REPAIR MANUAL 2012

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125 Duke EU
125 Duke DE
200 Duke EU
200 Duke 2013 COL

Art. no. 3206127en

INTRODUCTION

Read this repair manual carefully and thoroughly before beginning work.

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

This repair manual was written to correspond to the latest state of this series. We reserve the right to make changes in the interest of technical advancement without at the same time updating this manual.
We shall not provide a description of general workshop methods. Likewise, safety rules that apply in a workshop are not specified here. It is assumed that the repair work will be performed by a fully trained mechanic.

All specifications are non-binding. KTM Sportmotorcycle AG specifically reserves the right to modify or delete technical specifications, prices, colors, forms, materials, services, designs, equipment, etc., without prior notice and without specifying reasons, to adapt these to local conditions, as well as to stop production of a particular model without prior notice. KTM accepts no liability for delivery options, deviations from illustrations and descriptions, as well as misprints and other errors. The models portrayed partly contain special equipment that does not belong to the regular scope of supply.

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ISO 9001(12 100 6061)
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Issued by: TÜV Management Service

KTM-Sportmotorcycle AG
5230 Mattighofen, Austria

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

1 MEANS OF REPRESENTATION

1.1 Symbols used

The meaning of specific symbols is described below.

✓	Indicates an expected reaction (e.g. of a work step or a function).
✗	Indicates an unexpected reaction (e.g. of a work step or a function).
☛	Indicates a page reference (more information is provided on the specified page).
i	Indicates information with more details or tips.
»	Indicates the result of a testing step.
V	Denotes a voltage measurement.
A	Denotes a current measurement.
Ω	Denotes a resistance measurement.

1.2 Formats used

The typographical formats used in this document are explained below.

Proprietary name	Identifies a proprietary name.
Name®	Identifies a protected name.
Brand™	Identifies a trademark.

2 SAFETY ADVICE

2.1 Repair Manual

Read this Repair Manual carefully and thoroughly before beginning work. It contains useful information and tips that will help you repair and maintain your vehicle.
This manual assumes that the necessary special KTM tools and KTM workplace and workshop equipment are available.

2.2 Safety advice

A number of safety instructions need to be followed to operate the vehicle safely. Therefore, read this manual carefully. The safety instructions are highlighted in the text and are referred to at the relevant passages.

Info
The vehicle has various information and warning labels at prominent locations. Do not remove information/warning labels. If they are missing, you or others may not recognize dangers and may therefore be injured.

2.3 Degrees of risk and symbols

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

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

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

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

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

2.4 Work rules

Special tools are necessary for certain tasks. The tools are not contained in the vehicle but can be ordered under the number in parentheses. E.g.: bearing puller (15112017000)
During assembly, non-reusable parts (e.g. self-locking screws and nuts, seals and seal rings, O-rings, pins, lock washers) must be replaced by new parts.
In some instances, a thread locker (e.g. **Loctite®**) is required. The manufacturer instructions for use must be followed.
After disassembly, clean the parts that are to be reused and check them for damage and wear. Change damaged or worn parts.
After you complete the repair or service work, check the operating safety of the vehicle.

3 IMPORTANT NOTES

3.1 Guarantee, warranty

The work prescribed in the service schedule must be carried out by an authorized KTM workshop only and confirmed in the customer's Service & Warranty Booklet and in the **KTM dealer.net**; otherwise, all warranty claims will be void. No warranty claims can be considered for damage resulting from manipulations and/or alterations to the vehicle.
Additional information on the guarantee or warranty and the procedures involved can be found in the Service & Warranty Booklet.

3.2 Operating and auxiliary substances

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

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

Use the operating and auxiliary substances (such as fuel and lubricants) as specified in the manual.

3.3 Spare parts, 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.

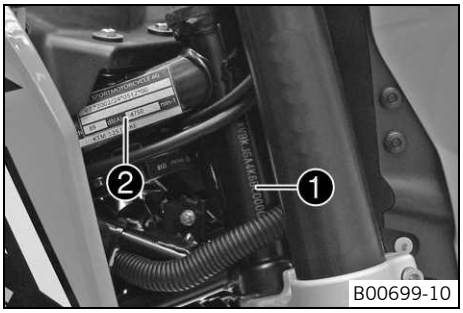
The current **KTM PowerParts** for your vehicle can be found on the KTM website.
International KTM Website: http://www.ktm.com

3.4 Figures

The figures contained in the manual may depict special equipment.
In the interest of clarity, some components may be shown disassembled or may not be shown at all. It is not always necessary to disassemble the component to perform the activity in question. Please follow the instructions in the text.

4 SERIAL NUMBERS

4.1 Chassis number/type label



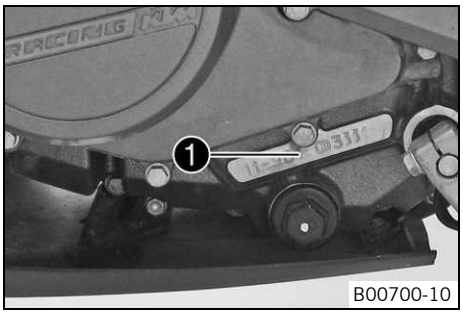
The chassis number ❶ is stamped on the right of the steering head.
The type label ❷ is on the right of the frame behind the steering head.

4.2 Key number

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

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

4.3 Engine number



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

5.1 Raising the motorcycle with the rear wheel stand

Note

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

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


C00195-01

– Mount the support of the wheel stand.
– Insert the adapter in the rear wheel stand.

Adapter (61029055130) (☛ p. 253)
Rear wheel stand (61029055400) (☛ p. 253)

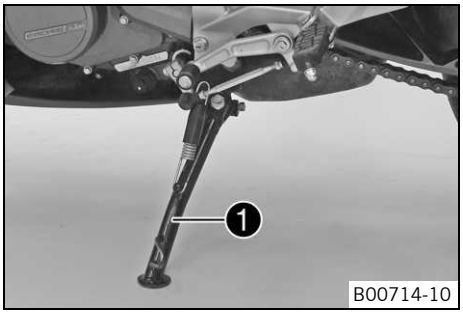
– Stand the motorcycle upright, align the lifting gear with the swingarm and the adapters, and lift the motorcycle.

5.2 Taking the motorcycle off of the rear wheel stand

Note

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

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



B00714-10

– Secure the motorcycle against falling over.
– Remove the rear wheel stand and lean the vehicle on the side stand ❶.
– Remove the support of the wheel stand.

5.3 Raising the motorcycle with the front wheel stand

Note

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

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

Preparatory work

– Raise the motorcycle with the rear wheel stand. (☛ p. 10)

C00196-10

Condition

– Remove cap ❶.


C00197-01

– Move the handlebar to the straight-ahead position. Attach the lifting gear to the steering stem.

Adapter (61029955620) (☛ p. 254)
Front wheel stand (61029055500) (☛ p. 253)

Info
Always raise the rear of the motorcycle first.

– Raise the front of the motorcycle.

5.4 Taking the motorcycle off of the front wheel stand

Note
Danger of damage The parked vehicle may roll away or fall over.
– Always place the vehicle on a firm and even surface.


B00781-01

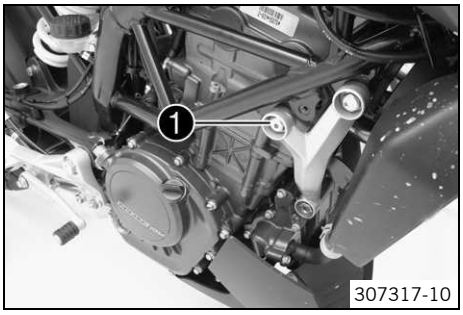
– Secure the motorcycle against falling over.
– Remove the front wheel stand.

C00196-10

– Mount cap ❶.

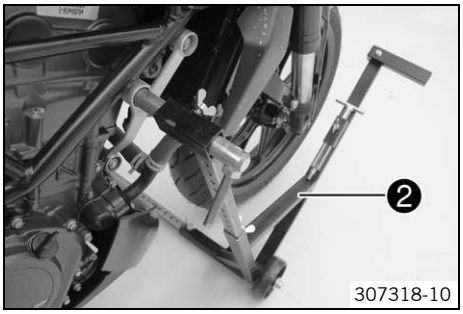
5.5 Raising the motorcycle with the work stand

Note
Danger of damage The parked vehicle may roll away or fall over.
– Always place the vehicle on a firm and even surface.



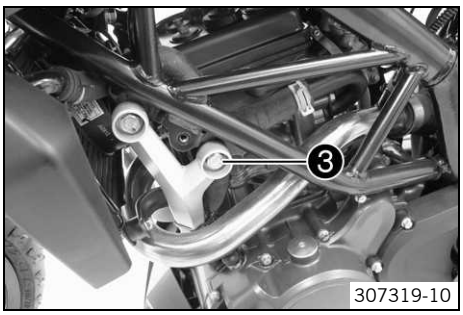
307317-10

– Remove screw ❶.

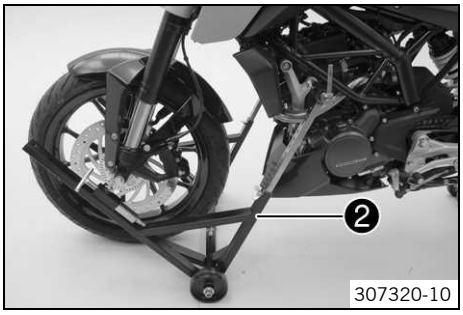


– Mount special tool ❷ on the right side of the vehicle.

Work stand (62529055000) (☛ p. 254)



– Remove screw ❸.



– Mount special tool ❷ on the left side of the vehicle.

Work stand (62529055000) (☛ p. 254)

– Position the motorcycle upright, align the special tool and raise the motorcycle.

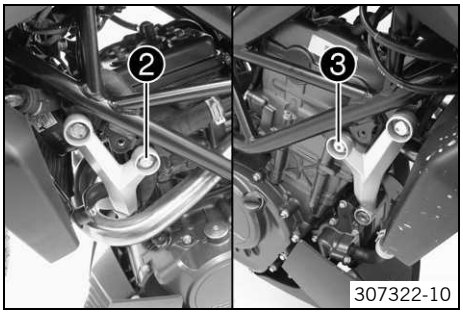
5.6 Removing the motorcycle from the work stand

Note

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

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

– Secure the motorcycle against falling over.
– Remove special tool ❶.



– Mount and tighten screws ❷❸.

Guideline

Screw, engine bearer on frame	M8	30 Nm (22.1 lbf ft)

5.7 Starting

Danger

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

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

Caution

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

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

Note

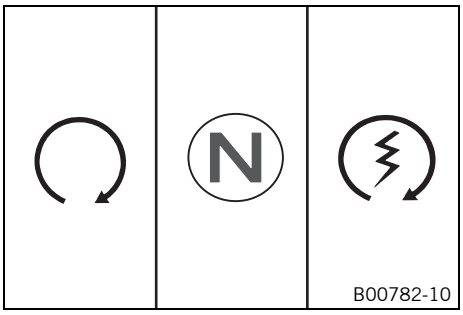
Engine failure Unfiltered intake air has a negative effect on the service life of the engine.

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

Note

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

– Always warm up the engine at low engine speeds.



– Sit on the vehicle, take the weight off of the side stand, and move up all the way.
– Turn the emergency OFF switch to the position ○.
– Switch on the ignition by turning the ignition key to the position ○.
  ✔ After you switch on the ignition, you can hear the fuel pump working for about two seconds. The function test of the combination instrument is run at the same time.
– Shift gear to neutral.
  ✔ The green idling speed indicator lamp **N** lights up.
– Press the electric starter button Ⓢ.

Info

Do not press the electric starter button until the function test of the combination instrument is finished.
When starting, **DO NOT** open the throttle. If you open the throttle during the starting procedure, fuel is not injected by the engine management system and the engine cannot start.
Press the starter for a maximum of 5 seconds. Wait for a least 5 seconds before trying again.
This motorcycle is equipped with a safety start system. You can only start the engine if the transmission is in neutral or if the clutch is pulled when a gear is engaged. If the side stand is folded out and you shift into gear and release the clutch, the engine stops.

5.8 Starting the motorcycle to make checks

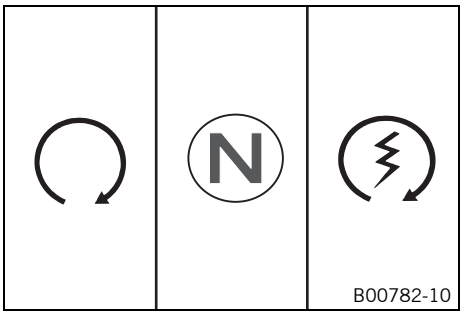
Danger

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

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

Info

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



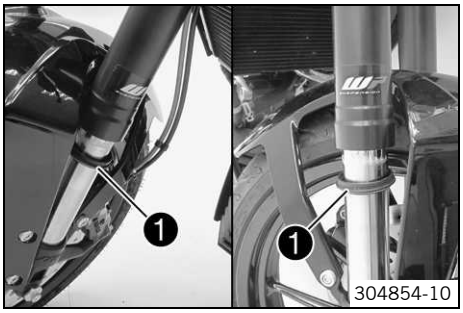
– Turn the emergency OFF switch to the position ○.
– Shift gear to neutral.
– Switch on the ignition by turning the ignition key to the position ○.
– Press the electric starter button ⓢ.

Info

Do not open the throttle.

6 FORK, TRIPLE CLAMP

6.1 Cleaning the dust boots of the fork legs



– Push dust boot ❶ of both fork legs downwards.

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

Warning
Danger of accidents Reduced braking efficiency due to oil or grease on the brake discs.
– Always keep the brake discs free of oil and grease, and clean them with brake cleaner when necessary.

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

Universal oil spray (☛ p. 251)

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

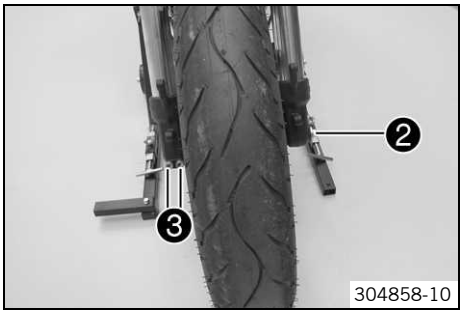
6.2 Removing fork legs

Preparatory work
– Raise the motorcycle with the work stand. (☛ p. 11)
– Tie the rear of the vehicle down.
– Dismount the front fender. (☛ p. 48)

Main work

– Remove screws ❶.
– Press back the brake linings with a light lateral tilting of the brake caliper on the brake disc. Pull the brake caliper carefully back from the brake disc and hang it to one side.

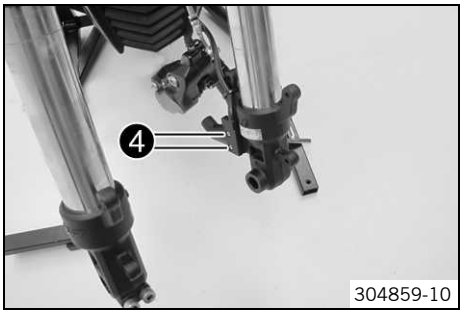
Info
Do not pull the hand brake lever when the brake caliper has been removed.



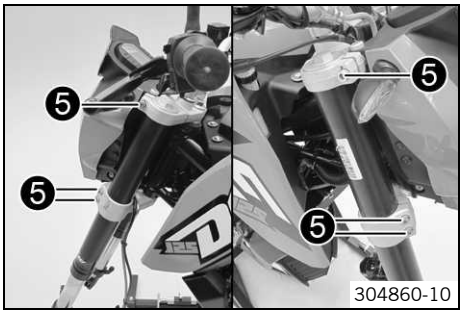
– Loosen screws ❷ and screw ❸.
– Unscrew screw ❷ about six turns and press your hand on the screw to push the wheel spindle out of the axle clamp. Remove screw ❷.

Warning
Danger of accidents Reduced braking effect caused by damaged brake discs.
– Always lay the wheel down in such a way that the brake discs are not damaged.

– Holding the front wheel, withdraw the wheel spindle. Take the front wheel out of the fork.



– Remove screws ❹.
– Remove the cable binder and hang the wheel speed sensor to one side.



– Loosen screws ❺. Remove the fork legs from the bottom.

6.3 Installing the fork legs

Warning

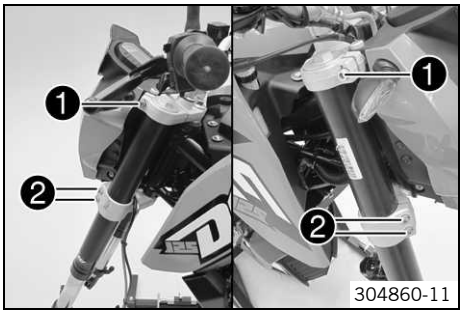
Danger of accidents Modifications to the suspension settings can seriously alter the vehicle's ride behavior.

– Following modifications, ride slowly at first to get the feel of the new ride behavior.

Main work

– Push the fork legs into the triple clamps.

– Align the fork legs in the required position using the fork rings.



– Tighten screw ❶.

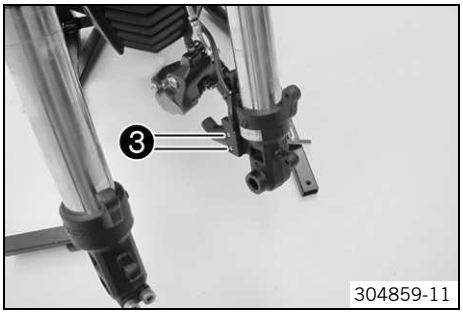
Guideline

Screw, top triple clamp	M8	11 Nm (8.1 lbf ft)

– Fully tighten screws ❷.

Guideline

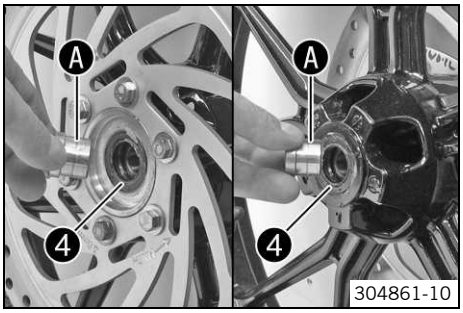
Screw, bottom triple clamp	M8	15 Nm (11.1 lbf ft)



– Position the wheel speed sensor. Mount and tighten screws ❸.

Guideline

Remaining screws, chassis	M4	4 Nm (3 lbf ft)



– Check the wheel bearing for damage and wear.

» If the wheel bearing is damaged or worn:

– Change the wheel bearing.

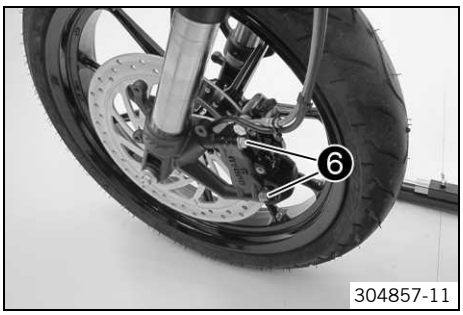
– Clean and grease the shaft seal rings ❹ and mating surfaces Ⓐ of the spacers.

Long-life grease (☛ p. 250)

– Clean screw ❺ and the wheel spindle.
– Lift the front wheel into the fork, position it, and insert the wheel spindle.
– Mount and tighten screw ❺.

Guideline

Screw, front wheel spindle	M8	30 Nm (22.1 lbf ft)



– Position the brake calipers and check that the brake linings are seated correctly.
– Mount screws ❻ but do not tighten yet.
– Operate the hand brake lever repeatedly until the brake linings are in contact with the brake disc and there is a pressure point. Fix the hand brake lever in the activated position.

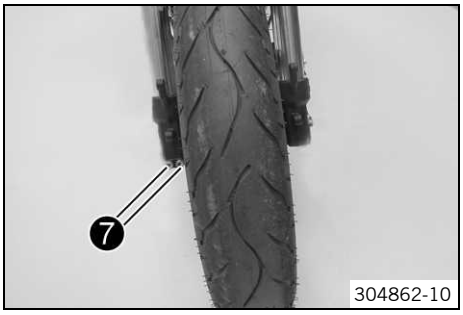
✔ The brake calipers straighten.

– Fully tighten screw ❻.

Guideline

Screw, front brake caliper	M8x1	30 Nm (22.1 lbf ft)	**Loctite® 243™**

– Remove the fixation of the hand brake lever.
– Unload the rear of the vehicle.
– Remove the motorcycle from the work stand. (☛ p. 12)



– Pull the front brake and compress the fork powerfully a few times.

✔ The fork legs straighten.

– Tighten screws ❼.

Guideline

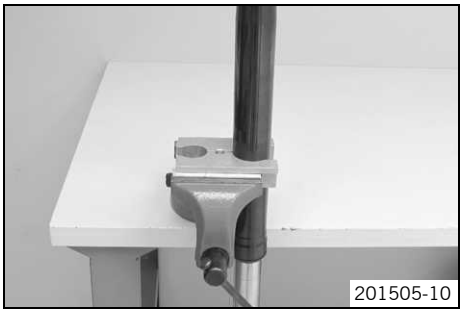
Screw, fork stub	M8	15 Nm (11.1 lbf ft)

Finishing work
– Install front fender. (☛ p. 48)

6.4 Disassembling the fork legs

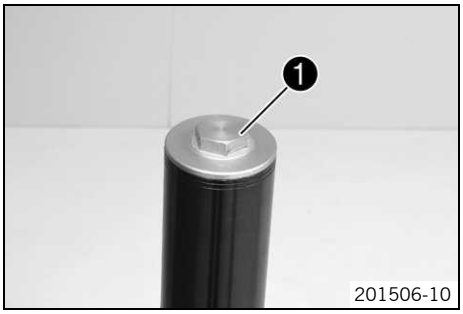
Info
These operations are the same on both fork legs.

Condition
The fork legs have been removed.



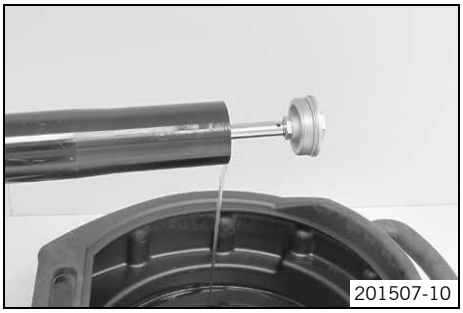
– Clamp the fork leg in the area of the lower triple clamp.

Clamping stand (T612S) (☛ p. 260)



– Loosen the screw cap ❶.

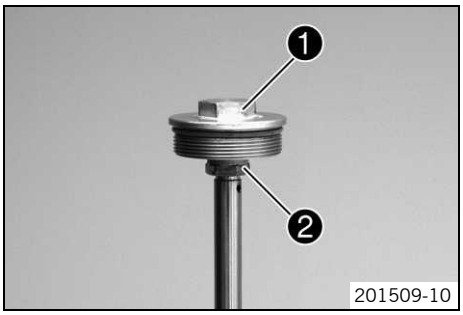
Info
The screw cap cannot be removed yet.



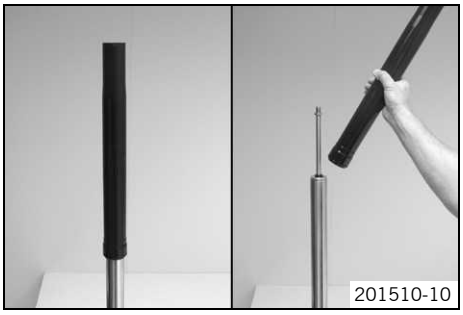
– Empty the fork oil.

– Release the fork leg and clamp it with the fork stub.

Info
Use soft jaws.



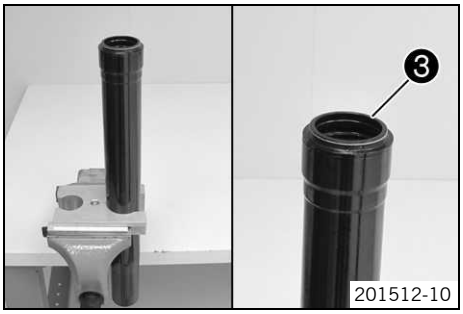
– Push the outer tube downward.
– Hold screw cap ❶. Loosen nut ❷. Remove the screw cap.



– Detach the outer tube from the inner tube.

Info
Place a container underneath to catch any oil that may run out.

– Unclamp the inner tube. Drain the oil.



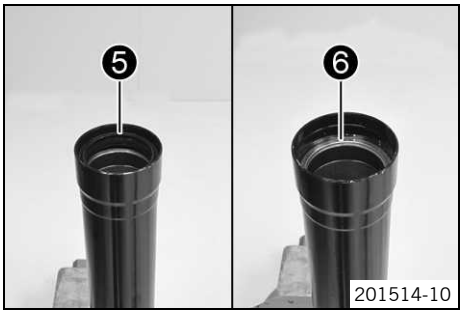
– Clamp the outer tube in the area of the lower triple clamp.

Clamping stand (T612S) (☛ p. 260)

– Remove dust boot ❸.

– Remove lock ring ❹.

Info
The lock ring has a beveled end where a screwdriver can be applied.



– Remove seal ring ❺. Remove support ring ❻.

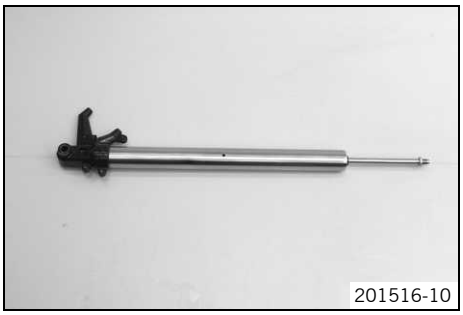
– Unclamp the outer tube.
– Heat up the outer tube in the area of sliding bushing ❼.
  Guideline

50 °C (122 °F)

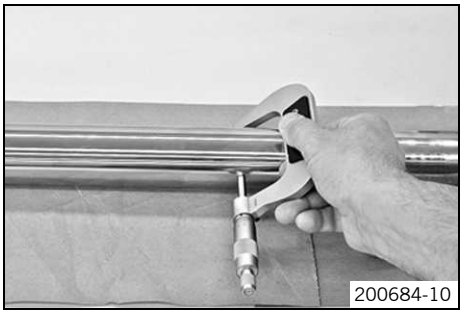
– Strike the lower edge of the outer fork tube on a wooden board.
  ✓ Sliding bushing ❼ must fall out of its seat.

6.5 Checking the fork legs

Condition
The fork legs have been disassembled.



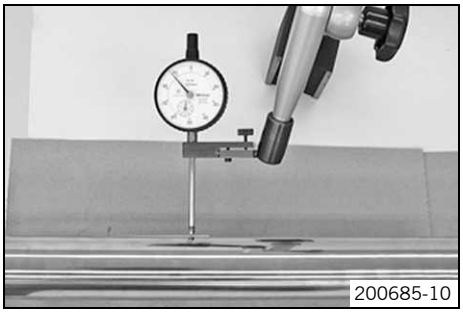
– Check the inner tube and the axle clamp for damage.
  » If damage is found:
    – Change the fork leg.



– Measure the outside diameter of the inner tube in several places.

External diameter of inner tube	42.975... 43.005 mm (1.69193... 1.69311 in)

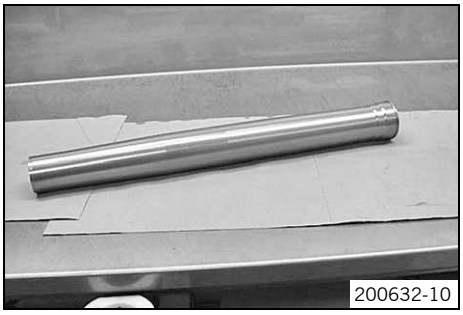
» If the measured value is less than the specified value:
– Change the fork leg.



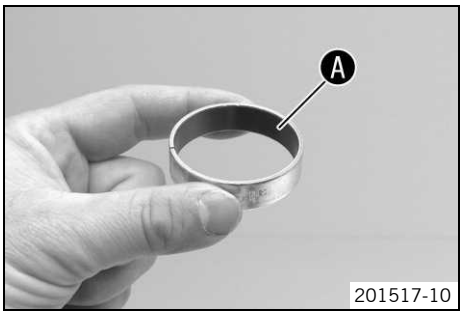
– Measure the run-out of the inner tube.

Run-out of inner tube	≤ 0.20 mm (≤ 0.0079 in)

» If the measured value is greater than the specified value:
– Change the fork leg.



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

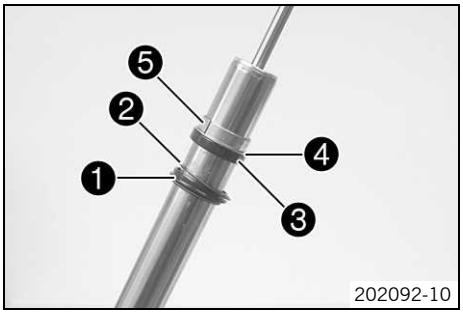


– Check the surface of the sliding bushings.
» If the dark layer Ⓐ is worn off:
– Change the fork leg.

6.6 Assembling the fork legs

Info
These operations are the same on both fork legs.

Preparatory work
– Check the fork legs. (☛ p. 19)



Main work
– Clamp in the inner tube with the axle clamp.
Guideline

Use soft jaws.

– Grease and slide on dust boot ❶.

Lubricant (T511) (☛ p. 250)

Info
Always change the dust boot, lock ring, seal ring, and support ring.
Install the dust boot with the sealing lip and spring expander facing downward.

– Slide on lock ring ❷.
– Grease and slide on seal ring ❸.

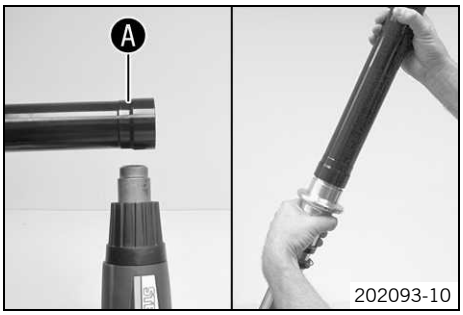
Lubricant (T511) (☛ p. 250)

Info
Mount with the sealing lip facing down and the open side facing up.

– Slide on support ring ❹.
– Sand the edges of sliding bushing ❺ with 600-grit sandpaper, then clean and grease.

Fork oil (SAE 4) (48601166S1) (☛ p. 249)

– Slide on sliding bushing ❺.



– Warm up the outer tube in the lower sliding bushing area Ⓐ.
Guideline

50 °C (122 °F)

– Slide the outer tube onto the inner tube.
– Hold the sliding bushing with the longer shoulder of the special tool.

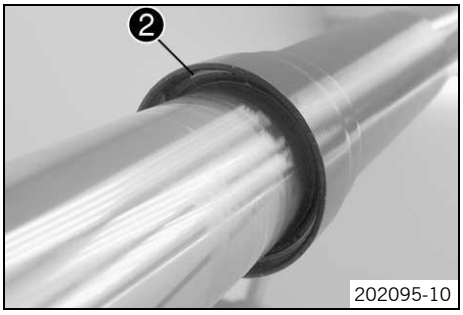
Mounting tool (T528S) (☛ p. 260)

– Push the sliding bushing all the way into the outer tube.

– Position the support ring.
– Hold the seal ring with the shorter shoulder of the special tool.

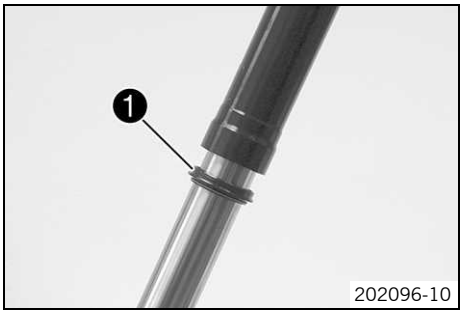
Mounting tool (T528S) (☛ p. 260)

– Push the seal ring and support ring all the way into the outer tube.

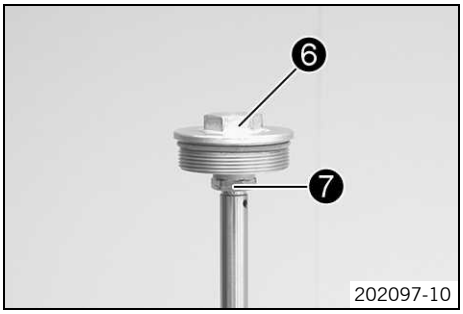


– Mount lock ring ❷.

Info
The lock ring must engage audibly.



– Install dust boot ❶.



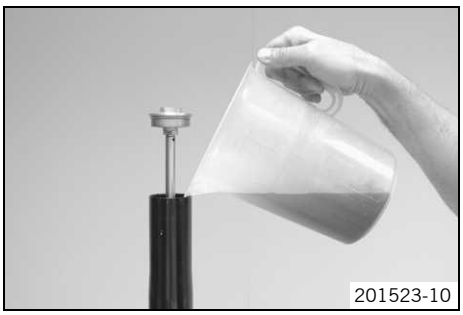
– Mount screw cap ❻ onto the piston rod.

Info
Nut ❼ must be turned all the way down.

– Hold the screw cap and tighten the nut.

Guideline

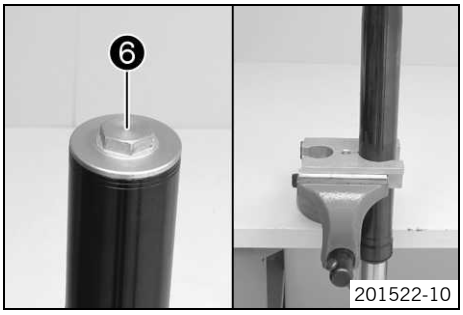
Nut, piston rod on screw cap	M12x1	30 Nm (22.1 lbf ft)



– Fill it with fork oil.

Fork oil	450 ml (15.21 fl. oz.)	Fork oil (SAE 4) (48601166S1) (☛ p. 249)

Info
If it should be impossible to add the full quantity of oil, close the screw cap of the outer tube, unclamp the fork and bounce a number of times. Then add the remaining quantity.



– Push the outer tube upward.
– Mount screw cap ❻.
– Unclamp the fork leg in the area of the lower triple clamp.

Clamping stand (T612S) (☛ p. 260)

– Tighten the screw cap.

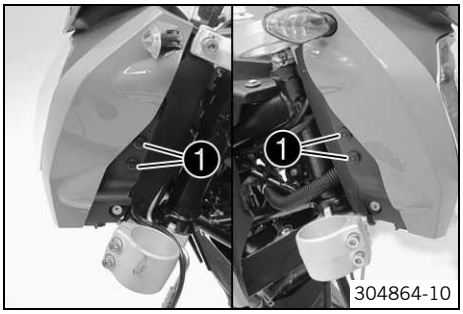
Guideline

Screw cap on outer tube	M47x1.5	30 Nm (22.1 lbf ft)

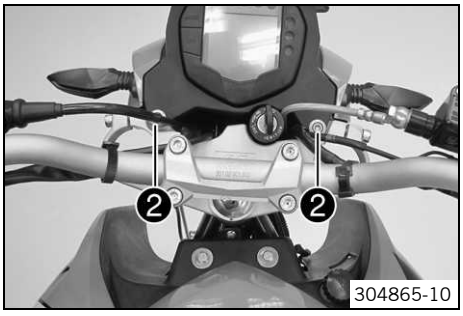
6.7 Removing the lower triple clamp

Preparatory work
– Raise the motorcycle with the work stand. (☛ p. 11)
– Tie the rear of the vehicle down.
– Dismount the front fender. (☛ p. 48)
– Remove the fork legs. (☛ p. 15)

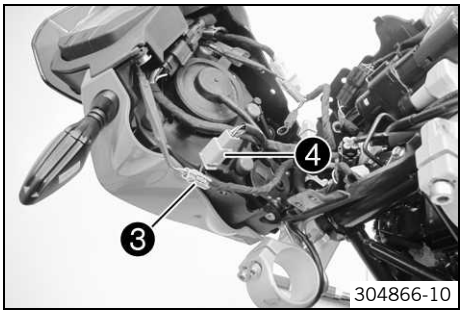
Main work



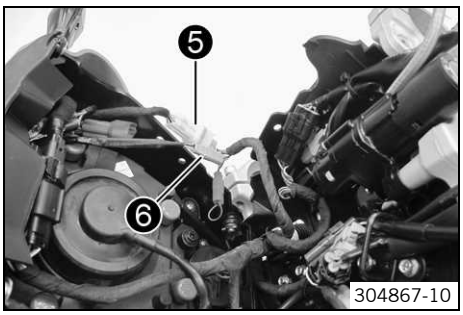
– Remove expanding rivets ❶.



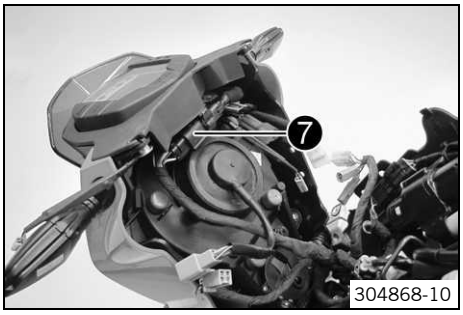
– Remove screws ❷.
– Lift the headlight mask slightly and swing forward.



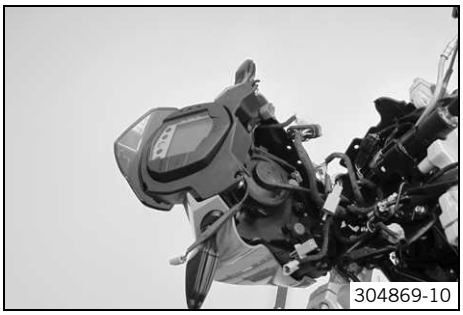
– Detach connectors ❸ and ❹.



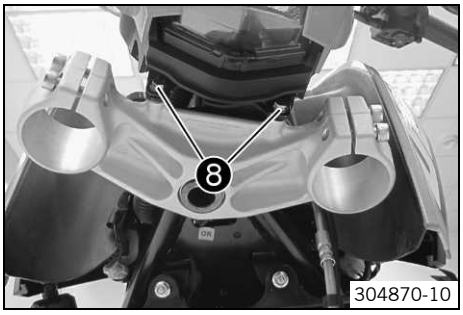
– Detach connectors ❺ and ❻.



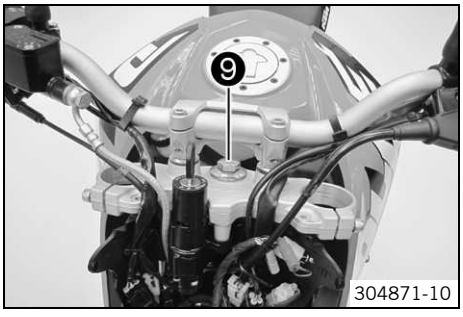
– Disconnect connector ❼.



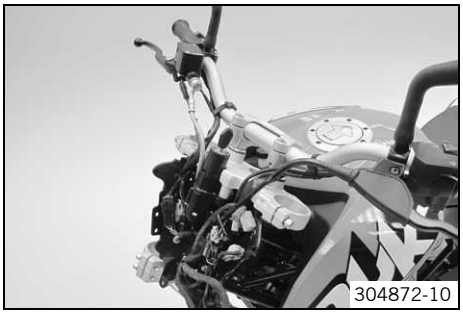
– Remove the combination instrument.



– Remove screws ❽.
– Remove the headlight mask.

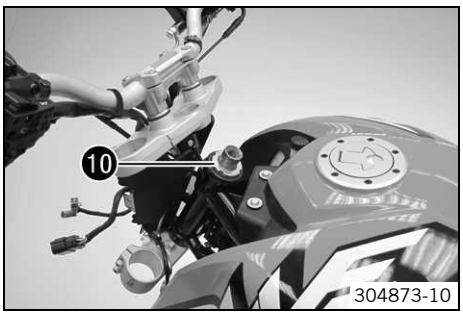


– Remove screw ❾ with the washer.



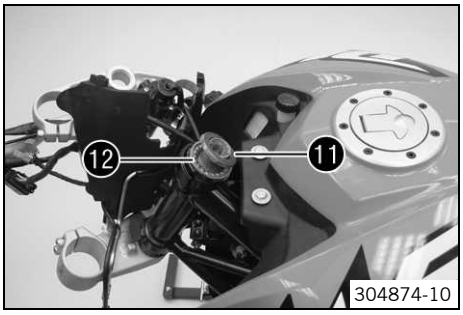
– Remove the upper triple clamp with the handlebar and set aside.

Info
Protect the vehicle and its attachments from damage by covering them.



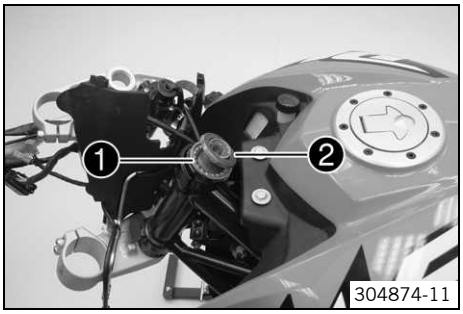
– Remove nut ❿.

Castle nut wrench; ½" drive (90129050100) (☛ p. 258)



– Remove washer ⓫.
– Remove steering head bearing ⓬.
– Remove the lower triple clamp with the steering stem.

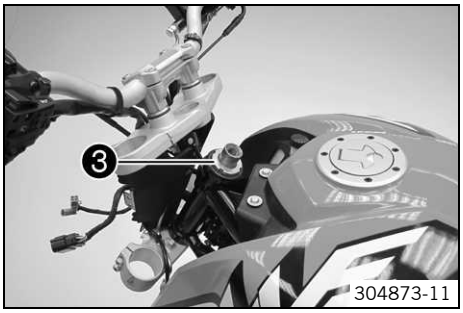
6.8 Installing the lower triple clamp



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

High viscosity grease (☛ p. 250)

– Insert the lower triple clamp with the steering stem.
– Mount the upper steering head bearing ❶.
– Mount washer ❷ with the cut-out facing downward.



Alternative 1
A new steering head bearing is used.
– Mount and tighten nut ❸.
Guideline

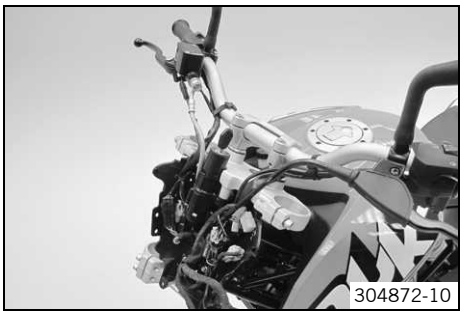
Nut, steering head	M30x1	Step 1 50 Nm (36.9 lbf ft) 2nd stage (loosen, counter-clockwise) 2 turns Step 3 5 Nm (3.7 lbf ft)

Castle nut wrench; ½" drive (90129050100) (☛ p. 258)

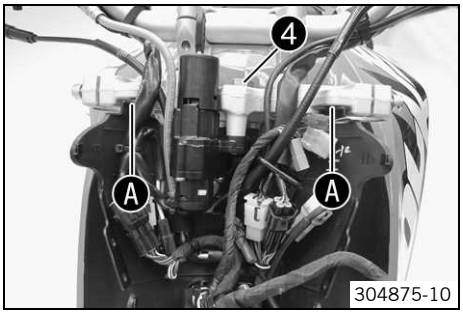
Alternative 2
The steering head bearing is used again.
– Mount and tighten nut ❸.
Guideline

Nut, steering head	M30x1	5 Nm (3.7 lbf ft)

Castle nut wrench; ½" drive (90129050000) (☛ p. 258)


304872-10

– Position the upper triple clamp with the handlebar.

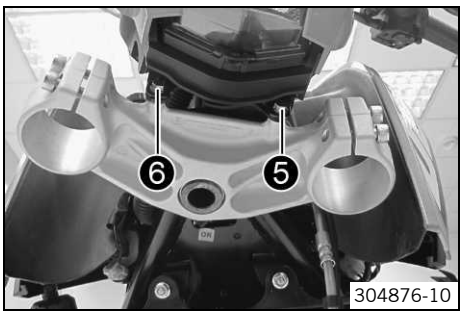


304875-10

– Mount screw ❹ with the washer but do not tighten it yet.
Guideline

Screw, top steering head	M16x1.5	52 Nm (38.4 lbf ft)

✔ Holding lugs Ⓐ reach into the drilled holes.



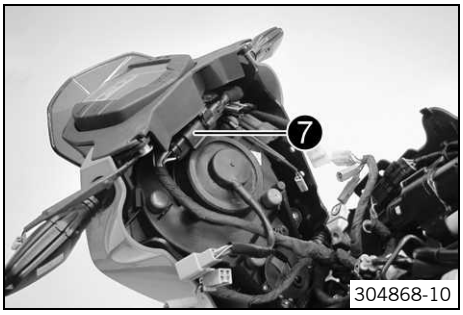
304876-10

– Position the headlight mask.
– Mount and tighten screw ❺.
Guideline

Screw, headlight mask	M6	11 Nm (8.1 lbf ft)

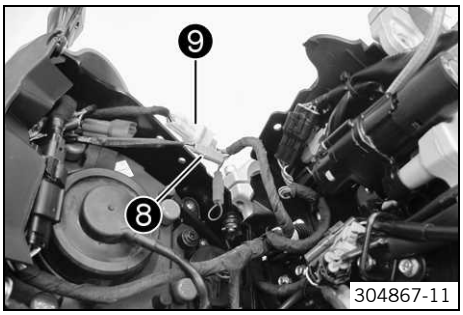
– Mount and tighten screw ❻ with the spacer washer.
Guideline

Screw, headlight mask	M6	11 Nm (8.1 lbf ft)



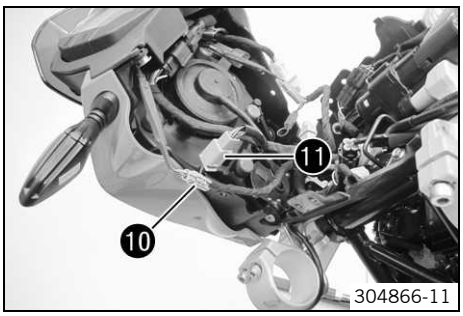
304868-10

– Position the combination instrument.
– Plug in connector ❼.



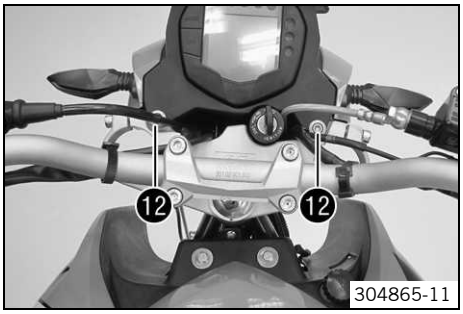
304867-11

– Plug in connectors ❽ and ❾.



304866-11

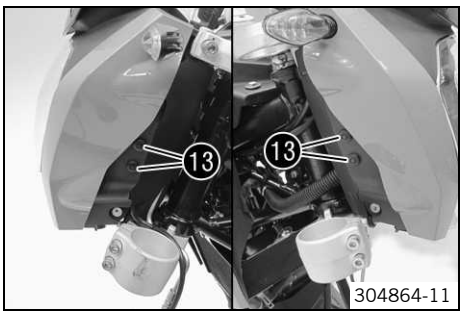
– Plug in connectors ❿ and ⓫.



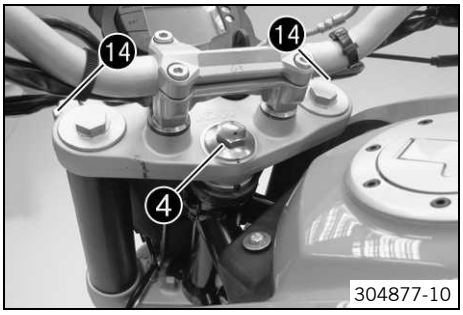
– Fold the headlight mask up.
– Mount and tighten screws ⓬.

Guideline

Screw, headlight mask	M6	11 Nm (8.1 lbf ft)



– Mount expanding rivets ⓭ on both sides.
– Install the fork legs. (☛ p. 16)



– Loosen screws ⓮.
– Using a plastic hammer, tap lightly on the upper triple clamp to avoid strains.
– Tighten screw ❹.

Guideline

Screw, top steering head	M16x1.5	52 Nm (38.4 lbf ft)

– Tighten screws ⓮.

Guideline

Screw, top triple clamp	M8	11 Nm (8.1 lbf ft)

Finishing work

– Check that the wiring harness, throttle cables, and brake line have the necessary freedom of movement and are correctly routed.
– Check the steering head bearing play. (☛ p. 26)
– Remove the motorcycle from the work stand. (☛ p. 12)

6.9 Checking the steering head bearing play

Warning

Danger of accidents Unstable vehicle handling from incorrect steering head bearing play.

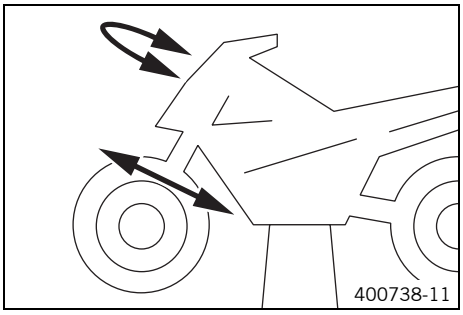
– Adjust the steering head bearing play without delay.

Info

If the bike is ridden with play in the steering head bearing, the bearing and the bearing seats in the frame can become damaged with time.

Preparatory work

– Raise the motorcycle with the work stand. (☛ p. 11)



Main work

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

No play should be noticeable in the steering head bearing.

» If there is noticeable play present:
– Adjust the play of the steering head bearing. (☛ p. 27)

– Move the handlebar to and fro over the entire steering range.

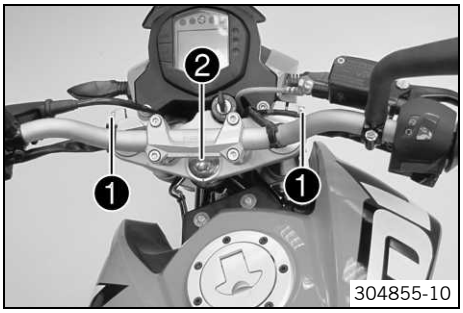
The handlebar must be able to move easily over the entire steering range. No resting locations should be noticeable.

» If click positions are noticeable:
– Adjust the play of the steering head bearing. (☛ p. 27)
– Check the steering head bearing and change if necessary.

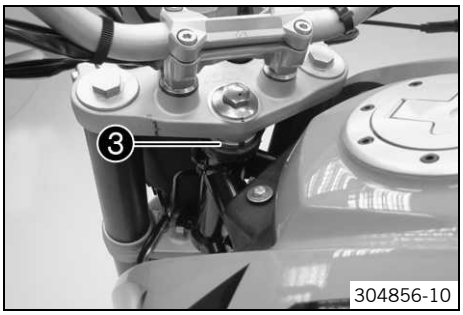
Finishing work
– Remove the motorcycle from the work stand. (☛ p. 12)

6.10 Adjusting the steering head bearing play

Preparatory work
– Raise the motorcycle with the work stand. (☛ p. 11)

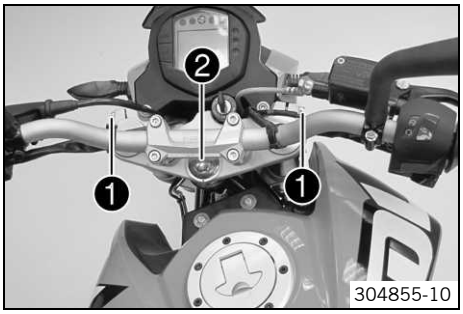


Main work
– Loosen screws ❶.
– Loosen screw ❷.



– Tighten nut ❸ with the special tool until there is no play in the steering head bearing.

Key for steering head bearing (90129051000) (☛ p. 259)



– Using a plastic hammer, tap lightly on the upper triple clamp to avoid strains.
– Tighten screw ❷.
Guideline

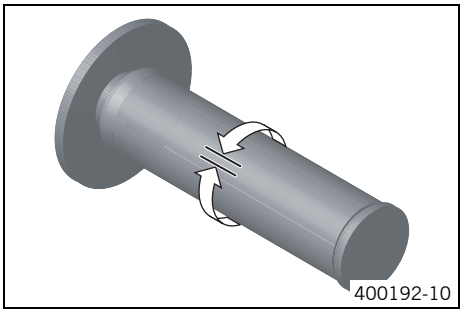
Screw, top steering head	M16x1.5	52 Nm (38.4 lbf ft)

– Tighten screw ❶.
Guideline

Screw, top triple clamp	M8	11 Nm (8.1 lbf ft)

Finishing work
– Check the steering head bearing play. (☛ p. 26)
– Remove the motorcycle from the work stand. (☛ p. 12)

7.1 Checking the play in the throttle cable



– Check the throttle grip for smooth operation.
– Move the handlebar to the straight-ahead position. Move the throttle grip backwards and forwards to ascertain the play in the throttle cable.

Throttle cable play	3... 5 mm (0.12... 0.2 in)

» If the throttle cable play does not meet specifications:
– Adjust the play in the throttle cable. (☛ p. 28)

Danger

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

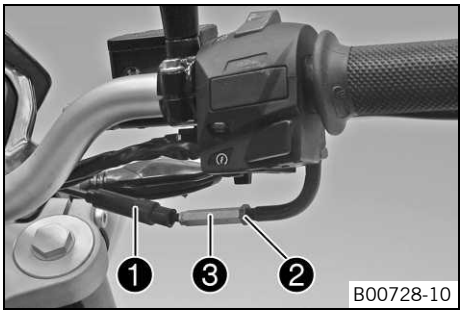
– When running the engine, always make sure there is sufficient ventilation, and do not start or run the engine in an enclosed space without an effective exhaust extraction system.

– Start the engine and let it run idle. Move the handlebar to and fro over the entire steering range.

The idle speed must not change.

» If the idle speed changes:
– Check the throttle cable routing.

7.2 Adjusting the play in the throttle cable



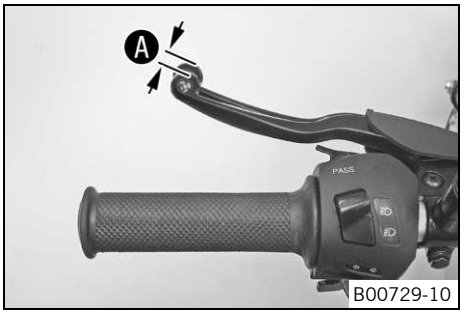
– Move the handlebar to the straight-ahead position.
– Push back sleeve ❶.
– Loosen lock nut ❷.
– Adjust the play in the throttle cable by turning adjusting screw ❸.

Guideline

Throttle cable play	3... 5 mm (0.12... 0.2 in)

– Tighten lock nut ❷.
– Slide on sleeve ❶.

7.3 Checking the clutch lever play



– Check the clutch lever for smooth operation.
– Move the handlebar to the straight-ahead position. Lightly pull the clutch lever and ascertain the clutch lever play Ⓐ.

Clutch lever play	1... 3 mm (0.04... 0.12 in)

» If the clutch lever play does not meet specifications:
– Adjust the clutch cable play. (☛ p. 29)

Note

Clutch damage If there is no play on the clutch lever, the clutch will begin to slip.

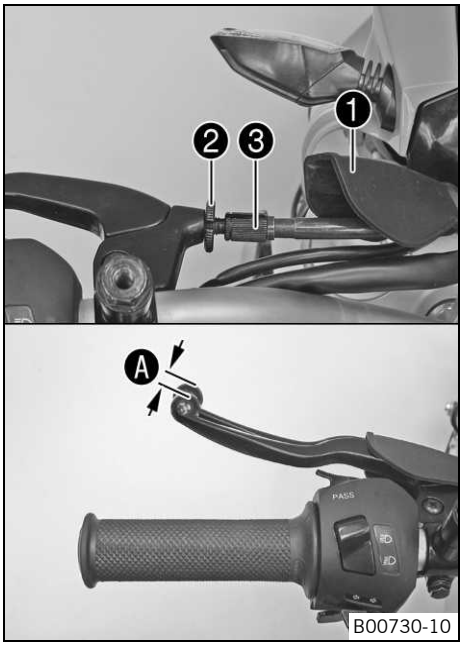
– When operating the motorcycle, always check the clutch lever play.

– Move the handlebar to and fro over the entire steering range.

The clutch lever play must not change.

» If the clutch lever play changes:
– Check the routing of the clutch cable.

7.4 Adjusting the clutch cable play



– Move the handlebar to the straight-ahead position.
– Push back sleeve ❶.
– Loosen lock nut ❷.
– Adjust the play in the clutch level Ⓐ by turning adjusting screw ❸.
  Guideline

Clutch lever play	1... 3 mm (0.04... 0.12 in)

– Tighten lock nut ❷.
– Slide on sleeve ❶.

8.1 Adjusting the spring preload of the shock absorber

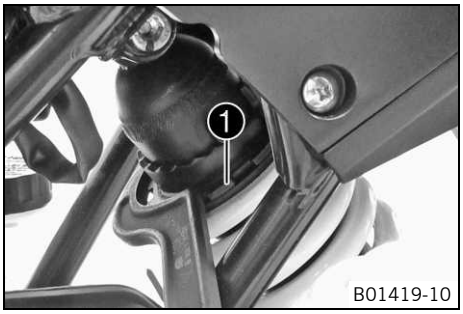
Warning

Danger of accidents Modifications to the suspension settings can seriously alter the vehicle's ride behavior.

– Following modifications, ride slowly at first to get the feel of the new ride behavior.

Info

The spring preload defines the initial situation of the spring process 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 baggage and a passenger, thus ensuring an ideal compromise between maneuverability and stability.



– Turn adjusting ring ❶ to adjust the spring preload.

Guideline

Spring preload	
Standard	3 clicks
Full payload	6 clicks

Hook wrench (T106S) (☛ p. 259)

Info

The spring preload can be set to 10 different positions.

8.2 Removing the shock absorber

Preparatory work

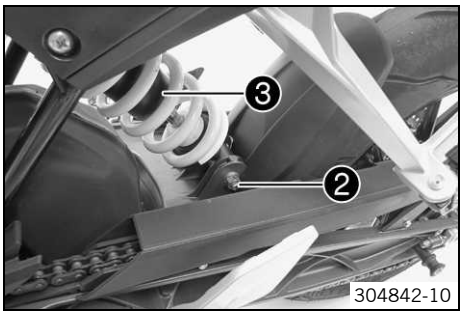
– Raise the motorcycle with the work stand. (☛ p. 11)

Main work

– Remove screw ❶.

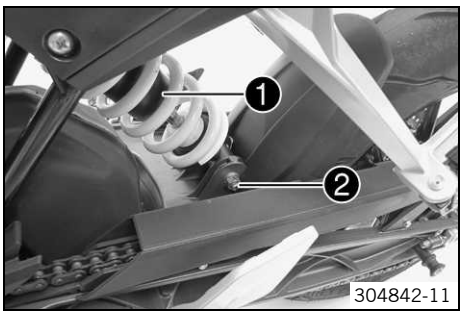
Info

Protect the link fork and attachments from damage.
Ensure that the chain and brake line are not damaged.



– Remove fitting ❷.
– Lift the link fork and take out the shock absorber ❸ toward the rear.

8.3 Installing the shock absorber



Main work

– Lift the link fork and position shock absorber ❶.
– Mount fitting ❷ but do not tighten yet.

Guideline

Fitting, bottom shock absorber	M10x1.25	45 Nm (33.2 lbf ft)

– Lift the link fork.
– Mount and tighten screw ❸.

Guideline

Screw, top shock absorber	M10x1.25	50 Nm (36.9 lbf ft)

– Tighten fitting ❷.

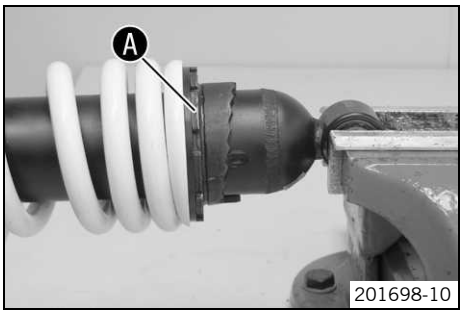
Guideline

Fitting, bottom shock absorber	M10x1.25	45 Nm (33.2 lbf ft)

Finishing work
– Remove the motorcycle from the work stand. (☛ p. 12)

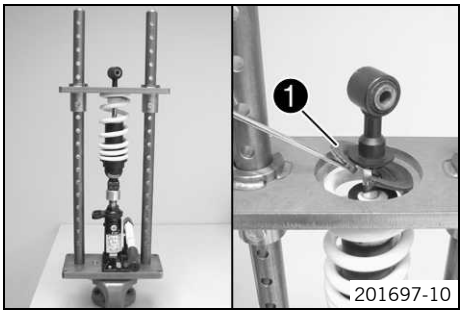
8.4 Removing the spring

Condition
The shock absorber has been removed.



– Clamp the shock absorber in the vise using soft jaws for protection.
– Note the position of the spring preload.
– Loosen adjusting ring ❹ using the special tool.

Hook wrench (T106S) (☛ p. 259)



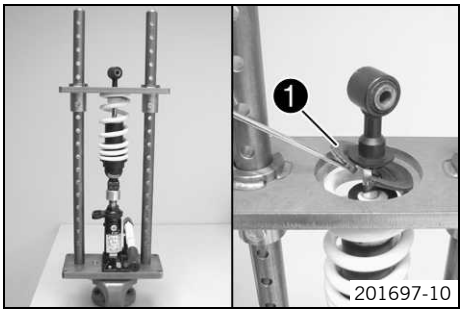
– Clamp the shock absorber into the special tool.

Spring compressor (T14050S) (☛ p. 260)

Info
Use the ring of the special tool with the smallest possible inside diameter. It must be pressed directly onto the spring.

– Compress the spring.
– Remove spring retainer ❶.
– Release the spring. Remove the shock absorber from the special tool.
– Remove the spring.

8.5 Installing the spring

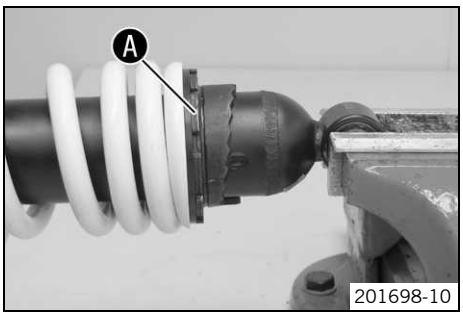


– Mount the spring.
✓ The tight coil of the spring is at the bottom.
– Clamp the shock absorber into the special tool.

Spring compressor (T14050S) (☛ p. 260)

Info
Use the ring of the special tool with the smallest possible inside diameter. It must be pressed directly onto the spring.

– Mount spring retainer ❶.
✓ The open end is opposite the spring end.
– Release the spring. Remove the shock absorber from the special tool.
– Clamp the shock absorber in the vise using soft jaws for protection.



Alternative 1

– Tension the spring to the prescribed position by turning the adjusting ring.

Guideline

Spring preload	
Standard	3 clicks
Full payload	6 clicks

Hook wrench (T106S) (☛ p. 259)

Alternative 2

Warning

Danger of accidents Modifications to the suspension settings can seriously alter the vehicle's ride behavior.

– Extreme modifications to the adjustment of the suspension components can cause a serious deterioration in the handling characteristics and overload some components.
– Only make adjustments within the recommended range.
– After making adjustments, ride slowly at first to get the feel of the new ride behavior.

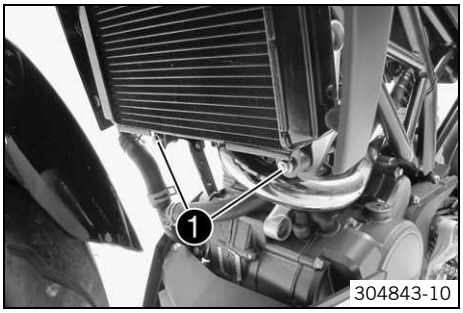
– Tension the spring to the position measured during dismantling by turning the adjusting ring.

9.1 Removing the exhaust manifold

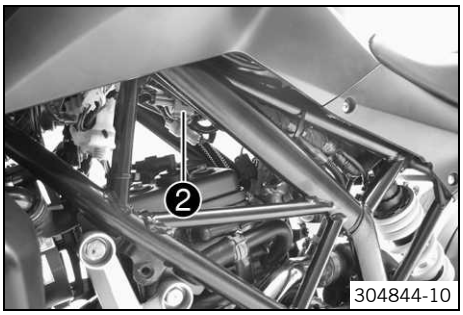
Warning

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

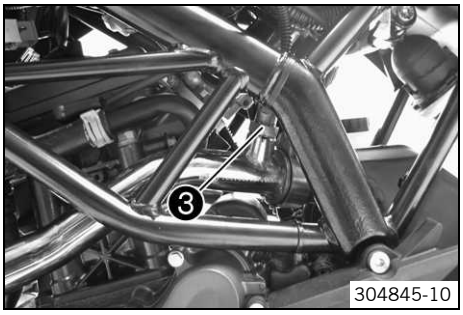
– Allow the exhaust system to cool down. Do not touch hot components.



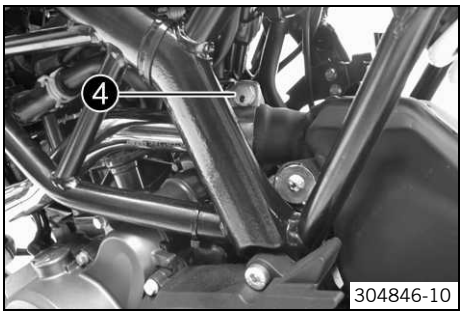
– Remove the nuts ❶.
– Swing the radiator forward slightly.



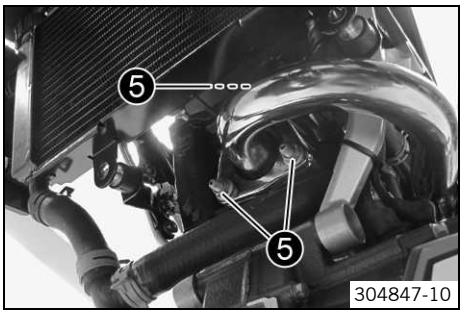
– Remove the cable binder, expose the connector ❷ of the lambda probe, and detach.



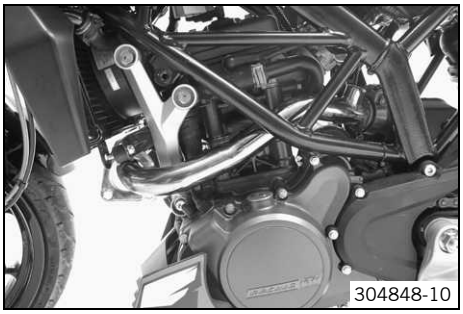
– Remove lambda sensor ❸.



– Loosen exhaust clamp ❹.

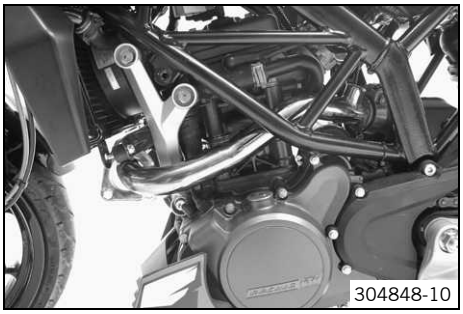


– Remove the nuts ❺.

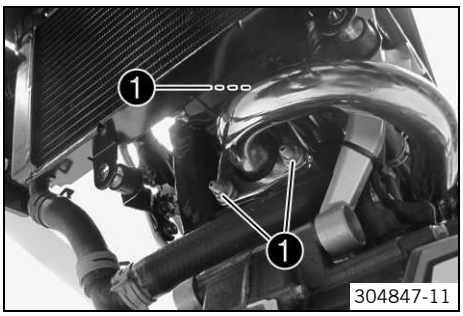


– Remove the exhaust manifold toward the front.

9.2 Installing the exhaust manifold



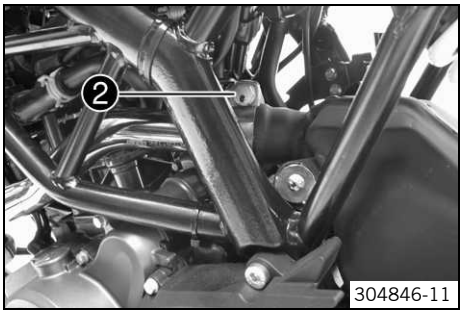
– Position the exhaust manifold.



– Mount nuts ❶ but do not tighten them yet.

Guideline

Nut, exhaust flange (125 Duke)	M8	22 Nm (16.2 lbf ft)
Nut, exhaust flange (200 Duke)	M8	22 Nm (16.2 lbf ft)



– Position and tighten exhaust clamp ❷.

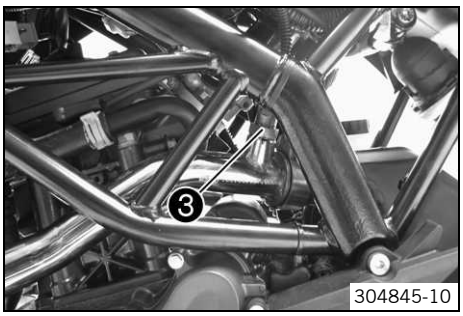
Guideline

Exhaust clamp	-	10 Nm (7.4 lbf ft)

– Tighten nuts ❶.

Guideline

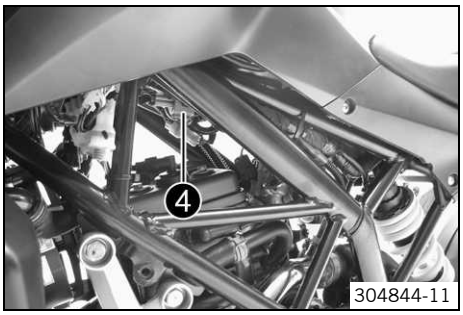
Nut, exhaust flange (125 Duke)	M8	22 Nm (16.2 lbf ft)
Nut, exhaust flange (200 Duke)	M8	22 Nm (16.2 lbf ft)



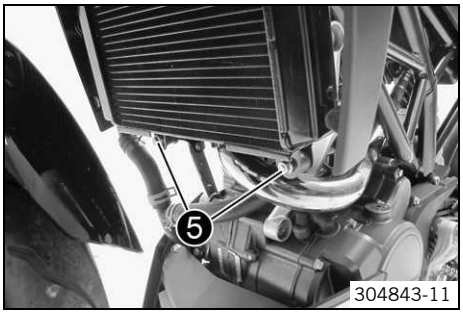
– Mount and tighten lambda sensor ❸.

Guideline

Lambda sensor	M18x1.5	40... 60 Nm (29.5... 44.3 lbf ft)	Lubricant (T152) (☛ p. 251)



– Plug in connector ❹.
– Secure the cable with the cable binders.



– Position the radiator.
– Mount and tighten nuts ❺.

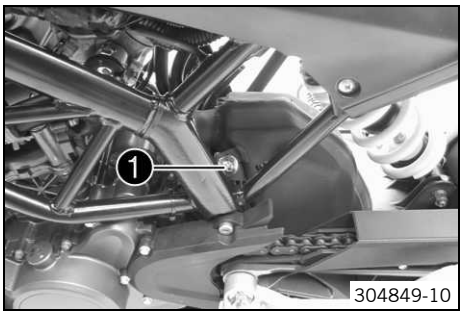
Guideline

Nut, radiator	M6	5 Nm (3.7 lbf ft)

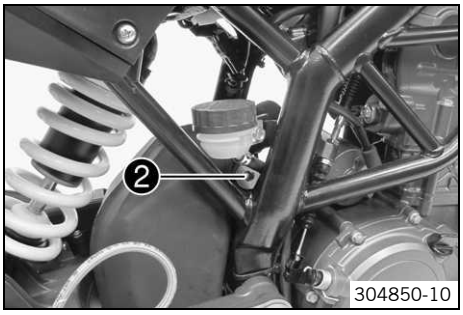
9.3 Removing the main silencer

Preparatory work
– Remove the exhaust manifold. (☛ p. 33)
– Remove the front spoiler. (☛ p. 47)

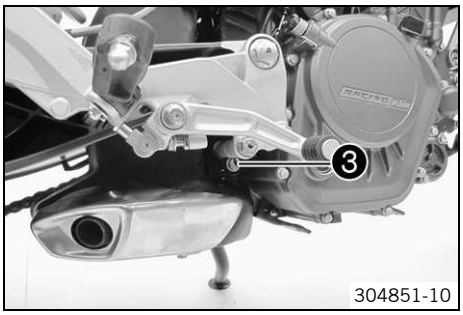
Main work



– Remove screw ❶ with washers.

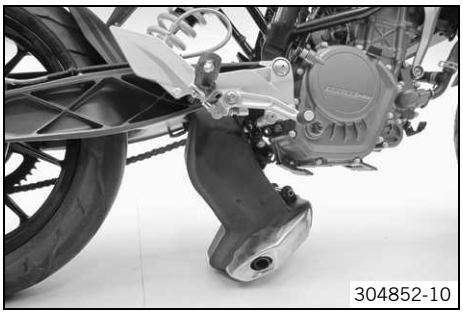


– Remove screw ❷ with washers.



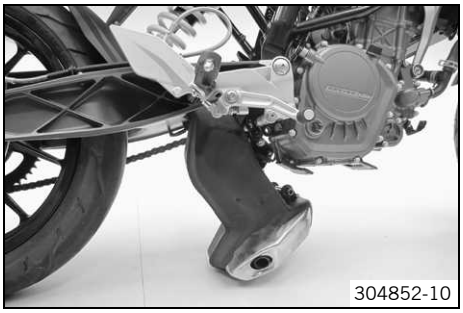
– Remove screw ❸.

Info
Do not misplace the sleeves.



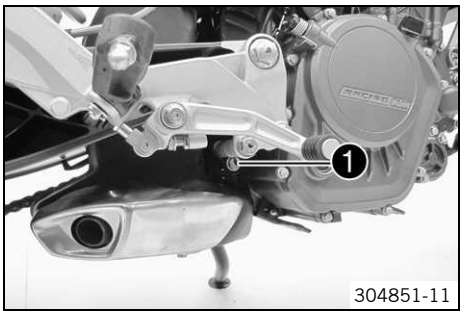
– Remove the main silencer toward the bottom.

9.4 Installing the main silencer



Main work

– Position the main silencer.

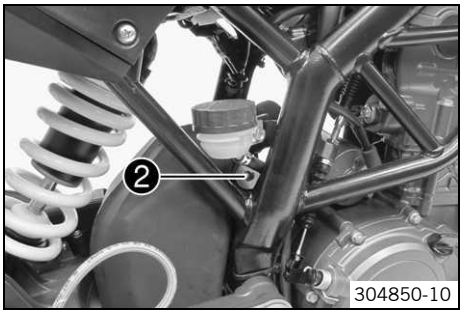


– Mount and tighten screw ❶.

Guideline

Screw, main silencer	M8	23 Nm (17 lbf ft)

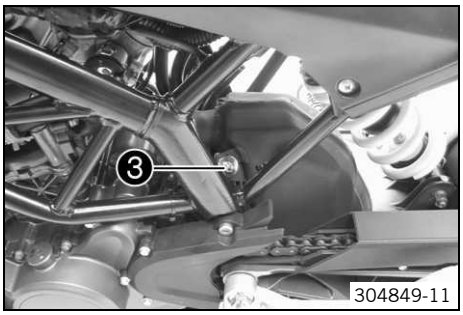
Info
Make sure the sleeves are seated correctly.



– Mount and tighten screw ❷ with the washers.

Guideline

Screw, main silencer	M6	11 Nm (8.1 lbf ft)



– Mount and tighten screw ❸ with the washers.

Guideline

Screw, main silencer	M6	11 Nm (8.1 lbf ft)

Finishing work

– Fit the front spoiler. (☛ p. 47)
– Install the exhaust manifold. (☛ p. 34)

10 AIR FILTER

10.1 Removing the air filter

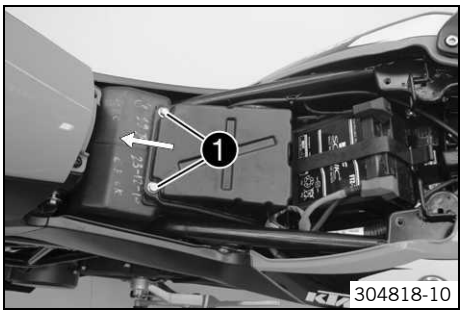
Note

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

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

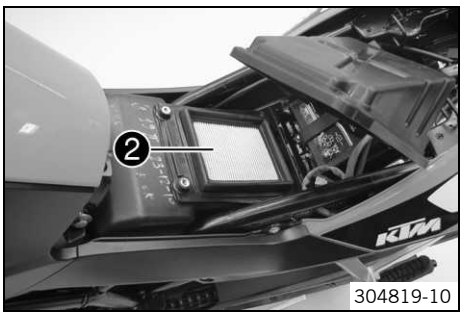
Preparatory work

– Remove the passenger seat. (☛ p. 39)
– Remove the seat. (☛ p. 38)



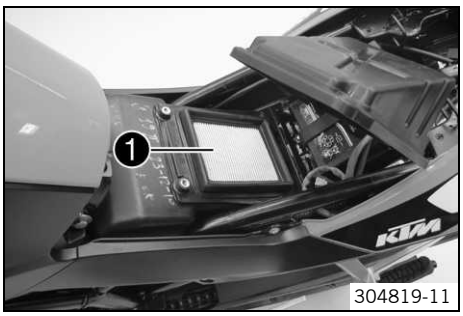
Main work

– Remove screws ❶.
– Pull the air filter box lid forward and move to the side.



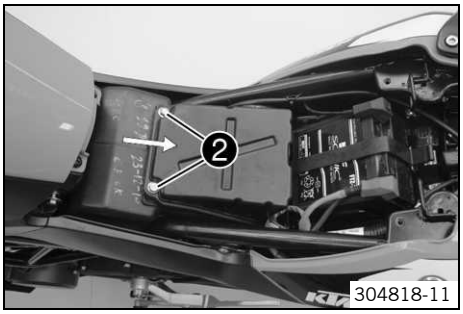
– Remove air filter ❷.
– Clean the air filter box.

10.2 Installing the air filter



Main work

– Position air filter ❶.



– Mount air filter box lid.

Info
Make sure the air filter box lid is seated correctly.

– Mount and tighten screws ❷.

Guideline

Screw, air filter box	M6	6 Nm (4.4 lbf ft)

Finishing work

– Mount the seat. (☛ p. 39)
– Mount the passenger seat. (☛ p. 39)

11.1 Opening the filler cap

Danger

Fire hazard Fuel is highly flammable.

- Never refuel the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
- The fuel in the fuel tank expands when warm and may emerge if overfilled. Follow the instructions on refueling.

Warning

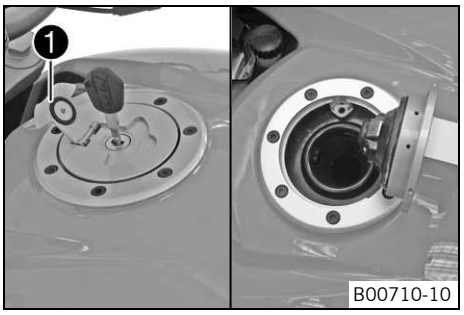
Danger of poisoning Fuel is poisonous and a health hazard.

- Fuel must not come into contact with the skin, eyes, or clothing. Do not breathe in the fuel vapors. If contact occurs with the eyes, rinse with water immediately and contact a physician. Immediately clean contaminated areas on the skin with soap and water. If fuel is swallowed, contact a physician immediately. Change clothing that is contaminated with fuel. Store fuel properly in a suitable canister and keep away from children.

Warning

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

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



- Lift the cover ❶ of the filler cap and insert the ignition key in the lock.

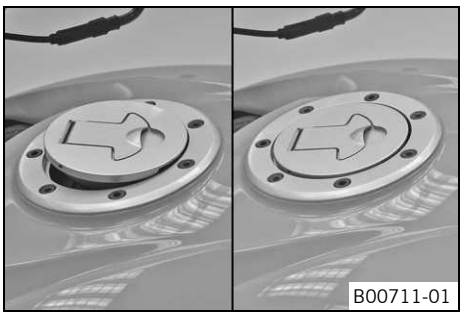
Note

Danger of damage Ignition key breakage.

- To take pressure off of the ignition key, push down on the filler cap. Damaged ignition keys must be replaced.

- Turn the ignition key 90° clockwise.
- Open the filler cap.
- Remove the ignition key.

11.2 Closing the filler cap



Warning

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

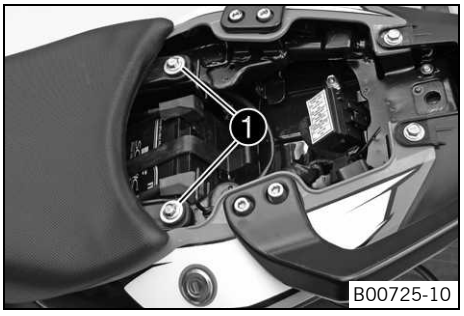
- After closing the filler cap, ensure that it is locked properly. Change clothing that has been contaminated with fuel. Immediately clean contaminated areas on the skin with soap and water.

- Close the filler cap.
- Push down the filler cap until the lock engages.

11.3 Removing the seat

Preparatory work

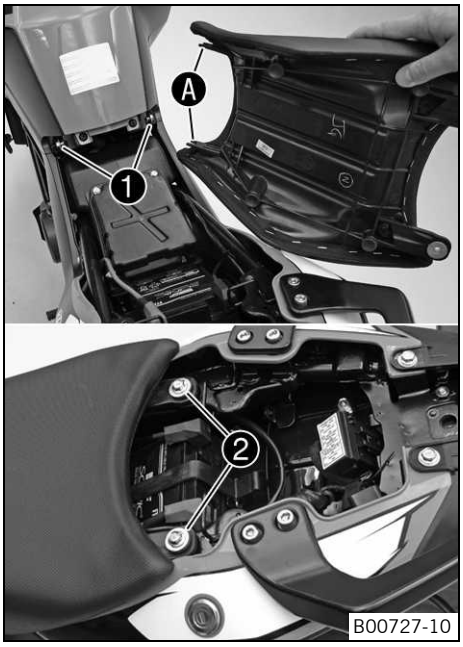
- Remove the passenger seat. (☛ p. 39)



Main work

- Remove screws ❶.
- Raise the rear of the seat, pull it towards the rear, and remove it upwards.

11.4 Mounting the seat



Main work

– Attach seat recesses Ⓐ at screws ❶ and lower at the rear.
– Mount and tighten screws ❷.

Guideline

Screw, seat	M6	11 Nm (8.1 lbf ft)

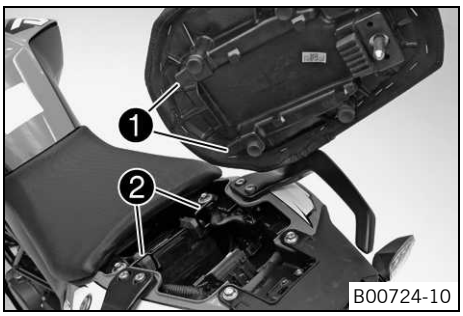
Finishing work

– Mount the passenger seat. (☛ p. 39)

11.5 Removing the passenger seat

– Insert the ignition key in seat lock ❶ and turn it clockwise.
– Raise the rear of the seat, push it towards the rear, and remove it upwards.
– Remove the ignition key from the seat lock.

11.6 Mounting the passenger seat



– Attach hooks ❶ on the passenger seat to brackets ❷ on the subframe, and lower it at the rear while pushing forward.
– Press down the passenger seat until it clicks into place.

Warning

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

– After mounting the passenger seat, check that it is locked correctly by pulling up.

– Finally, check that the passenger seat is correctly mounted.

11.7 Removing the fuel tank cover

Danger

Fire hazard Fuel is highly flammable.

– Never refuel the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
– The fuel in the fuel tank expands when warm and may emerge if overfilled. Follow the instructions on refueling.

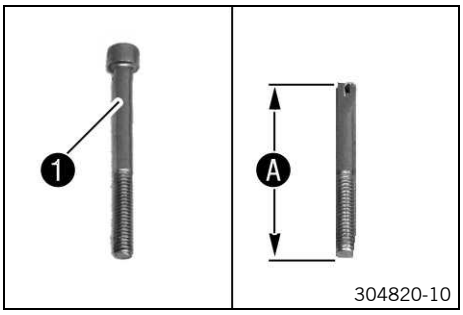
Warning
Danger of poisoning Fuel is poisonous and a health hazard.

– Fuel must not come into contact with the skin, eyes, or clothing. Do not breathe in the fuel vapors. If contact occurs with the eyes, rinse with water immediately and contact a physician. Immediately clean contaminated areas on the skin with soap and water. If fuel is swallowed, contact a physician immediately. Change clothing that is contaminated with fuel. Store fuel properly in a suitable canister and keep away from children.

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

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

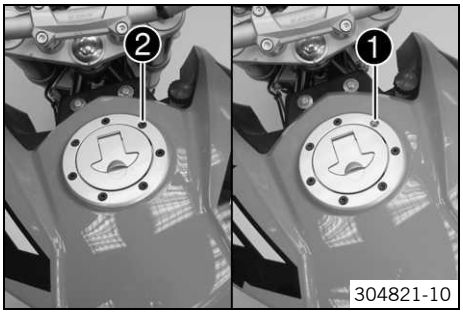
Preparatory work
– Remove the passenger seat. (☛ p. 39)
– Remove the seat. (☛ p. 38)



Create the tool (special screw):
Four ordinary screws are needed.
– Cut off screw ❶ to length Ⓐ.
Guideline

Screw	M5x50
Length Ⓐ	40 mm (1.57 in)

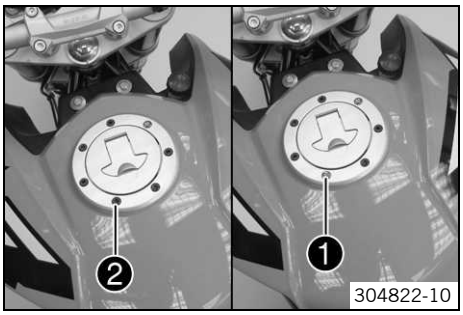
– Cut a slot into the top end of the screw.



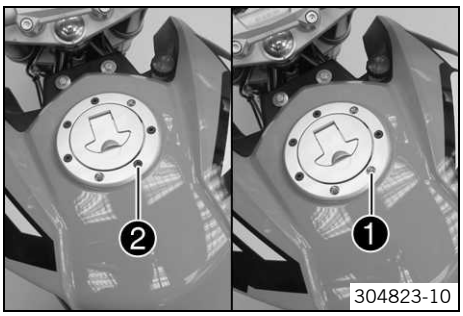
– Remove screw ❷.

Info
Always remove the screws individually and replace them with a special screw to avoid distorting the fuel tank.

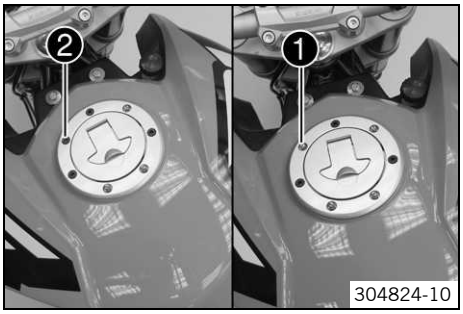
– Mount and tighten special screw ❶.



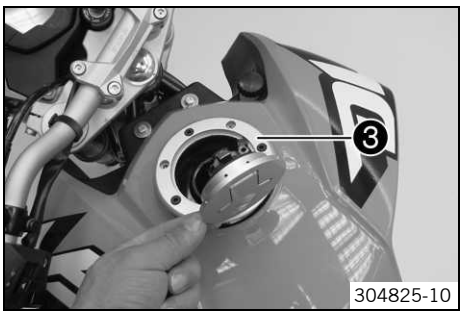
– Remove screw ❷.
– Mount and tighten another special screw ❶.



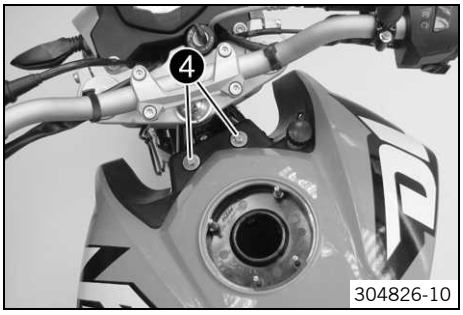
– Remove screw ❷.
– Mount and tighten another special screw ❶.



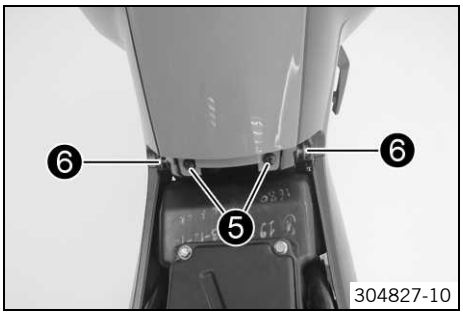
– Remove screw ❷.
– Mount and tighten another special screw ❶.
– Open the filler cap. (☛ p. 38)



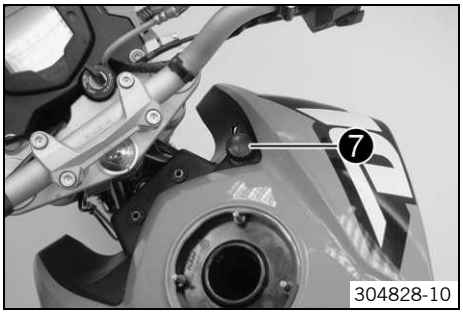
– Remove filler cap ❸.



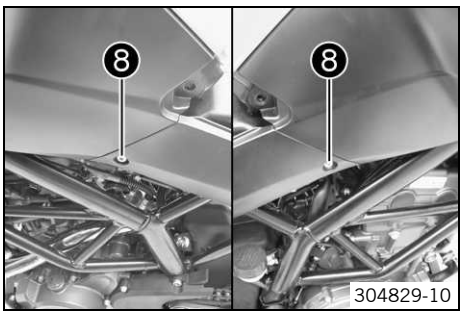
– Remove screws ❹ with the washers.



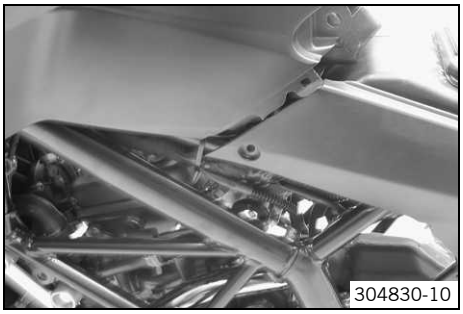
– Remove screws ❺.
– Remove screws ❻.



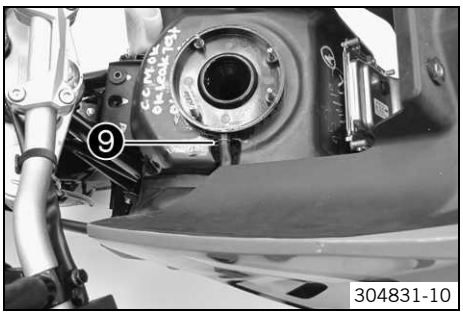
– Remove cap ❼ from the compensating tank.



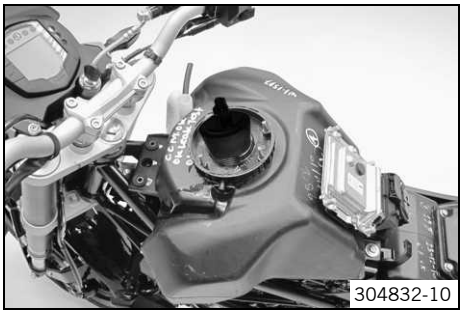
– Remove screws ❽.



– Lift the fuel tank cover.
– Detach the side covers on both sides.



– Push back hose clamp ❾.
– Pull off the vent hose.
– Remove the fuel tank cover.



– Close the fuel tank with a suitable plug.

11.8 Installing the fuel tank cover

Danger
Fire hazard Fuel is highly flammable.

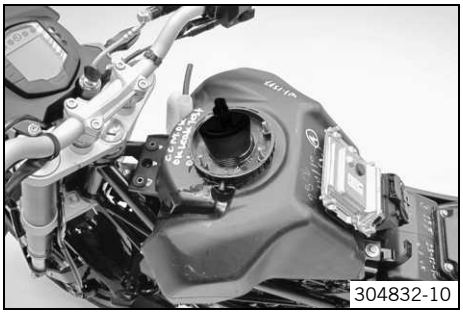
– Never refuel the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
– The fuel in the fuel tank expands when warm and may emerge if overfilled. Follow the instructions on refueling.

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

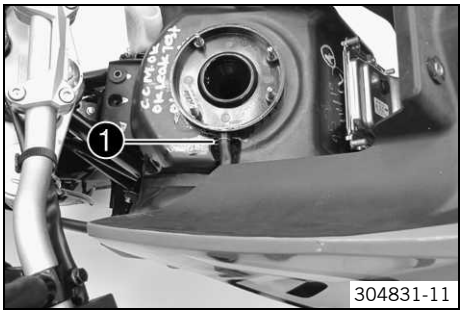
– Fuel must not come into contact with the skin, eyes, or clothing. Do not breathe in the fuel vapors. If contact occurs with the eyes, rinse with water immediately and contact a physician. Immediately clean contaminated areas on the skin with soap and water. If fuel is swallowed, contact a physician immediately. Change clothing that is contaminated with fuel. Store fuel properly in a suitable canister and keep away from children.

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

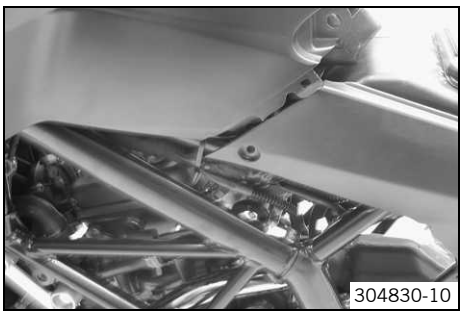
– Do not allow fuel to get into the ground water, the ground, or the sewage system.



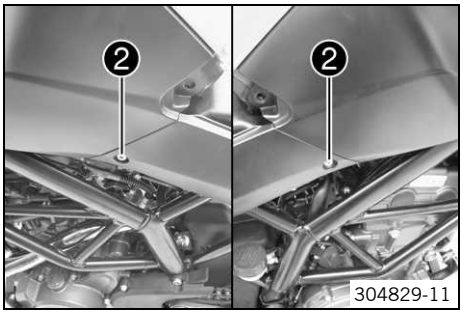
Main work
– Remove the plug.



– Mount the vent hose.
– Position hose clamp ❶.



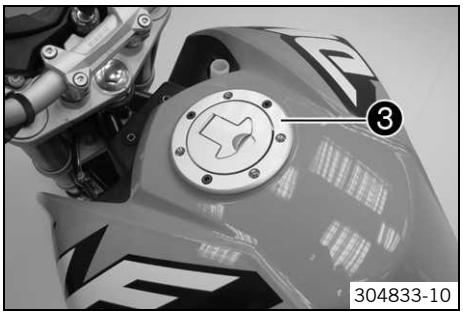
– Position the fuel tank cover.
– Attach the side cover on both sides.



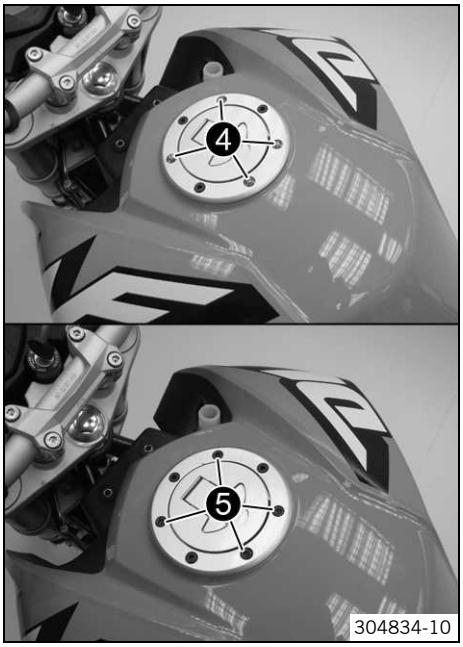
– Mount and tighten screws ❷.

Guideline

Remaining screws, chassis	M5	5 Nm (3.7 lbf ft)



– Mount filler cap ❸.



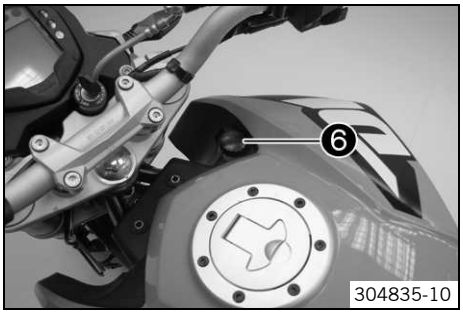
– Remove special screws ❹ individually and replace them with screws ❺.

Info
Always replace the screws individually, or the fuel tank will become distorted and it will no longer be possible to mount the screws.

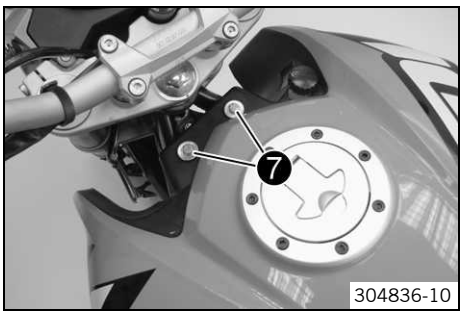
– When all screws have been replaced, tighten the screws crosswise.

Guideline

Screw, fuel tank cover	M5	4 Nm (3 lbf ft)

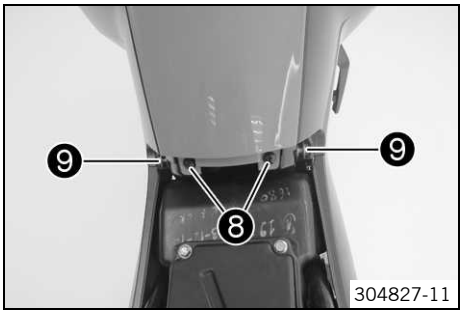


– Mount plug ❻ of the compensating tank.



– Mount and tighten screws ❼ with the washer.
Guideline

Screw, fuel tank	M6	11 Nm (8.1 lbf ft)



– Mount and tighten screws ❽.
Guideline

Screw, fuel tank trim	M5	5 Nm (3.7 lbf ft)

– Mount and tighten screws ❾.
Guideline

Screw, front seat fixing	M6	5 Nm (3.7 lbf ft)

Finishing work
– Mount the seat. (☛ p. 39)
– Mount the passenger seat. (☛ p. 39)

11.9 Removing the fuel tank

Danger
Fire hazard Fuel is highly flammable.

– Never refuel the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
– The fuel in the fuel tank expands when warm and may emerge if overfilled. Follow the instructions on refueling.

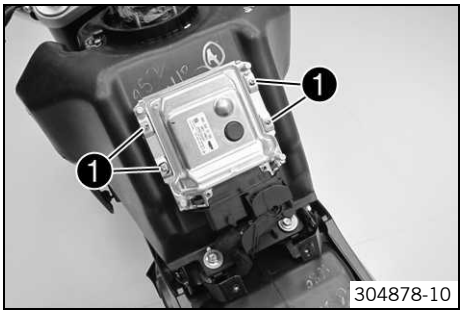
Warning
Danger of poisoning Fuel is poisonous and a health hazard.

– Fuel must not come into contact with the skin, eyes, or clothing. Do not breathe in the fuel vapors. If contact occurs with the eyes, rinse with water immediately and contact a physician. Immediately clean contaminated areas on the skin with soap and water. If fuel is swallowed, contact a physician immediately. Change clothing that is contaminated with fuel. Store fuel properly in a suitable canister and keep away from children.

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

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

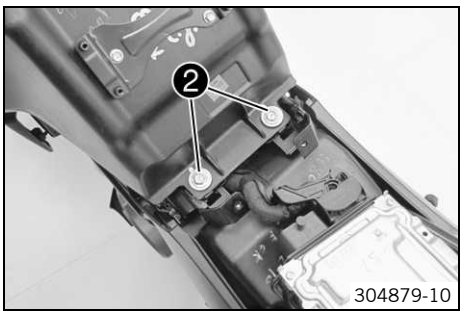
Preparatory work
– Remove the passenger seat. (☛ p. 39)
– Remove the seat. (☛ p. 38)
– Remove the fuel tank cover. (☛ p. 39)



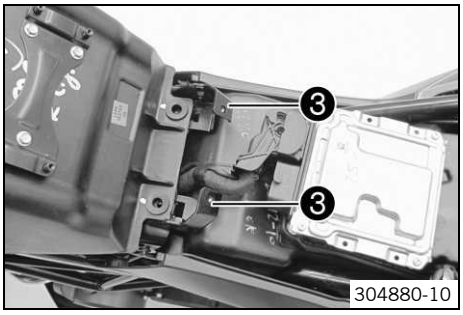
Main work

– Remove screw ❶.
– Hang the EFI control unit to one side.

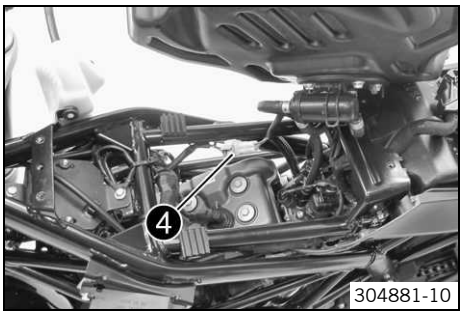
Info
Protect the frame and attachments from damage.



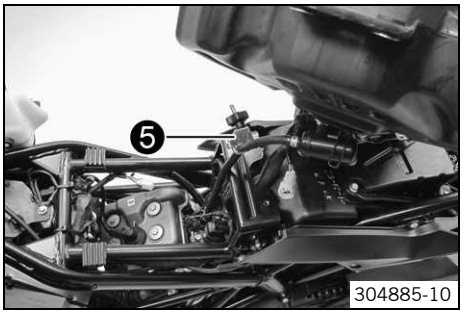
– Remove screws ❷.



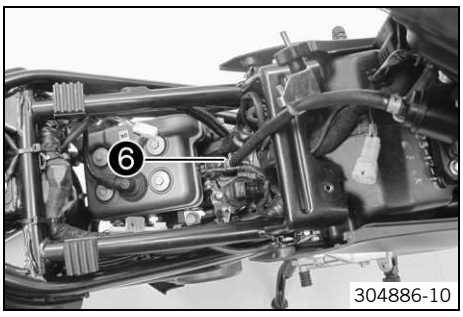
– Take off the holder ❸.



– Detach connector ❹.



– Detach the fuel line with a suitable tool ❺.



– Push back hose clamp ❻.
– Pull off the fuel line and remove the fuel tank.

11.10 Installing the fuel tank

Danger

Fire hazard Fuel is highly flammable.

- Never refuel the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
- The fuel in the fuel tank expands when warm and may emerge if overfilled. Follow the instructions on refueling.

Warning

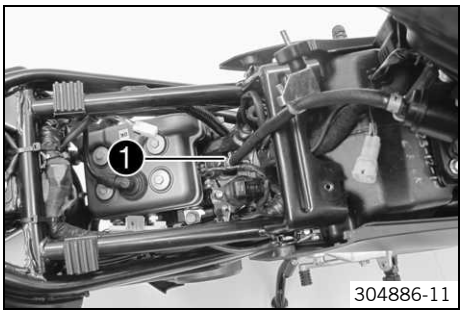
Danger of poisoning Fuel is poisonous and a health hazard.

- Fuel must not come into contact with the skin, eyes, or clothing. Do not breathe in the fuel vapors. If contact occurs with the eyes, rinse with water immediately and contact a physician. Immediately clean contaminated areas on the skin with soap and water. If fuel is swallowed, contact a physician immediately. Change clothing that is contaminated with fuel. Store fuel properly in a suitable canister and keep away from children.

Warning

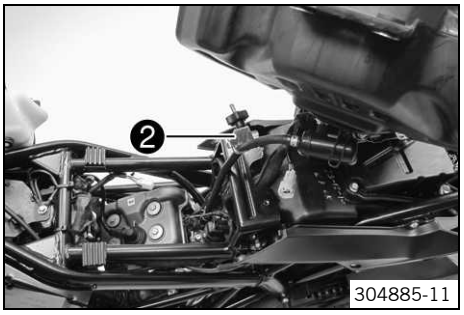
Environmental hazard Improper handling of fuel is a danger to the environment.

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

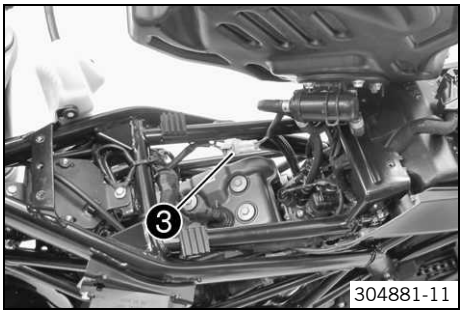


Main work

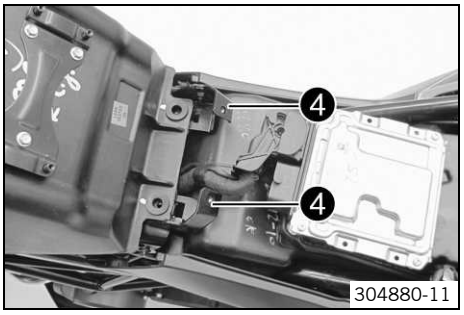
- Connect the fuel line.
- Position hose clamp ❶.



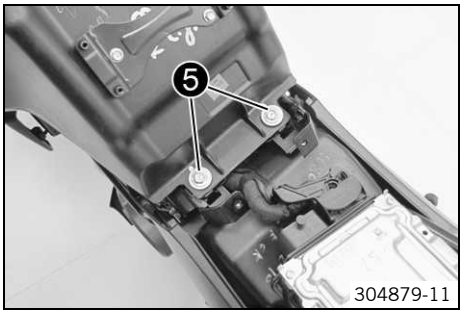
- Remove tool ❷.



- Plug in connector ❸.



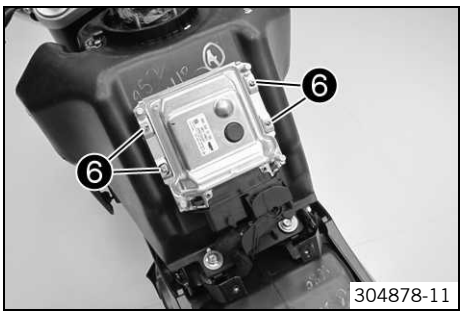
- Position the fuel tank.
- Position the holder ❹.



– Mount and tighten screws ❺.

Guideline

Screw, fuel tank	M6	11 Nm (8.1 lbf ft)



– Position the EFI control unit.
– Mount and tighten screws ❻.

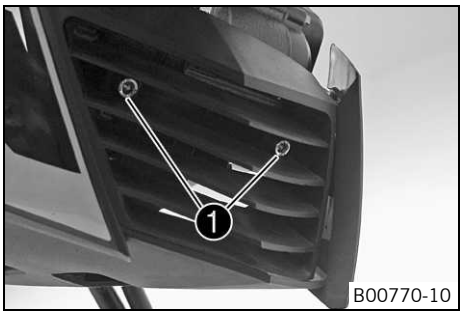
Guideline

Screw, EFI control unit	M4	4 Nm (3 lbf ft)

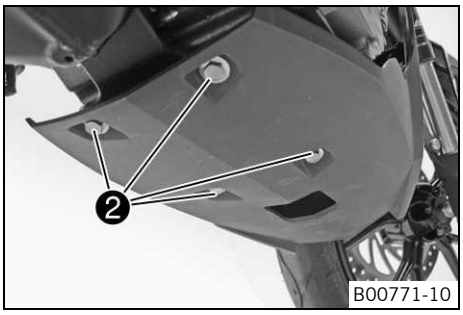
Finishing work

– Install the fuel tank cover. (☛ p. 42)
– Mount the seat. (☛ p. 39)
– Mount the passenger seat. (☛ p. 39)

11.11 Removing the front spoiler

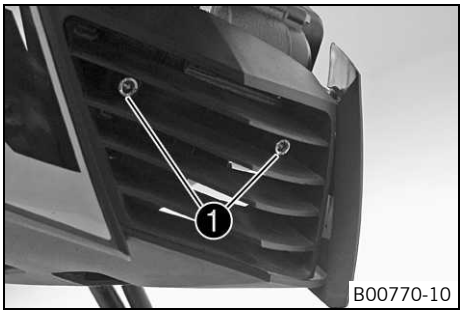


– Remove screws ❶.

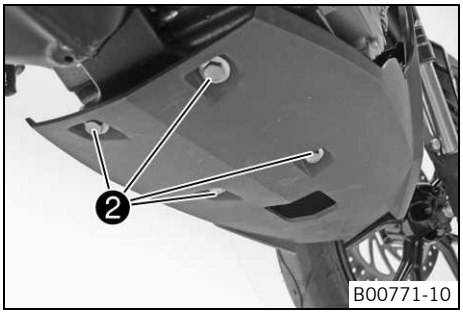


– Remove screws ❷.
– Take off the front spoiler.

11.12 Fitting front spoiler



– Position the front spoiler. Mount screws ❶ but do not tighten yet.



– Mount and tighten screws ❷.

Guideline

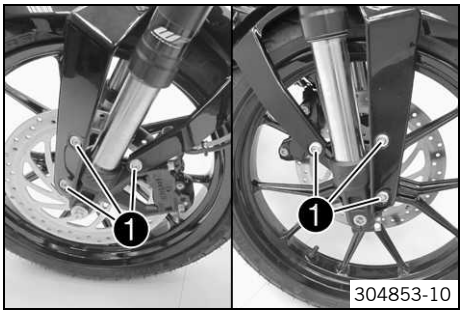
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)

– Tighten screw ❶.

Guideline

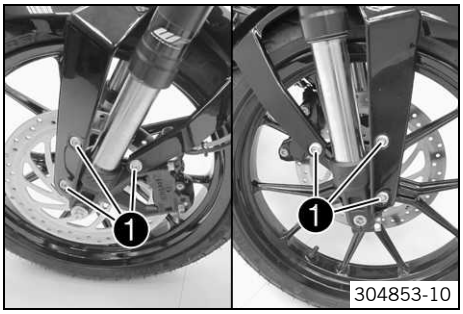
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)

11.13 Dismounting the front fender



– Remove screws ❶. Remove the front fender.

11.14 Installing the front fender



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

Guideline

Screw, front fender	M6	11 Nm (8.1 lbf ft)

11.15 Checking the fuel pressure

Danger

Fire hazard Fuel is highly flammable.

– Never refuel the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
– The fuel in the fuel tank expands when warm and may emerge if overfilled. Follow the instructions on refueling.

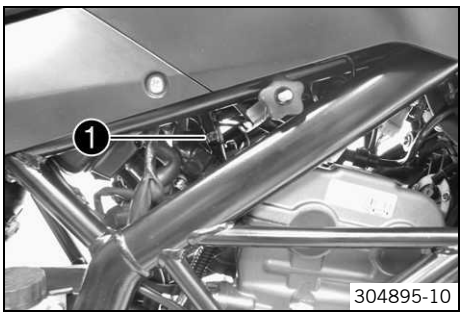
Warning

Danger of poisoning Fuel is poisonous and a health hazard.

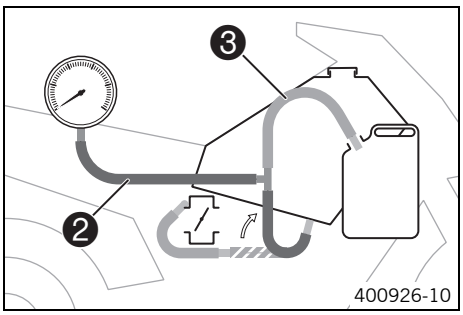
– Fuel must not come into contact with the skin, eyes, or clothing. Do not breathe in the fuel vapors. If contact occurs with the eyes, rinse with water immediately and contact a physician. Immediately clean contaminated areas on the skin with soap and water. If fuel is swallowed, contact a physician immediately. Change clothing that is contaminated with fuel. Store fuel properly in a suitable canister and keep away from children.

Condition

The fuel tank is full.
Ensure that the battery voltage does not drop below 12.5 V.
The ignition is off.
The diagnostics tool is connected.



– Detach the fuel line with a suitable tool.
– Push back hose clamp ❶ and pull off the fuel line.



– Mount special tool ❷.

Pressure testing tool (61029094000) (☛ p. 254)

– Mount special tool ❸ with the nozzle code **0,45**.

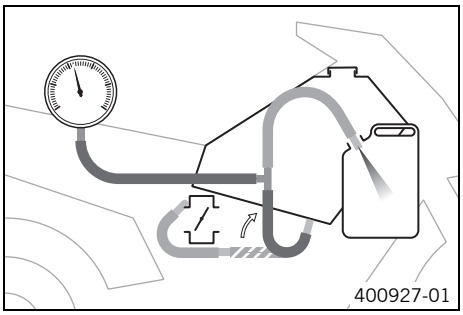
Testing hose (61029093000) (☛ p. 254)

– Position the hose end in a fuel can.

Guideline

Minimum size of fuel can	10 l (2.6 US gal)

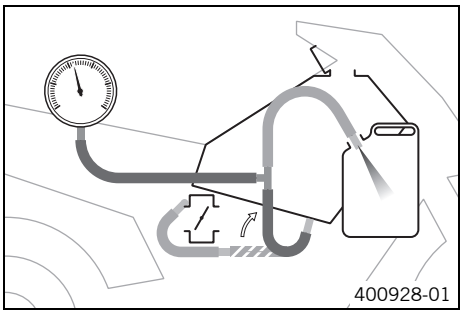
– Switch the ignition on.
– Execute **"Actuator test"** > **"Fuel pump relay function test"**.



– Check the fuel pressure with the filler cap closed.

Fuel pressure	
When the fuel pump is active	2.5... 2.9 bar (36... 42 psi)

» If the specification is not reached:
– Open the filler cap. (☛ p. 38)
– Check the tank air vent system.

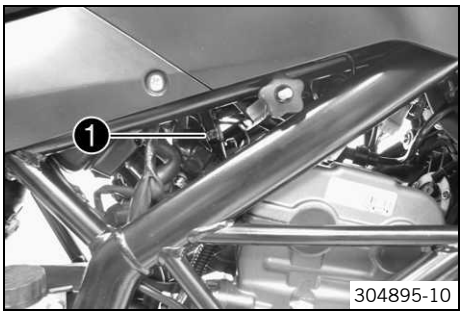


– Check the fuel pressure with the filler cap open.

Fuel pressure	
When the fuel pump is active	2.5... 2.9 bar (36... 42 psi)

» If the specification is not reached:
– Check that the fuel line is clear.
– Change the fuel filter. (☛ p. 50)
– Replace the fuel pump. (☛ p. 51)

– Stop the **"Function test of fuel pump control"** actuator test by pressing the **"Quit"** button.
– Remove the special tools.



– Connect the fuel line and position hose clamp ❶.
– Remove the tool.

11.16 Changing the fuel filter

Danger

Fire hazard Fuel is highly flammable.

- Never refuel the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
- The fuel in the fuel tank expands when warm and may emerge if overfilled. Follow the instructions on refueling.

Warning

Danger of poisoning Fuel is poisonous and a health hazard.

- Fuel must not come into contact with the skin, eyes, or clothing. Do not breathe in the fuel vapors. If contact occurs with the eyes, rinse with water immediately and contact a physician. Immediately clean contaminated areas on the skin with soap and water. If fuel is swallowed, contact a physician immediately. Change clothing that is contaminated with fuel. Store fuel properly in a suitable canister and keep away from children.

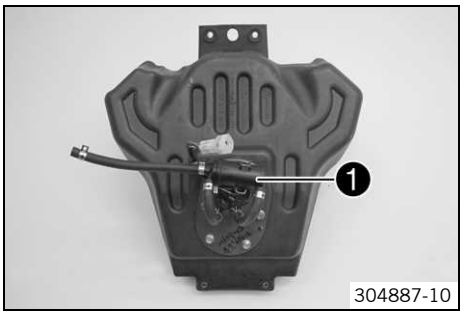
Warning

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

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

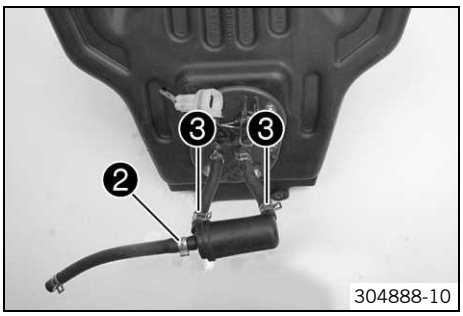
Preparatory work

- Remove the passenger seat. (☛ p. 39)
- Remove the seat. (☛ p. 38)
- Remove the fuel tank cover. (☛ p. 39)
- Dismount the fuel tank. (☛ p. 44)
- Drain the fuel from the fuel tank into a suitable container.

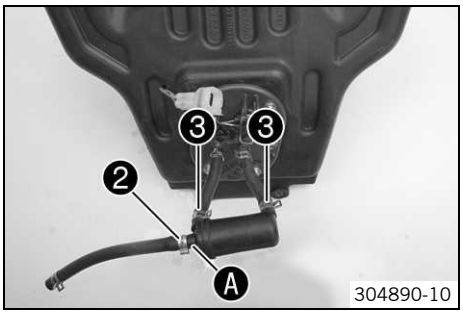


Main work

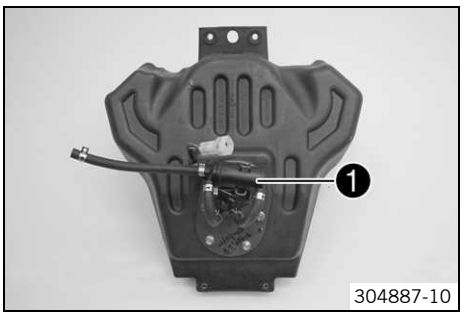
- Take fuel filter ❶ out of the holder.



- Remove hose clamp ❷ and pull off the fuel hose.
- Push back hose clamp ❸ and remove the fuel filter.



- Position the fuel filter.
  - ✓ Connection ❹ faces to the left.
- Position the fuel hoses and mount hose clamp ❷.
- Position hose clamps ❸.



– Position fuel filter ❶ in the holder.

Finishing work

– Install the fuel tank. (☛ p. 46)
– Install the fuel tank cover. (☛ p. 42)
– Mount the seat. (☛ p. 39)
– Mount the passenger seat. (☛ p. 39)

11.17 Replacing the fuel pump

Danger

Fire hazard Fuel is highly flammable.

– Never refuel the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
– The fuel in the fuel tank expands when warm and may emerge if overfilled. Follow the instructions on refueling.

Warning

Danger of poisoning Fuel is poisonous and a health hazard.

– Fuel must not come into contact with the skin, eyes, or clothing. Do not breathe in the fuel vapors. If contact occurs with the eyes, rinse with water immediately and contact a physician. Immediately clean contaminated areas on the skin with soap and water. If fuel is swallowed, contact a physician immediately. Change clothing that is contaminated with fuel. Store fuel properly in a suitable canister and keep away from children.

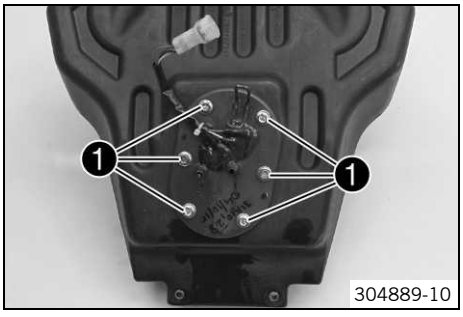
Warning

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

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

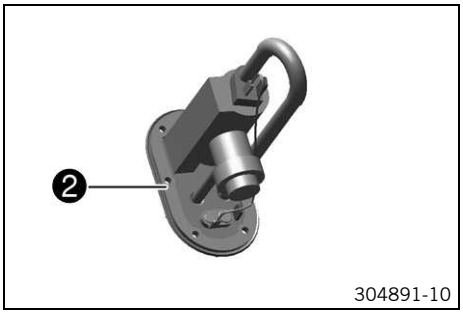
Preparatory work

– Remove the passenger seat. (☛ p. 39)
– Remove the seat. (☛ p. 38)
– Remove the fuel tank cover. (☛ p. 39)
– Dismount the fuel tank. (☛ p. 44)
– Drain the fuel from the fuel tank into a suitable container.

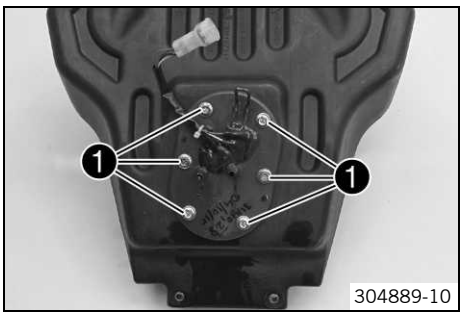


Main work

– Remove screws ❶.
– Remove the fuel pump with the gasket.



– Position gasket ❷.



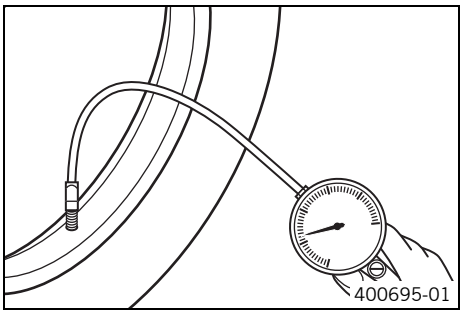
– Position the fuel pump with the gasket.
– Install the screws ❶ and tighten them diagonally.
  Guideline

Screw, fuel pump	M5	5 Nm (3.7 lbf ft)

Finishing work
– Install the fuel tank. (☛ p. 46)
– Install the fuel tank cover. (☛ p. 42)
– Mount the seat. (☛ p. 39)
– Mount the passenger seat. (☛ p. 39)

12.1 Checking the tire air pressure

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



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

Tire air pressure, solo	
Front	2.0 bar (29 psi)
Rear	2.0 bar (29 psi)

Tire air pressure with passenger/full payload	
Front	2.0 bar (29 psi)
Rear	2.2 bar (32 psi)

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

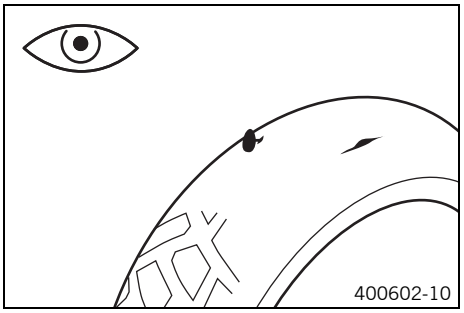
12.2 Checking the tire condition

Warning
Danger of accidents Uncontrollable vehicle handling in the event of a flat tire.
– In the interest of safety, replace damaged or worn tires immediately.

Warning
Danger of crashing Poor vehicle handling due to different tire tread patterns on front and rear wheels.
– The front and rear wheels must be fitted with tires with similar tread patterns to prevent loss of control over the vehicle.

Warning
Danger of accidents Uncontrollable handling characteristic due to non-approved and/or non-recommended tires/wheels.
– Only tires/wheels approved by KTM and with the corresponding speed index should be used.

Info
The type, condition and air pressure of the tires all have a major impact on the riding behavior of the motorcycle.
Worn tires have a negative effect on riding behavior, especially on wet surfaces.



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

Info
Note local national regulations concerning the minimum tread depth.

Minimum tread depth	≥ 2 mm (≥ 0.08 in)

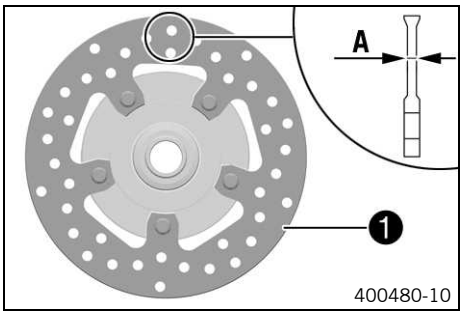
» If the tread depth is less than the minimum permissible depth:
– Change the tires.
– Check the age of the tires.

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

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

12.3 Checking the brake discs

Warning
Danger of accidents Reduced braking efficiency due to worn brake disc(s).
– Change the worn brake disc(s) without delay.



– Check the thickness of the front and rear brake discs at several places on the disk to see if it conforms to measurement Ⓐ.

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

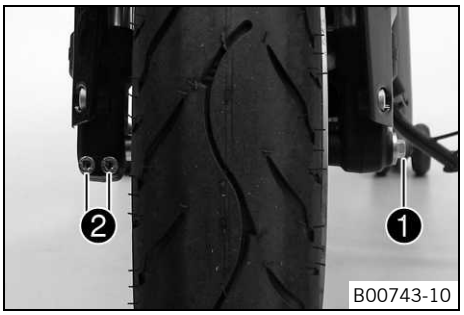
Brake discs - wear limit	
Front	3.6 mm (0.142 in)
Rear	3.6 mm (0.142 in)

» If the brake disc thickness is less than the specified value:
– Change the brake discs.
– Check the front and rear brake discs for damage, cracking, and deformation.
» If the brake disc shows signs of damage, cracking, or deformation:
– Change the brake discs.

12.4 Front wheel

12.4.1 Removing the front wheel

Preparatory work
– Raise the motorcycle with the rear wheel stand. (☛ p. 10)
– Raise the motorcycle with the front wheel stand. (☛ p. 10)



Main work
– Loosen screw ❶ and screws ❷.
– Unscrew screw ❶ about six turns and press your hand on the screw to push the wheel spindle out of the axle clamp. Remove screw ❶.

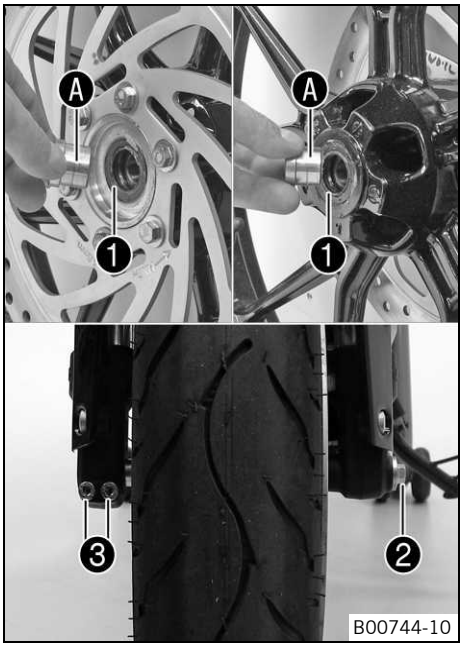
Warning
Danger of accidents Reduced braking effect caused by damaged brake discs.
– Always lay the wheel down in such a way that the brake discs are not damaged.

– Holding the front wheel, withdraw the wheel spindle. Take the front wheel out of the fork.

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

12.4.2 Installing the front wheel

Warning
Danger of accidents Reduced braking efficiency due to oil or grease on the brake discs.
– Always keep the brake discs free of oil and grease, and clean them with brake cleaner when necessary.



Main work
- Check the wheel bearing for damage and wear.
  - » If the wheel bearing is damaged or worn:
    - Change the wheel bearing.
- Clean and grease the shaft seal rings ❶ and mating surfaces Ⓐ of the spacers.

Long-life grease (☛ p. 250)

- Insert the spacers.
- Clean the thread of the wheel spindle and screw ❷.
- Position the front wheel and insert the wheel spindle.
  - ✓ The brake linings are correctly positioned.
- Mount and tighten screw ❷.

  Guideline

Screw, front wheel spindle	M8	30 Nm (22.1 lbf ft)

- Operate the hand brake lever repeatedly until the brake linings are in contact with the brake disc and there is a pressure point.
- Take the motorcycle off of the front wheel stand. (☛ p. 11)
- Pull the front wheel brake and push down hard on the fork several times to align the fork legs.
- Tighten screws ❸.

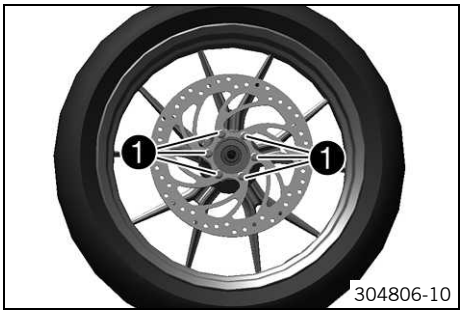
  Guideline

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

Finishing work
- Take the motorcycle off of the rear wheel stand. (☛ p. 10)

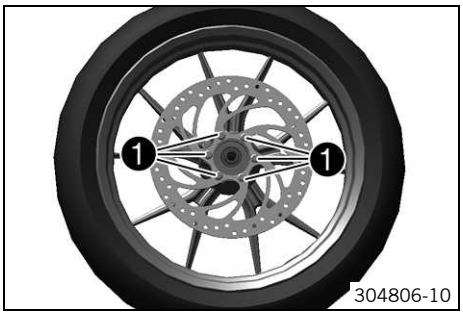
12.4.3 Removing the brake disc of the front brake

Preparatory work
- Raise the motorcycle with the rear wheel stand. (☛ p. 10)
- Raise the motorcycle with the front wheel stand. (☛ p. 10)
- Remove the front wheel. (☛ p. 54)



Main work
- Remove screws ❶.
- Remove the brake disc.

12.4.4 Installing the brake disc of the front brake



Main work
- Clean the contact surface of the brake disc.
- Position the brake disc with the label facing outward.
- Mount and tighten screws ❶.

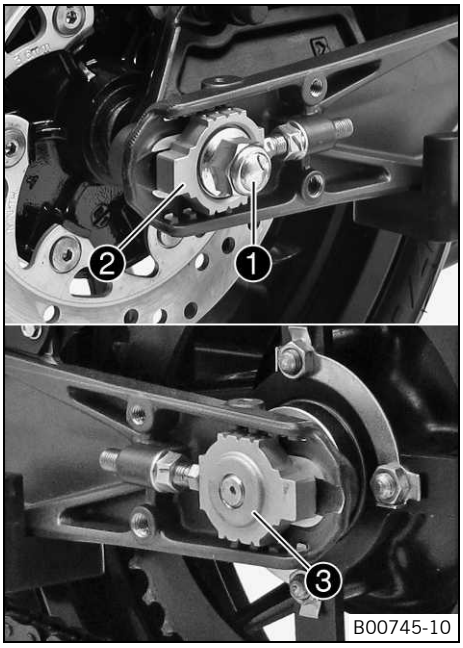
  Guideline

Screw, front brake disc	M8	29 Nm (21.4 lbf ft)	**Loctite® 243™**

Finishing work
- Install the front wheel. (☛ p. 54)
- Take the motorcycle off of the rear wheel stand. (☛ p. 10)

12.5 Rear wheel

12.5.1 Removing the rear wheel



Preparatory work

– Raise the motorcycle with the rear wheel stand. (☛ p. 10)

Main work

– Remove nut ❶ and the washer. Remove chain adjuster ❷.
– Holding the rear wheel, withdraw wheel spindle ❸.
– Push the rear wheel forward as far as possible and take the chain off the rear sprocket.

Warning

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

– Always lay the wheel down in such a way that the brake discs are not damaged.

– Pull the rear wheel back and take it out of the swingarm.

Info

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

12.5.2 Installing the rear wheel

Warning

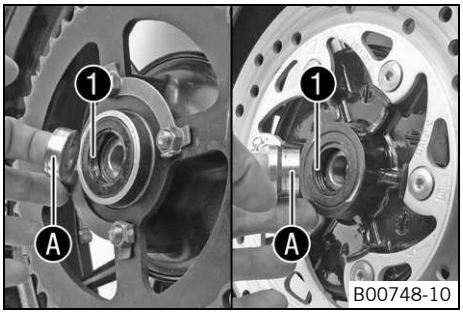
Danger of accidents Reduced braking efficiency due to oil or grease on the brake discs.

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

Warning

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

– After installing the rear wheel, always operate the foot brake until the pressure point is reached.

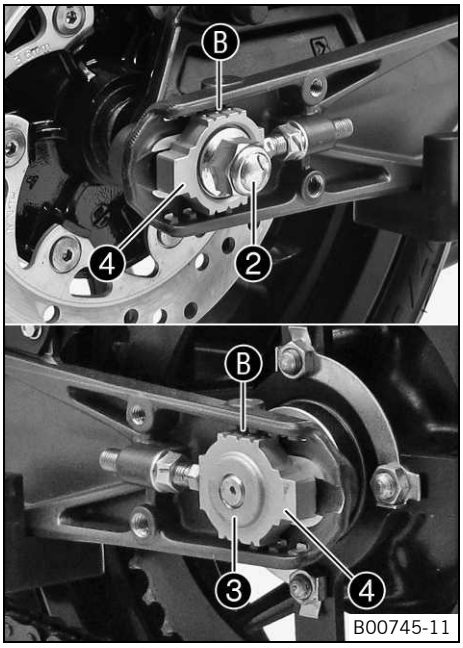


Main work

– Check the rear hub rubber dampers. (☛ p. 61)
– Check the wheel bearing for damage and wear.
  » If the wheel bearing is damaged or worn:
    – Change the wheel bearing.
– Clean and grease the shaft seal rings ❶ and mating surfaces Ⓐ of the spacers.

Long-life grease (☛ p. 250)

– Clean the thread of the axle and nut ❷.
– Clean the fixing locations on the brake caliper support and swingarm.
– Install the rubber damper and rear sprocket carrier on the rear wheel.
– Position the rear wheel.
  ✓ The brake linings are correctly positioned.
– Position the rear wheel on the contact surfaces in the swingarm.
– Push the rear wheel as far forward as possible and place the chain on the rear sprocket.



– Pull the rear wheel back and mount wheel spindle ❸.

Info
Mount the left and right chain adjusters ❹ in the same position.

– Mount nut ❷ and washer.
– Push the rear wheel forward so that the chain adjusters are on the screws, and tighten nut ❷.

Guideline

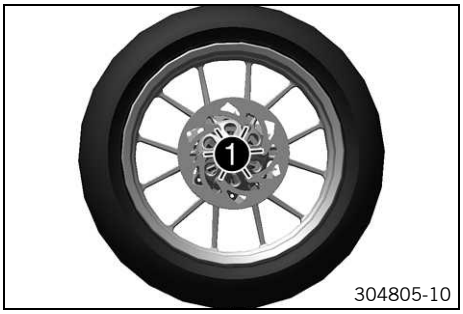
In order for the rear wheel to be correctly aligned, the markings on the left and right chain adjusters must be in the same position relative to the reference marks ❸.

Nut, rear wheel spindle	M14x1.5	60 Nm (44.3 lbf ft)

Finishing work
– Take the motorcycle off of the rear wheel stand. (☛ p. 10)

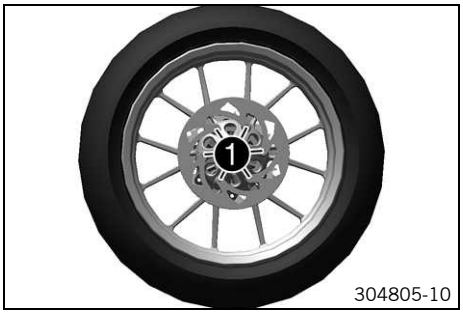
12.5.3 Removing the brake disc of the rear brake

Preparatory work
– Raise the motorcycle with the rear wheel stand. (☛ p. 10)
– Remove the rear wheel. (☛ p. 56)



Main work
– Remove screws ❶.
– Remove the brake disc.

12.5.4 Installing the brake disc of the rear brake



Main work
– Clean the contact surface of the brake disc.
– Position the brake disc with the label facing outward.
– Mount and tighten screws ❶.

Guideline

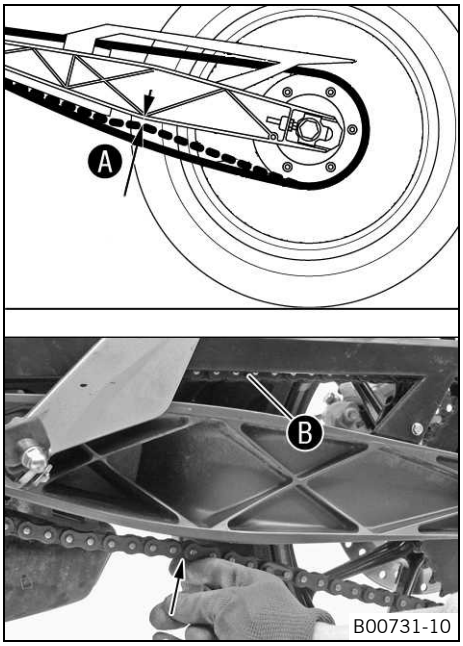
Screw, rear brake disc	M8	29 Nm (21.4 lbf ft)	**Loctite® 243™**

Finishing work
– Install the rear wheel. (☛ p. 56)
– Take the motorcycle off of the rear wheel stand. (☛ p. 10)

12.5.5 Checking the chain tension

Warning
Danger of accidents Danger caused by incorrect chain tension.

– If the chain is too taut, the components of the secondary power transmission (chain, engine sprocket, rear sprocket, bearings in the transmission and in the rear wheel) will be under additional load. In addition to premature wear, this can cause the chain or the countershaft of the transmission to break in extreme cases. If the chain is too loose, however, it may fall off the engine sprocket or rear sprocket and block the rear wheel or damage the engine. Ensure that the chain tension is correct and adjust it if necessary.



– Lean the motorcycle on the side stand.
– Shift gear to neutral.
– In the area of chain sliding guard, press the chain upward toward the swingarm and determine chain tension Ⓐ.

Info
The upper chain section Ⓑ must be taut.
Chain wear is not always even, so you should repeat this measurement at different chain positions.

Chain tension	5... 7 mm (0.2... 0.28 in)

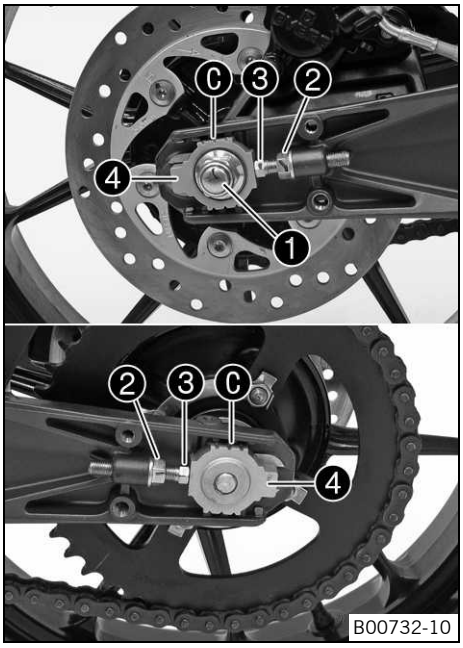
» If the chain tension does not meet specifications:
– Adjust the chain tension. (☛ p. 58)

12.5.6 Adjusting the chain tension

Warning
Danger of accidents Danger caused by incorrect chain tension.

– If the chain is too taut, the components of the secondary power transmission (chain, engine sprocket, rear sprocket, bearings in the transmission and in the rear wheel) will be under additional load. In addition to premature wear, this can cause the chain or the countershaft of the transmission to break in extreme cases. If the chain is too loose, however, it may fall off the engine sprocket or rear sprocket and block the rear wheel or damage the engine. Ensure that the chain tension is correct and adjust it if necessary.

Preparatory work
– Check the chain tension. (☛ p. 58)



Main work

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

Guideline

Chain tension	5... 7 mm (0.2... 0.28 in)
Turn adjusting screws ❸ on the left and right so that the markings on the left and right chain adjuster ❹ are in the same position in relation to reference marks ❻. The rear wheel is then correctly aligned.	

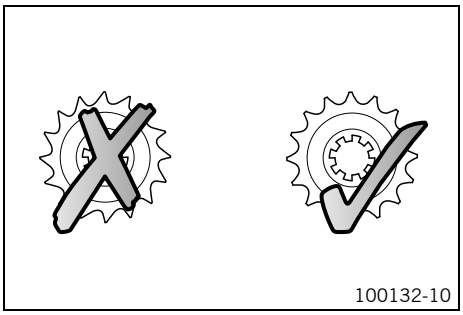
Info
The upper chain section must be taut.
Chain wear is not always even, so you should check the setting at different chain positions.

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

Guideline

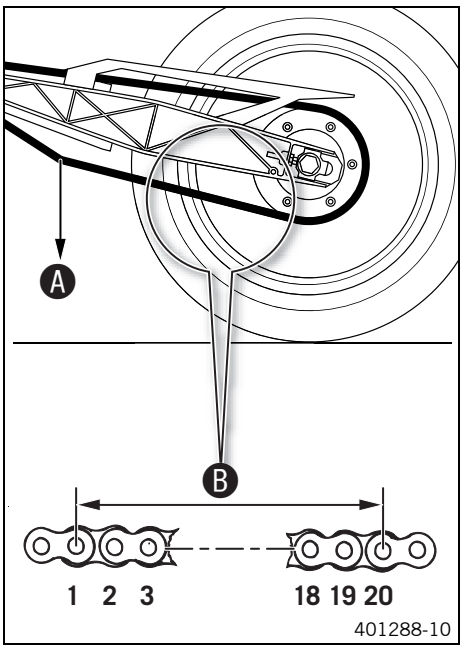
Nut, rear wheel spindle	M14x1.5	60 Nm (44.3 lbf ft)

12.5.7 Checking the chain, rear sprocket, and engine sprocket



– Check the rear sprocket and engine sprocket for wear.
» If the rear sprocket and engine sprocket are worn:
– Change the power set.

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



– Shift gear to neutral.
– Pull the lower chain section with specified weight ❹.

Guideline

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

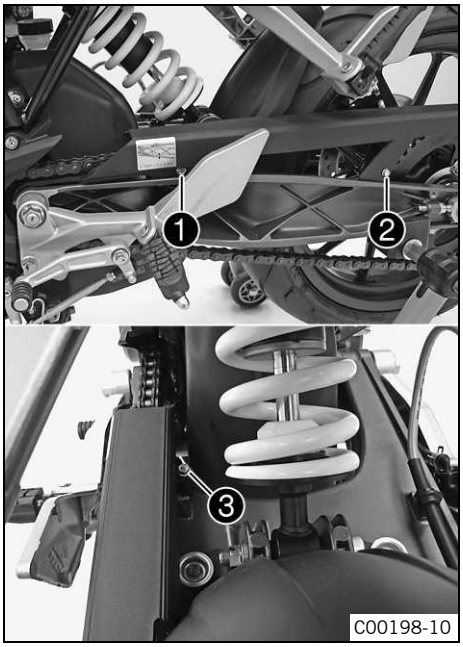
– Measure the distance ❽ of 20 chain links in the lower chain section.

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

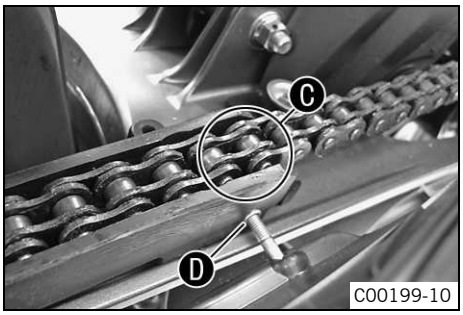
Maximum distance ❽ at the longest chain section	301.6 mm (11.874 in)

» If the distance ❽ is greater than the specified measurement:
– Change the power set.

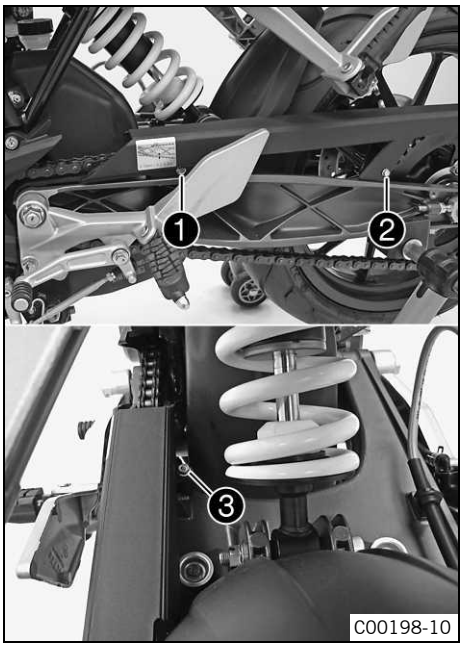
Info
When the chain is replaced, the rear sprocket and engine sprocket should also be changed.
New chains wear out faster on old, worn sprockets.



– Remove screws ❷ and ❸ and release screw ❶. Push the chain guard aside.



– Check the chain sliding guard for wear.
  » If drill hole ❶ becomes visible on the chain sliding guard in area ❷:
    – Change the chain sliding guard.
– Check that the chain sliding guard is firmly seated.
  » If the chain sliding guard is loose:
    – Tighten the chain sliding guard.



– Position the chain guard and tighten screw ❶.

Guideline

Screw, chain guard	**EJOT PT®**	4 Nm (3 lbf ft)

– Tighten screw ❷.

Guideline

Screw, chain guard	**EJOT PT®**	4 Nm (3 lbf ft)

– Tighten screw ❸.

Guideline

Remaining screws, chassis	M5	5 Nm (3.7 lbf ft)

12.5.8 Cleaning the chain

Warning

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

– Remove oil and grease with a suitable cleaning material.

Warning

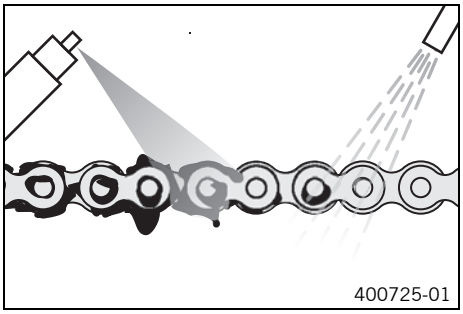
Danger of accidents Reduced braking efficiency due to oil or grease on the brake discs.

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

Warning
Environmental hazard Hazardous substances cause environmental damage.

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

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


400725-01

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

Chain cleaner (☛ p. 250)

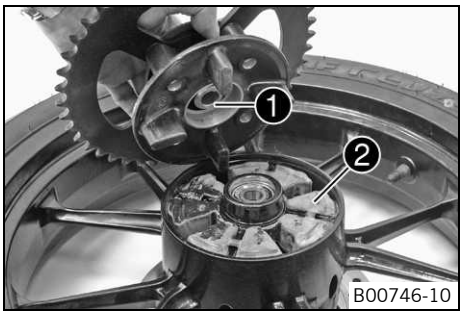
– After drying, apply chain spray.

Chain lube for road use (☛ p. 250)

12.5.9 Checking the rear hub rubber dampers

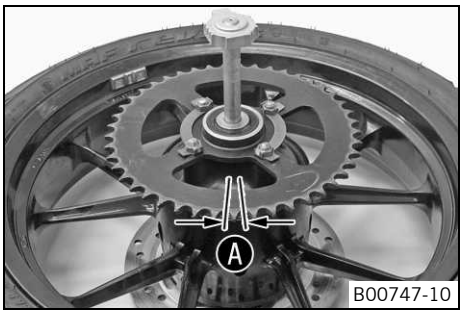
Info
The engine power is transmitted from the rear sprocket to the rear wheel via 6 rubber dampers. They eventually wear out during operation. If the rubber dampers are not changed in time, the rear sprocket carrier and the rear hub will be damaged.

Preparatory work
– Raise the motorcycle with the rear wheel stand. (☛ p. 10)
– Remove the rear wheel. (☛ p. 56)



B00746-10

Main work
– Check bearing ❶.
  » If the bearing is damaged or worn:
    – Change the bearing.
– Check the rubber dampers ❷ of the rear hub for damage and wear.
  » If the rubber dampers of the rear hub are damaged or worn:
    – Change all rubber dampers in the rear hub.



B00747-10

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

Info
Measure the play on the outside of the rear sprocket.

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

  » If play Ⓐ is larger than the specified value:
    – Change all rubber dampers in the rear hub.

Finishing work
– Install the rear wheel. (☛ p. 56)
– Take the motorcycle off of the rear wheel stand. (☛ p. 10)

13.1 Removing the battery

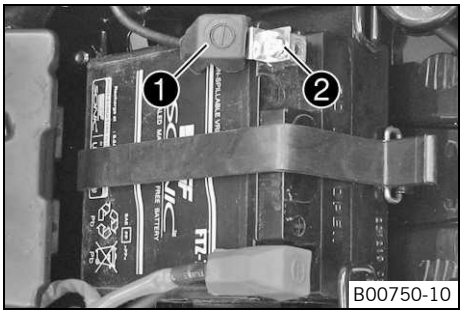
Warning

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

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

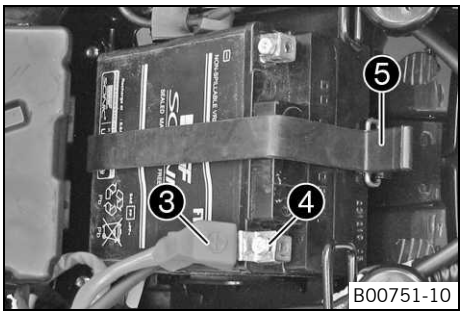
Preparatory work

- Remove the passenger seat. (☛ p. 39)
- Remove the seat. (☛ p. 38)



Main work

- Pull back the negative terminal cover ❶.
- Disconnect the negative cable ❷ of the battery.

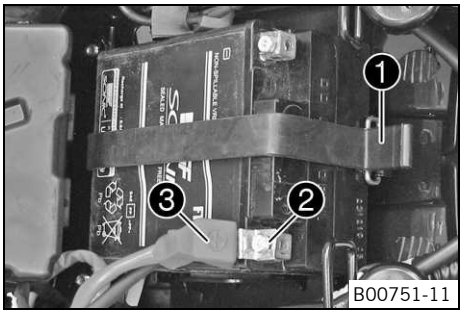


- Pull back the positive terminal cover ❸.
- Disconnect the positive cable ❹ of the battery.
- Detach rubber band ❺.
- Pull the battery up and out of the battery holder.

Info

Never operate the motorcycle with a discharged battery or without a battery. In both cases, electrical components and safety devices can be damaged. The vehicle is therefore no longer roadworthy.

13.2 Installing the battery



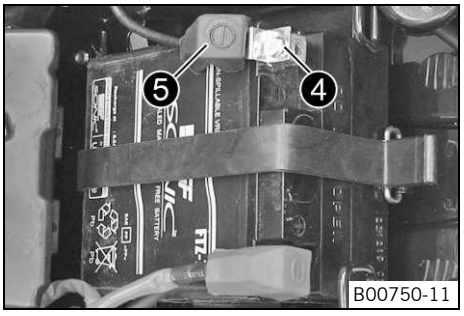
Main work

- Position the battery in the battery holder.

Info

The battery terminals must be at the top.

- Attach rubber band ❶.
- Reconnect the positive cable ❷ of the battery.
- Position positive terminal cover ❸.



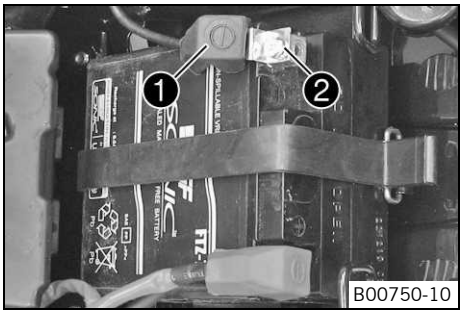
- Connect the negative cable ❹ of the battery.
- Position the negative terminal cover ❺.

Finishing work

- Mount the seat. (☛ p. 39)
- Mount the passenger seat. (☛ p. 39)
- Set the clock. (☛ p. 77)

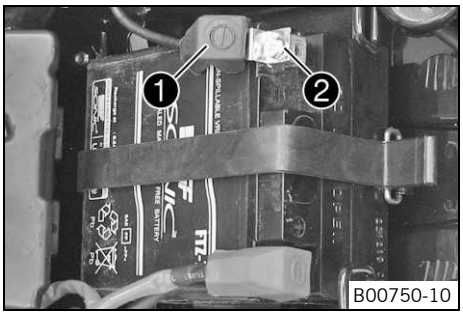
13.3 Disconnecting the negative cable of the battery

Preparatory work
- Remove the passenger seat. (☛ p. 39)
- Remove the seat. (☛ p. 38)



Main work
- Pull back the negative terminal cover ❶.
- Disconnect the negative cable ❷ of the battery.

13.4 Reconnecting the negative cable of the battery



Main work
- Connect the negative cable ❷ of the battery.
- Position the negative terminal cover ❶.

Finishing work
- Mount the seat. (☛ p. 39)
- Mount the passenger seat. (☛ p. 39)
- Set the clock. (☛ p. 77)

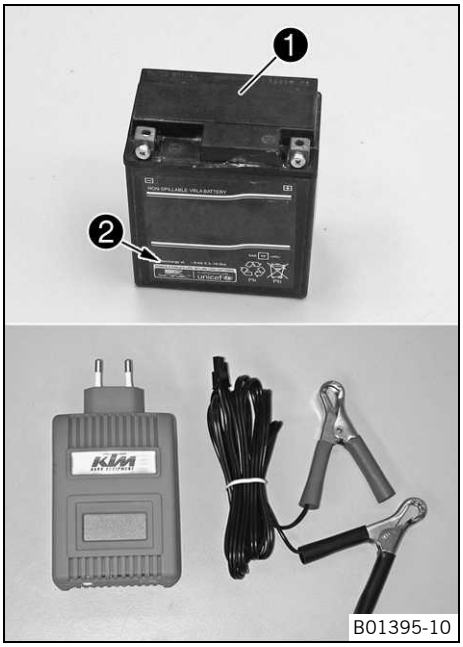
13.5 Recharging the battery

Warning
Risk of injury Battery acid and battery gases cause serious chemical burns.
- Keep batteries out of the reach of children.
- Wear suitable protective clothing and goggles.
- Avoid contact with battery acid and battery gases.
- Keep sparks and open flames away from the battery. Only charge in well-ventilated rooms.
- In the event of skin contact, rinse with large amounts of water. If battery acid gets in the eyes, rinse with water for at least 15 minutes and contact a physician.

Warning
Environmental hazard The battery contains elements that are harmful to the environment.
- Do not discard batteries with the household waste. Dispose of faulty batteries in an environmentally compatible manner. Give the battery to your authorized KTM dealer or dispose of it at a collection point for used batteries.

Info
Even when there is no load on the battery, it still loses power steadily.
The charge state and the type of charge are very important for the service life of the battery.
Rapid recharging with a high charging current shortens the battery's service life.
If the charging current, charging voltage, and charging time are exceeded, electrolyte escapes through the safety valves. This reduces the battery capacity.
If the battery is depleted from starting the vehicle repeatedly, the battery must be charged immediately.
If the battery is left in a discharged state for an extended period, it will become over-discharged and sulfate, destroying the battery.
The battery is maintenance-free, which means that the acid level does not need to be checked.

Preparatory work
- Switch off all power consumers and switch off the engine.
- Remove the passenger seat. (☛ p. 39)
- Remove the seat. (☛ p. 38)
- Disconnect the negative cable of the battery to avoid damage to the motorcycle's electronics.



Main work
- Connect the battery charger to the battery. Switch on the battery charger.

Battery charger (58429074000)

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

Info
Never remove lid ❶.
Charge the battery with a maximum of 10% of the capacity specified on battery housing ❷.

- Switch off the charger after charging. Disconnect the battery.

Guideline

The charge current, charge voltage and charge time must not be exceeded.	
Charge the battery regularly when the motorcycle is not in use	3 months

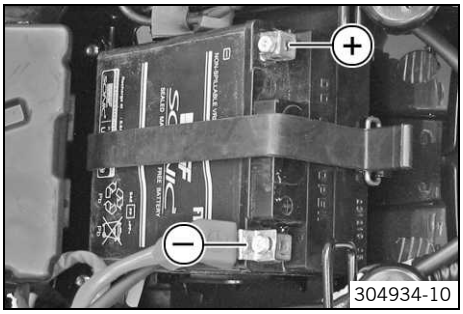
Finishing work
- Mount the seat. (☛ p. 39)
- Mount the passenger seat. (☛ p. 39)
- Set the clock. (☛ p. 77)

13.6 Checking the charging voltage

Condition
The battery must be fully functional and completely charged.

Preparatory work
- Remove the passenger seat. (☛ p. 39)
- Remove the seat. (☛ p. 38)

Main work
- Start the motorcycle to make checks. (☛ p. 14)



- V Measure the voltage between the specified points.
  Measuring point **Plus (+)** – Measuring point **Ground (–)**

Charging voltage	
5,000 rpm	13.5... 15.0 V

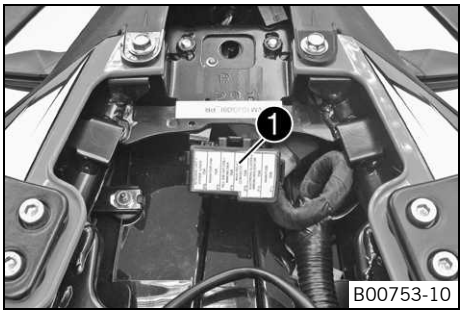
» If the displayed value is less than the specified value:
  - Check the cable from the alternator to the voltage regulator.
  - Check the cable from the voltage regulator to the wiring harness.
  - Check the stator winding of the alternator. (☛ p. 202)

» If the displayed value is greater than the specified value:
  - Change the voltage regulator.

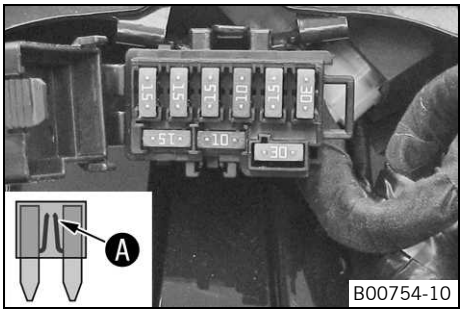
13.7 Changing the fuses of individual power consumers

Info
The fuse box with the main fuse and the fuses of the individual power consumers is located under the passenger seat.

Preparatory work
– Switch off all power consumers and switch off the engine.
– Remove the passenger seat. (☛ p. 39)



Main work
– Open fuse box cover ❶.



– Remove the defective fuse.
Guideline

Fuse **1** - 30 A - main fuse
Fuse **2** - 15 A - combination instrument
Fuse **3** - 10 A - control unit, main relay
Fuse **4** - 15 A - ignition coil, alarm system (OPTIONAL)
Fuse **5** - 15 A - radiator fan
Fuse **6** - 15 A - horn, brake light, turn signal, high beam, low beam, parking light, tail light, license plate lamp

Info
A defective fuse is indicated by a burned-out fuse wire ❹.

Warning
Fire hazard The electrical system can be overloaded if the wrong fuses are used.
– Use only fuses with the prescribed amperage. Never by-pass or repair fuses.

– Use spare fuses with the correct rating only.

Fuse (75011088010) (☛ p. 207)
Fuse (75011088015) (☛ p. 207)
Fuse (75011088030) (☛ p. 207)

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

– Check that the power consumer is functioning properly.
– Close the fuse box cover.

Finishing work
– Mount the passenger seat. (☛ p. 39)

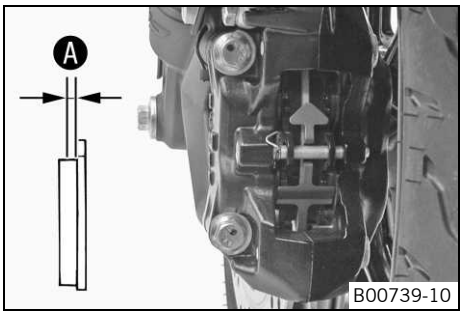
14.1 Checking the front brake linings

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

– Change worn brake linings immediately.

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

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



– Check the brake linings for minimum thickness Ⓐ.

Minimum thickness Ⓐ	≥ 1 mm (≥ 0.04 in)

» If the minimum thickness is less than specified:
– Change the front brake linings. (☛ p. 66)

– Check the brake linings for damage and cracking.

» If there is wear or tearing:
– Change the front brake linings. (☛ p. 66)

14.2 Changing the front brake linings

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

– Avoid contact with skin and eyes, and keep out of the reach of children.
– Wear suitable protective clothing and goggles.
– If brake fluid comes into contact with the eyes, flush the eyes thoroughly with water and consult a physician immediately.

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

– Change the brake fluid of the front and rear brake according to the service schedule.

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

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

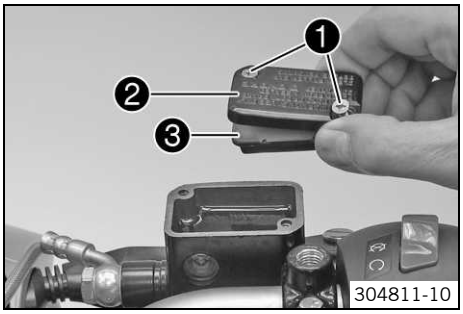
Warning
Danger of accidents Reduced braking efficiency due to use of non-approved brake linings.

– Brake linings available from accessory suppliers are often not tested and approved for use on KTM vehicles. The construction and friction factor of the brake linings and therefore the brake power can differ considerably from the original KTM brake linings. If brake linings are used that differ from the originals, there is no guarantee that they comply with the original license. The vehicle no longer corresponds to the condition at delivery, and the warranty is no longer valid.

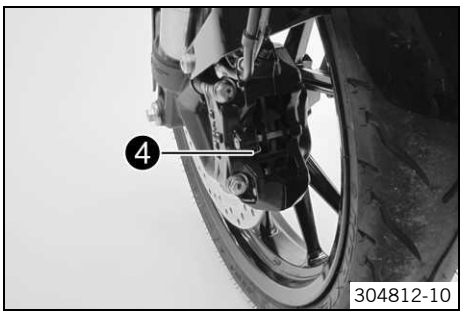
Warning
Environmental hazard Hazardous substances cause environmental damage.

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

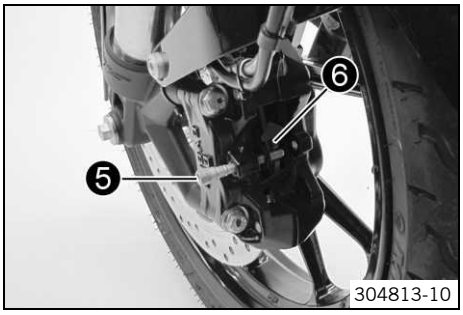
Info
Avoid contact between brake fluid and painted parts. Brake fluid attacks paint!
Use only clean brake fluid from a sealed container.



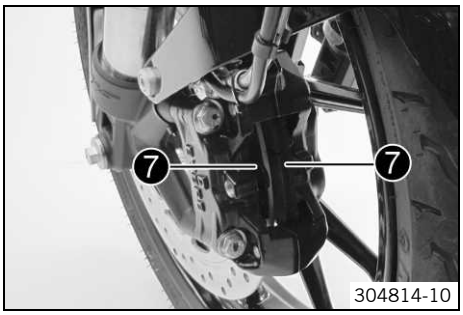
– Move the brake fluid reservoir mounted on the handlebar to a horizontal position.
– Remove screws ❶.
– Remove cover ❷ with membrane ❸.



– Remove locking clip ❹.



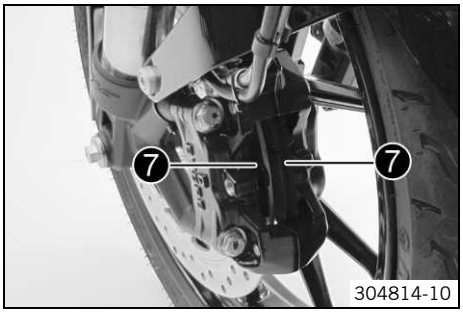
– Remove bolts ❺.
– Take off springs ❻.



– Remove brake linings ❼.
– Clean the brake caliper.

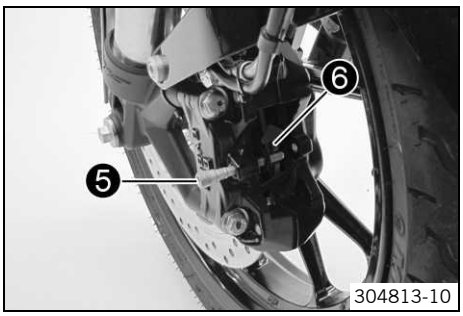
– Press the brake piston back to its basic position and make sure that no brake fluid overflows from the brake fluid reservoir.

Info
Protect the components against damage.



– Position brake linings ❼.

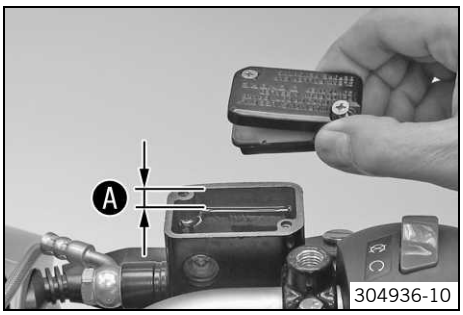
Info
Always change the brake linings in pairs.



– Position springs ❻.
✓ The arrow on the spring points in the direction of travel.
– Mount bolts ❺.

Info
Make sure the springs are seated correctly.

– Activate the hand brake lever until there is a firm pressure point.



– Correct the brake fluid level to level Ⓐ.
Guideline

Level Ⓐ	5 mm (0.2 in)

Brake fluid DOT 4 / DOT 5.1 (☛ p. 248)

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

Info
Clean up overflowed or spilt brake fluid immediately with water.

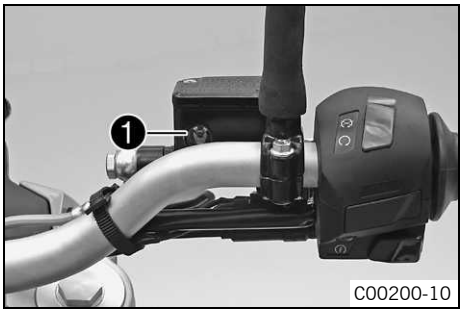
14.3 Checking the brake fluid level of the front brake

Warning
Danger of accidents Failure of the brake system.

– If the brake fluid level falls below the **MIN** mark, this indicates a leakage in the brake system or worn-out brake linings. Check the brake system and do not continue riding.

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

– Change the brake fluid of the front and rear brake according to the service schedule.



– Move the brake fluid reservoir mounted on the handlebar to a horizontal position.
– Check the brake fluid level in viewer ❶.
» If the brake fluid is below the **MIN** marking:
– Add front brake fluid. (☛ p. 68)

14.4 Adding front brake fluid

Warning
Danger of accidents Failure of the brake system.

– If the brake fluid level falls below the **MIN** mark, this indicates a leakage in the brake system or worn-out brake linings. Check the brake system and do not continue riding.

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

– Avoid contact with skin and eyes, and keep out of the reach of children.
– Wear suitable protective clothing and goggles.
– If brake fluid comes into contact with the eyes, flush the eyes thoroughly with water and consult a physician immediately.

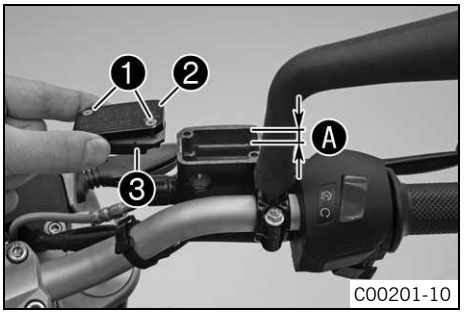
Warning
Danger of accidents Reduced braking efficiency due to old brake fluid.

– Change the brake fluid of the front and rear brake according to the service schedule.

Warning
Environmental hazard Hazardous substances cause environmental damage.

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

Info
Avoid contact between brake fluid and painted parts. Brake fluid attacks paint!
Use only clean brake fluid from a sealed container.



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

Guideline

Level Ⓐ	5 mm (0.2 in)

Brake fluid DOT 4 / DOT 5.1 (☛ p. 248)

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

Info
Clean up overflowed or spilt brake fluid immediately with water.

14.5 Changing the front brake fluid

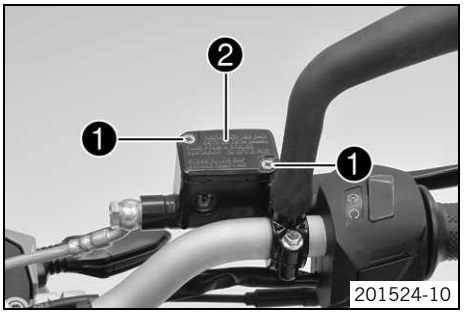
Warning
Skin irritation Brake fluid can cause skin irritation on contact.

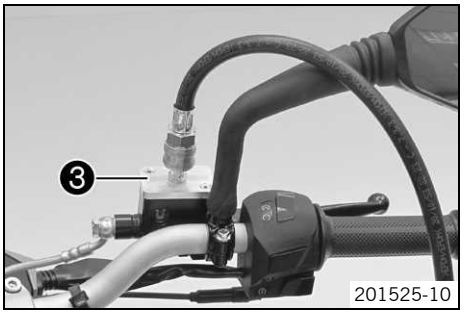
– Avoid contact with skin and eyes, and keep out of the reach of children.
– Wear suitable protective clothing and goggles.
– If brake fluid comes into contact with the eyes, flush the eyes thoroughly with water and consult a physician immediately.

Warning
Environmental hazard Hazardous substances cause environmental damage.

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

Info
Avoid contact between brake fluid and painted parts. Brake fluid attacks paint!
Use only clean brake fluid from a sealed container.





– Move the brake fluid reservoir mounted on the handlebar to a horizontal position.
– Cover the painted parts.
– Remove screws ❶.
– Remove cover ❷ with membrane.
– Draw the old brake fluid out of the brake fluid reservoir using a syringe and fill with fresh brake fluid.

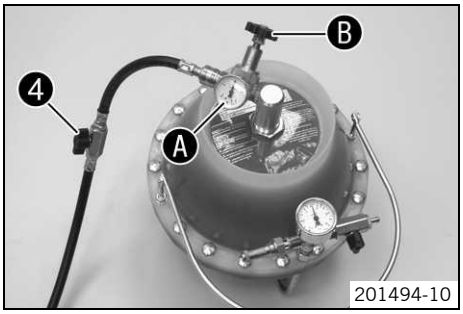
Bleed syringe (50329050000) (☛ p. 252)
Brake fluid DOT 4 / DOT 5.1 (☛ p. 248)

– Mount the corresponding bleeder cover ❸ from the special tool set.

Bleeder cover (00029013000) (☛ p. 252)

– Connect the bleeding device.

Bleeding device (00029013100) (☛ p. 252)



– Open shut-off valve ❹.

Info
Follow the operating instructions of the bleeding device.

– Ensure that the filling pressure is set on pressure gauge Ⓐ. Correct the filling pressure on the pressure regulator Ⓑ if necessary.

Guideline

Filling pressure	2... 2.5 bar (29... 36 psi)

– Pull off dust cap ❺ of the bleeder screw of the brake caliper. Connect the hose of the bleeder bottle.

Bleeding device (00029013100) (☛ p. 252)

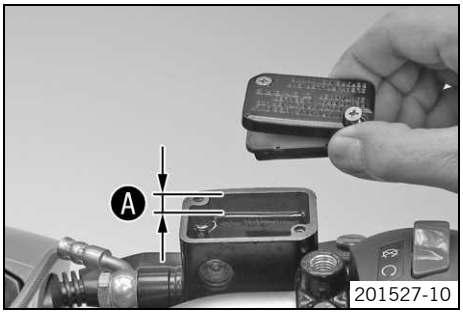
– Open bleeder screw ❻ by approximately one half turn.

Info
Drain until fresh brake fluid emerges from the hose of the bleeder bottle without bubbles.

– Tighten the bleeder screw.
– Close shut-off valve ❹.
– Open the bleeder screw again until no more brake fluid emerges.

Info
This prevents overfilling of the brake fluid reservoir.

– Tighten the bleeder screw. Remove the hose of the bleeder bottle. Attach the dust cap.
– Disconnect the bleeding device. Remove the bleeder cover.



– Correct the brake fluid level to level Ⓐ.

Guideline

Level Ⓐ	5 mm (0.2 in)

Brake fluid DOT 4 / DOT 5.1 (☛ p. 248)

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

Info
Clean up overflowed or spilt brake fluid immediately with water.

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

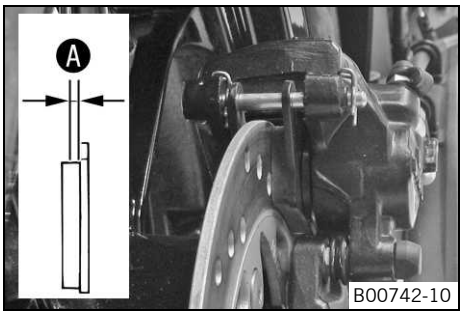
14.6 Checking the rear brake linings

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

– Change worn brake linings immediately.

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

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



– Check the brake linings for minimum thickness Ⓐ.

Minimum thickness Ⓐ	≥ 1 mm (≥ 0.04 in)

» If the minimum thickness is less than specified:
  – Change the rear brake linings. (☛ p. 71)
– Check the brake linings for damage and cracking.
» If there is wear or tearing:
  – Change the rear brake linings. (☛ p. 71)

14.7 Changing the rear brake linings

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

- Avoid contact with skin and eyes, and keep out of the reach of children.
- Wear suitable protective clothing and goggles.
- If brake fluid comes into contact with the eyes, flush the eyes thoroughly with water and consult a physician immediately.

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

- Change the brake fluid of the front and rear brake according to the service schedule.

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

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

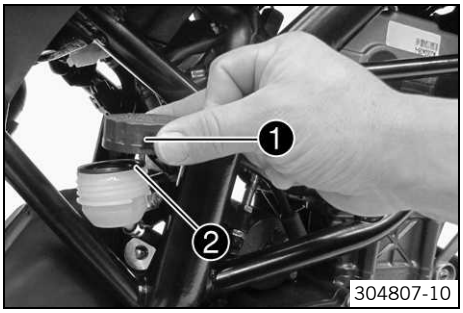
Warning
Danger of accidents Reduced braking efficiency due to use of non-approved brake linings.

- Brake linings available from accessory suppliers are often not tested and approved for use on KTM vehicles. The construction and friction factor of the brake linings and therefore the brake power can differ considerably from the original KTM brake linings. If brake linings are used that differ from the originals, there is no guarantee that they comply with the original license. The vehicle no longer corresponds to the condition at delivery, and the warranty is no longer valid.

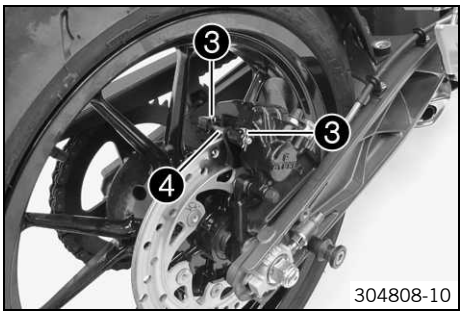
Warning
Environmental hazard Hazardous substances cause environmental damage.

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

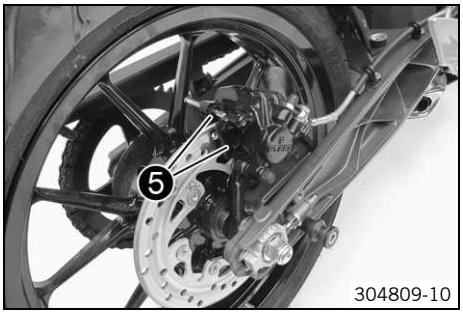
Info
Avoid contact between brake fluid and painted parts. Brake fluid attacks paint!
Use only clean brake fluid from a sealed container.



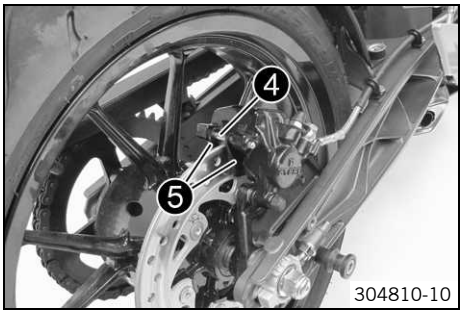
- Stand the vehicle upright.
- Remove screw cap ❶ and membrane ❷.
- Push the brake caliper toward the brake disc with your hand to push back the brake piston; ensure that brake fluid does not runs out of the brake fluid reservoir, removing it if it does.



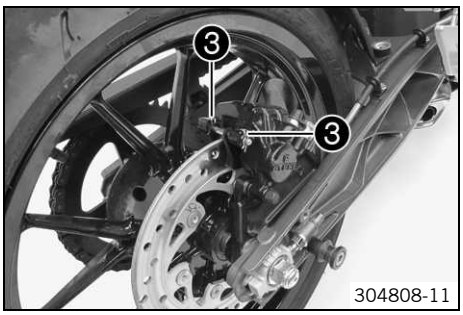
- Remove locking clips ❸.
- Remove bolts ❹.



- Remove brake linings ❺.
- Clean the brake caliper.



– Position brake linings ❺.
– Mount bolts ❹.



– Mount locking clips ❸.

– Operate the foot brake lever repeatedly until the brake linings are in contact with the brake disc and there is a pressure point.
– Adjust the brake fluid level to the **MAX** mark.

Brake fluid DOT 4 / DOT 5.1 (☛ p. 248)

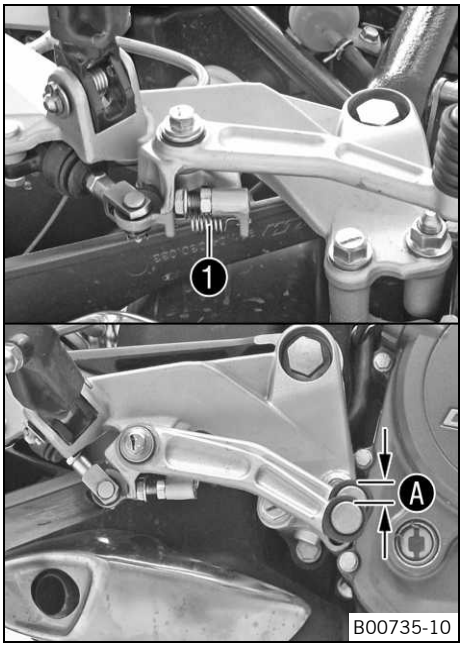
– Mount the screw cap with the washer and membrane.

Info
Clean up overflowed or spilt brake fluid immediately with water.

14.8 Checking the free travel of foot brake lever

Warning
Danger of accidents Brake system failure.

– If there is no free travel on the foot brake lever, pressure builds up on the rear brake circuit. The rear brake can fail due to overheating. Adjust the free travel on foot brake lever according to specifications.



– Disconnect spring ❶.
– Move the foot brake lever back and forth between the end stop and the contact to the foot brake cylinder piston and check free travel Ⓐ.

Guideline

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

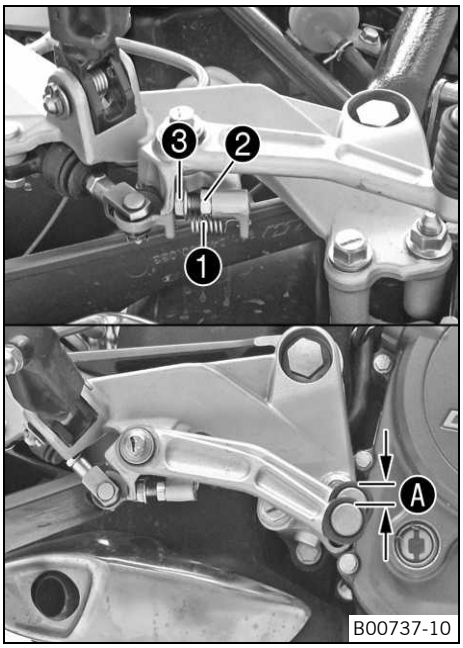
» If the free travel does not meet specifications:
– Adjust the free travel of the foot brake lever. (☛ p. 73)

– Reconnect spring ❶.

14.9 Adjusting the free travel of the foot brake lever

Warning
Danger of accidents Brake system failure.

– If there is no free travel on the foot brake lever, pressure builds up on the rear brake circuit. The rear brake can fail due to overheating. Adjust the free travel on foot brake lever according to specifications.



– Disconnect spring ❶.
– Release nut ❷ and use screw ❸ to adjust the specified free travel Ⓐ.

Guideline

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

Info
The range of adjustment is limited.

– Hold screw ❸ and tighten nut ❷.
– Attach spring ❶.

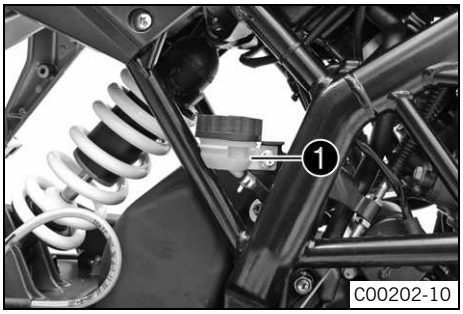
14.10 Checking the rear brake fluid level

Warning
Danger of accidents Failure of the brake system.

– If the brake fluid level falls below the **MIN** mark, this indicates a leakage in the brake system or worn-out brake linings. Check the brake system and do not continue riding.

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

– Change the brake fluid of the front and rear brake according to the service schedule.



– Stand the vehicle upright.
– Check the brake fluid level in the brake fluid reservoir.
  » If the fluid level reaches the **MIN** mark ❶:
    – Add rear brake fluid. (☛ p. 74)

14.11 Adding rear brake fluid

Warning
Danger of accidents Failure of the brake system.

– If the brake fluid level falls below the **MIN** mark, this indicates a leakage in the brake system or worn-out brake linings. Check the brake system and do not continue riding.

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

– Avoid contact with skin and eyes, and keep out of the reach of children.
– Wear suitable protective clothing and goggles.
– If brake fluid comes into contact with the eyes, flush the eyes thoroughly with water and consult a physician immediately.

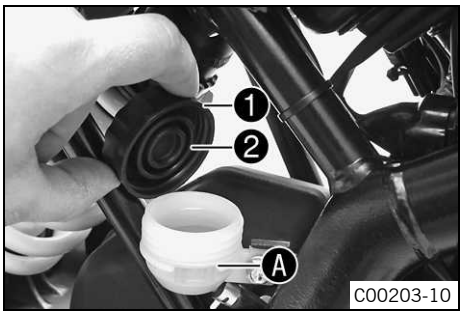
Warning
Danger of accidents Reduced braking efficiency due to old brake fluid.

– Change the brake fluid of the front and rear brake according to the service schedule.

Warning
Environmental hazard Hazardous substances cause environmental damage.

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

Info
Avoid contact between brake fluid and painted parts. Brake fluid attacks paint!
Use only clean brake fluid from a sealed container.



– Stand the vehicle upright.
– Remove screw cap ❶ with membrane ❷.
– Add brake fluid to level Ⓐ.

Brake fluid DOT 4 / DOT 5.1 (☛ p. 248)

– Refit screw cap with membrane.

Info
Clean up overflowed or spilt brake fluid immediately with water.

14.12 Changing the rear brake fluid

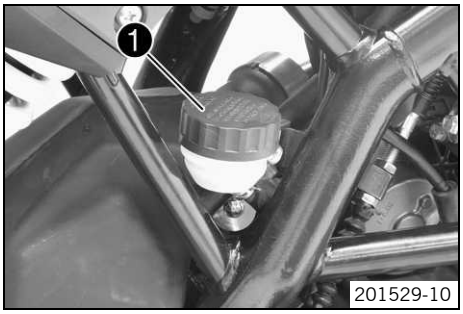
Warning
Skin irritation Brake fluid can cause skin irritation on contact.

– Avoid contact with skin and eyes, and keep out of the reach of children.
– Wear suitable protective clothing and goggles.
– If brake fluid comes into contact with the eyes, flush the eyes thoroughly with water and consult a physician immediately.

Warning
Environmental hazard Hazardous substances cause environmental damage.

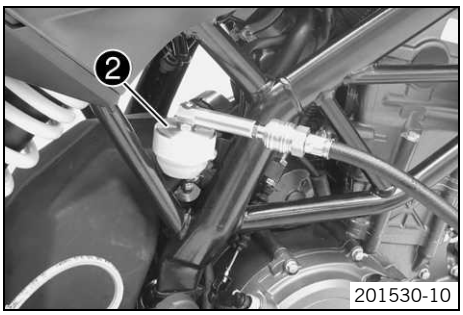
– Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

Info
Avoid contact between brake fluid and painted parts. Brake fluid attacks paint!
Use only clean brake fluid from a sealed container.



– Cover the painted parts.
– Remove screw cap ❶ with membrane.
– Draw the old brake fluid out of the brake fluid reservoir using a syringe and fill with fresh brake fluid.

Bleed syringe (50329050000) (☛ p. 252)
Brake fluid DOT 4 / DOT 5.1 (☛ p. 248)

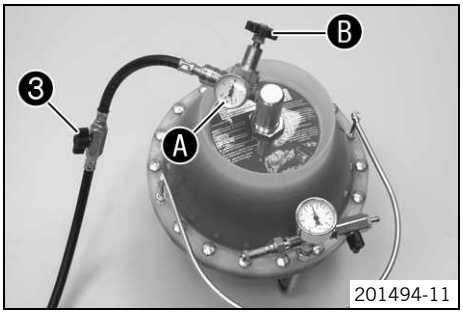


– Mount the corresponding bleeder cover ❷ from the special tool set.

Bleeder cover (00029013000) (☛ p. 252)

– Connect the bleeding device.

Bleeding device (00029013100) (☛ p. 252)



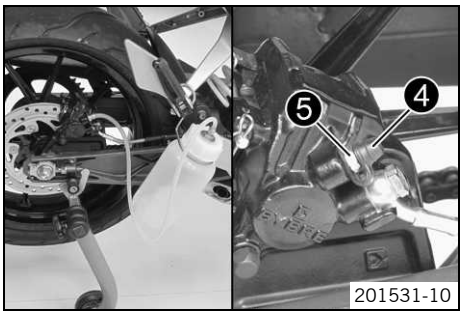
– Open shut-off valve ❸.

Info
Follow the operating instructions of the bleeding device.

– Ensure that the filling pressure is set on pressure gauge Ⓐ. Correct the filling pressure on the pressure regulator Ⓑ if necessary.

Guideline

Filling pressure	2... 2.5 bar (29... 36 psi)



– Pull off dust cap ❹ of the bleeder screw. Connect the hose of the bleeder bottle.

Bleeding device (00029013100) (☛ p. 252)

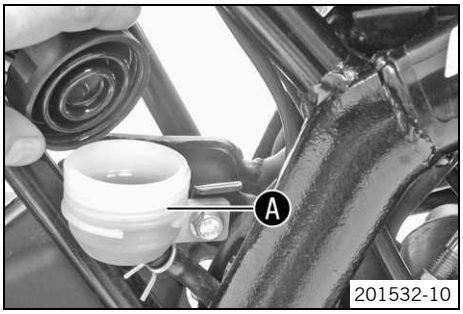
– Open bleeder screw ❺ by approximately one half turn.

Info
Drain until fresh brake fluid emerges from the hose of the bleeder bottle without bubbles.

– Tighten the bleeder screw.
– Close shut-off valve ❸.
– Open the bleeder screw again until no more brake fluid emerges.

Info
This prevents overfilling of the brake fluid reservoir.

– Tighten the bleeder screw. Remove the hose of the bleeder bottle. Attach the dust cap.
– Disconnect the bleeding device. Remove the bleeder cover.
– Stand the vehicle upright.



– Correct the brake fluid to level Ⓐ.

Brake fluid DOT 4 / DOT 5.1 (☛ p. 248)

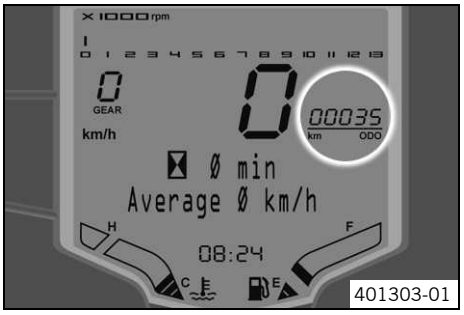
– Refit screw cap with membrane.

Info
Clean up overflowed or spilt brake fluid immediately with water.

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

15.1 Setting kilometers or miles

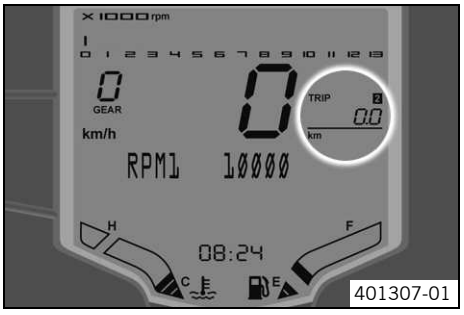
Info
Make the country-specific setting.



Condition
The ignition is on.
The motorcycle is stationary.

– Press the **MODE** button briefly and repeatedly until **ODO** appears on the display.
– Press the **MODE** button for 5 - 10 seconds.
✓ The display changes from **km/h** to **mph** or from **mph** to **km/h**.

15.2 Adjusting the shift speed RPM 1



Condition
The ignition is on.
The motorcycle is stationary.

– Press the **MODE** button briefly and repeatedly until **TRIP 2** appears on the display.
– Press the **MODE** button for 5 - 10 seconds.
✓ The display **RPM 1** appears.

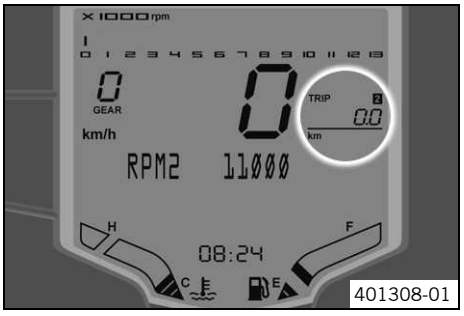
Info
The engine speed can be set at intervals of 50.
RPM 1 is the engine speed above which the shift warning light starts to flash.

– Set the speed with the **MODE** and **SET** buttons.

Info
The **MODE** button increases the value.
The **SET** button decreases the value.

– Do not activate the two buttons for approx. 15 seconds.
✓ The display **RPM 1** goes out and the set speed is stored.

15.3 Adjusting the shift speed RPM 2



Condition
The ignition is on.
The motorcycle is stationary.

– Press the **MODE** button briefly and repeatedly until **TRIP 2** appears on the display.
– Press the **SET** button for 5 - 10 seconds.
✓ The display **RPM 2** appears.

Info
The engine speed can be set at intervals of 50.
RPM 2 is the engine speed above which the shift warning light lights up constantly.
The speed **RPM 2** must always be higher than the speed **RPM 1**.

– Set the speed with the **MODE** and **SET** buttons.

Info
The **MODE** button increases the value.
The **SET** button decreases the value.

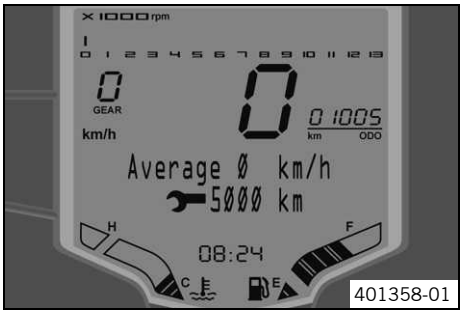
– Do not activate the two buttons for approx. 15 seconds.
  ✓ The display **RPM 2** goes out and the set speed is stored.

15.4 Setting the time

Condition
The ignition is on.
The motorcycle is stationary.

– Press the **MODE** button briefly and repeatedly until **ODO** appears on the display.
– Press the **MODE** and **SET** buttons for 5 - 10 seconds.
  ✓ The time display begins to flash.
– Set the hours display using the **MODE** button.
– Set the minutes display using the **SET** button.
– Press the **MODE** and **SET** buttons for 5 - 10 seconds.
  ✓ The time is set.

15.5 Resetting the service interval display

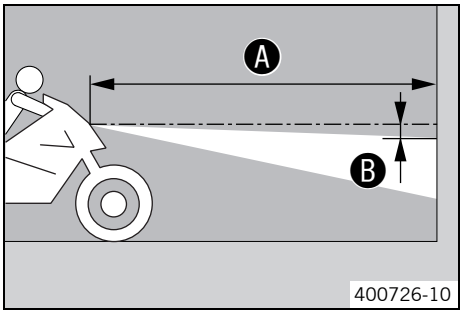


Condition
The ignition is on.
The engine is switched off.
The motorcycle is stationary.

– Press the **SET** button for more than 10 seconds.

Info
The service interval display can only be reset. It is not possible to individually adjust the distance or time to the next required service.

15.6 Checking the headlight setting



– Position the vehicle upright on a horizontal surface in front of a light wall and make a mark at the height of the center of the low beam headlight.
– Make another mark at a distance Ⓑ under the first mark.
  Guideline

Distance Ⓑ	5 cm (2 in)

– Position the vehicle vertically at a distance Ⓐ in front of the wall and switch on the low beam.
  Guideline

Distance Ⓐ	5 m (16 ft)

– The rider, with luggage and passenger if applicable, now mounts the motorcycle.
– Check the headlight setting.

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

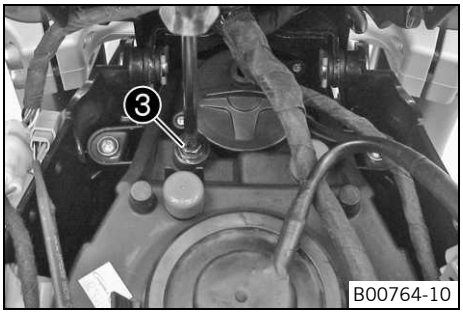
» If the boundary between light and dark does not meet specifications:
  – Adjust the headlight range. (☛ p. 78)

15.7 Adjusting the headlight range

Main work

– Remove expanding rivets ❶.

– Remove screws ❷.
– Lift the headlight mask slightly and swing forward.



– Adjust the beam distance of the headlight by turning screw ❸.

Guideline

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

Info

Turn clockwise to increase the headlight range; turn counterclockwise to reduce the headlight range.

– Fold the headlight mask up.
– Mount and tighten screws ❷.

Guideline

Screw, headlight mask	M6	11 Nm (8.1 lbf ft)

– Mount expanding rivets ❶ on both sides.

Finishing work

– Check the headlight setting. (☛ p. 77)

15.8 Changing the parking light bulb

Note

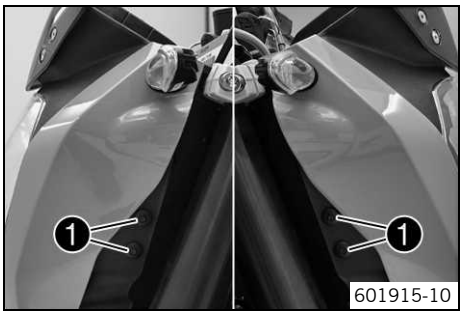
Damage to reflector Reduced brightness.

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

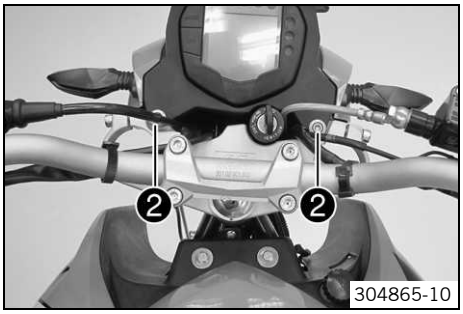
Preparatory work

– Switch off all power consumers and switch off the engine.

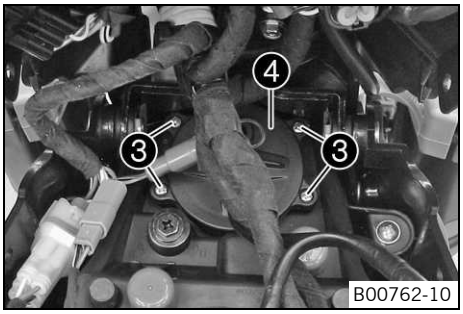
Main work



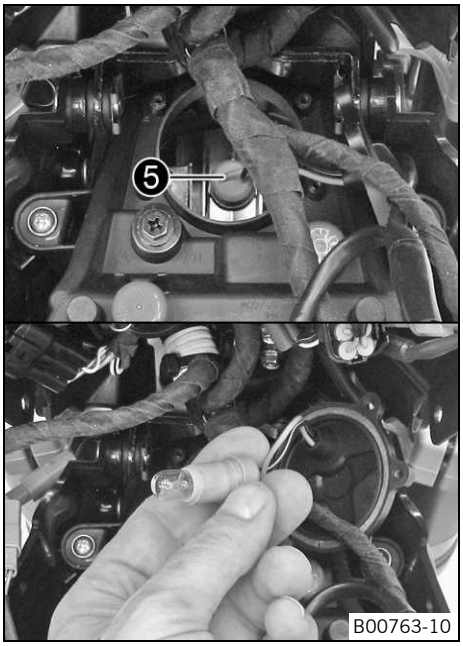
– Remove expanding rivets ❶.



– Remove screws ❷.
– Lift the headlight mask slightly and swing forward.



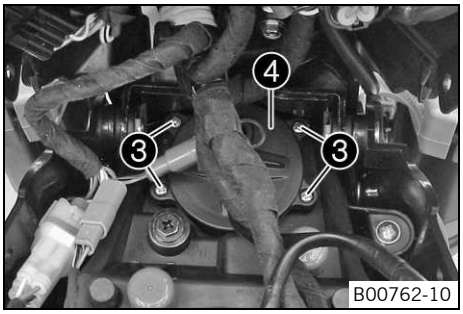
– Remove screws ❸.
– Take off cover ❹.



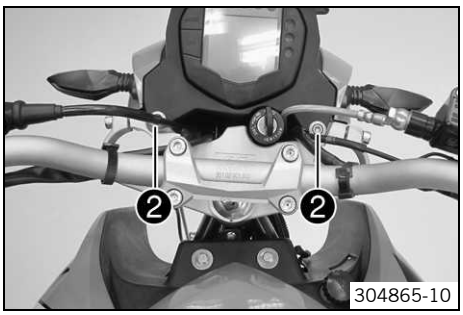
– Pull the socket with bulb ❺ out of the housing.
– Remove the bulb.
– Position a new light bulb in the socket.

Parking light (W5W/socket W2.1x9.5d) (☛ p. 207)

– Position the socket with bulb ❺ in the housing.



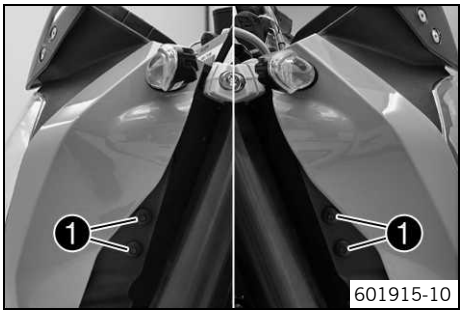
– Position cover ❹.
– Mount and tighten screws ❸.



– Fold the headlight mask up.
– Mount and tighten screws ❷.

Guideline

Screw, headlight mask	M6	11 Nm (8.1 lbf ft)



– Mount expanding rivets ❶ on both sides.
– Check that the lighting is functioning properly.

15.9 Changing the headlight bulb

Note

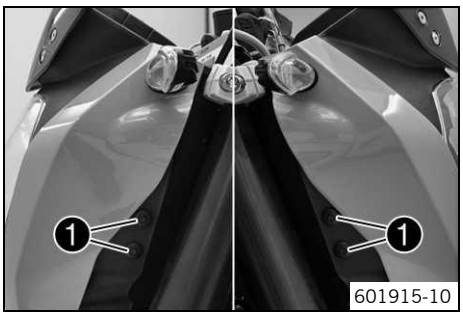
Damage to reflector Reduced brightness.

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

Preparatory work

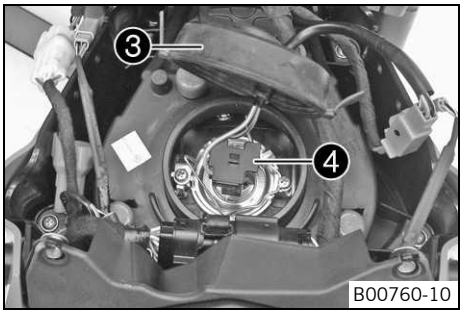
– Switch off all power consumers and switch off the engine.

Main work

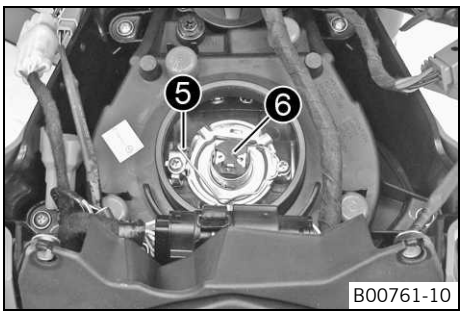


– Remove expanding rivets ❶.

– Remove screws ❷.
– Lift the headlight mask slightly and swing forward.



– Take off protection cap ❸.
– Disconnect plug-in connector ❹.

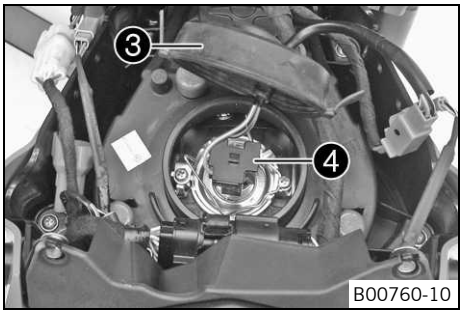


– Detach retaining clamp ❺.
– Remove headlight bulb ❻.
– Position the new headlight bulb in the headlight housing.

Headlight (H4/socket P43t) (☛ p. 207)

Info
Insert the headlight bulb so that the catches latch into the recesses.

– Attach retaining clamp ❺.



– Connect plug-in connection ❹.
– Mount protection cap ❸.

– Fold the headlight mask up.
– Mount and tighten screws ❷.

Guideline

Screw, headlight mask	M6	11 Nm (8.1 lbf ft)

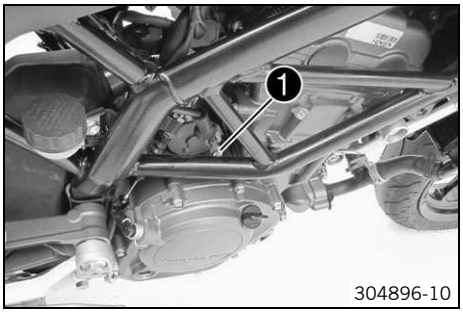
– Mount expanding rivets ❶ on both sides.
– Check that the lighting is functioning properly.

16.1 Removing the engine

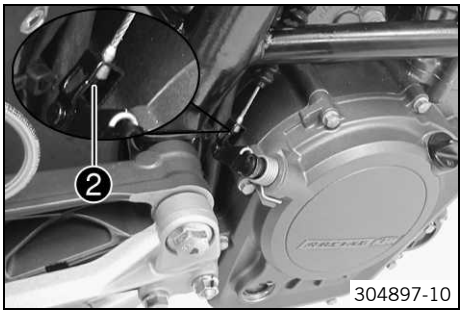
Preparatory work

– Raise the motorcycle with the rear wheel stand. (☛ p. 10)
– Remove the front spoiler. (☛ p. 47)
– Remove the passenger seat. (☛ p. 39)
– Remove the seat. (☛ p. 38)
– Disconnect the negative cable of the battery. (☛ p. 63)
– Drain the coolant. (☛ p. 194)
– Remove the exhaust manifold. (☛ p. 33)

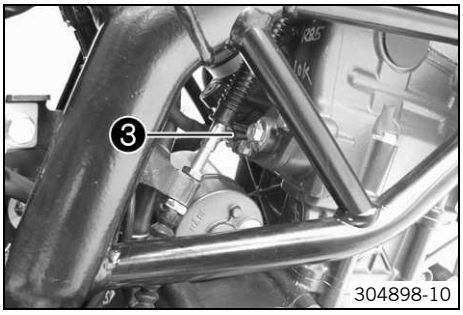
Main work



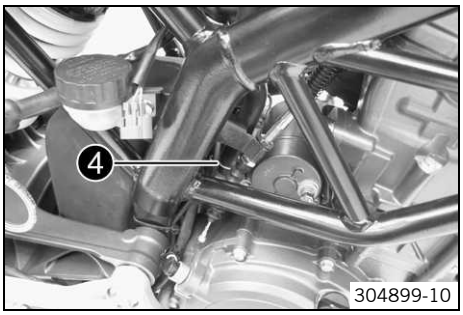
– Push back the rubber cap.
– Remove nut ❶ with washers.
– Hang the cable to one side.



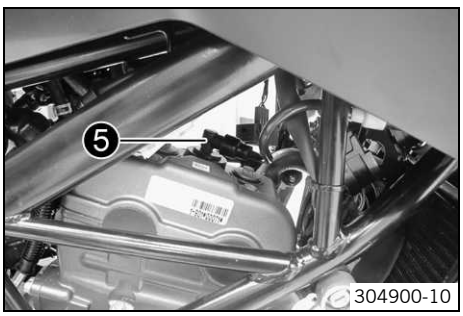
– Bend up the lock washer ❷.
– Detach the clutch cable.



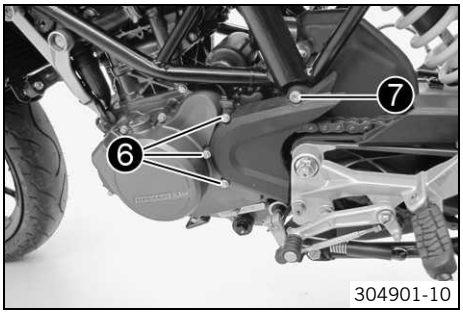
– Detach connector ❸.



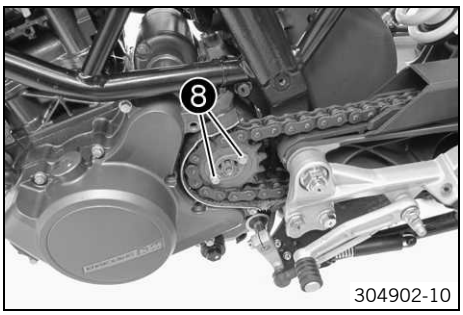
– Push back hose clamp ❹.
– Pull off the vent hose.



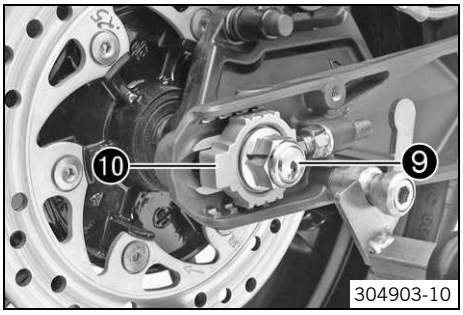
– Pull off spark plug connector ❺.



– Remove screws ❻.
– Remove screw ❼.
– Take off the engine sprocket cover.

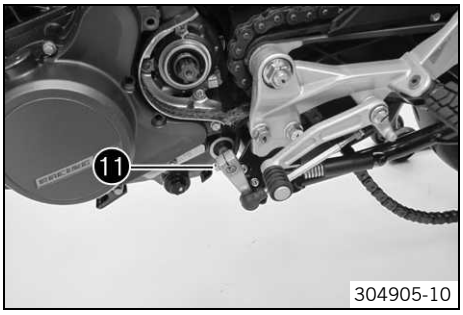


– Remove screws ❽ and take off the lock washer.

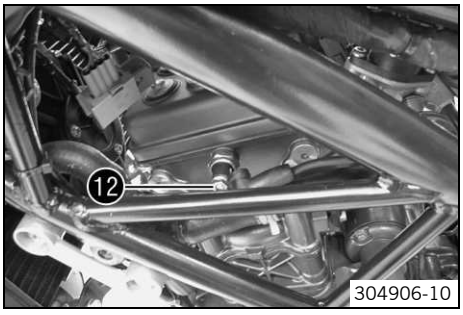


– Remove nut ❾ with washer.
– Remove chain adjuster ❿.
– Push the rear wheel into the foremost position.

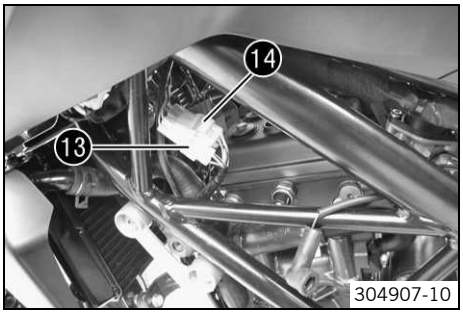
– Pull the engine sprocket off of the countershaft and remove it.



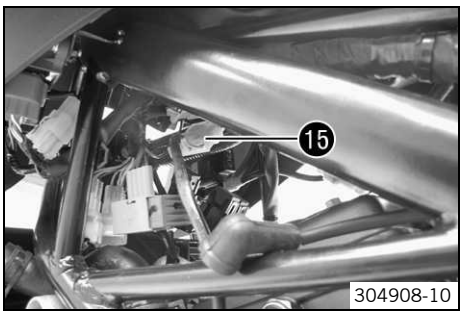
– Remove screw ⓫.
– Pull off the shift linkage and hang it to one side.



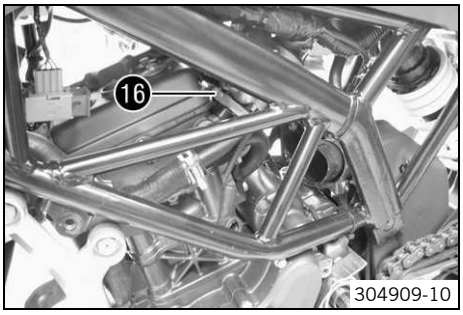
– Push back the rubber cap.
– Remove nut ⓬ with washer.



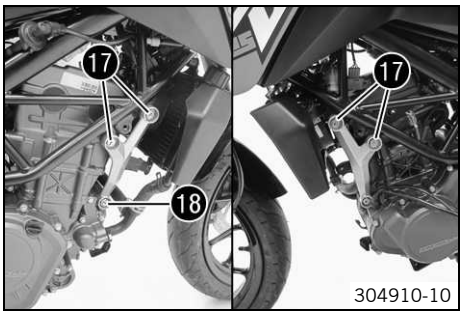
– Expose the cable and detach connectors ⓭ and ⓮.



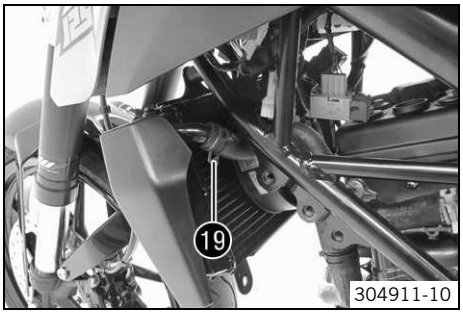
– Expose the cable and detach connector ⓯.



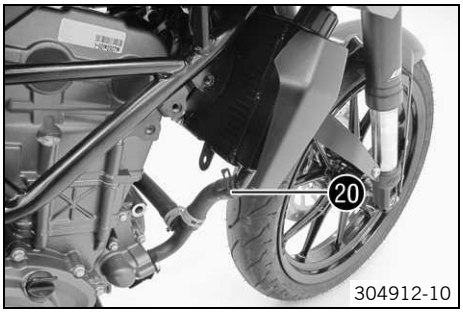
– Loosen hose clip ⓰.
– Push the throttle valve body upward out of the intake flange.



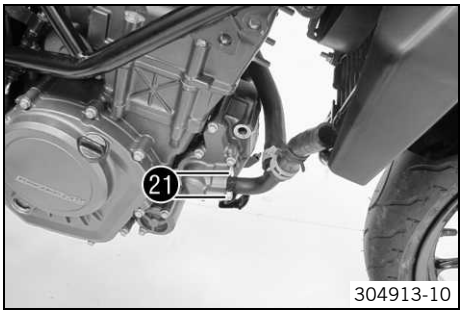
– Remove screws ⓱.
– Remove fitting ⓲.
– Remove both engine fixing arms.



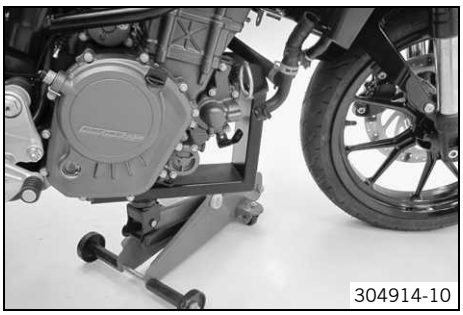
– Push back hose clamp ⓳.
– Pull off the radiator hose.



– Push back hose clamp ⓴.
– Pull off the radiator hose.

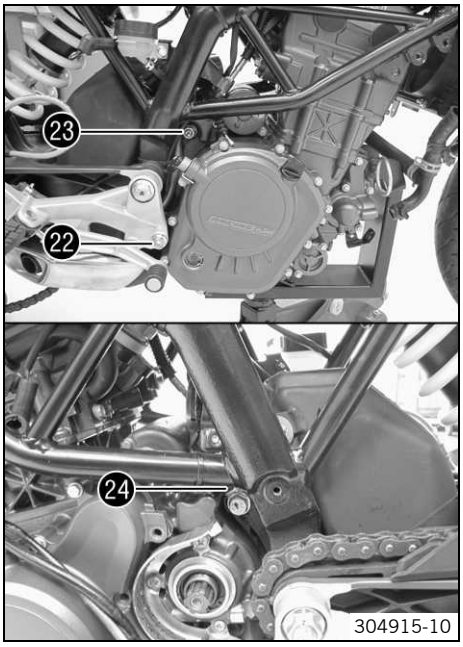


– Remove screws ㉑.
– Pull off the radiator pipe and hang it to one side.

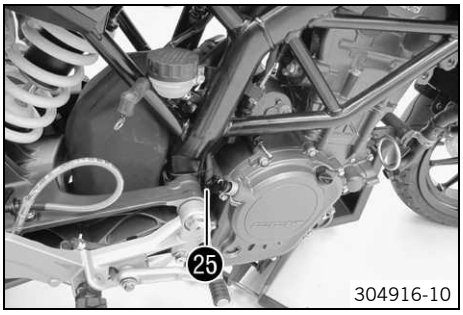


– Position the floor jack under the engine and fix it using the special tool.

Floor jack attachment (75029055000) (☛ p. 255)



– Remove fitting ㉒.
– Remove fitting ㉓.
– Hang ground wire ㉔ to one side.



– Lower the engine.

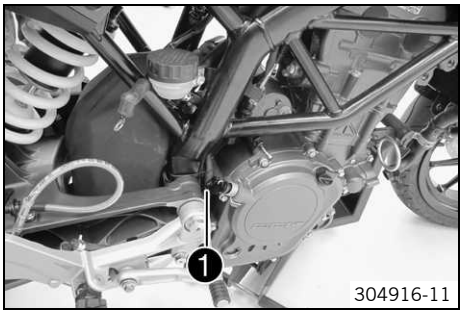
Info
Watch out for clutch lever ㉕.
You should have an assistant for this step.
Make sure that the engine is sufficiently secured against falling over.
Protect the frame and attachments from damage.

16.2 Installing the engine

Preparatory work

– Raise the engine onto the special tool and fix it.

Floor jack attachment (75029055000) (☛ p. 255)

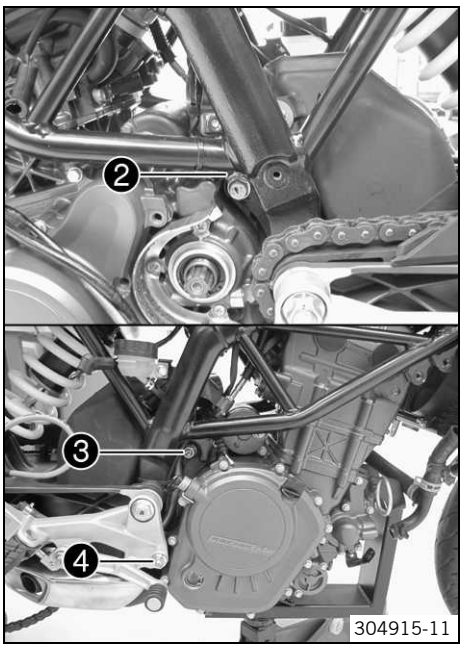


Main work

– Position the engine in the frame.

Info

Watch out for clutch lever ❶.
You should have an assistant for this step.
Protect the frame and attachments from damage.



– Position the ground wire ❷.
– Mount fitting ❸ but do not tighten yet.

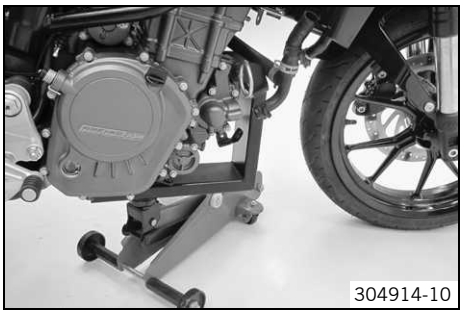
Guideline

Fitting, engine mounting bracket	M10	55 Nm (40.6 lbf ft)

– Mount fitting ❹ but do not tighten yet.

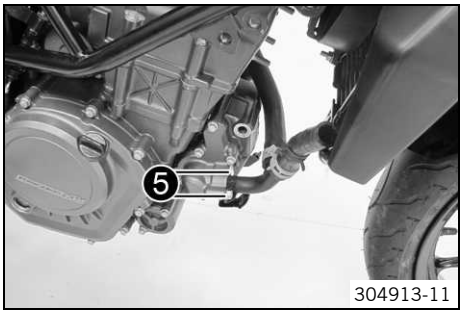
Guideline

Fitting, engine mounting bracket	M10	55 Nm (40.6 lbf ft)



– Remove the floor jack with the special tool.

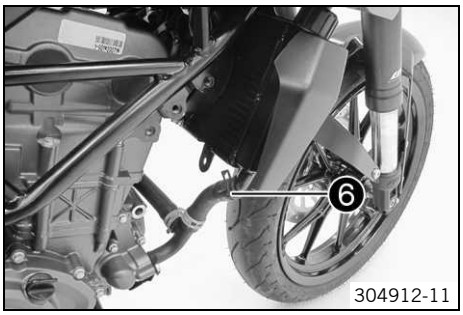
Floor jack attachment (75029055000) (☛ p. 255)



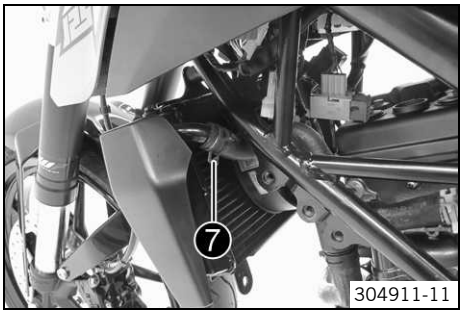
– Mount the radiator pipe with the O-ring.
– Mount and tighten screws ❺.

Guideline

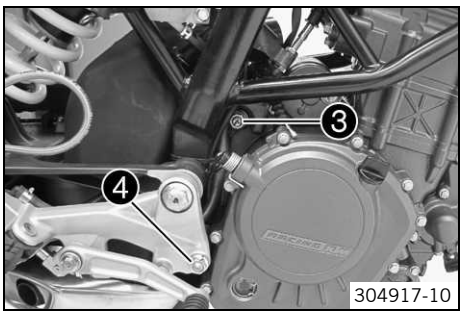
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)



– Mount the radiator hose.
– Position hose clamp ❻.

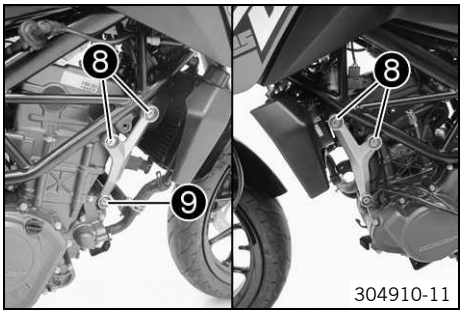


– Mount the radiator hose.
– Position hose clamp ❼.



– Tighten fitting ❸ and ❹.
Guideline

Fitting, engine mounting bracket	M10	55 Nm (40.6 lbf ft)

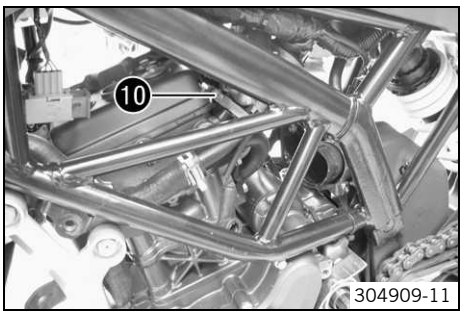


– Position both engine fixing arms.
– Mount and tighten screws ❽.
Guideline

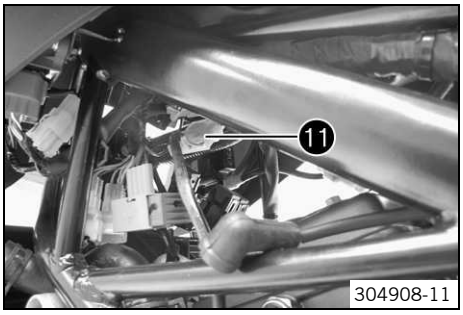
Screw, engine bearer on frame	M8	30 Nm (22.1 lbf ft)

– Mount and tighten fitting ❾.
Guideline

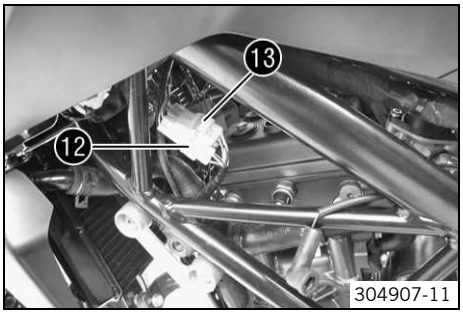
Fitting, engine mounting bracket	M10	55 Nm (40.6 lbf ft)



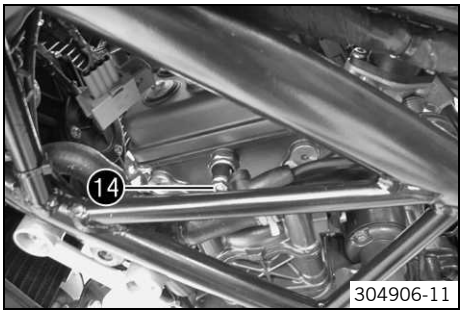
– Position the throttle valve body in the intake flange.
– Tighten hose clamp ❿.



– Plug in connector ⓫.
– Position the cable and fix it with cable binders.



– Plug in connectors ⓬ and ⓭.
– Position the cable and fix it with cable binders.

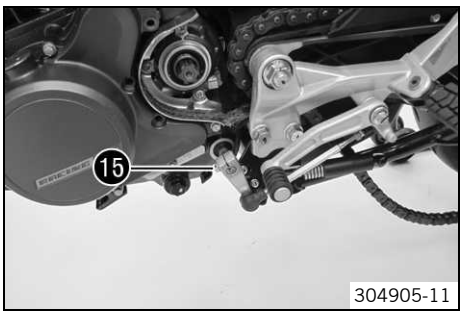


– Mount and tighten nut ⓮ with the washer.

Guideline

Remaining nuts, chassis	M5	3 Nm (2.2 lbf ft)

– Position the rubber cap.

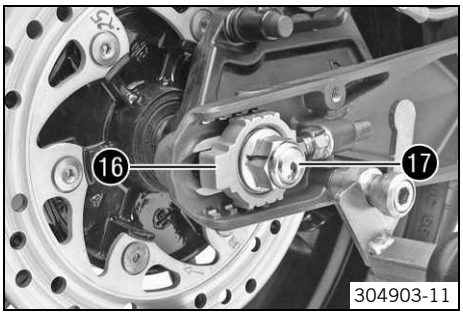


– Position the shift linkage.
– Mount and tighten screw ⓯.

Guideline

Screw, shift activation	M6	11 Nm (8.1 lbf ft)	**Loctite® 243™**

– Position the engine sprocket in the chain and slide it onto the countershaft.

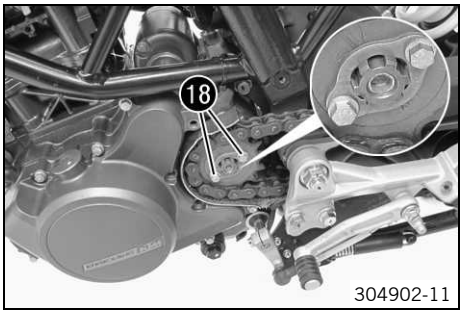


– Pull the rear wheel back.
– Mount chain adjuster ⓰.
– Mount and tighten nut ⓱ with the washer.

Guideline

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

Nut, rear wheel spindle	M14x1.5	60 Nm (44.3 lbf ft)



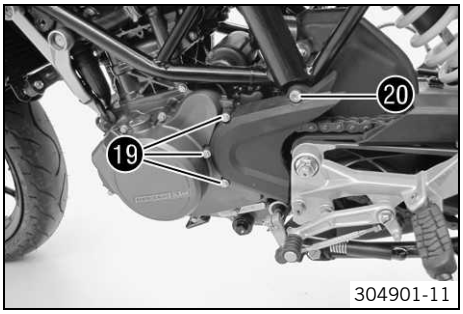
– Mount the lock washer and turn it slightly.

✓ The lock washer engages in the gear teeth of the countershaft.

– Mount and tighten screws ⓲.

Guideline

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



– Position the engine sprocket cover.
– Mount and tighten screws ⓳.

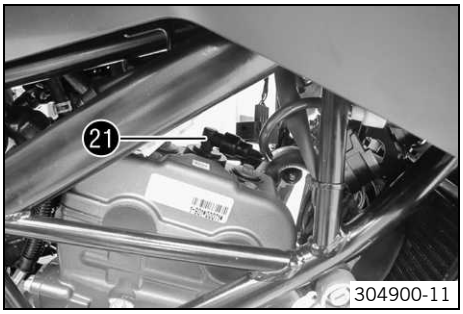
Guideline

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

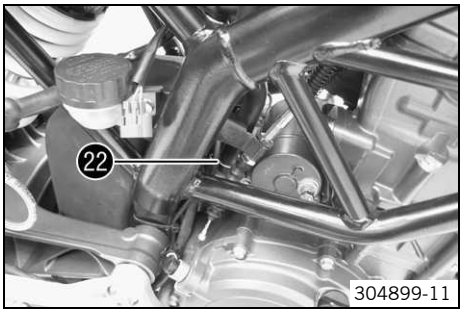
– Mount and tighten screw ⓴.

Guideline

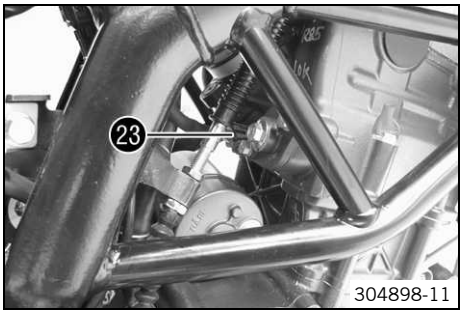
Remaining nuts, chassis	M6	15 Nm (11.1 lbf ft)



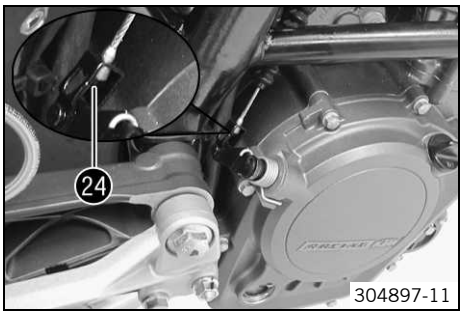
– Mount spark plug connector ㉑.



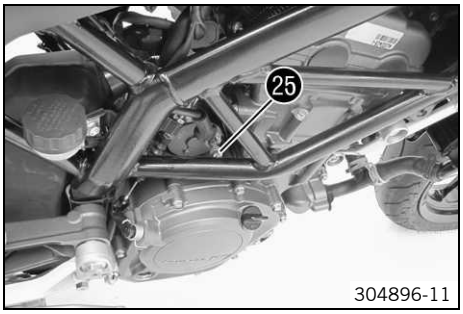
– Mount the vent hose.
– Position hose clamp ㉒.



– Plug in connector ㉓.



– Attach the clutch cable.
– Secure the clutch cable with lock washer ㉔.

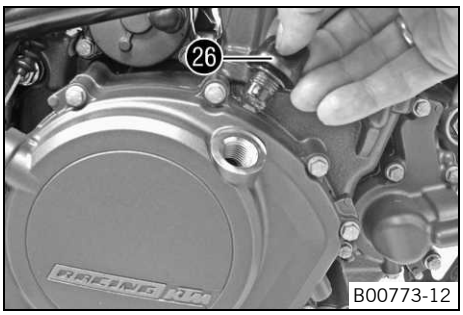


– Mount and tighten nut ㉕ with the washers.

Guideline

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

– Position the rubber cap.
– Position the cable and fix it with cable binders.



– Remove the oil filler plug ㉖ with the O-ring from the clutch cover and fill up with engine oil.

Engine oil			
First filling	1.5 l (1.6 qt.)	External temperature: 0… 50 °C (32… 122 °F)	Engine oil (SAE 15W/50) (☛ p. 248)
		External temperature: −10… 40 °C (14… 104 °F)	Engine oil (SAE 10W/40) (☛ p. 248)
After oil change approx.	1.2 l (1.3 qt.)	External temperature: 0… 50 °C (32… 122 °F)	Engine oil (SAE 15W/50) (☛ p. 248)

After oil change approx.	1.2 l (1.3 qt.)	External temperature: −10… 40 °C (14… 104 °F)	Engine oil (SAE 10W/40) (☛ p. 248)

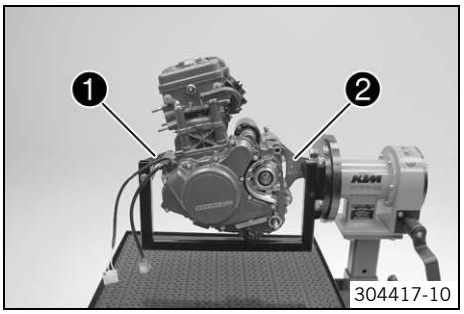
– Install and tighten the oil filler plug with O-ring.

Finishing work

– Install the exhaust manifold. (☛ p. 34)
– Reconnect the negative cable of the battery. (☛ p. 63)
– Set the clock. (☛ p. 77)
– Mount the seat. (☛ p. 39)
– Mount the passenger seat. (☛ p. 39)
– Take the motorcycle off of the rear wheel stand. (☛ p. 10)
– Fill/bleed the cooling system. (☛ p. 194)
– Fit the front spoiler. (☛ p. 47)
– Take a short test ride.
– Read out the fault memory using the KTM diagnostics tool.
– Check the engine for leakage.
– Check the engine oil level. (☛ p. 198)
– Check the coolant level. (☛ p. 196)

16.3 Disassembling the engine

16.3.1 Preparations (125 Duke)



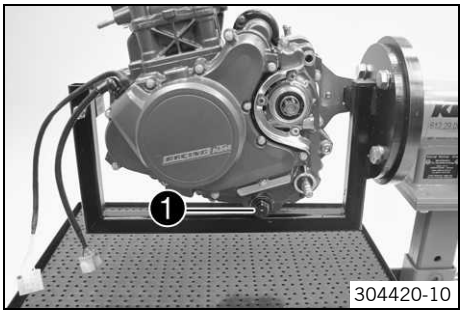
– Mount special tools ❶ and ❷ on the engine assembly stand.

Engine fixing arm (90129002060) (☛ p. 256)
Engine fixing arm (90129002050) (☛ p. 255)
Engine assembly stand (61229001000) (☛ p. 254)

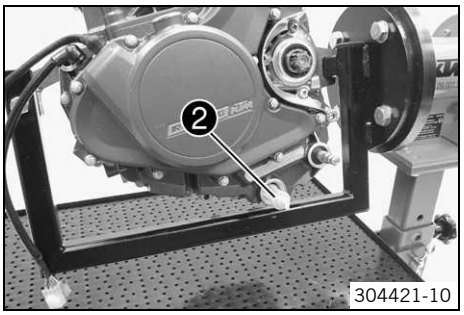
– Mount the engine on special tool.

Info
Have an assistant help you or use a crane.

16.3.2 Draining the engine oil (125 Duke)

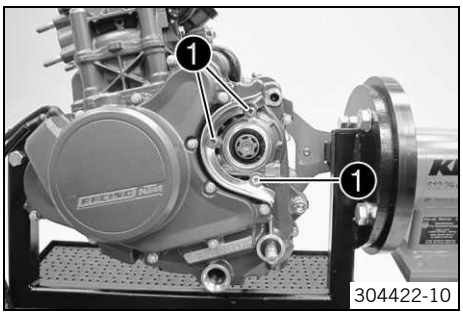


– Remove oil drain plug ❶ with the O-ring.



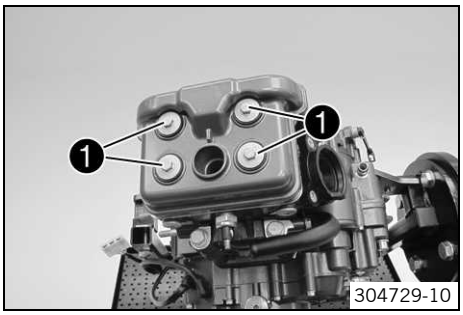
– Remove oil screen ❷ with the O-ring.
– Completely drain the engine oil.

16.3.3 Removing the chain securing guide (125 Duke)



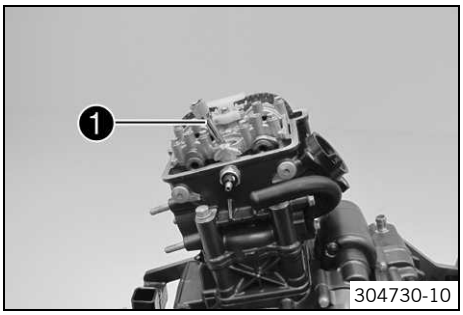
– Remove screws ❶.
– Take off the chain securing guide.

16.3.4 Removing the valve cover (125 Duke)



– Remove screws ❶ with the gasket.
– Take off the valve cover with the valve cover seal.

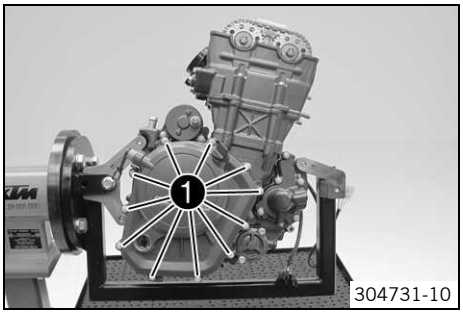
16.3.5 Removing the spark plug (125 Duke)



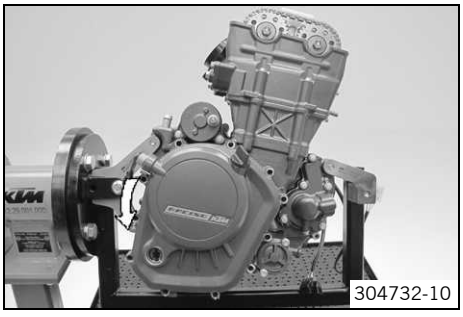
– Remove the spark plug using special tool ❶.

Spark plug wrench (77229172000) (☛ p. 255)

16.3.6 Removing the clutch cover (125 Duke)

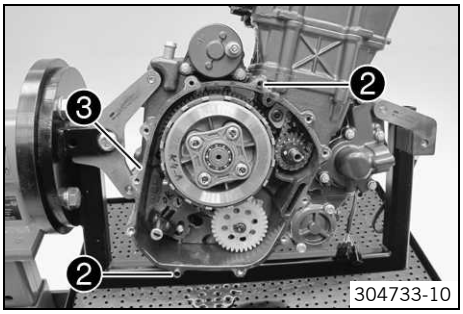


– Remove screws ❶.



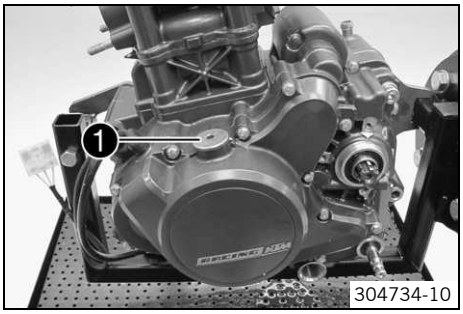
– Take off the clutch cover.

Info
Pull the clutch lever forward slightly.

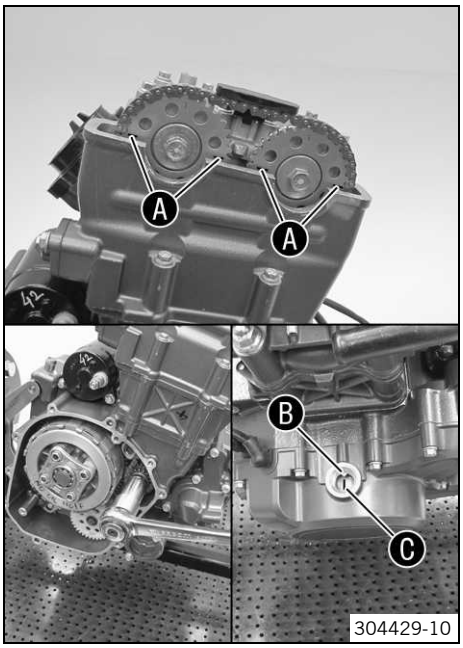


– Remove dowels ❷.
– Take off clutch cover gasket ❸.

16.3.7 Setting the engine to ignition top dead center (125 Duke)



– Remove screw plug ❶.

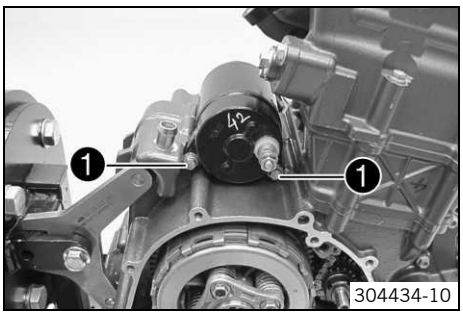


– Turn the crankshaft counterclockwise until markings Ⓐ align with the edge of the cylinder head.

Castle nut wrench; ½" drive (90129021000) (☛ p. 257)

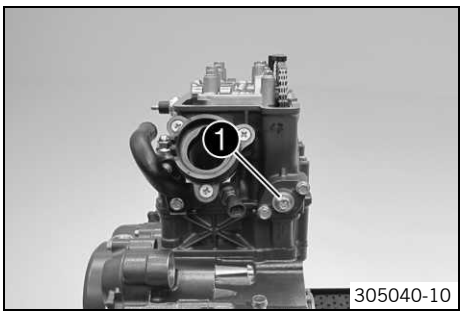
✓ Markings Ⓑ and Ⓒ align.

16.3.8 Removing the starter motor (125 Duke)

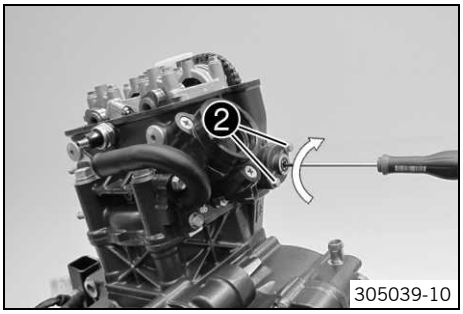


– Remove screws ❶.
– Take off the starter motor.

16.3.9 Removing the timing chain tensioner (125 Duke)

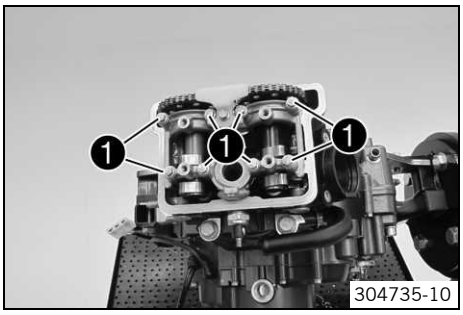


– Remove screw ❶ with the O-ring.

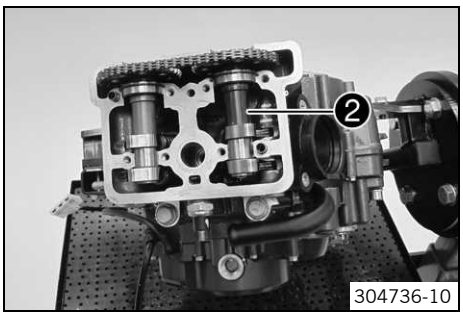


– Turn the timing chain tensioner screw clockwise.
  ✔ The timing chain tensioner is locked.
– Remove screw ❷.
– Remove the timing chain tensioner with the gasket.

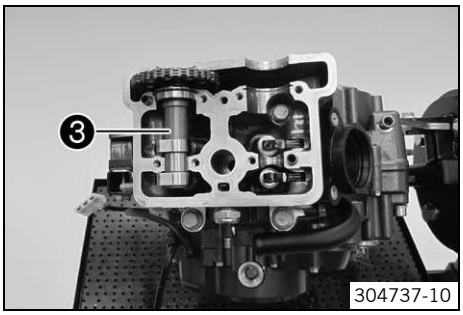
16.3.10 Removing the camshaft (125 Duke)



– Release screws ❶ from the outside to the inside and remove them.
– Remove the camshaft bearing bridge.
– Remove dowels.

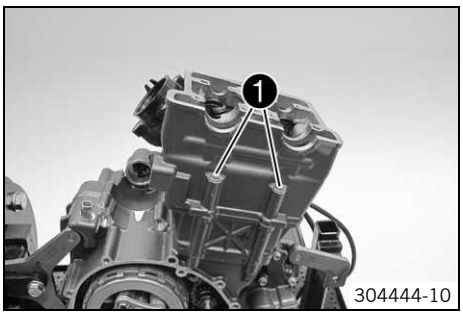


– Remove intake camshaft ❷.

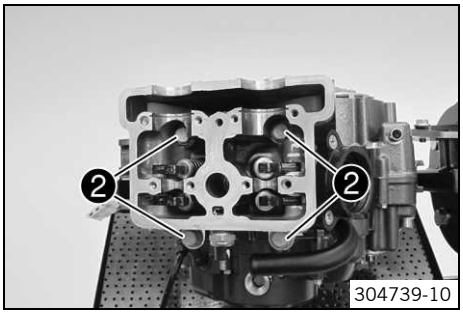


– Remove exhaust camshaft ❸.

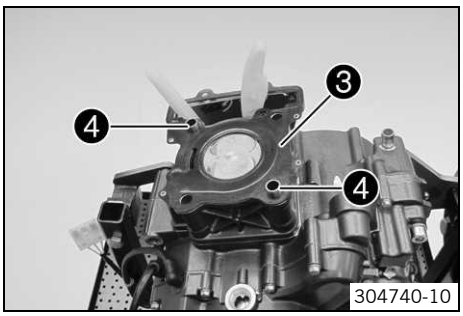
16.3.11 Removing the cylinder head (125 Duke)



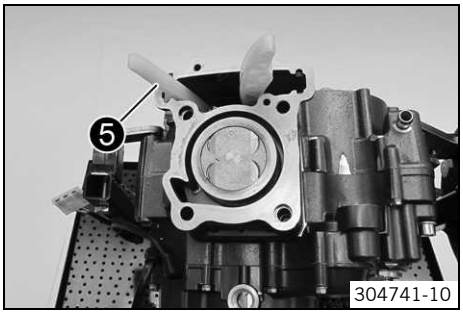
– Remove screws ❶.



– Release screws ❷ in a crisscross pattern and remove them with the washers.
– Take off the cylinder head.

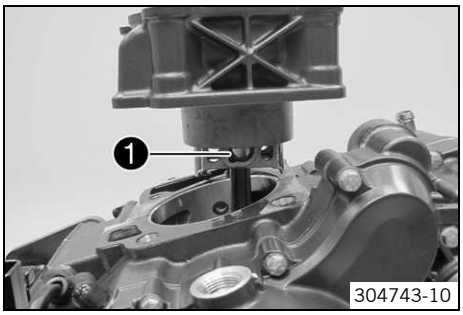


– Take off the cylinder head gasket ❸.
– Remove dowels ❹.



– Remove timing chain guide rail ❺.

16.3.12 Removing the piston (125 Duke)

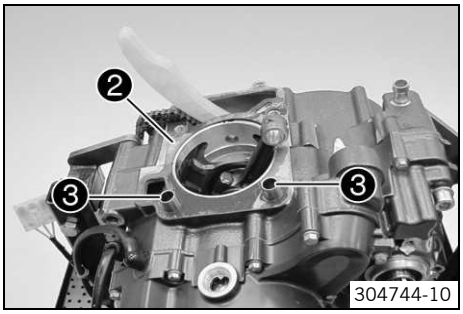


– Push the cylinder upward.

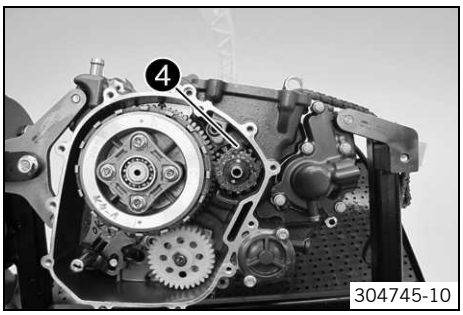
Info
Push the cylinder upward only far enough to allow removal of the piston pin.

– Remove piston pin retainer ❶.
– Remove the piston pin.
– Take off the cylinder with the piston.
– Push the piston upward out of the cylinder.

Info
If no other work is required on the cylinder and the piston, you can leave the piston in the cylinder.

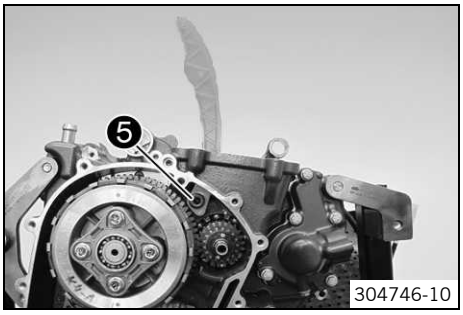


– Take off cylinder base gasket ❷.
– Remove dowels ❸.



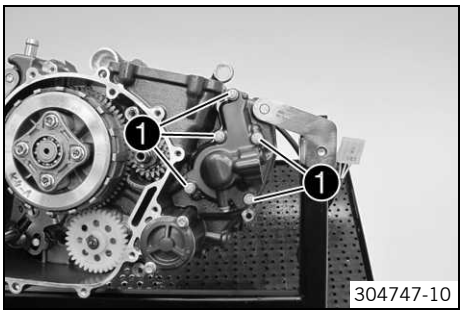
– Slip out timing chain ❹.

Info
If the timing chain is to be reused, mark the direction of travel.

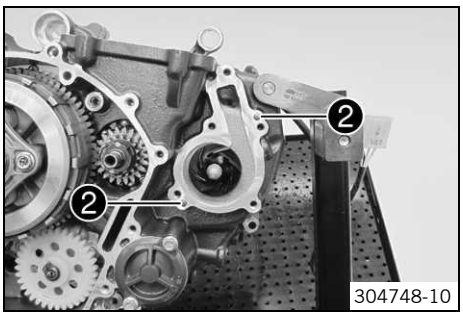


– Remove screw ❺.
– Take off the timing chain tensioning rail from above.

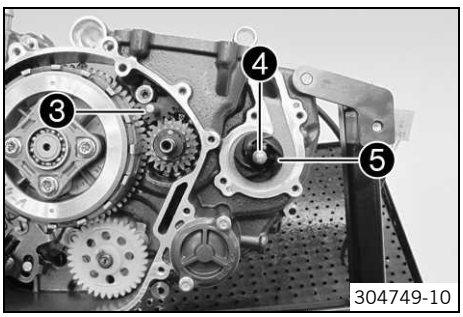
16.3.13 Removing the water pump wheel (125 Duke)



– Remove screws ❶.
– Remove the water pump cover with the gasket.



– Remove locating pins ❷.

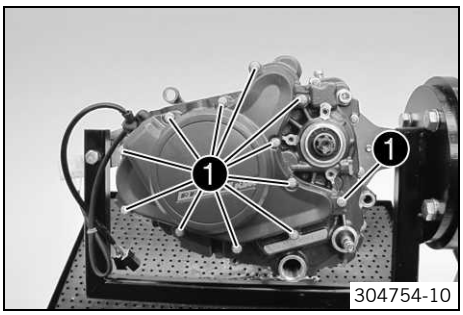


– Lock the clutch basket and primary gear using special tool ❸.

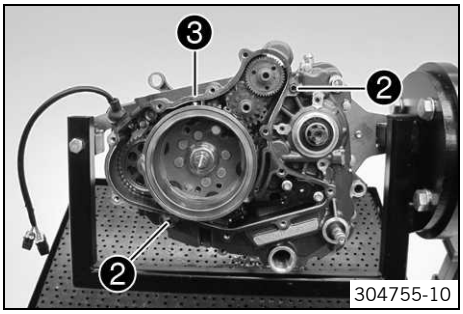
Gear segment (90129081100) (☛ p. 259)

– Remove nut ❹ with washer.
– Take off the water pump wheel ❺.

16.3.14 Removing the alternator cover (125 Duke)

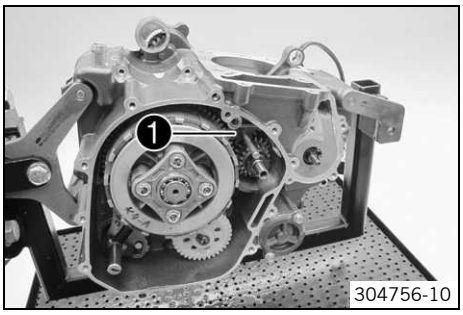


– Remove screws ❶.
– Take off the alternator cover.



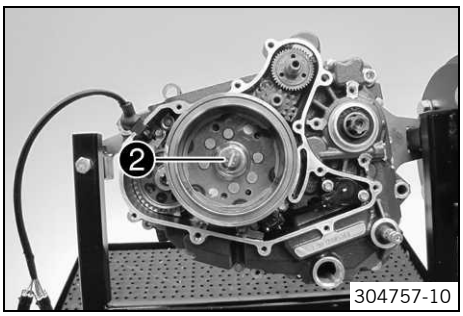
– Remove dowels ❷.
– Take off alternator cover gasket ❸.

16.3.15 Removing the rotor (125 Duke)



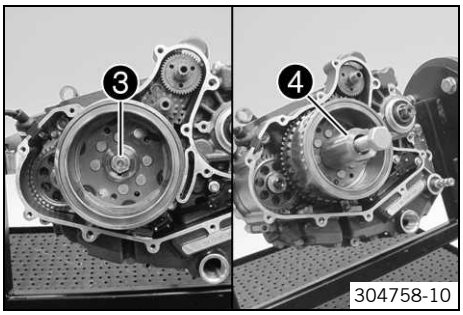
– Lock the clutch basket and primary gear using special tool ❶.

Gear segment (90129081100) (☛ p. 259)



– Remove screw ❷ with the washer.
– Remove the special tool.

Gear segment (90129081100) (☛ p. 259)



– Mount special tool ❸.

Pressure screw for crankshaft (90129020000) (☛ p. 257)

– Mount special tool ❹ on the rotor.

Info
Left-handed thread!

– Hold it tight using the special tool and pull off the rotor by turning the screw in.

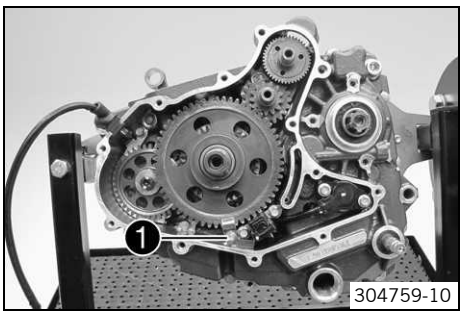
Extractor (90129009000) (☛ p. 256)

– Remove the special tool.

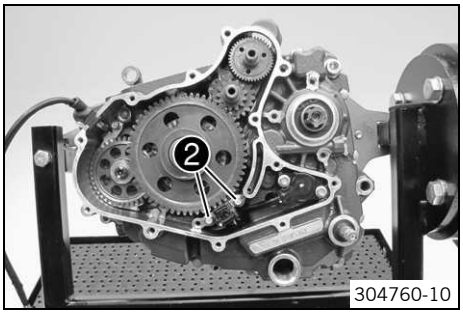
Pressure screw for crankshaft (90129020000) (☛ p. 257)

– Remove the spring washer.

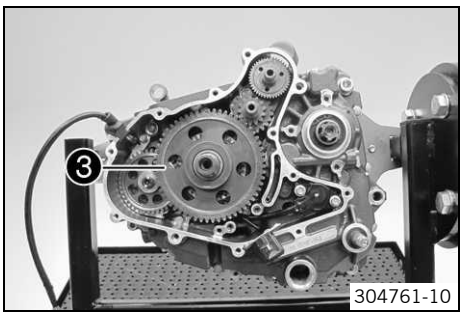
16.3.16 Removing the starter drive (125 Duke)



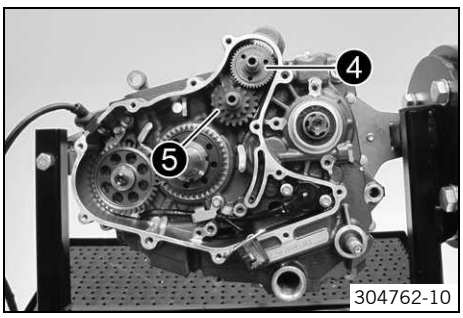
– Remove screw ❶.
– Remove the retaining bracket.



– Remove screws ❷.
– Hang the ignition pulse generator to one side.

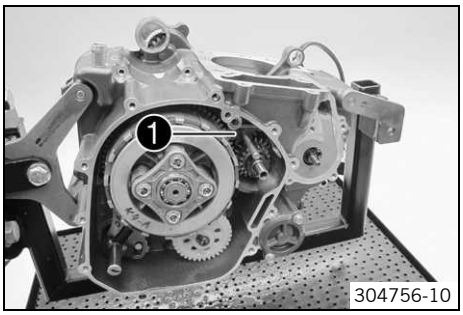


– Remove freewheel gear ❸.

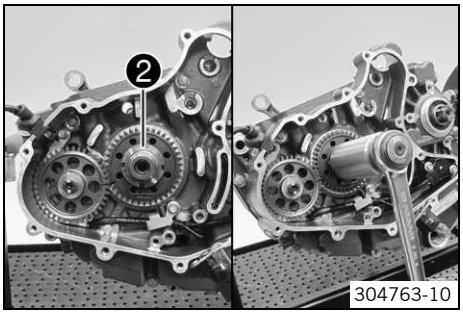


– Take off torque limiter ❹.
– Remove starter idler gear ❺.

16.3.17 Removing the balancer shaft drive wheel (125 Duke)

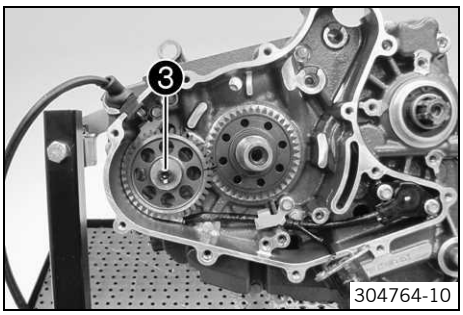


– Lock the clutch basket and primary gear using special tool ❶.

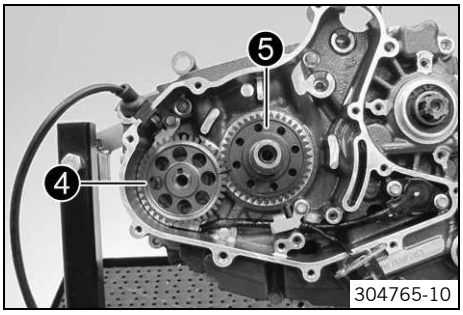


– Remove nut ❷ with washer.

Castle nut wrench; ½" drive (90129022000) (☛ p. 257)

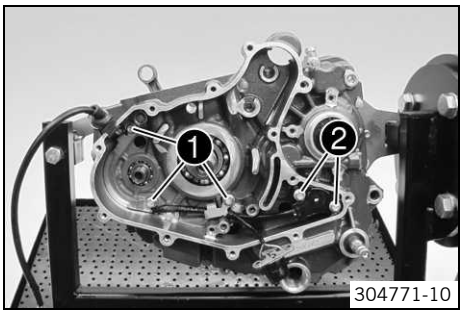


– Remove screw ❸ with the washer.

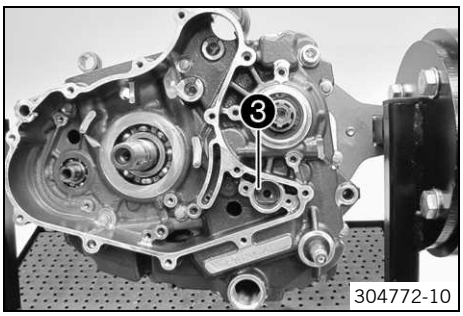


– Remove balancer shaft gear ❹ with a wedge.
– Take off drive wheel ❺ of the balancer shaft.
– Remove the spring washer.

16.3.18 Removing the gear position sensor (125 Duke)

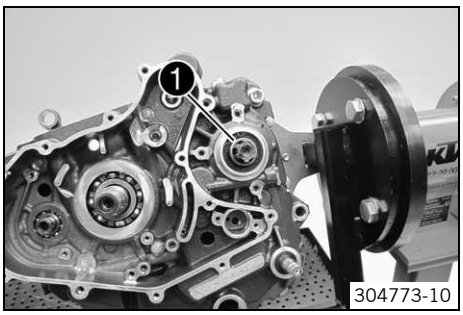


– Remove screws ❶.
– Take off the retaining bracket.
– Remove screws ❷ and take off the gear position sensor.



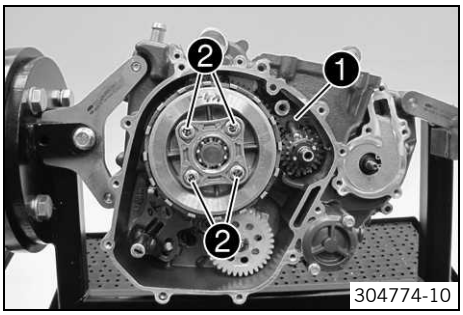
– Remove contact pin ❸ and the contact spring.

16.3.19 Removing the spacer (125 Duke)



– Remove the spacer ❶ of the countershaft.

16.3.20 Removing the clutch basket (125 Duke)

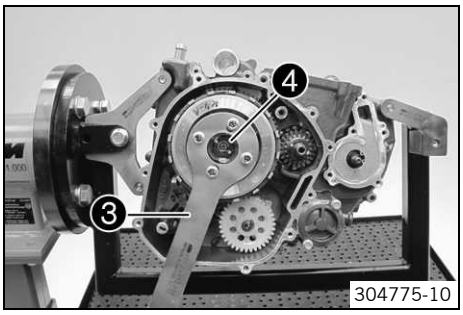


– Lock the clutch basket and primary gear using special tool ❶.

Gear segment (90129081100) (☛ p. 259)

– Remove screws ❷.
– Remove the release bearing holder and clutch springs.
– Remove the special tool.

Gear segment (90129081100) (☛ p. 259)



– Mount special tool ❸.

Holding spanner (90129012000) (☛ p. 256)

– Hold the inner clutch hub with the special tool.
– Remove nut ❹ with washer.

Castle nut wrench; ½" drive (90129021000) (☛ p. 257)

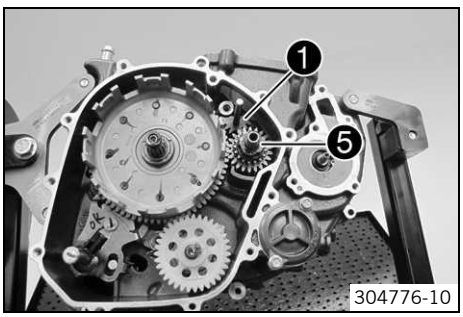
Info
Left-handed thread!

– Remove the special tool.

Holding spanner (90129012000) (☛ p. 256)

– Remove the inner clutch hub with the clutch discs.
– Remove the washer.

Info
The washer usually sticks to the inner clutch hub.

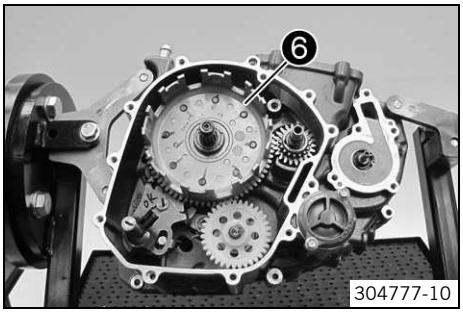


– Lock the clutch basket and primary gear using special tool ❶.

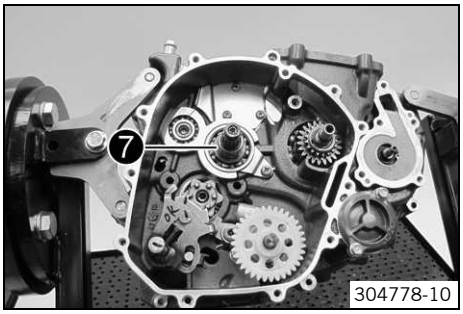
Gear segment (90129081100) (☛ p. 259)

– Remove nut ❺ with washer.

Castle nut wrench; ½" drive (90129021000) (☛ p. 257)

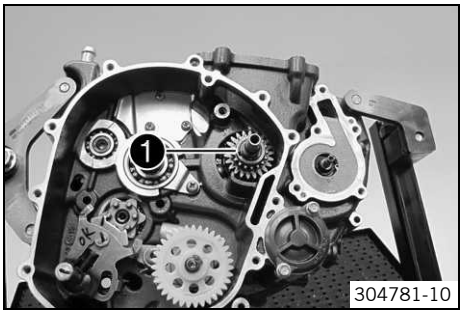


– Take off clutch basket ❻.

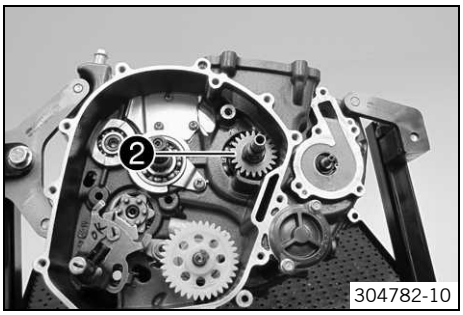


– Remove collar sleeve ❼.

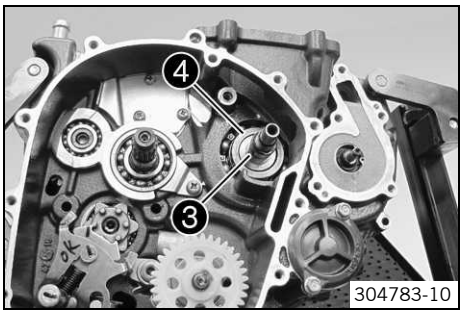
16.3.21 Removing the primary gear (125 Duke)



– Remove timing chain sprocket ❶.

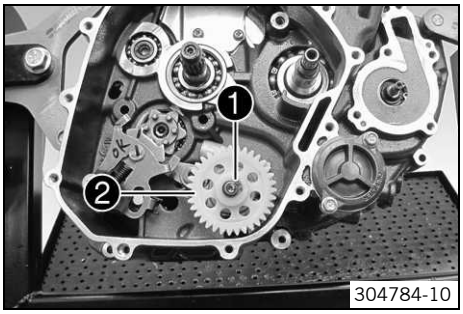


– Take off primary gear ❷.

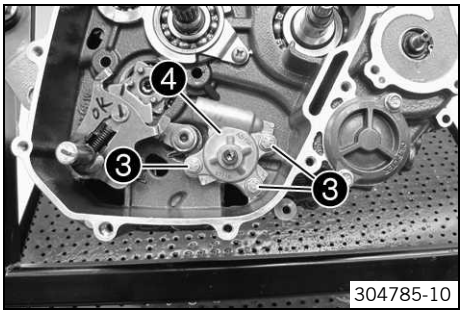


– Remove spring washer ❸.
– Take off spacer ring ❹.

16.3.22 Removing the oil pump (125 Duke)

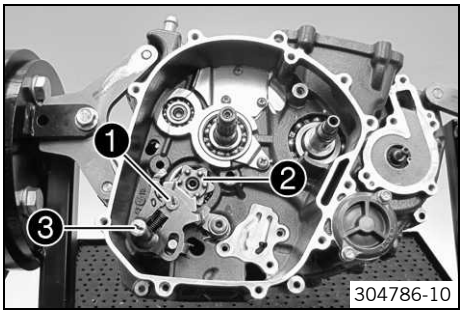


– Remove lock ring ❶.
– Take off oil pump gear ❷.



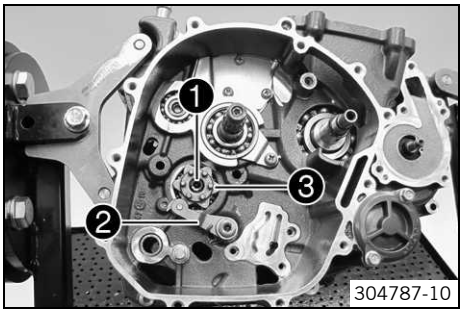
– Remove screws ❸.
– Take off oil pump ❹.
– Remove dowels.

16.3.23 Removing the shift shaft (125 Duke)



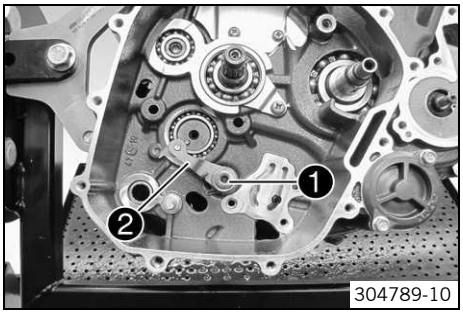
– Push sliding plate ❶ away from the shift drum locating ❷. Remove shift shaft ❸ with the washer.

16.3.24 Removing the shift drum locating (125 Duke)



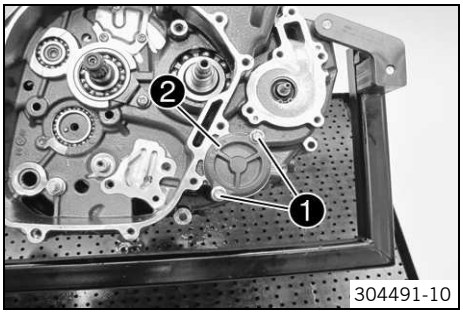
– Remove screw ❶.
– Press locking lever ❷ away from shift drum locating ❸ and take off the shift drum locating.
– Release the locking lever.

16.3.25 Removing the locking lever (125 Duke)

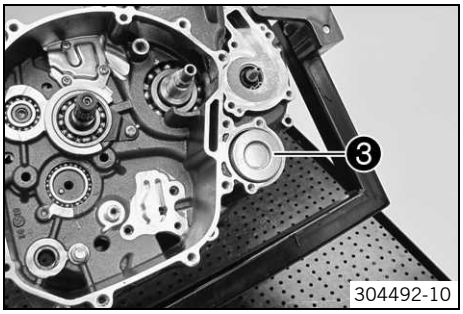


– Remove screw ❶.
– Take off locking lever ❷ together with the washers and spring.

16.3.26 Removing the oil filter (125 Duke)



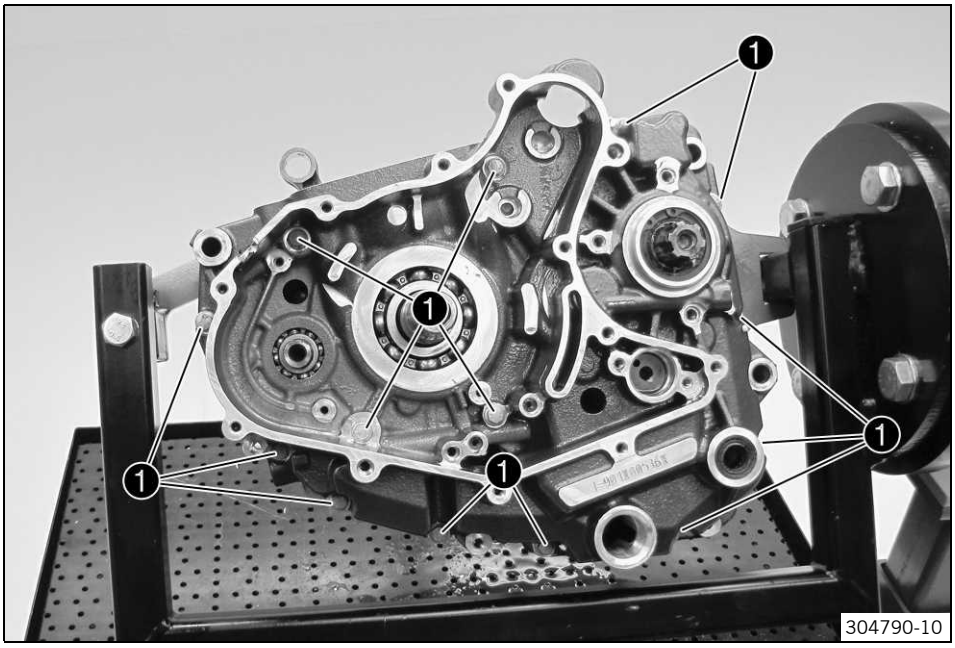
– Remove screws ❶.
– Remove the oil filter cover ❷ with the O-ring.



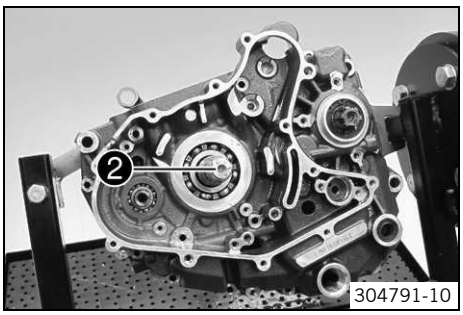
– Pull oil filter ❸ out of the oil filter housing.

Circlip pliers reverse (51012011000) (☛ p. 252)

16.3.27 Removing the left engine case (125 Duke)

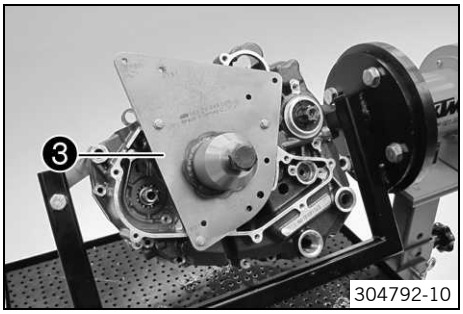


– Remove screws ❶.
– Swing the left section of the engine case up and remove the fitting of the engine fixing arm.



– Mount special tool ❷.

Pressure screw for crankshaft (90129020000) (☛ p. 257)



– Mount special tool ❸ with suitable screws.

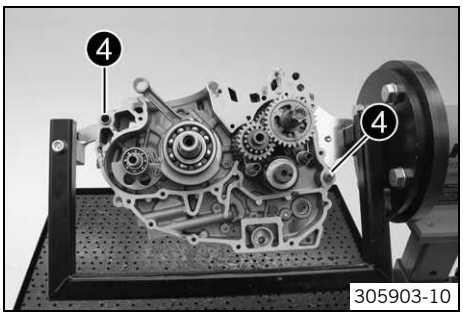
Case separating tool (90129048000) (☛ p. 258)

Info
Use the drill hole marked with **901**.

– Pull off the section of the engine case by screwing in the screw.

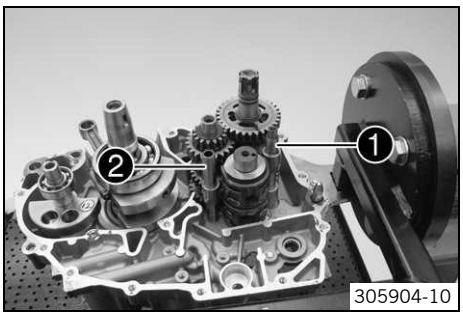
Info
Do not wedge the engine case section.
The washer of the main shaft usually sticks to the bearing.

– Take off the left section of the engine case.
– Remove the special tool.



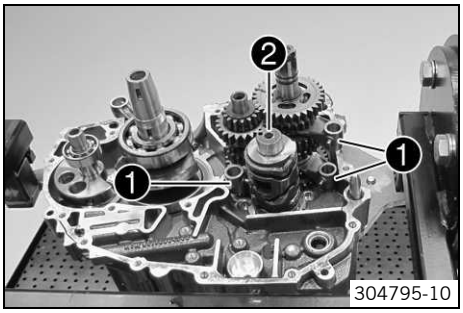
– Remove dowels ❹.
– Remove the engine case gasket.

16.3.28 Removing the shift rails (125 Duke)



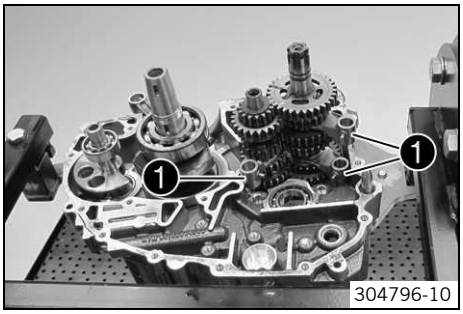
– Remove shift rail ❶ together with upper spring and the lower spring.
– Remove shift rail ❷.

16.3.29 Removing the shift drum (125 Duke)



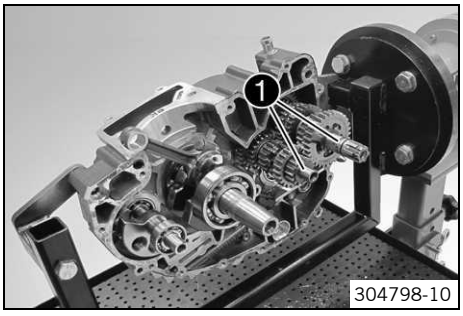
– Swing shift forks ❶ to one side.
– Remove shift drum ❷.

16.3.30 Removing the shift forks (125 Duke)



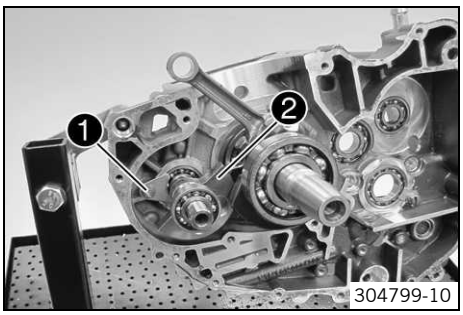
– Remove shift forks ❶.

16.3.31 Removing the transmission shafts (125 Duke)



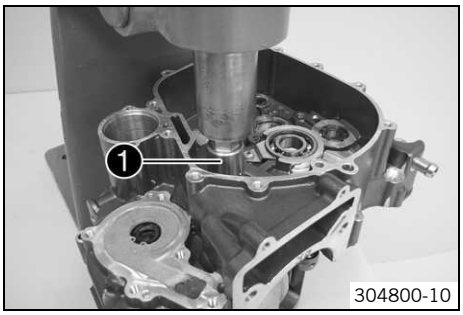
– Pull both transmission shafts ❶ out of the bearing seats together.

16.3.32 Removing the balancer shaft (125 Duke)



– Remove screw ❶.
– Take off the lock washer.
– Remove balancer shaft ❷.

16.3.33 Removing the crankshaft (125 Duke)

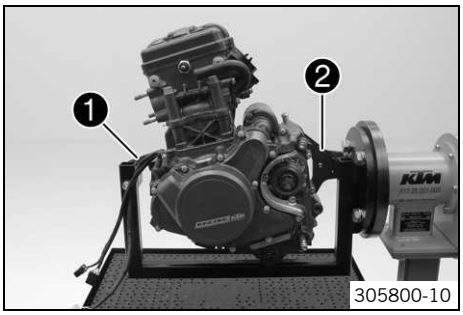


– Mount special tool ❶.

Protecting sleeve (90129019000) (☛ p. 257)

– Position the section of the engine case in a press.
– Press out the crankshaft.

16.3.34 Preparations (200 Duke)



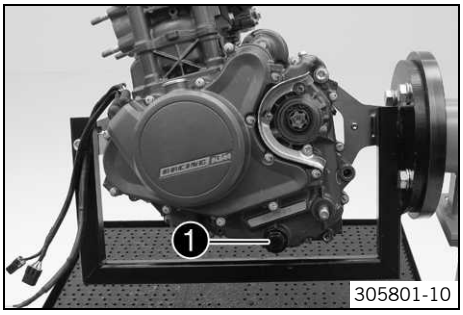
– Mount special tools ❶ and ❷ on the engine assembly stand.

Engine fixing arm (90129002060) (☛ p. 256)
Engine fixing arm (90129002050) (☛ p. 255)
Engine assembly stand (61229001000) (☛ p. 254)

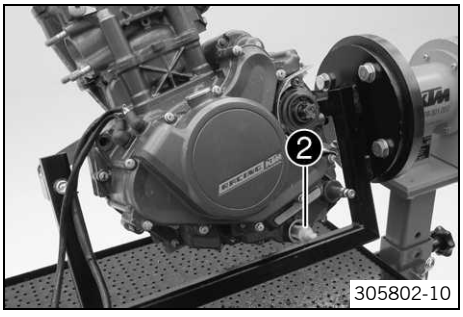
– Mount the engine on special tool.

Info
Have an assistant help you or use a crane.

16.3.35 Draining the engine oil (200 Duke)

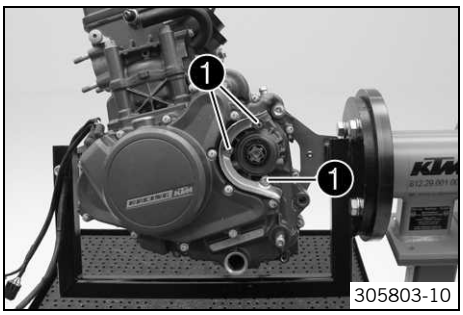


– Remove oil drain plug ❶ with the O-ring.



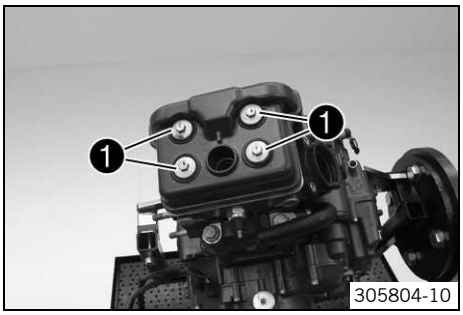
– Remove oil screen ❷ with the O-ring.
– Completely drain the engine oil.

16.3.36 Removing the chain securing guide (200 Duke)



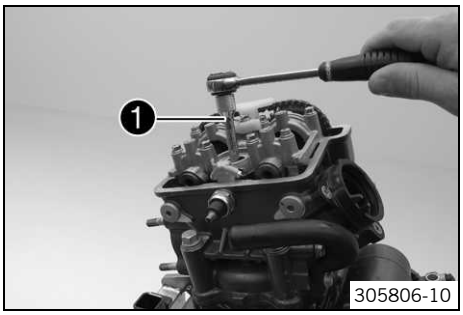
– Remove screws ❶.
– Take off the chain securing guide.

16.3.37 Removing the valve cover (200 Duke)



– Remove screws ❶ with the gasket.
– Take off the valve cover with the valve cover seal.

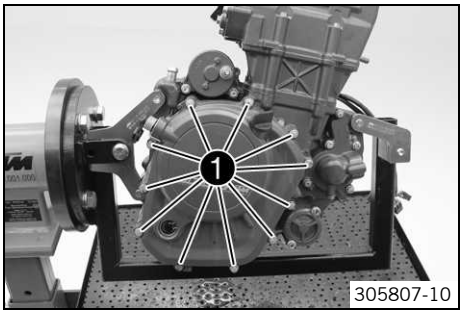
16.3.38 Removing the spark plug (200 Duke)



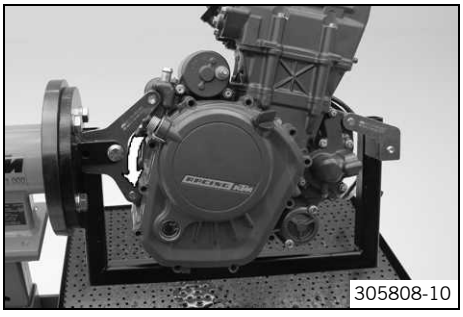
– Remove the spark plug using special tool ❶.

Spark plug wrench (77229172000) (☛ p. 255)

16.3.39 Removing the clutch cover (200 Duke)

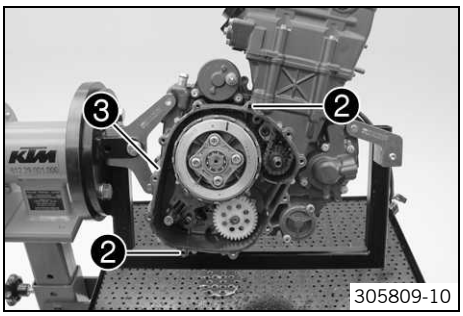


– Remove screws ❶.



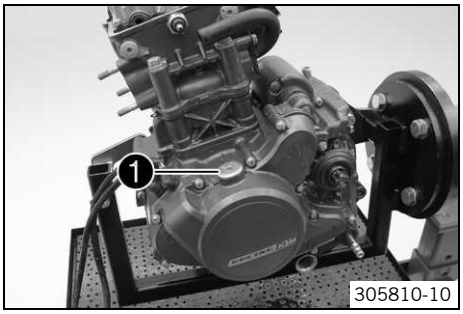
– Take off the clutch cover.

Info
Pull the clutch lever forward slightly.

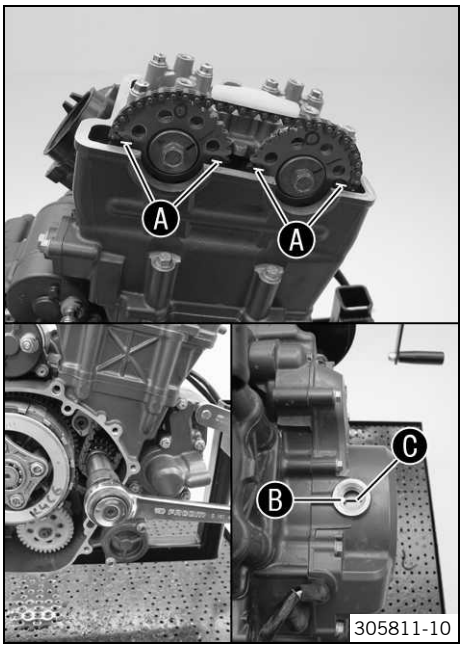


– Remove dowels ❷.
– Take off clutch cover gasket ❸.

16.3.40 Setting the engine to ignition top dead center (200 Duke)



– Remove screw plug ❶.

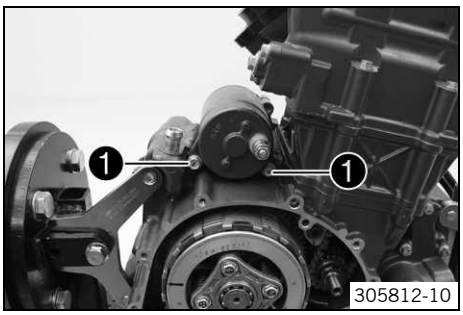


– Turn the crankshaft counterclockwise until markings Ⓐ align with the edge of the cylinder head.

Castle nut wrench; ½" drive (90129021000) (☛ p. 257)

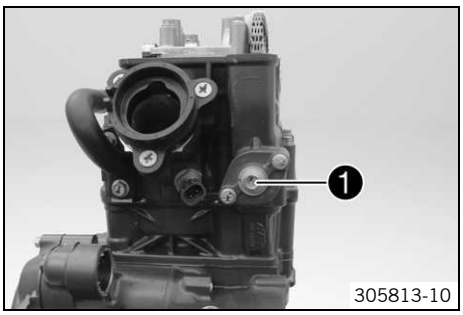
✔ Markings Ⓑ and Ⓒ align.

16.3.41 Removing the starter motor (200 Duke)

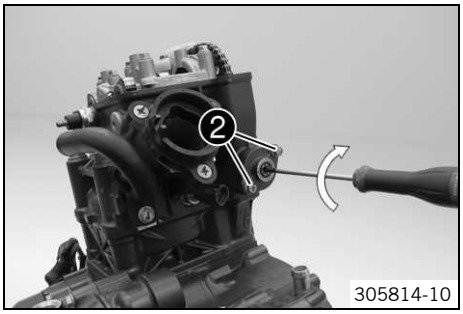


– Remove screws ❶.
– Take off the starter motor.

16.3.42 Removing the timing chain tensioner (200 Duke)

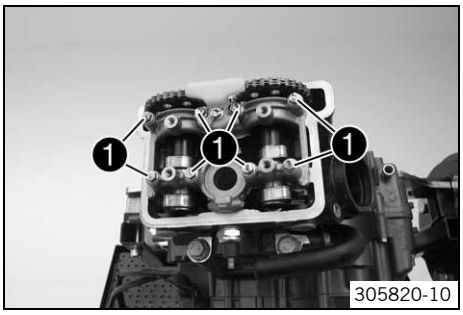


– Remove screw ❶ with the O-ring.

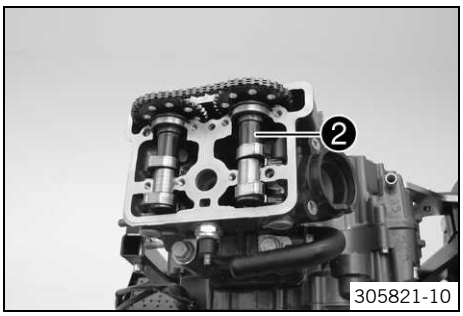


– Turn the timing chain tensioner screw clockwise.
  ✔ The timing chain tensioner is locked.
– Remove screw ❷.
– Remove the timing chain tensioner with the gasket.

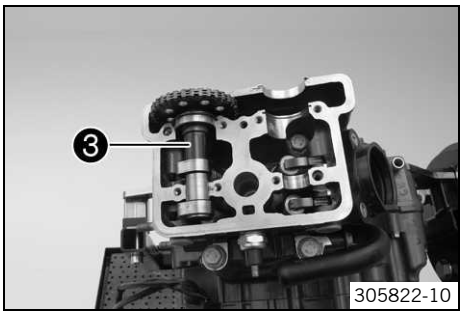
16.3.43 Removing the camshaft (200 Duke)



– Release screws ❶ from the outside to the inside and remove them.
– Remove the camshaft bearing bridge.
– Remove dowels.

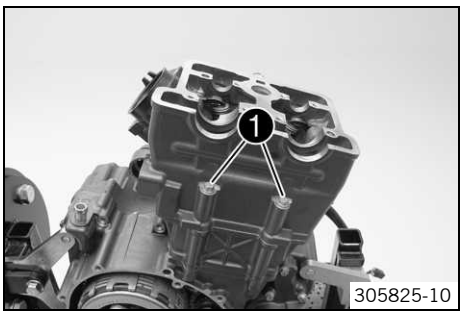


– Remove intake camshaft ❷.

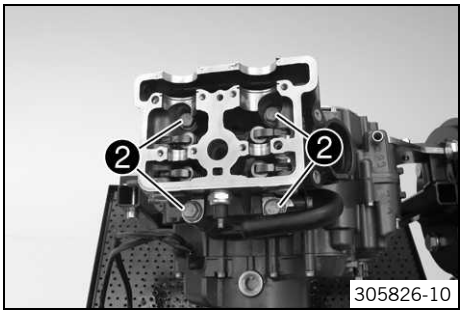


– Remove exhaust camshaft ❸.

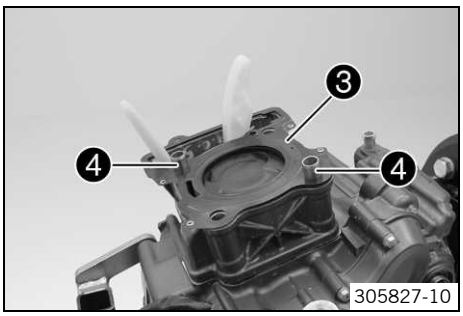
16.3.44 Removing the cylinder head (200 Duke)



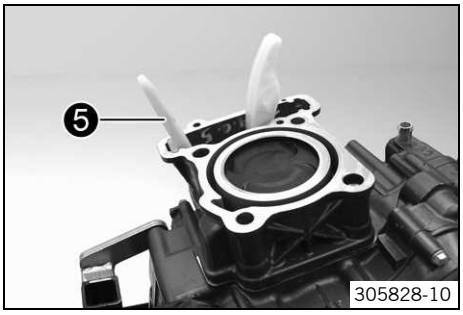
– Remove screws ❶.



– Release screws ❷ in a crisscross pattern and remove them with the washers.
– Take off the cylinder head.

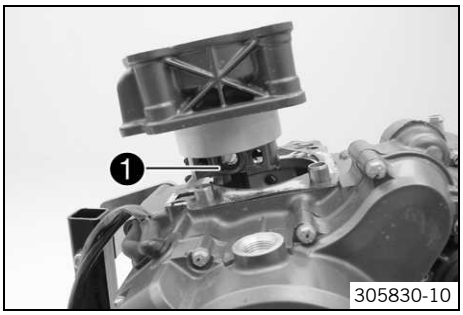


– Take off the cylinder head gasket ❸.
– Remove dowels ❹.



– Remove timing chain guide rail ❺.

16.3.45 Removing the piston (200 Duke)

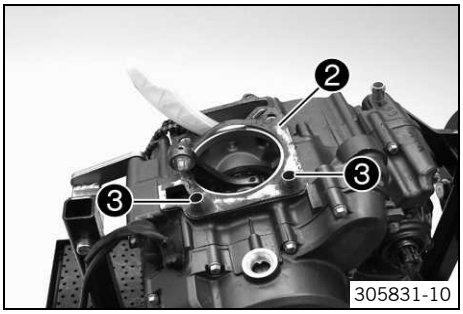


– Push the cylinder upward.

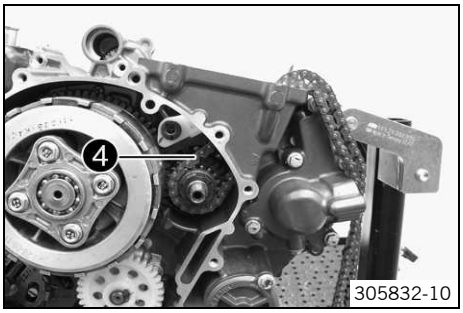
Info
Push the cylinder upward only far enough to allow removal of the piston pin.

– Remove piston pin retainer ❶.
– Remove the piston pin.
– Take off the cylinder with the piston.
– Push the piston upward out of the cylinder.

Info
If no other work is required on the cylinder and the piston, you can leave the piston in the cylinder.

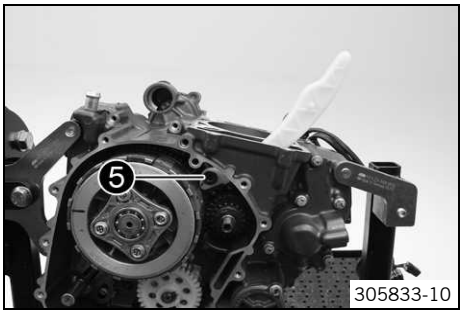


– Take off cylinder base gasket ❷.
– Remove dowels ❸.



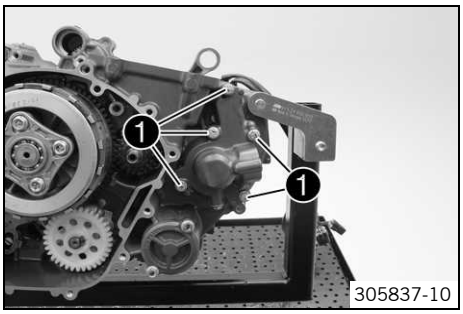
– Slip out timing chain ❹.

Info
If the timing chain is to be reused, mark the direction of travel.

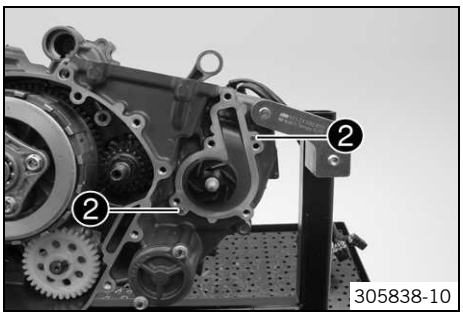


– Remove screw ❺.
– Take off the timing chain tensioning rail from above.

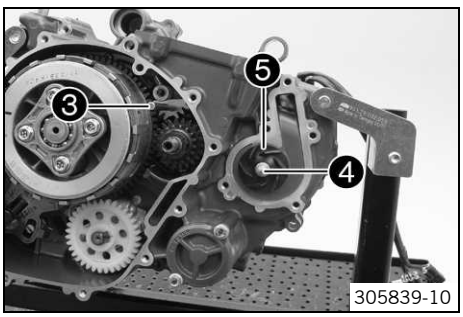
16.3.46 Removing the water pump wheel (200 Duke)



– Remove screws ❶.
– Remove the water pump cover with the gasket.



– Remove locating pins ❷.

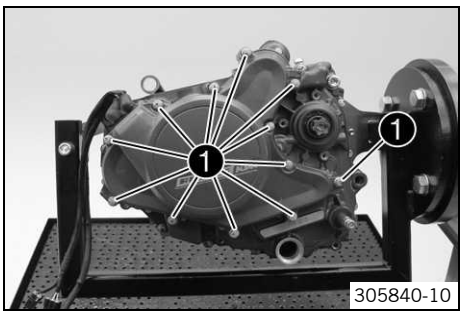


– Lock the clutch basket and primary gear using special tool ❸.

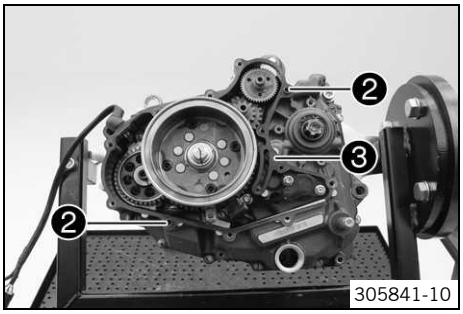
Gear segment (90129081100) (☛ p. 259)

– Remove nut ❹ with washer.
– Take off the water pump wheel ❺.

16.3.47 Removing the alternator cover (200 Duke)

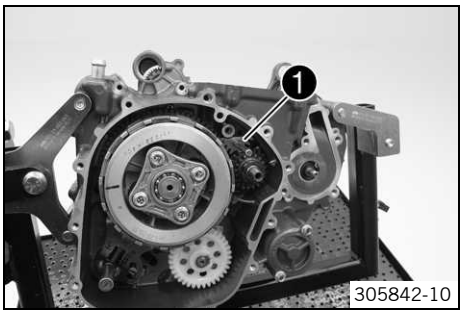


– Remove screws ❶.
– Take off the alternator cover.



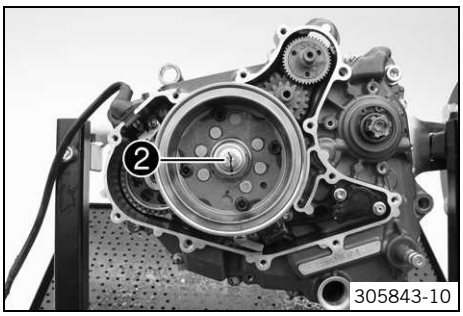
– Remove dowels ❷.
– Take off alternator cover gasket ❸.

16.3.48 Removing the rotor (200 Duke)



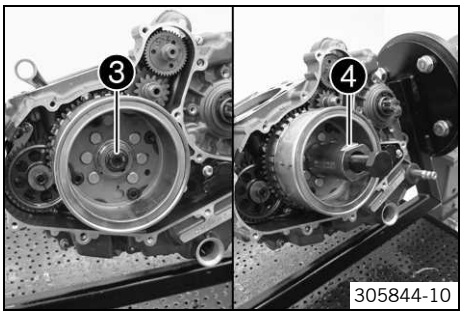
– Lock the clutch basket and primary gear using special tool ❶.

Gear segment (90129081100) (☛ p. 259)



– Remove screw ❷ with the washer.
– Remove the special tool.

Gear segment (90129081100) (☛ p. 259)



– Mount special tool ❸.

Pressure screw for crankshaft (90129020000) (☛ p. 257)

– Mount special tool ❹ on the rotor.

Info
Left-handed thread!

– Hold it tight using the special tool and pull off the rotor by turning the screw in.

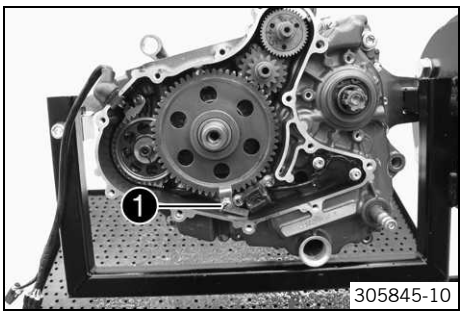
Extractor (90129009000) (☛ p. 256)

– Remove the special tool.

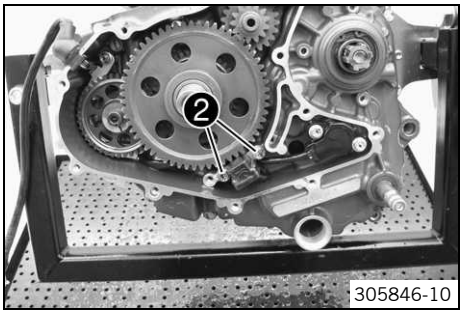
Pressure screw for crankshaft (90129020000) (☛ p. 257)

– Remove the spring washer.

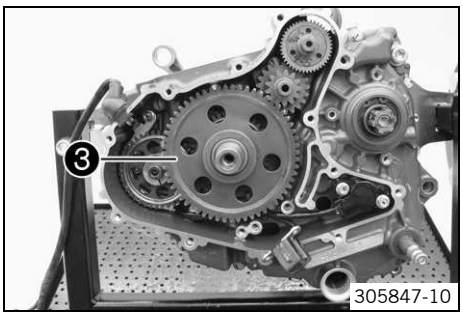
16.3.49 Removing the starter drive (200 Duke)



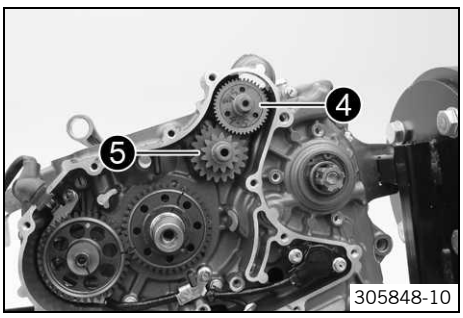
– Remove screw ❶.
– Remove the retaining bracket.



– Remove screws ❷.
– Hang the ignition pulse generator to one side.

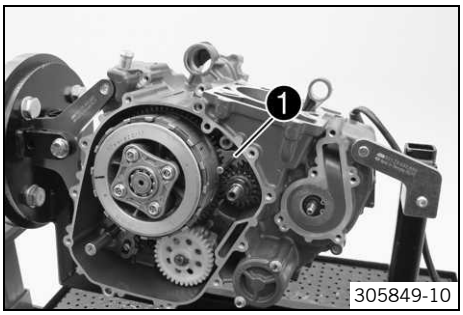


– Remove freewheel gear ❸.

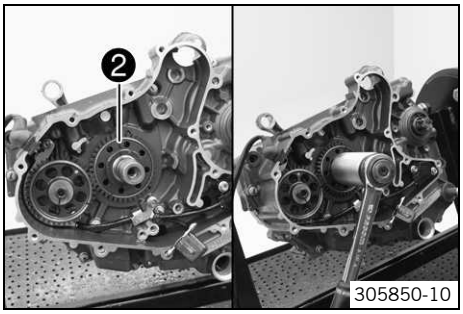


– Take off torque limiter ❹.
– Remove starter idler gear ❺.

16.3.50 Removing the balancer shaft drive wheel (200 Duke)

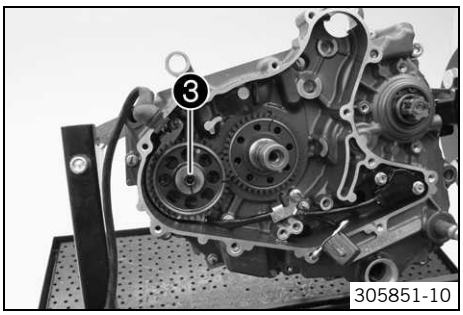


– Lock the clutch basket and primary gear using special tool ❶.

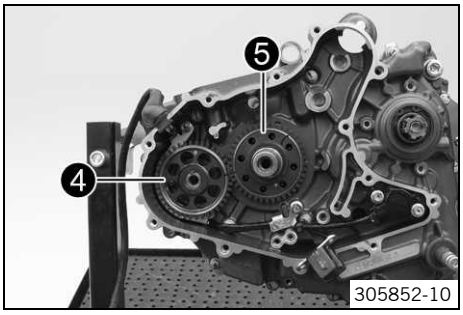


– Remove nut ❷ with washer.

Castle nut wrench; ½" drive (90129022000) (☛ p. 257)

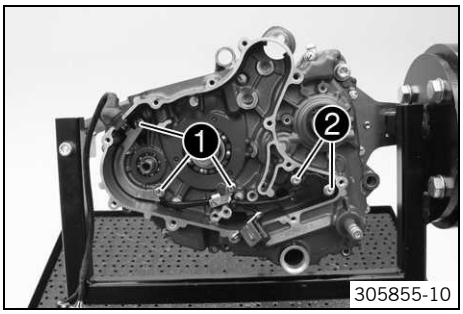


– Remove screw ❸ with the washer.

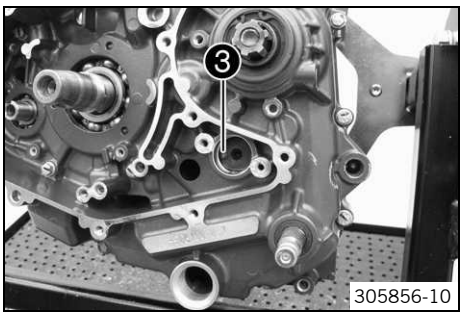


– Remove balancer shaft gear ❹ with a wedge.
– Take off drive wheel ❺ of the balancer shaft.
– Remove the spring washer.

16.3.51 Removing the gear position sensor (200 Duke)

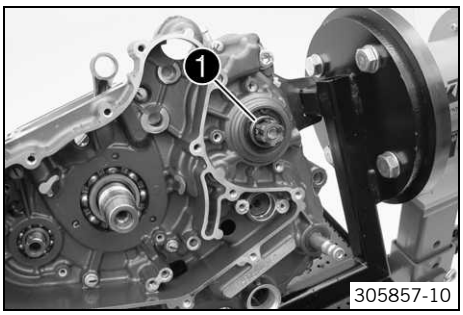


– Remove screws ❶.
– Take off the retaining bracket.
– Remove screws ❷ and take off the gear position sensor.



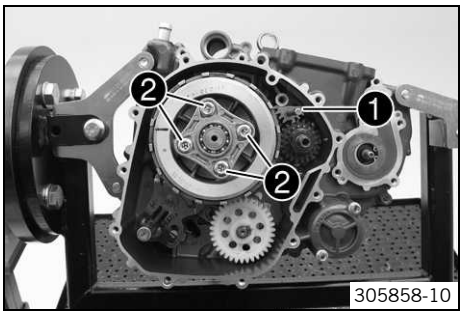
– Remove contact pin ❸ and the contact spring.

16.3.52 Removing the spacer (200 Duke)



– Remove the spacer ❶ of the countershaft.

16.3.53 Removing the clutch basket (200 Duke)

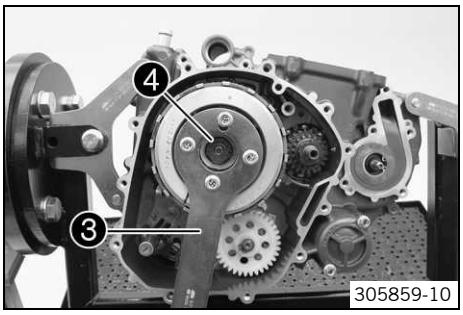


– Lock the clutch basket and primary gear using special tool ❶.

Gear segment (90129081100) (☛ p. 259)

– Remove screws ❷.
– Remove the release bearing holder and clutch springs.
– Remove the special tool.

Gear segment (90129081100) (☛ p. 259)



– Mount special tool ❸.

Holding spanner (90129012000) (☛ p. 256)

– Hold the inner clutch hub with the special tool.
– Remove nut ❹ with washer.

Castle nut wrench; ½" drive (90129021000) (☛ p. 257)

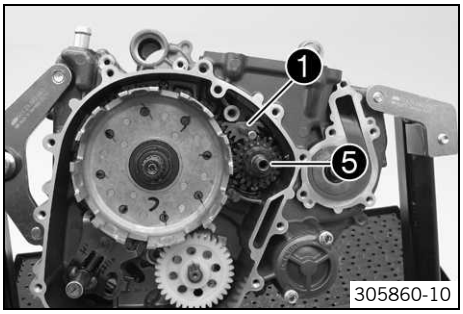
Info
Left-handed thread!

– Remove the special tool.

Holding spanner (90129012000) (☛ p. 256)

– Remove the inner clutch hub with the clutch discs.
– Remove the washer.

Info
The washer usually sticks to the inner clutch hub.

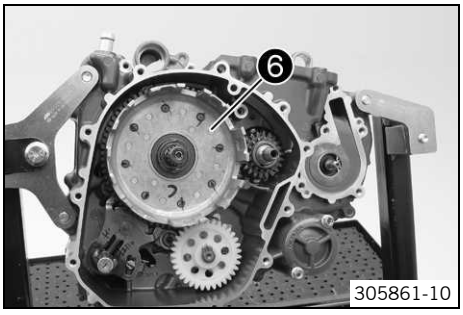


– Lock the clutch basket and primary gear using special tool ❶.

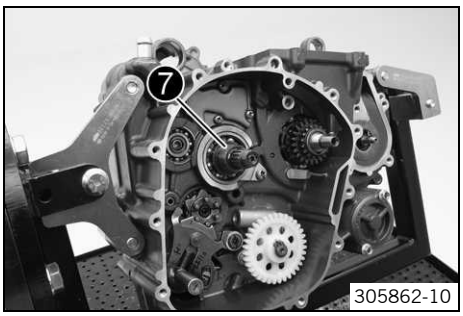
Gear segment (90129081100) (☛ p. 259)

– Remove nut ❺ with washer.

Castle nut wrench; ½" drive (90129021000) (☛ p. 257)

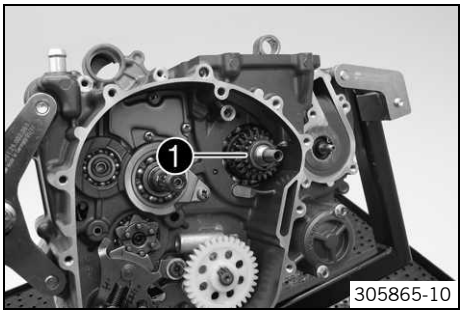


– Take off clutch basket ❻.

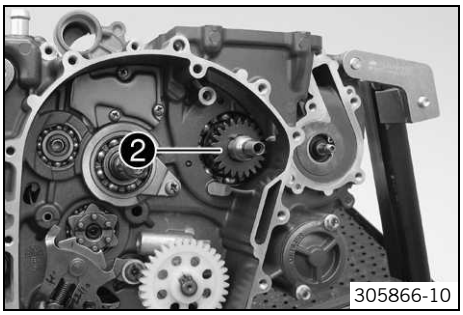


– Remove collar sleeve ❼.

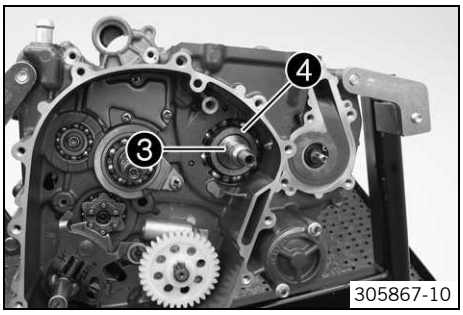
16.3.54 Removing the primary gear (200 Duke)



– Remove timing chain sprocket ❶.

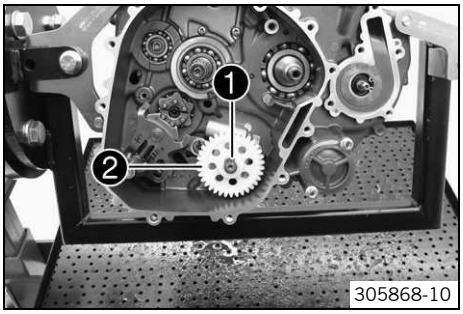


– Take off primary gear ❷.

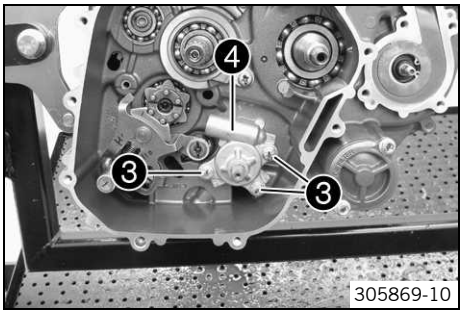


– Remove spring washer ❸.
– Take off spacer ring ❹.

16.3.55 Removing the oil pump (200 Duke)

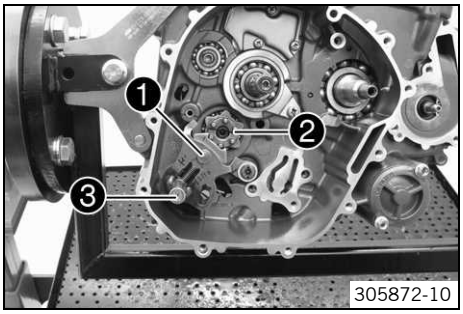


– Remove lock ring ❶.
– Take off oil pump gear ❷.



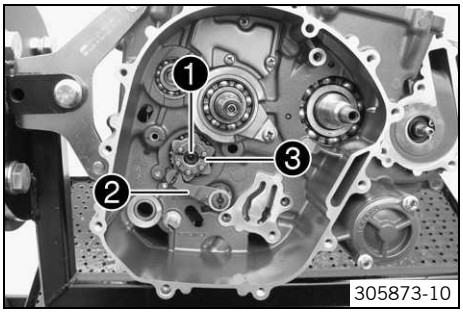
– Remove screws ❸.
– Take off oil pump ❹.
– Remove dowels.

16.3.56 Removing the shift shaft (200 Duke)



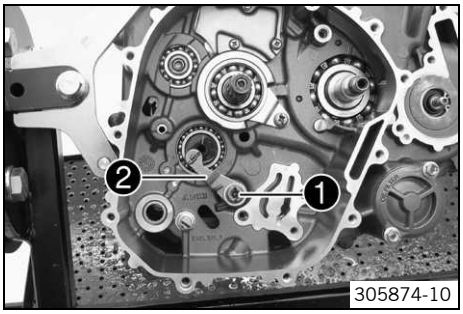
– Push sliding plate ❶ away from the shift drum locating ❷. Remove shift shaft ❸ with the washer.

16.3.57 Removing the shift drum locating (200 Duke)



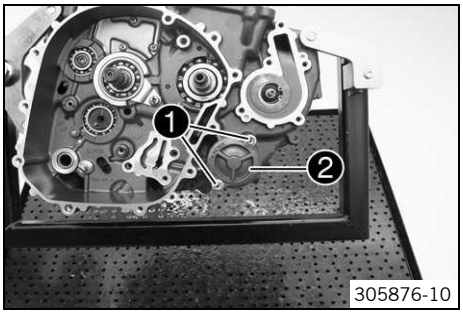
– Remove screw ❶.
– Press locking lever ❷ away from shift drum locating ❸ and take off the shift drum locating.
– Release the locking lever.

16.3.58 Removing the locking lever (200 Duke)

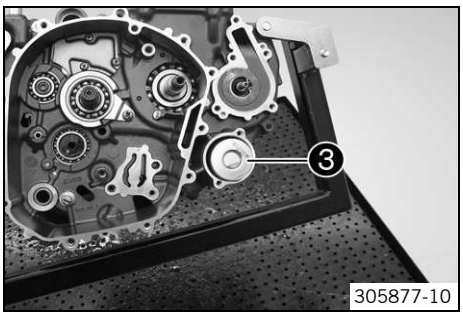


– Remove screw ❶.
– Take off locking lever ❷ together with the washers and spring.

16.3.59 Removing the oil filter (200 Duke)



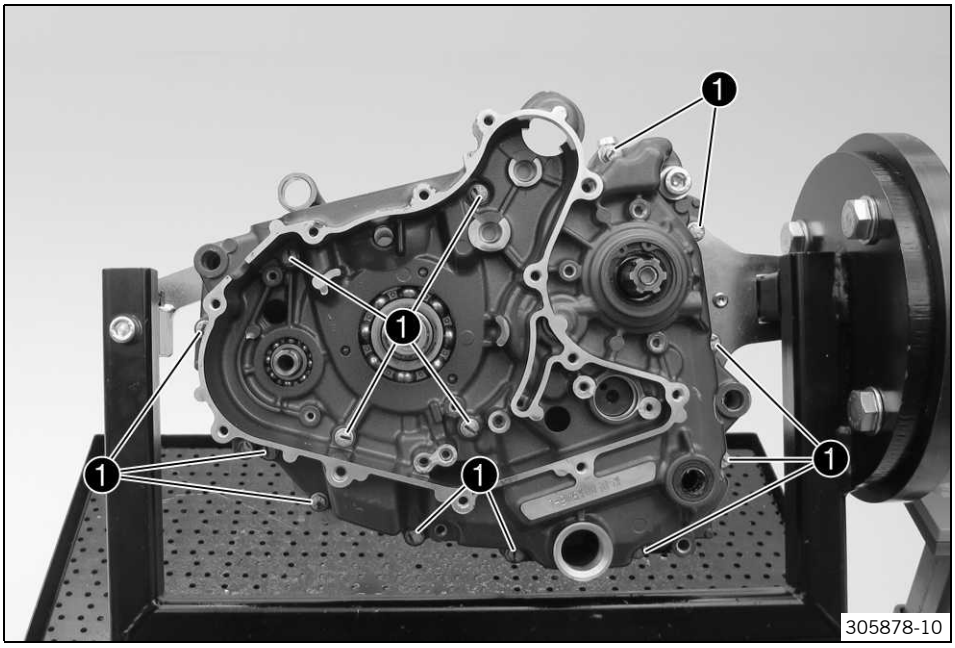
– Remove screws ❶.
– Remove the oil filter cover ❷ with the O-ring.



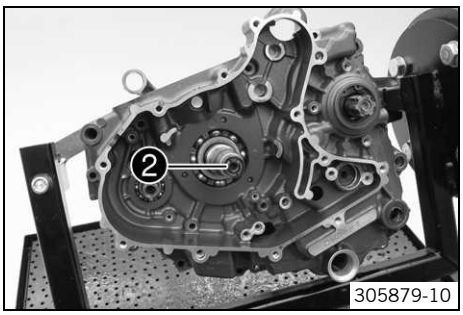
– Pull oil filter ❸ out of the oil filter housing.

Circlip pliers reverse (51012011000) (☛ p. 252)

16.3.60 Removing the left engine case (200 Duke)

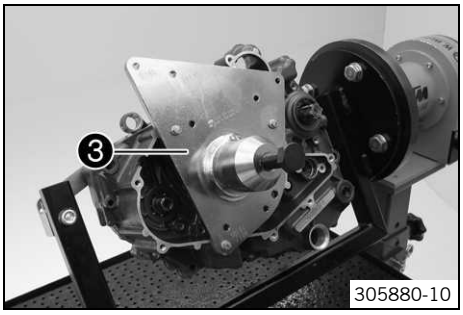


– Remove screws ❶.
– Swing the left section of the engine case up and remove the fitting of the engine fixing arm.



– Mount special tool ❷.

Pressure screw for crankshaft (90129020000) (☛ p. 257)



– Mount special tool ❸ with suitable screws.

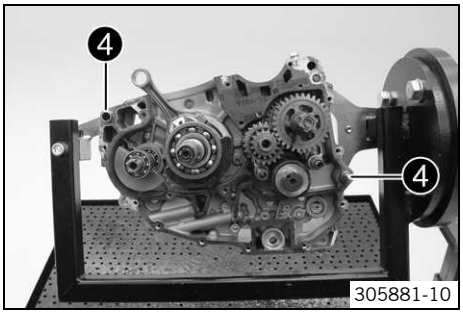
Case separating tool (90129048000) (☛ p. 258)

Info
Use the drill hole marked with **901**.

– Pull off the section of the engine case by screwing in the screw.

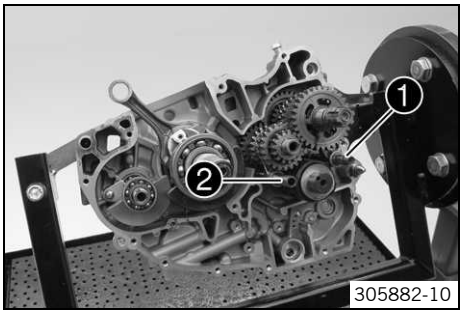
Info
Do not wedge the engine case section.
The washer of the main shaft usually sticks to the bearing.

– Take off the left section of the engine case.
– Remove the special tool.



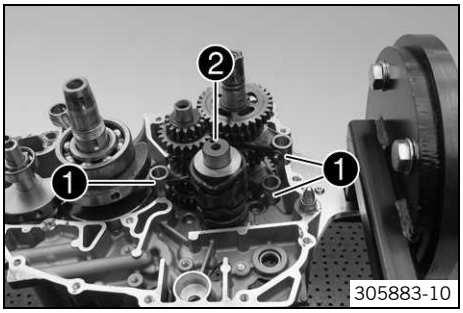
– Remove dowels ❹.
– Remove the engine case gasket.

16.3.61 Removing the shift rails (200 Duke)



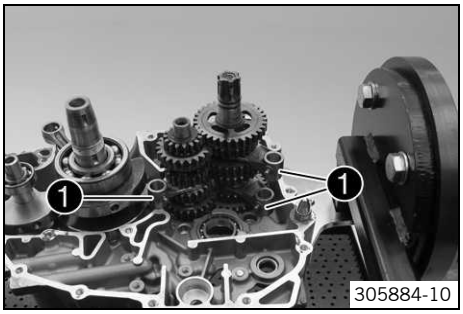
– Remove shift rail ❶ together with upper spring and the lower spring.
– Remove shift rail ❷.

16.3.62 Removing the shift drum (200 Duke)



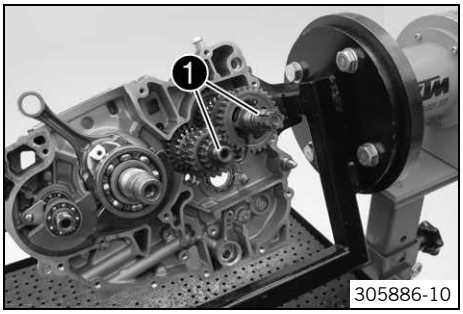
– Swing shift forks ❶ to one side.
– Remove shift drum ❷.

16.3.63 Removing the shift forks (200 Duke)



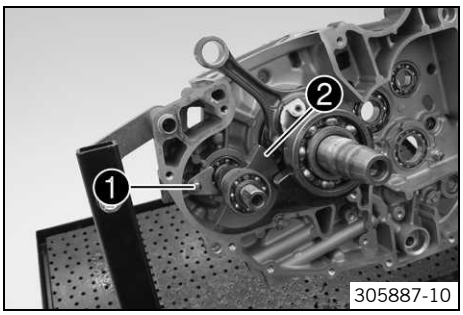
– Remove shift forks ❶.

16.3.64 Removing the transmission shafts (200 Duke)



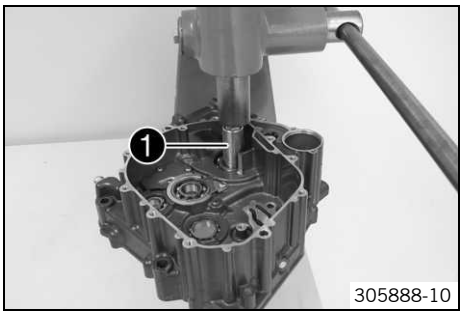
– Pull both transmission shafts ❶ out of the bearing seats together.

16.3.65 Removing the balancer shaft (200 Duke)



– Remove screw ❶.
– Take off the lock washer.
– Remove balancer shaft ❷.

16.3.66 Removing the crankshaft (200 Duke)



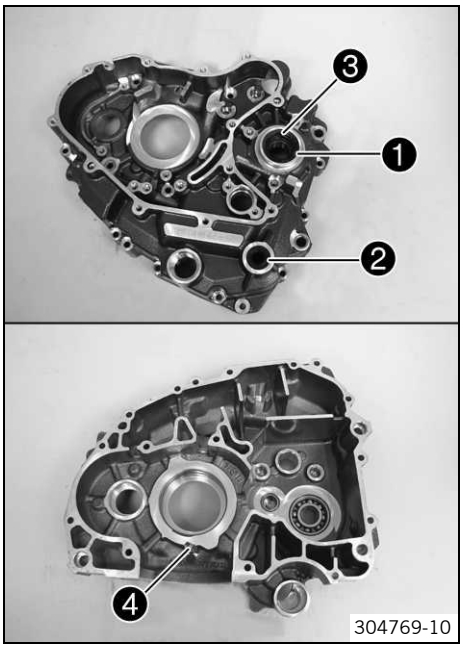
– Mount special tool ❶.

Protecting sleeve (90129019000) (☛ p. 257)

– Position the section of the engine case in a press.
– Press out the crankshaft.

16.4 Work on individual parts

16.4.1 Work on the left section of the engine case (125 Duke)



– Remove all dowels.
– Remove lock ring ❶.
– Remove shaft seal ring ❷ of the shift shaft and ❸ of the countershaft.
– Remove oil nozzle ❹.
– Remove any sealing mass remnants and clean the engine case section thoroughly.
– Warm the engine case section in an oven.

  Guideline

150 °C (302 °F)

– Knock the engine case section against a level wooden plate. This will cause the bearings to drop out of the bearing seats.

Info
Any bearings that remain in the engine case section must be removed using a suitable tool.

– Insert the new cold bearings into the bearing seats of the hot engine case section and, if necessary, use a suitable press drift to push the bearing all the way to the stop or so that it is flush.

Info
When pressing the bearing in, ensure that the engine case section is level to prevent damage.
Only press the bearings in via the outer ring; otherwise, the bearings will be damaged when they are pressed in.

– After the engine case section has cooled, check that the bearings are firmly seated.

Info
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 renewed.

– Mount the dowels.

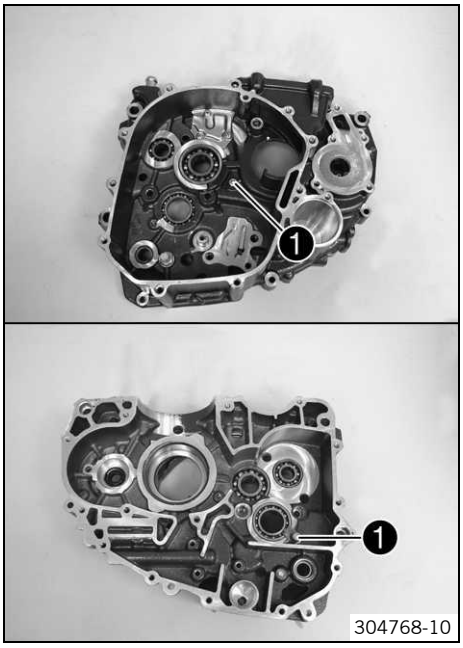
– Press in shaft seal ring ❷ of the shift shaft with the open side facing inward so that it is flush.
– Press in shaft seal ring ❸ of the countershaft with the open side facing inward so that it is flush.
– Mount lock ring ❶.
– Mount and tighten oil nozzle ❹.

Guideline

Oil nozzle	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**

– Blow out the oil channel with compressed air and check that it is clear.

16.4.2 Work on the right section of the engine case (125 Duke)



– Remove all dowels.
– Remove screws ❶. Remove the bearing retainers.
– Remove any sealing mass remnants and clean the engine case section thoroughly.
– Warm the engine case section in an oven.

Guideline

150 °C (302 °F)

– Knock the engine case section against a level wooden plate. This will cause the bearings to drop out of the bearing seats.

Info
Any bearings that remain in the engine case section must be removed using a suitable tool.

– Insert the new cold bearings into the bearing seats of the hot engine case section and, if necessary, use a suitable press drift to push the bearing all the way to the stop or so that it is flush.

Info
When pressing the bearing in, ensure that the engine case section is level to prevent damage.
Only press the bearings in via the outer ring; otherwise, the bearings will be damaged when they are pressed in.

– After the engine case section has cooled, check that the bearings are firmly seated.

Info
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 renewed.

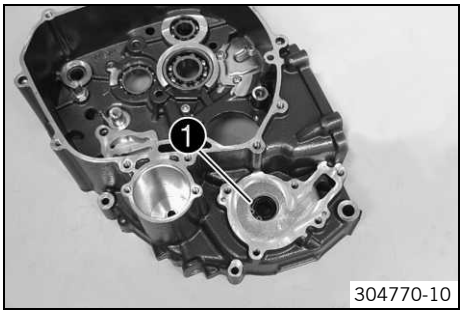
– Mount the dowels.
– Position all bearing locks.
– Mount and tighten screws ❶.

Guideline

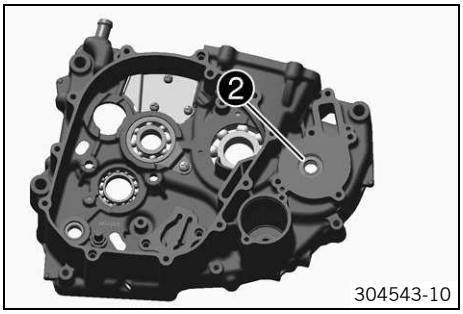
Screw, bearing retainer	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**

– Blow compressed air through the oil channel and check that it is clear.

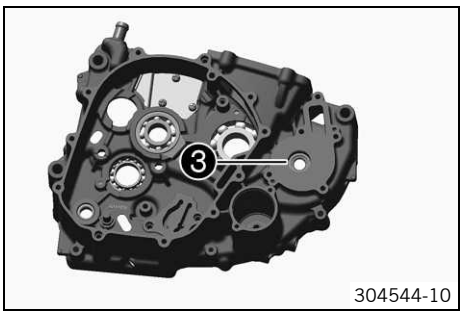
16.4.3 Changing the shaft seal ring of the water pump (125 Duke)



– Remove lock ring ❶.

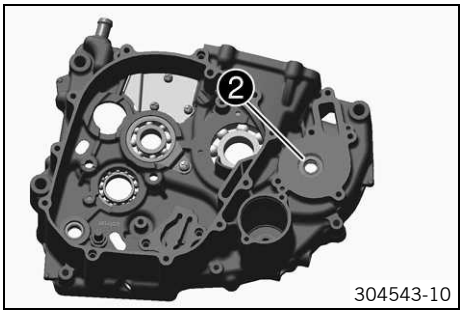


– Remove shaft seal ring ❷.



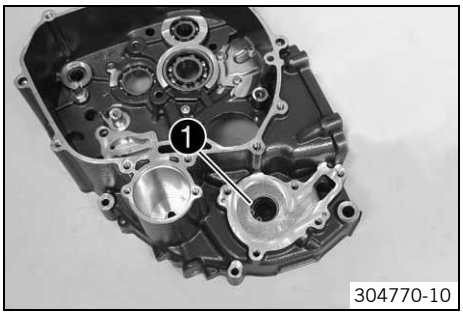
– Remove shaft seal ring ❸.
– Press the new shaft seal ring ❸ in all the way with the open side facing inward.

Mounting sleeve (90129043000) (☛ p. 258)



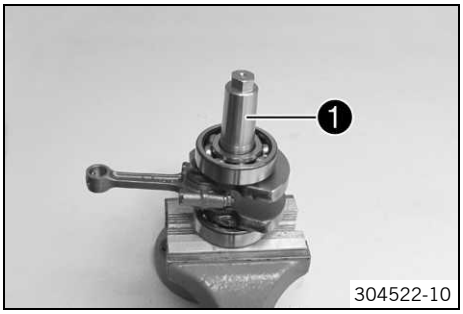
– Press shaft seal ring ❷ all the way in with the open side facing outward.

Mounting sleeve (90129043000) (☛ p. 258)



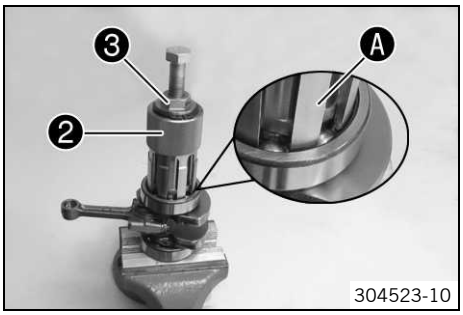
– Mount lock ring ❶.

16.4.4 Removing the main bearing (125 Duke)



– Mount special tool ❶.

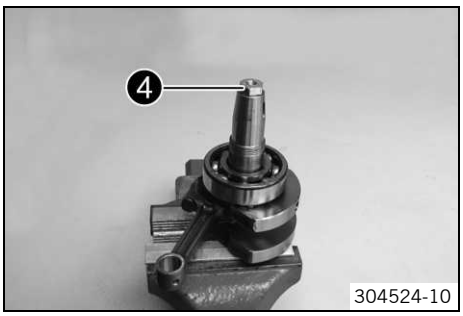
Protecting sleeve (90129019000) (☛ p. 257)



– Mount special tool ❷.

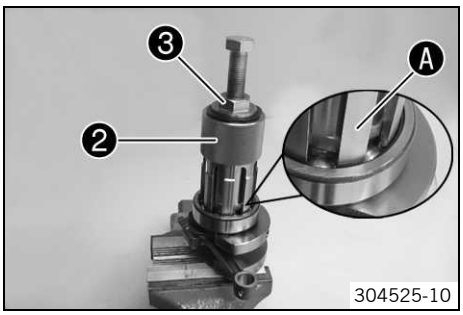
Puller for main bearing (90129018000) (☛ p. 256)

✓ Holding arms Ⓐ engage in the outer bearing race.
– Tension the holding arms by turning nut ❸.
– Pull off the main bearing by screwing in the screw.



– Clamp the crankshaft.
– Mount special tool ❹.

Pressure screw for crankshaft (90129020000) (☛ p. 257)

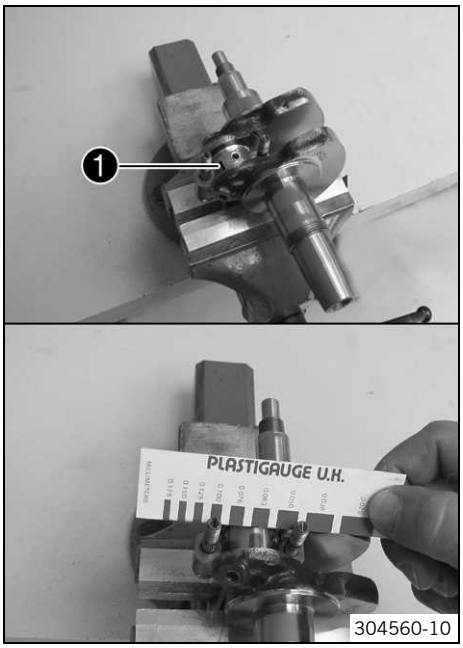


– Mount special tool ❷.

Puller for main bearing (90129018000) (☛ p. 256)

✓ Holding arms Ⓐ engage in the outer bearing race.
– Tension the holding arms by turning nut ❸.
– Pull off the main bearing by screwing in the screw.

16.4.5 Checking the radial play of the lower conrod bearing (125 Duke)



– Clamp the connecting rod with soft jaws.
– Position the bearing shells. Insert the **Plastigauge** clearance gauge ❶ offset by 90° to the bearing face.

Plastigauge measuring strips (60029012000) (☛ p. 253)

– Position the conrod bearing cover. Mount and tighten the nuts.

Guideline

Nut, conrod bearing	M7	24 Nm (17.7 lbf ft)

Info
Do not twist the connecting rod.

– Remove the conrod bearing cover again. Compare the **Plastigauge** clearance gauge with the specifications on the packaging.

Guideline

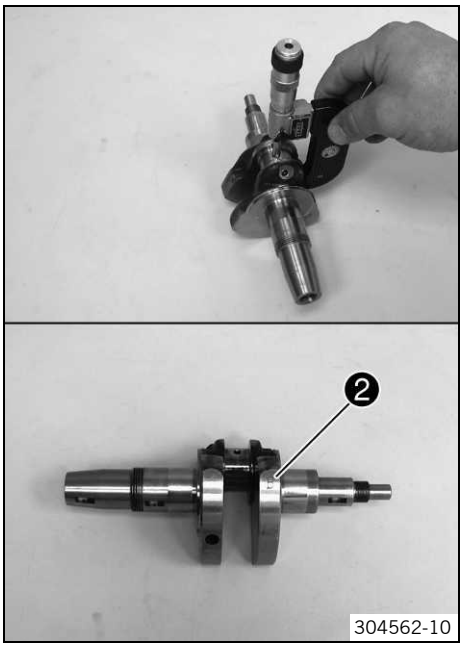
Connecting rod - radial play of lower conrod bearing	
New condition	0.030... 0.060 mm (0.00118... 0.00236 in)
Wear limit	0.080 mm (0.00315 in)

Info
The width of the **Plastigauge** clearance gauge is equivalent to the bearing play.

– Clean the parts.

16.4.6 Changing the conrod bearing (125 Duke)

– Clamp the connecting rod with soft jaws.
– Remove the nuts ❶.
– Remove the conrod bearing cover and crankshaft. Remove the bearing shells.



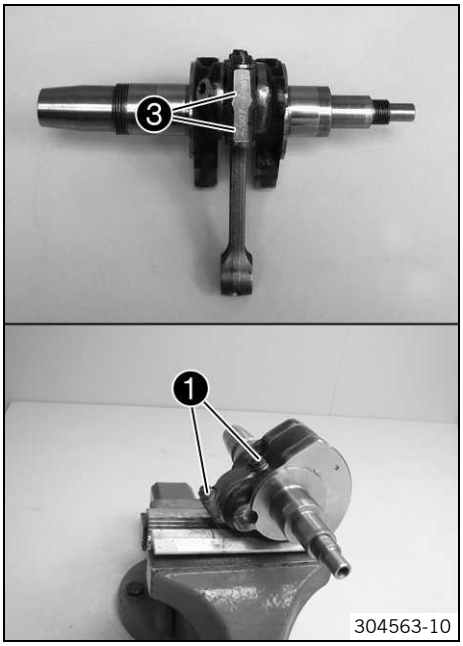
– Measure the crank pin diameter.

Guideline

Crankshaft – diameter, crank pin	
Crankshaft classification **A**	25.990... 25.998 mm (1.02323... 1.02354 in)
Crankshaft classification **B**	25.999... 26.006 mm (1.02358... 1.02386 in)

Info
The crankshaft classification is indicated by marking ❷.

– Check the radial play of the lower conrod bearing. (☛ p. 121)

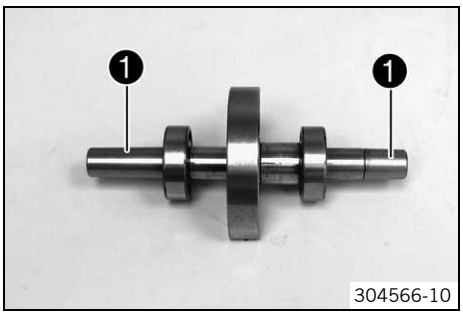


– Oil the bearing shells.
– Position the conrod bearing cover according to marking ❸.
– Mount and tighten nuts ❶.

Guideline

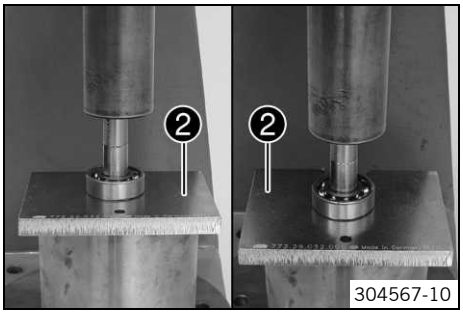
Nut, conrod bearing	M7	24 Nm (17.7 lbf ft)

16.4.7 Changing the balancer shaft bearing (125 Duke)



– Mount special tools ❶.

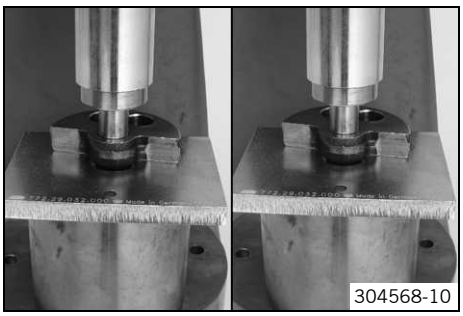
Disassembly tool, balancer shaft bearing (90129056000) (☛ p. 259)



– Position the balancer shaft with special tool ❷ in the press.

Separator plate (77229032000) (☛ p. 255)

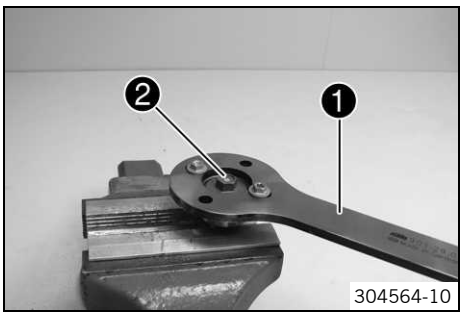
– Press out the bearing.



– Press on the balancer shaft bearing with a suitable tool.
– Remove the special tools.

Disassembly tool, balancer shaft bearing (90129056000) (☛ p. 259)

16.4.8 Changing the camshaft bearing (125 Duke)



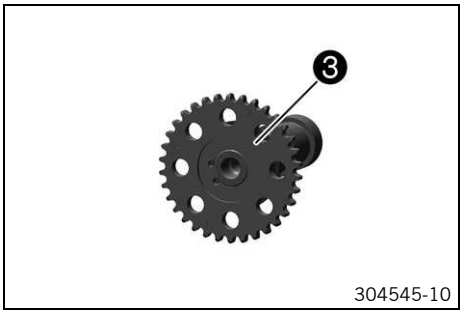
– Clamp the camshaft in a vise using soft jaws.

Info
Protect the outer cam of the camshaft against damage with adhesive tape.

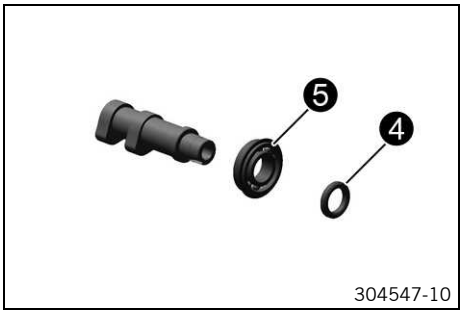
– Mount special tool ❶.

Holding spanner (90129012000) (☛ p. 256)

– Remove screw ❷.



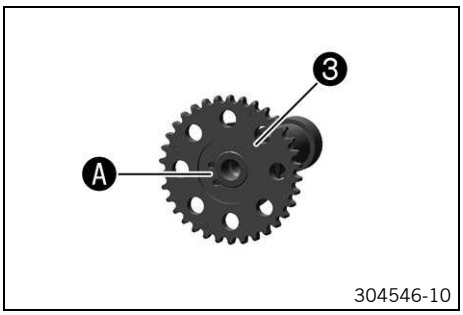
– Remove camshaft gear ❸.



– Remove the spacer ❹.
– Take off bearing ❺.
– Oil the new bearing and slide it onto the camshaft.

Lubricated with engine oil

– Mount the spacer.



– Mount camshaft gear ❸.
✓ Holding lug Ⓐ engages in the recess of the camshaft.
– Mount and tighten screw ❷.
Guideline

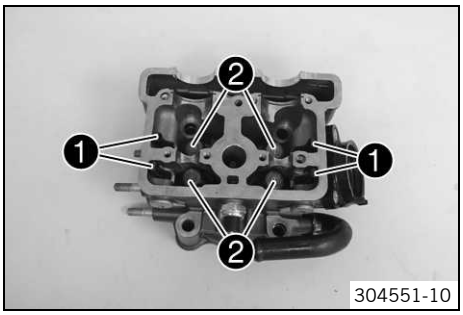
Screw, camshaft drive sprocket	M8	20 Nm (14.8 lbf ft)	**Loctite® 243™**

– Remove the special tool.

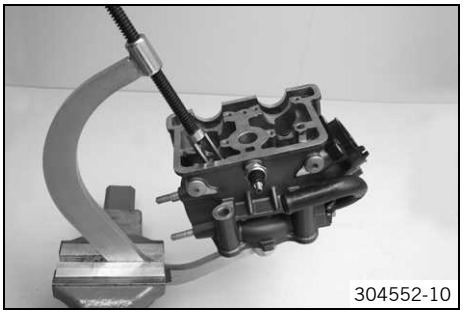
Holding spanner (90129012000) (☛ p. 256)

– Repeat these steps on the second camshaft.

16.4.9 Work on the cylinder head (125 Duke)

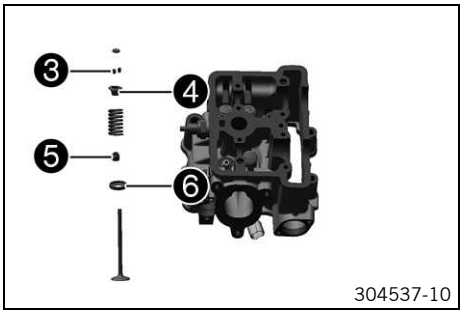


– Fold cam lever ❶ up.
– Take the shims ❷ out of the valve spring retainers and lay them to one side according to their normal built-in position.



– Pretension the valve spring using the special tool.

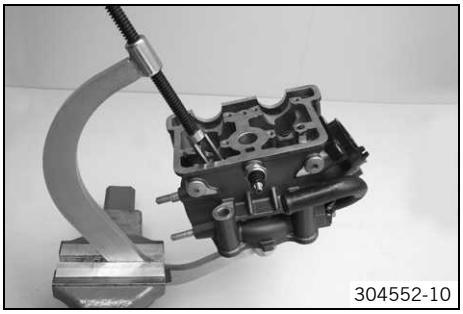
Valve spring compressor (59029019000) (☛ p. 252)
Insert for valve spring lever (90129060000) (☛ p. 259)



– Remove valve keys ❸ and relax the valve spring.
– Remove valve spring retainer ❹.
– Remove valve spring, valve stem seal ❺, and valve spring seat ❻.

Info
Place the valve into a box according to the installation position and label the box.

– Check the cylinder head. (☛ p. 125)
– Mount valve spring seat ❻ and the new valve stem seal ❺.
– Mount the valve spring.
– Mount valve spring retainer ❹.


304552-10

– Pretension the valve spring using the special tool.

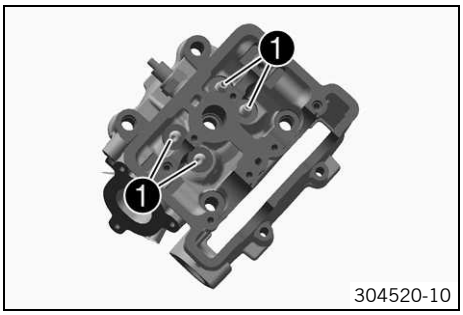
Valve spring compressor (59029019000) (☛ p. 252)
Insert for valve spring lever (90129060000) (☛ p. 259)

– Mount valve keys. Relax the valve spring.

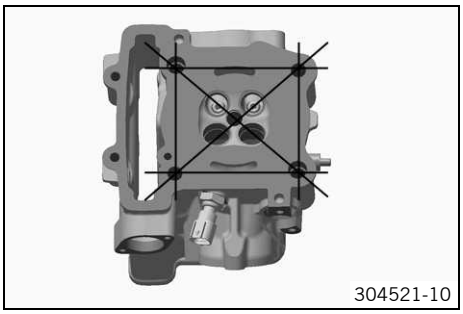
Info
When mounting the valve keys, check that they are seated correctly; preferably, fix the valve keys to the valve with a little grease.

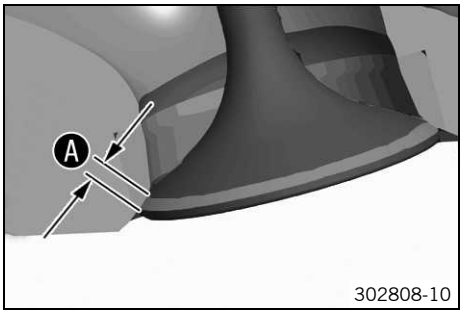
– Place shims into the valve spring retainers according to the installation position.

16.4.10 Checking the cylinder head (125 Duke)



304520-10


304521-10



302808-10

– Check valve guides ❶ with the special tool.

Limit plug gauge (90129026000) (☛ p. 257)

» If the special tool is easy to insert into the valve guide:
– Change the valve guides and valves.

– Check the sealing area of the spark plug thread and the valve seats for damage and tearing.

» If there is wear or tearing:
– Change the cylinder head.

– Check the sealing area of the cylinder for distortion using a straight edge and the special tool.

Feeler gauge (59029041100) (☛ p. 253)

Cylinder/cylinder head - distortion of sealing area	≤ 0.10 mm (≤ 0.0039 in)

» If the measured value does not equal the specified value:
– Change the cylinder head.

– Check sealing seat Ⓐ of the valves.

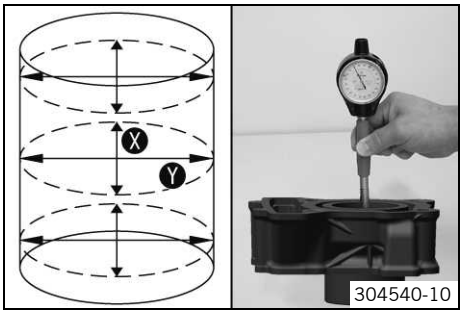
Valve - sealing seat width	
Intake	0.90... 1.10 mm (0.0354... 0.0433 in)

Valve - sealing seat width	
Exhaust	0.90... 1.10 mm (0.0354... 0.0433 in)

» If the measured value does not equal the specified value:
– Machine the valve seat.

– Blow compressed air through all oil holes and check that they are clear.

16.4.11 Checking/measuring the cylinder (125 Duke)



304540-10

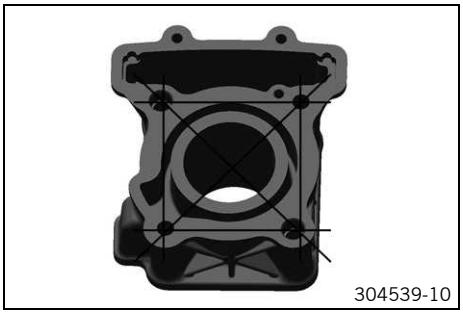
– Check the cylinder bearing surface for damage.

» If the cylinder bearing surface is damaged:
– Change the cylinder and piston.

– Measure the cylinder diameter at several places in the Ⓧ and Ⓨ axes using a micrometer to check for oval wear.

Guideline

Cylinder - bore diameter	58.006... 58.013 mm (2.2837... 2.28397 in)


304539-10

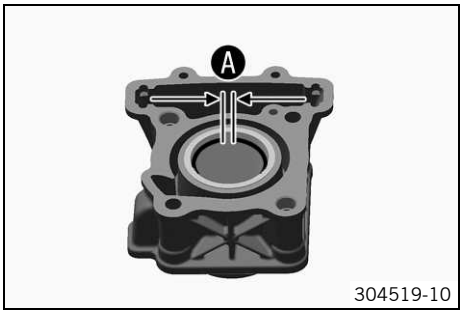
– Check the sealing area of the cylinder head for distortion using a straight edge and the special tool.

Feeler gauge (59029041100) (☛ p. 253)

Cylinder/cylinder head - distortion of sealing area	≤ 0.10 mm (≤ 0.0039 in)

» If the measured value does not equal the specified value:
– Change the cylinder and piston.

16.4.12 Checking the piston ring end gap (125 Duke)



304519-10

– Remove the piston ring from the piston.
– Place the piston ring in the cylinder and align it with the piston.
Guideline

Under the upper edge of the cylinder	20 mm (0.79 in)

– Measure end gap Ⓐ with the special tool.
Guideline

Piston ring end gap	
Compression ring	≤ 0.40 mm (≤ 0.0157 in)
Oil scraper ring	≤ 0.80 mm (≤ 0.0315 in)

Feeler gauge (59029041100) (☛ p. 253)

» If the end gap is more than the specified value:
– Check/measure the cylinder. (☛ p. 125)
» If the cylinder wear is within the tolerance range:
– Change the piston ring.
– Mount the piston ring with the marking facing toward the piston head.

16.4.13 Checking/measuring the piston (125 Duke)


304550-10

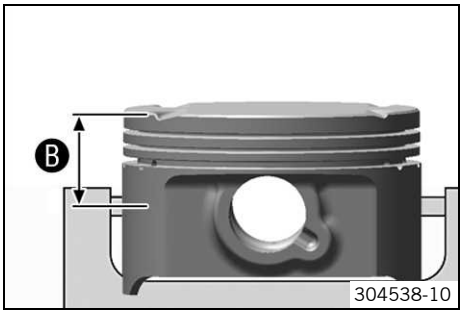
– Check the piston bearing surface for damage.
» If the piston bearing surface is damaged:
– Change the piston and, if necessary, the cylinder.
– Check that the piston rings can move easily in the piston ring grooves.
» If the piston ring is stiff:
– Clean the piston ring groove.

Tip
Use an old piston ring to clean the piston ring groove.

– Check the piston rings for damage.
» If the piston ring is damaged:
– Change the piston ring.

Info
Mount the piston ring with the marking facing upward.

– Check the piston pin for discoloration or signs of wear.
» If the piston pin has strong discoloration/signs of wear:
– Change the piston pin.
– Insert the piston pin into the connecting rod and check the bearing for play.
» If the piston pin bearing has too much play:
– Change the connecting rod and the piston pin.

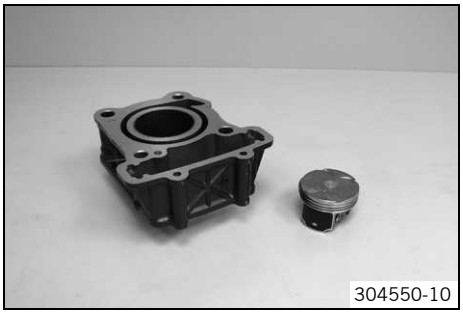


– Measure the piston at the piston skirt, at right angles to the piston pin, at a distance ❽.

Guideline

Distance ❽	9 mm (0.35 in)
Piston - diameter	57.963... 57.975 mm (2.282... 2.28248 in)

16.4.14 Checking the piston/cylinder mounting clearance (125 Duke)

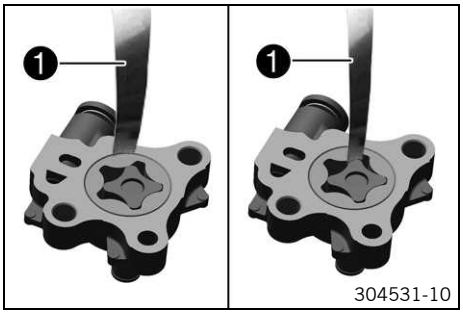


– Check/measure the cylinder. (☛ p. 125)
– Check/measure the piston. (☛ p. 126)
– The piston/cylinder mounting clearance is the result of the cylinder bore diameter minus the piston diameter.

Guideline

Piston/cylinder - mounting clearance	
New condition	0.031... 0.050 mm (0.00122... 0.00197 in)
Wear limit	0.08 mm (0.0031 in)

16.4.15 Checking the oil pump (125 Duke)



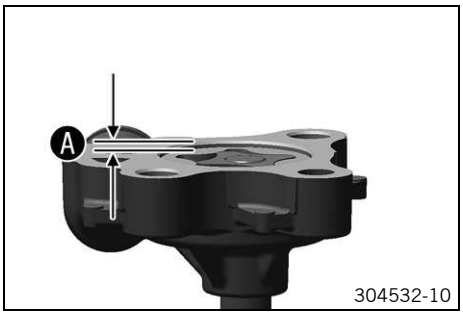
– With special tool ❶, check the play between the internal rotor and external rotor and between the external rotor and the oil pump housing.

Feeler gauge (59029041100) (☛ p. 253)

Oil pump	
Play between external rotor and internal rotor	0.10... 0.20 mm (0.0039... 0.0079 in)

Oil pump	
Play between external rotor and oil pump housing	0.09... 0.20 mm (0.0035... 0.0079 in)

» If the play exceeds the specification:
  – Change the oil pump and, if necessary, the oil pump housing.

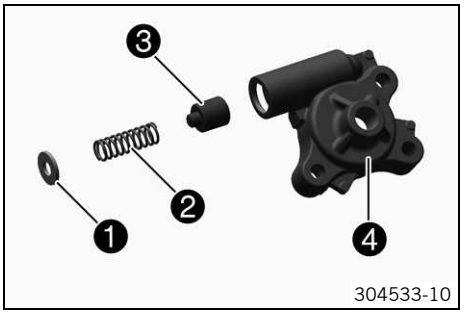


– Check axial play ❹ of the oil pump.

Oil pump	
Axial play	0.10... 0.25 mm (0.0039... 0.0098 in)

» If the play exceeds the specification:
  – Change the oil pump and, if necessary, the oil pump housing.

16.4.16 Checking the oil pressure regulator valve (125 Duke)



– Remove washer ❶.
– Remove spring ❷.
– Measure the length of spring ❷.

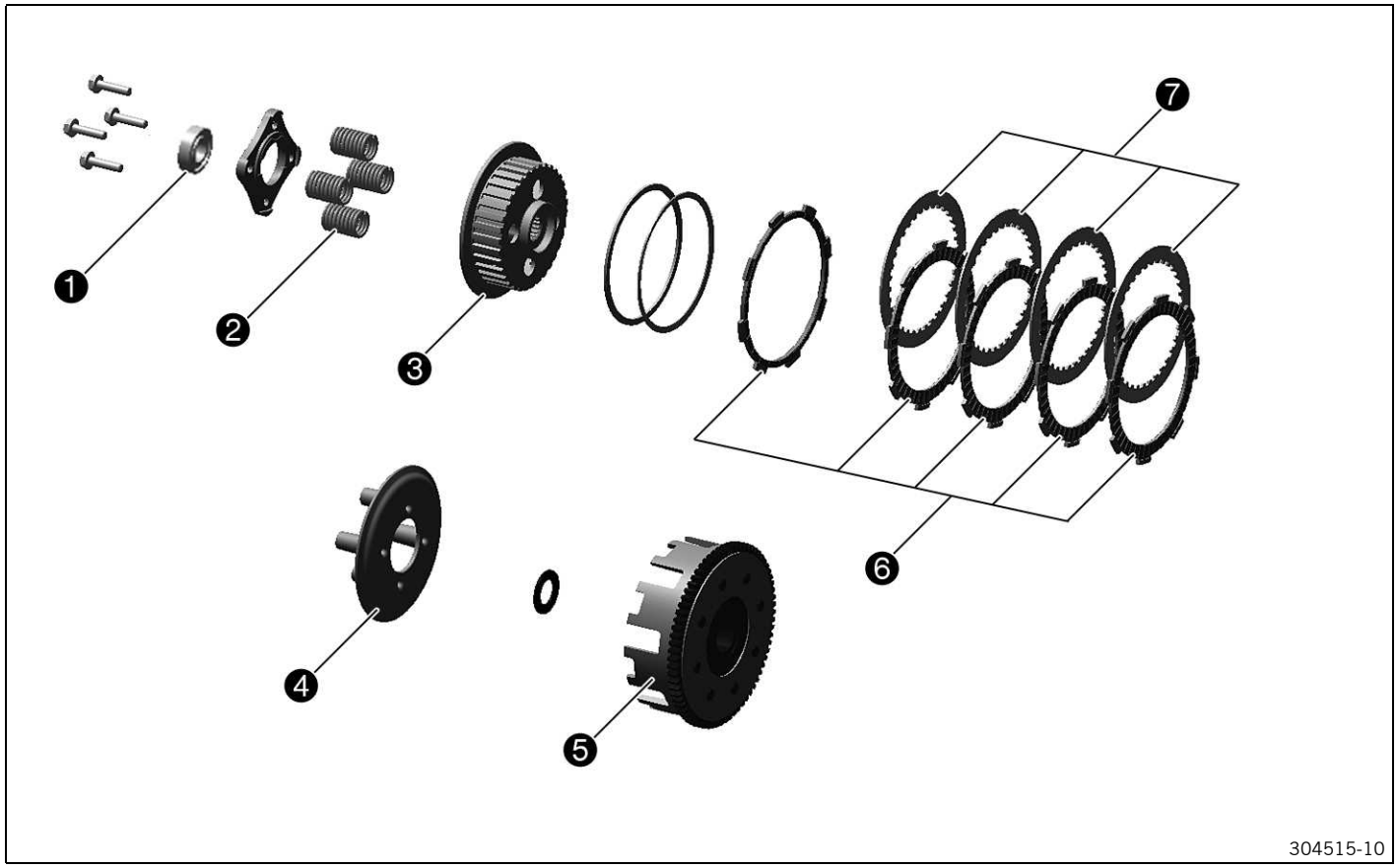
Oil pressure regulator valve - minimum spring length	26.00 mm (1.0236 in)

» If the measured length is less than the specification:
  – Change the spring.

– Check control piston ❸ for damage and wear.

» If there is damage or wear:
– Change the control piston.
– Check the control piston bore in the oil pump housing ❹ for damage and wear.
» If there is damage or wear:
– Change the oil pump housing.
– Thoroughly oil control piston ❸ and spring ❷ and mount.
– Mount washer ❶.

16.4.17 Checking the clutch (125 Duke)



– Check bearing ❶ for damage and wear.
» If there is damage or wear:
– Change the bearing.
– Check the length of clutch springs ❷.

Clutch spring - length	≥ 37 mm (≥ 1.46 in)

» If the clutch spring length is less than the specified value:
– Change all clutch springs.
– Check inner clutch hub ❸ for damage and wear.
» If there is damage or wear:
– Change the inner clutch hub.
– Check clutch pressure cap ❹ for damage and wear.
» If there is damage or wear:
– Change the clutch pressure cap.
– Check the contact surfaces of the clutch facing discs in the clutch basket ❺ for wear.

Contact surface, clutch facing discs in clutch basket	≤ 0.5 mm (≤ 0.02 in)

» If the contact surface is very worn:
– Change the clutch lining discs and the clutch basket.
– Check clutch facing discs ❻ for discoloration and scoring.

» If there is discoloration or scoring:
– Change all clutch lining discs.

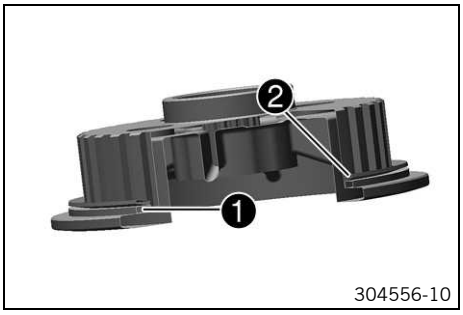
– Check the thickness of clutch facing discs ❻.

Clutch facing discs – thickness of total package	≥ 21.30 mm (≥ 0.8386 in)

» If the clutch facing discs do not meet specifications:
– Change all clutch lining discs.

– Check intermediate disc ❼ for damage and wear.
» If the intermediate discs are not flat or have punctiform outbreaks:
– Change all intermediate discs.

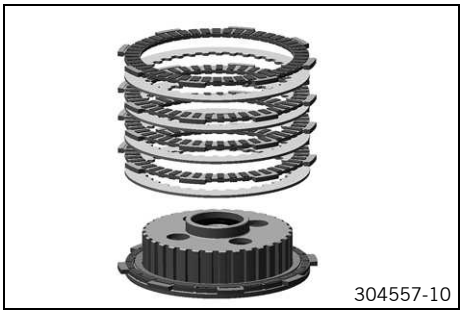
16.4.18 Preassembling the clutch (125 Duke)



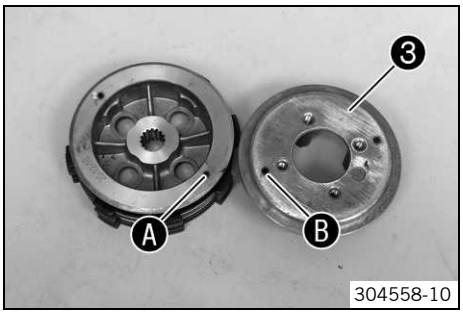
304556-10

– Lubricate the clutch facing discs thoroughly.
– Push support ring ❶ and pretension ring ❷ onto the inner clutch hub.

Info
The pretension ring must be installed so that it is flush with the inner edge on the support ring.

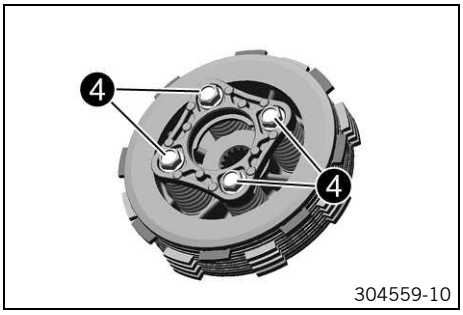

304557-10

– Position the clutch facing disc with the notch for the pretension ring on the inner clutch hub face down.
– Beginning with a clutch disc, position all further clutch facing discs and clutch discs alternately.



304558-10

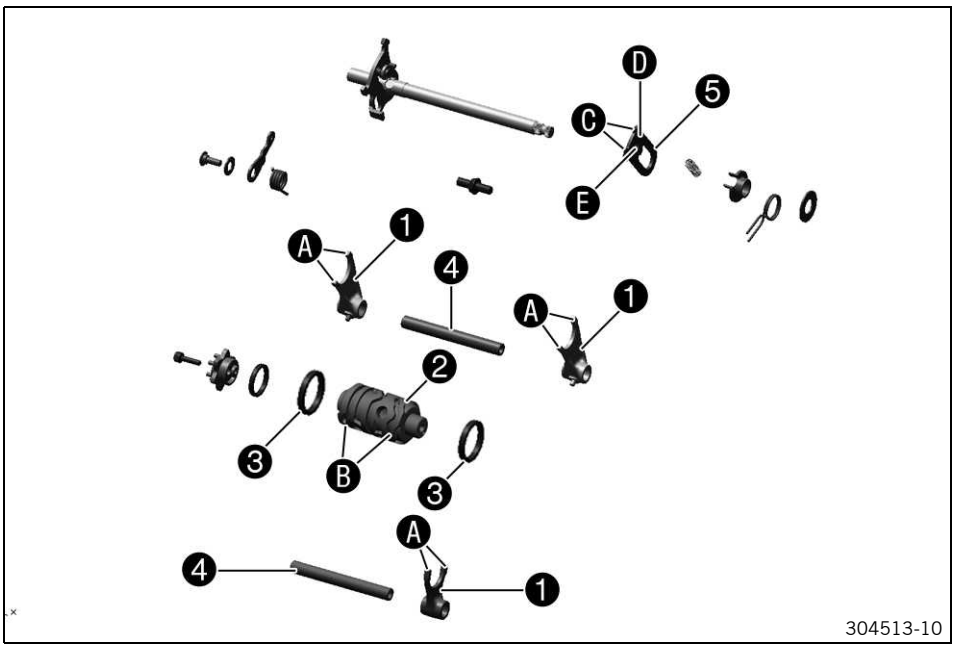
– Mount clutch pressure cap ❸.
✓ Marking Ⓐ and Ⓑ are aligned.



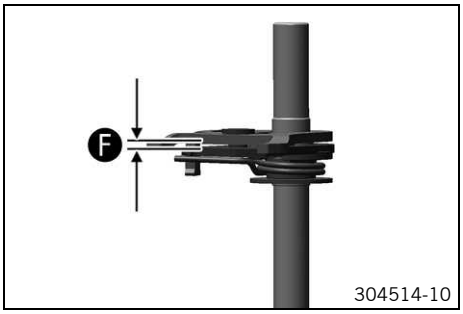
304559-10

– Position the clutch springs.
– Position the release bearing holder and mount screws ❹ but do not tighten yet.

16.4.19 Checking the shift mechanism (125 Duke)



– Check the shift forks ❶ (see Ⓐ) for damage and wear (visual check).
  » If there is damage or wear:
    – Change the shift fork and gear wheel pair.
– Check shift grooves Ⓑ of shift drum ❷ for wear.
  » If the shift groove is worn:
    – Change the shift roller.
– Check the seat of the shift drum in bearings ❸.
  » If the shift roller is not seated correctly:
    – Replace the shift drum and/or the bearing.
– Check bearing ❸ for stiffness and wear.
  » If the bearings do not move freely or are worn:
    – Change the bearing.
– Check shift rail ❹ on a flat surface for run-out.
  » If there is run-out:
    – Change the shift rail.
– Check the shift rail for scoring, signs of corrosion and stiffness in the shift forks.
  » If there is scoring or corrosion, or if the shift fork is stiff:
    – Change the shift rail.
– Check sliding plate ❺ in contact areas Ⓒ for wear.
  » If the sliding plate is worn:
    – Change the shift shaft.
– Check return surface Ⓓ on the sliding plate for wear.
  » If deep notches are present:
    – Change the shift shaft.
– Check guide pin Ⓔ for looseness and wear.
  » If the guide pin is loose and/or worn:
    – Change the shift shaft.

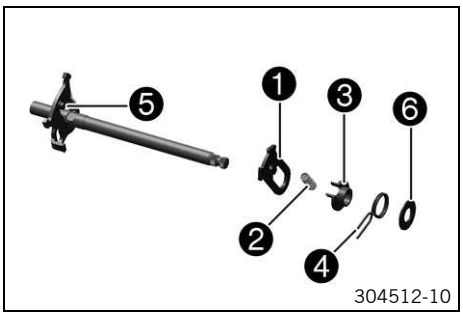


– Preassemble the shift shaft. (☛ p. 131)
– Check the play ❶ between the sliding plate and the shift quadrant.

Shift shaft – play in sliding plate/shift quadrant	0.15... 0.45 mm (0.0059... 0.0177 in)

» If the measured value does not equal the specified value:
– Change the shift shaft.

16.4.20 Preassembling the shift shaft (125 Duke)

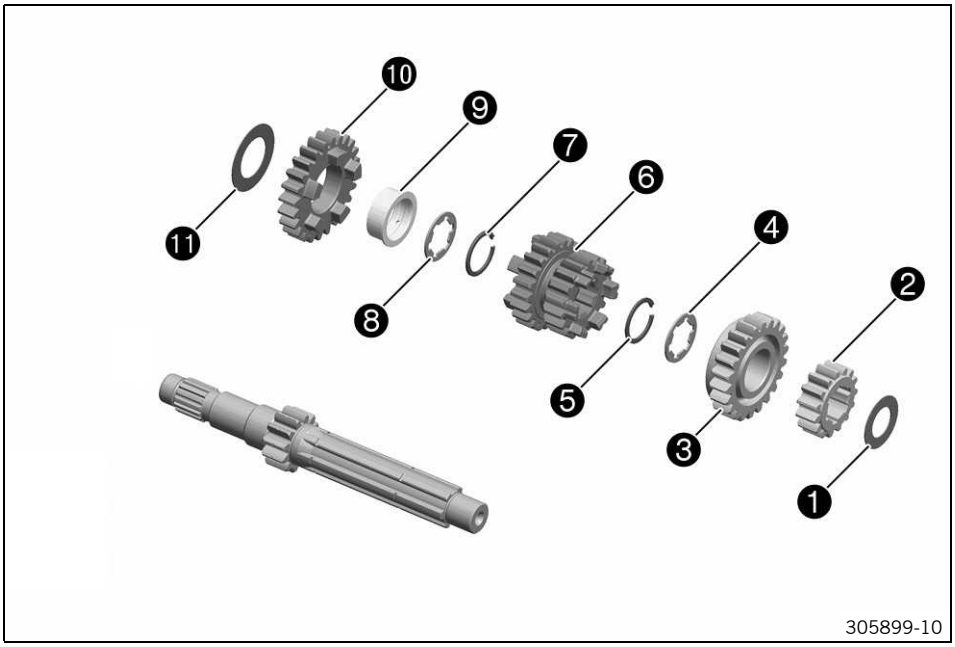


– Fix the short end of the shift shaft in a vise.
Guideline

Use soft jaws.

– Mount sliding plate ❶ with the guide pin facing down and attach the guide pin to the shift quadrant.
– Mount preload spring ❷.
– Push on spring guide ❸, push return spring ❹ over the spring guide with the offset end facing upward and lift the offset end over abutment bolt ❺.
– Mount washer ❻.

16.4.21 Disassembling the main shaft (125 Duke)

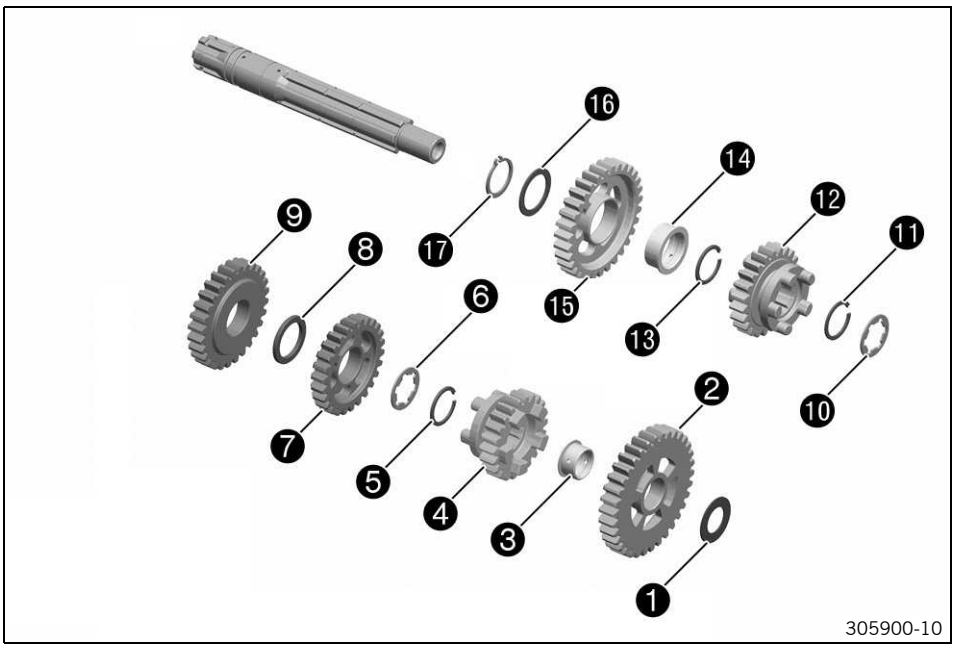


– Fix the main shaft in the vise with the geared end facing downward.
Guideline

Use soft jaws.

– Remove stop disk ❶ and 2nd-gear fixed gear ❷.
– Remove the 5th-gear idler gear ❸.
– Remove stop disk ❹.
– Remove lock ring ❺.
– Remove 3rd/4th-gear sliding gear ❻.
– Remove lock ring ❼.
– Remove stop disk ❽.
– Remove collar bushing ❾.
– Remove 6th-gear idler gear ❿.
– Remove stop disk ⓫.

16.4.22 Dismantling the countershaft (125 Duke)



– Fix the countershaft in the vise with the geared end facing downward.

  Guideline

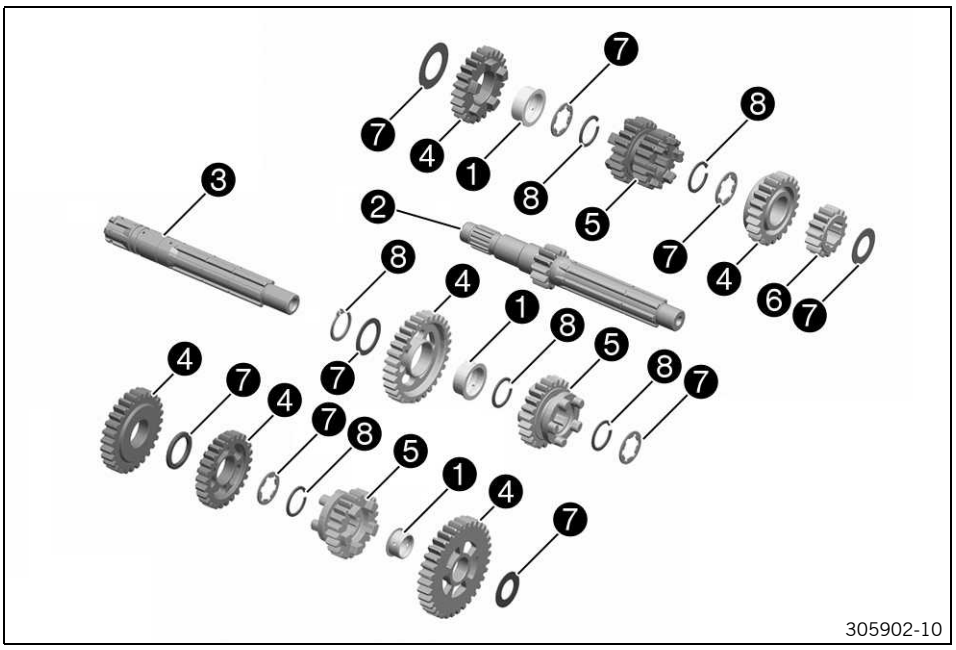
Use soft jaws

– Remove stop disk ❶ and the 1st-gear idler gear ❷.
– Remove collar bushing ❸.
– Remove the 6th-gear sliding gear ❹.
– Remove lock ring ❺.
– Remove stop disk ❻.
– Remove the 3rd-gear idler gear ❼.
– Remove washer ❽.
– Remove the 4th-gear idler gear ❾.
– Remove stop disk ❿ and lock ring ⓫.
– Remove 5th-gear sliding gear ⓬.
– Remove lock ring ⓭.
– Remove collar bushing ⓮.
– Remove the 2nd-gear idler gear ⓯.
– Remove stop disk ⓰ and lock ring ⓱.

16.4.23 Checking the transmission (125 Duke)

Condition

The transmission has been disassembled.

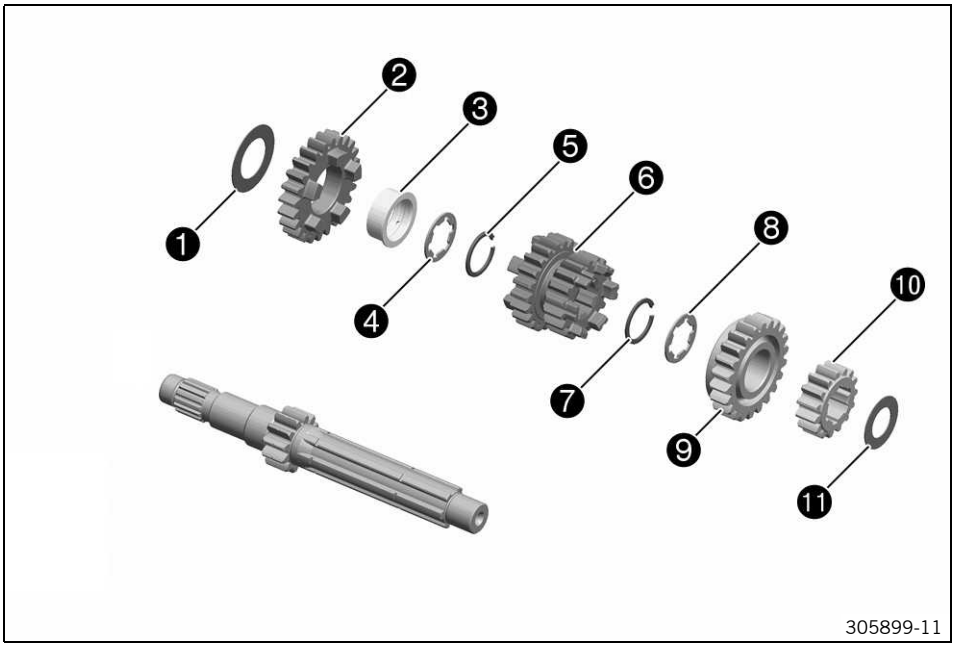


– Check collar bushings ❶ for damage and wear.
  » If there is damage or wear:
    – Change the collar bushings.
– Check the pivot points of main shaft ❷ and countershaft ❸ for damage and wear.
  » If there is damage or wear:
    – Change the main shaft and/or countershaft.
– Check the tooth profiles of main shaft ❷ and countershaft ❸ for damage and wear.
  » If there is damage or wear:
    – Change the main shaft and/or countershaft.
– Check the pivot points of idler gears ❹ for damage and wear.
  » If there is damage or wear:
    – Change the gear wheel pair.
– Check the shift dogs of idler gears ❹ and sliding gears ❺ for damage and wear.
  » If there is damage or wear:
    – Change the gear wheel pair.
– Check the tooth faces of idler gears ❹, sliding gears ❺, and fixed gear ❻ for damage and wear.
  » If there is damage or wear:
    – Change the gear wheel pair.
– Check the tooth profiles of sliding gears ❺ for damage and wear.
  » If there is damage or wear:
    – Change the gear wheel pair.
– Check sliding gears ❺ for smooth operation in the profile of main shaft ❷.
  » If the sliding gear does not move easily:
    – Change the sliding gear or the main shaft.
– Check sliding gears ❺ for smooth operation in the profile of countershaft ❸.
  » If the sliding gear does not move easily:
    – Change the sliding gear or the countershaft.
– Check stop disks ❼ for damage and wear.
  » If there is damage or wear:
    – Change the stop disk.
– Use new lock rings ❽ with every repair.

16.4.24 Assembling the main shaft (125 Duke)

Info
Use new lock rings in every repair job.

Preparatory work
- Oil all parts carefully before assembling.
- Check the transmission. (☛ p. 132)



Main work
- Fix the main shaft in the vise with the geared end facing downward.

  Guideline

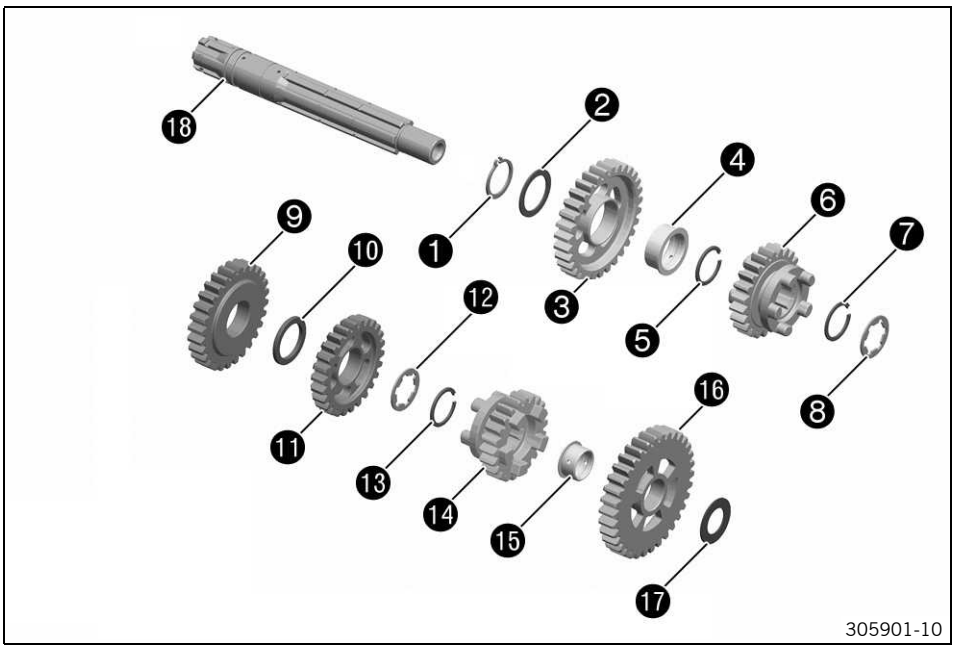
Use soft jaws

- Mount stop disk ❶.
- Mount 6th-gear idler gear ❷.
- Mount collar bushing ❸.
- Mount stop disk ❹ and lock ring ❺.
- Mount 3rd/4th-gear sliding gear ❻ with the small gear wheel facing up.
- Mount lock ring ❼.
- Mount stop disk ❽.
- Mount 5th-gear idler gear ❾.
- Mount 2nd-gear fixed gear ❿ and stop disk ⓫.
- Finally, check all gear wheels for smooth operation.

16.4.25 Assembling the countershaft (125 Duke)

Info
Use new lock rings in every repair job.

Preparatory work
- Oil all parts carefully before assembling.
- Check the transmission. (☛ p. 132)



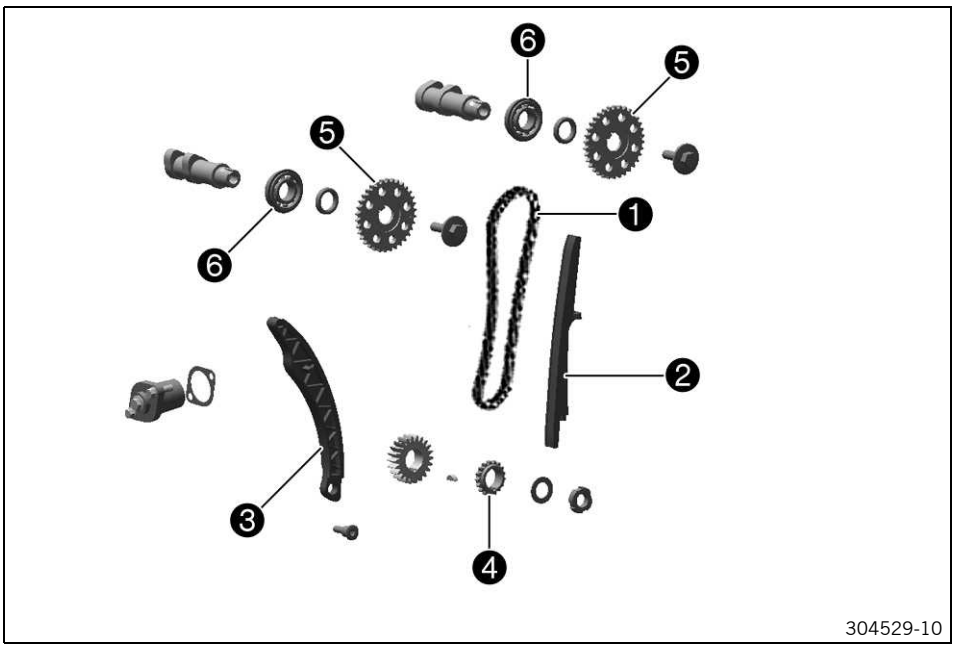
Main work

– Fix the countershaft in the vise with the geared end facing downward.
  Guideline

Use soft jaws

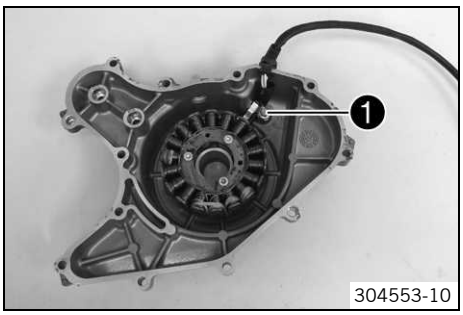
– Install lock ring ❶ and stop disk ❷.
– Mount 2nd-gear idler gear ❸.
– Mount collar bushing ❹.
– Mount lock ring ❺.
– Mount the 5th-gear sliding gear ❻ with the shift groove facing upward.
– Install lock ring ❼ and stop disk ❽.
– Mount 4th-gear idler gear ❾.
– Mount washer ❿.
– Mount 3rd-gear idler gear ⓫.
– Mount stop disk ⓬ and lock ring ⓭.
– Mount 6th-gear sliding gear ⓮ with the shift groove facing downward.
– Mount collar bushing ⓯.
– Mount 1st-gear idler gear ⓰.
– Mount stop disk ⓱.
– Replace O-ring ⓲ of the countershaft.
– Finally, check all gear wheels for smooth operation.

16.4.26 Checking the timing assembly (125 Duke)

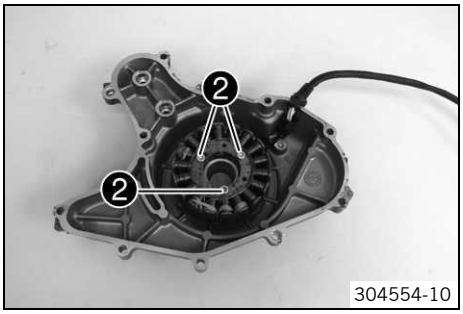


– Check timing chain ❶ for damage and wear.
  » If there is damage or wear:
    – Change the timing chain.
– Let the timing chain hang down freely. Check that the timing chain links move easily.
  » If the chain links no longer straighten out:
    – Change the timing chain.
– Check timing chain guide rail ❷ for damage and wear.
  » If there is damage or wear:
    – Change the timing chain guide rail.
– Check timing chain tensioning rail ❸ for damage and wear.
  » If there is damage or wear:
    – Change the timing chain tensioning rail.
– Check timing chain sprocket ❹ for damage and wear.
  » If there is damage or wear:
    – Change the timing chain sprocket.
– Check camshaft gears ❺ for damage and wear.
  » If there is damage or wear:
    – Change the camshaft gears.
– Check camshaft bearing ❻ for damage and wear.
  » If there is damage or wear:
    – Change the camshaft bearing.

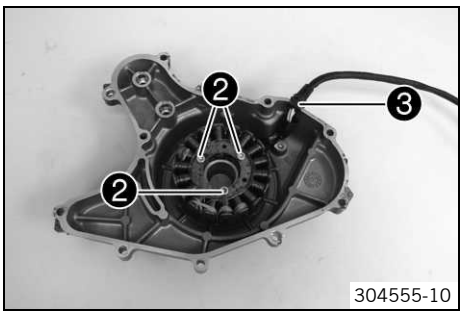
16.4.27 Changing the stator (125 Duke)



– Remove screw ❶.
– Remove the cable retainer.



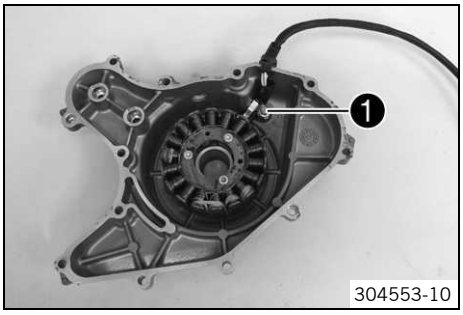
– Remove screws ❷.
– Remove the stator.



– Position the new stator.
– Mount and tighten screws ❷.
Guideline

Screw, stator	M5	8 Nm (5.9 lbf ft)	**Loctite® 243™**

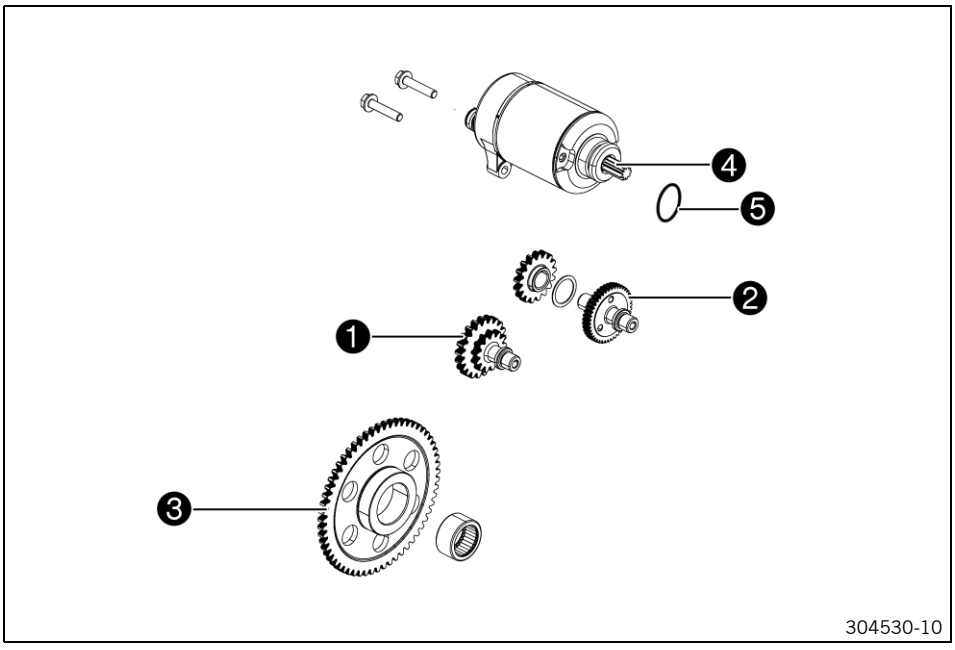
– Position cable guide ❸ in the alternator cover.



– Position the cable retainer.
– Mount and tighten screw ❶.
Guideline

Screw, retaining bracket, stator cable	M5	8 Nm (5.9 lbf ft)	**Loctite® 243™**

16.4.28 Checking the electric starter drive (125 Duke)



– Check the teeth and seating of the starter idler gear ❶ for damage and wear.
  » If there is damage or wear:
    – Change the starter idler gear.
– Check the teeth and seating of the torque limiter ❷ for damage and wear.
  » If there is damage or wear:
    – Change the torque limiter.
– Check the toothing and bearing of freewheel gear ❸ for damage and wear.

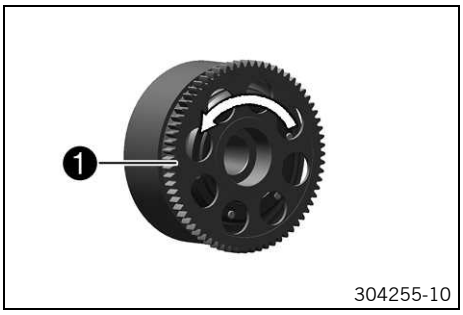
» If there is damage or wear:
– Replace the freewheel gear and/or the bearing.

– Check toothing ❹ of the starter motor for damage and wear.
» If there is damage or wear:
– Replace the starter motor.

– Replace the O-ring ❺ of the starter motor.

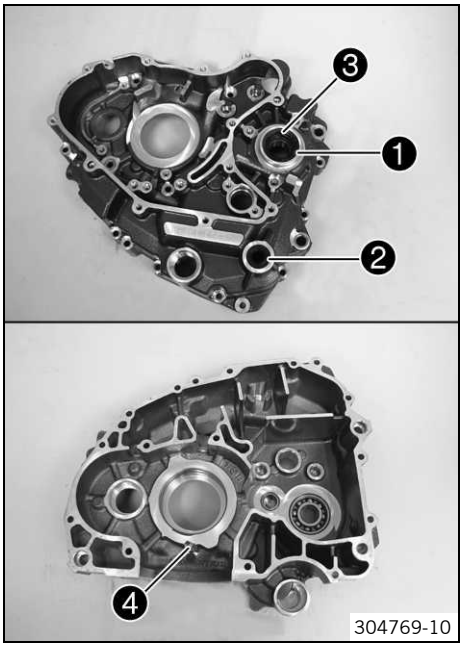
– Clamp the minus (negative) cable of a 12 Volt power supply to the starter motor housing. Briefly connect the positive cable of the power supply to the starter motor connection.
» If the starter motor does not turn when you close the power circuit:
– Replace the starter motor.

16.4.29 Checking the freewheel (125 Duke)



– Insert freewheel gear ❶ into the freewheel hub by turning the freewheel gear clockwise; do not wedge!
– Check the locking action of the freewheel gear.
» If the freewheel gear does not turn clockwise or if it does not lock counterclockwise:
– Replace the freewheel.

16.4.30 Work on the left section of the engine case (200 Duke)



– Remove all dowels.
– Remove lock ring ❶.
– Remove shaft seal ring ❷ of the shift shaft and ❸ of the countershaft.
– Remove oil nozzle ❹.
– Remove any sealing mass remnants and clean the engine case section thoroughly.
– Warm the engine case section in an oven.

Guideline

150 °C (302 °F)

– Knock the engine case section against a level wooden plate. This will cause the bearings to drop out of the bearing seats.

Info
Any bearings that remain in the engine case section must be removed using a suitable tool.

– Insert the new cold bearings into the bearing seats of the hot engine case section and, if necessary, use a suitable press drift to push the bearing all the way to the stop or so that it is flush.

Info
When pressing the bearing in, ensure that the engine case section is level to prevent damage.
Only press the bearings in via the outer ring; otherwise, the bearings will be damaged when they are pressed in.

– After the engine case section has cooled, check that the bearings are firmly seated.

Info
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 renewed.

– Mount the dowels.
– Press in shaft seal ring ❷ of the shift shaft with the open side facing inward so that it is flush.

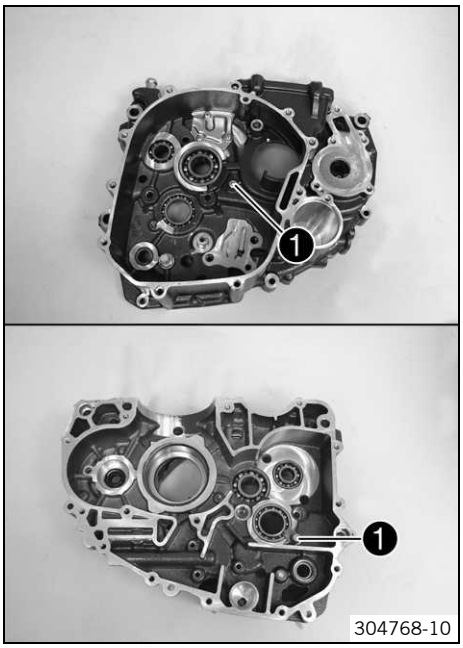
– Press in shaft seal ring ❸ of the countershaft with the open side facing inward so that it is flush.
– Mount lock ring ❶.
– Mount and tighten oil nozzle ❹.

Guideline

Oil nozzle	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**

– Blow out the oil channel with compressed air and check that it is clear.

16.4.31 Work on the right section of the engine case (200 Duke)



– Remove all dowels.
– Remove screws ❶. Remove the bearing retainers.
– Remove any sealing mass remnants and clean the engine case section thoroughly.
– Warm the engine case section in an oven.

Guideline

150 °C (302 °F)

– Knock the engine case section against a level wooden plate. This will cause the bearings to drop out of the bearing seats.

Info
Any bearings that remain in the engine case section must be removed using a suitable tool.

– Insert the new cold bearings into the bearing seats of the hot engine case section and, if necessary, use a suitable press drift to push the bearing all the way to the stop or so that it is flush.

Info
When pressing the bearing in, ensure that the engine case section is level to prevent damage.
Only press the bearings in via the outer ring; otherwise, the bearings will be damaged when they are pressed in.

– After the engine case section has cooled, check that the bearings are firmly seated.

Info
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 renewed.

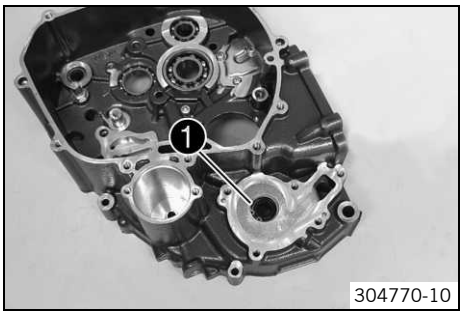
– Mount the dowels.
– Position all bearing locks.
– Mount and tighten screws ❶.

Guideline

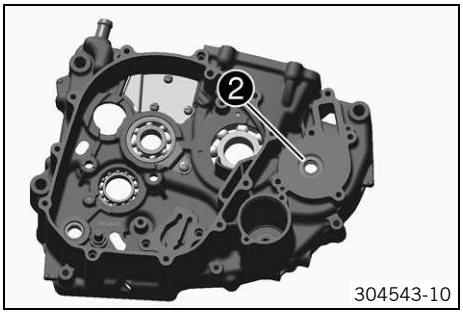
Screw, bearing retainer	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**

– Blow compressed air through the oil channel and check that it is clear.

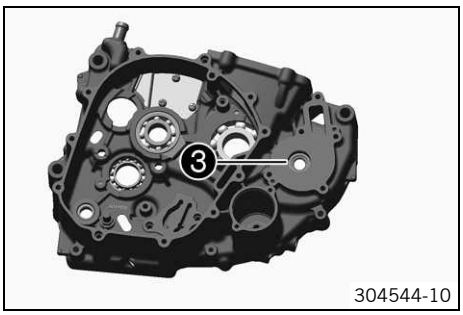
16.4.32 Changing the shaft seal ring of the water pump (200 Duke)



– Remove lock ring ❶.

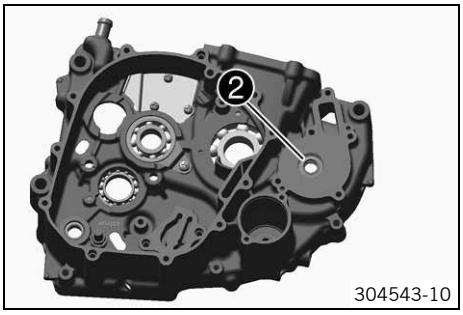


– Remove shaft seal ring ❷.



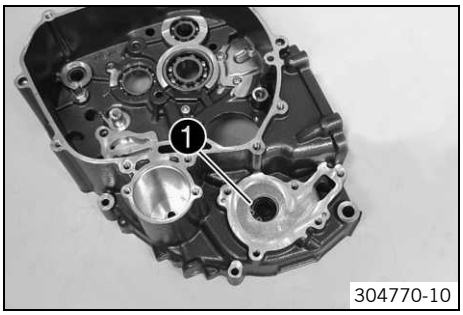
– Remove shaft seal ring ❸.
– Press the new shaft seal ring ❸ in all the way with the open side facing inward.

Mounting sleeve (90129043000) (☛ p. 258)



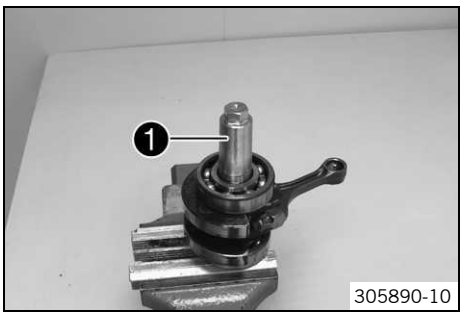
– Press shaft seal ring ❷ all the way in with the open side facing outward.

Mounting sleeve (90129043000) (☛ p. 258)



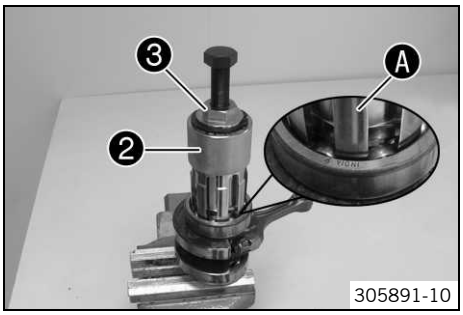
– Mount lock ring ❶.

16.4.33 Removing the main bearing (200 Duke)



– Mount special tool ❶.

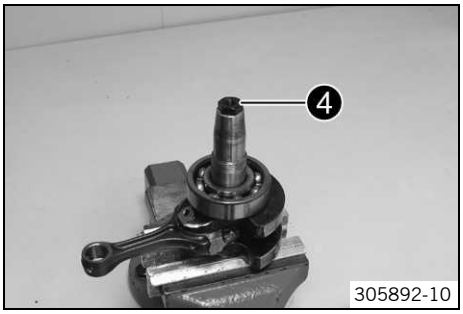
Protecting sleeve (90129019000) (☛ p. 257)



– Mount special tool ❷.

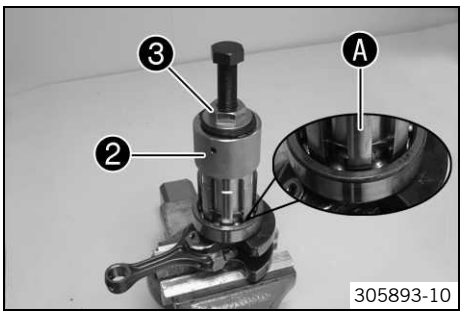
Puller for main bearing (90129018000) (☛ p. 256)

✓ Holding arms Ⓐ engage in the outer bearing race.
– Tension the holding arms by turning nut ❸.
– Pull off the main bearing by screwing in the screw.



– Clamp the crankshaft.
– Mount special tool ❹.

Pressure screw for crankshaft (90129020000) (☛ p. 257)

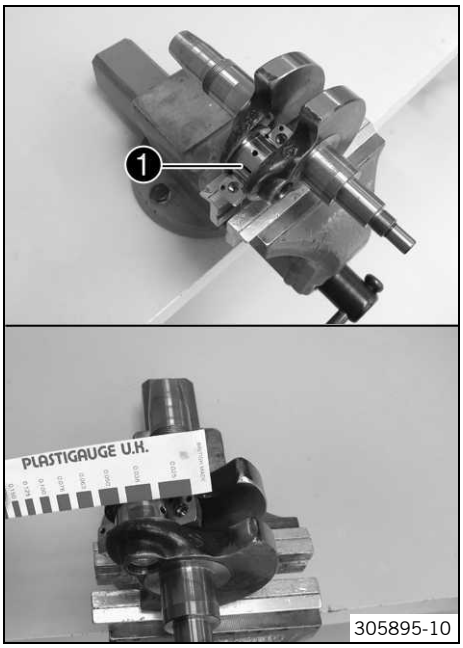


– Mount special tool ❷.

Puller for main bearing (90129018000) (☛ p. 256)

✓ Holding arms Ⓐ engage in the outer bearing race.
– Tension the holding arms by turning nut ❸.
– Pull off the main bearing by screwing in the screw.

16.4.34 Checking the radial play of the lower conrod bearing (200 Duke)



– Clamp the connecting rod with soft jaws.
– Position the bearing shells. Insert the **Plastigauge** clearance gauge ❶ offset by 90° to the bearing face.

Plastigauge measuring strips (60029012000) (☛ p. 253)

– Position the conrod bearing cover. Mount and tighten the nuts.

Guideline

Screw, conrod bearing	M7	24 Nm (17.7 lbf ft)

Info
Do not twist the connecting rod.

– Remove the conrod bearing cover again. Compare the **Plastigauge** clearance gauge with the specifications on the packaging.

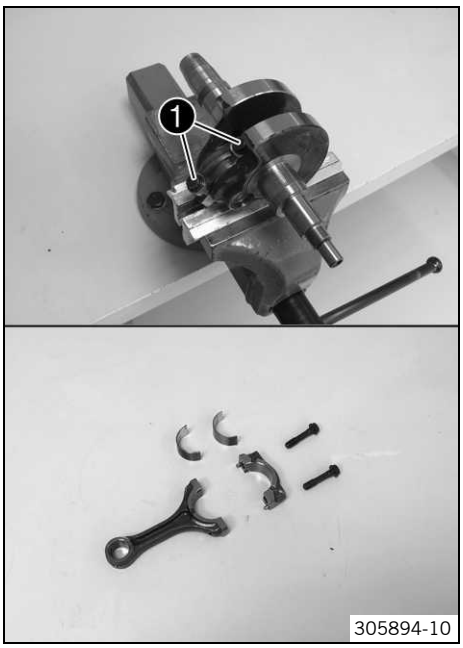
Guideline

Connecting rod - radial play of lower conrod bearing	
New condition	0.030... 0.060 mm (0.00118... 0.00236 in)
Wear limit	0.080 mm (0.00315 in)

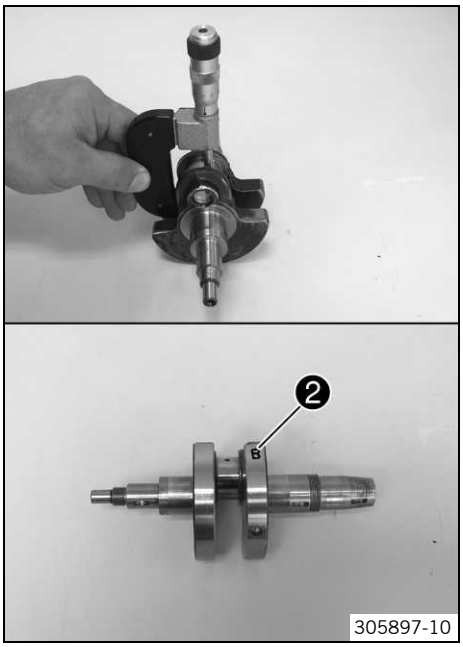
Info
The width of the **Plastigauge** clearance gauge is equivalent to the bearing play.

– Clean the parts.

16.4.35 Changing the conrod bearing (200 Duke)



– Clamp the connecting rod with soft jaws.
– Remove screws ❶.
– Remove the conrod bearing cover and crankshaft. Remove the bearing shells.



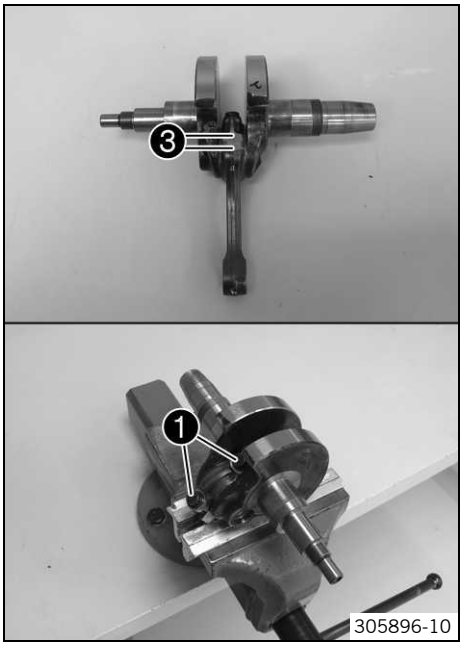
– Measure the crank pin diameter.

Guideline

Crankshaft – diameter, crank pin	
Crankshaft classification **A**	29.995... 30.003 mm (1.1809... 1.18122 in)
Crankshaft classification **B**	30.004... 30.011 mm (1.18126... 1.18153 in)

Info
The crankshaft classification is indicated by marking ❷.

– Check the radial play of the lower conrod bearing. (☛ p. 141)

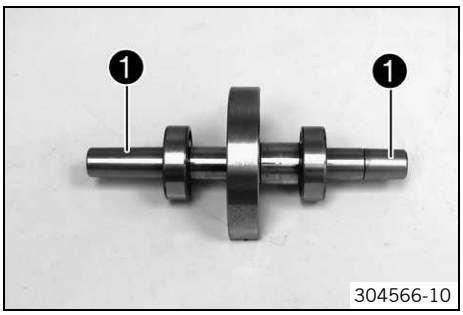


– Oil the bearing shells.
– Position the conrod bearing cover according to marking ❸.
– Mount and tighten screws ❶.

Guideline

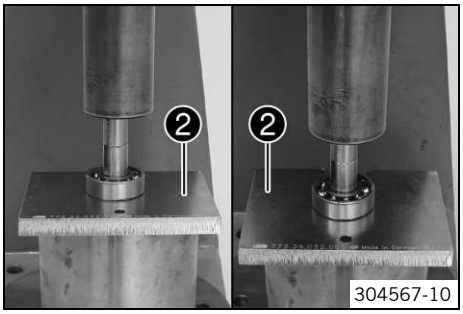
Screw, conrod bearing	M7	24 Nm (17.7 lbf ft)

16.4.36 Changing the balancer shaft bearing (200 Duke)



– Mount special tools ❶.

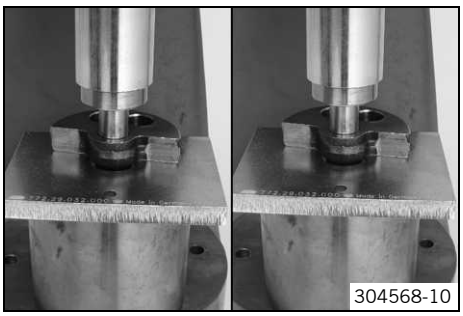
Disassembly tool, balancer shaft bearing (90129056000) (☛ p. 259)



– Position the balancer shaft with special tool ❷ in the press.

Separator plate (77229032000) (☛ p. 255)

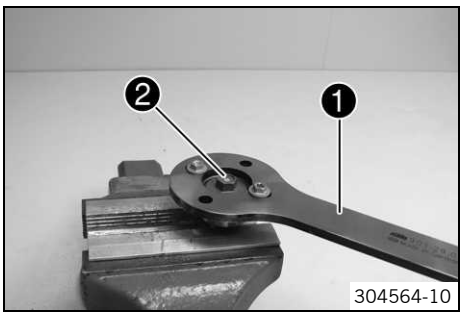
– Press out the bearing.



– Press on the balancer shaft bearing with a suitable tool.
– Remove the special tools.

Disassembly tool, balancer shaft bearing (90129056000) (☛ p. 259)

16.4.37 Changing the camshaft bearing (200 Duke)



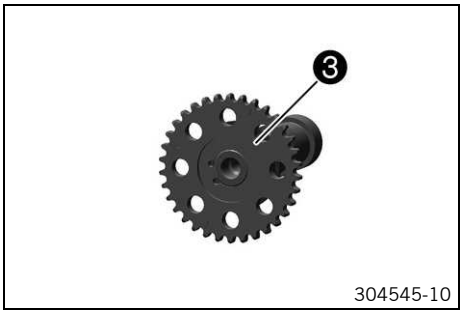
– Clamp the camshaft in a vise using soft jaws.

Info
Protect the outer cam of the camshaft against damage with adhesive tape.

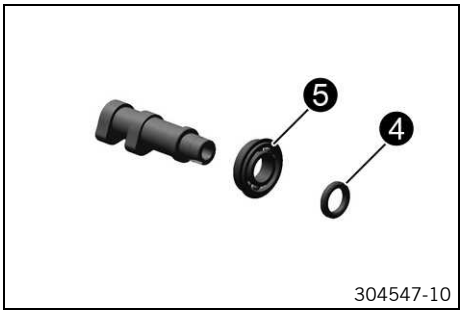
– Mount special tool ❶.

Holding spanner (90129012000) (☛ p. 256)

– Remove screw ❷.



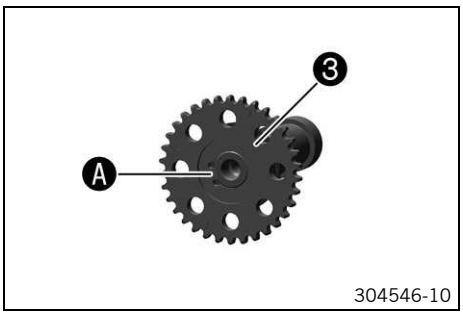
– Remove camshaft gear ❸.



– Remove the spacer ❹.
– Take off bearing ❺.
– Oil the new bearing and slide it onto the camshaft.

Lubricated with engine oil

– Mount the spacer.



– Mount camshaft gear ❸.
✓ Holding lug Ⓐ engages in the recess of the camshaft.
– Mount and tighten screw ❷.
Guideline

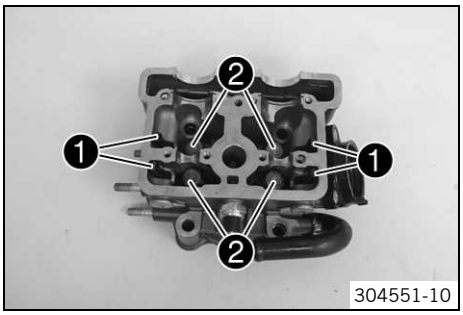
Screw, camshaft drive sprocket	M8	20 Nm (14.8 lbf ft)	**Loctite® 243™**

– Remove the special tool.

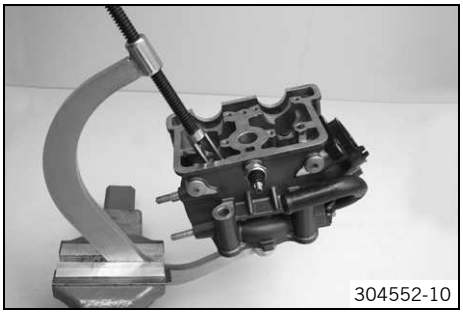
Holding spanner (90129012000) (☛ p. 256)

– Repeat these steps on the second camshaft.

16.4.38 Work on the cylinder head (200 Duke)

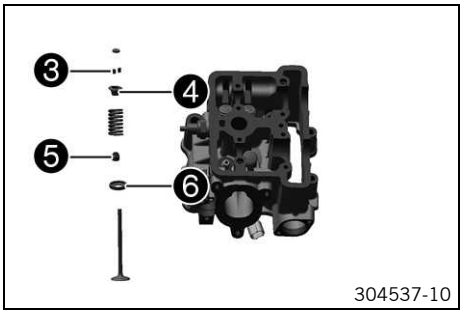


– Fold cam lever ❶ up.
– Take the shims ❷ out of the valve spring retainers and lay them to one side according to their normal built-in position.



– Pretension the valve spring using the special tool.

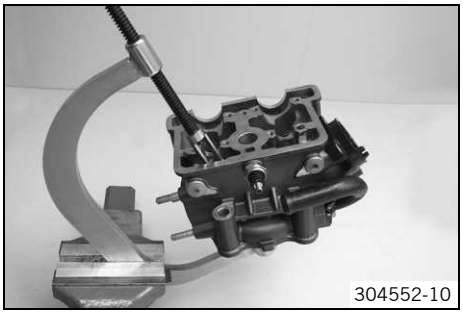
Valve spring compressor (59029019000) (☛ p. 252)
Insert for valve spring lever (90129060000) (☛ p. 259)



– Remove valve keys ❸ and relax the valve spring.
– Remove valve spring retainer ❹.
– Remove valve spring, valve stem seal ❺, and valve spring seat ❻.

Info
Place the valve into a box according to the installation position and label the box.

– Check the cylinder head. (☛ p. 145)
– Mount valve spring seat ❻ and the new valve stem seal ❺.
– Mount the valve spring.
– Mount valve spring retainer ❹.


304552-10

– Pretension the valve spring using the special tool.

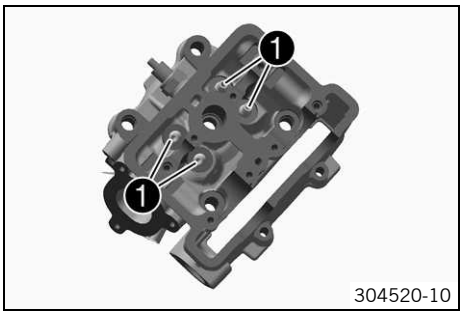
Valve spring compressor (59029019000) (☛ p. 252)
Insert for valve spring lever (90129060000) (☛ p. 259)

– Mount valve keys. Relax the valve spring.

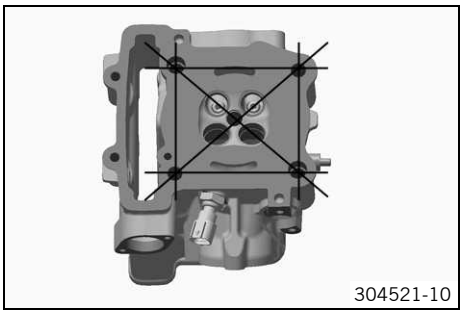
Info
When mounting the valve keys, check that they are seated correctly; preferably, fix the valve keys to the valve with a little grease.

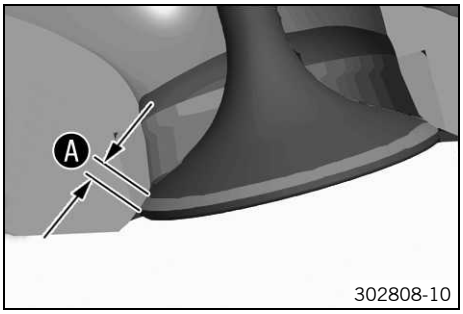
– Place shims into the valve spring retainers according to the installation position.

16.4.39 Checking the cylinder head (200 Duke)



304520-10


304521-10



302808-10

– Check valve guides ❶ with the special tool.

Limit plug gauge (90129026000) (☛ p. 257)

» If the special tool is easy to insert into the valve guide:
– Change the valve guides and valves.

– Check the sealing area of the spark plug thread and the valve seats for damage and tearing.

» If there is wear or tearing:
– Change the cylinder head.

– Check the sealing area of the cylinder for distortion using a straight edge and the special tool.

Feeler gauge (59029041100) (☛ p. 253)

Cylinder/cylinder head - distortion of sealing area	≤ 0.10 mm (≤ 0.0039 in)

» If the measured value does not equal the specified value:
– Change the cylinder head.

– Check sealing seat Ⓐ of the valves.

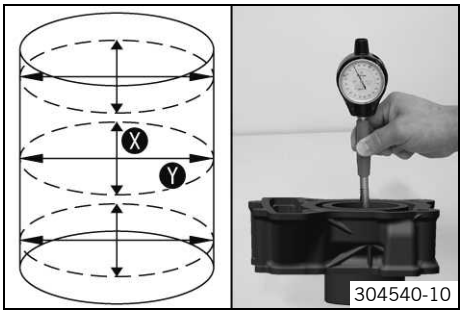
Valve - sealing seat width	
Intake	0.90... 1.10 mm (0.0354... 0.0433 in)

Valve - sealing seat width	
Exhaust	0.90... 1.10 mm (0.0354... 0.0433 in)

» If the measured value does not equal the specified value:
– Machine the valve seat.

– Blow compressed air through all oil holes and check that they are clear.

16.4.40 Checking/measuring the cylinder (200 Duke)



304540-10

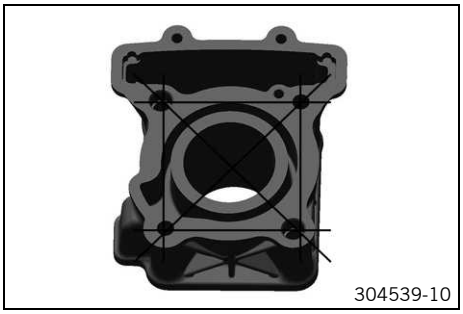
– Check the cylinder bearing surface for damage.

» If the cylinder bearing surface is damaged:
– Change the cylinder and piston.

– Measure the cylinder diameter at several places in the Ⓧ and Ⓨ axes using a micrometer to check for oval wear.

Guideline

Cylinder - bore diameter	72.016... 72.027 mm (2.83527... 2.8357 in)


304539-10

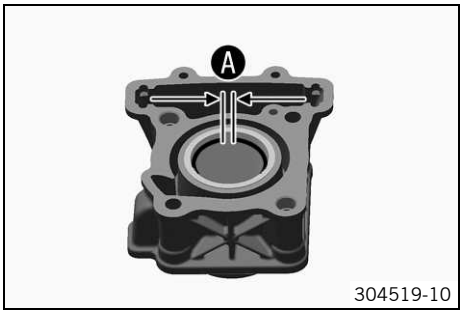
– Check the sealing area of the cylinder head for distortion using a straight edge and the special tool.

Feeler gauge (59029041100) (☛ p. 253)

Cylinder/cylinder head - distortion of sealing area	≤ 0.10 mm (≤ 0.0039 in)

» If the measured value does not equal the specified value:
– Change the cylinder and piston.

16.4.41 Checking the piston ring end gap (200 Duke)



304519-10

– Remove the piston ring from the piston.
– Place the piston ring in the cylinder and align it with the piston.
Guideline

Under the upper edge of the cylinder	20 mm (0.79 in)

– Measure end gap Ⓐ with the special tool.
Guideline

Piston ring end gap	
Compression ring	≤ 0.40 mm (≤ 0.0157 in)
Oil scraper ring	≤ 0.80 mm (≤ 0.0315 in)

Feeler gauge (59029041100) (☛ p. 253)

» If the end gap is more than the specified value:
– Check/measure the cylinder. (☛ p. 145)
» If the cylinder wear is within the tolerance range:
– Change the piston ring.
– Mount the piston ring with the marking facing toward the piston head.

16.4.42 Checking/measuring the piston (200 Duke)


305905-10

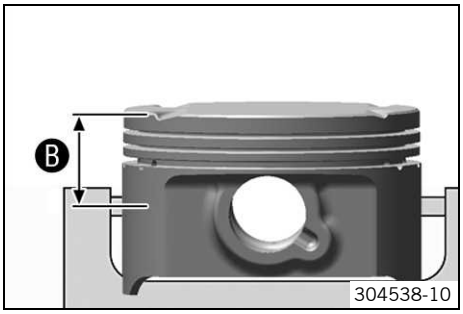
– Check the piston bearing surface for damage.
» If the piston bearing surface is damaged:
– Change the piston and, if necessary, the cylinder.
– Check that the piston rings can move easily in the piston ring grooves.
» If the piston ring is stiff:
– Clean the piston ring groove.

Tip
Use an old piston ring to clean the piston ring groove.

– Check the piston rings for damage.
» If the piston ring is damaged:
– Change the piston ring.

Info
Mount the piston ring with the marking facing upward.

– Check the piston pin for discoloration or signs of wear.
» If the piston pin has strong discoloration/signs of wear:
– Change the piston pin.
– Insert the piston pin into the connecting rod and check the bearing for play.
» If the piston pin bearing has too much play:
– Change the connecting rod and the piston pin.



– Measure the piston at the piston skirt, at right angles to the piston pin, at a distance ❽.

Guideline

Distance ❽	9 mm (0.35 in)
Piston - diameter	71.965... 71.977 mm (2.83326... 2.83373 in)

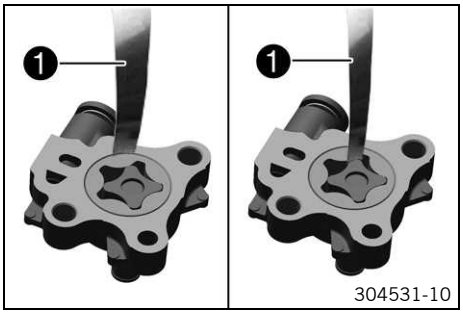
16.4.43 Checking the piston/cylinder mounting clearance (200 Duke)

– Check/measure the cylinder. (☛ p. 145)
– Check/measure the piston. (☛ p. 146)
– The piston/cylinder mounting clearance is the result of the cylinder bore diameter minus the piston diameter.

Guideline

Piston/cylinder - mounting clearance	
New condition	0.039... 0.062 mm (0.00154... 0.00244 in)
Wear limit	0.08 mm (0.0031 in)

16.4.44 Checking the oil pump (200 Duke)



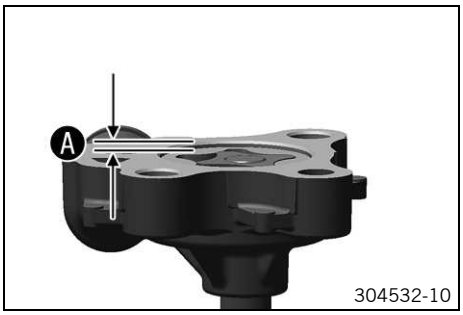
– With special tool ❶, check the play between the internal rotor and external rotor and between the external rotor and the oil pump housing.

Feeler gauge (59029041100) (☛ p. 253)

Oil pump	
Play between external rotor and internal rotor	0.10... 0.20 mm (0.0039... 0.0079 in)

Oil pump	
Play between external rotor and oil pump housing	0.09... 0.20 mm (0.0035... 0.0079 in)

» If the play exceeds the specification:
– Change the oil pump and, if necessary, the oil pump housing.

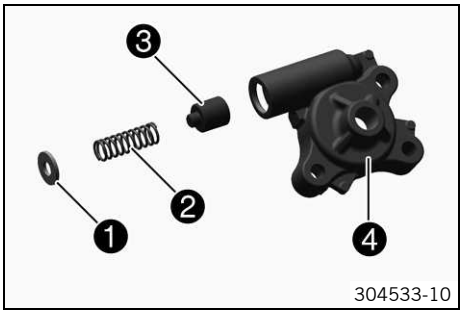


– Check axial play ❹ of the oil pump.

Oil pump	
Axial play	0.10... 0.25 mm (0.0039... 0.0098 in)

» If the play exceeds the specification:
– Change the oil pump and, if necessary, the oil pump housing.

16.4.45 Checking the oil pressure regulator valve (200 Duke)



– Remove washer ❶.
– Remove spring ❷.
– Measure the length of spring ❷.

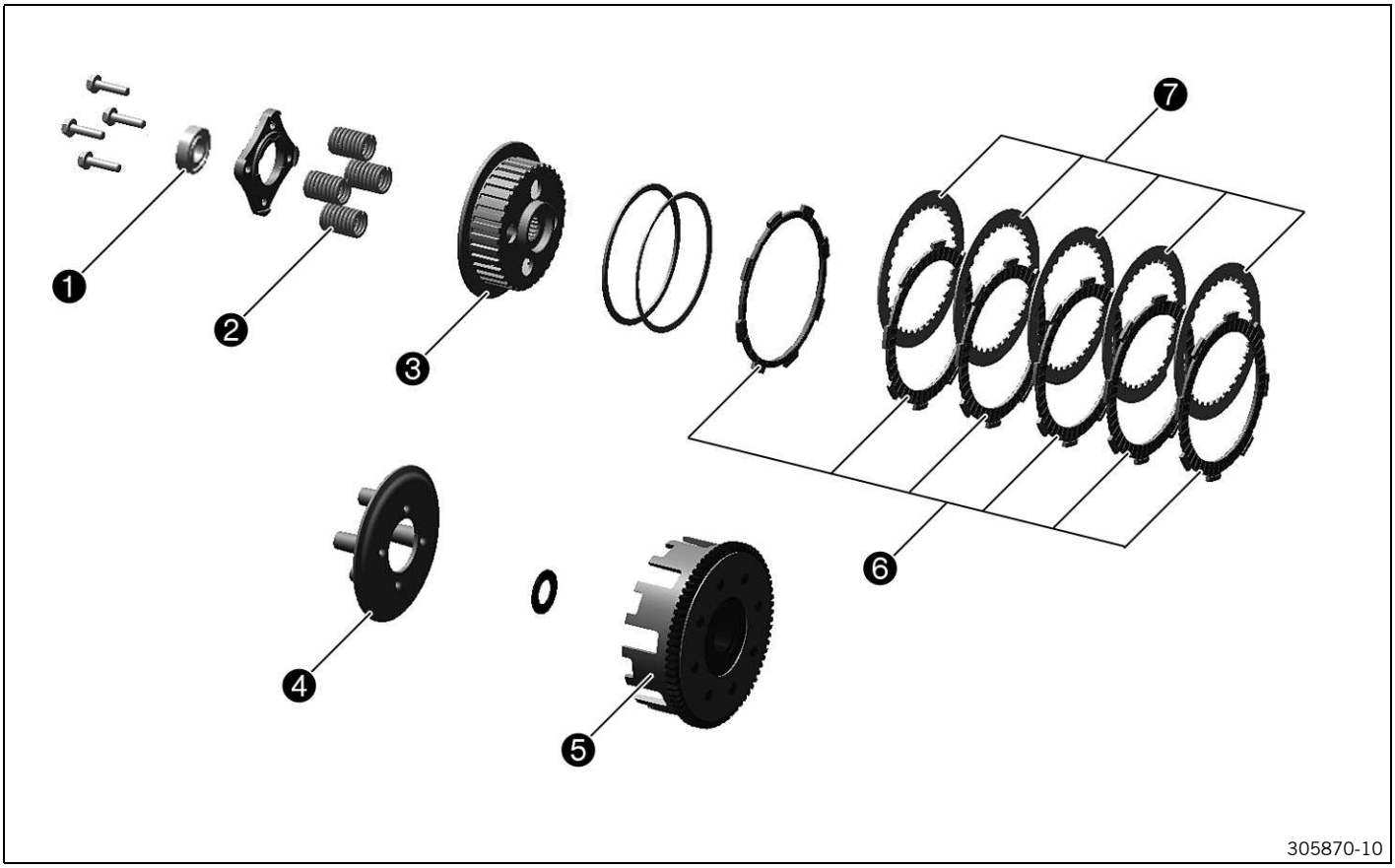
Oil pressure regulator valve - minimum spring length	26.00 mm (1.0236 in)

» If the measured length is less than the specification:
– Change the spring.

– Check control piston ❸ for damage and wear.

» If there is damage or wear:
– Change the control piston.
– Check the control piston bore in the oil pump housing ❹ for damage and wear.
» If there is damage or wear:
– Change the oil pump housing.
– Thoroughly oil control piston ❸ and spring ❷ and mount.
– Mount washer ❶.

16.4.46 Checking the clutch (200 Duke)



– Check bearing ❶ for damage and wear.
» If there is damage or wear:
– Change the bearing.
– Check the length of clutch springs ❷.

Clutch spring - length	≥ 37 mm (≥ 1.46 in)

» If the clutch spring length is less than the specified value:
– Change all clutch springs.
– Check inner clutch hub ❸ for damage and wear.
» If there is damage or wear:
– Change the inner clutch hub.
– Check clutch pressure cap ❹ for damage and wear.
» If there is damage or wear:
– Change the clutch pressure cap.
– Check the contact surfaces of the clutch facing discs in the clutch basket ❺ for wear.

Contact surface, clutch facing discs in clutch basket	≤ 0.5 mm (≤ 0.02 in)

» If the contact surface is very worn:
– Change the clutch lining discs and the clutch basket.
– Check clutch facing discs ❻ for discoloration and scoring.

» If there is discoloration or scoring:
– Change all clutch lining discs.

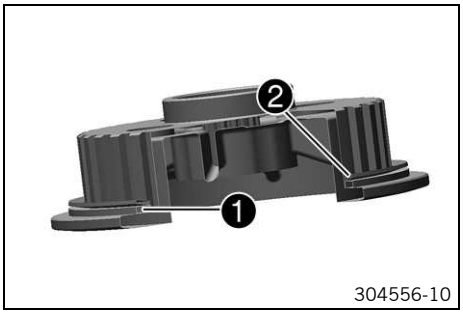
– Check the thickness of clutch facing discs ❻.

Clutch facing discs – thickness of total package	≥ 27.00 mm (≥ 1.063 in)

» If the clutch facing discs do not meet specifications:
– Change all clutch lining discs.

– Check intermediate disc ❼ for damage and wear.
» If the intermediate discs are not flat or have punctiform outbreaks:
– Change all intermediate discs.

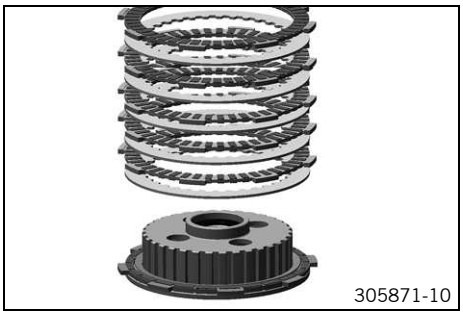
16.4.47 Preassembling the clutch (200 Duke)



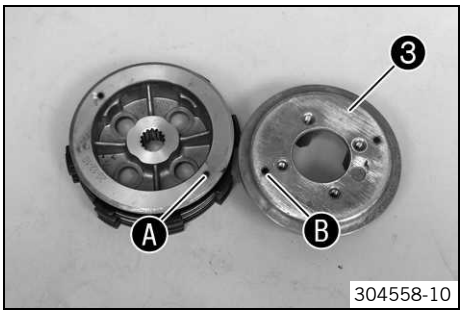
304556-10

– Lubricate the clutch facing discs thoroughly.
– Push support ring ❶ and pretension ring ❷ onto the inner clutch hub.

Info
The pretension ring must be installed so that it is flush with the inner edge on the support ring.

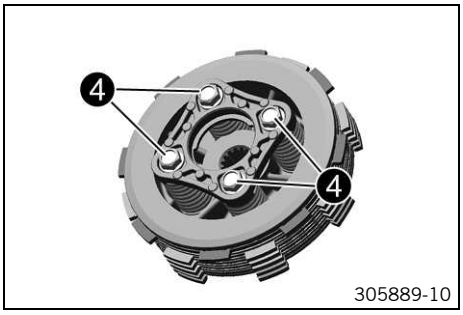

305871-10

– Position the clutch facing disc with the notch for the pretension ring on the inner clutch hub face down.
– Beginning with a clutch disc, position all further clutch facing discs and clutch discs alternately.



304558-10

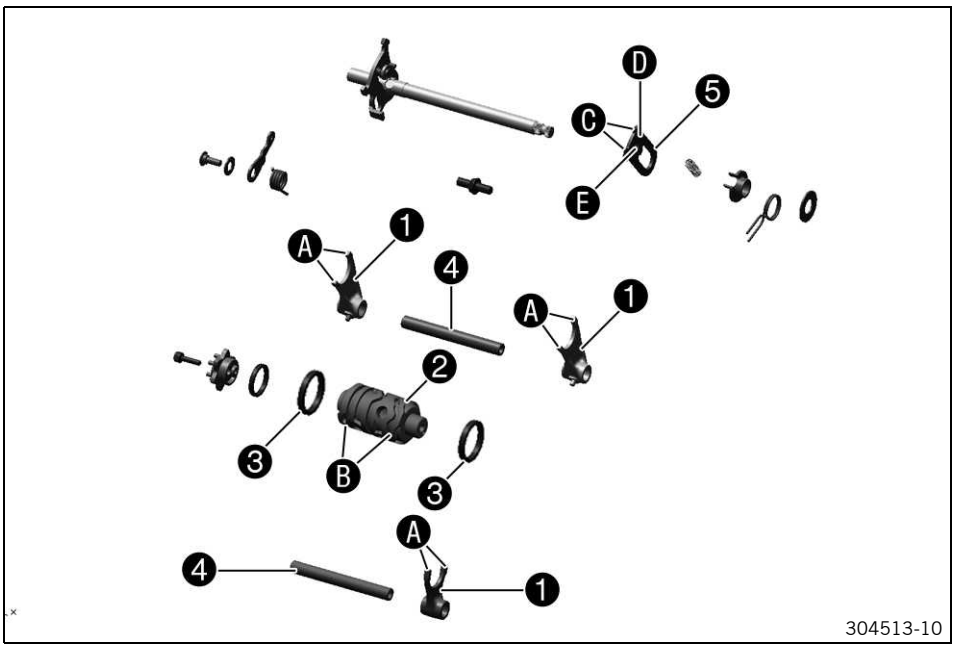
– Mount clutch pressure cap ❸.
✓ Marking Ⓐ and Ⓑ are aligned.



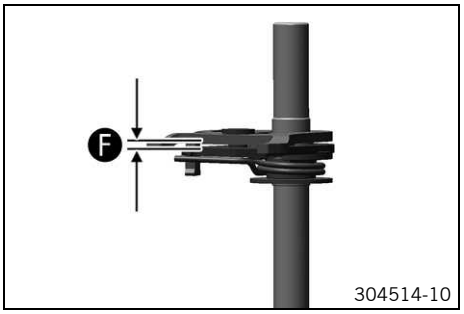
305889-10

– Position the clutch springs.
– Position the release bearing holder and mount screws ❹ but do not tighten yet.

16.4.48 Checking the shift mechanism (200 Duke)



– Check the shift forks ❶ (see Ⓐ) for damage and wear (visual check).
  » If there is damage or wear:
    – Change the shift fork and gear wheel pair.
– Check shift grooves Ⓑ of shift drum ❷ for wear.
  » If the shift groove is worn:
    – Change the shift roller.
– Check the seat of the shift drum in bearings ❸.
  » If the shift roller is not seated correctly:
    – Replace the shift drum and/or the bearing.
– Check bearing ❸ for stiffness and wear.
  » If the bearings do not move freely or are worn:
    – Change the bearing.
– Check shift rail ❹ on a flat surface for run-out.
  » If there is run-out:
    – Change the shift rail.
– Check the shift rail for scoring, signs of corrosion and stiffness in the shift forks.
  » If there is scoring or corrosion, or if the shift fork is stiff:
    – Change the shift rail.
– Check sliding plate ❺ in contact areas Ⓒ for wear.
  » If the sliding plate is worn:
    – Change the shift shaft.
– Check return surface Ⓓ on the sliding plate for wear.
  » If deep notches are present:
    – Change the shift shaft.
– Check guide pin Ⓔ for looseness and wear.
  » If the guide pin is loose and/or worn:
    – Change the shift shaft.

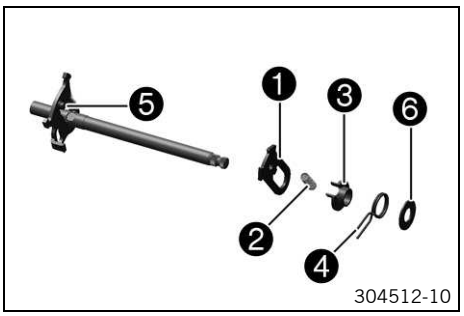


– Preassemble the shift shaft. (☛ p. 151)
– Check the play ❶ between the sliding plate and the shift quadrant.

Shift shaft – play in sliding plate/shift quadrant	0.15... 0.45 mm (0.0059... 0.0177 in)

» If the measured value does not equal the specified value:
– Change the shift shaft.

16.4.49 Preassembling the shift shaft (200 Duke)

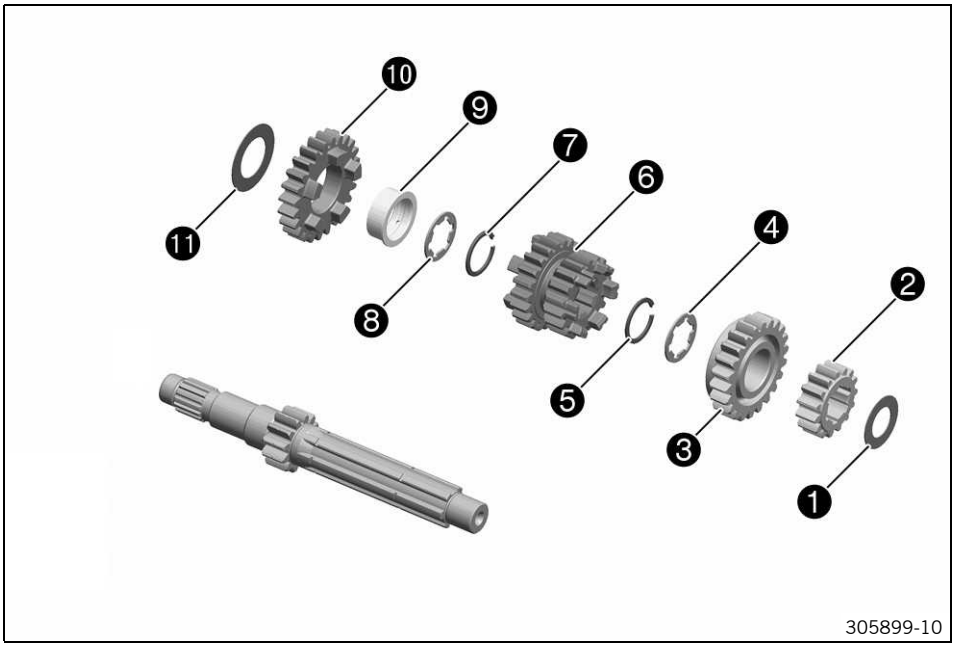


– Fix the short end of the shift shaft in a vise.
Guideline

Use soft jaws.

– Mount sliding plate ❶ with the guide pin facing down and attach the guide pin to the shift quadrant.
– Mount preload spring ❷.
– Push on spring guide ❸, push return spring ❹ over the spring guide with the offset end facing upward and lift the offset end over abutment bolt ❺.
– Mount washer ❻.

16.4.50 Disassembling the main shaft (200 Duke)

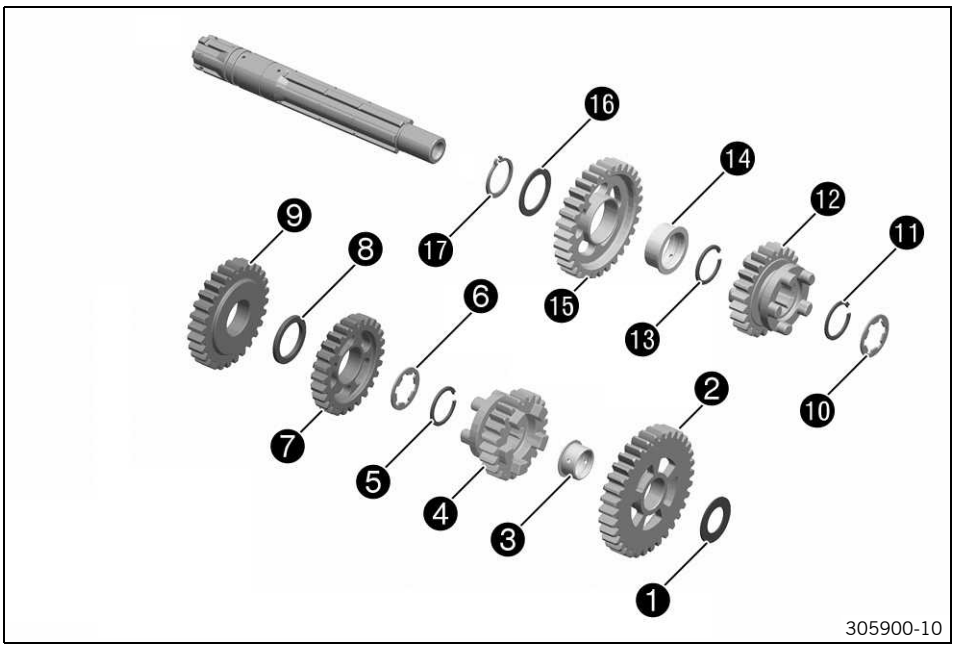


– Fix the main shaft in the vise with the geared end facing downward.
Guideline

Use soft jaws.

– Remove stop disk ❶ and 2nd-gear fixed gear ❷.
– Remove the 5th-gear idler gear ❸.
– Remove stop disk ❹.
– Remove lock ring ❺.
– Remove 3rd/4th-gear sliding gear ❻.
– Remove lock ring ❼.
– Remove stop disk ❽.
– Remove collar bushing ❾.
– Remove 6th-gear idler gear ❿.
– Remove stop disk ⓫.

16.4.51 Dismantling the countershaft (200 Duke)



– Fix the countershaft in the vise with the geared end facing downward.

  Guideline

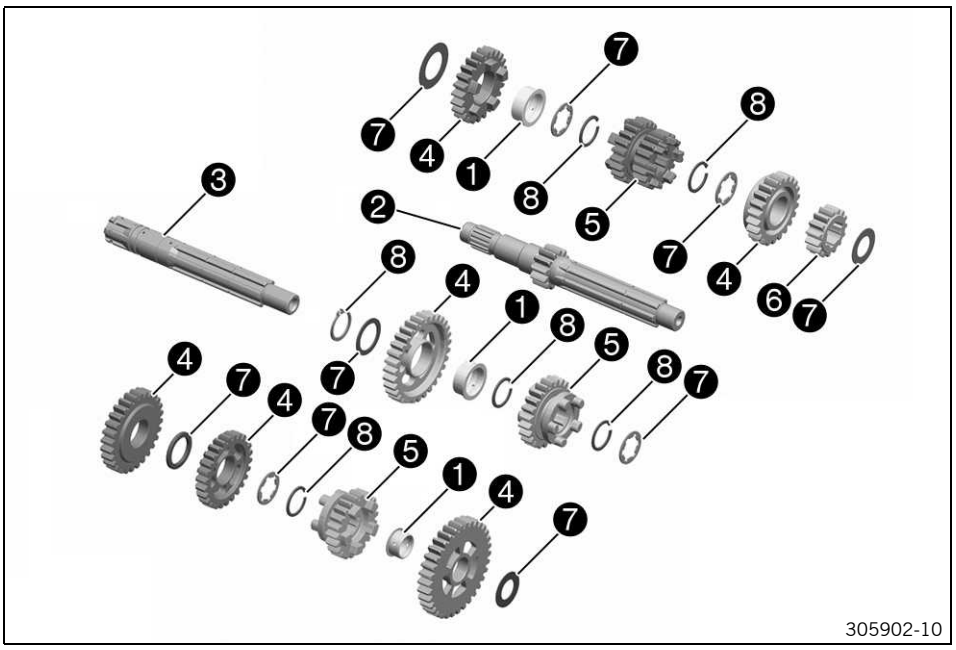
Use soft jaws

– Remove stop disk ❶ and the 1st-gear idler gear ❷.
– Remove collar bushing ❸.
– Remove the 6th-gear sliding gear ❹.
– Remove lock ring ❺.
– Remove stop disk ❻.
– Remove the 3rd-gear idler gear ❼.
– Remove washer ❽.
– Remove the 4th-gear idler gear ❾.
– Remove stop disk ❿ and lock ring ⓫.
– Remove 5th-gear sliding gear ⓬.
– Remove lock ring ⓭.
– Remove collar bushing ⓮.
– Remove the 2nd-gear idler gear ⓯.
– Remove stop disk ⓰ and lock ring ⓱.

16.4.52 Checking the transmission (200 Duke)

Condition

The transmission has been disassembled.

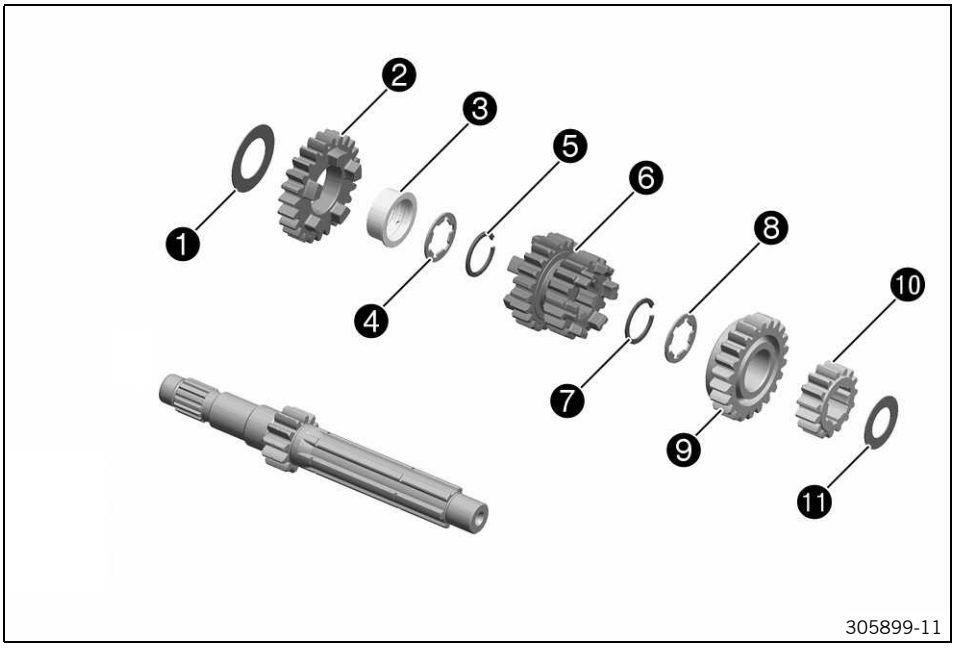


– Check collar bushings ❶ for damage and wear.
  » If there is damage or wear:
    – Change the collar bushings.
– Check the pivot points of main shaft ❷ and countershaft ❸ for damage and wear.
  » If there is damage or wear:
    – Change the main shaft and/or countershaft.
– Check the tooth profiles of main shaft ❷ and countershaft ❸ for damage and wear.
  » If there is damage or wear:
    – Change the main shaft and/or countershaft.
– Check the pivot points of idler gears ❹ for damage and wear.
  » If there is damage or wear:
    – Change the gear wheel pair.
– Check the shift dogs of idler gears ❹ and sliding gears ❺ for damage and wear.
  » If there is damage or wear:
    – Change the gear wheel pair.
– Check the tooth faces of idler gears ❹, sliding gears ❺, and fixed gear ❻ for damage and wear.
  » If there is damage or wear:
    – Change the gear wheel pair.
– Check the tooth profiles of sliding gears ❺ for damage and wear.
  » If there is damage or wear:
    – Change the gear wheel pair.
– Check sliding gears ❺ for smooth operation in the profile of main shaft ❷.
  » If the sliding gear does not move easily:
    – Change the sliding gear or the main shaft.
– Check sliding gears ❺ for smooth operation in the profile of countershaft ❸.
  » If the sliding gear does not move easily:
    – Change the sliding gear or the countershaft.
– Check stop disks ❼ for damage and wear.
  » If there is damage or wear:
    – Change the stop disk.
– Use new lock rings ❽ with every repair.

16.4.53 Assembling the main shaft (200 Duke)

Info
Use new lock rings in every repair job.

Preparatory work
- Oil all parts carefully before assembling.
- Check the transmission. (☛ p. 152)



Main work
- Fix the main shaft in the vise with the geared end facing downward.

  Guideline

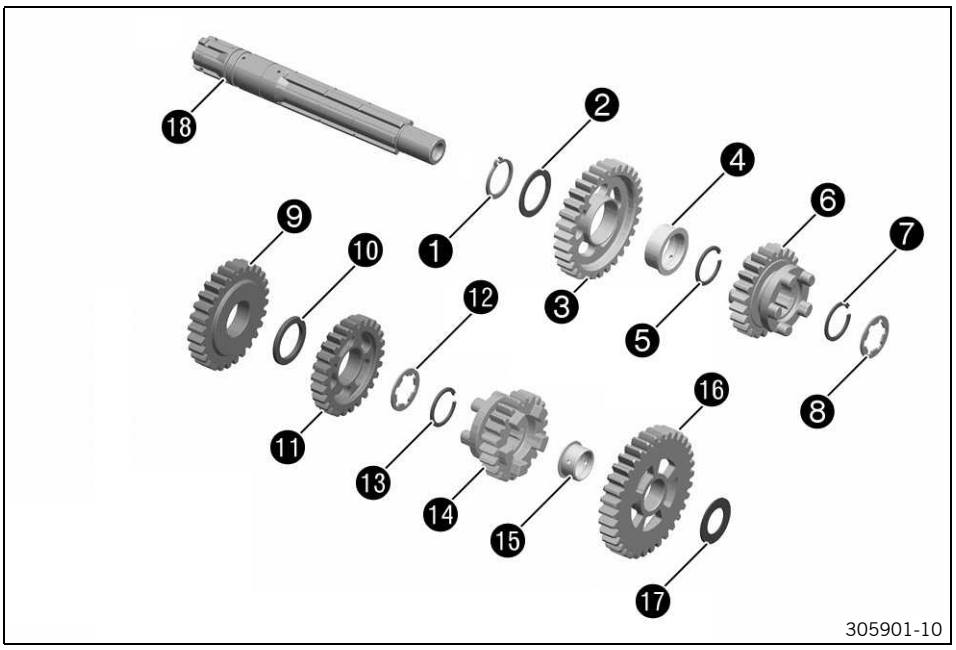
Use soft jaws

- Mount stop disk ❶.
- Mount 6th-gear idler gear ❷.
- Mount collar bushing ❸.
- Mount stop disk ❹ and lock ring ❺.
- Mount 3rd/4th-gear sliding gear ❻ with the small gear wheel facing up.
- Mount lock ring ❼.
- Mount stop disk ❽.
- Mount 5th-gear idler gear ❾.
- Mount 2nd-gear fixed gear ❿ and stop disk ⓫.
- Finally, check all gear wheels for smooth operation.

16.4.54 Assembling the countershaft (200 Duke)

Info
Use new lock rings in every repair job.

Preparatory work
- Oil all parts carefully before assembling.
- Check the transmission. (☛ p. 152)



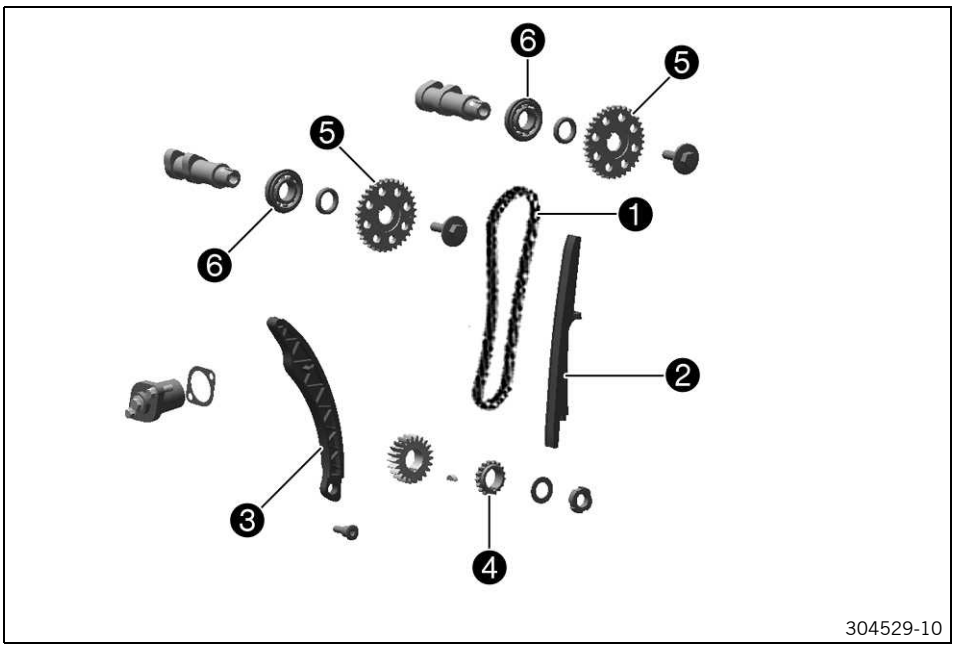
Main work

– Fix the countershaft in the vise with the geared end facing downward.
  Guideline

Use soft jaws

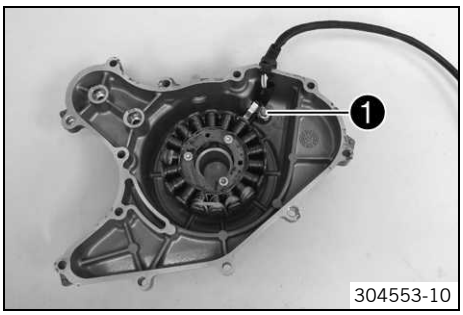
– Install lock ring ❶ and stop disk ❷.
– Mount 2nd-gear idler gear ❸.
– Mount collar bushing ❹.
– Mount lock ring ❺.
– Mount the 5th-gear sliding gear ❻ with the shift groove facing upward.
– Install lock ring ❼ and stop disk ❽.
– Mount 4th-gear idler gear ❾.
– Mount washer ❿.
– Mount 3rd-gear idler gear ⓫.
– Mount stop disk ⓬ and lock ring ⓭.
– Mount 6th-gear sliding gear ⓮ with the shift groove facing downward.
– Mount collar bushing ⓯.
– Mount 1st-gear idler gear ⓰.
– Mount stop disk ⓱.
– Replace O-ring ⓲ of the countershaft.
– Finally, check all gear wheels for smooth operation.

16.4.55 Checking the timing assembly (200 Duke)

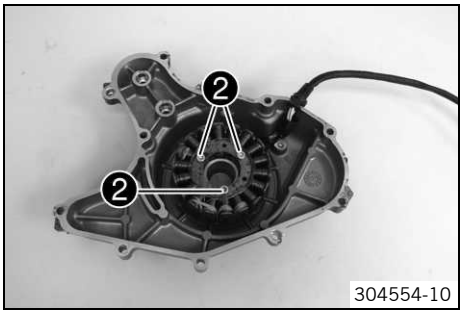


– Check timing chain ❶ for damage and wear.
  » If there is damage or wear:
    – Change the timing chain.
– Let the timing chain hang down freely. Check that the timing chain links move easily.
  » If the chain links no longer straighten out:
    – Change the timing chain.
– Check timing chain guide rail ❷ for damage and wear.
  » If there is damage or wear:
    – Change the timing chain guide rail.
– Check timing chain tensioning rail ❸ for damage and wear.
  » If there is damage or wear:
    – Change the timing chain tensioning rail.
– Check timing chain sprocket ❹ for damage and wear.
  » If there is damage or wear:
    – Change the timing chain sprocket.
– Check camshaft gears ❺ for damage and wear.
  » If there is damage or wear:
    – Change the camshaft gears.
– Check camshaft bearing ❻ for damage and wear.
  » If there is damage or wear:
    – Change the camshaft bearing.

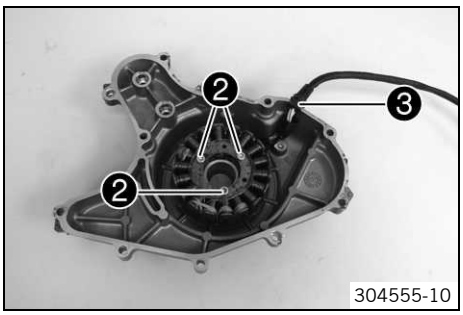
16.4.56 Changing the stator (200 Duke)



– Remove screw ❶.
– Remove the cable retainer.



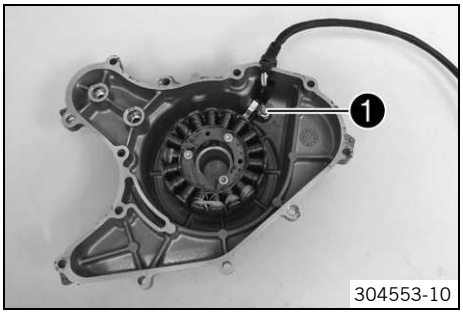
– Remove screws ❷.
– Remove the stator.



– Position the new stator.
– Mount and tighten screws ❷.
Guideline

Screw, stator	M5	8 Nm (5.9 lbf ft)	**Loctite® 243™**

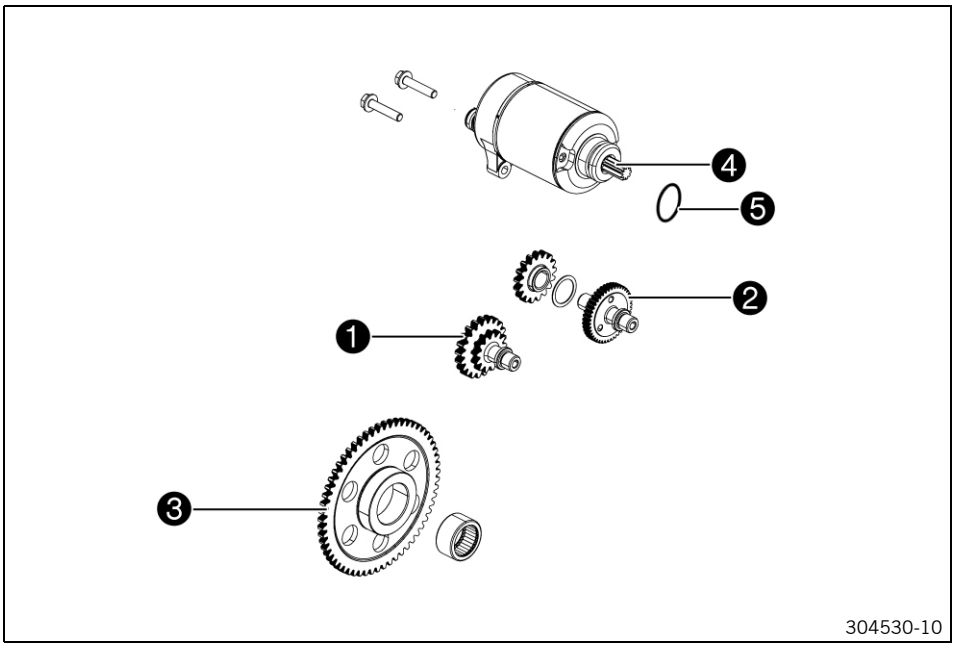
– Position cable guide ❸ in the alternator cover.



– Position the cable retainer.
– Mount and tighten screw ❶.
Guideline

Screw, retaining bracket, stator cable	M5	8 Nm (5.9 lbf ft)	**Loctite® 243™**

16.4.57 Checking the electric starter drive (200 Duke)



– Check the teeth and seating of the starter idler gear ❶ for damage and wear.
  » If there is damage or wear:
    – Change the starter idler gear.
– Check the teeth and seating of the torque limiter ❷ for damage and wear.
  » If there is damage or wear:
    – Change the torque limiter.
– Check the toothing and bearing of freewheel gear ❸ for damage and wear.

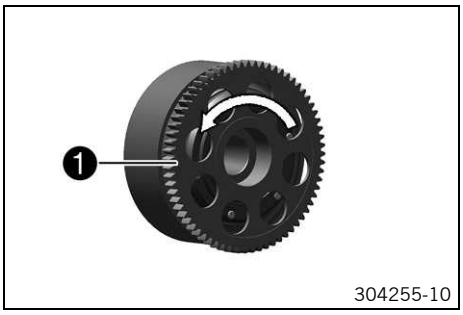
» If there is damage or wear:
– Replace the freewheel gear and/or the bearing.

– Check toothing ❹ of the starter motor for damage and wear.
» If there is damage or wear:
– Replace the starter motor.

– Replace the O-ring ❺ of the starter motor.

– Clamp the minus (negative) cable of a 12 Volt power supply to the starter motor housing. Briefly connect the positive cable of the power supply to the starter motor connection.
» If the starter motor does not turn when you close the power circuit:
– Replace the starter motor.

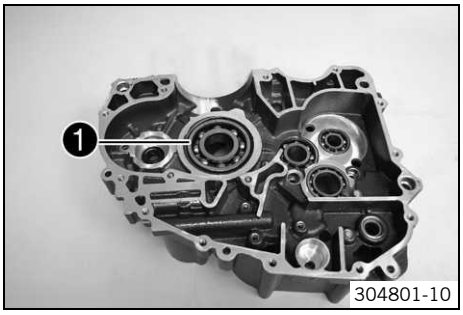
16.4.58 Checking the freewheel (200 Duke)



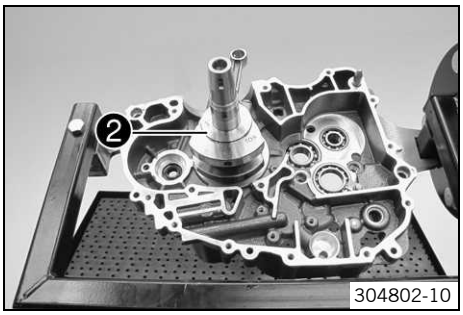
– Insert freewheel gear ❶ into the freewheel hub by turning the freewheel gear clockwise; do not wedge!
– Check the locking action of the freewheel gear.
» If the freewheel gear does not turn clockwise or if it does not lock counterclockwise:
– Replace the freewheel.

16.5 Assembling the engine

16.5.1 Installing the crankshaft (125 Duke)

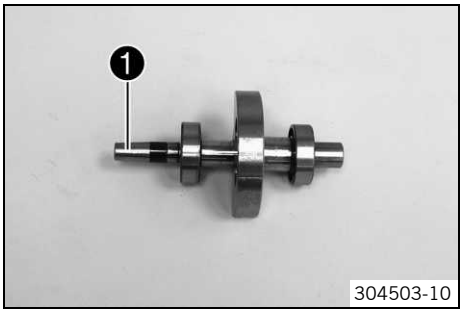


– Warm the engine case section in an oven.
Guideline
150 °C (302 °F)
– Mount main bearing ❶.

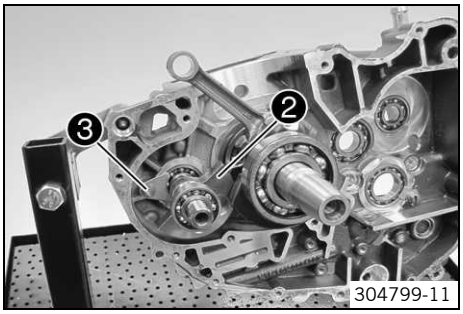


– Heat the main bearing.
Guideline
150 °C (302 °F)
– Slide crankshaft ❷ into the bearing seat.
– Heat the left main bearing.
Guideline
150 °C (302 °F)
– Mount the main bearing on the crankshaft.
– Cool the main bearing.
– Oil the bearing.

16.5.2 Installing the balancer shaft (125 Duke)



– Mount special tool ❶.
Mounting sleeve (90129005000) (☛ p. 256)



– Mount balancer shaft ❷ with the bearing.

Info
If necessary, heat the engine case.

– Position the retaining bracket.
– Mount and tighten screw ❸.

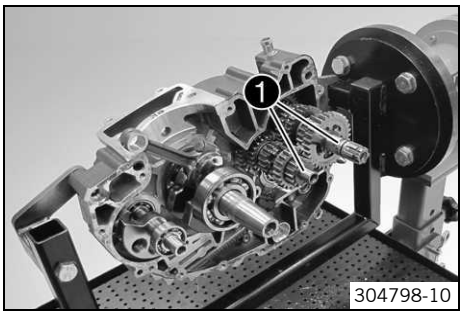
Guideline

Screw, bearing retainer	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**

– Remove the special tool.

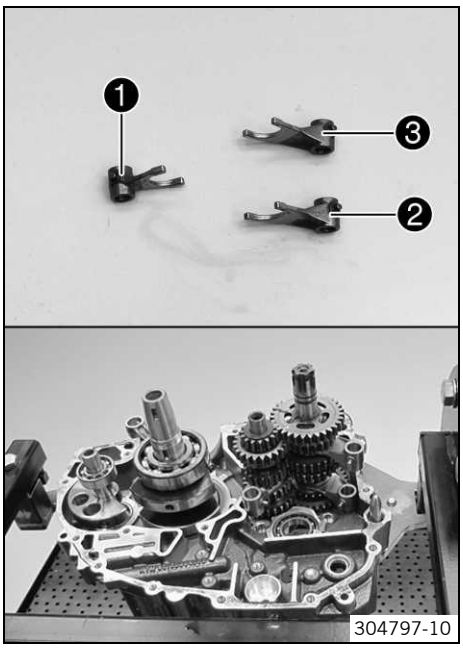
Mounting sleeve (90129005000) (☛ p. 256)

16.5.3 Installing the transmission shafts (125 Duke)



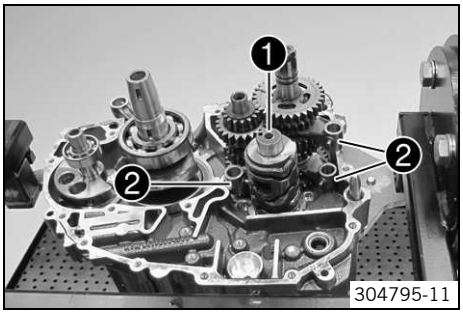
– Oil the bearing.
– Slide both transmission shafts ❶ into the bearing seats together.

16.5.4 Installing the shift forks (125 Duke)



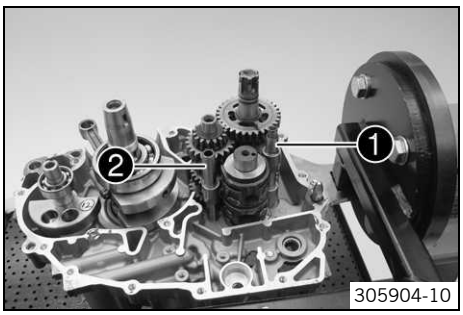
– Oil all parts carefully before assembling.
– Shift fork ❶ has a smaller inside diameter; mount it in the shift groove of the main shaft.
– Mount shift fork ❷ in the lower shift groove of the countershaft.
– Mount shift fork ❸ in the upper shift groove of the countershaft.

16.5.5 Installing the shift drum (125 Duke)



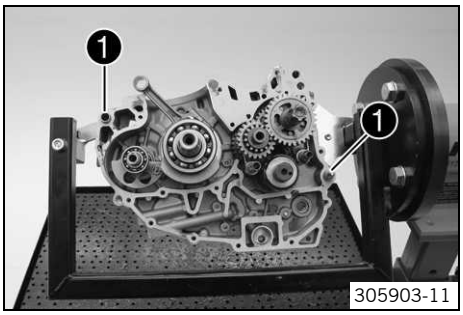
– Slide shift drum ❶ into the bearing seat.
– Hang shift forks ❷ into the shift drum.

16.5.6 Installing the shift rails (125 Duke)

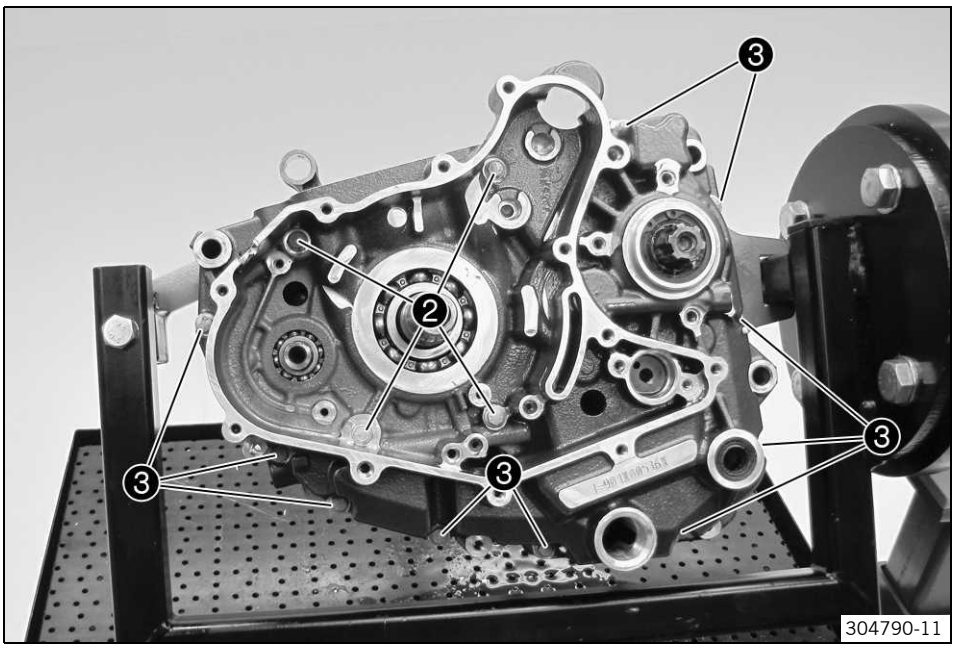


– Oil all parts carefully before assembling.
– Mount shift rail ❶ together with upper spring and the lower spring.
– Mount shift rail ❷.

16.5.7 Installing the left engine case (125 Duke)



– Clean the sealing areas.
– Mount dowels ❶.
– Mount the engine case gasket.



– Warm the left engine case section in an oven.

Guideline

150 °C (302 °F)

– Mount the engine case section. If necessary, tap lightly with a rubber mallet while turning the transmission shafts.

Info
Do not tighten the engine case sections using the screws.

– Mount screws ❷ but do not tighten them yet.

Guideline

Screw, engine case	M6x60	12 Nm (8.9 lbf ft)	**Loctite® 243™**

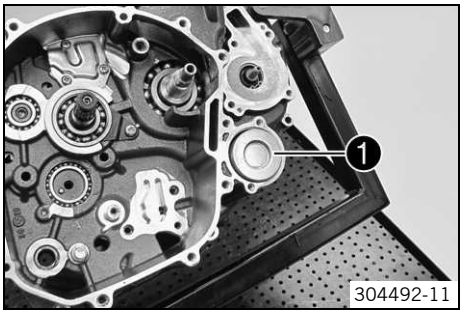
– Mount screws ❸ and tighten all screws in a crisscross pattern.

Guideline

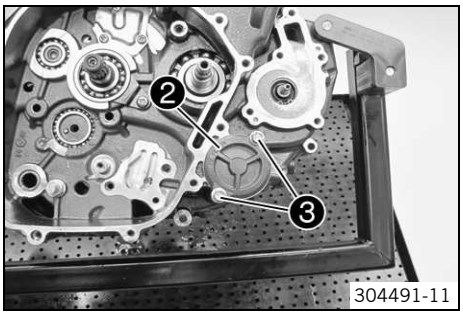
Screw, engine case	M6x40	12 Nm (8.9 lbf ft)

– Mount the fitting of the engine fixing arm.

16.5.8 Installing the oil filter (125 Duke)



– Tilt the engine sideways and fill the oil filter housing approx. ⅓ full with engine oil.
– Fill oil filter ❶ with engine oil and insert it in the oil filter housing.

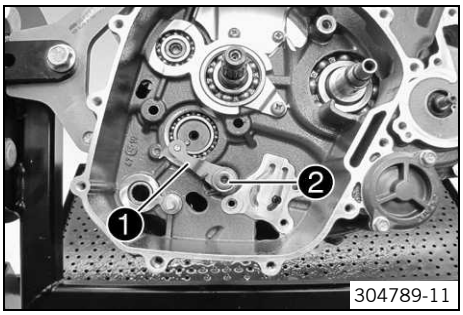


– Oil the O-ring of the oil filter cover.
– Install the oil filter cover ❷.
– Mount and tighten screws ❸.

Guideline

Screw, oil filter cover	M5	8 Nm (5.9 lbf ft)

16.5.9 Installing the locking lever (125 Duke)

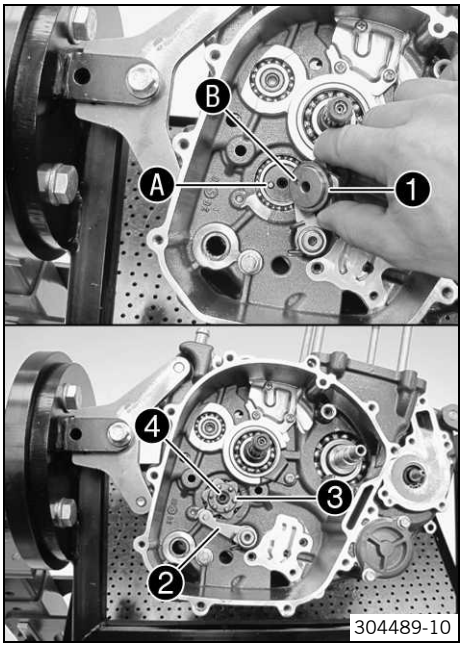


– Mount locking lever ❶ with the sleeve, washers and spring.
– Mount and tighten screw ❷ with the washer.

Guideline

Screw, locking lever	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**

16.5.10 Installing the shift drum locating (125 Duke)

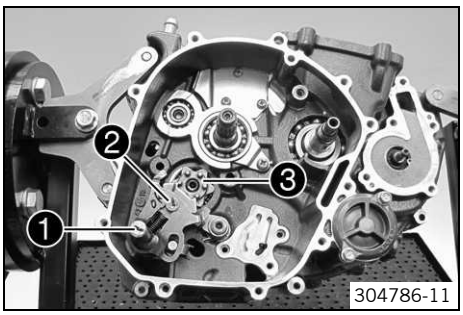


– Mount spacer ring ❶ on the shift drum locating unit.
– Press locking lever ❷ away from the shift drum locating and position the shift drum locating ❸.
  ✓ Pins ❹ engage in hole ❸.
– Release the locking lever.
– Mount and tighten screw ❹.

Guideline

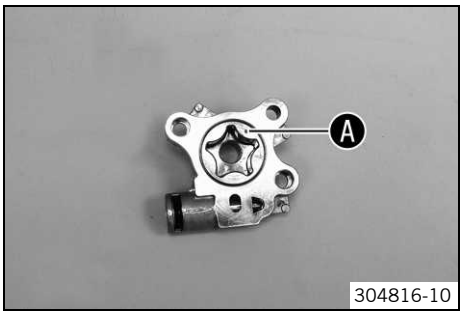
Screw, shift drum locating	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**

16.5.11 Installing the shift shaft (125 Duke)

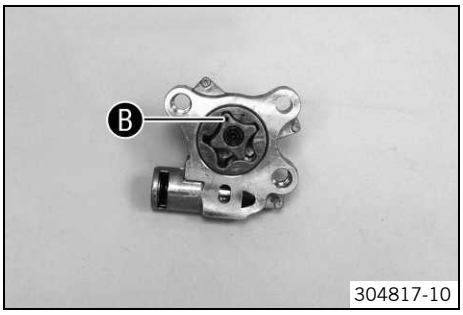


– Slide shift shaft ❶ with the washer into the bearing seat.
– Push sliding plate ❷ away from the shift drum locating ❸. Insert the shift shaft all the way.
– Let the sliding plate engage in the shift drum locating.
– Shift through the transmission.

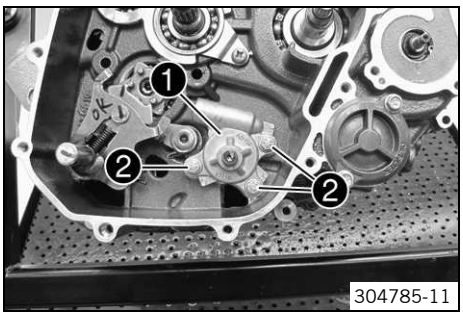
16.5.12 Installing the oil pump (125 Duke)



– Position the external rotor in the oil pump housing.
  ✔ The marking Ⓐ is visible after mounting.



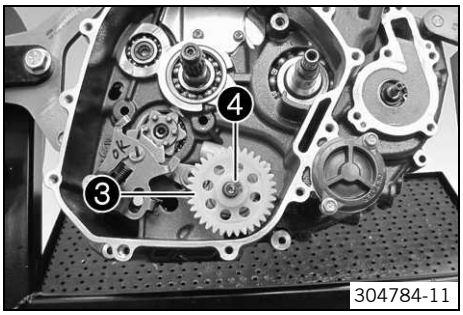
– Mount the internal rotor with the oil pump shaft.
  ✔ The marking Ⓑ is visible after mounting.



– Check that the oil holes are clear and fill with a small amount of oil.
– Mount the dowels.
– Position oil pump ❶.
– Mount and tighten screws ❷.

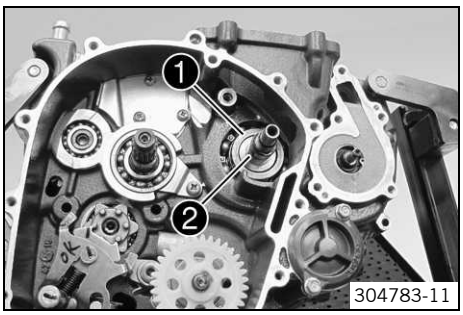
Guideline

Screw, oil pump	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**

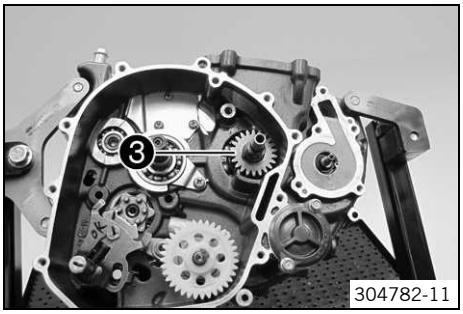


– Position oil pump gear ❸.
– Mount lock ring ❹.
– Crank the oil pump gear and check for stiffness.

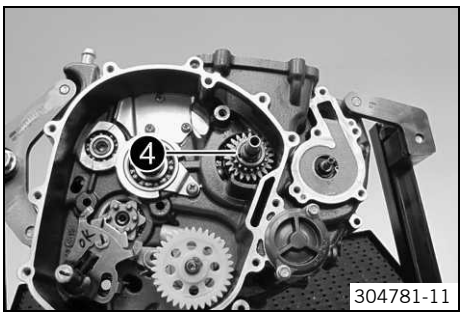
16.5.13 Installing the primary gear (125 Duke)



– Position spacer ring ❶.
– Mount spring washer ❷.

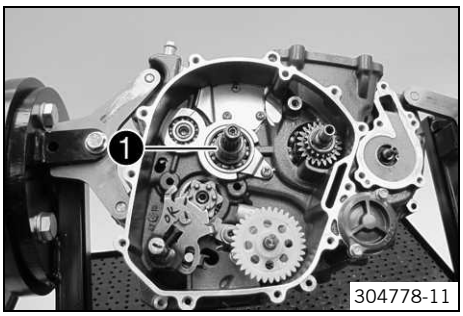


– Mount primary gear ❸.

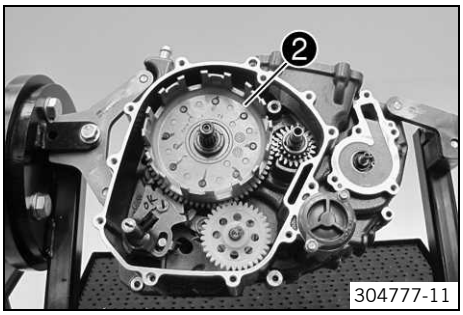


– Mount timing chain sprocket ❹.

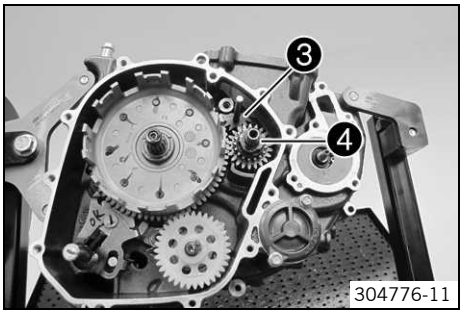
16.5.14 Installing the clutch basket (125 Duke)



– Mount collar sleeve ❶.



– Slide the clutch basket ❷ onto the gearbox main shaft. Turn the oil pump gear until the gear teeth of the clutch basket mesh.



– Lock the clutch basket and primary gear using special tool ❸.

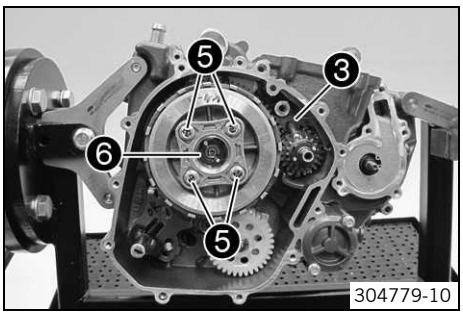
Gear segment (90129081100) (☛ p. 259)

– Mount and tighten nut ❹ with the washer.

Guideline

Nut, primary gear	M14	55 Nm (40.6 lbf ft)

Castle nut wrench; ½" drive (90129021000) (☛ p. 257)



– Position the preassembled inner clutch hub.

Info
Make sure that the upper clutch facing disc is offset by one notch.

– Lock the clutch basket and primary gear using special tool ❸.

Gear segment (90129081100) (☛ p. 259)

– Tighten screws ❺.

Guideline

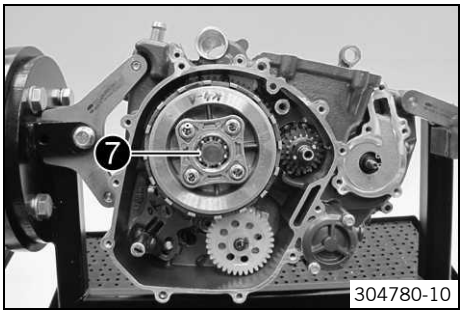
Screw, clutch spring	M6	10 Nm (7.4 lbf ft)

– Mount and tighten nut ❻ with the washer.

Guideline

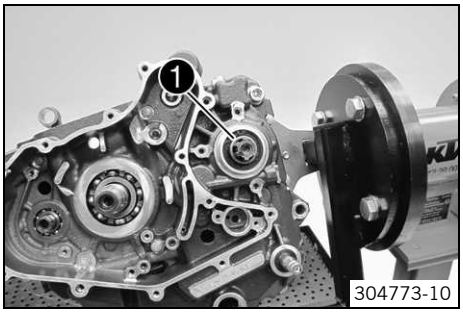
Nut, inner clutch hub	M14LH	60 Nm (44.3 lbf ft)	**Loctite® 243™**

Castle nut wrench; ½" drive (90129021000) (☛ p. 257)



– Mount bearing ❼.

16.5.15 Installing the spacer (125 Duke)

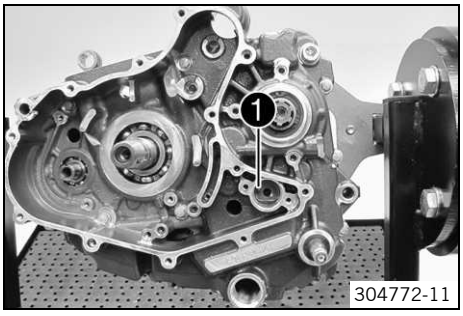


– Grease the shaft seal ring of the countershaft before mounting.

Long-life grease (☛ p. 250)

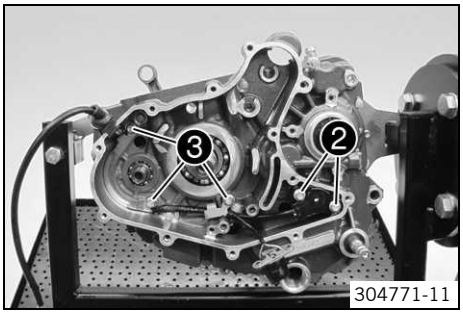
– Mount spacer ❶.

16.5.16 Installing the gear position sensor (125 Duke)



– Mount the contact springs and contact bolt ❶.

✓ The rounded sides of the contact pins face the sensor.



– Install the gear position sensor.
– Mount and tighten screws ❷.

Guideline

Screw, gear sensor	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**

– Position the cable guide in the engine case.
– Position the retaining bracket.

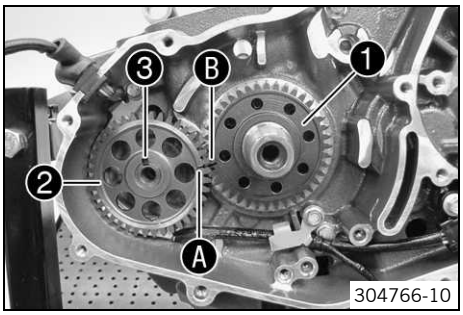
Info
Ensure that the cable is correctly routed.

– Mount and tighten screws ❸.

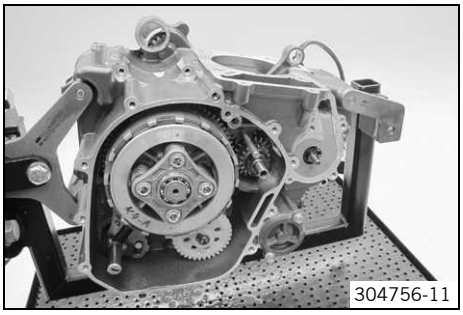
Guideline

Screw, retaining bracket	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**

16.5.17 Installing the balancer shaft drive wheel (125 Duke)

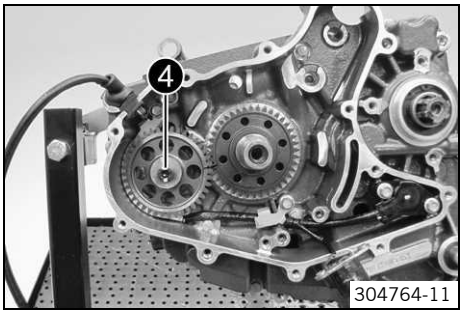


– Mount the spring washer.
– Mount drive wheel ❶ of the balancer shaft.
– Position balancer shaft gear ❷.
  ✓ Markings Ⓐ and Ⓑ align.
– Mount wedge ❸.



– Lock the clutch basket and primary gear using the special tool.

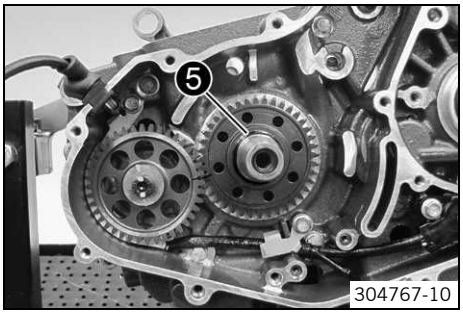
Gear segment (90129081100) (☛ p. 259)



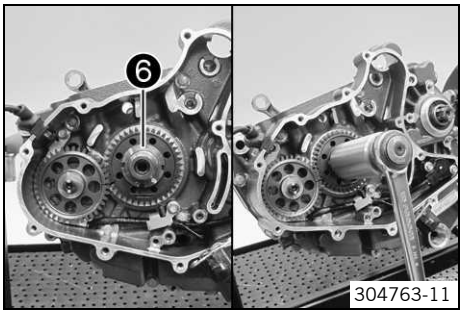
– Mount and tighten screw ❹.

Guideline

Screw, balancer shaft gear	M8	20 Nm (14.8 lbf ft)	**Loctite® 243™**



– Mount washer ❺.
  ✓ The outer side of the washer is in contact with the drive wheel and the inside faces away from the drive wheel.



– Mount and tighten nut ❻.

Guideline

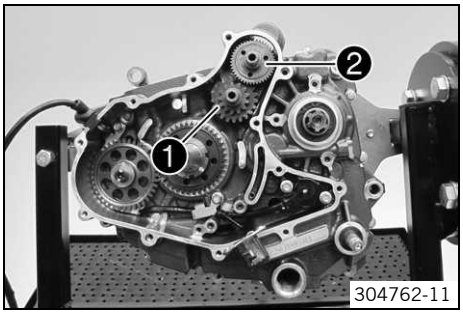
Nut, drive wheel for balancer shaft	M28	60 Nm (44.3 lbf ft)

Castle nut wrench; ½" drive (90129022000) (☛ p. 257)

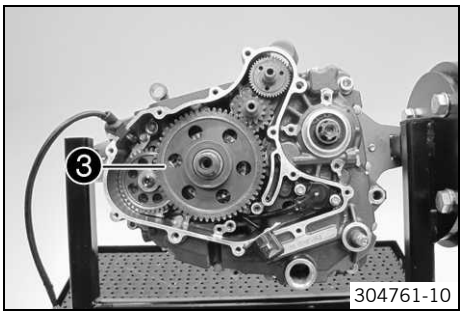
– Remove the special tool.

Gear segment (90129081100) (☛ p. 259)

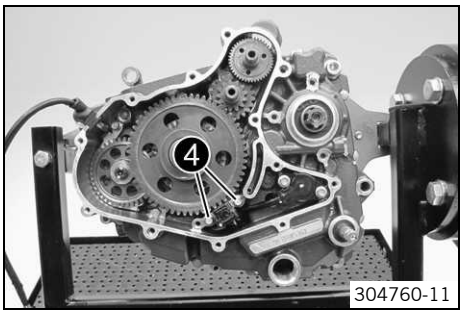
16.5.18 Installing the starter drive (125 Duke)



– Mount starter idler gear ❶.
– Mount torque limiter ❷.



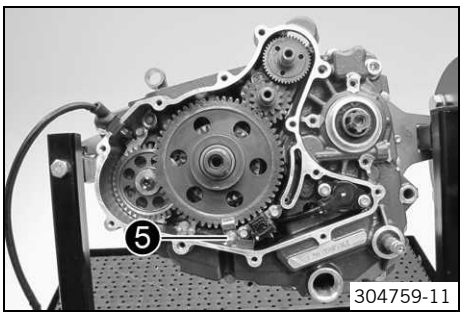
– Position freewheel gear ❸.



– Position the crankshaft position sensor.
– Mount and tighten screws ❹.

Guideline

Screw, ignition pulse generator	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**

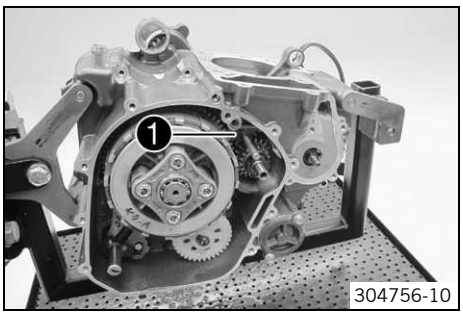


– Position the retaining bracket.
– Mount and tighten screw ❺.

Guideline

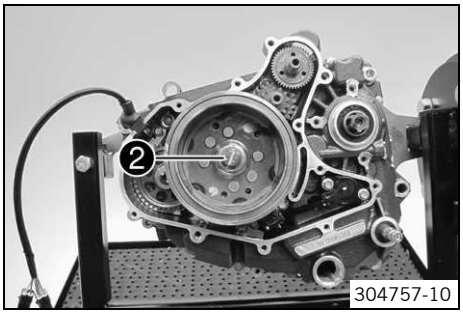
Screw, freewheel gear retaining bracket	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**

16.5.19 Installing the rotor (125 Duke)



– Lock the clutch basket and primary gear using special tool ❶.

Gear segment (90129081100) (☛ p. 259)



– Mount the spring washer.
– Mount the rotor.

Info
Turn the freewheel gear counterclockwise to simplify assembly.

– Mount and tighten screw ❷.

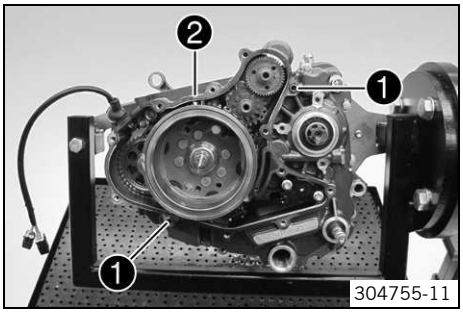
Guideline

Rotor screw	M10	46 Nm (33.9 lbf ft)	**Loctite® 243™**

– Remove the special tool.

Gear segment (90129081100) (☛ p. 259)

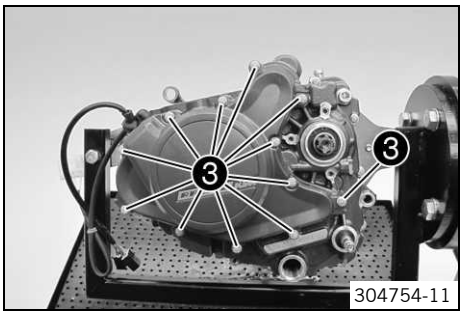
16.5.20 Installing the alternator cover (125 Duke)



– Mount the dowels ❶.
– Seal the cable guide.

Loctite® 5910

– Mount the alternator cover gasket ❷.

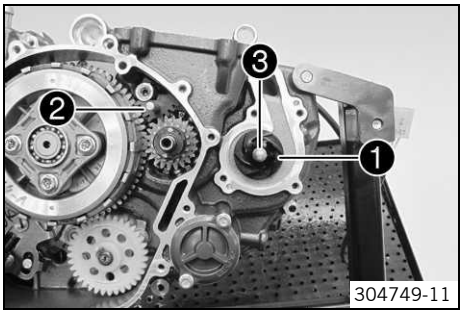


– Position the alternator cover.
– Install the screws ❸ and tighten them diagonally.

Guideline

Screw, alternator cover	M6	12 Nm (8.9 lbf ft)

16.5.21 Installing the water pump cover (125 Duke)



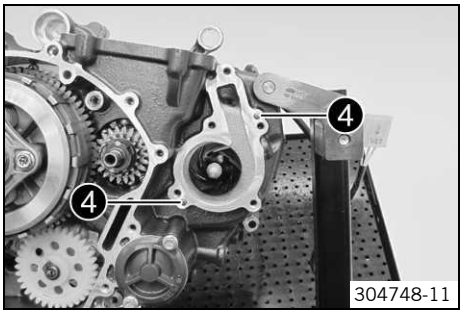
– Mount water pump impeller ❶.
– Lock the clutch basket and primary gear using special tool ❷.

Gear segment (90129081100) (☛ p. 259)

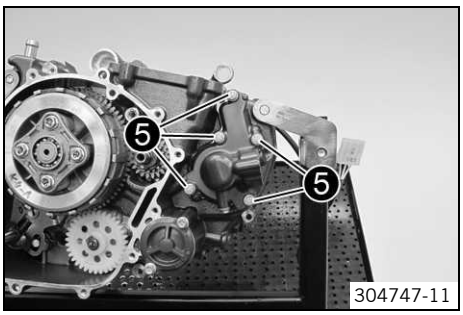
– Mount and tighten nut ❸ with the washer.

Guideline

Nut, water pump impeller	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**



– Mount locating pins ❹.



– Mount the water pump cover with the seal ring.
– Install the screws ❺ and tighten them diagonally.

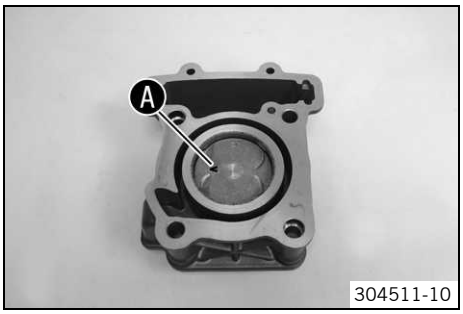
Guideline

Screw, water pump cover	M6	12 Nm (8.9 lbf ft)

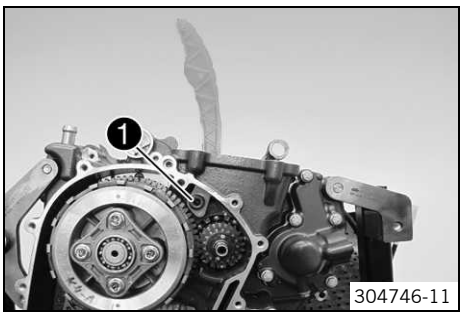
16.5.22 Installing the piston (125 Duke)

– Shift the joint of the piston rings by 120°.
– Push the piston carefully into the cylinder from below.

Info
The piston rings should not become caught; otherwise, they may be damaged.



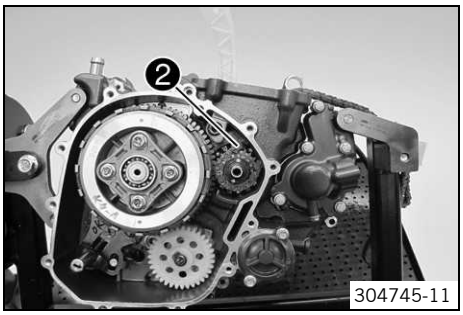
– Ensure that piston marking Ⓐ faces the outfeed side.



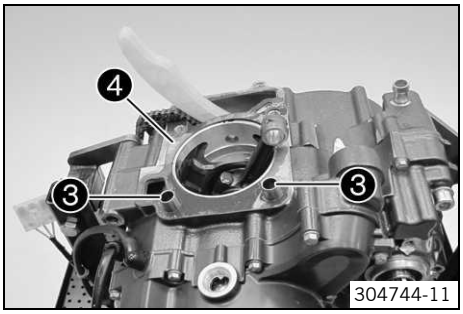
– Thread in the timing chain tensioning rail from above.
– Mount and tighten screw ❶.

Guideline

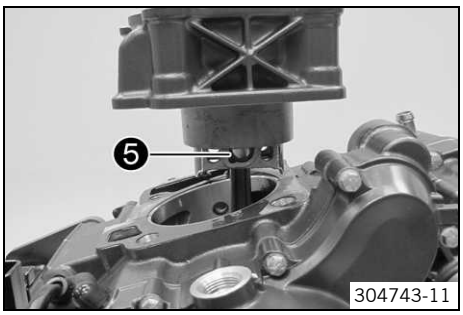
Screw, timing chain tensioning rail	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**



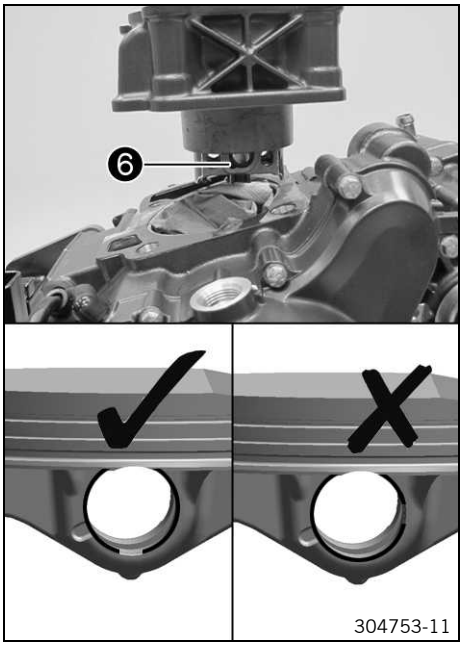
– Position timing chain ❷ in the engine case in the direction of travel.



– Mount dowels ❸ and cylinder base gasket ❹.



– Thread the timing chain through the chain shaft. Mount piston pin ❺.

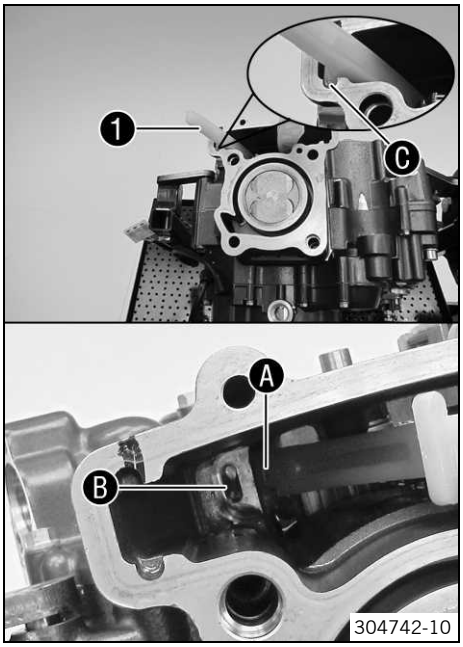


– Cover the engine case opening with a cloth.
– Position piston pin retainer ❻.
– Insert the special tool and firmly press it toward the piston.

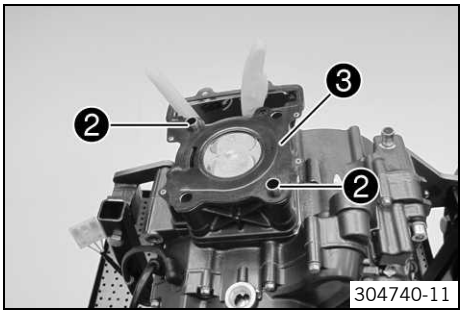
Insertion for piston ring lock (90129030000) (☛ p. 258)

– Turn the special tool clockwise, thereby pressing the piston pin retainer into the groove.
– Make sure that the piston pin retainer is seated correctly on both sides.
– Remove the cloth.
– Keep the timing chain tensioned. Push the cylinder down carefully and let the dowels engage.

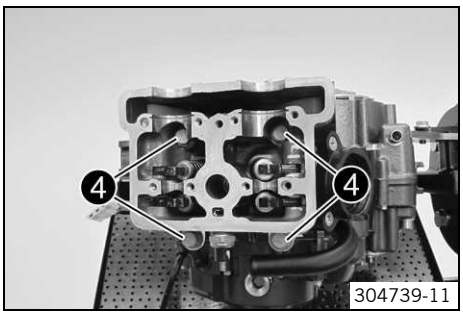
16.5.23 Installing the cylinder head (125 Duke)



– Position timing chain guide rail ❶.
  ✓ Pins Ⓐ engage in recess Ⓑ.
  ✓ The timing chain guide rail engages in recess Ⓒ.

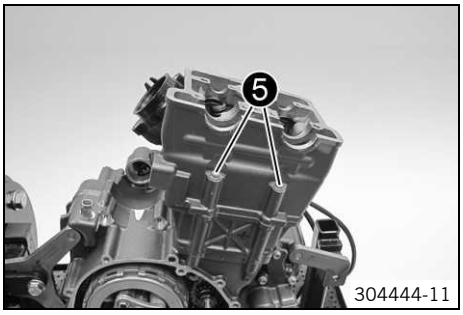


– Mount dowels ❷.
– Put on cylinder head gasket ❸.
– Mount the cylinder head.



– Mount screws ❹ with the washer and tighten in a crisscross pattern.
Guideline

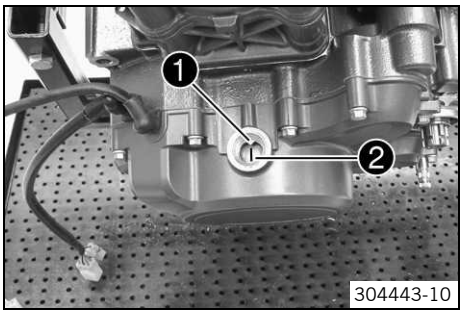
Cylinder head screw	M10	Step 1 20 Nm (14.8 lbf ft) Step 2 40 Nm (29.5 lbf ft)	Thread is oiled, head flat is greased



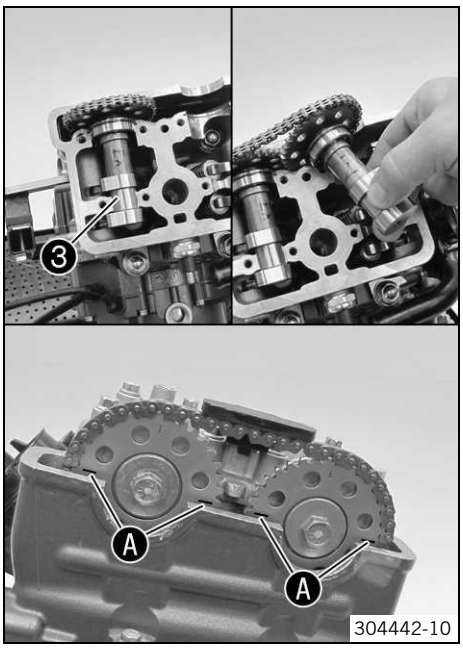
– Mount and tighten screws ❺.
Guideline

Cylinder head screw	M6	12 Nm (8.9 lbf ft)

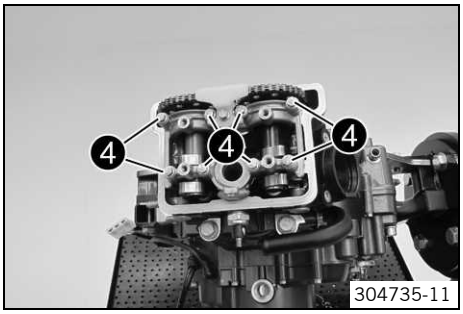
16.5.24 Installing the camshafts (125 Duke)



– Turn the crankshaft clockwise until markings ❶ and ❷ align.



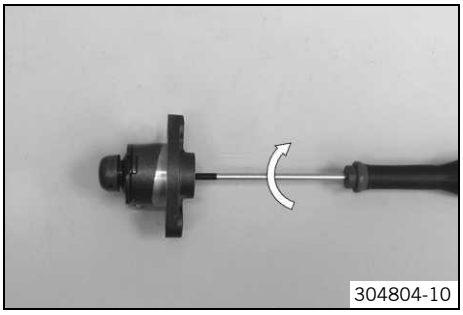
– Pull up the timing chain and insert exhaust camshaft ❸.
– Place the timing chain over the camshaft gear of the intake camshaft.
✓ Markings Ⓐ of the camshafts align with the edge of the cylinder head.



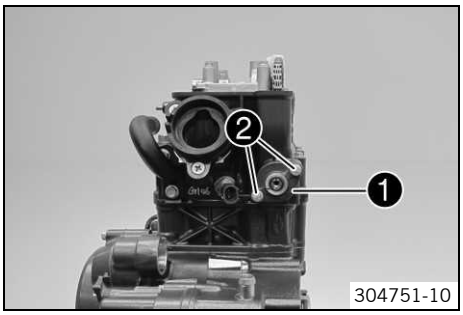
– Clean all oil nozzles thoroughly and blow out with compressed air.
– Mount the dowels.
– Position the camshaft bearing bridge.
– Mount screws ❹ and tighten from the inside to the outside.
Guideline

Screw, camshaft bearing bridge	M6	11 Nm (8.1 lbf ft)

16.5.25 Installing the timing chain tensioner (125 Duke)

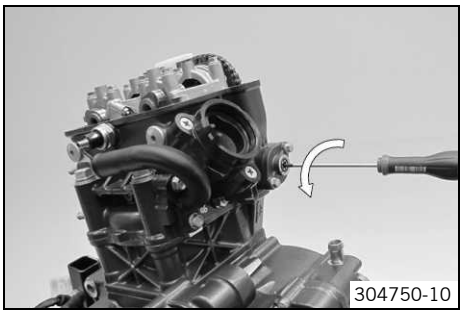


– Turn the timing chain tensioner screw clockwise.
✓ The timing chain tensioner is locked.

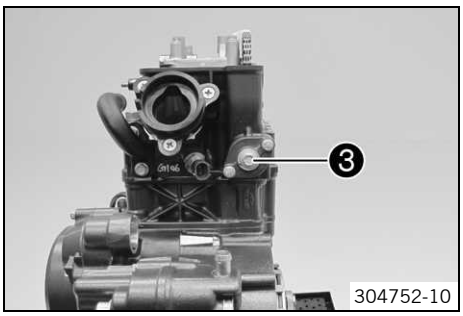


– Holding it with the correct orientation, mount the timing chain tensioner ❶ with the gasket.
– Mount and tighten screws ❷.
Guideline

Screw, timing chain tensioner	M6	12 Nm (8.9 lbf ft)



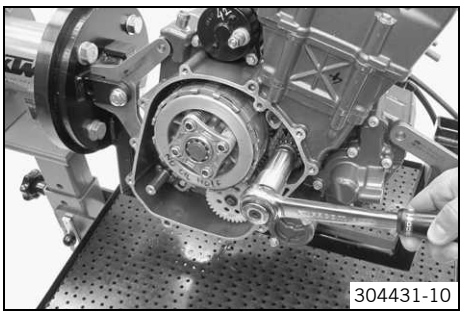
– Unlock the timing chain tensioner screw counterclockwise.
– Check the timing chain tension.



– Mount and tighten screw ❸ with the O-ring.
Guideline

Screw, unlocking of timing chain tensioner	M6	10 Nm (7.4 lbf ft)

16.5.26 Checking the valve clearance (125 Duke)



– Crank the engine several times.

Castle nut wrench; ½" drive (90129021000) (☛ p. 257)

– Set the engine to ignition top dead center. (☛ p. 92)

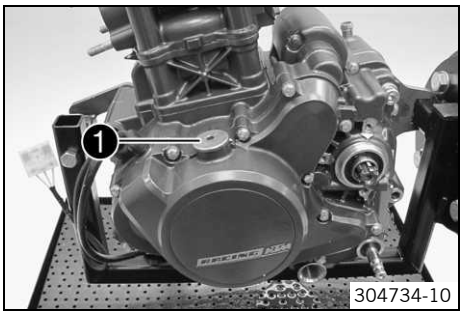
– Check the valve clearance at all valves between the camshaft and cam lever.

Guideline

Valve clearance, exhaust, cold	0.13... 0.17 mm (0.0051... 0.0067 in)
Valve clearance, intake, cold	0.08... 0.12 mm (0.0031... 0.0047 in)

Feeler gauge (59029041100) (☛ p. 253)

» If valve clearance does not meet specifications:
  – Adjust the valve clearance. (☛ p. 172)



– Mount and tighten screw plug ❶.

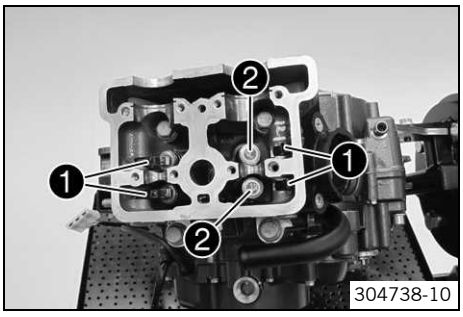
Guideline

Screw plug, alternator cover	M18x1.5	15 Nm (11.1 lbf ft)

16.5.27 Adjusting the valve clearance (125 Duke)

Main work

– Remove the timing chain tensioner. (☛ p. 93)
– Remove the camshaft. (☛ p. 93)

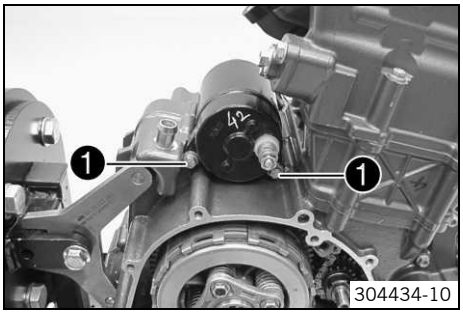


– Swing up cam lever ❶.
– Correct the shims ❷ as indicated by the results of the valve clearance check.
– Install the camshafts. (☛ p. 170)
– Install the timing chain tensioner. (☛ p. 171)

Finishing work

– Check the valve clearance. (☛ p. 172)

16.5.28 Installing the starter motor (125 Duke)



– Grease the O-ring. Position the starter motor.

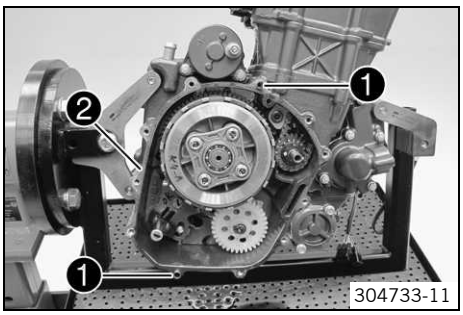
Long-life grease (☛ p. 250)

– Mount and tighten screws ❶.

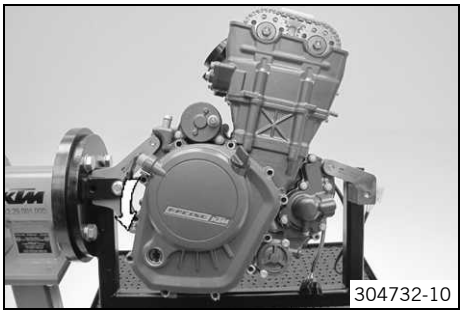
Guideline

Screw, starter motor	M6	12 Nm (8.9 lbf ft)

16.5.29 Installing the clutch cover (125 Duke)

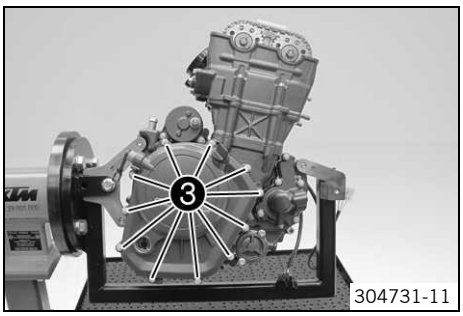


– Mount dowel ❶ and clutch cover gasket ❷.



– Position the clutch cover.

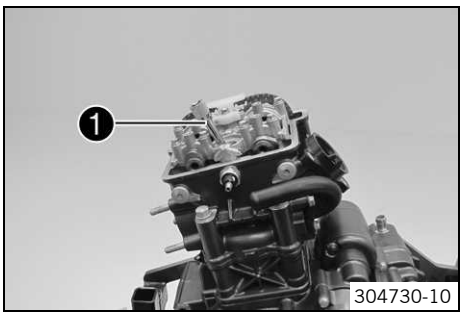
Info
Pivot the clutch lever.



– Mount and tighten screws ❸.
Guideline

Screw, clutch cover	M6	12 Nm (8.9 lbf ft)

16.5.30 Installing the spark plug (125 Duke)

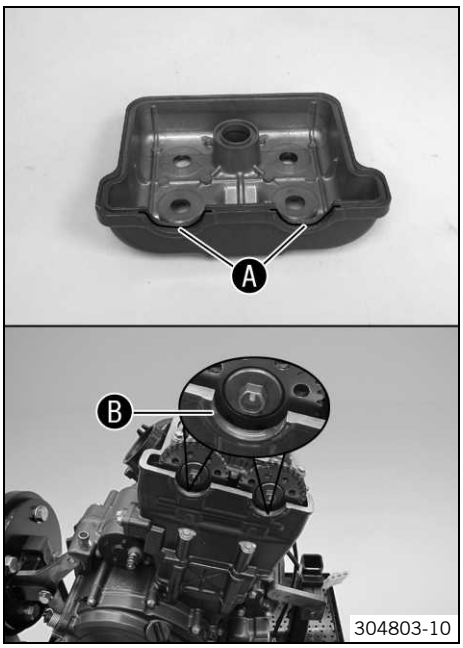


– Mount and tighten the spark plug using special tool ❶.
Guideline

Spark plug	M12	15 Nm (11.1 lbf ft)

Spark plug wrench (77229172000) (☛ p. 255)

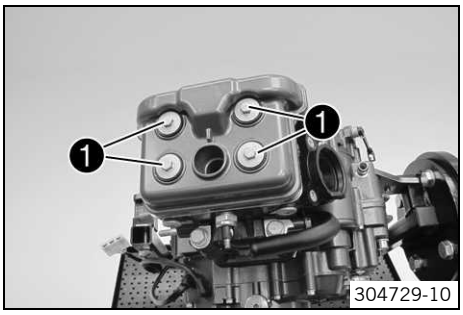
16.5.31 Installing the valve cover (125 Duke)



– Degrease the sealing areas and thinly coat with sealant in areas Ⓐ and Ⓑ.

Loctite® 5910

– Position the gasket in the valve cover.

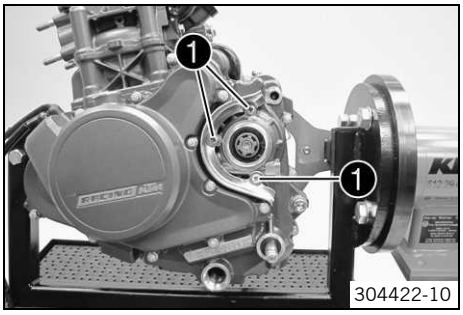


– Position the valve cover with the gasket.
– Mount and tighten screws ❶ with the gaskets.

Guideline

Screw, valve cover	M6	12 Nm (8.9 lbf ft)

16.5.32 Installing the chain securing guide (125 Duke)

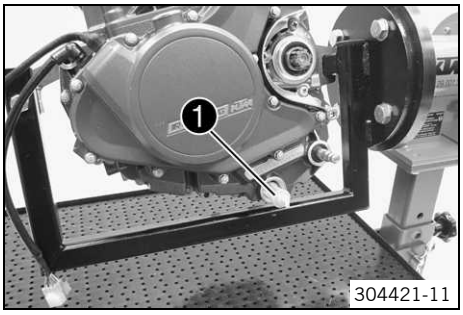


– Position the chain securing guide.
– Mount and tighten screws ❶.

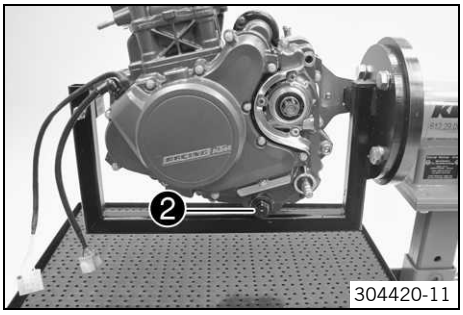
Guideline

Screw, chain securing guide	M6	11 Nm (8.1 lbf ft)	**Loctite® 243™**

16.5.33 Installing the oil screen (125 Duke)



– Mount oil screen ❶ with the O-ring.

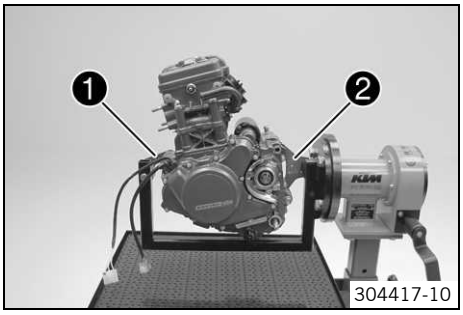


– Mount and tighten oil drain plug ❷ with the O-ring.

Guideline

Oil drain plug	M24x1.5	15 Nm (11.1 lbf ft)

16.5.34 Removing the engine from the engine assembly stand (125 Duke)



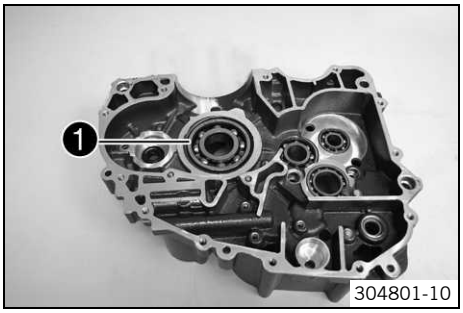
– Remove the fitting from special tools ❶ and ❷.

Engine fixing arm (90129002060) (☛ p. 256)
Engine fixing arm (90129002050) (☛ p. 255)

– Remove the engine from the engine assembly stand.

Info
Have an assistant help you or use a crane.

16.5.35 Installing the crankshaft (200 Duke)

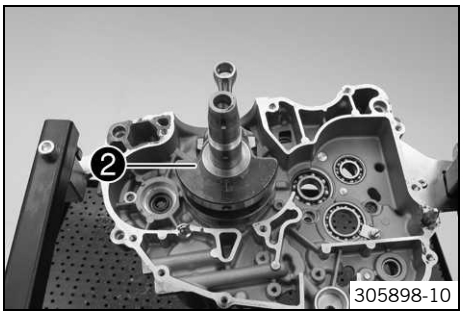


– Warm the engine case section in an oven.

Guideline

150 °C (302 °F)

– Mount main bearing ❶.



– Heat the main bearing.

Guideline

150 °C (302 °F)

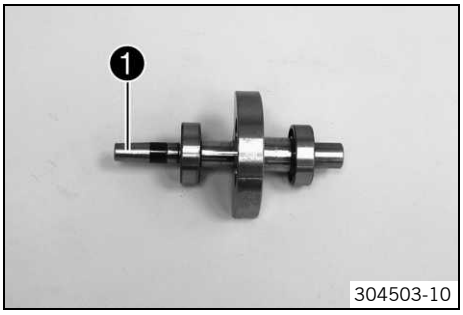
– Slide crankshaft ❷ into the bearing seat.
– Heat the left main bearing.

Guideline

150 °C (302 °F)

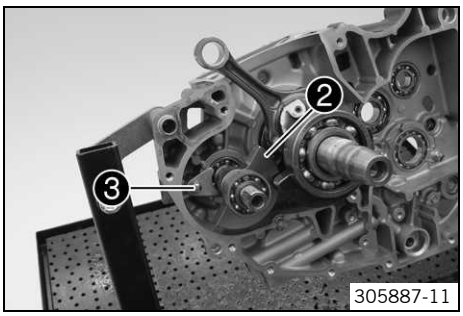
– Mount the main bearing on the crankshaft.
– Cool the main bearing.
– Oil the bearing.

16.5.36 Installing the balancer shaft (200 Duke)



– Mount special tool ❶.

Mounting sleeve (90129005000) (☛ p. 256)



– Mount balancer shaft ❷ with the bearing.

Info
If necessary, heat the engine case.

– Position the retaining bracket.
– Mount and tighten screw ❸.

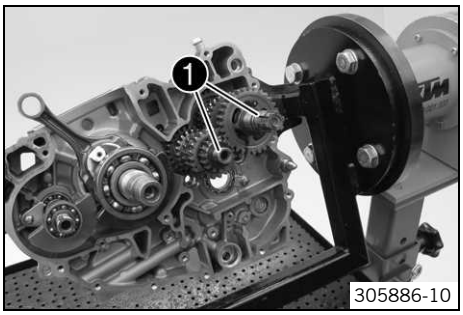
Guideline

Screw, bearing retainer	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**

– Remove the special tool.

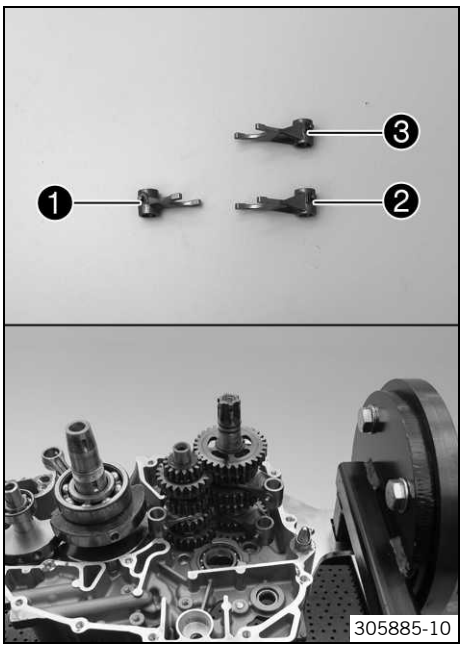
Mounting sleeve (90129005000) (☛ p. 256)

16.5.37 Installing the transmission shafts (200 Duke)



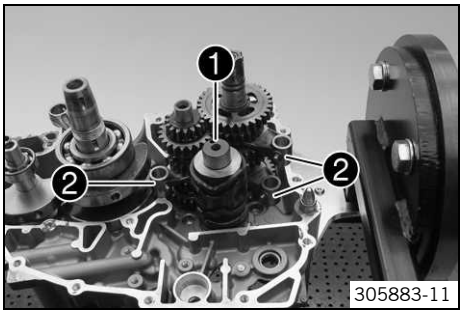
– Oil the bearing.
– Slide both transmission shafts ❶ into the bearing seats together.

16.5.38 Installing the shift forks (200 Duke)



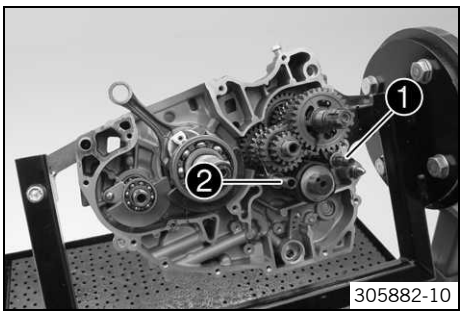
– Oil all parts carefully before assembling.
– Shift fork ❶ has a smaller inside diameter; mount it in the shift groove of the main shaft.
– Mount shift fork ❷ in the lower shift groove of the countershaft.
– Mount shift fork ❸ in the upper shift groove of the countershaft.

16.5.39 Installing the shift drum (200 Duke)



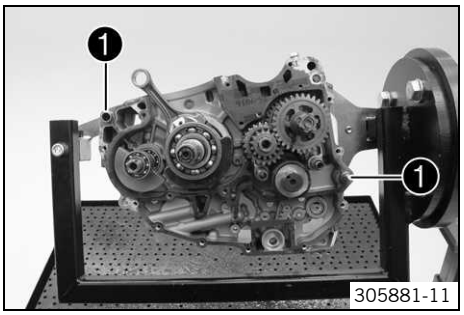
– Slide shift drum ❶ into the bearing seat.
– Hang shift forks ❷ into the shift drum.

16.5.40 Installing the shift rails (200 Duke)

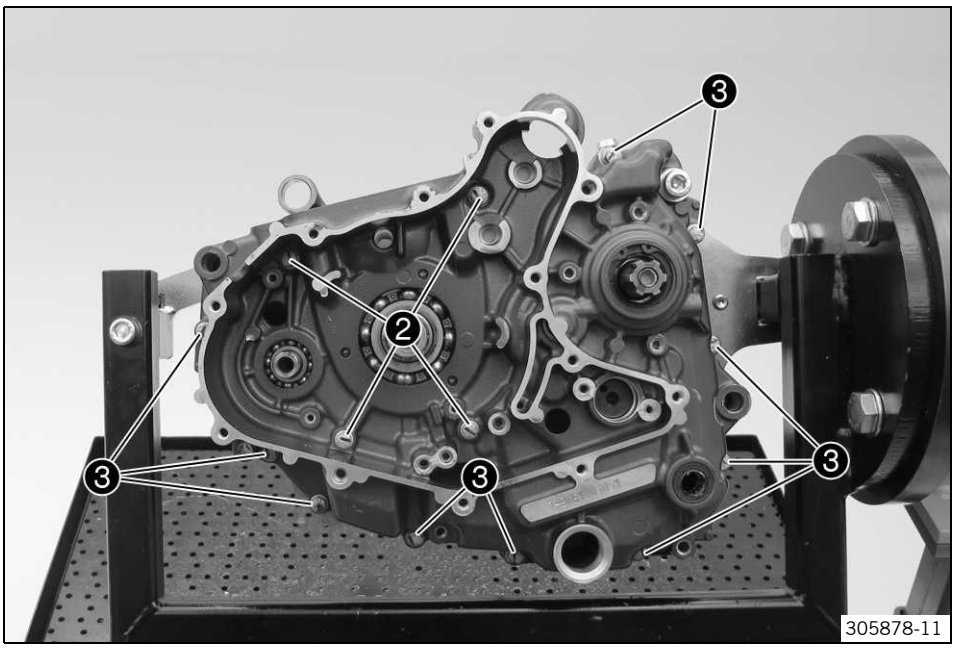


– Oil all parts carefully before assembling.
– Mount shift rail ❶ together with upper spring and the lower spring.
– Mount shift rail ❷.

16.5.41 Installing the left engine case (200 Duke)



– Clean the sealing areas.
– Mount dowels ❶.
– Mount the engine case gasket.



– Warm the left engine case section in an oven.

Guideline

150 °C (302 °F)

– Mount the engine case section. If necessary, tap lightly with a rubber mallet while turning the transmission shafts.

Info
Do not tighten the engine case sections using the screws.

– Mount screws ❷ but do not tighten them yet.

Guideline

Screw, engine case	M6x60	12 Nm (8.9 lbf ft)	**Loctite® 243™**

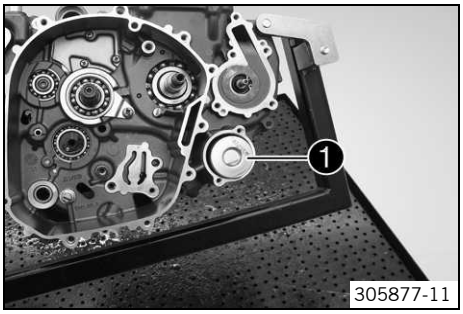
– Mount screws ❸ and tighten all screws in a crisscross pattern.

Guideline

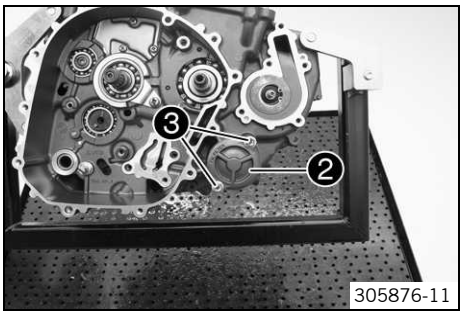
Screw, engine case	M6x40	12 Nm (8.9 lbf ft)

– Mount the fitting of the engine fixing arm.

16.5.42 Installing the oil filter (200 Duke)



– Tilt the engine sideways and fill the oil filter housing approx. ⅓ full with engine oil.
– Fill oil filter ❶ with engine oil and insert it in the oil filter housing.

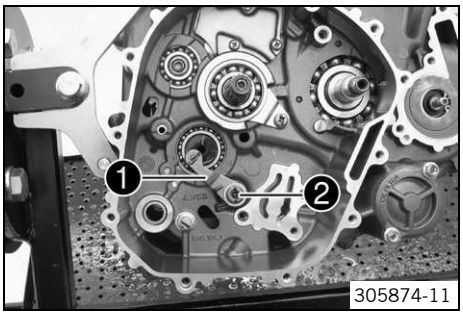


– Oil the O-ring of the oil filter cover.
– Install the oil filter cover ❷.
– Mount and tighten screws ❸.

Guideline

Screw, oil filter cover	M5	8 Nm (5.9 lbf ft)

16.5.43 Installing the locking lever (200 Duke)

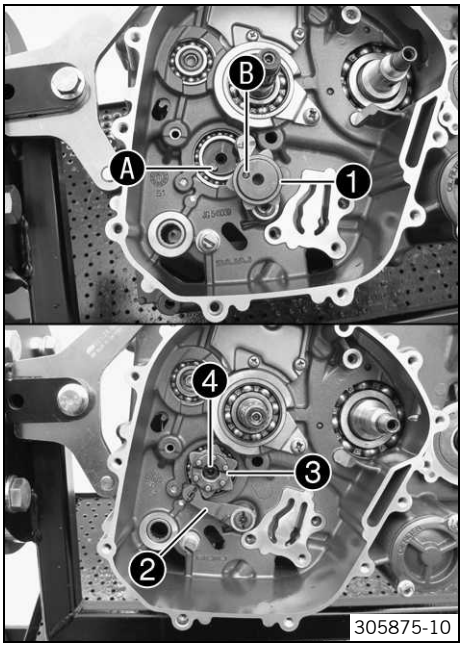


– Mount locking lever ❶ with the sleeve, washers and spring.
– Mount and tighten screw ❷ with the washer.

Guideline

Screw, locking lever	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**

16.5.44 Installing the shift drum locating (200 Duke)

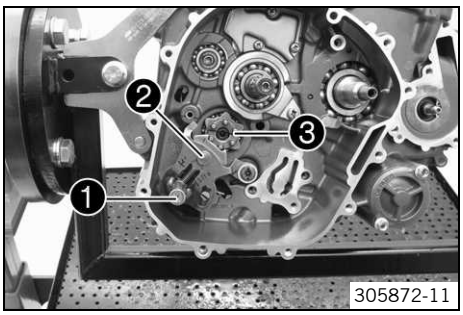


– Mount spacer ring ❶ on the shift drum locating unit.
– Press locking lever ❷ away from the shift drum locating and position the shift drum locating ❸.
  ✓ Pins ❹ engage in hole ❸.
– Release the locking lever.
– Mount and tighten screw ❹.

Guideline

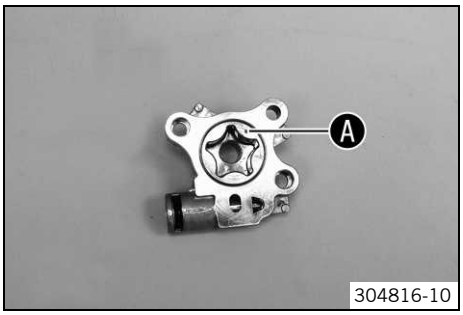
Screw, shift drum locating	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**

16.5.45 Installing the shift shaft (200 Duke)

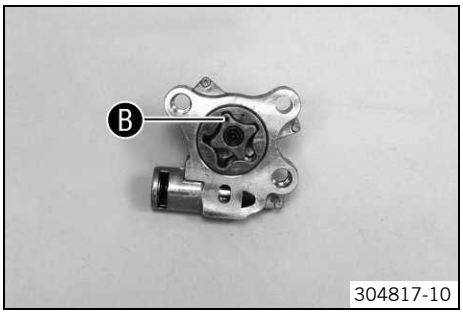


– Slide shift shaft ❶ with the washer into the bearing seat.
– Push sliding plate ❷ away from the shift drum locating ❸. Insert the shift shaft all the way.
– Let the sliding plate engage in the shift drum locating.
– Shift through the transmission.

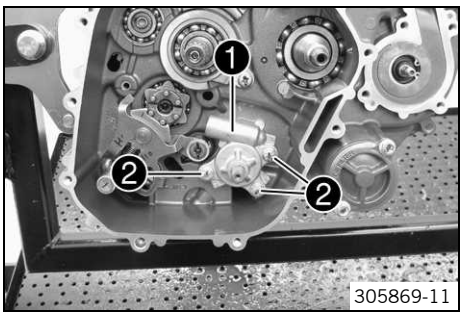
16.5.46 Installing the oil pump (200 Duke)



– Position the external rotor in the oil pump housing.
  ✔ The marking Ⓐ is visible after mounting.

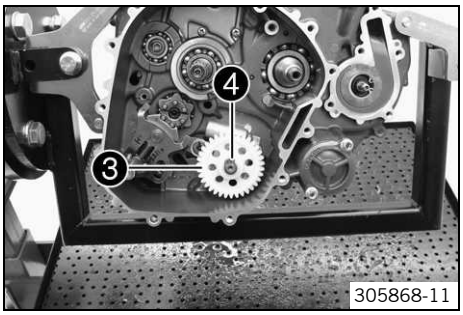


– Mount the internal rotor with the oil pump shaft.
  ✔ The marking Ⓑ is visible after mounting.



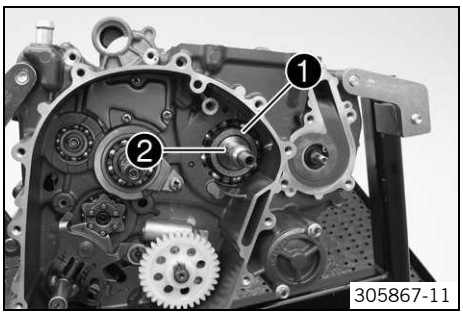
– Check that the oil holes are clear and fill with a small amount of oil.
– Mount the dowels.
– Position oil pump ❶.
– Mount and tighten screws ❷.
  Guideline

Screw, oil pump	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**

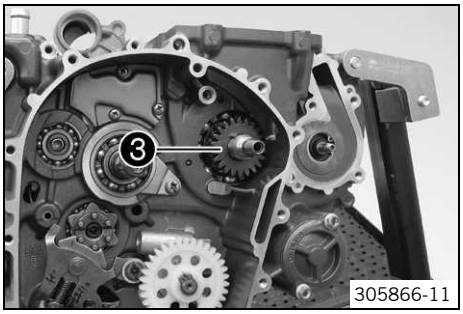


– Position oil pump gear ❸.
– Mount lock ring ❹.
– Crank the oil pump gear and check for stiffness.

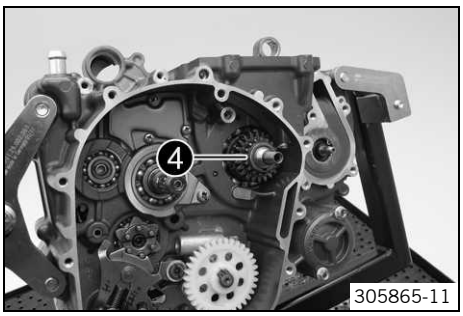
16.5.47 Installing the primary gear (200 Duke)



– Position spacer ring ❶.
– Mount spring washer ❷.

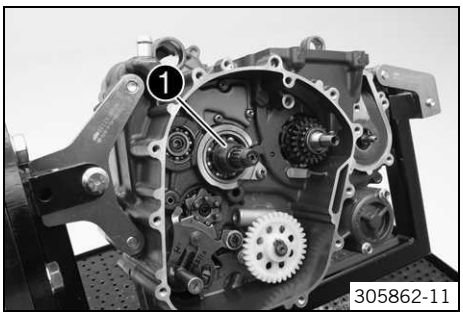


– Mount primary gear ❸.

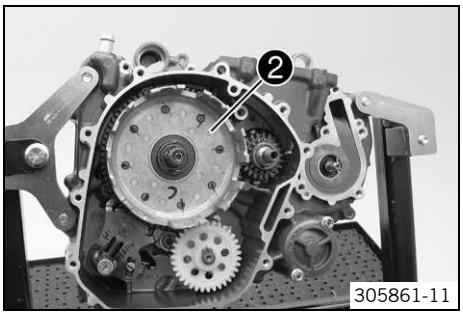


– Mount timing chain sprocket ❹.

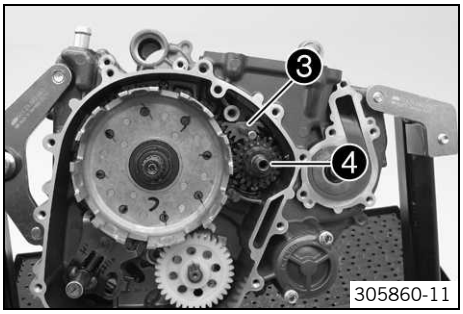
16.5.48 Installing the clutch basket (200 Duke)



– Mount collar sleeve ❶.



– Slide the clutch basket ❷ onto the gearbox main shaft. Turn the oil pump gear until the gear teeth of the clutch basket mesh.



– Lock the clutch basket and primary gear using special tool ❸.

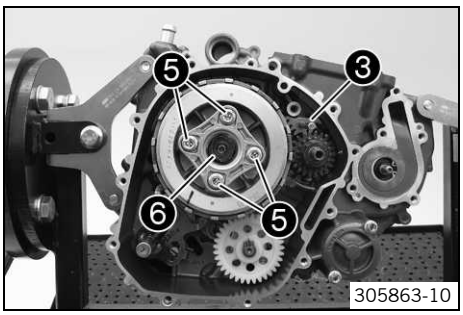
Gear segment (90129081100) (☛ p. 259)

– Mount and tighten nut ❹ with the washer.

Guideline

Nut, primary gear	M14	55 Nm (40.6 lbf ft)

Castle nut wrench; ½" drive (90129021000) (☛ p. 257)



– Position the preassembled inner clutch hub.

Info
Make sure that the upper clutch facing disc is offset by one notch.

– Lock the clutch basket and primary gear using special tool ❸.

Gear segment (90129081100) (☛ p. 259)

– Tighten screws ❺.

Guideline

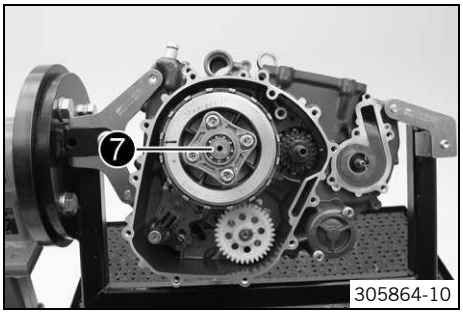
Screw, clutch spring	M6	10 Nm (7.4 lbf ft)

– Mount and tighten nut ❻ with the washer.

Guideline

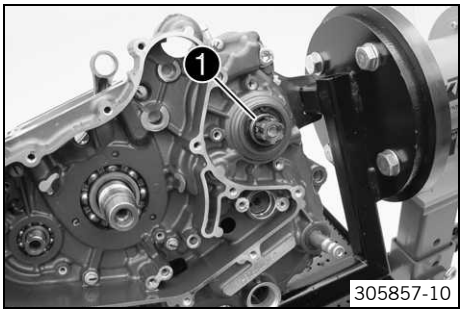
Nut, inner clutch hub	M14LH	60 Nm (44.3 lbf ft)	**Loctite® 243™**

Castle nut wrench; ½" drive (90129021000) (☛ p. 257)



– Mount bearing ❼.

16.5.49 Installing the spacer (200 Duke)

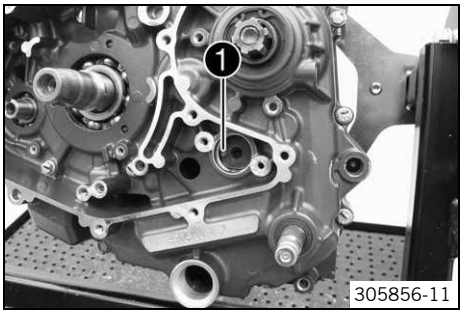


– Grease the shaft seal ring of the countershaft before mounting.

Long-life grease (☛ p. 250)

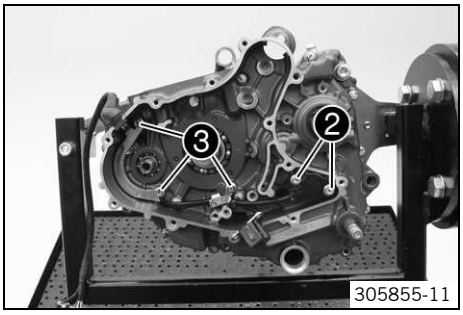
– Mount spacer ❶.

16.5.50 Installing the gear position sensor (200 Duke)



– Mount the contact springs and contact bolt ❶.

✓ The rounded sides of the contact pins face the sensor.



– Install the gear position sensor.
– Mount and tighten screws ❷.

Guideline

Screw, gear sensor	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**

– Position the cable guide in the engine case.
– Position the retaining bracket.

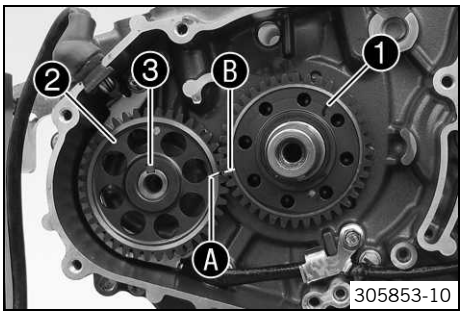
Info
Ensure that the cable is correctly routed.

– Mount and tighten screws ❸.

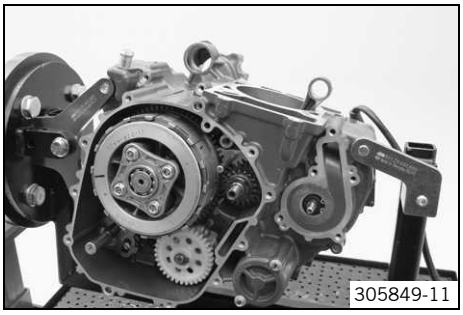
Guideline

Screw, retaining bracket	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**

16.5.51 Installing the balancer shaft drive wheel (200 Duke)

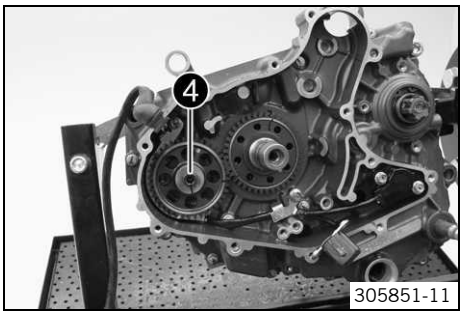


– Mount the spring washer.
– Mount drive wheel ❶ of the balancer shaft.
– Position balancer shaft gear ❷.
  ✓ Markings Ⓐ and Ⓑ align.
– Mount wedge ❸.



– Lock the clutch basket and primary gear using the special tool.

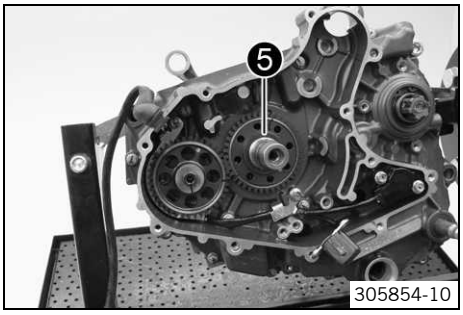
Gear segment (90129081100) (☛ p. 259)



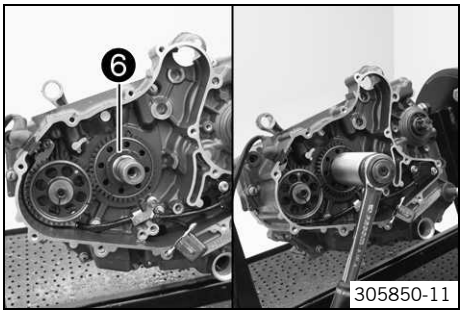
– Mount and tighten screw ❹.

Guideline

Screw, balancer shaft gear	M8	20 Nm (14.8 lbf ft)	**Loctite® 243™**



– Mount washer ❺.
  ✓ The outer side of the washer is in contact with the drive wheel and the inside faces away from the drive wheel.



– Mount and tighten nut ❻.

Guideline

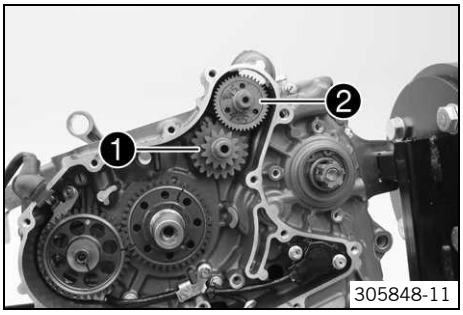
Nut, drive wheel for balancer shaft	M28	60 Nm (44.3 lbf ft)

Castle nut wrench; ½" drive (90129022000) (☛ p. 257)

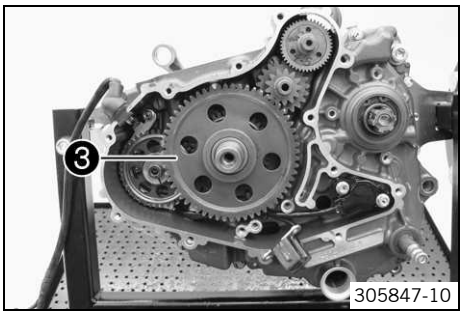
– Remove the special tool.

Gear segment (90129081100) (☛ p. 259)

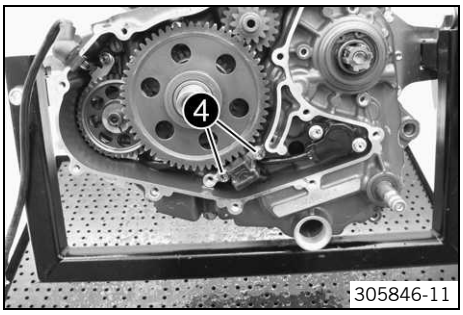
16.5.52 Installing the starter drive (200 Duke)



– Mount starter idler gear ❶.
– Mount torque limiter ❷.



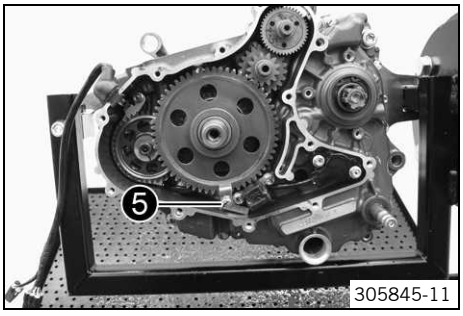
– Position freewheel gear ❸.



– Position the crankshaft position sensor.
– Mount and tighten screws ❹.

Guideline

Screw, ignition pulse generator	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**

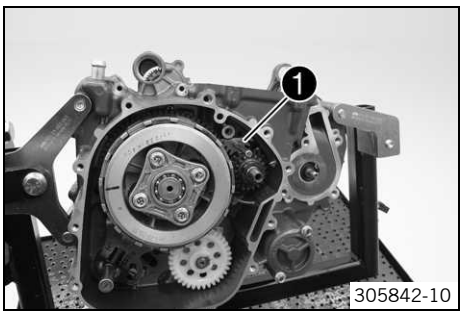


– Position the retaining bracket.
– Mount and tighten screw ❺.

Guideline

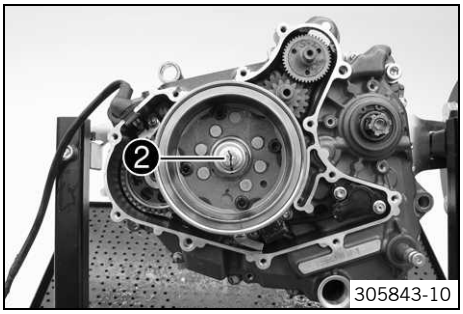
Screw, freewheel gear retaining bracket	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**

16.5.53 Installing the rotor (200 Duke)



– Lock the clutch basket and primary gear using special tool ❶.

Gear segment (90129081100) (☛ p. 259)



– Mount the spring washer.
– Mount the rotor.

Info
Turn the freewheel gear counterclockwise to simplify assembly.

– Mount and tighten screw ❷.

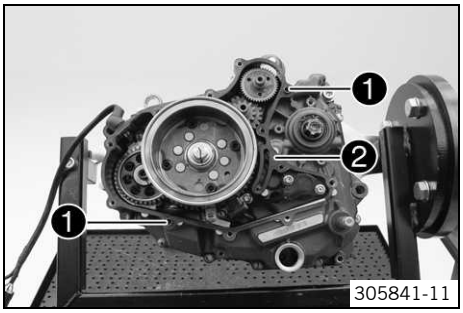
Guideline

Rotor screw	M10	46 Nm (33.9 lbf ft)	**Loctite® 243™**

– Remove the special tool.

Gear segment (90129081100) (☛ p. 259)

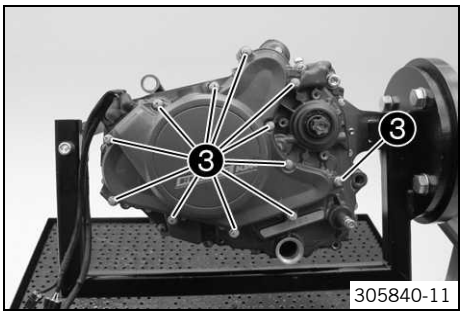
16.5.54 Installing the alternator cover (200 Duke)



– Mount the dowels ❶.
– Seal the cable guide.

Loctite® 5910

– Mount the alternator cover gasket ❷.

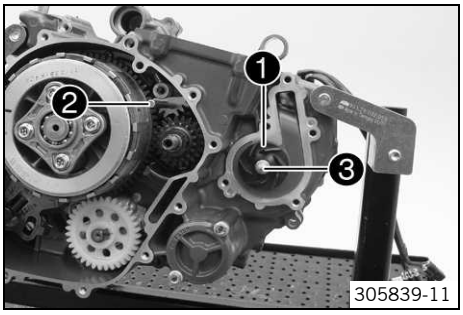


– Position the alternator cover.
– Install the screws ❸ and tighten them diagonally.

Guideline

Screw, alternator cover	M6	12 Nm (8.9 lbf ft)

16.5.55 Installing the water pump cover (200 Duke)



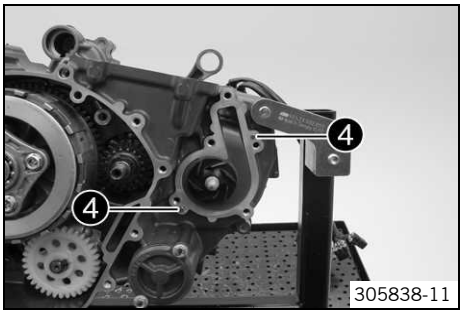
– Mount water pump impeller ❶.
– Lock the clutch basket and primary gear using special tool ❷.

Gear segment (90129081100) (☛ p. 259)

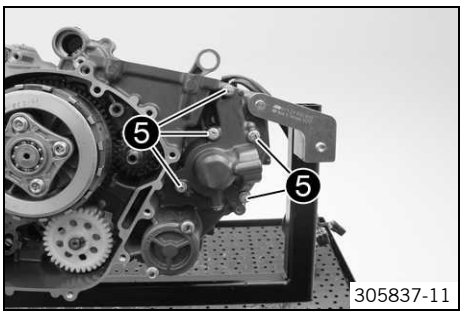
– Mount and tighten nut ❸ with the washer.

Guideline

Nut, water pump impeller	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**



– Mount locating pins ❹.



– Mount the water pump cover with the seal ring.
– Install the screws ❺ and tighten them diagonally.

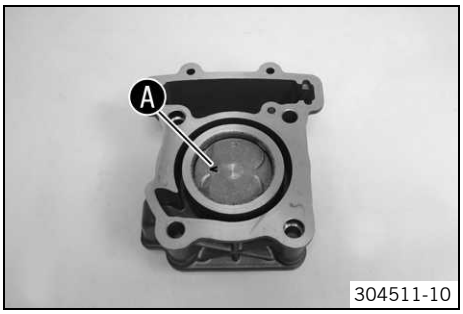
Guideline

Screw, water pump cover	M6	12 Nm (8.9 lbf ft)

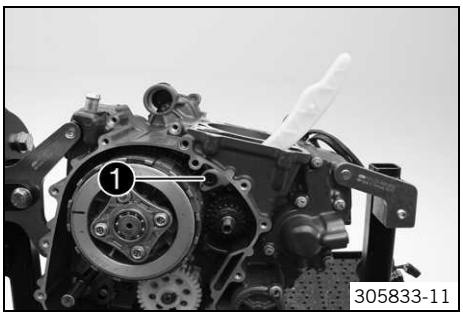
16.5.56 Installing the piston (200 Duke)

– Shift the joint of the piston rings by 120°.
– Push the piston carefully into the cylinder from below.

Info
The piston rings should not become caught; otherwise, they may be damaged.



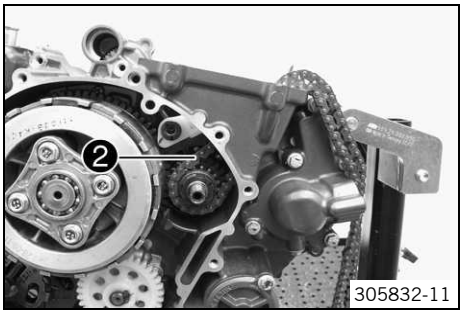
– Ensure that piston marking Ⓐ faces the outfeed side.



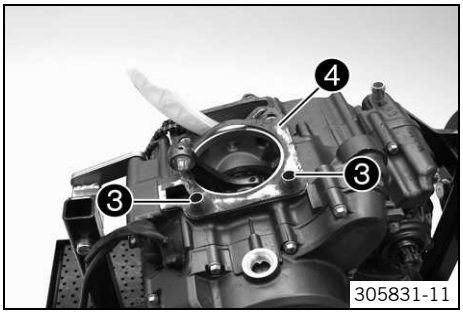
– Thread in the timing chain tensioning rail from above.
– Mount and tighten screw ❶.

Guideline

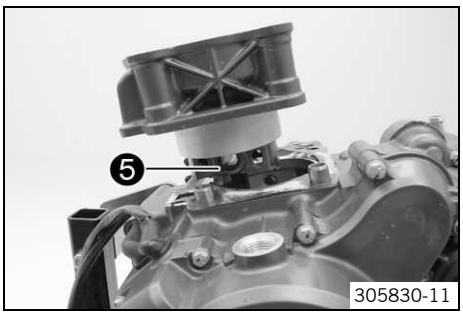
Screw, timing chain tensioning rail	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**



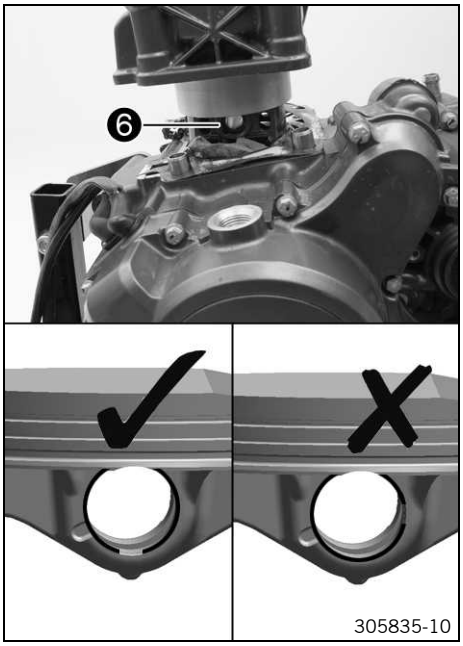
– Position timing chain ❷ in the engine case in the direction of travel.



– Mount dowels ❸ and cylinder base gasket ❹.



– Thread the timing chain through the chain shaft. Mount piston pin ❺.

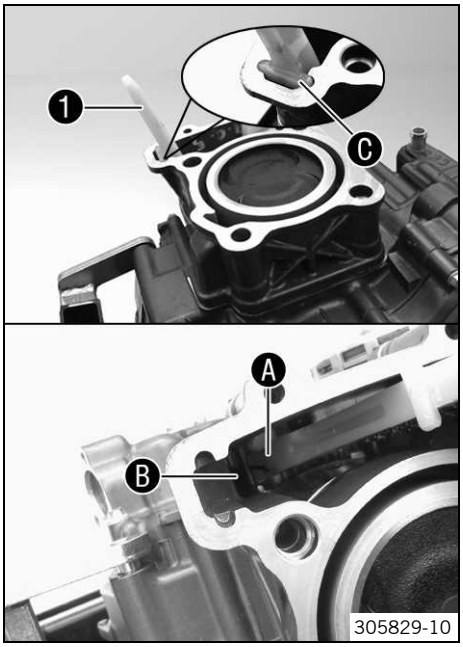


– Cover the engine case opening with a cloth.
– Position piston pin retainer ❻.
– Insert the special tool and firmly press it toward the piston.

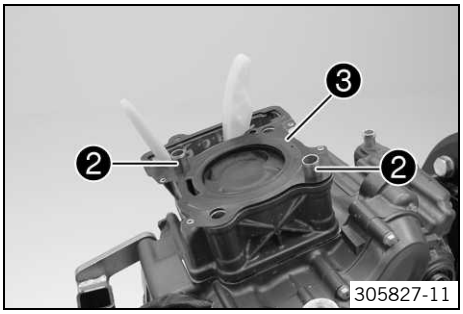
Insertion for piston ring lock (90129030000) (☛ p. 258)

– Turn the special tool clockwise, thereby pressing the piston pin retainer into the groove.
– Make sure that the piston pin retainer is seated correctly on both sides.
– Remove the cloth.
– Keep the timing chain tensioned. Push the cylinder down carefully and let the dowels engage.

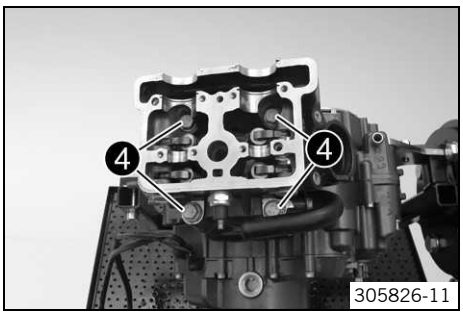
16.5.57 Installing the cylinder head (200 Duke)



– Position timing chain guide rail ❶.
  ✔ Pins ❹ engage in recess ❸.
  ✔ The timing chain guide rail engages in recess ❻.

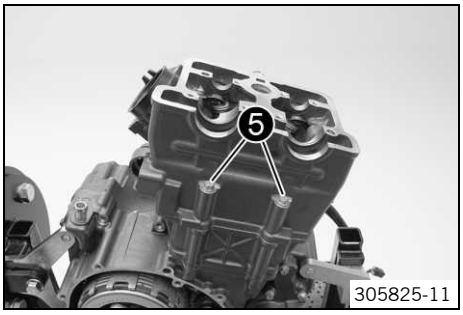


– Mount dowels ❷.
– Put on cylinder head gasket ❸.
– Mount the cylinder head.



– Mount screws ❹ with the washer and tighten in a crisscross pattern.
Guideline

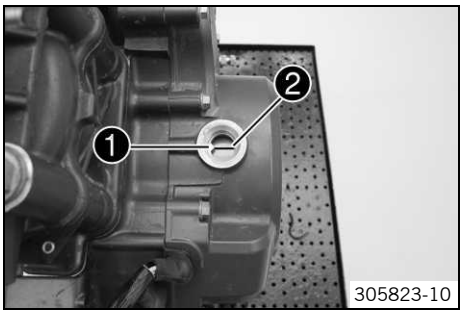
Cylinder head screw	M10	Step 1 20 Nm (14.8 lbf ft) Step 2 40 Nm (29.5 lbf ft)	Thread is oiled, head flat is greased



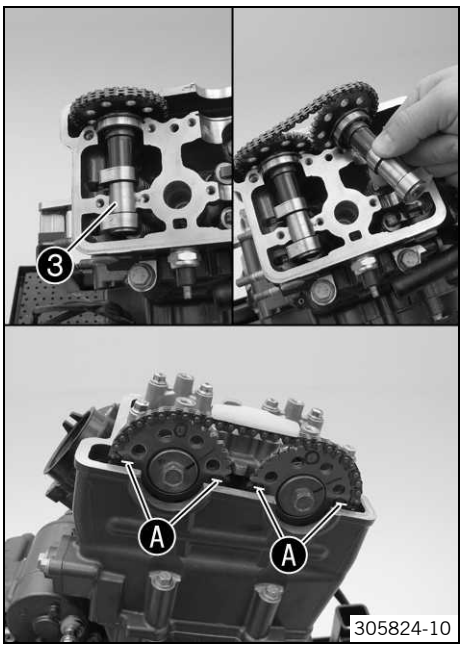
– Mount and tighten screws ❺.
Guideline

Cylinder head screw	M6	12 Nm (8.9 lbf ft)

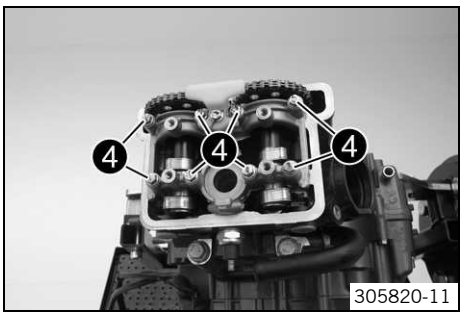
16.5.58 Installing the camshafts (200 Duke)



– Turn the crankshaft clockwise until markings ❶ and ❷ align.



– Pull up the timing chain and insert exhaust camshaft ❸.
– Place the timing chain over the camshaft gear of the intake camshaft.
✓ Markings Ⓐ of the camshafts align with the edge of the cylinder head.

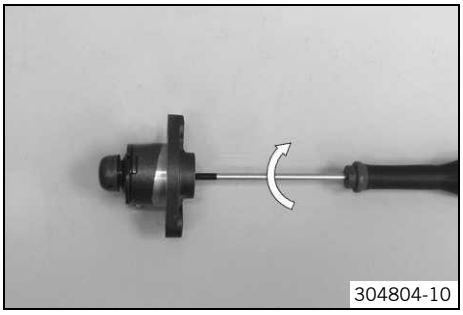


– Clean all oil nozzles thoroughly and blow out with compressed air.
– Mount the dowels.
– Position the camshaft bearing bridge.
– Mount screws ❹ and tighten from the inside to the outside.

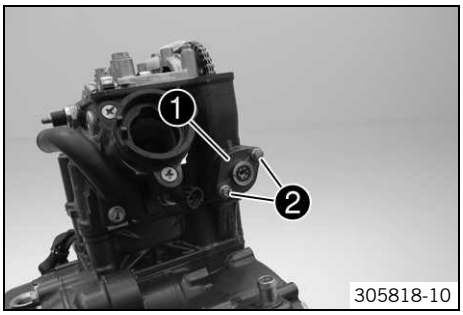
Guideline

Screw, camshaft bearing bridge	M6	11 Nm (8.1 lbf ft)

16.5.59 Installing the timing chain tensioner (200 Duke)



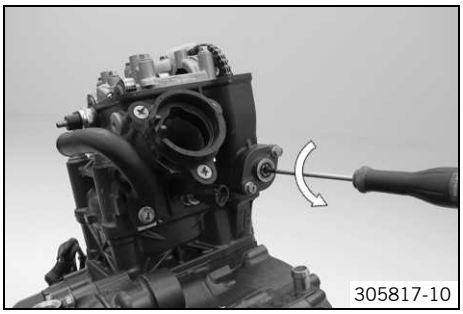
– Turn the timing chain tensioner screw clockwise.
✓ The timing chain tensioner is locked.



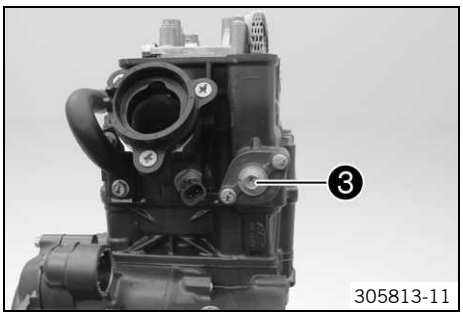
– Holding it with the correct orientation, mount the timing chain tensioner ❶ with the gasket.
– Mount and tighten screws ❷.

Guideline

Screw, timing chain tensioner	M6	12 Nm (8.9 lbf ft)



– Unlock the timing chain tensioner screw counterclockwise.
– Check the timing chain tension.

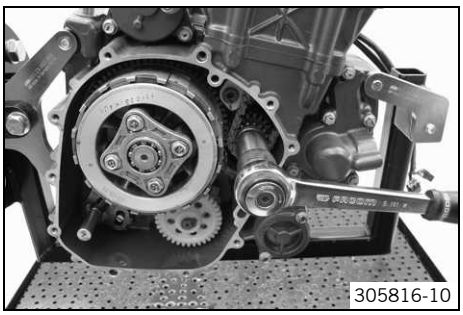


– Mount and tighten screw ❸ with the O-ring.

Guideline

Screw, unlocking of timing chain tensioner	M6	10 Nm (7.4 lbf ft)

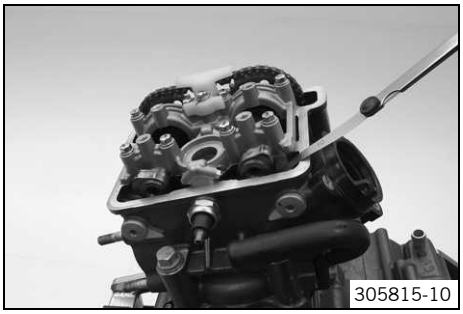
16.5.60 Checking the valve clearance (200 Duke)



– Crank the engine several times.

Castle nut wrench; ½" drive (90129021000) (☛ p. 257)

– Set the engine to ignition top dead center. (☛ p. 106)



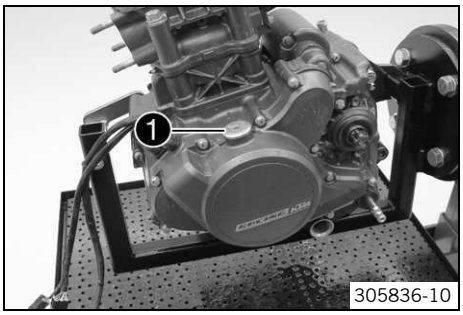
– Check the valve clearance at all valves between the camshaft and cam lever.

Guideline

Valve clearance, exhaust, cold	0.13... 0.17 mm (0.0051... 0.0067 in)
Valve clearance, intake, cold	0.08... 0.12 mm (0.0031... 0.0047 in)

Feeler gauge (59029041100) (☛ p. 253)

» If valve clearance does not meet specifications:
  – Adjust the valve clearance. (☛ p. 189)



– Mount and tighten screw plug ❶.

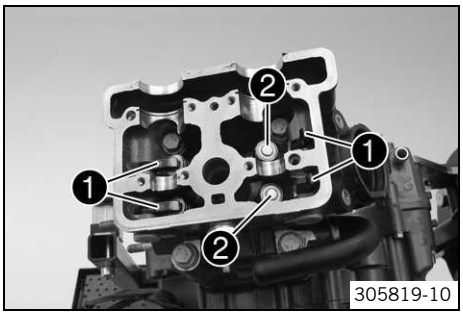
Guideline

Screw plug, alternator cover	M18x1.5	15 Nm (11.1 lbf ft)

16.5.61 Adjusting the valve clearance (200 Duke)

Main work

– Remove the timing chain tensioner. (☛ p. 107)
– Remove the camshaft. (☛ p. 107)

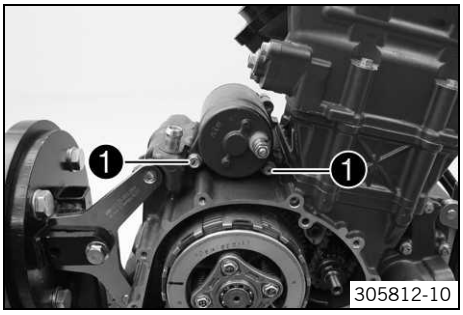


– Swing up cam lever ❶.
– Correct the shims ❷ as indicated by the results of the valve clearance check.
– Install the camshafts. (☛ p. 187)
– Install the timing chain tensioner. (☛ p. 188)

Finishing work

– Check the valve clearance. (☛ p. 189)

16.5.62 Installing the starter motor (200 Duke)



– Grease the O-ring. Position the starter motor.

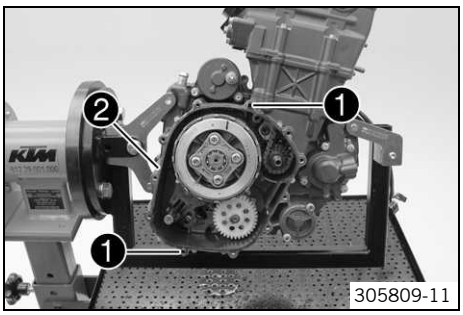
Long-life grease (☛ p. 250)

– Mount and tighten screws ❶.

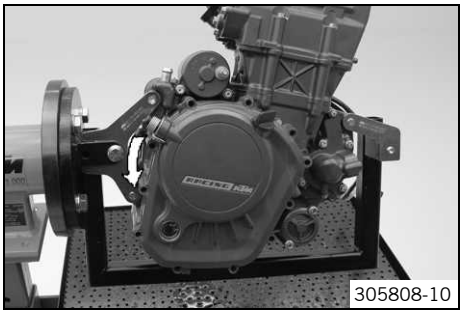
Guideline

Screw, starter motor	M6	12 Nm (8.9 lbf ft)

16.5.63 Installing the clutch cover (200 Duke)

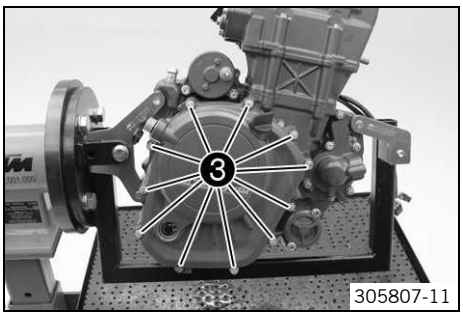


– Mount dowel ❶ and clutch cover gasket ❷.



– Position the clutch cover.

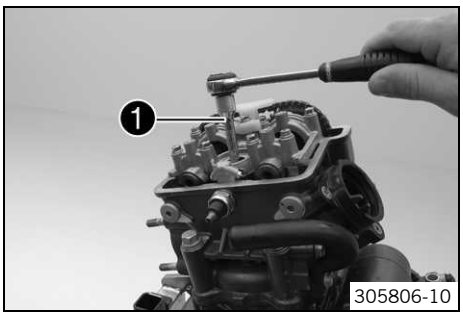
Info
Pivot the clutch lever.



– Mount and tighten screws ❸.
Guideline

Screw, clutch cover	M6	12 Nm (8.9 lbf ft)

16.5.64 Installing the spark plug (200 Duke)

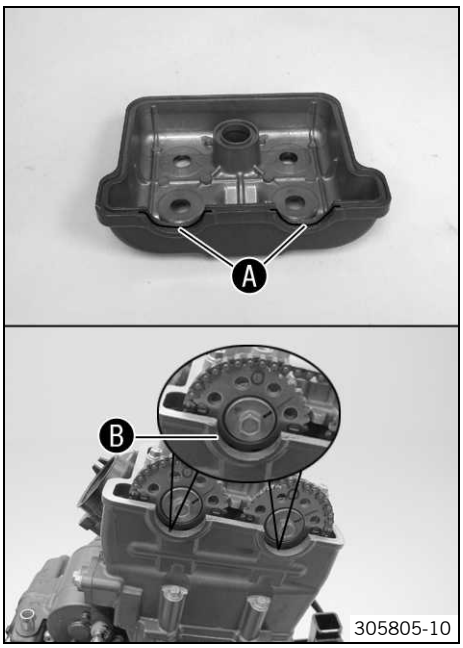


– Mount and tighten the spark plug using special tool ❶.
Guideline

Spark plug	M12	15 Nm (11.1 lbf ft)

Spark plug wrench (77229172000) (☛ p. 255)

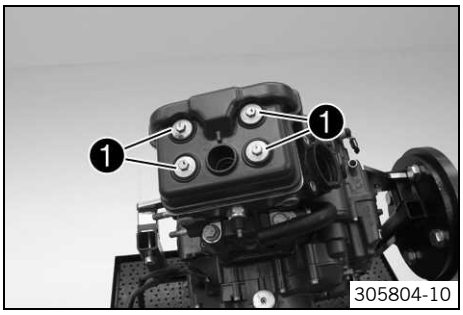
16.5.65 Installing the valve cover (200 Duke)



– Degrease the sealing areas and thinly coat with sealant in areas Ⓐ and Ⓑ.

Loctite® 5910

– Position the gasket in the valve cover.

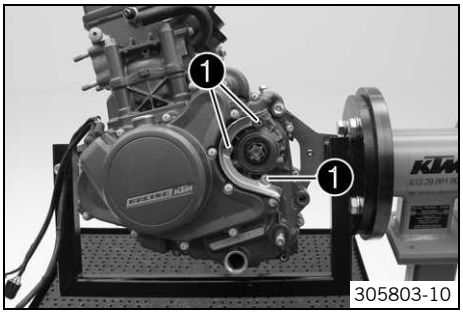


– Position the valve cover with the gasket.
– Mount and tighten screws ❶ with the gaskets.

Guideline

Screw, valve cover	M6	12 Nm (8.9 lbf ft)

16.5.66 Installing the chain securing guide (200 Duke)

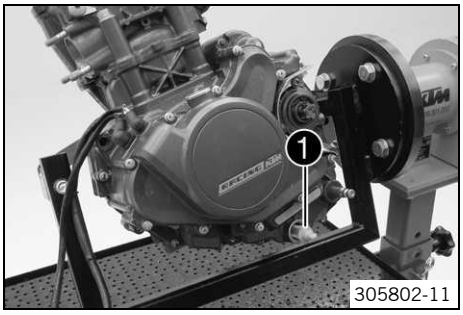


– Position the chain securing guide.
– Mount and tighten screws ❶.

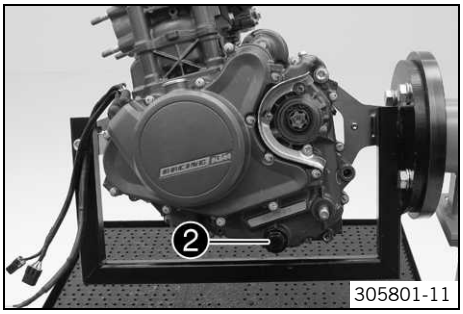
Guideline

Screw, chain securing guide	M6	11 Nm (8.1 lbf ft)	**Loctite® 243™**

16.5.67 Installing the oil screen (200 Duke)



– Mount oil screen ❶ with the O-ring.

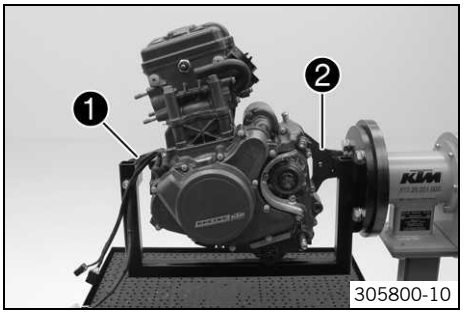


– Mount and tighten oil drain plug ❷ with the O-ring.

Guideline

Oil drain plug	M24x1.5	15 Nm (11.1 lbf ft)

16.5.68 Removing the engine from the engine assembly stand (200 Duke)



– Remove the fitting from special tools ❶ and ❷.

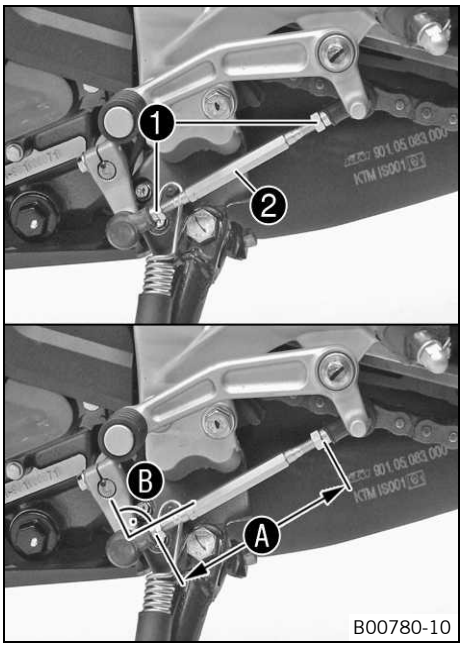
Engine fixing arm (90129002060) (☛ p. 256)
Engine fixing arm (90129002050) (☛ p. 255)

– Remove the engine from the engine assembly stand.

Info
Have an assistant help you or use a crane.

17.1 Adjusting the shift lever

Info
The adjustment range of the shift lever is limited.



– Loosen nuts ❶.
– Adjust the shift lever by turning shift rod ❷.
Guideline

Shift rod adjustment range Ⓐ	100... 112 mm (3.94... 4.41 in)

Info
Make the same adjustments on both sides.
At least five screw threads must be screwed into the seating.

– Check adjusting angle Ⓑ.
Guideline

Adjusting angle Ⓑ shift rod, deflector, shift lever	90°

– Tighten nuts ❶.

Info
After the nuts have been tightened, the bearings of the shift rod must be centrally and identically aligned to each other in order to ensure freedom of movement in the bearing shells.

– Check the shift lever to ensure it is functioning properly and can move freely.

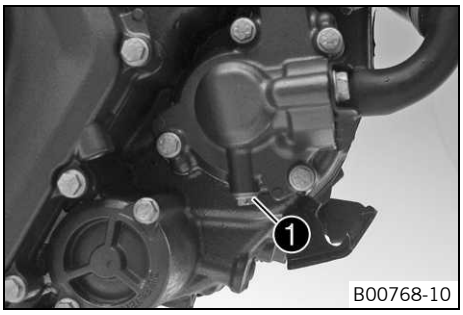
18.1 Draining the coolant

Warning
Danger of scalding During motorcycle operation, the coolant gets very hot and is under pressure.

– Do not remove the radiator cap, radiator hoses or other cooling system components when the engine is hot. Allow the engine and cooling system to cool down. In case of scalding, rinse immediately with lukewarm water.

Warning
Danger of poisoning Coolant is poisonous and a health hazard.

– Coolant must not come into contact with the skin, eyes, or clothing. If contact occurs with the eyes, rinse with water immediately and contact a physician. Immediately clean contaminated areas on the skin with soap and water. If coolant is swallowed, contact a physician immediately. Change clothing that is contaminated with coolant. Keep coolant out of reach of children.



Condition
The engine is cold.

Preparatory work
– Remove the front spoiler. (☛ p. 47)

Main work
– Stand the motorcycle upright.
– Place a suitable container under the engine.
– Remove screw ❶.
– Remove the radiator cap.
– Completely drain the coolant.
– Mount screw ❶ with a new seal ring and tighten it.

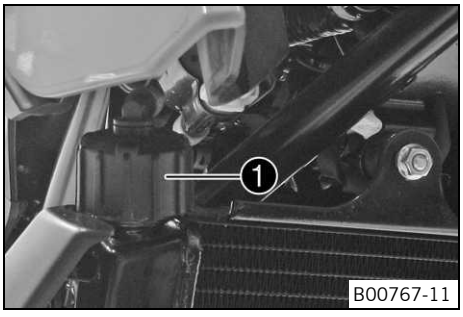
Guideline

Plug, water pump drain hole (125 Duke)	M6	8 Nm (5.9 lbf ft)
Plug, water pump drain hole (200 Duke)	M6	8 Nm (5.9 lbf ft)

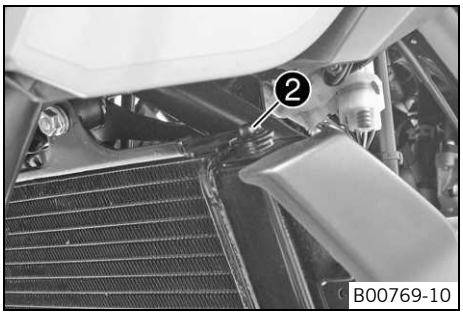
18.2 Filling/bleeding the cooling system

Warning
Danger of poisoning Coolant is poisonous and a health hazard.

– Coolant must not come into contact with the skin, eyes, or clothing. If contact occurs with the eyes, rinse with water immediately and contact a physician. Immediately clean contaminated areas on the skin with soap and water. If coolant is swallowed, contact a physician immediately. Change clothing that is contaminated with coolant. Keep coolant out of reach of children.



– Remove radiator cap ❶.



– Remove bleeder screw ❷.
– Tilt the vehicle slightly to the right.
– Pour in coolant until it emerges without bubbles at the vent hole, and then mount and tighten the bleeder screw immediately.

Alternative 1

Coolant (☛ p. 248)

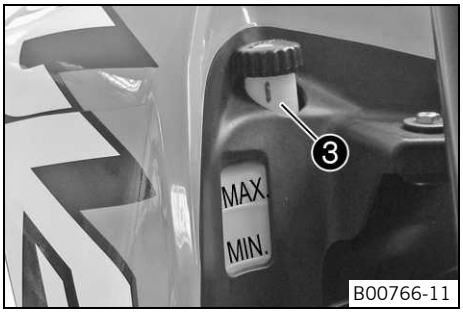
Alternative 2

Coolant (mixed ready to use) (☛ p. 248)

– Fill the radiator completely with coolant. Mount the radiator cap.
– Rest the vehicle on the side stand.

Danger
Danger of poisoning Exhaust gases are toxic and inhaling them may result in unconsciousness and/or death.
– When running the engine, always make sure there is sufficient ventilation, and do not start or run the engine in an enclosed space without an effective exhaust extraction system.

– Start the engine and let it run warm.
– Stop the engine and allow it to cool down.
– When the engine is cool, check the coolant level in the radiator and, if necessary, add coolant.
– Remove the cap of the compensating tank ❸ and add coolant until the coolant level is up to the **MAX** mark.
– Mount the cap of the compensating tank.
– Fit the front spoiler. (☛ p. 47)

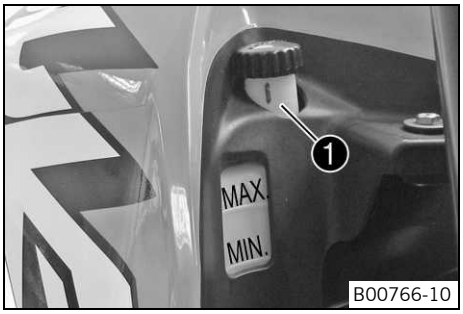


18.3 Checking the antifreeze and coolant level

Warning
Danger of scalding During motorcycle operation, the coolant gets very hot and is under pressure.
– Do not remove the radiator cap, radiator hoses or other cooling system components when the engine is hot. Allow the engine and cooling system to cool down. In case of scalding, rinse immediately with lukewarm water.

Warning
Danger of poisoning Coolant is poisonous and a health hazard.
– Coolant must not come into contact with the skin, eyes, or clothing. If contact occurs with the eyes, rinse with water immediately and contact a physician. Immediately clean contaminated areas on the skin with soap and water. If coolant is swallowed, contact a physician immediately. Change clothing that is contaminated with coolant. Keep coolant out of reach of children.

Condition
The engine is cold.



– Stand the motorcycle upright on a horizontal surface.
– Remove the cap of the compensating tank ❶.
– Check the coolant antifreeze.

−25... −45 °C (−13... −49 °F)

» If the coolant antifreeze does not meet specifications:
– Correct the coolant antifreeze.
– Check the coolant level in the compensating tank.

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

» If the coolant level does not meet specifications:
– Correct the coolant level.

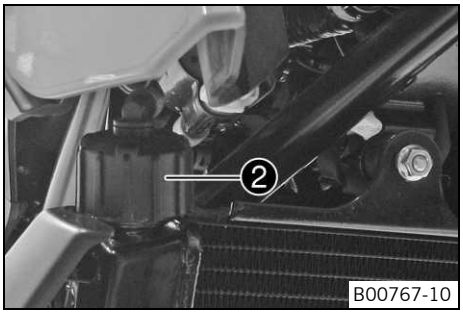
Alternative 1

Coolant (☛ p. 248)

Alternative 2

Coolant (mixed ready to use) (☛ p. 248)

– Mount the cap of the compensating tank.



– Screw off radiator cap ❷.
– Check the coolant antifreeze.

−25... −45 °C (−13... −49 °F)

» If the coolant antifreeze does not meet specifications:
– Correct the coolant antifreeze.

– Check the coolant level in the radiator.

The radiator must be completely filled.

» If the coolant level does not meet specifications:
– Correct the coolant level and find out the cause of the loss.

Alternative 1

Coolant (☛ p. 248)

Alternative 2

Coolant (mixed ready to use) (☛ p. 248)

» If you had to add more coolant than the specified amount:
> 0.20 l (> 0.21 qt.)
– Fill/bleed the cooling system. (☛ p. 194)

– Mount the radiator cap.

18.4 Checking the coolant level

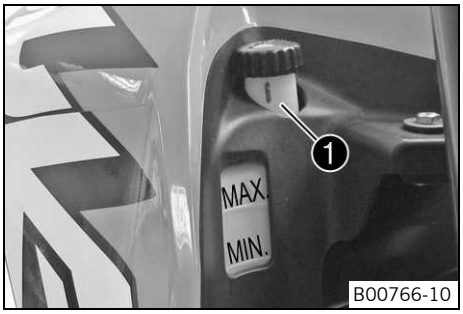
Warning
Danger of scalding During motorcycle operation, the coolant gets very hot and is under pressure.

– Do not remove the radiator cap, radiator hoses or other cooling system components when the engine is hot. Allow the engine and cooling system to cool down. In case of scalding, rinse immediately with lukewarm water.

Warning
Danger of poisoning Coolant is poisonous and a health hazard.

– Coolant must not come into contact with the skin, eyes, or clothing. If contact occurs with the eyes, rinse with water immediately and contact a physician. Immediately clean contaminated areas on the skin with soap and water. If coolant is swallowed, contact a physician immediately. Change clothing that is contaminated with coolant. Keep coolant out of reach of children.

Condition
The engine is cold.



– Stand the motorcycle upright on a horizontal surface.
– Check the coolant level in the compensating tank ❶.

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

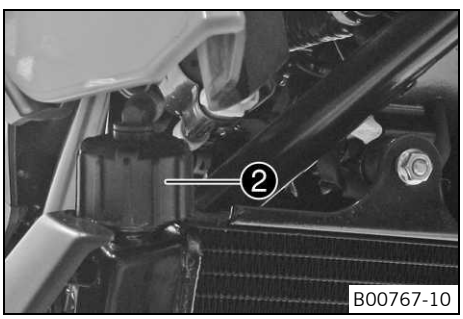
» If the coolant level does not meet specifications:
– Correct the coolant level.

Alternative 1

Coolant (☛ p. 248)

Alternative 2

Coolant (mixed ready to use) (☛ p. 248)



– Screw off radiator cap ❷ and check the coolant level in the radiator.

The radiator must be completely filled.

» If the coolant level does not meet specifications:
– Correct the coolant level and find out the cause of the loss.

Alternative 1

Coolant (☛ p. 248)

Alternative 2

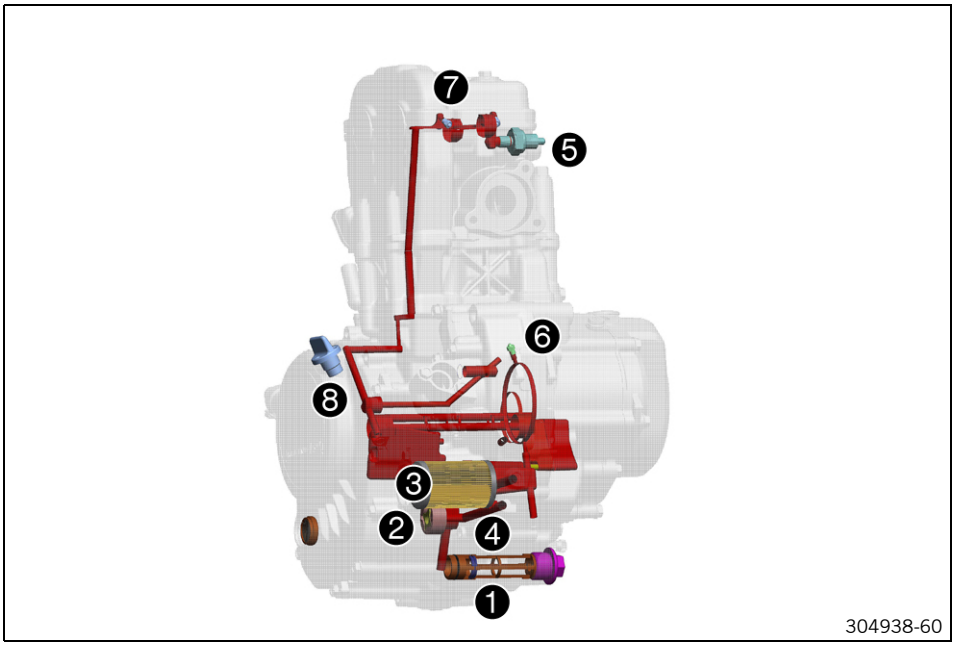
Coolant (mixed ready to use) (☛ p. 248)

» If you had to add more coolant than the specified amount: > 0.20 l (> 0.21 qt.)

– Fill/bleed the cooling system. (☛ p. 194)

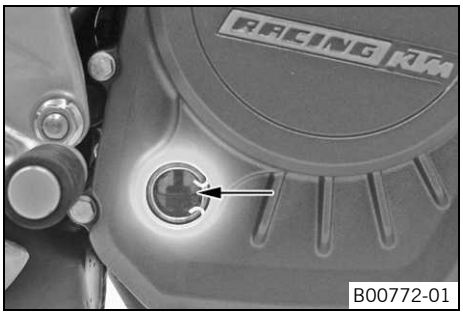
– Mount the radiator cap.

19.1 Oil circuit



1	Oil drain plug and oil screen
2	Oil pump
3	Oil filter
4	Oil pressure regulator valve
5	Oil pressure sensor
6	Oil nozzle for piston cooling
7	Oil nozzle for cam follower lubrication
8	Oil nozzle, clutch

19.2 Checking the engine oil level



Condition

The engine is at operating temperature.

Preparatory work

– Stand the motorcycle upright on a horizontal surface.

Main work

– Check the engine oil level.

Info

After switching off the engine, wait one minute before checking the level.

The engine oil must be between the lower and upper edge of the oil level viewer.

» If the engine oil level is not at the specified level:

– Add the engine oil. (☛ p. 201)

19.3 Checking the engine oil pressure

Warning

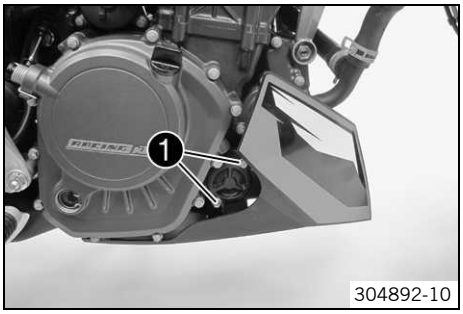
Danger of scalding Engine oil and gear oil get very hot when the motorcycle is ridden.

– Wear appropriate protective clothing and safety gloves. In case of burns, rinse immediately with lukewarm water.

Warning

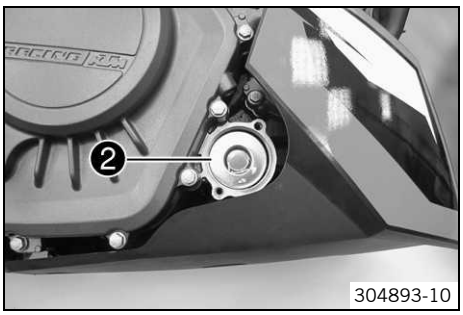
Environmental hazard Hazardous substances cause environmental damage.

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



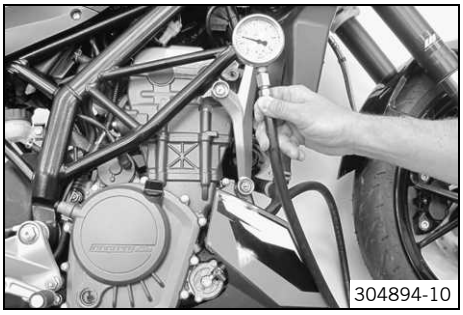
Main work

– Place a suitable container under the engine.
– Remove screws ❶. Take off the oil filter cover with the O-ring.



– Remove oil filter ❷.

Circlip pliers reverse (51012011000) (☛ p. 252)



– Position the special tool with the O-ring. Mount and tighten the screws.

Guideline

Screw, oil filter cover (125 Duke)	M5	8 Nm (5.9 lbf ft)
Screw, oil filter cover (200 Duke)	M5	8 Nm (5.9 lbf ft)

Oil pressure adapter (75029094000) (☛ p. 255)

– Connect the pressure tester to the special tool without the T-plate.

Pressure testing tool (61029094000) (☛ p. 254)

– Check the engine oil level. (☛ p. 198)

Danger

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

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

– Start the engine.
– Check the engine oil pressure.

Engine oil pressure	
Coolant temperature: ≥ 70 °C (≥ 158 °F) Engine speed: 1,500 rpm	≥ 0.7 bar (≥ 10 psi)
Coolant temperature: ≥ 70 °C (≥ 158 °F) Engine speed: 5,000 rpm	≥ 2.4 bar (≥ 35 psi)

» If the specification is not reached:
– Check oil pumps for wear. Check all oil channels for free flow.

– Switch off the engine.

Warning

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

– Wear appropriate protective clothing and safety gloves. In case of burns, rinse immediately with lukewarm water.

– Remove the special tools.
– Insert the new oil filter.

– Oil the O-ring of the oil filter cover. Mount the oil filter cover.
– Mount and tighten the screws.
Guideline

Screw, oil filter cover (125 Duke)	M5	8 Nm (5.9 lbf ft)
Screw, oil filter cover (200 Duke)	M5	8 Nm (5.9 lbf ft)

Finishing work
– Check the engine oil level. (☛ p. 198)

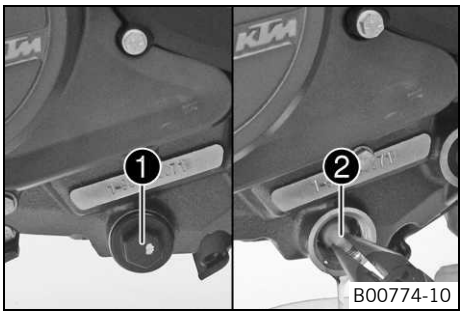
19.4 Changing the engine oil and oil filter, cleaning the oil screen

Warning
Danger of scalding Engine oil and gear oil get very hot when the motorcycle is ridden.
– Wear appropriate protective clothing and safety gloves. In case of burns, rinse immediately with lukewarm water.

Warning
Environmental hazard Hazardous substances cause environmental damage.
– Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

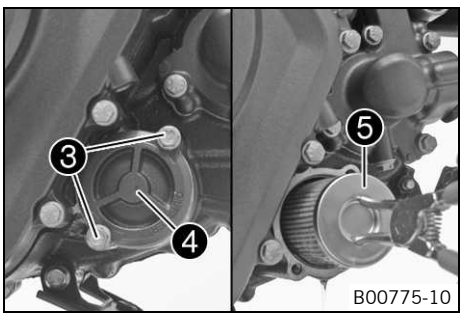
Info
Drain the engine oil only when the engine is warm.

Preparatory work
– Remove the front spoiler. (☛ p. 47)
– Stand the motorcycle on its side stand on a horizontal surface.



Main work
– Place a suitable container under the engine.
– Remove the oil drain plug ❶ with the O-ring.
– Remove oil screen ❷ with the O-ring.
– Completely drain the engine oil.
– Clean the oil drain plug and oil screen thoroughly.
– Position oil screen ❷ and mount and tighten oil drain plug ❶ with the O-ring.
Guideline

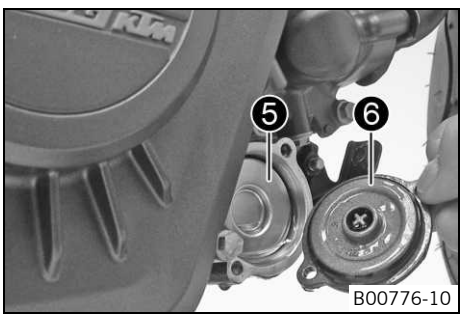
Oil drain plug (125 Duke)	M24x1.5	15 Nm (11.1 lbf ft)
Oil drain plug (200 Duke)	M24x1.5	15 Nm (11.1 lbf ft)



– Remove screws ❸. Remove the oil filter cover ❹ with the O-ring.
– Pull oil filter ❺ out of the oil filter housing.

Circlip pliers reverse (51012011000) (☛ p. 252)

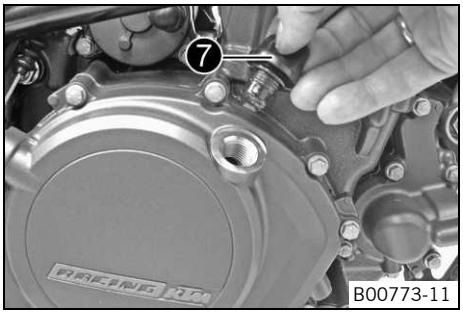
– Completely drain the engine oil.
– Thoroughly clean the parts and sealing area.



– Insert oil filter ❺.
– Oil the O-ring of the oil filter cover. Mount oil filter cover ❻.
– Mount and tighten the screws.
Guideline

Screw, oil filter cover (125 Duke)	M5	8 Nm (5.9 lbf ft)
Screw, oil filter cover (200 Duke)	M5	8 Nm (5.9 lbf ft)

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



– Remove the oil filler plug ❼ with the O-ring from the clutch cover and fill up with engine oil.

Engine oil			
First filling	1.5 l (1.6 qt.)	External temperature: 0… 50 °C (32… 122 °F)	Engine oil (SAE 15W/50) (☛ p. 248)
		External temperature: −10… 40 °C (14… 104 °F)	Engine oil (SAE 10W/40) (☛ p. 248)
After oil change approx.	1.2 l (1.3 qt.)	External temperature: 0… 50 °C (32… 122 °F)	Engine oil (SAE 15W/50) (☛ p. 248)
		External temperature: −10… 40 °C (14… 104 °F)	Engine oil (SAE 10W/40) (☛ p. 248)

– Install and tighten the oil filler plug with the O-ring.

Danger

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

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

– Start the engine and check that it is oil-tight.

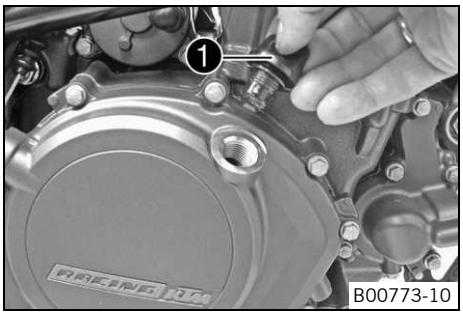
Finishing work

– Fit the front spoiler. (☛ p. 47)
– Check the engine oil level. (☛ p. 198)

19.5 Adding engine oil

Info

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



Main work

– Remove the oil filler plug ❶ with the O-ring from the clutch cover and fill up with engine oil.

Engine oil (SAE 15W/50) (☛ p. 248)
Engine oil (SAE 10W/40) (☛ p. 248)

Info

For optimal performance of the engine oil, do not mix different types of engine oil.
If appropriate, change the engine oil.

– Install and tighten the oil filler plug with O-ring.

Danger

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

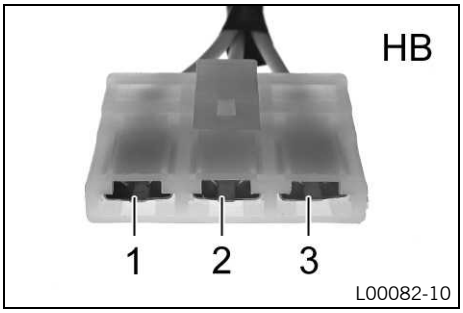
– When running the engine, always make sure there is sufficient ventilation, and do not start or run the engine in an enclosed space without an effective exhaust extraction system.

– Start the engine and check that it is oil-tight.

Finishing work

– Check the engine oil level. (☛ p. 198)

20.1 Alternator - checking the stator winding



Stator winding, measurement I - check the resistance

– Measure the resistance between the specified points.
Stator, connector **HB** pin **1** – Stator, connector **HB** pin **2**

Alternator	
Resistance of stator winding at: 20 °C (68 °F)	≤ 1 Ω

» If the displayed value does not equal the setpoint value:

– Change the stator.

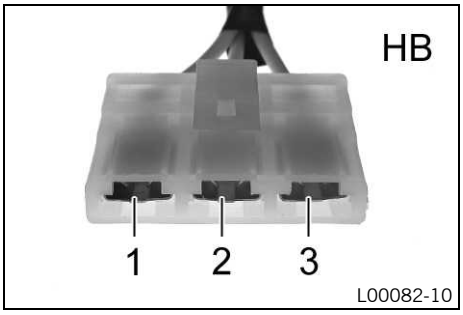
Stator winding, measurement II - check the resistance

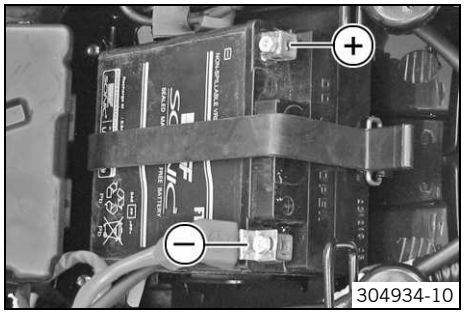
– Measure the resistance between the specified points.
Stator, connector **HB** pin **1** – Stator, connector **HB** pin **3**

Alternator	
Resistance of stator winding at: 20 °C (68 °F)	≤ 1 Ω

» If the displayed value does not equal the setpoint value:

– Change the stator.





Stator winding - check the short circuit to ground (terminal 31)

– Measure the resistance between the specified points.
Stator, connector **HB** pin **1** – Measuring point **Ground (–)**

Resistance	∞ Ω

» If the displayed value does not equal the setpoint value:

– Change the stator.

21 TECHNICAL DATA

21.1 Engine

21.1.1 125 Duke

Design	1-cylinder 4-stroke engine, water-cooled
Displacement	125 cm³ (7.63 cu in)
Stroke	47.2 mm (1.858 in)
Bore	58 mm (2.28 in)
Compression ratio	12.8:1
Control	DOHC, 4 valves controlled via cam lever, chain drive
Valve diameter, intake	22.5 mm (0.886 in)
Valve diameter, exhaust	19 mm (0.75 in)
Valve clearance, intake, cold	0.08... 0.12 mm (0.0031... 0.0047 in)
Valve clearance, exhaust, cold	0.13... 0.17 mm (0.0051... 0.0067 in)
Crankshaft bearing	Two ball bearings
Conrod bearing	Sleeve bearing
Pistons	Cast light alloy
Piston rings	1 L-ring, 1 tapered compression piston ring, 1 oil scraper ring
Engine lubrication	Pressure circulation lubrication with one rotary pump
Primary transmission	22:72
Clutch	Clutch in oil bath/mechanically activated
Transmission	6-gear, claw shifted
Transmission ratio	
1st gear	12:34
2nd gear	15:31
3rd gear	18:28
4th gear	21:26
5th gear	22:23
6th gear	24:22
Mixture preparation	Electronically controlled fuel injection
Ignition	Contactless controlled fully electronic ignition with digital ignition adjustment
Alternator	12 V, 238 W
Spark plug	BOSCH VR 5 NE
Spark plug electrode gap	0.8 mm (0.031 in)
Cooling	Water cooling, permanent circulation of coolant by water pump
Idle speed	1,350... 1,450 rpm
Starting aid	Electric starter

21.1.2 200 Duke

Design	1-cylinder 4-stroke engine, water-cooled
Displacement	200 cm³ (12.2 cu in)
Stroke	49 mm (1.93 in)
Bore	72 mm (2.83 in)
Compression ratio	11,5:1
Control	DOHC, 4 valves controlled via cam lever, chain drive
Valve diameter, intake	28.5 mm (1.122 in)
Valve diameter, exhaust	24 mm (0.94 in)
Valve clearance, intake, cold	0.08... 0.12 mm (0.0031... 0.0047 in)
Valve clearance, exhaust, cold	0.13... 0.17 mm (0.0051... 0.0067 in)
Crankshaft bearing	Two ball bearings
Conrod bearing	Sleeve bearing
Pistons	Cast light alloy

Piston rings	1 L-ring, 1 tapered compression piston ring, 1 oil scraper ring
Engine lubrication	Pressure circulation lubrication with one rotary pump
Primary transmission	22:72
Clutch	Clutch in oil bath/mechanically activated
Transmission	6-gear, claw shifted
Transmission ratio	
1st gear	12:34
2nd gear	15:31
3rd gear	18:28
4th gear	21:26
5th gear	22:23
6th gear	24:22
Mixture preparation	Electronically controlled fuel injection
Ignition	Contactless controlled fully electronic ignition with digital ignition adjustment
Alternator	12 V, 238 W
Spark plug	BOSCH VR 5 NE
Spark plug electrode gap	0.8 mm (0.031 in)
Cooling	Water cooling, permanent circulation of coolant by water pump
Idle speed	1,450... 1,550 rpm
Starting aid	Electric starter

21.2 Engine tolerance, wear limits

21.2.1 125 Duke

Valve - sealing seat width	
Intake	0.90... 1.10 mm (0.0354... 0.0433 in)
Exhaust	0.90... 1.10 mm (0.0354... 0.0433 in)
Cylinder/cylinder head - distortion of sealing area	≤ 0.10 mm (≤ 0.0039 in)
Cylinder - bore diameter	58.006... 58.013 mm (2.2837... 2.28397 in)
Piston - diameter	57.963... 57.975 mm (2.282... 2.28248 in)
Piston/cylinder - mounting clearance	
New condition	0.031... 0.050 mm (0.00122... 0.00197 in)
Wear limit	0.08 mm (0.0031 in)
Piston ring end gap	
Compression ring	≤ 0.40 mm (≤ 0.0157 in)
Oil scraper ring	≤ 0.80 mm (≤ 0.0315 in)
Connecting rod - radial play of lower conrod bearing	
New condition	0.030... 0.060 mm (0.00118... 0.00236 in)
Wear limit	0.080 mm (0.00315 in)
Crankshaft – diameter, crank pin	
Crankshaft classification **A**	25.990... 25.998 mm (1.02323... 1.02354 in)
Crankshaft classification **B**	25.999... 26.006 mm (1.02358... 1.02386 in)
Clutch facing discs – thickness of total package	≥ 21.30 mm (≥ 0.8386 in)
Clutch spring - length	≥ 37 mm (≥ 1.46 in)
Contact surface, clutch facing discs in clutch basket	≤ 0.5 mm (≤ 0.02 in)
Oil pressure regulator valve - minimum spring length	26.00 mm (1.0236 in)
Oil pump	
Play between external rotor and oil pump housing	0.09... 0.20 mm (0.0035... 0.0079 in)
Play between external rotor and internal rotor	0.10... 0.20 mm (0.0039... 0.0079 in)
Axial play	0.10... 0.25 mm (0.0039... 0.0098 in)
Shift shaft – play in sliding plate/shift quadrant	0.15... 0.45 mm (0.0059... 0.0177 in)

21.2.2 200 Duke

Valve - sealing seat width	
Intake	0.90... 1.10 mm (0.0354... 0.0433 in)
Exhaust	0.90... 1.10 mm (0.0354... 0.0433 in)
Cylinder/cylinder head - distortion of sealing area	≤ 0.10 mm (≤ 0.0039 in)
Cylinder - bore diameter	72.016... 72.027 mm (2.83527... 2.8357 in)
Piston - diameter	71.965... 71.977 mm (2.83326... 2.83373 in)
Piston/cylinder - mounting clearance	
New condition	0.039... 0.062 mm (0.00154... 0.00244 in)
Wear limit	0.08 mm (0.0031 in)
Piston ring end gap	
Compression ring	≤ 0.40 mm (≤ 0.0157 in)
Oil scraper ring	≤ 0.80 mm (≤ 0.0315 in)
Connecting rod - radial play of lower conrod bearing	
New condition	0.030... 0.060 mm (0.00118... 0.00236 in)
Wear limit	0.080 mm (0.00315 in)
Crankshaft – diameter, crank pin	
Crankshaft classification **A**	29.995... 30.003 mm (1.1809... 1.18122 in)
Crankshaft classification **B**	30.004... 30.011 mm (1.18126... 1.18153 in)
Clutch facing discs – thickness of total package	≥ 27.00 mm (≥ 1.063 in)
Clutch spring - length	≥ 37 mm (≥ 1.46 in)
Contact surface, clutch facing discs in clutch basket	≤ 0.5 mm (≤ 0.02 in)
Oil pressure regulator valve - minimum spring length	26.00 mm (1.0236 in)
Oil pump	
Play between external rotor and oil pump housing	0.09... 0.20 mm (0.0035... 0.0079 in)
Play between external rotor and internal rotor	0.10... 0.20 mm (0.0039... 0.0079 in)
Axial play	0.10... 0.25 mm (0.0039... 0.0098 in)
Shift shaft – play in sliding plate/shift quadrant	0.15... 0.45 mm (0.0059... 0.0177 in)

21.3 Engine tightening torques

Oil nozzle	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**
Screw, engine vent plate	M5	7 Nm (5.2 lbf ft)	**Loctite® 243™**
Screw, gear sensor	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**
Screw, ignition pulse generator	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**
Screw, oil filter cover	M5	8 Nm (5.9 lbf ft)	–
Screw, retaining bracket	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**
Screw, retaining bracket, stator cable	M5	8 Nm (5.9 lbf ft)	**Loctite® 243™**
Screw, stator	M5	8 Nm (5.9 lbf ft)	**Loctite® 243™**
Cylinder head screw	M6	12 Nm (8.9 lbf ft)	–
Nut, water pump impeller	M6	10 Nm (7.4 lbf ft)	**Loctite® 243™**
Plug, water pump drain hole	M6	8 Nm (5.9 lbf ft)	–
Screw, alternator cover	M6	12 Nm (8.9 lbf ft)	–
Screw, bearing retainer	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**
Screw, camshaft bearing bridge	M6	11 Nm (8.1 lbf ft)	–
Screw, chain securing guide	M6	11 Nm (8.1 lbf ft)	**Loctite® 243™**
Screw, clutch cover	M6	12 Nm (8.9 lbf ft)	–
Screw, clutch spring	M6	10 Nm (7.4 lbf ft)	–
Screw, engine case	M6x40	12 Nm (8.9 lbf ft)	–
Screw, engine case	M6x60	12 Nm (8.9 lbf ft)	**Loctite® 243™**
Screw, freewheel gear retaining bracket	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**
Screw, locking lever	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**

Screw, oil pump	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**
Screw, retaining bracket, shaft seal ring, clutch cover	M6	11 Nm (8.1 lbf ft)	**Loctite® 243™**
Screw, shift drum locating	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**
Screw, starter motor	M6	12 Nm (8.9 lbf ft)	–
Screw, timing chain tensioner	M6	12 Nm (8.9 lbf ft)	–
Screw, timing chain tensioning rail	M6	12 Nm (8.9 lbf ft)	**Loctite® 243™**
Screw, unlocking of timing chain tensioner	M6	10 Nm (7.4 lbf ft)	–
Screw, valve cover	M6	12 Nm (8.9 lbf ft)	–
Screw, water pump cover	M6	12 Nm (8.9 lbf ft)	–
Nut, conrod bearing (125 Duke)	M7	24 Nm (17.7 lbf ft)	–
Screw, conrod bearing (200 Duke)	M7	24 Nm (17.7 lbf ft)	–
Nut, exhaust flange	M8	22 Nm (16.2 lbf ft)	–
Screw, balancer shaft gear	M8	20 Nm (14.8 lbf ft)	**Loctite® 243™**
Screw, camshaft drive sprocket	M8	20 Nm (14.8 lbf ft)	**Loctite® 243™**
Screw, return spring, quick shifter	M8	12 Nm (8.9 lbf ft)	**Loctite® 243™**
Stud, exhaust flange	M8	22 Nm (16.2 lbf ft)	–
Cylinder head screw	M10	Step 1 20 Nm (14.8 lbf ft) Step 2 40 Nm (29.5 lbf ft)	Thread is oiled, head flat is greased
Oil pressure sensor	M10	14 Nm (10.3 lbf ft)	–
Rotor screw	M10	46 Nm (33.9 lbf ft)	**Loctite® 243™**
Water temperature sensor	M10	14 Nm (10.3 lbf ft)	–
Spark plug	M12	15 Nm (11.1 lbf ft)	–
Nut, inner clutch hub	M14LH	60 Nm (44.3 lbf ft)	**Loctite® 243™**
Nut, primary gear	M14	55 Nm (40.6 lbf ft)	–
Nut, timing chain sprocket	M14	55 Nm (40.6 lbf ft)	**Loctite® 243™**
Screw plug, alternator cover	M18x1.5	15 Nm (11.1 lbf ft)	–
Oil drain plug	M24x1.5	15 Nm (11.1 lbf ft)	–
Nut, drive wheel for balancer shaft	M28	60 Nm (44.3 lbf ft)	–

21.4 Capacities

21.4.1 Engine oil

Engine oil			
First filling	1.5 l (1.6 qt.)	External temperature: 0… 50 °C (32… 122 °F)	Engine oil (SAE 15W/50) (☛ p. 248)
		External temperature: −10… 40 °C (14… 104 °F)	Engine oil (SAE 10W/40) (☛ p. 248)
After oil change approx.	1.2 l (1.3 qt.)	External temperature: 0… 50 °C (32… 122 °F)	Engine oil (SAE 15W/50) (☛ p. 248)
		External temperature: −10… 40 °C (14… 104 °F)	Engine oil (SAE 10W/40) (☛ p. 248)

21.4.2 Coolant

Coolant	1 l (1 qt.)	Coolant (☛ p. 248)	
		Coolant (mixed ready to use) (☛ p. 248)	

21.4.3 Fuel

Total fuel tank capacity, approx.	10.5 l (2.77 US gal)	Super unleaded (ROZ 95/RON 95/PON 91) (☛ p. 249)

Fuel reserve, approx.	1.5 l (1.6 qt.)

21.5 Chassis

Frame	Lattice frame of steel tubes, powder-coated
Fork	**WP Suspension**
Shock absorber	**WP Suspension**
Brake system	
Front	Disc brake with four-pot brake caliper
Rear	Disc brake with single-piston brake caliper, floating
Suspension travel	
Front	150 mm (5.91 in)
Rear	150 mm (5.91 in)
Brake discs - diameter (125 Duke)	
Front	280 mm (11.02 in)
Rear	230 mm (9.06 in)
Brake discs - diameter (200 Duke)	
Front	300 mm (11.81 in)
Rear	230 mm (9.06 in)
Brake discs - wear limit	
Front	3.6 mm (0.142 in)
Rear	3.6 mm (0.142 in)
Tire air pressure, solo	
Front	2.0 bar (29 psi)
Rear	2.0 bar (29 psi)
Tire air pressure with passenger/full payload	
Front	2.0 bar (29 psi)
Rear	2.2 bar (32 psi)
Secondary ratio (125 Duke)	14:45
Secondary ratio (200 Duke)	14:42
Chain	5/8 x 1/4” (520) O-ring
Steering head angle	65°
Wheelbase	1,367±15 mm (53.82±0.59 in)
Seat height, unloaded	810 mm (31.89 in)
Ground clearance, unloaded	170 mm (6.69 in)
Weight without fuel, approx.	125 kg (276 lb.)

21.6 Electrical system

Battery (125 Duke)	FTZ-7	Battery voltage: 12 V Nominal capacity: 6 Ah Maintenance-free
Battery (200 Duke)	FTZ-9	Battery voltage: 12 V Nominal capacity: 8 Ah Maintenance-free
Fuse	75011088010	10 A
Fuse	75011088015	15 A
Fuse	75011088030	30 A
Headlight	H4/socket P43t	12 V 60/55 W
Parking light	W5W/socket W2.1x9.5d	12 V 5 W
Instrument lights and indicator lamps	LED	
Turn signal	LED	
Brake/tail light	LED	

License plate lamp	LED

21.7 Tires

Front tires	Rear tires
110/70 R 17 M/C 54S TL MRF revz FC	**150/60 R 17 M/C 66S TL** MRF revz C
Additional information is available in the Service section under: http://www.ktm.com	

21.8 Fork

Fork part number	90101000044

Fork	**WP Suspension**
Fork length	736 mm (28.98 in)

Fork oil	450 ml (15.21 fl. oz.)	Fork oil (SAE 4) (48601166S1) (☛ p. 249)

21.9 Shock absorber

Shock absorber part number	90604010000
Shock absorber	**WP Suspension**
Spring preload	
Standard	3 clicks
Full payload	6 clicks
Static sag	15 mm (0.59 in)
Riding sag	45... 50 mm (1.77... 1.97 in)
Fitted length	300 mm (11.81 in)

21.10 Chassis tightening torques

Exhaust clamp	-	10 Nm (7.4 lbf ft)	–
Screw, chain guard	**EJOT PT®**	4 Nm (3 lbf ft)	–
Screw, headlight	**EJOT PT®**	4 Nm (3 lbf ft)	–
Remaining screws, chassis	M4	4 Nm (3 lbf ft)	–
Screw, EFI control unit	M4	4 Nm (3 lbf ft)	–
Screw, trim, subframe, bottom	M4	2 Nm (1.5 lbf ft)	–
Remaining nuts, chassis	M5	3 Nm (2.2 lbf ft)	–
Remaining screws, chassis	M5	5 Nm (3.7 lbf ft)	–
Screw, brake fluid reservoir of rear brake	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**
Screw, fuel pump	M5	5 Nm (3.7 lbf ft)	–
Screw, fuel tank closure flange	M5	3 Nm (2.2 lbf ft)	–
Screw, fuel tank cover	M5	4 Nm (3 lbf ft)	–
Screw, fuel tank trim	M5	5 Nm (3.7 lbf ft)	–
Screw, license plate holder	M5	11 Nm (8.1 lbf ft)	–
Screw, rollover sensor	M5	6 Nm (4.4 lbf ft)	**Loctite® 243™**
Screw, side stand switch	M5	5 Nm (3.7 lbf ft)	**Loctite® 243™**
Screw, spoiler	M5	5 Nm (3.7 lbf ft)	–
Screw, subframe cover, bottom	M5	5 Nm (3.7 lbf ft)	**Loctite® 243™**
Screw, windshield	M5	3 Nm (2.2 lbf ft)	–
Nut, foot brake lever adjustment	M6	9 Nm (6.6 lbf ft)	–
Nut, radiator	M6	5 Nm (3.7 lbf ft)	–
Remaining nuts, chassis	M6	15 Nm (11.1 lbf ft)	–
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)	–

Screw, air filter box	M6	6 Nm (4.4 lbf ft)	–
Screw, bottom of rear part	M6	11 Nm (8.1 lbf ft)	–
Screw, brake fluid reservoir of rear brake	M6	9 Nm (6.6 lbf ft)	–
Screw, cable holder, side stand switch	M6	9 Nm (6.6 lbf ft)	**Loctite® 243™**
Screw, chain sliding guard	M6	9 Nm (6.6 lbf ft)	**Loctite® 243™**
Screw, compensating tank	M6	11 Nm (8.1 lbf ft)	–
Screw, foot brake cylinder	M6	9 Nm (6.6 lbf ft)	**Loctite® 243™**
Screw, front fender	M6	11 Nm (8.1 lbf ft)	–
Screw, front seat fixing	M6	5 Nm (3.7 lbf ft)	–
Screw, fuel tank	M6	11 Nm (8.1 lbf ft)	–
Screw, headlight holder	M6	11 Nm (8.1 lbf ft)	–
Screw, headlight mask	M6	11 Nm (8.1 lbf ft)	–
Screw, ignition coil	M6	9 Nm (6.6 lbf ft)	–
Screw, license plate holder	M6	14 Nm (10.3 lbf ft)	–
Screw, magnetic holder on side stand	M6	5 Nm (3.7 lbf ft)	**Loctite® 243™**
Screw, main silencer	M6	11 Nm (8.1 lbf ft)	–
Screw, radiator bracket	M6	6 Nm (4.4 lbf ft)	–
Screw, radiator holder	M6	9 Nm (6.6 lbf ft)	–
Screw, rear splash protector	M6	9 Nm (6.6 lbf ft)	–
Screw, rollover sensor holder	M6	11 Nm (8.1 lbf ft)	–
Screw, seat	M6	11 Nm (8.1 lbf ft)	–
Screw, shift activation	M6	11 Nm (8.1 lbf ft)	**Loctite® 243™**
Screw, voltage regulator	M6	10 Nm (7.4 lbf ft)	–
Screw, voltage regulator holder	M6	15 Nm (11.1 lbf ft)	–
Remaining nuts, chassis	M8	30 Nm (22.1 lbf ft)	–
Remaining screws, chassis	M8	25 Nm (18.4 lbf ft)	–
Screw, bottom triple clamp	M8	15 Nm (11.1 lbf ft)	–
Screw, engine bearer on frame	M8	30 Nm (22.1 lbf ft)	–
Screw, foot brake lever	M8	15 Nm (11.1 lbf ft)	**Loctite® 243™**
Screw, fork stub	M8	15 Nm (11.1 lbf ft)	–
Screw, front brake disc	M8	29 Nm (21.4 lbf ft)	**Loctite® 243™**
Screw, front wheel spindle	M8	30 Nm (22.1 lbf ft)	–
Screw, handlebar clamp	M8	21 Nm (15.5 lbf ft)	–
Screw, handrail	M8	31 Nm (22.9 lbf ft)	–
Screw, horn	M8	21 Nm (15.5 lbf ft)	–
Screw, main silencer	M8	23 Nm (17 lbf ft)	–
Screw, rear brake disc	M8	29 Nm (21.4 lbf ft)	**Loctite® 243™**
Screw, rear footrest bracket	M8	26 Nm (19.2 lbf ft)	**Loctite® 243™**
Screw, shift lever	M8	15 Nm (11.1 lbf ft)	**Loctite® 243™**
Screw, top triple clamp	M8	11 Nm (8.1 lbf ft)	–
Screw, front brake caliper	M8x1	30 Nm (22.1 lbf ft)	**Loctite® 243™**
Fitting side stand	M10	34 Nm (25.1 lbf ft)	–
Fitting, engine mounting bracket	M10	55 Nm (40.6 lbf ft)	–
Nut, mirror	M10	16 Nm (11.8 lbf ft)	–
Remaining nuts, chassis	M10	50 Nm (36.9 lbf ft)	–
Remaining screws, chassis	M10	45 Nm (33.2 lbf ft)	–
Fitting, bottom shock absorber	M10x1.25	45 Nm (33.2 lbf ft)	–
Fitting, handlebar support	M10x1.25	21 Nm (15.5 lbf ft)	–
Nut, rear sprocket screw	M10x1.25	32 Nm (23.6 lbf ft)	–
Nut, turn signal	M10x1.25	6 Nm (4.4 lbf ft)	–
Screw, front footrest bracket	M10x1.25	46 Nm (33.9 lbf ft)	–

Screw, side stand bracket	M10x1.25	25 Nm (18.4 lbf ft)	**Loctite® 243™**
Screw, top shock absorber	M10x1.25	50 Nm (36.9 lbf ft)	–
Nut, rear wheel spindle	M14x1.5	60 Nm (44.3 lbf ft)	–
Nut, swingarm pivot	M14x1.5	140 Nm (103.3 lbf ft)	–
Screw, top steering head	M16x1.5	52 Nm (38.4 lbf ft)	–
Lambda sensor	M18x1.5	40... 60 Nm (29.5... 44.3 lbf ft)	Lubricant (T152) (☛ p. 251)
Nut, steering head	M30x1	5 Nm (3.7 lbf ft)	–

22.1 Cleaning the motorcycle

Note

Material damage Damage and destruction of components by high-pressure cleaning equipment.

– When cleaning the vehicle with a pressure cleaner, do not point the water jet directly onto electrical components, connectors, cables, bearings, etc. Maintain a minimum distance of 60 cm between the nozzle of the pressure cleaner and the component. Excessive pressure can cause malfunctions or destroy these parts.

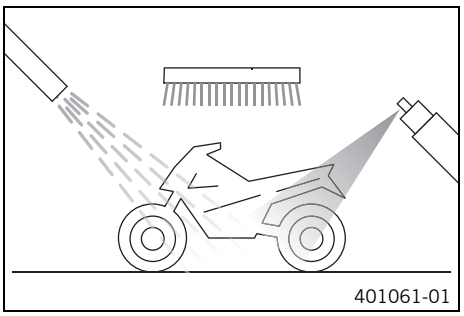
Warning

Environmental hazard Hazardous substances cause environmental damage.

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

Info

If you clean the motorcycle regularly, its value and appearance will be maintained over a long period.
Avoid direct sunshine on the motorcycle during cleaning.



– Seal the exhaust system to keep water out.
– First remove coarse dirt particles with a gentle spray of water.
– Spray very dirty areas with a normal motorcycle cleaner and then clean with a paintbrush.

Motorcycle cleaner (☛ p. 251)

Info

Use warm water containing normal motorcycle cleaner and a soft sponge. Never apply motorcycle cleaner to a dry vehicle; always rinse the vehicle with water first.
If the vehicle was operated in road salt, clean it with cold water. Warm water would enhance the corrosive effects of salt.

– After rinsing the motorcycle with a gentle spray of water, allow it to dry thoroughly.
– Remove the closure of the exhaust system.

Warning

Danger of accidents Reduced braking efficiency due to a wet or dirty brake system.

– Clean or dry a dirty or wet brake system by riding and braking gently.

– After cleaning, ride the vehicle a short distance until the engine warms up.

Info

The heat produced causes water at inaccessible locations in the engine and on the brake system to evaporate.

– Push back the sleeves of the handlebar controls to allow any water that has penetrated to evaporate.
– After the motorcycle has cooled off, lubricate all moving parts and bearings.
– Clean the chain. (☛ p. 60)
– Treat bare metal parts (except for brake discs and exhaust system) with anti-corrosion materials.

Cleaning and preserving materials for metal, rubber and plastic (☛ p. 250)

– Treat all painted parts with a mild paint polish.

High-luster polish for paint (☛ p. 250)

– Treat all plastic parts and powder-coated parts with a mild cleaning and care product.

Paint cleaner and polish for high-gloss and matte finishes, bare metal and plastic surfaces (☛ p. 251)

– Oil the ignition/steering lock.

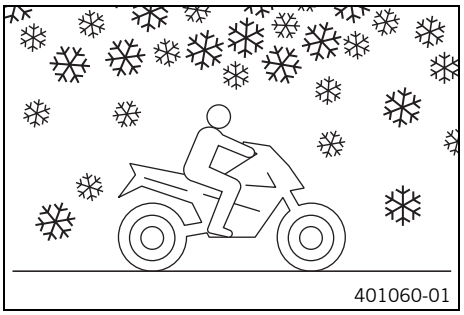
Universal oil spray (☛ p. 251)

22.2 Checks and maintenance steps for winter operation

Info

If the motorcycle is used in the winter, salt can be expected on the roads. Precautions need to be taken against road salt corrosion.

If the vehicle was operated in road salt, clean it with cold water after riding. Warm water would enhance the corrosive effects of salt.



– Clean the motorcycle. (☛ p. 211)
– Clean the brakes.

Info

After **EVERY** trip on salted roads, thoroughly wash the brake calipers and brake linings 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 wash the motorcycle with cold water and dry it well.

– Treat the engine, swingarm, and all other bright and zinc-plated parts (except for the brake discs) with a wax-based corrosion inhibitor.

Info

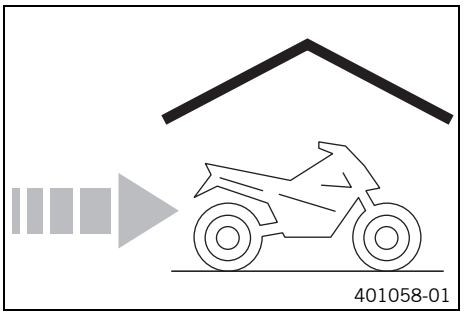
Corrosion inhibitor is not permitted to come in contact with the brake discs as this would greatly reduce the braking force.

– Clean the chain. (☛ p. 60)

23 STORAGE

23.1 Storage

Info
If you want to garage the motorcycle for a longer period, take the following steps.
Before storing the motorcycle, check all parts for function and wear. If service, repairs or replacements are necessary, you should do this during the storage period (less workshop overload). In this way, you can avoid long workshop waiting times at the start of the new season.


401058-01

– When refueling for the last time before taking the motorcycle out of service, add fuel additive.

Fuel additive (☛ p. 250)

– Refuel.
– Clean the motorcycle. (☛ p. 211)
– Change the engine oil and oil filter, clean the oil screen. (☛ p. 200)
– Check the antifreeze and coolant level. (☛ p. 195)
– Check the tire air pressure. (☛ p. 53)
– Remove the battery. (☛ p. 62)
– Recharge the battery. (☛ p. 63)

Guideline

Storage temperature of battery without direct sunlight	0... 35 °C (32... 95 °F)

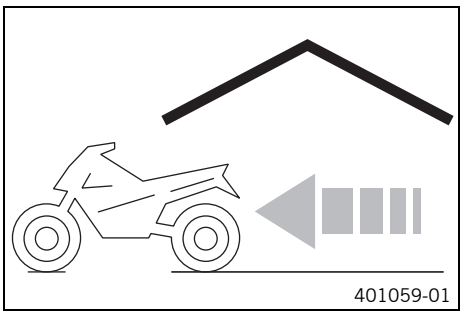
– Store the vehicle in a dry location that is not subject to large fluctuations in temperature.

Info
KTM recommends jacking up the motorcycle.

– Raise the motorcycle with the rear wheel stand. (☛ p. 10)
– Raise the motorcycle with the front wheel stand. (☛ p. 10)
– Cover the motorcycle with a tarp or similar cover that is permeable to air.

Info
Do not use non-porous materials since they prevent humidity from escaping, thus causing corrosion.
Avoid running the engine for a short time only. Since the engine cannot warm up properly, the water vapor produced during combustion condenses and causes valves and exhaust system to rust.

23.2 Preparing for use after storage


401059-01

– Take the motorcycle off of the front wheel stand. (☛ p. 11)
– Take the motorcycle off of the rear wheel stand. (☛ p. 10)
– Recharge the battery. (☛ p. 63)
– Install the battery. (☛ p. 62)
– Set the clock. (☛ p. 77)
– Refuel.
– Perform checks and maintenance steps when preparing for use.
– Take a test ride.

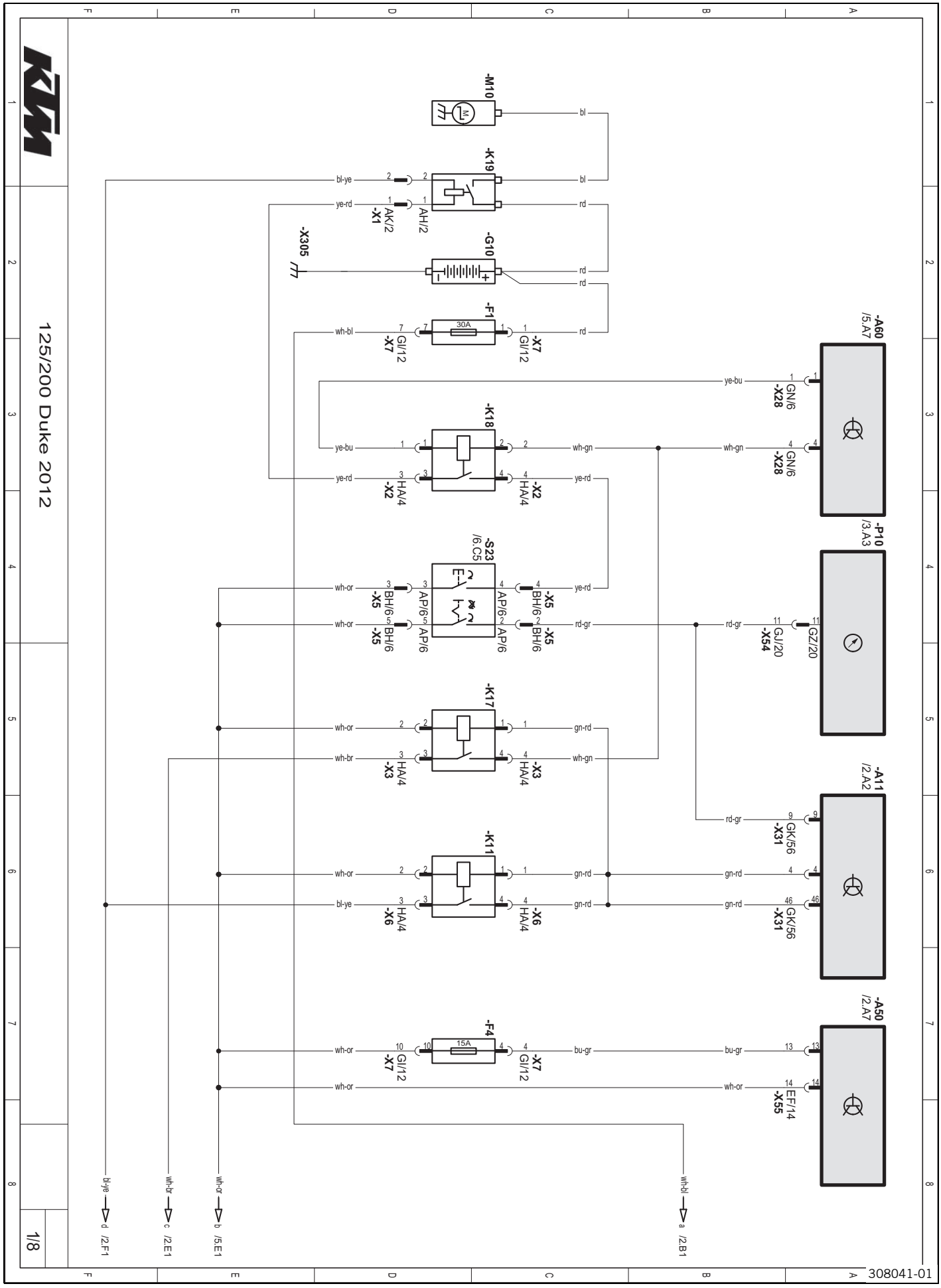
24.1 Service schedule

	Once after 1,000 km (621.4 mi)	Every 5,000 km (3,107 mi) or annually	Every 10,000 km (6,214 mi) or every 2 years
Check the functioning of the electrical equipment.	○	●	●
Read out the fault memory using the KTM diagnostics tool.	○	●	●
Change the engine oil and oil filter, clean the oil screen. (☛ p. 200)	○	●	●
Check the front brake linings. (☛ p. 66)	○	●	●
Check the rear brake linings. (☛ p. 70)	○	●	●
Check the brake discs. (☛ p. 54)	○	●	●
Check the brake lines for damage and leakage.	○	●	●
Check the rear brake fluid level. (☛ p. 73)	○	●	●
Check the shock absorber and fork for leaks.	○	●	●
Check the swingarm bearing.		●	●
Check the wheel bearing for play.		●	●
Check the tire condition. (☛ p. 53)	○	●	●
Check the tire air pressure. (☛ p. 53)	○	●	●
Check the chain, rear sprocket, and engine sprocket. (☛ p. 59)		●	●
Check the chain tension. (☛ p. 58)	○	●	●
Grease all moving parts (e.g. side stand, hand lever, chain, ...) and check for smooth operation.	○	●	●
Clean the dust boots of the fork legs. (☛ p. 15)		●	●
Check the brake fluid level of the front brake. (☛ p. 68)	○	●	●
Check the steering head bearing play. (☛ p. 26)	○	●	●
Change the spark plugs.		●	●
Check the valve clearance.	○		●
Check all hoses (e.g. fuel, cooling, bleeder, drainage, etc.) and bellows for cracking, leaks, and correct routing.	○		●
Check the antifreeze and coolant level. (☛ p. 195)	○	●	●
Check the cables for damage and routing without sharp bends.		●	●
Check that the throttle cables are undamaged, routed without sharp bends, and set correctly.	○	●	●
Change the air filter. Clean the air filter box.		●	●
Check the screws and nuts for tightness.	○	●	●
Change the front brake fluid. (☛ p. 69)			●
Change the rear brake fluid. (☛ p. 74)			●
Check the headlight setting. (☛ p. 77)	○	●	●
Check that the radiator fan is functioning properly.	○	●	●
Final check: Check the vehicle for roadworthiness and take a test ride.	○	●	●
Read out the fault memory using the KTM diagnostics tool after a test ride.	○	●	●
Make the service entry in **KTM DEALER.NET** and in the service record.	○	●	●

○ One-time interval

● Periodic interval

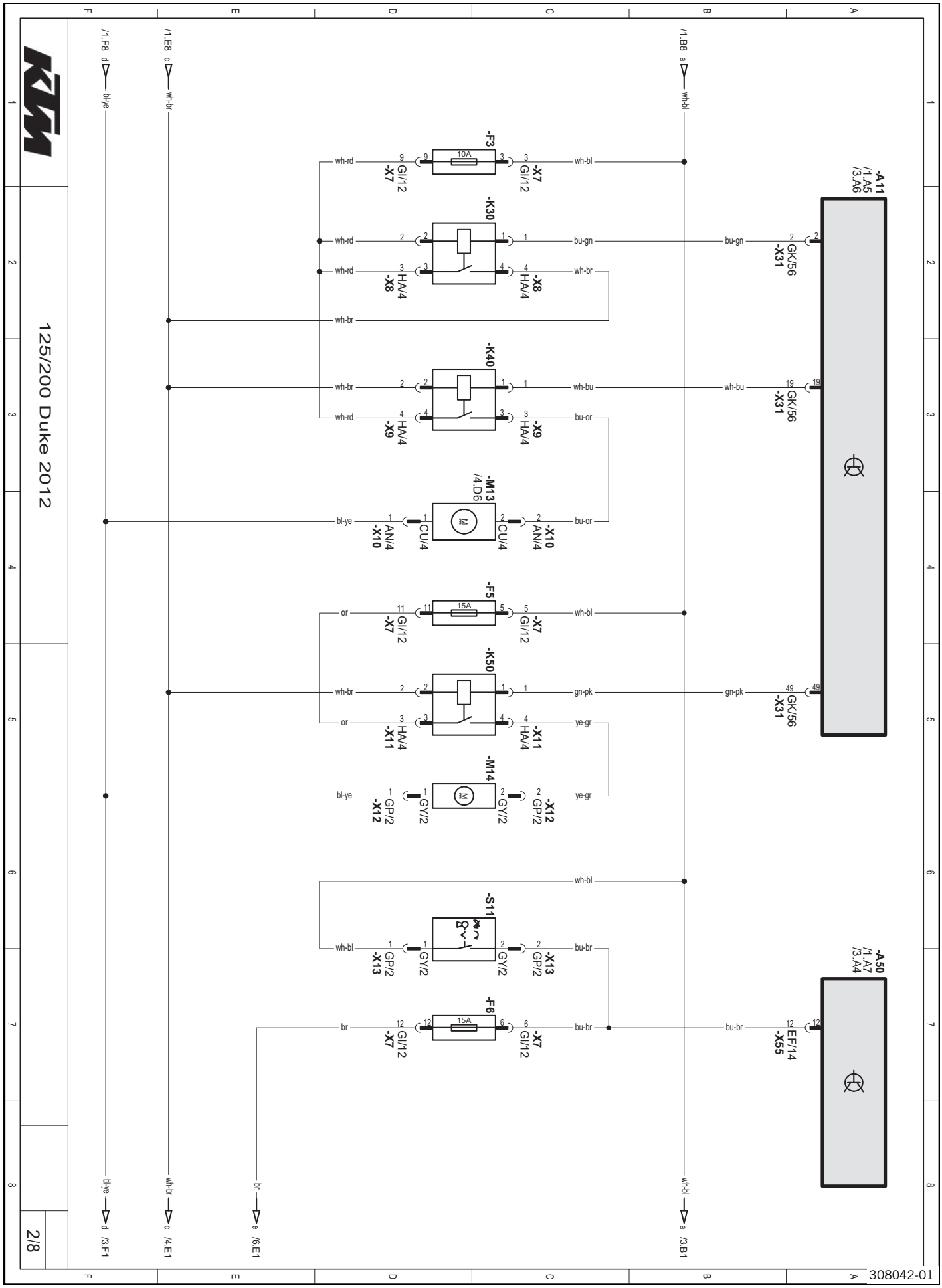
25.1 Page 1 of 8 (125 Duke, 200 Duke EU)



Components:

A11	EFI control unit
A50	Alarm system (optional)
A60	Vehicle control unit
F1	Fuse
F4	Fuse
G10	Battery
K11	Start auxiliary relay 1
K17	Start auxiliary relay 2
K18	Start auxiliary relay 3
K19	Starter relay
M10	Starter motor
P10	Combination instrument
S23	Emergency OFF switch, electric starter button

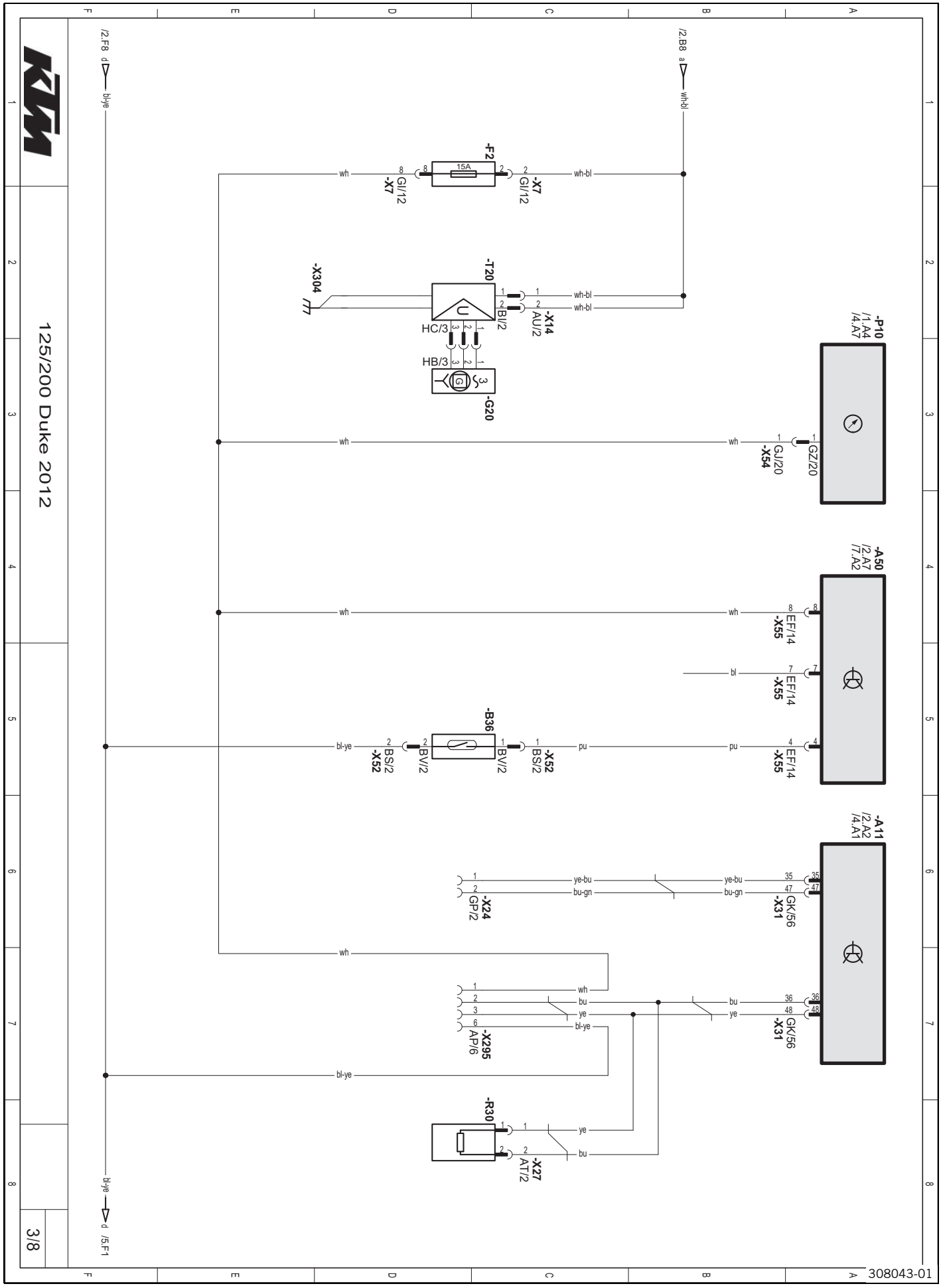
25.2 Page 2 of 8 (125 Duke, 200 Duke EU)



Components:

A11	EFI control unit
A50	Alarm system (optional)
F3	Fuse
F5	Fuse
F6	Fuse
K30	Power relay
K40	Fuel pump relay
K50	Radiator fan relay
M13	Fuel pump
M14	Radiator fan
S11	Ignition/steering lock

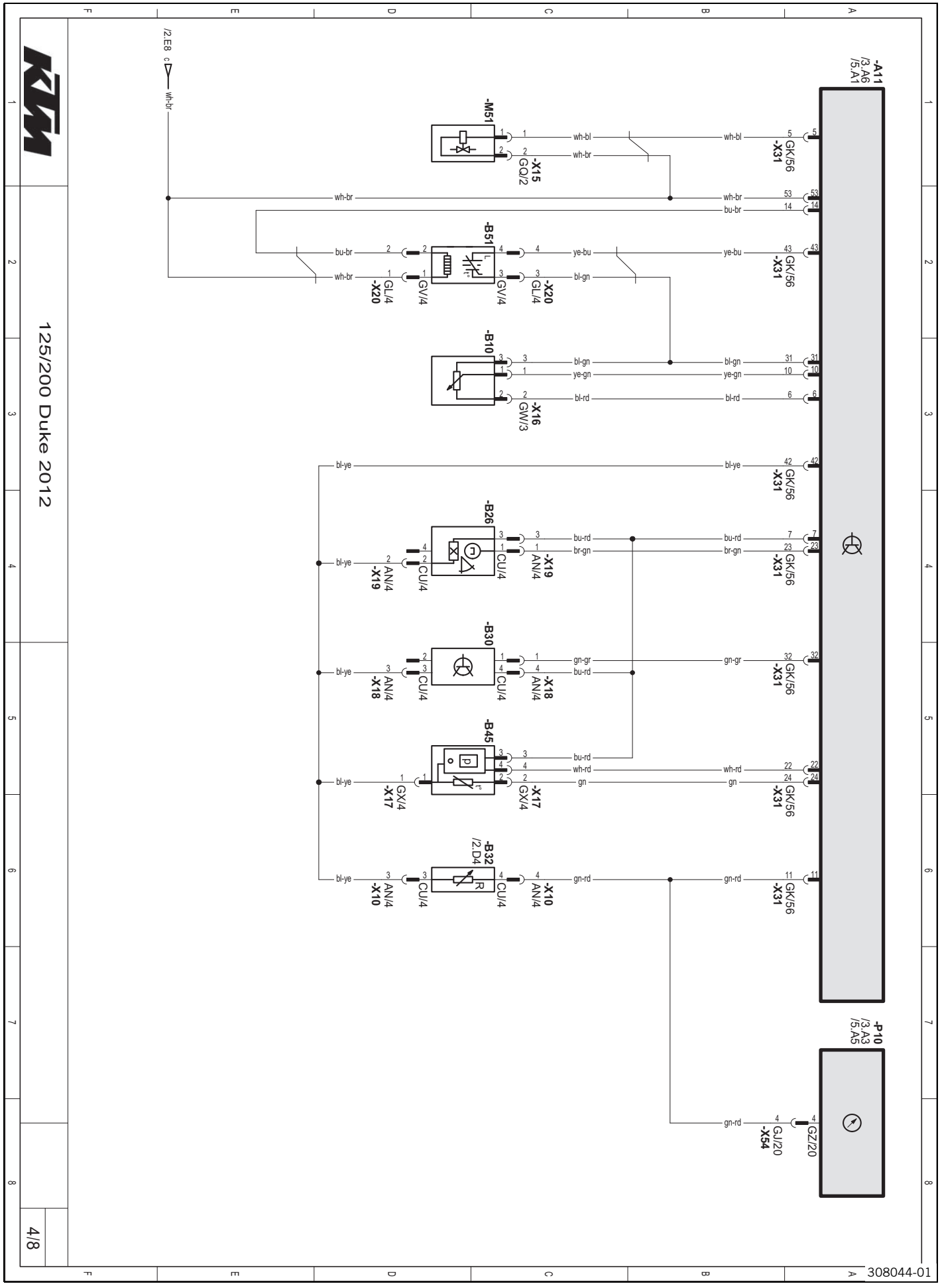
25.3 Page 3 of 8 (125 Duke, 200 Duke EU)



Components:

A11	EFI control unit
A50	Alarm system (optional)
B36	Alarm system switch (optional)
F2	Fuse
G20	Alternator
P10	Combination instrument
R30	CAN bus terminating resistor 1
T20	Voltage regulator
X295	Diagnostics connector

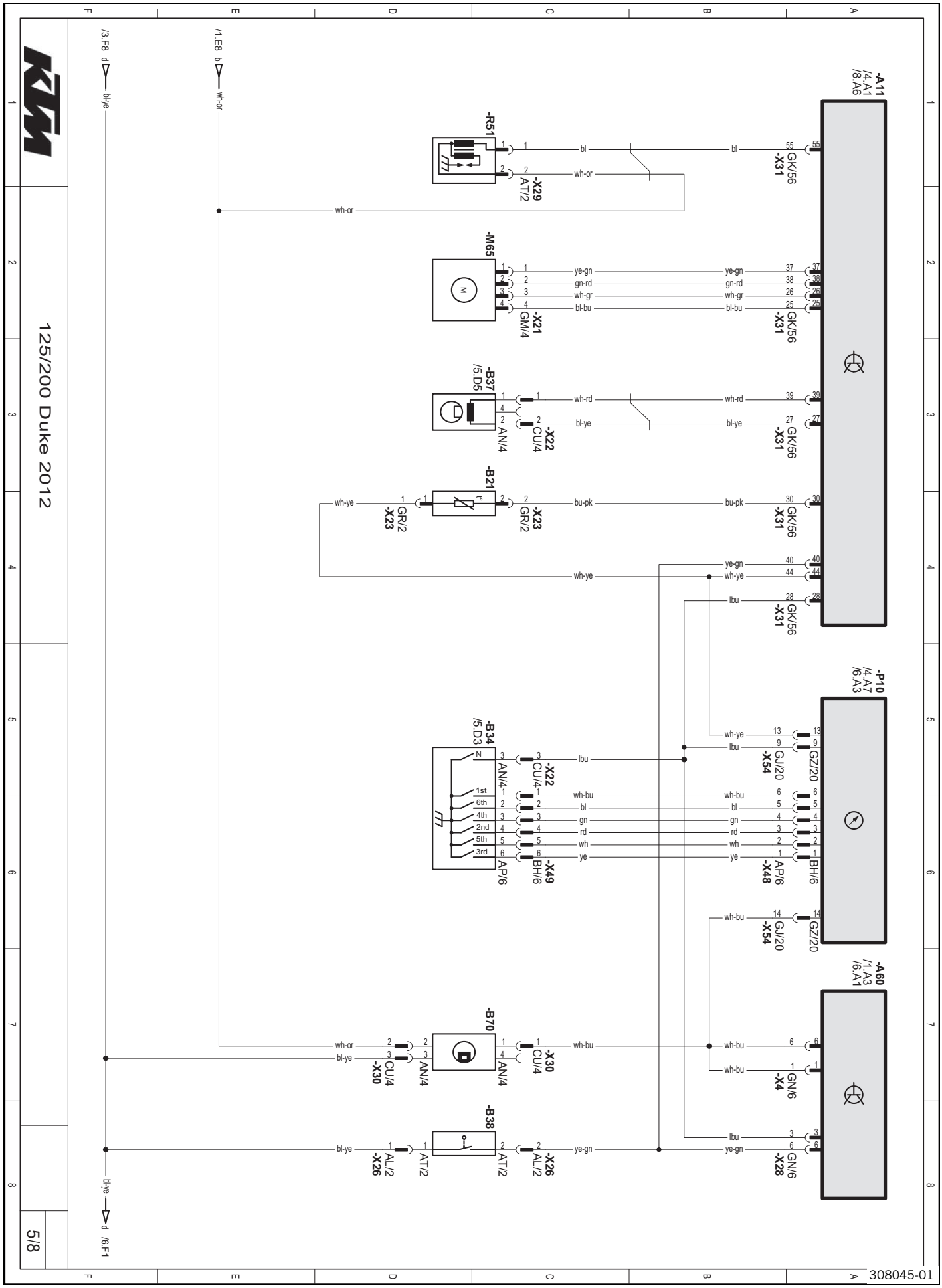
25.4 Page 4 of 8 (125 Duke, 200 Duke EU)



Components:

A11	EFI control unit
B10	Throttle position sensor circuit A
B26	Rollover sensor
B30	Side stand switch
B32	Fuel tank sensor
B45	Temperature and manifold absolute pressure sensor
B51	Lambda sensor (cylinder 1)
M51	Injection valve (cylinder 1)
P10	Combination instrument

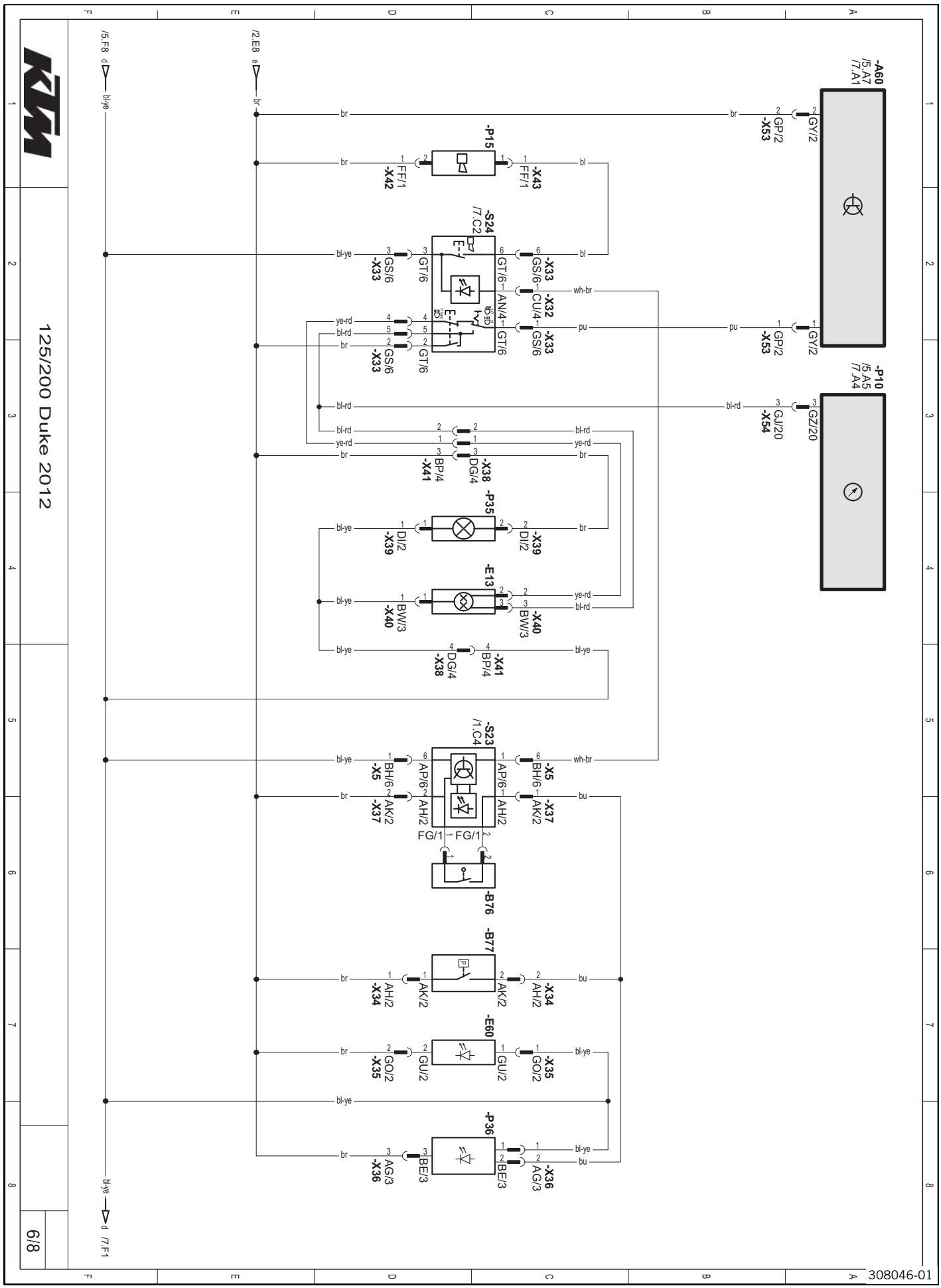
25.5 Page 5 of 8 (125 Duke, 200 Duke EU)



Components:

A11	EFI control unit
A60	Vehicle control unit
B21	Engine coolant temperature sensor (cylinder 1)
B34	Gear position sensor
B37	Ignition pulse alternator
B38	Clutch switch
B70	Front wheel speed sensor
M65	Idle speed actuator
P10	Combination instrument
R51	Ignition coil (cylinder 1)

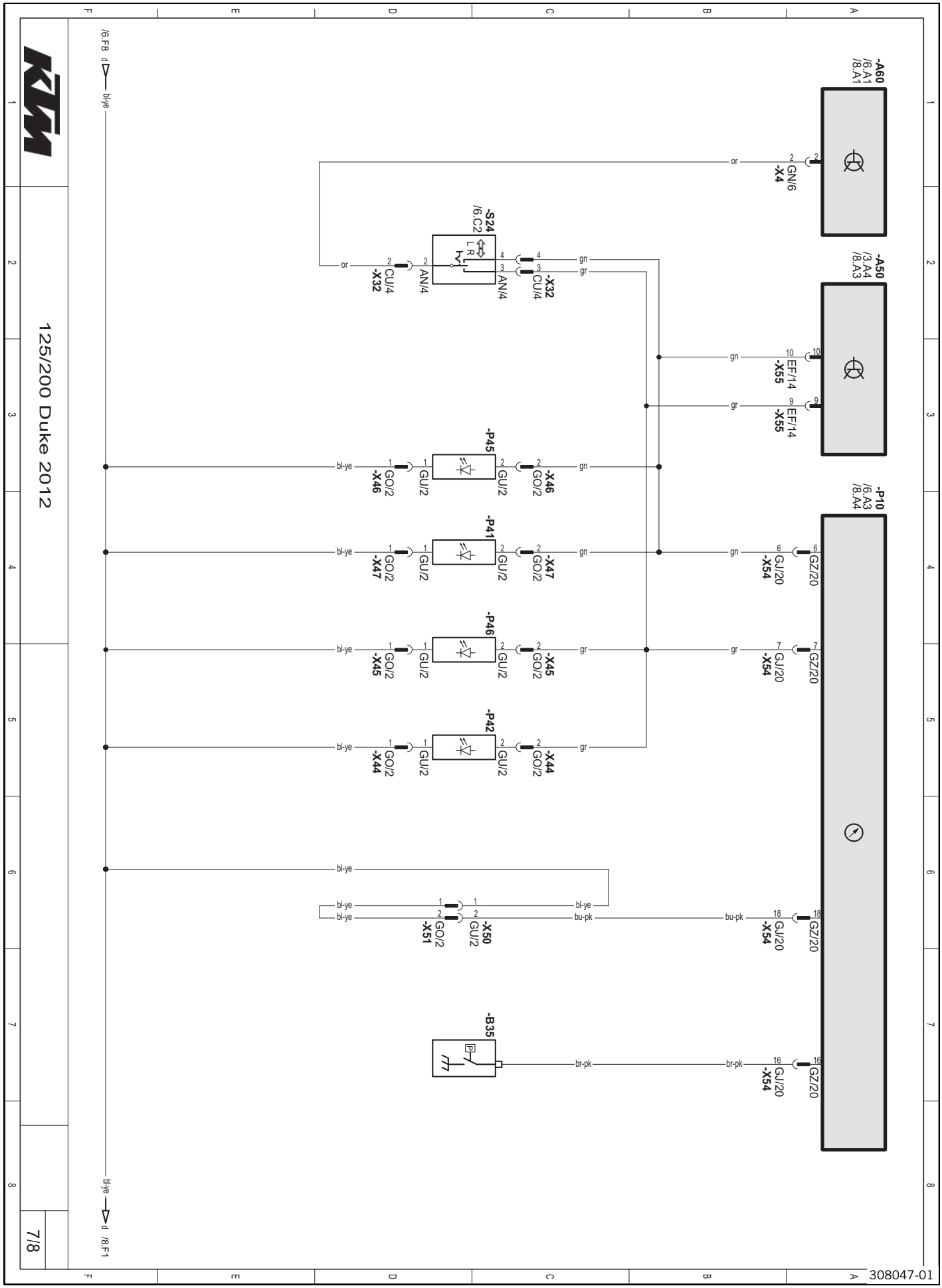
25.6 Page 6 of 8 (125 Duke, 200 Duke EU)



Components:

A60	Vehicle control unit
B76	Front brake light switch
B77	Brake light switch, rear
E13	Low beam, high beam
E60	License plate lamp
P10	Combination instrument
P15	Horn
P35	Parking light
P36	Brake/tail light
S23	Emergency OFF switch, electric starter button
S24	Light switch, horn button, headlight flasher switch, turn signal switch

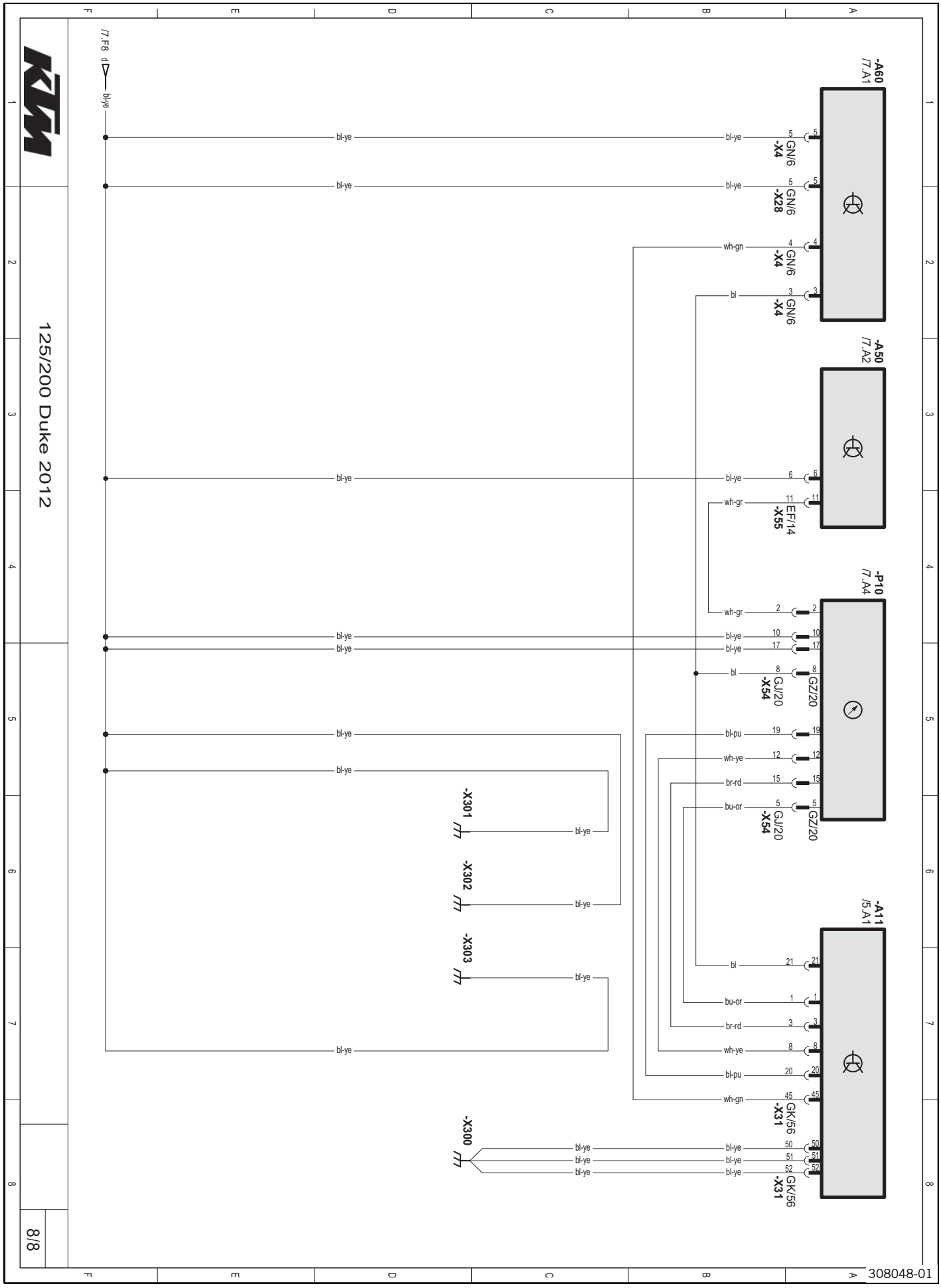
25.7 Page 7 of 8 (125 Duke, 200 Duke EU)



Components:

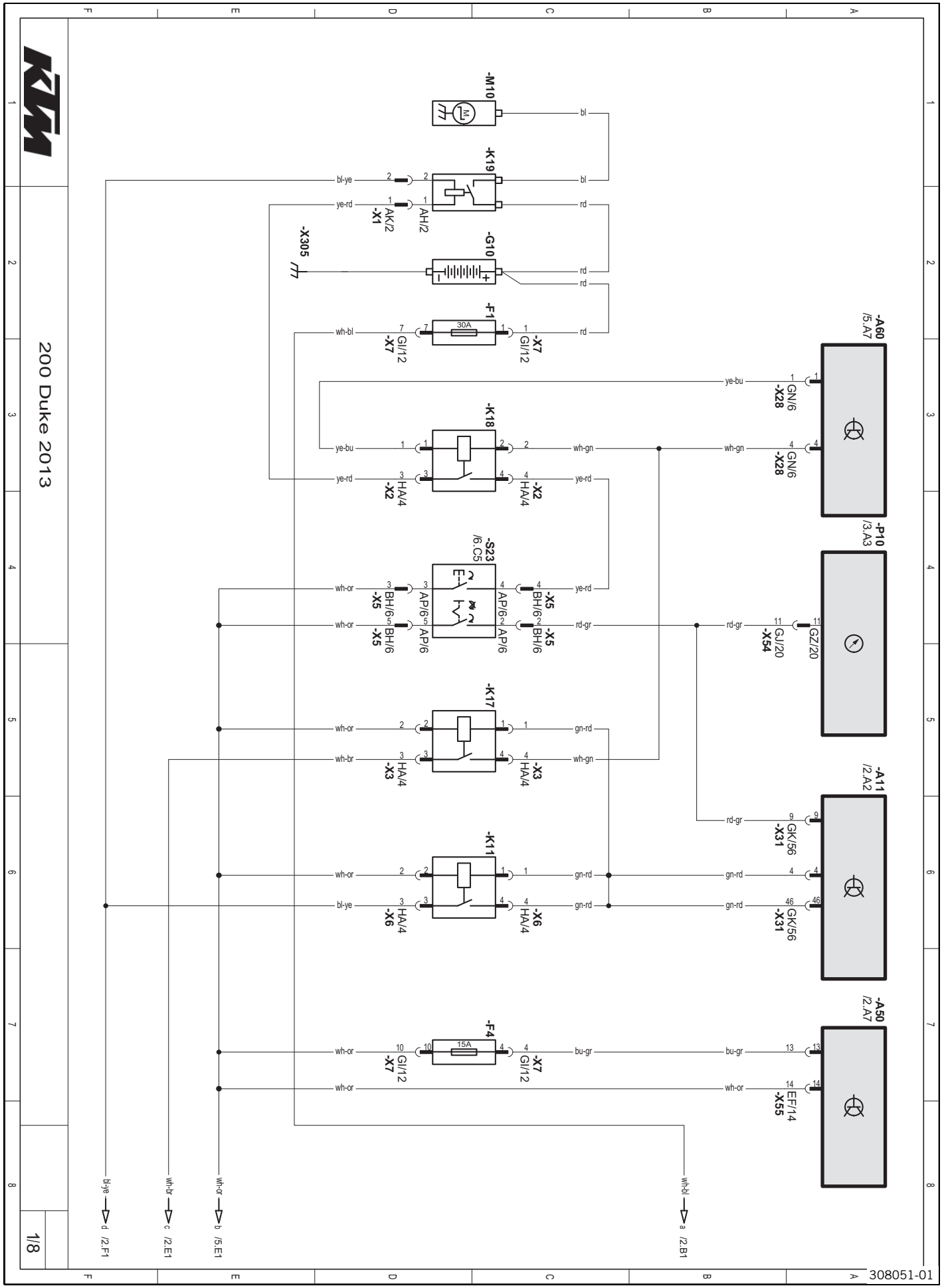
A50	Alarm system (optional)
A60	Vehicle control unit
B35	Oil pressure sensor
P10	Combination instrument
P41	Turn signal, front left
P42	Turn signal, front right
P45	Turn signal, rear left
P46	Turn signal, rear right
S24	Light switch, horn button, headlight flasher switch, turn signal switch

25.8 Page 8 of 8 (125 Duke, 200 Duke EU)



Components:	
A11	EFI control unit
A50	Alarm system (optional)
A60	Vehicle control unit
P10	Combination instrument
Cable colors:	
bl	Black
br	Brown
bu	Blue
gn	Green
gr	Gray
lbu	Light blue
or	Orange
pk	Pink
pu	Violet
rd	Red
wh	White
ye	Yellow

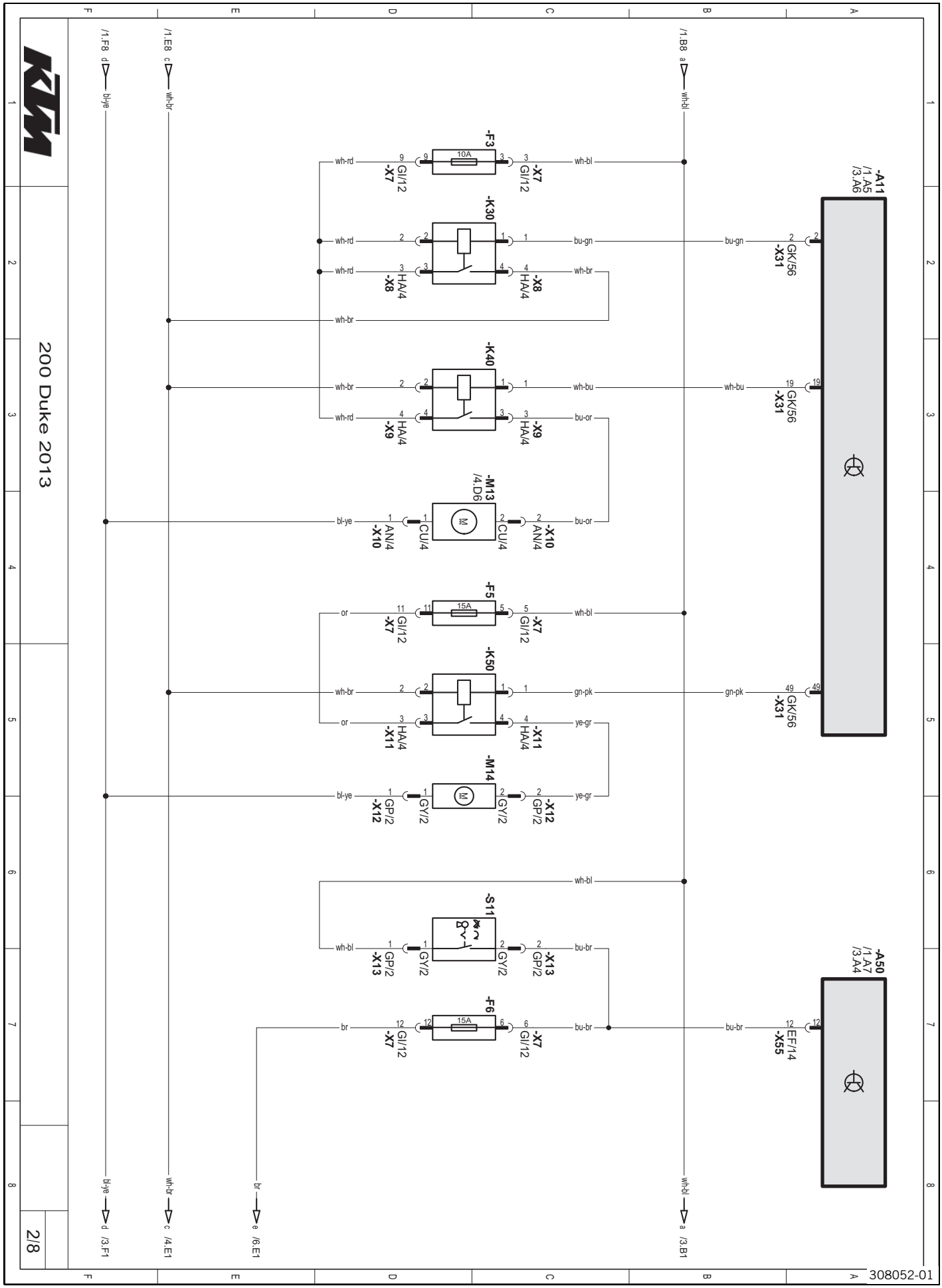
25.9 Page 1 of 8 (200 Duke 2013 COL)



Components:

A11	EFI control unit
A50	Alarm system (optional)
A60	Vehicle control unit
F1	Fuse
F4	Fuse
G10	Battery
K11	Start auxiliary relay 1
K17	Start auxiliary relay 2
K18	Start auxiliary relay 3
K19	Starter relay
M10	Starter motor
P10	Combination instrument
S23	Emergency OFF switch, electric starter button

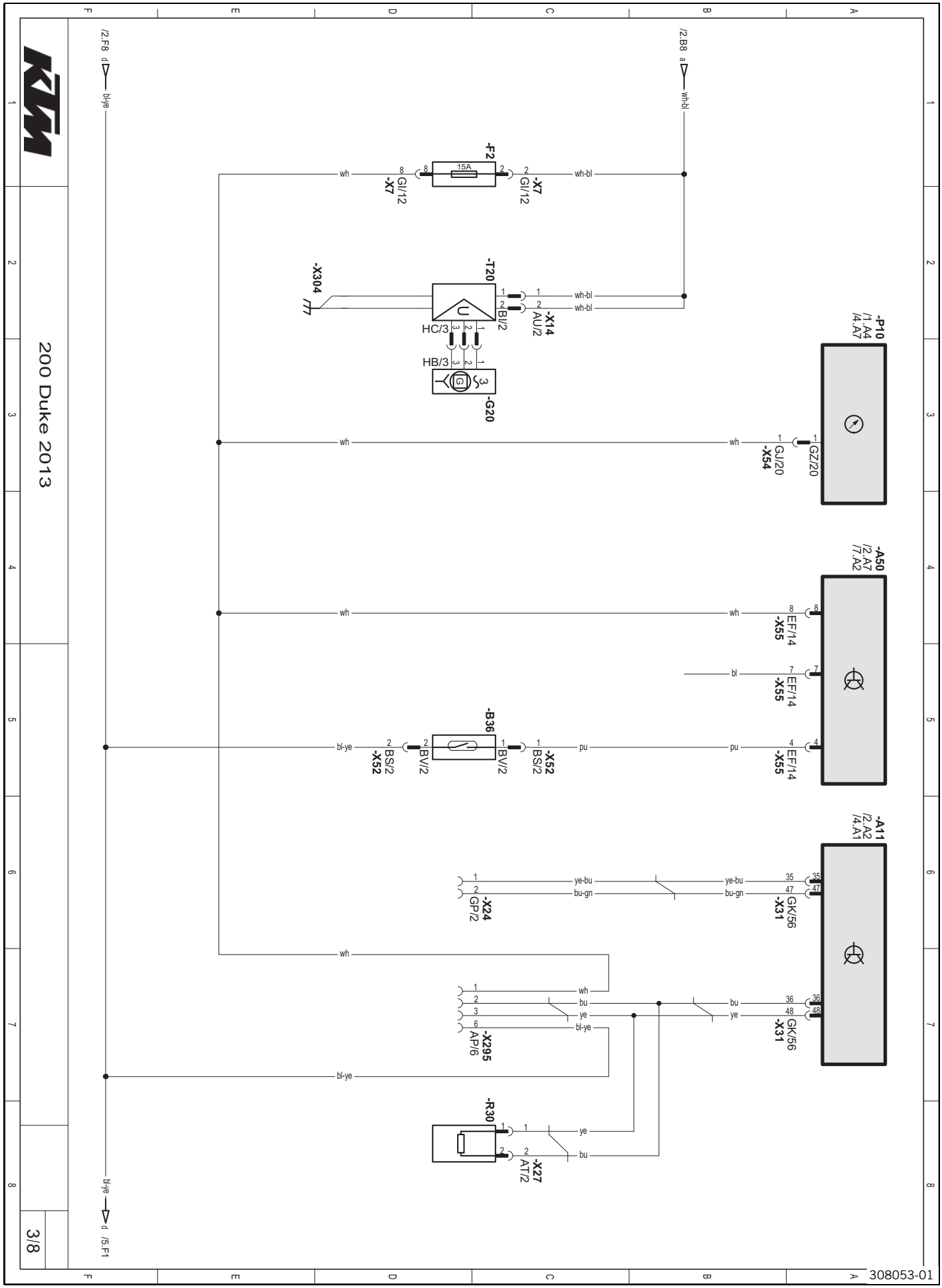
25.10 Page 2 of 8 (200 Duke 2013 COL)



Components:

A11	EFI control unit
A50	Alarm system (optional)
F3	Fuse
F5	Fuse
F6	Fuse
K30	Power relay
K40	Fuel pump relay
K50	Radiator fan relay
M13	Fuel pump
M14	Radiator fan
S11	Ignition/steering lock

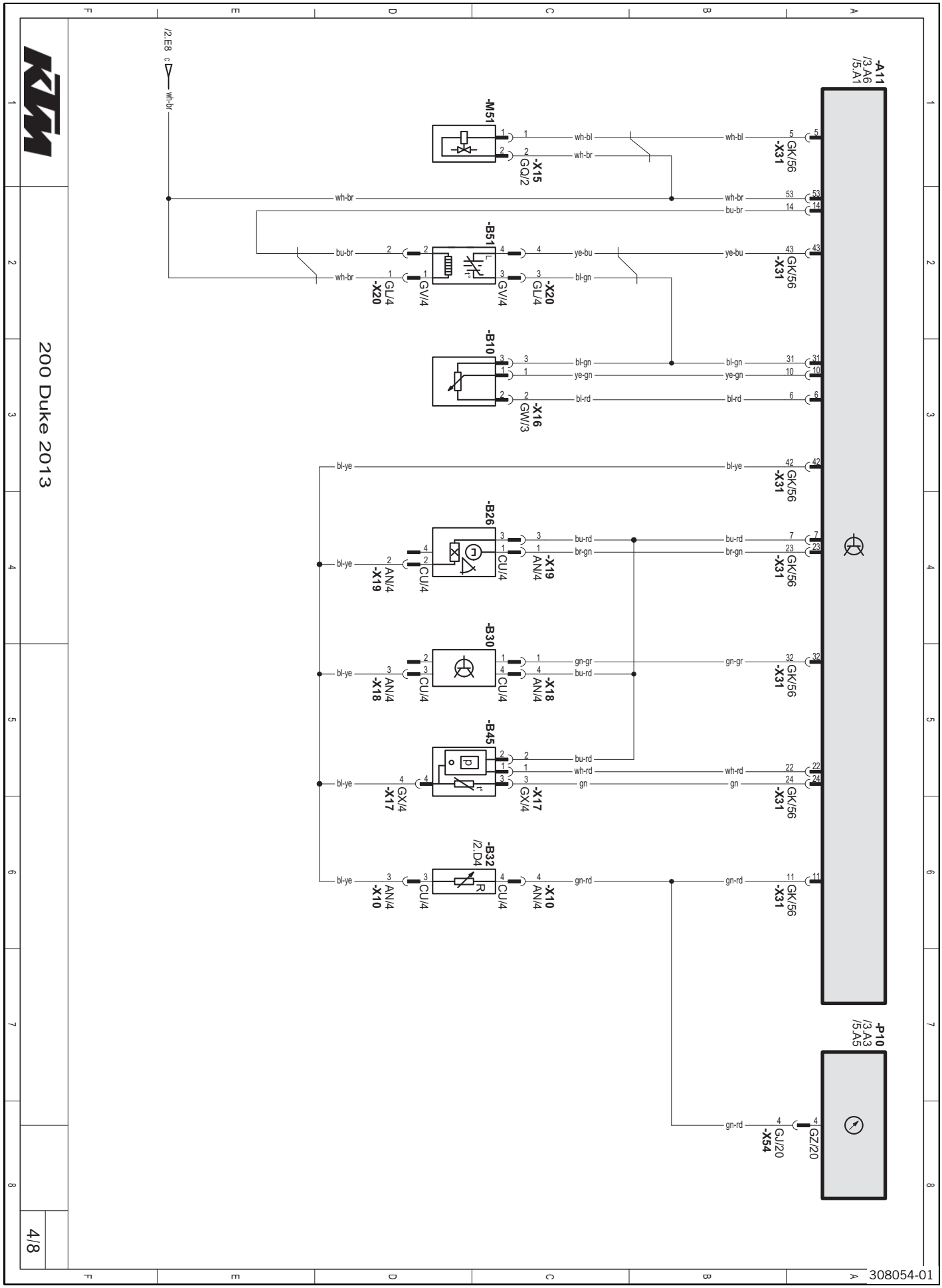
25.11 Page 3 of 8 (200 Duke 2013 COL)



Components:

A11	EFI control unit
A50	Alarm system (optional)
B36	Alarm system switch (optional)
F2	Fuse
G20	Alternator
P10	Combination instrument
R30	CAN bus terminating resistor 1
T20	Voltage regulator
X295	Diagnostics connector

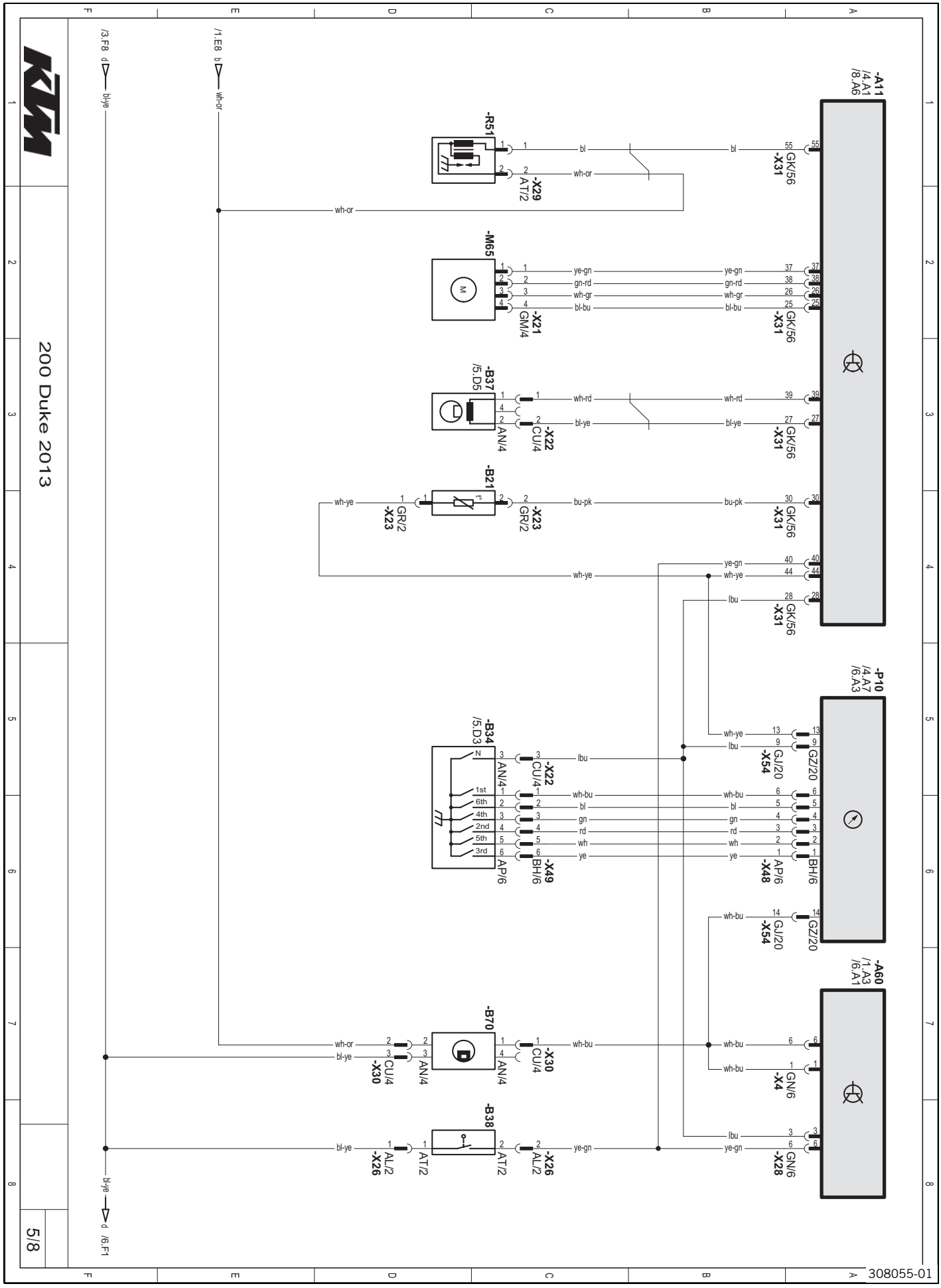
25.12 Page 4 of 8 (200 Duke 2013 COL)



Components:

A11	EFI control unit
B10	Throttle position sensor circuit A
B26	Rollover sensor
B30	Side stand switch
B32	Fuel tank sensor
B45	Temperature and manifold absolute pressure sensor
B51	Lambda sensor (cylinder 1)
M51	Injection valve (cylinder 1)
P10	Combination instrument

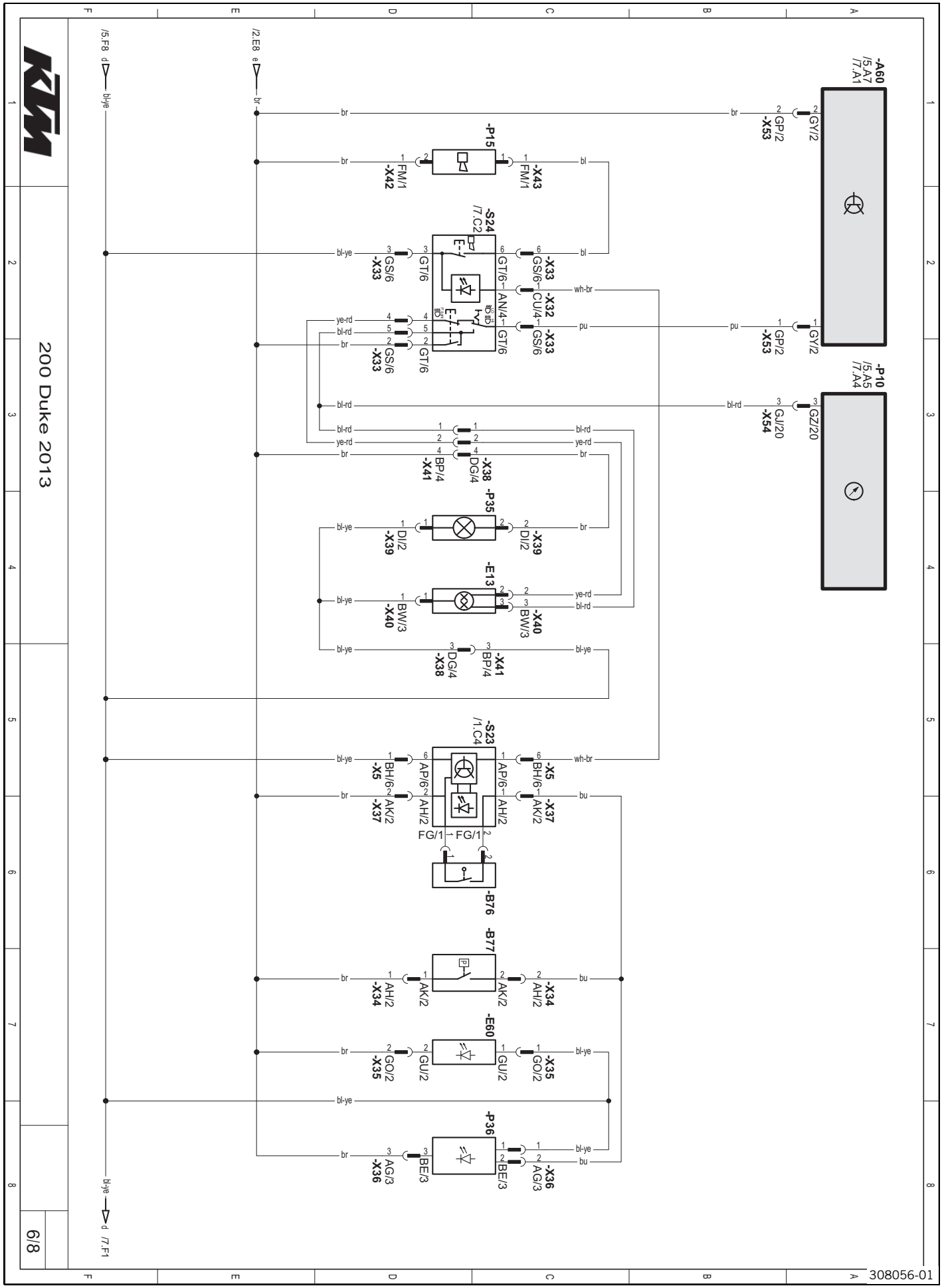
25.13 Page 5 of 8 (200 Duke 2013 COL)



Components:

A11	EFI control unit
A60	Vehicle control unit
B21	Coolant temperature sensor (cylinder 1)
B34	Gear position sensor
B37	Ignition pulse generator
B38	Clutch switch
B70	Wheel speed sensor, front
M65	Idle speed actuator
P10	Combination instrument
R51	Ignition coil (cylinder 1)

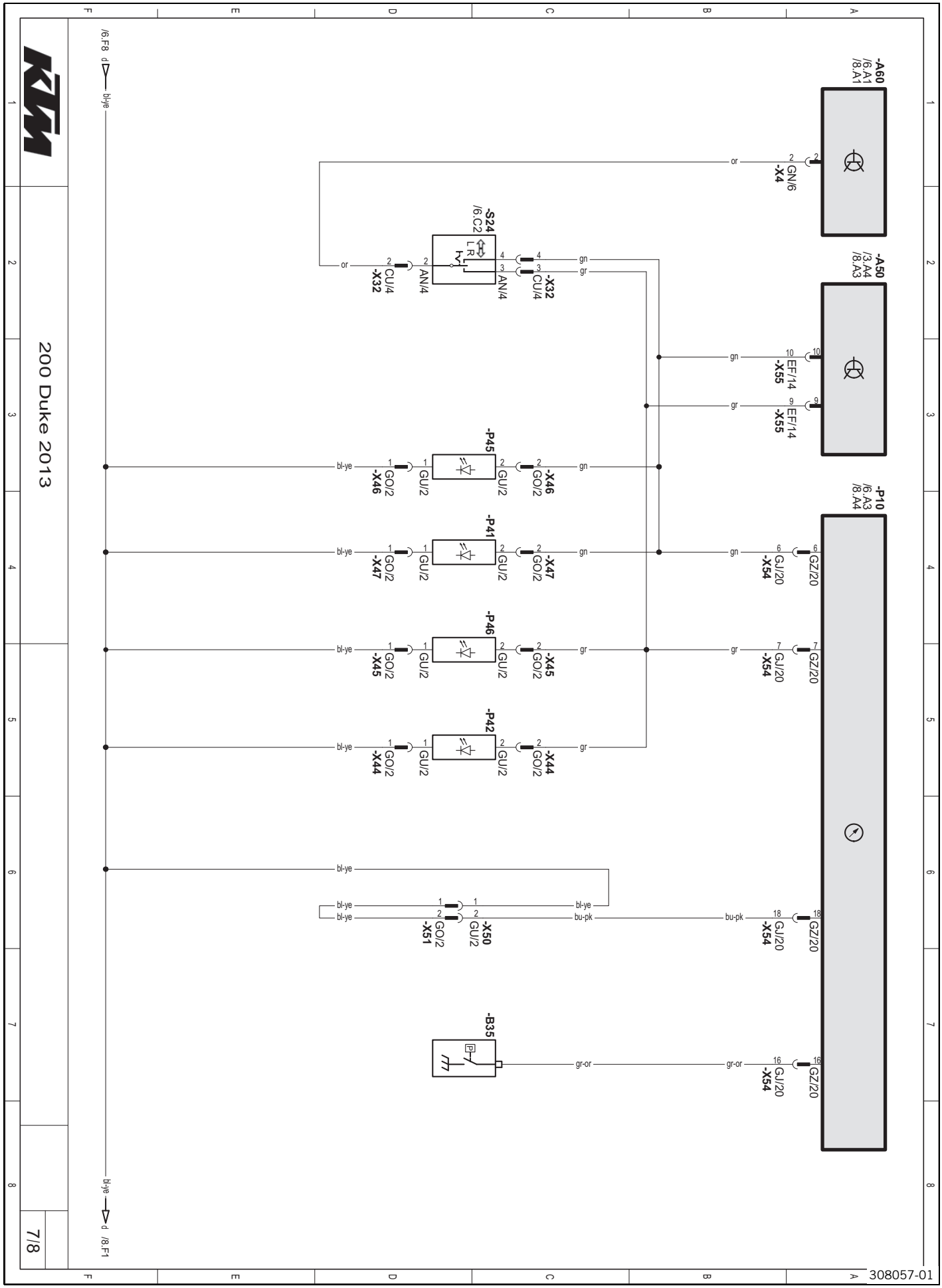
25.14 Page 6 of 8 (200 Duke 2013 COL)



Components:

A60	Vehicle control unit
B76	Brake light switch, front
B77	Brake light switch, rear
E13	Low beam, high beam
E60	License plate lamp
P10	Combination instrument
P15	Horn
P35	Parking light
P36	Brake/tail light
S23	Emergency OFF switch, electric starter button
S24	Light switch, horn button, high beam flasher button, turn signal switch

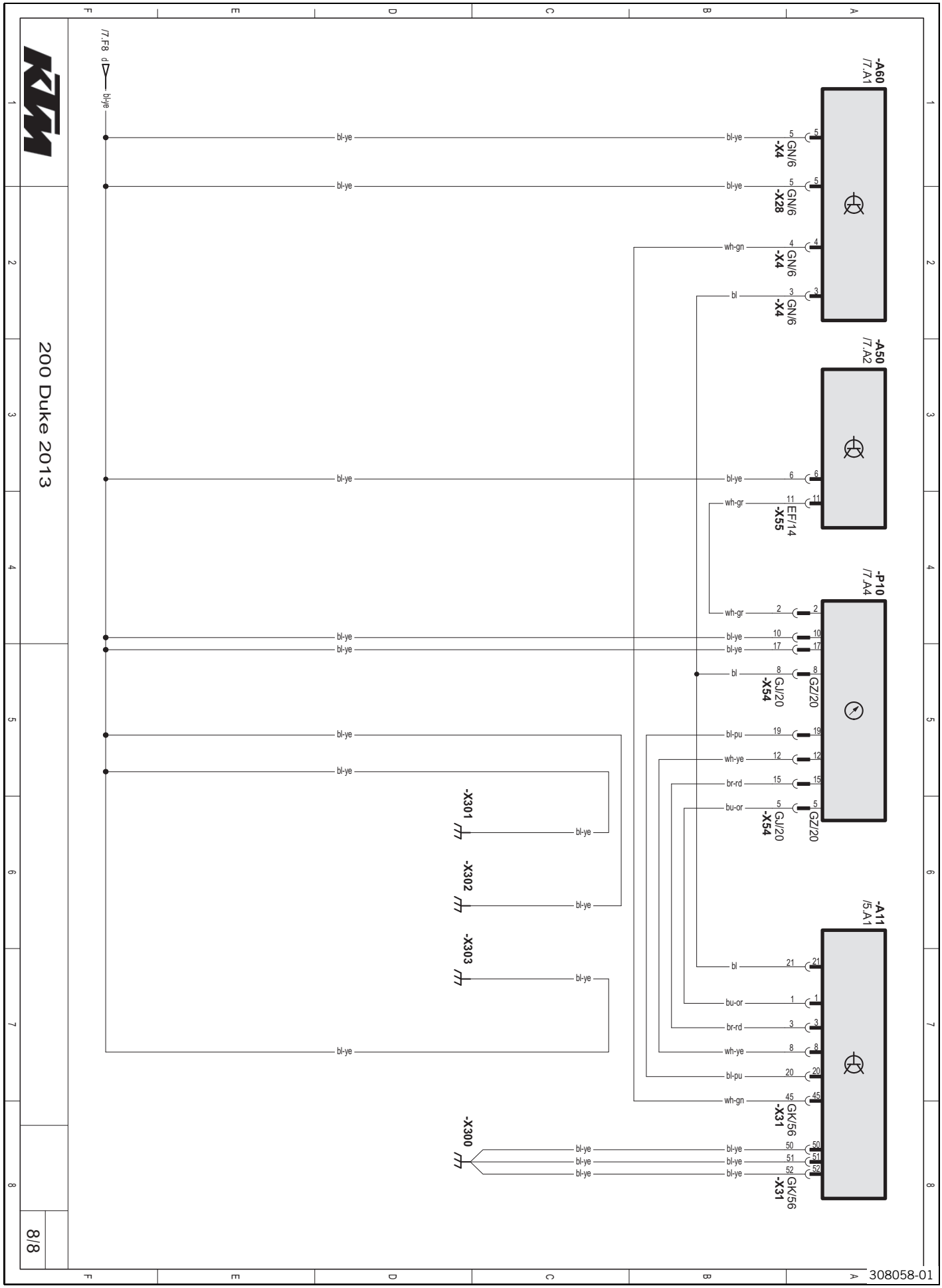
25.15 page 7 of 8 (200 Duke 2013 COL)



Components:

A50	Alarm system (optional)
A60	Vehicle control unit
B35	Oil pressure sensor
P10	Combination instrument
P41	Turn signal, front left
P42	Turn signal, front right
P45	Turn signal, rear left
P46	Turn signal, rear right
S24	Light switch, horn button, high beam flasher button, turn signal switch

25.16 Page 8 of 8 (200 Duke 2013 COL)



Components:	
A11	EFI control unit
A50	Alarm system (optional)
A60	Vehicle control unit
P10	Combination instrument
Cable colors:	
bl	Black
br	Brown
bu	Blue
gn	Green
gr	Gray
lbu	Light blue
or	Orange
pk	Pink
pu	Violet
rd	Red
wh	White
ye	Yellow

Brake fluid DOT 4 / DOT 5.1

According to
– DOT

Guideline
– Use only brake fluid that complies with the specified standard (see specifications on the container) and that possesses the corresponding properties. KTM recommends **Castrol** and **Motorex®** products.

Supplier
Castrol
– **RESPONSE BRAKE FLUID SUPER DOT 4**

Motorex®
– **Brake Fluid DOT 5.1**

Coolant

Guideline
– Use only suitable coolant (also in countries with high temperatures). Use of low-quality antifreeze can lead to corrosion and foaming. KTM recommends **Motorex®** products.

Mixture ratio

Antifreeze protection: −25… −45 °C (−13… −49 °F)	50 % corrosion inhibitor/antifreeze 50 % distilled water

Coolant (mixed ready to use)

Antifreeze	−40 °C (−40 °F)

Supplier
Motorex®
– **COOLANT G48**

Engine oil (SAE 15W/50)

According to
– JASO T903 MA (☛ p. 261)
– SAE (☛ p. 261) (SAE 15W/50)

Guideline
– Use only engine oils that comply with the specified standards (see specifications on the container) and that possess the corresponding properties. KTM recommends **Motorex®** products.

Partially synthetic engine oil

Supplier
Motorex®
– **Formula 4T**

Engine oil (SAE 10W/40)

According to
– JASO T903 MA (☛ p. 261)
– SAE (☛ p. 261) (SAE 10W/40)

Guideline
– Use only engine oils that comply with the specified standards (see specifications on the container) and that possess the corresponding properties. KTM recommends **Motorex®** products.

Partially synthetic engine oil

Supplier
Motorex®
– **Formula 4T**

Fork oil (SAE 4) (48601166S1)

According to

– SAE (☛ p. 261) (SAE 4)

Guideline

– Use only oils that comply with the specified standards (see specifications on the container) and that possess the corresponding properties.

Super unleaded (ROZ 95/RON 95/PON 91)

According to

– DIN EN 228 (ROZ 95/RON 95/PON 91)

Guideline

– Only use unleaded super fuel that matches or is equivalent to the specified fuel grade.
– Fuel with an ethanol content of up to 10 % (E10 fuel) is safe to use.

Info

Do **not** use fuel containing methanol (e. g. M15, M85, M100) or more than 10 % ethanol (e. g. E15, E25, E85, E100).

Chain cleaner

Guideline
– KTM recommends **Motorex®** products.

Supplier
Motorex®
– **Chain Clean**

Chain lube for road use

Guideline
– KTM recommends **Motorex®** products.

Supplier
Motorex®
– **Chainlube Road**

Cleaning and preserving materials for metal, rubber and plastic

Guideline
– KTM recommends **Motorex®** products.

Supplier
Motorex®
– **Protect & Shine**

Fuel additive

Guideline
– KTM recommends **Motorex®** products.

Supplier
Motorex®
– **Fuel Stabilizer**

High viscosity grease

Guideline
– KTM recommends **SKF®** products.

Supplier
SKF®
– **LGHB 2**

High-luster polish for paint

Guideline
– KTM recommends **Motorex®** products.

Supplier
Motorex®
– **Moto Polish**

Long-life grease

Guideline
– KTM recommends **Motorex®** products.

Supplier
Motorex®
– **Bike Grease 2000**

Lubricant (T511)

Guideline
– KTM recommends **Lubcon®** products.

Supplier
Lubcon®
– **Turmsilon® GTI 300 P**

Lubricant (T152)

Guideline

– KTM recommends **Bel-Ray®** products.

Supplier
Bel-Ray®

– **Molylube® Anti-Seize**

Motorcycle cleaner

Guideline

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Moto Clean 900**

Paint cleaner and polish for high-gloss and matte finishes, bare metal and plastic surfaces

Guideline

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Clean & Polish**

Universal oil spray

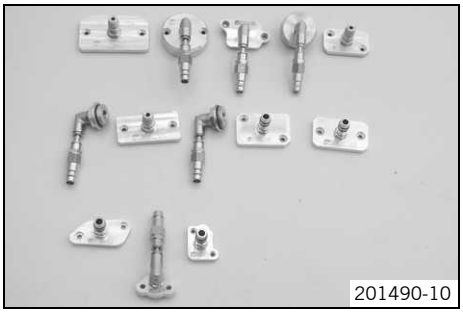
Guideline

– KTM recommends **Motorex®** products.

Supplier
Motorex®

– **Joker 440 Synthetic**

Bleeder cover

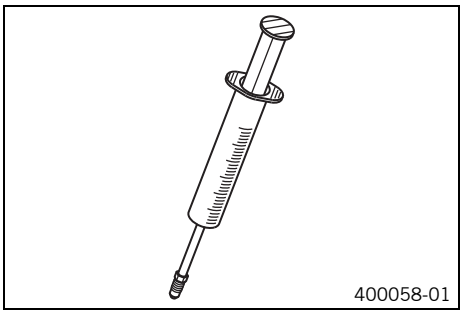


Art. no.: 00029013000

Bleeding device

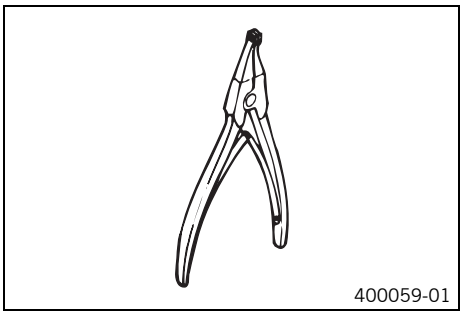
Art. no.: 00029013100

Bleed syringe



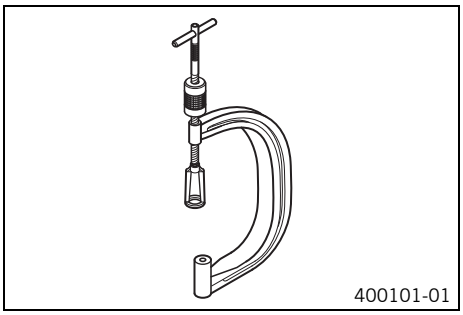
Art. no.: 50329050000

Circlip pliers reverse



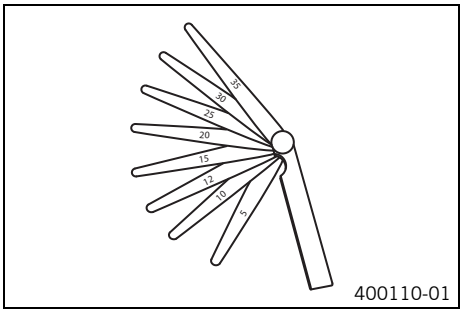
Art. no.: 51012011000

Valve spring compressor



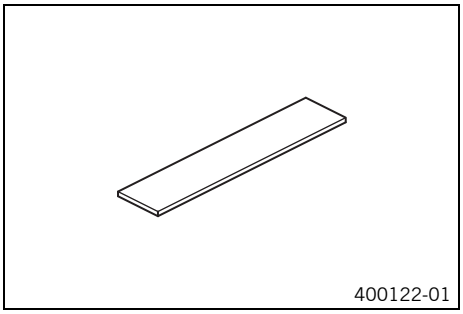
Art. no.: 59029019000

Feeler gauge



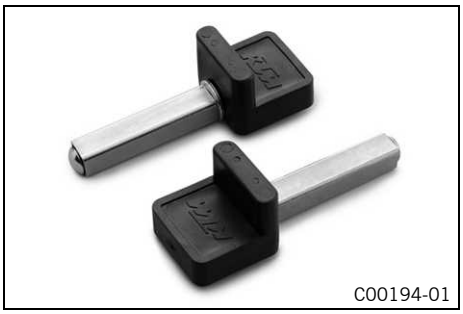
Art. no.: 59029041100

Plastigauge measuring strips



Art. no.: 60029012000

Adapter



Art. no.: 61029055130

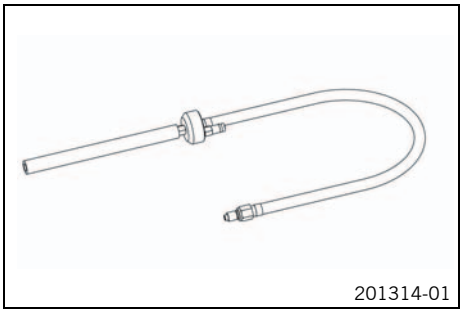
Rear wheel stand

Art. no.: 61029055400

Front wheel stand

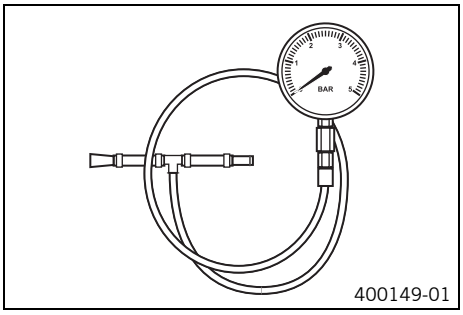
Art. no.: 61029055500

Testing hose



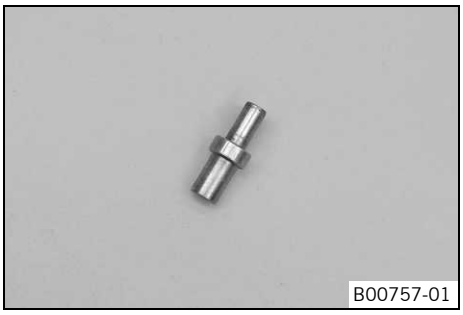
Art. no.: 61029093000

Pressure testing tool



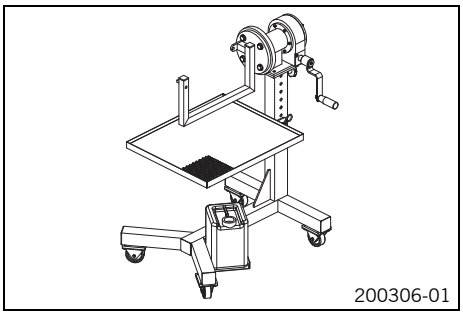
Art. no.: 61029094000

Adapter



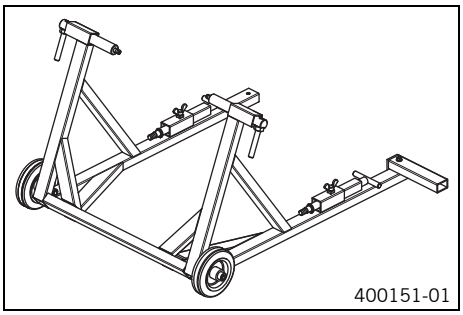
Art. no.: 61029955620

Engine assembly stand



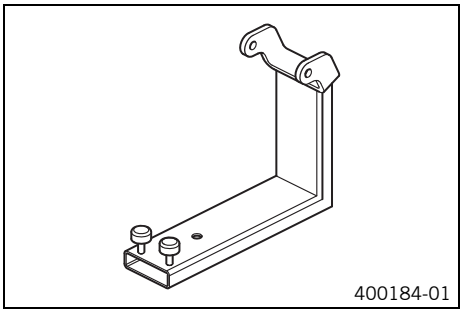
Art. no.: 61229001000

Work stand



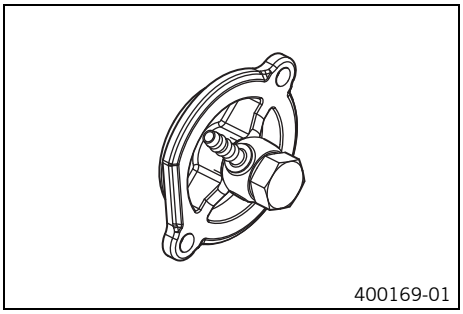
Art. no.: 62529055000

Floor jack attachment


400184-01

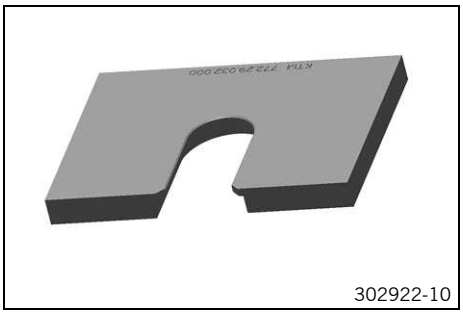
Art. no.: 75029055000

Oil pressure adapter


400169-01

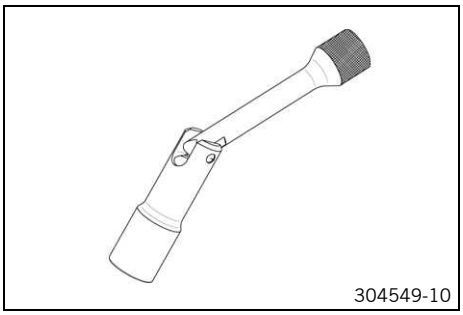
Art. no.: 75029094000

Separator plate


302922-10

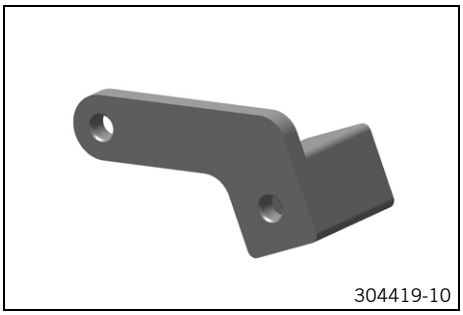
Art. no.: 77229032000

Spark plug wrench


304549-10

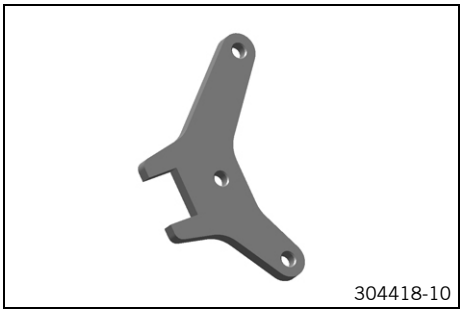
Art. no.: 77229172000

Engine fixing arm


304419-10

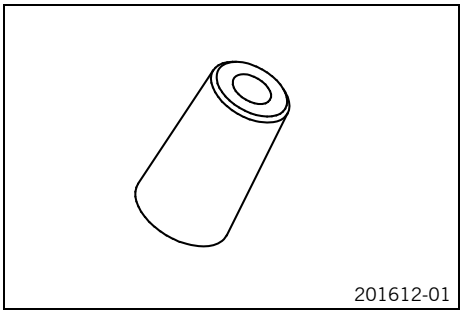
Art. no.: 90129002050

Engine fixing arm



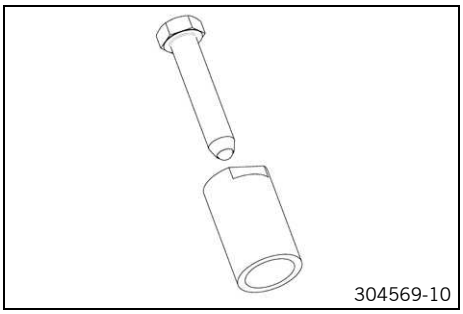
Art. no.: 90129002060

Mounting sleeve



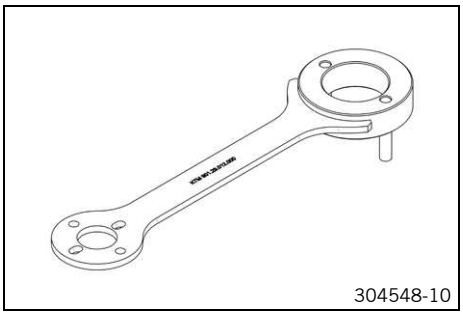
Art. no.: 90129005000

Extractor



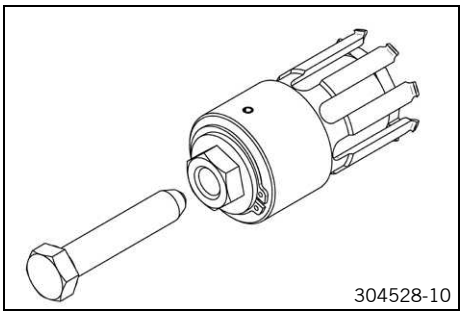
Art. no.: 90129009000

Holding spanner



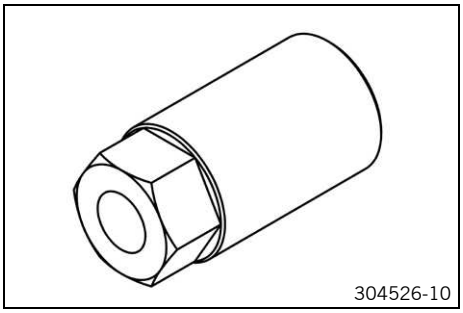
Art. no.: 90129012000

Puller for main bearing



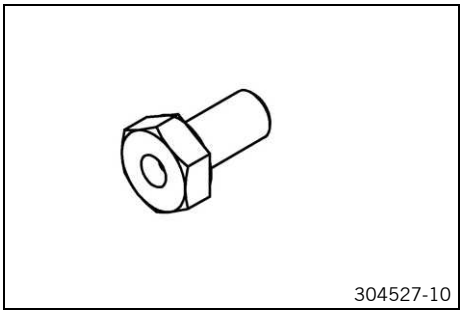
Art. no.: 90129018000

Protecting sleeve



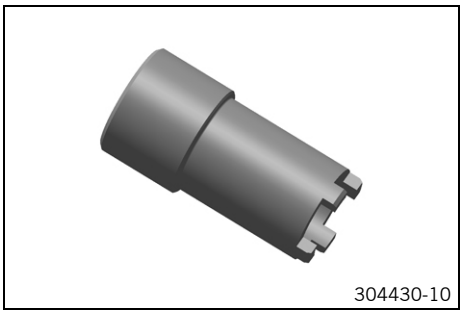
Art. no.: 90129019000

Pressure screw for crankshaft



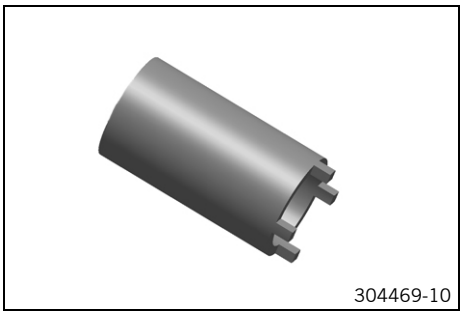
Art. no.: 90129020000

Castle nut wrench; ½" drive



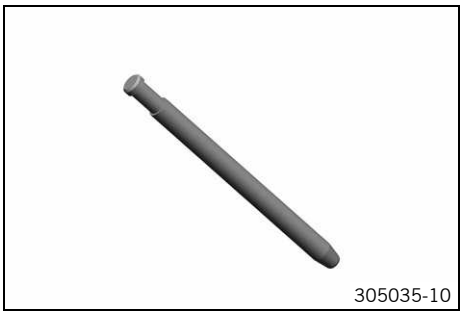
Art. no.: 90129021000

Castle nut wrench; ½" drive



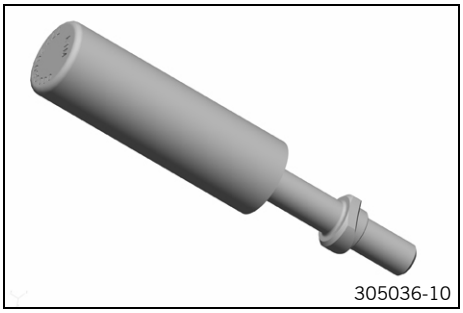
Art. no.: 90129022000

Limit plug gauge



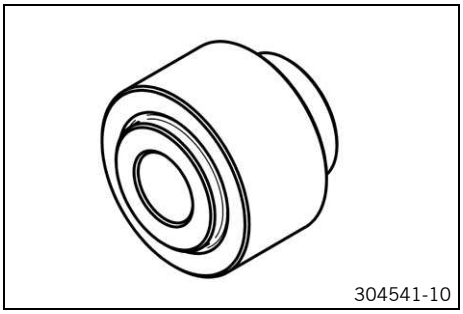
Art. no.: 90129026000

Insertion for piston ring lock



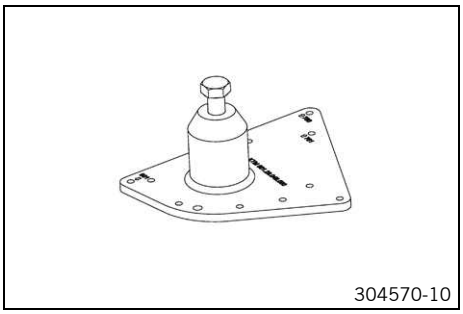
Art. no.: 90129030000

Mounting sleeve



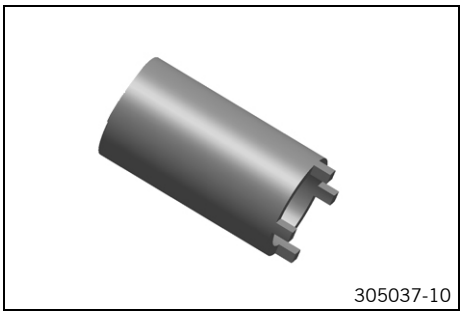
Art. no.: 90129043000

Case separating tool



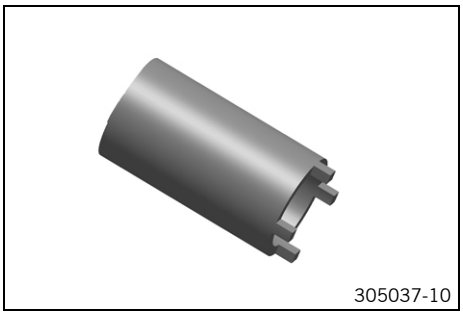
Art. no.: 90129048000

Castle nut wrench; ½" drive



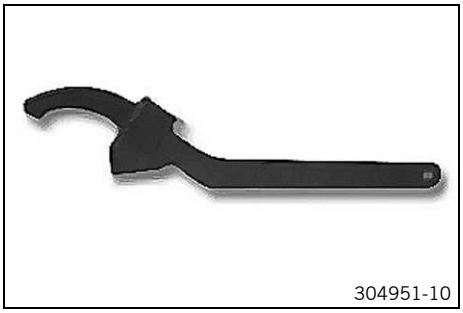
Art. no.: 90129050000

Castle nut wrench; ½" drive



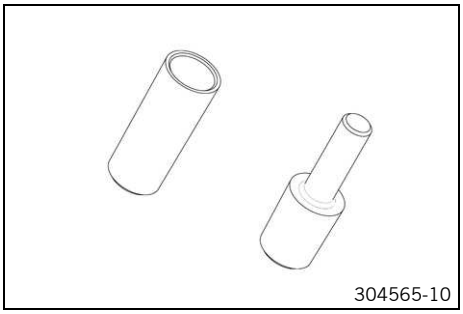
Art. no.: 90129050100

Key for steering head bearing


304951-10

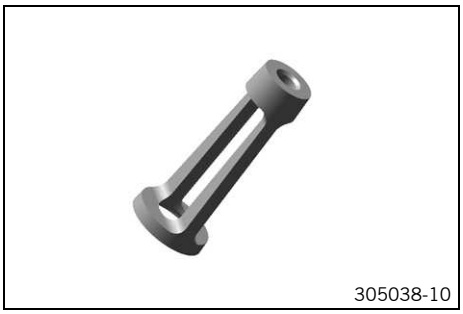
Art. no.: 90129051000

Disassembly tool, balancer shaft bearing


304565-10

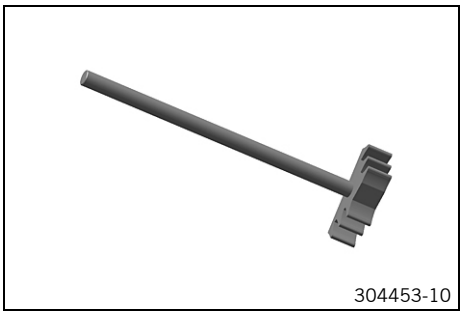
Art. no.: 90129056000

Insert for valve spring lever


305038-10

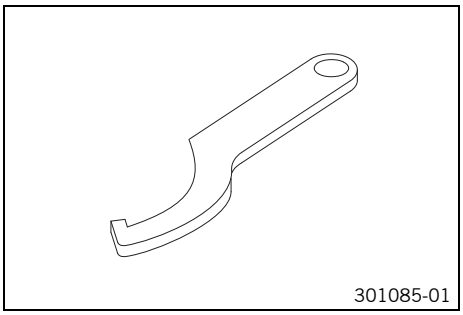
Art. no.: 90129060000

Gear segment


304453-10

Art. no.: 90129081100

Hook wrench

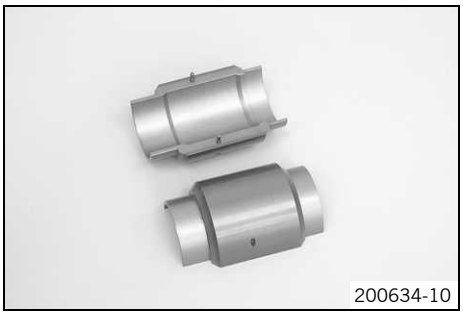

301085-01

Art. no.: T106S

Spring compressor

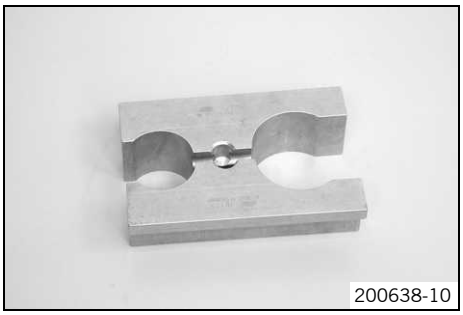
Art. no.: T14050S

Mounting tool



Art. no.: T528S

Clamping stand



Art. no.: T612S

JASO T903 MA

Different technical development directions required a new specification for 4-stroke motorcycles – the JASO T903 MA Standard. Earlier, engine oils from the automobile industry were used for 4-stroke motorcycles because there was no separate motorcycle specification. Whereas long service intervals are demanded for automobile engines, high performance at high engine speeds are in the foreground for motorcycle engines. In most motorcycles, the gearbox and the clutch are lubricated with the same oil as the engine. The JASO MA Standard meets these special requirements.

SAE

The SAE viscosity classes were defined by the Society of Automotive Engineers and are used for classifying oils according to their viscosity. The viscosity describes only one property of oil and says nothing about quality.

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KTM-Sportmotorcycle AG
5230 Mattighofen/Austria
http://www.ktm.com

KTM Group Partner

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