614 in)
--------------------------	--



- Using a straightedge and the special tool, check the sealing surface of the cylinder head for distortion.

Cylinder/cylinder head - distortion of sealing surface	≤ 0.05 mm (≤ 0.0020 in)
--	---------------------------------------

Feeler gauge (79129941000) (p. 494)

- » If the measured value does not meet specifications:
 - Change engine case.



19.4.12 Piston, checking/measuring



- Check the piston bearing surface for damage.
 - » If the piston bearing surface is damaged:
 - Replace the piston and, if necessary, the cylinder.
- Check that the piston rings move easily in the piston ring grooves.
 - » If the piston ring is stiff:
 - Clean the piston ring groove.

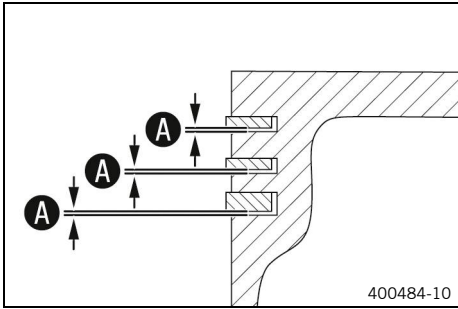


Tip

An old piston ring can be used to clean the piston ring groove.

- Check the piston rings for damage.
 - » If the piston ring is damaged:
 - Change the piston ring.

Mount the piston ring with the marking facing up-ward.

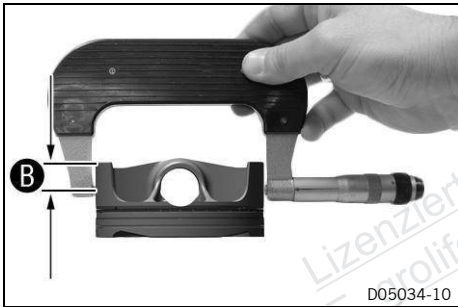


- Use the special tool to measure clearance **A** of the piston rings in the piston ring groove.

Piston ring - groove clearance	
First ring (rectangular ring)	$\leq 0.08\text{ mm}$ ($\leq 0.0031\text{ in}$)
Second ring (lower compression ring)	$\leq 0.08\text{ mm}$ ($\leq 0.0031\text{ in}$)
Oil scraper ring	$\leq 0.06\text{ mm}$ ($\leq 0.0024\text{ in}$)

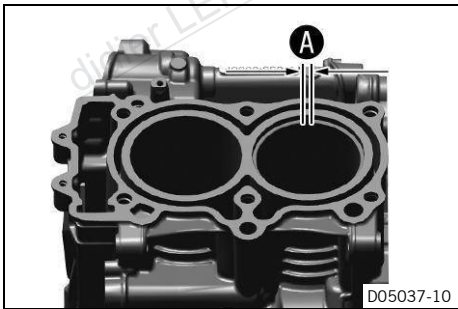
Feeler gauge (79129941000) (p. 494)

- » If clearance **A** is larger than the specified value:
 - Change the piston and piston rings.
 - Check/measure the cylinder. (p. 297)
- Check piston pin for discoloration, signs of wear or flaking of the coating.
 - » If the piston pin exhibits significant discoloration/signs of wear, or the coating is flaking:
 - Change the piston pin.
- Place the piston pin in the connecting rod and check the seating for play.
 - » If the piston pin seating has excessive play:
 - Change the connecting rod and piston pin.
- Measure the piston at the piston skirt, at right angles to the piston pin, at a distance **B**.



Piston - diameter	87.911 mm ... 87.979 mm (3.46106 in ... 3.46374 in)
Distance B	6 mm (0.24 in)

19.4.13 Piston ring end gap, checking



- Remove the piston ring from the piston.
- Place the piston ring in the cylinder and align with the piston.

Below the upper edge of the cylinder	10 mm (0.39 in)
--------------------------------------	--------------------

- Measure end gap **A** with a feeler gauge.

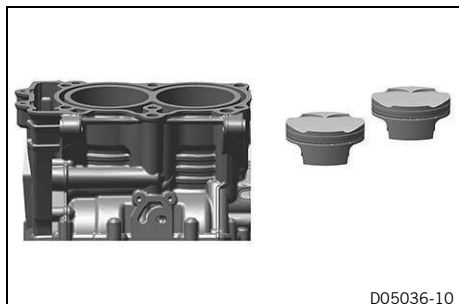
Piston ring end gap	
Compression rings	$\leq 0.80\text{ mm}$ ($\leq 0.0315\text{ in}$)
Oil scraper ring	$\leq 1.00\text{ mm}$ ($\leq 0.0394\text{ in}$)

- » If the end gap is greater than the specified value:
 - Check/measure the cylinder. (p. 297)

- » If cylinder wear lies within the specified tolerance:
 - Change the piston ring.
- Mount the piston ring with the marking facing toward the piston head.



19.4.14 Measuring the piston/cylinder mounting clearance

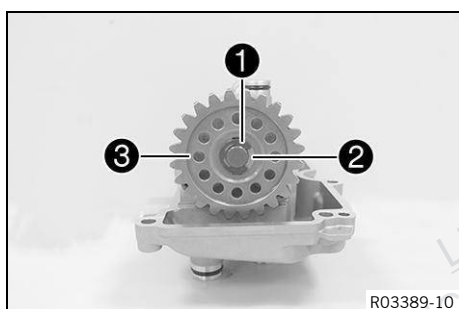


- Check/measure the cylinder. (p. 297)
- Check/measure the piston. (p. 297)
- The smallest piston/cylinder mounting clearance equals the smallest cylinder bore diameter minus the largest piston diameter. The largest piston/cylinder mounting clearance equals the largest cylinder bore diameter minus the smallest piston diameter.

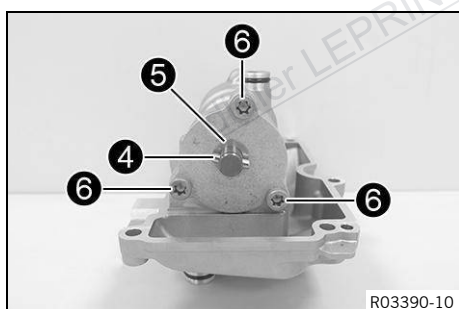
Piston/cylinder - mounting clearance	
New condition	0.035 mm ... 0.070 mm (0.00138 in ... 0.00276 in)
Wear limit	0.10 mm (0.0039 in)



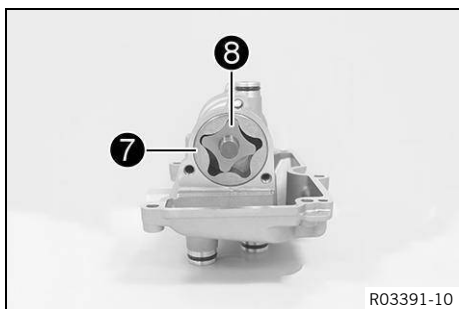
19.4.15 Oil pumps, removing



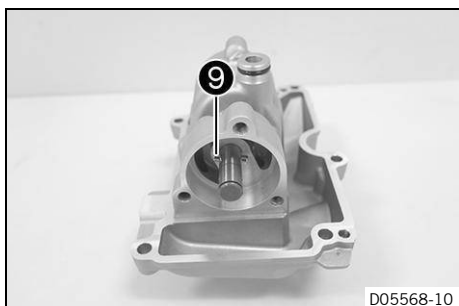
- Remove lock ring **1** and washer **2**.
- Take off oil pump gear wheel **3**.



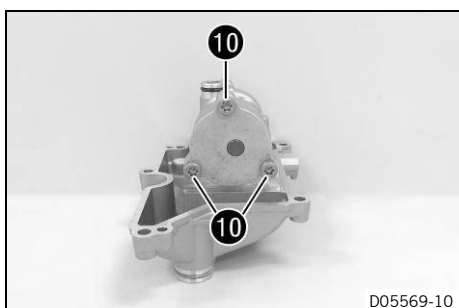
- Remove pin **4** and washer **5**.
- Remove screws **6**.
- Take off the oil pump cover.



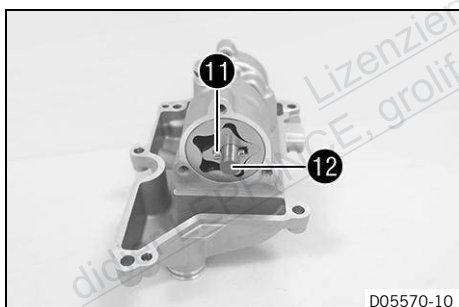
- Remove external rotor **7**.
- Remove internal rotor **8**.



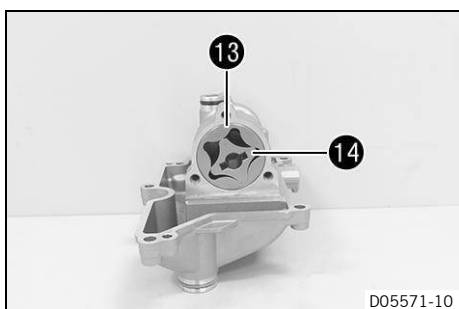
- Remove pin **9**.



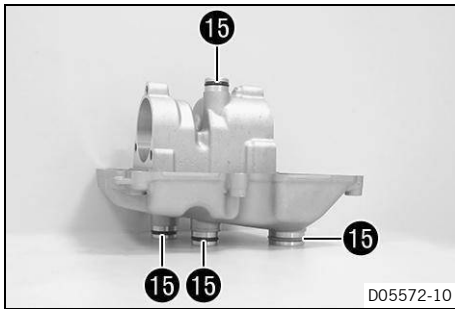
- Remove screws **10**.
- Take off the oil pump cover.



- Remove pin **11** and oil pump shaft **12**.



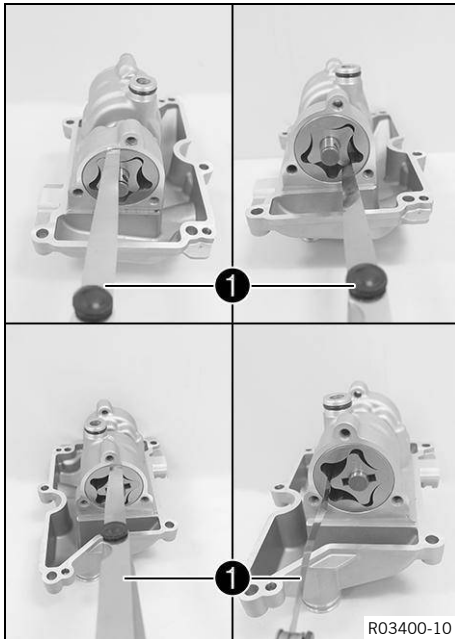
- Remove external rotor **13** and internal rotor **14**.



- Remove O-rings **15**.



19.4.16 Checking the oil pumps for wear

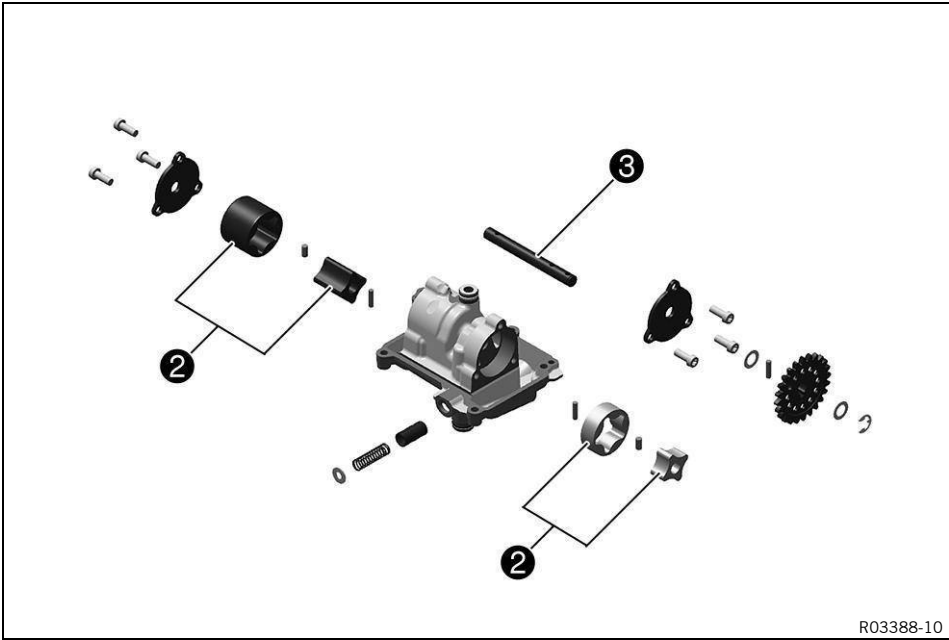


- Use a feeler gauge **1** to measure the play between the external rotor and oil pump housing as well as between the external rotor and internal rotor.

Oil pump	
Play between external rotor and oil pump housing	$\leq 0.15 \text{ mm}$ ($\leq 0.0059 \text{ in}$)
Clearance, external rotor/internal rotor	$\leq 0.20 \text{ mm}$ ($\leq 0.0079 \text{ in}$)
Axial play	$0.03 \text{ mm} \dots 0.08 \text{ mm}$ ($0.0012 \text{ in} \dots 0.0031 \text{ in}$)

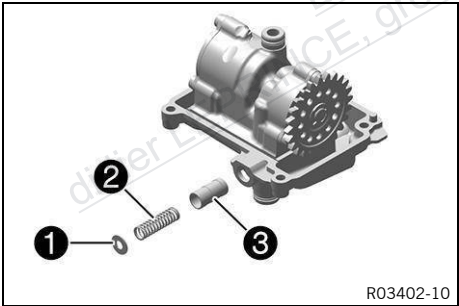
- » If the measured value does not meet specifications:
 - Replace the oil pump and, if necessary, the oil pump housing.

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didier LEPRINCE, grolifoualex@gmail.com, 075676080232



- Check the internal rotor and external rotor of oil pumps ② for damage and wear.
 - » If there is damage or wear:
 - Change the oil pump.
- Check oil pump shaft ③ for damage and wear.
 - » If there is damage or wear:
 - Change the oil pump shaft.
- Check both oil pump covers for damage and wear.
 - » If there is damage or wear:
 - Change the oil pump cover.

19.4.17 Oil pressure control valve, checking



- Remove washer ①.
- Remove spring ②.
- Measure the length of spring ②.

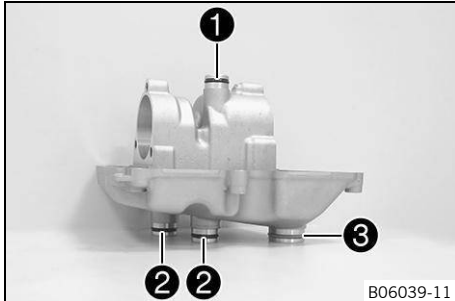
Oil pressure regulator valve - mini- mum length spring	42.00 mm ... 43.60 mm (1.6535 in ... 1.7165 in)
---	--

- » If the measured length is less than the specified value:
 - Change the spring.
- Check control piston ③ for damage and wear.
 - » If there is damage or wear:
 - Change the control piston.
- Check the control piston for smooth operation in the oil pump housing.
 - » If the control piston is stiff:
 - Change the control piston or the oil pump housing.

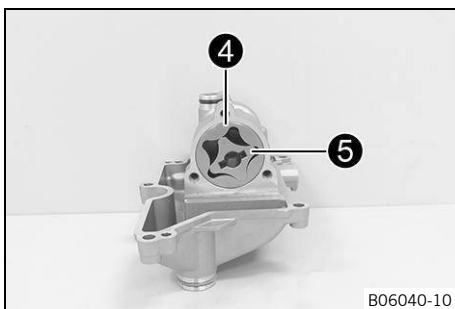
- Thoroughly oil control piston **3** and spring **2** and mount them.
- Mount washer **1**.



19.4.18 Oil pumps, installing



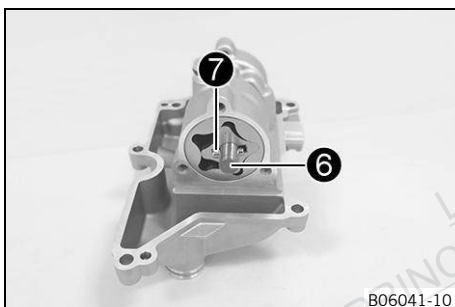
- Mount and grease the new O-rings **1**, **2** and **3**.



- Mount external rotor **4** and internal rotor **5**.

Oil the rotors.

- ✓ The rounded side of the external rotor must face the oil pump housing.



- Mount oil pump shaft **6** with pin **7**.



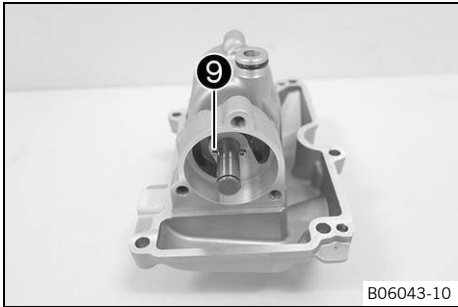
- Position the oil pump cover.
- Mount and tighten screws **8**.

Screw, oil pump cover

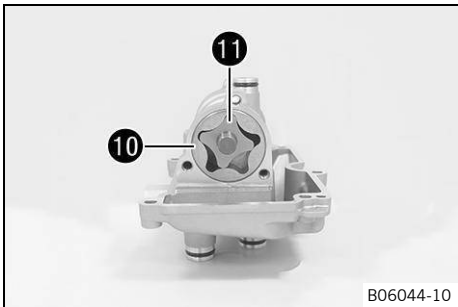
M6

10 Nm
(7.4 ft·lb_f)

Loctite® 243



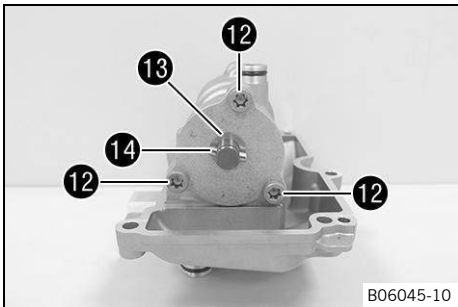
- Mount pin 9.



- Mount external rotor 10 and internal rotor 11.

Oil the rotors.

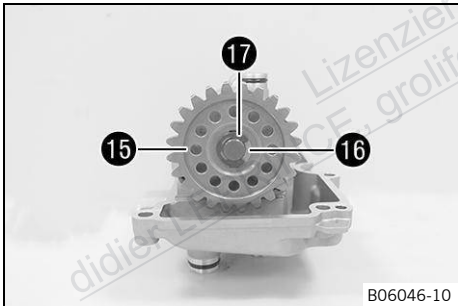
- ✓ The rounded side of the external rotor must face the oil pump housing.



- Position the oil pump cover.
- Mount and tighten screws 12.

Screw, oil pump cover		
M6	10 Nm (7.4 ft·lb _r)	Loctite® 243

- Mount washer 13.
- Mount pin 14.
- Mount oil pump gear wheel 15.
- Mount washer 16 and lock ring 17.



19.4.19 Preparing the timing chain tensioner for installation



- Press the timing chain tensioner together completely.

Note
This requires some force, as the oil must be pressed out.

- Release the timing chain tensioner.
- ✓ Without pressure, the timing chain tensioner expands fully.



- Place two compensating disks or similar aids next to the timing chain tensioner piston. This should ensure that when pushed down, the piston does not fully withdraw.

Thickness of the compensating disks	2 mm ... 2.5 mm (0.08 in ... 0.098 in)
-------------------------------------	---

- Release the timing chain tensioner.
- ✓ The detent mechanism engages and the piston remains in place.

Final position of the piston after engagement	3 mm (0.12 in)
---	-------------------

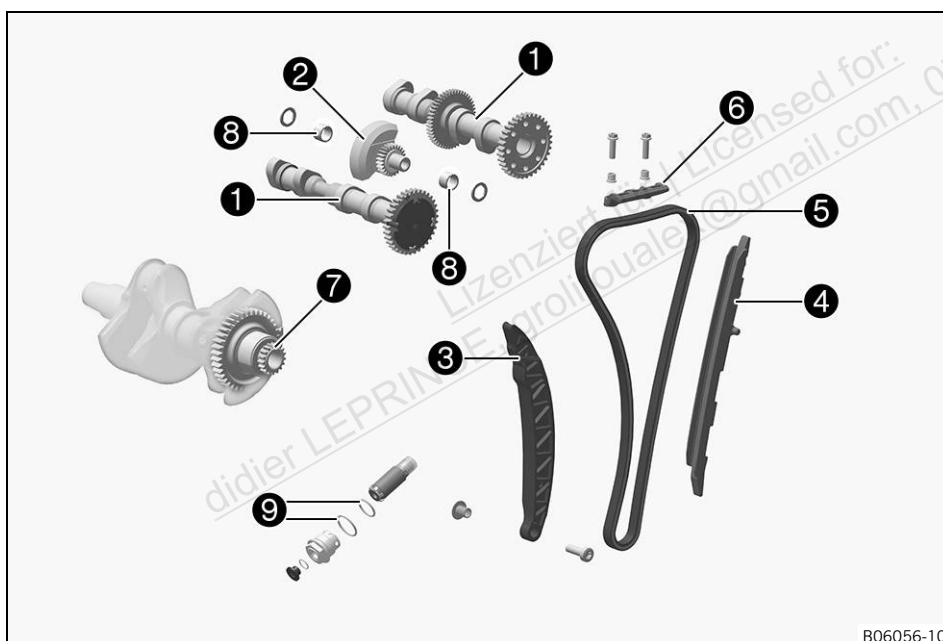


Note

This position is necessary for installation.

If the timing chain tensioner is now pressed again (in an installed state), and only extended a maximum of half way (therefore preventing it from extending completely), this blocks the detent mechanism and the timing chain tensioner can no longer be squeezed together. This function is necessary in order to ensure sufficient timing chain tension at low oil pressures.

19.4.20 timing assembly, checking

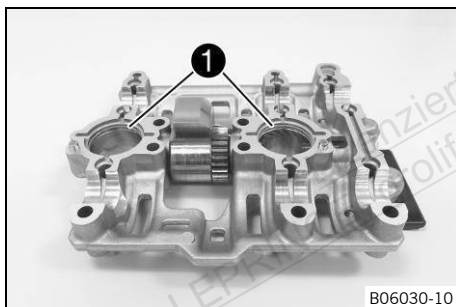


B06056-10

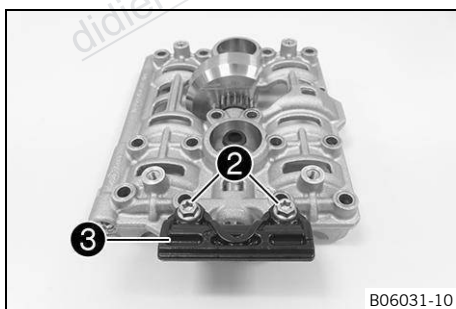
- Clean all parts thoroughly.
- Check camshafts **1** for damage and wear.
 - » If there is damage or wear:
 - Change the camshafts.
- Check balancer shaft **2** for damage and wear.
 - » If there is damage or wear:
 - Change the balancer shaft.
- Check tensioning rail **3** for damage and wear.

- » If there is damage or wear:
 - Change the tensioning rail.
- Check guide rail **4** for damage and wear.
 - » If there is damage or wear:
 - Change the guide rail.
- Check timing chain **5** for damage and wear.
 - » If there is damage or wear:
 - Change the timing chain.
- Check the timing chain links for smooth operation. Let the timing chain hang down freely.
 - » The chain links no longer align in a straight line:
 - Change the timing chain.
- Check guide rail **6** for damage and wear.
 - » If there is damage or wear:
 - Change the guide rail.
- Check timing chain sprocket **7** for damage and wear.
 - » If there is damage or wear:
 - Change the crankshaft.
- Check balancer shaft bearing **8** for damage and wear.
 - » If there is damage or wear:
 - Change the balancer bearing.
- Check the O-rings **9** of the timing chain tensioner for damage and wear.
 - » If there is damage or wear:
 - Change the O-rings.

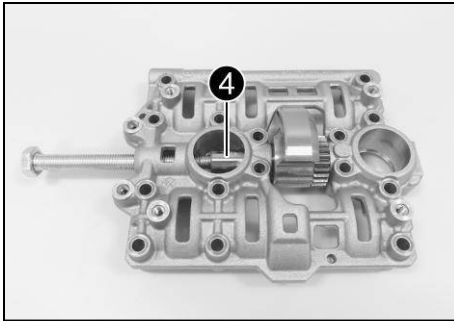
19.4.21 Working on the camshaft bearing bridge



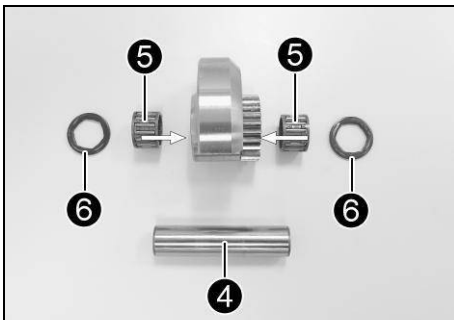
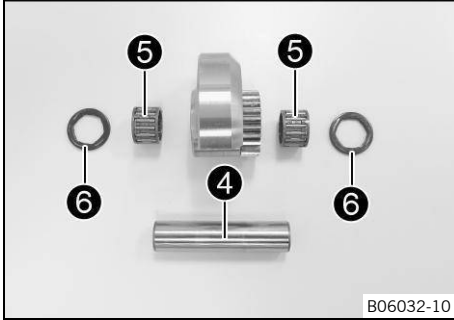
- Remove O-rings **1**.



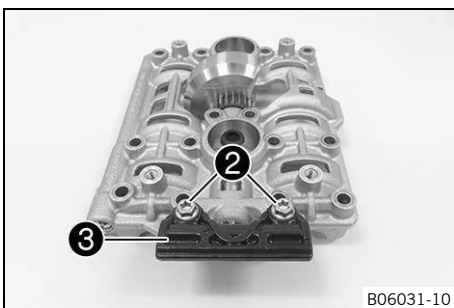
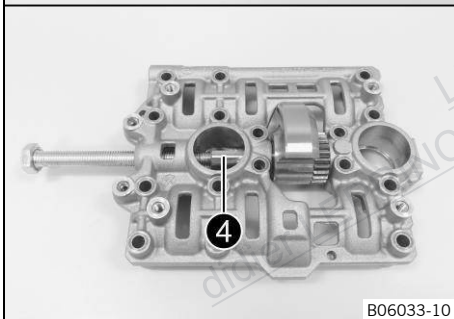
- Remove screws **2**.
- Take off guide rail **3**.



- Pull out spindle **4** of the balancer shaft with appropriate screw M10.
- Remove balancer shaft with needle bearings **5** and washers **6**.

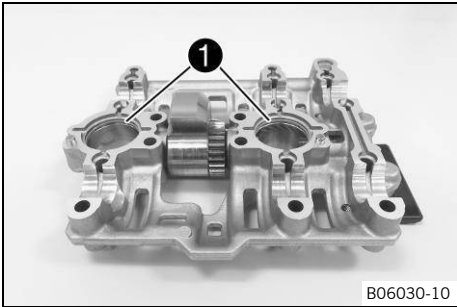


- Mount new needle bearings **5** in the balancer shaft and oil.
- Position balancer shaft with washers **6** in the camshaft bearing bridge.
- Mount spindle **4** of the balancer shaft in the center between the spark plug shafts.
- Remove screw M10.



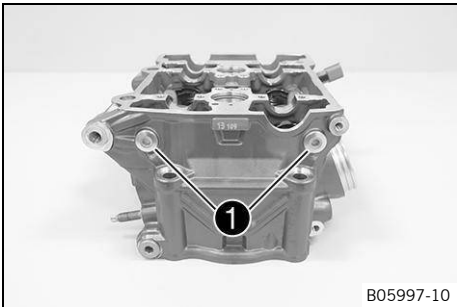
- Position guide rail **3**.
- Mount and tighten screws **2**.

Screw, upper guide rail	
M6	8 Nm (5.9 ft·lb _r) Loctite® 243

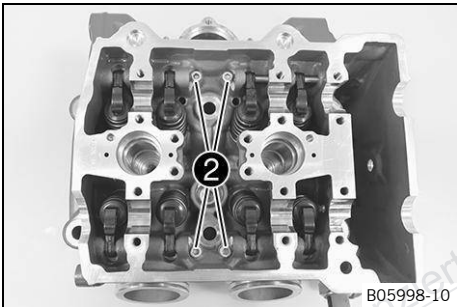


- Grease and mount the new O-rings 1.

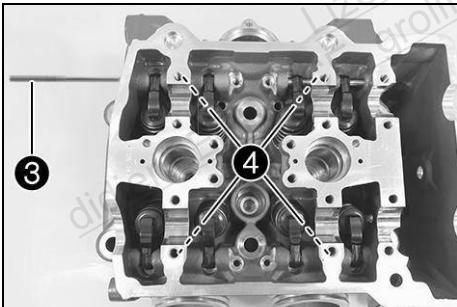
19.4.22 Working on the cylinder head



- Remove screw plugs 1 with the O-rings.



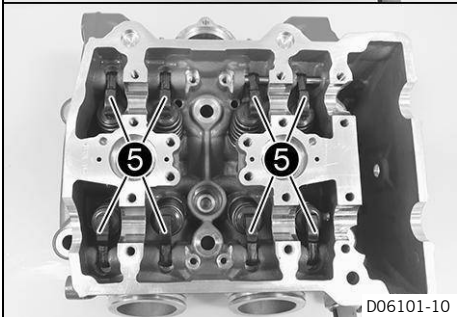
- Remove screws 2.

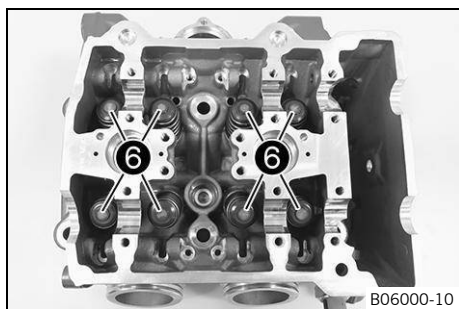


- Fit M4 disassembly tool 3, e.g. a spoke.

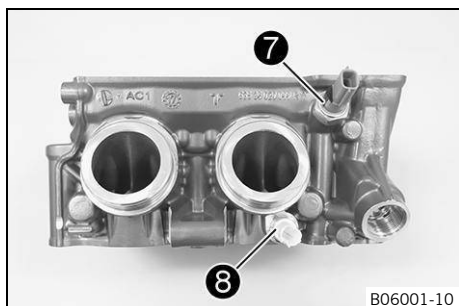
Spoke (26110071159)

- Remove cam lever shafts 4.
- Take off cam lever 5.

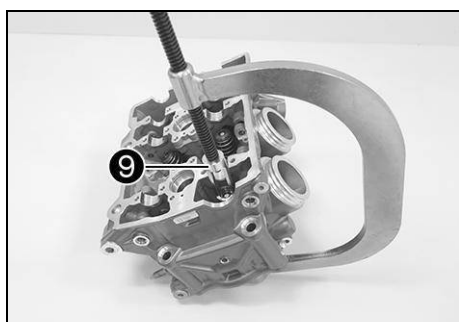




- Remove shims 6 and label according to their installation position.



- Remove oil pressure sensor 7 with O-ring.
- Remove coolant temperature sensor 8 with the O-ring.

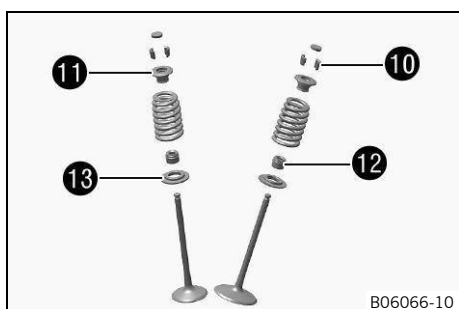
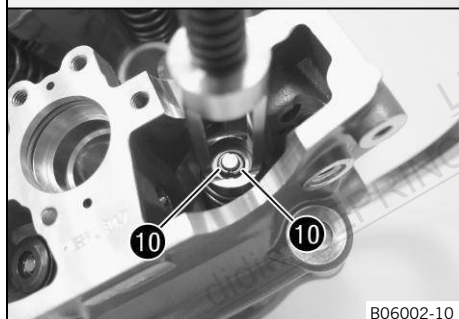


- Tension valve spring with special tool 9.

Valve spring mounter (59029019000) (p. 486)

Insert for valve spring lever (63529060000) (p. 491)

- Remove valve collets 10 and release the valve spring.

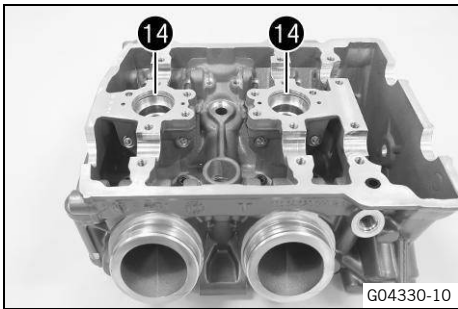


- Remove valve spring retainers 11, valve springs, valve stem seals 12 and valve spring seats 13.

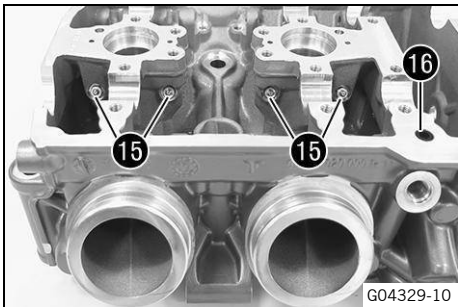


Tip

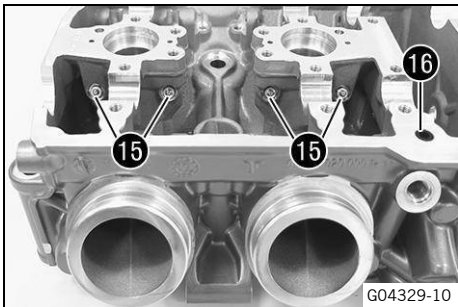
Place the valves in a box according to their normal built-in position and label them.



- Remove O-rings 14.

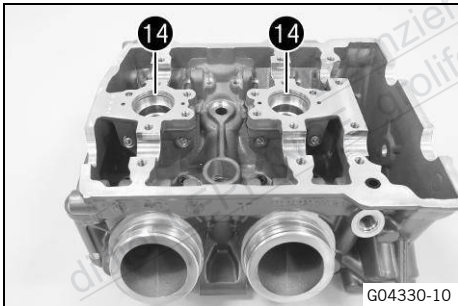


- Remove oil nozzles 15.
- Remove oil screen 16 and clean it.
- Check the cylinder head. (p. 312)

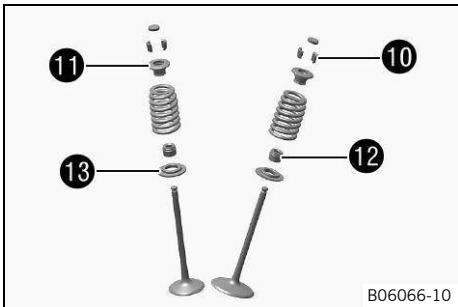


- Mount oil screen 16.
- Mount oil nozzles 15.

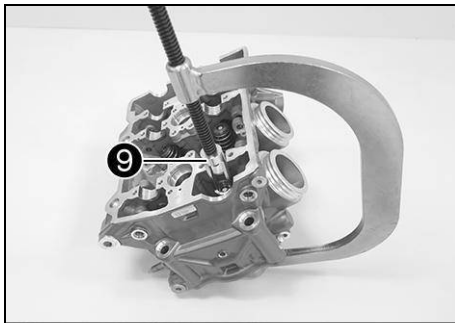
Oil nozzle in cylinder head	
M5	2 Nm (1.5 ft·lb _r)



- Grease and mount O-rings 14.



- Mount valve spring seats 13 and new valve stem seals 12.
- Mount valve spring retainers 11 and valve springs.



- Tension valve spring with special tool **9**.

Valve spring mounter (59029019000) (p. 486)

Insert for valve spring lever (63529060000) (p. 491)

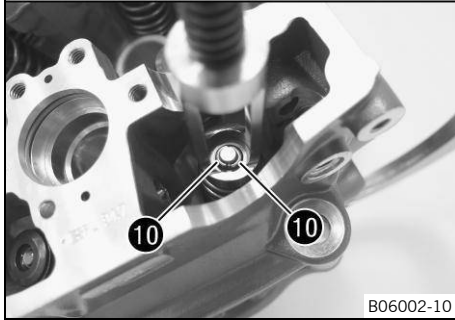
- Mount valve collets **10**. Release the tension on the valve spring.

When installing the valve collets, ensure that they are properly seated.

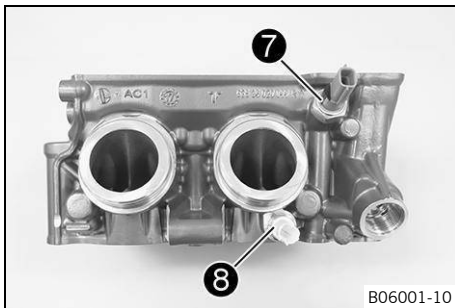


Tip

It is best to secure the valve collets to the valve with a little grease.



B06002-10



B06001-10

- Mount coolant temperature sensor **8** with the new O-ring.

Coolant temperature sensor

M10×1.25

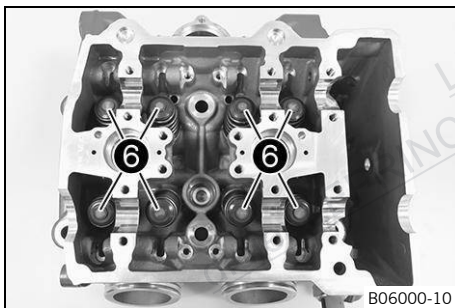
10 Nm
(7.4 ft·lb_f)

- Mount oil pressure sensor **7** with new O-ring.

Oil pressure sensor

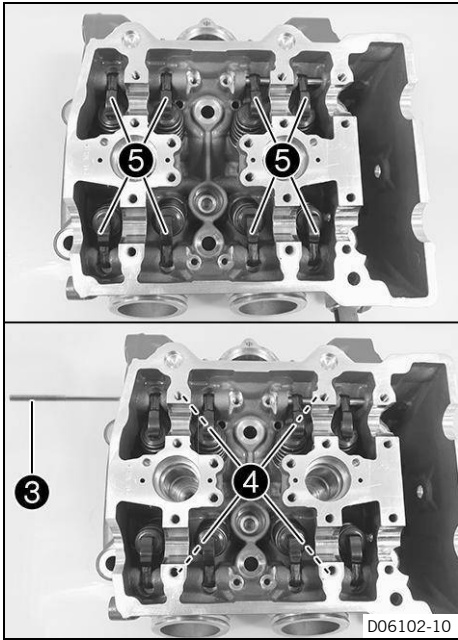
M10×1

10 Nm
(7.4 ft·lb_f)

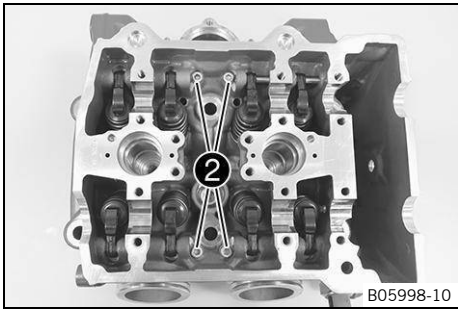


B06000-10

- Place shims **6** into the valve spring retainer according to their normal built-in position.

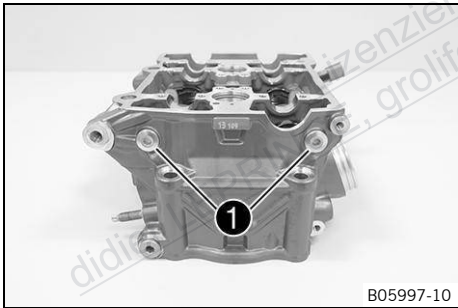


- Position cam levers 5.
- Mount cam lever shafts 4.
- Remove disassembly tool 3.



- Mount and tighten screws 2.

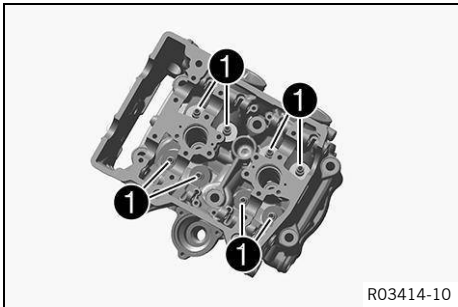
Screw, cam lever axial lock	
M5	6 Nm (4.4 ft·lb _r) Loctite® 243



- Mount screw plugs 1 with new O-rings.

Screw plug, cam lever shaft	
M10×1	8 Nm (5.9 ft·lb _r)

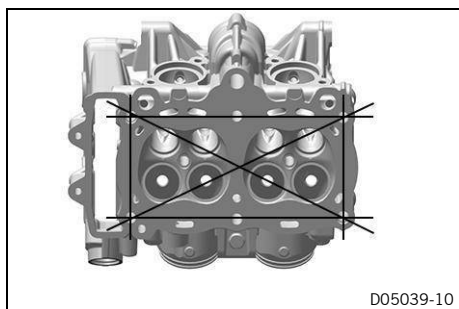
19.4.23 cylinder head, checking



- Check valve guides 1 using the special tool.

Limit plug gauge (77029026000) (p. 493)

- » If the special tool is easy to insert into the valve guide:
 - Change the valve guide and valve.
- Check the sealing surface of the spark plug thread and the valve seats for damage and cracking.
 - » If there is damage or cracking:
 - Change the cylinder head.

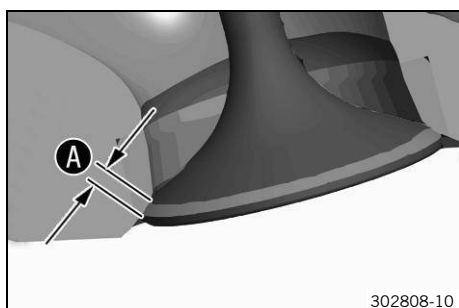


- Check the sealing surface of the cylinder for distortion using a straightedge and the special tool.

Cylinder/cylinder head - distortion of sealing surface	≤ 0.05 mm (≤ 0.0020 in)
--	---------------------------------------

Feeler gauge (79129941000) (p. 494)

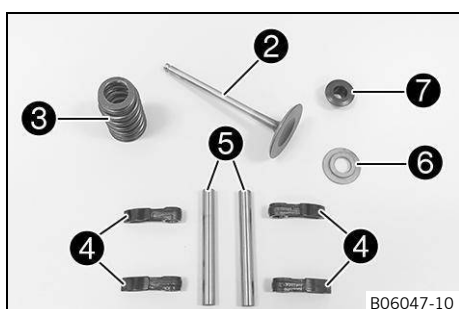
- » If the measured value does not meet specifications:
 - Change the cylinder head.



- Check sealing seat **A** of the valves.

Valve - sealing seat width	2.80 mm (0.1102 in)
Valve - sealing seat width	3.00 mm (0.1181 in)

- » If the measured value does not meet specifications:
 - Machine the valve seat.
- Blow compressed air through all oil channels and oil nozzles, and check that they are clear.



- Check valves **2** for damage and wear.
 - » If there is damage or wear:
 - Change the valve.
- Check the valves for run-out.

Valve - run-out	
on the valve plate	≤ 0.1 mm (≤ 0.004 in)

- » If the measured value does not meet specifications:
 - Change the valve.

- Check the valve stem diameter.

Valve – valve stem diameter	
Exhaust	4.95 mm ... 4.97 mm (0.1949 in ... 0.1957 in)
Intake	4.97 mm ... 4.99 mm (0.1957 in ... 0.1965 in)

- » If the measured value does not meet specifications:
 - Change the valve.

- Check valve springs **3** for damage and wear.
 - » If there is damage or wear:
 - Change the valve spring.
- Measure the length of the valve springs.

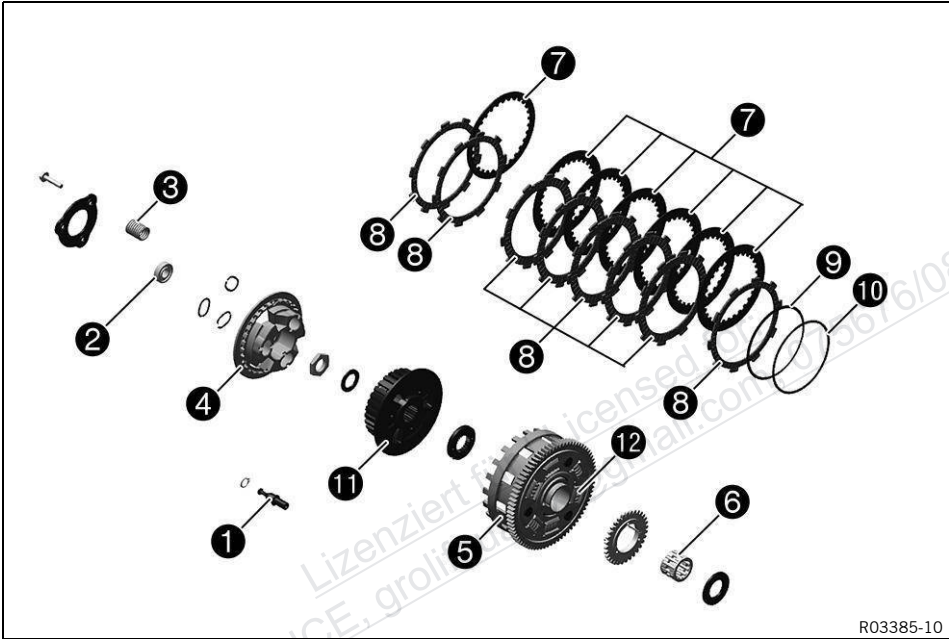
Valve spring	
Minimum length (without valve spring seat)	44.0 mm (1.732 in)

- » If the measured value does not meet specifications:
 - Change the valve springs.

- Check cam levers **4** for damage and wear.

- » If there is damage or wear:
 - Change the cam lever.
- Check cam lever shafts **5** for damage and wear.
 - » If there is damage or wear:
 - Change the cam lever shaft.
- Check valve spring seats **6** for damage and wear.
 - » If there is damage or wear:
 - Change the valve spring seat.
- Check valve spring retainer **7** for damage and wear.
 - » If there is damage or wear:
 - Change the valve spring retainer.

19.4.24 Checking the clutch



- Check clutch push rod **1** for damage and wear.
 - » If there is damage or wear:
 - Change clutch push rod.
- Check axial bearing **2** for damage and wear.
 - » If there is damage or wear:
 - Change the axial bearing.
- Check the length of clutch springs **3**.

Clutch spring - length	$\geq 43.0 \text{ mm}$ ($\geq 1.693 \text{ in}$)
------------------------	---

 - » If the clutch spring length is shorter than specified:
 - Change all clutch springs.
- Check the contact surface of clutch pressure plate **4** for damage and wear.
 - » If there is damage or wear:
 - Change the clutch pressure plate.
- Check the thrust surfaces of the clutch facing discs in clutch basket **5** for damage and wear.

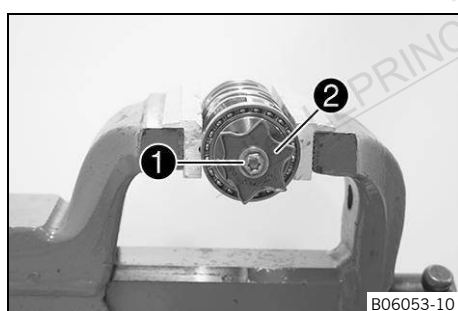
- » If there is damage or wear:
 - Change the clutch disc pack and the clutch basket.
- Check needle bearing **6** for damage and wear.
 - » If there is damage or wear:
 - Change the needle bearing.
- Check intermediate clutch discs **7** for damage and wear.
 - » If the intermediate clutch plates are not level and are pitted:
 - Change the clutch disc pack.
- Check clutch facing discs **8** for discoloration and scoring.
 - » If there is discoloration or scoring:
 - Change the clutch disc pack.
- Check the thickness of the clutch disc pack.

Clutch plate pack – thickness	
New condition	35.60 mm ... 36.40 mm (1.4016 in ... 1.4331 in)
Wear limit	34.80 mm (1.3701 in)

- » If the clutch disc pack does not meet specifications:
 - Change the clutch disc pack.
- Check pretension ring **9** and support ring **10** for damage and wear.
 - » If there is damage or wear:
 - Change the pretension ring and support ring.
- Check inner clutch hub **11** for damage and wear.
 - » If there is damage or wear:
 - Change the inner clutch hub.
- Check springs **12** of the clutch basket for damage and wear.
 - » If there is damage, wear or play in the direction of rotation:
 - Change the clutch basket.



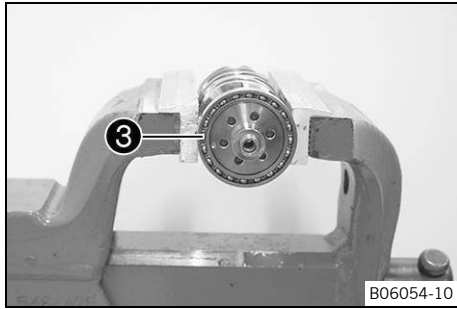
19.4.25 Shift drum locating unit, removing



- Clamp shift drum.

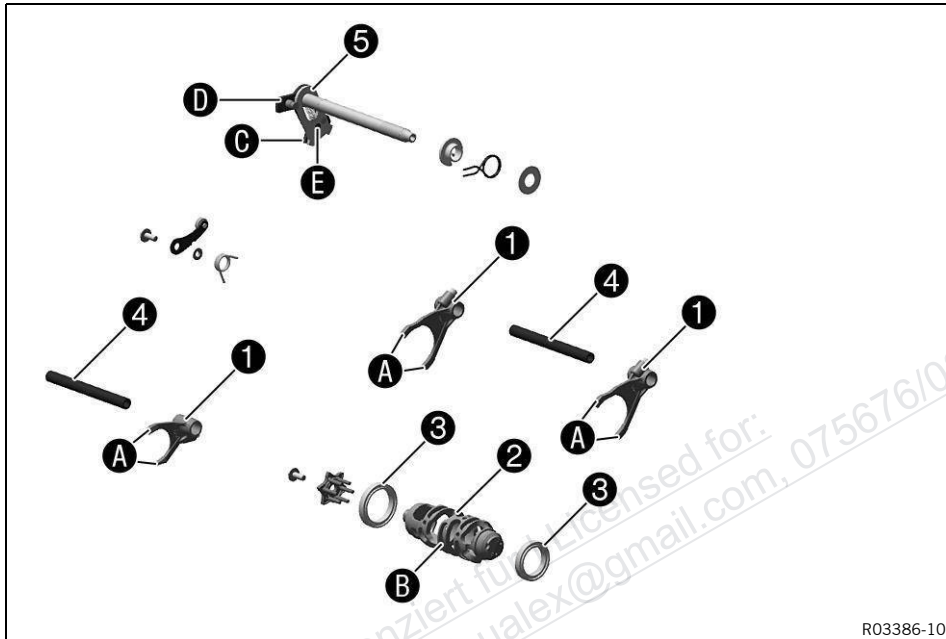
Use soft jaws.

- Remove screw **1**.
- Take off the shift drum locating unit **2**.



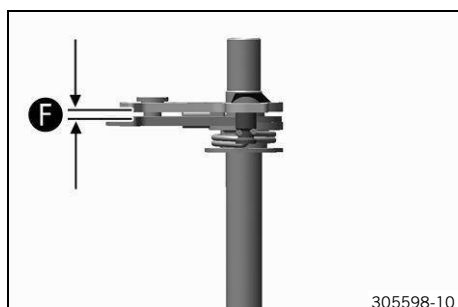
- Remove bearing ③.

19.4.26 Shift mechanism, checking



- Check shift forks ① on plate ① for damage and wear (visual check).
 - » If there is damage or wear:
 - Change the shift fork and gear wheel pair.
- Check shift grooves ② of shift drum ② for wear.
 - » If the shift groove is worn:
 - Change the shift drum.
- Check the seat of the shift drum in bearings ③.
 - » If the shift drum is not seated correctly:
 - Change the shift drum and/or the bearing.
- Check bearings ③ for ease of movement and wear.
 - » If the bearings are stiff or are worn:
 - Change the bearings.
- Check shift rails ④ on a flat surface for run-out.
 - » If there is run-out:
 - Change the shift rail.
- Check the shift rails for scoring, wear, and smooth operation in the shift forks.
 - » If there is evidence of scoring or seizure marks, or if the shift fork shaft is stiff in the shift fork:
 - Change the shift rail.
- Check shift shaft sliding plate ⑤ in contact areas ⑥ for wear.

- » If the shift shaft sliding plate is worn:
 - Change the shift shaft sliding plate.
- Check return surface **D** on the shift shaft sliding plate for wear.
 - » If deep notches are present:
 - Change the shift shaft sliding plate.
- Check guide pin **E** for looseness and wear.
 - » If the guide pin is loose and/or worn:
 - Change the shift shaft sliding plate.
- Preassemble the shift shaft.  (p. 317)



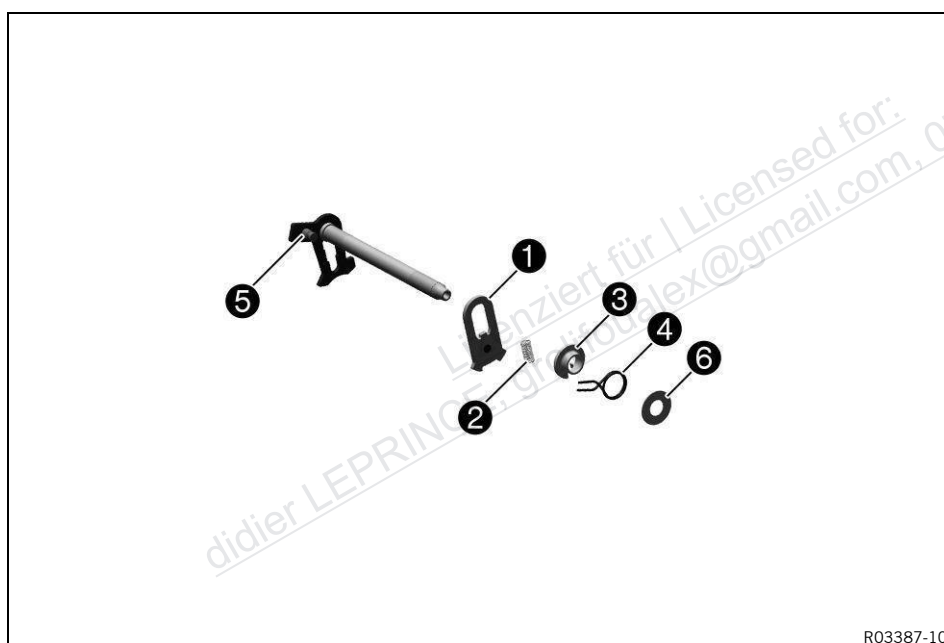
- Check clearance **F** between the shift shaft sliding plate and the shift quadrant.

Shift shaft - sliding plate/shift quadrant play	0.40 mm ... 0.80 mm (0.0157 in ... 0.0315 in)
---	--

- » If the measured value does not meet specifications:
 - Change the shift shaft sliding plate.



19.4.27 Shift shaft, preassembling



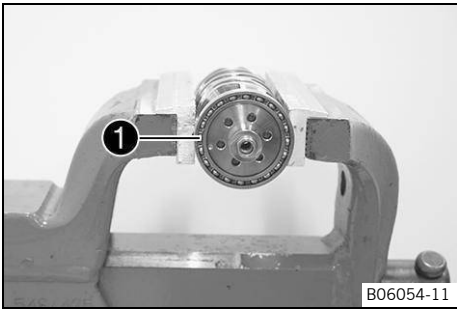
- Secure the short end of the shift shaft in the bench vise.

Use soft jaws.

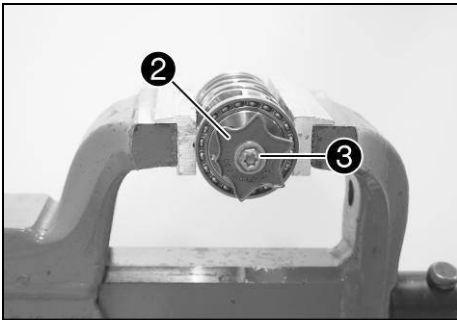
- Mount shift shaft sliding plate **1** with the guide pin facing downwards and attach the guide pin on the shift quadrant.
- Mount pressure spring **2**.
- Slide on spring guide **3**, push return spring **4**, with the offset end facing upward, over the spring guide and lift the offset end over abutment bolt **5**.
- Mount stop disk **6**.



19.4.28 Shift drum locating unit, installing

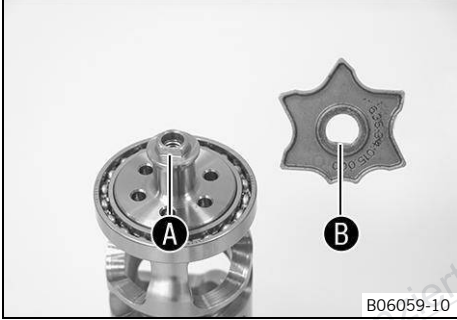


- Clamp shift drum.
Use soft jaws.
- Mount bearing 1.



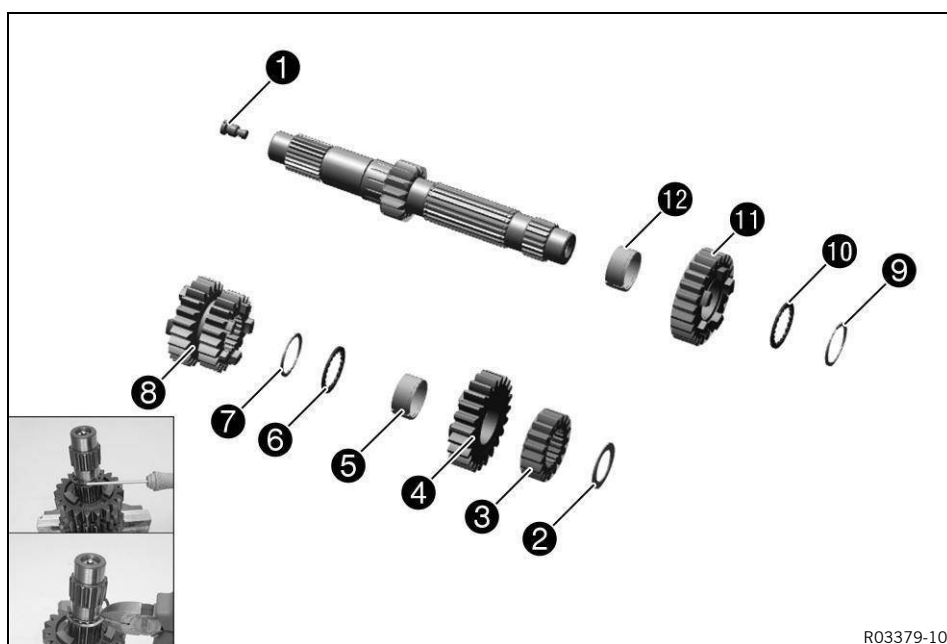
- Position shift drum locating unit 2.
✓ The flat surface A of the shift drum engages in the flat surface B of the shift drum locating unit.
- Mount and tighten screw 3.

Shift star screw	
M6	10 Nm (7.4 ft·lb _f) Loctite® 243



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didier LEPRINCE, grolifoualex@gmail.com, 075676/080232

19.4.29 Disassembling the main shaft

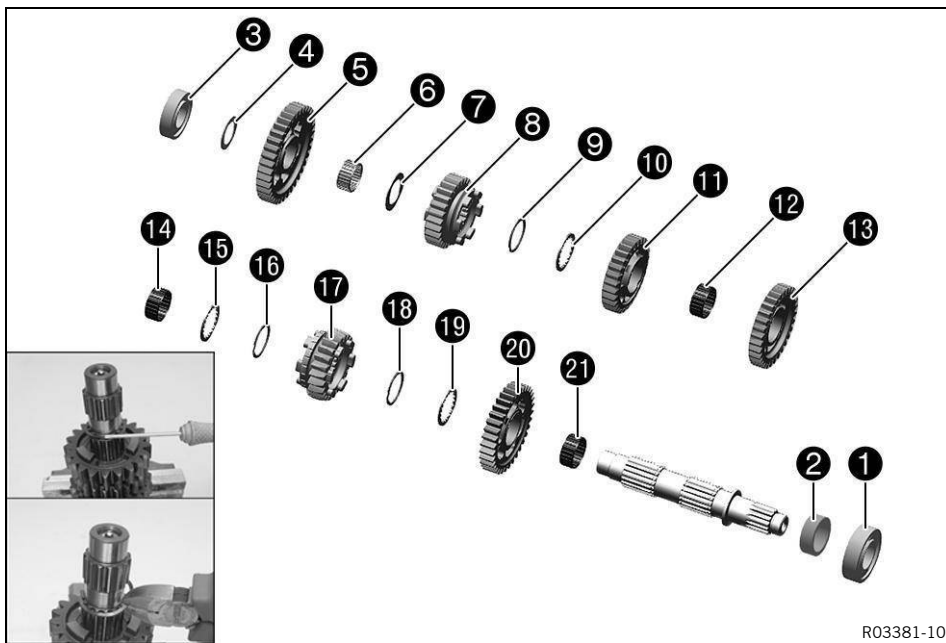


- Remove oil nozzle ①.
- Secure the main shaft in the vise with the gear teeth facing downward.

Use soft jaws.

- Remove stop disk ② and 2nd-gear fixed gear ③.
- Remove sixth-gear idle gear ④.
- Remove needle bearing ⑤ and stop disk ⑥.
- Remove lock ring ⑦.
- Remove third/fourth gear sliding gear ⑧.
- Remove lock ring ⑨.
- Remove stop disk ⑩ and 5th gear idler gear ⑪.
- Remove needle bearing ⑫.

19.4.30 Countershaft, disassembling

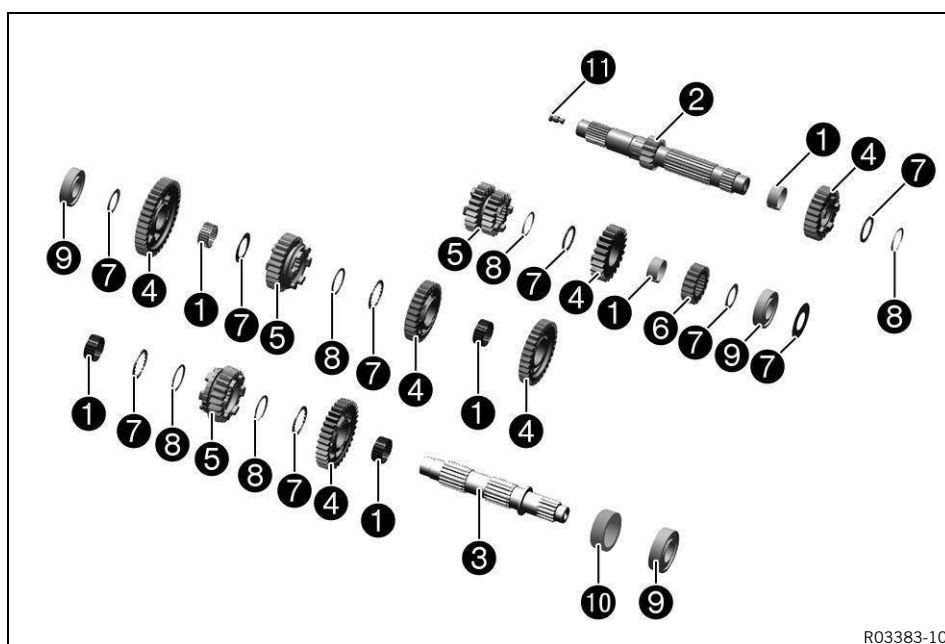


- Remove bearing ① with distance sleeve ②.
- Secure the countershaft in the bench vise with the toothed end facing downward.

Use soft jaws.

- Remove bearing ③.
- Remove stop disk ④ and 1st-gear idler gear ⑤.
- Remove needle bearing ⑥ and stop disk ⑦.
- Remove 5th gear sliding gear ⑧ and lock ring ⑨.
- Remove stop disk ⑩ and the fourth-gear idler gear ⑪.
- Remove needle bearing ⑫ and the third-gear idler gear ⑬.
- Remove needle bearing ⑭ and stop disk ⑮.
- Remove lock ring ⑯ and 6th gear sliding gear ⑰.
- Remove lock ring ⑱ and stop disk ⑲.
- Remove 2nd gear idler gear ⑳ and needle bearing ㉑.

19.4.31 Checking the transmission



R03383-10

- Check needle bearings **1** for damage and wear.
 - » If there is damage or wear:
 - Change the needle bearing.
- Check the pivot points of main shaft **2** and countershaft **3** for damage and wear.
 - » If there is damage or wear:
 - Change the main shaft and/or countershaft.
- Check the tooth profiles of main shaft **2** and countershaft **3** for damage and wear.
 - » If there is damage or wear:
 - Change the main shaft and/or countershaft.
- Check the pivot points of idler gears **4** for damage and wear.
 - » If there is damage or wear:
 - Change the gear wheel pair.
- Check the shift dogs of idler gears **4** and sliding gears **5** for damage and wear.
 - » If there is damage or wear:
 - Change the gear wheel pair.
- Check the tooth faces of idler gears **4**, sliding gears **5**, and fixed gear **6** for damage and wear.
 - » If there is damage or wear:
 - Change the gear wheel pair.
- Check the tooth profiles of sliding gears **5** for damage and wear.
 - » If there is damage or wear:
 - Change the gear wheel pair.
- Check sliding gear **5** for smooth operation in the profile of main shaft **2**.
 - » If the fixed gear is stiff:
 - Change the sliding gear or the main shaft.
- Check sliding gears **5** for smooth operation in the profile of countershaft **3**.
 - » If the fixed gear is stiff:
 - Change the sliding gear or the countershaft.
- Check stop disks **7** for damage and wear.

- » If there is damage or wear:
 - Change the stop disks.
- Use new lock rings **8** in every repair.
- Check bearings **9** for damage and wear.
 - » If there is damage or wear:
 - Change the bearings.
- Check distance sleeve **10** for damage and wear.
 - » If there is damage or wear:
 - Change distance sleeve.
- Check oil nozzle **11** to ensure that they are free.
 - » If the oil nozzle is blocked:
 - Clean the oil nozzle and change as necessary.

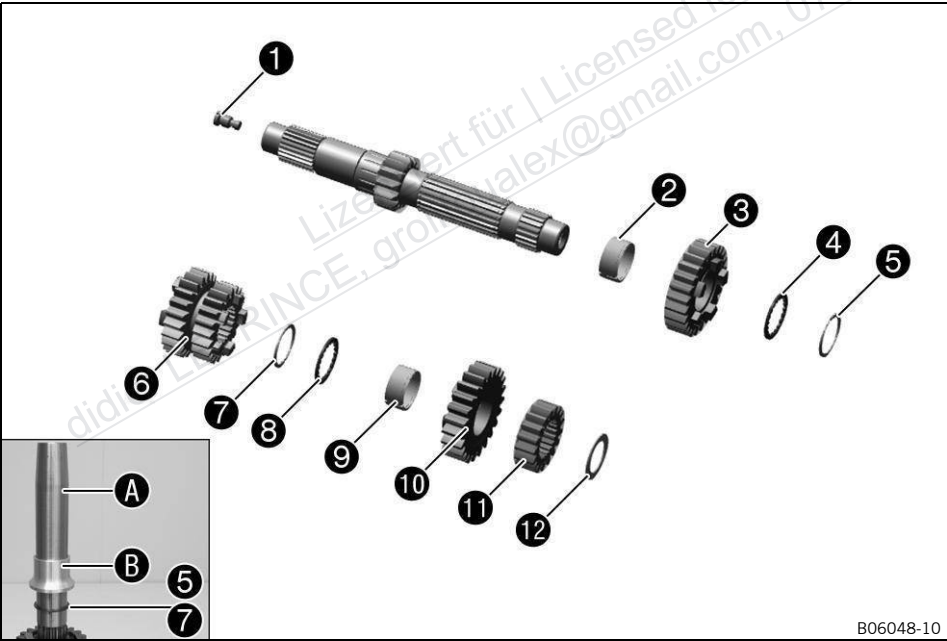
19.4.32 Assembling the main shaft

Note
Use new lock rings with every repair.

Preparatory work

- Carefully lubricate all parts before assembling.
- Check the transmission.  (p. 321)

Main work



- Mount and tighten oil nozzle **11**.

Oil nozzle for clutch lubrication	
M8	5 Nm (3.7 ft·lb _r)
Loctite® 243	

Ensure that there is no thread locker in the hole.

- Secure the main shaft in the vise with the gear teeth facing downward.

Use soft jaws.

- Mount needle bearing ②, and mount fifth gear idle gear ③ with the shift dogs facing up.
- Mount stop disk ④.
- Position special tool A on the transmission shaft.

Mounting tool for lock ring (76629032000)  (p. 493)

- Position new lock ring ⑤ on special tool A and push down with sleeve B.
- ✓ The lock ring engages in the groove of the transmission shaft.
- Attach third/fourth gear sliding gear ⑥ with the small gear facing up.
- Position special tool A on the transmission shaft.

Mounting tool for lock ring (76629032000)  (p. 493)

- Position new lock ring ⑦ on special tool A and push down with sleeve B.
- ✓ The lock ring engages in the groove of the transmission shaft.
- Mount stop disk ⑧ and needle bearing ⑨.
- Mount sixth gear idle gear ⑩ with the shift dogs facing downward.
- Mount second gear fixed gear ⑪ with the collar facing downward and mount stop disc ⑫.
- Finally, check all the gear wheels for smooth operation.

19.4.33 Assembling the countershaft



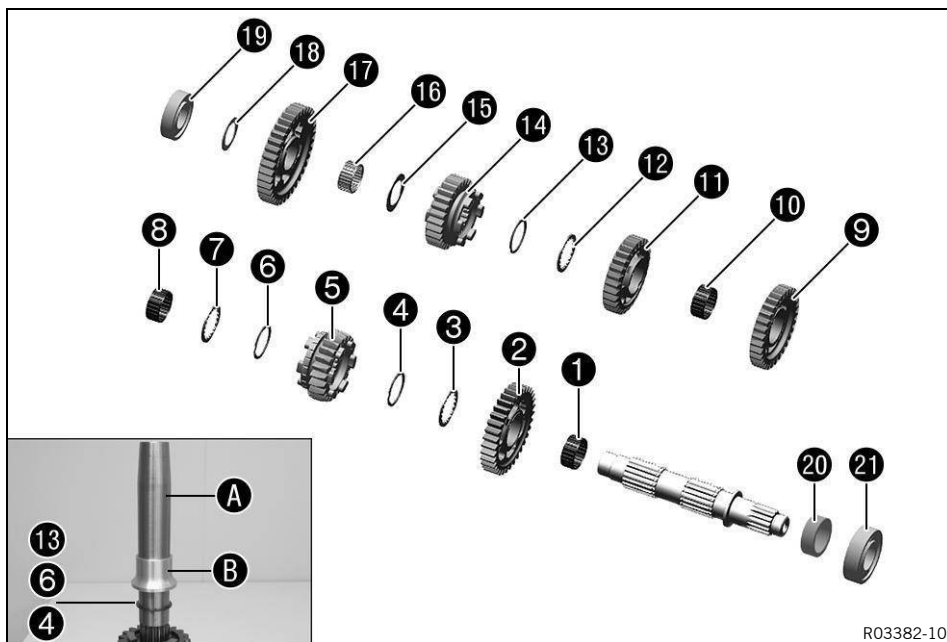
Note

Use new lock rings with every repair.

Preparatory work

- Carefully lubricate all parts before assembling.
- Check the transmission.  (p. 321)

Main work



- Secure the countershaft in the bench vise with the toothed end facing downward.

Use soft jaws.

- Mount needle bearing ① and 2nd-gear idler gear ② onto the countershaft with the protruding collar facing downward.
- Mount stop disk ③.
- Position special tool A on the transmission shaft.

Mounting tool for lock ring (63529032000) (p. 490)

- Position new lock ring ④ on special tool A and push down with sleeve B.
- ✓ The lock ring engages in the groove of the transmission shaft.
- Mount the 6th gear sliding gear ⑤ with the shift groove facing up.
- Position special tool A on the transmission shaft.

Mounting tool for lock ring (63529032000) (p. 490)

- Position new lock ring ⑥ on special tool A and push down with sleeve B.
- ✓ The lock ring engages in the groove of the transmission shaft.
- Mount stop disk ⑦.
- Mount needle bearing ⑧ and the third-gear idler gear ⑨ with the collar facing upward.
- Mount needle bearing ⑩ and the fourth-gear idler gear ⑪ with the collar facing downward.
- Mount stop disk ⑫.
- Position special tool A on the transmission shaft.

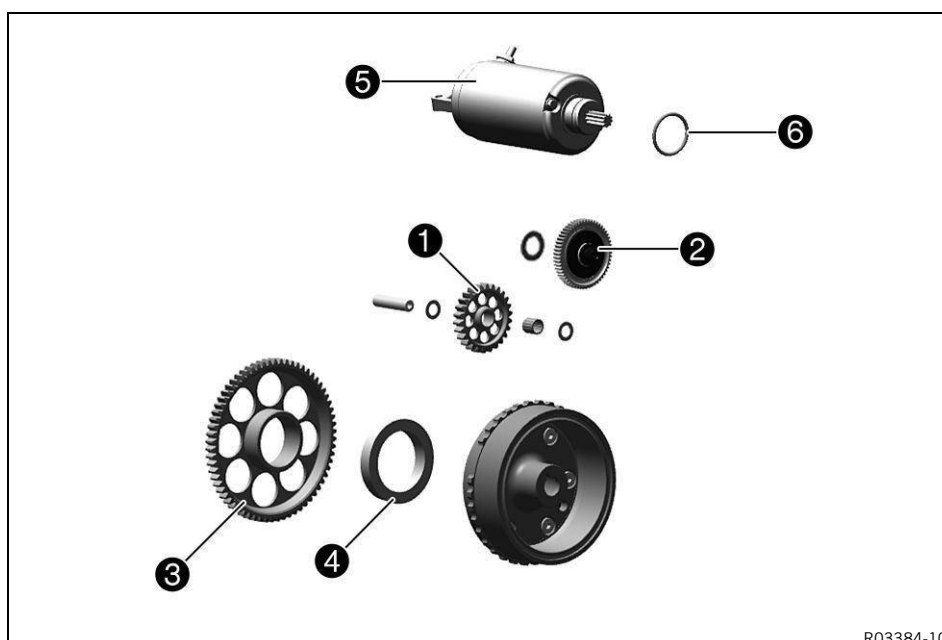
Mounting tool for lock ring (63529032000) (p. 490)

- Position new lock ring ⑬ on special tool A and push down with sleeve B.
- ✓ The lock ring engages in the groove of the transmission shaft.
- Mount the fifth-gear sliding gear ⑭ with the shift groove facing down and stop disk ⑮.
- Mount needle bearing ⑯ and first gear idle gear ⑰ with the recess facing down, and stop disc ⑱.
- Mount bearing ⑲.
- Take the countershaft out of the vise.

- Mount distance sleeve 20 with bearing 21.
- Finally, check all the gear wheels for smooth operation.



19.4.34 Electric starter drive, checking

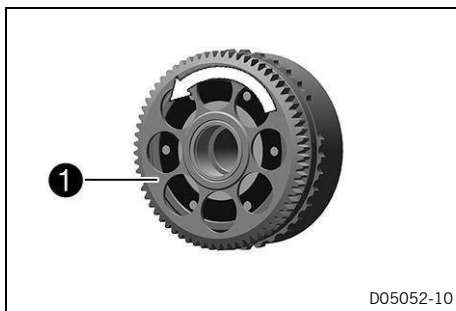


R03384-10

- Check the gear teeth and bearing of starter intermediate gear 1 for damage and wear.
 - » If there is damage or wear:
 - Change the starter intermediate gear.
- Check the gear teeth and bearing of torque limiter 2 for damage and wear.
 - » If there is damage or wear:
 - Change torque limiter.
- Check gear mesh and bearing of freewheel gear 3 for damage and wear.
 - » If there is damage or wear:
 - Change freewheel gear or bearing.
- Check freewheel 4 for damage and wear.
 - » If there is damage or wear:
 - Change the freewheel.
- Check the gear teeth of the starter motor 5 for damage and wear.
 - » If there is damage or wear:
 - Change starter motor.
- Change O-ring 6 of the starter motor.
- Connect negative cable of a 12 V voltage supply to the housing of the starter motor. Connect positive cable of the voltage supply briefly with the connector of the starter motor.
 - » If the starter motor does not turn when the circuit is closed:
 - Change starter motor.



19.4.35 Checking the freewheel



- Insert freewheel gear **1** into the freewheel hub by turning the freewheel gear counterclockwise.

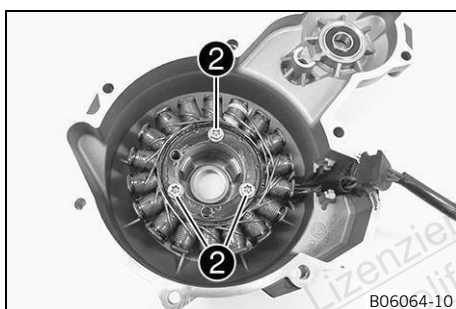
Do not tilt the freewheel gear.

- Check the locking action of freewheel gear **1**.
 - » The freewheel gear cannot be turned counterclockwise and does not block clockwise:
 - Change the freewheel.

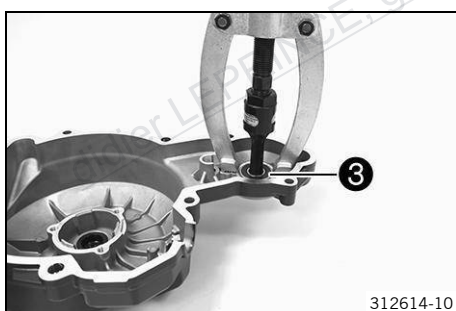
19.4.36 Alternator cover, working on



- Remove the cable retainer **1**.
- Pull the rubber grommet out of the engine case.



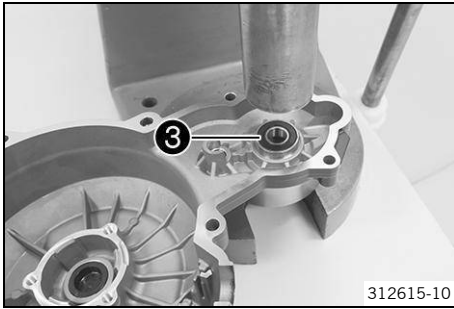
- Remove screws **2**.
- Remove the stator.



- Remove bearing **3** using the special tool.

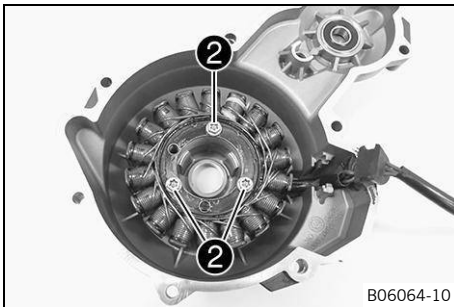
Bearing puller (15112017000) (p. 485)

Internal bearing puller (15112018000) (p. 485)



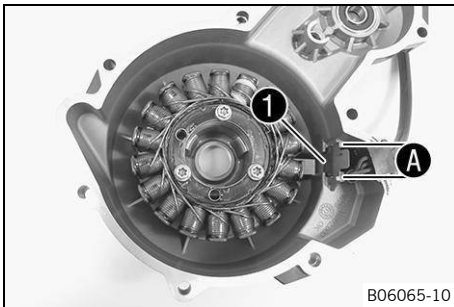
- Press in new bearing **3** all the way using a suitable tool.

Provide suitable support for the alternator cover while pressing in.



- Position the stator.
- Mount and tighten screws **2**.

Stator screw	
M6	10 Nm (7.4 ft·lb _f) Loctite® 243



- Apply sealing compound lightly in the area of the rubber grommet.

Loctite® SI 5910 (p. 501)

- Position the rubber grommet in the alternator cover.
- Position the cable retainer **1**.
- ✓ The retaining bracket engages in the attachment **A**.

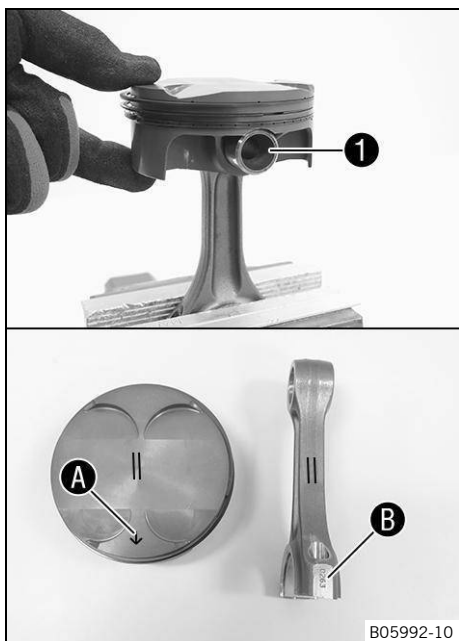
19.5 Assembling the engine

19.5.1 Installing the piston



Note

The operations are the same for both pistons.



- Clamp connecting rod in the vise.

Use soft jaws.

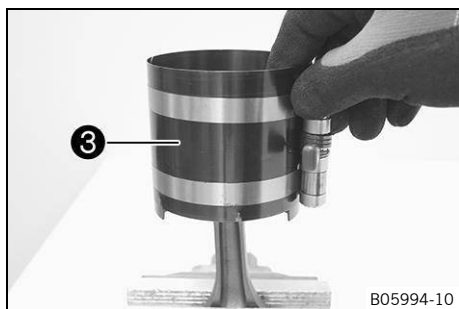
- Position piston on the associated connecting rod.
- Mount piston pin ①.
- ✓ The piston marking **A** and lettering **B** of the connecting rod point forward after assembly.



- Position the new piston ring lock ②.
- Insert the special tool and press it with force towards the piston.

Insertion tool for piston ring lock (77629030000)
 (p. 494)

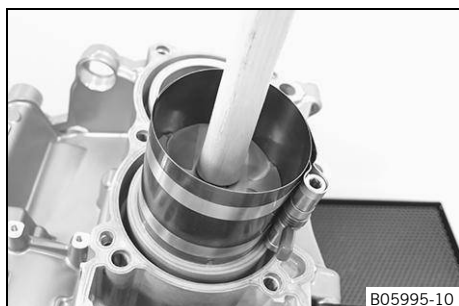
- Turn the special tool clockwise, thereby pushing the piston ring lock into the groove.
- Ensure that the piston ring lock is in the correct position on both sides.
- ✓ The open side **C** of the piston ring lock faces upwards.



- Oil the cylinder and piston.
- Offset the joint of the piston rings by 120°.
- Mount special tool ③ on the piston.

Piston ring compressor (60029015000) (p. 487)

- Clamp the piston rings together using the special tool.

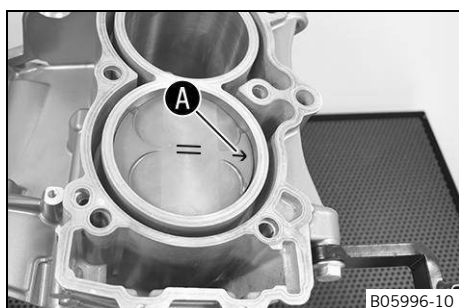


- Position the piston on the cylinder with the special tool.
- Tap lightly on the piston ring compressor from the top with a plastic hammer so that it lies flush with the cylinder.

The special tool must press the piston rings together properly and lie flush with the cylinder.

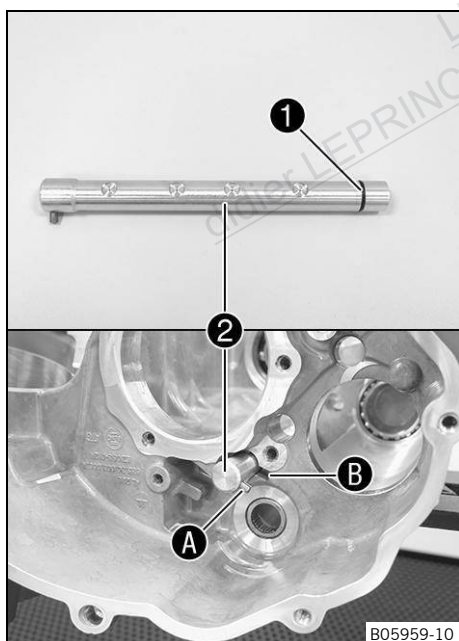
- Drive the piston into the cylinder by striking it carefully with the hammer handle.

The piston rings should not catch or they will be damaged.



- Ensure that piston marking (A) faces the exhaust side.

19.5.2 Oil spray tube, installing



- Mount the new O-ring ① on the oil spray tube ②.
- Mount the oil spray tube.
- ✓ The pin (A) engages in the recess (B).

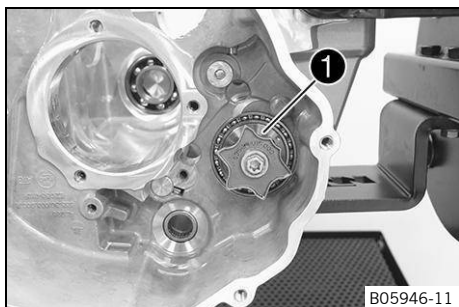
19.5.3 Installing the transmission shafts

Preparatory work

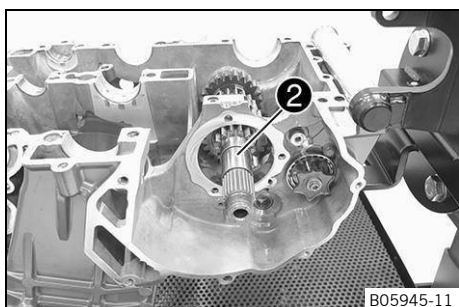
- Oil all bearings.

Main work

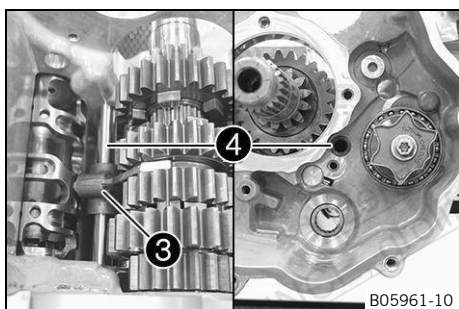
- Mount shift drum ①.



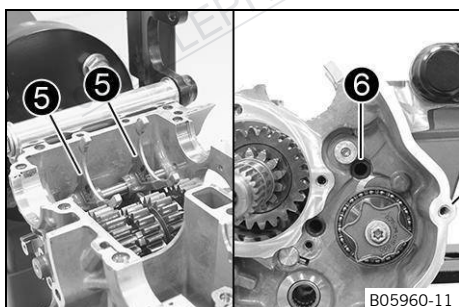
- Mount main shaft ②.

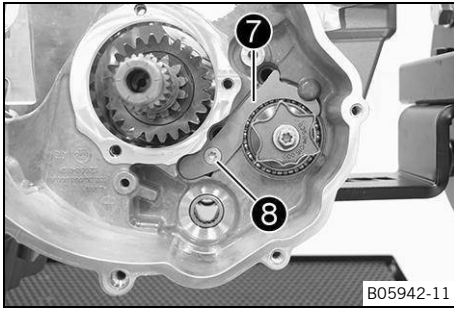


- Position shift fork ③.
- Mount shift rail ④.



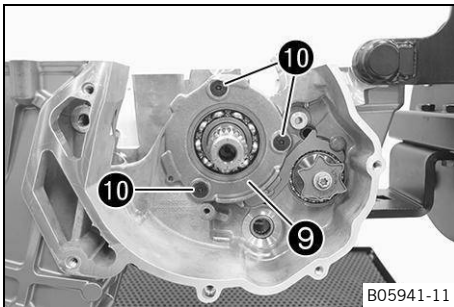
- Position shift forks ⑤.
- Mount shift rail ⑥.





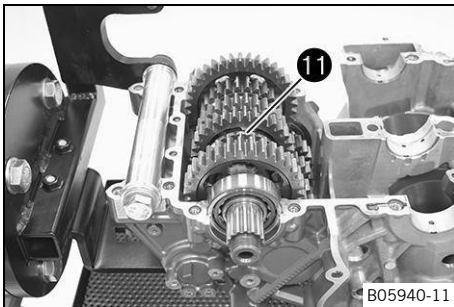
- Position retaining bracket **7**.
- Mount and tighten screw **8**.

Screw, shift drum retaining bracket	
M5	6 Nm (4.4 ft·lb _r) Loctite® 243

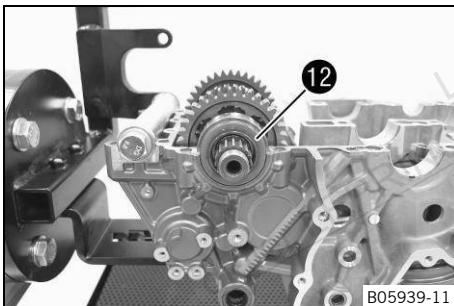


- Position bearing support **9** with bearing.
- Mount and tighten screws **10**.

Screw, main shaft bearing support	
M6	10 Nm (7.4 ft·lb _r) Loctite® 243

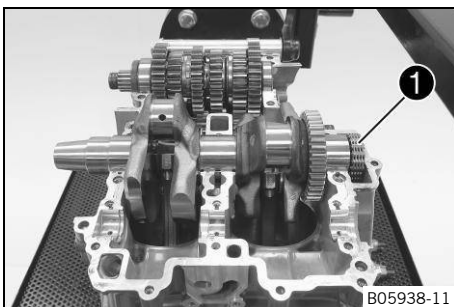


- Position countershaft **11**.

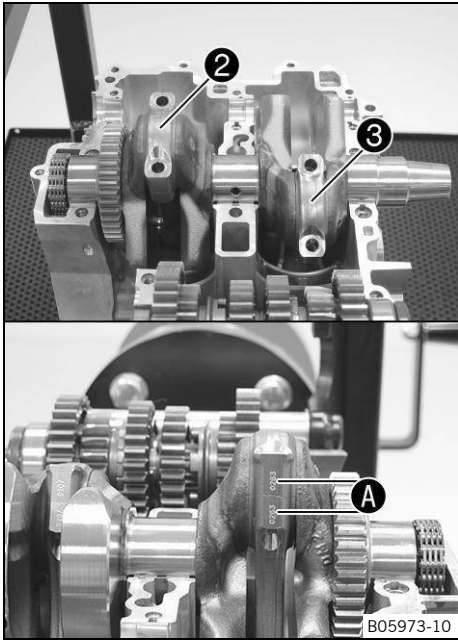


- Mount radial shaft seal ring **12**.

19.5.4 Lower engine case, installing

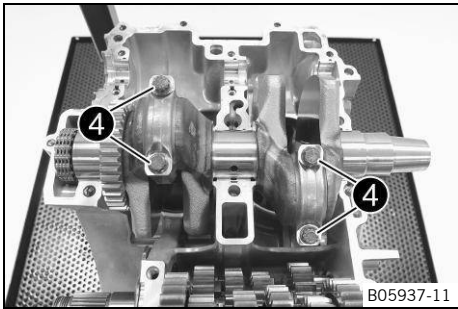


- Oil the bearing shells.
- Position crankshaft with timing chain **1**.



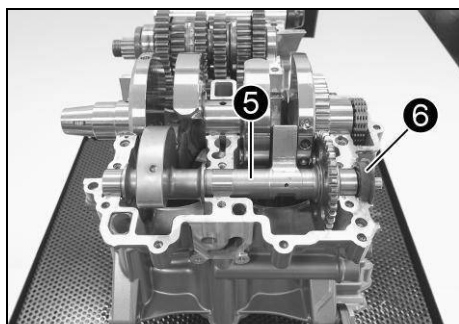
- Oil the bearing shells.
✓ There is no oil or grease on the connecting rod joint face.
- Position conrod bearing covers 2 and 3 on the associated connecting rod.

The markings A on the connecting rod and conrod bearing cover must be identical and legible from the front.



- Mount and tighten new screws 4.

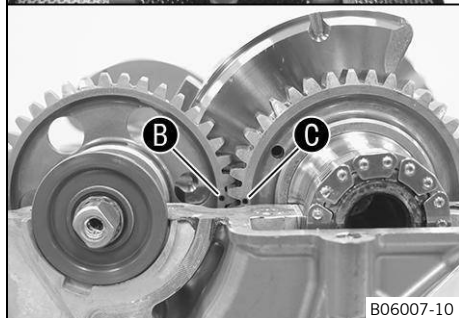
Screw, conrod bearing		
M8×0.75	1.	5 Nm
	2.	(3.7 ft·lb _r)
	3.	15 Nm (11.1 ft·lb _r) 90° (1.57 rad) engine oil
Multi-tooth wrench socket (63529075000) (p. 491)		
Angle disc (60029010000) (p. 486)		



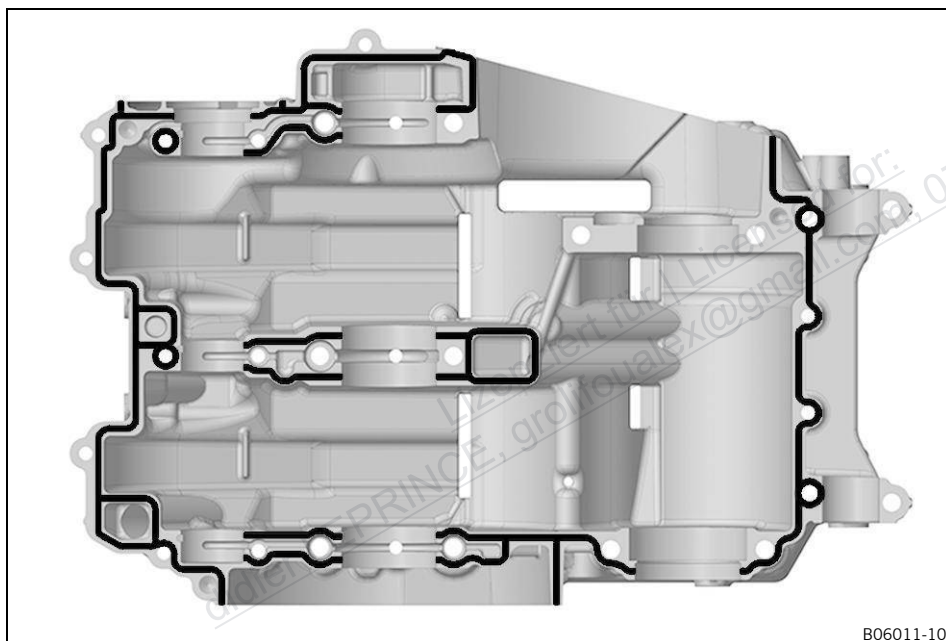
- Oil the bearing shells.
- Position balancer shaft **5** with new greased radial shaft seal ring **6**.

Long-life grease  (p. 500)

- ✓ Align markings **B** and **C**.



B06007-10

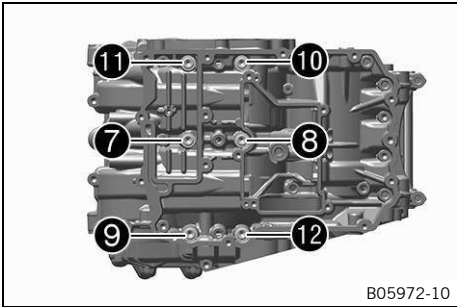


B06011-10

- Degrease the sealing surface. Apply sealing compound to the lower section of the engine case.

Ensure that the dowels are seated properly.

Loctite® SI 5910  (p. 501)

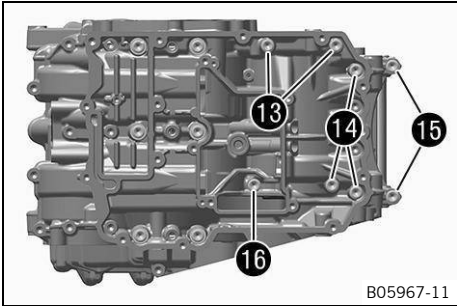


- Mount lower engine case. If necessary, strike lightly again with a rubber mallet.

Do not use the screws to pull the two halves of the engine case together.

- Mount screws with washers and tighten step by step in the order from 7 to 12.

Screw, engine case	
M8×90	25 Nm (18.4 ft·lb _f) Long-life grease



- Mount and tighten screws 13.

Screw, engine case	
M8×90	25 Nm (18.4 ft·lb _f) Long-life grease

- Mount and tighten screws 14.

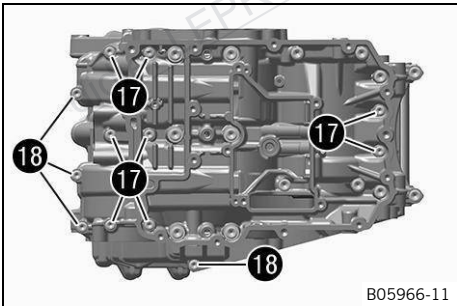
Screw, engine case	
M8×65	25 Nm (18.4 ft·lb _f) Long-life grease

- Mount and tighten screws 15.

Screw, engine case	
M8×55	25 Nm (18.4 ft·lb _f) Long-life grease

- Mount and tighten screw 16.

Screw, engine case	
M8×45	25 Nm (18.4 ft·lb _f) Long-life grease



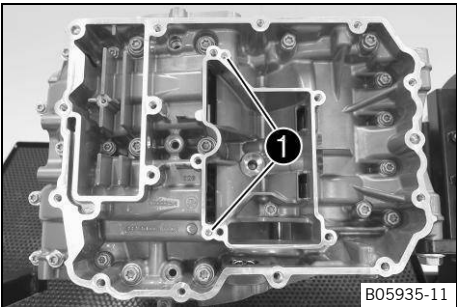
- Mount and tighten screws 17.

Screw, engine case	
M6×60	12 Nm (8.9 ft·lb _f)

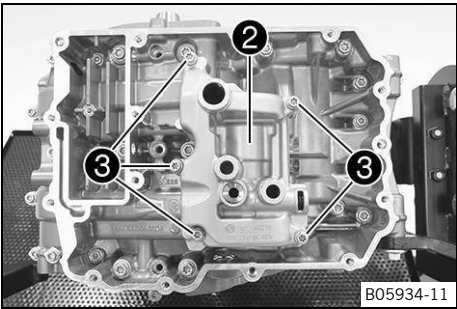
- Mount and tighten screws 18.

Screw, engine case	
M6×30	12 Nm (8.9 ft·lb _f)

19.5.5 Oil pump unit, installing



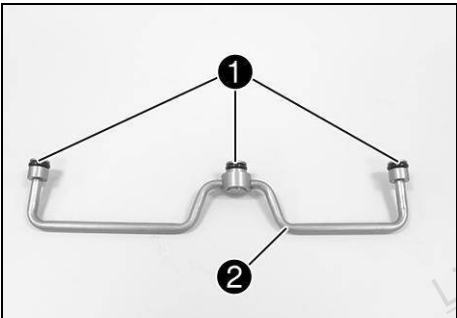
- Mount locating pins 1.



- Grease O-rings of the oil pump.
- Position oil pump unit 2.
- Mount and tighten screws 3.

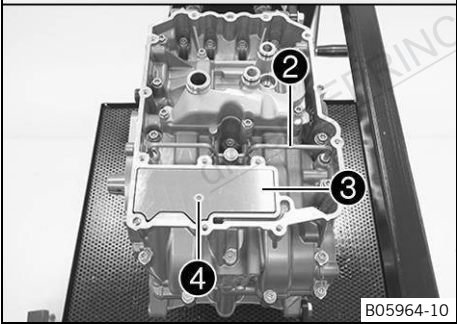
Screw, oil pump housing	
M6	10 Nm (7.4 ft·lb _f)

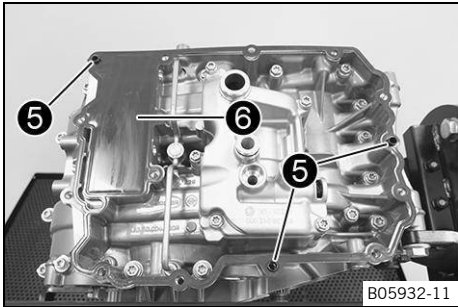
19.5.6 Oil pan, installing



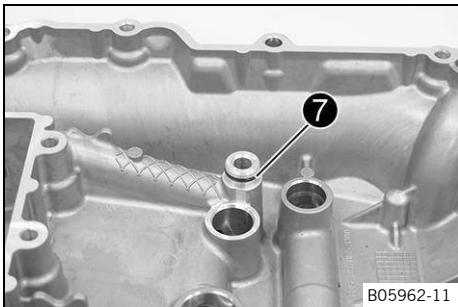
- Grease the new O-rings 1 and mount on the oil line 2.
- Mount oil line 2.
- Position pressure plate 3.
- Mount and tighten screw 4.

Screw, pressure plate	
M5	3 Nm (2.2 ft·lb _f) Loctite® 243

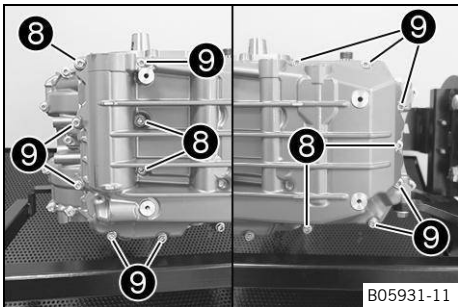




- Mount dowels 5.
- Mount gasket 6.



- Grease and mount the new O-ring 7.



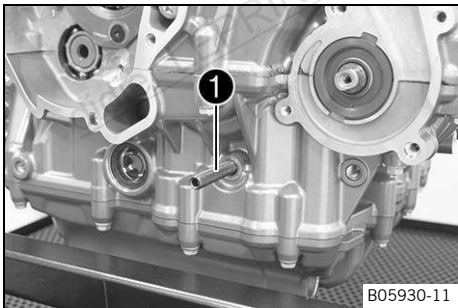
- Position oil pan.
- Mount screws 8, but do not tighten yet.

Screw, oil pan	
M6×35	10 Nm (7.4 ft·lb _r)

- Mount screws 9 and tighten all screws in a crisscross pattern.

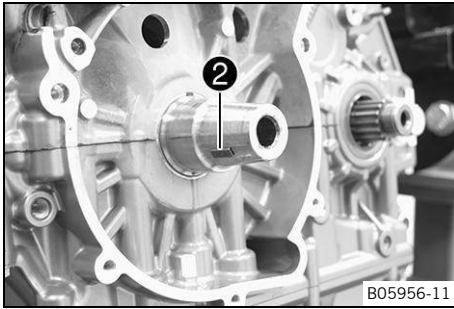
Screw, oil pan	
M6×30	10 Nm (7.4 ft·lb _r)

19.5.7 Rotor, installing

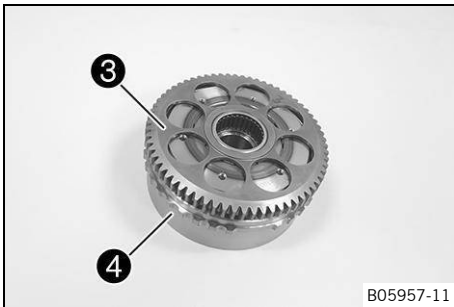


- Position crankshaft to cylinder 1 TDC and lock with special tool 1.

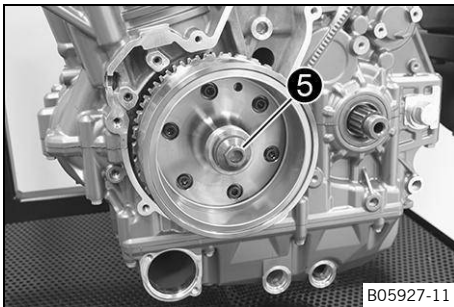
Locking screw (61229015000)  (p. 489)
--



- Mount woodruff key **2**.



- Turn the freewheel gear **3** counterclockwise and mount in the rotor **4**.



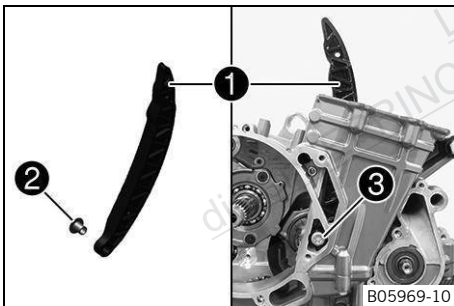
- Mount the rotor with the freewheel gear.

Ensure that the woodruff key is seated properly.

- Mount and tighten screw **5**.

Screw, rotor	
M12×1.5	90 Nm (66.4 ft·lb _r) Long-life grease

19.5.8 Installing the timing chain rails

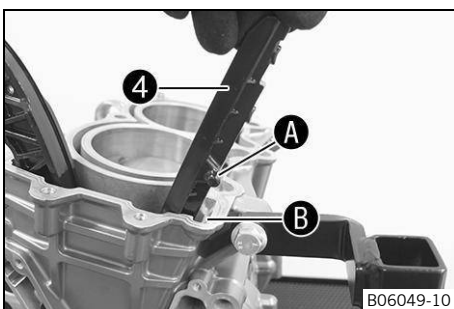


- Position tensioning rail **1** with support bushing **2**.
- Mount and tighten screw **3**.

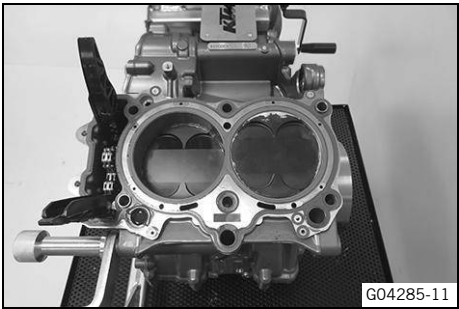
Slide rail screw	
M8	15 Nm (11.1 ft·lb _r) Loctite® 243

Ensure that there is no thread locker on the collar of the screw; otherwise, the tensioning rail may lock and break.

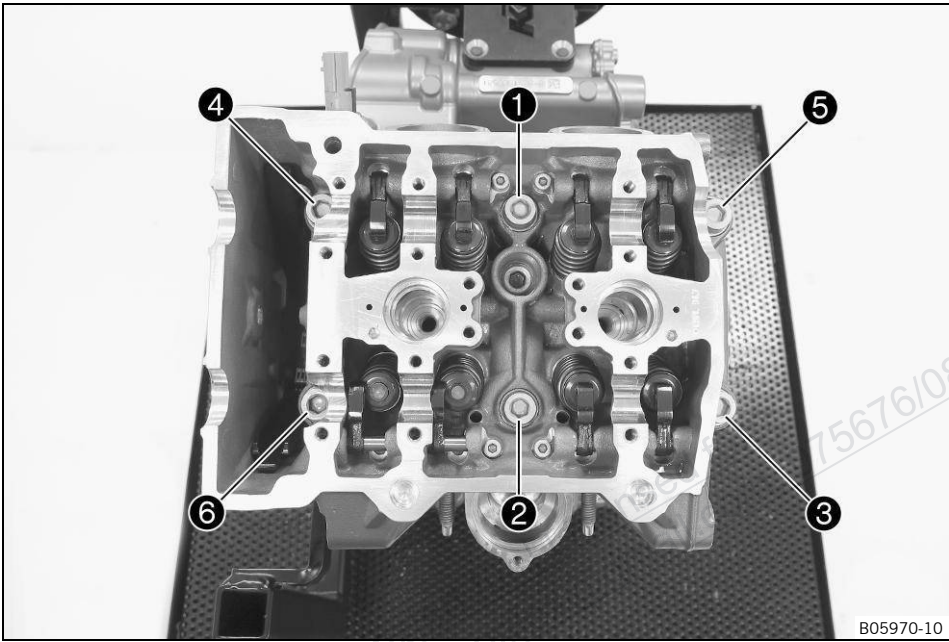
- Check the tensioning rail for freedom of movement.
- Position guide rail **4** from above in the engine case.
- ✓ Holder **A** engages in the recess **B**.



19.5.9 Cylinder head, installing

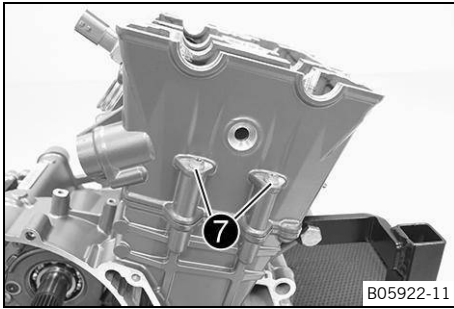


- Put the new cylinder head gasket in place.
Ensure that the dowels are seated properly.



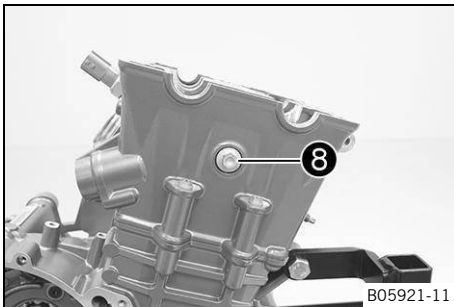
- Position the cylinder head.
- Mount cylinder head screws with washers and tighten step by step in the order from 1 to 6.

Screw, cylinder head		
M10×1.25	1.	5 Nm
	2.	(3.7 ft·lb _r)
	3.	15 Nm
	4.	(11.1 ft·lb _r)
		90°
		(1.57 rad)
		90°
		(1.57 rad)
engine oil		
Use new cylinder head screws.		



- Mount and tighten screws **7**.

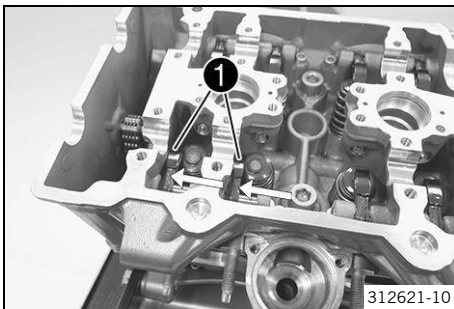
Chain shaft screw, cylinder head	
M6	10 Nm (7.4 ft·lb _r)



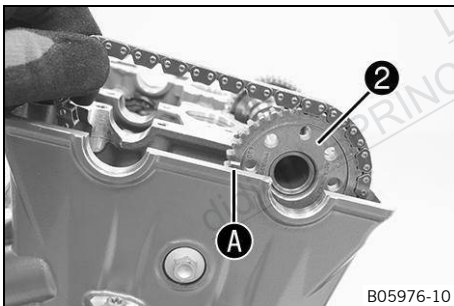
- Mount and tighten screw **8** with the gasket.

Screw, timing chain shaft	
M6	10 Nm (7.4 ft·lb _r)

19.5.10 Installing the camshafts



- Push exhaust cam lever **1** on cylinder 2 to the side.



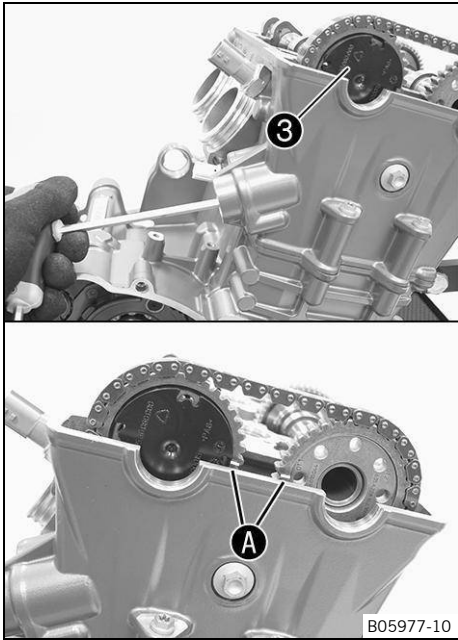
- Pull up the timing chain and position the exhaust camshaft **2**.

i Note
The drive gear wheel for the balancer shaft is located in the exhaust camshaft.

- Place timing chain over rear sprocket of the exhaust camshaft and keep taut.

✓ The **0T1** marking **A** is aligned with the sealing surface.

i Note
The **0T1** markings are line markings.

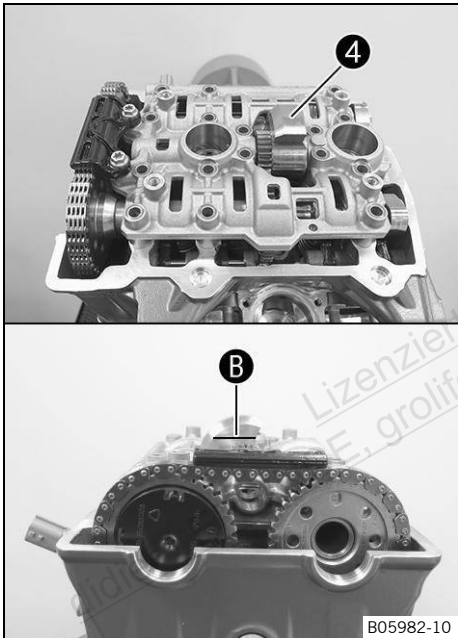


- Slip in intake camshaft **3**.

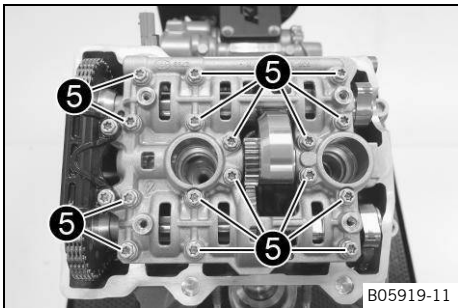
Note
The centrifuge of the engine vent is located on the intake camshaft.

- Keep the timing chain taut.
✓ The **OT1** markings **A** are aligned with the sealing surface.

Note
The **OT1** markings are line markings.

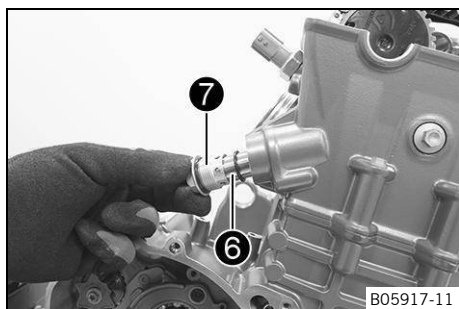


- Blow compressed air through all oil channels and oil nozzles, and check that they are clear.
- Mount camshaft bearing bridge with balancer shaft **4**.
✓ The marking **B** of the balancer shaft is aligned parallel to the sealing surface.



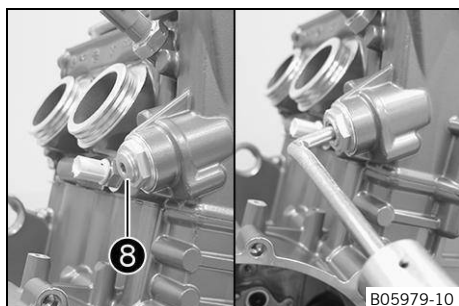
- Mount screws **5** and tighten them from the inside to the outside.

Screw, camshaft bearing bridge	
M6	10 Nm (7.4 ft·lb _r)



- After it has been positioned in the installation location, insert timing chain tensioner **6** with a new O-ring.
- Mount and tighten screw plug **7** with new O-ring.

Screw plug, timing chain tensioner	
M24×1.5	25 Nm (18.4 ft·lb _r)



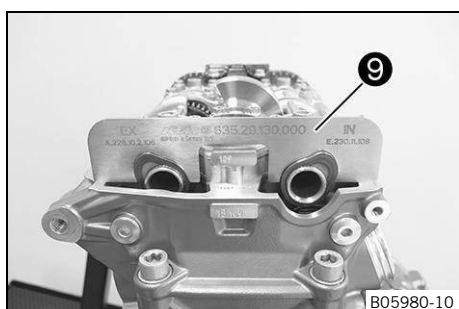
- Remove screw **8** with the O-ring and use a special tool to push the timing chain tensioner toward the timing chain.

Release device for timing chain tensioner (61229021000) (p. 489)	
---	--

✓ The timing chain tensioner unlocks.

- Mount and tighten screw **8** with new O-ring.

Screw, release for timing chain tensioner	
M10×1	8 Nm (5.9 ft·lb _r)



- Remove the special tool.

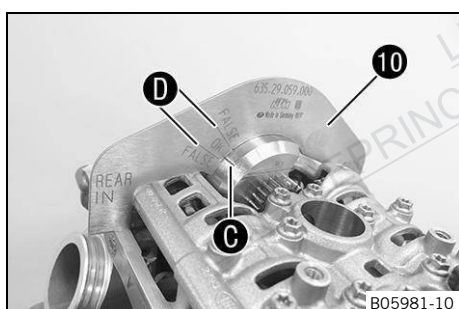
Locking screw (61229015000) (p. 489)	
---------------------------------------	--

- Crank the engine several times.
- Turn the crankshaft counterclockwise to ignition top dead center of cylinder 1 and lock it using special tool.

Locking screw (61229015000) (p. 489)	
---------------------------------------	--

- Check position of the camshafts with special tool **9**.

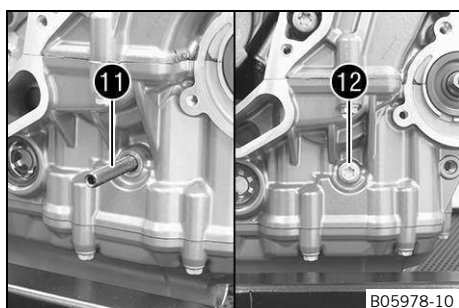
Setting gauge (63529530000) (p. 492)	
---------------------------------------	--



- Check position of the balancer shaft with special tool **10**.

Setting gauge (63529059000) (p. 491)	
---------------------------------------	--

✓ The marking **C** of the balancer shaft is located in the **D** area of the adjusting gauge.

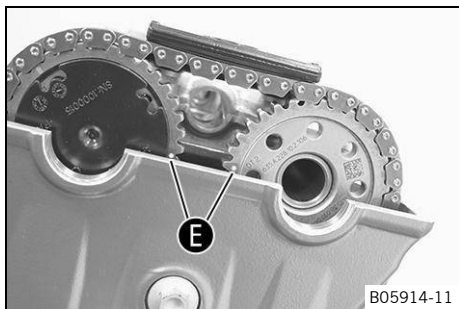


- Remove special tool **11**.

Locking screw (61229015000) (p. 489)	
---------------------------------------	--

- Mount and tighten screw **12** with the washer.

Screw plug, locking screw	
M8	15 Nm (11.1 ft·lb _r)



- Turn the crankshaft counterclockwise by the specified value and set it to ignition top dead center of cylinder 2.

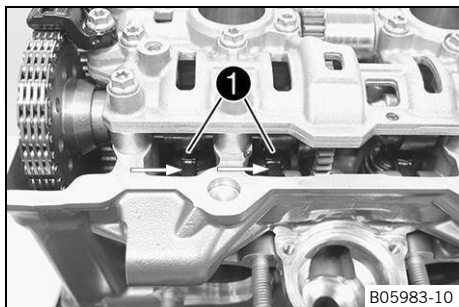
435°
(7.59 rad)

- ✓ The **OT2** markings **E** are aligned with the sealing surface.

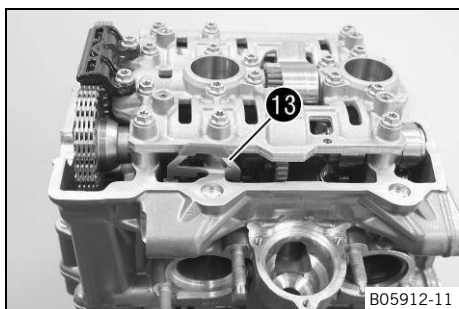


Note

The **OT2** markings are dot markings.

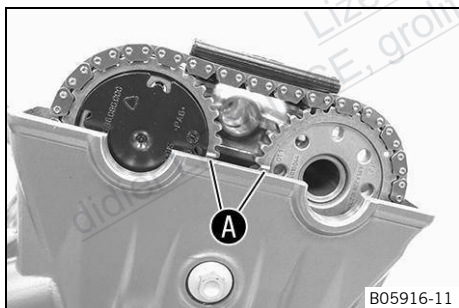


- Position exhaust cam lever **1** on cylinder 2.



- Mount cam lever clip **13**.

19.5.11 Checking the valve clearance



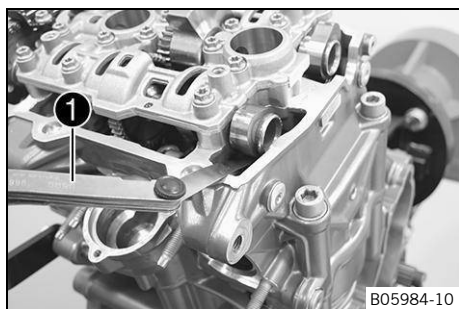
- Crank the engine several times.
- Turn the crankshaft counterclockwise and set it to ignition top dead center of cylinder 1.

- ✓ The **OT1** markings **A** are aligned with the sealing surface.



Note

The **OT1** markings are line markings.

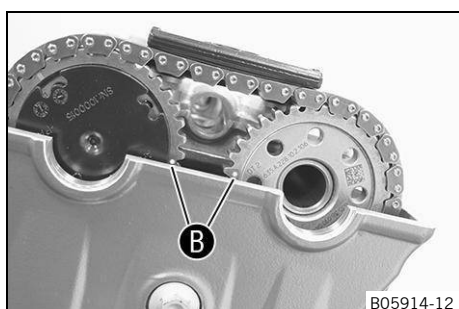


- Check the valve clearance at the exhaust valves and the intake valves between the camshaft and cam lever using special tool **1**.

Valve clearance, cold	
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)	0.15 mm ... 0.20 mm (0.0059 in ... 0.0079 in)

Feeler gauge (79129941000) (p. 494)

- » If the valve clearance does not meet specifications:
 - Adjust the valve clearance. (p. 344)



- Turn the crankshaft counterclockwise by the specified value and set it to ignition top dead center of cylinder 2.

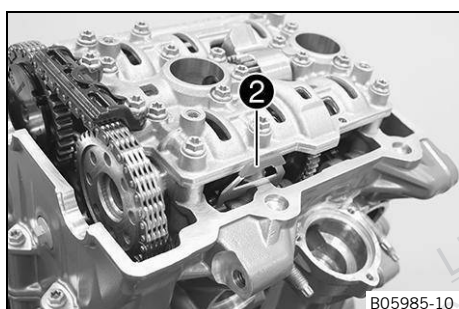
435°
(7.59 rad)

- ✓ The **OT2** markings **B** are aligned with the sealing surface.

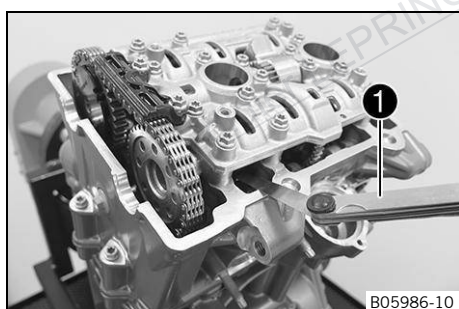


Note

The **OT2** markings are dot markings.



- Remove cam lever clip **2**.



- Check the valve clearance at the exhaust valves and the intake valves between the camshaft and cam lever using special tool **1**.

Valve clearance, cold	
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)	0.15 mm ... 0.20 mm (0.0059 in ... 0.0079 in)

Feeler gauge (79129941000) (p. 494)

- » If the valve clearance does not meet specifications:
 - Adjust the valve clearance. (p. 344)

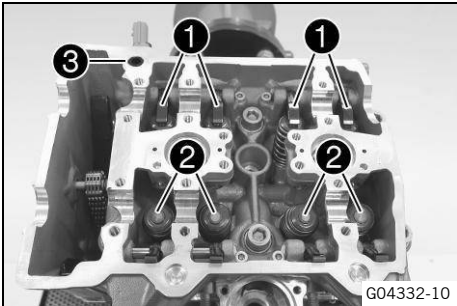
19.5.12 Adjusting the valve clearance and cleaning the oil screen

Preparatory work

- Remove the camshafts.  (p. 275)

Main work

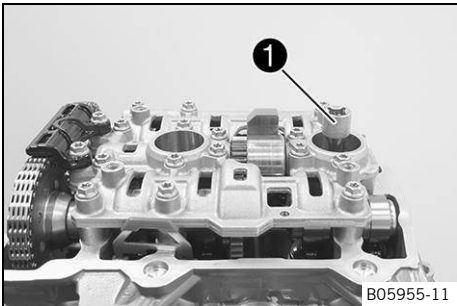
- Swing up cam lever **1**.
- Remove shims **2** and set them down according to the installation position.
- Correct the shims based on the results of the valve clearance check.
- Insert suitable shims.
- Clean oil screen **3**.
- Install the camshafts.  (p. 339)
- Check the valve clearance.  (p. 342)



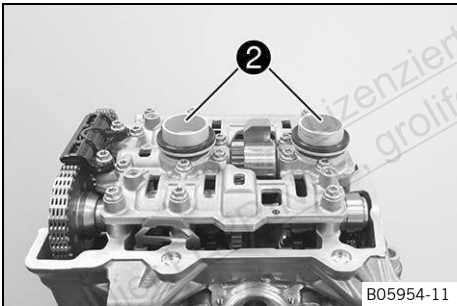
19.5.13 Installing the spark plugs

- Mount and tighten the spark plugs using special tool **1**.

Spark plug	
M10	11 Nm (8.1 ft·lb _f)
Spark plug wrench with link (77229172000)  (p. 493)	



- Grease the O-rings and mount spark plug shaft inserts **2** with gasket.

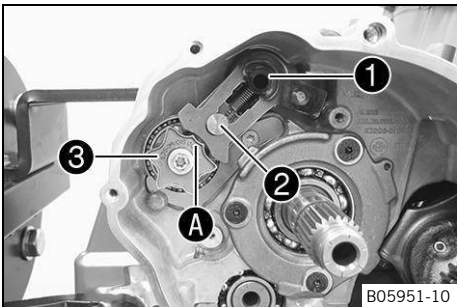


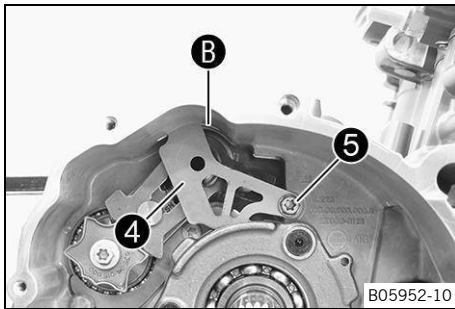
19.5.14 Installing the shift shaft

- Slide shift shaft **1** with the washer into the bearing seat.
- Push shift shaft sliding plate **2** away from shift drum locating unit **3**. Insert the shift shaft all the way.

The neutral position **A** must be aligned with the shift shaft sliding plate **2** for assembly.

- Let the shift shaft sliding plate engage in the shift drum locating unit.
- Shift through the transmission.

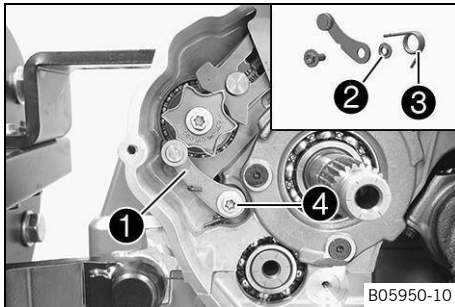




- Position retaining bracket **4** in the groove **B**.
- Mount and tighten screw **5**.

Screw, shift shaft retaining bracket	
M6	10 Nm (7.4 ft·lb _f) Loctite® 243

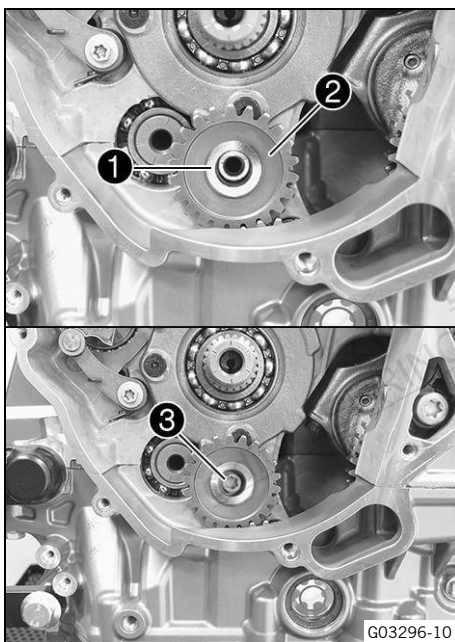
19.5.15 Locking lever, installing



- Position locking lever **1** with sleeve **2** and spring **3**.
- Mount and tighten screw **4**.

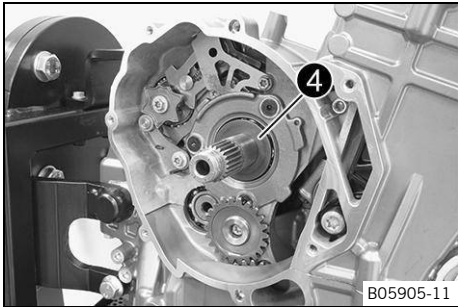
Detent arm screw	
M6	10 Nm (7.4 ft·lb _f) Loctite® 243

19.5.16 Installing the clutch basket

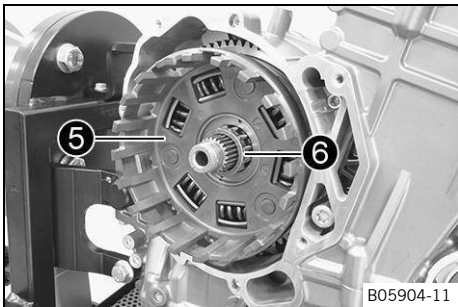


- Oil collar bushing **1** thoroughly.
- Position collar bushing **1** with oil pump intermediate gear **2**.
- Mount and tighten screw **3**.

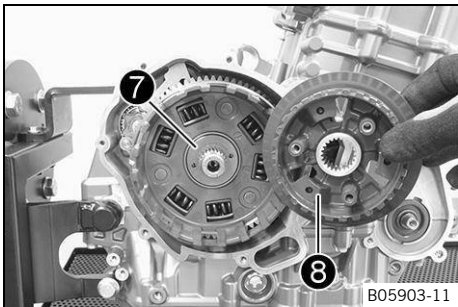
Screw, oil pump intermediate gear	
M8	15 Nm (11.1 ft·lb _f) Loctite® 243
Screw 3 must be replaced.	



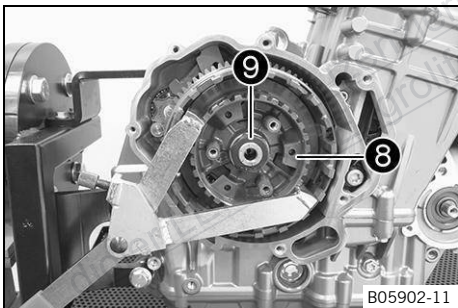
- Mount washer ④.



- Position clutch basket ⑤.
Turn the oil pump intermediate gear carefully to engage the outer clutch hub.
- Mount needle bearing ⑥.



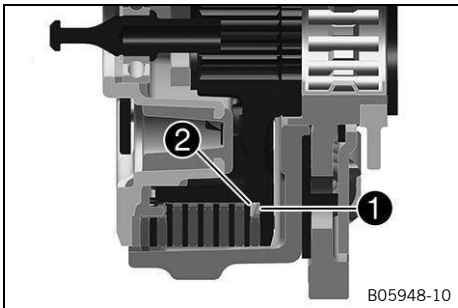
- Mount washer ⑦ and inner clutch hub ⑧.



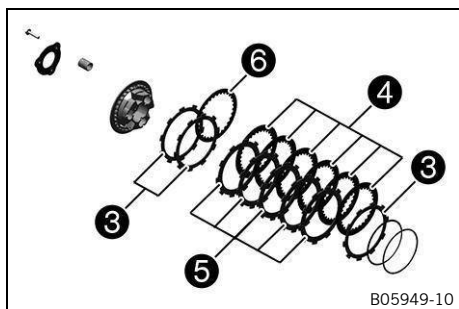
- Mount nut ⑨ with washer.
- Use a special tool to hold the inner clutch hub ⑧ and tighten the nut ⑨.

Nut, inner clutch hub	
M20×1.5	135 Nm (99.6 ft·lb _f)
Spanner wrench (51129003000)  (p. 486)	

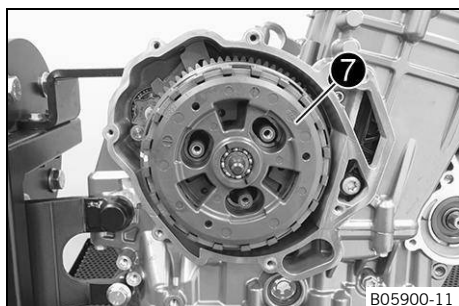
19.5.17 Installing the clutch discs



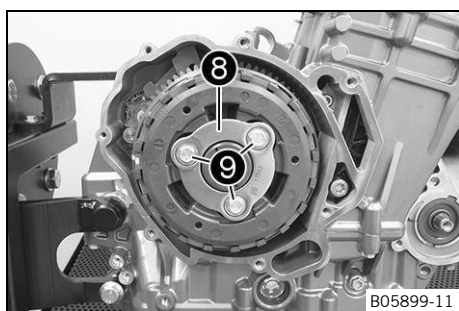
- Mount support ring ① and pretension ring ②.
✓ The pretension ring rests against the support ring on the inside and the outside faces away from the support ring.



- Thoroughly oil the friction plates.
- Mount a clutch facing disc **3** with a larger inside diameter.
- Alternately mount 6 intermediate clutch discs **4** and 5 of the same clutch facing discs **5**.
- Alternately mount 2 clutch facing discs **3** and an intermediate clutch disc **6** with a larger inside diameter.
- The outer clutch facing disc must be mounted offset by one mesh.



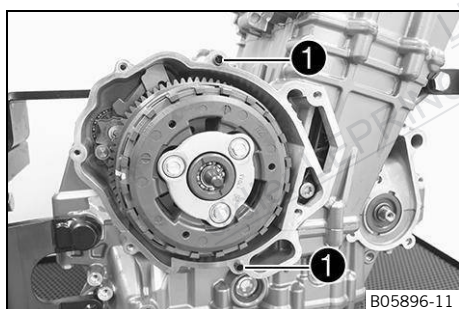
- Position clutch pressure plate **7**.
 - ✓ The gear teeth of the outer intermediate clutch disc engage in the clutch pressure cap.
 - ✓ The clutch pressure cap rests flush against the outer clutch facing disc.



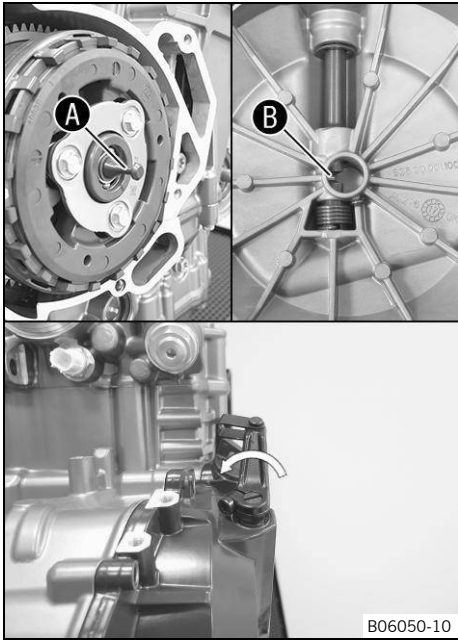
- Position clutch pressure cap stop **8** and the springs.
- Mount and tighten screws **9**.

Screw, clutch pressure plate	
M6	8 Nm (5.9 ft·lb _f)

19.5.18 Clutch cover, installing



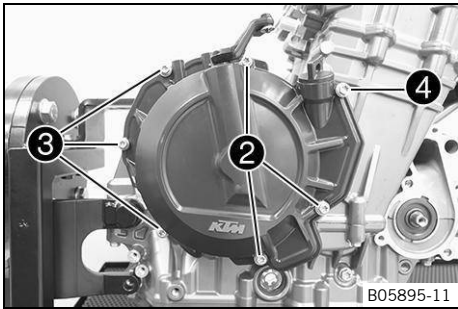
- Mount dowels **1**.



- Position the clutch cover with the clutch cover gasket.

Swivel clutch release lever counterclockwise.

- ✓ Clutch push rod **A** engages in groove **B**.



- Mount screws **2**, but do not tighten yet.

Screw, clutch cover	
M6×30	10 Nm (7.4 ft·lb _f)

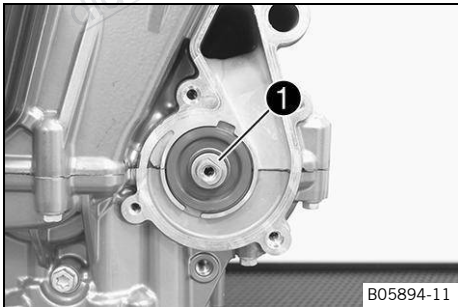
- Mount screws **3**, but do not tighten yet.

Screw, clutch cover	
M6×25	10 Nm (7.4 ft·lb _f)

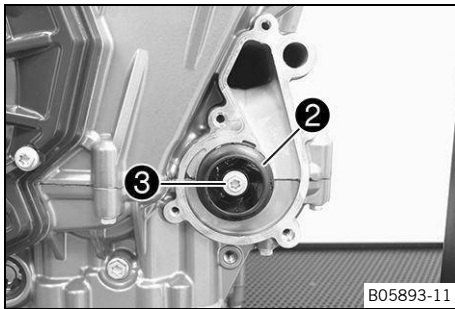
- Mount screw **4** and tighten all screws in a crisscross pattern.

Screw, clutch cover	
M6×35	10 Nm (7.4 ft·lb _f)

19.5.19 Mounting the water pump cover

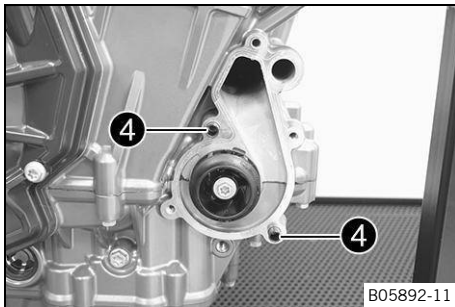


- Mount form washer **1**.

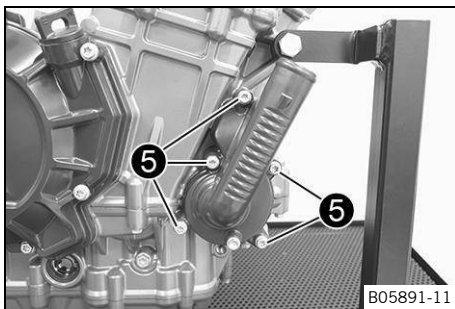


- Mount water pump impeller ②.
- Mount and tighten screw ③.

Screw, water pump impeller	
M6	10 Nm (7.4 ft·lb _r) Loctite® 243



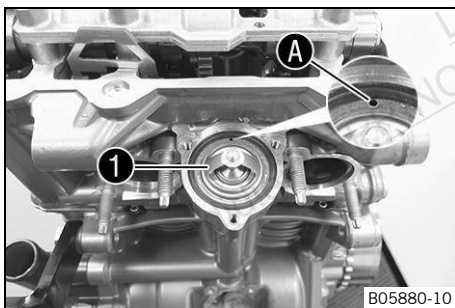
- Mount dowels ④.



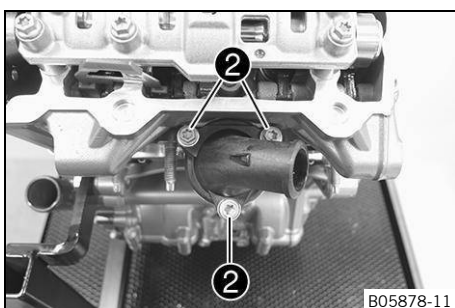
- Position the water pump cover with the gasket.
- Mount and tighten screws ⑤.

Screw, water pump cover	
M6	10 Nm (7.4 ft·lb _r) Loctite® 243

19.5.20 Installing the thermostat



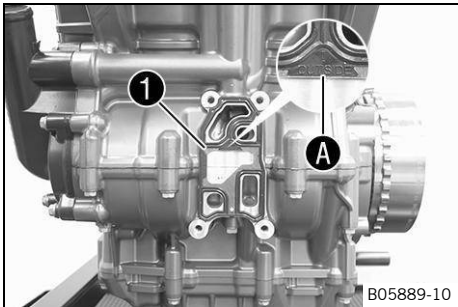
- Position thermostat ① with the gasket.
- ✓ Drill hole ① must face upward.



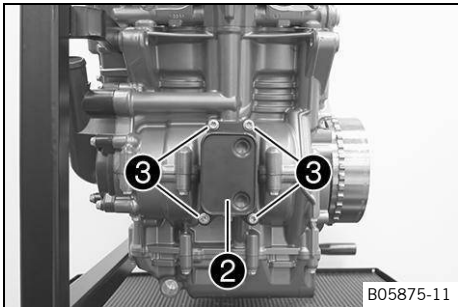
- Position the thermostat case.
- Mount and tighten screws ②.

Screw, thermostat case	
M5	6 Nm (4.4 ft·lb _r) Loctite® 243

19.5.21 Installing the oil/water heat exchanger



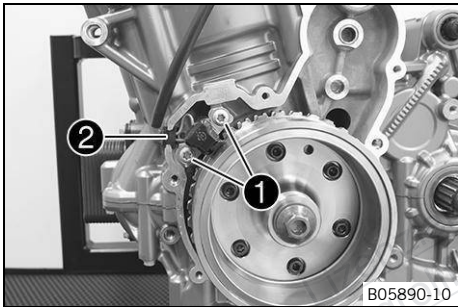
- Position gasket 1.
- ✓ The **OUTSIDE** marking A is legible.



- Position oil/water heat exchanger 2.
- Mount and tighten screws 3.

Screw, oil/water heat exchanger	
M6	10 Nm (7.4 ft·lb _f) Loctite® 243

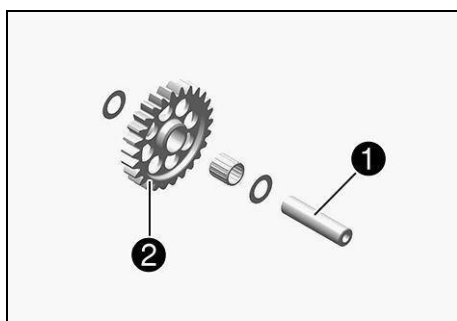
19.5.22 Crankshaft speed sensor, installing



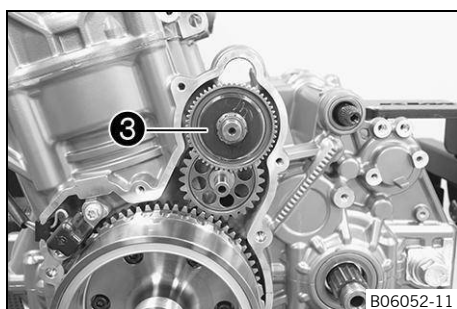
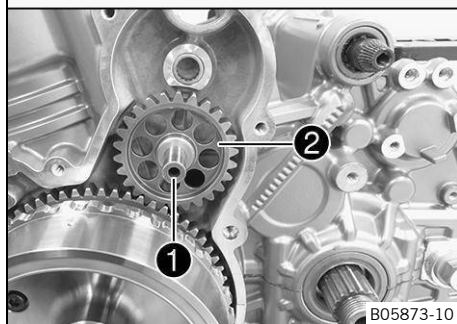
- Position the crankshaft speed sensor.
- Mount and tighten screws 1.
- Position the cable and position rubber grommet 2 in the engine case.

Screw, crankshaft position sensor	
M5	6 Nm (4.4 ft·lb _f) Loctite® 243

19.5.23 Torque limiter and starter intermediate gear, installing

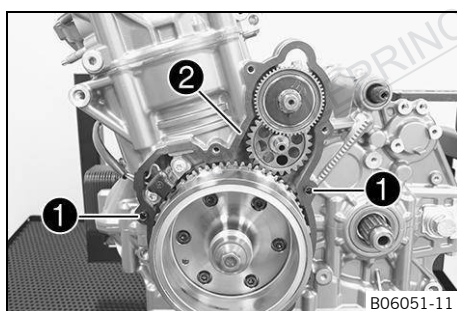


- Mount shaft ① and starter intermediate gear ② with the needle bearing and the washers.



- Mount torque limiter ③ with washer.

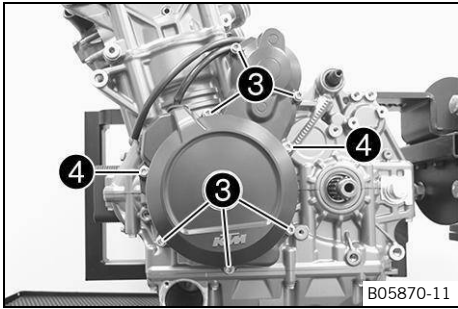
19.5.24 Installing the alternator cover



- Apply sealing compound lightly in the area of the rubber grommet.

Loctite® SI 5910 (p. 501)

- Mount dowels ① and put alternator cover gasket ② in place.

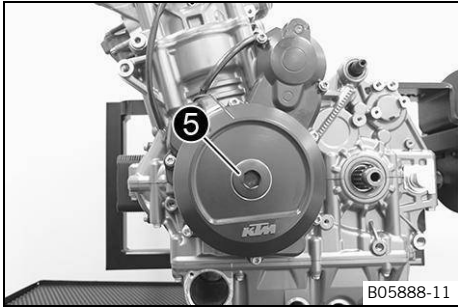


- Position the alternator cover.
- Mount and tighten screws 3.

Screw, ignition cover	
M6×30	10 Nm (7.4 ft·lb _r)

- Mount and tighten screws 4.

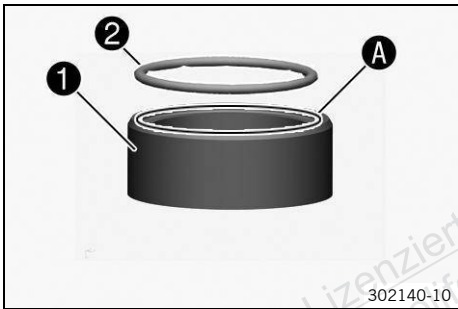
Screw, ignition cover	
M6×35	10 Nm (7.4 ft·lb _r)



- Mount and tighten screw plug 5 with O-ring.

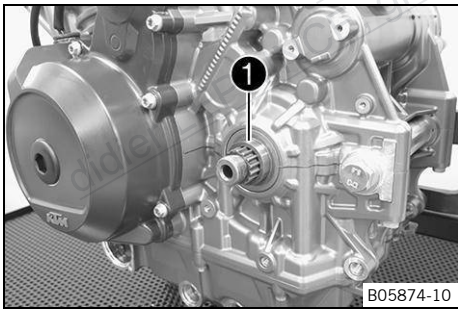
Screw plug, alternator cover	
M24×1.5	8 Nm (5.9 ft·lb _r)

19.5.25 Spacer, installing



- Before mounting, grease spacer 1 in area A and O-ring 2.
- Position the O-ring in the recess of the spacer.

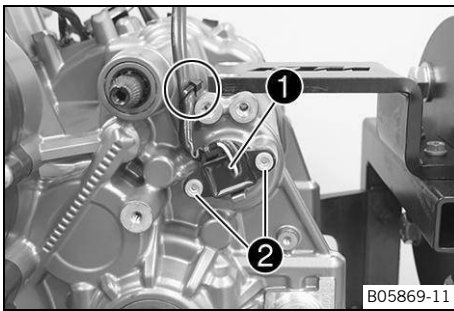
Long-life grease (p. 500)



- Grease the radial shaft seal ring.
- Push spacer 1 with the O-ring onto the countershaft with a twisting motion.
- ✓ The recess with the O-ring faces inward.
- ✓ The radial shaft seal ring rests against the spacer along its entire circumference.

Long-life grease (p. 500)

19.5.26 Installing the gear position sensor

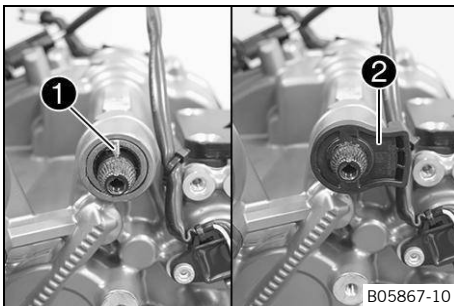


- Position gear position sensor ①.
- Mount and tighten screws ②.

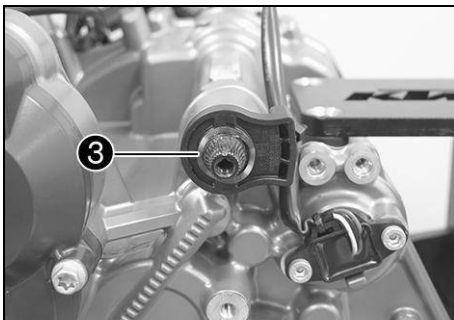
Screw, gear position sensor	
M5	5 Nm (3.7 ft·lb _r) Loctite® 243

- Secure the cable with a cable tie.

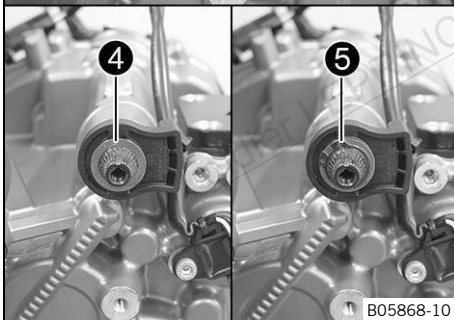
19.5.27 Shift shaft sensor, installing

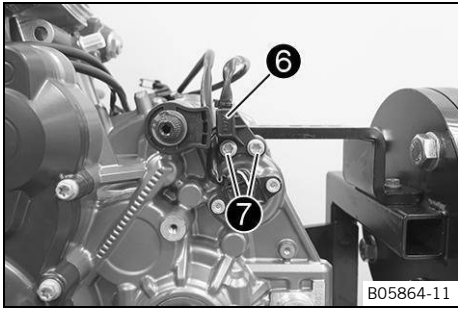


- Mount pin ①.
- Mount magnetic holder ②.



- Mount locating washer ③.
- Mount washer ④.
- Mount lock ring ⑤.

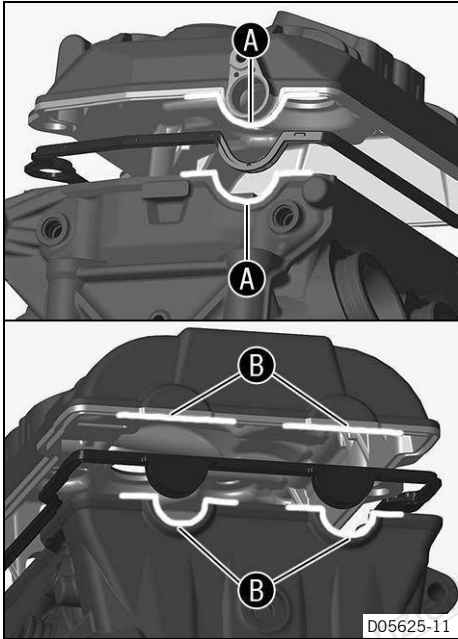




- Position the shift shaft sensor ⑥.
- Mount and tighten screws ⑦.

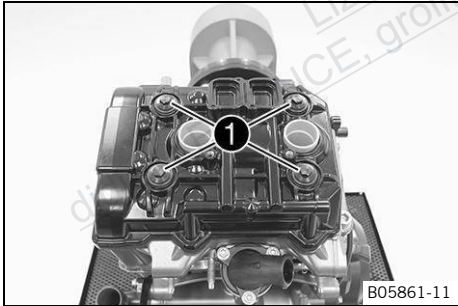
Screw, shift shaft sensor	
M5	6 Nm (4.4 ft·lb _f) Loctite® 243

19.5.28 Install the valve cover



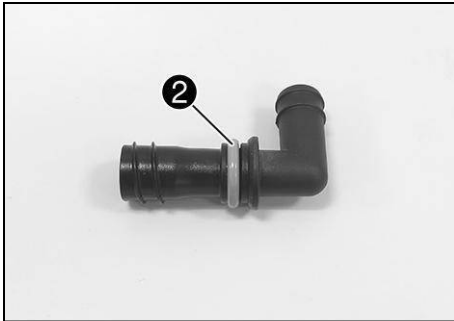
- Clean and degrease the valve cover seal.
- Apply a thin layer of sealing compound to areas A and B.

Loctite® SI 5910 (p. 501)



- Position the valve cover with the valve cover seal.
- Mount and tighten screws ① with the gaskets.

Screw, valve cover	
M6	10 Nm (7.4 ft·lb _f)



- Grease O-ring ②.

Long-life grease (p. 500)

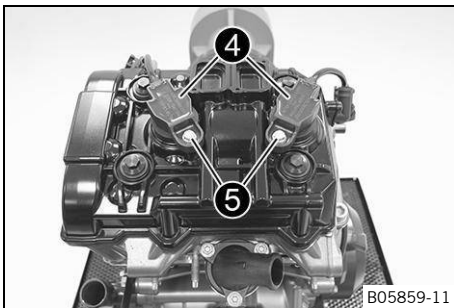
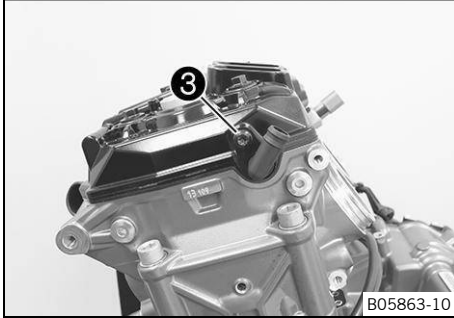
- Position the bleeder flange in the valve cover.
- Mount and tighten screw ③ with retaining bracket.

Screw, bleeder flange

EJOT Altracs® – M6×12

8 Nm
(5.9 ft·lb_f)

Loctite® 243



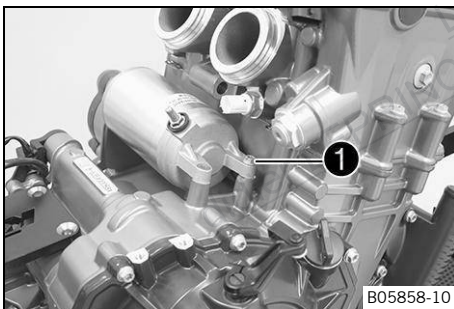
- Mount ignition coils ④.
- Mount and tighten screws ⑤.

Screw, ignition coil

M6

8 Nm
(5.9 ft·lb_f)

19.5.29 Starter motor, installing



- Grease the O-ring and mount the starter motor.

Long-life grease (p. 500)

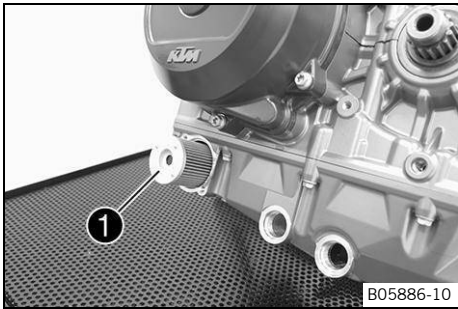
- Mount and tighten screw ①.

Screw, starter motor

M6

10 Nm
(7.4 ft·lb_f)

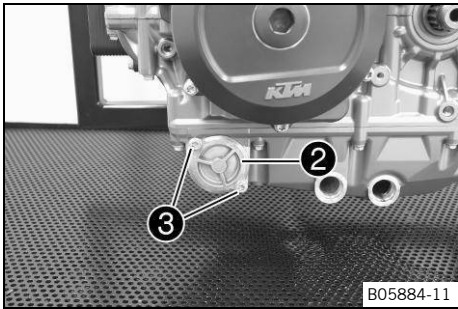
19.5.30 Oil filter, installing



- Tilt the motorcycle to one side and fill the oil filter housing to about 1/3 full with engine oil.

engine oil (SAE 10W/50) (p. 500)
fully synthetic

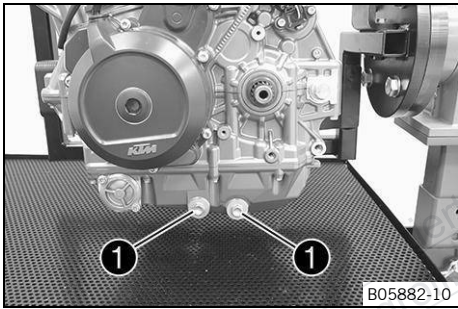
- Mount oil filter 1.



- Oil the O-ring of oil filter cover 2. Mount the oil filter cover.
- Mount and tighten screws 3.

Screw, oil filter cover	
M5	6 Nm (4.4 ft·lb _r)

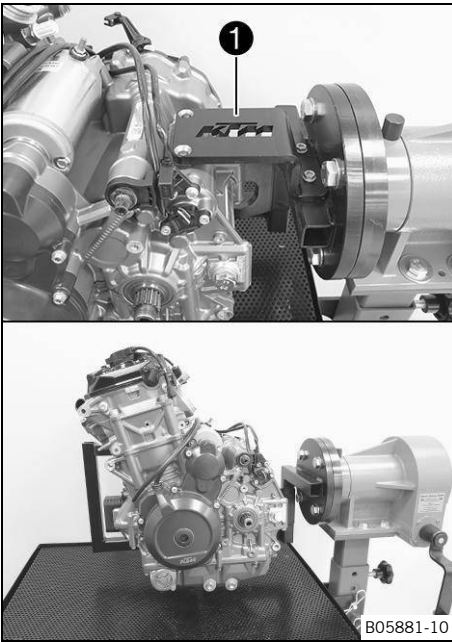
19.5.31 Installing the oil drain plug



- Mount the new O-rings.
- Mount and tighten oil drain plugs 1 with magnets, O-rings, and oil screens.

Plug, oil screen	
M20×1.5	20 Nm (14.8 ft·lb _r)

19.5.32 Removing the motor from the motor work stand

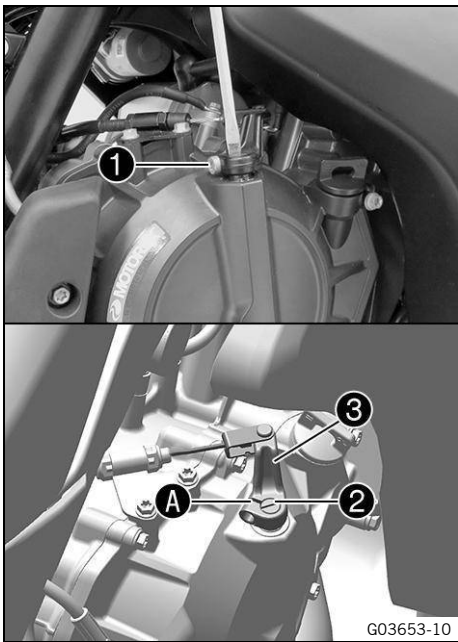


- Remove retaining bracket ❶.
- Remove the motor from the motor work stand.

Work with an assistant or a motorized hoist.

Lizenziert für | Licensed for:
didier LEPRINCE, grolifoualex@gmail.com, 075676/080232

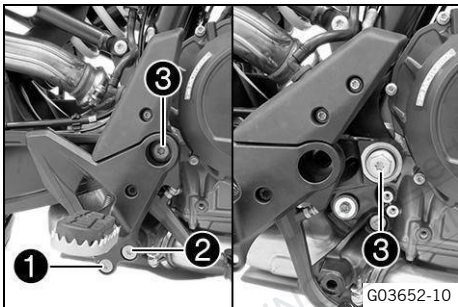
20.1 Adjusting the clutch release lever



- Remove screw ❶.
- Use a screwdriver to turn clutch release shaft ❷ counter-clockwise as far as it will go and hold.
- Position clutch release lever ❸.
 - ✓ Align clamping slot A 90° to the direction of travel.
- Mount and tighten screw ❶.

Screw, clutch release lever	
M6	10 Nm (7.4 ft·lb _f) Loctite® 243

20.2 Checking the clutch

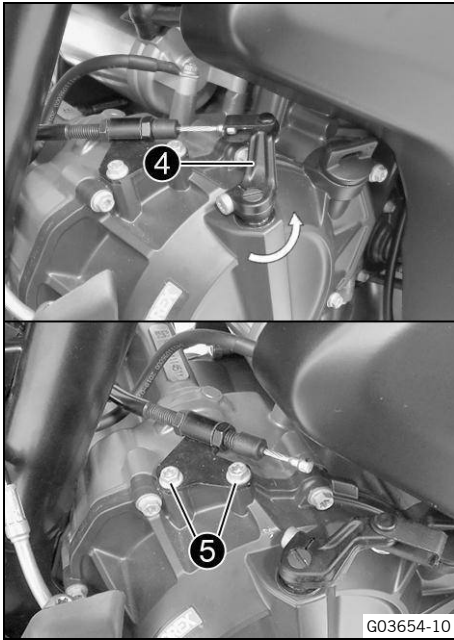


Main work

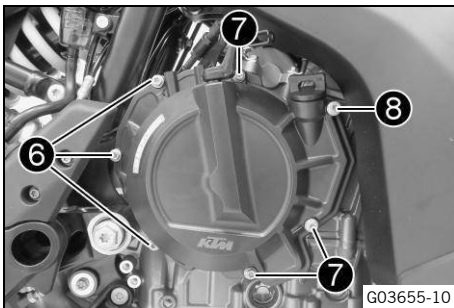
- Remove screw ❶ and bushing.
- Remove screw ❷.
- Remove screw ❸.
- Take off footrest bracket and hang to the side.

Protect the components against damage by covering them.

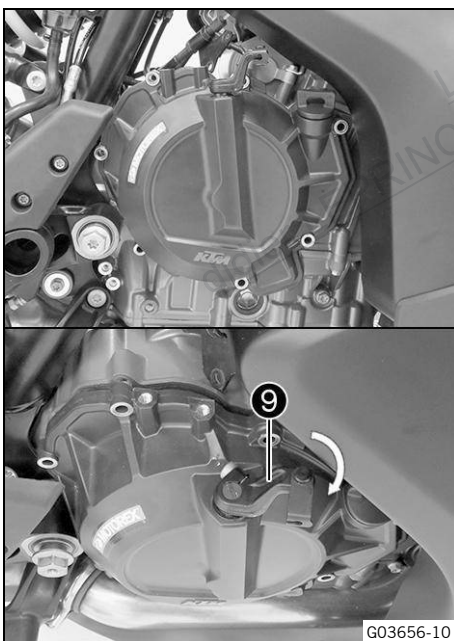
- Mount screw ❸, but do not tighten.



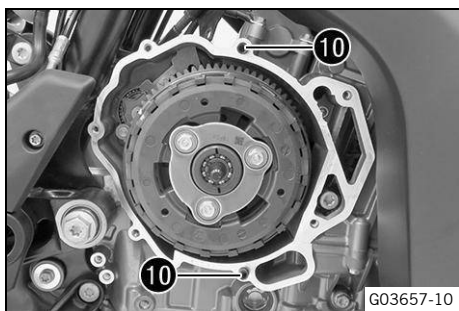
- Swivel clutch release lever **4** counterclockwise and detach the inner clutch cable.
- Remove screws **5**.
- Hang the inner clutch cable with bracket to the side.



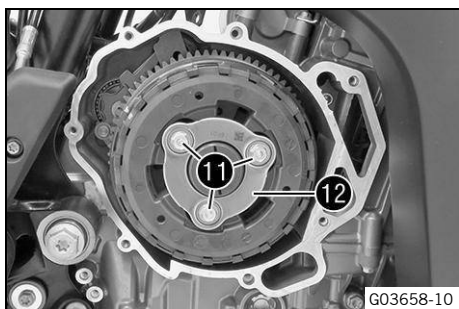
- Remove screws **6** and **7**.
- Remove screw **8**.



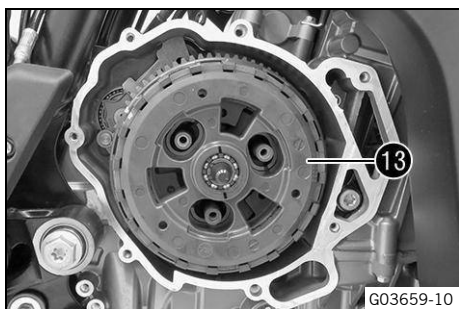
- Swivel the clutch release lever **9** clockwise and take off clutch cover with clutch cover gasket.



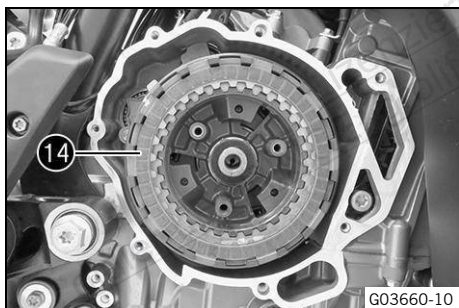
- Remove dowels 10.



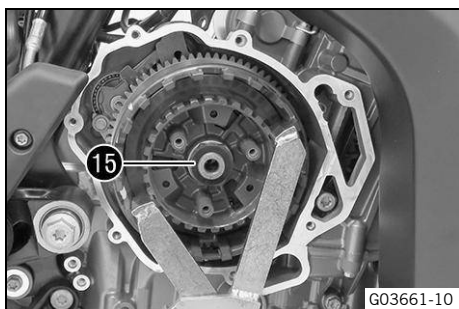
- Remove screws 11.
- Take off clutch pressure cap stop 12 and the springs.



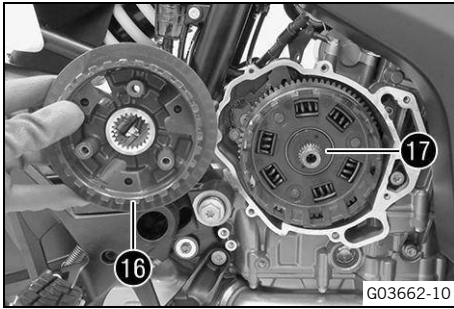
- Take off clutch pressure plate 13.



- Remove clutch discs 14, support ring, and pretension ring.



- Hold the inner clutch hub with the special tool.
Spanner wrench (51129003000)  (p. 486)
- Remove nut 15 with washer.

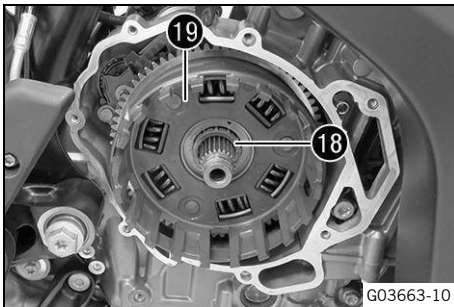


- Take off inner clutch hub **16** and washer **17**.



Tip

The washer usually sticks to the inner clutch hub.



- Remove needle bearing **18**.

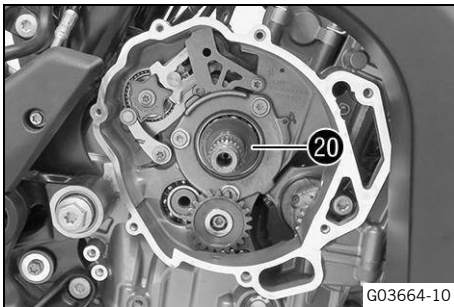
Do not use pliers, as otherwise the needle bearing will be damaged.



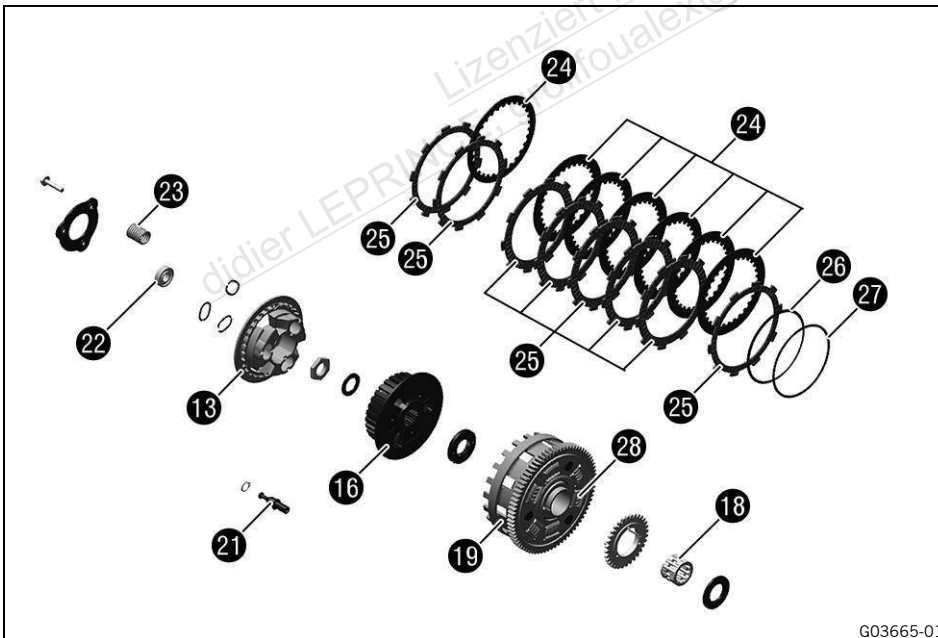
Tip

Use a magnetic rod to make disassembly easier.

- Take off outer clutch hub **19**.



- Remove washer **20**.



- Check clutch push rod **21** for damage and wear.

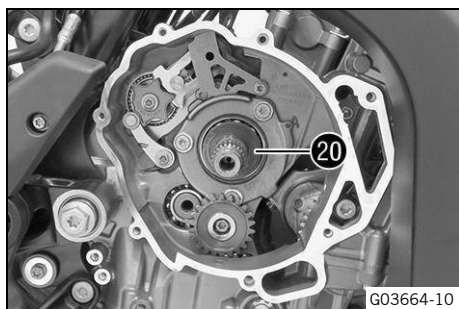
- » If there is damage or wear:
 - Change clutch push rod.
- Check axial bearing **22** for damage and wear.
 - » If there is damage or wear:
 - Change the axial bearing.
- Check the length of clutch springs **23**.

Clutch spring - length	≥ 43.0 mm (≥ 1.693 in)
------------------------	---------------------------

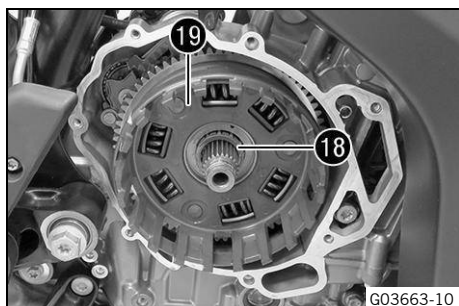
- » If the clutch spring length is shorter than specified:
 - Change all clutch springs.
- Check the contact surface of clutch pressure plate **13** for damage and wear.
 - » If there is damage or wear:
 - Change the clutch pressure plate.
- Check the thrust surfaces of the clutch facing discs in clutch basket **19** for damage and wear.
 - » If there is damage or wear:
 - Change the clutch disc pack and the clutch basket.
- Check needle bearing **18** for damage and wear.
 - » If there is damage or wear:
 - Change the needle bearing.
- Check intermediate clutch discs **24** for damage and wear.
 - » If the intermediate clutch plates are not level and are pitted:
 - Change the clutch disc pack.
- Check clutch facing discs **25** for discoloration and scoring.
 - » If there is discoloration or scoring:
 - Change the clutch disc pack.
- Check the thickness of the clutch disc pack.

Clutch plate pack – thickness	
New condition	35.60 mm ... 36.40 mm (1.4016 in ... 1.4331 in)
Wear limit	34.80 mm (1.3701 in)

- » If the clutch disc pack does not meet specifications:
 - Change the clutch disc pack.
- Check pretension ring **26** and support ring **27** for damage and wear.
 - » If there is damage or wear:
 - Change the pretension ring and support ring.
- Check inner clutch hub **16** for damage and wear.
 - » If there is damage or wear:
 - Change the inner clutch hub.
- Check springs **28** of the clutch basket for damage and wear.
 - » If there is damage, wear or play in the direction of rotation:
 - Change the clutch basket.



- Mount washer 20.



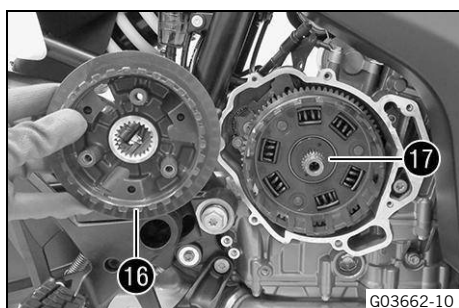
- Position clutch basket 19.



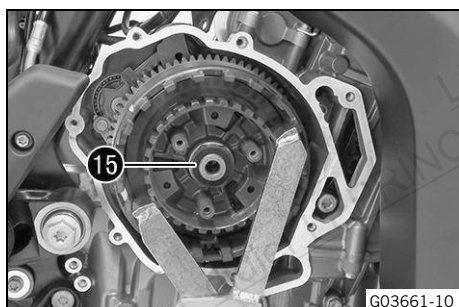
Tip

Turn the clutch basket and oil pump idler gear backwards and forwards slightly to help them mesh more easily.

- Mount needle bearing 18.

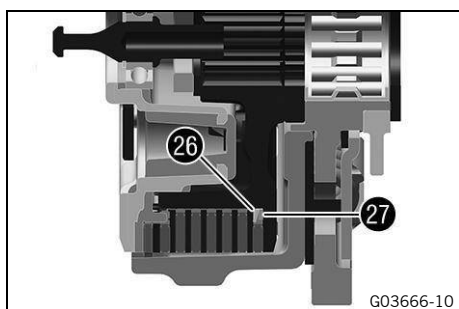


- Mount washer 17 and inner clutch hub 16.

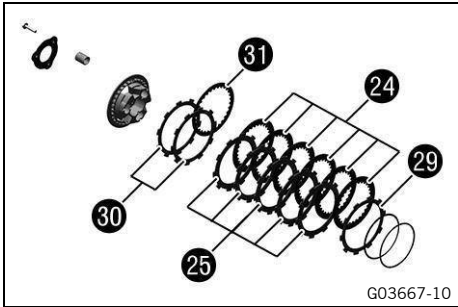


- Mount nut 15 with washer.
- Hold the inner clutch hub with the special tool and tighten the nut.

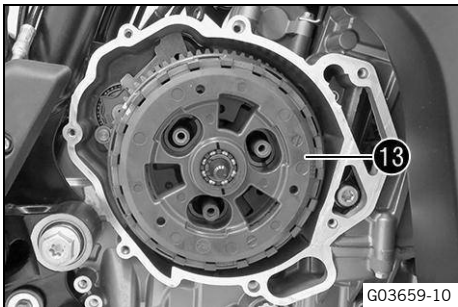
Nut, inner clutch hub	
M20×1.5	135 Nm (99.6 ft·lb _r)
Spanner wrench (51129003000) (p. 486)	



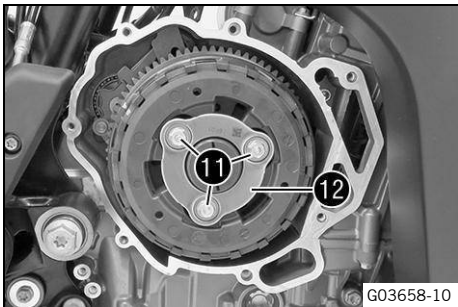
- Mount support ring 27 and pretension ring 26.
- ✓ The pretension ring rests against the support ring on the inside and the outside faces away from the support ring.



- Thoroughly oil the friction plates.
- Mount a clutch facing disc 29 with a larger inside diameter.
- Alternately mount 6 intermediate clutch discs 24 and 5 of the same clutch facing discs 25.
- Alternately mount 2 clutch facing discs 30 and an intermediate clutch disc 31 with a larger inside diameter.
- The outer clutch facing disc must be mounted offset by one mesh.

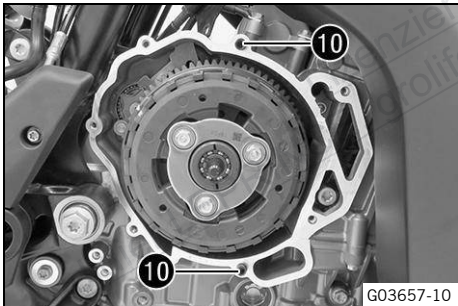


- Position clutch pressure plate 13.
 - ✓ The gear teeth of the outer intermediate clutch disc engage in the clutch pressure cap.
 - ✓ The clutch pressure cap rests flush against the outer clutch facing disc.

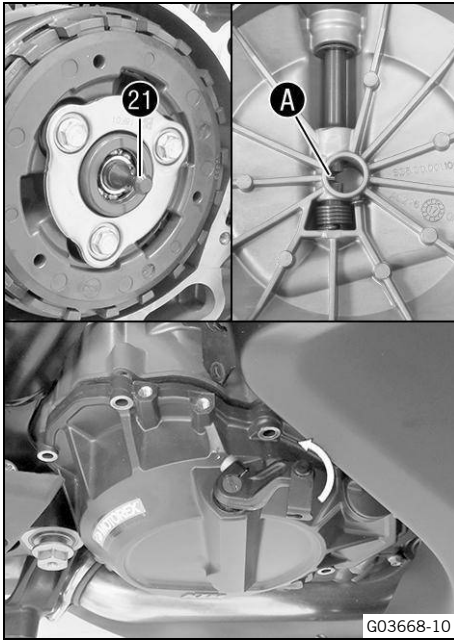


- Position clutch pressure cap stop 12 and the springs.
- Mount and tighten screws 11.

Screw, clutch pressure plate	
M6	8 Nm (5.9 ft·lb _r)



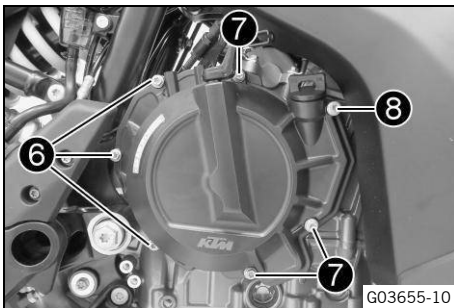
- Mount dowels 10.



- Position the clutch cover with the clutch cover gasket.

Swivel clutch release lever counterclockwise.

- ✓ Clutch push rod 21 engages in groove A.



- Mount screws 7, but do not tighten yet.

Screw, clutch cover

M6×30

10 Nm
(7.4 ft·lb_f)

- Mount screws 6, but do not tighten yet.

Screw, clutch cover

M6×25

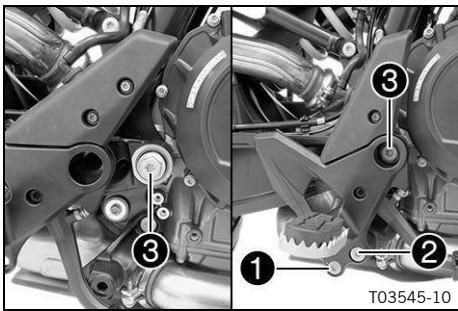
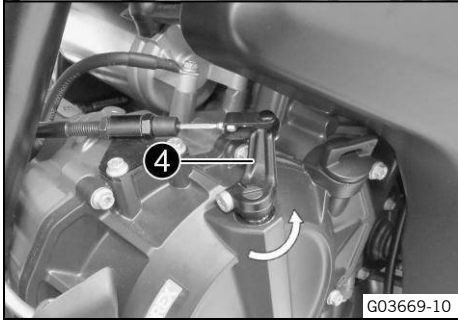
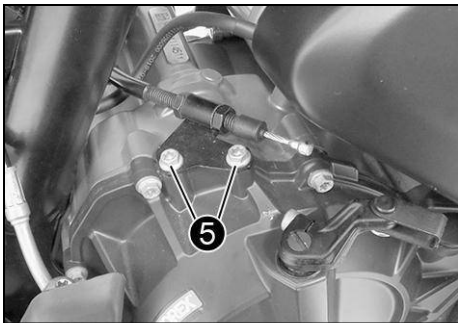
10 Nm
(7.4 ft·lb_f)

- Mount screw 8 and tighten all screws in a crisscross pattern.

Screw, clutch cover

M6×35

10 Nm
(7.4 ft·lb_f)



- Position the inner clutch cable with bracket.
 - Mount and tighten screws **5**.
- | Remaining screws for engine | |
|-----------------------------|------------------------------------|
| M6 | 10 Nm
(7.4 ft·lb _f) |
- Swivel clutch release lever **4** counterclockwise and hook in the inner clutch cable.

- Remove screw **3** from the swingarm pivot.
- Position the footrest support.
- Mount and tighten screw **3**.

Screw, swingarm pivot	
M12	100 Nm (73.8 ft·lb _f)

- Mount and tighten screw **2**.

Screw, front footrest bracket	
M10×30	45 Nm (33.2 ft·lb _f) Loctite® 243

- Mount screw **1** and bushing and tighten.

Screw, front footrest bracket	
M10×40	45 Nm (33.2 ft·lb _f) Loctite® 243

Reworking

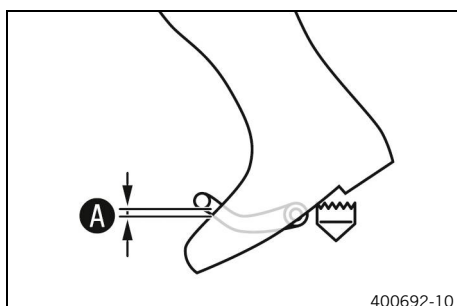
- Adjust the clutch release lever. 📖 (p. 358)
- Check the engine oil level. 📖 (p. 391)

21.1 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 malfunctions on the QUICKSHIFTER+ (optional).

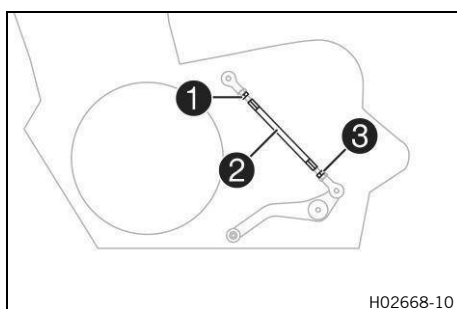


- Sit on the vehicle in the riding position and measure the distance **A** between the upper edge of your boot and the shift lever.

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. 367)

21.2 Adjusting the basic position of the gear shift lever



- Loosen nut **1** while holding stud **2**.
- Loosen nut **3** while holding stud **2**.



Note

Nut **3** has an LH thread.

- Turn stud **2** to adjust the shift lever.

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.

- Tighten nut **3** while holding stud **2**.

Nut, shift rod	
M6	6 Nm (4.4 ft·lb _f)

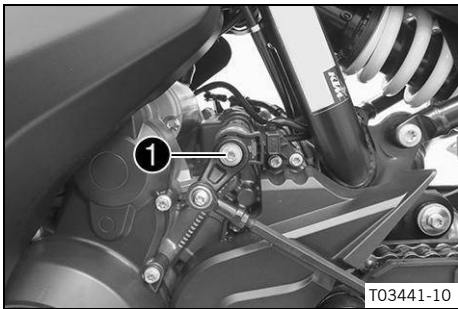
- Tighten nut **1** while holding stud **2**.

Nut, shift rod	
M6	6 Nm (4.4 ft·lb _f)

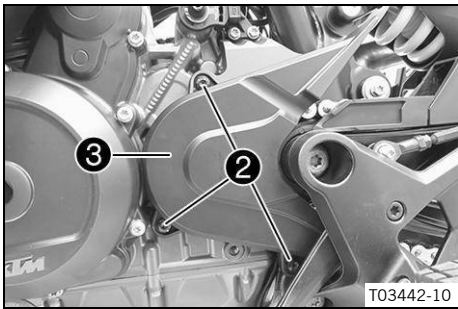
21.3 Changing the gear position sensor

Main work

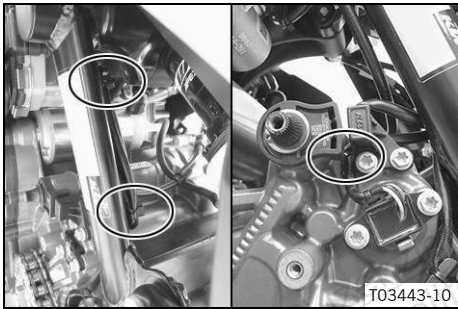
- Remove screw ❶ and the washers.
- Hang the bell crank with the shift linkage to the side.



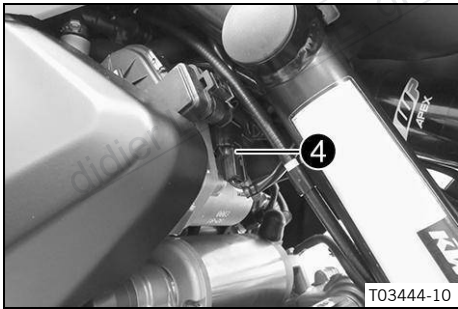
- Remove screws ❷.
- Take off engine sprocket cover ❸.



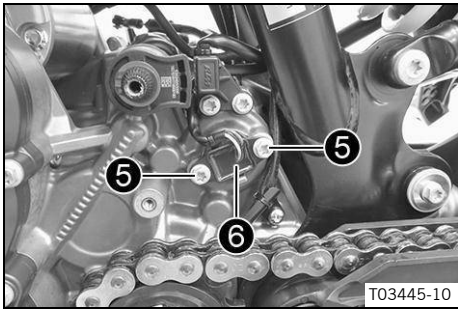
- Remove the cable ties.



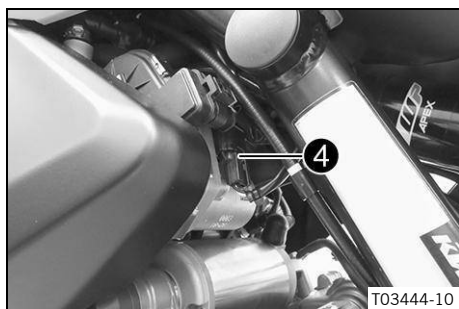
- Disconnect plug-in connector ❹.
- Expose the cable.



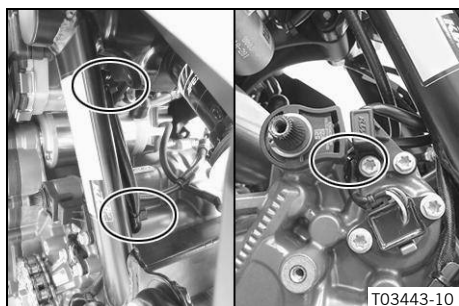
- Remove screws ❺.
- Take off gear position sensor ❻.
- Position a new gear position sensor.
- Mount and tighten screws ❺.



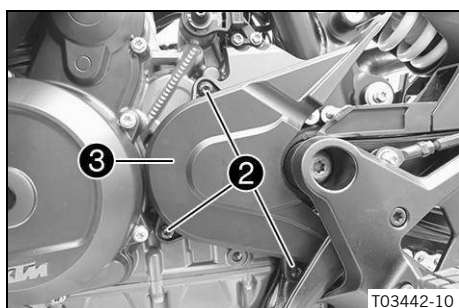
Screw, gear position sensor	
M5	5 Nm (3.7 ft·lb _f)
Loctite® 243	



- Route the cable without tension.
- Join plug-in connector ④.

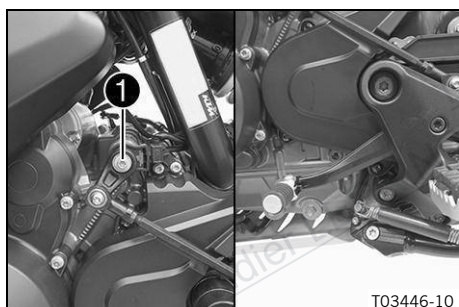


- Mount the cable ties.



- Position engine sprocket cover ③.
- Mount and tighten screws ②.

Screw, front sprocket cover	
M5	5 Nm (3.7 ft·lb _r) Loctite® 243



- Position the bell crank.

The gear shift lever must not come into contact with any other vehicle components during the shift procedure.

- Mount and tighten screw ① with washers.

Screw, shift lever	
M6	14 Nm (10.3 ft·lb _r) Loctite® 243

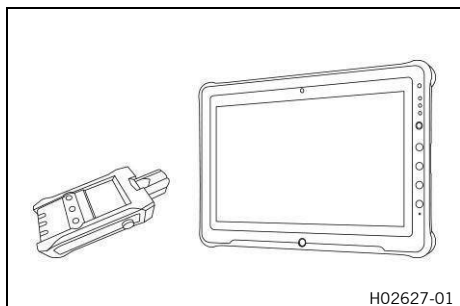
Reworking

- Program the gear position sensor. 📖 (p. 370)
- Program the shift shaft sensor. 📖 (p. 372)



21.4 Programming the gear position sensor

Condition: Diagnostic tool is connected and active



Main work

- Execute «**Engine control unit**» > «**Functions**» > «**Neutral gear calibration**».
- Switch the ignition off and on again.
 - ✓ Green neutral indicator **N** lights up.

Reworking

- Program the shift shaft sensor.  (p. 372)

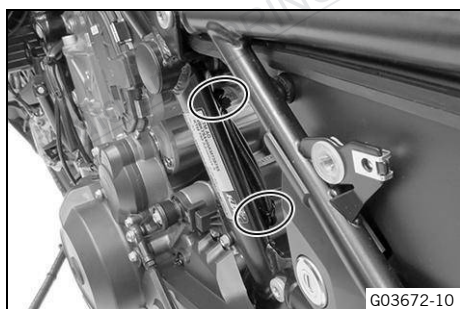
21.5 Changing the shift shaft sensor

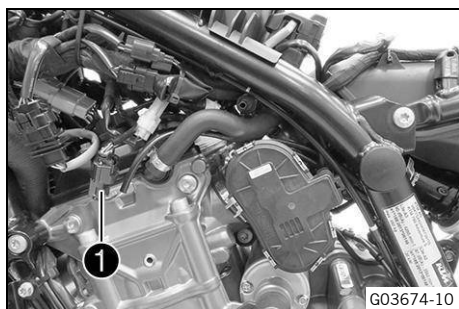
Preparatory work

- Remove the passenger seat.  (p. 99)
- Remove the front rider's seat.  (p. 100)
- Remove the left side cover.  (p. 118)
- Remove the battery cover.  (p. 120)
- Remove left fuel tank spoiler.  (p. 121)
- Remove the right side fairing.  (p. 119)
- Remove right fuel tank spoiler.  (p. 123)
- Remove the skid plate.  (p. 125)
- Remove the fuel tank.  (p. 100)

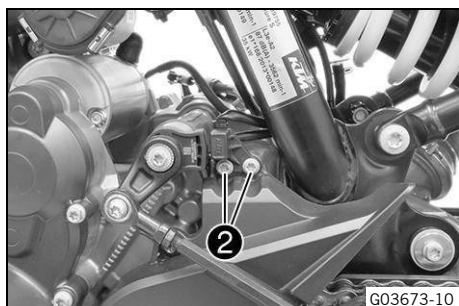
Main work

- Remove the cable ties.



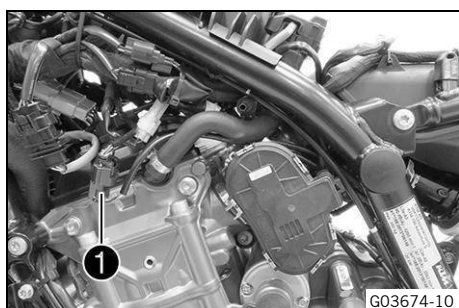


- Disconnect plug-in connector ❶.
- Expose the cable.

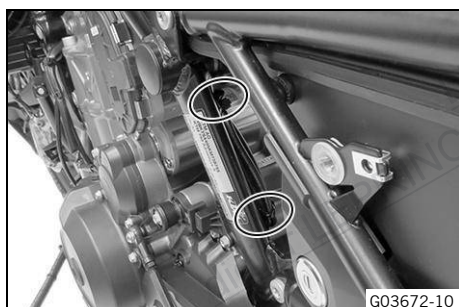


- Remove screws ❷.
- Take off the shift shaft sensor.
- Position the new shift shaft sensor.
- Mount and tighten the screws.

Screw, shift shaft sensor	
M5	6 Nm (4.4 ft·lb _f) Loctite® 243



- Route the cable without tension.
- Join plug-in connector ❶.



- Mount the cable ties.

Reworking

- Install the fuel tank. 📖 (p. 103)
- Install the skid plate. 📖 (p. 126)
- Install the right fuel tank spoiler. 📖 (p. 124)
- Install the right side cover. 📖 (p. 119)
- Install the left fuel tank spoiler. 📖 (p. 122)
- Install the battery cover. 📖 (p. 120)
- Install the left side fairing 📖 (p. 118)
- Mount the front rider's seat. 📖 (p. 100)

- Mount the passenger seat.  (p. 99)
- Program the shift shaft sensor.  (p. 372)

21.6 Programming the shift shaft sensor

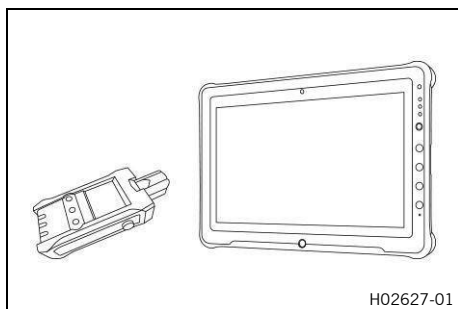
Condition: Diagnostic tool is connected and active

Preparatory work

- Program the gear position sensor.  (p. 370)

Main work

- Execute «Engine control unit» > «Functions» > «Quickshifter calibration».



22.1 Checking the coolant fill level and antifreeze



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

- Park the motorcycle on a horizontal surface.
- Remove the passenger seat. (p. 99)
- Remove the front rider's seat. (p. 100)
- Remove the right side fairing. (p. 119)
- Remove the battery cover. (p. 120)
- Remove right fuel tank spoiler. (p. 123)

Main work

- Remove radiator cap **1** and cover of the compensating tank **2**.
- 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.

The radiator must be filled completely.

The coolant level in the compensating tank must be between MIN and MAX .
--

» If the coolant level does not meet the specifications:

- Check the coolant level and the reason for the loss.

- Mount the radiator cap and the cover of the compensating tank.



Reworking

- Install the right fuel tank spoiler. 📖 (p. 124)
- Install the battery cover. 📖 (p. 120)
- Install the right side cover. 📖 (p. 119)
- Mount the front rider's seat. 📖 (p. 100)
- Mount the passenger seat. 📖 (p. 99)

22.2 Checking the coolant level in the compensating tank



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, Radiator is completely full



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

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

- » If there is no coolant in the compensating tank:
 - Check the transmission and cooling system for leaks.
- » If the coolant level in the reservoir is not correct, but the reservoir is not yet empty:
 - Correct the coolant level in the compensating tank. 📖 (p. 379)

22.3 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.

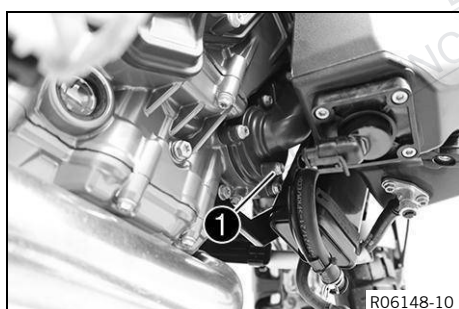
Condition: The engine is cold

Preparatory work

- Remove the skid plate. (p. 125)
- Remove the passenger seat. (p. 99)
- Remove the front rider's seat. (p. 100)
- Remove the right side fairing. (p. 119)
- Remove the battery cover. (p. 120)
- Remove right fuel tank spoiler. (p. 123)

Main work

- Stand the motorcycle upright.
- Position an appropriate container under the engine.
- Remove screw ❶ with the sealing ring.
- Remove the radiator cap.
- 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) Loctite® 243

- Mount the radiator cap.



22.4 Filling/bleeding the cooling system

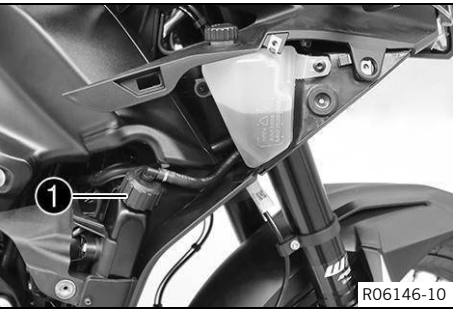


WARNING

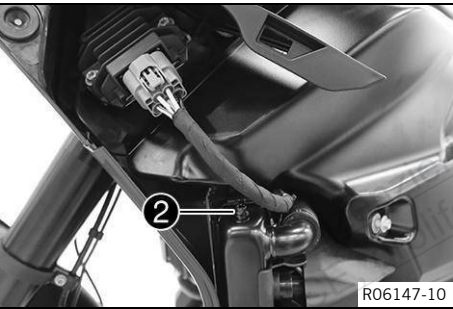
Health hazard Coolant is harmful to health.

- 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.

Condition: The fuel tank spoiler has been removed on the left and right

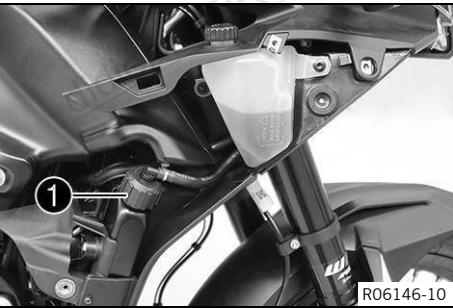


- Remove radiator cap **1**.



- Remove bleeder screw **2**.
- Tilt the vehicle slightly to the right.
- Pour in coolant until it emerges without bubbles at the vent hole, and then mount and tighten bleeder screw **2** immediately.

coolant	
Coolant  (p. 502)	1.60 l
Antifreeze protection to at least: -25 °C (-13.0 °F)	(0.423 liq. gal _{US})



- Completely fill the radiator with coolant.
- Mount radiator cap **1**.
- Check the coolant level in the compensating tank.  (p. 374)
- Rest the vehicle on the side stand.



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 run it until the 5th bar of the temperature indicator lights up.

- Stop the engine and allow it to cool down.
- After the engine has cooled down, check the coolant level in the radiator and in the compensating tank again and add more coolant if necessary.



22.5 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.

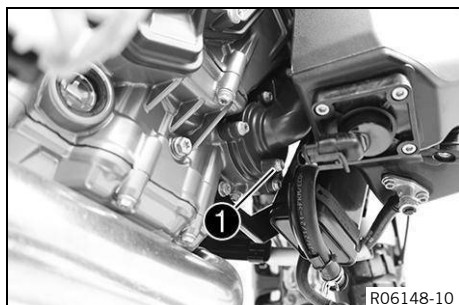
Condition: The engine is cold

Preparatory work

- Remove the skid plate. (p. 125)
- Remove the passenger seat. (p. 99)
- Remove the front rider's seat. (p. 100)
- Remove the left side cover. (p. 118)
- Remove the battery cover. (p. 120)
- Remove left fuel tank spoiler. (p. 121)
- Remove the right side fairing. (p. 119)
- Remove right fuel tank spoiler. (p. 123)

Main work

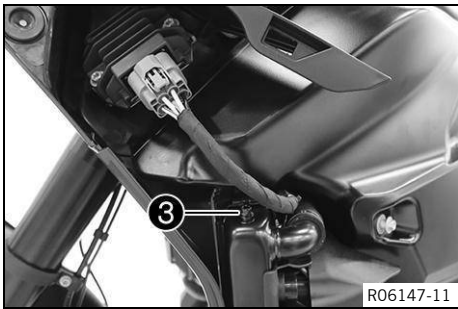
- Stand the motorcycle upright.
- Position an appropriate container under the engine.
- Remove screw **1** with the sealing ring.





- Remove radiator cap ②.
- Completely drain the coolant.
- Mount screw ① with the new sealing ring and tighten.

Screw plug, water pump drain hole	
EJOT ALtracs® Plus – 60×14	8 Nm (5.9 ft·lb _f) Loctite® 243



- Remove bleeder screw ③.
- Tilt the vehicle slightly to the right.
- Pour in coolant until it emerges without bubbles at the vent hole, and then mount and tighten bleeder screw ③ immediately.

coolant	
Coolant (p. 502) Antifreeze protection to at least: -25 °C (-13.0 °F)	1.60 l (0.423 liq. gal _{US})

- Completely fill the radiator with coolant.
- Mount radiator cap ②.
- Check the coolant level in the compensating tank. (p. 374)
- Rest the vehicle on the side stand.



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 run it until the 5th bar of the temperature indicator lights up.
- Stop the engine and allow it to cool down.
- After the engine has cooled down, check the coolant level in the radiator and in the compensating tank again and add more coolant if necessary.

Reworking

- Install the right fuel tank spoiler. (p. 124)
- Install the right side cover. (p. 119)
- Install the left fuel tank spoiler. (p. 122)
- Install the battery cover. (p. 120)
- Install the left side fairing (p. 118)
- Mount the front rider's seat. (p. 100)
- Mount the passenger seat. (p. 99)
- Install the skid plate. (p. 126)

22.6 Correcting the coolant level in the compensating tank



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.

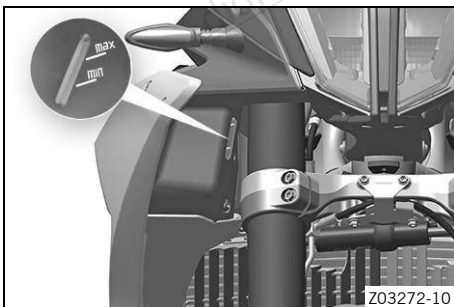
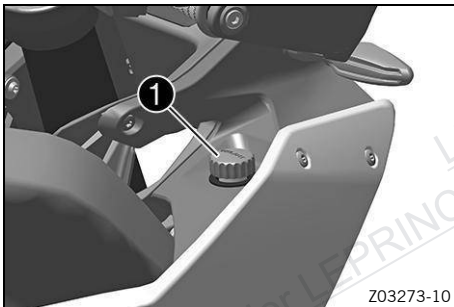
Condition: The engine is cold, Radiator is completely full

Preparatory work

- Check the coolant level in the compensating tank.
 (p. 374)

Main work

- Remove compensating tank cover **1**.



- Add coolant until the coolant reaches the specified level.

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

coolant

Coolant (p. 502)

Antifreeze protection to at least: -25 °C (-13.0 °F)

1.60 l

(0.423 liq. gal_{US})

- Mount cover of the compensating tank.

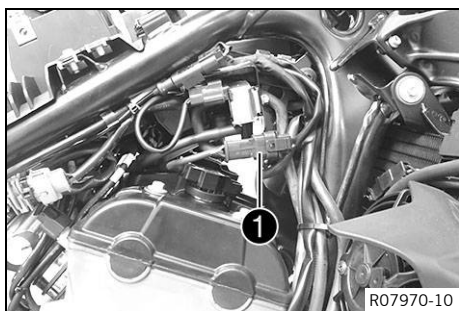
23.1 Checking the valve clearance

Preparatory work

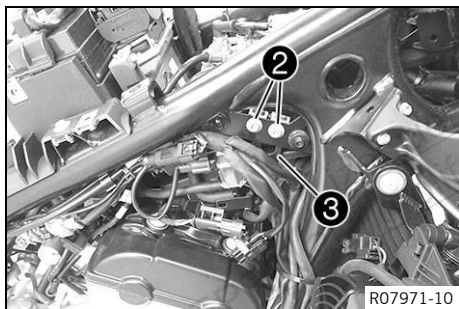
- Remove the passenger seat.  (p. 99)
- Remove the front rider's seat.  (p. 100)
- Remove the left side cover.  (p. 118)
- Remove the battery cover.  (p. 120)
- Remove left fuel tank spoiler.  (p. 121)
- Remove the right side fairing.  (p. 119)
- Remove right fuel tank spoiler.  (p. 123)
- Remove the skid plate.  (p. 125)
- Remove the fuel tank.  (p. 100)
- Raise the motorcycle with the rear lifting gear.  (p. 18)

Main work

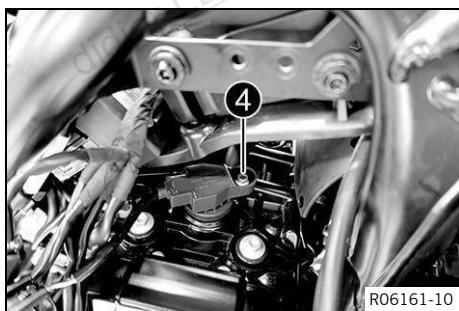
- Pull off and disconnect plug-in connector **1** from the holder.

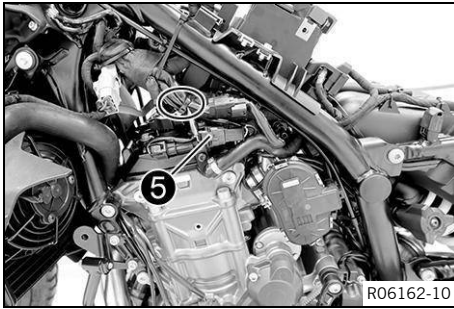


- Remove screws **2**.
- Hang holder **3** to the side.



- Remove screw **4**.
- Remove the ignition coil.

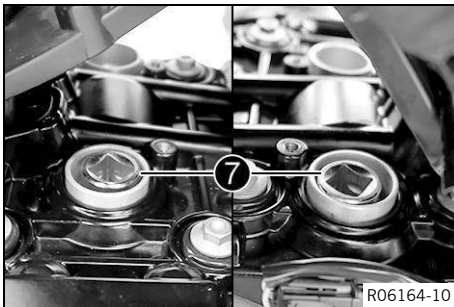




- Remove the cable ties.
- Disconnect plug-in connector **5**.

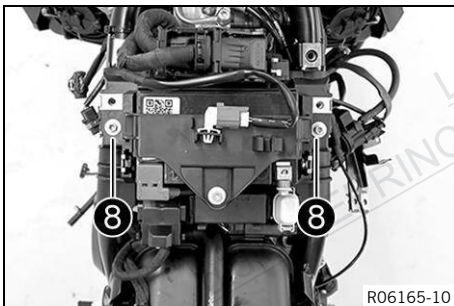


- Remove screw **6**.
- Remove the ignition coil.

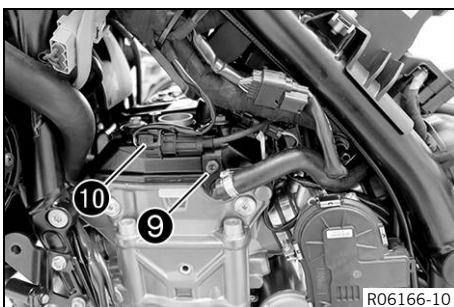


- Remove the spark plugs using special tool **7**.

Spark plug wrench with link (77229172000) (p. 493)

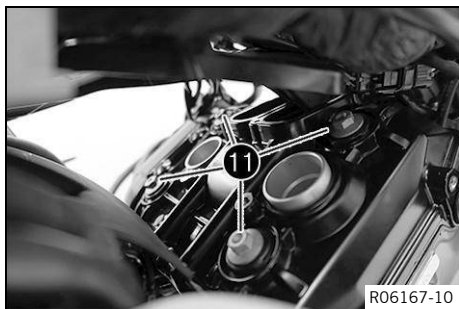


- Remove screws **8**.
- Press the battery compartment upwards.

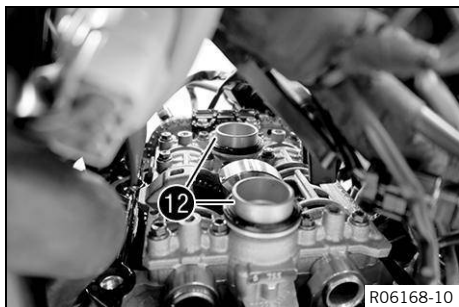


- Remove screw **9** with the retaining bracket.
- Disconnect plug-in connector **10**.
- Pull off bleeder flange and hang it to the side.

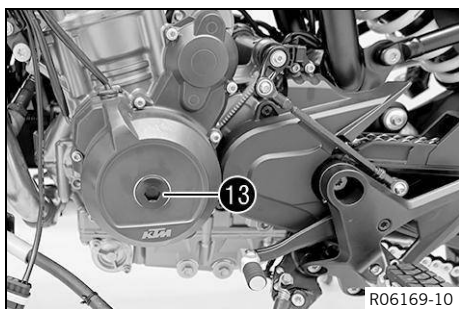
23 Cylinder head



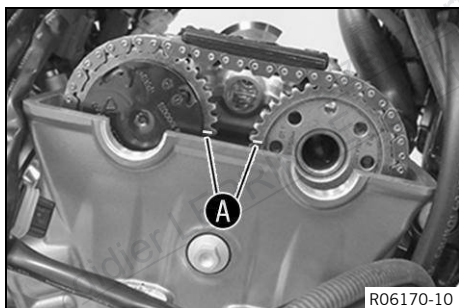
- Remove screws **11** with the gaskets.
- Take off the valve cover with the valve cover seal.



- Remove spark plug shaft inserts **12** with the gaskets.



- Remove screw plug **13** with O-ring.

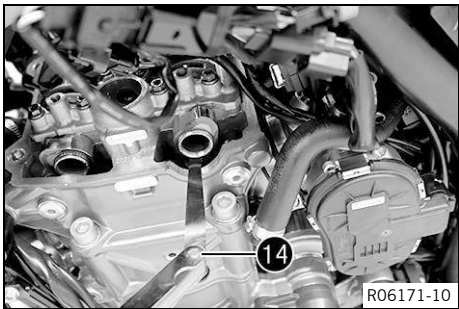


- Crank the engine several times.
 - Turn the crankshaft counterclockwise and set it to ignition top dead center of cylinder 1.
- ✓ The **OT1** markings **A** are aligned with the sealing surface.



Note

The **OT1** markings are line markings.

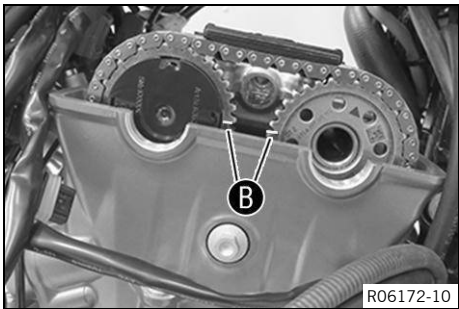


- Check the valve clearance at the exhaust valves and the intake valves between the camshaft and cam lever using special tool 14.

Valve clearance, cold	
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)	0.15 mm ... 0.20 mm (0.0059 in ... 0.0079 in)

Feeler gauge (79129941000) (p. 494)

- » If the valve clearance does not meet specifications:
 - Adjust the valve clearance. (p. 390)

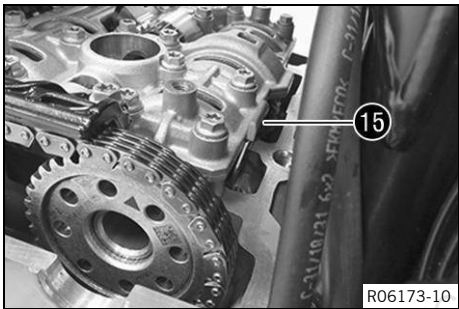


- Turn the crankshaft counterclockwise by the specified value and set it to ignition top dead center of cylinder 2.

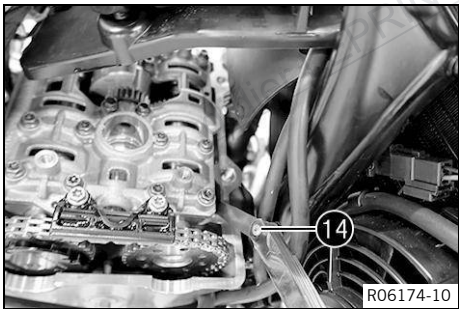
435° (7.59 rad)

✓ The 0T2 markings B are aligned with the sealing surface.

Note
The 0T2 markings are dot markings.



- Remove cam lever clip 15.



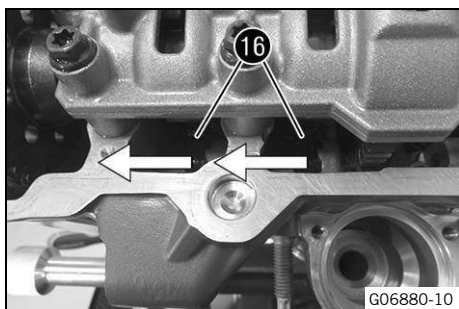
- Check the valve clearance at the exhaust valves and the intake valves between the camshaft and cam lever using special tool 14.

Valve clearance, cold	
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)	0.15 mm ... 0.20 mm (0.0059 in ... 0.0079 in)

Feeler gauge (79129941000) (p. 494)

- » If the valve clearance does not meet specifications:
 - Adjust the valve clearance. (p. 390)

23 Cylinder head

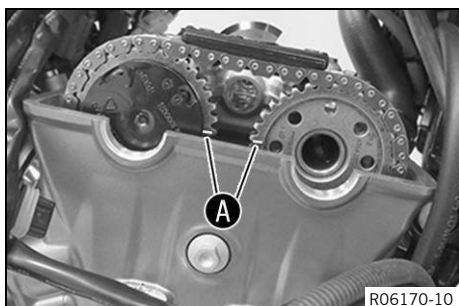


- Push exhaust cam lever **16** on cylinder 2 to the side.



Note

For purposes of illustration, a work step is shown with the engine removed.



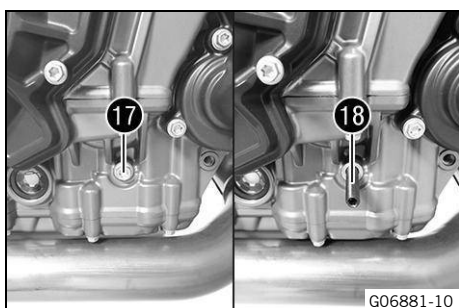
- Crank the engine several times.
- Turn the crankshaft counterclockwise and set it to ignition top dead center of cylinder 1.

✓ The **OT1** markings **A** are aligned with the sealing surface.



Note

The **OT1** markings are line markings.

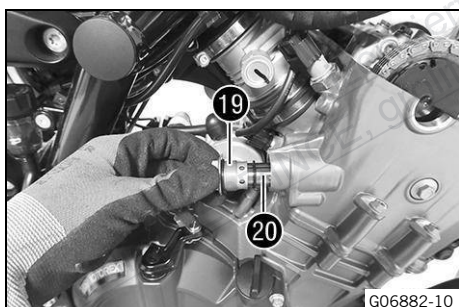


- Remove screw **17** with the washer.

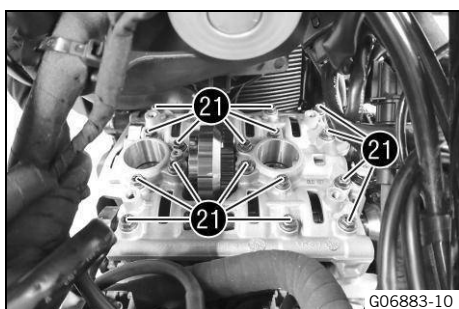
Look through the hole to check that the position hole of the crankshaft is visible.

- Mount special tool **18**.

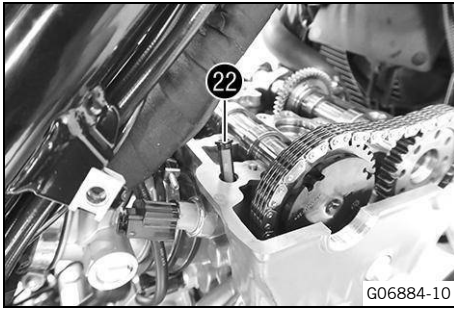
Locking screw (61229015000) (p. 489)



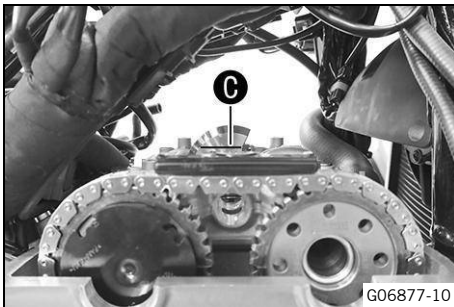
- Remove screw plug **19** with O-ring.
- Remove timing chain tensioner **20** with the O-ring.



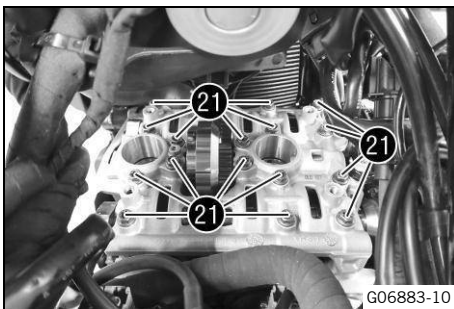
- Loosen and remove screws **21** from the outside to the inside.
- Take off camshaft bearing bridge with balancer shaft.



- Remove oil screen **22** and clean it.
- Check the oil screen for damage.
 - » If the oil screen is damaged:
 - Change the oil screen.

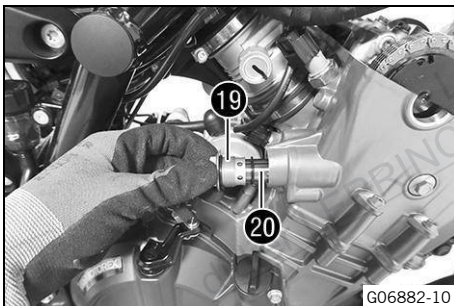


- Mount the camshaft bearing bridge with the balancer shaft.
 - ✓ The marking **C** of the balancer shaft is aligned parallel to the sealing surface.



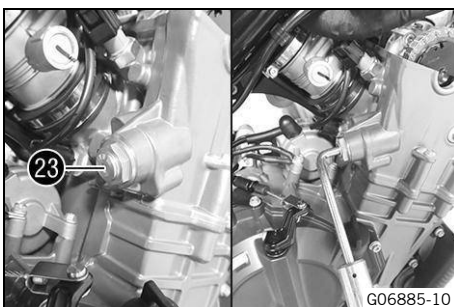
- Mount screws **21** and tighten them from the inside to the outside.

Screw, camshaft bearing bridge	
M6	10 Nm (7.4 ft·lb _r)



- Prepare the timing chain tensioner for installation.
 - 📖 (p. 304)
- After it has been positioned in the installation location, insert timing chain tensioner **20** with a new O-ring.
- Mount and tighten screw plug **19** with new O-ring.

Screw plug, timing chain tensioner	
M24×1.5	25 Nm (18.4 ft·lb _r)



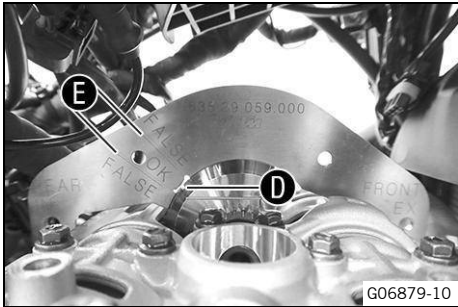
- Remove screw **23** with the O-ring and use a special tool to push the timing chain tensioner toward the timing chain.

Release device for timing chain tensioner (61229021000)	
📖 (p. 489)	

- ✓ The timing chain tensioner unlocks.

- Mount and tighten screw **23** with new O-ring.

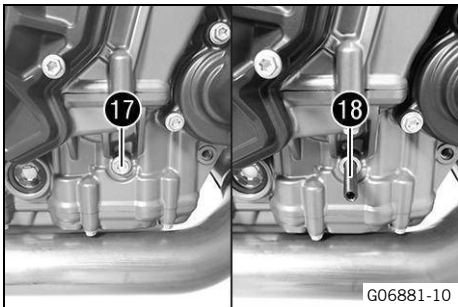
Screw, release for timing chain tensioner	
M10×1	8 Nm (5.9 ft·lb _r)



- Check the position of the balancer shaft with the special tool.

Setting gauge (63529059000) (p. 491)

- ✓ Marking D of the balancer shaft is located in area E of the adjusting gage.

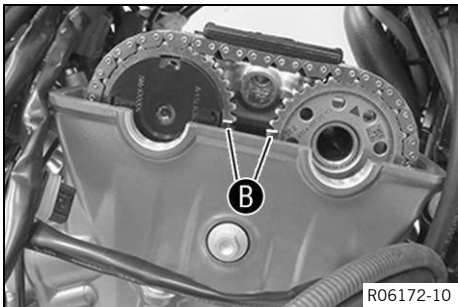


- Remove special tool 18.

Locking screw (61229015000) (p. 489)

- Mount and tighten screw 17 with the washer.

Screw plug, locking screw	
M8	15 Nm (11.1 ft·lb _f)

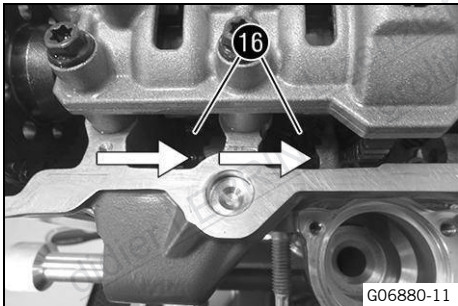


- Turn the crankshaft counterclockwise by the specified value and set it to ignition top dead center of cylinder 2.

435°
(7.59 rad)

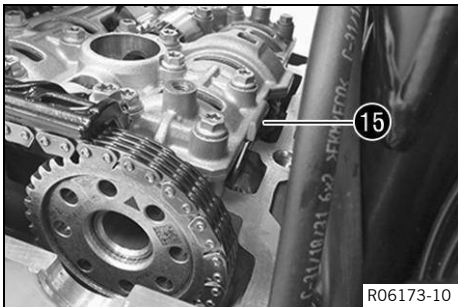
- ✓ The 0T2 markings B are aligned with the sealing surface.

Note
The 0T2 markings are dot markings.



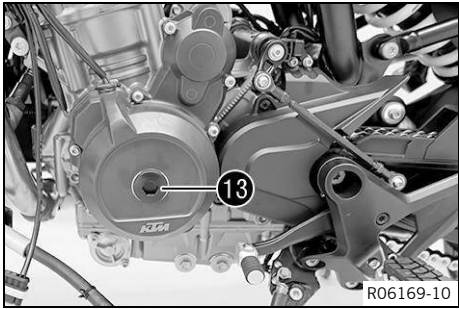
- Push exhaust cam lever 16 on cylinder 2 to the side.

Note
For purposes of illustration, a work step is shown with the engine removed.



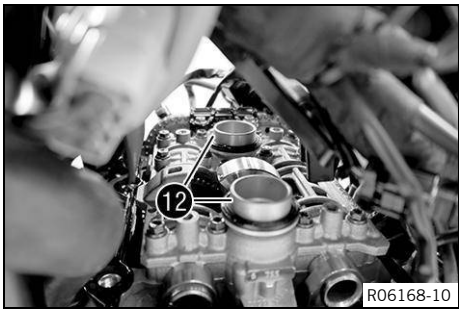
- Mount cam lever clip 15.

Check for correct positioning of the exhaust cam lever.

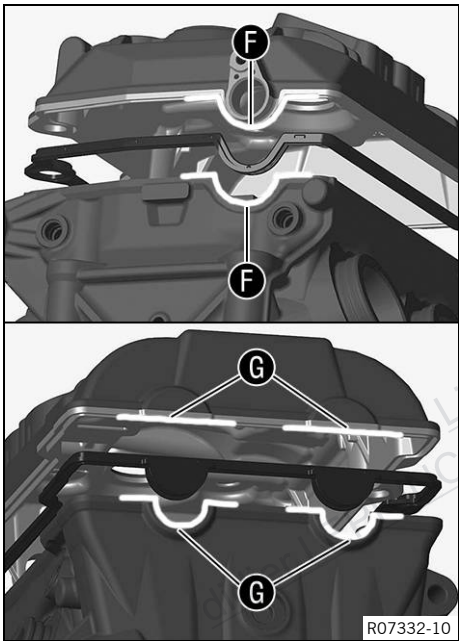


- Mount and tighten screw plug 13 with O-ring.

Screw plug, alternator cover	
M24×1.5	8 Nm (5.9 ft·lb _r)

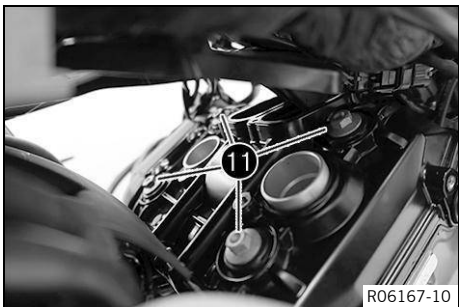


- Grease the O-rings and mount spark plug shaft inserts 12 with the gaskets.



- Clean and degrease the sealing surfaces.
- Apply a thin layer of sealing compound to areas F and G.

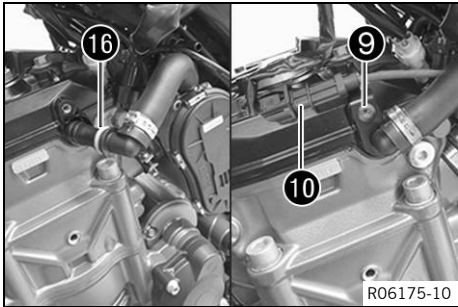
Loctite® SI 5910 (p. 501)



- Position the valve cover with the valve cover seal.
- Mount and tighten screws 11 with the gaskets.

Screw, valve cover	
M6	10 Nm (7.4 ft·lb _r)

23 Cylinder head



- Grease O-ring 16.

Long-life grease (p. 500)

- Position the bleeder flange in the valve cover.
- Mount and tighten screw 9 with retaining bracket.

Screw, bleeder flange

EJOT ALtracs® – M6×12

8 Nm
(5.9 ft·lb_r)

Loctite® 243

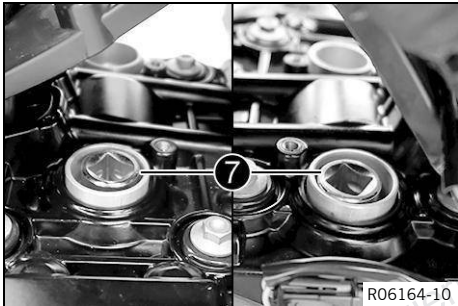
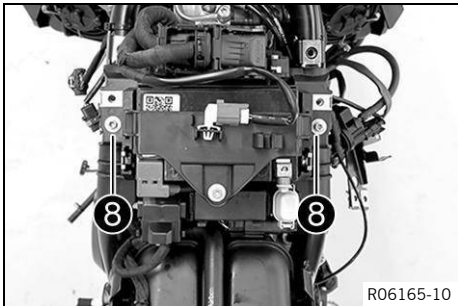
- Join plug-in connector 10.

- Position the battery compartment.
- Mount and tighten screws 8.

Remaining screws on chassis

M6

10 Nm
(7.4 ft·lb_r)



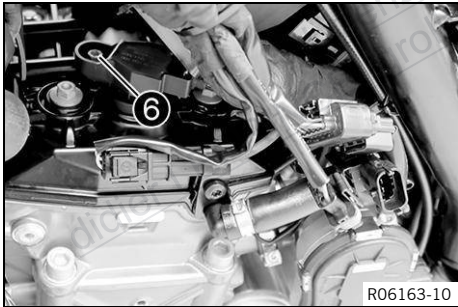
- Mount and tighten the spark plugs using special tool 7.

Spark plug

M10

11 Nm
(8.1 ft·lb_r)

Spark plug wrench with link (77229172000) (p. 493)

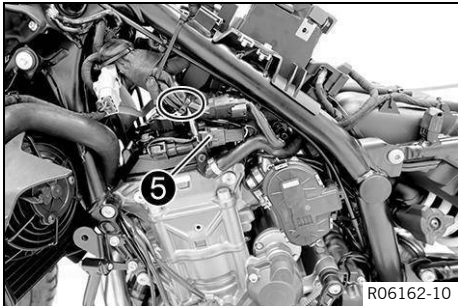


- Mount the ignition coil.
- Mount and tighten screw 6.

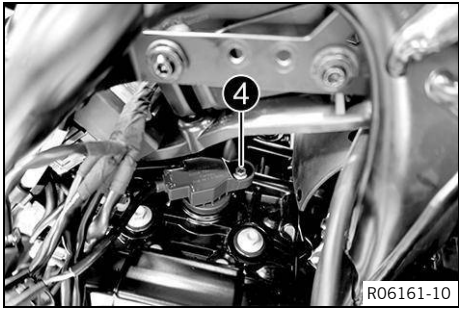
Screw, ignition coil

M6

8 Nm
(5.9 ft·lb_r)

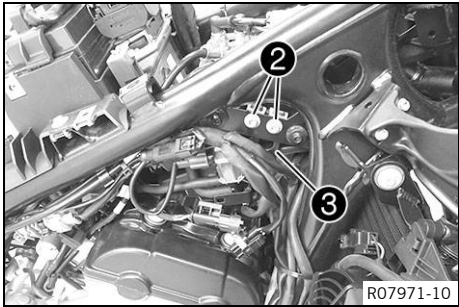


- Join plug-in connector 5.
- Route the cable without tension and secure with the cable ties.



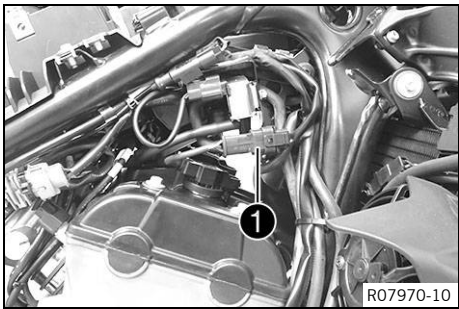
- Mount the ignition coil.
- Mount and tighten screw 4.

Screw, ignition coil	
M6	8 Nm (5.9 ft·lb _r)



- Position holder 3.
- Mount and tighten screws 2.

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



- Join plug-in connector 1 and position it on the holder.
- Route the cable without tension and secure with the cable ties.

Reworking

- Remove the rear of the motorcycle from the lifting gear.  (p. 18)
- Install the fuel tank.  (p. 103)
- Install the skid plate.  (p. 126)
- Install the right fuel tank spoiler.  (p. 124)
- Install the right side cover.  (p. 119)
- Install the left fuel tank spoiler.  (p. 122)
- Install the battery cover.  (p. 120)
- Install the left side fairing  (p. 118)
- Mount the front rider's seat.  (p. 100)
- Mount the passenger seat.  (p. 99)



23.2 Adjusting the valve clearance and cleaning the oil screen



Note

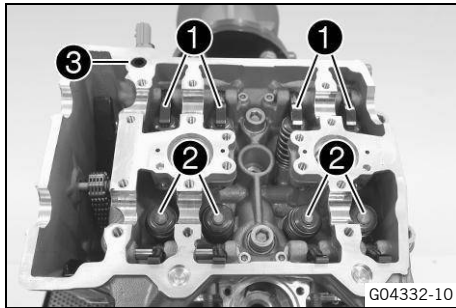
For purposes of illustration, the following steps are shown with the engine removed. Removal is not necessary.

Preparatory work

- Remove the camshafts. (p. 275)

Main work

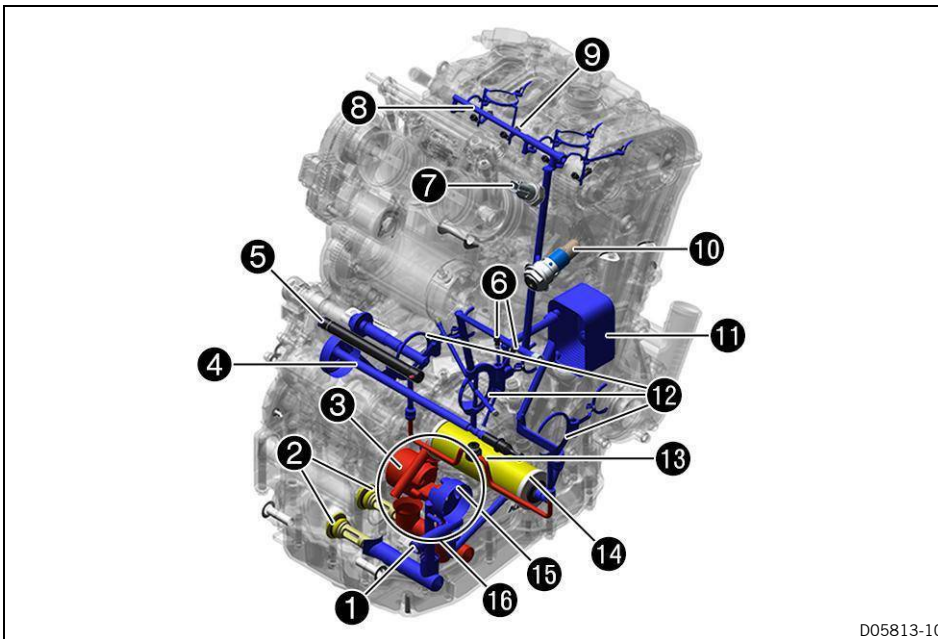
- Swing up cam lever ❶.
- Remove shims ❷ and set them down according to the installation position.
- Correct the shims based on the results of the valve clearance check.
- Insert suitable shims.
- Clean oil screen ❸.



Reworking

- Install the camshafts. (p. 339)

24.1 Oil circuit



- | | |
|----------------------------------|--|
| ① Oil pressure control valve | ⑨ Oil nozzles for cam follower lubrication |
| ② Oil screens | ⑩ Timing chain tensioner |
| ③ Suction pump | ⑪ Oil/water heat exchanger |
| ④ Clutch lubrication | ⑫ Conrod bearing lubrication |
| ⑤ Oil spray tube | ⑬ Oil line |
| ⑥ Oil nozzles for piston cooling | ⑭ Oil filter |
| ⑦ Oil pressure sensor | ⑮ Pressure pump |
| ⑧ Cam lever shaft | ⑯ Oil pump unit |

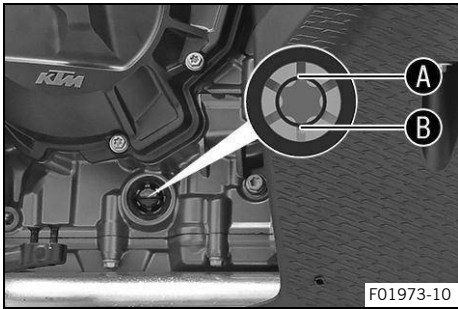
24.2 Checking the engine oil level

Note
Oil consumption depends on the riding style and the operating conditions.

Condition: The engine is at operating temperature

Preparatory work

- Stand the motorcycle upright on a level surface.



Main work

- Check the engine oil level.

After switching off the engine, wait one minute before checking the level.

The engine oil must be between marking **A** and marking **B** of the oil level viewer.

- » If the engine oil level is below the marking **B**:
 - Add engine oil. (p. 396)
- » If the engine oil level is above the marking **A**:
 - Correct engine oil level.

24.3 Checking the oil pressure



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.

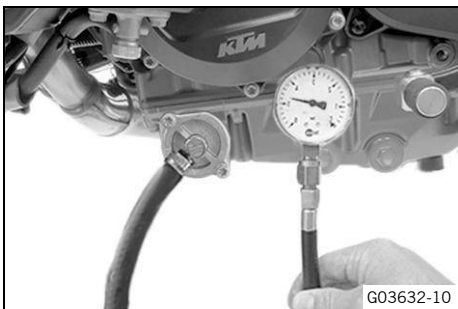
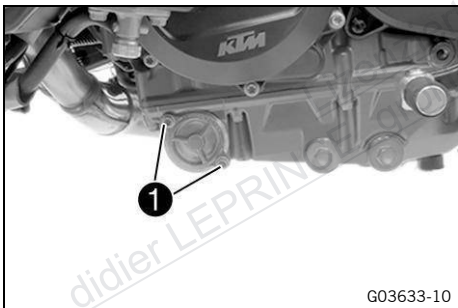
Preparatory work

- Remove the skid plate. (p. 125)

Main work

- Position an appropriate container under the engine.
- Remove screws **1**.
- Take off the oil filter cover with the O-ring.
- Remove the oil filter.

Lock ring plier (51012011000) (p. 485)



- Position the special tool with the O-ring.

Oil pressure adapter (75029094000) (p. 493)

- Mount and tighten the screws.

Screw, oil filter cover

M5

6 Nm
(4.4 ft·lb_f)

- Connect the pressure testing tool to the special tool without the t-junction.

Pressure testing tool (61029094000) (p. 488)

- Check the engine oil level. (p. 391)



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 allow it to warm up.
- Check the oil pressure.

Oil pressure	
Coolant temperature: $\geq 70\text{ }^{\circ}\text{C}$ ($\geq 158.0\text{ }^{\circ}\text{F}$), Engine speed: idle speed	$\geq 1.4\text{ bar}$ ($\geq 20.3\text{ psi}$)
Coolant temperature: $\geq 70\text{ }^{\circ}\text{C}$ ($\geq 158.0\text{ }^{\circ}\text{F}$), Engine speed: 6,000 rpm (100.00 Hz)	$\geq 2.4\text{ bar}$ ($\geq 34.8\text{ psi}$)

- » If the specifications have not been met:
 - Check the oil pumps for wear. Check that all oil holes are clear.
- Switch off the engine.



WARNING

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

- Wear suitable protective clothing and safety gloves.
- In the event of scalding, rinse the area affected immediately with lukewarm water.

- Remove the special tools.
- Grease the O-ring of the oil filter cover.
- Mount the oil filter cover.
- Mount and tighten the screws.

Screw, oil filter cover	
M5	6 Nm (4.4 ft·lb _r)

Reworking

- Check the engine oil level. (p. 391)
- Install the skid plate. (p. 126)



24.4 Changing the engine oil and oil filter, cleaning the oil screens



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.



Note

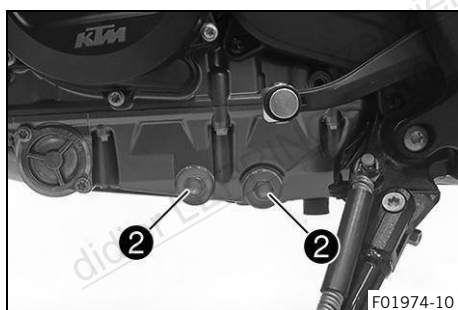
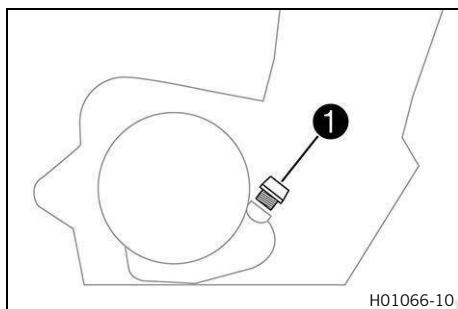
Drain the engine oil while the engine is at operating temperature.

Preparatory work

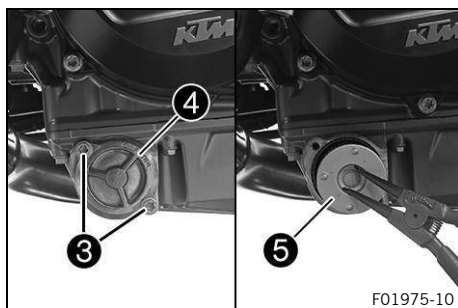
- Remove the skid plate. (p. 125)

Main work

- Rest the motorcycle on its side stand on a horizontal surface.
- Position an appropriate container under the engine.
- Remove filler plug **1** with the O-ring.



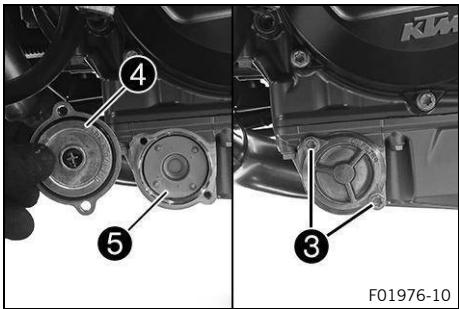
- Remove oil drain plugs **2** along with the magnets, the O-rings, and the oil screens.



- Remove screws **3**. Take off oil filter cover **4** with the O-ring.
- Pull oil filter **5** out of the oil filter housing.

Lock ring plier (51012011000) (p. 485)

- Allow the engine oil to drain completely.
- Thoroughly clean the parts and the sealing surfaces.



- Insert new oil filter 5.

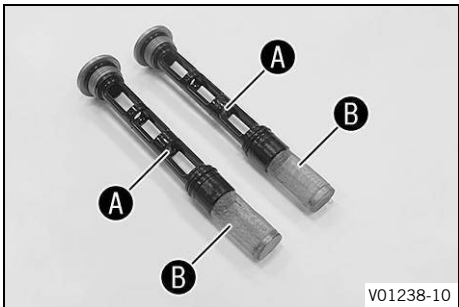
Only insert the oil filter by hand.

- Oil the new O-ring of the oil filter cover. Position oil filter cover 4.
- Mount and tighten screws 3.

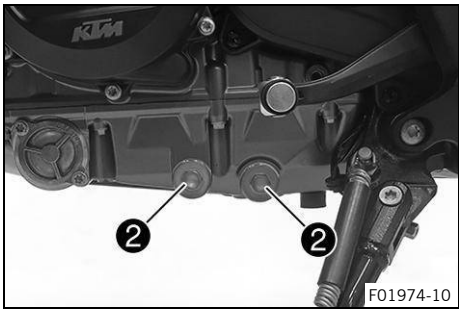
Screw, oil filter cover

M5

6 Nm
(4.4 ft·lb_f)



- Thoroughly clean magnets A and oil screens B of the oil drain plugs.



- Mount the oil drain plugs 2 with magnets and new seal rings, and tighten.

Plug, oil screen

M20×1.5

20 Nm
(14.8 ft·lb_f)

- Fill up with engine oil at the clutch cover.

engine oil

engine oil (SAE 10W/50)

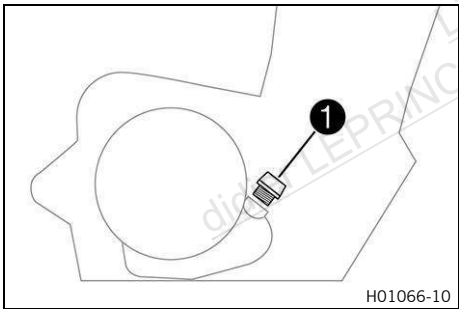
📖 (p. 500)

fully synthetic

2.8 l

(0.74 liq. gal_{US})

- Mount and tighten oil plug 1 with 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.

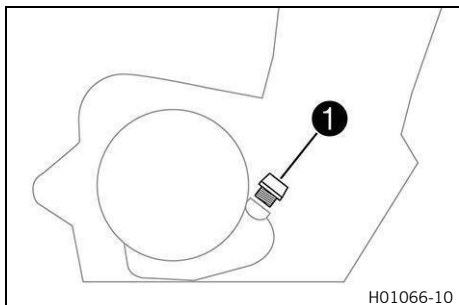
Reworking

- Check the engine oil level. 📖 (p. 391)
- Install the skid plate. 📖 (p. 126)

24.5 Adding engine oil

i Note

Too little engine oil or poor-quality engine oil will result in premature wear of the engine.



Main work

- Remove oil plug **1** with O-ring.
- Fill engine oil to the middle of the level viewer.

engine oil (SAE 10W/50) (p. 500)
fully synthetic

i 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 oil plug **1** with O-ring.



DANGER

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

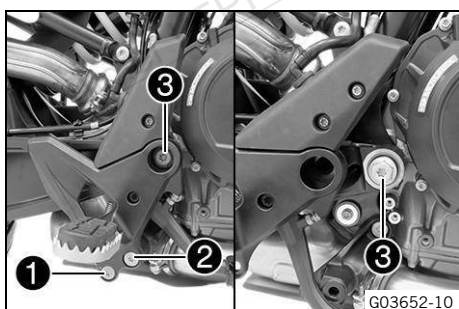
- Always ensure that there is sufficient ventilation when running the engine.
- Use suitable exhaust extraction when starting or running the engine in an enclosed space.

- Start the engine and check it for leaks.

Reworking

- Check the engine oil level. (p. 391)

24.6 Checking/cleaning the oil nozzle for clutch lubrication

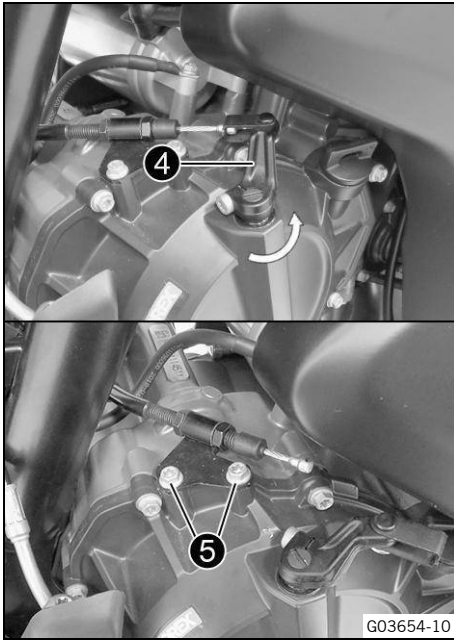


Main work

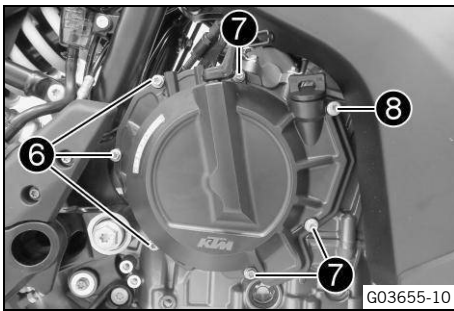
- Remove screw **1** and bushing.
- Remove screw **2**.
- Remove screw **3**.
- Take off footrest bracket and hang to the side.

Protect the components against damage by covering them.

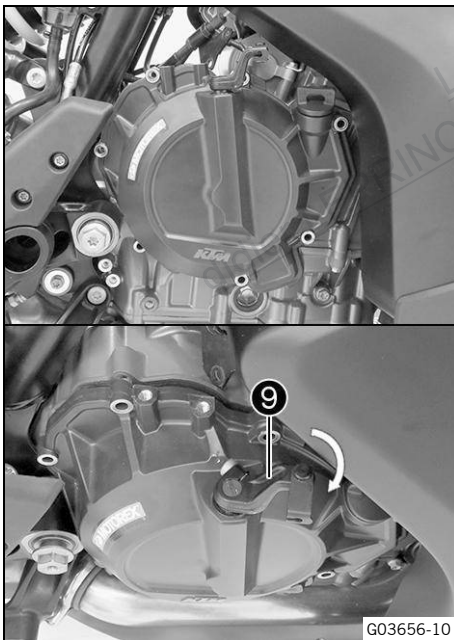
- Mount screw **3**, but do not tighten.



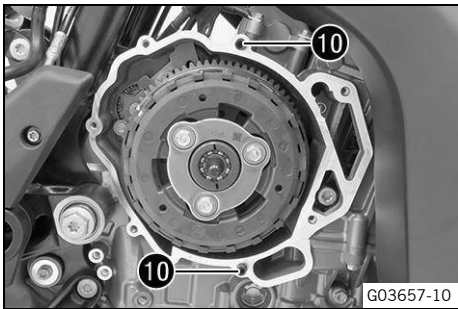
- Swivel clutch release lever **4** counterclockwise and detach the inner clutch cable.
- Remove screws **5**.
- Hang the inner clutch cable with bracket to the side.



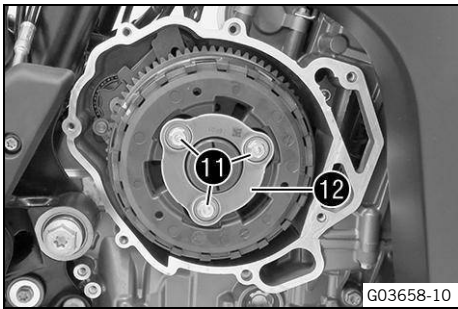
- Remove screws **6** and **7**.
- Remove screw **8**.



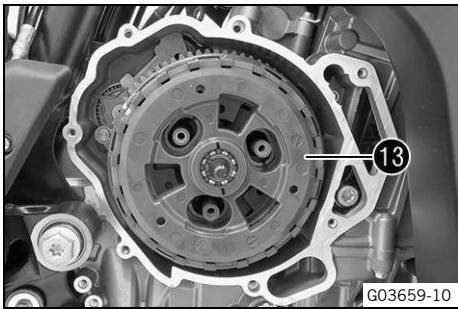
- Swivel the clutch release lever **9** clockwise and take off clutch cover with clutch cover gasket.



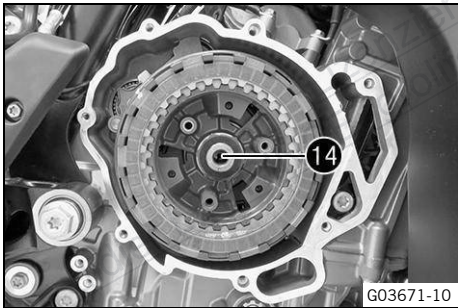
- Remove dowels 10.



- Remove screws 11.
- Take off clutch pressure cap stop 12 and the springs.



- Take off clutch pressure plate 13.



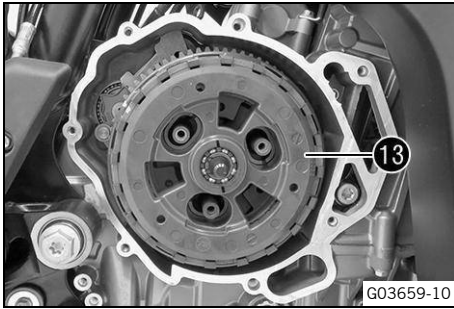
- Remove oil nozzle 14.
- Clean the thread of the main shaft.

Ensure that there is no thread locking material in the hole.

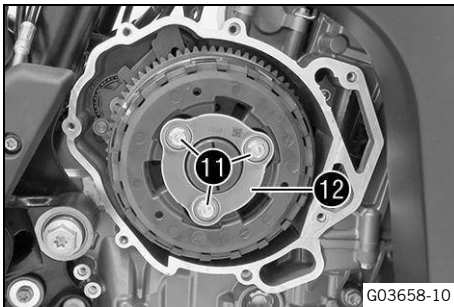
- Check that the oil nozzle for clutch lubrication is not blocked.
 - » If the oil nozzle is blocked:
 - Clean the oil nozzle and change if necessary.
- Mount and tighten oil nozzle 14.

Oil nozzle for clutch lubrication	
M8	5 Nm (3.7 ft·lb _r) Loctite® 243

Ensure that there is no thread locking material in the hole.

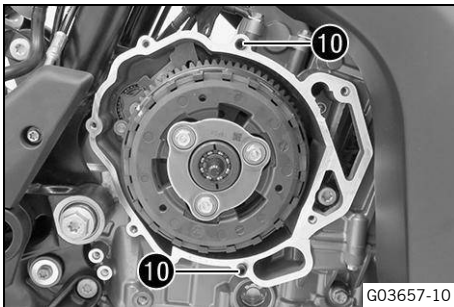


- Position clutch pressure plate **13**.
 - ✓ The gear teeth of the outer intermediate clutch disc engage in the clutch pressure cap.
 - ✓ The clutch pressure cap rests flush against the outer clutch facing disc.

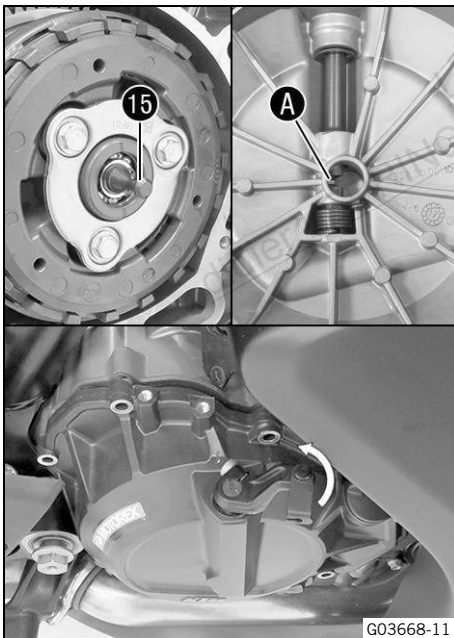


- Position clutch pressure cap stop **12** and the springs.
- Mount and tighten screws **11**.

Screw, clutch pressure plate	
M6	8 Nm (5.9 ft·lb _r)



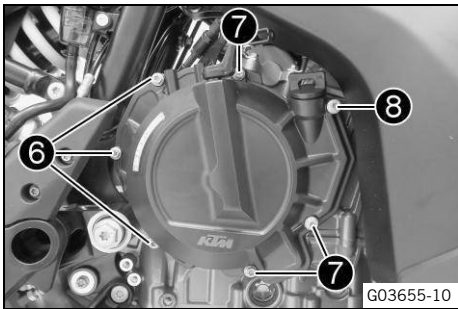
- Mount dowels **10**.



- Position the clutch cover with the clutch cover gasket.

Swivel clutch release lever counterclockwise.

- ✓ Clutch push rod **15** engages in groove **A**.



- Mount screws 7, but do not tighten yet.

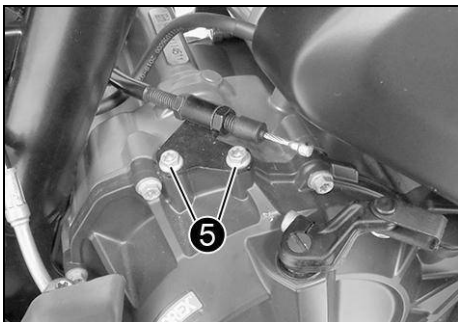
Screw, clutch cover	
M6×30	10 Nm (7.4 ft·lb _f)

- Mount screws 6, but do not tighten yet.

Screw, clutch cover	
M6×25	10 Nm (7.4 ft·lb _f)

- Mount screw 8 and tighten all screws in a crisscross pattern.

Screw, clutch cover	
M6×35	10 Nm (7.4 ft·lb _f)

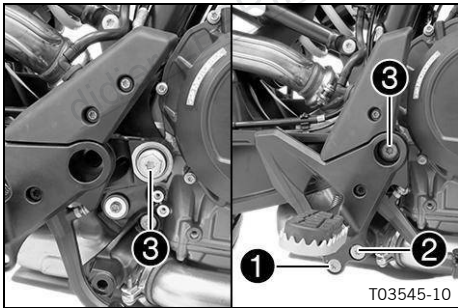
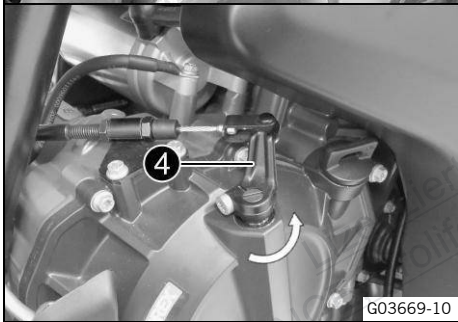


- Position the inner clutch cable with bracket.

- Mount and tighten screws 5.

Remaining screws for engine	
M6	10 Nm (7.4 ft·lb _f)

- Swivel clutch release lever 4 counterclockwise and hook in the inner clutch cable.



- Remove screw 3 from the swingarm pivot.

- Position the footrest support.

- Mount and tighten screw 3.

Screw, swingarm pivot	
M12	100 Nm (73.8 ft·lb _f)

- Mount and tighten screw 2.

Screw, front footrest bracket	
M10×30	45 Nm (33.2 ft·lb _f) Loctite® 243

- Mount screw ❶ and bushing and tighten.

Screw, front footrest bracket	
M10×40	45 Nm (33.2 ft·lb _f) Loctite® 243

Reworking

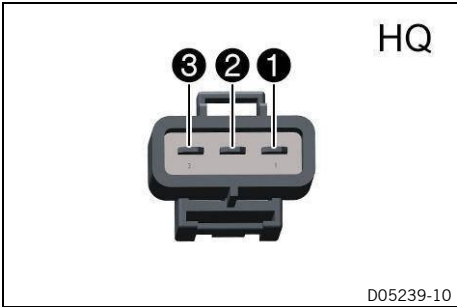
- Check the engine oil level.  (p. 391)



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25.1 Alternator – checking the stator winding

Condition: Stator is disconnected



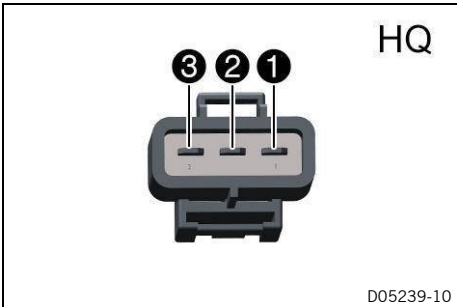
- Stator winding measurement I – check the resistance.



Resistance measurement points
Stator, connector **HQ** Pin **1** – Stator, connector **HQ** Pin **2**

Alternator	0.18 Ω ... 0.22 Ω
------------	-------------------

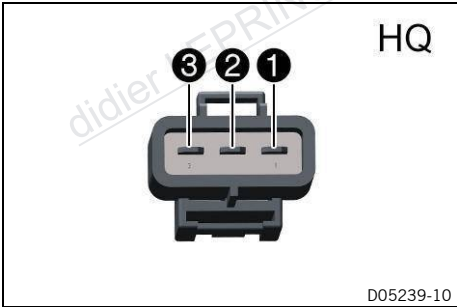
- » If the indicated value does not correspond to the set value:
 - Change the stator.
- Stator winding measurement II – check the resistance.



Resistance measurement points
Stator, connector **HQ** Pin **1** – Stator, connector **HQ** Pin **3**

Alternator	0.18 Ω ... 0.22 Ω
------------	-------------------

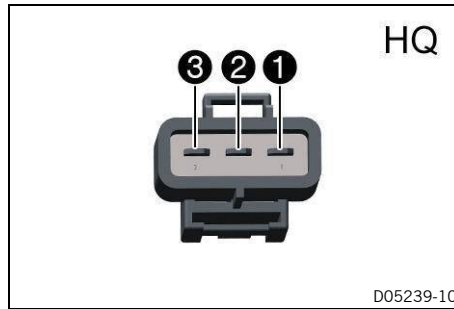
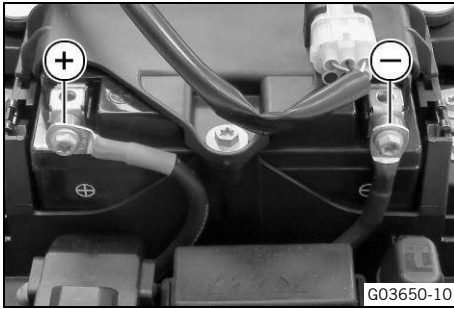
- » If the indicated value does not correspond to the set value:
 - Change the stator.
- Stator winding measurement III – check the resistance.



Resistance measurement points
Stator, connector **HQ** Pin **2** – Stator, connector **HQ** Pin **3**

Alternator	0.18 Ω ... 0.22 Ω
------------	-------------------

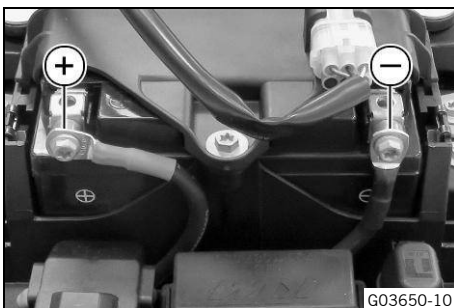
- » If the indicated value does not correspond to the set value:
 - Change the stator.
- Stator winding I – check the short circuit to ground (terminal 31).



Resistance measurement points
Stator, connector **HQ** Pin **1** – Measuring point **Ground (-)**

Resistance	$\infty \Omega$
------------	-----------------

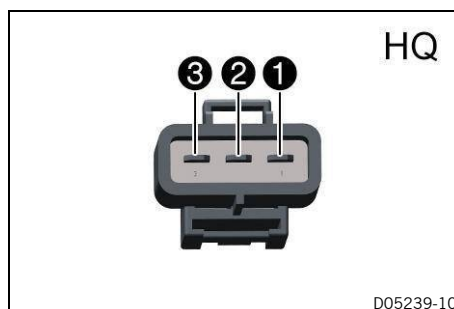
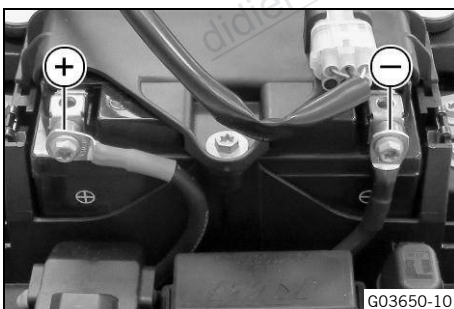
- » If the indicated value does not correspond to the set value:
 - Change the stator.
- Stator winding II – check the short circuit to ground (terminal 31).



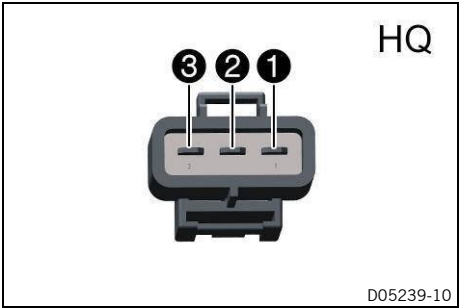
Resistance measurement points
Stator, connector **HQ** Pin **2** – Measuring point **Ground (-)**

Resistance	$\infty \Omega$
------------	-----------------

- » If the indicated value does not correspond to the set value:
 - Change the stator.
- Stator winding III – check the short circuit to ground (terminal 31).



Resistance measurement points
Stator, connector **HQ** Pin **3** – Measuring point **Ground (-)**



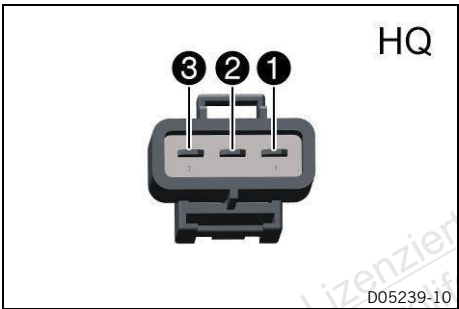
Resistance	$\infty \Omega$
------------	-----------------

- » If the indicated value does not correspond to the set value:
 - Change the stator.
- Start the motorcycle to check the function. (p. 24)
- Stator winding measurement I – check the voltage.

V	Voltage measurement points Stator, connector HQ Pin 1 – Stator, connector HQ Pin 2
----------	---

Alternator	$\geq 50 \text{ V}$
The results of the measurements on the individual coils must not deviate significantly from one another.	

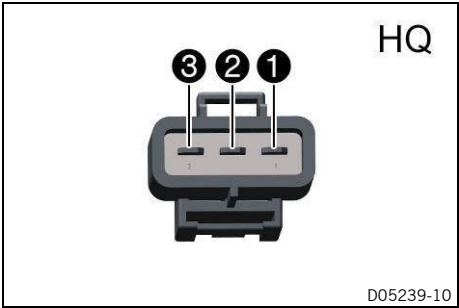
- » If the indicated value does not correspond to the set value:
 - Change the stator.
- Stator winding measurement II – check the voltage.



V	Voltage measurement points Stator, connector HQ Pin 1 – Stator, connector HQ Pin 3
----------	---

Alternator	$\geq 50 \text{ V}$
The results of the measurements on the individual coils must not deviate significantly from one another.	

- » If the indicated value does not correspond to the set value:
 - Change the stator.
- Stator winding measurement III – check the voltage.



V	Voltage measurement points Stator, connector HQ Pin 2 – Stator, connector HQ Pin 3
----------	---

Alternator	$\geq 50 \text{ V}$
The results of the measurements on the individual coils must not deviate significantly from one another.	

- » If the indicated value does not correspond to the set value:
 - Change the stator.



25.2 Ignition coil - checking the primary winding

Preparatory work

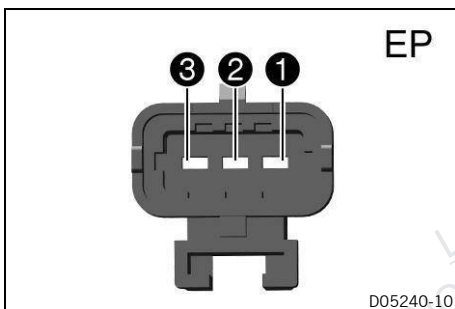
- Remove the passenger seat. (p. 99)
- Remove the front rider's seat. (p. 100)
- Remove the left side cover. (p. 118)
- Remove the battery cover. (p. 120)
- Remove left fuel tank spoiler. (p. 121)
- Remove the right side fairing. (p. 119)
- Remove right fuel tank spoiler. (p. 123)
- Remove the skid plate. (p. 125)
- Remove the fuel tank. (p. 100)

Main work

- Disconnect ignition coil 1, cylinder 1.
- Ignition coil, cylinder 1 - check the primary winding resistor



Resistance measurement points
Ignition coil Pin 1 – Ignition coil Pin 3

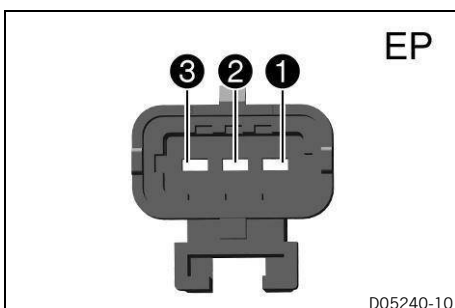


Ignition coil	$0.70 \Omega \dots 0.90 \Omega$
---------------	---------------------------------

- » If the displayed value does not correspond to the nominal value:
 - Change the ignition coil.
- Disconnect twin cylinder ignition coil 2.
- Ignition coil, cylinder 2 - check the primary winding resistor



Resistance measurement points
Ignition coil Pin 1 – Ignition coil Pin 3



Ignition coil	0.70 Ω ... 0.90 Ω
---------------	---------------------------------

- » If the displayed value does not correspond to the nominal value:
 - Change the ignition coil.

Reworking

- Install the fuel tank.  (p. 103)
- Install the skid plate.  (p. 126)
- Install the right fuel tank spoiler.  (p. 124)
- Install the right side cover.  (p. 119)
- Install the left fuel tank spoiler.  (p. 122)
- Install the battery cover.  (p. 120)
- Install the left side fairing  (p. 118)
- Mount the front rider's seat.  (p. 100)
- Mount the passenger seat.  (p. 99)

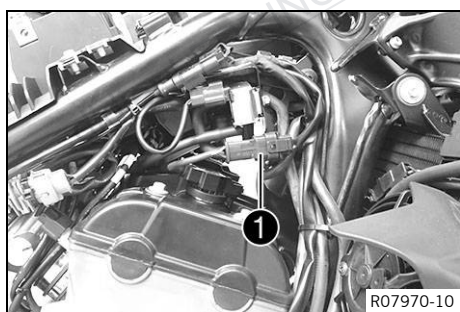
25.3 Changing the spark plugs

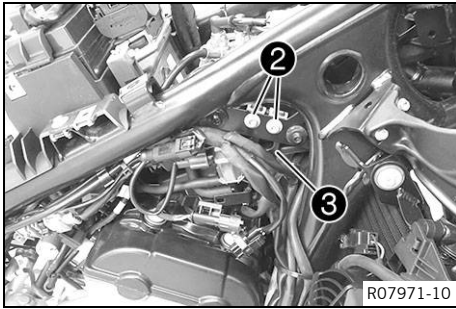
Preparatory work

- Remove the passenger seat.  (p. 99)
- Remove the front rider's seat.  (p. 100)
- Remove the left side cover.  (p. 118)
- Remove the battery cover.  (p. 120)
- Remove left fuel tank spoiler.  (p. 121)
- Remove the right side fairing.  (p. 119)
- Remove right fuel tank spoiler.  (p. 123)
- Remove the skid plate.  (p. 125)
- Remove the fuel tank.  (p. 100)

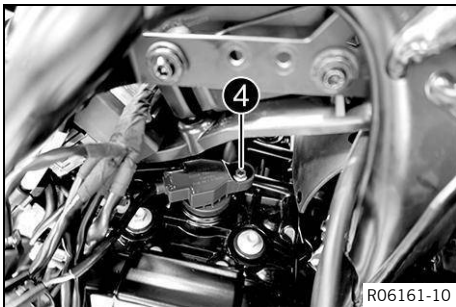
Main work

- Pull off and disconnect plug-in connector **1** from the holder.

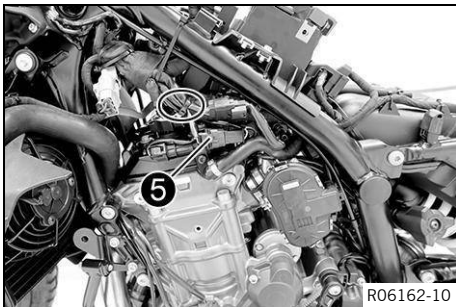




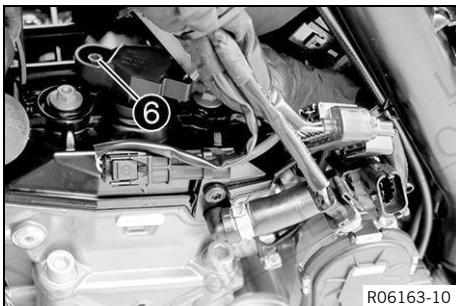
- Remove screws ②.
- Hang bracket ③ to the side.



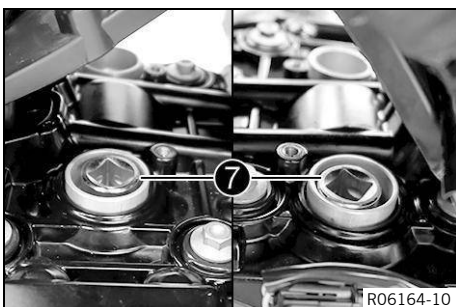
- Remove screw ④.
- Remove the ignition coil.



- Remove the cable ties.
- Disconnect plug-in connector ⑤.



- Remove screw ⑥.
- Remove the ignition coil.



- Remove the spark plugs using special tool ⑦.

Spark plug wrench with link (77229172000) (p. 493)

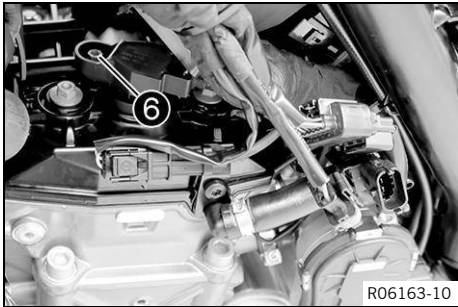
- Mount and tighten the new spark plugs using the special tool.

Spark plug

M10

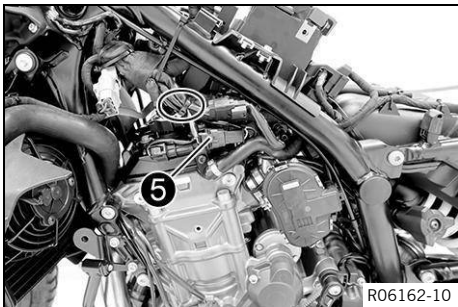
11 Nm
(8.1 ft·lb_r)

Spark plug wrench with link (77229172000) (p. 493)

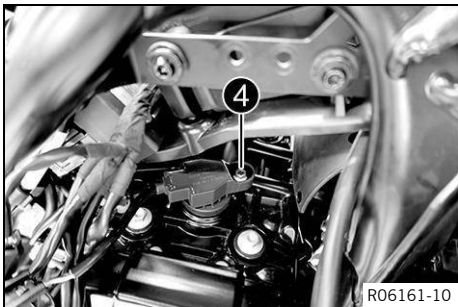


- Mount the ignition coil.
- Mount and tighten screw 6.

Screw, ignition coil	
M6	8 Nm (5.9 ft·lb _r)

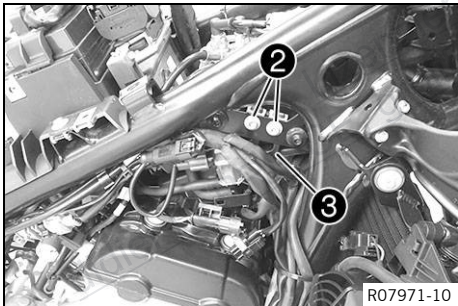


- Join plug-in connector 5.
- Route the cable without tension and secure with the cable ties.



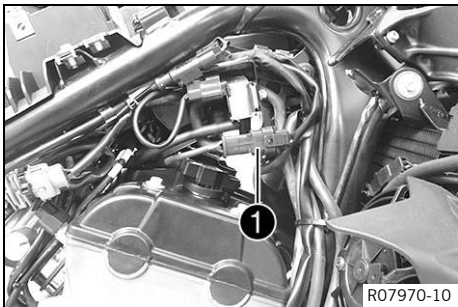
- Mount the ignition coil.
- Mount and tighten screw 4.

Screw, ignition coil	
M6	8 Nm (5.9 ft·lb _r)



- Position holder 3.
- Mount and tighten screws 2.

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



- Join plug-in connector 1 and position it on the holder.

Reworking

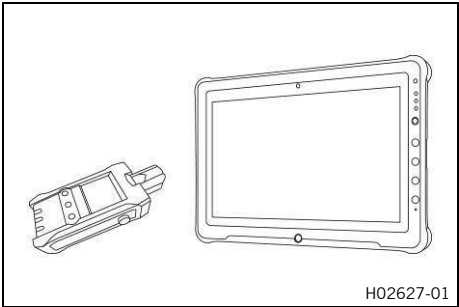
- Install the fuel tank.  (p. 103)
- Install the skid plate.  (p. 126)
- Install the right fuel tank spoiler.  (p. 124)
- Install the right side cover.  (p. 119)
- Install the left fuel tank spoiler.  (p. 122)
- Install the battery cover.  (p. 120)
- Install the left side fairing  (p. 118)
- Mount the front rider's seat.  (p. 100)
- Mount the passenger seat.  (p. 99)



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26.1 Performing the initialization run

Condition: Diagnostic tool is connected and active, Software version is up-to-date, all model-specific variant coding is correct, The engine is cold



- Execute «Engine control unit» > «Functions» > «Clear specific adaptation values».
- | | |
|------------------------------------|--|
| All subfunctions must be executed. | |
|------------------------------------|--|
- ✓ All adaptation values are deleted.
 - Switch on the ignition by turning the ignition key to position 0.
 - Do not operate the throttle grip and observe the waiting time.
- | | |
|--|------|
| Waiting time without operating the throttle grip | 20 s |
|--|------|
- Program the gear position sensor. (p. 370)
 - Switch off the ignition for 20 seconds.
 - Program the shift shaft sensor. (p. 372)
 - Program the cruise control system (if available).

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 without operating the throttle grip.
 - Allow the engine to run at idle speed.
- | | |
|----------|--------------|
| Duration | 5 fan cycles |
|----------|--------------|
- | | |
|---|--|
| Do not operate the throttle grip during the initialization process. | |
|---|--|

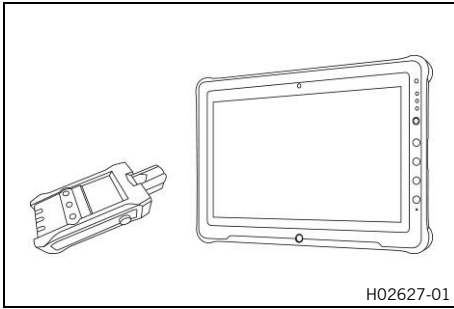
Note

If initialization is not completed or if the initialization process was interrupted, the entire process must be restarted.

- Check adaptation values for plausibility and error memory for entries using the diagnostics tool.
- Switch off the ignition for 20 seconds.

26.2 Resetting service display with diagnostic tool

Condition: Diagnostic tool is connected and active



- Select **«Combination instrument»** > **«Functions»** > **«Distance and time until the next service is due»**.
- Enter the distance until the next service is due.
- Select the unit for the distance.
- End the process using **«Execute»**.



Lizenziert für | Licensed for:
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27.1 Engine

27.1.1 Technical data - engine

Design	2-cylinder 4-stroke in-line engine, water-cooled
Displacement	799 cm ³ (48.76 in ³)
Stroke	65.7 mm (2.587 in)
Bore	88 mm (3.46 in)
Compression ratio	12.5:1
Control	DOHC, 4 valves per cylinder controlled via cam lever, chain drive
Valve diameter, intake	36 mm (1.42 in)
Valve diameter, exhaust	29 mm (1.14 in)
Valve clearance, cold	
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)	0.15 mm ... 0.20 mm (0.0059 in ... 0.0079 in)
Crankshaft bearing	Plain bearing
big (bottom) end bearing	Plain bearing
Piston	Forged light alloy
Piston rings	1 compression ring, 1 lower compression ring, 1 oil ring with spring expander
Engine lubrication	Pressure circulation lubrication with 2 trochoidal pumps
Primary transmission	39:75
Clutch	Slipper clutch in oil bath/mechanically operated
Transmission	6 speed transmission, claw shift
Gear ratios	
1st gear	13:37
2nd gear	17:34
3rd gear	20:31
4th gear	22:28
5th gear	24:26
6th gear	23:22
Mixture formation	Electronic fuel injection
Ignition system	Contactless controlled fully electronic ignition with digital ignition adjustment
Alternator	12 V 400 W (0.536 hp)
Spark plug	NGK LMAR9AI-10

Plug gap of spark plug	1.0 mm ... 1.1 mm (0.039 in ... 0.043 in)
Cooling	Liquid cooling, permanent circulation of coolant by water pump
idle speed	1,600 rpm (26.67 Hz)
Starting aid	Starter motor

27.1.2 tolerance, engine wear limits

Valve spring	
Minimum length (without valve spring seat)	44.0 mm (1.732 in)
Valve spring seat - thickness	1.15 mm ... 1.35 mm (0.0453 in ... 0.0531 in)
Valve - sealing seat width	
Intake	2.80 mm (0.1102 in)
Exhaust	3.00 mm (0.1181 in)
Valve - run-out	
on the valve plate	≤ 0.1 mm (≤ 0.004 in)
Cylinder/cylinder head - distortion of sealing surface	≤ 0.05 mm (≤ 0.0020 in)
Cylinder - bore diameter	87.992 mm ... 88.040 mm (3.46425 in ... 3.46614 in)
Piston - diameter	87.911 mm ... 87.979 mm (3.46106 in ... 3.46374 in)
Piston/cylinder - mounting clearance	
New condition	0.035 mm ... 0.070 mm (0.00138 in ... 0.00276 in)
Wear limit	0.10 mm (0.0039 in)
Piston ring - groove clearance	≤ 0.08 mm (≤ 0.0031 in)
Piston ring end gap	
Compression rings	≤ 0.80 mm (≤ 0.0315 in)
Oil scraper ring	≤ 1.00 mm (≤ 0.0394 in)
Crankshaft - axial play	0.07 mm ... 0.35 mm (0.0028 in ... 0.0138 in)
Crankshaft - run-out at bearing pin	≤ 0.02 mm (≤ 0.0008 in)
Clutch plate pack – thickness	
New condition	35.60 mm ... 36.40 mm (1.4016 in ... 1.4331 in)

Wear limit	34.80 mm (1.3701 in)
Clutch spring - length	≥ 43.0 mm (≥ 1.693 in)
Oil pressure regulator valve - minimum length spring	42.00 mm ... 43.60 mm (1.6535 in ... 1.7165 in)
Shift shaft - sliding plate/shift quadrant play	0.40 mm ... 0.80 mm (0.0157 in ... 0.0315 in)

27.1.3 Coolant capacity

coolant	
Coolant  (p. 502)	1.60 l
Antifreeze protection to at least: -25 °C (-13.0 °F)	(0.423 liq. gal _{US})

27.1.4 Filling quantity of engine oil

engine oil	
engine oil (SAE 10W/50)  (p. 500)	2.8 l
fully synthetic	(0.74 liq. gal _{US})

27.2 Chassis

27.2.1 Technical data - chassis

Frame	Lattice frame made of chrome molybdenum steel tubing, powder-coated
Suspension travel:	
front	200 mm (7.87 in)
rear	200 mm (7.87 in)
Brake system	
front	Double disc brake with radially mounted four-piston brake calipers, floating brake discs
rear	Single disc brake with dual-piston brake caliper, floating brake disc
Brake discs - diameter	
front	320 mm (12.60 in)
rear	260 mm (10.24 in)
Brake disc wear limit	
front	4.5 mm (0.177 in)
rear	4.5 mm (0.177 in)
Tire pressure solo / with passenger	

front	2.4 bar (34.8 psi)
rear	2.4 bar (34.8 psi)
Tire pressure full payload	
front	2.6 bar (37.7 psi)
rear	2.9 bar (42.1 psi)
Final drive	16:45 Note Modifications to the transmission ratio are not permitted and can lead to malfunctions.
Chain	5/8 x 1/4" (520) X-ring
Steering head angle	64.1° (1.119 rad)
Wheelbase	1,509 mm (59.41 in)
Seat Height unloaded	
Lower position	840 mm (33.07 in)
Upper position	860 mm (33.86 in)
Ground clearance unloaded	233 mm (9.17 in)
Weight without fuel approx.	200 kg (440.9 lb)
Maximum permissible front axle load	175 kg (385.8 lb)
Maximum permissible rear axle load	275 kg (606.3 lb)
Maximum permissible total weight	450 kg (992.1 lb)

27.2.2 Technical data - tires

Tire front	Rear tire
90/90 R 21 M/C 54P M+S TL Pirelli Scorpion Rally STR	150/70 R 18 M/C 70P M+S TL Pirelli Scorpion Rally STR
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.	

27.2.3 Fuel capacity

Total fuel tank capacity, approx.	
(790 ADVENTURE US, 790 ADVENTURE AR, 790 ADVENTURE CN, 790 ADVENTURE EU, 790 ADVENTURE D.D. EU, 790 ADVENTURE UK) Super unleaded (ROZ 95)  (p. 503)	20 l (5.3 liq. gal _{US})
(790 ADVENTURE BR) Super unleaded, type C (ROZ 95/RON 95/PON 91)  (p. 503)	
Fuel reserve, approx.	
Super unleaded (ROZ 95)  (p. 503)	3 l (0.8 liq. gal _{US})

27.2.4 Fuel capacity

Fuel reserve, approx.	3 l (0.8 liq. gal _{US})
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27.3 Electrics

27.3.1 Battery

12 V battery	HTZ12A-BS	Battery voltage: 12 V Nominal capacity: 10 Ah Maintenance-free
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27.3.2 Fuses

Fuse	75011088010	10 A
Fuse	75011088015	15 A
Fuse	75011088025	25 A
Fuse	58011109130	30 A

27.3.3 Lamps

Low beam/high beam	LED
Daytime running light/position light	LED
Dashboard illumination and indicator lights	LED
(all except US models) Turn signal	LED
Brake/tail light	LED
License plate lighting	LED

27.4 Fork

27.4.1 Technical data - fork

Fork part number	A610C129W201102
Fork	WP APEX OC
Spring rate	
Medium (standard)	6.5 N/mm (37.12 lb _f /in)
Compression damping	
Standard	15 clicks
Rebound damping	
Standard	15 clicks
Fork length	855 mm (33.66 in)
Spring length with preload spacer(s)	493.5 mm (19.429 in)

27.4.2 Fork capacity

Fork oil per fork leg	
Fork oil (SAE 5)  (p. 500)	460 ±5 ml (15.55 ±0.17 fl. oz _{US})

27.5 Shock absorber

27.5.1 Technical data - shock absorber

Shock absorber part number	A661C451Y313102
Shock absorber	WP APEX
Rebound damping	
Standard	12 clicks
Spring preload – preload adjuster	
Standard	4 turns (1,440°)
Installation position	364 mm (14.33 in)
Spring length	188 mm (7.40 in)
Spring rate	
Weight of rider: 75 kg ... 85 kg (165.3 lb ... 187.4 lb)	57 N/mm (325.5 lb _f /in)
Static sag	25 mm (0.98 in)
Riding sag	58 mm (2.28 in)

Gas assisted	20 bar (290 psi)
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27.5.2 Shock absorber capacity

Shock absorber oil	
Shock absorber oil (50180751S1) (SAE 2.5)  (p. 501)	Fill to the maximum mark

27.6 Tightening torque

27.6.1 engine tightening torques

Hose clip, intake flange	M4	2.5 Nm (1.84 ft·lb _f)	
Remaining screws for engine	M5	6 Nm (4.4 ft·lb _f)	
Screw, gear position sensor	M5	5 Nm (3.7 ft·lb _f)	Loctite® 243
Screw, oil filter cover	M5	6 Nm (4.4 ft·lb _f)	
Oil nozzle for piston cooling	M5	2 Nm (1.5 ft·lb _f)	
Screw, cam lever axial lock	M5	6 Nm (4.4 ft·lb _f)	Loctite® 243
Screw, crankshaft position sensor	M5	6 Nm (4.4 ft·lb _f)	Loctite® 243
Screw, thermostat case	M5	6 Nm (4.4 ft·lb _f)	Loctite® 243
Oil nozzle in cylinder head	M5	2 Nm (1.5 ft·lb _f)	
Engine vent nozzle	M5	2 Nm (1.5 ft·lb _f)	
Screw, shift drum retaining bracket	M5	6 Nm (4.4 ft·lb _f)	Loctite® 243
Screw, pressure plate	M5	3 Nm (2.2 ft·lb _f)	Loctite® 243
Screw, shift shaft sensor	M5	6 Nm (4.4 ft·lb _f)	Loctite® 243
Securing screw, balancer shaft	M5	5 Nm (3.7 ft·lb _f)	Loctite® 243

Screw, swing angle sensor	M5	6 Nm (4.4 ft·lb _r) Loctite® 243
Remaining screws for engine	M6	10 Nm (7.4 ft·lb _r)
Screw, clutch pressure plate	M6	8 Nm (5.9 ft·lb _r)
Screw, oil pump cover	M6	10 Nm (7.4 ft·lb _r) Loctite® 243
Detent arm screw	M6	10 Nm (7.4 ft·lb _r) Loctite® 243
Screw, upper guide rail	M6	8 Nm (5.9 ft·lb _r) Loctite® 243
Screw, clutch cover	M6×25	10 Nm (7.4 ft·lb _r)
Screw, clutch cover	M6×30	10 Nm (7.4 ft·lb _r)
Screw, clutch cover	M6×35	10 Nm (7.4 ft·lb _r)
Screw, engine case	M6×30	12 Nm (8.9 ft·lb _r)
Screw, engine case	M6×60	12 Nm (8.9 ft·lb _r)
Shift star screw	M6	10 Nm (7.4 ft·lb _r) Loctite® 243
Screw, shift lever	M6	14 Nm (10.3 ft·lb _r) Loctite® 243
Screw, starter motor	M6	10 Nm (7.4 ft·lb _r)
Stator screw	M6	10 Nm (7.4 ft·lb _r) Loctite® 243
Screw, valve cover	M6	10 Nm (7.4 ft·lb _r)
Screw, water pump cover	M6	10 Nm (7.4 ft·lb _r) Loctite® 243
Screw, water pump impeller	M6	10 Nm (7.4 ft·lb _r) Loctite® 243
Chain shaft screw, cylinder head	M6	10 Nm (7.4 ft·lb _r)

27 Technical specifications

Screw, ignition cover	M6×30	10 Nm (7.4 ft·lb _f)
Screw, ignition cover	M6×35	10 Nm (7.4 ft·lb _f)
Screw, camshaft bearing bridge	M6	10 Nm (7.4 ft·lb _f)
Screw, timing chain shaft	M6	10 Nm (7.4 ft·lb _f)
Screw, bleeder flange	EJOT ALtracs® – M6×12	8 Nm (5.9 ft·lb _f) Loctite® 243
Screw, shift shaft retaining bracket	M6	10 Nm (7.4 ft·lb _f) Loctite® 243
Screw, main shaft bearing support	M6	10 Nm (7.4 ft·lb _f) Loctite® 243
Screw, oil pump housing	M6	10 Nm (7.4 ft·lb _f)
Screw, oil pan	M6×30	10 Nm (7.4 ft·lb _f)
Screw, oil pan	M6×35	10 Nm (7.4 ft·lb _f)
Screw, oil/water heat exchanger	M6	10 Nm (7.4 ft·lb _f) Loctite® 243
Screw, ignition coil	M6	8 Nm (5.9 ft·lb _f)
Screw, freewheel ring	M6	14 Nm (10.3 ft·lb _f) Loctite® 243
Screw, clutch release lever	M6	10 Nm (7.4 ft·lb _f) Loctite® 243
Screw, clutch cable retaining bracket	M6	10 Nm (7.4 ft·lb _f) Loctite® 243
Nut, starter motor cable	M6	5 Nm (3.7 ft·lb _f)
Stator screw	M6	10 Nm (7.4 ft·lb _f)
Remaining screws for engine	M8	20 Nm (14.8 ft·lb _f)
Screw, engine case	M8×45	25 Nm (18.4 ft·lb _f) Long-life grease

Screw, engine case	M8×55	25 Nm (18.4 ft·lb _r) Long-life grease
Screw, engine case	M8×65	25 Nm (18.4 ft·lb _r) Long-life grease
Screw, engine case	M8×90	25 Nm (18.4 ft·lb _r) Long-life grease
Slide rail screw	M8	15 Nm (11.1 ft·lb _r) Loctite® 243
Stud, exhaust flange	M8	15 Nm (11.1 ft·lb _r) Loctite® 243
Exhaust flange nut	M8	15 Nm (11.1 ft·lb _r) Copper paste
Screw plug, locking screw	M8	15 Nm (11.1 ft·lb _r)
Screw, oil pump intermediate gear	M8	15 Nm (11.1 ft·lb _r) Loctite® 243
Oil nozzle for clutch lubrication	M8	5 Nm (3.7 ft·lb _r) Loctite® 243
Screw, conrod bearing M8×0.75 engine oil	1.	5 Nm (3.7 ft·lb _r)
	2.	15 Nm (11.1 ft·lb _r)
	3.	90° (1.57 rad)
Knock sensor screw	M8	20 Nm (14.8 ft·lb _r)
Screw with washer, engine case	M8×65	25 Nm (18.4 ft·lb _r)
Screw with washer, engine case	M8×90	25 Nm (18.4 ft·lb _r)
Screw, release for timing chain tensioner	M10×1	8 Nm (5.9 ft·lb _r)
Screw, cylinder head M10×1.25 engine oil	1.	5 Nm (3.7 ft·lb _r)
	2.	15 Nm (11.1 ft·lb _r)
	3.	90° (1.57 rad)
	4.	90° (1.57 rad)

Oil pressure sensor	M10×1	10 Nm (7.4 ft·lb _f)
Spark plug	M10	11 Nm (8.1 ft·lb _f)
Coolant temperature sensor	M10×1.25	10 Nm (7.4 ft·lb _f)
Screw plug, cam lever shaft	M10×1	8 Nm (5.9 ft·lb _f)
Screw plug, bearing support	M10×1	12 Nm (8.9 ft·lb _f) Loctite® 243
Screw, rotor	M12×1.5	90 Nm (66.4 ft·lb _f) Long-life grease
Screw plug, cylinder head oil drain	M12×1.5	15 Nm (11.1 ft·lb _f)
Screw plug, water jacket	M16×1.5	20 Nm (14.8 ft·lb _f) Loctite® 243
Nut, engine sprocket	M20×1.5	100 Nm (73.8 ft·lb _f) Loctite® 243
Nut, inner clutch hub	M20×1.5	135 Nm (99.6 ft·lb _f)
Plug, oil screen	M20×1.5	20 Nm (14.8 ft·lb _f)
Screw plug, timing chain tensioner	M24×1.5	25 Nm (18.4 ft·lb _f)
Screw plug, alternator cover	M24×1.5	8 Nm (5.9 ft·lb _f)
Screw plug, water pump drain hole	EJOT ALtracs® Plus – 60×14	8 Nm (5.9 ft·lb _f) Loctite® 243

27.6.2 Chassis tightening torques

Remaining screws on chassis	EJOT PT®	1 Nm (0.7 ft·lb _f)
Remaining screws on chassis	EJOT PT®	1 Nm (0.7 ft·lb _f)
Remaining screws on chassis	EJOT PT®	1 Nm (0.7 ft·lb _f)
Remaining screws on chassis	EJOT PT®	2 Nm (1.5 ft·lb _f)
Remaining screws on chassis	EJOT PT®	2 Nm (1.5 ft·lb _f)

Nut, valve	ISO 10V2	12 Nm (8.9 ft·lb _r) Loctite® 2701
Screw, tail light	EJOT PT®	1.5 Nm (1.11 ft·lb _r)
Brake fluid reservoir cover, front		1 Nm (0.7 ft·lb _r)
Compensating tank cover		1.1 Nm (0.81 ft·lb _r)
Nut, tire pressure sensor	ISO 10V2	12 Nm (8.9 ft·lb _r) Loctite® 2701
Remaining screws on chassis	M4	3 Nm (2.2 ft·lb _r)
Screw, fixed grip, left	M4	3 Nm (2.2 ft·lb _r)
Remaining nuts on chassis	M4	3 Nm (2.2 ft·lb _r)
Remaining screws on chassis	M4	3 Nm (2.2 ft·lb _r)
Remaining nuts on chassis	M5	5 Nm (3.7 ft·lb _r)
Remaining screws on chassis	M5	5 Nm (3.7 ft·lb _r)
Screw, foot brake lever stub	M5	10 Nm (7.4 ft·lb _r) Loctite® 243
Screw, side stand sensor	M5	2 Nm (1.5 ft·lb _r) Loctite® 243
Screw, trim	M5	3 Nm (2.2 ft·lb _r)
Screw, heat guard	M5	5 Nm (3.7 ft·lb _r) Loctite® 243
Screw, combination switch, left	M5	2 Nm (1.5 ft·lb _r)
Screw, combination switch, right	M5	5 Nm (3.7 ft·lb _r)
Screw, front sprocket cover	M5	5 Nm (3.7 ft·lb _r) Loctite® 243
Screw, combination instrument	M5	1 Nm (0.7 ft·lb _r)
Screw, air filter box	M5	3 Nm (2.2 ft·lb _r)

Screw, brake fluid reservoir for rear brake	M5	5 Nm (3.7 ft·lb _f) Loctite® 243
Screw, throttle twist grip	M5	3.5 Nm (2.58 ft·lb _f)
Screw, license plate holder	M5	5 Nm (3.7 ft·lb _f) Loctite® 243
Brake line holder on fork screw	M5	1 Nm (0.7 ft·lb _f)
Screw, lower rear panel	M5	3 Nm (2.2 ft·lb _f)
Screw, fender	M5×12	3 Nm (2.2 ft·lb _f)
Screw, instrument support on mask support, rear	M5	5 Nm (3.7 ft·lb _f)
Screw, instrument support on mask support, front	M5	5 Nm (3.7 ft·lb _f)
Screw, mask support center part	M5	3.5 Nm (2.58 ft·lb _f)
Screw, mask support cover	M5	3.5 Nm (2.58 ft·lb _f)
Screw, fender	M5×12	3 Nm (2.2 ft·lb _f)
Screw, fuel level sensor	M5	3 Nm (2.2 ft·lb _f)
Screw, activated carbon filter on retaining bracket	M6	8 Nm (5.9 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, manifold clamp	M6	8 Nm (5.9 ft·lb _f) Copper paste
Screw, rear brake disc	M6	14 Nm (10.3 ft·lb _f) Loctite® 243
Screw, front brake disc	M6	14 Nm (10.3 ft·lb _f) Loctite® 243
Screw, magnetic holder on side stand	M6	2 Nm (1.5 ft·lb _f) Loctite® 243
Screw, rear wheel speed sensor	M6	6 Nm (4.4 ft·lb _f)

Screw, ignition lock (tamper-proof screw)	M6	Tighten until the head tears off. Loctite® 243
Screw, front wheel speed sensor	M6	6 Nm (4.4 ft·lb _r)
Screw, ground wire on frame	M6	6 Nm (4.4 ft·lb _r)
Screw, clutch lever assembly	M6	5 Nm (3.7 ft·lb _r)
Screw, radiator bracket, bottom	M6	5 Nm (3.7 ft·lb _r)
Screw, 6-D sensor	M6	5 Nm (3.7 ft·lb _r)
Screw, seat lock	M6	10 Nm (7.4 ft·lb _r) Loctite® 243
Screw, battery terminal	M6	4.5 Nm (3.32 ft·lb _r)
Screw, footrest bracket, rear	M6	9 Nm (6.6 ft·lb _r) Loctite® 243
Screw, fuel tank spoiler attachment	M6	3 Nm (2.2 ft·lb _r)
Screw, battery holding bracket	M6	4.5 Nm (3.32 ft·lb _r)
Screw, seat installation	M6	6 Nm (4.4 ft·lb _r)
Screw, ground wire on starter motor	M6	10 Nm (7.4 ft·lb _r)
Cable on starter motor screw	M6	5 Nm (3.7 ft·lb _r)
Screw, shift rod	M6	10 Nm (7.4 ft·lb _r) Loctite® 243
Screw, shift shaft deflector on shift shaft	M6	10 Nm (7.4 ft·lb _r) Loctite® 243
Nut, hand brake lever	M6	Attach torque to nut. 10 Nm (7.4 ft·lb _r)
Screw, front brake assembly	M6	5 Nm (3.7 ft·lb _r)
Nut, push rod, brake pedal	M6	6 Nm (4.4 ft·lb _r)
Nut, shift rod	M6	6 Nm (4.4 ft·lb _r)
Screw, brake cylinder on the rear brake system	M6	10 Nm (7.4 ft·lb _r) Loctite® 243

Screw, headlight mask	M6	10 Nm (7.4 ft·lb _f) Loctite® 243
Screw, engine guard	M6×8	8 Nm (5.9 ft·lb _f)
Screw, engine guard	M6×10	10 Nm (7.4 ft·lb _f) Loctite® 243
Fuel tank cover screw	M6×12	3 Nm (2.2 ft·lb _f)
Screw cap, fuel tank cover	M6	5 Nm (3.7 ft·lb _f) Loctite® 243
Battery cover attachment screw	M6	5 Nm (3.7 ft·lb _f)
Screw, fuel tank spoiler	M6	5 Nm (3.7 ft·lb _f)
Screw, cross member in rear	M6×13	10 Nm (7.4 ft·lb _f) Loctite® 243
Screw, cross member in rear	M6×12	6 Nm (4.4 ft·lb _f) Loctite® 243
Fitting, chain guide	M6	10 Nm (7.4 ft·lb _f)
Screw, ABS module	M6	8 Nm (5.9 ft·lb _f)
Screw, brace for mask support center part	M6	3 Nm (2.2 ft·lb _f) Loctite® 243
Screw, mask support on steering head	M6	10 Nm (7.4 ft·lb _f) Loctite® 243
Screw, headlight mask support	M6	10 Nm (7.4 ft·lb _f) Loctite® 243
Screw, headlight	M6	3 Nm (2.2 ft·lb _f)
Screw, presilencer exhaust clamp	M6	8 Nm (5.9 ft·lb _f) Copper paste
Screw, front wheel speed sensor	M6	6 Nm (4.4 ft·lb _f)
Screw, exhaust clamp	M6	8 Nm (5.9 ft·lb _f)
Screw, fuel pump	M6	6 Nm (4.4 ft·lb _f)

Foot brake lever, fitting	M8	25 Nm (18.4 ft·lb _r) Loctite® 2701
Remaining nuts on chassis	M8	25 Nm (18.4 ft·lb _r)
Remaining screws on chassis	M8	25 Nm (18.4 ft·lb _r)
Screw, footrest bracket, rear	M8	25 Nm (18.4 ft·lb _r) Loctite® 243
Screw, top triple clamp	M8	15 Nm (11.1 ft·lb _r)
Screw, bottom triple clamp	M8	12 Nm (8.9 ft·lb _r)
Screw, fork shoe	M8	15 Nm (11.1 ft·lb _r)
Handlebar clamp screw	M8	20 Nm (14.8 ft·lb _r)
Screw, steering damper on triple clamp	M8	8 Nm (5.9 ft·lb _r) Loctite® 243
Screw, steering damper on holder	M8	8 Nm (5.9 ft·lb _r) Loctite® 243
Screw, steering stem	M8	20 Nm (14.8 ft·lb _r) Loctite® 243
Nut, manifold on cylinder head	M8 Copper paste	Tighten the nuts evenly. Do not bend the metal. 13 Nm (9.6 ft·lb _r)
Screw, presilencer on frame	M8	15 Nm (11.1 ft·lb _r) Loctite® 243
Screw, main silencer fastening	M8	15 Nm (11.1 ft·lb _r)
Screw, engine fixing arm linkage bracket	M8	25 Nm (18.4 ft·lb _r) Loctite® 243
Screw, shift lever	M8	25 Nm (18.4 ft·lb _r) Loctite® 2701
Screw, spring holder plate on the side stand bracket	M8	15 Nm (11.1 ft·lb _r) Loctite® 2701
Pin, rear brake caliper	M8	22 Nm (16.2 ft·lb _r) Loctite® 243

Screw, grab handle	M8	25 Nm (18.4 ft·lb _f) Loctite® 243
Securing bolt for brake pads	M8	10 Nm (7.4 ft·lb _f)
Screw, passenger seat bracket	M8	25 Nm (18.4 ft·lb _f) Loctite® 243
Screw, engine guard frame	M8	25 Nm (18.4 ft·lb _f) Loctite® 243
Subframe screw	M8	25 Nm (18.4 ft·lb _f) Loctite® 243
Screw, foot brake lever spring	M8	12 Nm (8.9 ft·lb _f) Loctite® 2701
Nut, rear sprocket screw	M8	35 Nm (25.8 ft·lb _f) Loctite® 2701
Screw, handguard	M8	25 Nm (18.4 ft·lb _f)
Screw, steering damper on triple clamp	M8	8 Nm (5.9 ft·lb _f) Loctite® 243
Remaining nuts on chassis	M10	45 Nm (33.2 ft·lb _f)
Remaining screws on chassis	M10	45 Nm (33.2 ft·lb _f)
Screw, front brake caliper	M10×1.25	45 Nm (33.2 ft·lb _f) Loctite® 243
Screw, front footrest bracket	M10×30	45 Nm (33.2 ft·lb _f) Loctite® 243
Screw, handlebar mount	M10	45 Nm (33.2 ft·lb _f) Loctite® 243
Screw, side stand	M10	40 Nm (29.5 ft·lb _f) Loctite® 243
Banjo bolt, brake line	M10×1	25 Nm (18.4 ft·lb _f)
Screw, front footrest bracket	M10×40	45 Nm (33.2 ft·lb _f) Loctite® 243

Screw, front footrest bracket	M10×65	45 Nm (33.2 ft·lb _r) Loctite® 243
Engine mounting bolt	M10	45 Nm (33.2 ft·lb _r) Loctite® 243
Subframe screw	M10	50 Nm (36.9 ft·lb _r) Loctite® 243
Screw, swingarm pivot	M12	100 Nm (73.8 ft·lb _r)
Top shock absorber screw	M12	80 Nm (59.0 ft·lb _r) Loctite® 2701
Bottom shock absorber screw	M12	80 Nm (59.0 ft·lb _r) Loctite® 2701
Oxygen sensor	M18×1.5	50 Nm (36.9 ft·lb _r)
Screw, steering head	M20×1.5	18 Nm (13.3 ft·lb _r)
Bushing, shock absorber support	M20LH×1.5	10 Nm (7.4 ft·lb _r) Long-life grease
Nut, wheel spindle, rear	M25×1.5	90 Nm (66.4 ft·lb _r) Long-life grease
Screw, wheel spindle, front	M25×1.5	45 Nm (33.2 ft·lb _r) Long-life grease

28.1 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)
------------------	--------------------

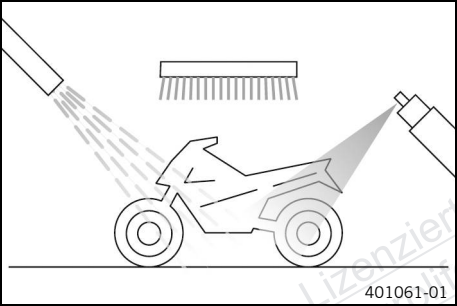


NOTE
Environmental hazard Hazardous substances cause environmental damage.

- 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. 504)



Note
Use warm water containing standard motorcycle cleaner and a soft sponge.
If the vehicle was driven in road salt, clean it with cold water. Warm water enhances the corrosive effects of salt.

- 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.

- After the motorcycle has cooled off, lubricate all moving parts and pivot points.



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 the chain. (p. 160)
- Treat bare metal (except for brake discs and the exhaust system) with an anticorrosive.

Preserving materials (p. 504)

- Treat all painted parts with a mild paint polish.

Do not polish parts that were matte when delivered as this would strongly impair the material quality.

Shine spray with beading effect (p. 504)

- Treat the plastic parts and powder-coated parts with a mild cleaning and care product.

Cleaning agents for plastics, glass, lacquers, metals, windshields and visors (p. 504)

- Oil the ignition and steering lock, tank lock, and seat lock.

Universal oil spray (p. 500)

28.2 Checks and maintenance steps for winter operation



WARNING

Danger of accidents Salt on the roads impairs the brake system.

- Brake carefully several times to remove salt from the brake linings and the brake discs.



WARNING

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

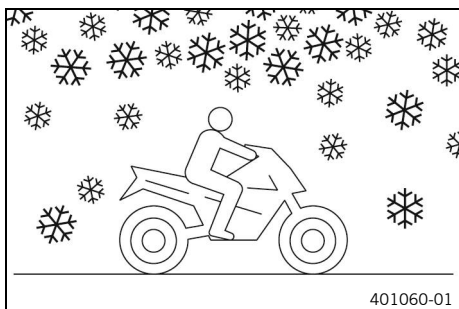
- Always keep the brake discs free of oil, fat and wax.
- Clean the brake discs with brake cleaner when necessary.



Note

If you use the motorcycle in winter, salt can be expected on the roads. You should therefore take precautions against aggressive road salt.

28 Cleaning/protective treatment



- Clean the motorcycle. 📖 (p. 430)
- Clean brake system.

After every trip on salted roads, thoroughly wash the brake calipers and brake pads with cold water and dry carefully. This should be done after the parts are cooled down and while they are installed.

After riding on salted roads, thoroughly clean the vehicle with cold water and dry it well.



Note

Warm water enhances the corrosive effects of salt.

- Treat the engine, swingarm, and all other bare or zinc-plated parts (except the brake discs) with a wax-based anticorrosive.

Corrosion inhibitor must not come into contact with the brake discs. This would severely lower the braking effect.

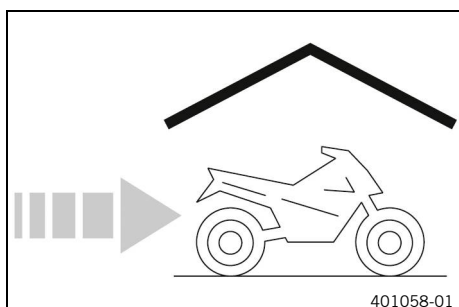
- Clean the chain. 📖 (p. 160)



29.1 Storage

**Note**

If you plan to garage the motorcycle for a longer period, perform the following steps or have them performed. 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 (workshops less busy). In this way, you can avoid long workshop waiting times at the start of the new season.



- When refueling for the last time before taking the motorcycle out of service, add fuel additive.

Fuel additive (p. 503)

- Refuel. (p. 116)

**Tip**

Fill the fuel tank completely as specified, using fuel with the lowest possible ethanol content.

- Clean the motorcycle. (p. 430)
- Change the engine oil and the oil filter, clean the oil screens. (p. 394)
- Check the coolant fill level and antifreeze. (p. 373)
- Check the tire pressure. (p. 129)
- Remove the 12 V battery. (p. 168)

Storage temperature of the 12 V battery without direct sunlight	0 °C ... 35 °C (32.0 °F ... 95.0 °F)
---	---

- Charge the 12 V battery.
- 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 the rear lifting gear. (p. 18)
- Lift the motorcycle with the front lifting gear. (p. 17)

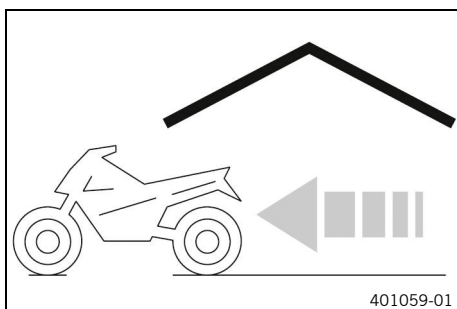
Cover the motorcycle with a tarp or cover that is permeable to air.

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. Since the engine cannot warm up properly, the water vapor produced during combustion condenses and causes valves and the exhaust system to rust.

29.2 Preparing for use after storage



- Take the motorcycle off the front lifting gear. 📖 (p. 17)
- Remove the rear of the motorcycle from the lifting gear. 📖 (p. 18)
- Charge the 12 V battery.
- Install the 12 V battery. 📖 (p. 169)
- Set the time and date. 📖 (p. 238)
- Perform checks and maintenance measures when preparing for use.
- Take a test ride.

30.1 Service work

Any further work that results from the compulsory work or from the recommended work must be ordered separately and invoiced separately.

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

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.

	Every 48 months					
	Every 24 months					
	Every 12 months					
	every 30,000 km (18,641.1 mi)					
	every 15,000 km (9,320.6 mi)					
	after 1,000 km (621.4 mi)					
Read out the fault memory using the diagnostics tool.	○	●	●	●	●	●
Program the shift shaft sensor.  (p. 372)	○	●	●	●	●	●
Check that the electrical equipment is functioning properly.	○	●	●	●	●	●
Check that the brake pads of the front brake are secured.  (p. 180)	○	●	●	●	●	●
Check that the brake pads of the rear brake are secured.  (p. 187)	○	●	●	●	●	●
Check the brake discs.  (p. 133)	○	●	●	●	●	●
Check the brake lines for damage and tightness.	○	●	●	●	●	●
Check the brake fluid level for the front brake.  (p. 182)	○	●	●	●		
Change the brake fluid for the front brake.  (p. 184)					●	●
Check the brake fluid level for the rear brake.  (p. 192)	○	●	●	●		
Change the brake fluid for the rear brake.  (p. 193)					●	●
Check the free travel of the clutch lever.  (p. 53)	○	●	●	●	●	●
Check the free travel of the brake pedal.  (p. 190)	○	●	●	●	●	●
Change the engine oil and the oil filter, clean the oil screens.  (p. 394)	○	●	●	●	●	●
Check all hoses (e.g. fuel, cooling, bleeder, drainage, etc.) and boots for cracking, leaks, and correct routing.		●	●	●	●	●
Empty the drainage hoses.	○	●	●	●	●	●
Check the cables for damage and that there are no kinks in the routing.		●	●	●	●	●
Check the frame.  (p. 63)			●			
Check the swingarm.  (p. 73)			●			
Check the swingarm bearing for play.  (p. 73)		●	●			
Check the steering head bearing play.  (p. 41)	○	●	●			
Check the wheel bearing for play.  (p. 131)		●	●			
Check the shock absorber and fork for leaks. Perform a fork service and shock absorber service as needed, when possible and depending on how the vehicle is used.	○	●	●	●	●	●
Check the tire condition.  (p. 129)	○	●	●	●	●	●
Check the tire pressure.  (p. 129)	○	●	●	●	●	●
Check the rim run-out.  (p. 130)	○	●	●	●	●	●
Retighten the spokes.	○					

	Every 48 months					
	Every 24 months					
	Every 12 months					
	every 30,000 km (18,641.1 mi)					
	every 15,000 km (9,320.6 mi)					
	after 1,000 km (621.4 mi)					
Check the spoke tension.  (p. 132)		•	•	•	•	•
Check the chain, rear sprocket, engine sprocket, and chain guide.  (p. 158)		•	•	•	•	•
Check the chain tension.  (p. 157)	○	•	•	•	•	•
Grease all moving parts (e.g. side stand, hand lever, chain, etc.) and check for smooth operation.	○	•	•	•	•	•
Change the spark plugs.  (p. 406)			•			
Check the valve clearance.  (p. 380)			•			
Change the air filter, clean the air filter box.  (p. 96)		•	•			
Check the fuel pressure.  (p. 106)		•	•	•	•	•
Check the headlight adjustment.  (p. 206)	○	•	•			
Check the tightness of the safety-relevant screws and nuts which are easily accessible.	○	•	•	•	•	•
Clean the dust boots of the fork legs.  (p. 27)		•	•			
Check the coolant fill level and antifreeze.  (p. 373)	○	•	•	•	•	
Change the coolant.  (p. 377)						•
Check that the radiator fan is functioning properly.	○	•	•	•	•	•
Final check: Check the vehicle is roadworthy and take a test ride.	○	•	•	•	•	•
Read out the fault memory after the test ride using the diagnostics tool.	○	•	•	•	•	•
Adjust service display with KTM diagnostics tool.	○	•	•	•	•	•
Enter the electronic proof of service in the contractual partner portal.	○	•	•	•	•	•

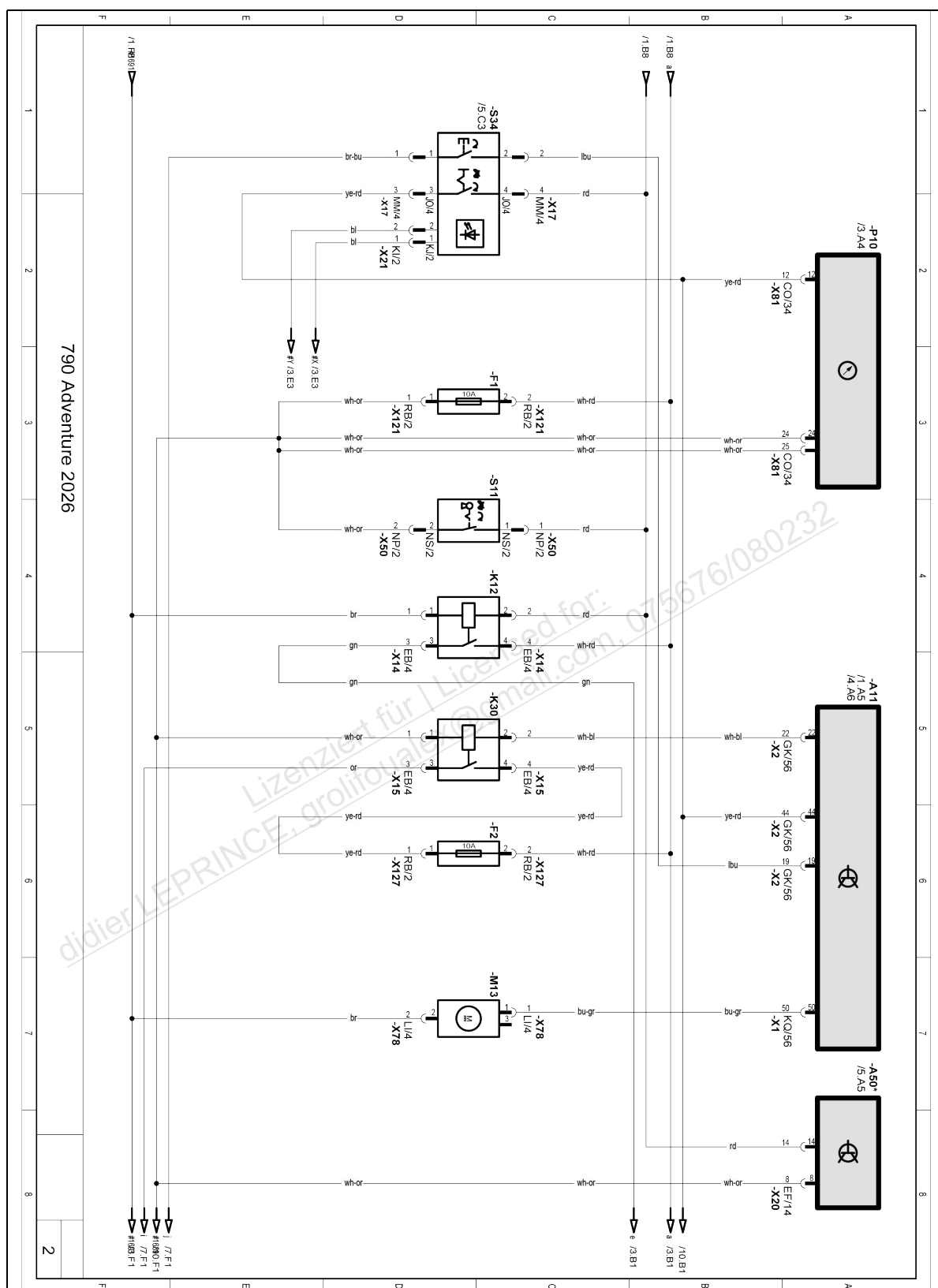
- One-time interval
- Periodic interval

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Components:

A11	Engine control unit	T20	Regulator rectifier
F7	Fuse	X270	Connector for accessories circuit, ground ACC 1
G10	12 V battery	X271	Connector for accessories circuit, plus ACC 1
G20	Alternator	X291	Connector for accessories circuit, ground ACC 1
K10	Starter relay with main fuse	X292	Connector for accessories circuit, plus ACC 1
K11	Auxiliary start relay		
M10	Starter motor		

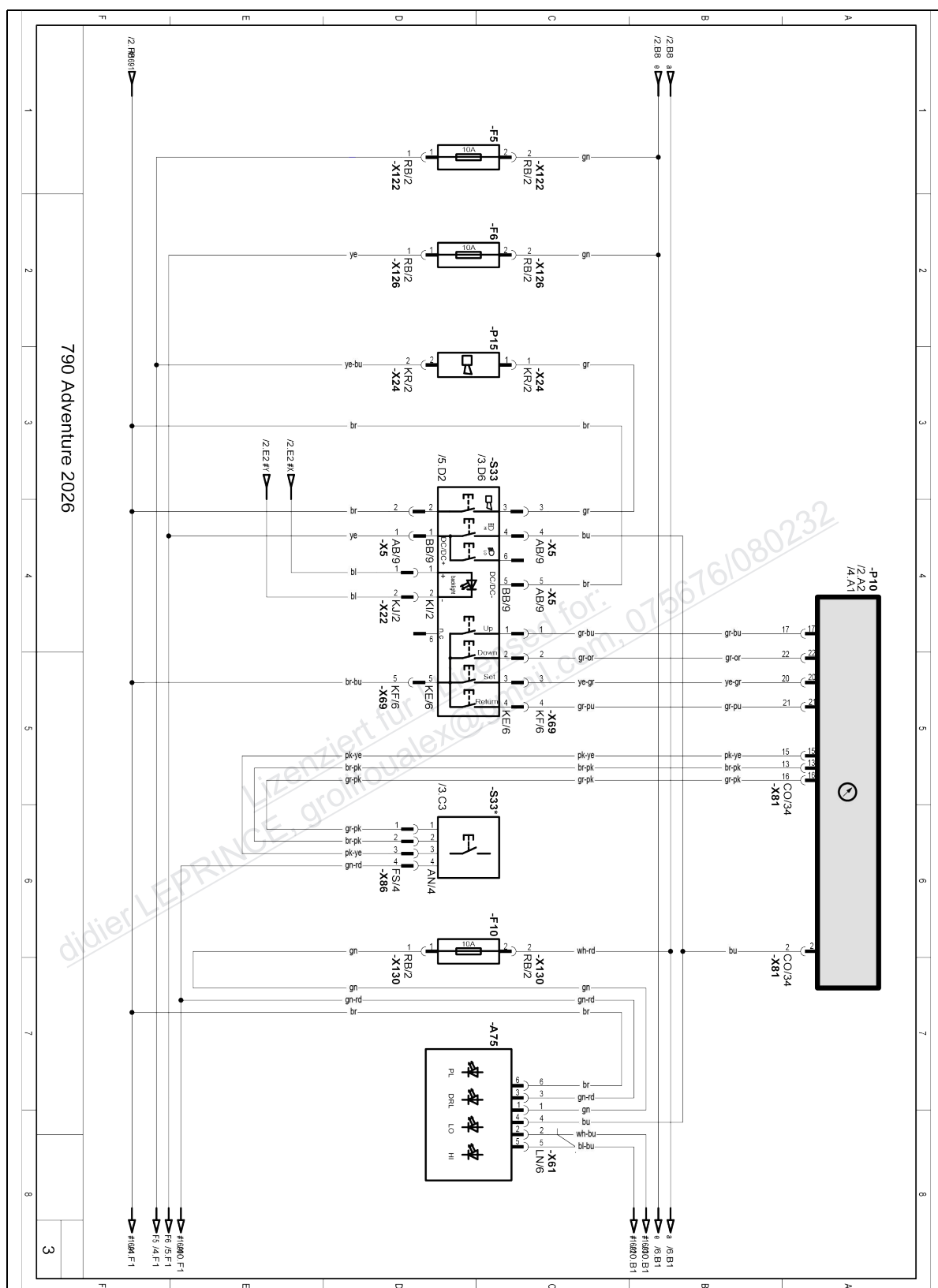
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Components:

A11	Engine control unit	K30	Main relay
A50	Alarm system (if fitted)	M13	Fuel pump
F1	Fuse	P10	Combination instrument
F2	Fuse	S11	Ignition and steering lock
K12	Light relay	S34	Combination switch, right

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Components:

A75	Headlight unit	P10	Combination instrument
F5	Fuse	P15	Horn
F6	Fuse	S33	Left combination switch
F10	Fuse	S33*	Left combination switch cruise control system (if fitted)

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Components:

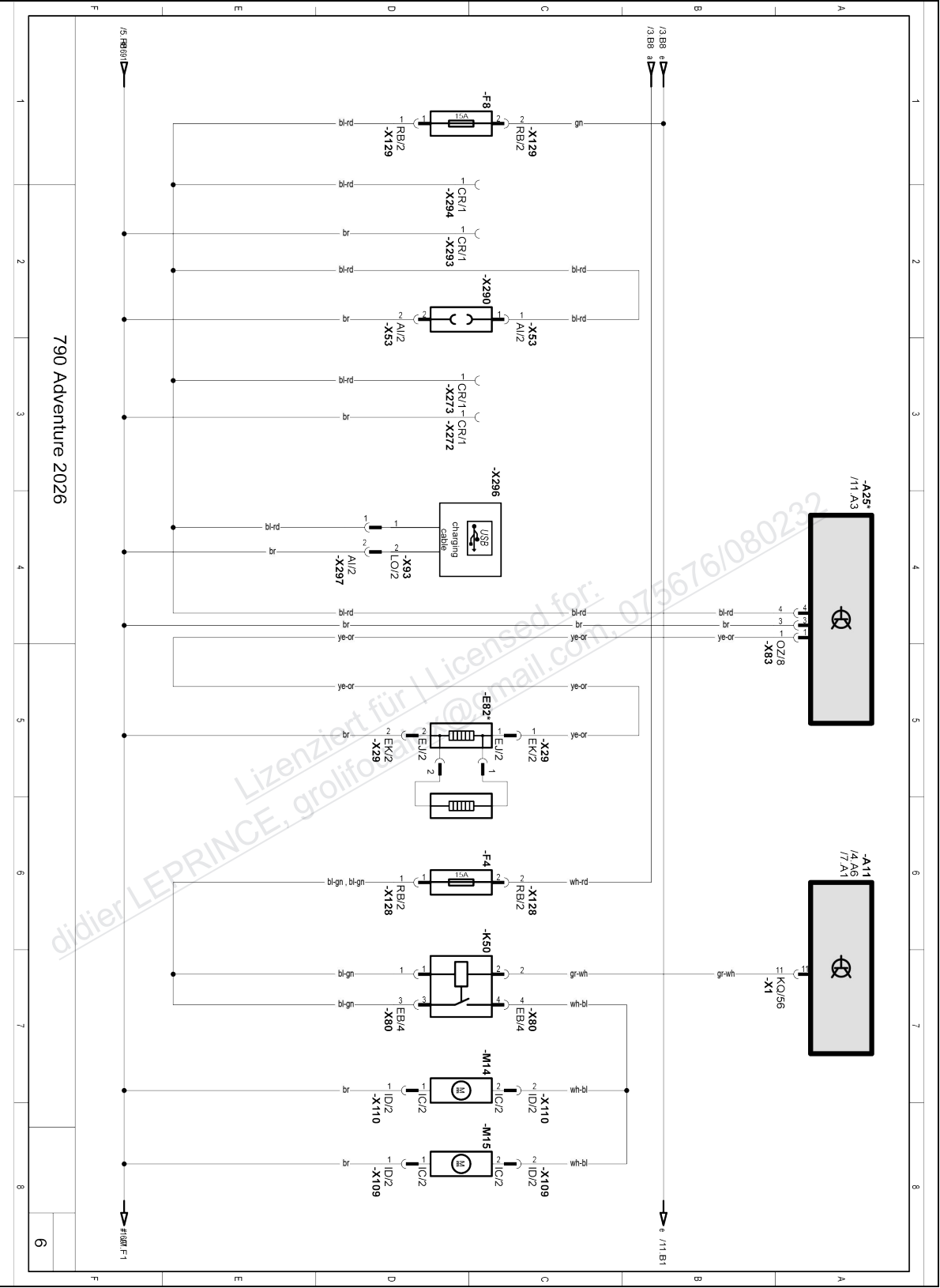
A11	Engine control unit	B76	Front brake light switch
B25	Ambient air temperature sensor	B77	Rear brake light switch
B32	Fuel level sensor	P10	Combination instrument

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Components:

A50	Alarm system (if fitted)	P45	Turn signal, rear left
P10	Combination instrument	P46	Turn signal, rear right
P37	Tail light	S33	Left combination switch
P41	Turn signal, front left	S34	Right combination switch
P42	Turn signal, front right		

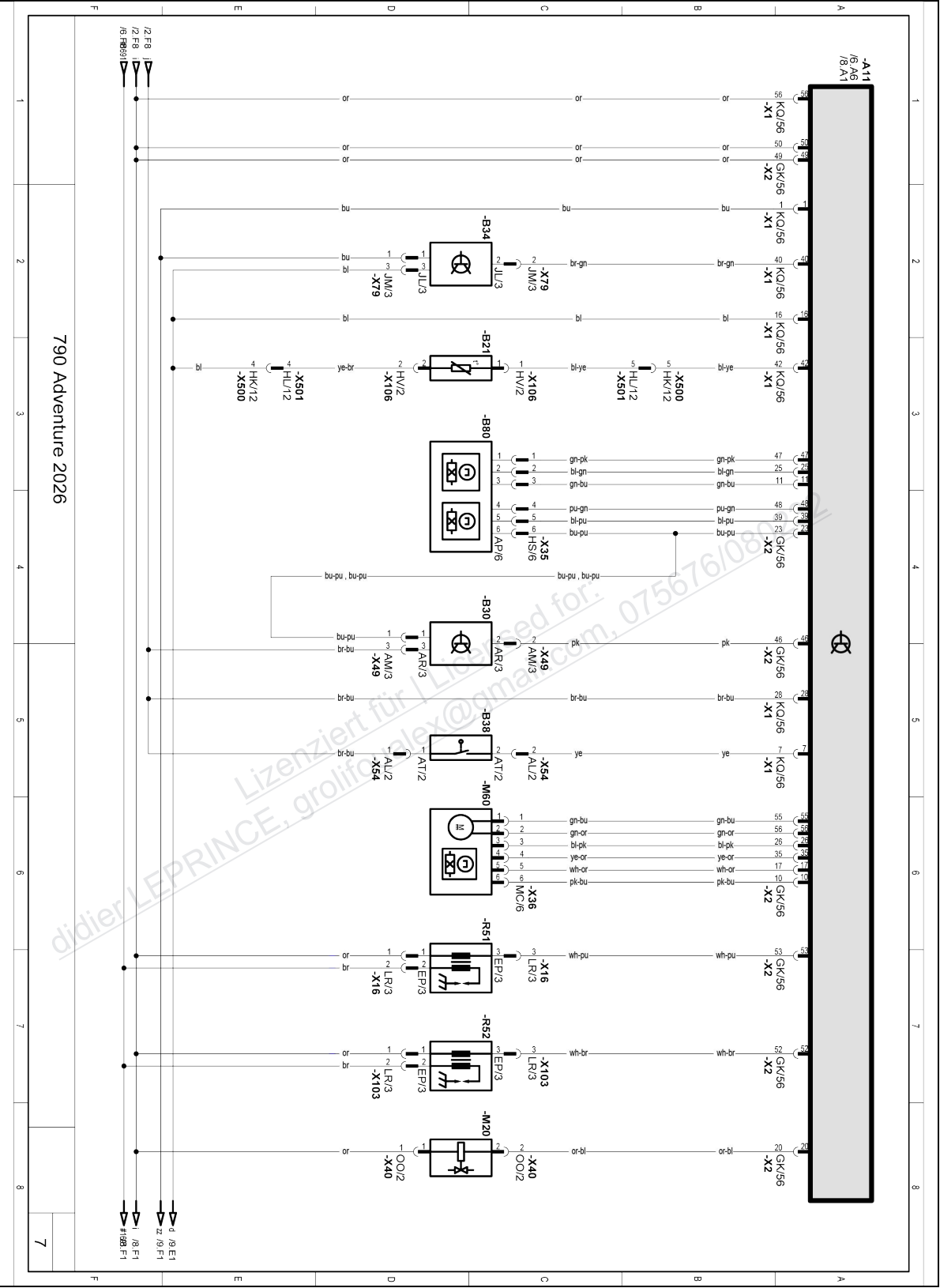
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Components:

A11	Engine control unit	X272	Connector for accessories circuit, ground ACC 2
A25	Heating control unit (if fitted)	X273	Connector for accessories circuit, plus ACC 2
E82	Grip heater (if fitted)	X290	Socket
F4	Fuse	X293	Connector for accessories circuit, ground ACC 2
F8	Fuse	X294	Connector for accessories circuit, plus ACC 2
K50	Radiator fan relay	X296	USB-A charging socket
M14	Radiator fan 1		
M15	Radiator fan 2		

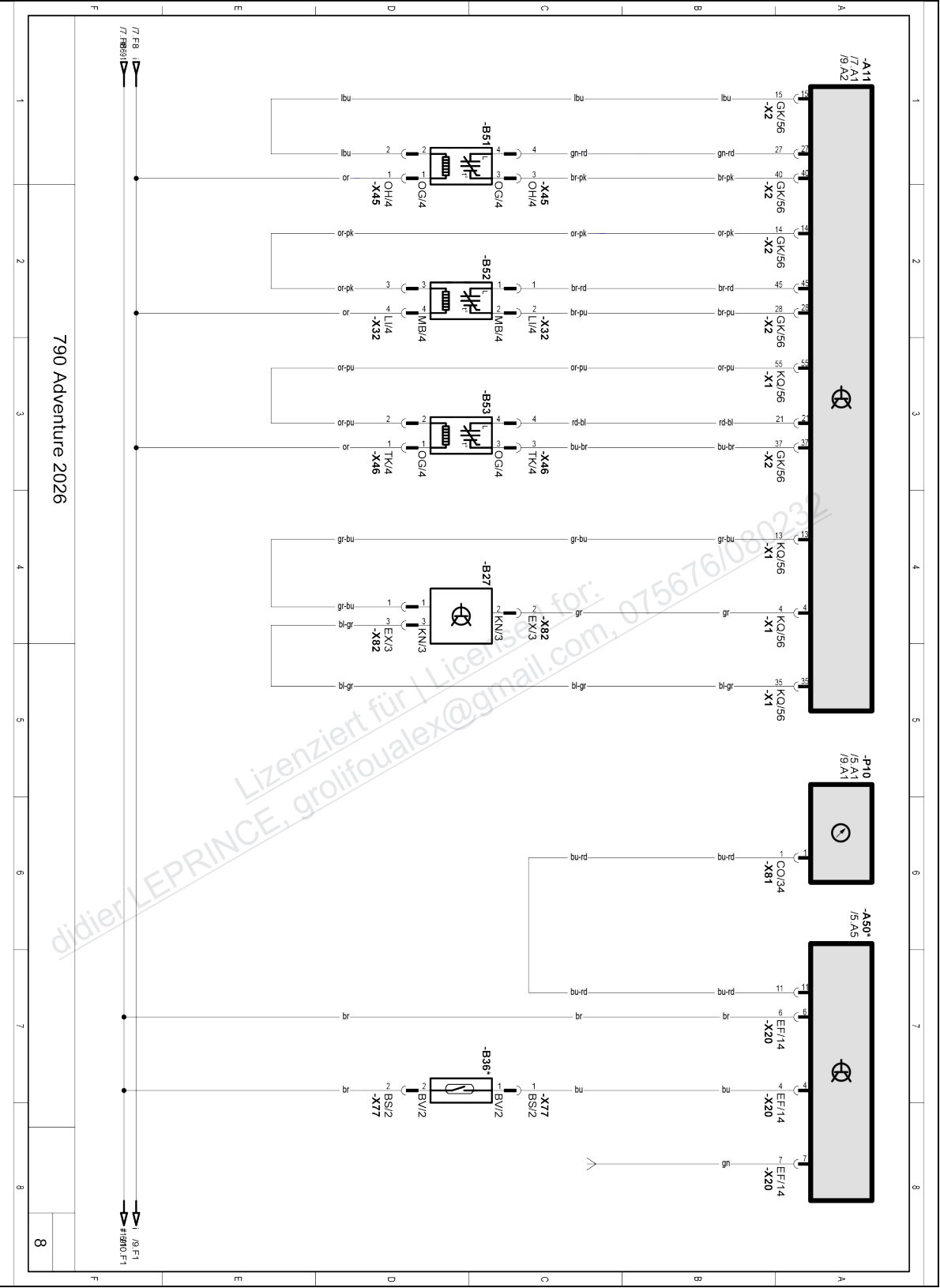
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Components:

A11	Engine control unit	B80	Throttle grip
B21	Coolant temperature sensor	M20	Purge valve
B30	Side stand sensor	M60	Throttle valve actuator and throttle valve position sensor
B34	Gear position sensor	R51	Ignition coil 1
B38	Clutch switch	R52	Ignition coil 2

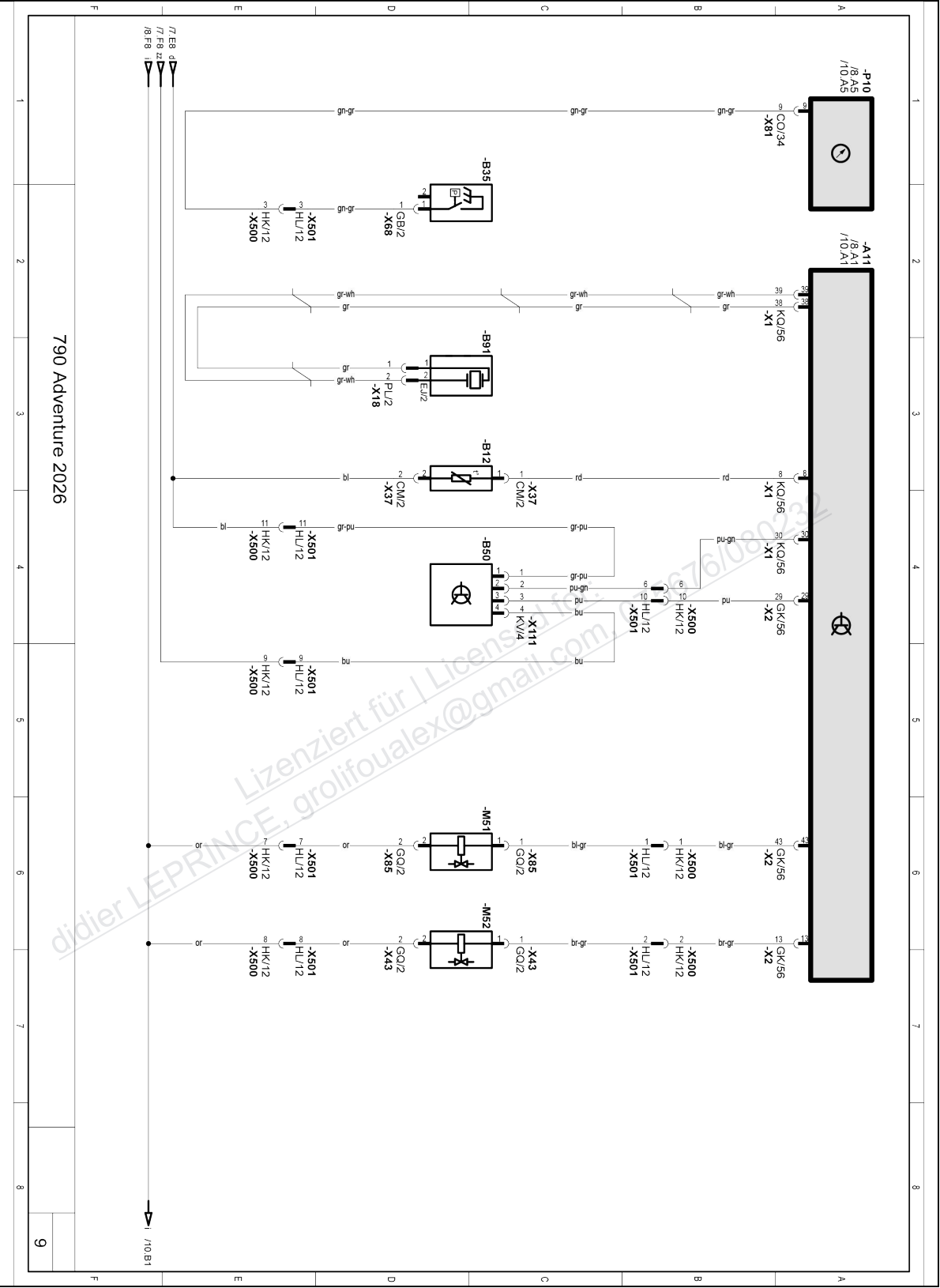
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Components:

A11	Engine control unit	B51	Lambda sensor, cylinder 1
A50	Alarm system (if fitted)	B52	Lambda sensor, cylinder 2
B27	Shift shaft sensor	B53	Oxygen sensor 3 after catalytic converter
B36	Alarm system switch (if fitted)	P10	Combination instrument

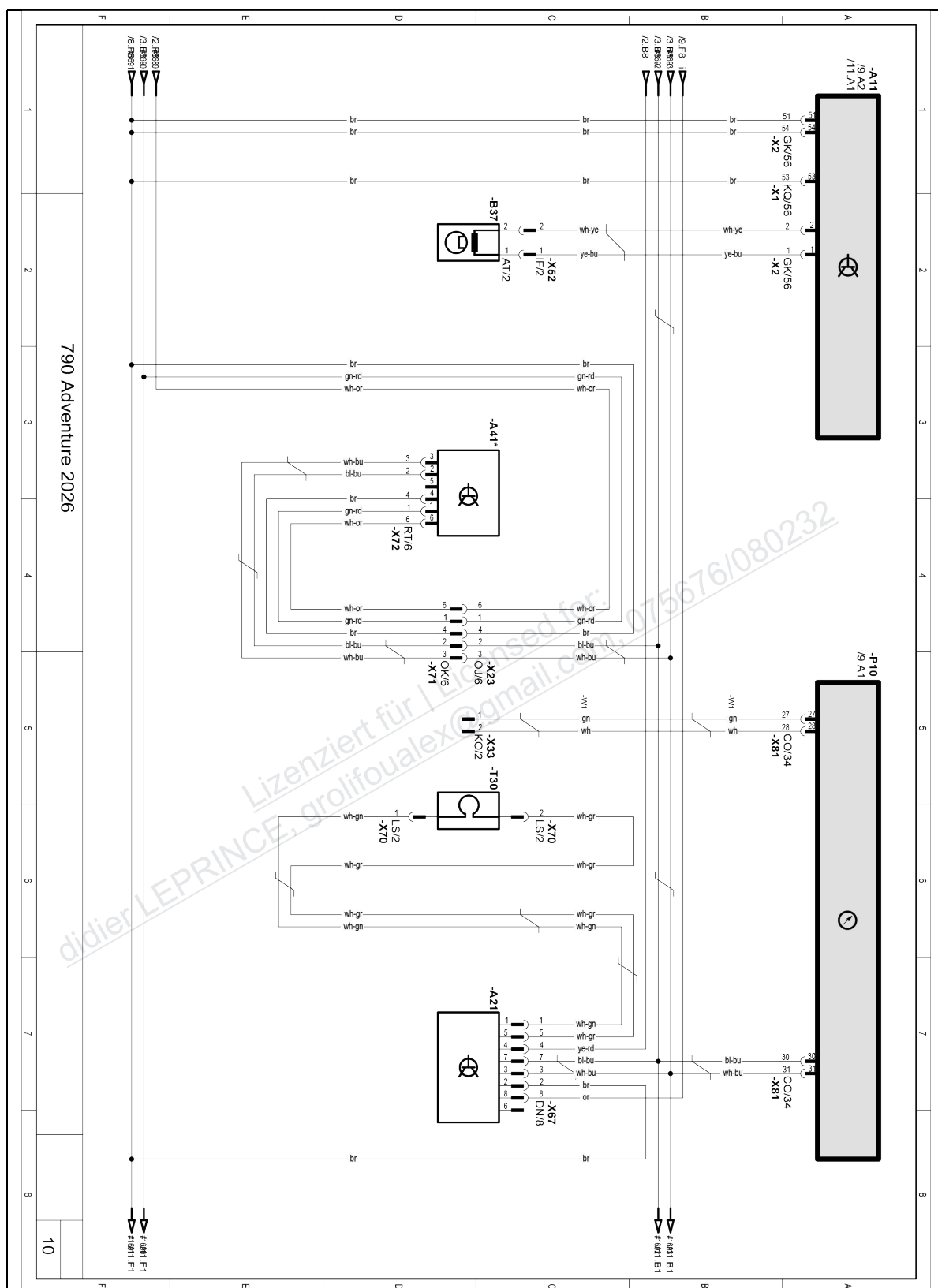
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Components:

A11	Engine control unit	B91	Knock sensor
B12	Intake air temperature sensor	M51	Injection valve, cylinder 1
B35	Oil pressure sensor	M52	Injection valve, cylinder 2
B50	Intake manifold pressure sensor, cylinder 1 and 2	P10	Combination instrument

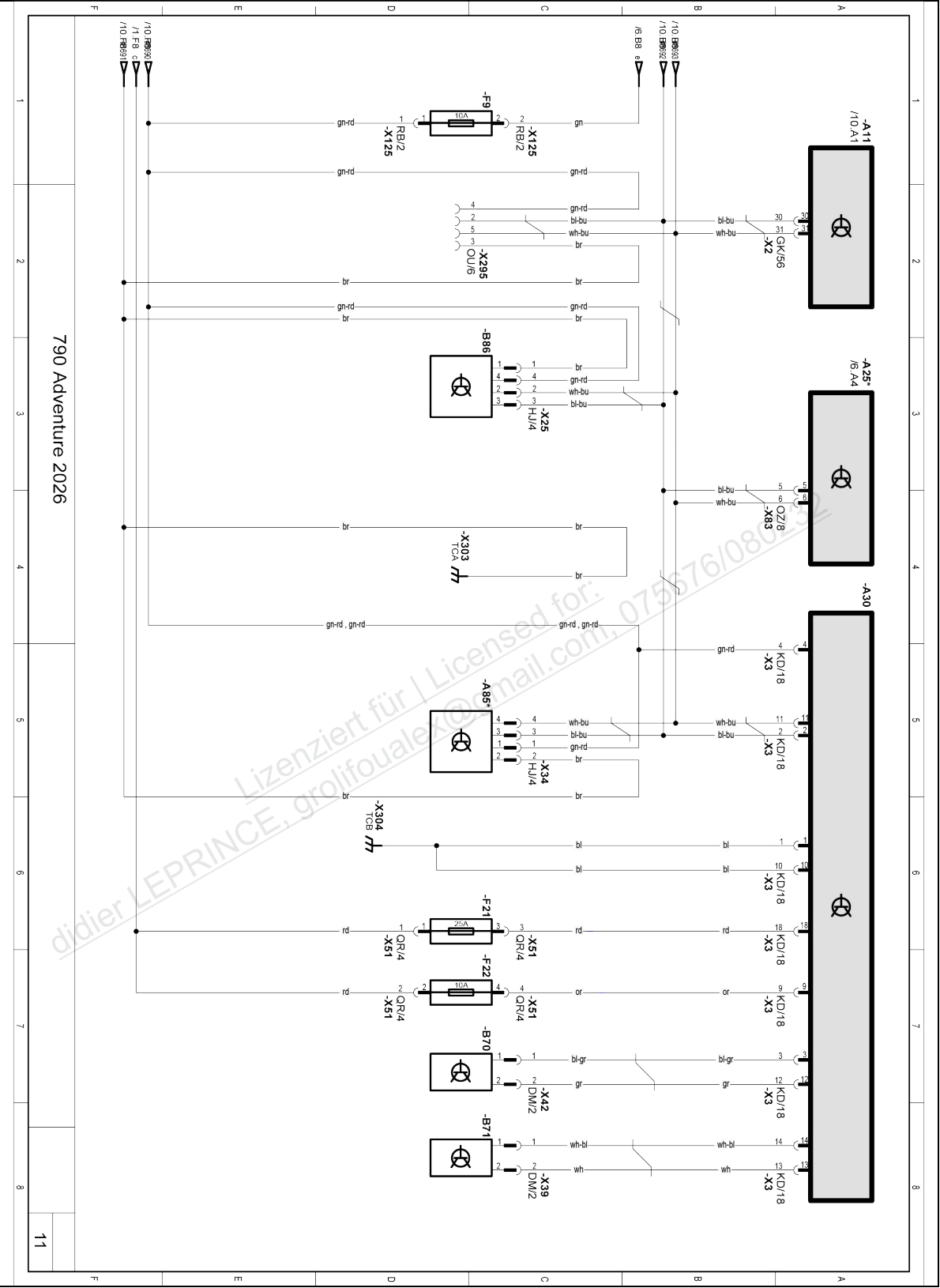
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Components:

A11	Engine control unit	B37	Crankshaft position sensor
A21	Immobilizer control unit	P10	Combination instrument
A41	Connectivity Unit (if installed)	T30	Antenna of the immobilizer control unit

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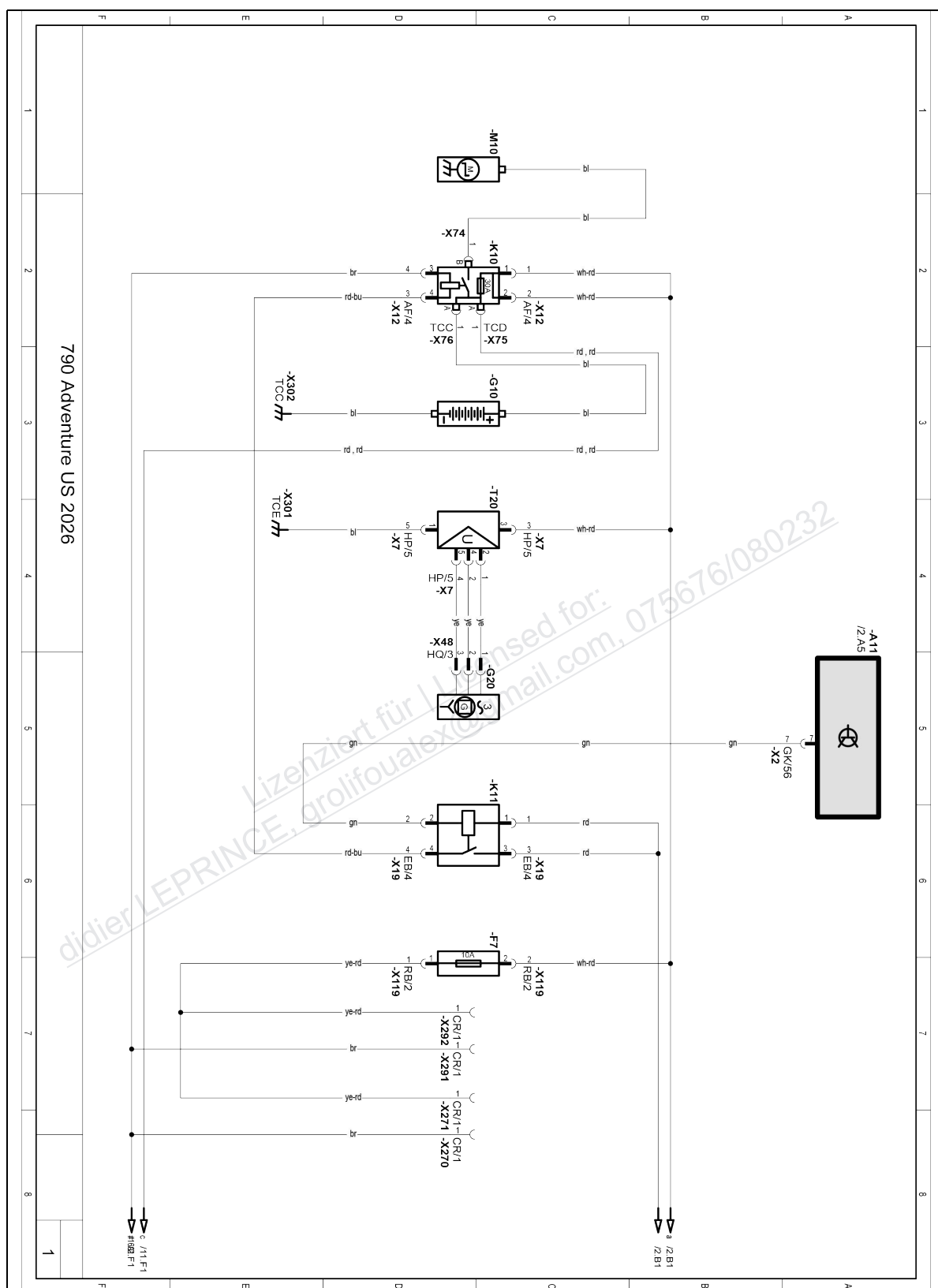
Components:

A11	Engine control unit	B86	Inertial measurement unit
A25	Heating control unit (if fitted)	F9	Fuse
A30	ABS control unit	F21	ABS return pump fuse
A85	Tire pressure monitoring system (if fitted)	F22	ABS hydraulic unit fuse
B70	Front wheel speed sensor	X295	Diagnostic connector
B71	Rear wheel speed sensor		

Cable colors:

bl	black	or	orange
br	brown	pk	pink
bu	blue	pu	violet
gn	green	rd	red
gr	grey	wh	white
lbu	light blue	ye	yellow

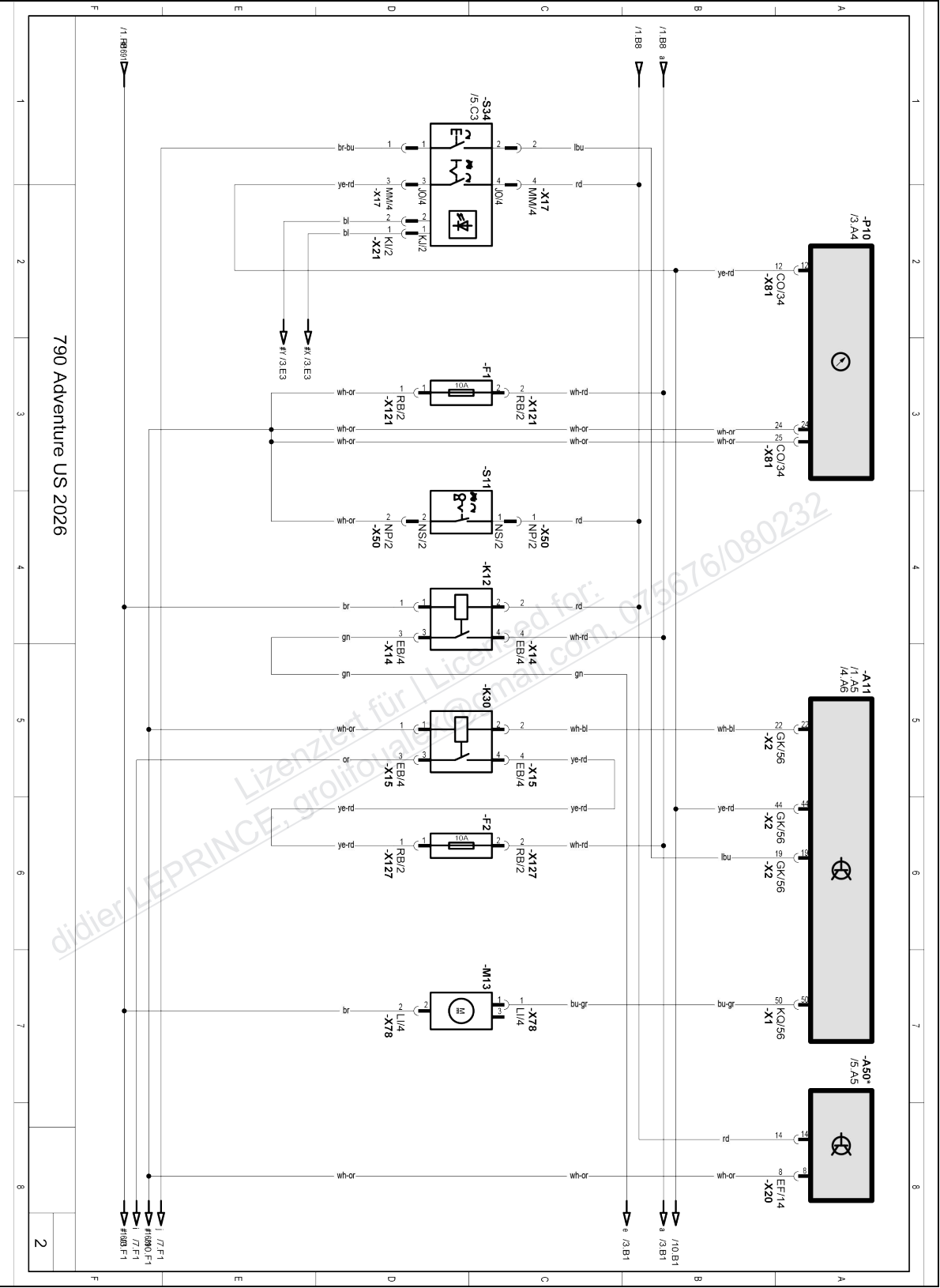
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Components:

A11	Engine control unit	T20	Regulator rectifier
F7	Fuse	X270	Connector for accessories circuit, ground ACC 1
G10	12 V battery	X271	Connector for accessories circuit, plus ACC 1
G20	Alternator	X291	Connector for accessories circuit, ground ACC 1
K10	Starter relay with main fuse	X292	Connector for accessories circuit, plus ACC 1
K11	Auxiliary start relay		
M10	Starter motor		

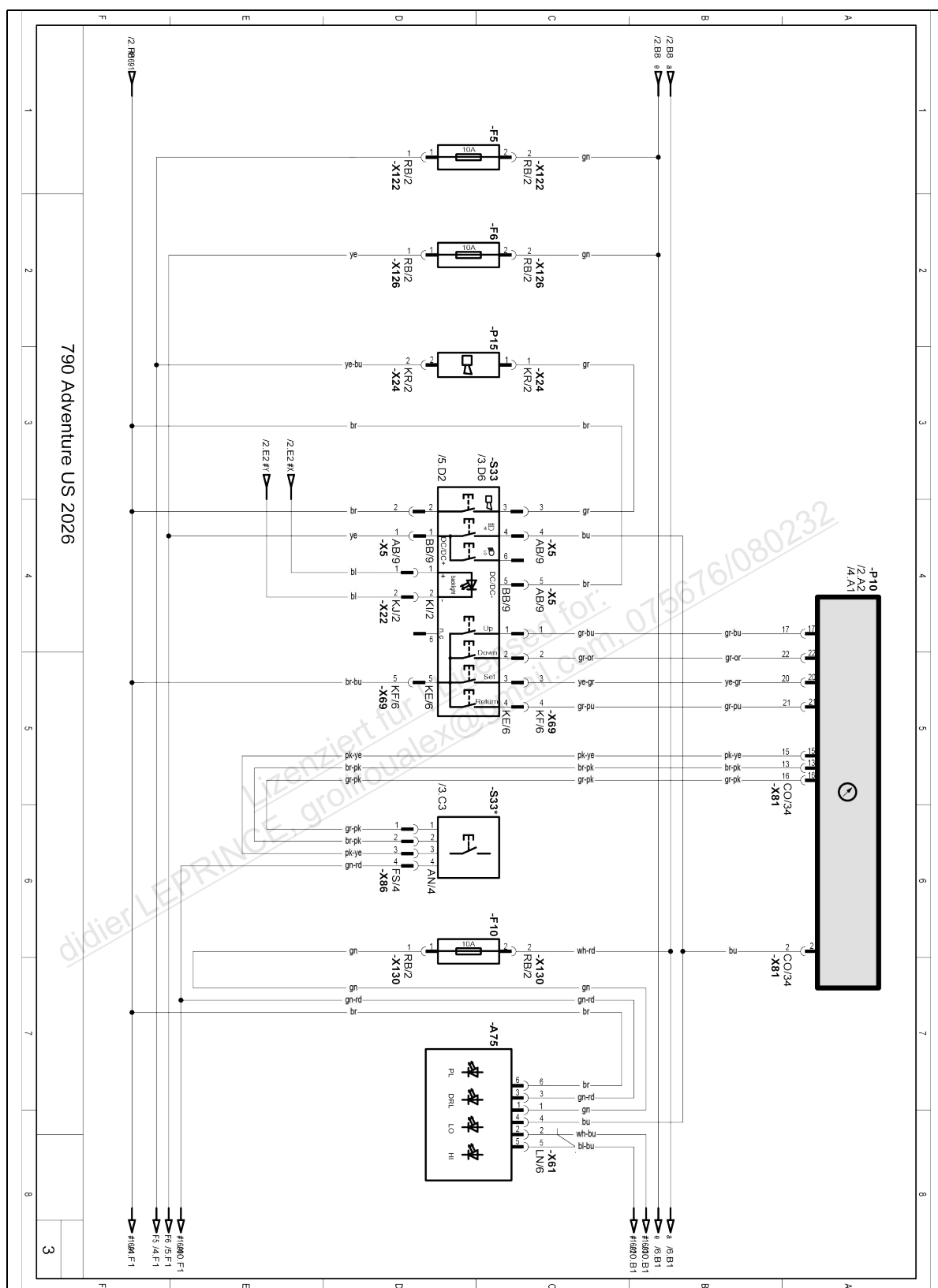
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Components:

A11	Engine control unit	K30	Main relay
A50	Alarm system (if fitted)	M13	Fuel pump
F1	Fuse	P10	Combination instrument
F2	Fuse	S11	Ignition and steering lock
K12	Light relay	S34	Combination switch, right

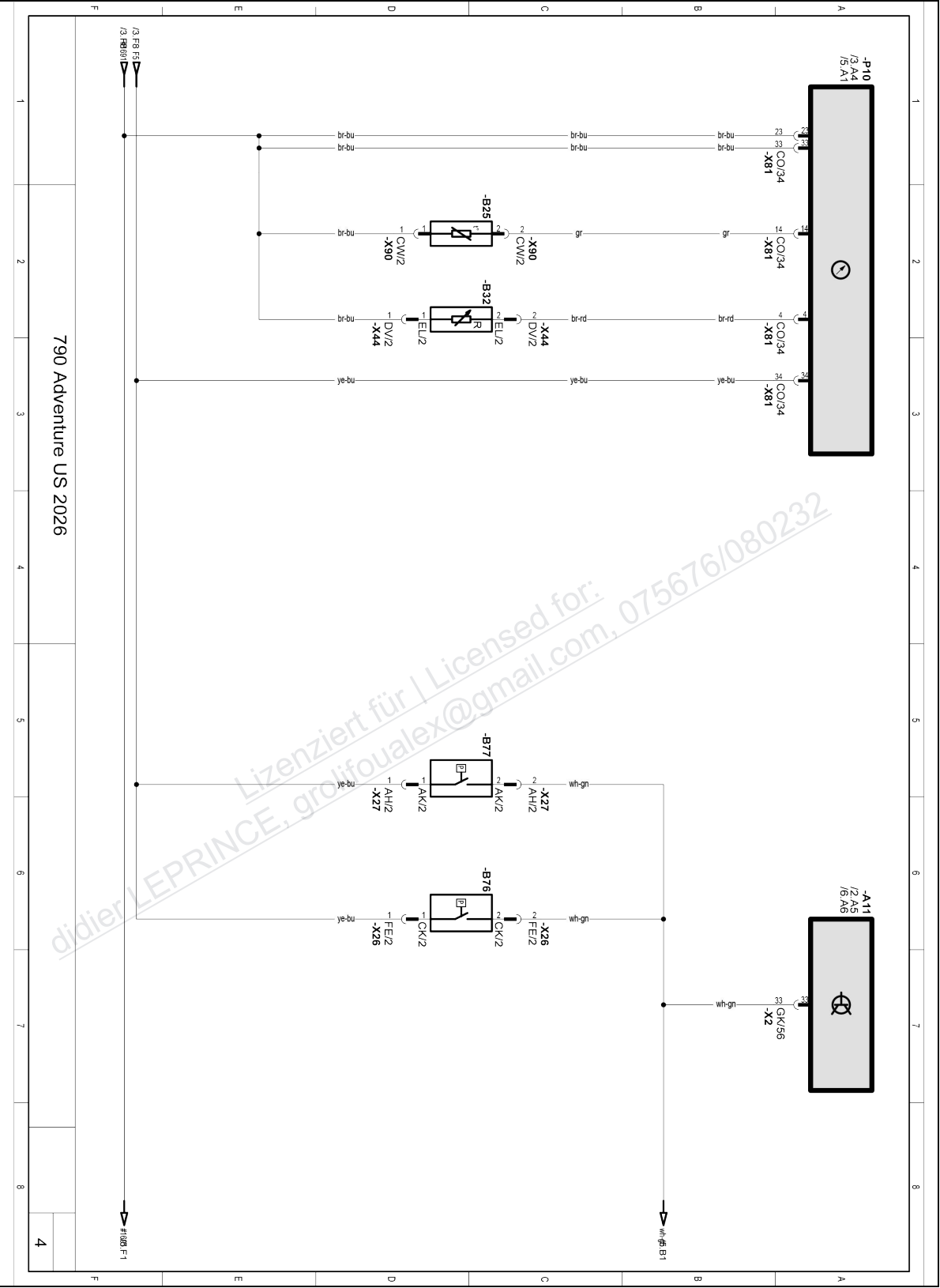
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Components:

A75	Headlight unit	P10	Combination instrument
F5	Fuse	P15	Horn
F6	Fuse	S33	Left combination switch
F10	Fuse	S33*	Left combination switch cruise control system (if fitted)

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Components:

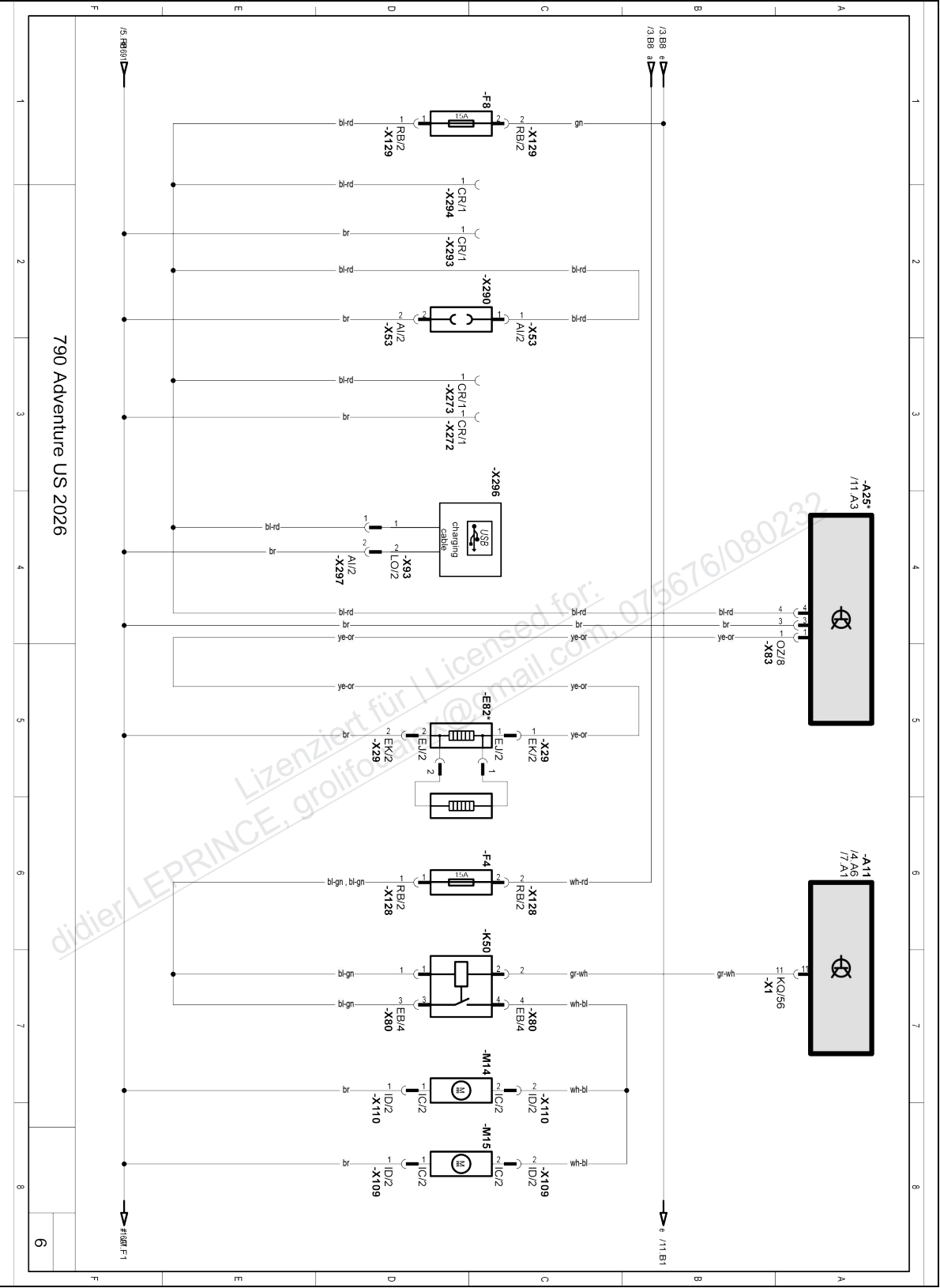
A11	Engine control unit	B76	Front brake light switch
B25	Ambient air temperature sensor	B77	Rear brake light switch
B32	Fuel level sensor	P10	Combination instrument

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Components:

A50	Alarm system (if fitted)	P45	Turn signal, rear left
P10	Combination instrument	P46	Turn signal, rear right
P37	Tail light	S33	Left combination switch
P41	Turn signal, front left	S34	Right combination switch
P42	Turn signal, front right		

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Components:

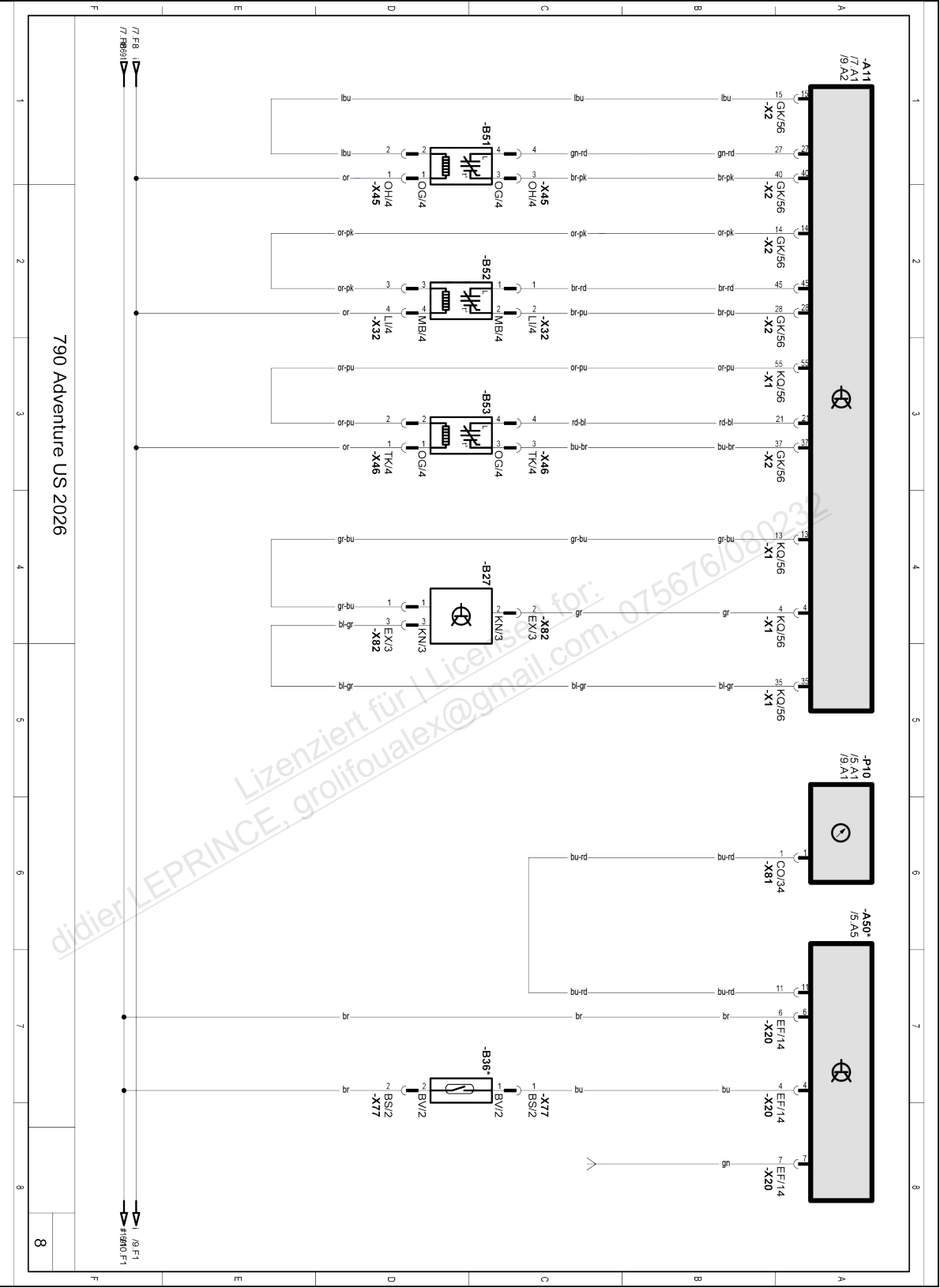
A11	Engine control unit	X272	Connector for accessories circuit, ground ACC 2
A25	Heating control unit (if fitted)	X273	Connector for accessories circuit, plus ACC 2
E82	Grip heater (if fitted)	X290	Socket
F4	Fuse	X293	Connector for accessories circuit, ground ACC 2
F8	Fuse	X294	Connector for accessories circuit, plus ACC 2
K50	Radiator fan relay	X296	USB-A charging socket
M14	Radiator fan 1		
M15	Radiator fan 2		

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Components:

A11	Engine control unit	B80	Throttle grip
B21	Coolant temperature sensor	M20	Purge valve
B30	Side stand sensor	M60	Throttle valve actuator and throttle valve position sensor
B34	Gear position sensor	R51	Ignition coil 1
B38	Clutch switch	R52	Ignition coil 2

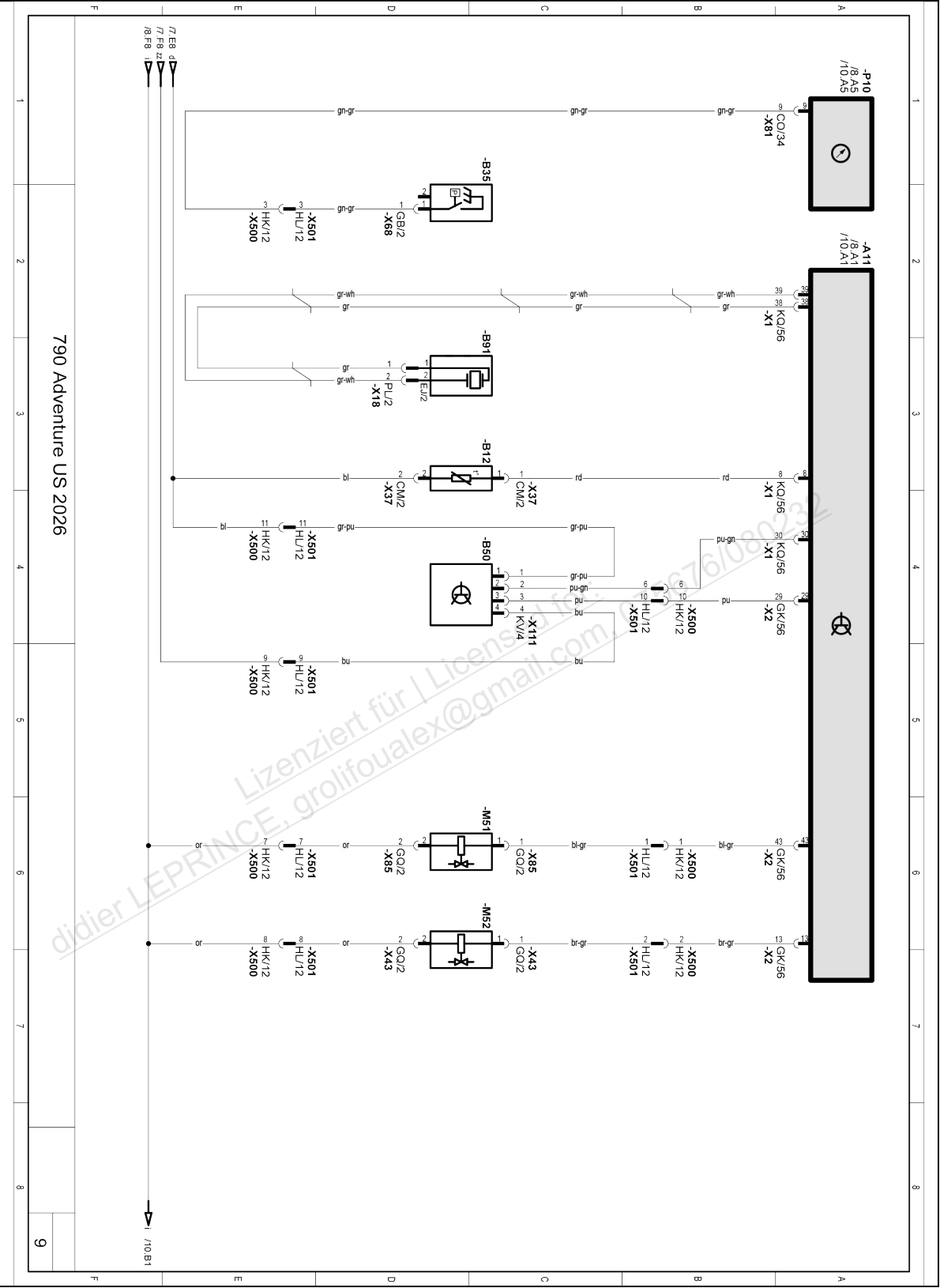
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Components:

A11	Engine control unit	B51	Lambda sensor, cylinder 1
A50	Alarm system (if fitted)	B52	Lambda sensor, cylinder 2
B27	Shift shaft sensor	B53	Oxygen sensor 3 after catalytic converter
B36	Alarm system switch (if fitted)	P10	Combination instrument

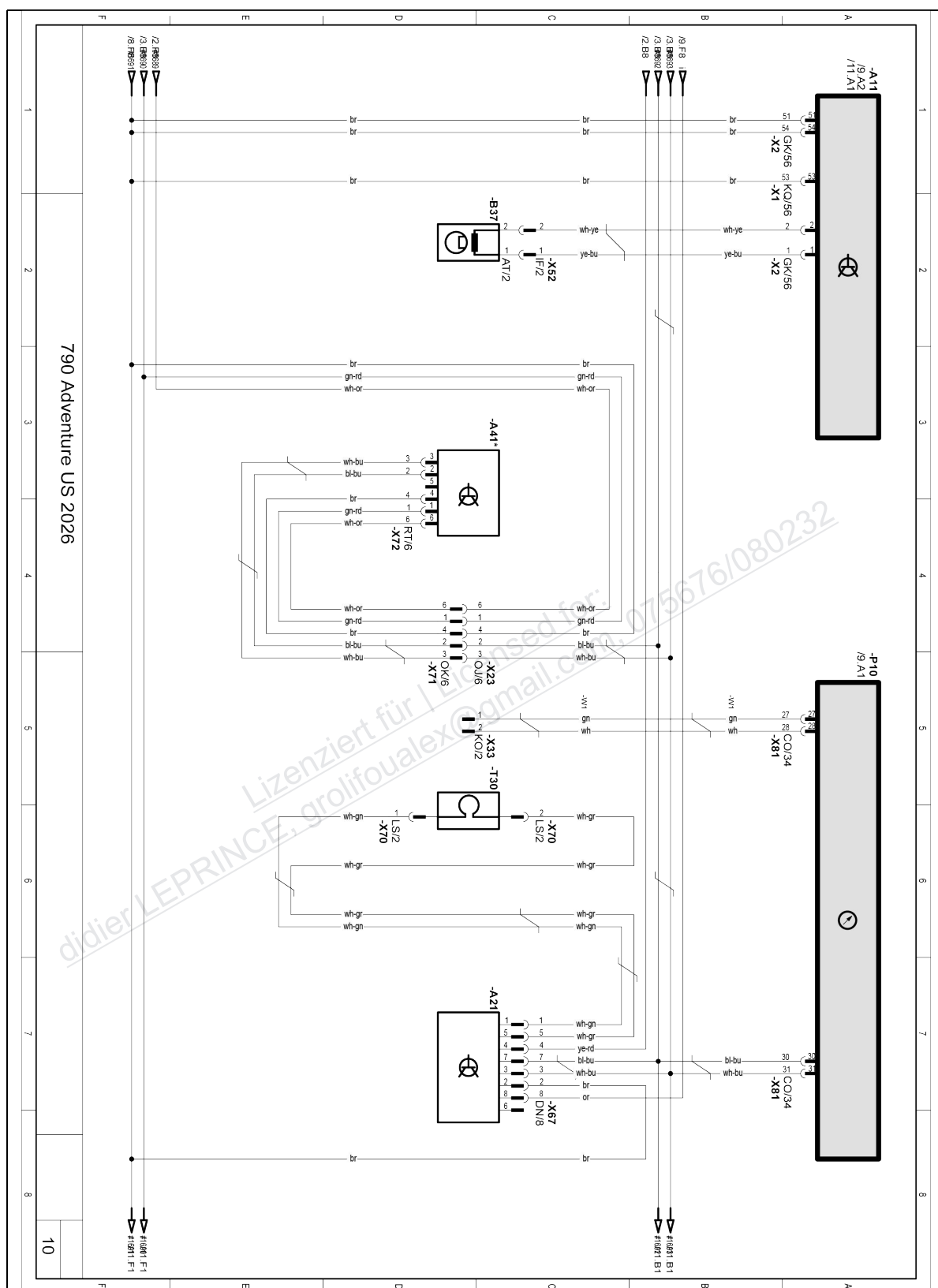
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Components:

A11	Engine control unit	B91	Knock sensor
B12	Intake air temperature sensor	M51	Injection valve, cylinder 1
B35	Oil pressure sensor	M52	Injection valve, cylinder 2
B50	Intake manifold pressure sensor, cylinder 1 and 2	P10	Combination instrument

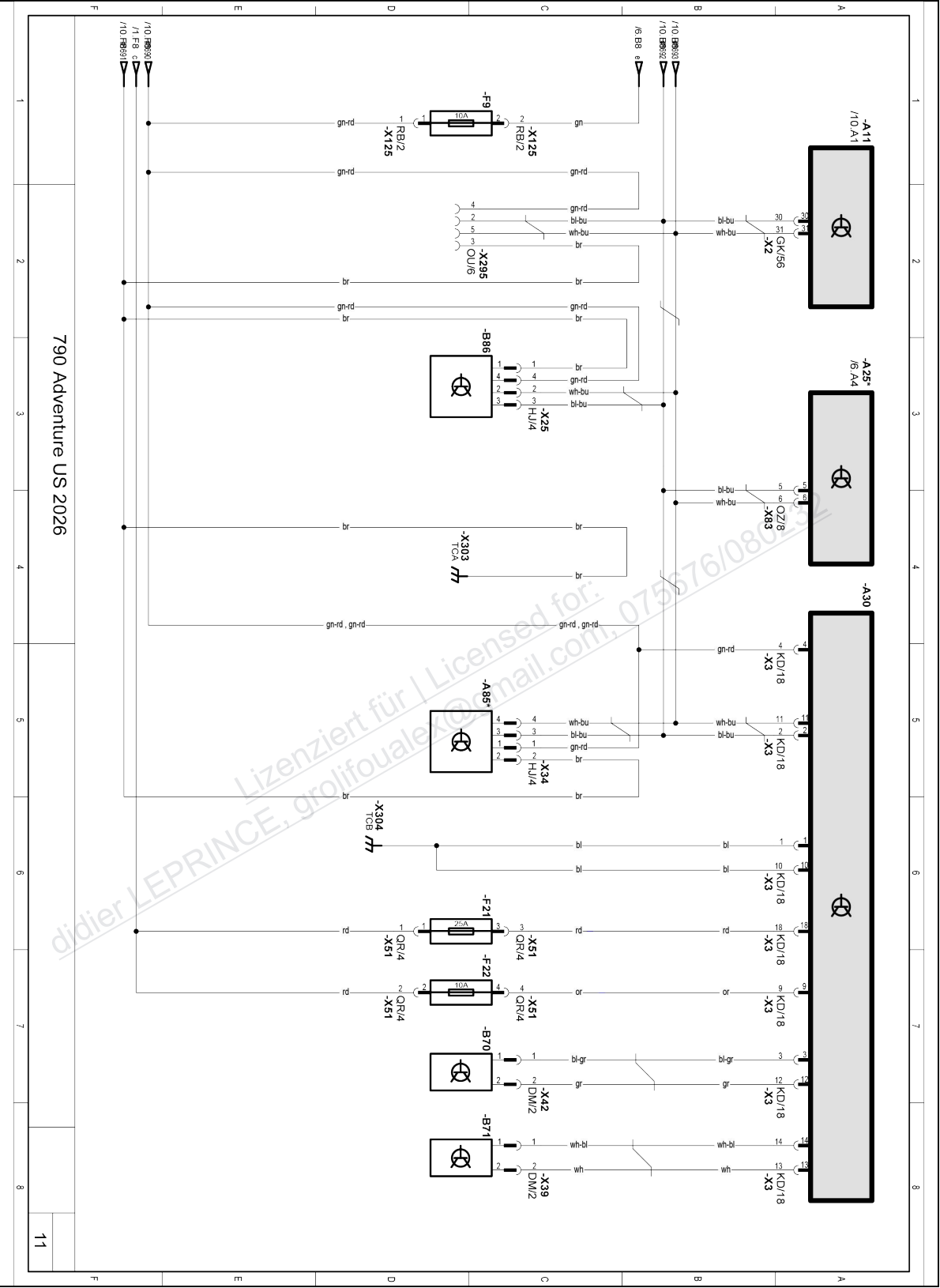
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Components:

A11	Engine control unit	B37	Crankshaft position sensor
A21	Immobilizer control unit	P10	Combination instrument
A41	Connectivity Unit (if installed)	T30	Antenna of the immobilizer control unit

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Components:

A11	Engine control unit	B86	Inertial measurement unit
A25	Heating control unit (if fitted)	F9	Fuse
A30	ABS control unit	F21	ABS return pump fuse
A85	Tire pressure monitoring system (if fitted)	F22	ABS hydraulic unit fuse
B70	Front wheel speed sensor	X295	Diagnostic connector
B71	Rear wheel speed sensor		

Cable colors:

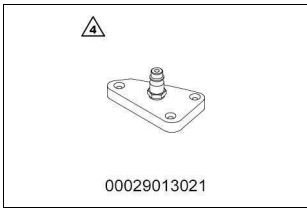
bl	black	or	orange
br	brown	pk	pink
bu	blue	pu	violet
gn	green	rd	red
gr	grey	wh	white
lbu	light blue	ye	yellow

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A Tools

Bleeder cover



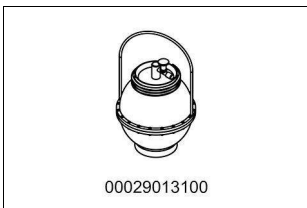
- Order details**
- 00029013021
- Application areas**
- Adapter for front or back brake cylinder, for filling or bleeding the brake system

Bleeder cover



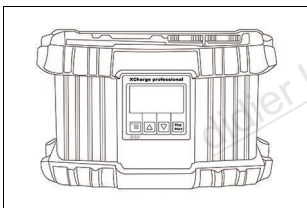
- Order details**
- 00029013022
- Application areas**
- Adapter for front or back brake cylinder, for filling or bleeding the brake system

Bleeding device



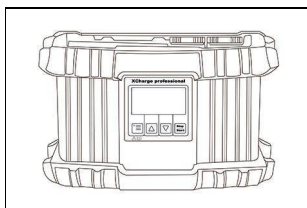
- Order details**
- 00029013100
- Application areas**
- Tool for servicing hydraulic brake systems

EU battery charger XCharge–professional



- Order details**
- 00029095050
- Properties**
- EU safety plug
 - Nominal voltage 230 V
 - Mains fuse 16 A
 - Power cable length approx. 5 m (16 ft – 5 in)
 - Charger cable length approx. 5 m (16 ft – 5 in)
- Application areas**
- Specially designed battery charger for the correct charging of various 12 V batteries (acid, AGM and lithium-ion), backup operation with diagnosis and flash operations, refresh function at deep discharge, initial charge for the activation of dry batteries, the software can be updated using a dongle

US battery charger XCharge–professional



Order details

- 00029095051

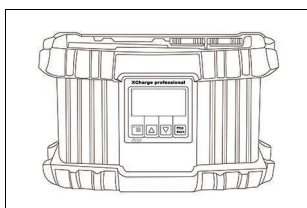
Properties

- US plug
- Nominal voltage 120 V
- Mains fuse 32 A
- Power cable length approx. 5 m (16 ft – 5 in)
- Charger cable length approx. 5 m (16 ft – 5 in)

Application areas

- Specially designed battery charger for the correct charging of various 12 V batteries (acid, AGM and lithium-ion), backup operation with diagnosis and flash operations, refresh function at deep discharge, initial charge for the activation of dry batteries, the software can be updated using a dongle

UK battery charger XCharge–professional



Order details

- 00029095052

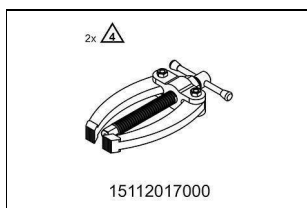
Properties

- GB socket connector
- Nominal voltage 230 V
- Mains fuse 16 A
- Power cable length approx. 5 m (16 ft – 5 in)
- Charger cable length approx. 5 m (16 ft – 5 in)

Application areas

- Specially designed battery charger for the correct charging of various 12 V batteries (acid, AGM and lithium-ion), backup operation with diagnosis and flash operations, refresh function at deep discharge, initial charge for the activation of dry batteries, the software can be updated using a dongle

Bearing puller



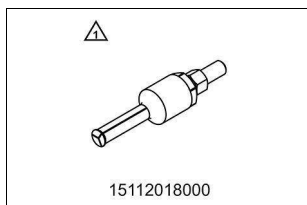
Order details

- 15112017000

Application areas

- Tool for removing bearings from a housing

Internal bearing puller



Order details

- 15112018000

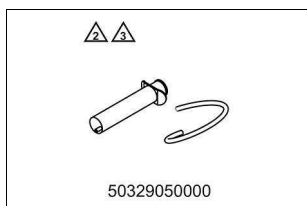
Properties

- 12 mm ... 16 mm
(0.47 in ... 0.63 in)

Application areas

- Tool for removing bearings from a housing

Syringe



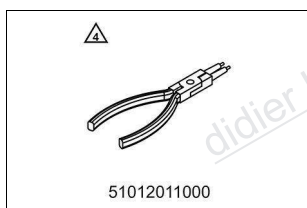
Order details

- 50329050000

Application areas

- Tool for extracting and adding liquids

Lock ring plier



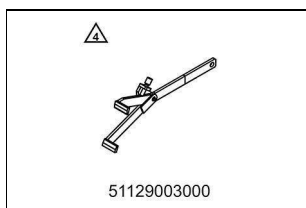
Order details

- 51012011000

Application areas

- Tool for removing the oil filter

Spanner wrench



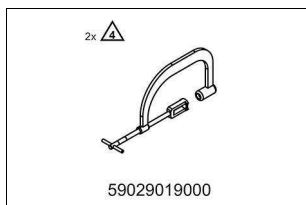
Order details

- 51129003000

Application areas

- Tool for holding components (clutch)

Valve spring mounter



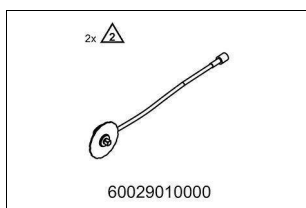
Order details

- 59029019000

Application areas

- Tool for installing and removing valves and valve springs

Angle disc



Order details

- 60029010000

Properties

- Driver system / tip 12.7 mm (1/2 in)

Application areas

- Tool for tightening bolts with rotation angle (cylinder head nuts, conrod bearing bolts)

Plastigauge clearance gauge



Order details

- 60029012000

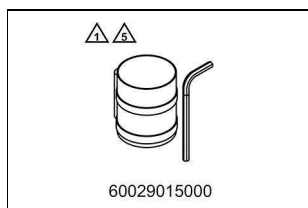
Properties

- 0.025 mm ... 0.175 mm (0.00098 in ... 0.00689 in)

Application areas

- Tool for measuring bearing play

Piston ring compressor



Order details

- 60029015000

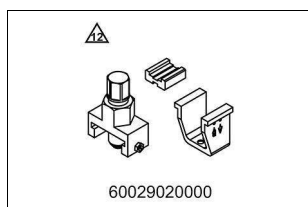
Properties

- Height 80 mm (3.15 in)
- Diameter 57 mm ... 125 mm (2.24 in ... 4.92 in)

Application areas

- Tool for tensioning piston rings when installing the piston in the cylinder

Chain rivet tool



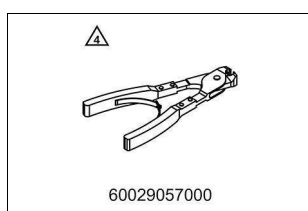
Order details

- 60029020000

Application areas

- Tool for riveting the chain

Hose clamp pliers



Order details

- 60029057000

Application areas

- Tool for mounting hose clamps

Testing hose



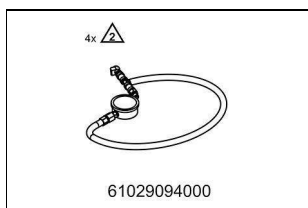
Order details

- 61029093000

Application areas

- Hose for pressure testing tool, for checking the fuel pressure

Pressure testing tool



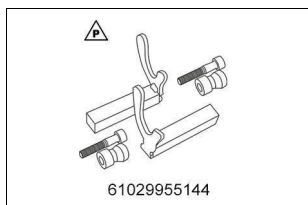
Order details

- 61029094000

Application areas

- Tool for checking fuel and oil pressure

Retaining adapter



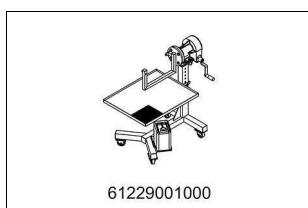
Order details

- 61029955144

Application areas

- The set consists of retaining adapter and bushings kit, for rear wheel work stand, for lifting the motorcycle at the link fork

Engine assembly stand



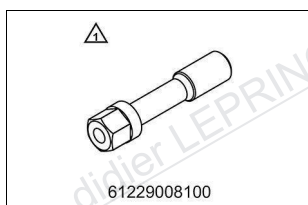
Order details

- 61229001000

Application areas

- Tool (including chassis, crank rotation mechanism, oil pan, and engine bracket) for mounting the removed engine

Pressing tool



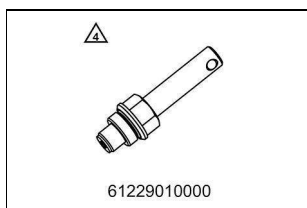
Order details

- 61229008100

Application areas

- Tool for pressing out components (removing rotor)

Puller



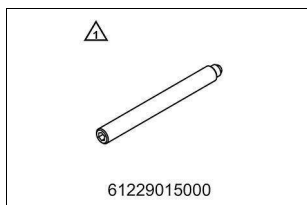
Order details

- 61229010000

Application areas

- Tool for pulling off components (alternator cover)

Locking screw



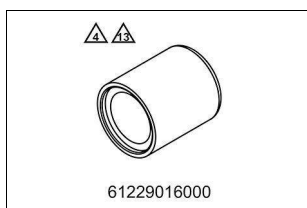
Order details

- 61229015000

Application areas

- Tool for securing components (crankshaft in TDC position)

Pressing tool



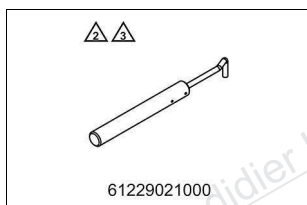
Order details

- 61229016000

Application areas

- Tool for pressing in components (drive gear wheel of the balancer shaft)

Release device for timing chain tensioner



Order details

- 61229021000

Application areas

- Tool for installing timing chain tensioner

Work stand



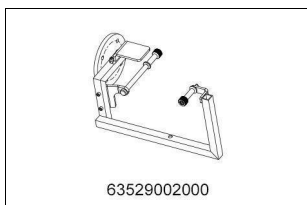
Order details

- 62529055200

Application areas

- Tool for lifting the motorcycle at the center

Engine bracket for engine assembly stand



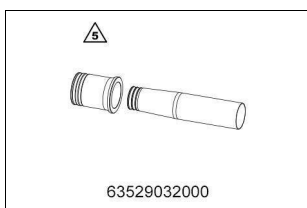
Order details

- 63529002000

Application areas

- Separate tool for mounting large engines on the engine assembly stand

Mounting tool for lock ring



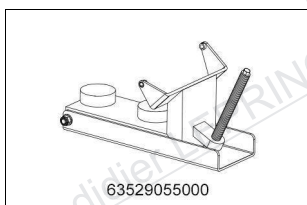
Order details

- 63529032000

Application areas

- Tool for mounting lock rings on the countershaft and main shaft

Floor jack attachment



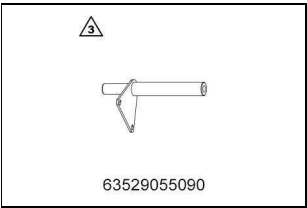
Order details

- 63529055000

Application areas

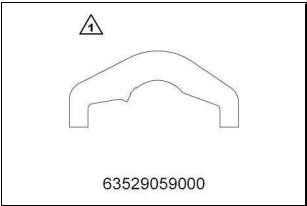
- Attachment for floor jack, for lifting and tilting the engine

Socket pin



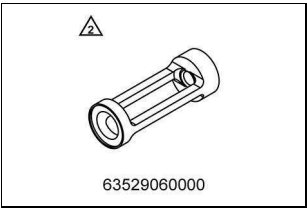
- Order details**
- 63529055090
- Application areas**
- Tool for securing the swingarm when the engine is removed

Setting gauge



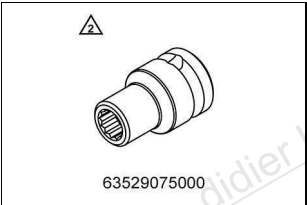
- Order details**
- 63529059000
- Application areas**
- Tool for aligning the upper balancer shaft

Insert for valve spring lever



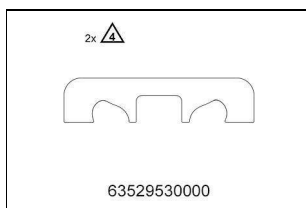
- Order details**
- 63529060000
- Application areas**
- Tool for installing and removing valves and valve springs

Multi-tooth wrench socket



- Order details**
- 63529075000
- Properties**
- | | |
|------------|---------------------|
| • Drive | 12.7 mm
(1/2 in) |
| • Diameter | 9 mm
(0.35 in) |
- Application areas**
- Tool for removing and mounting screws (conrod bearing)

Setting gauge



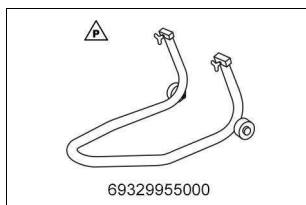
Order details

- 63529530000

Application areas

- Tool for aligning the camshafts

Rear wheel work stand



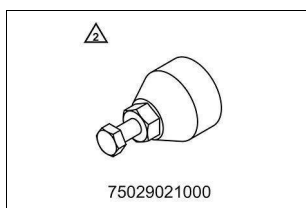
Order details

- 69329955000

Application areas

- Tool for lifting the motorcycle at the swingarm

Puller



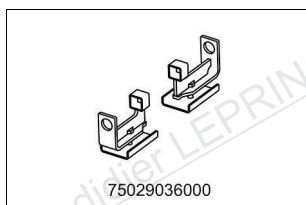
Order details

- 75029021000

Application areas

- Tool for pulling off components (primary gear wheel)

Work stand attachments



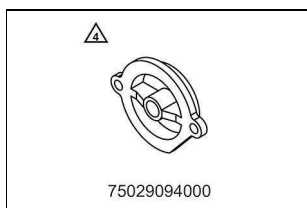
Order details

- 75029036000

Application areas

- Attachments for work stand, for lifting the motorcycle at the center

Oil pressure adapter



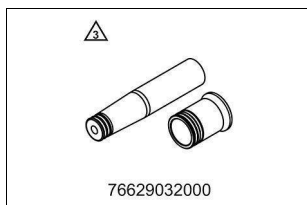
Order details

- 75029094000

Application areas

- Adapter for pressure testing tool, for checking oil pressure

Mounting tool for lock ring



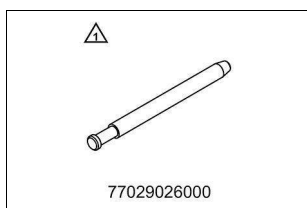
Order details

- 76629032000

Application areas

- Tool for mounting lock rings on the countershaft and main shaft

Limit plug gauge



Order details

- 77029026000

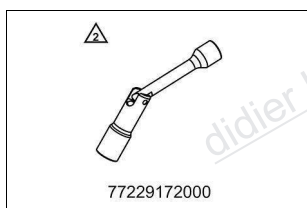
Properties

- Diameter 5.05 mm
(0.1988 in)

Application areas

- Tool for checking valve guides

Spark plug wrench with link



Order details

- 77229172000

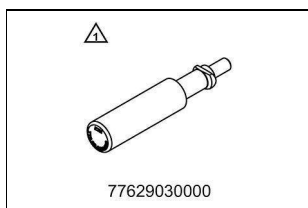
Properties

- Drive 9.52 mm
(3/8 in)
- Hexagonal part 14 mm
(0.55 in)
- Length 130 mm
(5.12 in)

Application areas

- Tool for removing and installing spark plugs

Insertion tool for piston ring lock



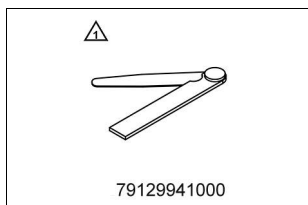
Order details

- 77629030000

Application areas

- Tool for installing the circlip in the piston

Feeler gauge



Order details

- 79129941000

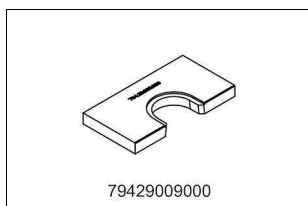
Properties

- 20 sheets 0.05 mm ... 1.00 mm
(0.0020 in ... 0.0394 in)

Application areas

- Tool for checking and measuring installed gaps

Separator plate



Order details

- 79429009000

Application areas

- Tool for separating the crankshaft

EU battery charger TecMATE Optimate PRO



Order details

- A61029974044

Properties

- EU safety plug
- Nominal voltage 100 V ... 240 V
- Mains fuse 16 A
- Power cable length approx. 1.8 m
(5 ft – 10.9 in)
- Charger cable length approx. 1.8 m
(5 ft – 10.9 in)

Application areas

- Specially designed battery charger for the correct charging of various 12-V batteries (acid, AGM and lithium-ion), backup operation with diagnosis and flash operations, refresh function at deep discharge, initial charge for the activation of dry batteries

USA/CA battery charger TecMATE Optimate PRO



Order details

- A61029974144

Properties

- US contact plug
- Nominal voltage 100 V ... 240 V
- Mains fuse 16 A
- Power cable length approx. 1.8 m
(5 ft – 10.9 in)
- Charger cable length approx. 1.8 m
(5 ft – 10.9 in)

Application areas

- Specially designed battery charger for the correct charging of various 12-V batteries (acid, AGM and lithium-ion), backup operation with diagnosis and flash operations, refresh function at deep discharge, initial charge for the activation of dry batteries

Battery charger TecMATE Optimate PRO UK



Order details

- A61029974244

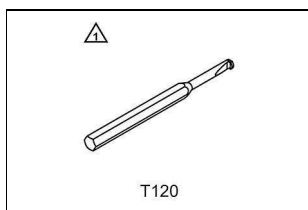
Properties

- UK-contact plug
- Nominal voltage 100 V ... 240 V
- Mains fuse 16 A
- Power cable length approx. 1.8 m
(5 ft – 10.9 in)
- Charger cable length approx. 1.8 m
(5 ft – 10.9 in)

Application areas

- Specially designed battery charger for the correct charging of various 12-V batteries (acid, AGM and lithium-ion), backup operation with diagnosis and flash operations, refresh function at deep discharge, initial charge for the activation of dry batteries

Drift



Order details

- T120

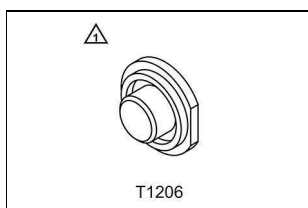
Properties

- Diameter 8 mm
(0.31 in)

Application areas

- Tool for driving components out (collar bushings)

Pressing tool



Order details

- T1206

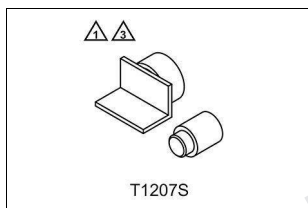
Properties

- Diameter 15 mm ... 30 mm
(0.59 in ... 1.18 in)

Application areas

- Tool for pressing in components (heim joint)

Pressing tool



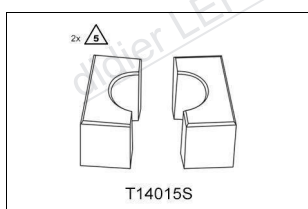
Order details

- T1207S

Application areas

- Tool for pressing in components (heim joint)

Clamping stand



Order details

- T14015S

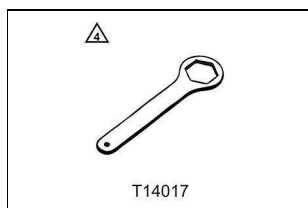
Properties

- Diameter 27 mm
(1.06 in)

Application areas

- Tool for clamping components (cartridge)

Ring wrench



Order details

- T14017

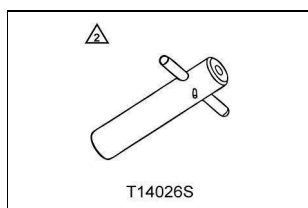
Properties

- Hexagonal part 50 mm
(1.97 in)

Application areas

- Tool for loosening and tightening components (screw cap)

Support tool



Order details

- T14026S

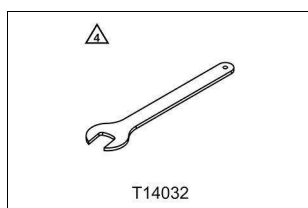
Properties

- M14
- Diameter 25 mm
(0.98 in)

Application areas

- Tool for assembling the fork legs (pulling out piston rod)

Open end wrench



Order details

- T14032

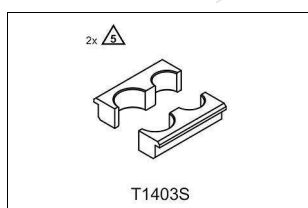
Properties

- Jaw opening 22 mm
(0.87 in)

Application areas

- Tool for disassembling and assembling the fork legs

Clamping stand



Order details

- T1403S

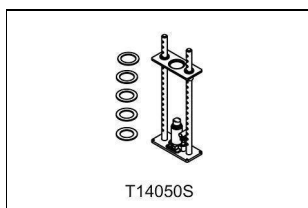
Properties

- Diameter 48 mm
(1.89 in)
- Diameter 60 mm
(2.36 in)

Application areas

- Tool for clamping components (fork legs, outer fork tube)

Spring tensioner



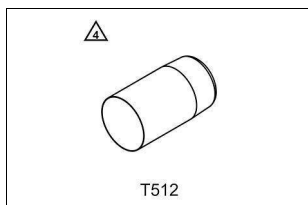
Order details

- T14050S

Application areas

- Tool for removing and installing the spring

Protecting sleeve



Order details

- T512

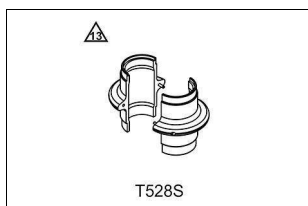
Properties

- Diameter 43 mm
(1.69 in)

Application areas

- Tool for protecting components (inner tube)

Mounting tool



Order details

- T528S

Properties

- Diameter 43 mm
(1.69 in)

Application areas

- Tool for holding when assembling fork legs

B Technical terms

ABS	Anti-lock braking system	Safety system that prevents locking of the wheels when riding straight ahead without the influence of lateral forces.
ETTC	Engine traction torque control	Auxiliary function of the engine control, which prevents rear wheel locking with excessive engine braking effect, by lightly opening the throttle valve
	KTMconnect	System for remote communication with suitable cell phones and communication systems for telephony and audio
OBD	On-board diagnosis	Vehicle system that monitors the specified parameters of the vehicle electronics.
	QUICKSHIFTER+	Engine electronics function for shifting up and down without clutch actuation

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 didier LEPRINCE, grolifoualex@gmail.com, 075676/080232

C Operating supplies

Street chain spray

Recommended supplier

MOTOREX®

- CHAINLUBE ROAD STRONG

Fork oil

Recommended supplier

MOTOREX®

- RACING FORK OIL

Standards

- SAE 5 → SAE

Universal oil spray

Recommended supplier

MOTOREX®

- JOKER 440 SYNTHETIC

Copper paste

Long-life grease

Recommended supplier

MOTOREX®

- Bike Grease 2000

engine oil

Recommended supplier

MOTOREX®

- POWER SYNT 4T

Standards

→ JASO T903 MA2

- SAE 10W/50 → SAE

Properties

- fully synthetic

Diluted tire mounting paste

High viscosity grease**Recommended supplier**

SKF®

- LGHB 2

Lubricant**Order details**

- T14034

Recommended supplier

WP Suspension GmbH

- **Racing Grease IPR 2**

Lubricant**Order details**

- T159

Recommended supplier

Bel-Ray®

- MC-11®

Silicone spray**Recommended supplier**

MOTOREX®

- SILICONE SPRAY

Shock absorber oil**Order details**

- 50180751S1

Standards

- SAE 2.5 → SAE

Loctite® 2701**Loctite® 243****Loctite® SI 5910**

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)

didier LEPRINCE, grolifoualex@gmail.com, 075676/080232
Lizenziert für | Licensed for:

D Fuels

Super unleaded

Standards
• ROZ 95 → DIN EN 228

Super unleaded, type C

Standards
• ROZ 95/RON 95/PON 91 → ANP (Agência Nacional do Petróleo) #57

Fuel additive

Recommended supplier
MOTOREX®
• FUEL STABILIZER

Lizenziert für | Licensed for:
didier LEPRINCE, grolifoualex@gmail.com, 075676/080232

E Cleaning agents

Shine spray with beading effect

Recommended supplier

MOTOREX®

- MOTO SHINE MS1

Chain cleaner

Recommended supplier

MOTOREX®

- CHAIN CLEAN

Preserving materials

Recommended supplier

MOTOREX®

- MOTO PROTECT

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 Red symbols

Red symbols indicate a fault status that requires immediate intervention.

	The oil pressure warning light lights up red
---	--

F.1.2 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.

	Ice warning is active on the display.
	ABS warning light lights up yellow
	The ABS rear warning light lights up yellow
	The malfunction indicator light lights up yellow
	TC indicator lamp lights up/flashes yellow
	The cruise control system indicator lamp (optional) lights up yellow
	Hazard warning flasher indicator lamps
	General warning light lights up yellow

F.1.3 Green and blue symbols

Green and blue symbols convey information.

	The turn signal indicator light flashes green with a steady blinking interval
	The high beam indicator lamp lights up blue
	The cruise control system indicator lamp (optional) lights up green
	The idle indicator lamp lights up green

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3206663en

08/06/2026



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REG. NO. 12 100 6061