

# REPAIR MANUAL 2016



701 Enduro

Art. no. 3403036en





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 model series. We reserve the right to make changes in the interest of technical advancement without updating this repair manual at the same time.

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.

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Husqvarna Motorcycles GmbH  
5230 Mattighofen, Austria

This document is valid for the following models:

701 Enduro EU (F2603P1)

701 Enduro AU (F2660P1)

701 Enduro US (F2675P1)



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## 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).



Indicates information with more details or tips.



Indicates the result of a testing step.



Denotes a voltage measurement.



Denotes a current measurement.



Denotes a resistance measurement.

## 1.2 Formats used

The typographical formats used in this document are explained below.

<b>Proprietary name</b>	Identifies a proprietary name.
<b>Name<sup>®</sup></b>	Identifies a protected name.
<b>Brand<sup>™</sup></b>	Identifies a trademark.
<b><u>Underlined terms</u></b>	Refer to technical details of the vehicle or indicate technical terms, which are explained in the glossary.

### 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 Husqvarna tools and Husqvarna 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

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



#### Warning

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



#### Caution

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

#### Note

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



#### Warning

Indicates 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.



### 3.1 Manufacturer and implied warranty

The work prescribed in the service schedule must be carried out by an authorized Husqvarna Motorcycles workshop only and confirmed both in the customer's Service & Warranty Booklet and in the **Husqvarna Motorcycles Dealer.net**; otherwise, all warranty claims will be void. Damage or secondary damage caused by tampering with and/or conversions on the vehicle are not covered by the warranty.

Additional information on the manufacturer or implied 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 Husqvarna Motorcycles. Husqvarna Motorcycles accepts no liability for other products and any resulting damage or loss.

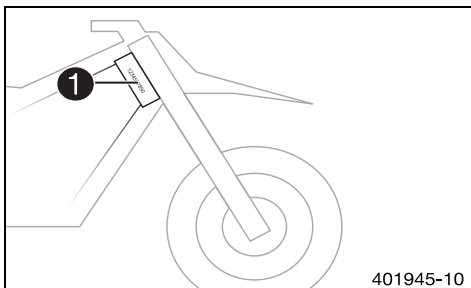
The current **Husqvarna Motorcycles** parts for your vehicle can be found on the Husqvarna Motorcycles website. International Husqvarna Motorcycles website: [www.husqvarna-motorcycles.com](http://www.husqvarna-motorcycles.com)

### 3.4 Figures

The figures contained in the manual may depict special equipment.

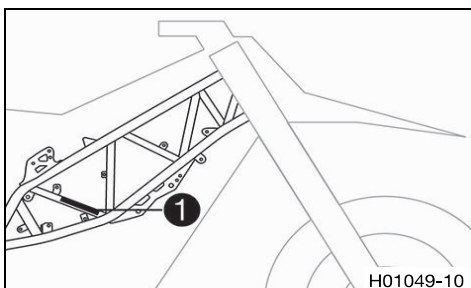
In the interest of clarity, some components may be shown disassembled or may not be shown at all. It is not always necessary to disassemble the component to perform the activity in question. Please follow the instructions in the text.

## 4.1 Chassis number



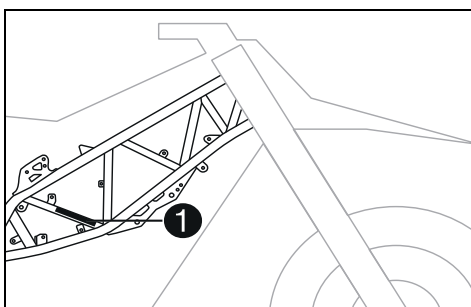
The chassis number ❶ is stamped on the steering head on the right.

## 4.2 Type label



(EU/AU)

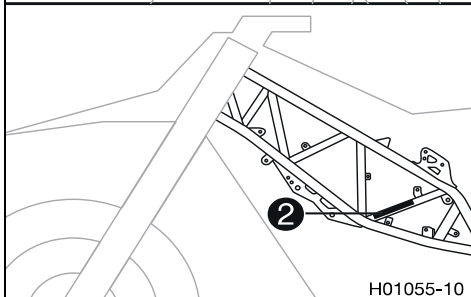
The type label ❶ is located on the right side of the frame.



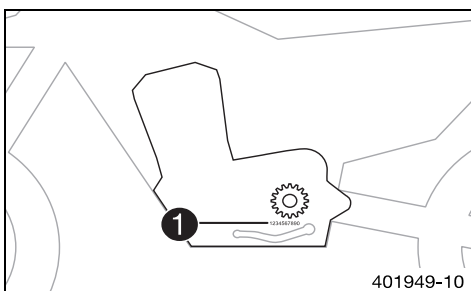
(US)

The type label USA ❶ is located on the right side of the frame.

The type label Canada ❷ is located on the left side of the frame.

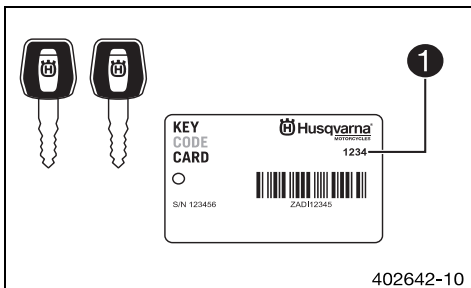


## 4.3 Engine number



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

## 4.4 Key number



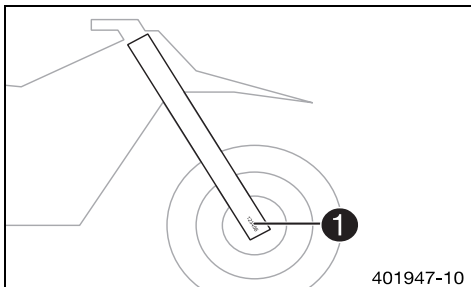
The key number **1** can be found on the **KEYCODECARD**.



### Info

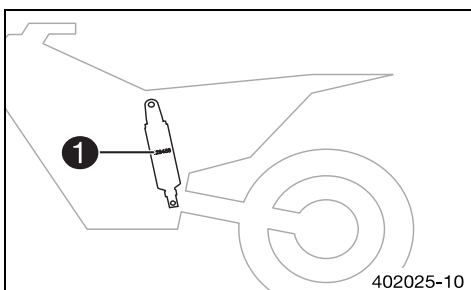
You need the key number to order a spare key. Keep the **KEYCODECARD** in a safe place.

## 4.5 Fork part number



The fork part number **1** is stamped on the inner side of the fork stub.

## 4.6 Shock absorber article number



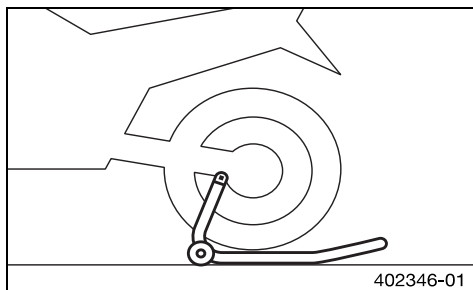
The shock absorber article number **1** is on the left side of the shock absorber.

## 5.1 Raising the motorcycle with the rear lifting gear

### Note

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

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



- Insert adapter in the rear of the lifting gear and screw into the swingarm on both sides.

Adapter (61029055110) (📖 p. 312)

Lifting gear, rear (61029055400) (📖 p. 313)

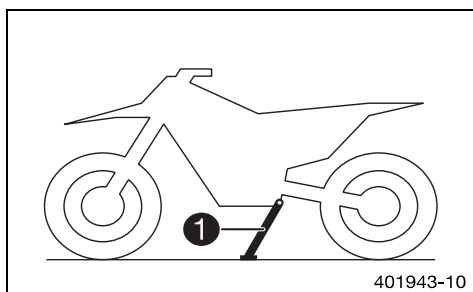
- Position the motorcycle upright, align the lifting gear, and raise the motorcycle.

## 5.2 Removing the rear of the motorcycle from the lifting gear

### Note

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

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



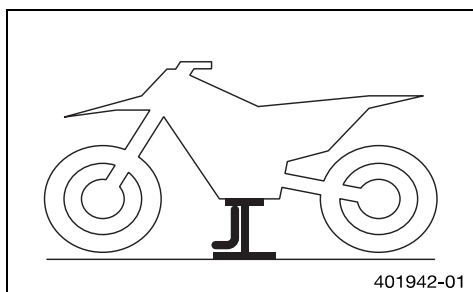
- Secure the motorcycle against falling over.
- Remove the rear lifting gear and lean the vehicle on side stand ❶.

## 5.3 Raising the motorcycle with a lift stand

### Note

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

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



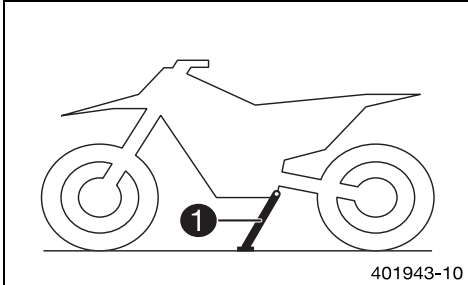
- Use the underride guard underneath the engine to raise the vehicle.
  - ✓ Neither wheel is in contact with the ground.
- Secure the motorcycle against falling over.

## 5.4 Removing the motorcycle from the lift stand

### Note

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

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



- Remove the motorcycle from the lift stand and rest it on side stand ①.
- Remove the lift stand.

## 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.



- Mount special tool on the footrests.

Work stand adapter (75029036000) (📖 p. 315)



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

Work stand (62529055100) (📖 p. 313)

## 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 the work stand and lean the vehicle on the side stand.



- Remove the special tool.

## 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

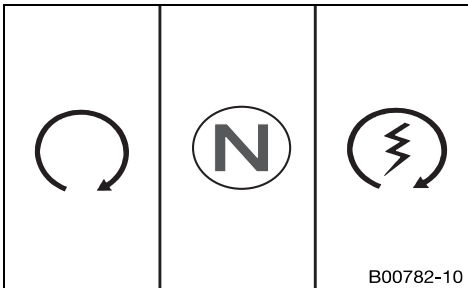
**Danger of accidents** If the vehicle is operated with a discharged battery or without a battery, electronic components and safety equipment may be damaged.

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

### Note

**Engine failure** 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.



- Turn the emergency OFF switch to the position
- Switch on the ignition by turning the ignition key to the **ON**
- ✓ After you switch on the ignition, you can hear the fuel pump working for about two seconds. The function check of the combination instrument is run at the same time.
- ✓ The ABS warning lamp lights up and goes back out after starting off.
- 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 combination instrument function check 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 starting system. You can only start the engine if the transmission is in neutral or if the clutch lever 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.

- Take the weight off the side stand and swing it back up with your foot as far as it will go.

### Switching off ABS

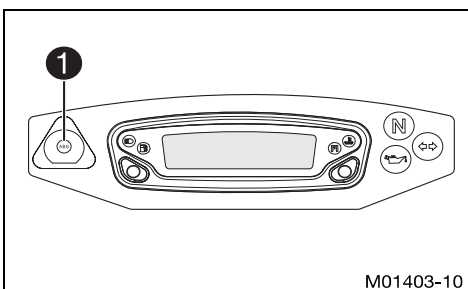
Husqvarna Motorcycles recommends riding with ABS at all times. However, situations may arise in which ABS is not advantageous.

#### Condition

The motorcycle is stationary.

Vehicle speed before stopping:  $\geq 5$  km/h ( $\geq 3.1$  mph)

- Press and hold the button **1** for 3 - 5 seconds.
- ✓ The ABS warning lamp lights up; ABS is deactivated.



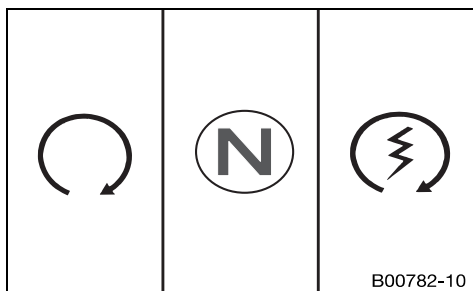
**5.8 Starting the motorcycle to make checks****Danger**

**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.
- Press the electric starter button ⚡.

**Info**

Do not open the throttle.

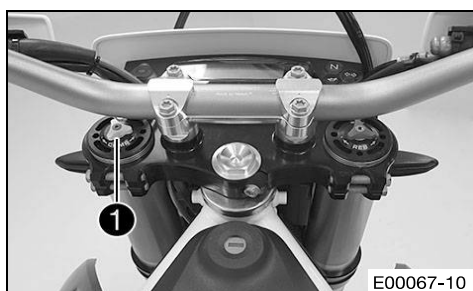


## 6.1 Adjusting the compression damping of the fork



### Info

The hydraulic compression damping determines the fork suspension behavior.



- Turn white adjusting screw **1** all the way clockwise.



### Info

Adjusting screw **1** is located at the upper end of the left fork leg. The compression damping is located in left fork leg **COMP** (white adjusting screw). The rebound damping is located in right fork leg **REB** (red adjusting screw).

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

### Guideline

Compression damping	
Comfort	15 clicks
Standard	12 clicks
Sport	10 clicks



### Info

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

## 6.2 Adjusting the rebound damping of the fork



### Info

The hydraulic rebound damping determines the fork suspension behavior.



- Turn red adjusting screw **1** all the way clockwise.



### Info

Adjusting screw **1** is located at the upper end of the right fork leg. The rebound damping is located in right fork leg **REB** (red adjusting screw). The compression damping is located in left fork leg **COMP** (white adjusting screw).

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

### Guideline

Rebound damping	
Comfort	15 clicks
Standard	12 clicks
Sport	10 clicks



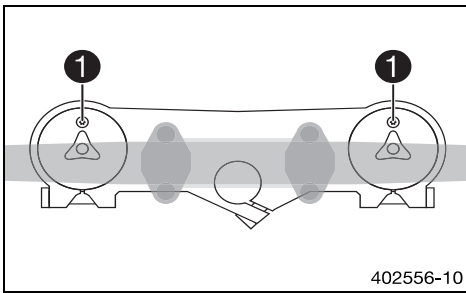
### Info

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

## 6.3 Bleeding the fork legs

### Preparatory work

- Raise the motorcycle with a lift stand. (📖 p. 11)



## Main work

- Release bleeder screws ❶.
- ✓ Any excess pressure escapes from the interior of the fork.
- Tighten the bleeder screws.

## Finishing work

- Remove the motorcycle from the lift stand. (📖 p. 12)

## 6.4 Cleaning the dust boots of the fork legs



## Preparatory work

- Remove the fork protector. (📖 p. 16)

## Main work

- Push dust boots ❶ of both fork legs downward.



## Info

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



## Warning

**Danger of accidents** 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 tubes of both fork legs.

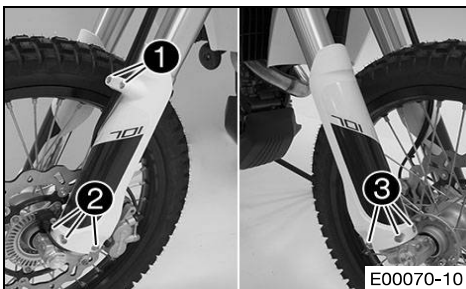
Universal oil spray (📖 p. 307)

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

## Finishing work

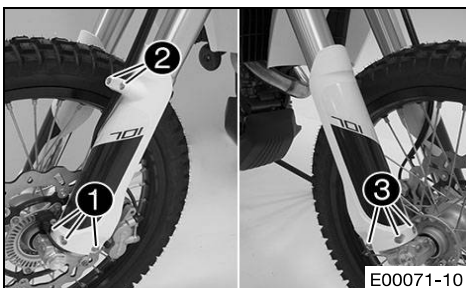
- Install the fork protector. (📖 p. 16)

## 6.5 Removing the fork protector



- Remove screws ❶ and take off the clamp.
- Remove screws ❷ on the left fork leg. Take off the fork protector.
- Remove screws ❸ on the right fork leg. Take off the fork protector.

## 6.6 Installing the fork protector



- Position the fork protector on the left fork leg. Mount and tighten screws ❶.

## Guideline

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

- Position the brake line, wiring harness, and clamp. Mount and tighten screws ❷.
- Position the fork protector on the right fork leg. Mount and tighten screws ❸.

## Guideline

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

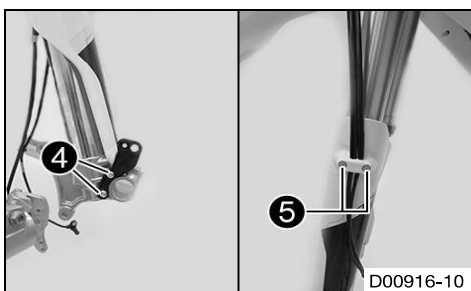
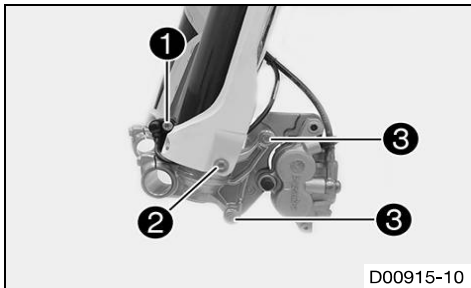
## 6.7 Removing the fork legs

### Preparatory work

- Raise the motorcycle with the work stand. (p. 12)
- Place a load on rear of vehicle.
- ✓ The front wheel is not in contact with the ground.
- Remove front wheel using a work stand. (p. 96)

### Main work

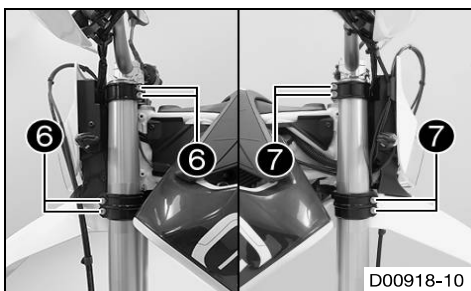
- Remove screw ❶ and pull wheel speed sensor out of the hole.
- Remove screw ❷.
- Hang the wheel speed sensor cable to the side.
- Remove screws ❸.



- Remove screws ❹ and holder.
- Remove screws ❺ and take off the clamp.
- Allow the brake caliper and brake line to hang tension-free to the side.

### Info

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



- Loosen screws ❻. Take out the left fork leg.
- Loosen screws ❼. Take out the right fork leg.

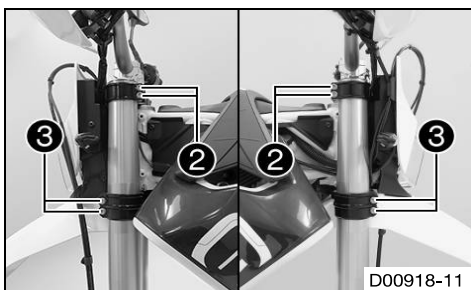
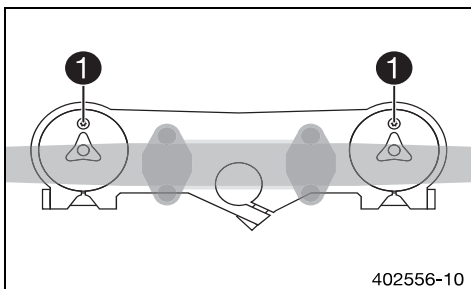
## 6.8 Installing the fork legs

### Main work

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

### Info

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



- Tighten screws ❷.

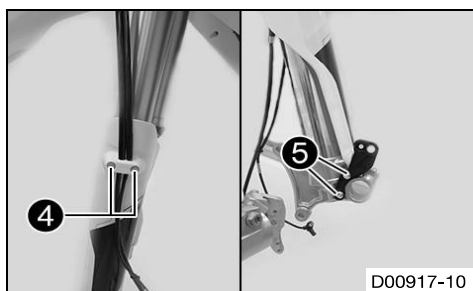
### Guideline

Screw, top triple clamp	M8	17 Nm (12.5 lbf ft)
-------------------------	----	---------------------

- Tighten screws ❸.

### Guideline

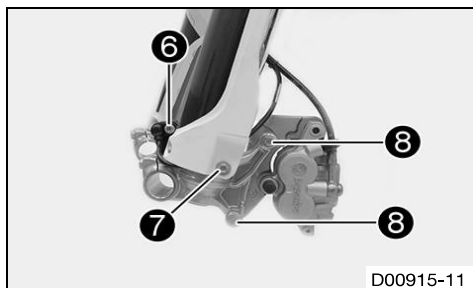
Screw, bottom triple clamp	M8	12 Nm (8.9 lbf ft)
----------------------------	----	--------------------



- Position the brake line, wiring harness, and clamp. Mount and tighten screws **4**.
- Position the holder, and mount and tighten screws **5**.

## Guideline

Wheel speed sensor screws on holder	M5	3 Nm (2.2 lbf ft)	Loctite® 243™
-------------------------------------	----	-------------------	---------------



- Position the brake caliper.
- Mount and tighten screws **8**.

## Guideline

Screw, front brake caliper	M8	25 Nm (18.4 lbf ft)	Loctite® 243™
----------------------------	----	---------------------	---------------

- Route the cable for the wheel speed sensor without tension.
- Position the wheel speed sensor. Mount and tighten screw **6**.

## Guideline

Screw, wheel speed sensor	M6	6 Nm (4.4 lbf ft)	
---------------------------	----	-------------------	--

- Mount and tighten screw **7**.

## Guideline

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

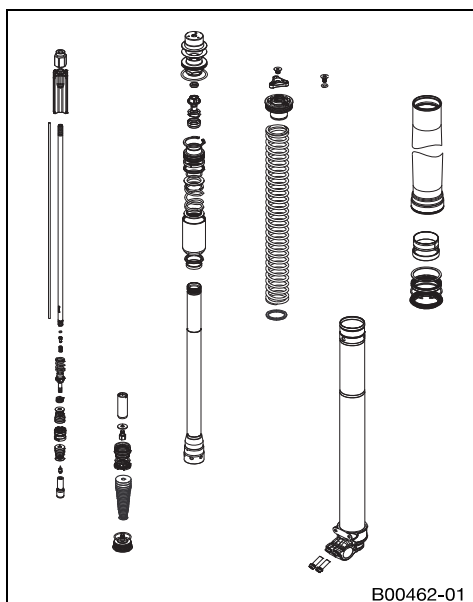
**Finishing work**

- Install the front wheel using a work stand. (📖 p. 97)
- Remove the motorcycle from the work stand. (📖 p. 12)

**6.9 Performing a fork service****Condition**

The fork legs have been removed.

- Disassemble the fork legs. (📖 p. 19)
- Remove the spring. (📖 p. 21)
- Disassemble the cartridge. (📖 p. 21)
- Disassemble the piston rod. (📖 p. 22)
- Disassemble the hydrostop unit. (📖 p. 24)
- Disassemble the seal ring retainer. (📖 p. 24)
- Check the fork legs. (📖 p. 25)
- Assemble the seal ring retainer. (📖 p. 26)
- Assemble the hydrostop unit. (📖 p. 26)
- Assemble the piston rod. (📖 p. 27)
- Assemble the cartridge. (📖 p. 28)
- Assemble the fork legs. (📖 p. 29)



## 6.10 Disassembling the fork legs



### Info

The procedures are the same on both fork legs.



201699-10



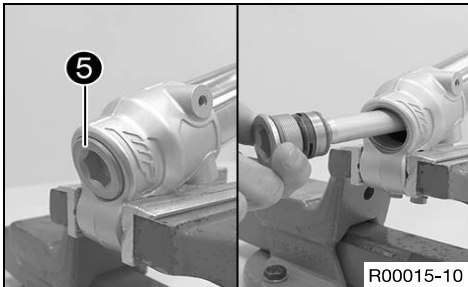
201700-10



201701-10



201702-10



R00015-10

### Condition

The fork legs have been removed.

- Note down the current state of rebound damping **1 REB** (red adjuster of right fork leg).
- Note down the current state of compression damping **2 COMP** (white adjuster of left fork leg).
- Open the adjusters of the rebound and compression damping completely.

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

Clamping stand (T1403S) (p. 322)

- Remove screw **3**. Remove adjuster.

- Loosen the screw cover **4**.

Special socket (T14047) (p. 323)



### Info

The cartridge cannot be taken off yet.

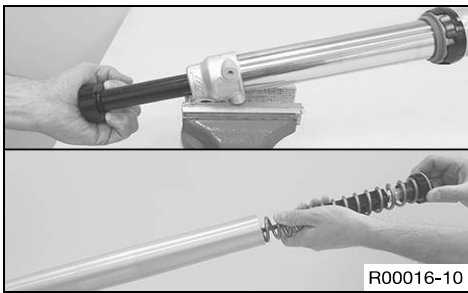
- Unclamp the fork leg.
- Slide the outer tube down. Drain the fork oil.

- Clamp the fork leg with the axle clamp.
- Release hydrostop unit **5** and remove it.



### Info

Do not use an impact wrench.  
Place a pan underneath since oil will run out.



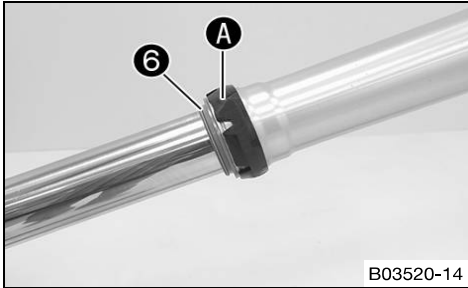
- Remove the cartridge from the fork leg.

Press-out tool (T14051) (p. 323)



## Info

Removing the O-ring seat from the cartridge usually requires the application of considerable force.

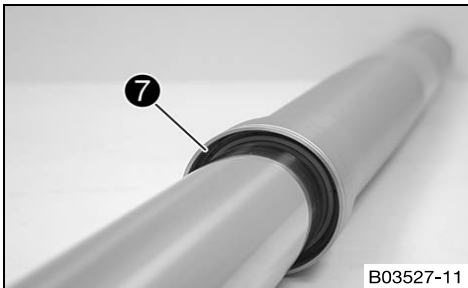


- Remove dust boot 6.
- Remove fork protector ring A.



## Info

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

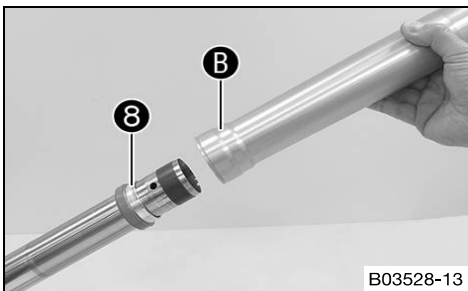


- Remove lock ring 7.



## Info

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



- Warm up outer tube in area B of the lower sliding bushing.
- Guideline

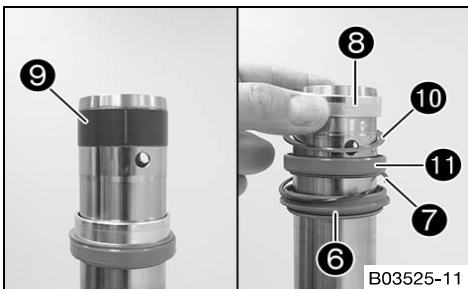
50 °C (122 °F)

- Pull the outer tube from the inner tube with a jerk.



## Info

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



- Remove upper sliding bushing 9.



## Info

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

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



## 6.11 Removing the spring

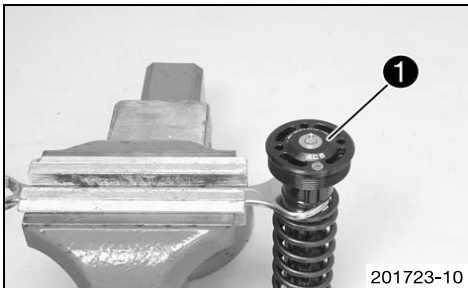


### Info

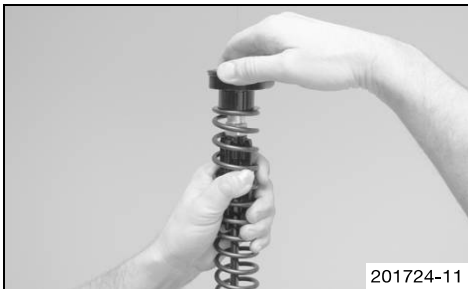
The steps are identical for both fork legs.



201722-11



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201724-11

### Preparatory work

- Disassemble the fork legs. (📖 p. 19)

### Main work

- Pull the spring down. Mount the open end wrench on the hexagonal part.

- Clamp the open end wrench in the vise. Release screw cap ❶ but do not remove it yet.

Special socket (T14047) (📖 p. 323)

- Pull the spring down. Remove the open end wrench.
- Remove the screw cap.
- Remove the spring with the preload spacer(s).

## 6.12 Disassembling the cartridge



### Info

The procedures are the same on both fork legs.

### Preparatory work

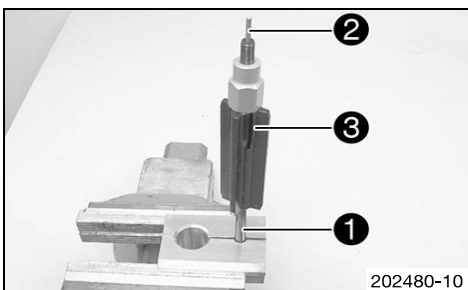
- Disassemble the fork legs. (📖 p. 19)
- Remove the spring. (📖 p. 21)

### Main work

- Degrease piston rod ❶ and clamp using the special tool.

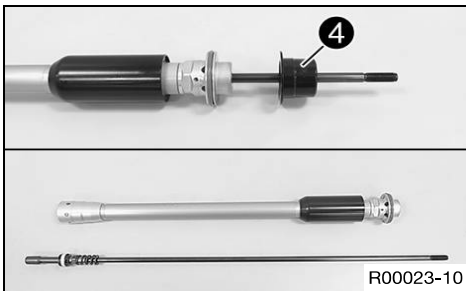
Clamping stand (T14049S) (📖 p. 323)

- Remove adjusting tube ❷. Unscrew spring guide ❸.



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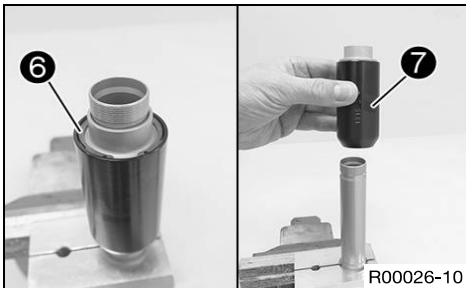
- Remove spring seat 4.
- Pull the piston rod out of the cartridge.



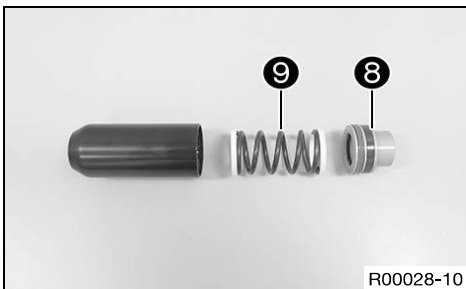
- Degrease the cartridge and clamp it with the special tool.

Clamping stand (T14049S) (p. 323)

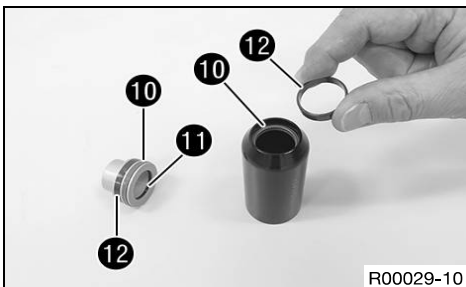
- Release seal ring retainer 5 and remove with the washer.



- Remove lock ring 6.
- Pull reservoir 7 out of the cartridge.



- Pull sleeve 8 out of the reservoir.
- Remove spring 9 with preload spacers 9.



- Remove seal rings 10 and O-ring 11.
- Remove pilot bushings 12.

## 6.13 Disassembling the piston rod

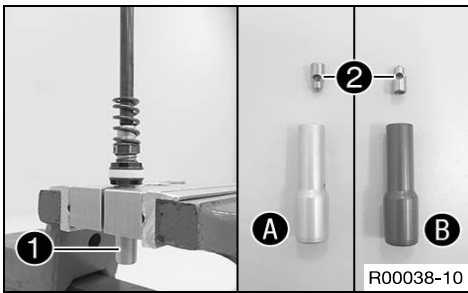


### Info

The steps are identical for both fork legs, except for the hydrostop needle and valve.

### Preparatory work

- Disassemble the fork legs. (p. 19)
- Remove the spring. (p. 21)
- Disassemble the cartridge. (p. 21)



## Main work

- Degrease hydrostop needle ① and clamp using the special tool.

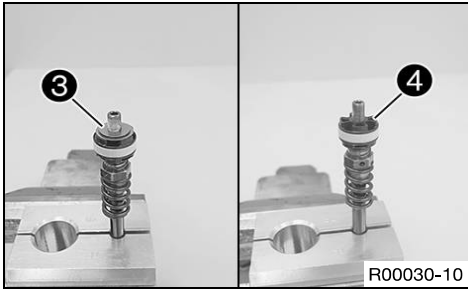
Clamping stand (T1202S) (p. 321)

- Release hydrostop needle ① and remove it from the piston rod.

✓ Valve ② usually remains in the hydrostop needle.

## Info

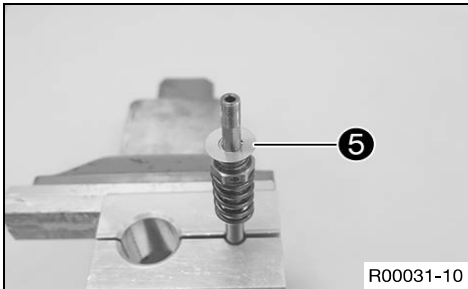
- ① A – silver hydrostop needle on compression damping side.
- ① B – red hydrostop needle on rebound damping side.



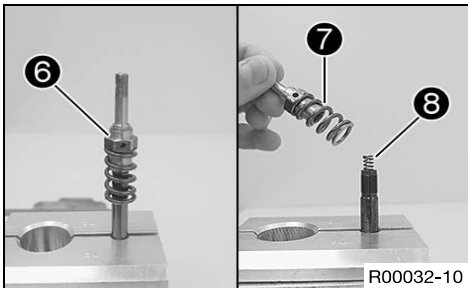
- Turn piston rod, degrease and clamp using the special tool.

Clamping stand (T14049S) (p. 323)

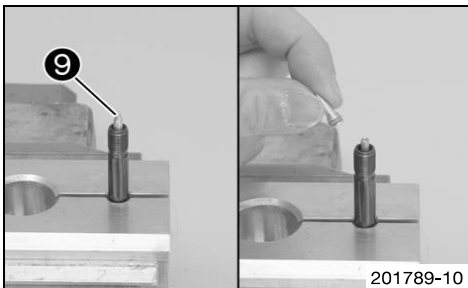
- Remove rebound shim stack ③.
- Remove piston ④.



- Remove the compression shim stack ⑤.
- Remove the spring.



- Remove adapter ⑥ with spring ⑦.
- Remove spring ⑧.



- Remove valve needle ⑨ from the piston rod.

## Info

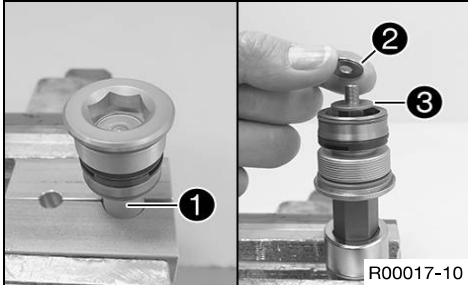
The adjusting tube can be used for this.

## 6.14 Disassembling the hydrostop unit



### Info

The procedures are the same on both fork legs.



### Preparatory work

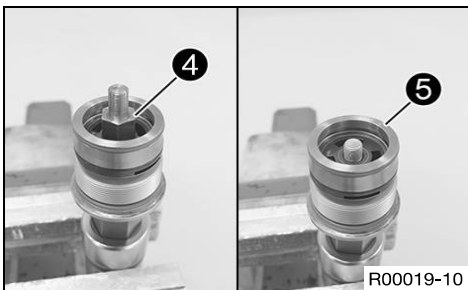
- Disassemble the fork legs. (p. 19)

### Main work

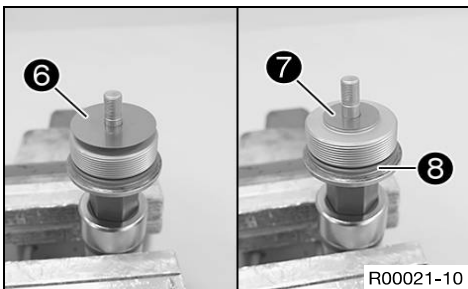
- Clamp hydrostop unit using special tool to sleeve 1 and loosen.

Clamping stand (T1202S) (p. 321)

- Turn hydrostop unit, mount on a fitting hexagon socket and clamp into a vice.
- Remove sleeve 1.
- Remove shim set 2 and washer 3.



- Remove adapter 4.
- Remove hub 5.
- Remove O-ring from the hub.



- Remove shim set 6.
- Remove washer 7.
- Remove O-ring 8.

## 6.15 Disassembling the seal ring retainer



### Info

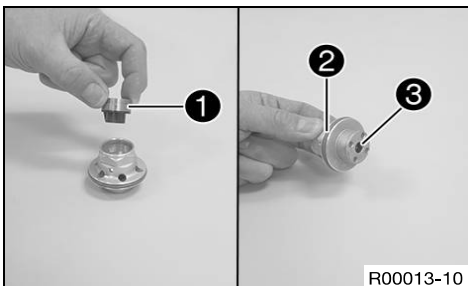
The steps are identical for both fork legs.

### Preparatory work

- Disassemble the fork legs. (p. 19)
- Remove the spring. (p. 21)
- Disassemble the cartridge. (p. 21)

### Main work

- Remove pilot bushing support 1.
- Remove O-ring 2 and seal ring 3.

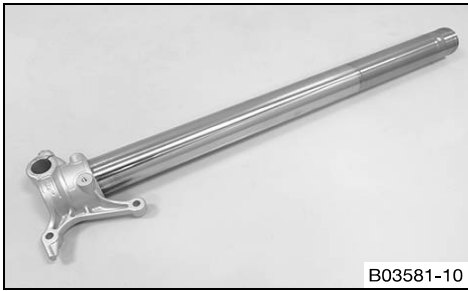


## 6.16 Checking the fork legs

### Condition

The fork legs have been disassembled.

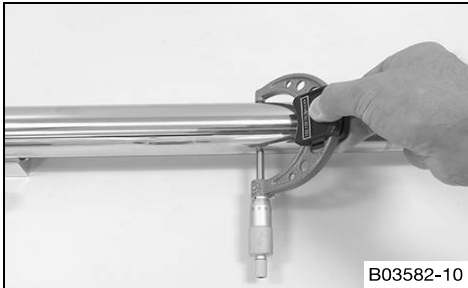
- Check the inner tube and axle clamp for damage.
  - » If there is damage:
    - Change the inner tube.



- Measure the outside diameter at multiple locations of the inner tube.

Outside diameter of inner tube	47.975... 48.005 mm (1.88878... 1.88996 in)
--------------------------------	---

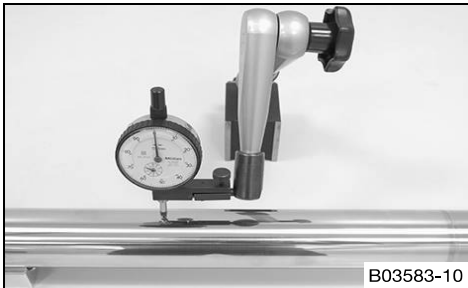
- » If the measured value is smaller than the specified value:
  - Change the inner tube.



- Measure the run-out of the inner tube.

Inner tube run-out	≤ 0.20 mm (≤ 0.0079 in)
--------------------	-------------------------

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



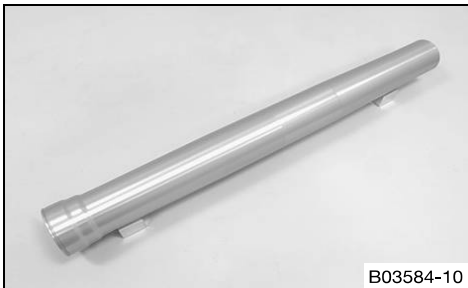
- Measure the inside diameter at multiple locations of the outer tube.

Inside diameter of outer tube	≤ 49.20 mm (≤ 1.937 in)
-------------------------------	-------------------------

- » If the measured value is larger than the specified value:
  - Change the outer tube.

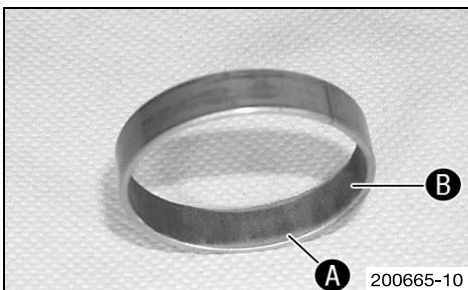
- Check the outer tube for damage.

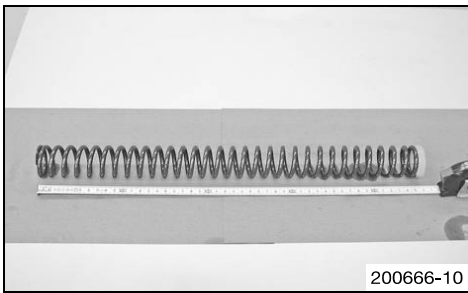
- » If there is damage:
  - Change the outer tube.



- Check the surface of the sliding bushings.

- » If the bronze-colored layer **A** under sliding layer **B** is visible or the surface is rough:
  - Change the sliding bushings.





- Check the spring length.

Guideline

Spring length with preload spacer(s)	482 mm (18.98 in)
--------------------------------------	-------------------

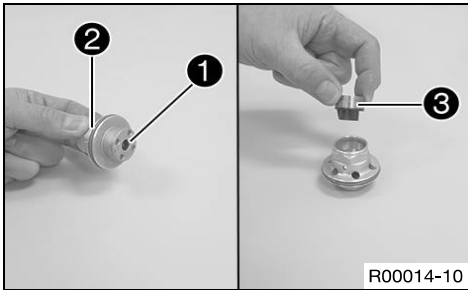
- » If the measured value is larger than the specified value:
  - Reduce the thickness of the preload spacers.
- » If the measured value is smaller than the specified value:
  - Increase the thickness of the preload spacers.

## 6.17 Assembling the seal ring retainer



### Info

The steps are identical for both fork legs.



- Mount and grease seal ring ①.

Lubricant (T158) (p. 307)

- Mount and grease O-ring ②.

Lubricant (T158) (p. 307)

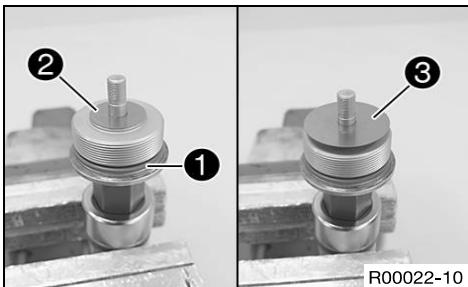
- Position pilot bushing support ③.

## 6.18 Assembling the hydrostop unit



### Info

The procedures are the same on both fork legs.



- Mount and grease O-ring ①.

Lubricant (T158) (p. 307)

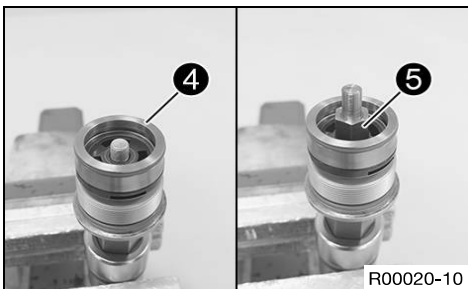
- Mount washer ②.

- Mount shim stack ③ with the smaller washers facing downward.



### Info

Note the setting list.



- Mount the new O-ring on hub ④.

- Mount hub ④.

- Mount and tighten adapter ⑤.

Guideline

Hydrostop unit adapter	M6x0.5	6 Nm (4.4 lbf ft)
------------------------	--------	-------------------

- Mount washer ⑥ and shim set ⑦.



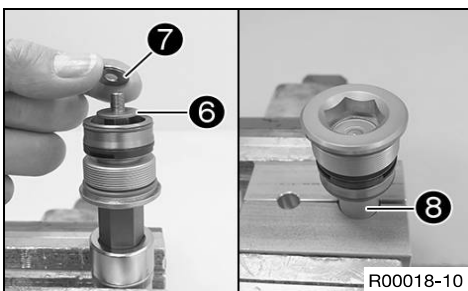
### Info

Note the setting list.

- Mount sleeve ⑧.

- Turn hydrostop unit and clamp sleeve ⑧ with special tool.

Clamping stand (T1202S) (p. 321)



- Tighten sleeve **8**.

Guideline

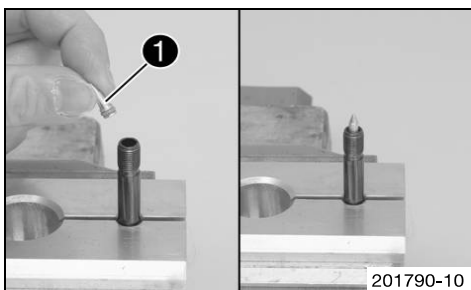
Hydrostop unit sleeve	M6x0.5	6 Nm (4.4 lbf ft)
-----------------------	--------	-------------------

## 6.19 piston rod, assembling



### Info

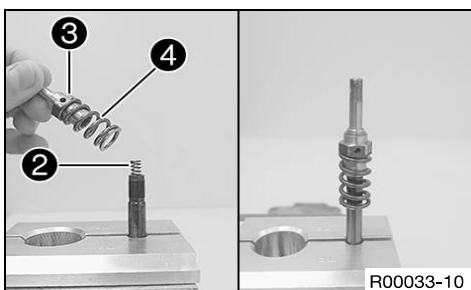
The steps are identical for both fork legs, except for the hydrostop needle and valve.



- Degrease the piston rod.
- Clamp the piston rod with the special tool.
- Grease O-ring. Mount valve needle **1** in the piston rod.

Clamping stand (T14049S) (p. 323)

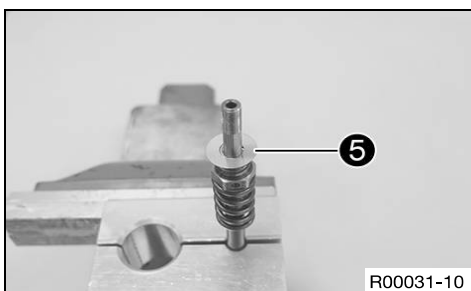
Lubricant (T158) (p. 307)



- Mount spring **2**.
- Mount and tighten adapter **3** with spring **4**.

Guideline

Adapter of piston rod	M6x0.5	12 Nm (8.9 lbf ft)
-----------------------	--------	--------------------

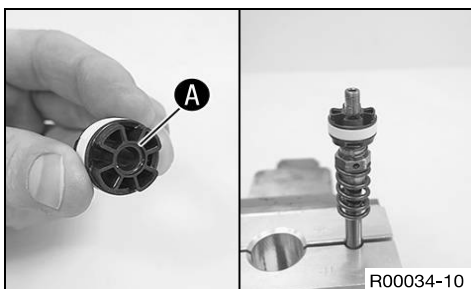


- Position the spring.
- Mount compression shim stack **5** with the smaller shims facing downward.



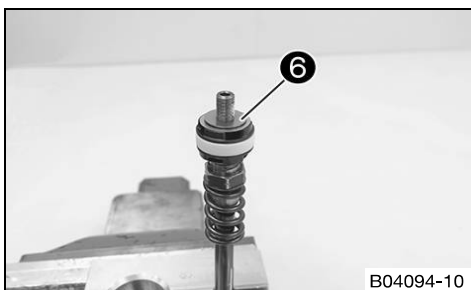
### Info

Note the setting list.



- Grind the piston on both sides on a surfacing plate using 1200 grit sandpaper.
- Clean the piston.
- Lubricate the piston ring.
- Mount the piston with chamfer **A** facing down.

Fork oil (SAE 4) (48601166S1) (p. 306)

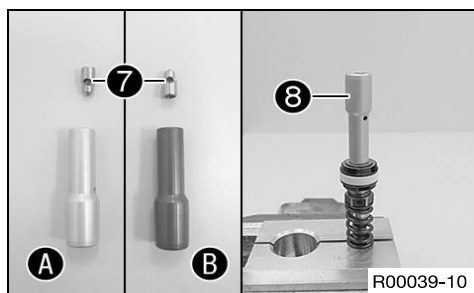


- Mount rebound shim stack **6** with the smaller shims facing upward.



### Info

Note the setting list.



- Press the piston downward against the spring.



## Info

Make sure the pistons do not squeeze the shims.

- Position valve 7 in hydrostop needle 8. Mount and tighten the hydrostop needle.

## Guideline

Hydrostop needle on piston rod	M6x0.5	8 Nm (5.9 lbf ft)
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## Info

- A – silver hydrostop needle on compression damping side.
- B – red hydrostop needle on rebound damping side.

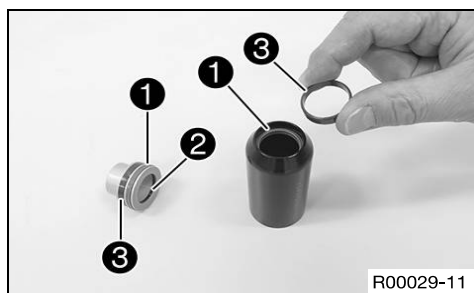
- Unclamp the piston rod.

## 6.20 cartridge, assembling



## Info

The procedures are the same on both fork legs.



## Preparatory work

- Assemble the seal ring retainer. (p. 26)
- Assemble the piston rod. (p. 27)

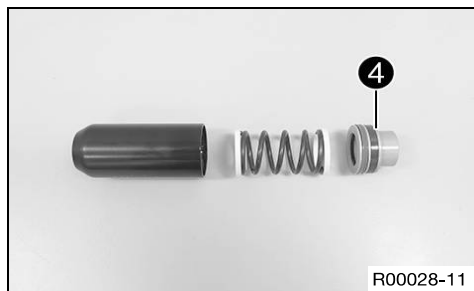
## Main work

- Mount and grease seal rings 1 and O-ring 2.

Lubricant (T158) (p. 307)

- Mount and lubricate pilot bushings 3.

Fork oil (SAE 4) (48601166S1) (p. 306)



- Check the length of the reservoir spring.

## Guideline

Reservoir spring length with preload spacer	46 mm (1.81 in)
---	-----------------

» If the length is out of tolerance:

- Correct the preload spacers.

- Position the spring with the preload spacers in the reservoir.
- Position sleeve 4 in the reservoir.

- Clamp cartridge with special tool.

Clamping stand (T14049S) (p. 323)

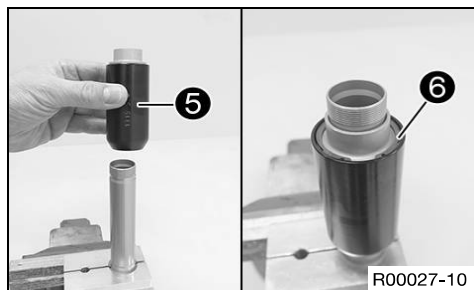
- Slide reservoir 5 onto the cartridge.



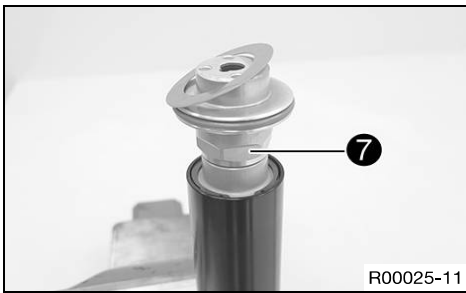
## Info

Hold the sleeve in the reservoir to prevent it from sliding out.

- Mount lock ring 6.







- Mount seal ring retainer **7** with the washer and tighten.

Guideline

Seal ring retainer	M23.5x0.75	46 Nm (33.9 lbf ft)	Loctite® 2701™
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- Unclamp the cartridge.



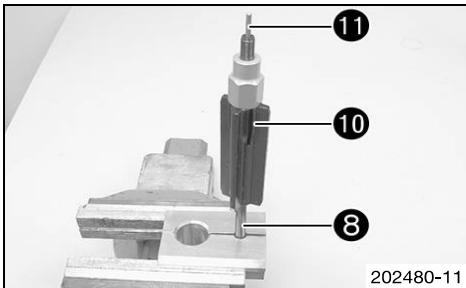
- Slide piston rod **8** into the cartridge.



## Info

Check that the piston ring is correctly seated.

- Mount spring seat **9**.



- Clamp piston rod **8** with the special tool.

Clamping stand (T14049S) (p. 323)

- Screw spring guide **10** all the way on.



## Info

The nut must be firmly tightened against the stop by hand. Do not use a tool.

- Mount adjusting tube **11**.
- Unclamp the piston rod. Mount the preload spacer(s).

## 6.21 Assembling the fork legs



## Info

When assembling, ensure that the right cartridge is mounted in the corresponding inner tube and the right adjuster is mounted on the corresponding screw cap.

Compression damping side – screw cap with mark **COMP**, brake caliper holder, white adjuster.

Rebound damping side – screw cap with mark **REB**, no brake caliper holder, red adjuster.

## Preparatory work

- Assemble the hydrostop unit. (p. 26)

## Main work

- Clamp the inner tube with the axle clamp.

Guideline

Use soft jaws.

- Mount the special tool.

Protecting sleeve (T1401) (p. 322)

- Grease and push on dust boot **1**.

Lubricant (T511) (p. 307)

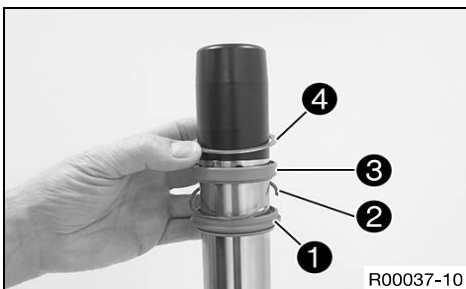


## Info

Always change the dust boot, seal ring, lock ring, and support ring. Mount the sealing lip with the spring expander facing down.

- Push on lock ring **2**.
- Grease and push on seal ring **3**.

Lubricant (T511) (p. 307)





## Info

Sealing lip downward, open side upward.

- Push on support ring ④.
- Remove the special tool.
- Sand the edges of the sliding bushings with 600-grit sandpaper; then clean and grease the bushings.

Fork oil (SAE 4) (48601166S1) (📖 p. 306)

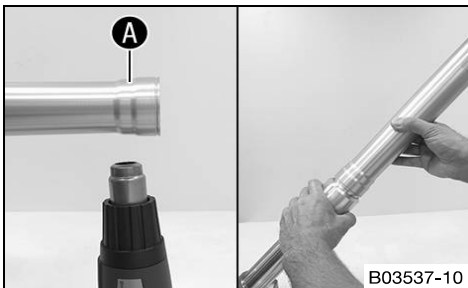


- Push on lower sliding bushing ⑤.
- Mount upper sliding bushing ⑥.



## Info

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



- Warm up outer tube in area A of the lower sliding bushing.

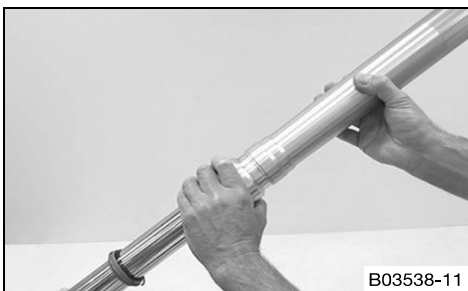
## Guideline

50 °C (122 °F)

- Slide the outer tube onto the inner tube.
- Hold the lower sliding bushing with the longer side of the special tool.

Mounting tool (T14040S) (📖 p. 322)

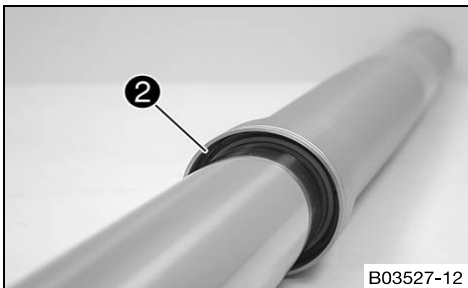
- Press the sliding bushing all the way into the outer tube.



- Position the support ring.
- Hold the seal ring with the shorter side of the special tool.

Mounting tool (T14040S) (📖 p. 322)

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

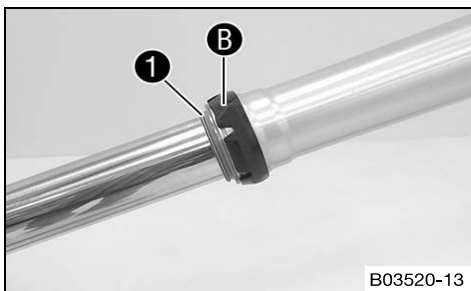


- Mount lock ring ②.



## Info

The lock ring engages audibly.



- Mount dust boot **1**.
- Mount fork protector ring **B**.



- Grease O-ring.

Fork oil (SAE 4) (48601166S1) (p. 306)
--

- Slide the cartridge all the way into the fork leg.



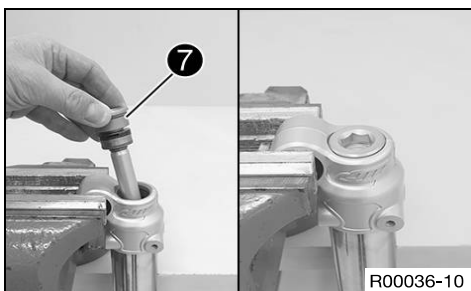
- Turn the fork.
- Have the entire filling quantity of fork oil available.

Oil capacity per fork leg	630 ml (21.3 fl. oz.)	Fork oil (SAE 4) (48601166S1) (p. 306)
---------------------------	-----------------------	--

- Add some of the fork oil while pulling out and pushing in the piston rod numerous times.

Guideline

Fork oil quantity	510 ml (17.24 fl. oz.)
-------------------	------------------------



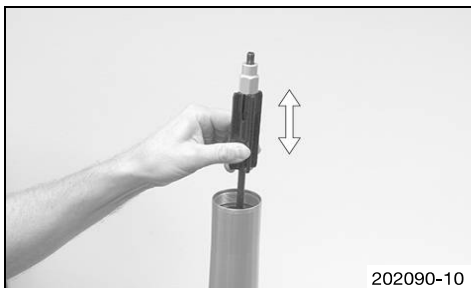
- Mount and tighten hydrostop unit **7**.

Guideline

Hydrostop unit	M30x1	40 Nm (29.5 lbf ft)
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- Clamp the fork vertically.
- Add the remaining quantity of fork oil.

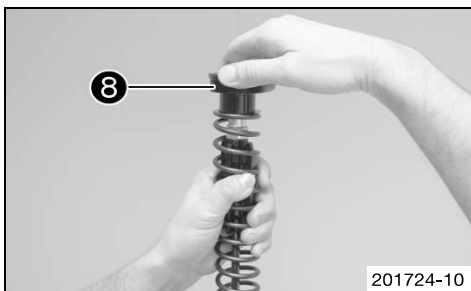


- Pull out the piston rod and push it back in numerous times while pressing it to one side slightly.
  - ✓ Air bubbles emerge and the cartridge is bled.
- Keep bleeding until no more air bubbles emerge.
  - ✓ The piston rod moves out automatically.



## Info

When fully bled, the correct air chamber length is achieved.



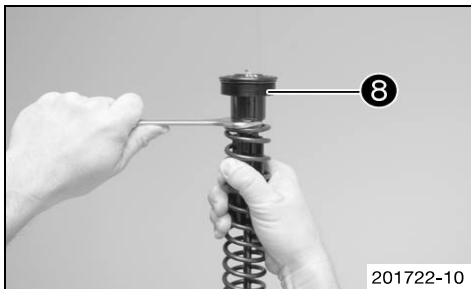
- Position the spring.
- Pull the spring downwards. Mount screw cap **8**.

## Info

When assembling, ensure that the screw caps are correctly mounted according to the hydrostop needles.

Rebound damping side – red hydrostop needle, screw cap with mark **REB**.

Compression damping side – silver hydrostop needle, screw cap with mark **COMP**.



- Mount the open end wrench on the hexagonal part.
- Hold the open end wrench. Tighten screw cap **8**.

## Guideline

Screw cap on piston rod	M8x0.75	18 Nm (13.3 lbf ft)
-------------------------	---------	---------------------

Special socket (T14047) (p. 323)



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

Clamping stand (T1403S) (p. 322)

- Tighten screw cap **8**.

## Guideline

Cartridge on outer tube	M51x1.5	40 Nm (29.5 lbf ft)
-------------------------	---------	---------------------

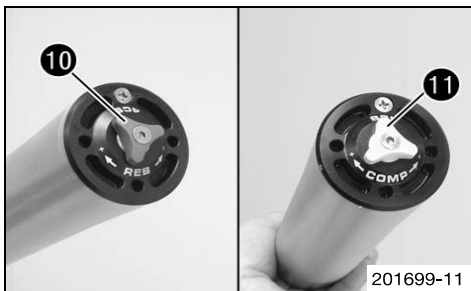
Special socket (T14047) (p. 323)



- Mount the adjuster.
- Mount and tighten screw **9**.

## Guideline

Screw, adjuster	M4x0.5	2.5 Nm (1.84 lbf ft)
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## Alternative 1

- Turn the adjuster for rebound damping **10** (mark **REB**) and the adjuster for compression damping **11** (mark **COMP**) clockwise all the way.
- Turn counterclockwise by the number of clicks corresponding to the fork type.

## Guideline

Rebound damping	
Comfort	15 clicks
Standard	12 clicks
Sport	10 clicks
Compression damping	
Comfort	15 clicks
Standard	12 clicks
Sport	10 clicks

## Alternative 2

**Warning**

**Danger of accident** Modifications to the suspension setting may seriously alter the handling characteristic.

Extreme modifications to the suspension setting may cause a serious deterioration in the handling characteristic and overload components.

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

- Set the adjusters to the positions determined upon removal.

## 6.22 Checking the play of the steering head bearing

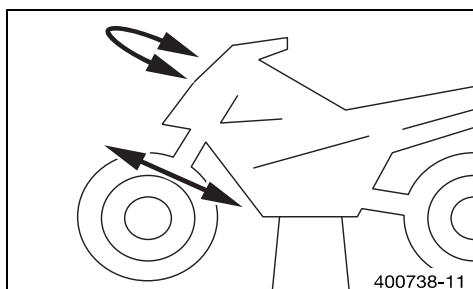
**Warning**

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

- Adjust the steering head bearing play without delay.

**Info**

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

**Preparatory work**

- Raise the motorcycle with a lift 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.

Play should not be detectable on the steering head bearing.

» If there is detectable play:

- Adjust the steering head bearing play. (📖 p. 33)

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

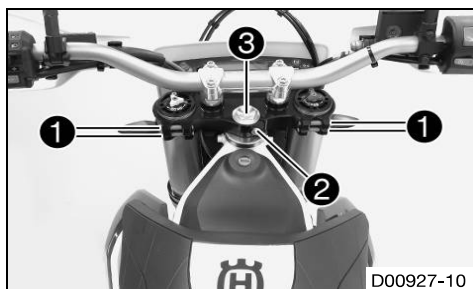
It must be possible to move the handlebar easily over the entire steering range. There should be no detectable detent positions.

» If detent positions are detected:

- Adjust the steering head bearing play. (📖 p. 33)
- Check the steering head bearing and change if necessary.

- Remove the motorcycle from the lift stand. (📖 p. 12)

## 6.23 Adjusting the steering head bearing play

**Preparatory work**

- Raise the motorcycle with a lift stand. (📖 p. 11)

**Main work**

- Loosen screws ①. Remove screw ②.

- Loosen and retighten screw ③.

**Guideline**

Screw, top steering head	M20x1.5	12 Nm (8.9 lbf ft)
--------------------------	---------	--------------------

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

- Tighten screws ①.

**Guideline**

Screw, top triple clamp	M8	17 Nm (12.5 lbf ft)
-------------------------	----	---------------------

- Mount and tighten screw ②.

**Guideline**

Screw, steering stem	M8	20 Nm (14.8 lbf ft)
----------------------	----	---------------------

**Finishing work**

- Check the play of the steering head bearing. (📖 p. 33)

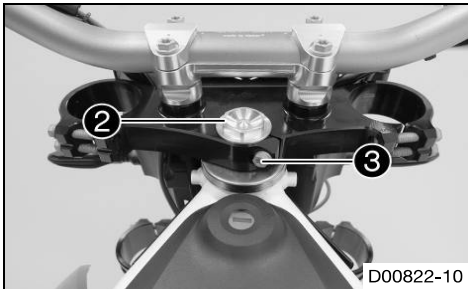
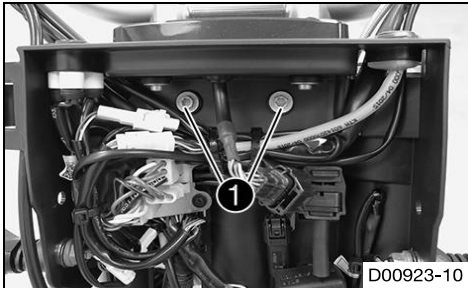
## 6.24 Removing the lower triple clamp

### Preparatory work

- Switch off the ignition by turning the ignition key to the **OFF** ☒ position.
- Remove the headlight mask with the headlight. (📖 p. 131)
- Remove the front fender. (📖 p. 91)
- Raise the motorcycle with the work stand. (📖 p. 12)
- Place a load on rear of vehicle.
- ✓ The front wheel is not in contact with the ground.
- Remove front wheel using a work stand. (📖 p. 96)
- Remove the fork legs. (📖 p. 17)

### Main work

- Remove screws ❶.

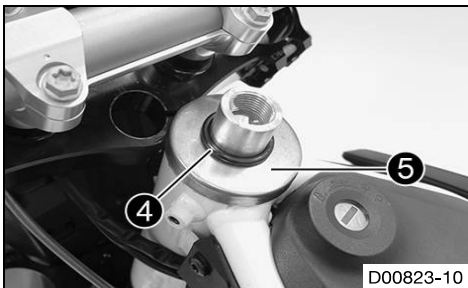


- Remove screw ❷.
- Remove screw ❸.
- Take off the upper triple clamp with the handlebar and hang to the front.



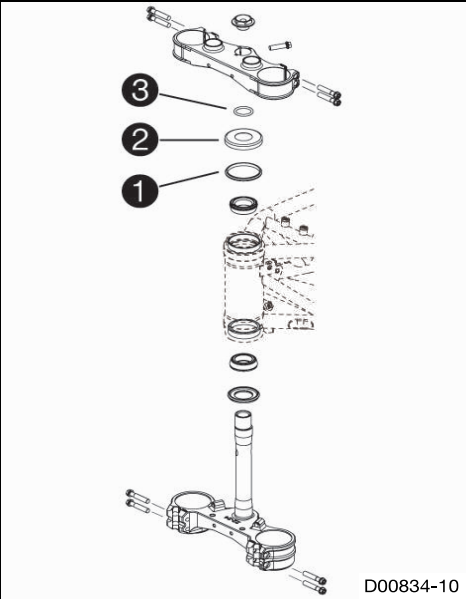
### Info

Cover the components to protect them against damage.  
Do not kink the cables and lines.



- Remove O-ring ❹. Remove protective ring ❺.
- Take off the lower triple clamp with the steering stem.
- Remove the upper steering head bearing.

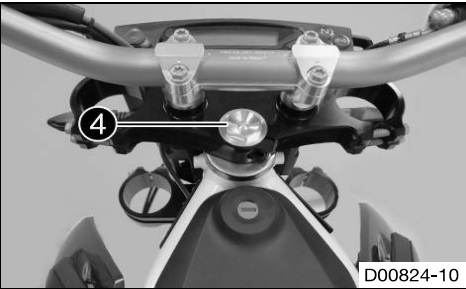
6.25 Installing the lower triple clamp



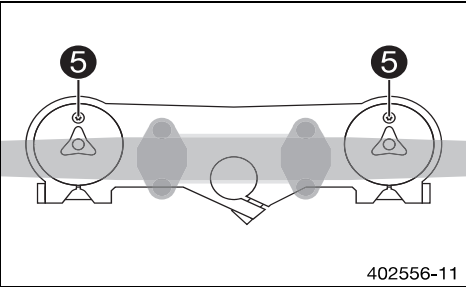
Main work

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

High viscosity grease (📖 p. 307)
- Insert the lower triple clamp with the steering stem. Mount the upper steering head bearing.
- Check whether upper steering head seal ❶ is correctly positioned.
- Slide on protective ring ❷ and O-ring ❸.



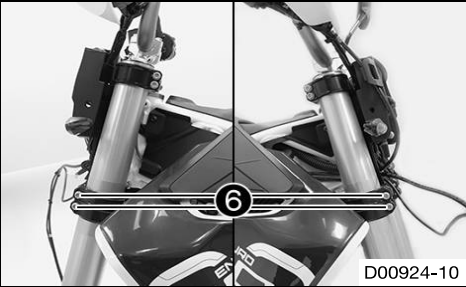
- Position the upper triple clamp with the handlebar.
- Mount screw ❹ but do not tighten yet.



- Position the fork legs.  
✓ Bleeder screws ❺ are positioned toward the front.

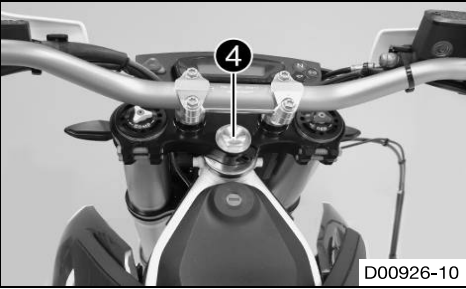
**Info**

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



- Tighten screws ❻.

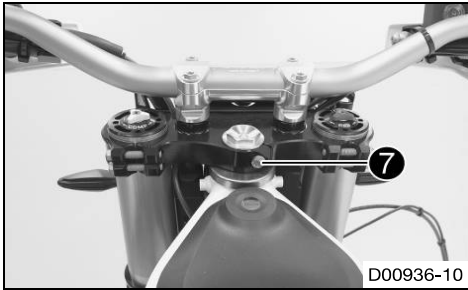
Guideline		
Screw, bottom triple clamp	M8	12 Nm (8.9 lbf ft)



- Tighten screw ❹.

Guideline		
Screw, top steering head	M20x1.5	12 Nm (8.9 lbf ft)

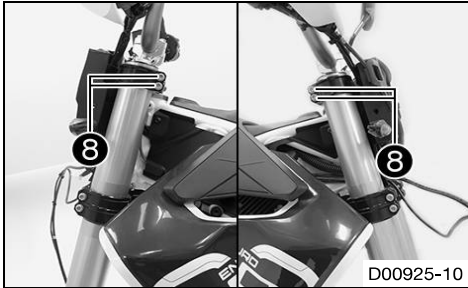




- Mount and tighten screw **7**.

Guideline

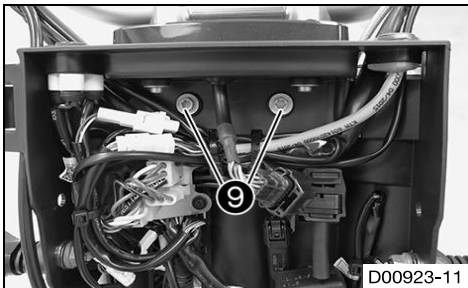
Screw, steering stem	M8	20 Nm (14.8 lbf ft)
----------------------	----	---------------------



- Using a plastic hammer, tap lightly on the upper triple clamp to avoid stresses.
- Tighten screws **8**.

Guideline

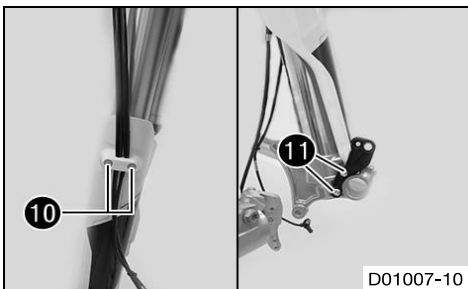
Screw, top triple clamp	M8	17 Nm (12.5 lbf ft)
-------------------------	----	---------------------



- Mount and tighten screws **9**.

Guideline

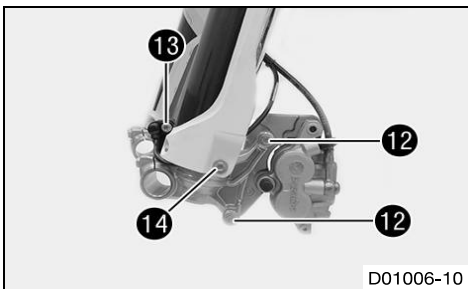
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)
---------------------------	----	--------------------



- Position the brake line, wiring harness, and clamp. Mount and tighten screws **10**.
- Position the holder, and mount and tighten screws **11**.

Guideline

Wheel speed sensor screws on holder	M5	3 Nm (2.2 lbf ft)	Loctite® 243™
-------------------------------------	----	-------------------	---------------



- Position the brake caliper.
- Mount and tighten screws **12**.

Guideline

Screw, front brake caliper	M8	25 Nm (18.4 lbf ft)	Loctite® 243™
----------------------------	----	---------------------	---------------

- Route the cable for the wheel speed sensor without tension.
- Position the wheel speed sensor. Mount and tighten screw **13**.

Guideline

Screw, wheel speed sensor	M6	6 Nm (4.4 lbf ft)
---------------------------	----	-------------------

- Mount and tighten screw **14**.

Guideline

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

## Finishing work

- Install the front fender. (📖 p. 91)
- Install the headlight mask with the headlight. (📖 p. 132)
- Install the front wheel using a work stand. (📖 p. 97)
- Remove the motorcycle from the work stand. (📖 p. 12)



- Check that the wiring harness, throttle cables, and brake and clutch lines can move freely and are routed correctly.
- Check the play of the steering head bearing. (📖 p. 33)
- Check the headlight setting. (📖 p. 130)

## 6.26 Changing the steering head bearing

### Preparatory work

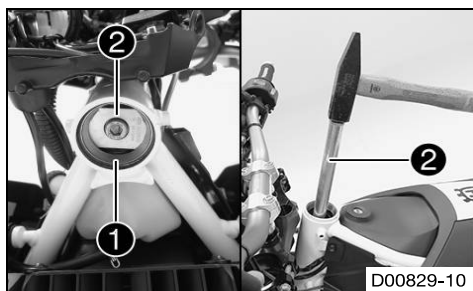
- Switch off the ignition by turning the ignition key to the **OFF** ⏻ position.
- Remove the headlight mask with the headlight. (📖 p. 131)
- Remove the front fender. (📖 p. 91)
- Raise the motorcycle with the work stand. (📖 p. 12)
- Place a load on rear of vehicle.
- ✓ The front wheel is not in contact with the ground.
- Remove front wheel using a work stand. (📖 p. 96)
- Remove the fork legs. (📖 p. 17)
- Remove the lower triple clamp. (📖 p. 34)

### Main work

- Remove lower bearing ring ❶ with special tool ❷.

Tool bracket (58429089000) (📖 p. 310)

Press-out tool (58429092000) (📖 p. 311)



- Press the new bearing ring up to the stop with special tool ❸.

Tool bracket (58429089000) (📖 p. 310)

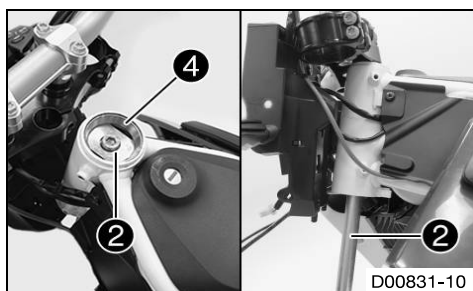
Press-in tool (58429091000) (📖 p. 310)



- Remove upper bearing ring ❹ with special tool ❷.

Tool bracket (58429089000) (📖 p. 310)

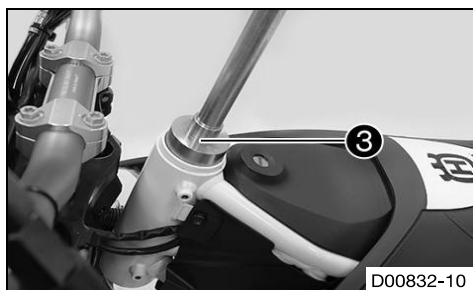
Press-out tool (58429092000) (📖 p. 311)

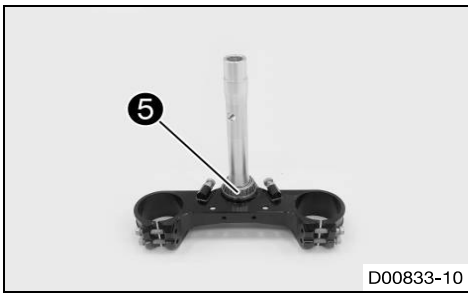


- Press the new bearing ring up to the stop with special tool ❸.

Tool bracket (58429089000) (📖 p. 310)

Press-in tool (58429091000) (📖 p. 310)



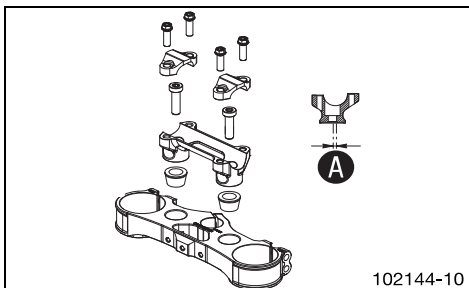


- Remove lower steering head bearing ⑤.
- Remove the seal ring.
- Grease and mount the new seal ring.
- Press on the new bearing with a suitable tube as far as it will go.

### Finishing work

- Install the lower triple clamp. (📖 p. 35)
- Install the front fender. (📖 p. 91)
- Install the headlight mask with the headlight. (📖 p. 132)
- Install the front wheel using a work stand. (📖 p. 97)
- Remove the motorcycle from the work stand. (📖 p. 12)
- Check that the wiring harness, throttle cables, and brake and clutch lines can move freely and are routed correctly.
- Check the play of the steering head bearing. (📖 p. 33)
- Check the headlight setting. (📖 p. 130)

## 7.1 Handlebar position



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

Hole distance <b>A</b>	3.5 mm (0.138 in)
------------------------	-------------------

The handlebar can be mounted in 2 different positions. In this way, the handlebar can be mounted in the most comfortable position for the rider.

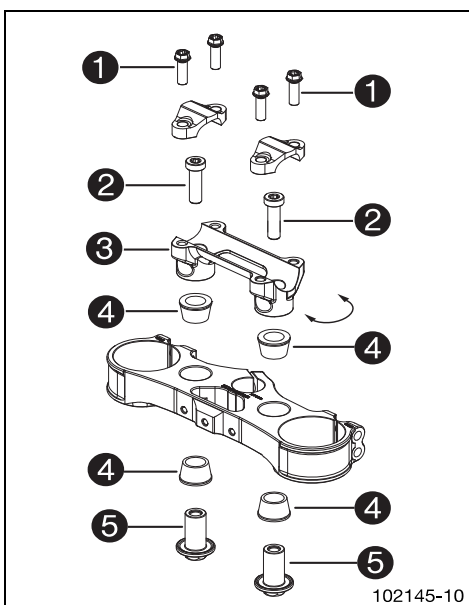
## 7.2 Adjusting the handlebar position



### Warning

**Danger of accidents** Handlebar breakage.

- If the handlebar is bent or straightened it will cause material fatigue, and the handlebar can break. Always replace handlebar.



- Remove screws **1**. Take off the handlebar clamps. Remove the handlebar and lay it to one side.



### Info

Cover the components to protect them against damage.  
Do not kink the cables and lines.

- Remove screws **2**. Remove handlebar support **3**.
- Position rubber bushings **4** and push through nuts **5** from below.
- Place the handlebar support in the required position. Mount and tighten screws **2**.

### Guideline

Screw, handlebar support	M10	45 Nm (33.2 lbf ft)	Loctite® 243™
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- Position the handlebar.



### Info

Make sure the cables and wiring are positioned correctly.

- Position the handlebar clamps.
- Mount screws **1**, but do not tighten yet.
- Screw the handlebar clamps so that both parts touch at the front and tighten all of the screws.

### Guideline

Screw, handlebar clamp	M8	20 Nm (14.8 lbf ft)
------------------------	----	---------------------

## 7.3 Changing the throttle grip

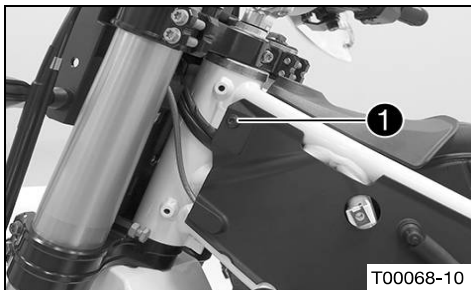
### Preparatory work

- Switch off the ignition by turning the ignition key to the **OFF** position.
- Remove the headlight mask with the headlight. (📖 p. 131)
- Remove the seat. (📖 p. 79)
- Take off the side cover. (📖 p. 80)

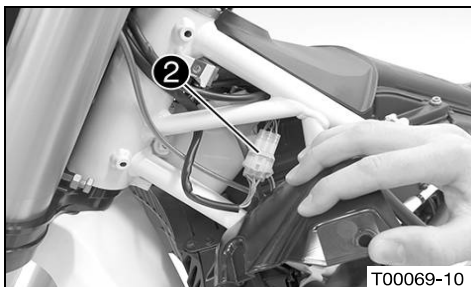


## Main work

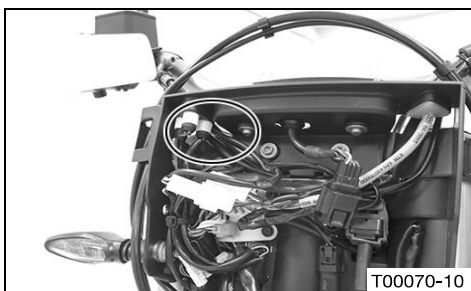
- Remove the cable ties.



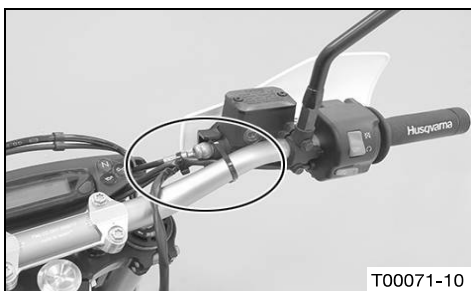
- Remove screw ①.



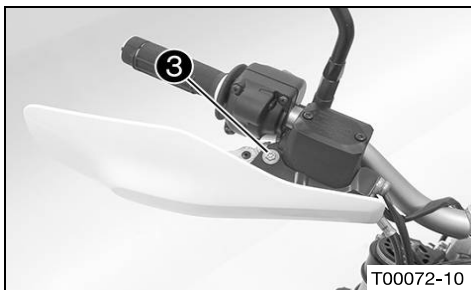
- Push the trim aside.
- Disconnect plug-in connector ②.
- Expose the cable of the accelerator position sensor.



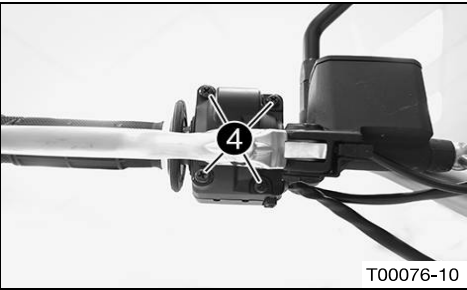
- Slip out the accelerator position sensor cable through the opening in the instrument support.



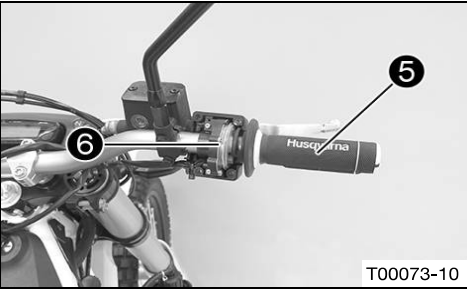
- Remove the cable ties.



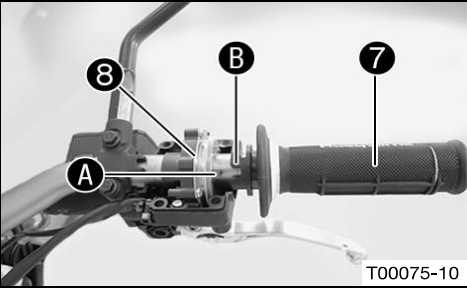
- Remove screw ③.
- Take off the handlebar guard.



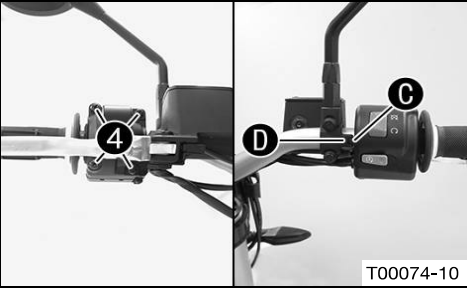
- Remove screws 4.



- Pull throttle grip 5 and accelerator position sensor 6 from the handlebar.



- Position throttle grip 7 and accelerator position sensor 8 on the handlebar.  
✓ Catch A engages in driver B.

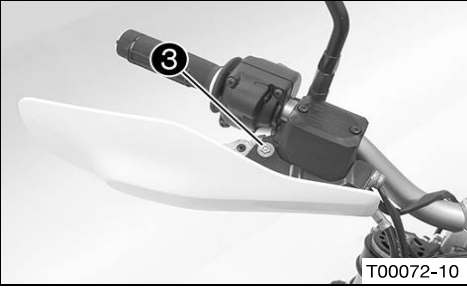


- Mount and tighten screws 4.

Guideline

Screw, throttle grip	M5	3.5 Nm (2.58 lbf ft)
----------------------	----	-------------------------

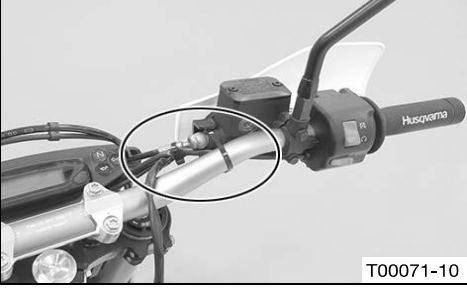
- ✓ Catch C engages in recess D.



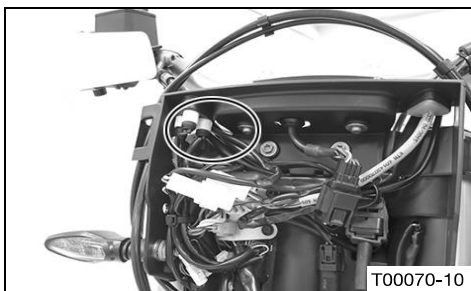
- Position the handlebar guard.
- Mount and tighten screw 3.

Guideline

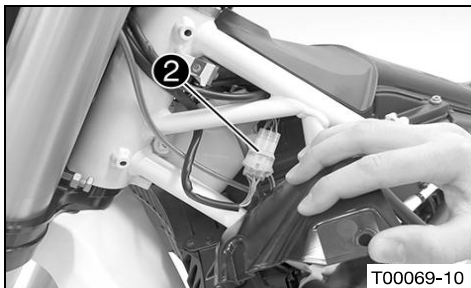
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)
---------------------------	----	--------------------



- Route the cable without tension and secure with cable ties.



- Route the accelerator position sensor cable through the opening in the instrument support without tension.



- Push the trim aside.
- Connect plug-in connector **2**.
- Route the wiring harness of the accelerator position sensor without tension.



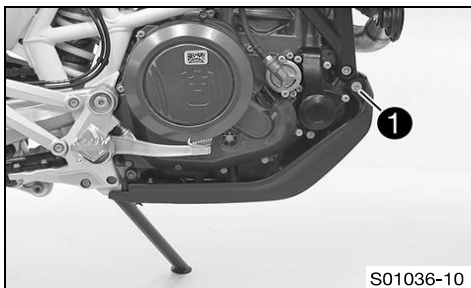
- Mount and tighten screw **1**.
- Route the wiring harness of the accelerator position sensor without tension.



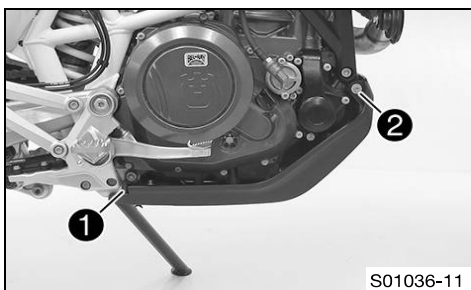
- Secure the cable with the cable ties.

## Finishing work

- Install the headlight mask with the headlight. (📖 p. 132)
- Check the headlight setting. (📖 p. 130)
- Reset the engine electronics control unit. (📖 p. 226)
- Program the gear position sensor. (📖 p. 209)
- Mount the side cover. (📖 p. 80)
- Mount the seat. (📖 p. 80)

**8.1 Removing the engine guard**

- Remove screws ❶ on the left and right.
- Pull the engine guard forward out of the holders and remove it.

**8.2 Installing the engine guard**

- Slide the engine guard into holders ❶ at the rear.
- Position the engine guard. Mount and tighten screws ❷.

Guideline

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

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



### Caution

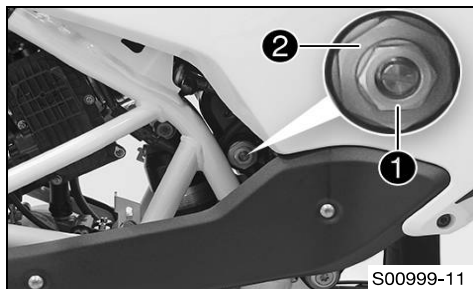
**Danger of accidents** Disassembly of pressurized parts can lead to injury.

- The shock absorber is filled with high density nitrogen. Adhere to the description provided.



### Info

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



- Turn adjusting screw ① all the way clockwise with a socket wrench.



### Info

Do not loosen fitting ②!

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

Guideline

Compression damping, high-speed	
Standard	1.5 turns



### Info

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

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



### Caution

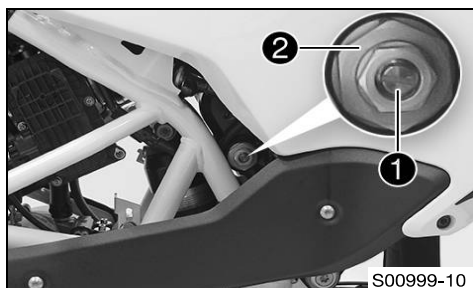
**Danger of accidents** Disassembly of pressurized parts can lead to injury.

- The shock absorber is filled with high density nitrogen. Adhere to the description provided.



### Info

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



- Turn adjusting screw ① clockwise with a screwdriver up to the last perceptible click.



### Info

Do not loosen fitting ②!

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

Guideline

Compression damping, low-speed	
Standard	15 clicks



### Info

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



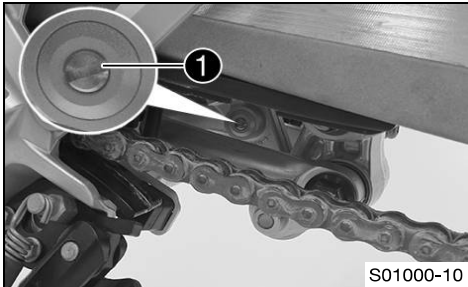
## 9.3 Adjusting the rebound damping of the shock absorber



### Caution

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

- The shock absorber is filled with high density nitrogen. Adhere to the description provided.



- Turn adjusting screw **1** clockwise up to the last perceptible click.
- Turn counterclockwise by the number of clicks corresponding to the shock absorber type.

### Guideline

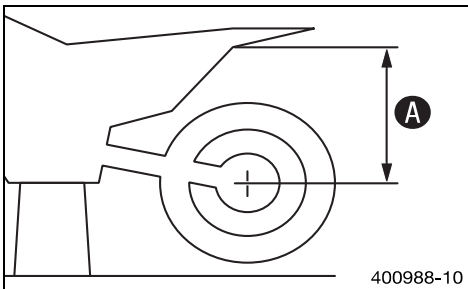
Rebound damping	
Standard	15 clicks



### Info

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

## 9.4 Measuring the unloaded rear wheel sag



### Preparatory work

- Raise the motorcycle with a lift stand. (📖 p. 11)

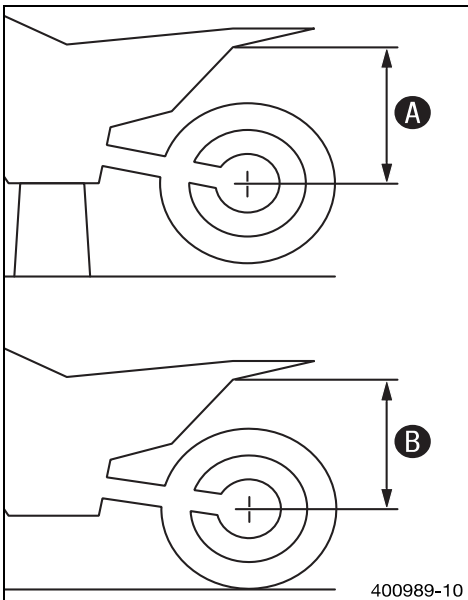
### Main work

- Measure the distance – as vertical as possible – between the rear axle and a fixed point, for example, a mark on the rear fairing.
- Note down the value as dimension **A**.

### Finishing work

- Remove the motorcycle from the lift stand. (📖 p. 12)

## 9.5 Checking the static sag of the shock absorber



- Measure distance **A** of rear wheel unloaded. (📖 p. 45)
- Hold the motorcycle upright with the aid of an assistant.
- Measure the distance between the rear axle and the fixed point again.
- Note down the value as dimension **B**.



### Info

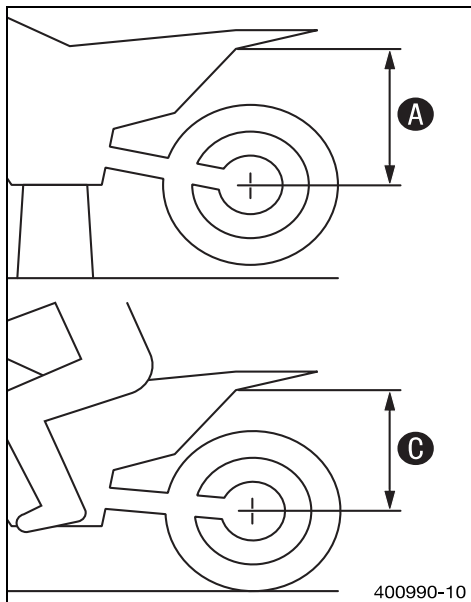
The static sag is the difference between measurements **A** and **B**.

- Check the static sag.

Static sag	30 mm (1.18 in)
------------	-----------------

- » If the static sag is less or more than the specified value:
  - Adjust the spring preload of the shock absorber. (📖 p. 46)

## 9.6 Checking the riding sag of the shock absorber



- Measure distance **A** of rear wheel unloaded. (📖 p. 45)
- With another person holding the motorcycle, the rider, wearing full protective clothing, sits on the seat in a normal sitting position (feet on footrests) and bounces up and down a few times.
  - ✓ The rear wheel suspension levels out.
- Another person now measures the distance between the rear axle and the fixed point.
- Note down the value as dimension **C**.

### **i** Info

The riding sag is the difference between measurements **A** and **C**.

- Check the riding sag.

Riding sag	75... 85 mm (2.95... 3.35 in)
------------	-------------------------------

- » If the riding sag differs from the specified measurement:
  - Adjust the riding sag. (📖 p. 47)

## 9.7 Adjusting the spring preload of the shock absorber



### Caution

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

- The shock absorber is filled with high density nitrogen. Adhere to the description provided.



### Info

Before changing the spring preload, make a note of the present setting, e.g., by measuring the length of the spring.

### Preparatory work

- Raise the motorcycle with the work stand. (📖 p. 12)
- Remove the seat. (📖 p. 79)
- Take off the side cover. (📖 p. 80)
- Remove the air filter box. (📖 p. 75)
- Remove the shock absorber. (📖 p. 47)
- After removing the shock absorber, clean it thoroughly.

### Main work

- Loosen retaining ring **1**.
- Turn adjusting ring **2** until the spring is no longer under tension.

Hook wrench (T106S) (📖 p. 320)
--------------------------------

- Measure the overall spring length while the spring is not under tension.
- Tighten the spring by turning adjusting ring **2** to the specified measurement.

### Guideline

Spring preload	22 mm (0.87 in)
----------------	-----------------

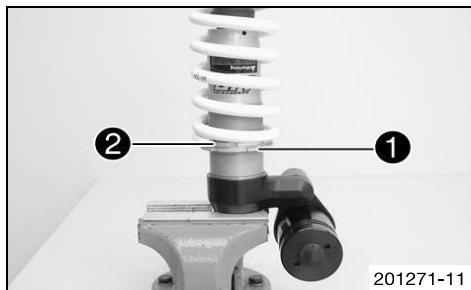
### **i** Info

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

- Tighten retaining ring **1**.

### Finishing work

- Install the shock absorber. (📖 p. 49)
- Install the air filter box. (📖 p. 77)
- Mount the side cover. (📖 p. 80)
- Mount the seat. (📖 p. 80)



- Remove the motorcycle from the work stand. (📖 p. 12)

## 9.8 Adjusting the riding sag

### Preparatory work

- Raise the motorcycle with the work stand. (📖 p. 12)
- Remove the seat. (📖 p. 79)
- Take off the side cover. (📖 p. 80)
- Remove the air filter box. (📖 p. 75)
- Remove the shock absorber. (📖 p. 47)
- After removing the shock absorber, clean it thoroughly.

### Main work

- Choose and mount a suitable spring.

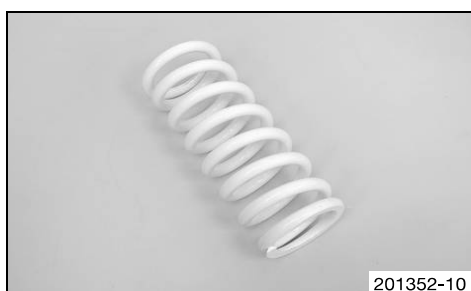
#### Guideline

Spring rate	
Medium (standard)	69 N/mm (394 lb/in)



### Info

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



201352-10

### Finishing work

- Install the shock absorber. (📖 p. 49)
- Install the air filter box. (📖 p. 77)
- Mount the side cover. (📖 p. 80)
- Mount the seat. (📖 p. 80)
- Remove the motorcycle from the work stand. (📖 p. 12)
- Check the static sag of the shock absorber. (📖 p. 45)
- Adjust the rebound damping of the shock absorber. (📖 p. 45)

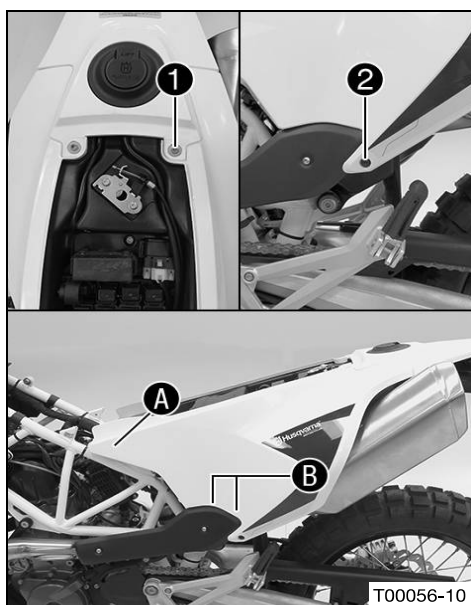
## 9.9 Removing the shock absorber

### Preparatory work

- Raise the motorcycle with the work stand. (📖 p. 12)
- Remove the seat. (📖 p. 79)
- Take off the side cover. (📖 p. 80)
- Remove the air filter box. (📖 p. 75)

### Main work

- Remove screw ①.
- Remove screw ②.
- Pull off the rear left side cover in area A sideways and lift it out of the holding lugs B.



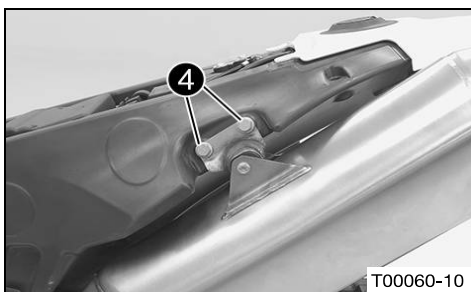
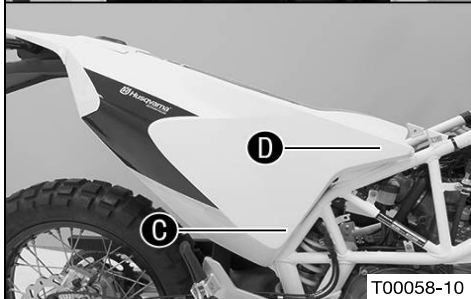
T00056-10

## 9 SHOCK ABSORBER, SWINGARM

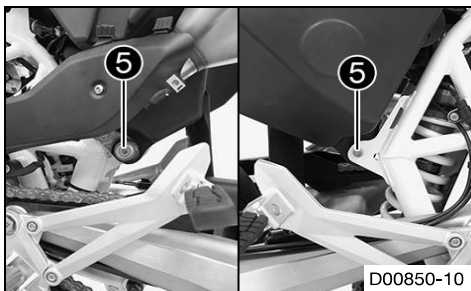
48



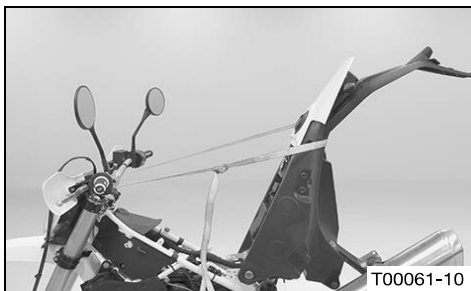
- Remove screw 3.
- Release catch C, pull off the rear right side cover in area D sideways and remove it toward the rear.



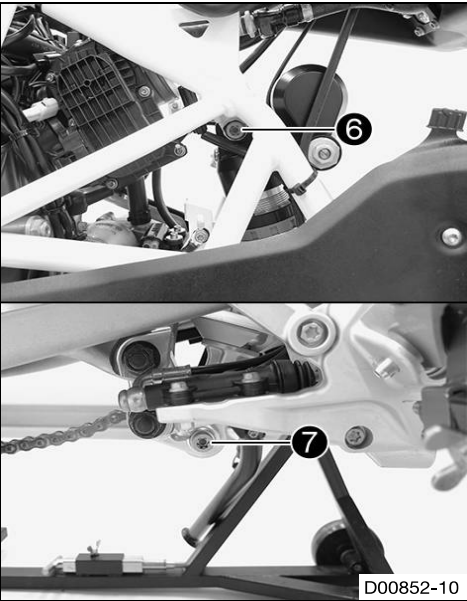
- Remove screws 4.



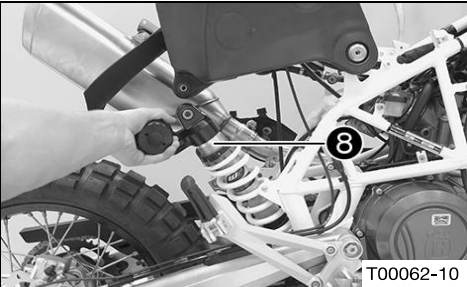
- Remove screws 5.



- Pivot up the subframe and secure it.

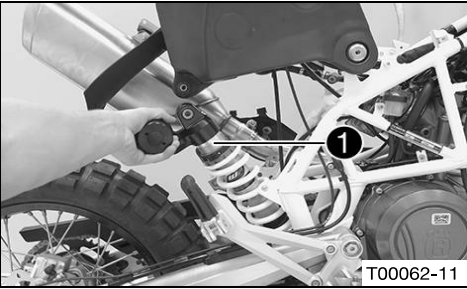


- Loosen screw 6.
- Remove screw 7.
- Remove screw 6.

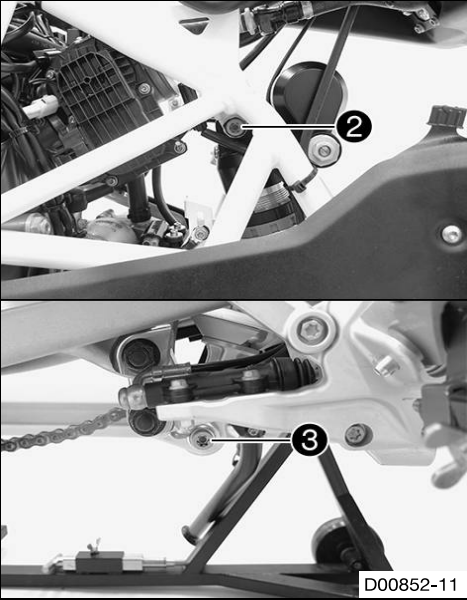


- Lift off shock absorber 8.

9.10 Installing the shock absorber



- Main work
- Position shock absorber 1 from above.



- Mount screw 2 but do not tighten yet.

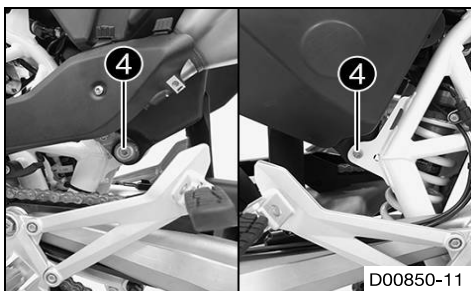
Guideline			
Screw, top shock absorber	M10	45 Nm (33.2 lbf ft)	Loctite® 243™

- Mount and tighten screw 3.

Guideline			
Screw, bottom shock absorber	M10	45 Nm (33.2 lbf ft)	Loctite® 243™

- Tighten screw 2.

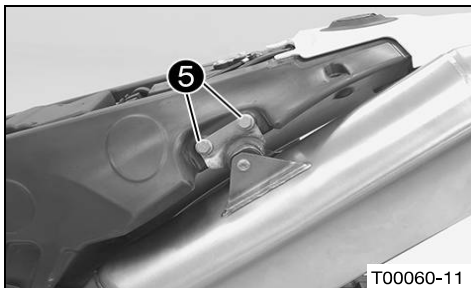
Guideline			
Screw, top shock absorber	M10	45 Nm (33.2 lbf ft)	Loctite® 243™



- Remove the locking piece and position the subframe.
- Mount and tighten screws **4**.

Guideline

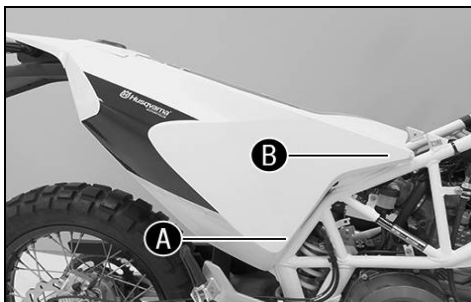
Screw, fuel tank, bottom	M8	25 Nm (18.4 lbf ft)	Loctite® 243™
--------------------------	----	------------------------	---------------



- Mount and tighten screws **5**.

Guideline

Screw, main silencer holder on fuel tank	M8	25 Nm (18.4 lbf ft)	
--	----	---------------------	--



- Position the rear right side cover and engage in area **B**.
- Engage catch **A**.
- Mount and tighten screw **6**.

Guideline

Remaining screws on fuel tank	M6	5 Nm (3.7 lbf ft)	
-------------------------------	----	-------------------	--



- Position rear left side cover in holding lugs **C**. Engage side cover in area **D**.
- Mount and tighten screw **7**.

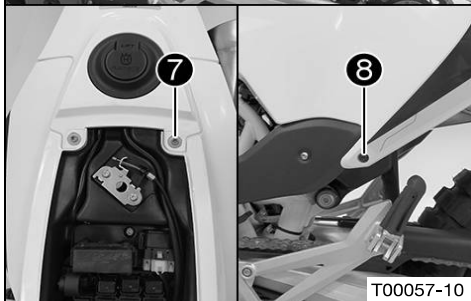
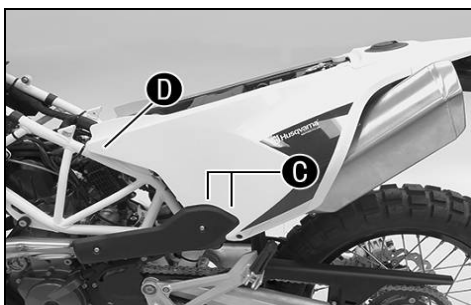
Guideline

Remaining screws on fuel tank	M6	5 Nm (3.7 lbf ft)	
-------------------------------	----	-------------------	--

- Mount and tighten screw **8**.

Guideline

Screw, trim	M5x12	3.5 Nm (2.58 lbf ft)	
-------------	-------	-------------------------	--



## Finishing work

- Install the air filter box. (p. 77)

- Mount the side cover. (📖 p. 80)
- Mount the seat. (📖 p. 80)
- Remove the motorcycle from the work stand. (📖 p. 12)

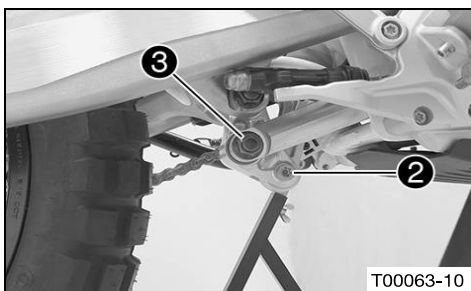
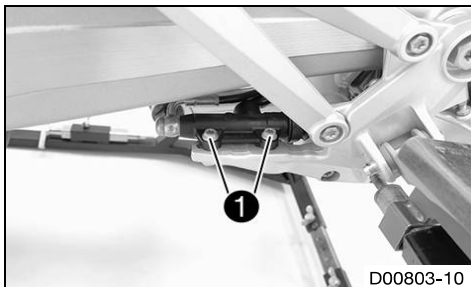
## 9.11 Checking the shock absorber linkage

### Preparatory work

- Raise the motorcycle with the work stand. (📖 p. 12)

### Main work

- Remove fittings ❶.
- Hang the foot brake cylinder to the side.

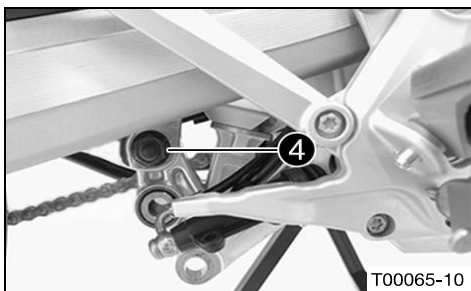


- Remove screw ❷.
- Remove fitting ❸.

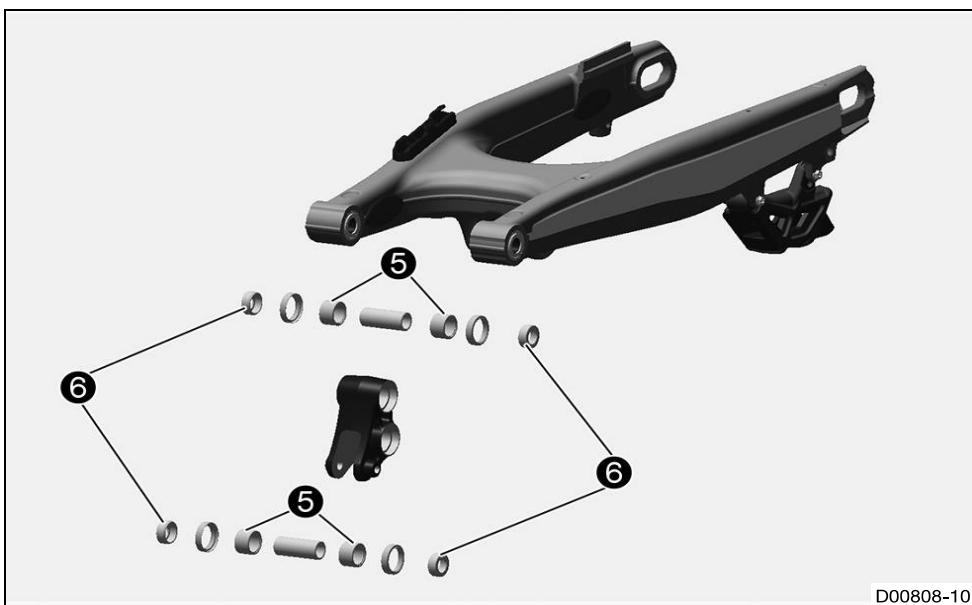


### Info

Raise the wheel slightly to be able to remove the screws more easily.



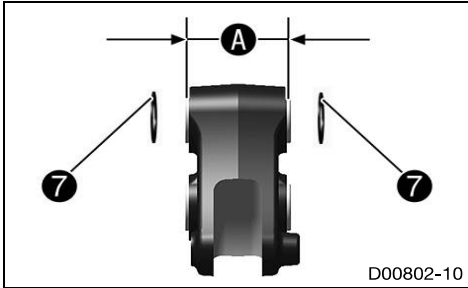
- Remove fitting ❹.
- Take off the angle lever.



- Check needle bearing ❺ for damage and wear.



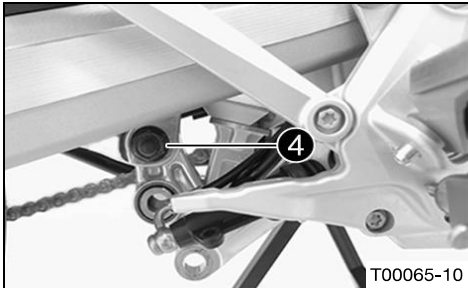
- » If there is damage or wear:
  - Change the needle bearings.
- Check spacers ⑥ for damage and wear.
  - » If there is damage or wear:
    - Change the spacers.
- Check the shaft seal rings for damage and wear.
  - » If there is damage or wear:
    - Change the shaft seal rings.



- Check dimension A.

51.91... 52.00 mm (2.0437... 2.0472 in)

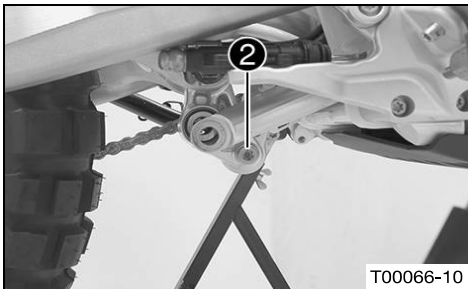
- » If dimension A is below the specified value:
  - Add the necessary spacing washers ⑦.



- Position the angle lever.
- Mount fitting ④ but do not tighten yet.

Guideline

Nut, linkage lever on swingarm	M14x1.5	100 Nm (73.8 lbf ft)
--------------------------------	---------	-------------------------



- Mount screw ② but do not tighten yet.

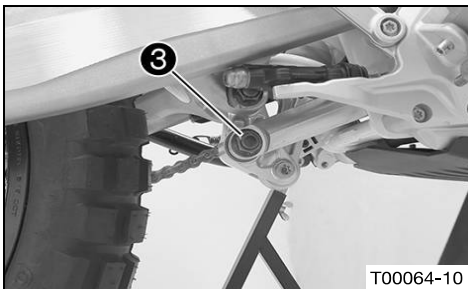
Guideline

Screw, bottom shock absorber	M10	45 Nm (33.2 lbf ft)	Loctite® 243™
------------------------------	-----	------------------------	---------------



### Info

Raise the wheel slightly to be able to mount the screw more easily.



- Position the linkage lever.
- Mount and tighten fitting ③.

Guideline

Nut, linkage lever to rocker arm	M14x1.5	100 Nm (73.8 lbf ft)
----------------------------------	---------	-------------------------



### Info

Raise the wheel slightly to be able to mount the screw more easily.

- Tighten screws ②.

Guideline

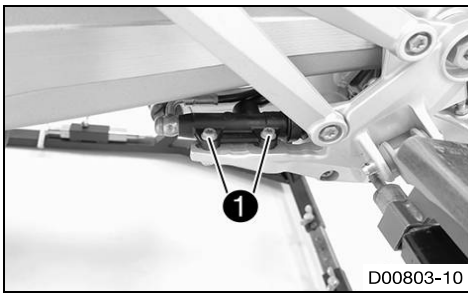
Screw, bottom shock absorber	M10	45 Nm (33.2 lbf ft)	Loctite® 243™
------------------------------	-----	------------------------	---------------

- Tighten fitting ④.

Guideline

Nut, linkage lever on swingarm	M14x1.5	100 Nm (73.8 lbf ft)
--------------------------------	---------	-------------------------





- Position the foot brake cylinder.
- Mount and tighten fittings **1**.

## Guideline

Screw connection, foot brake cylinder	M6	10 Nm (7.4 lbf ft)
---------------------------------------	----	--------------------

## Finishing work

- Remove the motorcycle from the work stand. (📖 p. 12)
- Check the free travel of the foot brake lever. (📖 p. 126)

## 9.12 Servicing the shock absorber



### Caution

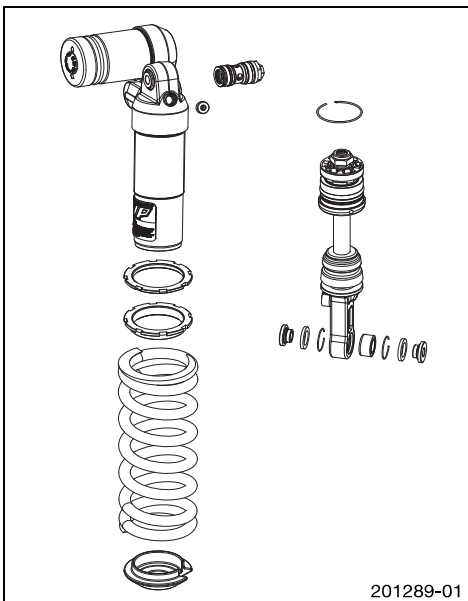
**Danger of accidents** Disassembly of pressurized parts can lead to injury.

- The shock absorber is filled with high density nitrogen. Adhere to the description provided.

## Condition

The shock absorber has been removed.

- Remove the spring. (📖 p. 53)
- Dismantle the damper. (📖 p. 54)
- Disassemble the piston rod. (📖 p. 55)
- Check the damper. (📖 p. 56)
- Remove the heim joint. (📖 p. 57)
- Install the heim joint. (📖 p. 58)
- Assemble the piston rod. (📖 p. 59)
- Assemble the damper. (📖 p. 60)
- Install the spring. (📖 p. 65)



## 9.13 Removing the spring

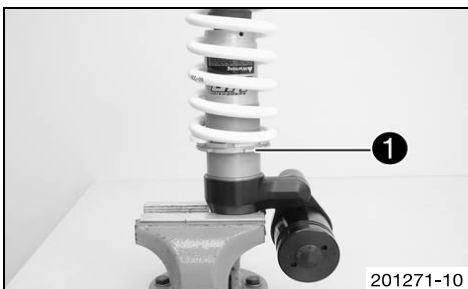
## Condition

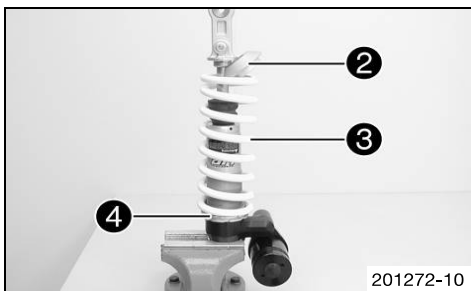
The shock absorber has been removed.

- Clamp the shock absorber in the vise using soft jaws for protection.
- Measure and note spring length in preloaded state.
- Loosen retaining ring **1** and the adjusting ring with the special tool.

Hook wrench (T106S) (📖 p. 320)
--------------------------------

- Turn the retaining ring and adjusting ring until the spring is fully relieved of tension.





- Remove spring retainer ②.
- Take off spring ③ with the retaining ring and adjusting ring ④.

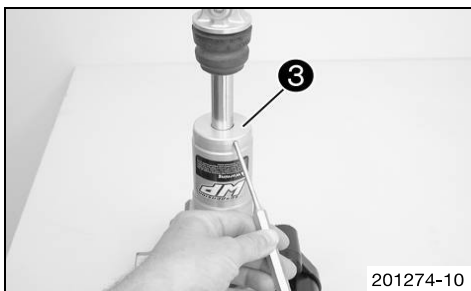
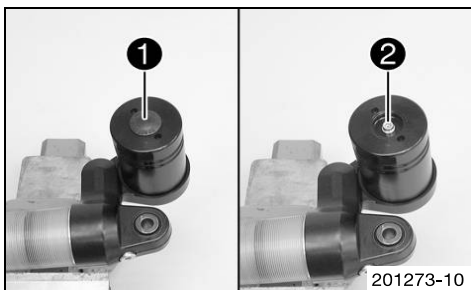
## 9.14 Dismantling the damper

### Preparatory work

- Remove the spring. (📖 p. 53)

### Main work

- Establish and note the current state of the rebound damping and compression damping.
- Completely open the adjusters of the rebound and compression damping.
- Remove rubber cap ① of the reservoir.
- Open screw ② slowly.  
✓ The pressurized nitrogen escapes.



- Clamp the damper in the vise using soft jaws.
- Remove locking cap ③.

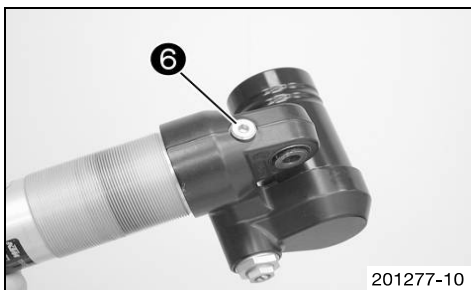


- Press in seal ring retainer ④. Remove lock ring ⑤.



### Info

Do not scratch the inner surface.



- Remove screw ⑥. Drain the oil.



- Remove the piston rod. Drain the remaining oil.



- Remove compression adjuster **7**. Remove the spring, sleeve, and piston.



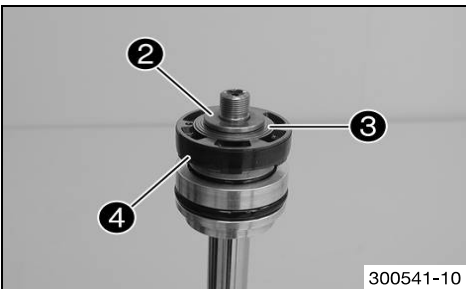
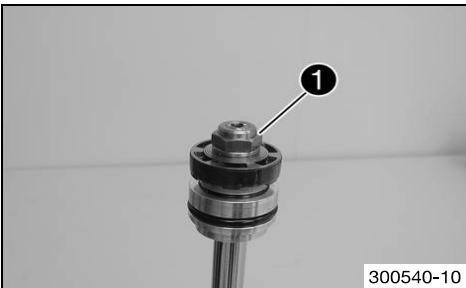
## 9.15 Disassembling the piston rod

### Preparatory work

- Remove the spring. (p. 53)
- Dismantle the damper. (p. 54)

### Main work

- Clamp the piston rod with the heim joint in a vise.
- Remove nut **1**.



- Remove supporting plate **2** and rebound shim stack **3** together with piston **4**.



### Info

Thread the rebound shim set on a screwdriver and set the parts down together.

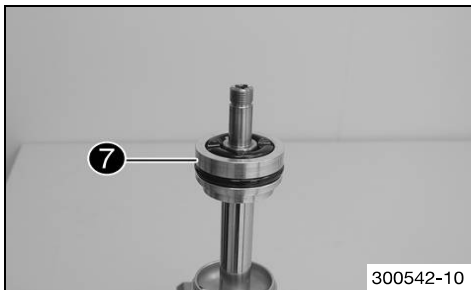


- Remove compression shim stack **6** with supporting plate **5**.

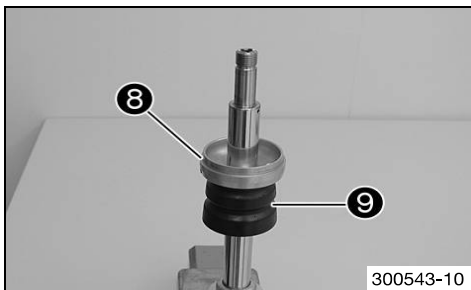


## Info

Thread the compression shim stack on a screwdriver and set the parts down together.



- Remove seal ring retainer **7**.



- Remove locking cap **8** and rubber buffer **9**.

## 9.16 Checking the damper



### Condition

The damper has been disassembled.

- Measure the inside diameter at both ends and in the center of the damper cartridge.

Damper cartridge	
Diameter	46.10 mm (1.815 in)

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

- Change the damper cartridge.

- Check the damper cartridge for damage and wear.

» If there is damage or wear:

- Change the damper cartridge.

- Measure the diameter of the piston rod.

Piston rod	
Diameter	$\geq 17.95$ mm ( $\geq 0.7067$ in)

» If the specification is not reached:

- Change the piston rod.

- Measure the run-out of the piston rod.

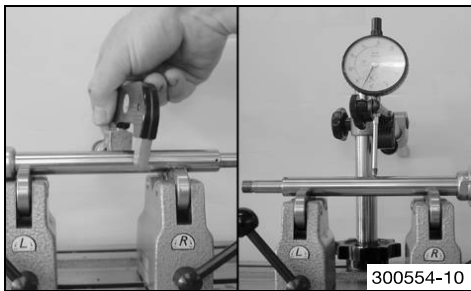
Piston rod	
Run-out	$\leq 0.03$ mm ( $\leq 0.0012$ in)

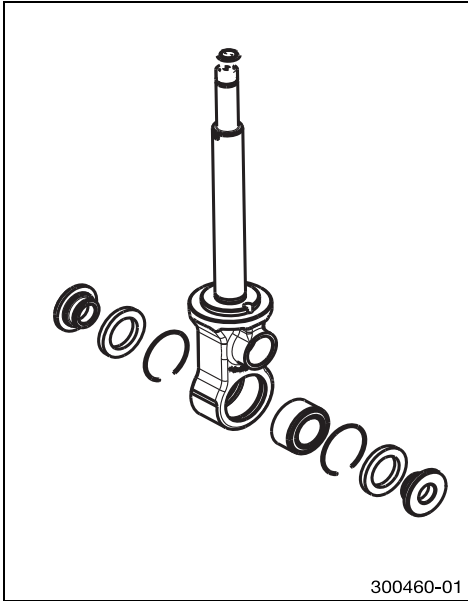
» If the measured value is greater than the specified value:

- Change the piston rod.

- Check the piston rod for damage and wear.

» If there is damage or wear:



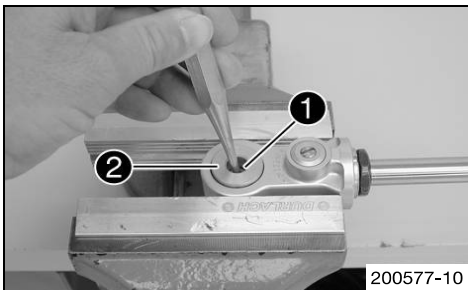


- Change the piston rod.
- Check the heim joint for damage and wear.
  - » If there is damage or wear:
    - Change the heim joint.

## 9.17 Removing the heim joint

### Condition

The shock absorber has been removed.

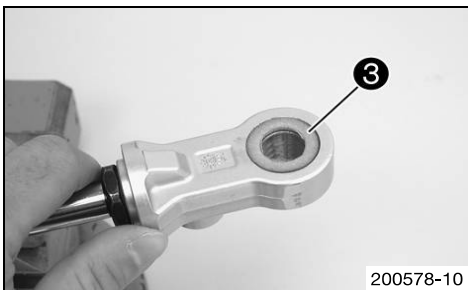


- Clamp the shock absorber into the vise with soft jaws.
- Remove collar bushing ① of the heim joint.

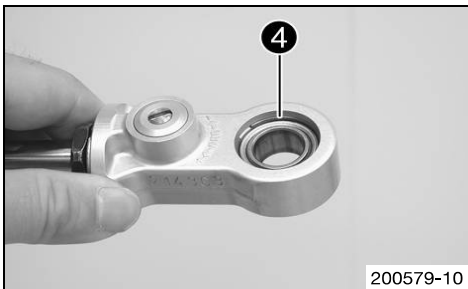
Pin (T120) (p. 321)

- Turn around the shock absorber and remove collar bushing ② of the heim joint.

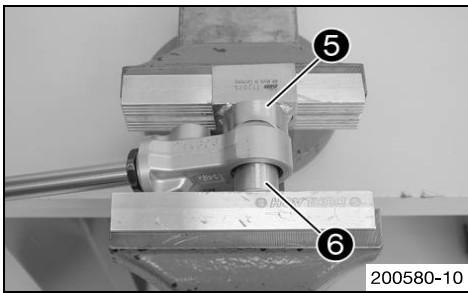
Pin (T120) (p. 321)



- Remove seal ③ on both sides.



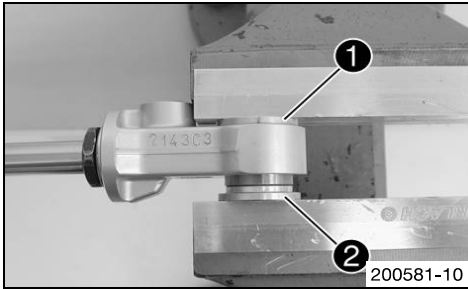
- Remove lock ring ④ on both sides.



- Place special tool **5** underneath and press out the heim joint with special tool **6**.

Pressing tool (T1207S) (p. 321)

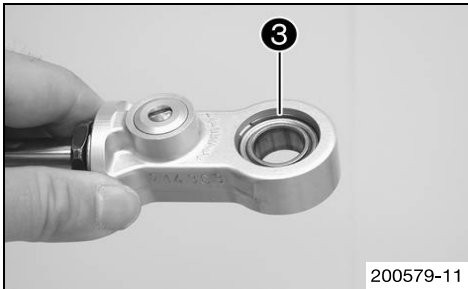
## 9.18 Installing the heim joint



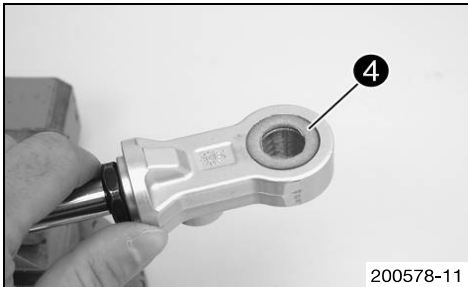
- Place special tool **1** underneath and push the heim joint to the middle using special tool **2**.

Pressing tool (T1206) (p. 321)

Pressing tool (T129) (p. 322)

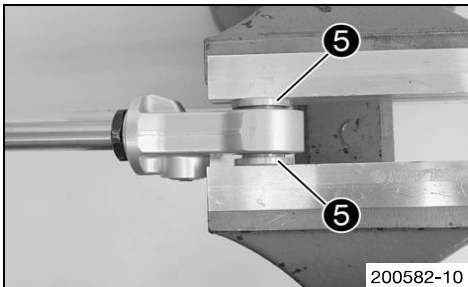


- Mount lock ring **3** on both sides.



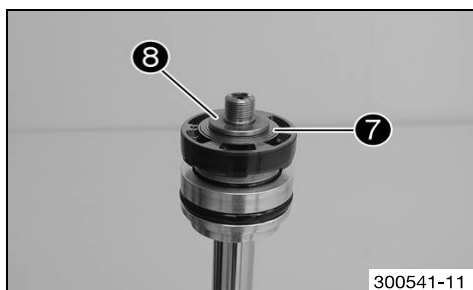
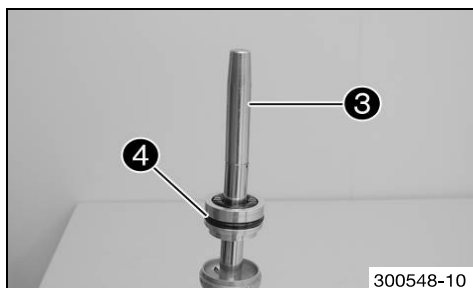
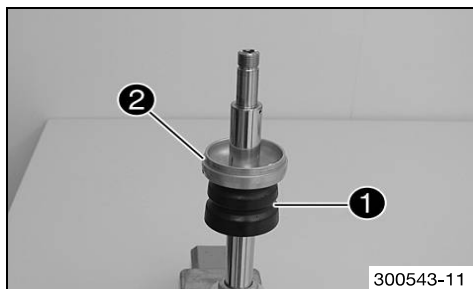
- Mount and grease seal ring **4** on both sides.

Lubricant (T158) (p. 307)



- Press in both collar bushings **5** of the heim joint.

## 9.19 Assembling the piston rod



### Preparatory work

- Check the damper. (📖 p. 56)

### Main work

- Clamp the piston rod with the heim joint in a vise.

#### Guideline

Use soft jaws.

- Mount rubber buffer **1** and locking cap **2**.

- Position special tool **3** on the piston rod.

Mounting sleeve (T1515) (📖 p. 323)

- Grease the seal ring and push seal ring retainer **4** on to the piston rod.

Lubricant (T625) (📖 p. 307)

- Remove the special tool.

- Mount supporting plate **5** with the rounded side facing downward.

- Mount the compression shim stack **6** with the smaller shims facing downward.

- Sand both sides of the piston on a surface plate using 1200-grit sandpaper.

- Clean the piston.

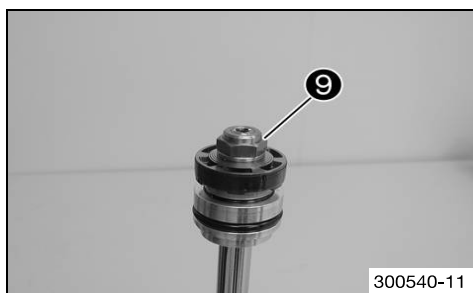
- Assemble the piston.

#### Guideline

View <b>A</b>	Piston from above
View <b>B</b>	Piston from below

- Mount the rebound shim stack **7** with the smaller shims facing upward.

- Install supporting plate **8**.



- Mount and tighten nut **9**.

Guideline

Piston rod nut	M12x1	40 Nm (29.5 lbf ft)
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## 9.20 Assembling the damper

### Preparatory work

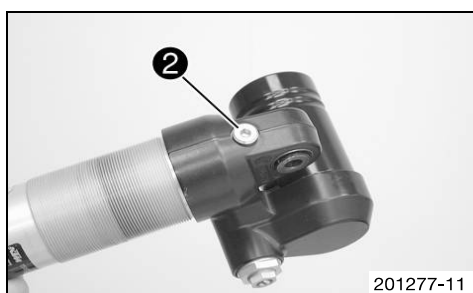
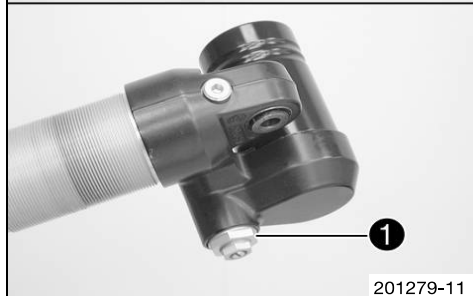
- Check the damper. (📖 p. 56)
- Assemble the piston rod. (📖 p. 59)

### Main work

- Push the spring and sleeve onto the compression adjuster. Mount the piston.
- Mount and tighten compression adjuster **1**.

Guideline

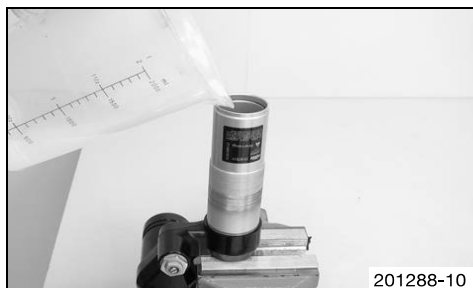
Compression adjuster	M26x1	30 Nm (22.1 lbf ft)
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- Mount and tighten screw **2**.

Guideline

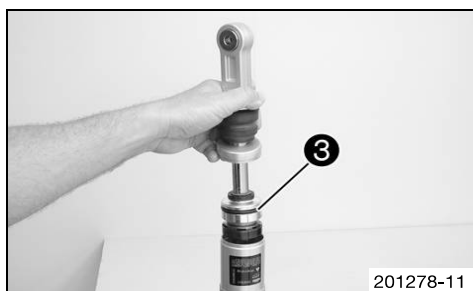
Filling port screw	M10x1	14 Nm (10.3 lbf ft)
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- Clamp the damper in the vise using soft jaws.
- Fill the damper cartridge about half full.

Shock absorber fluid (SAE 2.5) (50180751S1) (📖 p. 306)





- Grease O-ring (3) of the seal ring retainer.

Lubricant (T158) (p. 307)

- Mount the piston rod carefully.



- Install the seal ring bearer (4) and push it under the ring groove.
- Mount lock ring (5).



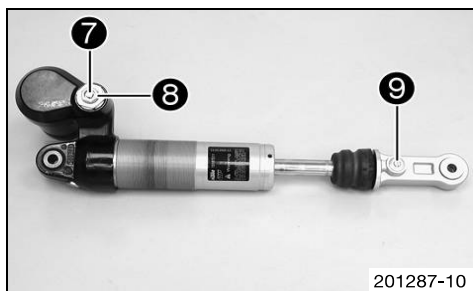
## Info

Do not scratch the inner surface.

- Pull out the piston rod so that the seal ring retainer rests against the lock ring.



- Mount locking cap (6) of the damper cartridge.
- Bleed and fill the damper. (p. 62)
- Fill the damper with nitrogen. (p. 64)



## Alternative 1

- Turn adjusting screw (7) clockwise with a screwdriver up to the last perceptible click.
- Turn counterclockwise by the number of clicks corresponding to the shock absorber type.

## Guideline

Compression damping, low-speed	
Standard	15 clicks

- Turn adjusting screw (8) all the way clockwise using a socket wrench.
- Turn counterclockwise by the number of turns corresponding to the shock absorber type.

## Guideline

Compression damping, high-speed	
Standard	1.5 turns

- Turn adjusting screw (9) clockwise up to the last perceptible click.
- Turn counterclockwise by the number of clicks corresponding to the shock absorber type.

## Guideline

Rebound damping	
Standard	15 clicks

## Alternative 2



### Warning

**Danger of accident** Modifications to the suspension setting may seriously alter the handling characteristic.

Extreme modifications to the suspension setting may cause a serious deterioration in the handling characteristic and overload components.

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

- Turn adjusting screws ⑦, ⑧ and ⑨ to the position determined during disassembly.

### Finishing work

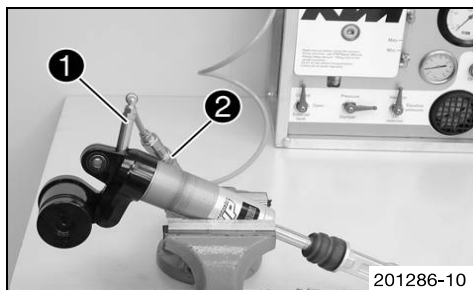
- Install the spring. (📖 p. 65)

## 9.21 Bleeding and filling the damper



### Info

Before working with the vacuum pump, be sure to read the operating instructions carefully. Completely open the adjusters of the rebound and compression damping.



- Remove the screw of the filling port.
- Install adapter ① on the damper.



### Info

Tighten only hand-tight, without the use of tools.

- Connect the adapter ① to connector ② of the vacuum pump.

Vacuum pump (T1240S) (📖 p. 322)

- Clamp the damper with soft jaws or hold it as shown in the photo.

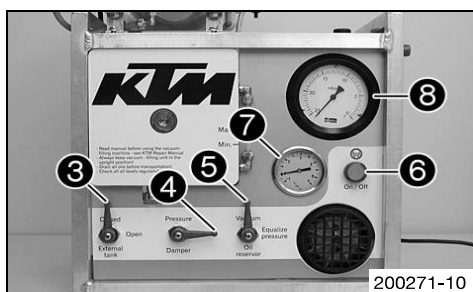


### Info

Clamp the damper only lightly.

The filling port must be at the highest point.

The piston rod slides in and out during filling - do not hold it tight with your hand!



- Place the control lever as shown in the photo.
  - ✓ The **External tank** ③ control lever is on **Closed**, **Damper** ④ on **Vacuum**, and **Oil reservoir** ⑤ on **Vacuum**.

- Operate the **On/Off** switch ⑥.

✓ The vacuum pump process starts.

✓ Pressure gauge ⑦ falls to the specified value.

< 0 bar

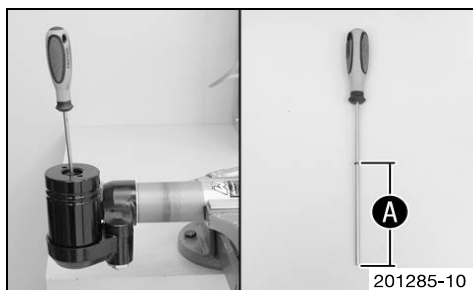
✓ The vacuum gauge ⑧ falls to the specified value.

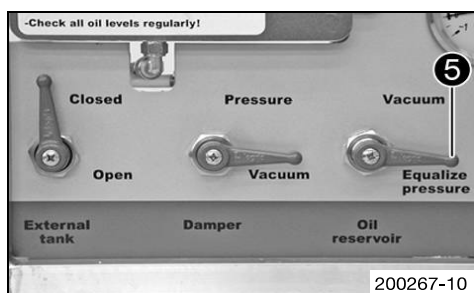
4 mbar

- Measure distance A between the floating piston and reservoir hole with the special tool.

Depth micrometer (T107S) (📖 p. 321)

✓ The floating piston is positioned all the way at the bottom.





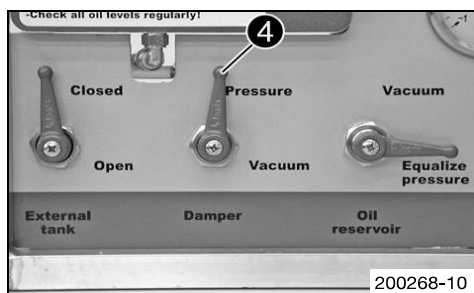
- When the vacuum pressure gauge reaches the specified value, turn the **Oil reservoir** control lever **5** to **Equalize pressure**.

Guideline

4 mbar

- ✓ The pressure gauge rises to the specified value.

0 bar



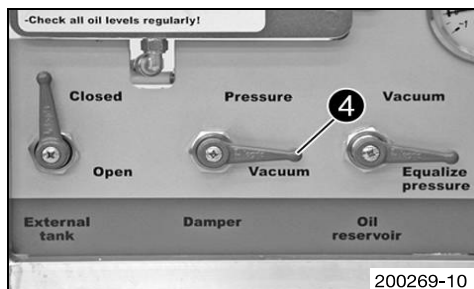
- When the pressure gauge reaches the specified value, turn the **Damper** control lever **4** to **Pressure**.

Guideline

0 bar

- ✓ Oil is pumped into the damper.
- ✓ The pressure gauge rises to the specified value.

3 bar



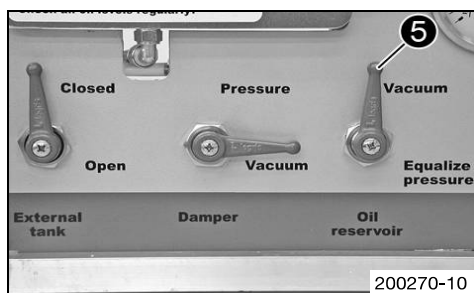
- When the pressure gauge reaches the specified value, turn the **Damper** **4** control lever to **Vacuum**.

Guideline

3 bar

- ✓ The pressure gauge falls to the specified value.

0 bar



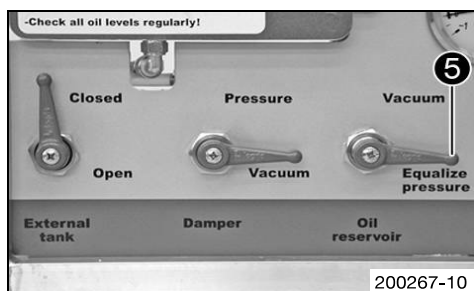
- When the pressure gauge reaches the specified value, turn the **Oil reservoir** **5** control lever to **Vacuum**.

Guideline

0 bar

- ✓ The vacuum gauge falls to the specified value.

4 mbar



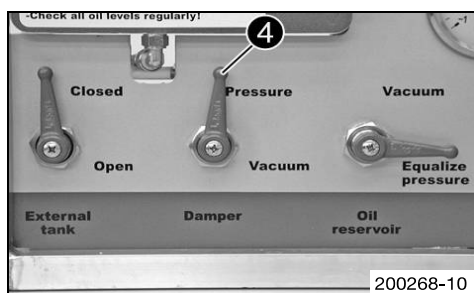
- When the vacuum pressure gauge reaches the specified value, turn the **Oil reservoir** control lever **5** to **Equalize Pressure**.

Guideline

4 mbar

- ✓ The pressure gauge falls to the specified value.

0 bar



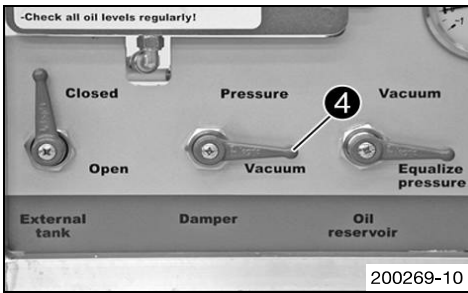
- When the pressure gauge reaches the specified value, turn the **Damper** control lever **4** to **Pressure**.

Guideline

0 bar

- ✓ Oil is pumped into the damper.
- ✓ The pressure gauge rises to the specified value.

3 bar



- When the pressure gauge reaches the specified value, turn the **Damper 4** control lever to **Vacuum**.

Guideline

3 bar

- ✓ The pressure gauge falls to the specified value.

0 bar

- When the pressure gauge reaches the specified value, operate the **On/Off** switch.

Guideline

0 bar

- ✓ The vacuum pump is switched off.

- Slide O-ring **B** to the end of the special tool by the specified value (distance **A** minus specified value).

Guideline

10 mm

Depth micrometer (T107S) (p. 321)

- Slide the floating piston into the reservoir to the shortened position using the special tool.



## Info

The floating piston must be positioned at exactly this point when the rod is fully extended; otherwise, damage will occur during compression of the shock absorber.

- Remove the special tool.
- Remove adapter **1** from connection **2** of the vacuum pump.



## Info

Hold the damper so that the filling port is at the highest point.

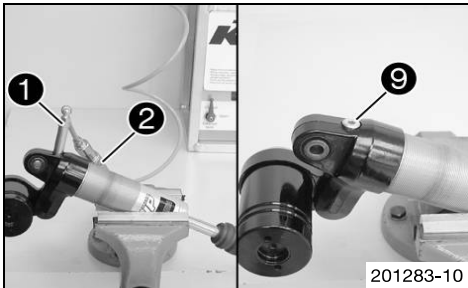
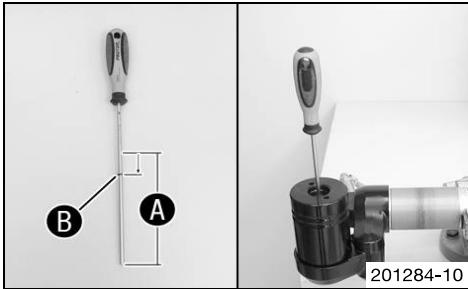
- Remove the adapter.
- Mount and tighten screw **9**.

Guideline

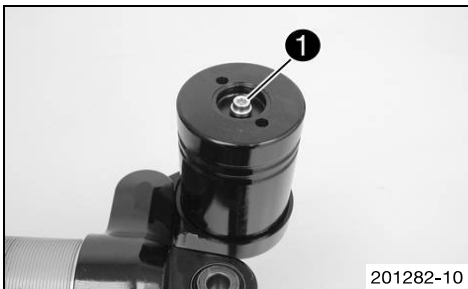
Filling port screw

M10x1

14 Nm (10.3 lbf ft)



## 9.22 Filling the damper with nitrogen

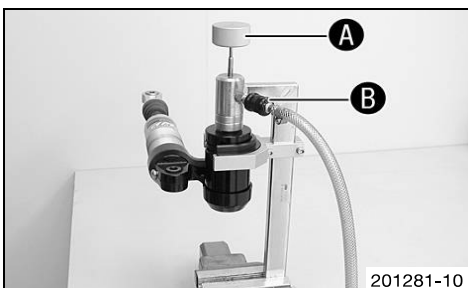


- Screw in screw **1** by approx. 2 rotations but do not tighten.



## Info

The piston rod is fully extended.



- Clamp special tool in the vise.

Nitrogen filling tool (T170S1) (p. 323)

- Connect the special tool to the pressure regulator of the filling cylinder.

Filling gas - nitrogen

- Adjust pressure regulator.

Guideline

Gas pressure

10 bar (145 psi)

- Position the damper in the special tool.

- ✓ The hexagonal part of the tap handle **A** engages in the hexagon socket of the filling port screw.

- Open filler tap **B**.
- Fill the damper for at least 15 seconds.

Guideline

Gas pressure	10 bar (145 psi)
--------------	------------------



#### Info

Watch the pressure regulator dial.  
Make sure that the damper is filled to the specified pressure.

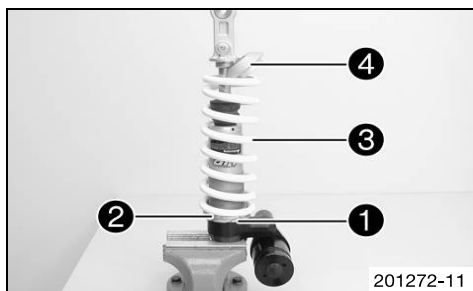
- Close the filling port screw using tap handle **A**.
- Close spigot **B** and take the damper out of the special tool.
- Tighten the filling port screw.

Guideline

Screw, reservoir filling port	M5	3 Nm (2.2 lbf ft)
-------------------------------	----	-------------------

- Mount the rubber cap of the reservoir.

### 9.23 Installing the spring



- Clamp the damper in the vise using soft jaws.
- Install retaining ring **1** and turn it down as far as possible.  
✓ The collar points to the adjusting ring.
- Mount adjusting ring **2** and turn it down as far as possible.  
✓ The collar points to the spring.
- Measure the overall spring length without a load.
- Mount spring **3**.

Guideline

Spring rate	
Medium (standard)	69 N/mm (394 lb/in)

- Mount spring retainer **4**.  
✓ The open end is opposite the spring end.

#### Alternative 1

- Tension the spring to the prescribed amount by turning the adjusting ring.

Guideline

Spring preload	22 mm (0.87 in)
Hook wrench (T106S) (p. 320)	

#### Alternative 2



#### Warning

**Danger of accident** Modifications to the suspension setting may seriously alter the handling characteristic.

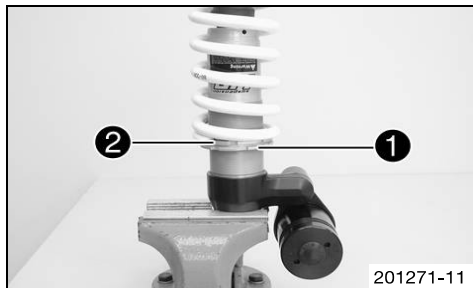
Extreme modifications to the suspension setting may cause a serious deterioration in the handling characteristic and overload components.

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

- Tension the spring to the amount measured during dismantling by turning adjusting ring **2**.

Hook wrench (T106S) (p. 320)
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- Tighten lock nut **1** and the adjusting ring.



## 9.24 Checking the swingarm bearing for play

### Preparatory work

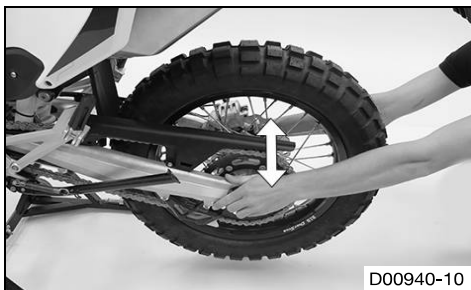
- Raise the motorcycle with the work stand. (📖 p. 12)
- Place a load on the front of the vehicle.
- ✓ The rear wheel is not in contact with the ground.

### Main work

- Move the swingarm up and down.
  - » If there is detectable play:
    - Change the swingarm bearing. (📖 p. 68)



D00939-10



D00940-10

- Move the swingarm from one side to the other.
  - » If there is detectable play:
    - Change the swingarm bearing. (📖 p. 68)

### Finishing work

- Place a load on the front of the vehicle.
- Remove the motorcycle from the work stand. (📖 p. 12)

## 9.25 Removing the swingarm

### Preparatory work

- Raise the motorcycle with the work stand. (📖 p. 12)
- Remove the rear wheel using a work stand. (📖 p. 101)

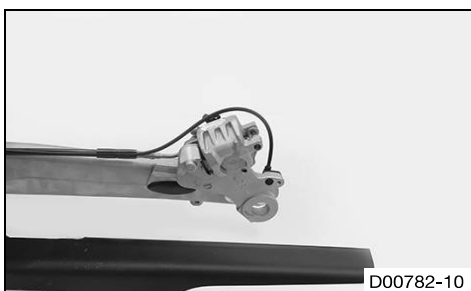
### Main work

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



#### Info

Cover the components to protect them against damage.



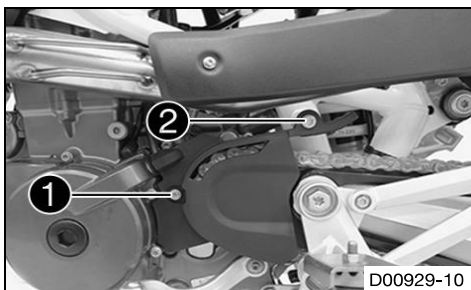
D00782-10

- Remove screws ① and ②.
- Remove the engine sprocket cover.
- Open the chain. (📖 p. 109)



#### Info

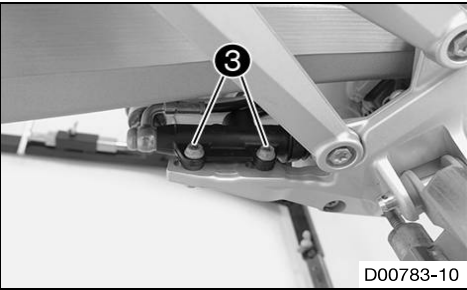
Cover the components to protect them against damage.



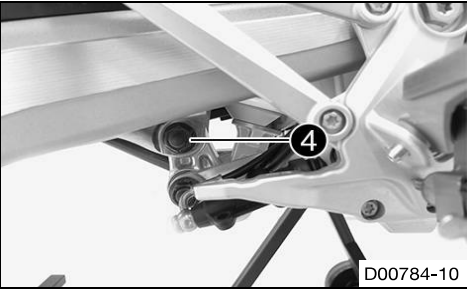
D00929-10

- Take off the chain.

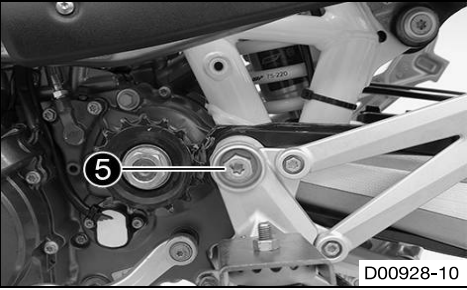




- Remove fittings ③.
- Hang the foot brake cylinder to the side.

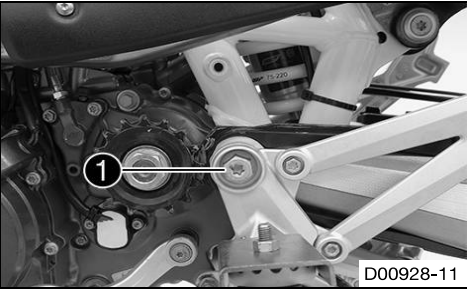


- Remove fitting ④.
- Lower the swingarm.



- Remove screw ⑤.
- Remove the swingarm pivot.
- Take off the swingarm.

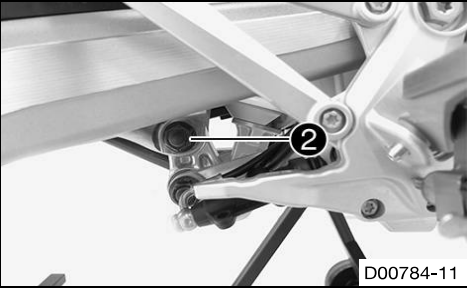
9.26 Installing the swingarm



- Main work**
- Position the swingarm.
  - Mount the swingarm pivot.
  - Mount and tighten screw ①.

Guideline

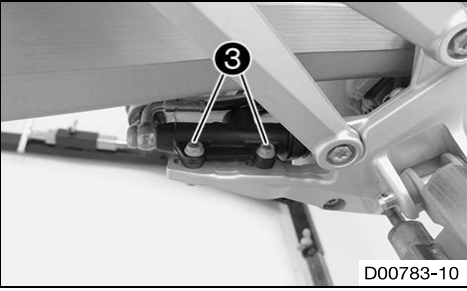
Screw, swingarm pivot	M12	80 Nm (59 lbf ft)
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- Lift the swingarm.
- Mount and tighten fitting ②.

Guideline

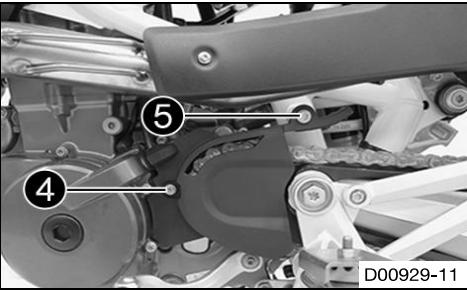
Nut, linkage lever on swingarm	M14x1.5	100 Nm (73.8 lbf ft)
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- Position the foot brake cylinder.
- Mount and tighten fittings ③.

Guideline

Screw connection, foot brake cylinder	M6	10 Nm (7.4 lbf ft)
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- Mount the new chain.
- Rivet the chain. (📖 p. 109)
- Position the engine sprocket cover.
- Mount and tighten screw ④.

Guideline

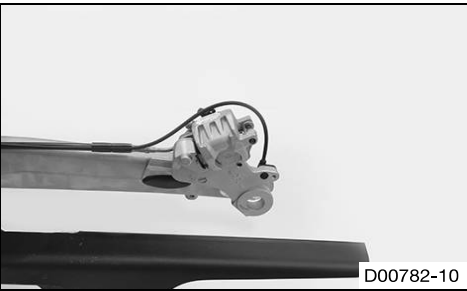
Screw, clutch slave cylinder	M6x40	10 Nm (7.4 lbf ft)	Loctite® 243™
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- Mount and tighten screw ⑤.

Guideline

Remaining screws, chassis	M8	25 Nm (18.4 lbf ft)
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- Position the brake caliper in the guide.



Finishing work

- Install the rear wheel using a work stand. (📖 p. 101)
- Check the chain tension. (📖 p. 105)
- Remove the motorcycle from the work stand. (📖 p. 12)
- Check the free travel of the foot brake lever. (📖 p. 126)

9.27 Changing the swingarm bearing



**Info**

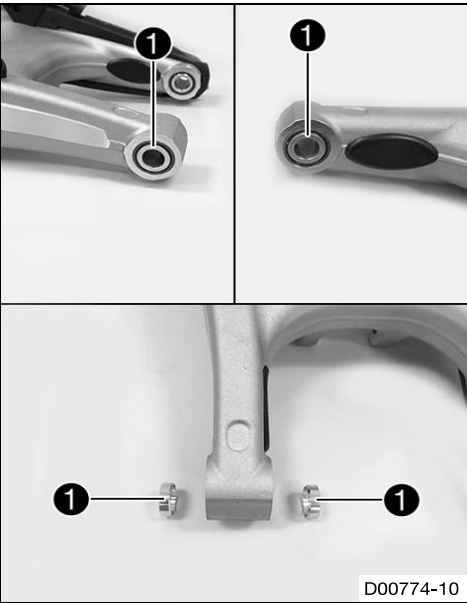
These operations are the same on both swingarm bearings.

Preparatory work

- Raise the motorcycle with the work stand. (📖 p. 12)
- Remove the rear wheel using a work stand. (📖 p. 101)
- Remove the swingarm. (📖 p. 66)

Main work

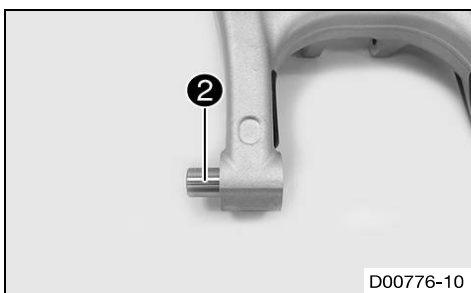
- Remove outer collar bushings ①.



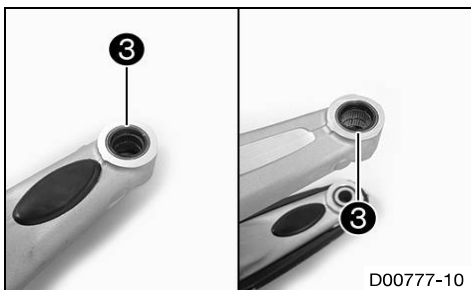


## 9 SHOCK ABSORBER, SWINGARM

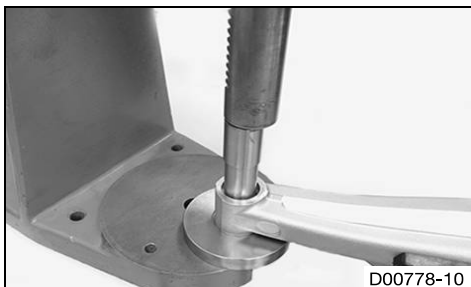
69



- Remove bushing ②.



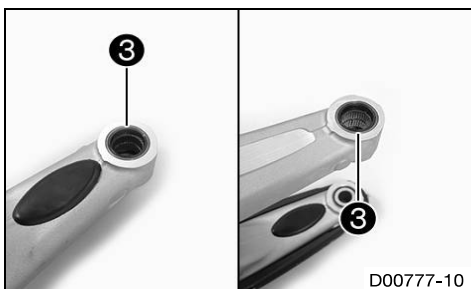
- Remove shaft seal rings ③ using a suitable tool.



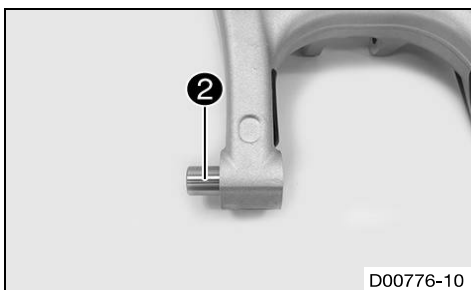
- Using a suitable tool, press the bearing out from the outside to the inside.



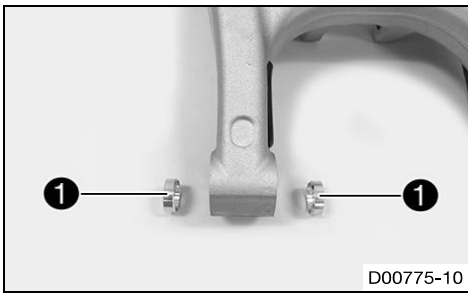
- Press in the new bearing until it is flush using a suitable tool.



- Press in shaft seal rings ③.



- Mount bushing ②.



- Grease the shaft seal rings.

Long-life grease (📖 p. 307)

- Position collar bushings ❶ with the shoulder facing inward.

### Finishing work

- Install the swingarm. (📖 p. 67)
- Install the rear wheel using a work stand. (📖 p. 101)
- Check the chain tension. (📖 p. 105)
- Remove the motorcycle from the work stand. (📖 p. 12)
- Check the free travel of the foot brake lever. (📖 p. 126)

## 10.1 Removing the manifold



### Warning

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

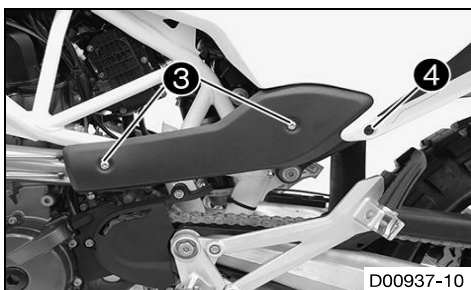
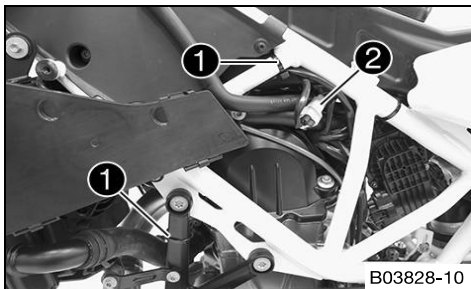
- Allow the exhaust system to cool down. Do not touch hot components.

### Preparatory work

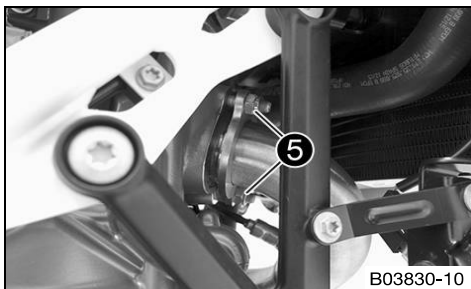
- Remove the seat. (p. 79)
- Take off the side cover. (p. 80)

### Main work

- Remove cable ties ①.
- Expose and disconnect plug-in connector ② of the lambda sensor.
- Feed out the cable of the lambda sensor.



- Remove screws ③ and screw ④.
- Remove the exhaust heat shield.

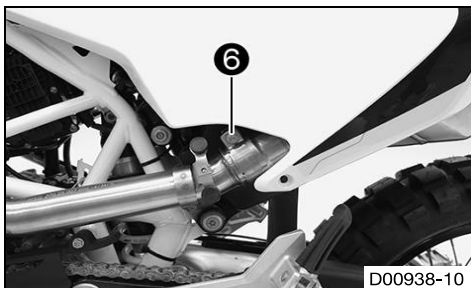


- Remove nuts ⑤.

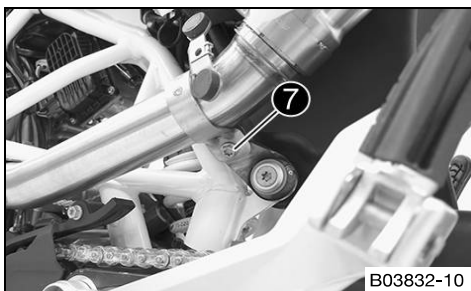


### Info

Do not misplace the spacer.

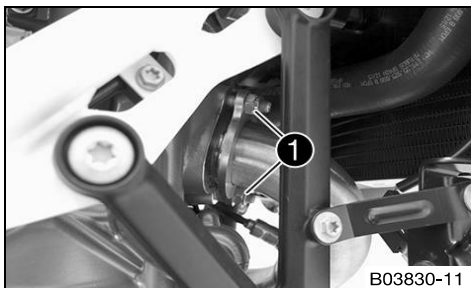


- Loosen screw ⑥.



- Remove screw ⑦.
- Take off the manifold.

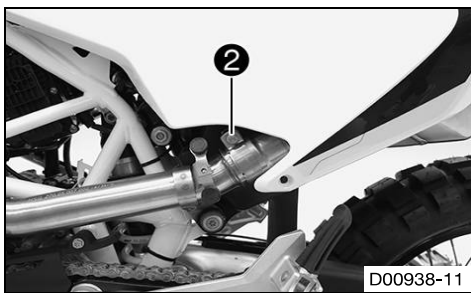
## 10.2 Installing the manifold

**Main work**

- Position the manifold with the seals.
- Position the spacer.
- Mount and tighten nuts **1** with the gasket.

## Guideline

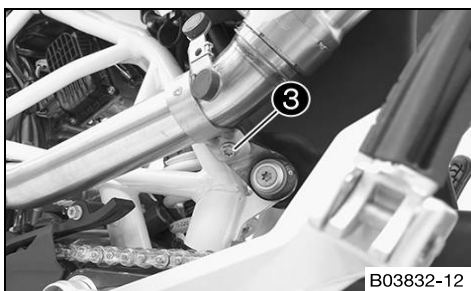
Nut, manifold on cylinder head	M8	20 Nm (14.8 lbf ft)	Copper paste
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- Position the screw clamp.
- Tighten screw **2**.

## Guideline

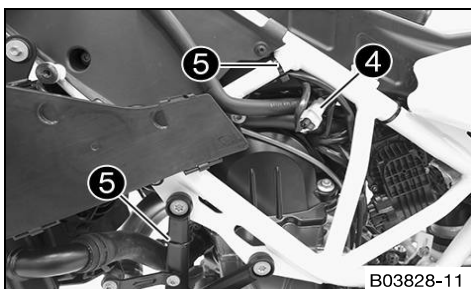
Screw, main silencer clamp	M8	12 Nm (8.9 lbf ft)	Copper paste
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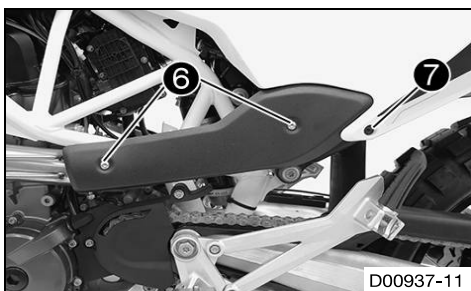
- Position the screw clamp.
- Mount and tighten screw **3**.

## Guideline

Screw, exhaust clamp	M8	12 Nm (8.9 lbf ft)	Copper paste
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- Connect plug-in connector **4** of the lambda sensor. Route the cable without tension and secure with cable ties **5**.



- Position the exhaust heat guard.
- Mount and tighten screws **6**.

## Guideline

Screw, exhaust heat shield	M5	8 Nm (5.9 lbf ft)	Loctite® 243™
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- Mount and tighten screw **7**.

## Guideline

Screw, trim	M5x12	3.5 Nm (2.58 lbf ft)	
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**Finishing work**

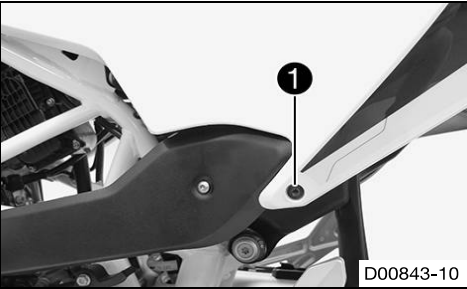
- Mount the side cover. (📖 p. 80)
- Mount the seat. (📖 p. 80)

10.3 Removing the main silencer

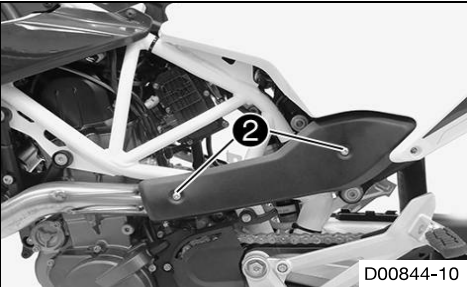
**Warning**  
**Danger of burns** The exhaust system gets very hot when the vehicle is driven.  
– Allow the exhaust system to cool down. Do not touch hot components.

- Preparatory work**
- Raise the motorcycle with the work stand. (📖 p. 12)
  - Remove the seat. (📖 p. 79)

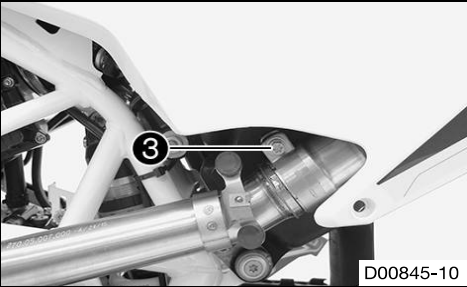
- Main work**
- Remove screw ❶.



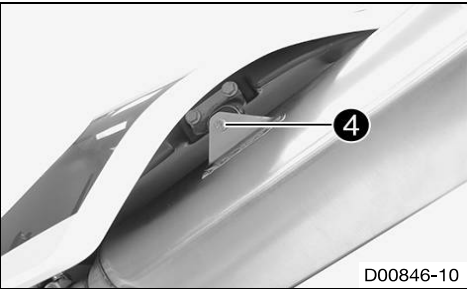
- Remove screws ❷.
- Remove the exhaust heat guard.



- Loosen screw ❸.



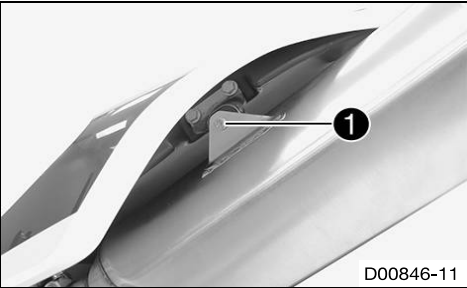
- Lift the rear fairing.
- Remove screw ❹.
- Take off the main silencer.

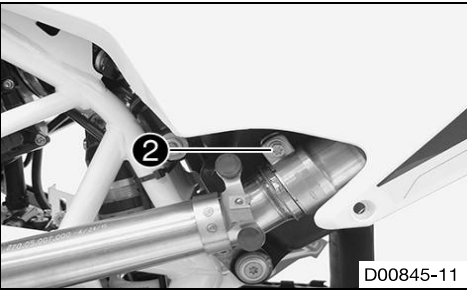


10.4 Installing the main silencer

- Main work**
- Lift the rear fairing.
  - Position the main silencer.
  - Mount and tighten screw ❶.

Guideline		
Screw, main silencer holder	M8	25 Nm (18.4 lbf ft)

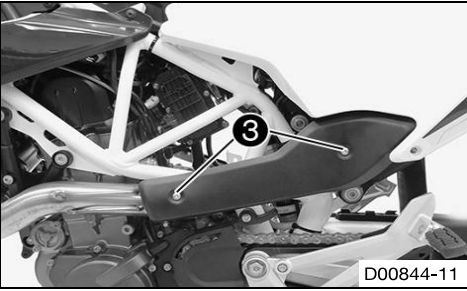




- Position the screw clamp.
- Tighten screw ②.

Guideline

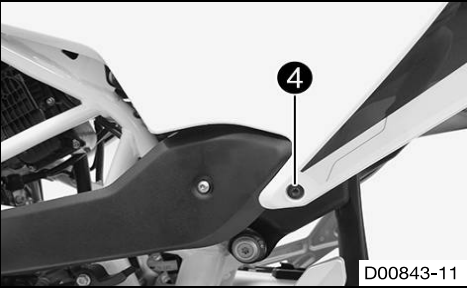
Screw, main silencer clamp	M8	12 Nm (8.9 lbf ft)	Copper paste
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- Position the exhaust heat guard.
- Mount and tighten screws ③.

Guideline

Screw, exhaust heat shield	M5	8 Nm (5.9 lbf ft)	Loctite® 243™
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- Mount and tighten screw ④.

Guideline

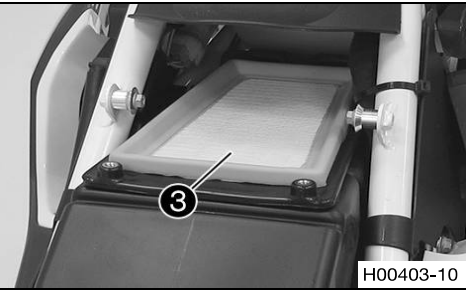
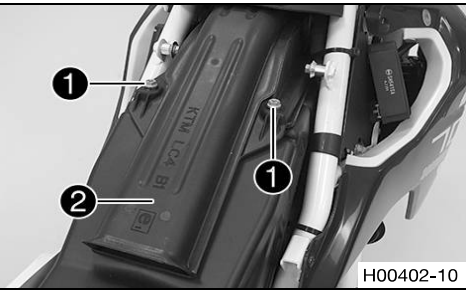
Screw, trim	M5x12	3.5 Nm (2.58 lbf ft)	
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Finishing work

- Mount the seat. (📖 p. 80)
- Remove the motorcycle from the work stand. (📖 p. 12)



11.1 Removing the air filter



Preparatory work

- Remove the seat. (📖 p. 79)

Main work

- Remove screws ①.
- Remove the upper part of the air filter box ②.

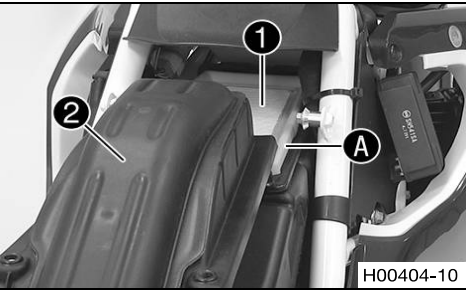
Note

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

- Never operate the vehicle without an air filter as dust and dirt will enter the engine and lead to increased wear.

- Remove air filter ③.

11.2 Installing the air filter



Main work

- Clean the air filter box.
- Mount air filter ①.



Info

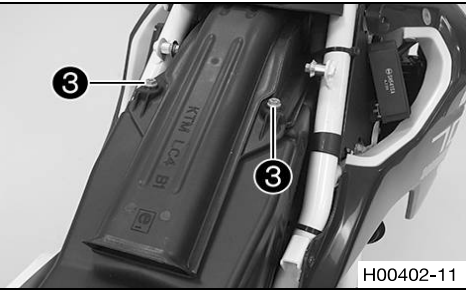
The air filter must lie flush against the air filter box along the entire sealing surface A.

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

- Hook air filter box top ② into the front of the air filter box and swing down.
- Mount and tighten screws ③.

Guideline

Screw, air filter box top	M6	2 Nm (1.5 lbf ft)
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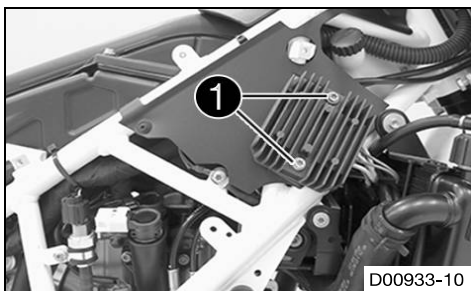
Finishing work

- Mount the seat. (📖 p. 80)

11.3 Removing the air filter box

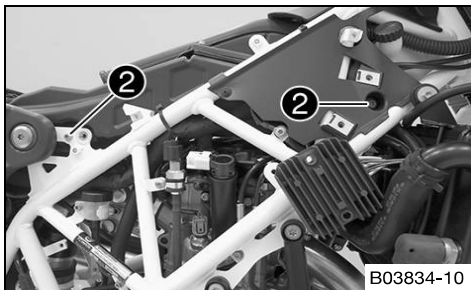
Preparatory work

- Remove the seat. (📖 p. 79)
- Take off the side cover. (📖 p. 80)

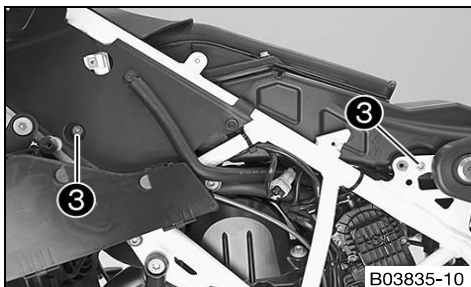


## Main work

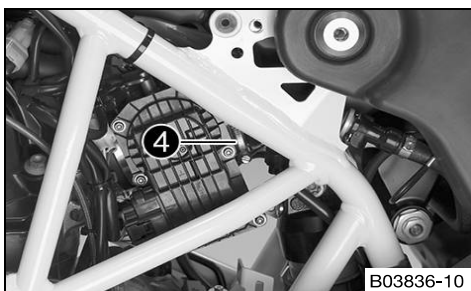
- Remove screws ①.
- Remove the voltage regulator and allow it to hang tension-free to the side.



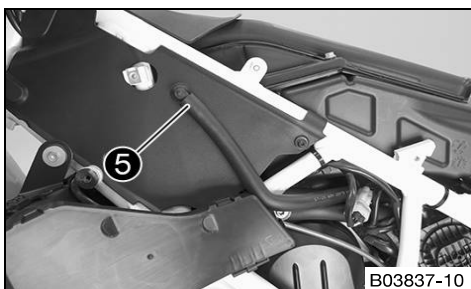
- Remove screws ②.



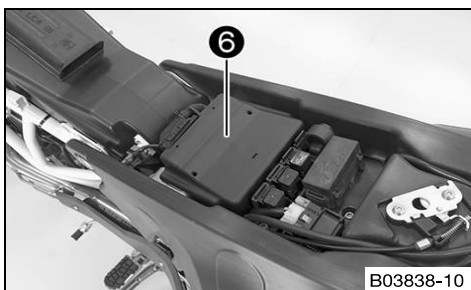
- Remove screws ③.



- Loosen hose clip ④.

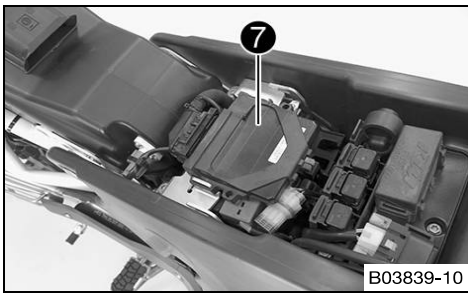


- Detach vent hose ⑤.

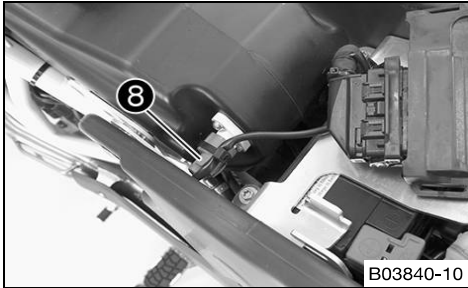


- Remove battery cover ⑥.



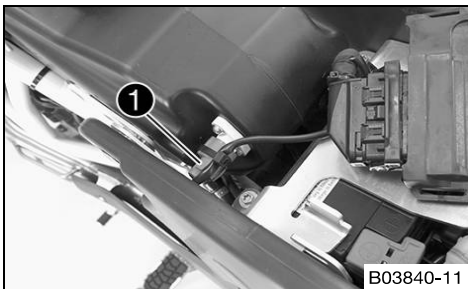


- Take off engine electronics control unit (7) and hang to the side.



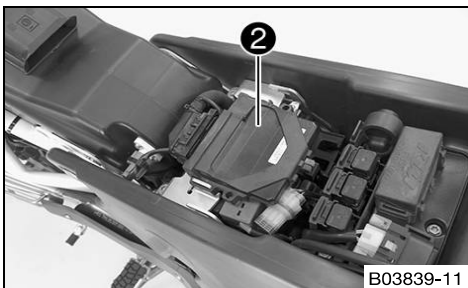
- Remove the cable tie(s).
- Raise the air filter box at the rear.
- Disconnect connector (8) of the intake air temperature sensor.
- Remove the air filter box.

## 11.4 Installing the air filter box

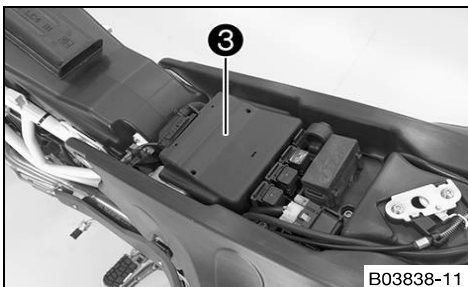


### Main work

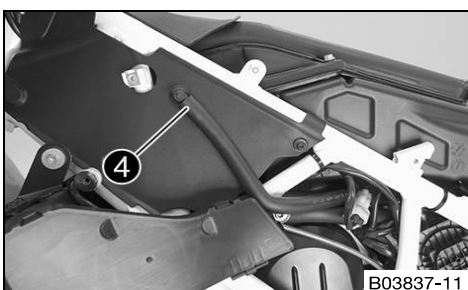
- Plug in connector (1) of the intake air temperature sensor and secure with the cable tie(s).
- Position the air filter box.



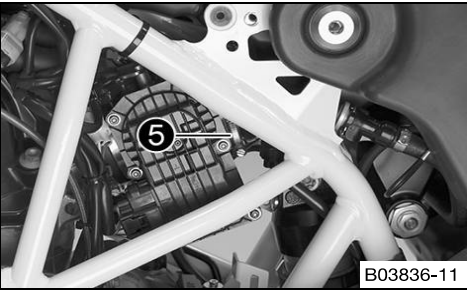
- Position engine electronics control unit (2).



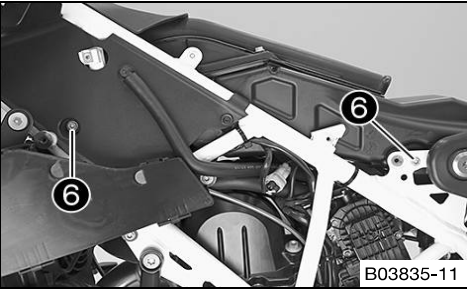
- Mount battery cover (3).



- Route vent hose (4) without bends and mount.



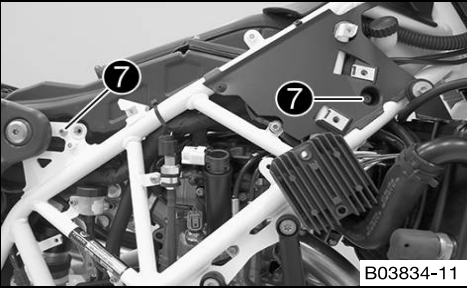
- Mount and tighten hose clip 5.



- Mount and tighten screws 6.

Guideline

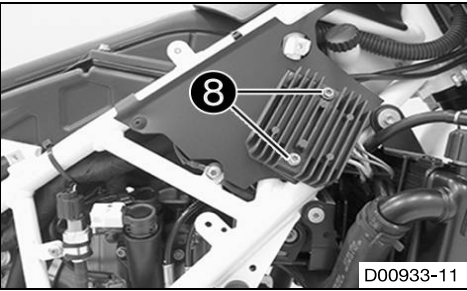
Screw, air filter box, on frame	M6	6 Nm (4.4 lbf ft)
---------------------------------	----	-------------------



- Mount and tighten screws 7.

Guideline

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



- Position the voltage regulator.
- Mount and tighten screws 8.

Guideline

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

**Finishing work**

- Mount the side cover. (📖 p. 80)
- Mount the seat. (📖 p. 80)

## 12.1 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 has been 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 cover **1** of filler cap and insert the ignition key.
- Turn the ignition key 90° counterclockwise and remove the filler cap.



### Info

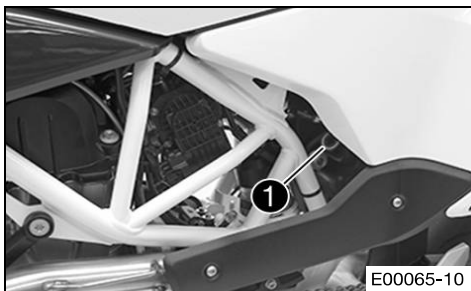
The filler cap has a fuel tank breather.

## 12.2 Closing filler cap



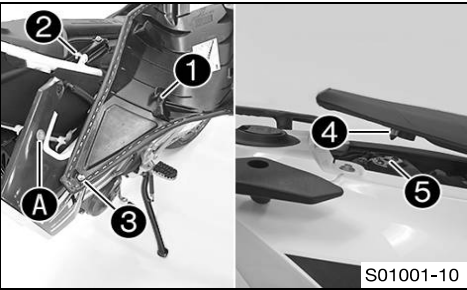
- Put the filler cap back on and turn the ignition key 90° clockwise.
- Remove the ignition key and fold down the cover.

## 12.3 Removing the seat



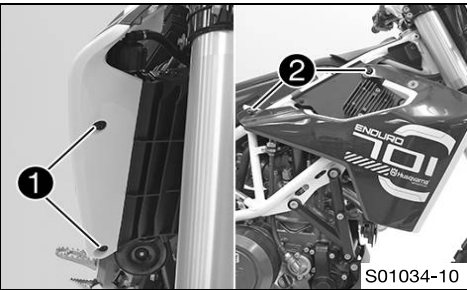
- Pull on the loop **1** while raising the rear of the seat.
- Pull off the seat sideways at the front ends from the side cover.
- Pull seat back and lift it off.

12.4 Mounting the seat



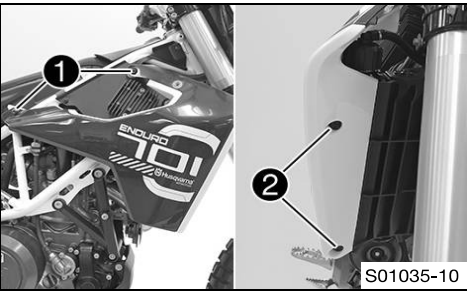
- Stretch the seat at the front ends slightly and position holding tabs 1 on holders 2.
- ✓ The holding tabs engage in the holder.
- Press holding tabs 3 into bushings A.
- Insert locking pin 4 into the lock housing 5 and push down the rear of the seat until the locking pin engages with an audible click.
- Check, finally, that the seat is correctly mounted.

12.5 Take off the side cover



- Preparatory work**
- Remove the seat. (📖 p. 79)
- Main work**
- Remove screws 1 and 2.
  - Take off the side cover.
  - Repeat these steps on the opposite side.

12.6 Mounting the side cover



- Main work**
- Position the side cover, and mount and tighten screws 1.
- Guideline
- |             |       |                         |
|-------------|-------|-------------------------|
| Screw, trim | M5x12 | 3.5 Nm<br>(2.58 lbf ft) |
|-------------|-------|-------------------------|
- Mount and tighten screws 2.
- Guideline
- |             |       |                         |
|-------------|-------|-------------------------|
| Screw, trim | M5x17 | 3.5 Nm<br>(2.58 lbf ft) |
|-------------|-------|-------------------------|
- Repeat these steps on the opposite side.
- Finishing work**
- Mount the seat. (📖 p. 80)

12.7 Checking the fuel pressure

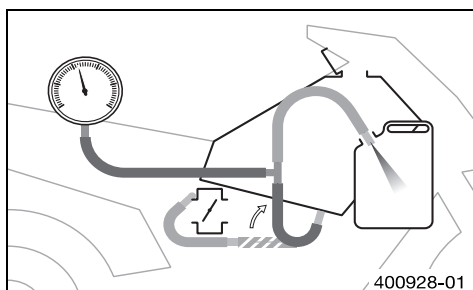
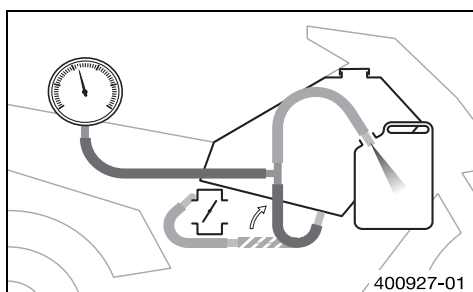
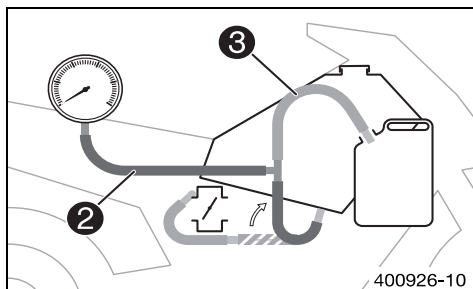
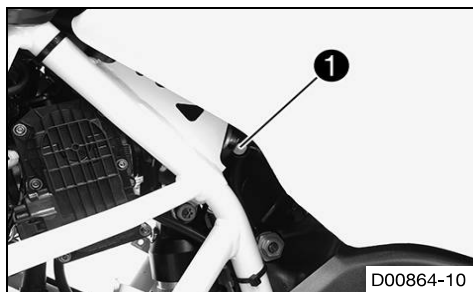
- Danger**
- Fire hazard** Fuel is highly flammable.
- Never refuel the vehicle near open flames or burning cigarettes, and always switch off the engine first. Be careful that no fuel is spilt, especially on hot vehicle components. Clean up spilt fuel immediately.
  - The fuel in the fuel tank expands 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 has been contaminated with fuel. Store fuel properly in a suitable canister and keep away from children.

**Condition**

The fuel tank is completely full.

Ensure that the battery voltage does not drop below 12.5 V.

The ignition is on.



The diagnostics tool is connected.

- Press on the metal plate and disconnect the fuel hose connection **1**.



## Info

Remaining fuel may run out of the fuel hose.

- Mount special tool **2**.

Pressure tester (61029094000) (p. 313)

- Mount special tool **3** with nozzle code **0,60**.

Testing hose (61029093000) (p. 313)

- Insert the hose end in a fuel canister.

## Guideline

Minimum fuel canister capacity	10 l (2.6 US gal)
--------------------------------	-------------------

- Perform the **"Actuator Test" > "Function test of fuel pump control"**.

## Guideline

Maximum duration of actuator test	3 min
-----------------------------------	-------

- Check the fuel pressure with the filler cap closed.

## Fuel pressure

When the fuel pump is active	3.3... 3.7 bar (48... 54 psi)
------------------------------	-------------------------------

» If the specification is not reached:

- Open the filler cap. (p. 79)
- Check the fuel tank breather.

- Check the fuel pressure with the filler cap open.

## Fuel pressure

When the fuel pump is active	3.3... 3.7 bar (48... 54 psi)
------------------------------	-------------------------------

» If the specification is not reached:

- Check that the fuel line is clear.
- Change the fuel filter. (p. 82)
- Change the fuel pump. (p. 86)

- Stop the **"Function test of fuel pump control"** actuator test by pressing the **"Quit"** button.
- Dismantle the special tools.
- Connect the fuel hose connection.

## 12.8 Changing the fuel screen



## 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.

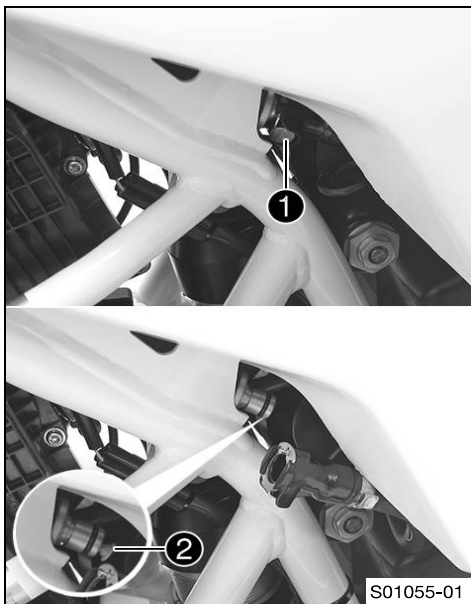
- Fuel must not come into contact with the skin, eyes, or clothing. Do not breathe in the fuel vapors. If contact occurs with the eyes, rinse with water immediately and contact a physician. Immediately clean contaminated areas on the skin with soap and water. If fuel is swallowed, contact a physician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



## 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.



- Clean plug-in connection ❶ of the fuel line thoroughly with compressed air.



## Info

Under no circumstances should dirt enter into the fuel line. Dirt in the fuel line clogs the injection valve!

- Disconnect plug-in connection ❶ of the fuel line.
- Pull fuel screen ❷ out of the connecting piece.
- Insert the new fuel screen all the way into the connecting piece.
- Lubricate the O-ring and connect plug-in connection of the fuel line.



## 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 the response.

## 12.9 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 has been contaminated with fuel. Store fuel properly in a suitable canister and keep away from children.



## Warning

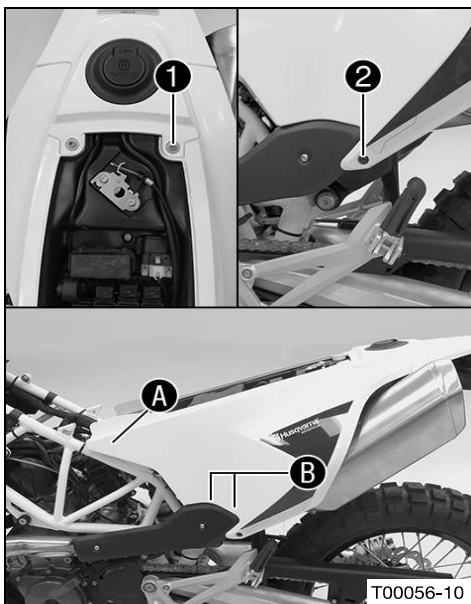
**Environmental hazard** Improper handling of fuel is a danger to the environment.

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

## Preparatory work

- Remove the seat. (📖 p. 79)
- Take off the side cover. (📖 p. 80)
- Remove the air filter box. (📖 p. 75)
- Switch off the ignition by turning the ignition key to the **OFF** ⏻ position.
- Disconnect the battery. (📖 p. 114)
- Drain the fuel from the fuel tank into a suitable container.



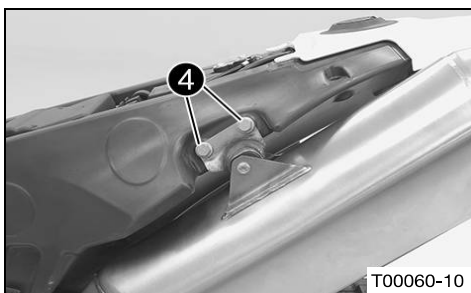


## Main work

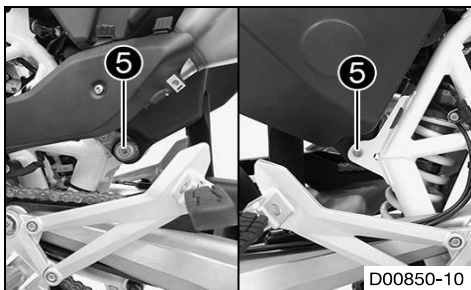
- Remove screw ①.
- Remove screw ②.
- Pull off the rear left side cover in area ① sideways and lift it out of holding lugs ②.



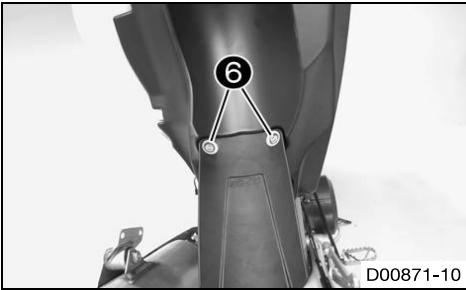
- Remove screw ③.
- Release catch ④, pull off the rear right side cover in area ⑤ sideways and remove it toward the rear.



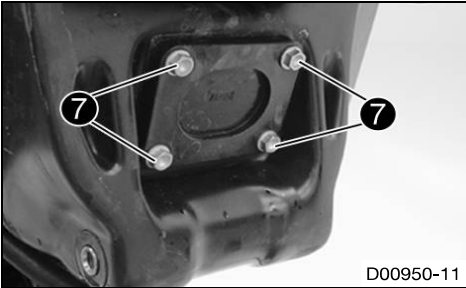
- Remove screws ④.



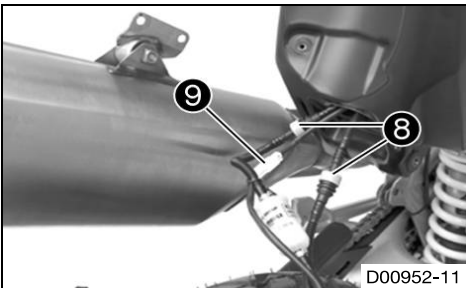
- Remove screws ⑤ on both sides.
- Swing the rear end upward and secure it.



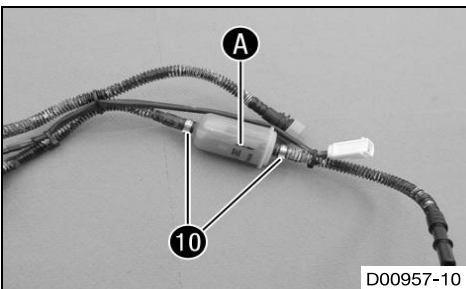
- Remove screws 6 and take off the splash protector.



- Remove screws 7.
- Pull out the fuel pump.

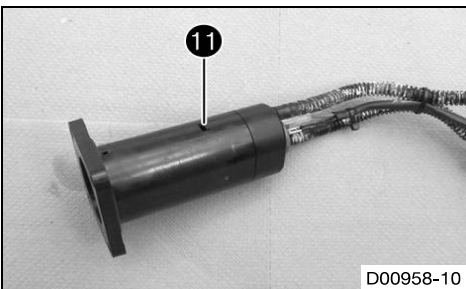


- Disconnect both fuel hose connections 8.
- Disconnect plug-in connector 9. Remove the fuel pump.

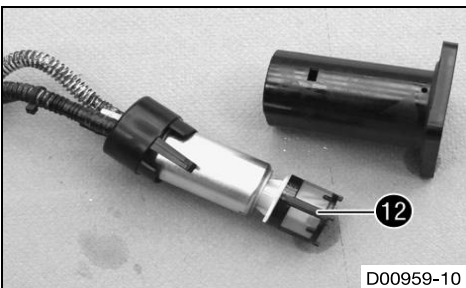


- Remove hose clamps 10.
- Remove fuel filter.
- Mount the new fuel filter.
- ✓ Arrow A points away from the fuel pump.
- Mount hose clamps 10.

Hose clamp pliers (60029057000) (p. 312)

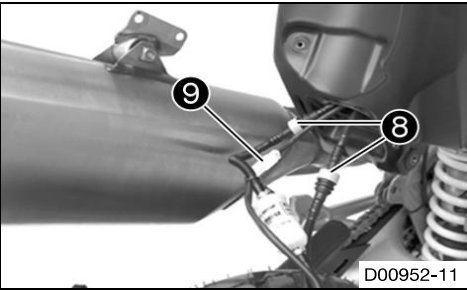


- Press locking mechanism 11 on both sides.
- Pull off the fuel pump housing.

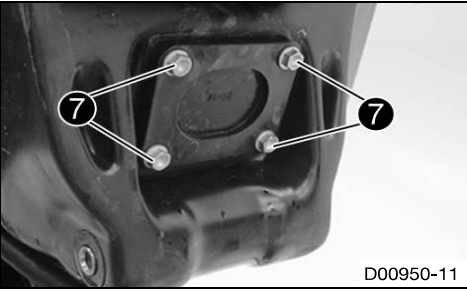


- Change fuel screen 12.
- Mount the fuel pump housing.





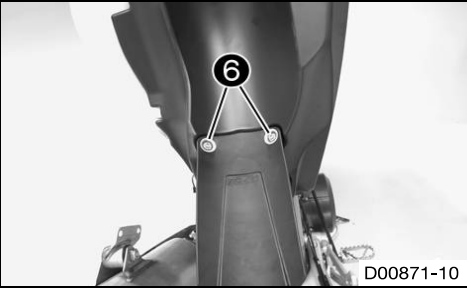
- Connect both fuel hose connections ⑧.
- Connect plug-in connector ⑨.



- Position the fuel pump.
- Mount and tighten screws ⑦.

Guideline

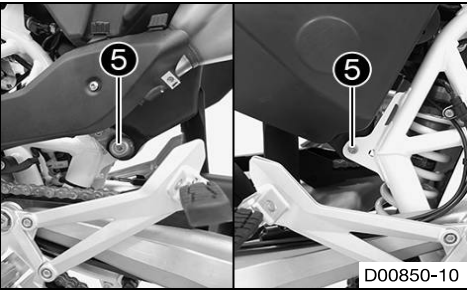
Screw, fuel pump	M5	4 Nm (3 lbf ft)
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- Position the splash protector. Mount and tighten screws ⑥.

Guideline

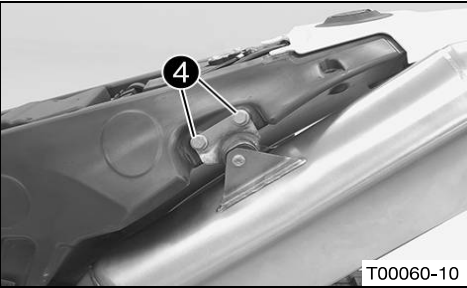
Remaining screws, chassis	M5	4 Nm (3 lbf ft)
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- Position the rear end.
- Mount and tighten screws ⑤ on both sides.

Guideline

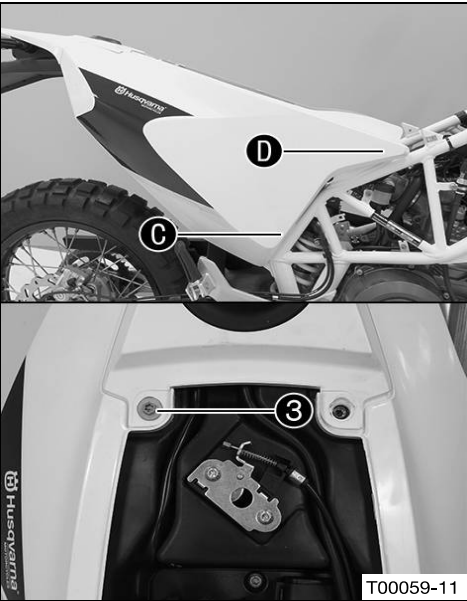
Screw, fuel tank, bottom	M8	25 Nm (18.4 lbf ft)	Loctite® 243™
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- Mount and tighten screws ④.

Guideline

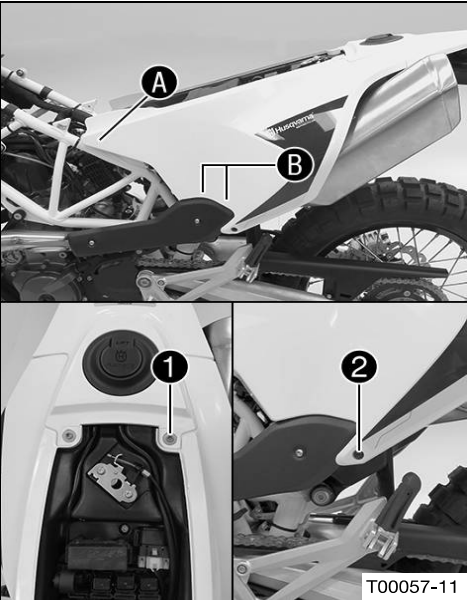
Screw, main silencer holder on fuel tank	M8	25 Nm (18.4 lbf ft)
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- Position the rear right side cover and engage in area **D**.
- Engage catch **C**.
- Mount and tighten screw **3**.

Guideline

Remaining screws on fuel tank	M6	5 Nm (3.7 lbf ft)
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- Position rear left side cover in holding lugs **B**. Engage side cover in area **A**.
- Mount and tighten screw **2**.

Guideline

Remaining screws on fuel tank	M6	5 Nm (3.7 lbf ft)
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- Mount and tighten screw **1**.


Guideline

Screw, trim	M5x12	3.5 Nm (2.58 lbf ft)
-------------	-------	----------------------

**Finishing work**


- Install the air filter box. (📖 p. 77)
- Mount the side cover. (📖 p. 80)
- Connect the battery. (📖 p. 115)
- Mount the seat. (📖 p. 80)
- Set the clock. (📖 p. 130)

12.10 Changing 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 has been 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.

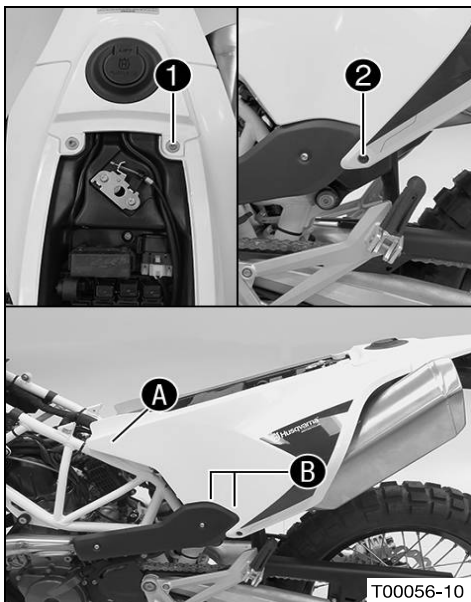
- Do not allow fuel to get into the ground water, the ground, or the sewage system.

## Preparatory work

- Remove the seat. (📖 p. 79)
- Take off the side cover. (📖 p. 80)
- Remove the air filter box. (📖 p. 75)
- Switch off the ignition by turning the ignition key to the **OFF** ☒ position.
- Disconnect the battery. (📖 p. 114)
- Drain the fuel from the fuel tank into a suitable container.

## Main work

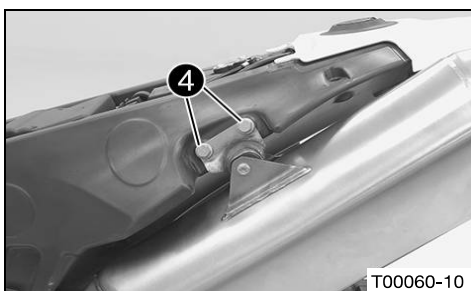
- Remove screw ❶.
- Remove screw ❷.
- Pull off the rear left side cover in area ❶ sideways and lift it out of holding lugs ❷.

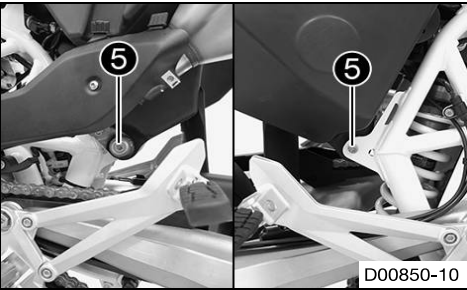


- Remove screw ❸.
- Release catch ❸, pull off the rear right side cover in area ❹ sideways and remove it toward the rear.

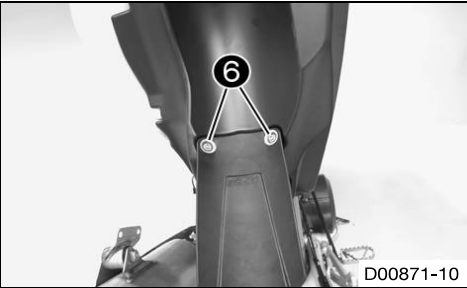


- Remove screws ❹.

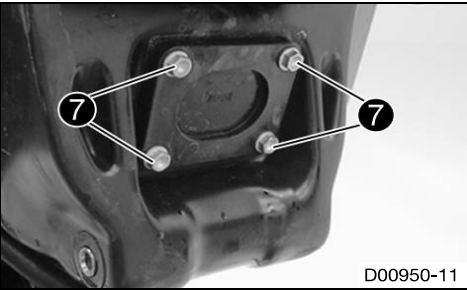




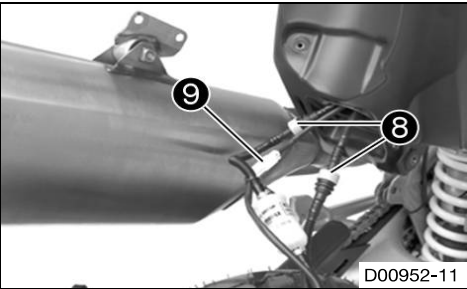
- Remove screws 5 on both sides.
- Swing the rear end upward and secure it.



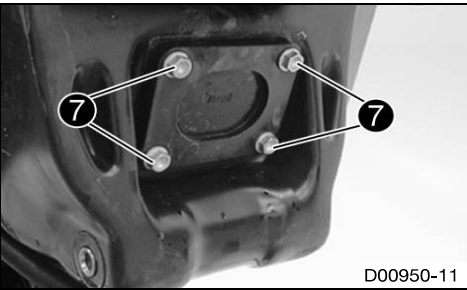
- Remove screws 6 and take off the splash protector.



- Remove screws 7.
- Pull out the fuel pump.



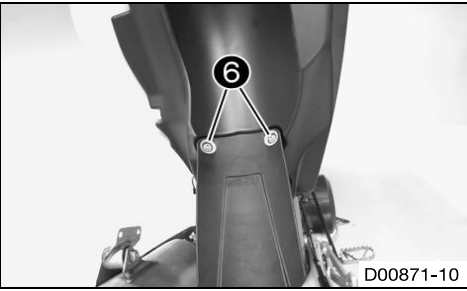
- Disconnect both fuel hose connections 8.
- Disconnect plug-in connector 9. Disconnect the fuel pump.
- Connect the new fuel pump, attaching both fuel hose connections 8.
- Connect plug-in connector 9.



- Position the fuel pump.
- Mount and tighten screws 7.

Guideline

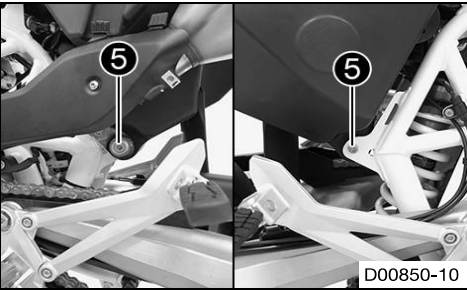
Screw, fuel pump	M5	4 Nm (3 lbf ft)
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- Position the splash protector. Mount and tighten screws 6.

Guideline

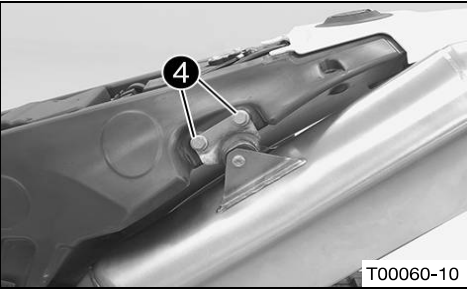
Remaining screws, chassis	M5	4 Nm (3 lbf ft)
---------------------------	----	-----------------



- Position the rear end.
- Mount and tighten screws 5 on both sides.

Guideline

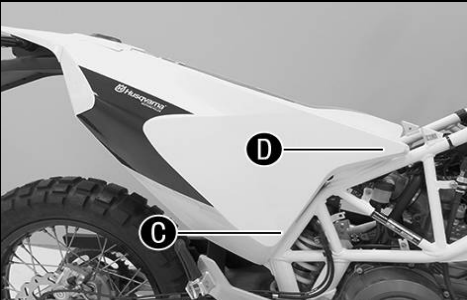
Screw, fuel tank, bottom	M8	25 Nm (18.4 lbf ft)	Loctite® 243™
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- Mount and tighten screws 4.

Guideline

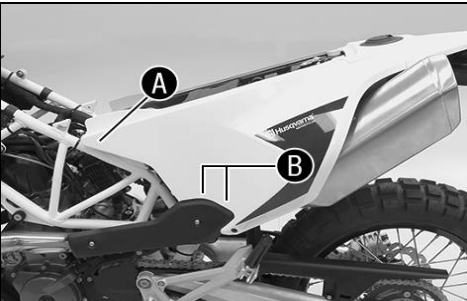
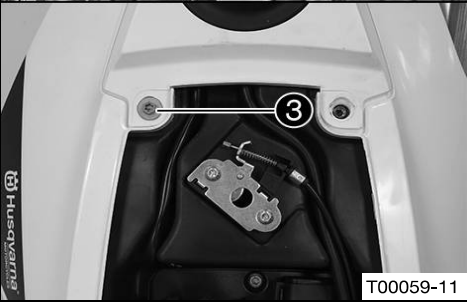
Screw, main silencer holder on fuel tank	M8	25 Nm (18.4 lbf ft)	
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- Position the rear right side cover and engage in area D.
- Engage catch C.
- Mount and tighten screw 3.

Guideline

Remaining screws on fuel tank	M6	5 Nm (3.7 lbf ft)	
-------------------------------	----	-------------------	--



- Position rear left side cover in holding lugs B. Engage side cover in area A.
- Mount and tighten screw 2.

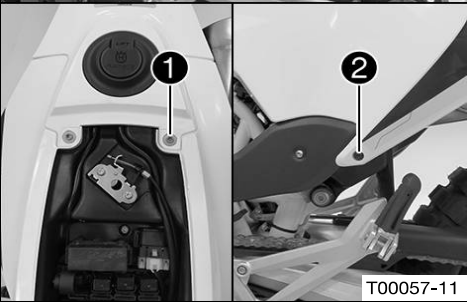
Guideline

Remaining screws on fuel tank	M6	5 Nm (3.7 lbf ft)	
-------------------------------	----	-------------------	--

- Mount and tighten screw 1.

Guideline

Screw, trim	M5x12	3.5 Nm (2.58 lbf ft)	
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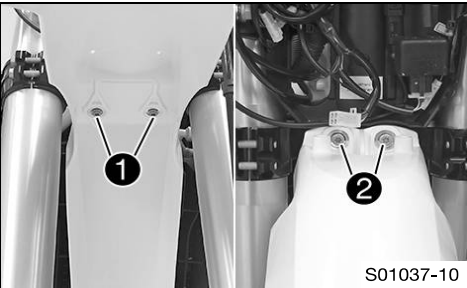


Finishing work

- Install the air filter box. (p. 77)

- Mount the side cover. (📖 p. 80)
- Connect the battery. (📖 p. 115)
- Mount the seat. (📖 p. 80)
- Set the clock. (📖 p. 130)

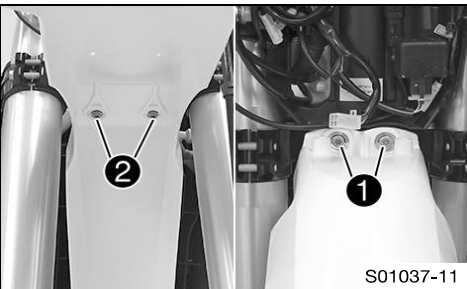
13.1 Removing the front fender



- Preparatory work**
- Switch off the ignition by turning the ignition key to the **OFF** ☒ position.
  - Remove the headlight mask with the headlight. (📖 p. 131)

- Main work**
- Remove screws ❶.
  - Remove screws ❷ and take off the fender.

13.2 Installing the front fender



- Main work**
- Position the front fender. Mount and tighten screws ❶.

Guideline

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

- Mount and tighten screws ❷.


Guideline

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

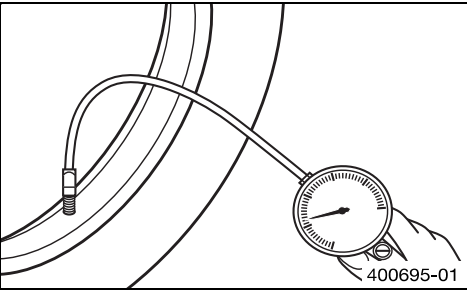
- Finishing work**
- Install the headlight mask with the headlight. (📖 p. 132)
  - Check the headlight setting. (📖 p. 130)



14.1    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 protection cap.
- Check the tire air pressure when the tires are cold.





Tire air pressure, offroad, single rider	
Front	1.5 bar (22 psi)
Rear	1.5 bar (22 psi)


Tire air pressure, road, solo	
Front	1.8 bar (26 psi)
Rear	1.8 bar (26 psi)

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

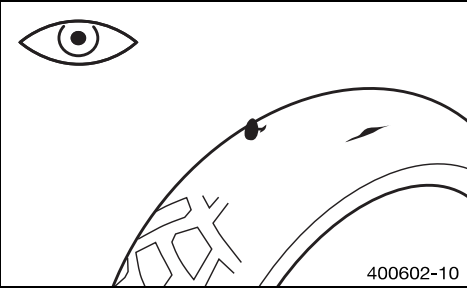
- » If the tire pressure does not meet specifications:
  - Correct the tire pressure.
- Mount the protection cover.

14.2    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**    Non-approved or non-recommended tires and wheels impact the handling characteristic.
- Only use tires/wheels approved by Husqvarna Motorcycles with the corresponding speed index.
-  **Warning**
- Danger of accidents**    Reduced road grip with new tires.
- New tires have a smooth rolling surface and therefore cannot provide full road grip. The entire rolling surface must be roughened in the first 200 kilometers (124.3 miles) by moderate riding at alternating angles. The full grip levels are not achieved until the tires have been run in.

 **Info**

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



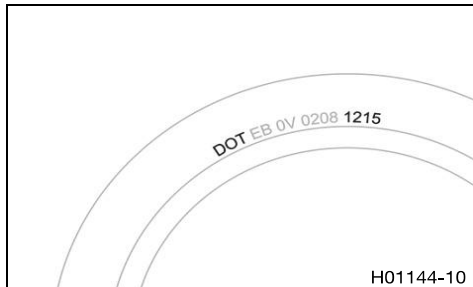
- Check the front and rear tires for cuts, run-in objects, and other damage.
  - » If the tires have cuts, run-in objects, or other damage:
    - Change the tires.
- Check the tread depth.

 **Info**

Adhere to the legally required minimum tread depth.

Minimum tread depth	≥ 2 mm (≥ 0.08 in)
---------------------	--------------------





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

## **i Info**

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

- » If the tires are more than 5 years old:
  - Change the tires.

## 14.3 Checking the wheel bearing for play

### Preparatory work

- Raise the motorcycle with the work stand. (📖 p. 12)
- Place a load on rear of vehicle.
- ✓ The front wheel is not in contact with the ground.

### Main work

- Move the front wheel from side to side.

## **i Info**

Hold the fork leg to check it.

- » If there is detectable play:
  - Change the front wheel bearing. (📖 p. 98)



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

## **i Info**

Hold the swingarm to check it.

- » If there is detectable play:
  - Change the rear wheel bearing. (📖 p. 102)



### Finishing work

- Remove the motorcycle from the work stand. (📖 p. 12)

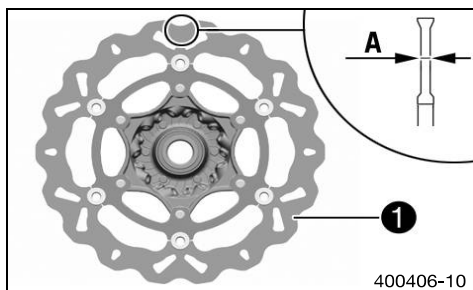
## 14.4 Checking the brake discs



### 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 multiple points on each brake disc to ensure it is at least thickness **A**.

## **i Info**

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

### Brake discs - wear limit

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

- » If the brake disc thickness is less than the specified value.
  - Change the front brake disc. (📖 p. 98)
  - Change the rear brake disc. (📖 p. 105)
- Check the front and rear brake discs for damage, cracking, and deformation.
  - » If the brake disc exhibits damage, cracking, or deformation:
    - Change the front brake disc. (📖 p. 98)
    - Change the rear brake disc. (📖 p. 105)

### 14.5 Checking spoke tension



#### Warning

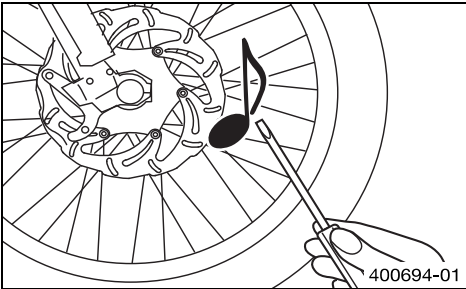
**Danger of accidents** Instable handling due to incorrect spoke tension.

- Ensure that the spoke tension is correct.



#### Info

A loose spoke can unbalance the wheel and other spokes may loosen within a short period.  
If the spokes are too tight, they can break due to local overload.  
Check the spoke tension regularly, especially on a new motorcycle.



- Strike each spoke briefly using a screwdriver blade.



#### Info

The frequency of the sound depends on the spoke length and spoke diameter.  
If you hear different tone frequencies from different spokes of equal length and diameter, this is an indication of different spoke tensions.

You should hear a high note.

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

### 14.6 Checking the rim run-out



#### Warning

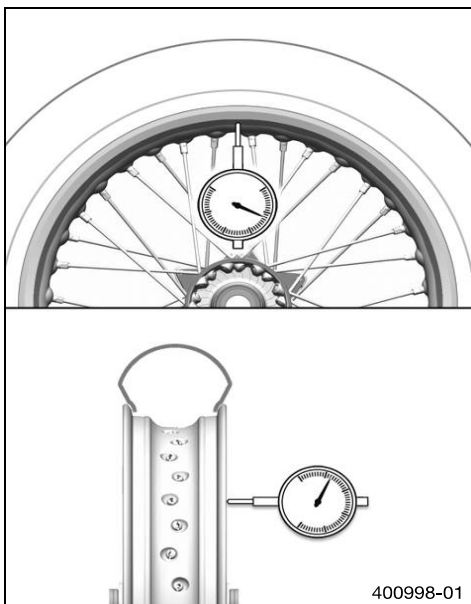
**Danger of accidents** Instable handling due to incorrect spoke tension.

- Ensure that the spoke tension is correct.



#### Info

A loose spoke can unbalance the wheel and other spokes may loosen within a short period.  
If the spokes are too tight, they can break due to local overload.  
Check the spoke tension regularly, especially on a new motorcycle.



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

Axial run-out	
outside of the rim joint	< 1.8 mm (< 0.071 in)
Radial run-out	
outside of the rim joint	< 1.8 mm (< 0.071 in)

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

- Center the rim.



### Info

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

- Correct the spoke tension.

## 14.7 Front wheel

### 14.7.1 Removing the front wheel

#### Preparatory work

- Raise the motorcycle with a lift stand. (p. 11)

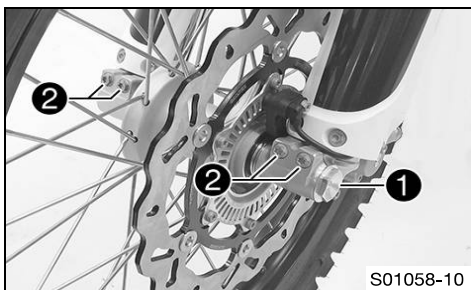
#### Main work

- Press the brake caliper onto the brake disc by hand in order to push back the brake pistons.



### Info

Make sure that you do not press the brake caliper against the spokes when pushing back the brake pistons.



- Loosen screw ① by several rotations.
- Loosen screws ②.
- Press the screw ① with your hand to push the wheel spindle out of the axle clamp.
- Remove screw ①.



### Warning

**Danger of accidents** Reduced braking efficiency due to damaged brake disc.

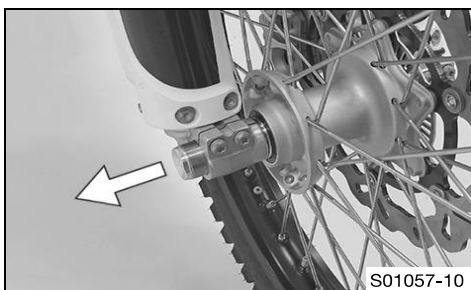
- Always lay the wheel down in such a way that the brake disc is not damaged.

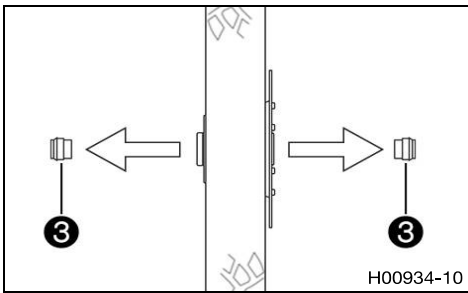
- Holding the front wheel, withdraw the wheel spindle. Take the front wheel out of the fork.



### Info

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





- Remove spacers ③.

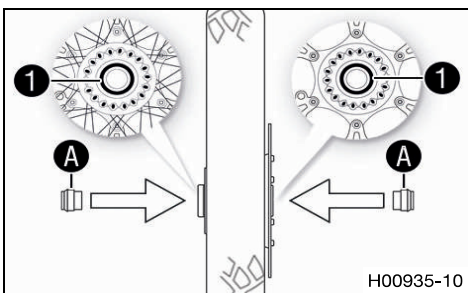
## 14.7.2 Installing the front wheel



### Warning

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

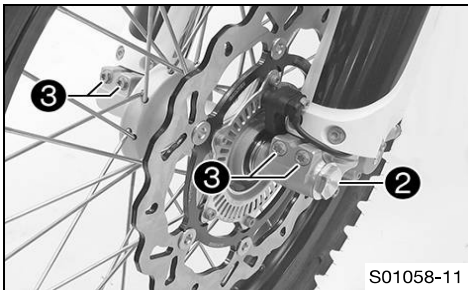
- Always keep the brake discs free of oil and grease, and clean them with brake cleaner when necessary.



- Check the wheel bearing for damage and wear.
  - » If the wheel bearing is damaged or worn:
    - Change the front wheel bearing. (p. 98)
- Clean and grease shaft seal rings ① and mating surfaces A of the spacers.

Long-life grease (p. 307)

- Insert the spacers.



- Lift the front wheel into the fork, position it, and insert the wheel spindle.

✓ The brake linings are correctly positioned.

- Mount and tighten screw ②.

### Guideline

Screw, front wheel spindle	M24x1.5	45 Nm (33.2 lbf ft)
----------------------------	---------	---------------------

- Operate the hand brake lever several times until the brake linings are seated correctly against the brake disc.
- Remove the motorcycle from the lift stand. (p. 12)
- Operate the front brake and compress the fork a few times firmly.
  - ✓ The fork legs straighten.

- Tighten screws ③.

### Guideline

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

## 14.7.3 Removing the front wheel using work stand

### Preparatory work

- Raise the motorcycle with the work stand. (p. 12)
- Place a load on rear of vehicle.
  - ✓ The front wheel is not in contact with the ground.

### Main work

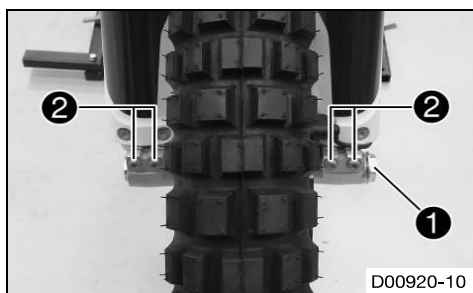
- Press the brake caliper onto the brake disc by hand in order to push back the brake pistons.



### Info

Make sure that you do not press the brake caliper against the spokes when pushing back the brake pistons.





- Loosen screw ① by several rotations.
- Loosen screws ②.
- Press the screw ① with your hand to push the wheel spindle out of the axle clamp.
- Remove screw ①.



## Warning

**Danger of accidents** Reduced braking efficiency due to damaged brake disc.

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

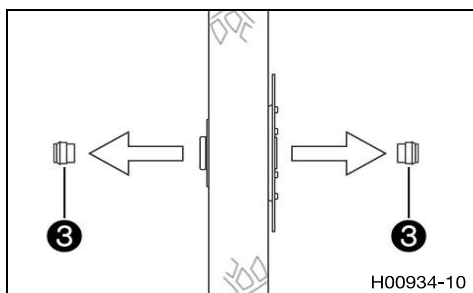
- Holding the front wheel, withdraw the wheel spindle. Take the front wheel out of the fork.



## Info

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

- Remove spacers ③.



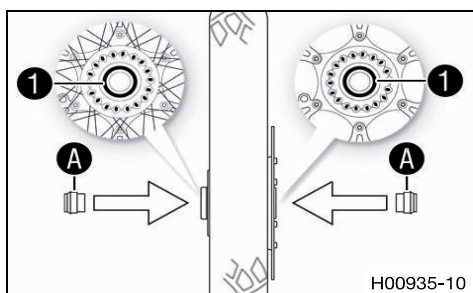
### 14.7.4 Installing the front wheel using a work stand



## 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 front wheel bearing. (p. 98)
- Clean and grease shaft seal rings ① and mating surfaces A of the spacers.

Long-life grease (p. 307)

- Insert the spacers.



- Remove the load from the rear of the vehicle.
- Lift the front wheel into the fork, position it, and insert the wheel spindle.
  - ✓ The brake linings are correctly positioned.
- Mount and tighten screw ②.

## Guideline

Screw, front wheel spindle	M24x1.5	45 Nm (33.2 lbf ft)
----------------------------	---------	---------------------

- Operate the hand brake lever several times until the brake linings are seated correctly against the brake disc.
- Remove the load from the rear of the vehicle.
- Operate the front brake and compress the fork a few times firmly.
  - ✓ The fork legs straighten.



- Tighten screws ❸.

Guideline

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

Finishing work

- Remove the motorcycle from the work stand. (📖 p. 12)

14.7.5    Changing the front brake disc

Preparatory work

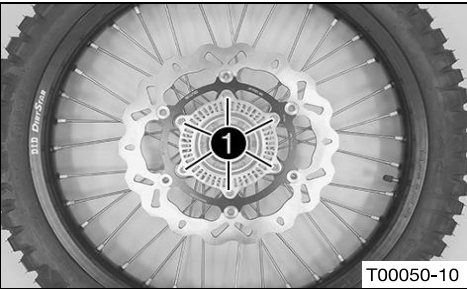
- Raise the motorcycle with a lift stand. (📖 p. 11)
- Remove the front wheel. (📖 p. 95)

Main work

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

Guideline

Screw, front brake disc	M6	14 Nm (10.3 lbf ft)	Loctite® 243™
-------------------------	----	------------------------	---------------



Finishing work

- Install the front wheel. (📖 p. 96)

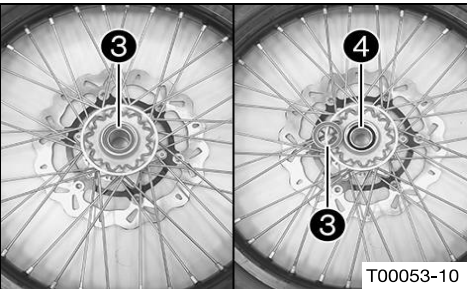
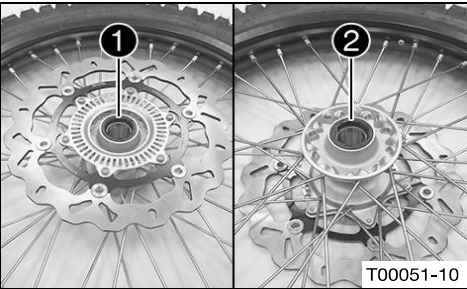
14.7.6    Changing the front wheel bearing

Preparatory work

- Raise the motorcycle with a lift stand. (📖 p. 11)
- Remove the front wheel. (📖 p. 95)

Main work

- Remove shaft seal rings ❶ and ❷.



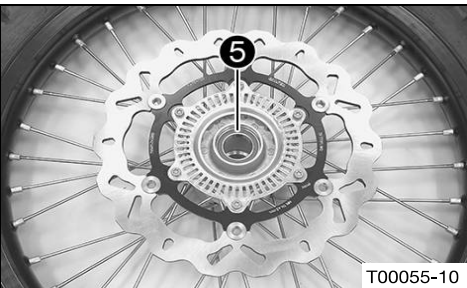
- Press out bearing ❸ using a suitable tool.



Info

Spacing tube ❹ can be pushed aside.

- Remove the spacing tube.

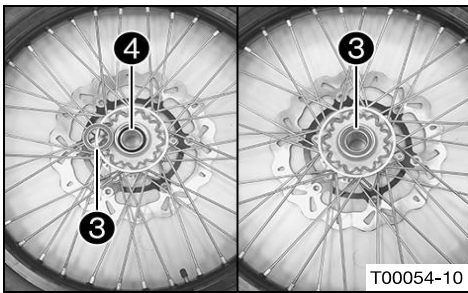


- Press out bearing ❺ using a suitable tool.
- Press in the new bearing ❺ all the way using a suitable tool.



Info

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

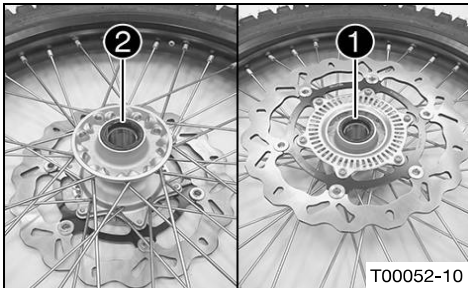


- Position spacing tube ④.
- Press in the new bearing ③ all the way using a suitable tool.



### Info

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



- Grease the new shaft seal rings ② and ① and press in until they are flush.

### Finishing work

- Install the front wheel. (📖 p. 96)

## 14.8 Rear wheel

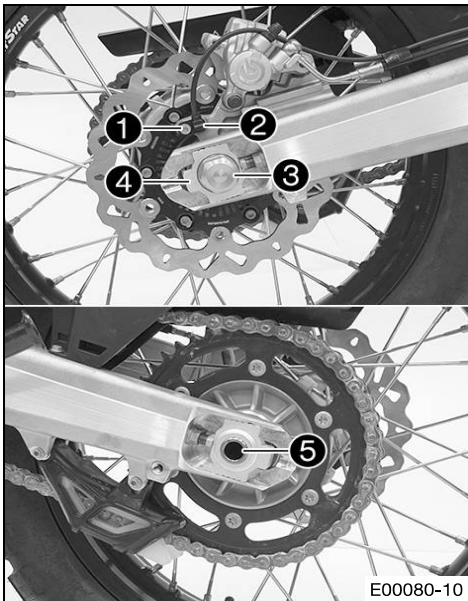
### 14.8.1 Removing the rear wheel

#### Preparatory work

- Raise the motorcycle with a lift stand. (📖 p. 11)

#### Main work

- Press the brake caliper onto the brake disc by hand in order to push back the brake piston.
- Remove screw ① and pull wheel speed sensor ② out of the hole.
- Remove nut ③. Remove chain adjuster ④.
- Pull out wheel spindle ⑤ to the point where the chain adjuster is no longer in contact with the adjusting screw.



- Push the rear wheel forward as far as possible and take the chain off the rear sprocket.



### Info

Cover the components to protect them against damage.

- Holding the rear wheel, withdraw the wheel spindle.



### Warning

**Danger of accidents** Reduced braking efficiency due to damaged brake disc.

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





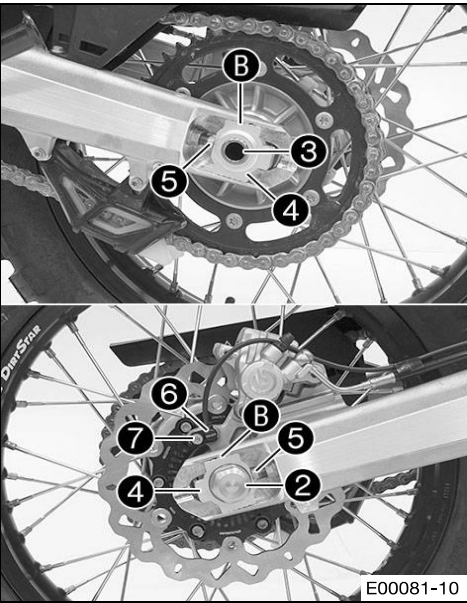
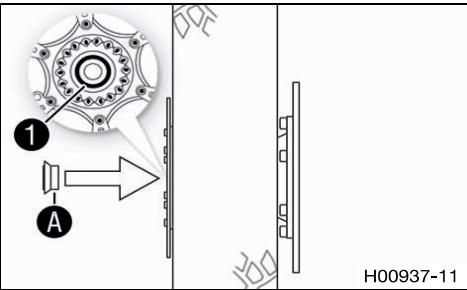
- Take the rear wheel out of the swingarm.



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

14.8.2 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. 110)
- Check the wheel bearing for damage and wear.
  - » If the wheel bearing is damaged or worn:
    - Change the rear wheel bearing. (📖 p. 102)
- Remove spacer.
- Clean and grease shaft seal ring 1 and contact surface A of the spacer.

Long-life grease (📖 p. 307)
- Insert the spacer.
- Clean and grease the thread of the wheel spindle and nut 2.

Long-life grease (📖 p. 307)
- Mount the rubber damper and rear sprocket carrier in the rear wheel.
- Position the rear wheel.
  - ✓ The brake linings are correctly positioned.
- Push the rear wheel forward as far as possible and lay the chain on the rear sprocket.
- Mount wheel spindle 3 and chain adjuster 4. Mount nut 2, but do not tighten it yet.
- Make sure that chain adjusters 4 are fitted correctly on adjusting screws 5.

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 B.



**Info**  
Mount left and right chain adjusters 4 in the same position.

- Tighten nut 2.

Guideline

Nut, rear wheel spindle	M25x1.5	90 Nm (66.4 lbf ft)
-------------------------	---------	---------------------
- Position wheel speed sensor 6 in the drill hole.
- Mount and tighten screw 7.

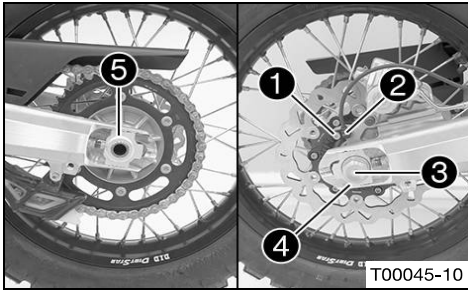
Guideline

Screw, wheel speed sensor	M6	6 Nm (4.4 lbf ft)
---------------------------	----	-------------------
- Operate the foot brake lever repeatedly until the brake linings are in contact with the brake disc and there is a pressure point.

Finishing work

- Remove the motorcycle from the lift stand. (📖 p. 12)
- Check the chain tension. (📖 p. 105)

## 14.8.3 Removing the rear wheel using a work stand



### Preparatory work

- Raise the motorcycle with the work stand. (p. 12)

### Main work

- Press the brake caliper onto the brake disc by hand in order to push back the brake piston.
- Remove screw ① and pull wheel speed sensor ② out of the hole.
- Remove nut ③. Remove chain adjuster ④.
- Pull out wheel spindle ⑤ to the point where the chain adjuster is no longer in contact with the adjusting screw.

- Push the rear wheel forward as far as possible and take the chain off the rear sprocket.



### Info

Cover the components to protect them against damage.

- Withdraw the wheel spindle.



### 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.

- Take the rear wheel out of the swingarm.



### Info

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

## 14.8.4 Removing the rear wheel using a work stand



### Warning

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

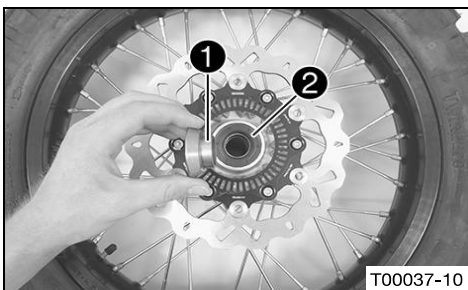
- Always keep the brake discs free of oil and grease, and clean them with brake cleaner when necessary.



### 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. 110)
- Check the wheel bearing for damage and wear.
  - » If the wheel bearing is damaged or worn:
    - Change the rear wheel bearing. (p. 102)
- Remove spacer.
- Clean and grease shaft seal ring ② and contact surface of the spacer.

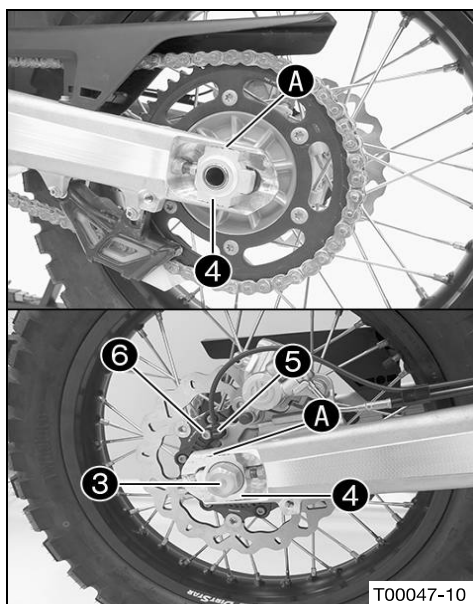
Long-life grease (p. 307)

- Insert the spacer.
- Clean and grease the thread of the wheel spindle and nut ③.

Long-life grease (p. 307)

- Mount the rubber damper and rear sprocket carrier in the rear wheel.
- Position the rear wheel.

✓ The brake linings are correctly positioned.



- Push the rear wheel forward as far as possible and lay the chain on the rear sprocket.
- Mount wheel spindle and chain adjuster ④. Mount nut ③, but do not tighten it yet.
- Make sure that chain adjusters ④ are fitted correctly on the adjusting screws.

#### 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 reference marks A.

#### Info

Mount left and right chain adjusters ④ in the same position.

- Tighten nut ③.

#### Guideline

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

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

#### Guideline

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

- Operate the foot brake lever repeatedly until the brake linings are in contact with the brake disc and there is a pressure point.

#### Finishing work

- Check the chain tension. (📖 p. 105)
- Remove the motorcycle from the work stand. (📖 p. 12)

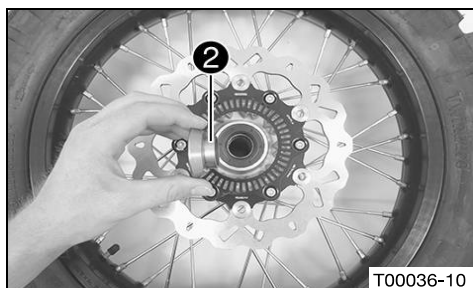
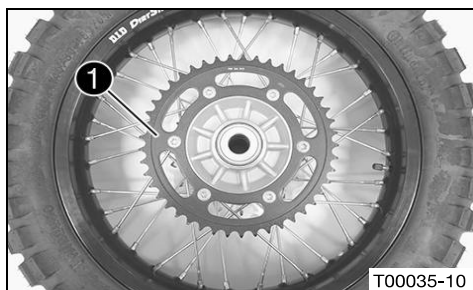
### 14.8.5 Changing the rear wheel bearing

#### Preparatory work

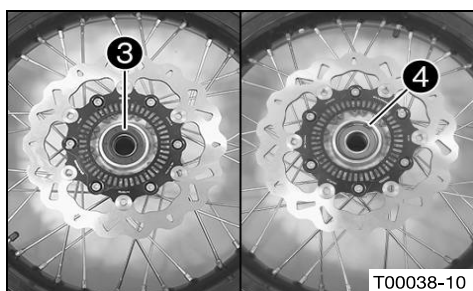
- Raise the motorcycle with a lift stand. (📖 p. 11)
- Remove the rear wheel. (📖 p. 99)

#### Main work

- Remove rear sprocket carrier ①.

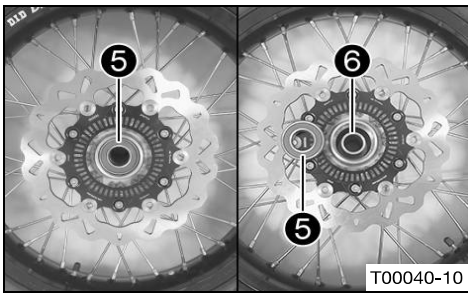


- Remove spacer ②.

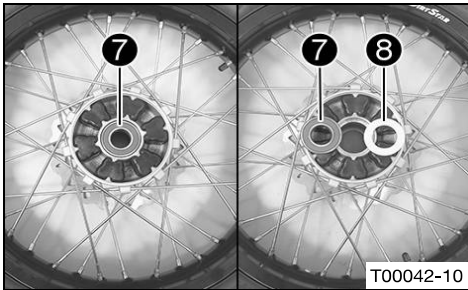


- Remove shaft seal ring ③.
- Remove lock ring ④.

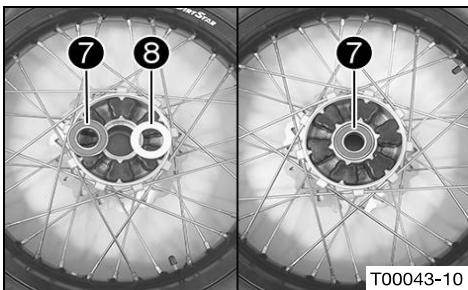




- Using a suitable tool, press bearing **5** out from the inside to the outside.
- Remove spacing tube **6**.



- Using a suitable tool, press bearing **7** out from the inside to the outside.
- Remove spacer washer **8**.

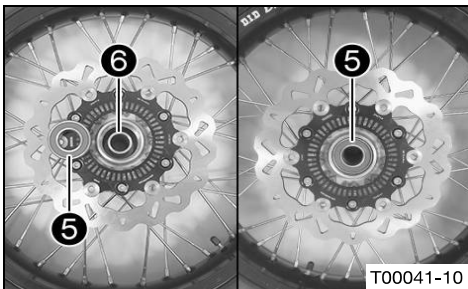


- Check spacer washer **8** for damage and wear.
  - » If the spacer washer is damaged or worn:
    - Replace the spacer washer.
- Position spacer washer **8**.
- Press new bearing **7** all the way in from the outside to the inside.



## Info

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



- Clean, grease, and mount spacing tube **6**.

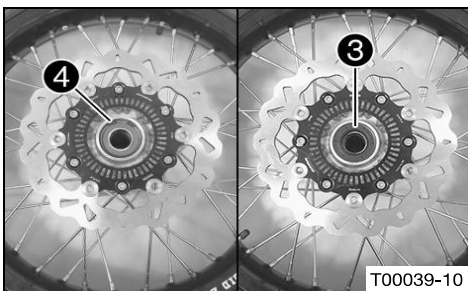
Long-life grease (📖 p. 307)

- Press new bearing **5** all the way in from the outside to the inside.

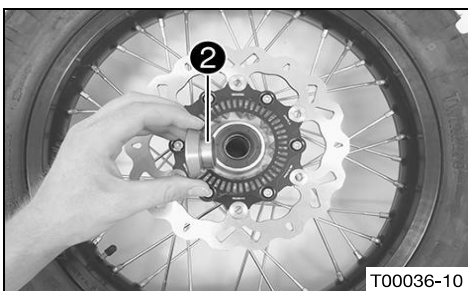


## Info

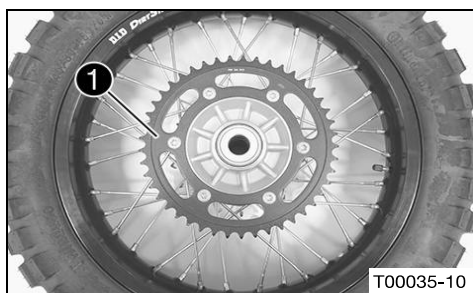
Only press the bearing in via the outer ring; otherwise, the bearing will be damaged when it is pressed in.



- Mount lock ring **4**.
  - ✓ The lock ring engages audibly.
- Grease new shaft seal ring **3** and press it in until it is flush.



- Mount spacer **2**.



- Ensure that the rubber dampers are seated properly.
- Mount rear sprocket carriers **1**.

## Finishing work

- Install the rear wheel. (📖 p. 100)
- Remove the motorcycle from the lift stand. (📖 p. 12)
- Check the chain tension. (📖 p. 105)

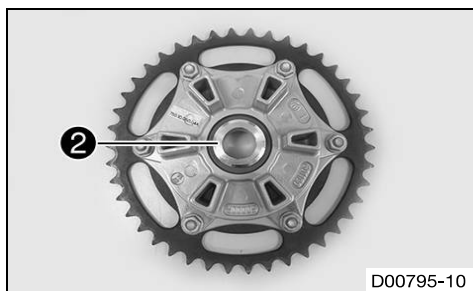
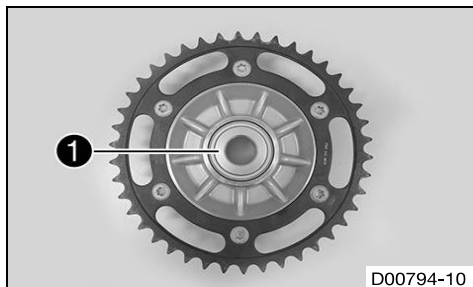
### 14.8.6 Changing the bearing of the rear sprocket carrier

#### Preparatory work

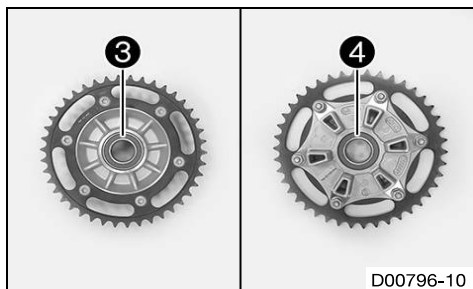
- Raise the motorcycle with a lift stand. (📖 p. 11)
- Remove the rear wheel. (📖 p. 99)

#### Main work

- Remove spacer **1** with washer.



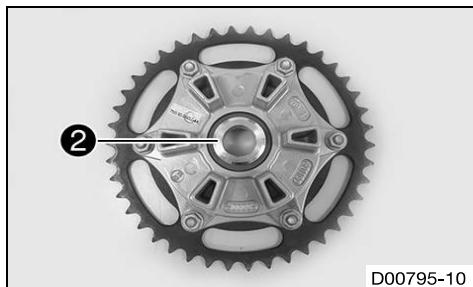
- Remove collar bushing **2**.



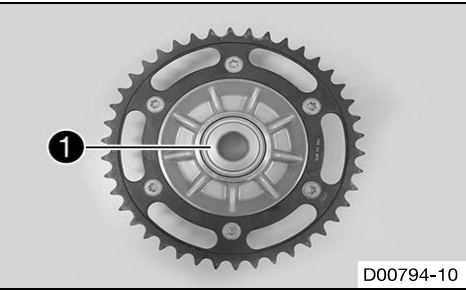
- Using a suitable tool, press bearings **3** and **4** out from the inside to the outside.
- Press in new bearings **4** and **3** from the outside all the way to the inside.

#### Info

Only press the bearings in via the outer ring; otherwise, the bearings will be damaged when they are pressed in.



- Mount collar bushing **2**.



- Mount spacer 1 with washer.

**Finishing work**

- Install the rear wheel. (p. 100)
- Remove the motorcycle from the lift stand. (p. 12)
- Check the chain tension. (p. 105)

**14.8.7 Changing the rear brake disc**

**Preparatory work**

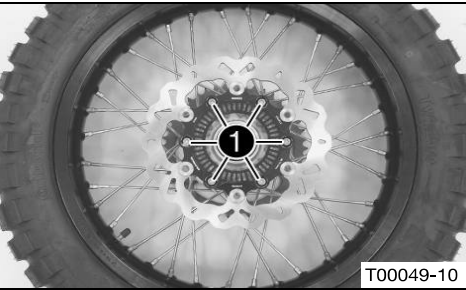
- Raise the motorcycle with a lift stand. (p. 11)
- Remove the rear wheel. (p. 99)

**Main work**

- Remove screws 1. Remove the brake disc.
- Clean the contact surface of the brake disc.
- Position the new brake disc with the label facing outward.
- Mount and tighten screws 1.

**Guideline**

Screw, rear brake disc	M6	14 Nm (10.3 lbf ft)	Loctite® 243™
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**Finishing work**

- Install the rear wheel. (p. 100)
- Remove the motorcycle from the lift stand. (p. 12)
- Check the chain tension. (p. 105)

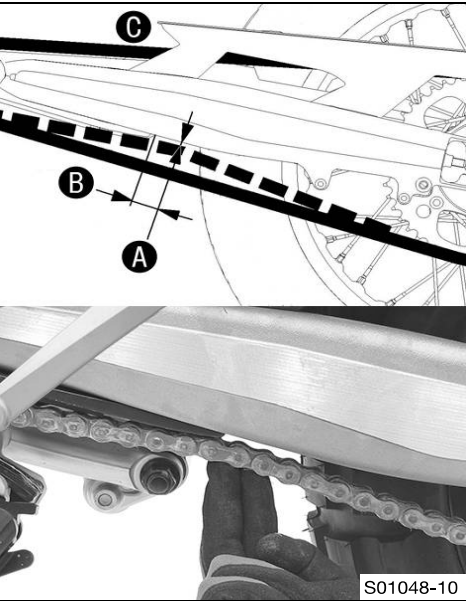
**14.8.8 Checking the chain tension**




**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.



- Place the motorcycle onto the side stand.
- Shift gear to neutral.
- Push the chain upward at a distance (B) from the chain sliding guard and determine chain tension (A).


**Info**

Upper chain section (C) must be taut.  
Chain wear is not always even. Repeat this measurement at different chain positions.

Chain tension (A)	5 mm (0.2 in)
Distance (B) to chain sliding guard	30 mm (1.18 in)

- » If the chain tension does not meet the specification:
- Adjust the chain tension. (📖 p. 106)

14.8.9 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. 105)
  - Raise the motorcycle with a lift stand. (📖 p. 11)

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

Guideline

Chain tension	5 mm (0.2 in)
Turn the adjusting screws (3) on the left and right so that the markings on the left and right chain adjusters (4) are in the same position relative to the reference marks (A). The rear wheel is then correctly aligned.	

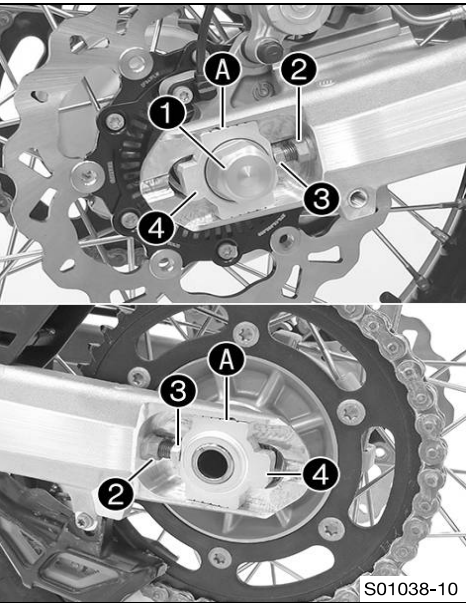
**Info**

The upper part of the chain must be taut.  
Chain wear is not always even. Repeat this measurement at different chain positions.

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

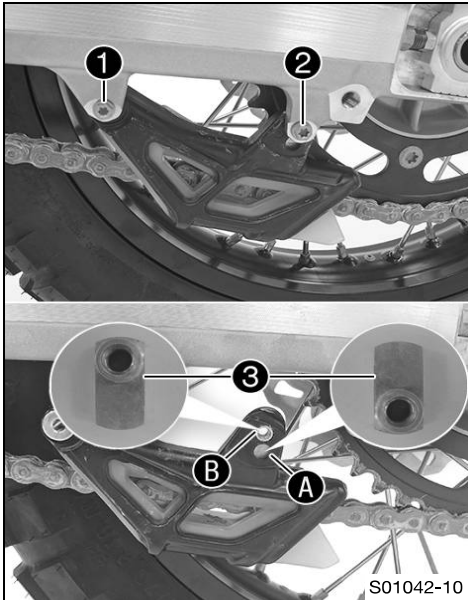
Nut, rear wheel spindle	M25x1.5	90 Nm (66.4 lbf ft)
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- Finishing work**
- Remove the motorcycle from the lift stand. (📖 p. 12)





## 14.8.10 Adjusting the chain guide



- Remove screws ① and ②. Take off the chain guide.

**Condition**

Number of teeth:  $\leq 44$  teeth

- Insert nut ③ in hole ①. Position the chain guide.
- Mount and tighten screws ① and ②.

**Guideline**

Screw, chain guide	M6	8 Nm (5.9 lbf ft)
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**Condition**

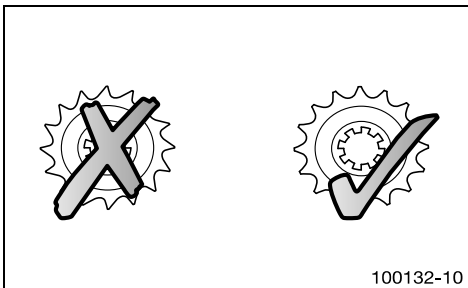
Number of teeth:  $\geq 45$  teeth

- Insert nut ③ in hole ②. Position the chain guide.
- Mount and tighten screws ① and ②.

**Guideline**

Screw, chain guide	M6	8 Nm (5.9 lbf ft)
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## 14.8.11 Checking the chain, rear sprocket, engine sprocket, and chain guide

**Preparatory work**

- Raise the motorcycle with a lift stand. (p. 11)

**Main work**

- Shift the transmission to idle.
- Check the rear sprocket and engine sprocket for wear.
  - » If the rear sprocket or engine sprocket is worn:
    - Change the drivetrain kit. (p. 111)

**Info**

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

- Pull at the top part of the chain with the specified weight ①.

**Guideline**

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

- Measure distance ② of 18 chain rollers in the lower chain section.

**Info**

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

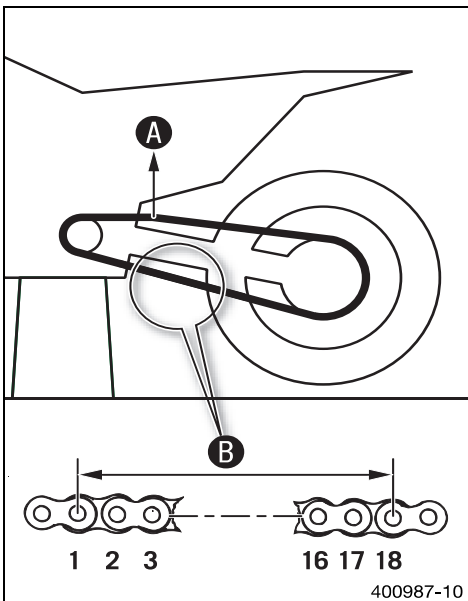
Maximum distance ② at the longest chain section	272 mm (10.71 in)
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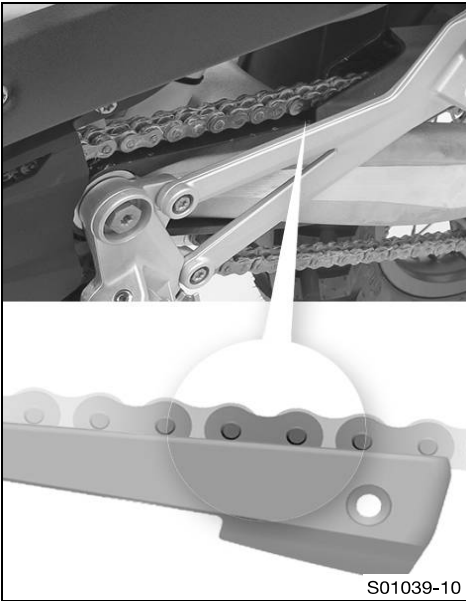
- » If the distance ② is greater than the specified measurement:

- Change the drivetrain kit. (p. 111)

**Info**

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

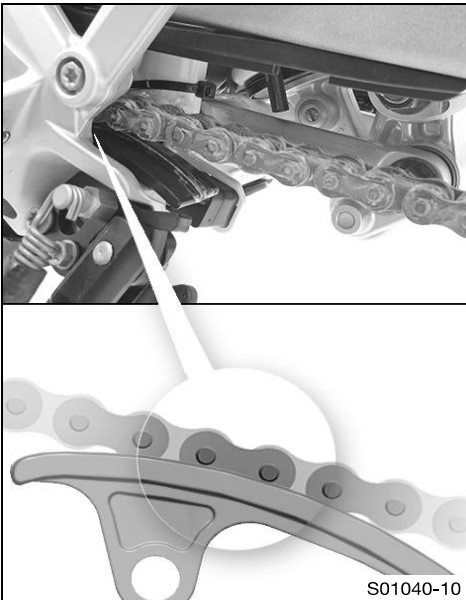




- Check the chain sliding guard for wear.
  - » If the lower edge of the chain pins is in line with or below the chain sliding guard:
    - Replace the chain sliding guard.
- Check that the chain sliding guard is firmly seated.
  - » If the chain sliding guard is loose:
    - Tighten the screws on the chain sliding guard.

Guideline

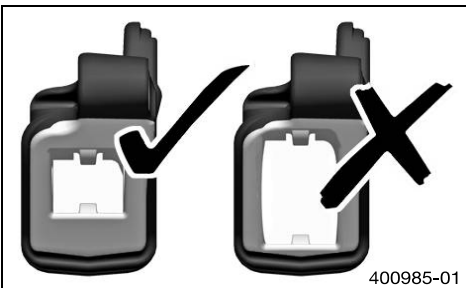
Screw, chain sliding guard	M6	8 Nm (5.9 lbf ft)	Loctite® 243™
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- Check the chain sliding piece for wear.
  - » If the lower edge of the chain pins is in line with or below the chain sliding piece:
    - Change the chain sliding piece.
- Check that the chain sliding piece is firmly seated.
  - » If the chain sliding piece is loose:
    - Tighten the screw on the chain sliding piece.

Guideline

Screw, chain sliding piece	M8	15 Nm (11.1 lbf ft)
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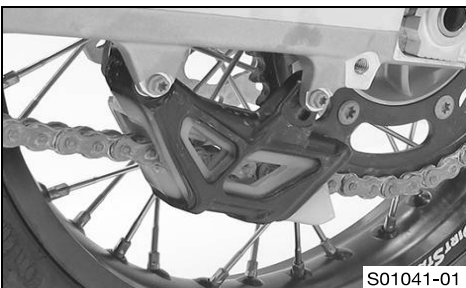
- Check the chain guide for wear.



**Info**

Wear can be seen on the front of the chain guide.

- » If the light part of the chain guide is worn:
  - Change the chain guide.



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

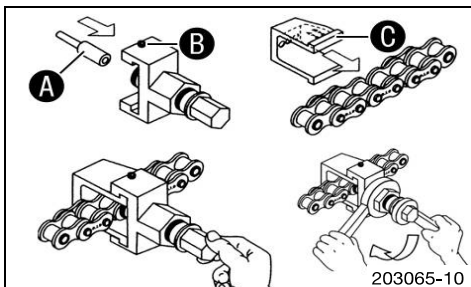
Guideline

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

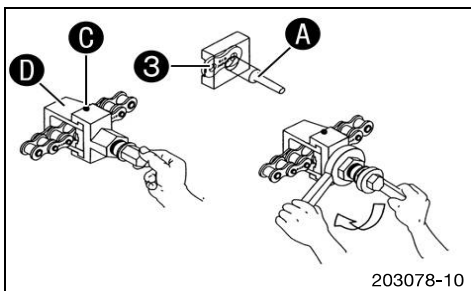
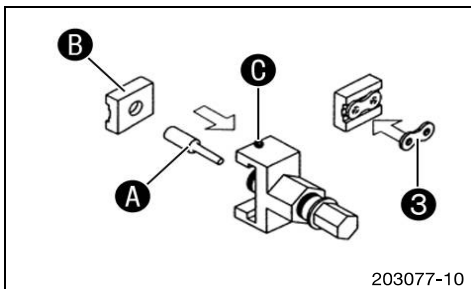
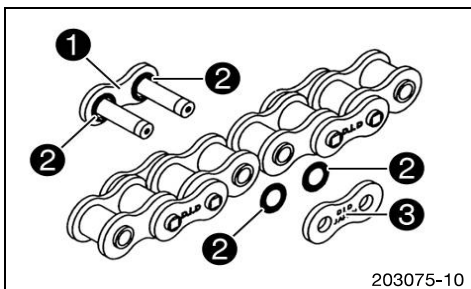
- Remove the motorcycle from the lift stand. (📖 p. 12)

## 14.8.12 Opening the chain



- Mount press drift **A** with the larger diameter in the spindle of the special tool. Turn the spindle counterclockwise.
- Chain rivet tool (60029020000) (p. 312)
- Make the connecting link of the chain accessible. Fret the riveting point.
  - Position the special tool with the press drift on one of the 2 pins of the connecting link of the chain.
    - ✓ Locking screw **B** points upwards.
  - Position retaining clamp **C** of the special tool on the chain from the rear.
    - ✓ Markings **A** and **B** point upwards.
  - Slide retaining clamp **C** of the special tool into the pressing tool.
    - ✓ The arrow of marking **A** points to locking screw **B**.
  - Screw the locking screw hand-tight as far as it will go.
    - ✓ The retaining clamp is fixed.
  - Hold the special tool and screw in the spindle.
    - ✓ The chain pin is pressed out through the retaining clamp drill hole.
  - Unscrew the locking screw and remove the special tool.
  - Repeat the process on the second pin of the chain link.

## 14.8.13 Riveting the chain



- Grease new connecting link **1** and position an X-ring **2** on each pin.
  - Connect the chain ends with a connecting link.
  - Position another X-ring **2** on each pin.
- Mount press drift **A** with the smaller diameter in the spindle of the special tool. Turn the spindle counterclockwise.
- Chain rivet tool (60029020000) (p. 312)
- Position press plate **B** of the special tool on the press drift.
  - Position chain joint plate **3** in the press plate.
- Position the special tool on the chain.
    - ✓ Locking screw **C** points upwards.
  - Position retaining clamp **D** of the special tool on the chain from the rear.
    - ✓ Markings **A** and **B** point upwards.
  - Slide retaining clamp **D** of the special tool into the pressing tool.
    - ✓ The arrow of marking **A** points to locking screw **C**.
  - Screw the locking screw hand-tight as far as it will go.
    - ✓ The retaining clamp is fixed.
  - Hold the special tool and screw in the spindle.
    - ✓ Press drift **A** of the special tool presses against the center of the chain joint plate **3**.
    - ✓ The chain joint plate is pressed on.
  - Unscrew the locking screw and remove the special tool.
  - Rivet the two pins of the connecting link with special tool.

Chain rivet tool (60029020000) (p. 312)

## 14.8.14 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

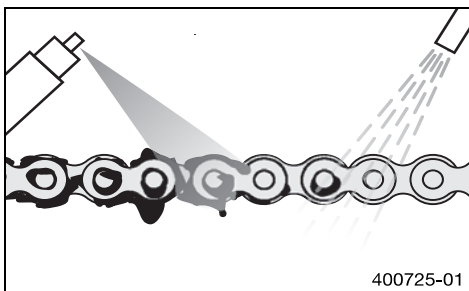
**Environmental hazard** Hazardous substances cause environmental damage.

- 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.



### Preparatory work

- Raise the motorcycle with a lift stand. (p. 11)

### Main work

- Clean the chain regularly.
- Rinse off loose dirt with a soft jet of water.
- Remove old grease residue with chain cleaner.
- After drying, apply chain spray.

Offroad chain spray (p. 307)

### Finishing work

- Remove the motorcycle from the lift stand. (p. 12)

## 14.8.15 Checking the rear hub rubber dampers



### Warning

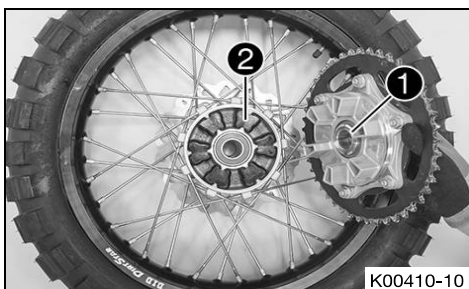
**Danger of accidents** Reduced braking efficiency due to damaged brake disc.

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



### 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 become damaged.



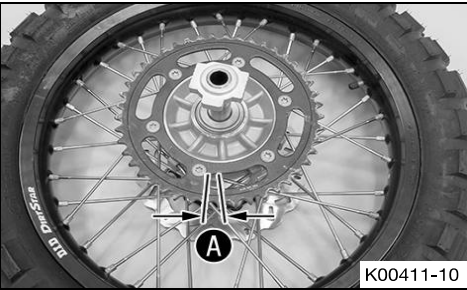
### Preparatory work

- Raise the motorcycle with a lift stand. (p. 11)
- Remove the rear wheel. (p. 99)


### Main work

- Check bearing ①.
  - » If the bearing is damaged or worn:
    - Change the bearing of the rear sprocket carrier. (p. 104)
- Check rubber dampers ② of the rear hub for damage and wear.
  - » If the rubber dampers of the rear hub are damaged or worn:
    - Change all rubber dampers in the rear hub.





- Lay the rear wheel on a workbench with the rear sprocket facing upwards and insert the wheel spindle in the hub.
- To check play **A**, hold the rear wheel tight and try to turn the rear sprocket with your hand.

 **Info**

Measure the play on the outside of the rear sprocket.

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

- » If clearance **A** is larger than the specified value:
- Change all rubber dampers in the rear hub.

**Finishing work**

- Install the rear wheel. (📖 p. 100)
- Remove the motorcycle from the lift stand. (📖 p. 12)
- Check the chain tension. (📖 p. 105)

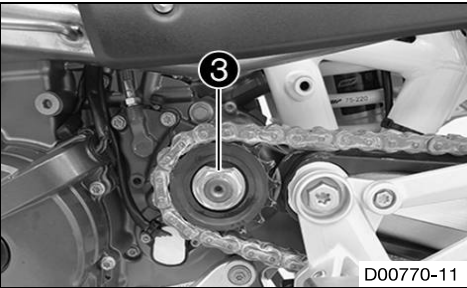
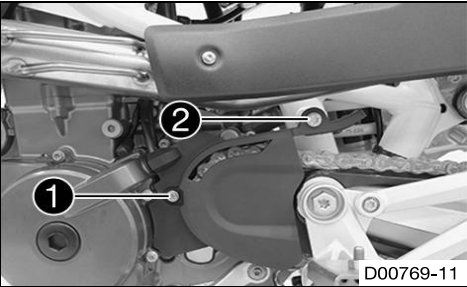
14.8.16 Changing the drivetrain kit

**Preparatory work**

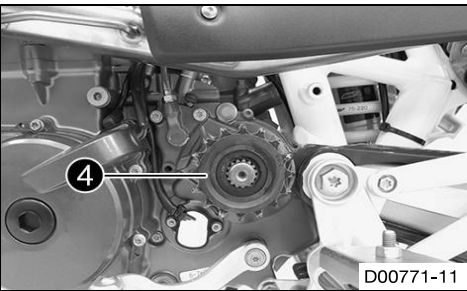
- Raise the motorcycle with the work stand. (📖 p. 12)

**Main work**


- Remove screws **1** and **2**.
- Remove the engine sprocket cover.



- Bend up lock washer **3**.
- Have an assistant operate the rear brake.
- Remove the nut with the lock washer.
- Remove the rear wheel using a work stand. (📖 p. 101)

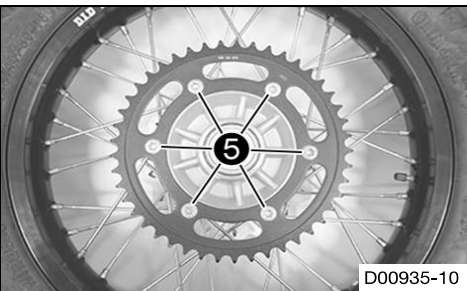


- Open the chain. (📖 p. 109)

 **Info**

Cover the components to protect them against damage.

- Remove engine sprocket **4**.
- Slide new engine sprocket **4** onto the main shaft.
- Mount the new chain.
- Rivet the chain. (📖 p. 109)

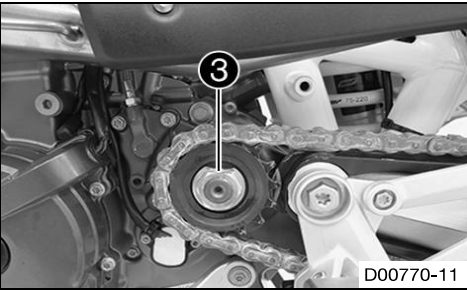


- Remove fittings **5**. Take off the rear sprocket.
- Position new rear sprocket. Mount and tighten the fittings.

**Guideline**

Nut, rear sprocket screw	M8	35 Nm (25.8 lbf ft)	Loctite® 2701™
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- Install the rear wheel using a work stand. (📖 p. 101)

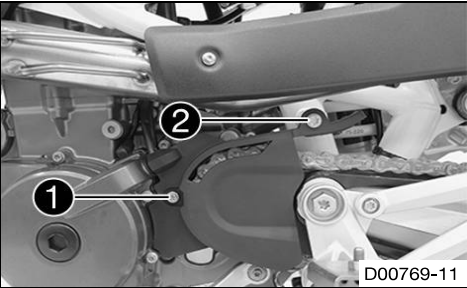


- Have an assistant operate the rear brake.
- Mount and tighten nut with lock washer ③.

Guideline

Nut, engine sprocket	M20x1.5	80 Nm (59 lbf ft)	Loctite® 243™
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- Secure the nut with the lock washer.



- Position the engine sprocket cover.
- Mount and tighten screw ①.

Guideline

Screw, clutch slave cylinder	M6x40	10 Nm (7.4 lbf ft)	Loctite® 243™
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- Mount and tighten screw ②.

Guideline

Remaining screws, chassis	M8	25 Nm (18.4 lbf ft)	
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**Finishing work**

- Remove the motorcycle from the work stand. (📖 p. 12)

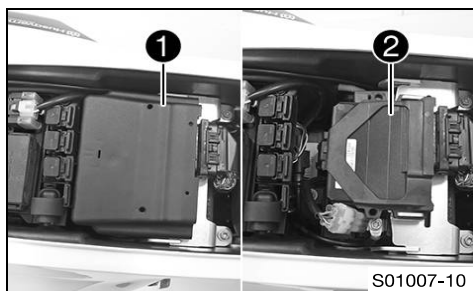
## 15.1 Removing the battery



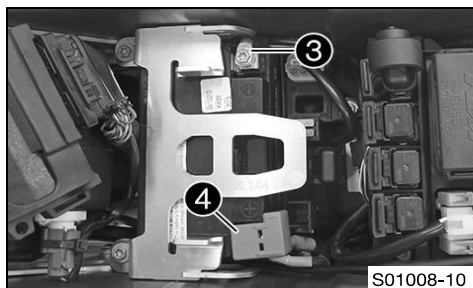
### Warning

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

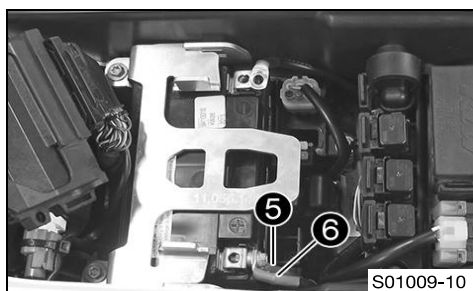
- Keep batteries out of the reach of children.
- Wear suitable protective clothing and goggles.
- Avoid contact with battery acid and battery gases.
- Keep sparks and open flames away from the battery. Only charge in well-ventilated rooms.
- In the event of skin contact, rinse with large amounts of water.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



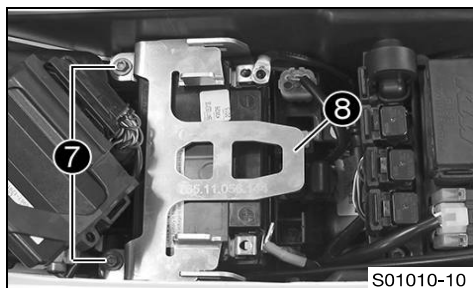
S01007-10



S01008-10




S01009-10



S01010-10

### Preparatory work

- Switch off the ignition by turning the ignition key to the **OFF**  position.
- Remove the seat. (p. 79)

### Main work

- Remove battery cover **1**.
- Pull engine electronics control unit **1** off of the holder and set it to one side.

- Disconnect negative cable **3** from the battery.
- Take off positive terminal cover **4**.

- Disconnect ABS connection cable **5** and positive cable **6** from the battery.

- Remove screws **7**.
- Pull retaining bracket **8** of the battery forward and remove it.
- Lift the battery up and out.

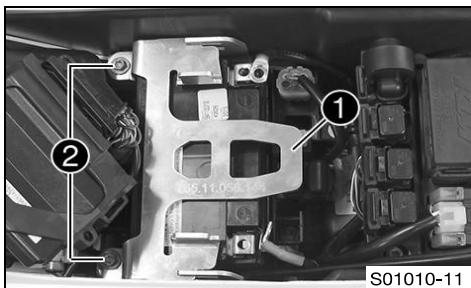


### Info

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 will therefore no longer be roadworthy.



## 15.2 Installing the battery

**Main work**

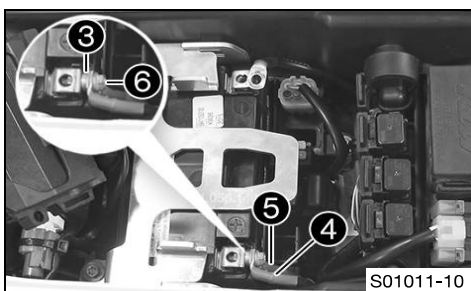
- Insert the battery into the battery compartment with the terminals facing rearward.

Battery (YTZ10S) (p. 231)

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

**Guideline**

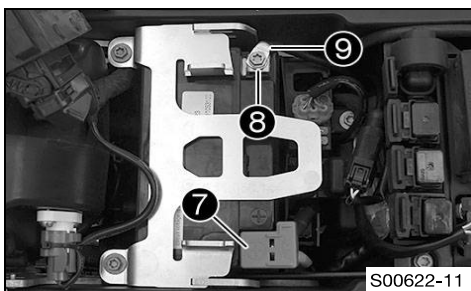
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)
---------------------------	----	--------------------



- Position washer ③, positive cable ④, and ABS connection cable ⑤.
- Mount and tighten screw ⑥.

**Guideline**

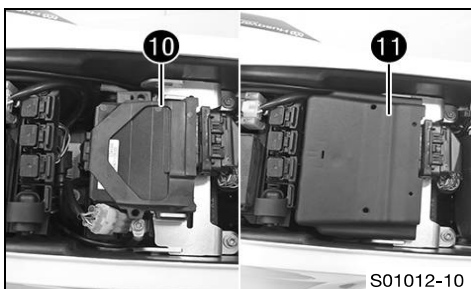
Screw, battery terminal	M6	4.5 Nm (3.32 lbf ft)
-------------------------	----	-------------------------



- Position positive terminal cover ⑦.
- Position washer ⑧ and negative cable ⑨, and mount and tighten the screw.

**Guideline**

Screw, battery terminal	M6	4.5 Nm (3.32 lbf ft)
-------------------------	----	-------------------------



- Position EFI control unit ⑩.
- Mount battery cover ⑪.

**Finishing work**

- Mount the seat. (p. 80)
- Set the clock. (p. 130)

## 15.3 Disconnecting the battery

**Preparatory work**

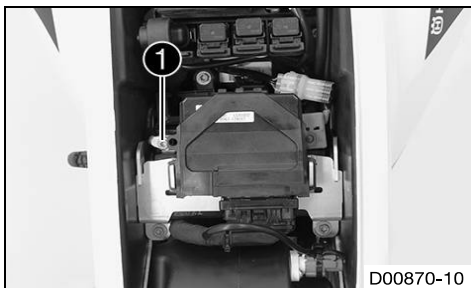
- Switch off the ignition by turning the ignition key to the **OFF** position.
- Remove the seat. (p. 79)

**Main work**

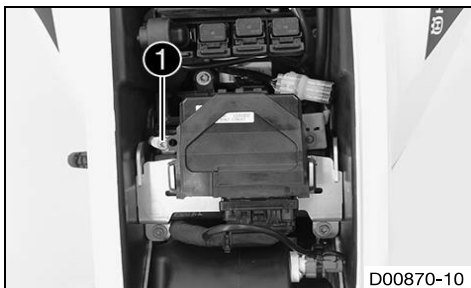
- Remove the battery cover.
- Disconnect negative cable ① of the battery.

**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 will therefore no longer be roadworthy.



## 15.4 Connecting the battery

**Main work**

- Position washer and negative cable ①, and mount and tighten the screw.

## Guideline

Screw, battery terminal	M6	4.5 Nm (3.32 lbf ft)
-------------------------	----	-------------------------

- Mount the battery cover.

**Finishing work**

- Mount the seat. (📖 p. 80)
- Set the clock. (📖 p. 130)

## 15.5 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** Batteries contain environmentally-hazardous materials.

- Do not dispose of batteries as household waste.
- Return batteries to your authorized Husqvarna Motorcycles dealer or dispose of them at a collection point for used batteries.

**Warning**

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

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

**Info**

Even when there is no load on the battery, it discharges steadily.

The charging level and the method of charging are very important for the service life of the battery.

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

If the charging current, charging voltage, and charging time are exceeded, the battery will be destroyed.

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 sulfated, destroying the battery.

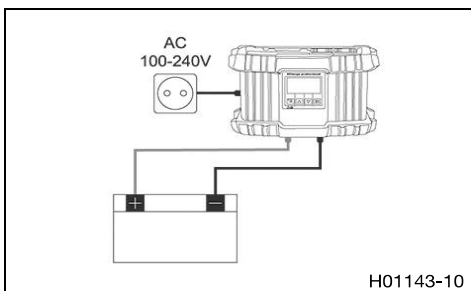
The battery is maintenance-free, i.e., the acid level does not have to be checked.

**Preparatory work**

- Switch off the ignition by turning the ignition key to the **OFF** ☒ position.
- Remove the seat. (📖 p. 79)
- Disconnect the battery. (📖 p. 114)

**Main work**

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




Battery charger **XCharge-professional** EU (00029095050) (📖 p. 308)

Battery charger **XCharge-professional** US (00029095051) (📖 p. 308)

Battery charger **XCharge-professional** GB (00029095052) (📖 p. 309)

Battery charger **XCharge-professional** CH (00029095053) (📖 p. 309)

 **Info**  
Follow the charger's instructions exactly.

- Switch off the battery charger after charging and disconnect from the battery.
- Guideline

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

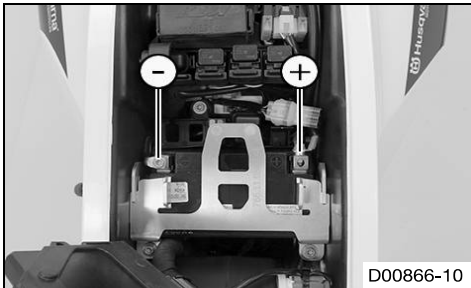
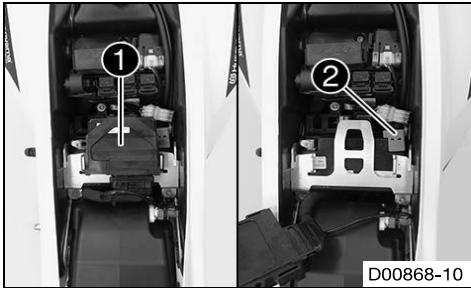
- Finishing work**
- Connect the battery. (📖 p. 115)
  - Mount the seat. (📖 p. 80)
  - Set the clock. (📖 p. 130)

15.6 Checking the charging voltage

**Condition**  
The battery must be fully functional and completely charged.

- Preparatory work**
- Remove the seat. (📖 p. 79)

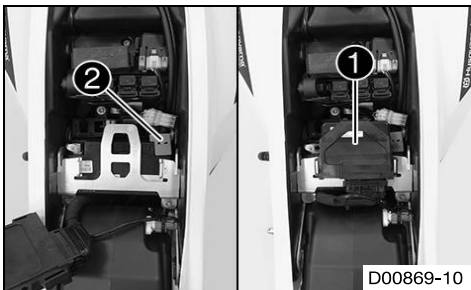
- Main work**
- Remove the battery cover.
  - Pull engine electronics control unit ❶ off of the holder and set it to one side.
  - Take off positive terminal cover ❷.
  - Start the motorcycle to make checks. (📖 p. 14)



- **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 plug-in connections from the alternator to the voltage regulator.
  - Check the plug-in connections from the voltage regulator to the wiring harness.
  - Check the stator winding of the alternator. (📖 p. 219)
- » If the displayed value is greater than the specified value:
  - Change the voltage regulator.
- Position positive terminal cover ❷.
- Mount engine electronics control unit ❶.
- Mount the battery cover.



- Finishing work**
- Mount the seat. (📖 p. 80)

## 15.7 Checking the open-circuit current



### Preparatory work

- Switch off the ignition by turning the ignition key to the **OFF** ☒ position.
- Remove the seat. (📖 p. 79)

### Main work

- Remove the battery cover.
- Disconnect the negative cable of the battery.
- Measure the current between battery ground (–) and the negative cable.



### Info

The value of the open-circuit current only applies to vehicles in their original state without additional power consumers.

Maximum open-circuit current	< 1.0 mA
------------------------------	----------

- » If the measured value is greater than the specified value:
  - Disconnect the voltage regulator from the wiring harness and perform the measurement again.
- Mount the battery cover.

### Finishing work

- Mount the seat. (📖 p. 80)

## 15.8 Changing the main fuse



### Warning

**Fire hazard** The electrical system can be overloaded if the wrong fuses are used.

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



### Info

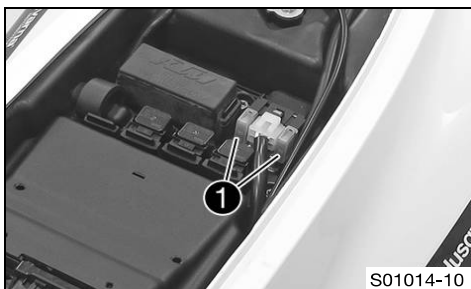
The main fuse protects all power consumers of the vehicle. It is in the housing of the starter relay next to the battery.

### Preparatory work

- Switch off the ignition by turning the ignition key to the **OFF** ☒ position.
- Remove the seat. (📖 p. 79)

### Main work

- Take off protection caps ❶.



- Remove a defective main fuse ❷ with needle nose pliers.



### Info

A defective fuse is indicated by a burned-out fuse wire ❸. A spare fuse ❸ is located in the starter relay.

- Install a new main fuse.

Fuse (58011109130) (📖 p. 231)
-------------------------------



### Info

Insert a new spare fuse into the starter relay to have it available when needed.

- Check that the electrical equipment is functioning properly.

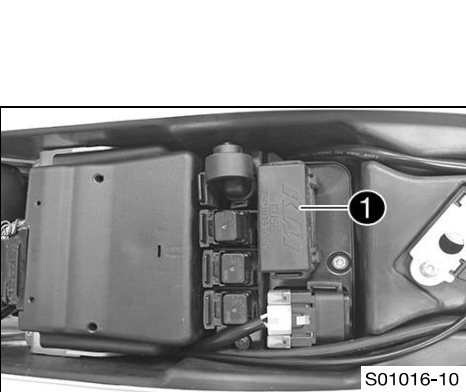
- Mount the protection caps.

Finishing work

- Mount the seat. (📖 p. 80)
- Set the clock. (📖 p. 130)

15.9 Changing the fuses of individual power consumers

**i Info**  
The fuse box containing the fuses of individual power consumers is located under the seat.

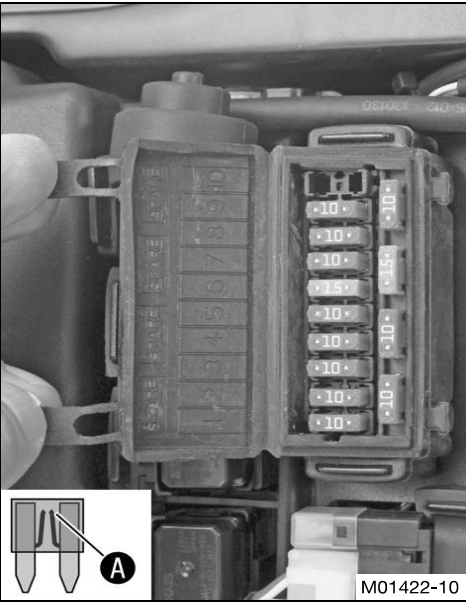


Preparatory work

- Switch off the ignition by turning the ignition key to the **OFF** ⏻ position.
- Remove the seat. (📖 p. 79)

Main work

- Open fuse box cover **1**.



- Remove the defective fuse.

Guideline

Fuse <b>1</b> - 10 A - ignition
Fuse <b>2</b> - 10 A - ignition, combination instrument, engine electronics control unit, lambda sensor, ABS switch
Fuse <b>3</b> - 10 A - fuel pump
Fuse <b>4</b> - 10 A - radiator fan
Fuse <b>5</b> - 10 A - horn, brake light, turn signal, oil pressure sensor
Fuse <b>6</b> - 15 A - high beam, low beam, parking light, tail light, license plate lamp
Fuse <b>7</b> - 10 A - for auxiliary equipment (permanent positive)
Fuse <b>8</b> - 10 A - for auxiliary equipment (accessories connected with ignition switch)
Fuse <b>9</b> - 10 A - ABS control unit, diagnostics connector
Fuse <b>10</b> - not assigned
Fuse <b>SPARE</b> - 10 A/15 A - spare fuses

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

**! Warning**  
**Fire hazard** The electrical system can be overloaded if the wrong fuses are used.

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

- Use spare fuses with the correct rating only.

Fuse (75011088010) (📖 p. 231)
Fuse (75011088015) (📖 p. 231)

**i 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 seat. (📖 p. 80)

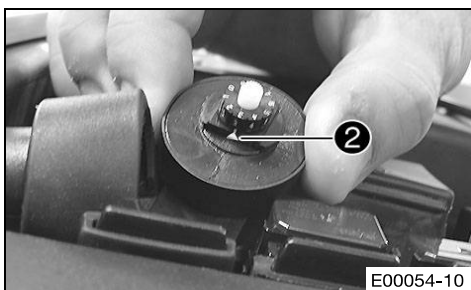
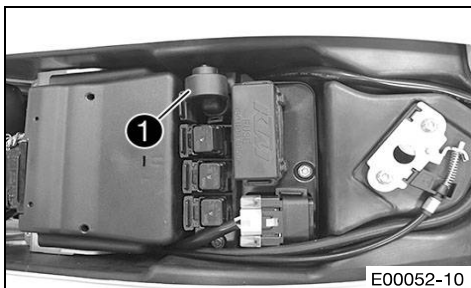
## 15.10 Adjusting the engine characteristic

### Preparatory work

- Switch off the ignition by turning the ignition key to the **OFF** ☒ position.
- Remove the seat. (📖 p. 79)

### Main work

- Pull the **Map-Select** switch and holder ❶ upward off of the retaining bracket.
- Pull the **Map-Select** switch out of the holder.



- Turn the adjusting wheel until the desired digit is next to marking ❷.

### Set the Map-Select switch to Soft.

- Set the adjusting wheel to position 1.  
✓ Soft – reduced homologated peak performance for better driveability.

### Set the Map-Select switch to Advanced.

- Set the adjusting wheel to position 2.  
✓ Advanced – homologated performance with extremely direct responsiveness.

### Set the Map-Select switch to Standard.

- Set the adjusting wheel to position 3, 4, 5, 6, 7, 8 or 9.  
✓ Standard – homologated performance with balanced responsiveness.

### Set the Map-Select switch to poor fuel quality.

- Set the adjusting wheel to position 0.  
✓ Poor fuel quality – homologated performance is reduced in accordance with the fuel quality, use for no more than 1 tank of fuel

- Position the **Map-Select** switch in the holder.
- Slide the **Map-Select** switch with the holder downward onto the retaining bracket.

### Finishing work

- Mount the seat. (📖 p. 80)



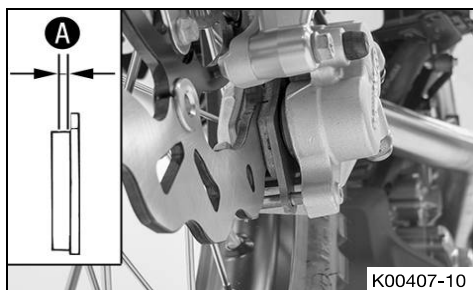
## 16.1 Checking the front brake linings

**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 **A**.

Minimum thickness <b>A</b>	≥ 1 mm (≥ 0.04 in)
----------------------------	--------------------

- » If the minimum thickness is less than specified:
  - Change the front brake linings. (📖 p. 120)
- Check the brake linings for damage and cracking.
  - » If there is wear or tearing:
    - Change the front brake linings. (📖 p. 120)

## 16.2 Changing the front brake linings

**Warning****Danger of accident** Brake system failure.

- Maintenance work and repairs must be carried out professionally.

**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 accident** Reduced braking efficiency due to the use of non-approved brake linings.

- Brake linings available in accessories stores often have not been tested and approved for use in Husqvarna motorcycles. The structure and friction coefficient of the brake linings and thus their brake power may vary greatly from that of original Husqvarna Motorcycles brake linings. If brake linings that differ from the original equipment are used, it cannot be guaranteed that these are in keeping with the original homologation. In this case, the vehicle will not correspond to its condition at delivery and the warranty shall be void.

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

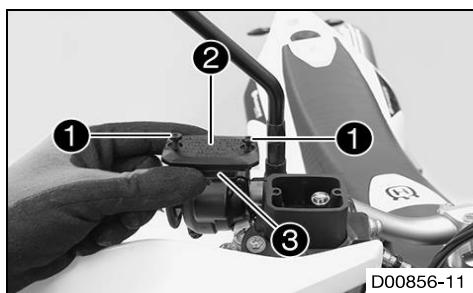
- Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

**Info**

Never use DOT 5 brake fluid. It is silicone-based and purple in color. Oil seals and brake lines are not designed for DOT 5 brake fluid.

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

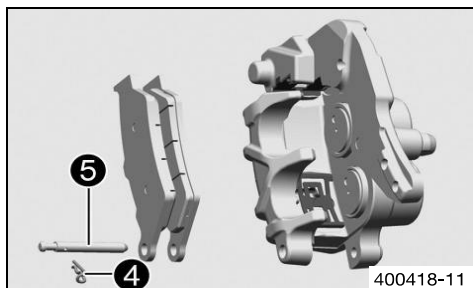
Only use clean brake fluid from a sealed container.



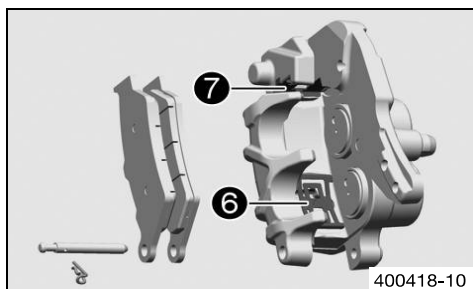
- Move the brake fluid reservoir mounted on the handlebar to a horizontal position.
- Remove screws ①.
- Remove cover ② with membrane ③.
- Press the brake caliper onto the brake disc by hand in order to push back the brake pistons. Ensure that brake fluid does not flow out of the brake fluid reservoir, extracting it by suction if it does.

**i Info**

Make sure that you do not press the brake caliper against the spokes when pushing back the brake pistons.



- Remove cotter pin ④, remove pin ⑤ toward the right by striking it, and remove the brake linings.
- Clean the brake caliper and brake caliper support.

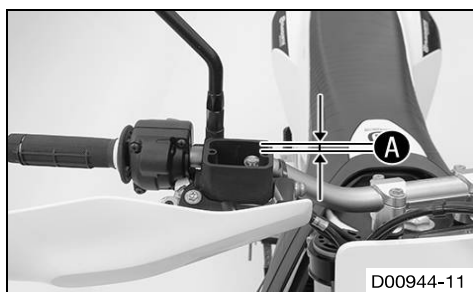


- Check that leaf spring ⑥ in the brake caliper and sliding plate ⑦ in the brake caliper support are seated correctly.
- Insert the new brake linings, insert the pin, and mount the cotter pins.

**i Info**

Always change the brake linings in pairs.

- Operate the hand brake lever repeatedly until the brake linings are in contact with the brake disk and there is a pressure point.



- Correct the brake fluid quantity to level A.

**Guideline**

Level A	5 mm (0.2 in)
Brake fluid DOT 4 (p. 306)	

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

**i Info**

Clean up overflowed or spilled brake fluid immediately with water.

### 16.3 Checking brake fluid level of front brake



**Warning**

**Danger of accidents** Brake system failure.

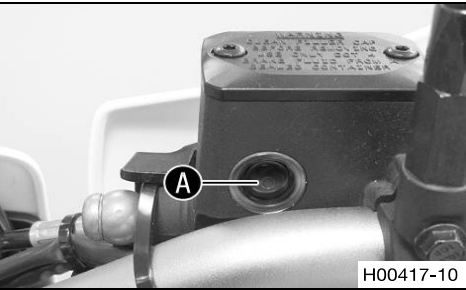
- If the brake fluid level drops below the specified marking or the specified value, this is an indication that the brake system is leaking or that the brake linings are completely worn down. Check the brake system and do not continue riding.



**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 the viewer.
  - » If the brake fluid has dropped below marking **A** :
    - Add front brake fluid. (📖 p. 122)


16.4 Adding front brake fluid

**Warning**  
**Danger of accidents** Brake system failure.


- If the brake fluid level drops below the specified marking or the specified value, this is an indication that the brake system is leaking or that the brake linings are completely worn down. 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.

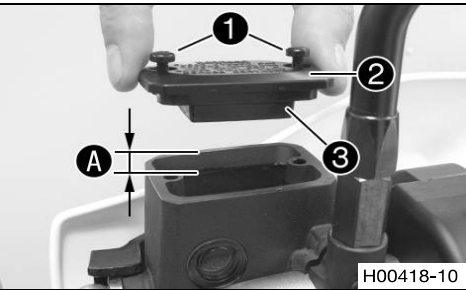
- Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

**Info**

Never use DOT 5 brake fluid. It is silicone-based and purple in color. Oil seals and brake lines are not designed for DOT 5 brake fluid.

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

Only use clean brake fluid from a sealed container.



**Preparatory work**

- Check the front brake linings. (📖 p. 120)

**Main work**

- Move the brake fluid reservoir mounted on the handlebar to a horizontal position.
- Remove screws **1**.
- Remove cover **2** with membrane **3**.
- Add brake fluid to level **A**.

Guideline

Level <b>A</b> (brake fluid level below reservoir rim)	5 mm (0.2 in)
--	---------------

Brake fluid DOT 4 (📖 p. 306)

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

**Info**

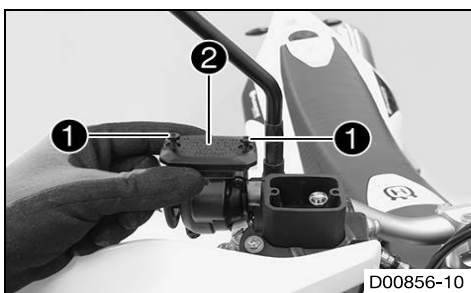
Clean up overflowed or spilled brake fluid immediately with water.

## 16.5 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.

- i 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 painted parts.
- Remove screws ①.
- Take off cover ② with the 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. 309)

Brake fluid DOT 4 (p. 306)

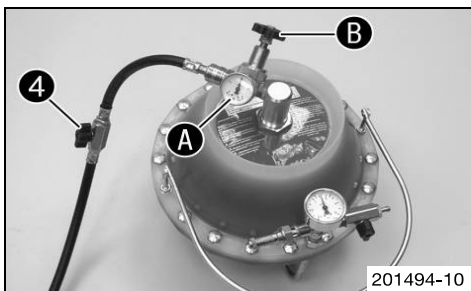


- Mount bleeder cover ③.

Bleeder cover (00029013015) (p. 308)

- Connect the bleeding device.

Bleeding device (00029013100) (p. 308)



- Open shut-off valve ④.

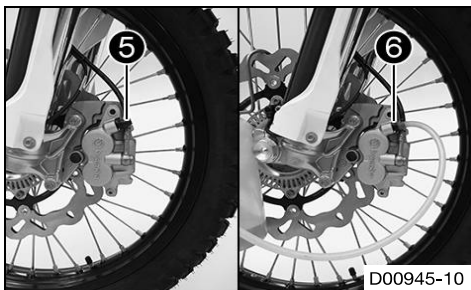
- i Info**  
 Follow the instructions in the Owner's Manual of the bleeding device.

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

Guideline

Filling pressure

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



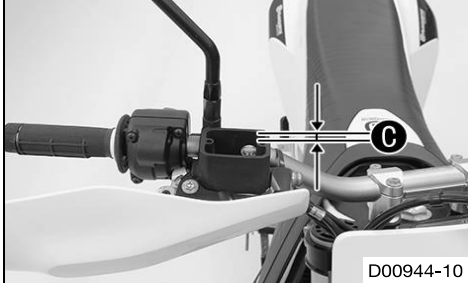
- Pull off protection cap ⑤ of the brake caliper bleeder screw. Connect the bleeder bottle hose.

Bleeding device (00029013100) (p. 308)

- Open bleeder screw ⑥ by approx. one half turn.

- i Info**  
 Drain until fresh brake fluid emerges in the bleeder bottle hose without bubbles.

- Tighten the bleeder screw.
- Close shut-off valve ④.



- Open the bleeder screw again until brake fluid stops emerging.



## Info

Overfilling of the brake fluid reservoir is prevented.

- Tighten the bleeder screw. Remove the bleeder bottle hose. Attach the protection cap.
- Disconnect the bleeding device. Remove the bleeder cover.
- Correct the brake fluid level.

## Guideline

Add brake fluid to level <b>C</b> .	5 mm (0.2 in)
-------------------------------------	---------------

Brake fluid DOT 4 (p. 306)
----------------------------

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



## Info

Clean up overflowed or spilled brake fluid immediately with water.

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

## 16.6 Checking the rear brake linings



## Warning

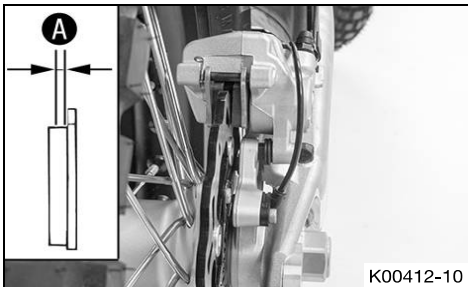
**Danger of accidents** Reduced braking efficiency caused by worn brake linings.

- 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 **A**.

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

» If the minimum thickness is less than specified:

- Change the rear brake linings. (p. 124)

- Check the brake linings for damage and cracking.

» If there is wear or tearing:

- Change the rear brake linings. (p. 124)

## 16.7 Changing the rear brake linings



## Warning

**Danger of accident** Brake system failure.

- Maintenance work and repairs must be carried out professionally.



## 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 accident** Reduced braking efficiency due to the use of non-approved brake linings.

- Brake linings available in accessories stores often have not been tested and approved for use in Husqvarna motorcycles. The structure and friction coefficient of the brake linings and thus their brake power may vary greatly from that of original Husqvarna Motorcycles brake linings. If brake linings that differ from the original equipment are used, it cannot be guaranteed that these are in keeping with the original homologation. In this case, the vehicle will not correspond to its condition at delivery and the warranty shall be void.

**Warning**

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

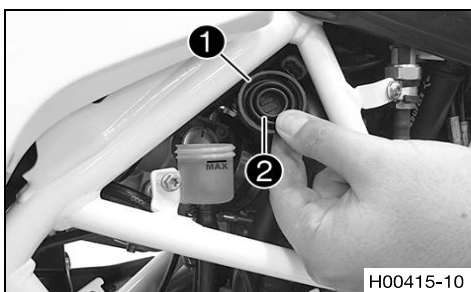
- Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

**Info**

Never use DOT 5 brake fluid. It is silicone-based and purple in color. Oil seals and brake lines are not designed for DOT 5 brake fluid.

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

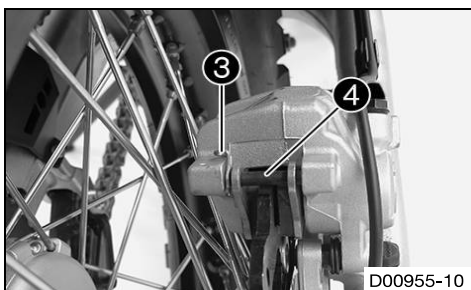
Only use clean brake fluid from a sealed container.



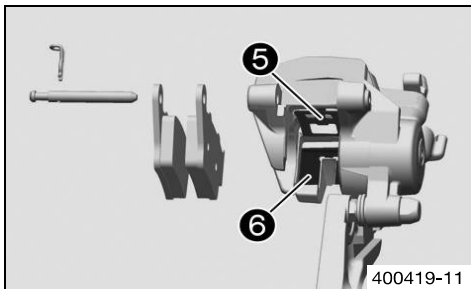
- Stand the vehicle upright.
- Remove screw cap ① with membrane ②.
- Press the brake caliper onto the brake disc by hand in order to push back the brake piston. Ensure that brake fluid does not flow out of the brake fluid reservoir, extracting it by suction if it does.

**Info**

Make sure when pushing back the brake piston that you do not press the brake caliper against the spokes.



- Remove cotter pin ③, remove pin ④ toward the left by striking it, and remove the brake linings.
- Clean the brake caliper and brake caliper support.



- Check that leaf spring ⑤ in the brake caliper and sliding plate ⑥ in the brake caliper support are seated correctly.
- Insert the new brake linings, insert the pin, and mount the cotter pins.

**Info**

Always change the brake linings in pairs.

- 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 (p. 306)

- Refit screw cap with membrane.

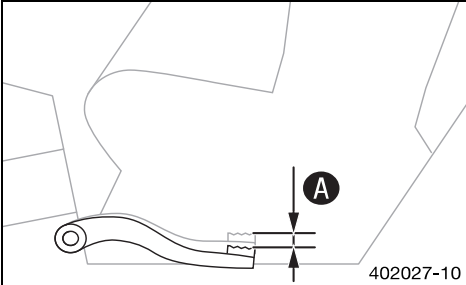
**Info**

Clean up overflowed or spilled brake fluid immediately with water.



## 16.8 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.



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

Guideline

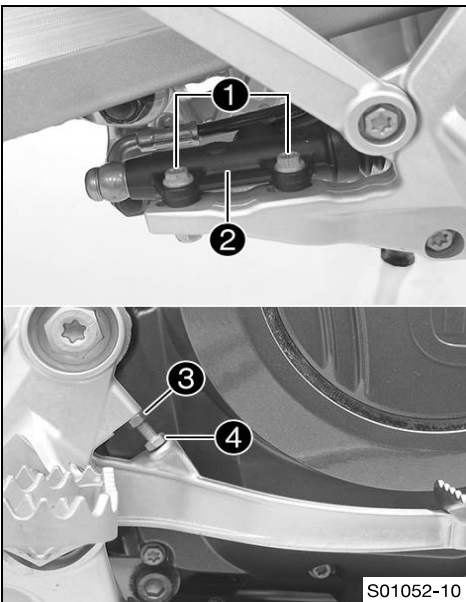
Free travel at foot brake lever	3... 5 mm (0.12... 0.2 in)
---------------------------------	----------------------------

- i Info**  
 You will know that contact has been made with the foot brake cylinder piston when there is increased resistance when you activate the foot brake lever.

- » If the free travel does not meet specifications:
- Adjust the basic position of the foot brake lever. (p. 126)

## 16.9 Adjusting the basic position 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.



- Loosen fittings **1** on foot brake cylinder **2**.
- To adjust the basic position of the foot brake lever to individual requirements, loosen nut **3** and turn screw **4** accordingly.

- i Info**  
 The range of adjustment is limited. The screw must be screwed into the footrest bracket by at least four turns.

- Position foot brake cylinder **2** so that the foot brake lever has the necessary free travel.
- Tighten fitting **1**.

Guideline

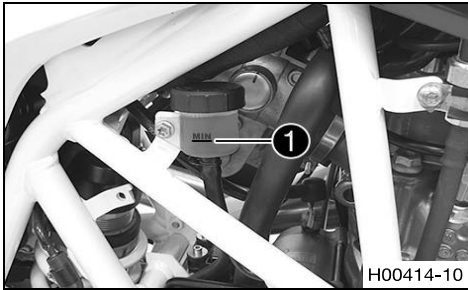
Screw connection, foot brake cylinder	M6	10 Nm (7.4 lbf ft)
---------------------------------------	----	--------------------

- Check the free travel of the foot brake lever. (p. 126)
- Tighten nut **3**.

## 16.10 Checking 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** marking ①:
    - Add rear brake fluid. (📖 p. 127)

## 16.11 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.

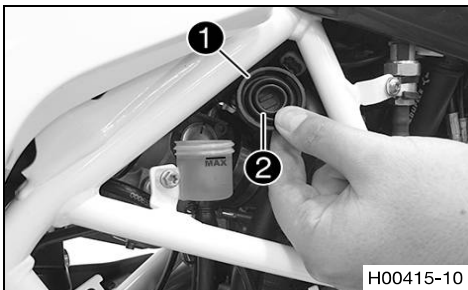
  - Oil, grease, filters, fuel, cleaners, brake fluid, etc., should be disposed of as stipulated in applicable regulations.

- i Info**

Never use DOT 5 brake fluid. It is silicone-based and purple in color. Oil seals and brake lines are not designed for DOT 5 brake fluid.

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

Only use clean brake fluid from a sealed container.



- Preparatory work**
- Check the rear brake linings. (📖 p. 124)

- Main work**
- Stand the vehicle upright.
  - Remove screw cap ① with membrane ②.
  - Add brake fluid to the **MAX** marking.


Brake fluid DOT 4 (📖 p. 306)

- Refit screw cap with membrane.


- i Info**

Clean up overflowed or spilled brake fluid immediately with water.


16.12 Changing the rear brake fluid

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

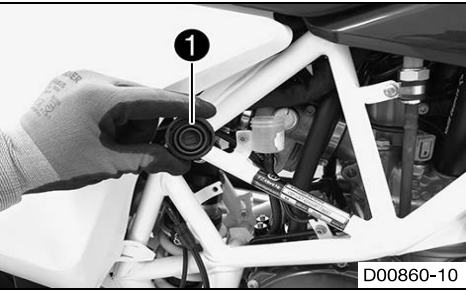
- Avoid contact with skin and eyes, and keep out of the reach of children.
- Wear suitable protective clothing and goggles.
- If brake fluid comes into contact with the eyes, flush the eyes thoroughly with water and consult a physician immediately.

**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.

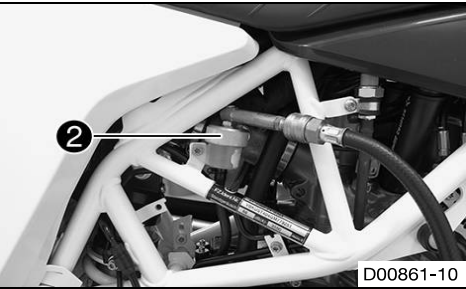
**Info**

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

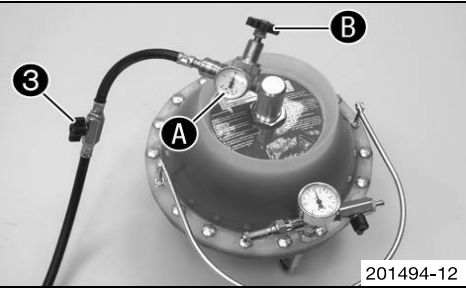



- Cover painted parts.
- Take off screw cap ① with the washer and membrane.
- Draw the old brake fluid out of the brake fluid reservoir using a syringe and fill with fresh brake fluid.

Bleed syringe (50329050000) (📖 p. 309)
Brake fluid DOT 4 (📖 p. 306)

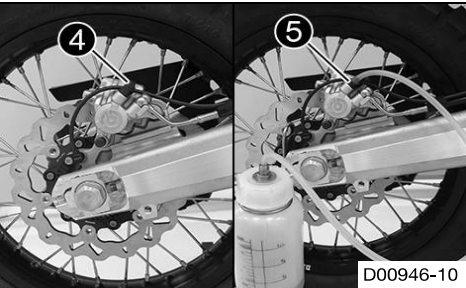


- Mount bleeder cover ②.
- |  |
|--|
| Bleeder cover (00029013004) (📖 p. 308) |
|--|
- Connect the bleeding device.
- |  |
|--|
| Bleeding device (00029013100) (📖 p. 308) |
|--|



- Open shut-off valve ③.
- **Info**  
Follow the instructions in the Owner's Manual of the bleeding device.

- Ensure that the filling pressure is set on pressure gauge ①. Correct the filling pressure on pressure regulator ② if necessary.
- Guideline
- |                  |                             |
|------------------|-----------------------------|
| Filling pressure | 2... 2.5 bar (29... 36 psi) |
|------------------|-----------------------------|

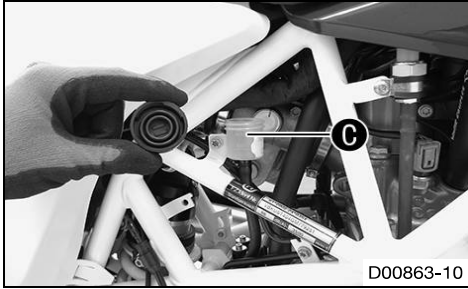


- Pull off protection cap ④ of the bleeder screw. Connect the bleeder bottle hose.
- |  |
|--|
| Bleeding device (00029013100) (📖 p. 308) |
|--|
- Open bleeder screw ⑤ by approx. one half turn.

**Info**

Drain until fresh brake fluid emerges in the bleeder bottle hose without bubbles.

- Tighten the bleeder screw.
- Close shut-off valve ③.
- Open the bleeder screw again until brake fluid stops emerging.



---

**i Info**

Overfilling of the brake fluid reservoir is prevented.

---

- Tighten the bleeder screw. Remove the bleeder bottle hose. Attach the protection cap.
- Disconnect the bleeding device. Remove the bleeder cover.
- Add brake fluid up to the **MAX** marking **C**.

Brake fluid DOT 4 (📖 p. 306)
------------------------------

- Mount the screw cap with the washer and membrane.
- 

**i Info**

Clean up overflowed or spilled brake fluid immediately with water.

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## 17.1 Combination instrument

### 17.1.1 Setting the kilometers or miles



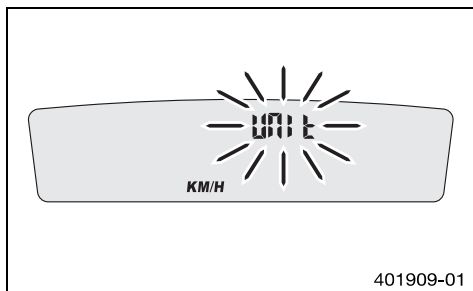
#### Info

If the unit is changed, the value **ODO** is retained and converted accordingly.

#### Condition

The motorcycle is stationary.

- Press both buttons for 3–5 seconds.
  - ✓ The Setup menu is displayed. The **UNIT** display flashes.
- Press one of the buttons to select **UNIT** for the speed in kilometers **KM/H** or miles **M/H**.

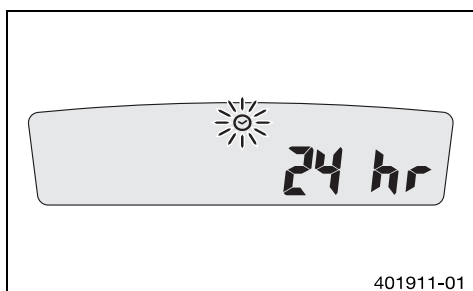


### 17.1.2 Setting the clock

#### Condition

The motorcycle is stationary.

- Press both buttons for 3–5 seconds.
  - ✓ The Setup menu is displayed. The **UNIT** display flashes.
- Wait for the menu of the clock ☀ to flash.
- Press one of the buttons to select the 24h display or 12h display for the clock.



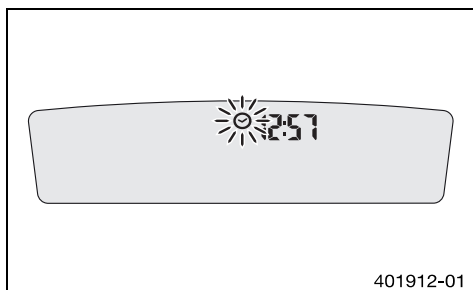
- Wait for 5 seconds.
  - ✓ The combination instrument changes to the next menu item. The clock ☀ symbol flashes.

#### Resetting the time

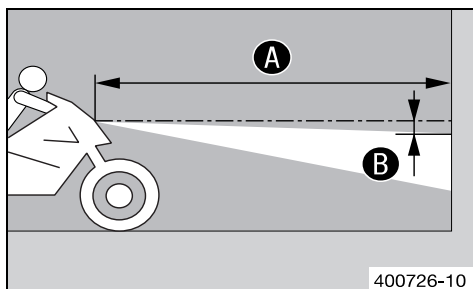
- Press the left button.
  - ✓ The value decreases.

#### Advancing the time

- Press the right button.
  - ✓ The value increases.



## 17.2 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 **B** under the first mark.

#### Guideline

Distance <b>B</b>	5 cm (2 in)
-------------------	-------------

- Position the vehicle vertically at a distance **A** away from the wall.

#### Guideline

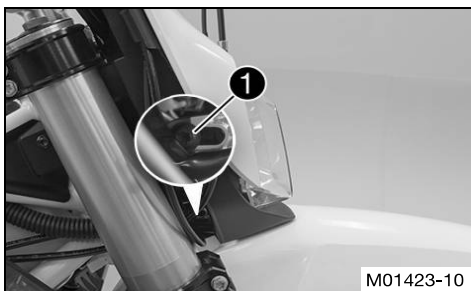
Distance <b>A</b>	5 m (16 ft)
-------------------	-------------

- The rider, with luggage and passenger if applicable, now mounts the motorcycle.
- Switch on the low beam.
- 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. 131)

## 17.3 Adjusting the headlight range



### Preparatory work

- Check the headlight setting. (📖 p. 130)

### Main work

- Loosen screw ①.
- Adjust the headlight range by pivoting the headlight.

### Guideline

The boundary between light and dark must be exactly on the lower mark for a motorcycle with rider (instructions on how to apply the mark: Checking the headlight setting).

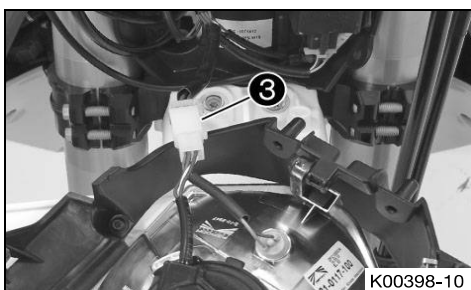
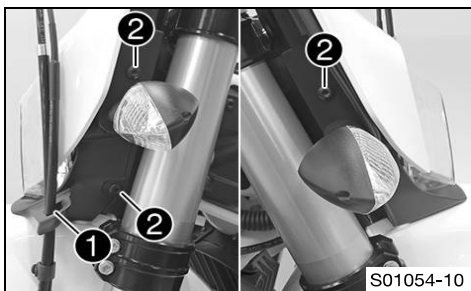
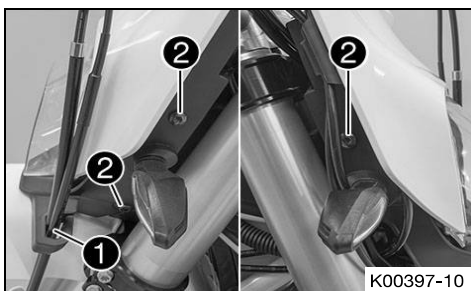


### Info

If you have a payload, you may have to correct the headlight range.

- Tighten screw ①.

## 17.4 Removing the headlight mask with the headlight



### Preparatory work

- Switch off the ignition by turning the ignition key to the **OFF** ⏻ position.

### Main work

#### (EU/AU)

- Cover the fender with a cloth to protect it from damage.
- Detach the brake line and wiring harness from holder ①.
- Remove screws ② on both sides.
- Fold the headlight mask forward.

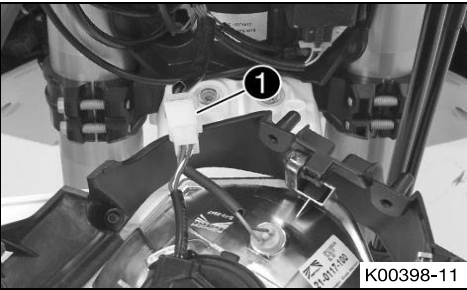
#### (US)

- Cover the fender with a cloth to protect it from damage.
- Detach the brake line and wiring harness from holder ①.
- Remove screws ② on both sides.
- Fold the headlight mask forward.

- Disconnect plug-in connector ③ of the headlight.
- Remove the headlight mask.

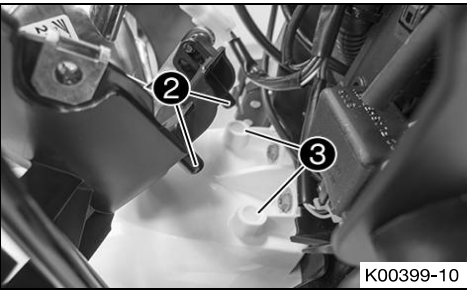


17.5 Installing the headlight mask with the headlight

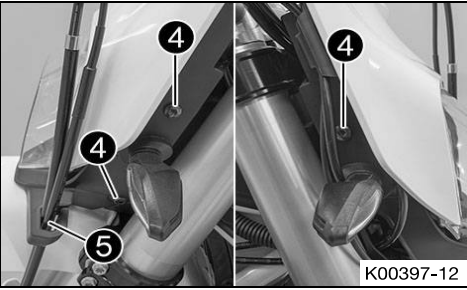


Main work

- Connect plug-in connector 1 of the headlight.
- Check that the lighting is functioning properly.



- Remove the cloth from the fender and position the headlight mask.  
✓ Both holding lugs 2 engage in drilled holes 3 of the fender.



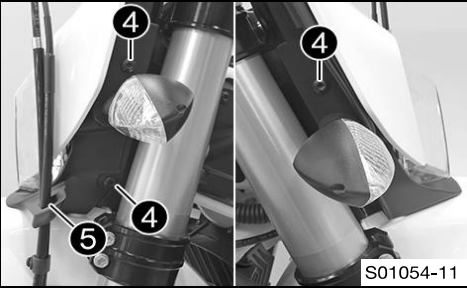
(EU/AU)

- Mount and tighten screws 4.

Guideline

Screw, headlight mask	M5	5 Nm (3.7 lbf ft)
-----------------------	----	-------------------

- Mount the brake line and wiring harness in holder 5.



(US)

- Mount and tighten screws 4.

Guideline

Screw, headlight mask	M5	5 Nm (3.7 lbf ft)
-----------------------	----	-------------------

- Mount the brake line and wiring harness in holder 5.

Finishing work

- Check the headlight setting. (📖 p. 130)

17.6 Changing the parking light bulb

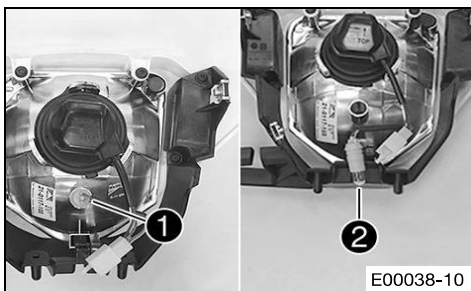
Note

**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 the ignition by turning the ignition key to the **OFF** ☒ position.
- Remove the headlight mask with the headlight. (📖 p. 131)



## Main work

- Pull bulb socket ① out of the reflector.
- Pull parking light bulb ② out of the bulb socket.
- Insert a new parking light bulb in the bulb socket.

Parking light (W5W / socket W2.1x9.5d) (p. 231)

- Insert the bulb socket in the reflector.

## Finishing work

- Install the headlight mask with the headlight. (p. 132)
- Check the headlight setting. (p. 130)

## 17.7 Changing the headlight bulb

### Note

**Damage to reflector** Reduced brightness.

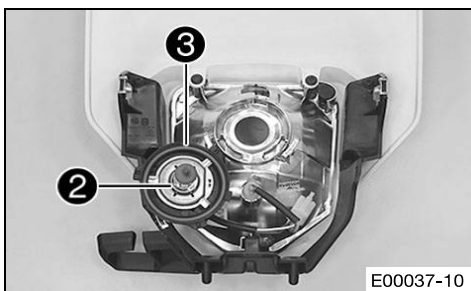
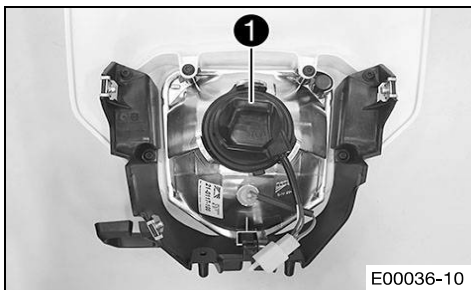
- Grease on the lamp will evaporate due to the heat and be deposited on the reflector. Clean the lamp and keep it free of grease before mounting.

## Preparatory work

- Switch off the ignition by turning the ignition key to the **OFF** position.
- Remove the headlight mask with the headlight. (p. 131)

## Main work

- Turn protection cap ① together with the underlying bulb socket counterclockwise all the way and remove it.



- Pull out headlight bulb ②.
- Insert the new headlight bulb.

Headlight (H4/socket P43t) (p. 231)

- Insert the protection cap with the bulb socket into the reflector and turn it clockwise all the way.



### Info

Ensure that O-ring ③ is seated properly.

## Finishing work

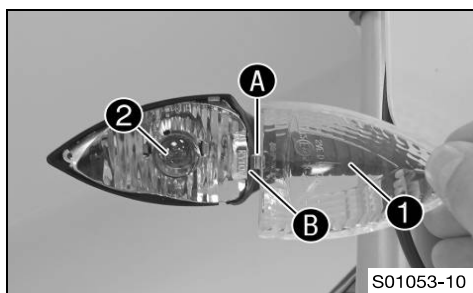
- Install the headlight mask with the headlight. (p. 132)
- Check the headlight setting. (p. 130)

## 17.8 Changing the turn signal bulb (US)

### 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.



- Remove the screw on the rear of the turn signal housing.
- Carefully remove diffuser **1**.
- Push bulb **2** lightly into the socket, turn approx. 30° counterclockwise, and pull it out of the socket.



## Info

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

- Lightly push the new lamp into the socket and turn all the way clockwise.

Turn signal (RY10W/socket BAU15s) (📖 p. 231)

- Check that the turn signal is functioning properly.
- Position the diffuser.












## Info

Insert catch **A** into recess **B**.

- Insert the screw and first turn counterclockwise until it engages in the thread with a small jerk. Tighten the screw lightly.


## 18.1 Removing the engine

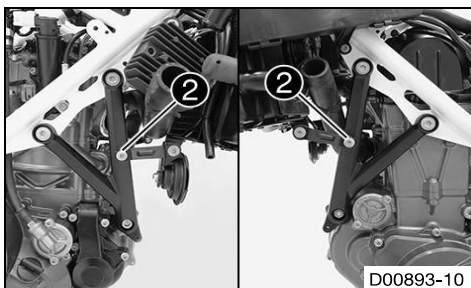
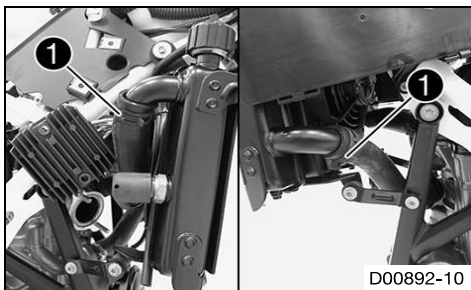
### Preparatory work

- Switch off the ignition by turning the ignition key to the **OFF**  position.
- Remove the seat. ( p. 79)
- Disconnect the battery. ( p. 114)
- Raise the motorcycle with the work stand. ( p. 12)
- Take off the side cover. ( p. 80)
- Remove the air filter box. ( p. 75)
- Remove the manifold. ( p. 71)
- Remove the engine guard. ( p. 43)
- Drain the coolant. ( p. 210)

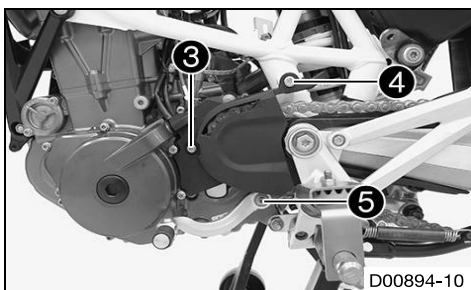
### Main work

- Loosen the spring band clamps **1** using the special tool. Pull off the radiator hoses.

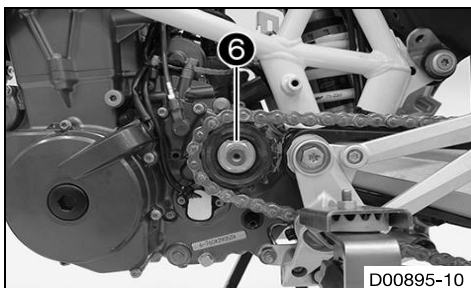
Pliers for spring band clamp (60029057100) ( p. 312)



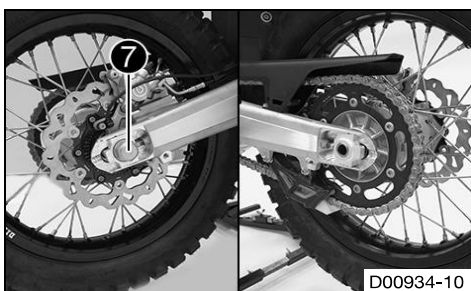
- Remove screws **2**.



- Remove screw **3**.
- Remove screw **4**.
- Take off the engine sprocket cover.
- Remove screw **5** with the washers.
- Take off the shift lever.



- Bend up lock washer **6**.
- Have an assistant operate the rear brake.
- Remove the nut of the engine sprocket with the lock washer.



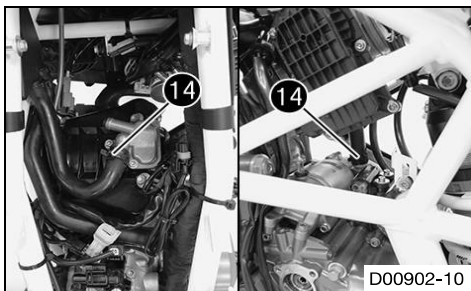
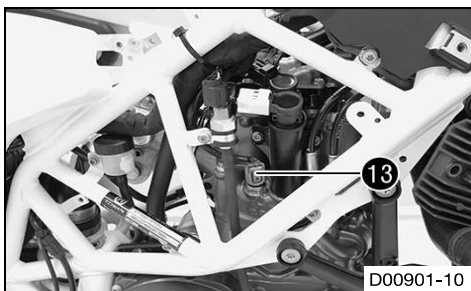
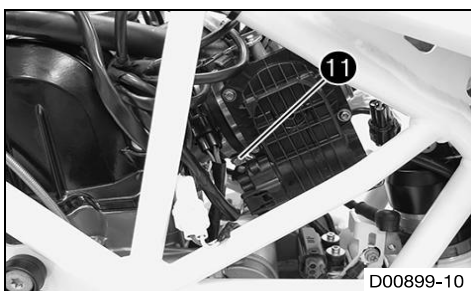
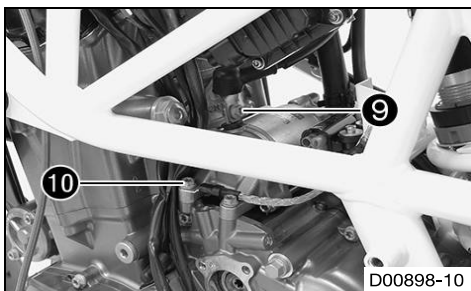
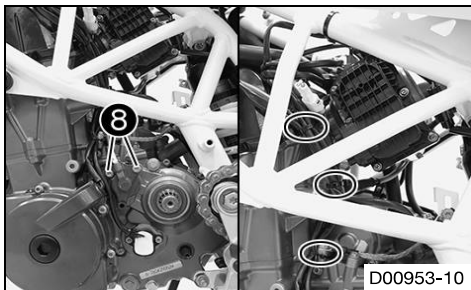
- Remove nut **7**. Remove the chain adjuster.
- Pull out the wheel spindle only far enough to allow the rear wheel to be pushed forward.
- Push the rear wheel forward as far as possible and take the chain off the rear sprocket.



### Info

The rear wheel must not be fully removed.





- Take off the engine sprocket.
- Remove screws ⑧.
- Remove the cable ties.
- Take off the clutch slave cylinder with the gasket and hang it to the side.

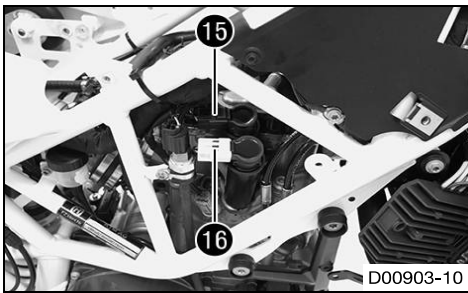


## Info

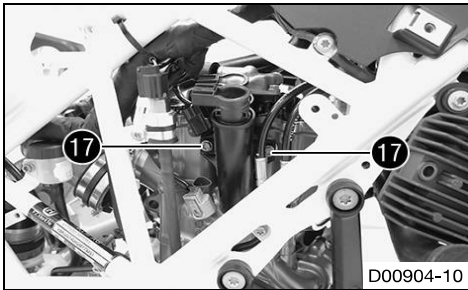
Do not kink the clutch line.  
Do not activate the clutch lever while the slave cylinder of the clutch is removed.

- Take off the clutch push rod.
- Pull back the protection cap. Remove nut ⑨.
- Remove screw ⑩.
- Loosen hose clip ⑪.
- Pull off the throttle valve body to the rear.
- Disconnect plug-in connectors ⑫ of the gear position sensor, crankshaft position sensor, and alternator.
- Disconnect engine coolant temperature sensor connector ⑬.
- Loosen the spring band clamps ⑭ using the special tool.

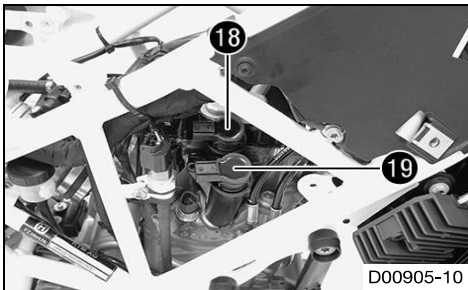
Pliers for spring band clamp (60029057100) (p. 312)



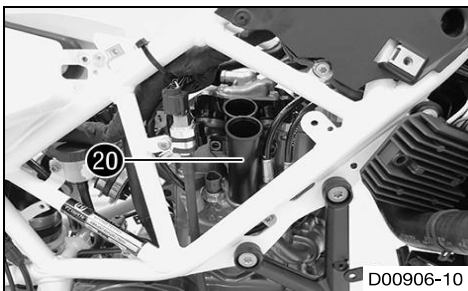
- Unplug connector 15 and 16 of the ignition coils.



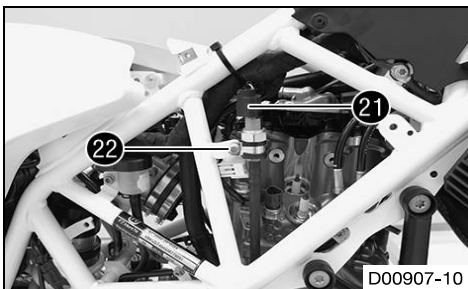
- Remove screws 17.



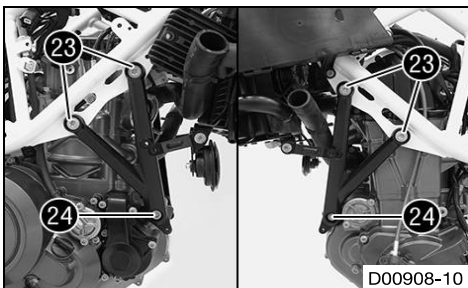
- Pull the spark plug shaft lightly to the side.
- Remove ignition coils 18 and 19.



- Remove spark plug shaft 20.

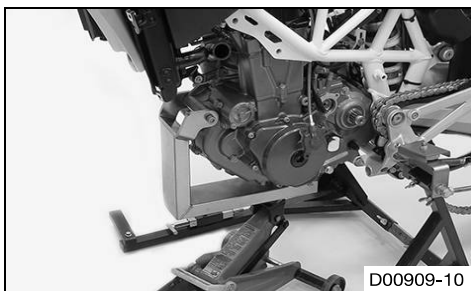


- Detach connector 21 of the oil pressure sensor. Remove screw 22.



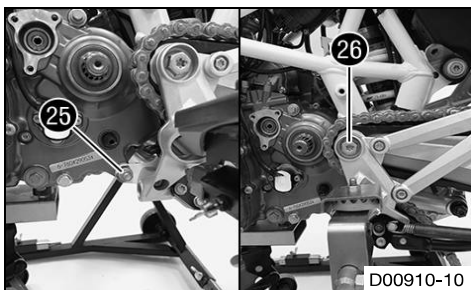
- Remove screws 23.
- Remove fitting 24.
- Remove the engine bearer.



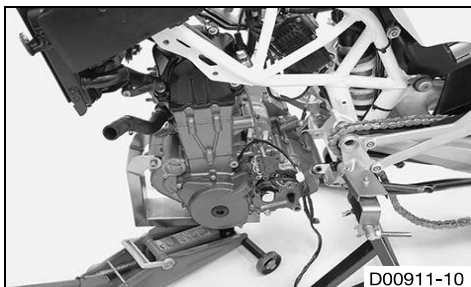


- Position the floor jack under the engine and fix it using the special tool.

Floor jack attachment (75029055000) (🔧 p. 317)



- Remove fitting 25 of the lower engine bracket.
- Remove screw 26.
- Pull the swingarm pivot out far enough to release the engine.



- Lower the engine.



## Info

The help of an assistant is useful in this step.  
Make sure that the engine is sufficiently secured against falling over.  
Protect the frame and attachments against damage.

## 18.2 Installing the engine

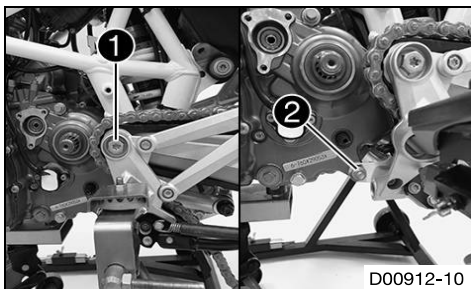
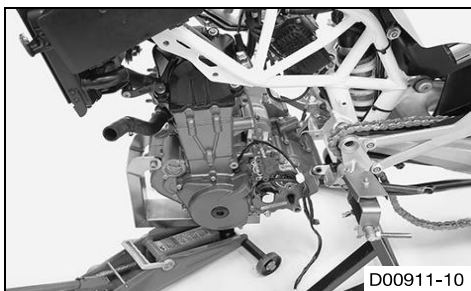
### Preparatory work

- Lift the engine onto the special tool and secure it.

Floor jack attachment (75029055000) (🔧 p. 317)

### Main work

- Position the engine in the frame.

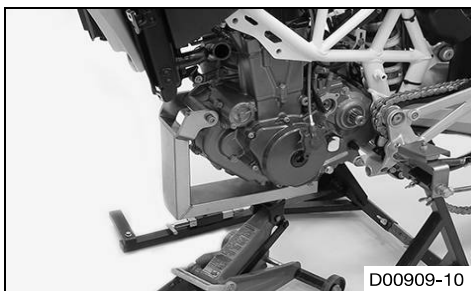


- Mount the swingarm pivot.
- Mount screw 1 of swingarm pivot but do not tighten yet.
- Mount fitting 2 of the lower engine attachment but do not tighten yet.



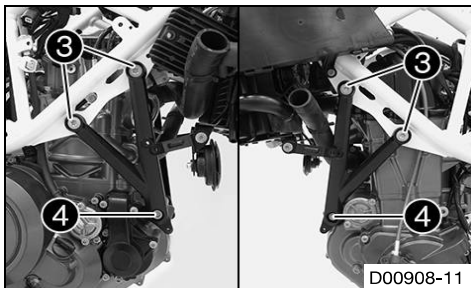
## Info

The help of an assistant is useful in this step.  
Make sure that the engine is sufficiently secured against falling over.  
Protect the frame and attachments against damage.



- Remove the floor jack with the special tool.

Floor jack attachment (75029055000) (🔧 p. 317)



- Position the engine bearer.
- Mount and tighten screws ③.

Guideline

Screw, engine bearer on frame	M10	45 Nm (33.2 lbf ft)
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- Mount and tighten fitting ④.

Guideline

Engine carrying screw	M10	45 Nm (33.2 lbf ft)	Loctite® 243™
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- Tighten screw ① of swingarm pivot.

Guideline

Screw, swingarm pivot	M12	80 Nm (59 lbf ft)
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- Tighten fitting ② of the lower engine bracket.

Guideline

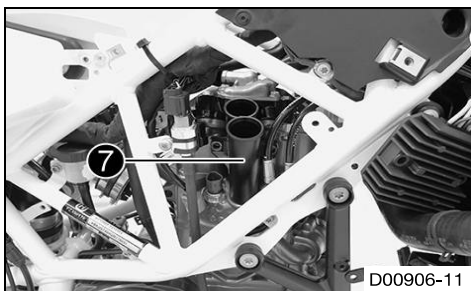
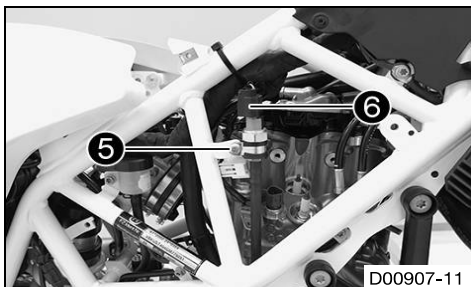
Engine carrying screw	M10	45 Nm (33.2 lbf ft)	Loctite® 243™
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- Position the clamp of the oil line. Mount and tighten screw ⑤. Plug in the connector.

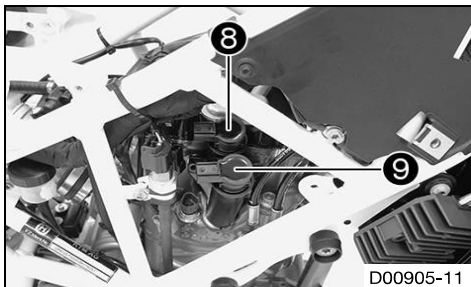
Guideline

Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)
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- Plug in connector ⑥.



- Position spark plug shaft ⑦.

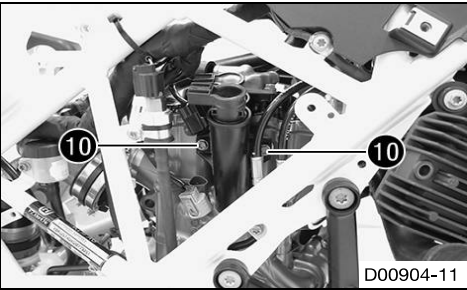


- Position ignition coils ⑧ and ⑨.



#### Info

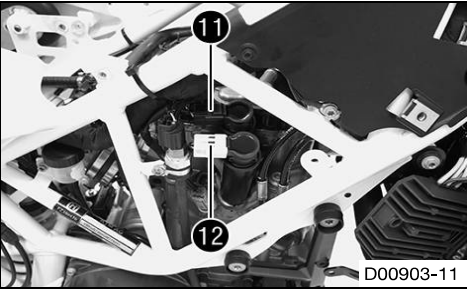
Ensure that the ignition coils are seated correctly.



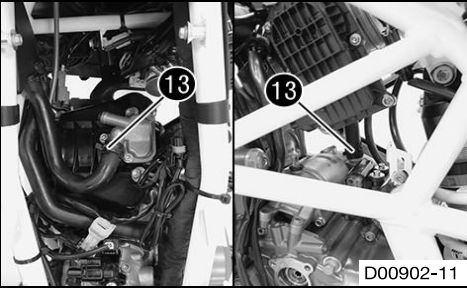
- Mount and tighten screws 10.

Guideline

Screw, ignition coil	M6	10 Nm (7.4 lbf ft)
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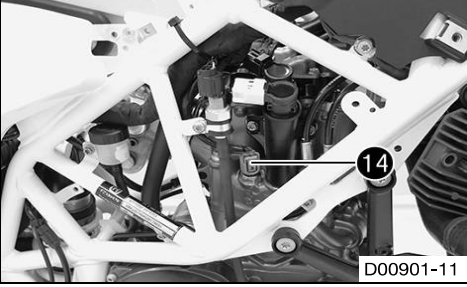


- Plug in connectors 11 and 12 of the ignition coils.  
✓ The cable with the white marking is connected to the outer ignition coil.

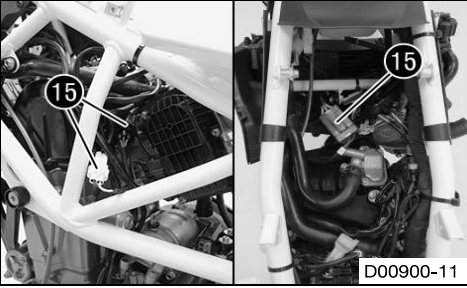


- Position the bleeder hoses.
- Mount the spring band clamps 13 using the special tool.

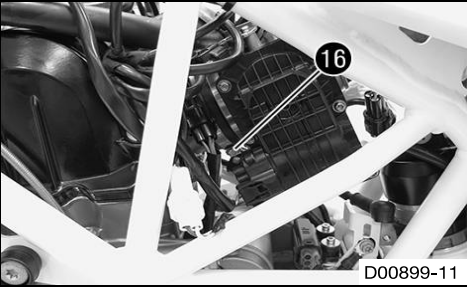
Pliers for spring band clamp (60029057100) (p. 312)
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- Plug in the connector of the engine coolant temperature sensor 14.



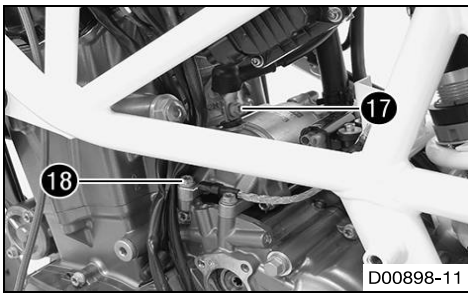
- Connect plug-in connectors 15 of the gear position sensor, crankshaft position sensor, and alternator.



- Position the throttle valve body.
- Position and tighten hose clip 16.

Guideline

Hose clamp, intake flange	M4	2.5 Nm (1.84 lbf ft)
---------------------------	----	-------------------------



- Position electrical connection **17** on the starter motor. Mount and tighten the screw. Mount the protection cap.

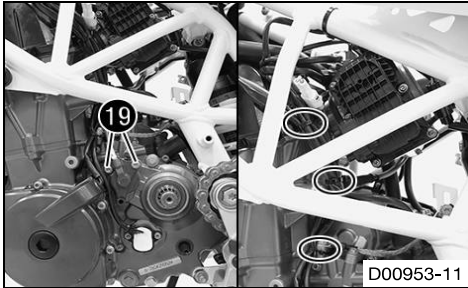
Guideline

Screw, cable on starter motor	M5	3 Nm (2.2 lbf ft)
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- Position the ground wire on the starter motor. Mount and tighten screw **18**.

Guideline

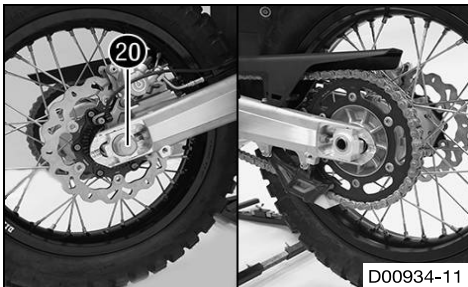
Screw, starter motor	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
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- Insert the clutch push rod.
- Position the slave cylinder of the clutch.
- Mount and tighten screws **19**.

Guideline

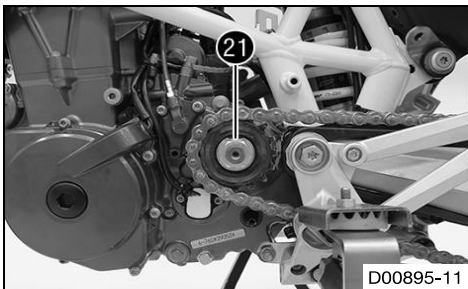
Screw, clutch slave cylinder	M6x20	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, clutch slave cylinder	M6x35	10 Nm (7.4 lbf ft)	Loctite® 243™



- Secure the cable with the cable ties.
- Mount the engine sprocket with the chain.
- Position the new lock washer and mount nut but do not tighten yet.
- Position the rear wheel.
- Mount the chain adjuster and nut.
- Push the rear wheel forward so that the chain adjusters rest against the tensioning screws, and tighten nut **20**.

Guideline

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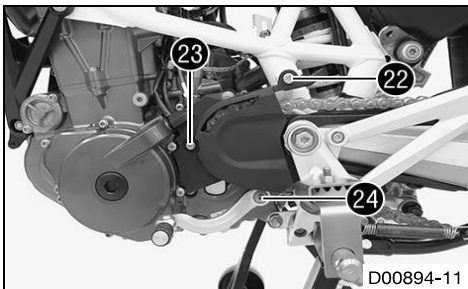


- Have an assistant operate the rear brake.
- Tighten the nut.

Guideline

Nut, engine sprocket	M20x1.5	80 Nm (59 lbf ft)	Loctite® 243™
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- Secure the nut with lock washer **21**.



- Position the engine sprocket cover.
- Mount and tighten screw **22**.

Guideline

Remaining screws, chassis	M8	25 Nm (18.4 lbf ft)
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- Mount and tighten screw **23**.

Guideline

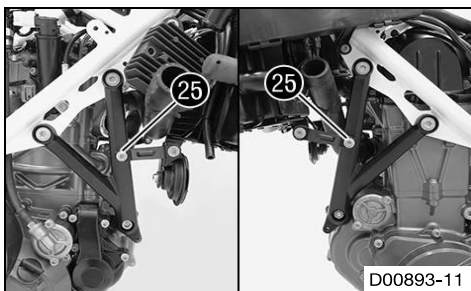
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)
---------------------------	----	--------------------

- Position the shift lever.
- Mount and tighten screw **24** with washers.

Guideline

Screw, shift lever	M6	14 Nm (10.3 lbf ft)	Loctite® 243™
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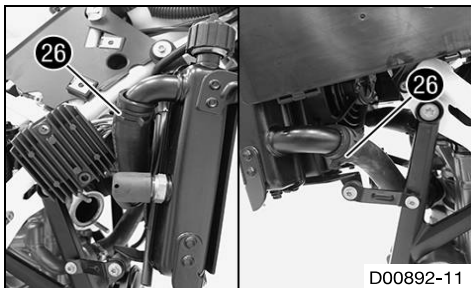




- Mount and tighten screws 25.

Guideline

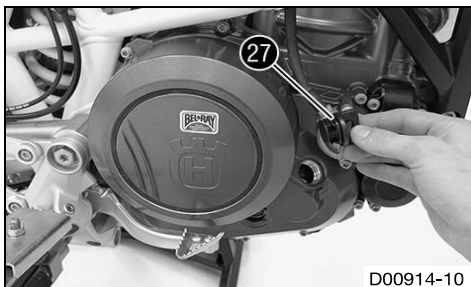
Screw, upper radiator bracket	M6	10 Nm (7.4 lbf ft)
-------------------------------	----	--------------------



- Position the radiator hoses. Mount spring band clamps 26.

Pliers for spring band clamp (60029057100) (p. 312)

- Install the manifold. (p. 72)
- Connect the battery. (p. 115)



- Remove filler plug 27 and the O-ring from the clutch cover, and fill up with engine oil.

Engine oil	1.70 l (1.8 qt.)	Engine oil (SAE 10W/50) (p. 306)
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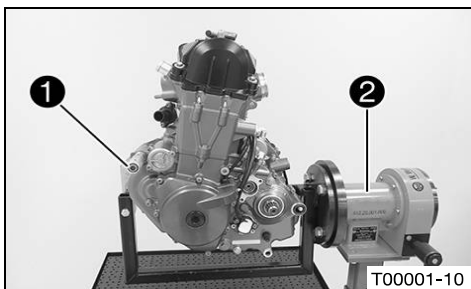
- Mount and tighten the filler plug with O-ring 27.

## Finishing work

- Fill/bleed the cooling system. (p. 210)
- Install the air filter box. (p. 77)
- Mount the side cover. (p. 80)
- Mount the seat. (p. 80)
- Remove the motorcycle from the work stand. (p. 12)
- Perform the initialization run. (p. 226)
- Go for a short test ride.
- Read out the fault memory using the Husqvarna Motorcycles diagnostics tool.
- Check the engine for leak tightness.
- Check the engine oil level. (p. 213)
- Check the coolant level. (p. 212)

## 18.3 Engine disassembly

### 18.3.1 Clamping the engine into the engine assembly stand



- Mount special tool 1 on engine assembly stand 2.

Engine assembly stand (80329001000) (p. 319)

Support for engine assembly stand (75012001060) (p. 313)

Holder for engine assembly stand (75012001070) (p. 314)

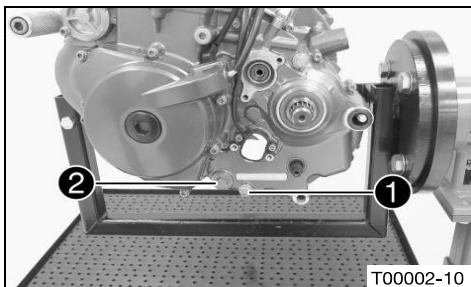
- Mount the engine on special tool 1.



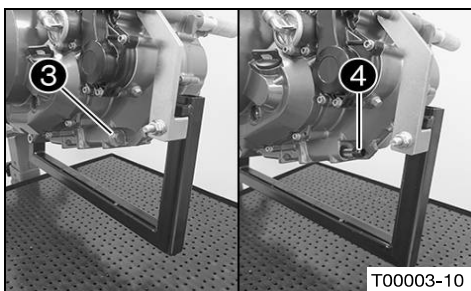
## Info

Work with an assistant or a motorized hoist.

## 18.3.2 Draining the engine oil

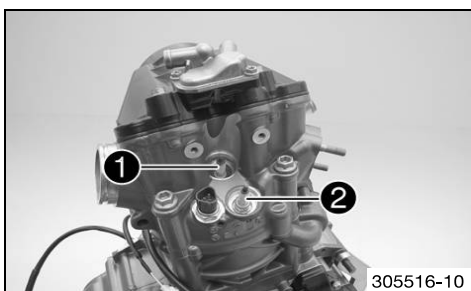


- Remove the oil drain plug ❶ with the magnet and seal ring.
- Remove plug ❷ with oil screen and the O-rings.



- Remove plug ❸ with oil screen ❹ and the O-rings.
- Completely drain the engine oil.

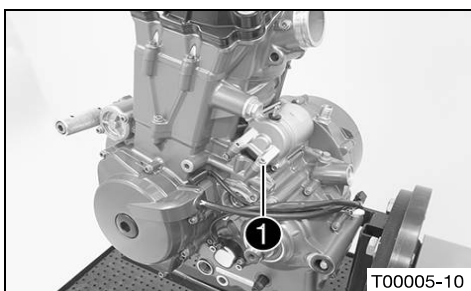
## 18.3.3 Removing the spark plugs



- Remove spark plugs ❶ and ❷.

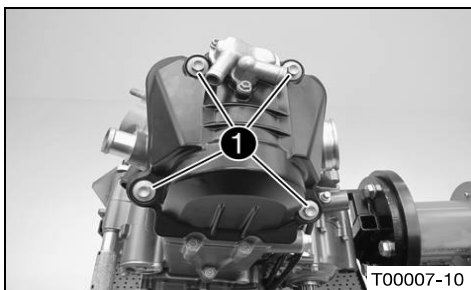
Spark plug wrench (75029172000) (p. 318)

## 18.3.4 Removing the starter motor



- Remove oil throttle ❶.
- Take off the starter motor.

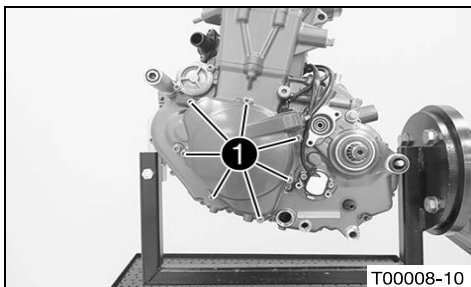
## 18.3.5 Removing the valve cover



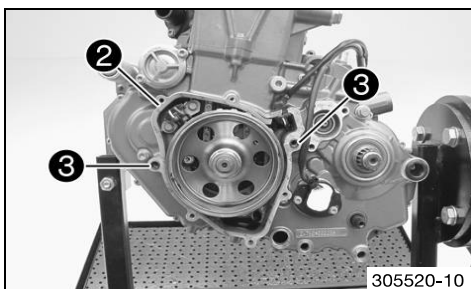
- Remove screws ❶.
- Take off the valve cover with the valve cover seal.



## 18.3.6 Removing the alternator cover

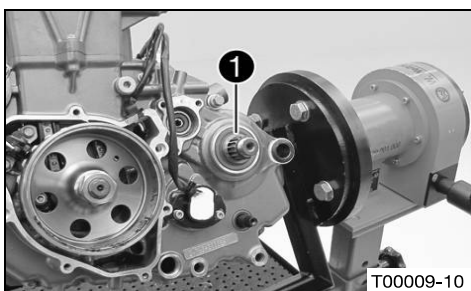


- Remove screws ①.
- Take off the alternator cover.



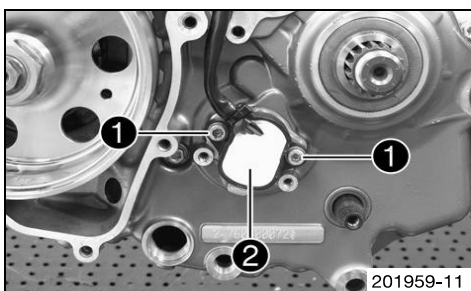
- Take off alternator cover gasket ② and remove dowels ③.

## 18.3.7 Removing the spacer



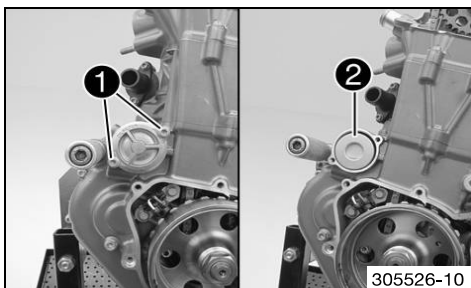
- Remove spacer ①.

## 18.3.8 Removing the gear position sensor



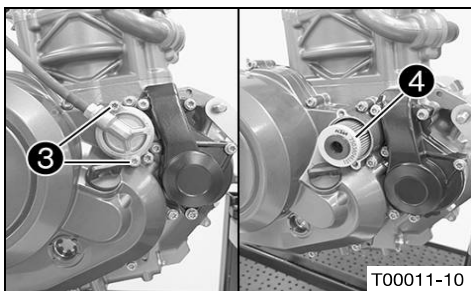
- Remove screws ① with the washers.
- Remove gear position sensor ② with the O-ring.

## 18.3.9 Removing the oil filter



- Remove screws ①.
- Take off the oil filter cover with the O-ring.
- Remove oil filter ②.

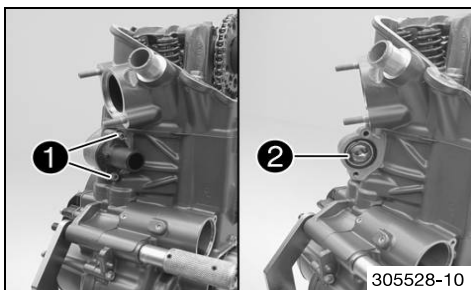
Circlip pliers reverse (51012011000) (p. 310)



- Remove screws ③.
- Take off the oil filter cover with the O-ring.
- Remove oil filter ④.

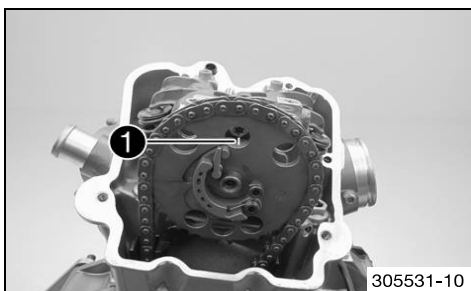
Circlip pliers reverse (51012011000) (p. 310)

## 18.3.10 Removing the thermostat

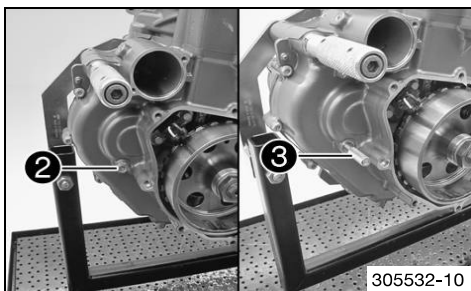


- Remove screws ①.
- Take off the thermostat case.
- Remove thermostat ②.

## 18.3.11 Setting engine to ignition top dead center



- Turn the crankshaft counterclockwise until markings ① of the camshafts are flush with the marks of the camshaft support plate.



- Remove screw ②.



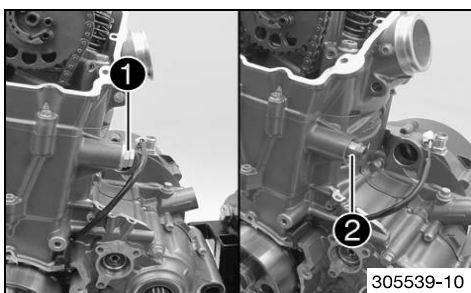
### Info

Look through the hole to check that the position hole of the balancer shaft is visible.

- Screw in special tool ③.

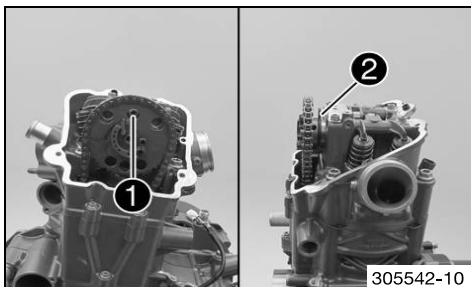
Engine blocking screw (77329010000) (p. 318)

## 18.3.12 Removing the timing chain tensioner

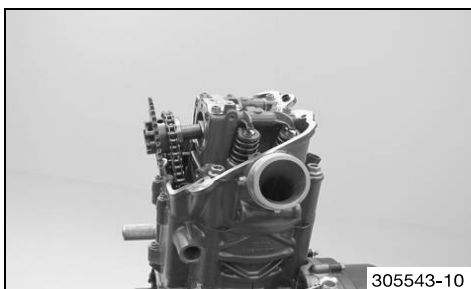


- Remove screw ① with the seal ring.
- Remove timing chain tensioner ②.

## 18.3.13 Removing the camshafts

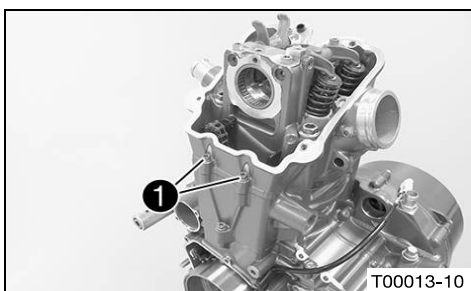


- Remove screw ①.
- Take off the camshaft support plate ②.

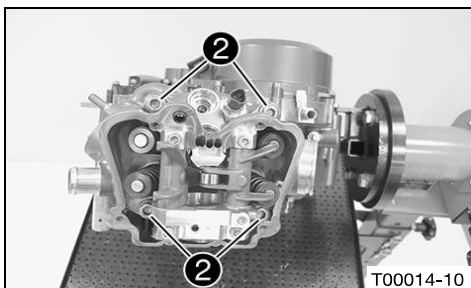


- Pull the camshaft out of the bearing seats.
- Take the timing chain off the camshaft gear.
- Remove the camshaft.

## 18.3.14 Removing the cylinder head

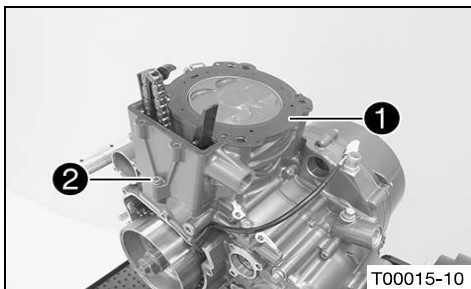


- Remove screws ①.



- Loosen screws ② diagonally and remove them.
- Take off the cylinder head.

## 18.3.15 Removing the piston

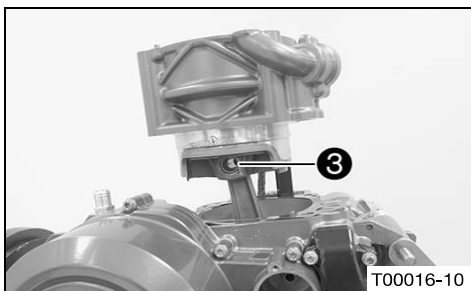


- Take off the cylinder head gasket ①.
- Remove screw ②.
- Push the cylinder upward.



### Info

Push the cylinder upward only far enough to allow removal of the piston pin.  
Ensure that the two grooved pins remain in place.

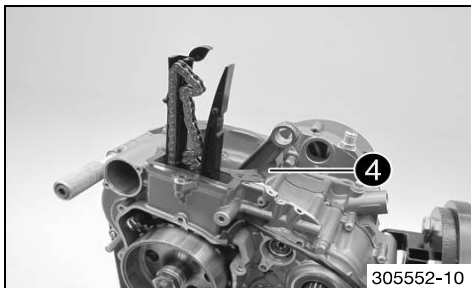


- Remove piston pin retainer ③.
- Remove the piston pin.
- Take off the cylinder with the piston.
- Push the piston upward out of the cylinder.



## Info

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



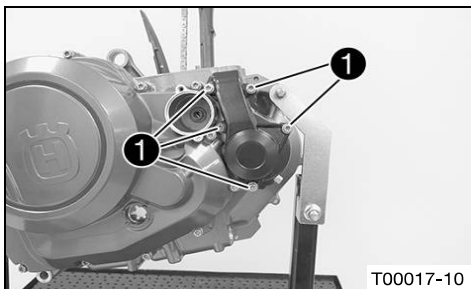
- Take off the cylinder base gasket ④.



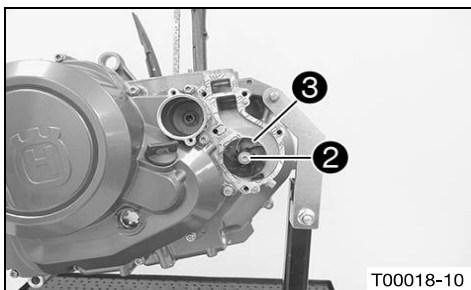
## Info

Ensure that the two grooved pins remain in place.

### 18.3.16 Removing the water pump impeller



- Remove screws ①. Take off the water pump cover.

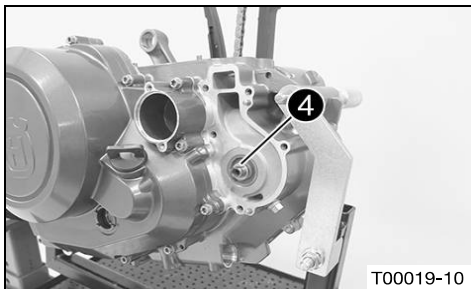


- Remove screw ②.
- Remove water pump impeller ③.
- Take off the water pump cover seal.



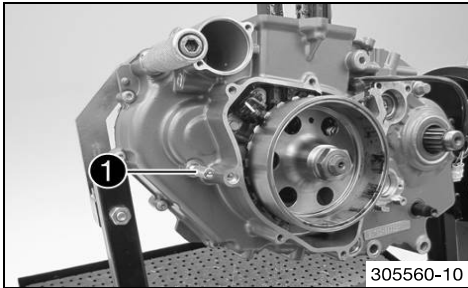
## Info

Ensure the locating pins remain in place.



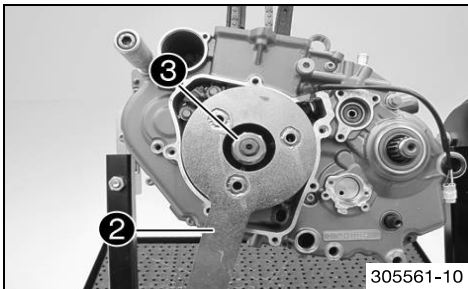
- Remove formed washer ④.

## 18.3.17 Removing the rotor



- Remove special tool ①.

Engine blocking screw (77329010000) (p. 318)



- Hold the rotor with special tool ②.

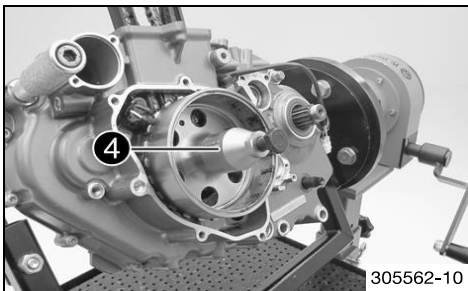
Holding wrench (75029091000) (p. 318)



### Info

Make sure that the crankshaft is not blocked.

- Remove nut ③ and the locking edge washer.

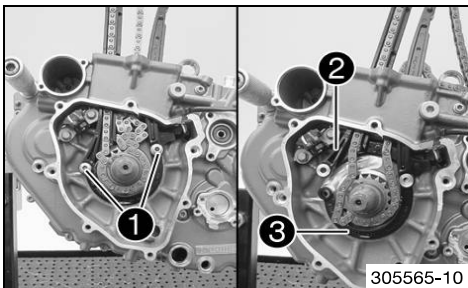


- Mount the special tool ④ on the rotor.

Extractor (58429009000) (p. 310)

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

## 18.3.18 Removing the timing chain rails



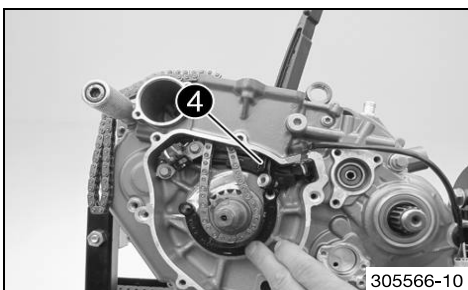
- Remove screws ①.
- Pull the timing chain guide rails ② out of the timing chain securing guide ③.



### Info

The support bushing is plugged into the timing chain securing guide through the timing chain guide rails.

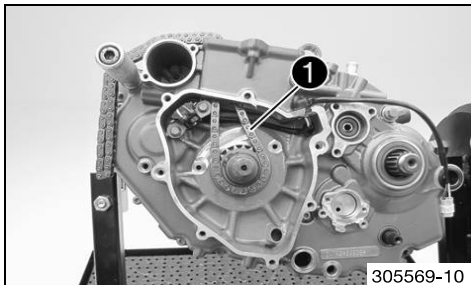
- Remove the timing chain guide rails upward out of the timing chain shaft.



- Hold the timing chain securing guide tight and pull the timing chain tensioning rail ④ out of the timing chain securing guide.
- Remove the timing chain tensioning rail upward out of the timing chain shaft.
- Remove the timing chain securing guide.



## 18.3.19 Removing the timing chain and timing chain sprocket

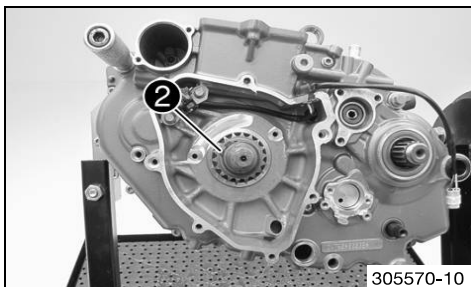


- Slip out timing chain ①.

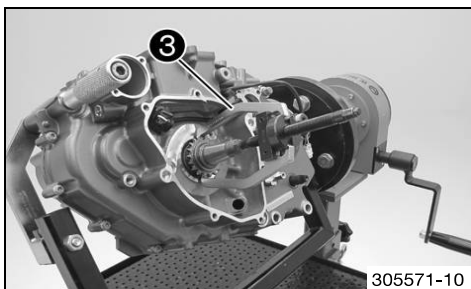


### Info

If the timing chain will be used again, mark the direction of travel.



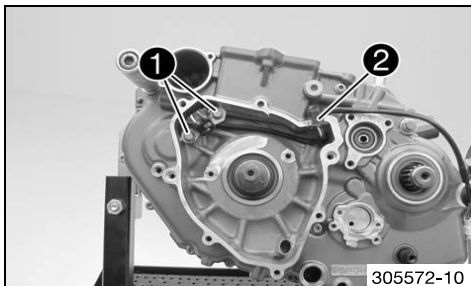
- Take off lock ring ②.



- Pull off the timing chain sprocket with special tool ③.

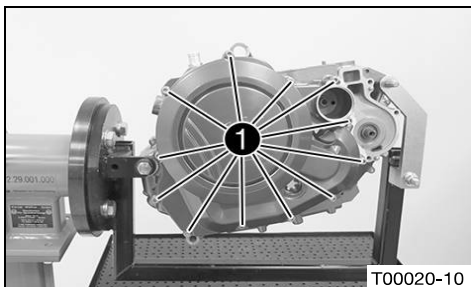
Extractor (59029033000) (p. 311)

## 18.3.20 Removing the ignition pulse generator



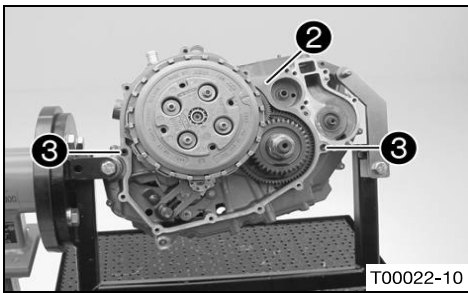
- Remove screws ①.
- Pull cable sleeve ② out of the engine case.
- Remove the ignition pulse generator.

## 18.3.21 Removing the clutch cover



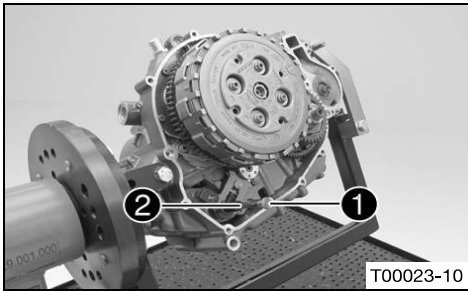
- Remove screws ①.
- Take off the clutch cover.





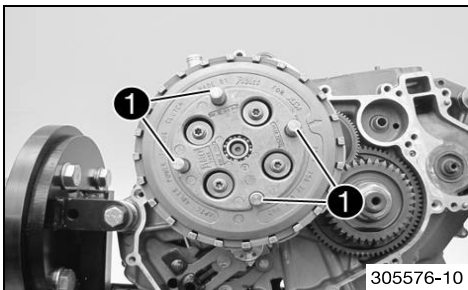
- Remove the clutch cover gasket **2**.
- Take off dowels **3**.

## 18.3.22 Removing the spacer and spring



- Remove spacer **1** and spring **2**.

## 18.3.23 Removing the clutch basket



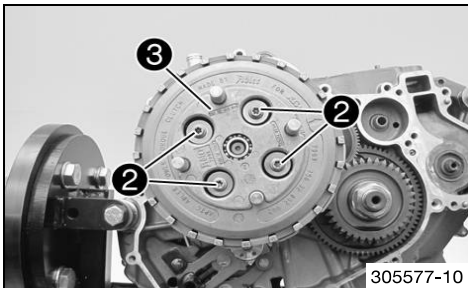
- Clamp the antihopping clutch with special tool **1**.

Assembly screws (75029033000) (p. 314)

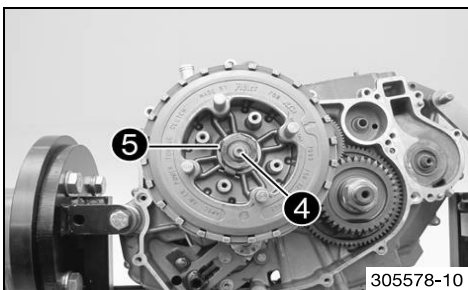


### Info

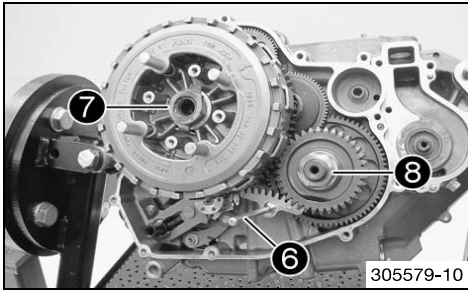
Apply the special tool with the hand only, do not use another tool.



- Loosen screws **2** diagonally and remove them with their spring retainers and clutch springs.
- Remove pressure cap **3**.



- Remove pressure piece **4**.
- Bend open lock washer **5**.



- Hold the clutch basket with special tool ⑥.

Gear segment (75029081000) (📖 p. 317)



## Info

Make sure that the crankshaft is not blocked.

- Remove nut ⑦.
- Remove the lock washer.
- Remove nut ⑧.



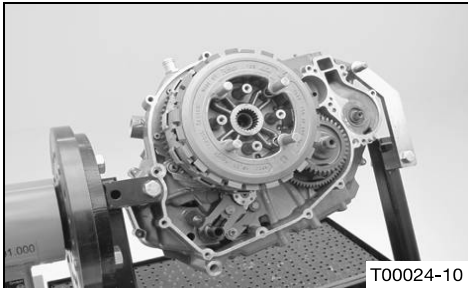
## Info

Left-handed thread!

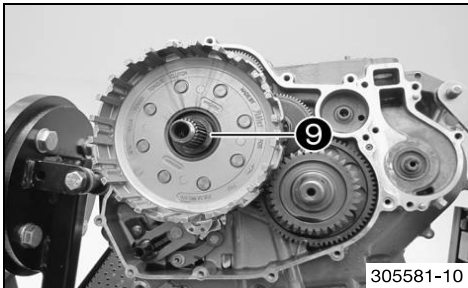
- Remove the special tool.

Gear segment (75029081000) (📖 p. 317)

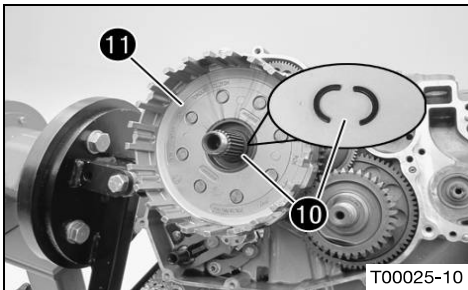
- Take out the antihopping clutch.



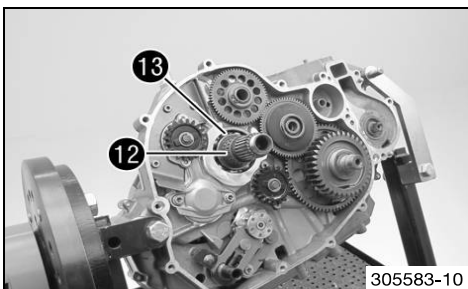
- Remove stepped washer ⑨.



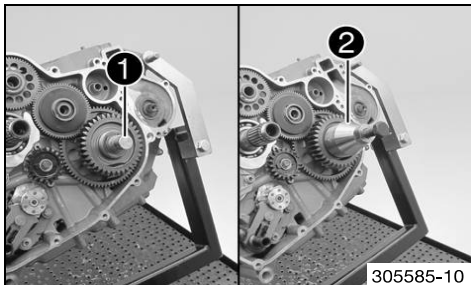
- Remove half washers ⑩.
- Take off the clutch basket ⑪.



- Remove needle bearing ⑫ and supporting plate ⑬.



## 18.3.24 Removing the primary gear



- Position special tool **1**.

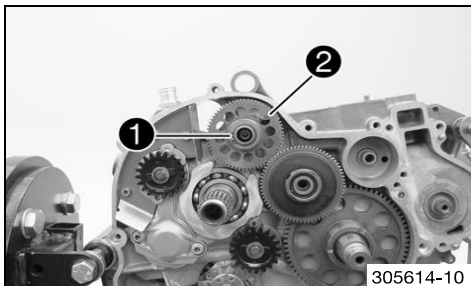
Protection cap (75029090000) (p. 317)

- Mount special tool **2**.

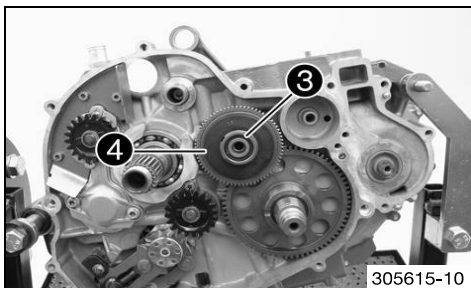
Extractor (75029021000) (p. 314)

- Hold it using the special tool and pull off the primary gear by turning the screw in.
- Remove the special tools.

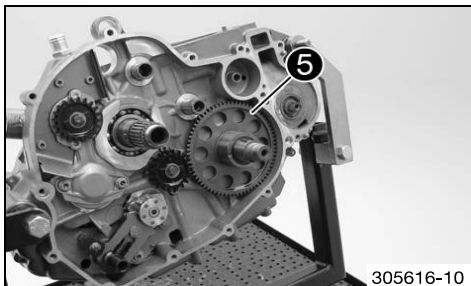
## 18.3.25 Removing the starter drive



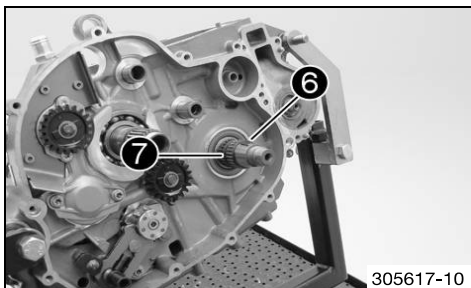
- Remove lock ring **1**.
- Take off the starter idler gear **2** with the washers.



- Remove lock ring **3**.
- Remove torque limiter **4** with the washers and needle bearing.

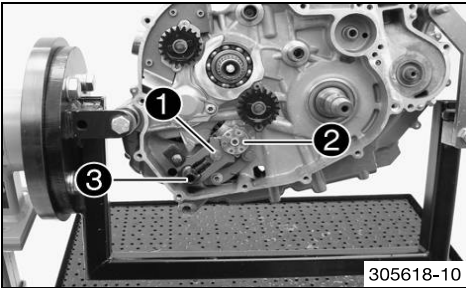


- Take off freewheel gear **5**.



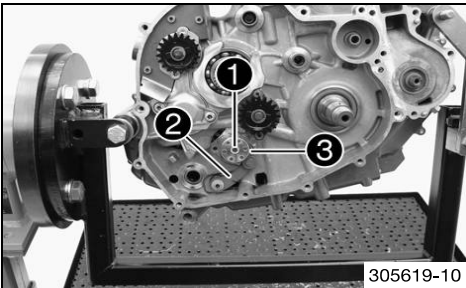
- Remove woodruff key **6** and both needle bearings **7**.

## 18.3.26 Removing shift shaft



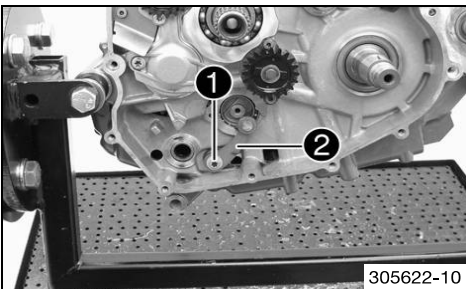
- Push sliding plate **1** away from the shift drum locating **2**. Remove shift shaft **3** with the washer.

## 18.3.27 Removing shift drum locating



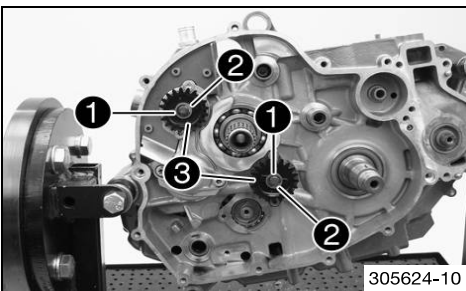
- Remove screw **1**.
- Press locking lever **2** away from shift drum locating **3** and take off the shift drum locating.
- Release the locking lever.

## 18.3.28 Removing locking lever

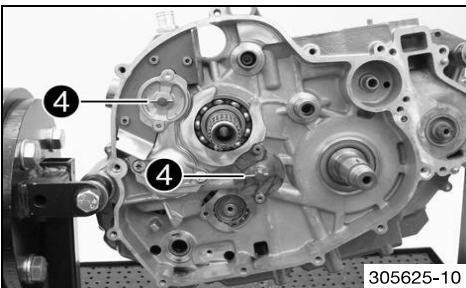


- Remove screw **1**.
- Take off locking lever **2** with the sleeve and spring.

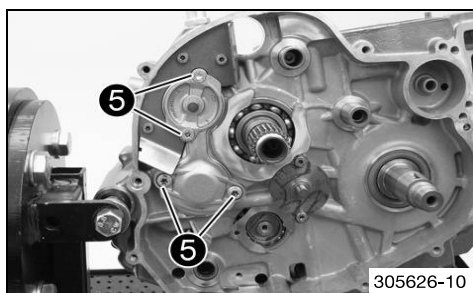
## 18.3.29 Removing the oil pumps



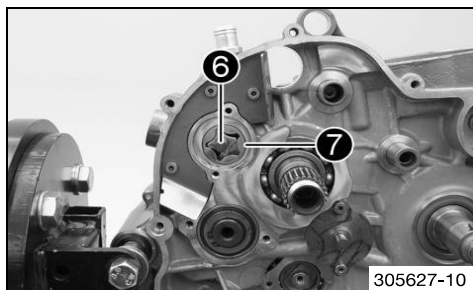
- Remove lock washers **1** and normal washers **2** from both oil pumps.
- Take off oil pump gear wheels **3**.



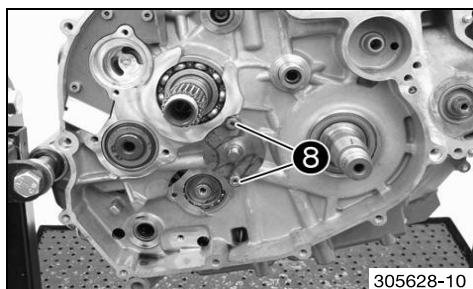
- Remove pins **4** and washers.



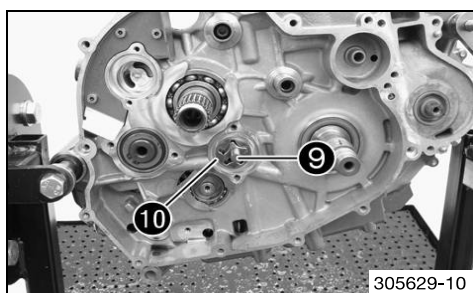
- Remove screws ⑤.
- Take off the oil pump cover.



- Remove oil pump shaft ⑥ with the internal rotor.
- Remove external rotor ⑦.

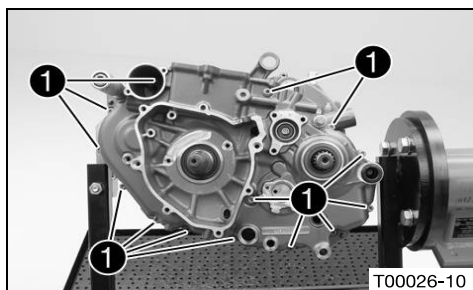


- Remove screws ⑧.
- Take off the oil pump cover.

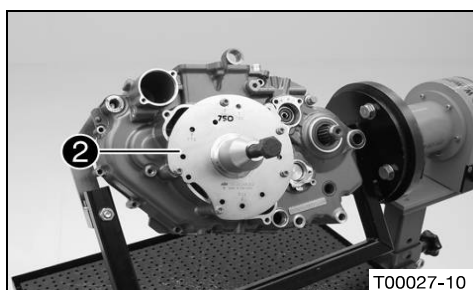


- Remove oil pump shaft ⑨ with the internal rotor.
- Remove external rotor ⑩.

## 18.3.30 Removing the left engine case



- Remove screws ①.
- Swing the left section of the engine case up and remove the nut or screw of the engine fixing arm.



- Mount special tool ② with suitable screws.

Extractor (75029048100) (p. 316)



### Info

Use the drill hole with marking 750.

- Pull off the section of the engine case.



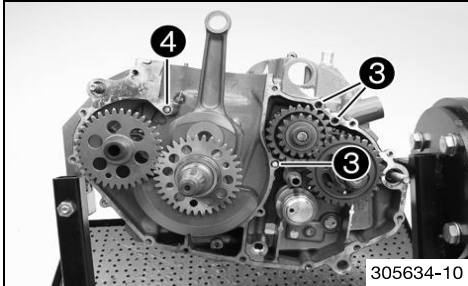


## Info

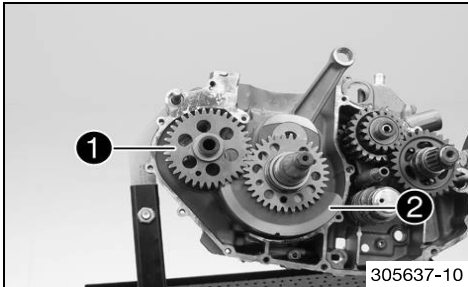
Do not tension the section of the engine case.

The balancer shaft and the main shaft have a stop disk; these usually stick to the bearing.

- Take off the left section of the engine case.
- Remove the special tool.
- Remove dowels ③.
- Remove O-ring ④.

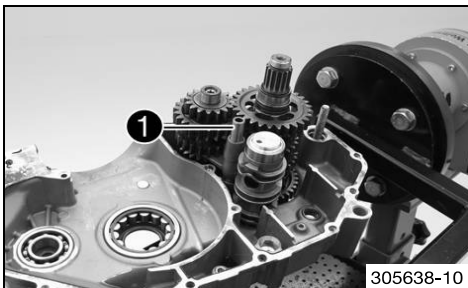


### 18.3.31 Removing the crankshaft and balancer shaft

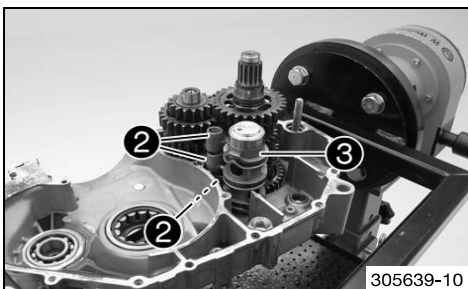


- Remove balancer shaft ① and crankshaft ②.

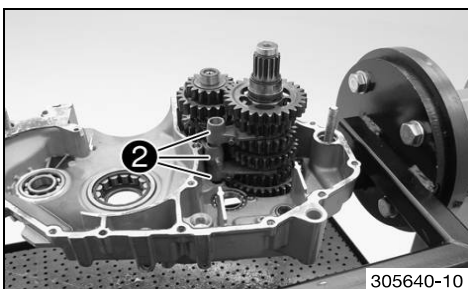
### 18.3.32 Removing the transmission shafts



- Remove shift rail ①.



- Swing shift forks ② to one side.
- Remove shift drum ③.



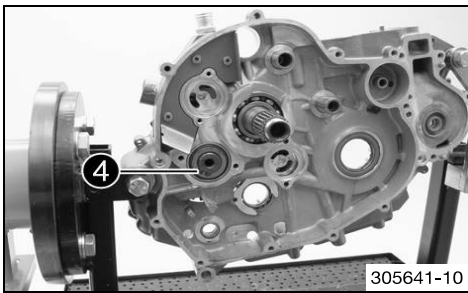
- Remove shift forks ②.



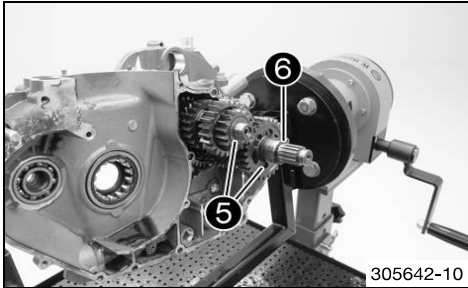
## Info

Ensure that the pins remain in place.





- Remove lock ring **4** and the stop disk.



- Remove transmission shafts **5**.



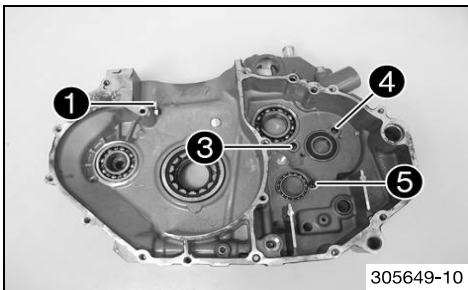
## Info

The stop disk of the countershaft usually sticks to the bearing.

- Take off the O-ring of countershaft **6**.

## 18.4 Work on individual parts

### 18.4.1 Work on the right section of the engine case



- Remove oil jet **1**.
- Remove bearing locks of the main shaft bearing **3**, of the countershaft bearing **4**, and of the shift drum bearing **5**.
- Remove any sealing mass remnants and clean the engine case section thoroughly.
- Pull the dowels out of the housing.
- Warm the engine case section in an oven.

## Guideline

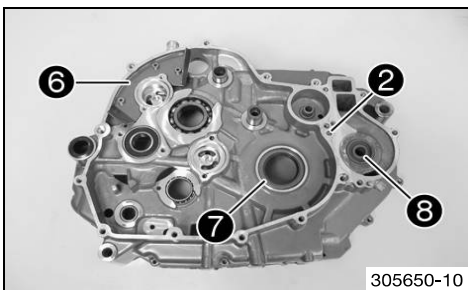
150 °C (302 °F)

- 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.



- Remove oil jet **2**.
- Remove the cover plate **6** for the oil return line.
- Press out the shaft seal ring **7** of the crankshaft from the inside to the outside.
- Remove the shaft seal rings **8** of the water pump.
- Press in the shaft seal ring **7** of the crankshaft from the outside to the inside with the open side facing in.



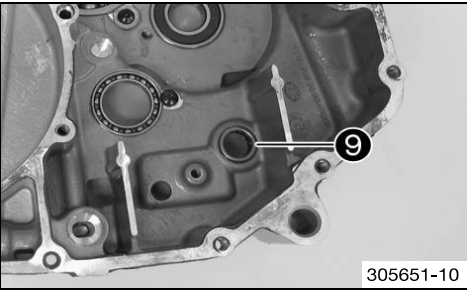
## Info

The shaft seal ring must be flush on the outside.


- Press in the shaft seal rings of the water pump with the open side facing out so that it is flush.
- Warm the engine case section again.

## Guideline

150 °C (302 °F)




- 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 from the inside to the outside, all the way to the stop or so it is flush.

**Info**

The shift shaft bearing 9 must be pressed in from the outside to the inside until it is flush.  
When pressing the bearing in, ensure that the engine case section is level to prevent damage.  
Only press the bearings in via the outer bearing race; 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.

- Position all bearing locks. Mount and tighten the screws.

Guideline			
Locking screw for bearing	M5	6 Nm (4.4 lbf ft)	Loctite® 243™

- Mount and tighten the oil jet 1.

Guideline			
Oil jet, piston cooling	M6x0.75	4 Nm (3 lbf ft)	Loctite® 243™

- Mount and tighten the oil jet 2.

Guideline			
Oil nozzle for conrod bearing lubrication	M4	2 Nm (1.5 lbf ft)	Loctite® 243™

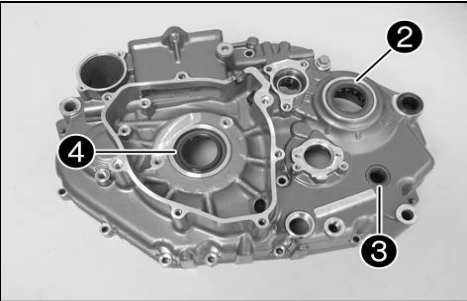
- Blow compressed air through all oil channels and check that they are clear.

- Position the cover plate 6. Mount and tighten the screws.


Guideline			
Screw, cover plate for oil return line	M5	6 Nm (4.4 lbf ft)	

- Reinstall the dowels.

18.4.2 Work on the left section of the engine case

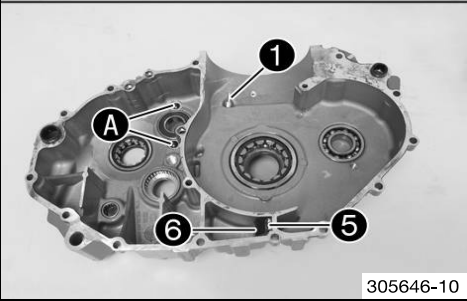


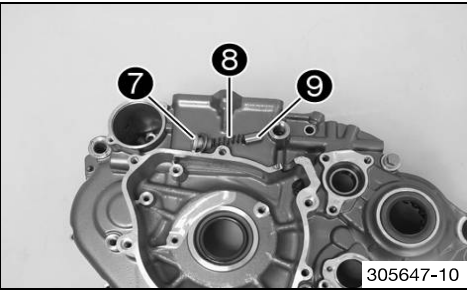
- Remove all dowels.
- Remove oil jet 1.
- Remove the shaft seal ring of countershaft 2 and shift shaft 3.

**Info**

The shaft seal ring 4 of the crankshaft cannot be removed before the crankshaft bearing.

- Screw off the membrane support plate 5 and remove it together with membrane 6.
- Remove screw A with the washer.





- Remove screw plug 7 and take pressure spring 8 with piston valve 9 out of the drill hole.
- 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.

**i** Info

Any bearings that remain in the engine case section must be removed using a suitable tool.

- Press out the shaft seal ring of the crankshaft from the outside to the inside.
- Press in the shaft seal ring of the crankshaft from the inside to the outside with the open side facing out.

**i** Info

The shaft seal ring must be flush on the outside.

- Warm the engine case section again.

Guideline

150 °C (302 °F)
-----------------

- 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.

**i** 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 bearing race; 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.

**i** 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 and tighten screw A with the washer.

Guideline

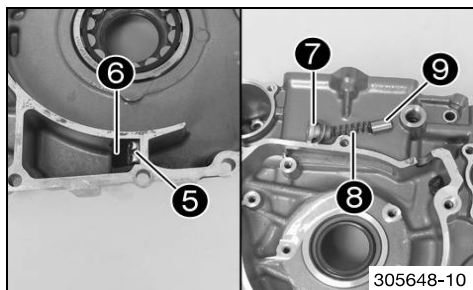
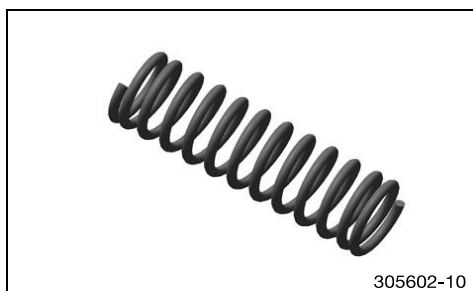
Locking screw for bearing	M5	6 Nm (4.4 lbf ft)	Loctite® 243™
---------------------------	----	----------------------	---------------

- Press in the shaft seal ring of countershaft 2 and shift shaft 3 with the open side facing inwards so that it is flush.
- Mount and tighten the oil jet 1.

Guideline

Oil jet, piston cooling	M6x0.75	4 Nm (3 lbf ft)	Loctite® 243™
-------------------------	---------	-----------------	---------------

- Mount the dowels.
- Blow compressed air through all oil channels and check that they are clear.



- Measure the spring length of the oil pressure regulator valve.

Oil pressure regulator valve - minimum spring length	25.36 mm (0.9984 in)
--	----------------------

- » If the measured value does not equal the specified value:
  - Change the spring.

- Check the piston valve for damage and wear.

- » If there is damage or wear:
  - Replace the piston valve.

- Lubricate piston valve (9) and mount it with pressure spring (8). Mount and tighten screw plug (7) with the new seal ring.

Guideline

Oil pressure regulator valve plug	M12x1.5	20 Nm (14.8 lbf ft)
-----------------------------------	---------	---------------------

- Position the membrane support plate (5) with membrane (6). Mount and tighten the screws.

Guideline

Screw, membrane fixation	M3	2 Nm (1.5 lbf ft)	Loctite® 243™
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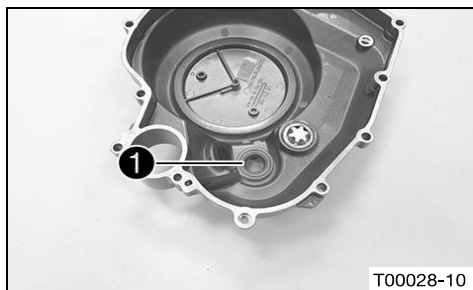
## Info

The membrane support plate is curved and must point away from the membrane.

An incorrectly installed membrane support plate results in loss of performance and increased oil consumption or leaks.

Do not apply thread locker between the membrane and the membrane support plate since this would impair their function.

### 18.4.3 Work on the clutch cover



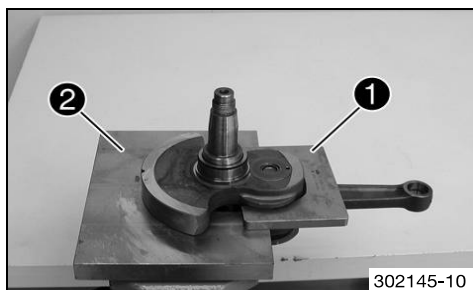
- Remove the shaft seal ring (1) of the crankshaft.
- Press in a new shaft seal ring with the open side facing inward until it stops.

## Info

Support the clutch cover sufficiently when pressing in.

- Blow compressed air through the oil channel and check that it is clear.

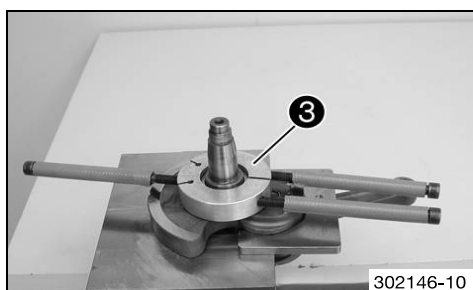
### 18.4.4 Removing crankshaft bearing inner ring



- Fix the crankshaft with special tools (1) and (2) in the vise.

Press-out plate, top (75029047050) (p. 316)

Press-out plate, base (75029047051) (p. 316)



- Heat the special tool (3).

Guideline

150 °C (302 °F)

Tool for inner bearing race (58429037043) (p. 310)

- Push the heated special tool (3) on to the inner bearing race, press them hard together, and pull them together off the crankshaft.

- Take off the compensation shim.
- Repeat the operation on the opposite side.

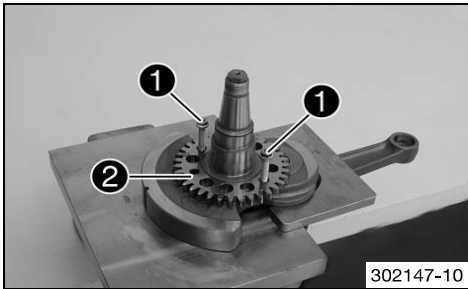
## 18.4.5 Removing the drive wheel of the balancer shaft

### Preparatory work

- Remove the crankshaft bearing inner ring. (p. 159)

### Main work

- Screw suitable screws **1** into the thread. Tighten the two screws evenly to pull drive wheel **2** off the crankshaft.



## 18.4.6 Changing the connecting rod, conrod bearing, and crank pin

### Preparatory work

- Remove the crankshaft bearing inner ring. (p. 159)
- Remove the drive wheel of the balancer shaft. (p. 160)

### Main work

- Position the crankshaft with special tool **1** in the press.

Press-out plate, base (75029047051) (p. 316)

- Position special tool **2** between the crankwebs.

Press-out plate, top (75029047050) (p. 316)

- Press the crank pin out of the upper crankweb with the push-out drift of the special tool.

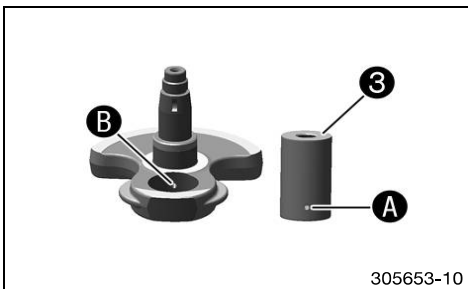
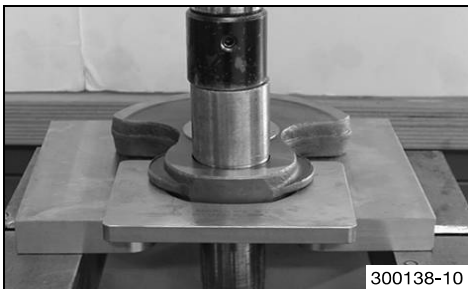
Pressing tool for crankshaft, complete (75029047000) (p. 315)



### Info

Hold the lower crankweb.

- Take off the connecting rod and bearing.
- Press the crank pin out of the crankweb.



- Press in the new crank pin **3** as far as possible.



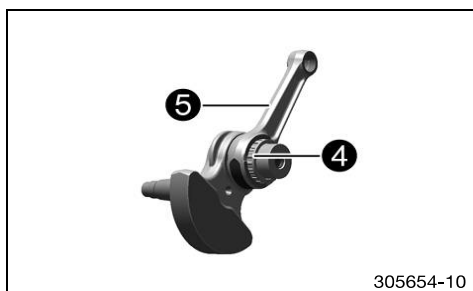
### Info

The crank pin must be pressed in so that oil channel **A** is aligned with oil channel **B**.

If the oil channels are not correctly aligned, the conrod bearing will not be supplied with oil.

- Blow compressed air through the oil channel to check that it is clear.



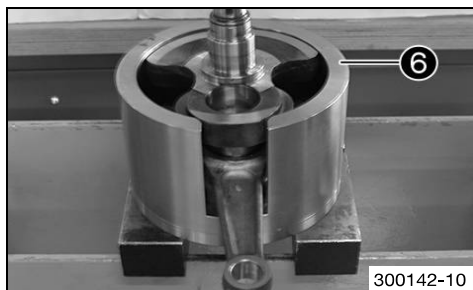


- Mount bearing ④ and connecting rod ⑤.



## Info

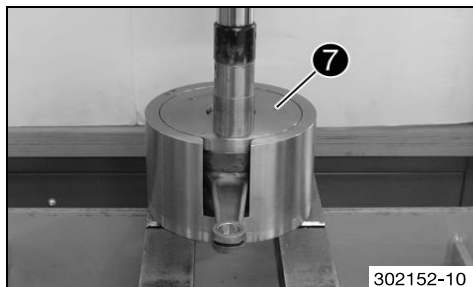
Thoroughly lubricate the bearing.



- Position special tool ⑥ on the press.

Pressing tool for crankshaft, complete (75029047000) (p. 315)

- Place the crankweb in with the connecting rod and the bearing. Position the second crankweb.



- Position special tool ⑦ with the heel at the bottom.

Pressing tool for crankshaft, complete (75029047000) (p. 315)

- Press the upper crankweb in as far as possible.



## Info

The press mandrel must be applied above the crank pin.

- Take the crankshaft out of the special tool, and check the connecting rod for freedom of movement.

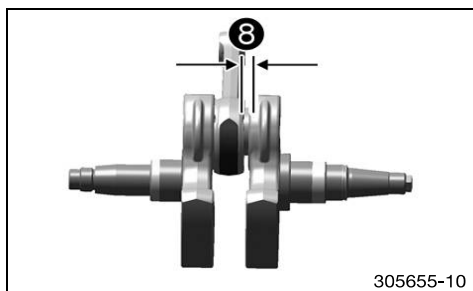
- Measure axial play ⑧ between the connecting rod and the crankwebs using the special tool.

Feeler gauge (59029041100) (p. 312)

Connecting rod - axial clearance of lower conrod bearing

0.30... 0.60 mm (0.0118... 0.0236 in)

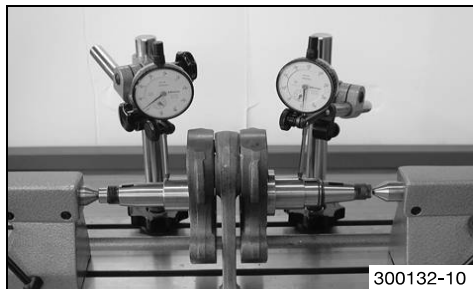
- » If the specification is not reached:
  - Correct until it complies with the specified value.



## Finishing work

- Check the crankshaft run-out at the bearing pin. (p. 161)
- Install the drive wheel of the balancer shaft. (p. 162)
- Install the crankshaft bearing inner ring. (p. 162)
- Measure the axial clearance of the crankshaft and the balancer shaft. (p. 163)

### 18.4.7 Checking crankshaft run-out at bearing pin



- Position the crankshaft on a roller block.
- Rotate the crankshaft slowly.
- Check the crankshaft run-out at both bearing pins.

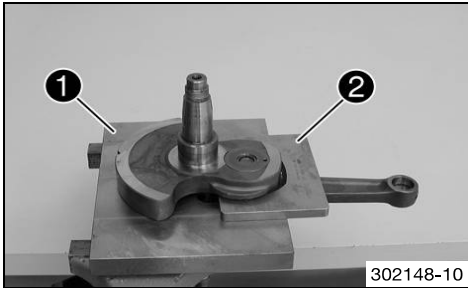
Crankshaft run-out at bearing pin

≤ 0.10 mm (≤ 0.0039 in)

- » If the crankshaft run-out at the bearing pin is greater than the specified value:
  - Align the crankshaft.



## 18.4.8 Installing balancer shaft drive wheel

**Main work**

- Fix the crankshaft with special tools ① and ② in the vise.

Press-out plate, top (75029047050) (📖 p. 316)
---

Press-out plate, base (75029047051) (📖 p. 316)
--

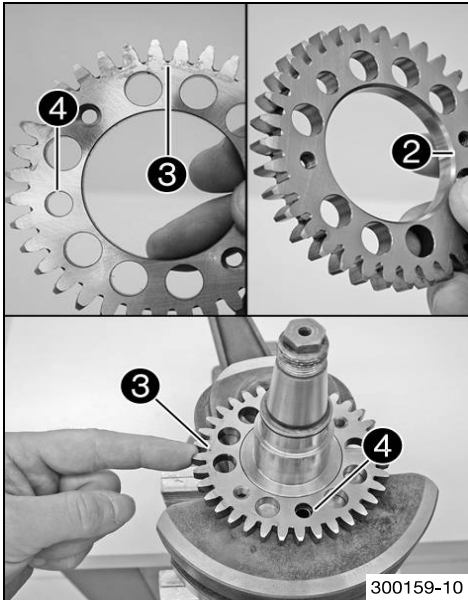
- Warm the drive wheel.

**Guideline**

100 °C (212 °F)
-----------------

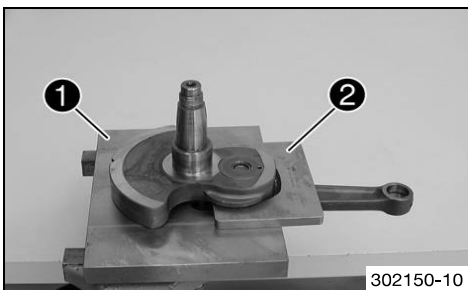
- Place the drive wheel on the crankshaft.

- ✓ The dowel of the crankshaft must fit in the drill hole ④.
- ✓ The side of the drive wheel with the punch mark ③ must be visible after assembly, and the side with the bevel ② must be in contact with the crankweb.

**Finishing work**

- Install the crankshaft bearing inner ring. (📖 p. 162)
- Measure the axial clearance of the crankshaft and the balancer shaft. (📖 p. 163)

## 18.4.9 Installing crankshaft bearing inner ring

**Main work**

- Fix the crankshaft with special tools ① and ② in the vise.

Press-out plate, top (75029047050) (📖 p. 316)
---

Press-out plate, base (75029047051) (📖 p. 316)
--

- Push on the compensation shim.
- Heat the special tool. Install the inner bearing race.

**Guideline**

120 °C (248 °F)
-----------------

- Repeat the operation on the opposite side.
- Make sure that the new inner bearing race is installed flush.

**Info**

After changing the crankshaft bearing and the conrod bearing, measure the axial play of the crankshaft.

**Finishing work**

- Measure the axial clearance of the crankshaft and the balancer shaft. (📖 p. 163)

## 18.4.10 Measuring axial clearance of crankshaft and balancer shaft



300126-10

- Insert the crankshaft and balancer shaft in the right engine casing.

**Info**

Do not forget the dowels.

- Mount the left engine casing.
- Mount and tighten the screws.

## Guideline

Screw, engine case	M6	10 Nm (7.4 lbf ft)
--------------------	----	--------------------

- Mount the dial gauge support on the engine case and measure and note the axial clearance of the crankshaft.

## Guideline

Crankshaft - axial clearance	0.15... 0.25 mm (0.0059... 0.0098 in)
------------------------------	---------------------------------------

» If the measured value does not equal the specified value:

- Remove the crankshaft.
- Remove the crankshaft bearing inner ring. (📖 p. 159)
- Calculate the thickness of the compensation shims.
- Add or remove compensation shims equally on both sides.

**Info**

If the axial clearance is too small, remove compensation shims.  
If the axial clearance is too large, add compensation shims.

- Install the crankshaft bearing inner ring. (📖 p. 162)

- Mount the dial gauge support on the engine case and measure and note the axial clearance of the balancer shaft.

## Guideline

Balancer shaft axial clearance	0.05... 0.20 mm (0.002... 0.0079 in)
--------------------------------	--------------------------------------

» If the measured value does not equal the specified value:

- Remove the balancer shaft.
- Calculate the thickness of the compensation shims.
- Add compensation shims to the ignition side only.

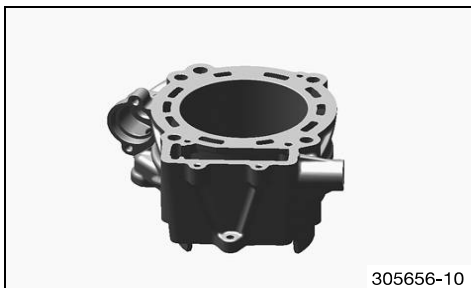
**Info**

If the axial clearance is too small, remove compensation shims.  
If the axial clearance is too large, add compensation shims.



300164-10

## 18.4.11 Cylinder - Nikasil® coating

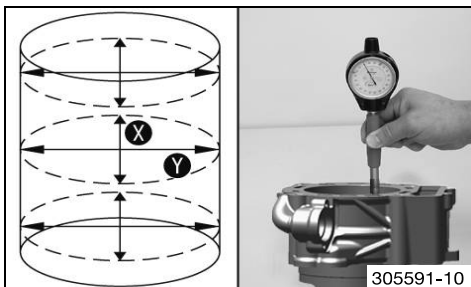


305656-10

**Nikasil®** is a surface protection layer for a coating procedure developed by Mahle. The name is derived from the two materials used in this procedure - a layer of nickel into which is embedded the particularly hard silicone carbide.

The most important advantages of the **Nikasil®** coating are very good heat conductivity, resulting in much improved performance, low wear, and a lightweight cylinder.

## 18.4.12 Checking/measuring the cylinder



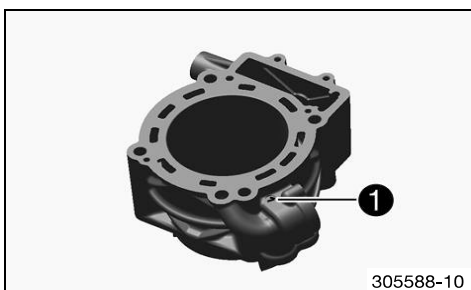
305591-10

- Check the O-ring of the chain adjuster for damage and wear.
  - » If there is damage or wear:
    - Change the O-ring.
- 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 locations on the **X** and **Y** axes using a micrometer to identify oval wear.

Guideline

Cylinder - bore diameter	
Size I	102.000... 102.012 mm (4.01574... 4.01621 in)
Size II	102.013... 102.025 mm (4.01625... 4.01672 in)

- The cylinder size **1** is marked on the side of the cylinder.



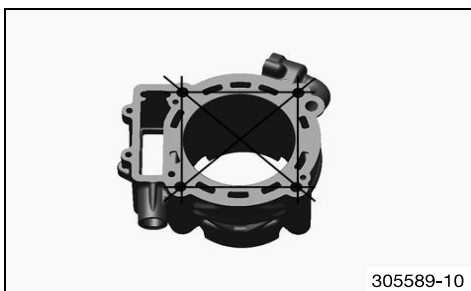
305588-10

- Using a straightedge and the special tool, check the sealing surface of the cylinder head for distortion.

Feeler gauge (59029041100) (📖 p. 312)

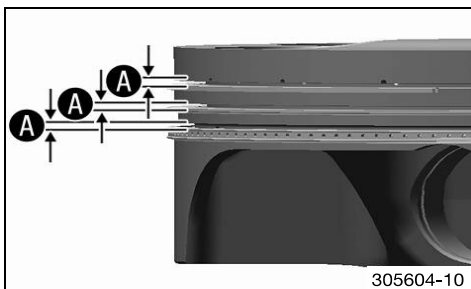
Cylinder/cylinder head - sealing area distortion	≤ 0.10 mm (≤ 0.0039 in)
--	-------------------------

- » If the measured value does not meet specifications:
  - Change the cylinder.



305589-10

## 18.4.13 Checking/measuring the piston



305604-10

- Use the special tool to measure play **A** of the piston rings in the piston ring groove.

Guideline

Piston ring - groove clearance	≤ 0.08 mm (≤ 0.0031 in)
--------------------------------	-------------------------

Feeler gauge (59029041100) (📖 p. 312)

- » If play **A** is greater than the specified value:
  - Change the piston and piston rings.
  - Check/measure the cylinder. (📖 p. 164)
- 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.



305645-10

- 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.

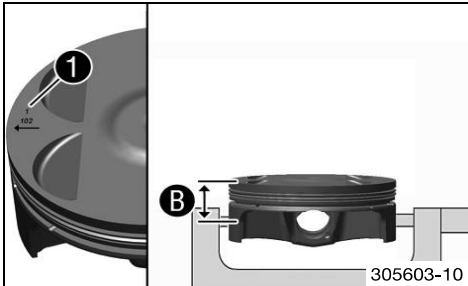
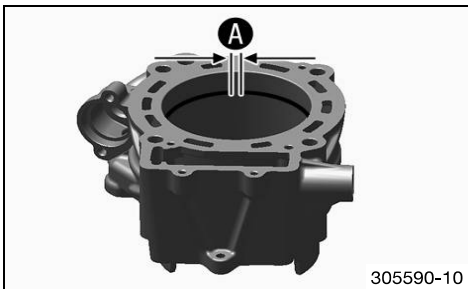
- Check the piston pin for discoloration or signs of wear.
  - » If the piston pin has strong discoloration/signs of wear:
    - Change the piston pin.
- Insert the piston pin into the connecting rod and check the bearing for play.
  - » If the piston pin bearing has too much play:
    - Change the connecting rod and the piston pin.
- Measure the piston at the piston skirt, at right angles to the piston pin, at a distance **B**.

**Guideline**

Distance <b>B</b>	31.5 mm (1.24 in)
Piston - diameter	
Size I	101.955... 101.965 mm (4.01397... 4.01436 in)
Size II	101.965... 101.975 mm (4.01436... 4.01476 in)

**Info**

Piston size **1** is marked on the piston head.

**18.4.14 Checking piston ring end gap**

- 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	10 mm (0.39 in)
--------------------------------------	-----------------

- Measure the end gap with a feeler gauge **A**.

**Guideline**

Piston ring end gap	
Compression rings	≤ 0.80 mm (≤ 0.0315 in)
Oil scraper ring	≤ 1.00 mm (≤ 0.0394 in)

- » If the end gap is more than the specified value:
  - Check/measure the cylinder. (📖 p. 164)
- » 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.

**18.4.15 Determining the piston/cylinder mounting clearance**

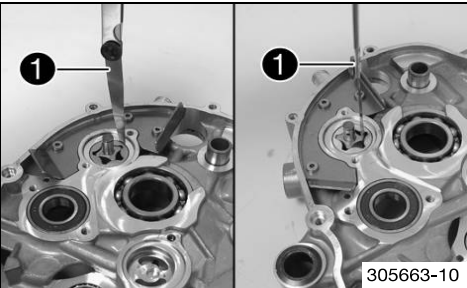
- Check/measure the cylinder. (📖 p. 164)
- Check/measure the piston. (📖 p. 164)
- The smallest piston/cylinder mounting clearance is the result of the smallest cylinder bore diameter minus the largest piston diameter. The largest piston/cylinder mounting clearance is the result of the largest cylinder bore diameter minus the smallest piston diameter.

**Guideline**

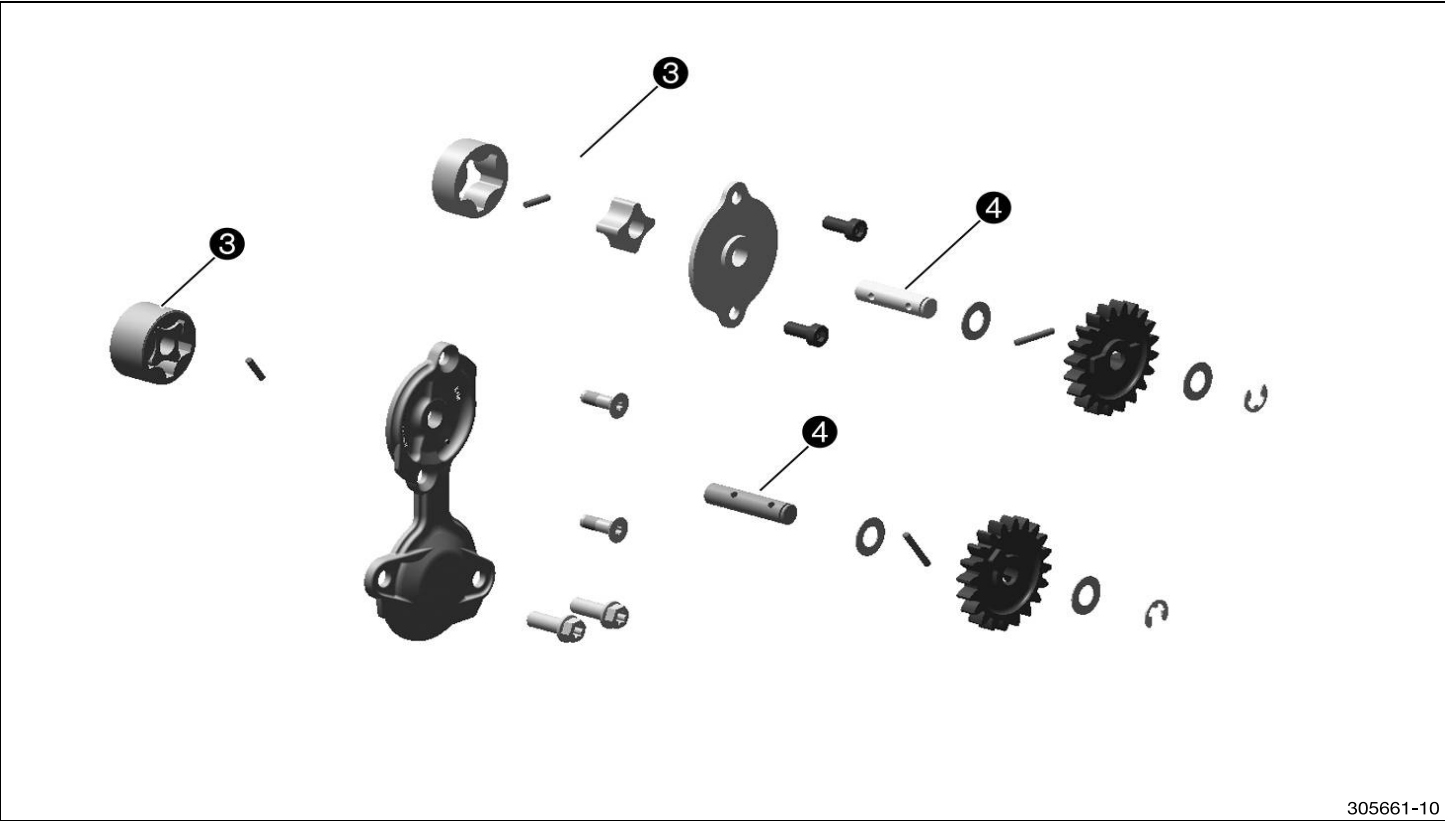
Piston/cylinder - mounting clearance	
New condition	0.035... 0.060 mm (0.00138... 0.00236 in)
Wear limit	0.10 mm (0.0039 in)

18.4.16 Checking the oil pumps for wear

**i Info**  
The oil pump wear check shown here is on the suction pump but it applies to all oil pumps.

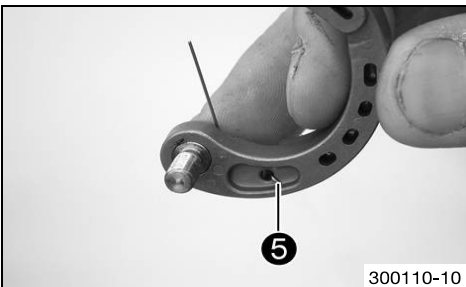
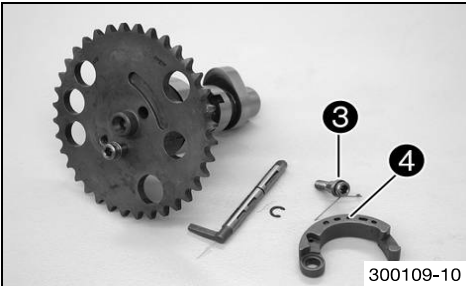
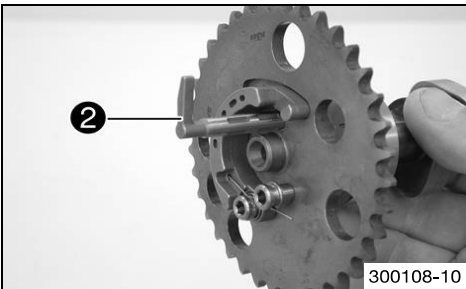
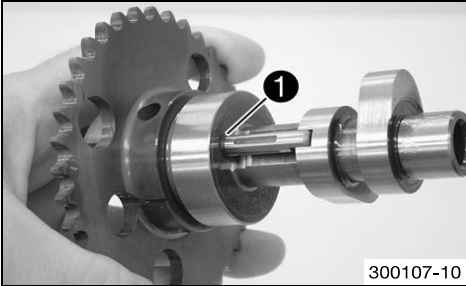


- Use a feeler gauge **1** to measure the play between the external rotor and the engine case as well as between the external rotor and the internal rotor.
- | Oil pump  |                                       |
|---|---------------------------------------|
| Clearance between external rotor and engine case    | ≤ 0.20 mm (≤ 0.0079 in)               |
| Clearance between external rotor and internal rotor | ≤ 0.20 mm (≤ 0.0079 in)               |
| Axial clearance                                     | 0.04... 0.08 mm (0.0016... 0.0031 in) |
- » If the measured value does not meet specifications:
    - Change the oil pump and, if necessary, the engine case.



- Check the internal rotor and external rotor of oil pumps **3** for damage and wear.
  - » If there is damage or wear:
    - Change the oil pumps.
- Check oil pump shafts **4** for damage and wear.
  - » If there is damage or wear:
    - Change the oil pump shaft.
- Check both oil pump covers for damage and wear.
  - » If there is damage or wear:
    - Change the oil pump cover.


## 18.4.17 Replacing autodecompressor



- Take the lock ring ① off the autodecompression shaft and dispose of it.
  - Pull the autodecompression shaft ② from the camshaft.
  - Disconnect the autodecompression spring. Loosen the screw ③ and remove it together with the autodecompression spring and the autodecompression weight ④.
  - When assembling, first connect the autodecompression spring and then insert the screw through the autodecompression weight.
    - ✓ The arm of the autodecompression spring ⑤ is long enough to pass right through the autodecompression weight.
  - Position the autodecompression weight. Mount and tighten screw ③. Reconnect the autodecompression spring.
- Guideline
- |                          |    |                                |               |
|--------------------------|----|--------------------------------|---------------|
| Screw, autodecompression | M6 | 3... 4 Nm<br>(2.2... 3 lbf ft) | Loctite® 243™ |
|--------------------------|----|--------------------------------|---------------|
- Mount the autodecompression shaft in the camshaft. Install a new lock ring.
  - Check the functioning.
    - » If the autodecompression spring does not completely retract the autodecompression shaft:
      - Replace the autodecompression spring.

## 18.4.18 Preparing timing chain tensioner for installation



- Fully compress the timing chain tensioner.
- 
-  **Info**
- This requires considerable force since the oil has to be pressed out.
- 
- Release the timing chain tensioner.
    - ✓ Without pressure, the timing chain tensioner expands fully.





- Place two compensating disks or similar aids next to the piston of the timing chain tensioner. This should ensure that when pushed down, the piston does not fully withdraw.

## Guideline

Thickness of the compensating disks	2... 2.5 mm (0.08... 0.098 in)
-------------------------------------	--------------------------------

- Release the timing chain tensioner.
- ✓ The latching system locks and the piston stops moving.

End position of piston after latching	3 mm (0.12 in)
---------------------------------------	----------------

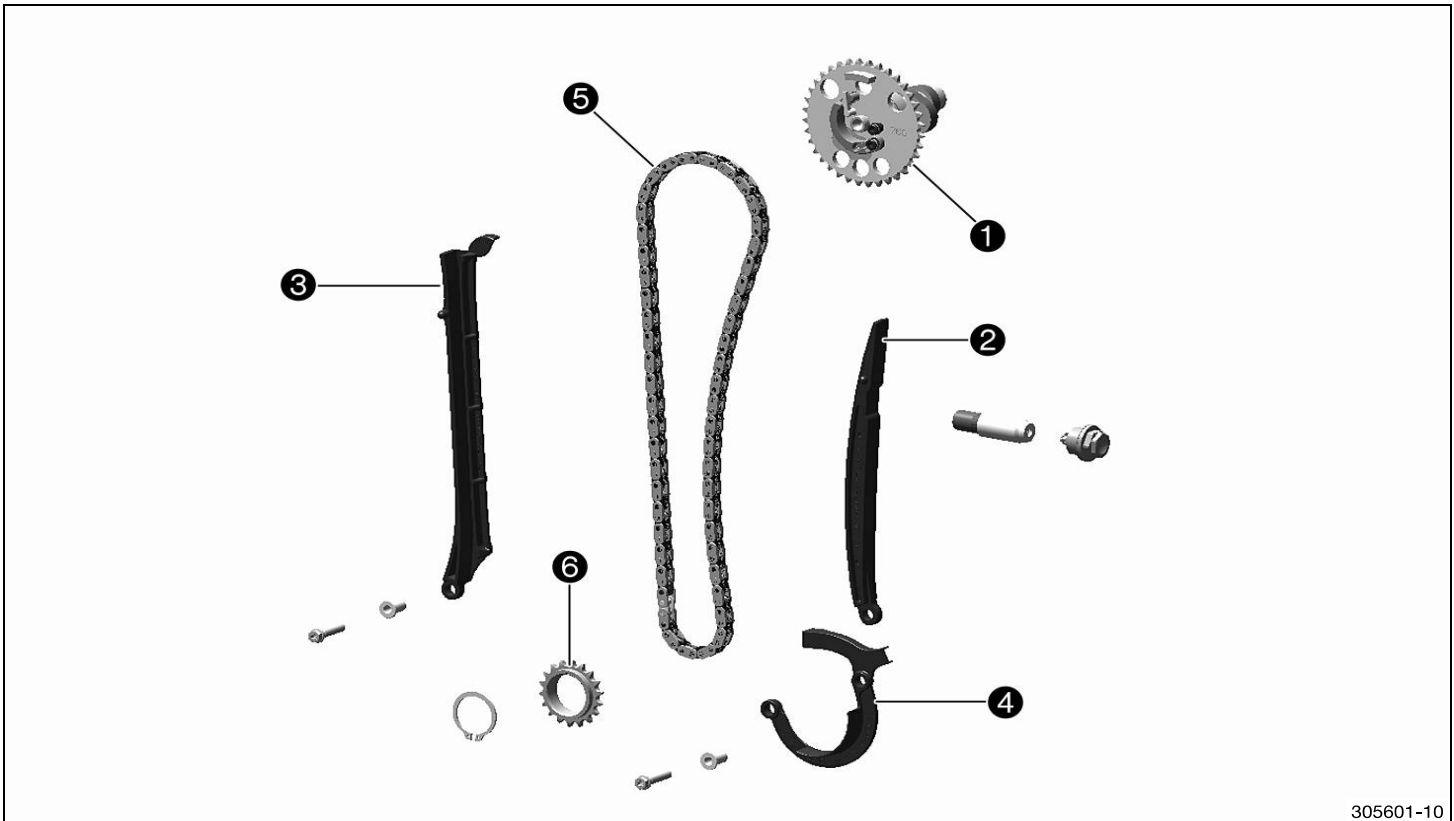


## Info

This position is necessary for installation.

If the timing chain tensioner is now pressed in once more (while it is installed) and then pulled out no more than halfway (preventing it from coming out fully), the latching system locks and the timing chain tensioner can no longer be compacted; this function is necessary to ensure sufficient tension of the timing chain, even at low oil pressure.

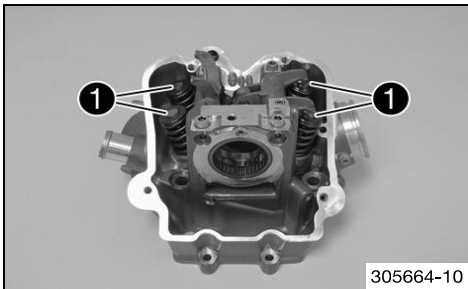
### 18.4.19 Checking the timing assembly



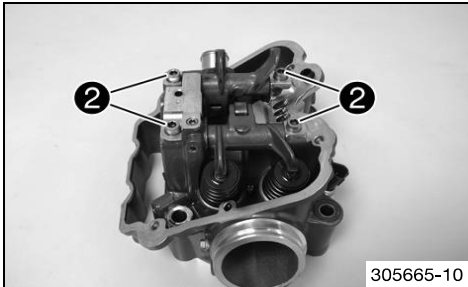
- Clean all parts well.
- Check timing chain gear **1** for damage and wear.
  - » If there is damage or wear:
    - Change the timing chain gear/timing chain sprocket.
- Check timing chain tensioning rail **2** for damage and wear.
  - » If there is damage or wear:
    - Change the timing chain tensioning rail.
- Check timing chain guide rail **3** for damage and wear.
  - » If there is damage or wear:
    - Change the timing chain guide rail.
- Check timing chain securing guide **4** for damage and wear.

- » If there is damage or wear:
  - Change the timing chain securing guide.
- Check timing chain **5** for damage and wear.
  - » If there is damage or wear:
    - Change the timing chain.
- Check that the timing chain links move easily. Let the timing chain hang down freely.
  - » If the chain links no longer straighten out:
    - Change the timing chain.
- Check timing chain sprocket **6** for damage and wear.
  - » If there is damage or wear:
    - Change the timing chain gear/timing chain sprocket.

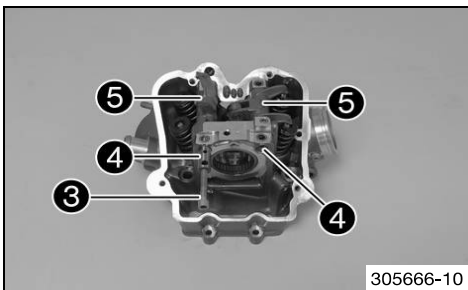
## 18.4.20 Removing the rocker arm



- Take shims **1** out of the valve spring retainers and lay them to one side according to their normal built-in position.



- Remove screws **2**.



- Screw a suitable screw **3** into the rocker arm shafts **4**. Pull out the rocker arm shafts.
- Take off rocker arm **5**.

## 18.4.21 Changing the camshaft bearing

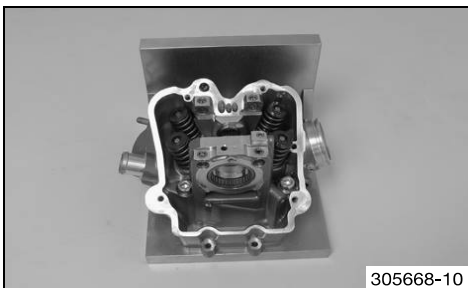
### Preparatory work

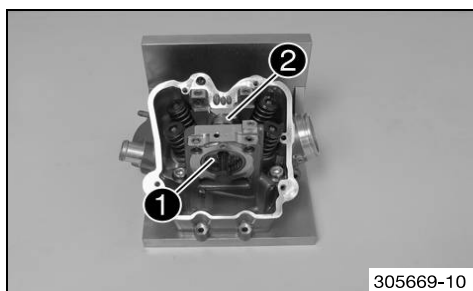
- Remove the rocker arm. (📖 p. 169)

### Main work

- Mount the cylinder head on the special tool.

Clamping plate (75029050000) (📖 p. 316)





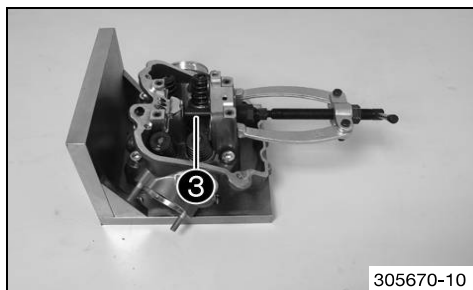
- Remove the large camshaft bearing using special tool **1**.

Push-out drift (75029051000) (p. 316)



## Info

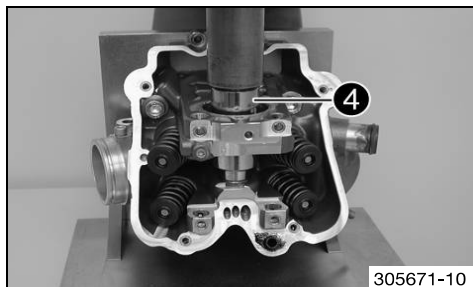
Brace the back of the special tool with a suitable tool **2**.



- Remove the small camshaft bearing using special tool **3**.

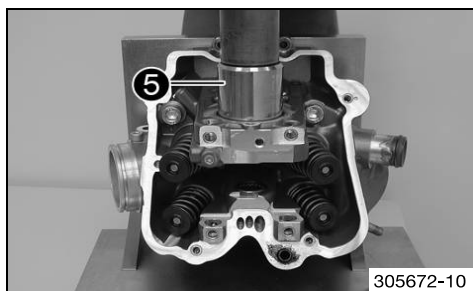
Internal bearing puller (15112018100) (p. 309)

Bearing puller (15112017000) (p. 309)



- Press in the small camshaft bearing as far as possible using special tool **4**.

Push-in drift (75029044020) (p. 315)



- Press in the large camshaft bearing as far as possible using special tool **5**.

Push-in drift (75029044010) (p. 315)

## Finishing work

- Install the rocker arm. (p. 173)

### 18.4.22 Removing the valves

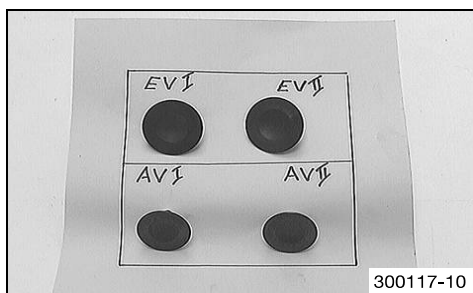


- Pretension the valve springs using the special tool.

Valve spring mounter (59029019000) (p. 311)

Insert for valve spring lever (78029060000) (p. 319)

- Remove the valve keys and release the tension on the valve springs.
- Remove the spring retainer and spring.
- Pull the valve down and out of the valve guide, and remove the valve stem seal and valve spring seat.



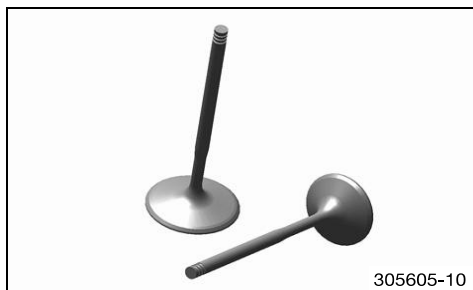
- Mark the valves according to their normal built-in position.



## Info

Place the valves into a box according to the installation position and label the box.

### 18.4.23 Checking the valves

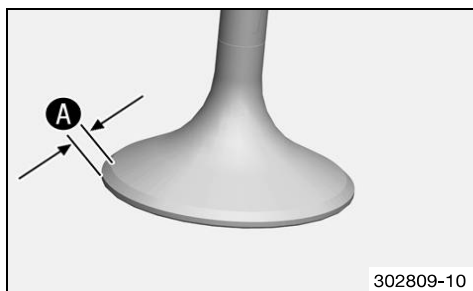


- Check the run-out at the valve plate.

Valve - run-out	
On the valve plate	≤ 0.05 mm (≤ 0.002 in)

» If the measured value does not equal the specified value:

- Change the valve.



- Check sealing seat **A** on the valve.

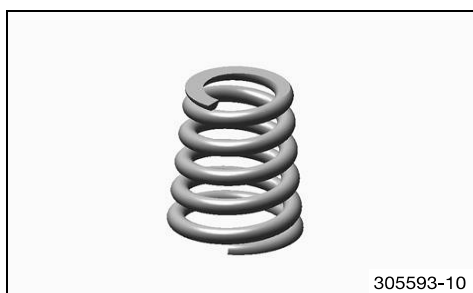
Valve - sealing seat width	
Intake	1.60 mm (0.063 in)

Valve - sealing seat width	
Exhaust	2.00 mm (0.0787 in)

» If the sealing area is not in the center of the valve seat or deviates from the specified value:

- Machine the valve seat.

### 18.4.24 Checking valve springs



- Check the valve springs for fractures and wear (visual check).

» If the valve spring is fractured or worn:

- Change the valve spring.

- Measure the valve spring lengths.

Valve spring	
Minimum length (without valve spring cap)	42.3 mm (1.665 in)

» If the measured value does not equal the specified value:

- Change the valve spring.

### 18.4.25 Checking valve spring retainer



- Check the valve spring retainer for fractures and wear (visual check).

» If the valve spring retainer is fractured or worn:

- Change the valve spring retainer.

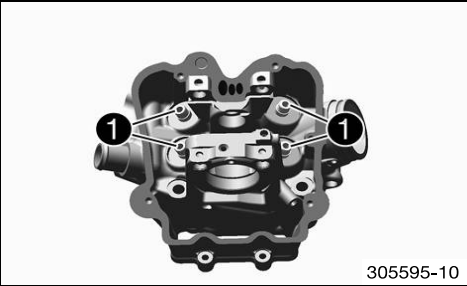
- Measure the thickness of the valve spring retainer.

Valve spring cap - thickness	2.4... 2.5 mm (0.094... 0.098 in)
------------------------------	-----------------------------------

» If the measured value does not equal the specified value:

- Change the valve spring retainer.

18.4.26 Checking the cylinder head



- Check valve guides 1 with the special tool.

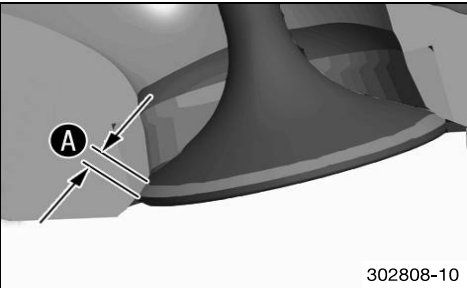
Limit plug gauge (59029026006) (p. 311)
---

- » If the special tool is easy to insert into the valve guide:
  - Change the valve guide and valve.
- Check the sealing area of the spark plug thread and the valve seats for damage and cracking.
  - » If there is damage or cracking:
    - Change the cylinder head.
- Check the sealing area of the cylinder for distortion using a straight edge and the special tool.

Feeler gauge (59029041100) (p. 312)
-------------------------------------

Cylinder/cylinder head - sealing area distortion	≤ 0.10 mm (≤ 0.0039 in)
--	-------------------------

- » If the measured value does not equal the specified value:
  - Change the cylinder head.
- Check sealing seat A of the valves.

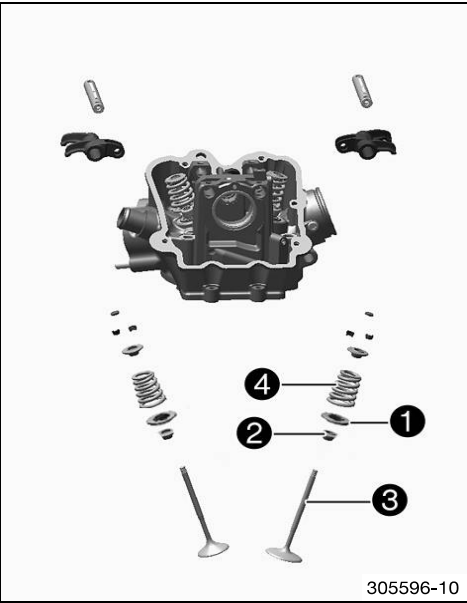


Valve - sealing seat width	
Intake	1.60 mm (0.063 in)

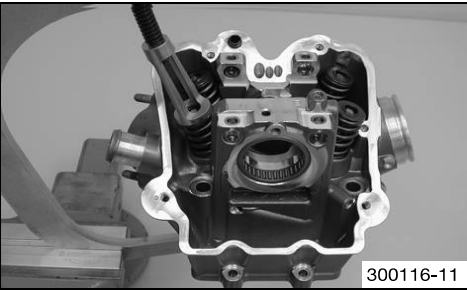
Valve - sealing seat width	
Exhaust	2.00 mm (0.0787 in)

- » If the measured value does not equal the specified value:
  - Machine the valve seat.
- Blow compressed air through all oil channels and check that they are clear.

18.4.27 Installing the valves




- Position the valve spring seat 1. Mount the new valve stem seals 2.
- Mount valves 3 according to their normal built-in position.
- Mount valve springs 4 and the spring retainers.



- Pretension the valve springs using the special tool.

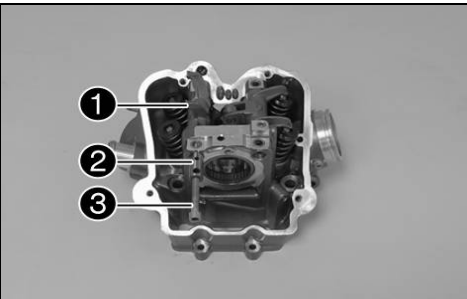
Valve spring mounter (59029019000) (📖 p. 311)
Insert for valve spring lever (78029060000) (📖 p. 319)

- Mount the valve keys.


**Info**

When mounting the valve keys, check that they are seated correctly; preferably, fix the valve keys to the valve with a little grease.

18.4.28 Installing the rocker arm

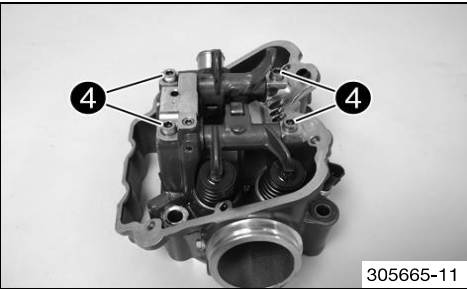
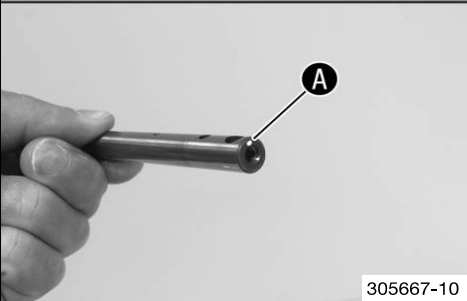


- Position rocker arm ① and push in the rocker arm shafts ②.

**Info**

Make sure that the tapped hole of the rocker arm shaft is facing outward. The small drill hole ① and the flat surface must face upward.

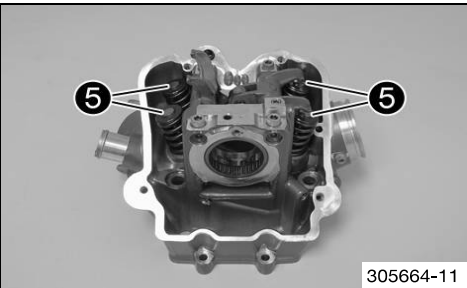
- Remove screw ③.



- Mount and tighten screws ④.

Guideline

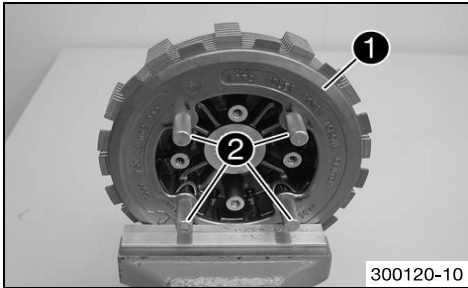
Screw, rocker arm shaft	M6	12 Nm (8.9 lbf ft)
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- Place shims ⑤ into the valve spring retainers according to their normal built-in position.



## 18.4.29 Disassembling the antihopping clutch



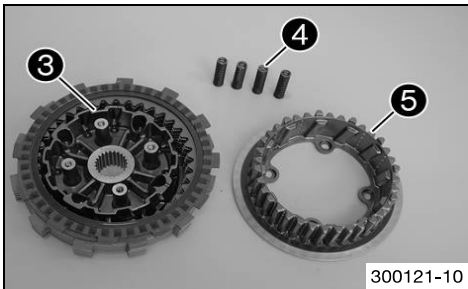
- Clamp the clutch ① in a vise.



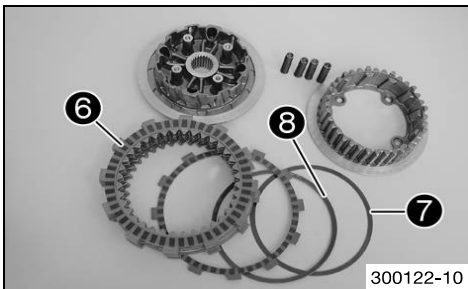
### Info

Use soft jaws.

- Carefully loosen and gradually remove the special tool ②.



- Take the clutch out of the vise and lay it on a clean workbench with the outer clutch hub ⑤ facing down.
- Take the inner clutch hub ③ and release springs ④ out of the outer clutch hub ⑤.

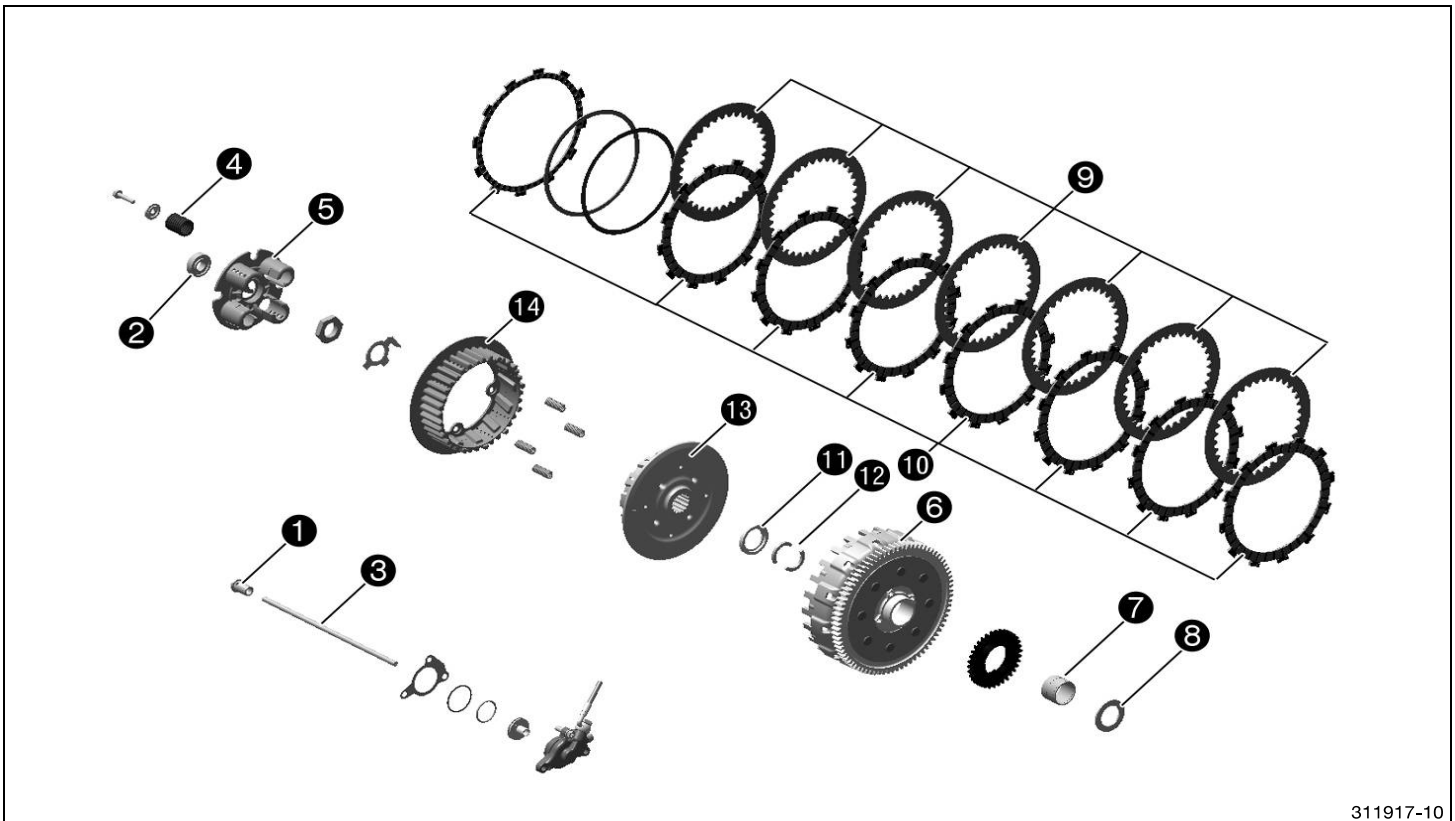


- Take off the clutch facing discs ⑥ from the inner clutch hub.
- Remove pretension ring ⑦ and support ring ⑧.
- Clean all parts well.
- Check the clutch. (📖 p. 174)

## 18.4.30 Checking the clutch

### Preparatory work

- Disassemble the antihopping clutch. (📖 p. 174)



311917-10

**Main work**

- Check pressure piece **1** for damage and wear.
  - » If there is damage or wear:
    - Change the pressure piece.
- Check axial bearing **2** for damage and wear.
  - » If there is damage or wear:
    - Change the axial bearing.
- Place push rod **3** on a level surface and check it for run-out.
  - » If there is run-out:
    - Change the push rod.
- Check the length of clutch springs **4**.
 

Clutch spring - length	31.5... 33.5 mm (1.24... 1.319 in)
------------------------	------------------------------------

  - » If the clutch spring length is less than the specified value:
    - Change all clutch springs.
- Check the contact surface of pressure cap **5** for damage and wear.
  - » If there is damage or wear:
    - Change the pressure cap.
- Check the contact surfaces of the clutch facing discs in the clutch basket **6** for wear.
 

Clutch basket - contact surface of clutch facing discs	≤ 0.5 mm (≤ 0.02 in)
--	----------------------

  - » If the contact surface is very worn:
    - Change the clutch facing discs and the clutch basket.
- Check needle bearing **7** and supporting plate **8** for damage and wear.
  - » If there is damage or wear:
    - Change the needle bearing and supporting plate.
- Check the intermediate clutch discs **9** for damage and wear.
  - » If the intermediate clutch discs are not even or are pitted:
    - Change all intermediate clutch discs.

- Check clutch facing discs **10** for discoloration and scoring.
  - » If there is discoloration or scoring:
    - Change all clutch facing discs.
- Check the thickness of clutch facing discs **10**.

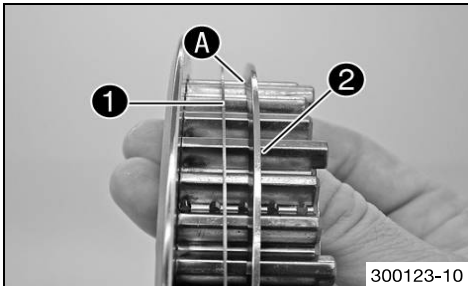
Clutch facing disc - thickness	≥ 2.5 mm (≥ 0.098 in)
--------------------------------	-----------------------

- » If the clutch facing disc does not meet specifications:
  - Change all clutch facing discs.
- Check stepped washer **11** for damage and wear.
  - » If there is damage or wear:
    - Change the stepped washer.
- Check half washers **12** for damage and wear.
  - » If there is damage or wear:
    - Change the half washers.
- Check inner clutch hub **13** for damage and wear.
  - » If there is damage or wear:
    - Change the inner clutch hub.
- Check the outer clutch hub **14** for damage and wear.
  - » If there is damage or wear:
    - Change the outer clutch hub.

## Finishing work

- Preassemble the antihopping clutch. (📖 p. 176)

### 18.4.31 Preassembling the antihopping clutch

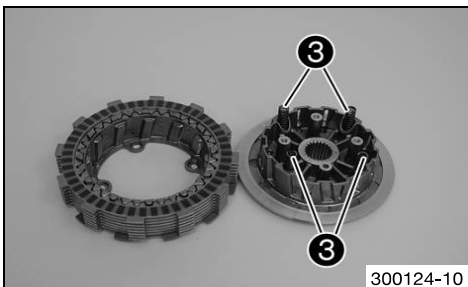


- Thoroughly oil the clutch facing discs.
- Push the support ring **1** and the pretension ring **2** on to the outer clutch hub.

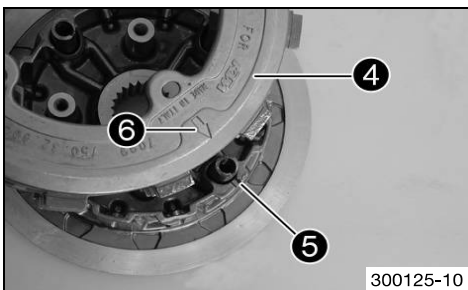


#### Info

The pretension ring must be installed so that it is flush with the inner edge **A** on the support ring.



- Position the trimmed clutch facing disc with the recess for the pretension ring on the outer clutch hub.
- Beginning with the coated intermediate clutch disc, position all further clutch facing discs and intermediate clutch discs alternately.
- Position the release springs **3**.



- Push on the outer clutch hub **4** and pay attention to the markings.
  - ✓ The arrow **6** of the outer clutch hub must point to the notch **5** of the inner clutch hub.
- Push the two clutch hubs firmly together and have an assistant screw in the special tool.

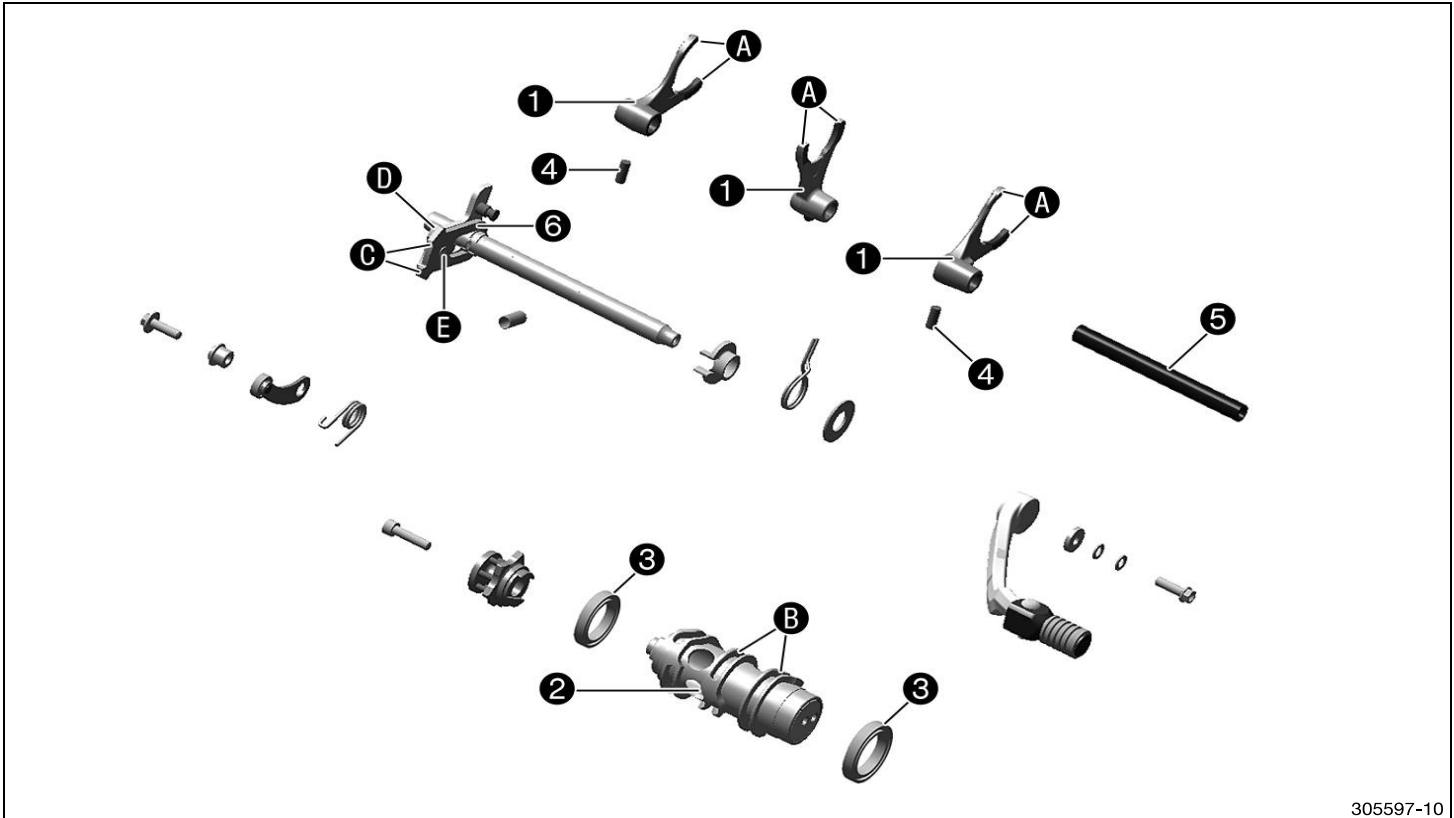
Assembly screws (75029033000) (📖 p. 314)



#### Info

Apply the special tool with the hand only, do not use another tool. Apply the special tool only firmly enough so that the clutch facing discs can still be turned against each other since they still have to be aligned for mounting in the clutch basket.

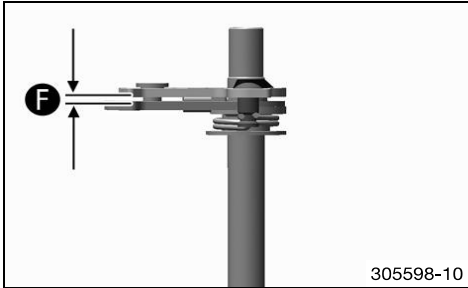
## 18.4.32 Checking the shift mechanism



305597-10

- Check shift forks **1** (see **A**) for damage and wear (visual check).
  - » If there is damage or wear:
    - Change the shift fork and gear wheel pair.
- Check shift grooves **B** of shift drum **2** for wear.
  - » If the shift groove is worn:
    - Change the shift drum.
- Check the seat of the shift drum in bearings **3**.
  - » If the shift drum is not seated correctly:
    - Change the shift drum and/or the bearing.
- Check bearing **3** for stiffness and wear.
  - » If the bearings do not move freely or are worn:
    - Change the bearings.
- Check needle bushing **4** for stiffness and wear.
  - » If the needle bushing does not move freely or is worn:
    - Change the needle bushing.
- Check shift rail **5** 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 **6** in contact areas **C** for wear.
  - » If the sliding plate is worn:
    - Change the sliding plate.
- Check return surface **D** on the sliding plate for wear.
  - » If deep notches are present:

- Change the sliding plate.
- Check guide pin **E** for looseness and wear.
  - » If the guide pin is loose and/or worn:
    - Change the sliding plate.
- Preassemble the shift shaft. (📖 p. 178)

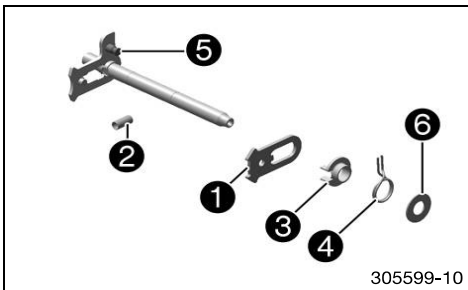


- Check play **F** between the sliding plate and the shift quadrant.

Shift shaft - play in sliding plate/shift quadrant	0.40... 0.80 mm (0.0157... 0.0315 in)
--	---------------------------------------

- » If the measured value does not equal the specified value:
  - Change the sliding plate.

## 18.4.33 Preassembling the shift shaft



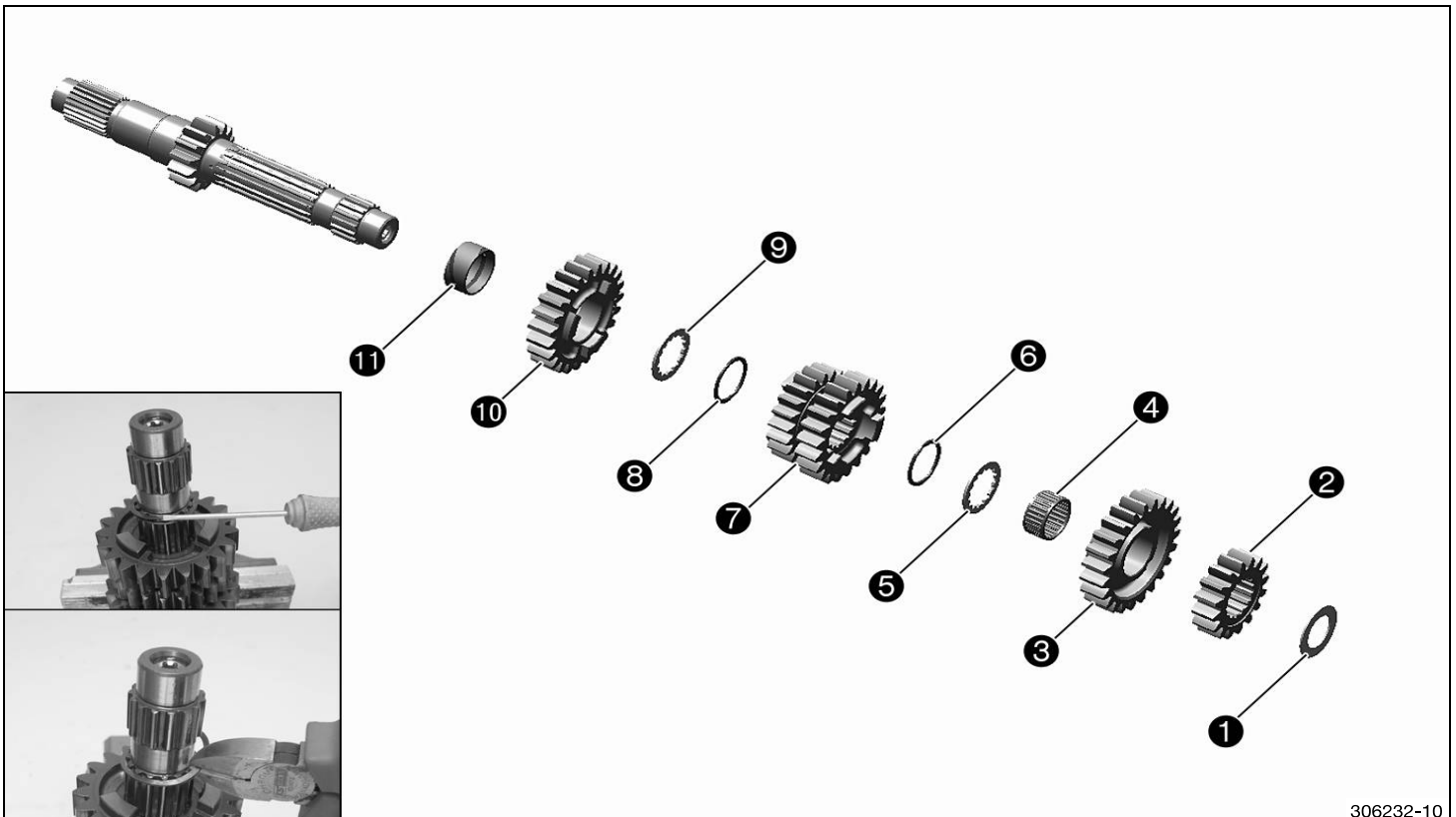
- Fix the short end of the shift shaft in a vise.

Guideline

Use soft jaws.

- Mount sliding plate **1** with the guide pin facing down and attach the guide pin to the shift quadrant.
- Mount pressure spring **2**.
- Push on spring guide **3**, push return spring **4** over the spring guide with the offset end facing upward and lift the offset end over abutment bolt **5**.
- Mount stop disk **6**.

## 18.4.34 Disassembling the main shaft



- Fix the main shaft in the vise with the geared end facing downward.

Guideline

Use soft jaws.

- Remove stop disk ① and second-gear fixed gear ②.
- Remove the sixth-gear idler gear ③.
- Remove the split needle bearing ④ and stop disk ⑤.
- Remove lock ring ⑥.

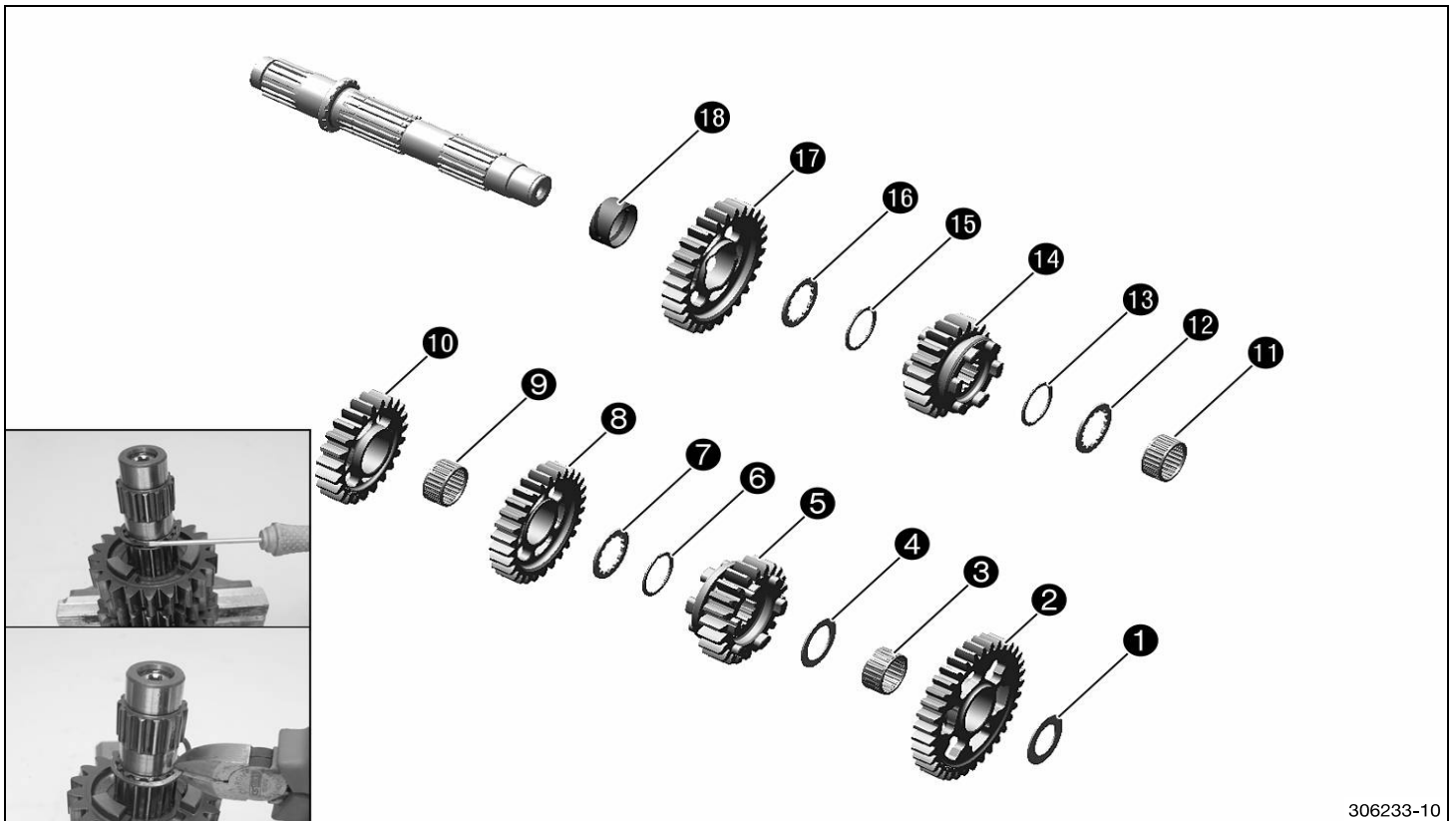


## Info

Open the lock ring with a screwdriver and twist it off the transmission shaft with pliers.

- Remove the third/fourth-gear sliding gear ⑦.
- Remove lock ring ⑧.
- Remove stop disk ⑨ and fifth-gear idler gear ⑩.
- Remove bearing bush ⑪.

### 18.4.35 Disassembling the countershaft



306233-10

- Fix the countershaft in the vise with the geared end facing downward.

## Guideline

Use soft jaws

- Remove stop disk ① and first-gear idler gear ②.
- Remove needle bearing ③ and stop disk ④.
- Remove fifth-gear sliding gear ⑤ and lock ring ⑥.



## Info

Open the lock ring with a screwdriver and twist it off the transmission shaft with pliers.

- Remove stop disk ⑦ and third-gear idler gear ⑧.
- Remove needle bearing ⑨ and the fourth-gear idler gear ⑩.
- Remove needle bearing ⑪ and stop disk ⑫.
- Remove lock ring ⑬ and sixth-gear sliding gear ⑭.
- Remove lock ring ⑮ and stop disk ⑯.

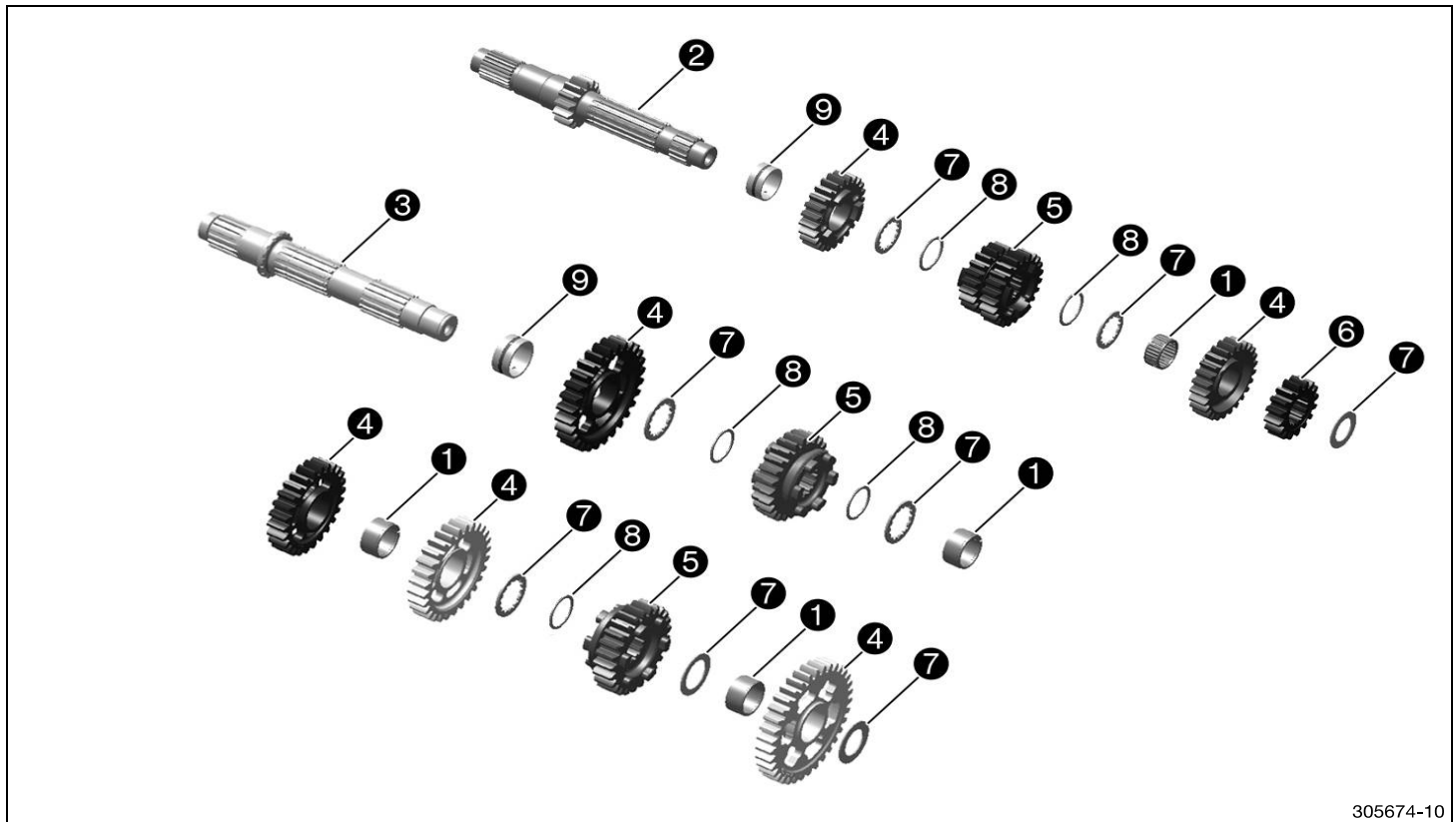


- Remove the second-gear idler gear 17 and bearing bush 18.

## 18.4.36 Checking the transmission

### Condition

The transmission has been disassembled.



305674-10

- Check needle bearings 1 for damage and wear.
  - » If there is damage or wear:
    - Change the needle bearing.
- Check the pivot points of main shaft 2 and countershaft 3 for damage and wear.
  - » If there is damage or wear:
    - Change the main shaft and/or countershaft.
- Check the tooth profiles of main shaft 2 and countershaft 3 for damage and wear.
  - » If there is damage or wear:
    - Change the main shaft and/or countershaft.
- Check the pivot points of idler gears 4 for damage and wear.
  - » If there is damage or wear:
    - Change the gear wheel pair.
- Check the shift dogs of idler gears 4, sliding gears 5, and fixed gear 6 for damage and wear.
  - » If there is damage or wear:
    - Change the gear wheel pair.
- Check the tooth faces of idler gears 4, sliding gears 5, and fixed gear 6 for damage and wear.
  - » If there is damage or wear:
    - Change the gear wheel pair.
- Check the tooth profiles of sliding gears 5 for damage and wear.
  - » If there is damage or wear:
    - Change the gear wheel pair.
- Check sliding gears 5 for smooth operation in the profile of main shaft 2.

- » If the sliding gear does not move easily:
  - Change the sliding gear or the main shaft.
- Check sliding gears **5** for smooth operation in the profile of countershaft **3**.
- » If the fixed gear does not move easily:
  - Change the sliding gear or the countershaft.
- Check stop disks **7** for damage and wear.
- » If there is damage or wear:
  - Change the stop disk.
- Use new lock rings **8** in every repair job.
- Check bearing bush **9** for damage and wear.
- » If there is damage or wear:
  - Change the bearing bush.

## 18.4.37 Assembling the main shaft

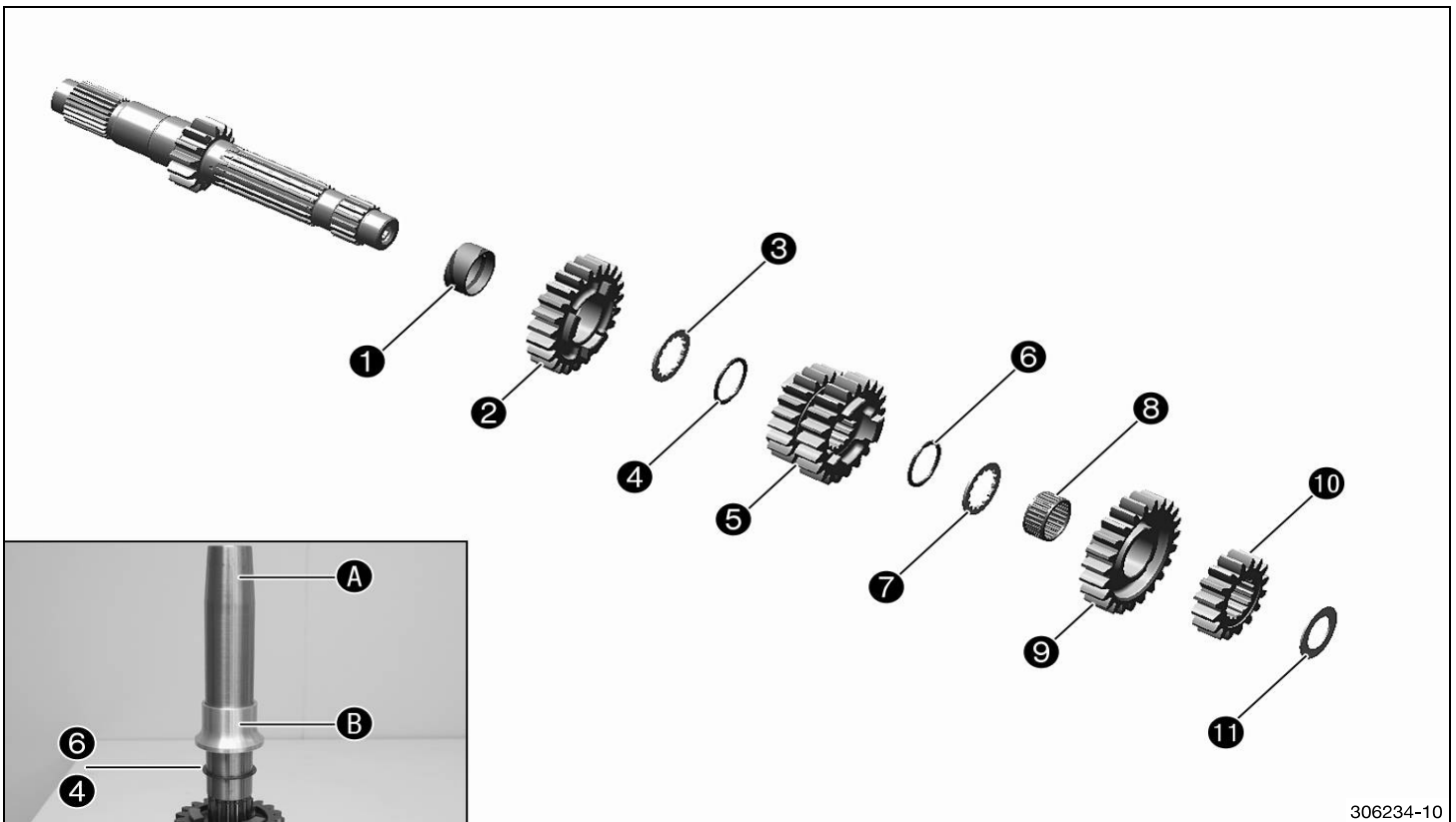


### Info

Use new lock rings with every repair.

### Preparatory work

- Lubricate all parts carefully before assembling.
- Check the transmission. (📖 p. 180)



306234-10

### Main work

- Secure the main shaft with the toothed end facing downward in the vise.

Guideline

Use soft jaws.

- Lubricate and mount bearing bush **1**.

Long-life grease (📖 p. 307)

- Push on fifth-gear idler gear **2** with the shift dogs facing upward.

- Mount stop disk **3**.
- Position special tool **A** on the transmission shaft.

Mounting tool for lock ring (75029005000) (📖 p. 314)

- Position lock ring **4** on special tool **A** and push down with sleeve **B**.  
✓ The lock ring engages in the groove of the transmission shaft.
- Push on third/fourth-gear sliding gear **5** with the small gear wheel facing downward.
- Position special tool **A** on the transmission shaft.

Mounting tool for lock ring (75029005000) (📖 p. 314)

- Position lock ring **6** on special tool **A** and push down with sleeve **B**.  
✓ The lock ring engages in the groove of the transmission shaft.
- Push on stop disk **7** and split needle bearing **8**.
- Push on sixth-gear idler gear **9** with the shift dogs facing downward.
- Push on second-gear fixed gear **10** with the collar facing downward and attach stop disk **11**.
- Finally, check all gear wheels for smooth operation.

## 18.4.38 Assembling the countershaft

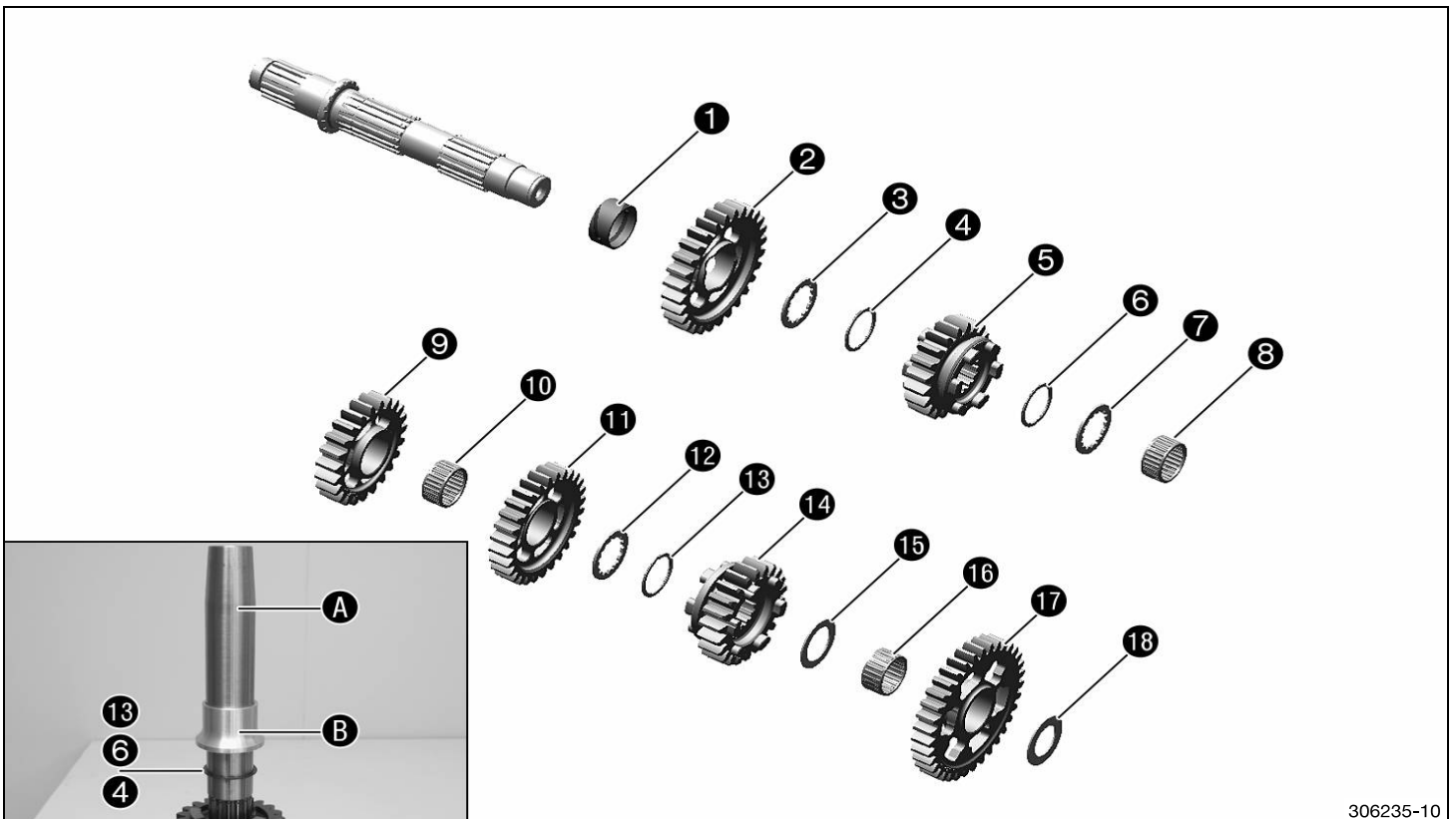


### Info

Use new lock rings in every repair job.

### Preparatory work

- Lubricate all parts carefully before assembling.
- Check the transmission. (📖 p. 180)



306235-10

### Main work

- Fix the countershaft in the vise with the geared end facing downward.

Guideline

Use soft jaws

- Mount bearing bush **1** and the second-gear idler gear **2** on the countershaft with the protruding collar facing downward.
- Mount stop disk **3**.
- Position special tool **A** on the transmission shaft.

Mounting tool for lock ring (75029005000) (p. 314)

- Position lock ring **4** on special tool **A** and push down with sleeve **B**.  
✓ The lock ring engages in the groove of the transmission shaft.
- Mount the sixth-gear sliding gear **5** with the shift groove facing upward.
- Position special tool **A** on the transmission shaft.

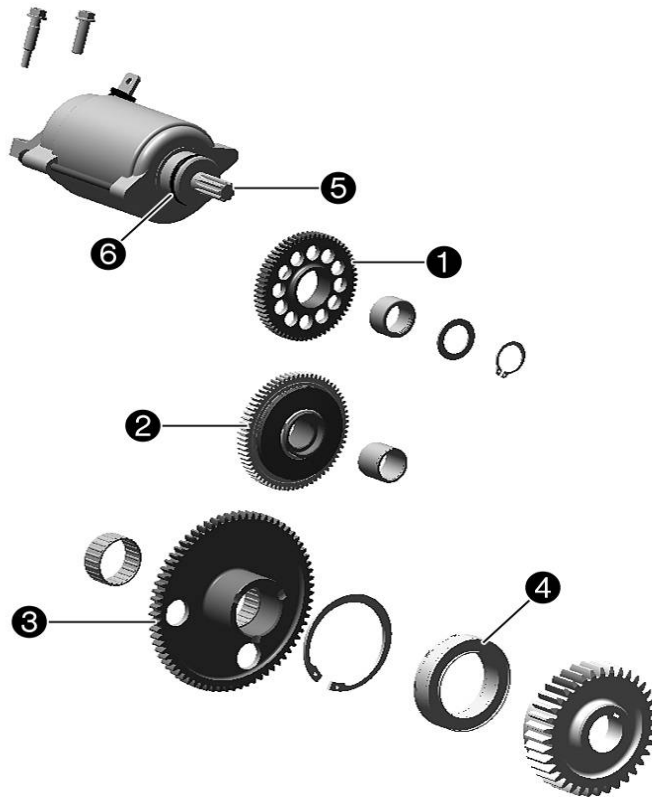
Mounting tool for lock ring (75029005000) (p. 314)

- Position lock ring **6** on special tool **A** and push down with sleeve **B**.  
✓ The lock ring engages in the groove of the transmission shaft.
- Mount stop disk **7**.
- Mount needle bearing **8** and the fourth-gear idler gear **9** with the collar facing upward.
- Mount needle bearing **10** and the third-gear idler gear **11** with the collar facing downward.
- Mount stop disk **12**.
- Position special tool **A** on the transmission shaft.

Mounting tool for lock ring (75029005000) (p. 314)

- Position lock ring **13** on special tool **A** and push down with sleeve **B**.  
✓ The lock ring engages in the groove of the transmission shaft.
- Mount the fifth-gear sliding gear **14** with the shift groove facing downward and stop disk **15**.
- Mount needle bearing **16**, first-gear idler gear **17** with the recess facing downward and stop disk **18**.
- Finally, check all gear wheels for smooth operation.

## 18.4.39 Checking the starter drive

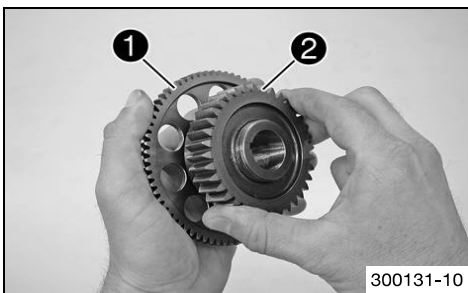


305600-10

- Check the gear mesh and bearing of starter idler gear **1** for damage and wear.  
» If there is damage or wear:

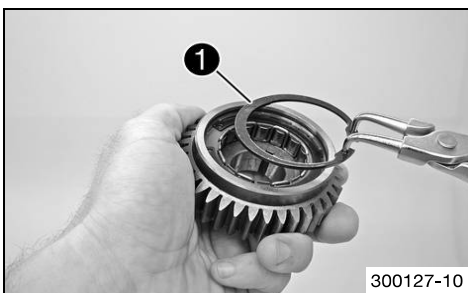
- Change the starter idler gear and/or needle bushing.
- Check the gear teeth and bearing of torque limiter **2** for damage and wear.
  - » If there is damage or wear:
    - Change the torque limiter and/or needle bearing.
- Check freewheel gear **3** and bearing when removed for damage and wear.
  - » If there is damage or wear:
    - Change the freewheel gear or bearing.
- Check freewheel **4** when removed for damage and wear.
  - » If there is damage or wear:
    - Change the freewheel.
- Check the gear teeth of starter motor **5** for damage and wear.
  - » If there is damage or wear:
    - Change the starter motor.
- Connect the negative cable of a 12-volt power supply to the housing of the starter motor. Connect the positive cable of the power supply briefly with the connector of the starter motor.
  - » If the starter motor does not turn when the circuit is closed:
    - Change the starter motor.
- Change O-ring **6** of the starter motor.

## 18.4.40 Checking freewheel

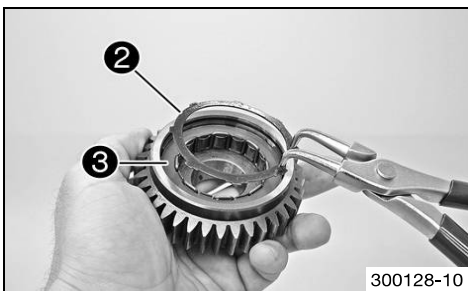


- Insert the freewheel gear **1** in the primary gear **2**, turning the primary gear clockwise; do not twist!
- Check the locking action of the freewheel gear **1**.
  - » If the primary gear does not turn clockwise or if it does not lock counterclockwise:
    - Remove the freewheel. (📖 p. 184)
    - Turn the freewheel 180°.
    - Install the freewheel. (📖 p. 185)

## 18.4.41 Removing freewheel



- Extract the lock ring **1** from the groove using suitable pliers.



- Compress the expansion ring **2** and remove it, using suitable pliers.
- Take the freewheel **3** out of the primary gear.

## 18.4.42 Installing freewheel



- Lubricate all parts thoroughly.
- Push the freewheel **1** into the primary gear.

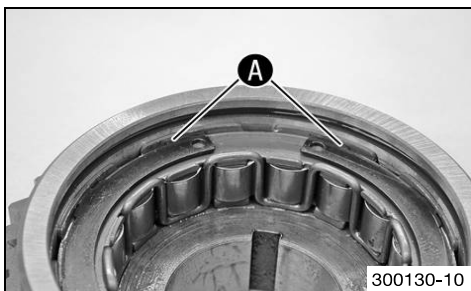


### Info

Note the direction of rotation.



- Install the expansion ring **2**.

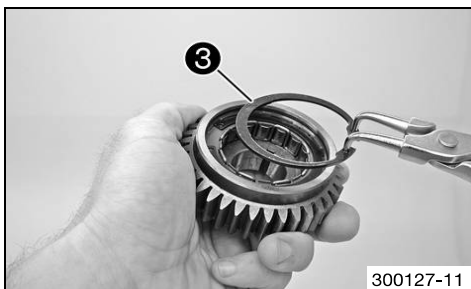


- Make sure that all lugs of the expansion ring locate in the slits **A** of the free-wheel.



### Info

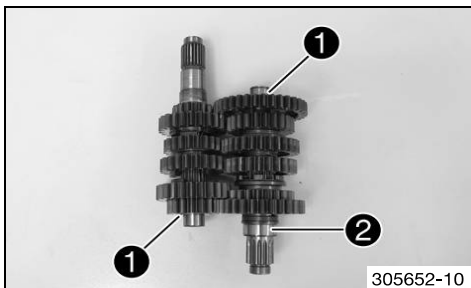
If necessary, use a screwdriver to ease them in.



- Insert the lock ring **3** into the groove with suitable pliers and check that it is seated correctly.

## 18.5 Engine assembly

### 18.5.1 Installing the transmission shafts



- Clamp the right section of the engine case.

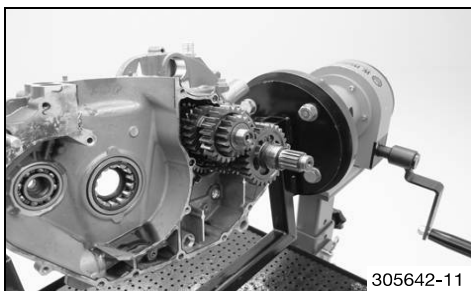
Holder for engine assembly stand (75012001070) (p. 314)

Support for engine assembly stand (75012001060) (p. 313)

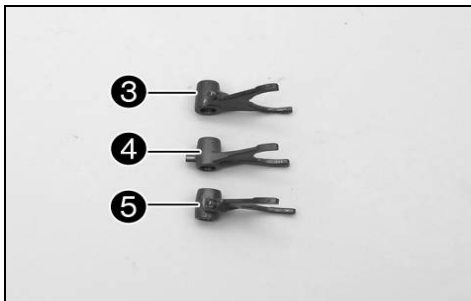
Engine assembly stand (80329001000) (p. 319)

- Make sure that both stop disks **1** are installed.
- Mount inner bearing race **2** on the countershaft.





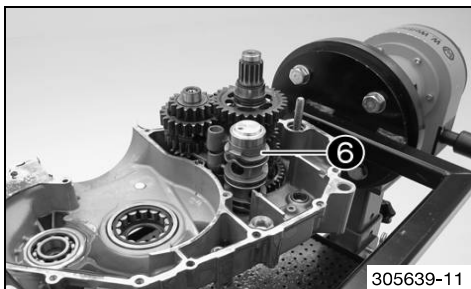
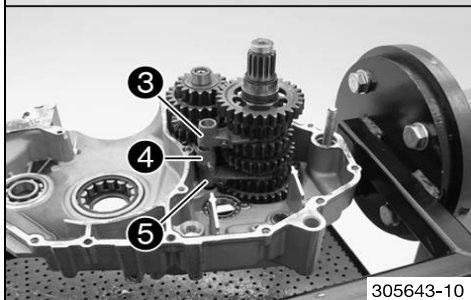
- Oil all bearings.
- Slide both transmission shafts together into the bearing seats.



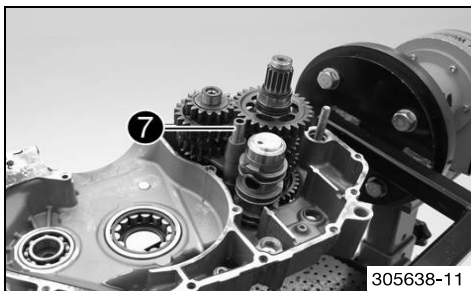
- Mount upper shift fork ③, middle shift fork ④, and lower shift fork ⑤.

## **i** Info

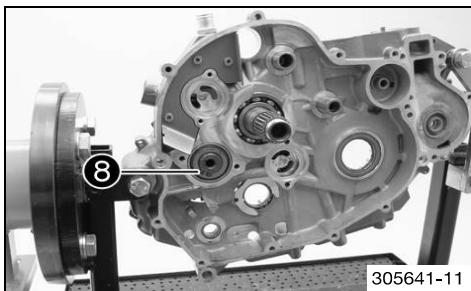
For easier assembly of middle shift fork ④, lift the sliding gear of the third/fourth gear.



- Mount shift drum ⑥.
- Hang the shift forks into the shift drum.

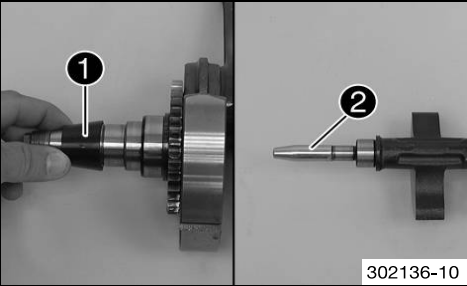


- Mount shift rail ⑦.
- Check the transmission for smooth operation.



- Mount the washer and lock ring ⑧.

18.5.2 Installing crankshaft and balancer shaft



- Mount special tool 1 on the alternator side of the crankshaft.

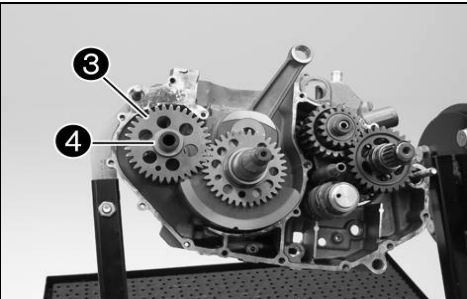
Mounting sleeve (75029080000) (p. 317)

- Mount the special tool on the clutch end of the crankshaft.

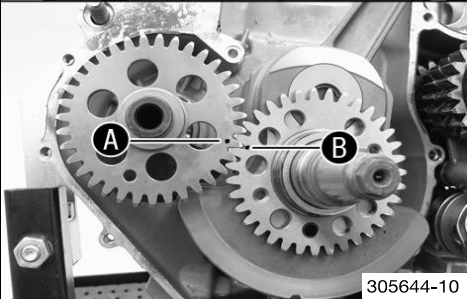
Mounting sleeve (75029080050) (p. 317)

- Mount special tool 2 on the balancer shaft.

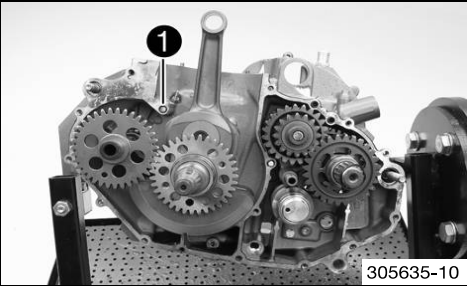
Mounting sleeve (58529005000) (p. 311)



- Push the crankshaft into the bearing seat and take off the special tool.
- Grease the shaft seal rings of the balancer shaft.
- Push balancer shaft 3 into the bearing seat and remove the special tool.
  - ✓ Align markings A and B.
- Mount stop disk 4.

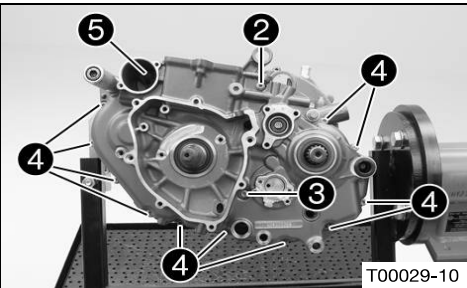


18.5.3 Installing the left engine case



- Mount the dowels.
- Mount O-ring 1.
- Degrease the sealing surface. Apply sealing compound to the left section of the engine case.

Loctite® 5910



- Mount the left section of the engine case. If necessary, strike it lightly with a rubber mallet and turn the transmission shafts.

**Info**  
Do not use the screws to pull the two sections of the engine case together.

- Take off special tool from the crankshaft.

Mounting sleeve (75029080000) (p. 317)

- Mount screw 2 but do not tighten yet.

Guideline

Screw, engine case	M6x80	10 Nm (7.4 lbf ft)
--------------------	-------	--------------------

- Mount screw 3 but do not tighten yet.

Guideline

Screw, engine case	M6x70	10 Nm (7.4 lbf ft)
--------------------	-------	--------------------

- Mount screws ④ but do not tighten yet.

Guideline

Screw, engine case	M6x30	10 Nm (7.4 lbf ft)
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- Mount screw ⑤ with the washer but do not tighten yet.

Guideline

Screw, engine case	M6x25	10 Nm (7.4 lbf ft)
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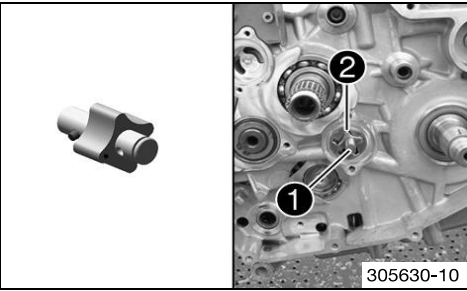
**Info**  
Mount the screw with a new copper washer.

- Tighten all screws in a crisscross pattern.

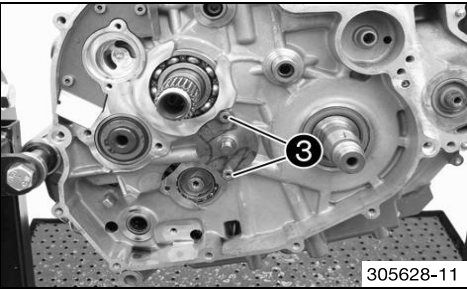
Guideline

Screw, engine case	M6	10 Nm (7.4 lbf ft)
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18.5.4 Installing the oil pumps



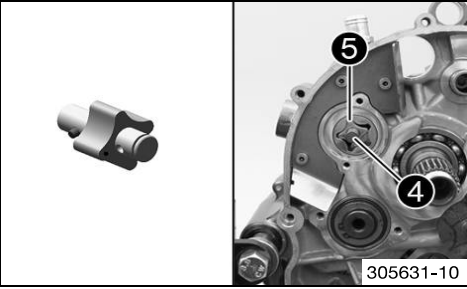
- Mount the pin and internal rotor on the oil pump shaft.
- Position the external rotor in the engine case with the bevel facing inward.
- Mount oil pump shaft ① with internal rotor ②.
- Oil the parts.



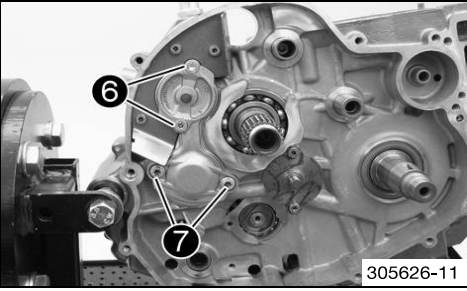
- Position the oil pump cover.
- Mount and tighten screws ③.

Guideline

Screw, oil pump cover	M5	6 Nm (4.4 lbf ft)	Loctite® 243™
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- Mount the pin and internal rotor on the oil pump shaft.
- Position the external rotor in the engine case with the bevel facing inward.
- Mount oil pump shaft ④ with internal rotor ⑤.
- Oil the parts.



- Position the oil pump cover.
- Mount and tighten screws ⑥.

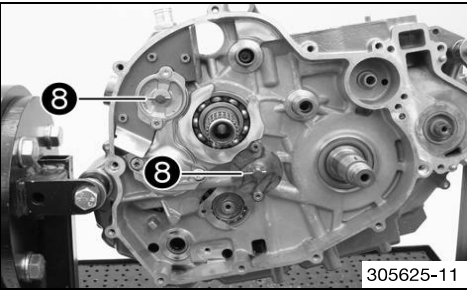
Guideline

Screw, oil pump cover, top	M5	6 Nm (4.4 lbf ft)	Loctite® 243™
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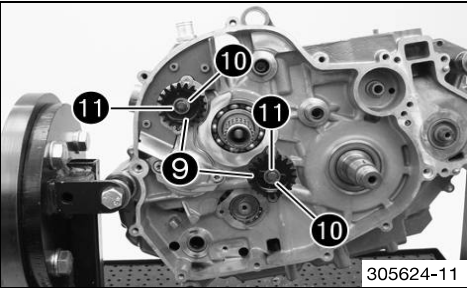
- Mount and tighten screws ⑦.

Guideline

Screw, oil pump cover, bottom	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
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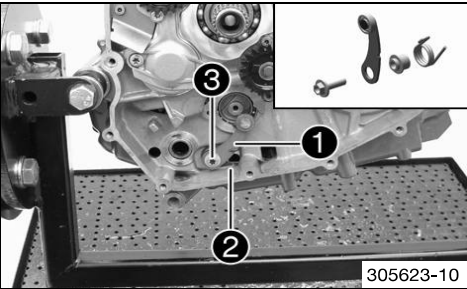


- Mount washers and pins 8.



- Mount oil pump gear wheels 9, washers 10 and lock washers 11.

18.5.5 Installing locking lever

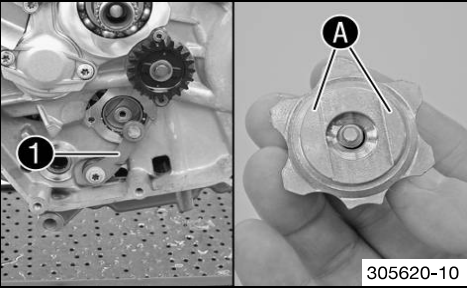


- Position locking lever 1 with sleeve and spring 2.
- Mount and tighten screw 3.

Guideline

Screw, locking lever	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
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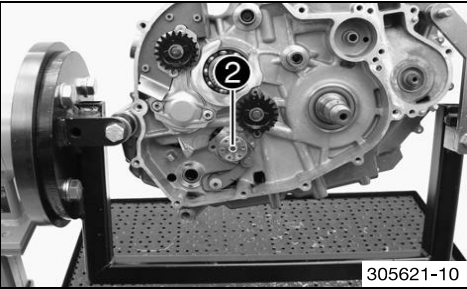
18.5.6 Installing shift drum locating



- Press locking lever 1 down and position shift drum locating.

**i** Info

The flat surfaces A of the shift drum locating are not symmetric.

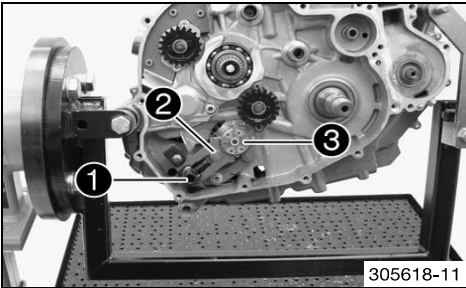


- Release the locking lever.
- Mount and tighten screw 2.

Guideline

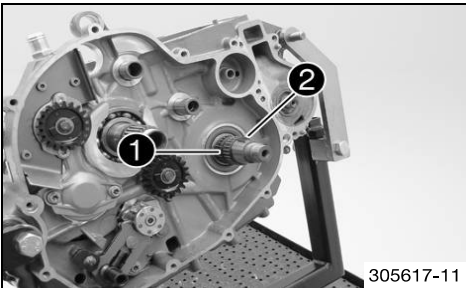
Screw, shift drum locating	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
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## 18.5.7 Installing shift shaft

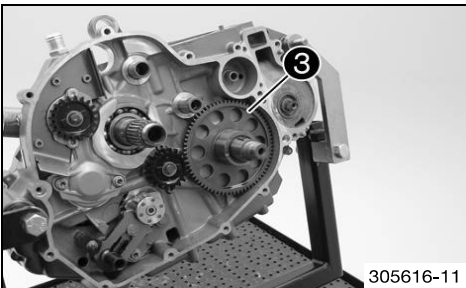


- Slide shift shaft ① with the washer into the bearing seat.
- Push sliding plate ② away from the shift drum locating ③. Insert the shift shaft all the way.
- Let the sliding plate engage in the shift drum locating.
- Shift through the transmission.

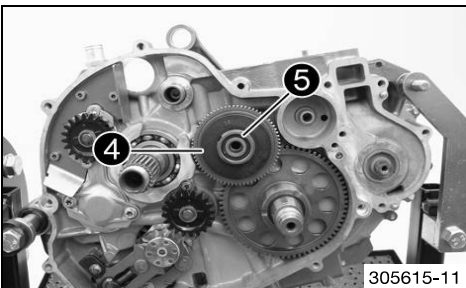
## 18.5.8 Installing the starter drive



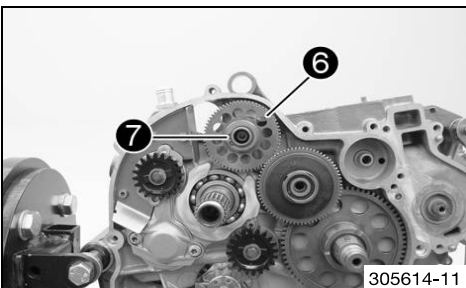
- Mount the two needle bearings ① and the woodruff key ②.



- Position freewheel gear ③.



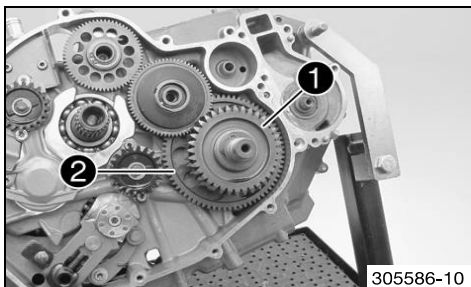
- Mount the needle bearing and torque limiter ④ with the washer.
- Mount lock ring ⑤.



- Mount the starter idler gear ⑥ with the washer.
- Mount lock ring ⑦.



## 18.5.9 Installing the primary gear



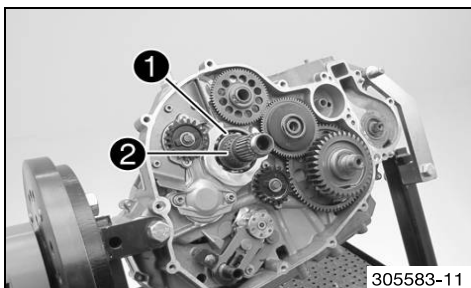
- Ensure that the woodruff key is seated properly.
- Mount primary gear ①.



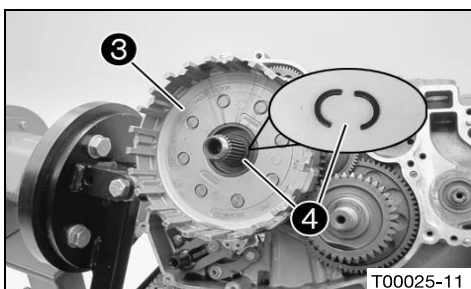
### Info

Turn freewheel gear ② backwards and forwards to ease meshing.

## 18.5.10 Installing the clutch basket



- Mount supporting plate ① and needle bearing ②.



- Mount clutch basket ③.



### Info

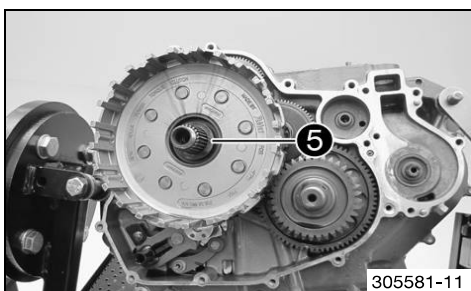
Turn the clutch basket and oil pump gear wheels backwards and forwards slightly to help them mesh more easily.

- Mount half washers ④ with the sharp edge facing outward.

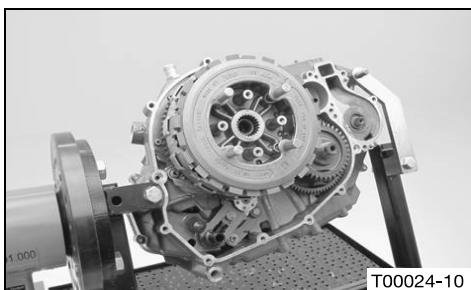


### Info

Grease the half washers to ease assembly.



- Position stepped washer ⑤ with the recesses toward the half washers.



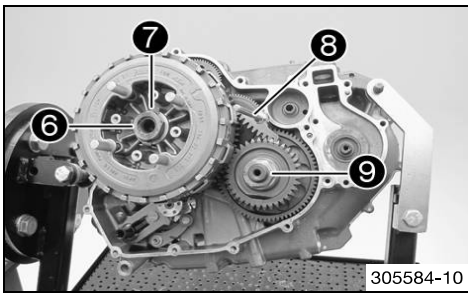
- Insert the antihopping clutch in the clutch basket.
- ✓ The uppermost clutch facing disc is offset by one tooth.



### Info

If necessary, turn the main shaft a little to ease access.





- Mount the new lock washer **6** with nut **7**.
- Lock the clutch basket and primary gear using special tool **8** and tighten the nut.

## Guideline

Nut, inner clutch hub	M20x1.5	100 Nm (73.8 lbf ft)	Loctite® 243™
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Gear segment (75029081000) (p. 317)



## Info

Make sure that the crankshaft is not blocked.

- Secure the nut with the lock washer.
- Mount and tighten nut **9**.

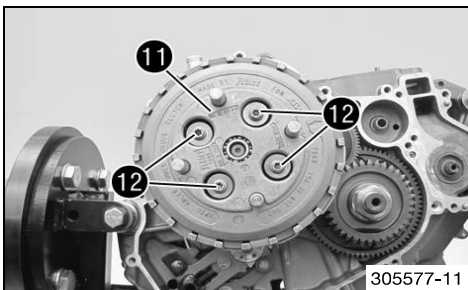
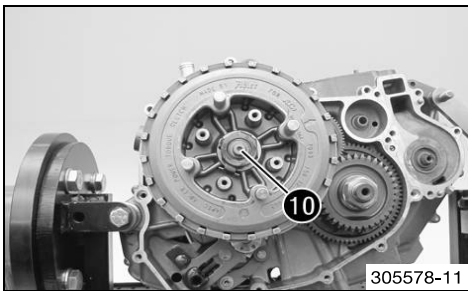
## Guideline

Nut, primary gear	M20LHx1.5	90 Nm (66.4 lbf ft)	Loctite® 243™
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- Remove the special tool.

Gear segment (75029081000) (p. 317)

- Mount pressure piece **10**.



- Position pressure cap **11**.
- Mount and tighten screws **12** with the spring retainers and clutch springs.

## Guideline

Screw, clutch spring	M5	6 Nm (4.4 lbf ft)
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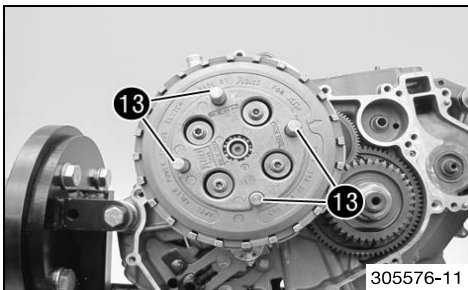


## Info

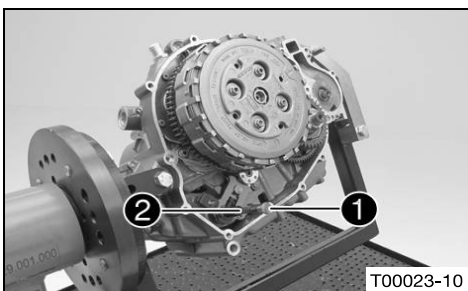
Ensure that all clutch springs have a blue color coding.

- Remove special tool **13**.

Assembly screws (75029033000) (p. 314)

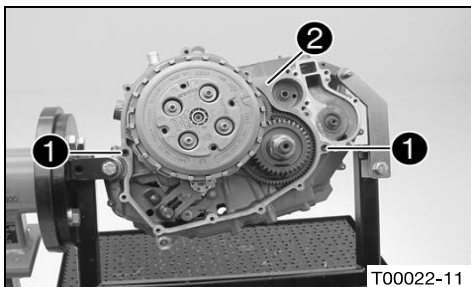


## 18.5.11 Installing the spacer and spring

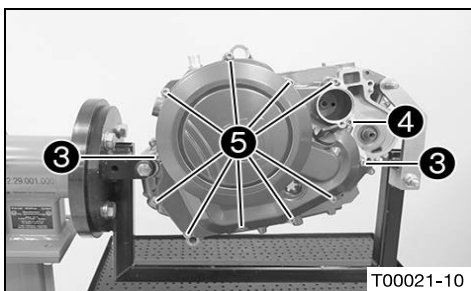


- Position spacer **1** and spring **2**.

## 18.5.12 Installing the clutch cover



- Mount dowels **1** and position the clutch cover gasket **2**.



- Position the clutch cover.
- Mount screws **3** but do not tighten yet.

Guideline

Screw, clutch cover	M6x30	10 Nm (7.4 lbf ft)
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- Mount screw **4** but do not tighten it yet.

Guideline

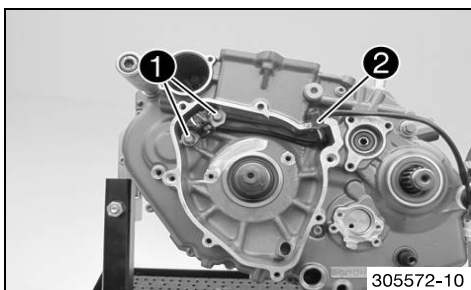
Screw, clutch cover	M6x35	10 Nm (7.4 lbf ft)
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- Mount screws **5** and tighten all screws in a crisscross pattern.

Guideline

Screw, clutch cover	M6x25	10 Nm (7.4 lbf ft)
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## 18.5.13 Installing the ignition pulse generator



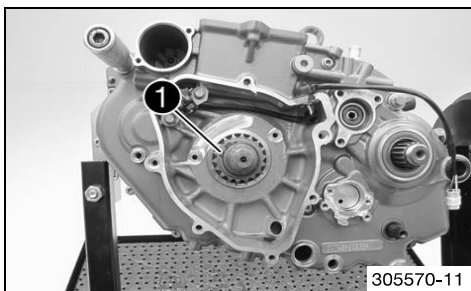
- Position the ignition pulse generator.
- Mount screws **1** but do not tighten yet.

Guideline

Screw, ignition pulse generator	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
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- Position the cable and position cable sleeve **2** in the engine case.

## 18.5.14 Installing timing chain and timing chain sprocket

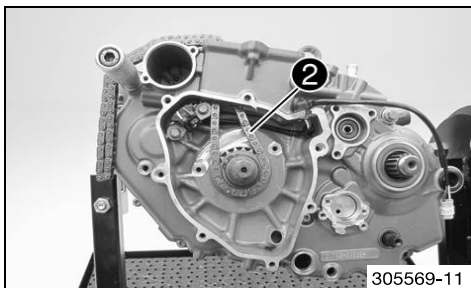


- Heat the timing chain sprocket and push it immediately on to the crankshaft.

Guideline

100 °C (212 °F)

- Mount lock ring **1**.



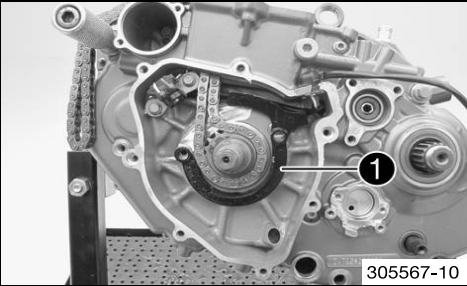
- Thread the timing chain **2** in and lay it over the timing chain sprocket.



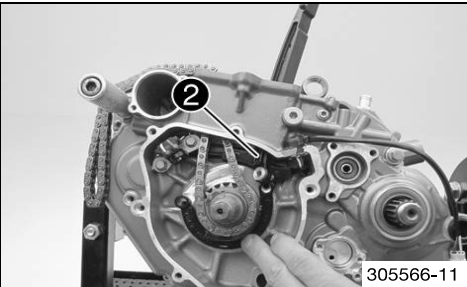
#### Info

If the timing chain is not new, pay attention to the direction of travel.

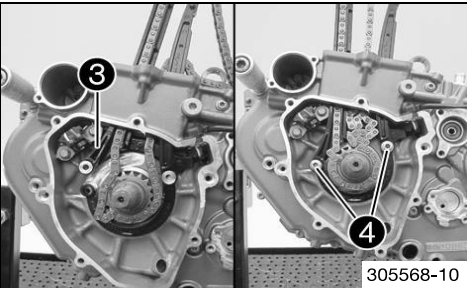
18.5.15 Installing the timing chain rails



- Position the timing chain securing guide ①.
- ✓ The ignition pulse generator cable is routed in the cable duct of the timing chain securing guide.



- Position the timing chain tensioning rail ② from above.
- Insert the support bushing into the timing chain securing guide.



- Position the timing chain guide rail ③ from above.
- Insert the support bushing into the timing chain securing guide.
- Mount and tighten screws ④.

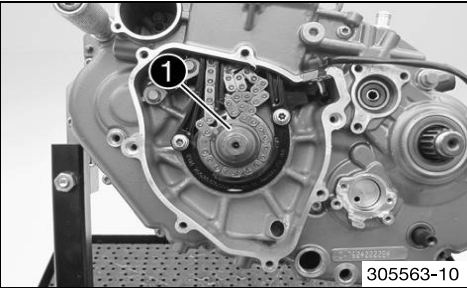
Guideline

Screw, timing chain guide rail	M6	10 Nm (7.4 lbf ft)	Loctite® 2701™
Screw, timing chain tensioning rail	M6	10 Nm (7.4 lbf ft)	Loctite® 2701™

**i Info**  
Ensure that there is no thread locking material at the collar of the screw; otherwise, the timing chain tensioning rail could lock and break.

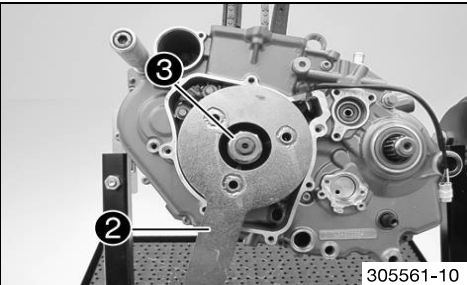
- Check both timing chain rails for freedom of movement.

18.5.16 Installing the rotor



- Ensure that woodruff key ① is seated properly.
- Degrease the cone of the crankshaft and rotor.
- Mount the rotor.

**i Info**  
Make sure that the crankshaft is not blocked.



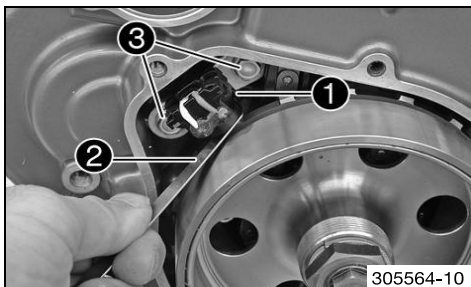
- Hold the rotor with special tool ②.
- Mount and tighten nut ③ with the locking edge washer.

Guideline

Rotor nut	M18x1.5	100 Nm (73.8 lbf ft)
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Holding wrench (75029091000) (p. 318)

## 18.5.17 Adjusting crankshaft position sensor distance



- Adjust the distance between the crankshaft position sensor **1** and the conductive element of the rotor using the special tool **2**.

Guideline

Crankshaft position sensor/rotor - distance	0.70 mm (0.0276 in)
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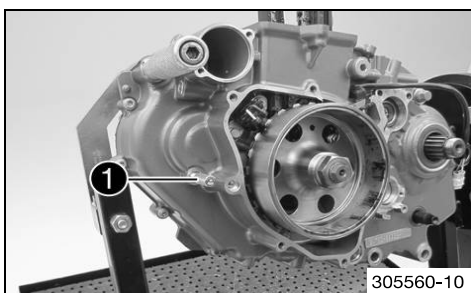
Feeler gauge (59029041100) (p. 312)

- Fully tighten screws **3**.

Guideline

Screw, ignition pulse generator	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
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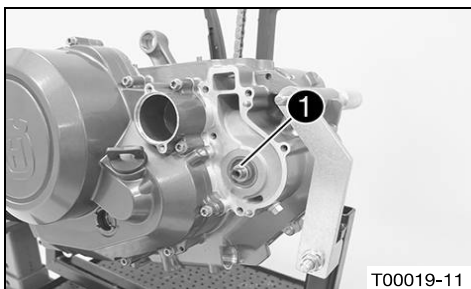
## 18.5.18 Setting engine to top dead center



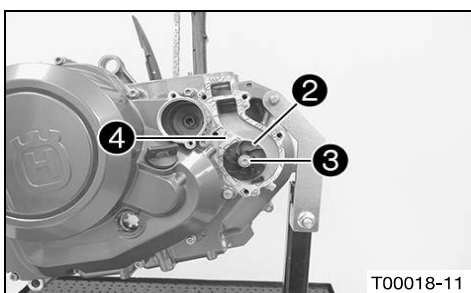
- Set the crankshaft to top dead center and lock it with the special tool **1**.

Engine blocking screw (77329010000) (p. 318)

## 18.5.19 Mounting the water pump cover



- Mount form washer **1**.

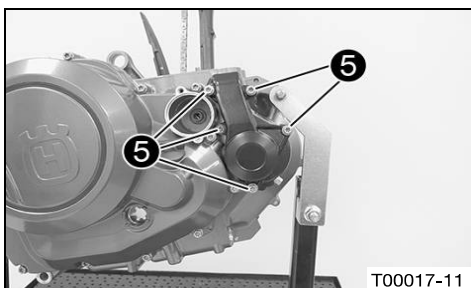


- Mount water pump impeller **2**.
- Mount and tighten screw **3**.

Guideline

Screw, water pump wheel	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
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- Lay on the water pump cover seal **4**.



- Position the water pump cover.
- Mount and tighten screws **5**.

Guideline

Screw, water pump cover	M6	10 Nm (7.4 lbf ft)
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## 18.5.20 Installing piston



302600-10

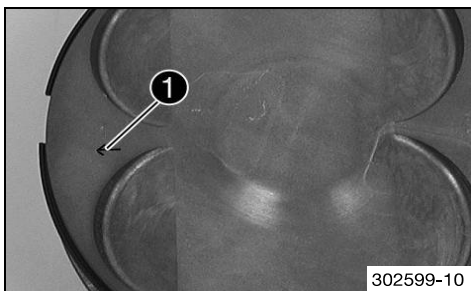
- Shift the joint of the piston rings by 120°.
- Push the oiled piston into the special tool.

Piston assembly ring (75029015102) (📖 p. 314)



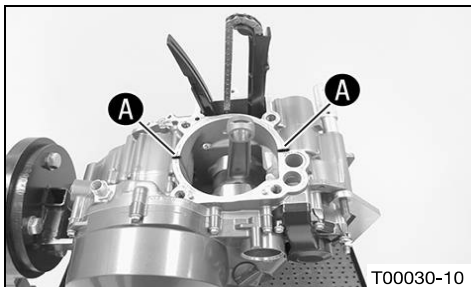
302601-10

- Position the piston on the cylinder using the special tool.
- Push the piston carefully into the cylinder from above.
  - ✓ The piston rings should not become caught; otherwise, they may be damaged.



302599-10

- Ensure that piston marking **1** faces the outfeed side.



T00030-10

- Apply a thin layer of sealing compound in area **A**.

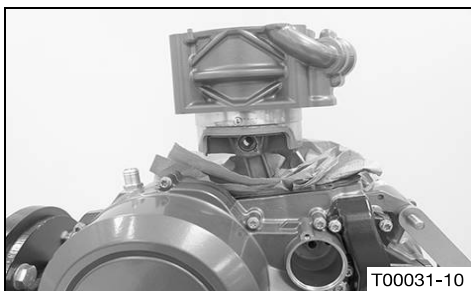
**Loctite® 5910**

- Place the cylinder base gasket on.



### Info

Make sure the grooved pins are seated correctly.



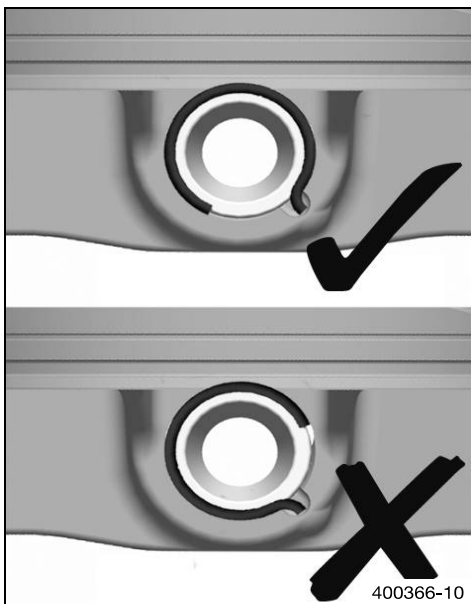
T00031-10

- Cover the engine case opening with a cloth. Thread the timing chain through the chain shaft. Mount the piston pin.

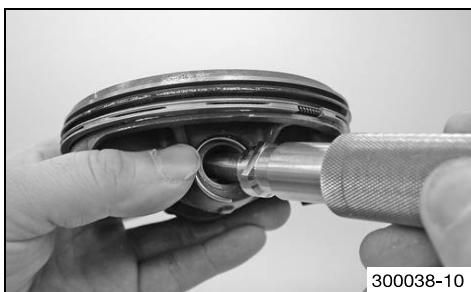


### Info

For clarity, the following steps are illustrated using a disassembled piston.



- Position the piston pin retainer.



- Insert the special tool and firmly press it toward the piston.
- Turn the special tool counterclockwise, thereby pressing the piston pin retainer into the groove.

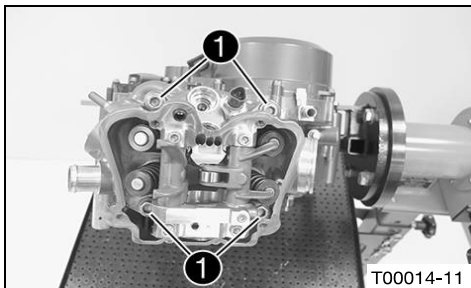
Insertion tool for piston ring lock (75029035000) (p. 315)

- 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 grooved pins engage.

## 18.5.21 Installing the cylinder head



- Put on the cylinder head gasket.



### Info

Make sure the grooved pins are seated correctly.

- Mount the cylinder head.
- Mount and tighten screws 1 with the washers.



Guideline

Cylinder head screw	M10	Tightening sequence: Tighten diagonally, beginning with the rear screw on the timing chain shaft. Step 1 15 Nm (11.1 lbf ft) Step 2 30 Nm (22.1 lbf ft) Step 3 45 Nm (33.2 lbf ft) Step 4 60 Nm (44.3 lbf ft)	Lubricated with engine oil
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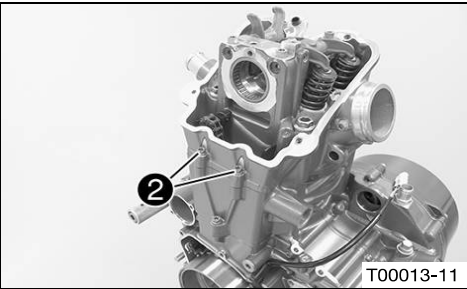
 **Info**

Always use new cylinder head screws.

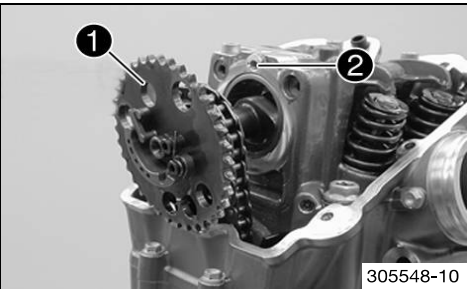
- Mount and tighten screws ②.

Guideline

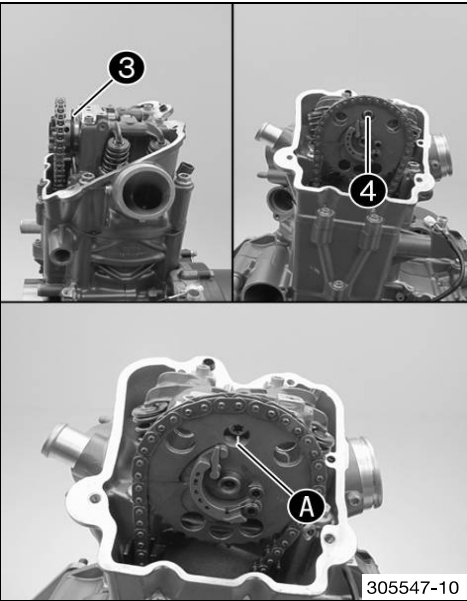
Screw, cylinder head	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
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18.5.22 Installing the camshafts



- Lay the timing chain over the camshaft. Push the camshaft into the bearing seats.
  - ✓ The crankshaft is at top dead center.
  - ✓ The middle drill hole of camshaft ① and the drill hole of cylinder head ② are aligned.



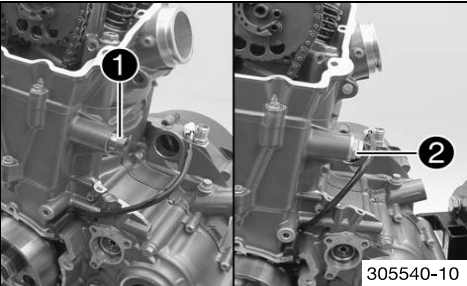
- Position the camshaft support plate ③. Mount and tighten screw ④.

Guideline

Screw, camshaft support plate	M6x12	10 Nm (7.4 lbf ft)	Loctite® 243™
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- ✓ Marking A of the camshaft is aligned with the marking of the camshaft support plate.

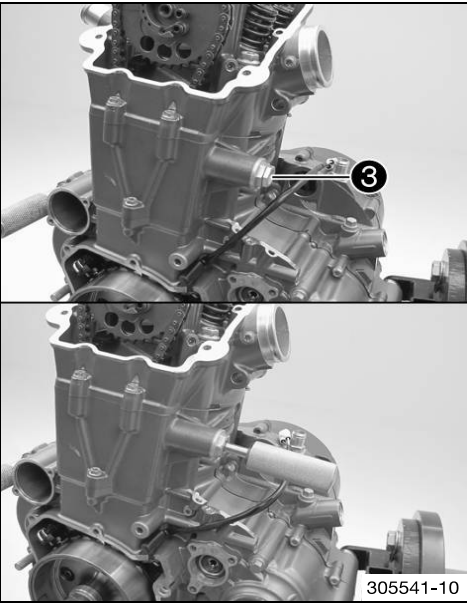
18.5.23 Installing timing chain tensioner



- Insert the timing chain tensioner ①.
- Mount and tighten plug ② with the new seal ring.

Guideline

Plug, timing chain tensioner	M20x1.5	25 Nm (18.4 lbf ft)
------------------------------	---------	---------------------



- Remove screw ③ and use the special tool to push the timing chain tensioner toward the timing chain.

Release device for timing chain tensioner (77329051000) (p. 318)
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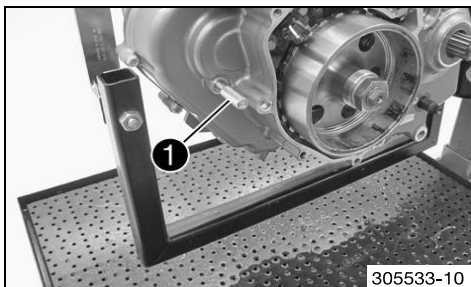
- ✓ The timing chain tensioner unlocks.

- Mount and tighten screw ③.

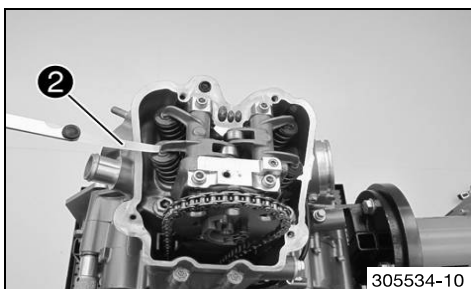
Guideline

Screw, unlocking of timing chain tensioner	M10x1	10 Nm (7.4 lbf ft)
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## 18.5.24 Checking valve clearance



- Remove special tool ①.
- Crank the engine several times.
- Set the engine to ignition top dead center. (📖 p. 145)



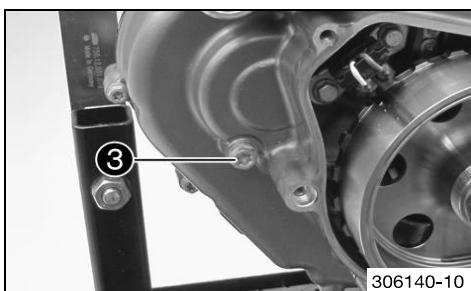
- Check the valve clearance on all valves between the valve and the rocker arm using the special tool ②.

Guideline

Valve play, cold	0.07... 0.13 mm (0.0028... 0.0051 in)
------------------	---------------------------------------

Feeler gauge (59029041100) (📖 p. 312)

- » If valve clearance does not meet specifications:
  - Adjust the valve clearance. (📖 p. 200)



- Remove the special tool.

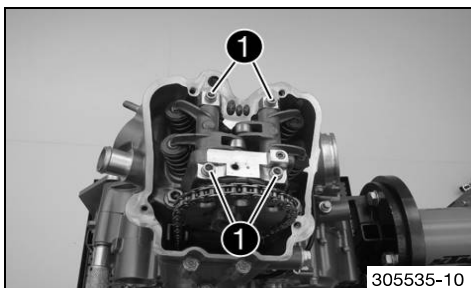
Engine blocking screw (77329010000) (📖 p. 318)

- Mount and tighten screw ③ with the washer.

Guideline

Crankshaft clamp screw plug	M8	15 Nm (11.1 lbf ft)
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## 18.5.25 Adjusting the valve clearance

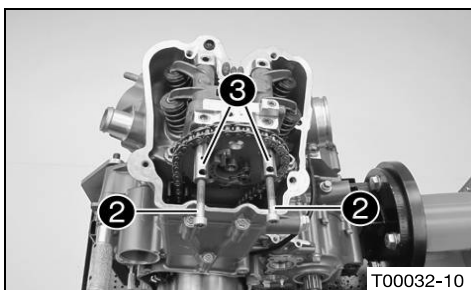


- Remove screws ①.

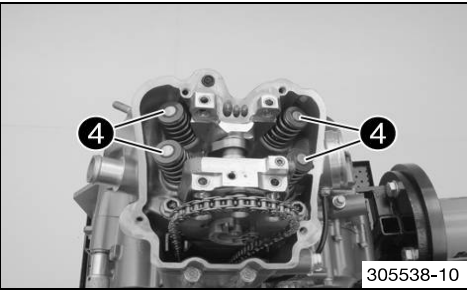


### Info

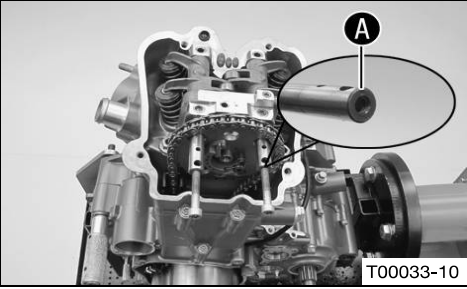
Make sure that the crankshaft is at top dead center.



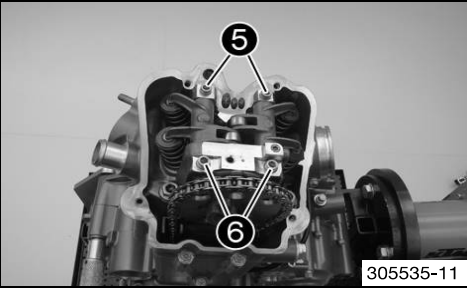
- Screw suitable screws ② into the rocker arm shafts ③.
- Remove the rocker arm shafts and take off the rocker arm.



- Remove shims 4 and set them down according to the installation position.
- Correct the shims as indicated by the results of the valve clearance check.
- Insert suitable shims.



- Position the rocker arms and mount the rocker arm shafts.
  - ✓ The tapped hole of the rocker arm shaft faces outward.
  - ✓ Drill hole A and the flat surface face upward.

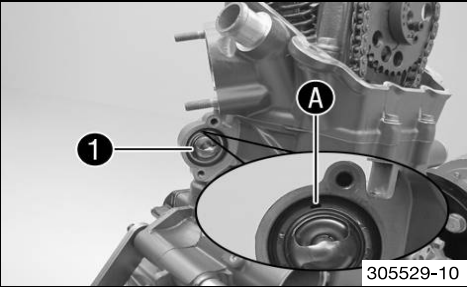


- Mount and tighten screws 5.  
Guideline

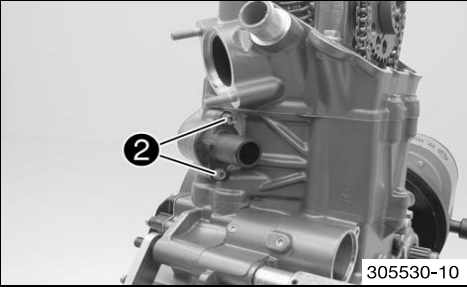
Screw, rocker arm shaft	M6	12 Nm (8.9 lbf ft)
-------------------------	----	--------------------
- Mount and tighten screws 6.  
Guideline

Screw, rocker arm shaft	M6	12 Nm (8.9 lbf ft)
-------------------------	----	--------------------
- Check the valve clearance. (p. 200)

18.5.26 Installing the thermostat



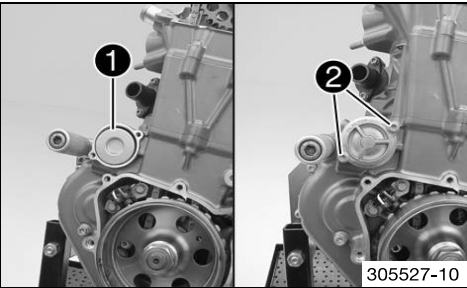
- Position thermostat 1 with the gasket.
  - ✓ Drill hole A must face upward.



- Position the thermostat case.
- Mount and tighten screws 2.  
Guideline

Screw, thermostat hous- ing	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
--------------------------------	----	-----------------------	---------------

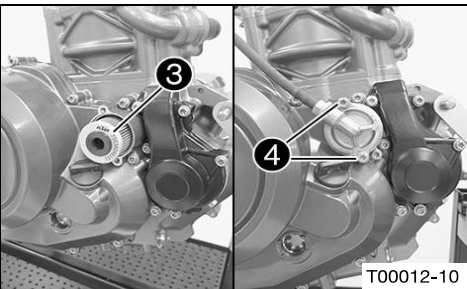
18.5.27 Installing the oil filter



- Insert oil filter ①.
- Oil the O-ring of the oil filter cover and mount it with the oil filter cover.
- Mount and tighten screws ②.

Guideline

Screw, oil filter cover	M5	6 Nm (4.4 lbf ft)
-------------------------	----	-------------------

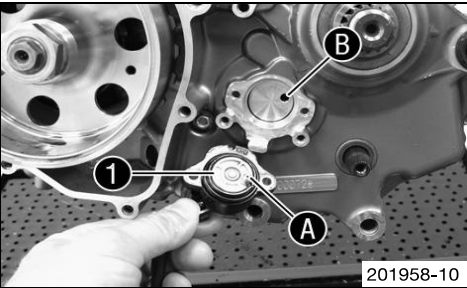


- Insert oil filter ③.
- Oil the O-ring of the oil filter cover and mount it with the oil filter cover.
- Mount and tighten screws ④.

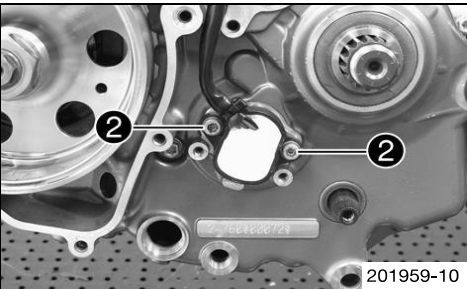
Guideline

Screw, oil filter cover	M5	6 Nm (4.4 lbf ft)
-------------------------	----	-------------------

18.5.28 Installing the gear position sensor



- Mount gear position sensor ① with the O-ring.
- ✓ Pin ① engages in drill hole ②.

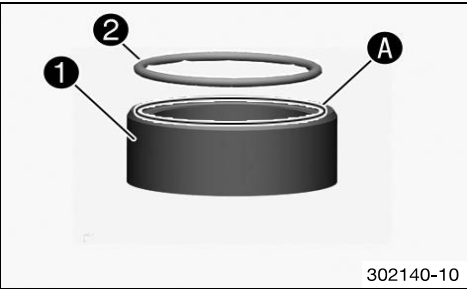


- Mount and tighten screws ② with the washers.

Guideline

Screw, gear sensor	M5	5 Nm (3.7 lbf ft)	Loctite® 243™
--------------------	----	-------------------	---------------

18.5.29 Installing the spacer

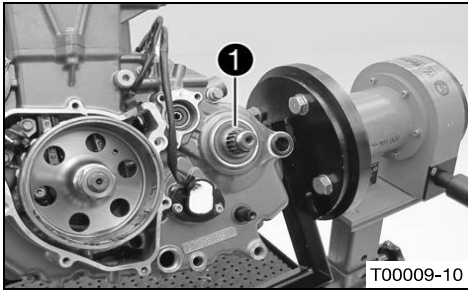


- Before mounting, grease spacer ① in area ① and O-ring ②.

Long-life grease (p. 307)
---------------------------

- Position the O-ring in the recess of the spacer.



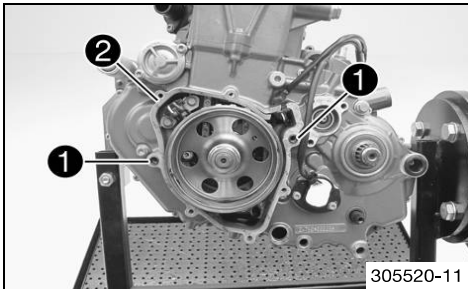


- Grease the shaft seal ring.

Long-life grease (p. 307)

- Push spacer with the O-ring onto the countershaft with a twisting motion.
  - ✓ The recess with the O-ring faces inward.
  - ✓ The shaft seal ring rests against the spacer along its entire circumference.

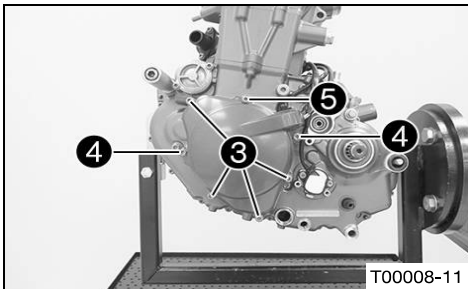
## 18.5.30 Installing the alternator cover



- Apply sealing compound lightly in the area of the cable sleeve.

Loctite® 5910

- Mount dowel ① and position the alternator cover gasket ②.



- Position the alternator cover.
- Mount and tighten screws ③.

Guideline

Screw in alternator cover	M6	10 Nm (7.4 lbf ft)
---------------------------	----	--------------------

- Mount and tighten screws ④.

Guideline

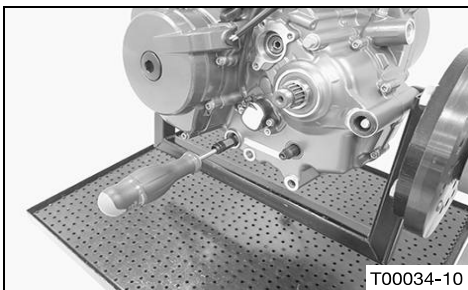
Screw, alternator cover	M6x30	10 Nm (7.4 lbf ft)
-------------------------	-------	--------------------

- Mount and tighten screw ⑤.

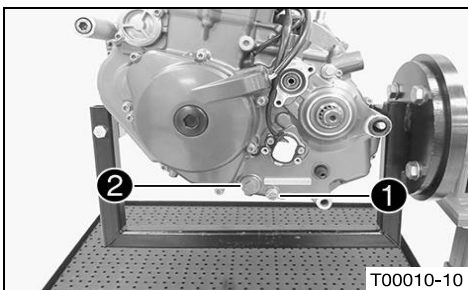
Guideline

Screw, alternator cover (chain shaft through-hole)	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
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## 18.5.31 Installing oil screens



- Push the oil screen with O-rings on to a pin wrench. Push the pin wrench through the opening into the drill hole of the opposite engine case wall and push the oil screen as far as possible into the engine case.



- Mount the oil drain plug ① with the magnet and a new seal ring and tighten it.

Guideline

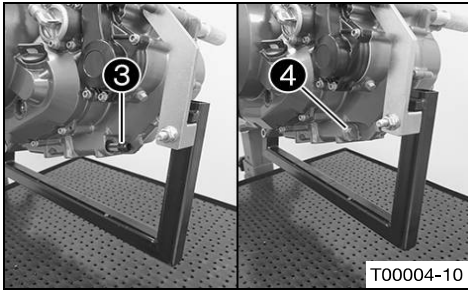
Oil drain plug with magnet	M12x1.5	20 Nm (14.8 lbf ft)
----------------------------	---------	---------------------

- Mount and tighten screw plug ② with the O-ring.

Guideline

Plug, oil screen	M20x1.5	15 Nm (11.1 lbf ft)
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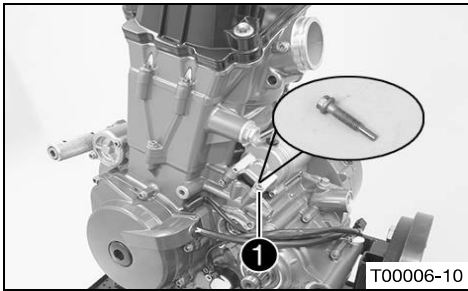


- Position the oil screen **3** with O-rings.
- Mount and tighten screw plug **4** with the O-ring.

Guideline

Plug, oil screen	M20x1.5	15 Nm (11.1 lbf ft)
------------------	---------	---------------------

## 18.5.32 Installing the starter motor



- Grease the O-ring and mount the starter motor.

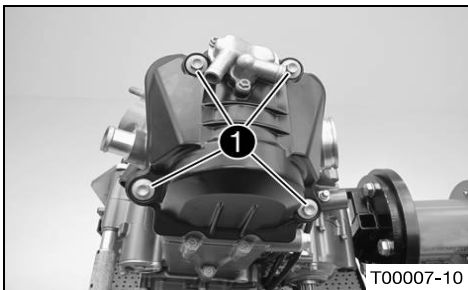
Long-life grease (p. 307)

- Mount and tighten oil throttle **1**.

Guideline

Screw, starter motor with oil throttle	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
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## 18.5.33 Installing the valve cover

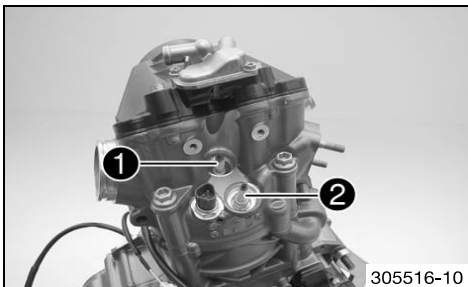


- Position the valve cover with the gasket.
- Mount and tighten screws **1**.

Guideline

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

## 18.5.34 Installing the spark plugs



- Mount and tighten spark plug **1** using the special tool.

Guideline

Spark plug inside	M12x1.25	18 Nm (13.3 lbf ft)
-------------------	----------	---------------------

Spark plug wrench (75029172000) (p. 318)

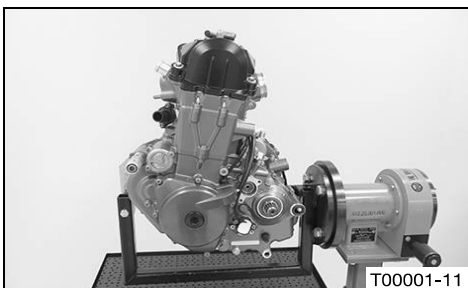
- Mount and tighten spark plug **2** using the special tool.

Guideline

Spark plug outside	M10x1	11 Nm (8.1 lbf ft)
--------------------	-------	--------------------

Spark plug wrench (75029172000) (p. 318)

## 18.5.35 Removing the engine from the engine assembly stand



- Remove the engine from the engine assembly stand.



### Info

Have an assistant help you or use a motorized hoist.

19.1 Checking/correcting the fluid level of the hydraulic clutch

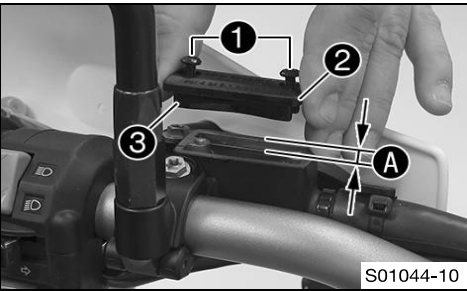
**Warning**  
**Skin irritation** Brake fluid can cause skin irritation on contact.

- 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**  
The fluid level rises with increasing wear of the clutch facing discs.  
Never use DOT 5 brake fluid. It is silicone-based and purple in color. Oil seals and clutch lines are not designed for DOT 5 brake fluid.  
Avoid contact between brake fluid and painted parts. Brake fluid attacks paint.  
Only use clean brake fluid from a sealed container.



- Move the clutch fluid reservoir mounted on the handlebar to a horizontal position.
- Remove screws ①.
- Remove cover ② with membrane ③.
- Check the fluid level.

Fluid level ① below container rim	4 mm (0.16 in)
-----------------------------------	----------------

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

Brake fluid DOT 4 (📖 p. 306)
------------------------------

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

**Info**  
Clean up overflowed or spilled brake fluid immediately with water.

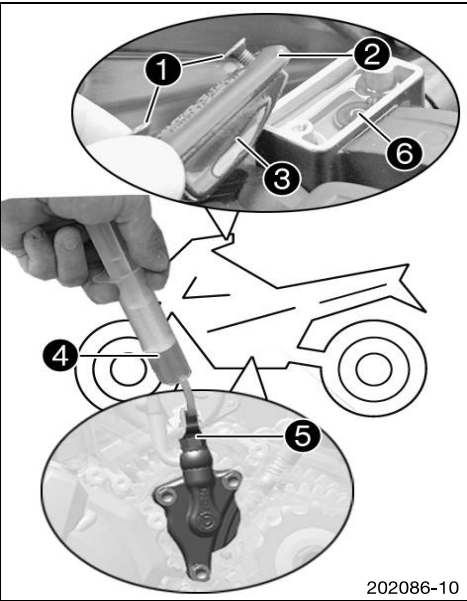
19.2 Changing the hydraulic clutch fluid

**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.



- Move the clutch fluid reservoir mounted on the handlebar to a horizontal position.
- Remove screws ❶.
- Remove cover ❷ with membrane ❸.
- Fill bleeding syringe ❹ with the appropriate hydraulic fluid.

Bleed syringe (50329050000) (📖 p. 309)
Brake fluid DOT 4 (📖 p. 306)

- On the clutch slave cylinder, remove bleeder screw ❺ and mount bleeding syringe ❹.
- Inject the liquid into the system until it escapes from drill hole ❻ of the master cylinder without bubbles.
- Now and then, extract fluid from the master cylinder reservoir to prevent overflow.
- Remove the bleeding syringe. Mount and tighten screws bleeder screw.
- Correct the fluid level of the hydraulic clutch.

Guideline

Fluid level below container rim	4 mm (0.16 in)
---------------------------------	----------------

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

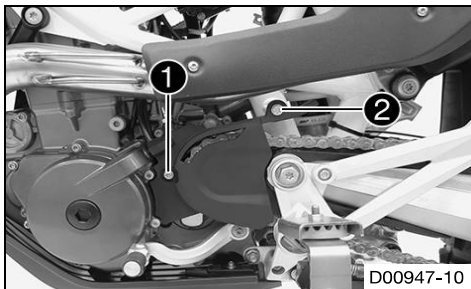
## 20.1 Changing the gear position sensor

### Preparatory work

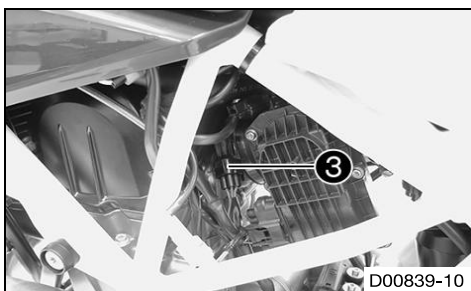
- Raise the motorcycle with the work stand. (p. 12)

### Main work

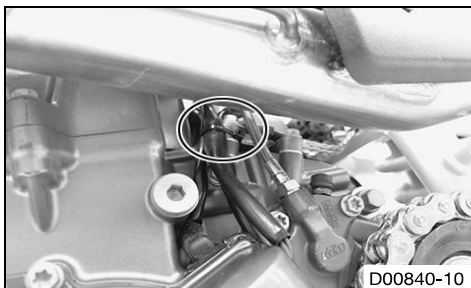
- Remove screws ① and ②.
- Remove the engine sprocket cover.



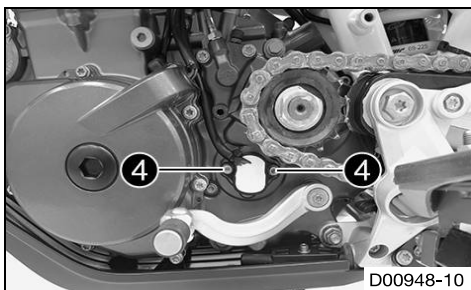
- Remove the cable ties.



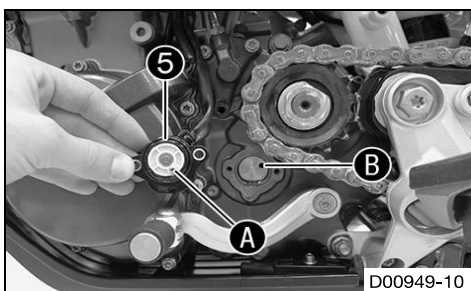
- Disconnect plug-in connector ③.



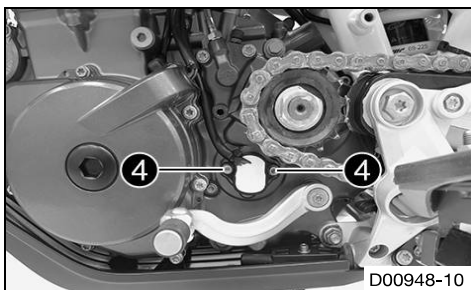
- Remove the cable tie(s).
- Expose the cable.



- Remove screws ④.
- Take off the gear position sensor.



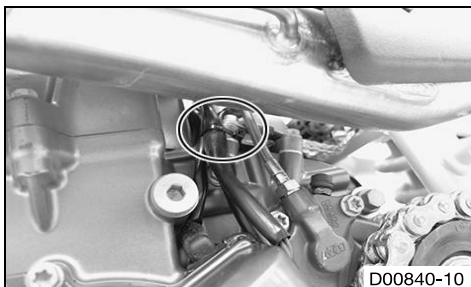
- Lubricate O-ring (5) of the new gear position sensor.
- Position the gear position sensor.
- ✓ Pin (A) engages in drill hole (B).



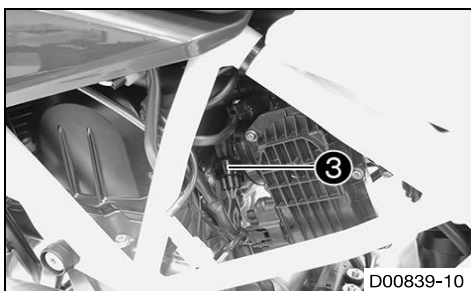
- Mount and tighten screws (4).

## Guideline

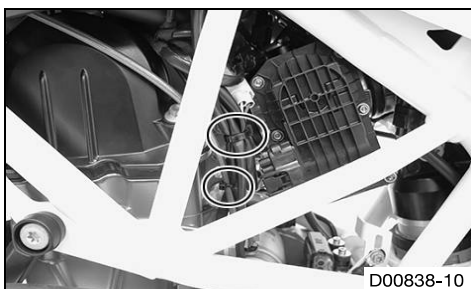
Screw, gear sensor	M5	5 Nm (3.7 lbf ft)	Loctite® 243™
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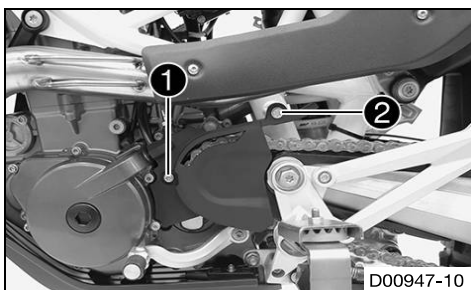
- Secure the wiring harness with cable binders.



- Connect plug-in connector (3).



- Route the cable without tension and secure with cable ties.



- Position the engine sprocket cover.
- Mount and tighten screw (1).

## Guideline

Screw, clutch slave cylinder	M6x40	10 Nm (7.4 lbf ft)	Loctite® 243™
------------------------------	-------	-----------------------	---------------

- Mount and tighten screw (2).

## Guideline

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

## Finishing work

- Program the gear position sensor. (📖 p. 209)
- Remove the motorcycle from the work stand. (📖 p. 12)

## 20.2 Programming the gear position sensor

### Condition

The diagnostics tool is connected and running.

### Preparatory work

- Reset the engine electronics control unit. (📖 p. 226)



### Main work

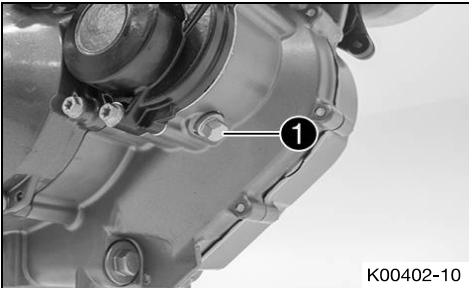
- Execute **"Engine electronics" > "Functions" > "Program the gear position sensor"**.
- Switch to the main menu.
- Switch the ignition off and on again.
- ✓ The green idling speed indicator lamp **N** lights up.






21.1 Draining the coolant

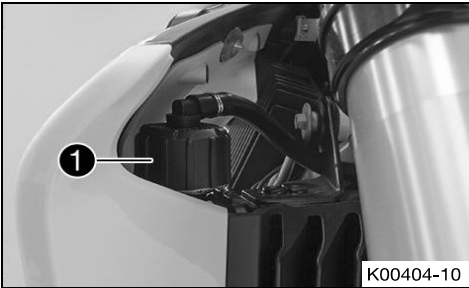
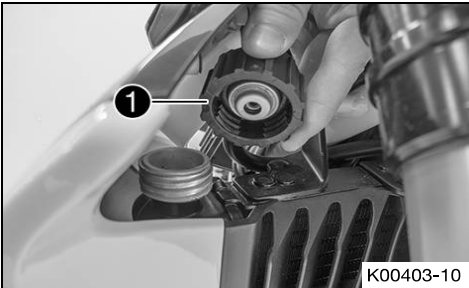
- **Warning**  
**Danger of scalding** During motorcycle operation, the coolant gets very hot and is under pressure.
- Do not remove the radiator cap, radiator hoses or other cooling system components when the engine is hot. Allow the engine and cooling system to cool down. In case of scalding, rinse 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 fuel is swallowed, contact a physician immediately. Change clothing that is contaminated with coolant. Keep coolant out of reach of children.



- Preparatory work**
- Remove the engine guard. (📖 p. 43)
- Main work**
- Position the motorcycle upright.
  - Place a suitable container under the engine.
  - Remove screw ❶.
  - Remove the radiator cap.
  - Completely drain the coolant.
  - Mount and tighten screw ❶ with a new seal ring.
- Guideline
- |                                |       |                     |
|--------------------------------|-------|---------------------|
| Plug, drain hole of water pump | M10x1 | 15 Nm (11.1 lbf ft) |
|--------------------------------|-------|---------------------|
- Finishing work**
- Install the engine guard. (📖 p. 43)

21.2 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 fuel is swallowed, contact a physician immediately. Change clothing that is contaminated with coolant. Keep coolant out of reach of children.



- Stand the motorcycle on its side stand on a horizontal surface.
  - Remove radiator cap ❶.
- Refill with coolant.
- |         |                   |                    |
|---------|-------------------|--------------------|
| Coolant | 1.20 l (1.27 qt.) | Coolant (📖 p. 306) |
|---------|-------------------|--------------------|
- Completely fill the radiator with coolant.
  - Mount radiator cap ❶.



- Remove the cover of compensating tank ②.
- Add coolant up to a level between the two marks.
- Mount the cover of the compensating tank.



## 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 warm up.
- Stop the engine and allow it to cool down.
- Check the coolant level. (📖 p. 212)

## 21.3 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 fuel 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 on its side stand on a horizontal surface.
- Remove the cover of compensating tank ①.
- Check the antifreeze in the coolant.

–25... –45 °C (–13... –49 °F)

- » If the antifreeze in the coolant does not match the specified value:
  - Correct the antifreeze in the coolant.

- Check the coolant level in the compensating tank.

The coolant level must be between the two markings.

- » If the coolant level does not match the specified value:
  - Correct the coolant level.

Coolant (📖 p. 306)

- Mount the cover of the compensating tank ①.
- Remove radiator cap ②.
- Check the antifreeze in the coolant.

–25... –45 °C (–13... –49 °F)

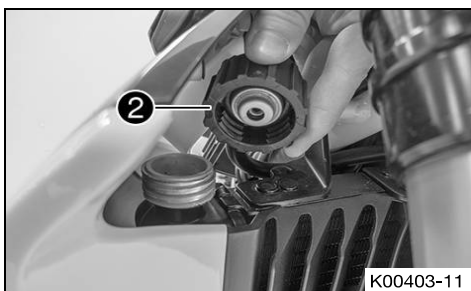
- » If the antifreeze in the coolant does not match the specified value:
  - Correct the antifreeze in the coolant.

- Check the coolant level in the radiator.

The radiator must be filled completely.

- » If the coolant level does not match the specified value:
  - Check the coolant level and the reason for the loss.

Coolant (📖 p. 306)



- Mount radiator cap ②.

## 21.4 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 fuel is swallowed, contact a physician immediately. Change clothing that is contaminated with coolant. Keep coolant out of reach of children.

### Condition

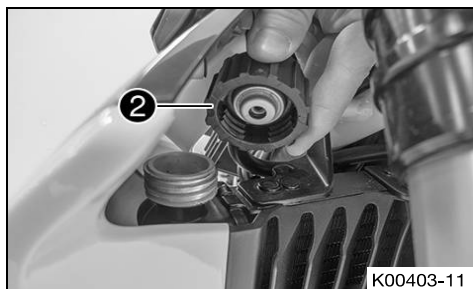
The engine is cold.

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

The coolant level must be between the two markings.

- » If the coolant level does not match the specified value:
  - Correct the coolant level.

Coolant (📖 p. 306)



- Remove radiator cap ② and check the coolant level in the radiator.

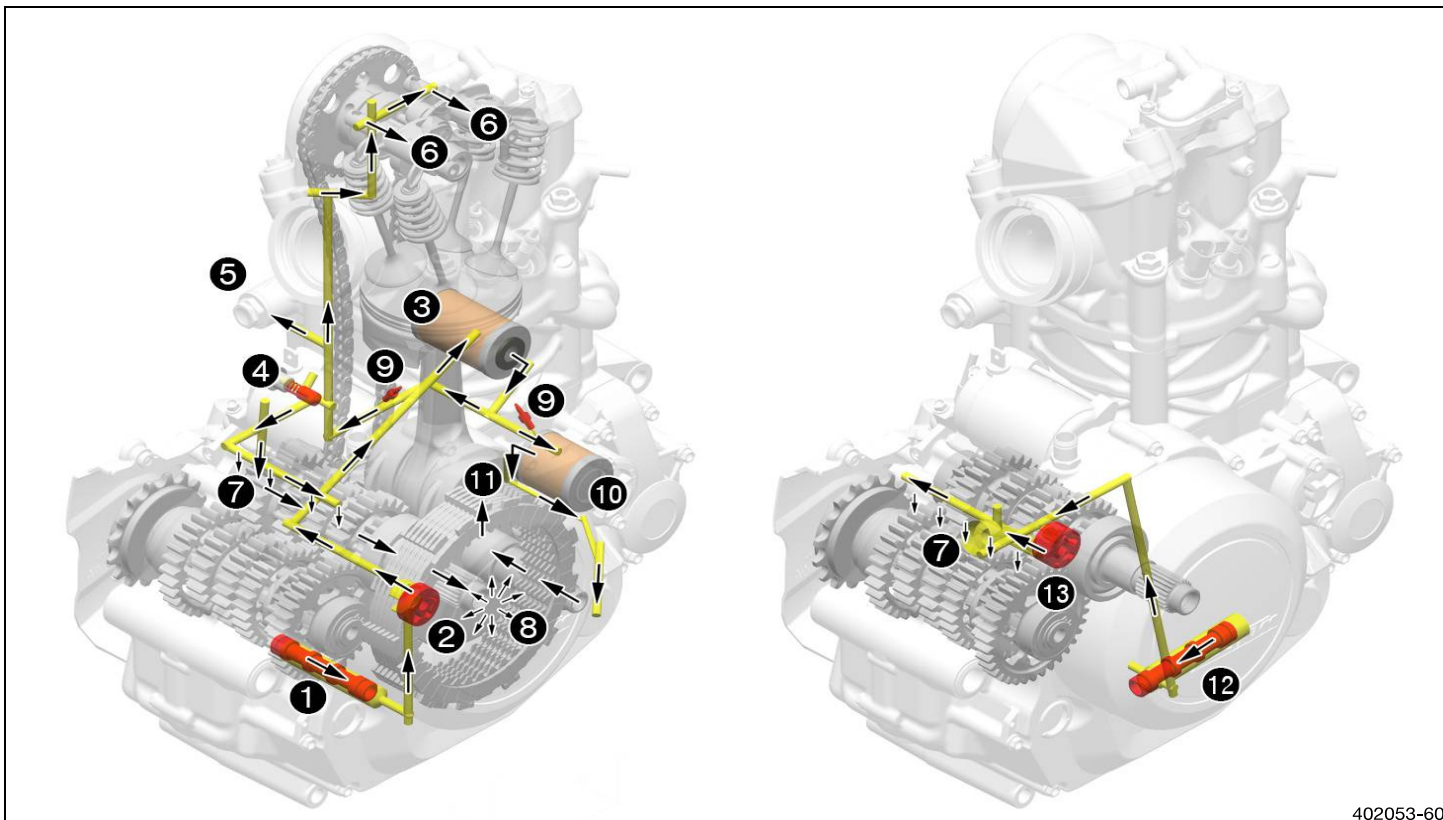
The radiator must be filled completely.

- » If the coolant level does not match the specified value:
  - Check the coolant level and the reason for the loss.

Coolant (📖 p. 306)

- Mount the radiator cap.

## 22.1 Oil circuit



402053-60

**Oil circuit of force pump**

1	Oil screen
2	Force pump
3	Oil filter
4	Oil pressure regulator valve
5	Timing chain tensioner
6	Rocker arm shaft
7	Transmission
8	Clutch
9	Oil jet for piston cooling
10	Oil filter
11	Oil nozzle for conrod bearing lubrication

**Oil circuit of suction pump**

12	Oil screen
13	Suction pump
7	Transmission

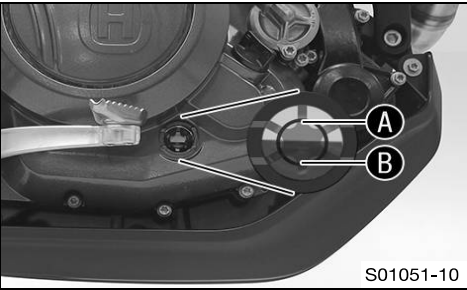
## 22.2 Checking the engine oil level

**Condition**

The engine is at operating temperature.

**Preparatory work**

- Stand the motorcycle upright on a horizontal surface.



Main work

- Check the engine oil level.

**i Info**  
After switching off the engine, wait one minute before checking the level.

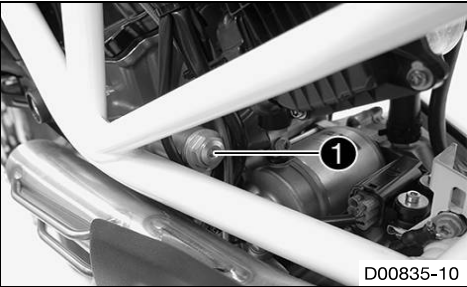
The engine oil must be between marking **A** and marking **B** of the oil level viewer.

- » If the engine oil level is below the **B** mark:
  - Add engine oil. (📖 p. 218)
- » If the engine oil level is above the **A** mark:
  - Correct the engine oil level.

22.3 Checking the engine oil pressure

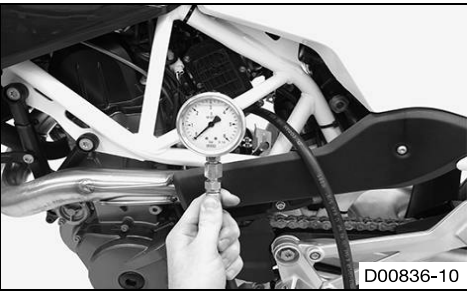
**⚠ Warning**  
**Danger of scalding** Engine oil and gear oil get very hot when the motorcycle is ridden.  
– Wear appropriate protective clothing and safety gloves. In case of burns, rinse immediately with lukewarm water.

**☀ 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

- Remove screw **1**.



- Position the banjo bolt with the connector and sealing rings. Mount and tighten the banjo bolt.

Guideline

Banjo bolt	M10x1	8 Nm (5.9 lbf ft)
------------	-------	-------------------

Oil pressure adapter (77329006000) (📖 p. 318)

- Connect the pressure tester to the special tool without the T-plate.

Pressure tester (61029094000) (📖 p. 313)

- Check the engine oil level. (📖 p. 213)

**⚠ 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 warm up.
- Check the engine oil pressure.

Engine oil pressure	
Coolant temperature: $\geq 70\text{ }^{\circ}\text{C}$ ( $\geq 158\text{ }^{\circ}\text{F}$ ) Engine speed: 1,500 rpm	$\geq 0.4\text{ bar } (\geq 6\text{ psi})$
Coolant temperature: $\geq 70\text{ }^{\circ}\text{C}$ ( $\geq 158\text{ }^{\circ}\text{F}$ ) Engine speed: 5,000 rpm	$\geq 1.5\text{ bar } (\geq 22\text{ psi})$



- » If the measured value is less than the specification:
  - Change the oil filter. Check the oil pumps for wear. Check that all oil holes are clear.
- 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.
- Mount and tighten screw ❶.

Guideline

Screw, unlocking of timing chain tensioner	M10x1	10 Nm (7.4 lbf ft)
--	-------	--------------------

**Finishing work**

- Check the engine oil level. (📖 p. 213)

22.4 Changing the engine oil and oil filter, cleaning the oil screens



**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**

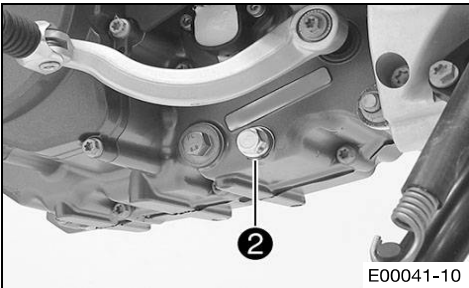
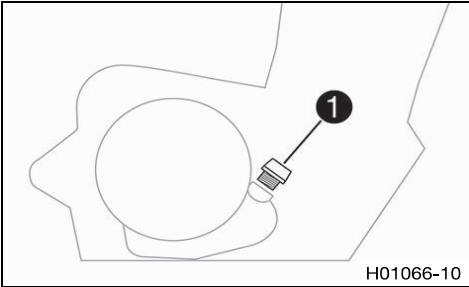
Drain the engine oil while the engine is at operating temperature.

**Preparatory work**

- Remove the engine guard. (📖 p. 43)

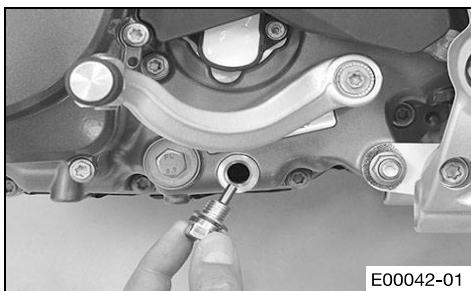
**Main work**

- Place a suitable container under the engine.
- Remove oil filler plug ❶ with the O-ring from the clutch cover.



- Remove oil drain plug ❷ with the magnet and seal ring.
- Completely drain the engine oil.

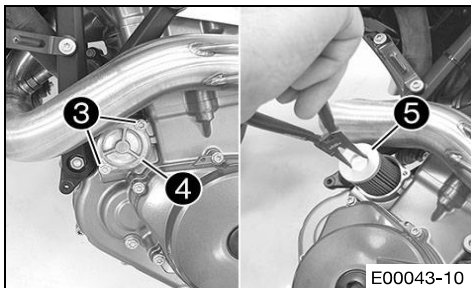




- Thoroughly clean the oil drain plug with magnet.
- Mount and tighten the oil drain plug with the magnet and a new seal ring.

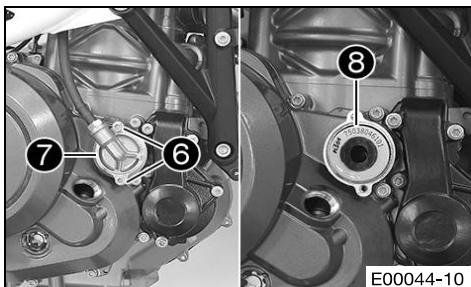
Guideline

Oil drain plug with magnet	M12x1.5	20 Nm (14.8 lbf ft)
----------------------------	---------	---------------------



- Remove screws 3. Remove oil filter cover 4 with the O-ring.
- Pull oil filter 5 out of the oil filter housing.

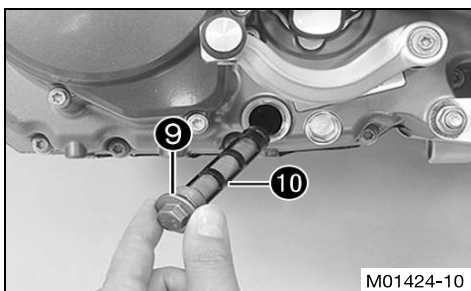
Circlip pliers reverse (51012011000) (p. 310)



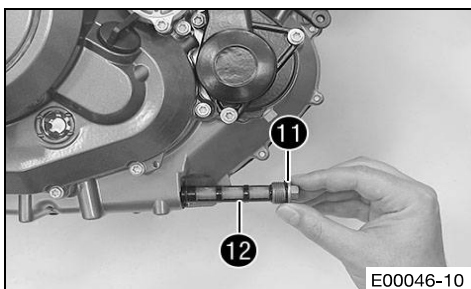
- Remove screws 6. Remove oil filter cover 7 with the O-ring.
- Pull oil filter 8 out of the oil filter housing.

Circlip pliers reverse (51012011000) (p. 310)

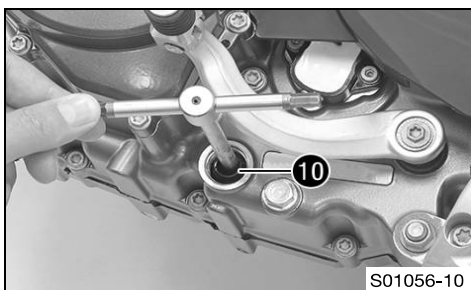
- Completely drain the engine oil.
- Thoroughly clean the parts and sealing surfaces.



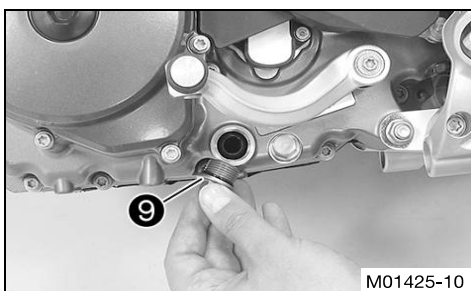
- Remove screw plug 9 with oil screen 10 and the O-rings.



- Remove screw plug 11 with oil screen 12 and the O-rings.
- Completely drain the engine oil.
- Thoroughly clean the parts and sealing surfaces.



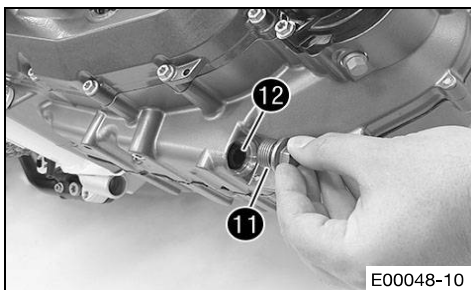
- Position oil screen 10 with the O-rings on a pin wrench.
- Position the pin wrench through the drilled hole of the screw plug in the opposite section of the engine case.
- Push the oil screen all the way into the engine case.



- Mount and tighten screw plug **9** with the O-ring.

Guideline

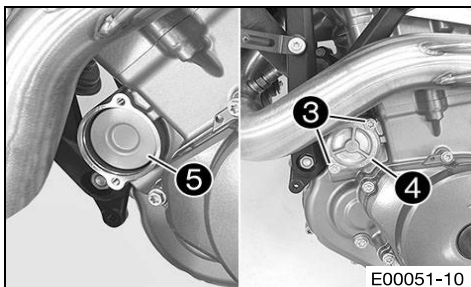
Plug, oil screen	M20x1.5	15 Nm (11.1 lbf ft)
------------------	---------	---------------------



- Position oil screen **12** with the O-rings.
- Mount and tighten screw plug **11** with the O-ring.

Guideline

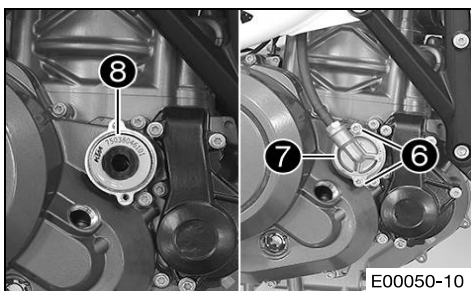
Plug, oil screen	M20x1.5	15 Nm (11.1 lbf ft)
------------------	---------	---------------------



- Insert new oil filter **5**.
- Lubricate the O-ring of the oil filter cover. Position oil filter cover **4**.
- Mount and tighten screws **3**.

Guideline

Screw, oil filter cover	M5	6 Nm (4.4 lbf ft)
-------------------------	----	-------------------



- Insert new oil filter **8**.
- Lubricate the O-ring of the oil filter cover. Position oil filter cover **7**.
- Mount and tighten screws **6**.

Guideline

Screw, oil filter cover	M5	6 Nm (4.4 lbf ft)
-------------------------	----	-------------------

- Fill up with engine oil at the clutch cover.

Engine oil	1.70 l (1.8 qt.)	Engine oil (SAE 10W/50) (p. 306)
------------	------------------	----------------------------------



## Info

Too little engine oil or poor-quality engine oil results in premature wear of the engine.

- Mount and tighten oil filler plug **1** with the O-ring.



## Danger

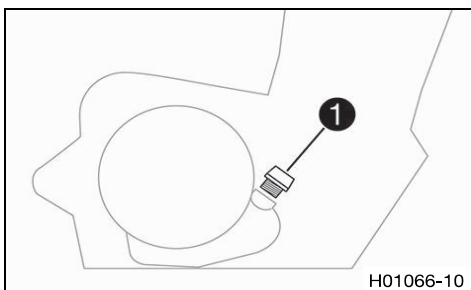
**Danger of poisoning** Exhaust gases are toxic and inhaling them may result in unconsciousness and/or death.

- 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

- Install the engine guard. (p. 43)
- Check the engine oil level. (p. 213)

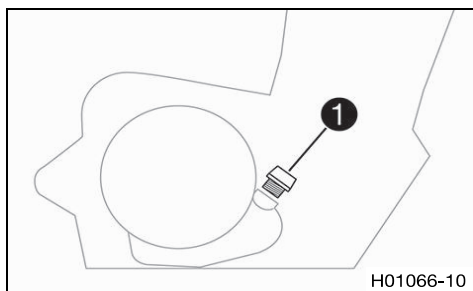


## 22.5 Adding engine oil



### Info

Too little engine oil or poor-quality engine oil results in premature wear of the engine.



### Main work

- Remove filler plug **1** and the O-ring from the clutch cover and fill up with engine oil.
- Fill engine oil to the middle of the level viewer.

Engine oil (SAE 10W/50) (📖 p. 306)



### Info

For optimal performance of the engine oil, do not mix different types of engine oil.

We recommended changing the engine oil when necessary.

- Mount and tighten oil filler plug **1** 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

- Check the engine oil level. (📖 p. 213)


23.1 Alternator - checking the stator winding

**Condition**  
The stator is disconnected.

- Preparatory work**
- Remove the seat. (📖 p. 79)
  - Take off the side cover. (📖 p. 80)

**Main work**


**Stator winding measurement I - check the resistance**

-  Measure the resistance between the specified points.  
Stator, connector **EN** pin 1 – Stator, connector **EN** pin 2

Alternator	
Resistance of stator winding at: 20 °C (68 °F)	≤ 1 Ω

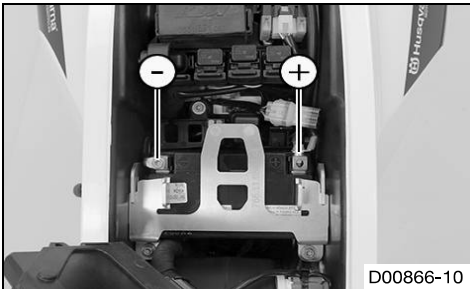
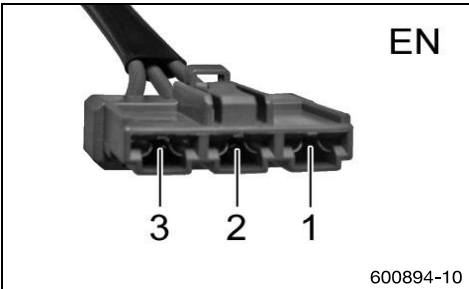
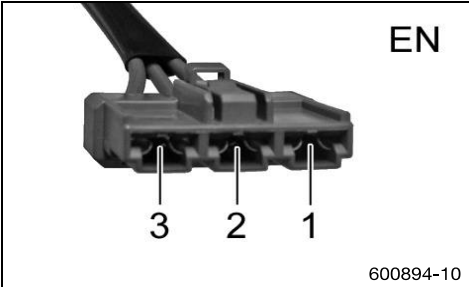
- » If the indicated value does not correspond to the required value:
  - Change the stator.

**Stator winding measurement II - check the resistance**


-  Measure the resistance between the specified points.  
Stator, connector **EN** pin 1 – Stator, connector **EN** pin 3

Alternator	
Resistance of stator winding at: 20 °C (68 °F)	≤ 1 Ω

- » If the indicated value does not correspond to the required value:
  - Change the stator.



**Stator winding - check the short circuit to ground (terminal 31)**

-  Measure the resistance between the specified points.  
Stator, connector **EN** pin 1 – Measuring point **Ground (-)**

Resistance	∞ Ω
------------	-----

- » If the indicated value does not correspond to the required value:
  - Change the stator.

**Finishing work**

- Mount the side cover. (📖 p. 80)
- Mount the seat. (📖 p. 80)

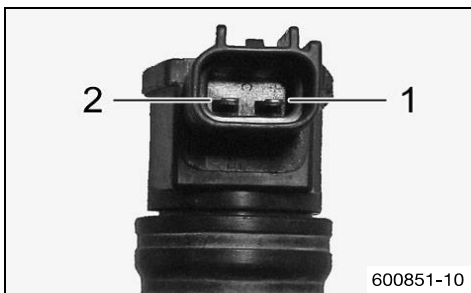
23.2 Ignition coil - checking the primary winding

**Preparatory work**


- Remove the seat. (📖 p. 79)
- Take off the side cover. (📖 p. 80)

**Main work**

- Disconnect ignition coil 1 cylinder 1.



## Ignition coil cylinder 1 - check the primary winding resistance


-  Measure the resistance between the specified points.  
Ignition coil pin **1** – Ignition coil pin **2**

Ignition coil	
Resistance of primary winding at: 20 °C (68 °F)	1.105... 1.495 Ω

» If the displayed value does not correspond to specifications:

- Change the ignition coil.
- Disconnect ignition coil 2 cylinder 1.

## Ignition coil cylinder 1 - check the primary winding resistance

-  Measure the resistance between the specified points.  
Ignition coil pin **1** – Ignition coil pin **2**

Ignition coil	
Resistance of primary winding at: 20 °C (68 °F)	1.105... 1.495 Ω

» If the displayed value does not correspond to specifications:

- Change the ignition coil.

## 24.1 Checking the valve clearance

### Preparatory work

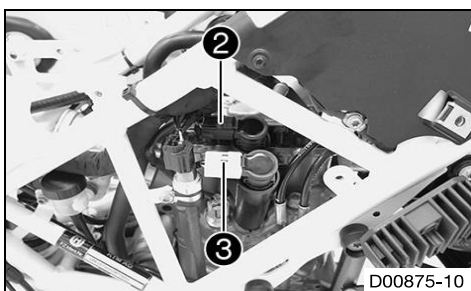
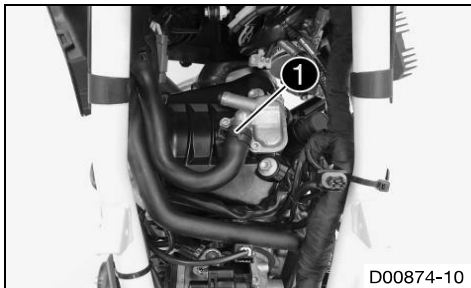
- Raise the motorcycle with the work stand. (p. 12)
- Remove the seat. (p. 79)
- Take off the side cover. (p. 80)
- Remove the air filter box. (p. 75)

### Main work

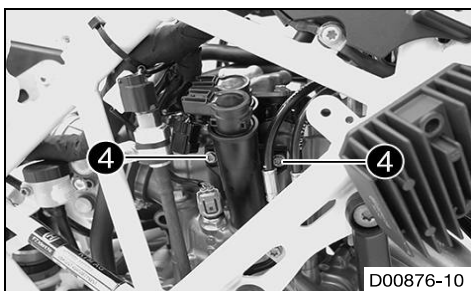
- Loosen the spring-loaded band-type clamp ❶ using the special tool.

Pliers for spring band clamp (60029057100) (p. 312)

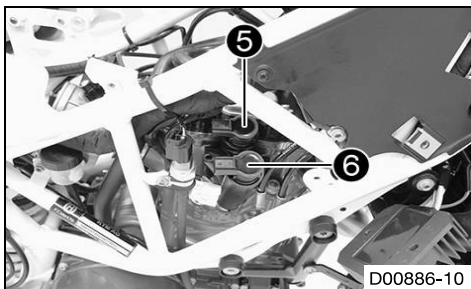
- Pull off the bleeder hose.



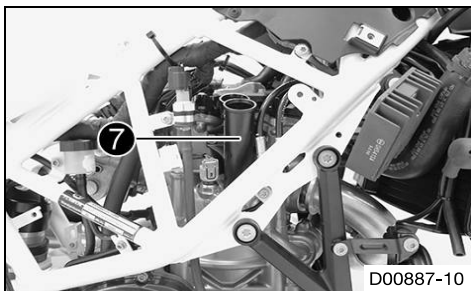
- Unplug connector ❷ and ❸ of the ignition coils.



- Remove screws ❹.

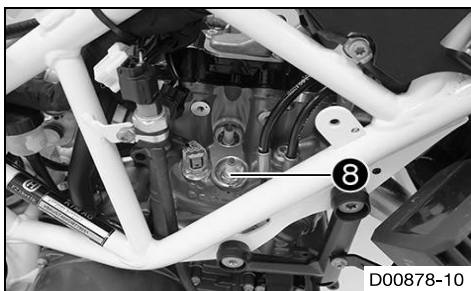


- Pull the spark plug shaft lightly to the side.
- Remove ignition coils ❺ and ❻.



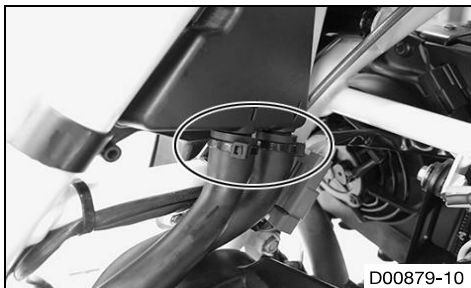
- Remove spark plug shaft ❼.



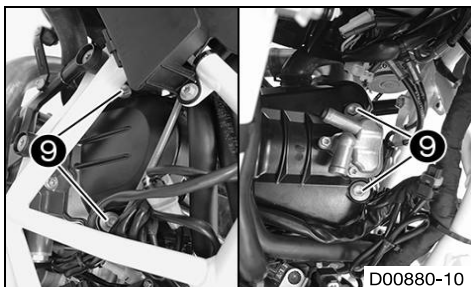


- Remove spark plug **8** using the special tool.

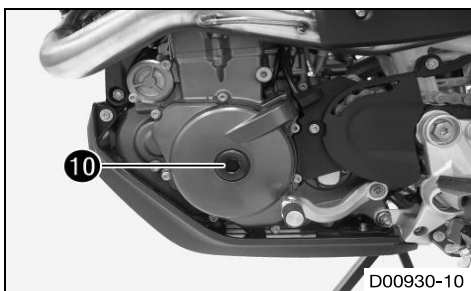
Spark plug wrench (75029172000) (p. 318)



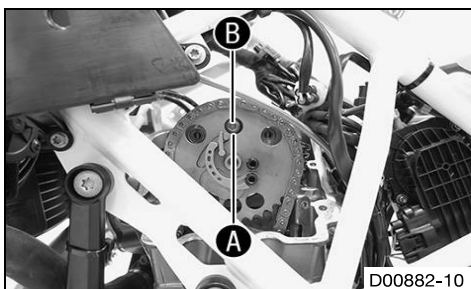
- Remove the cable ties.
- Remove bleeder hoses.



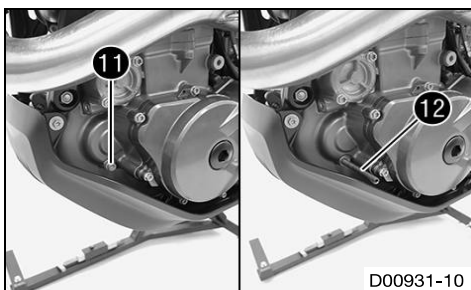
- Remove screws **9**.
- Remove the valve cover with the gasket.



- Remove screw **10**.

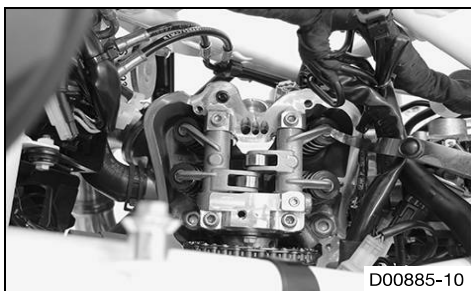


- Turn the crankshaft counterclockwise until drill hole **A** of the camshaft and the screw **A** on the cylinder head are lined up.



- Remove screw **11** with washer.
- Look through the hole to check that the position hole of the crankshaft is visible.
- Mount special tool **12**.

Engine blocking screw (77329010000) (p. 318)



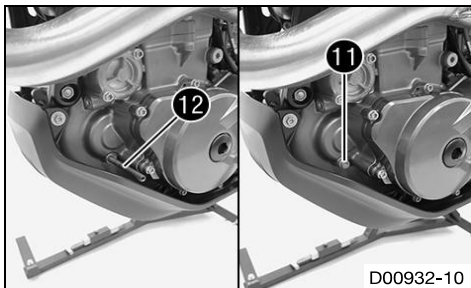
- On all valves, check valve clearance between the valve and rocker arm using special tool.

Guideline

Valve play, cold	0.07... 0.13 mm (0.0028... 0.0051 in)
------------------	---------------------------------------

Feeler gauge (59029041100) (📖 p. 312)

- » If the valve clearance does not meet specifications:
  - Adjust the valve clearance. (📖 p. 225)



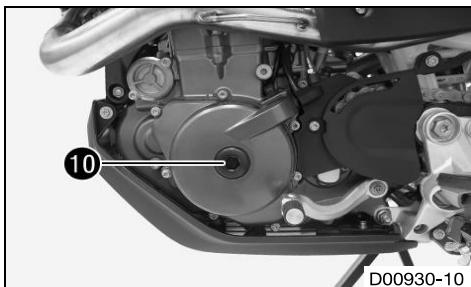
- Remove special tool 12.

Engine blocking screw (77329010000) (📖 p. 318)

- Crank the engine several times.
- Check the valve clearance and correct it if necessary.
- Mount and tighten screw 11 with washer.

Guideline

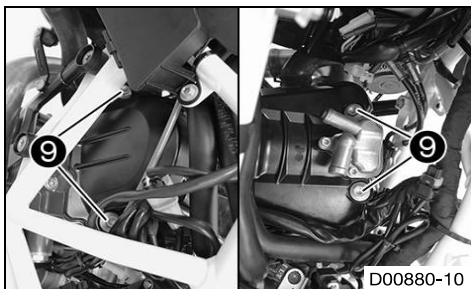
Crankshaft clamp screw plug	M8	15 Nm (11.1 lbf ft)
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- Mount and tighten screw 10.

Guideline

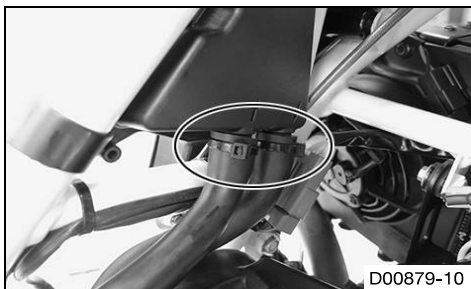
Screw in alternator cover	M24x1.5	8 Nm (5.9 lbf ft)
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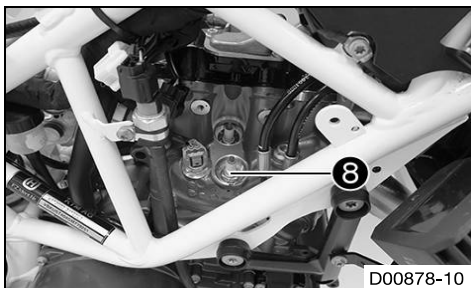
- Position the valve cover with the gasket. Mount and tighten screws 9.

Guideline

Screw, valve cover	M6	10 Nm (7.4 lbf ft)
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- Mount bleeder hoses and secure with cable binders.

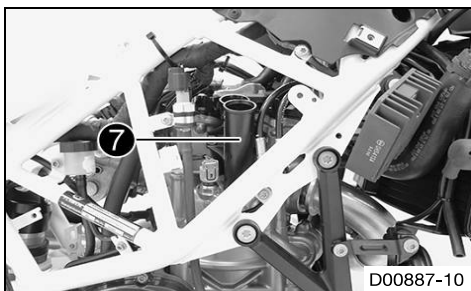


- Mount and tighten spark plug 8 using the special tool.

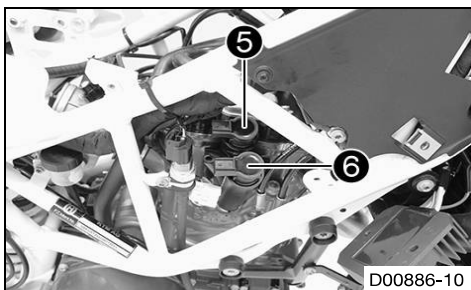
Guideline

Spark plug outside	M10x1	11 Nm (8.1 lbf ft)
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Spark plug wrench (75029172000) (📖 p. 318)



- Position spark plug shaft **7**.

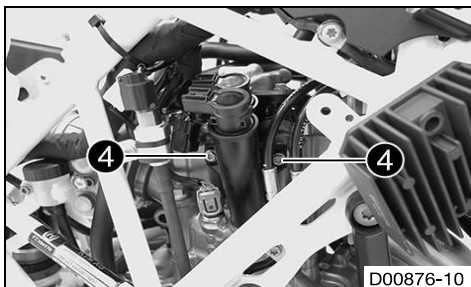


- Position ignition coils **5** and **6**.



## Info

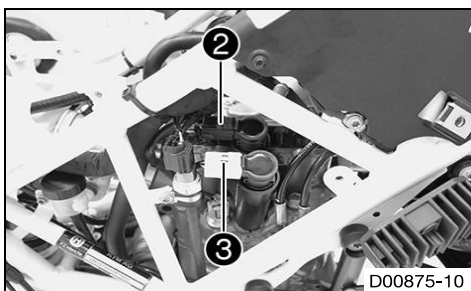
Ensure that the ignition coils are seated correctly.



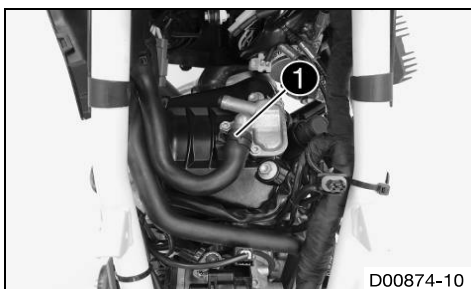
- Mount and tighten screws **4**.

## Guideline

Screw, ignition coil	M6	10 Nm (7.4 lbf ft)
----------------------	----	--------------------



- Plug in connectors **2** and **3** of the ignition coils.
- ✓ The cable with the white marking is connected to the outer ignition coil.



- Mount bleeder hose and position spring band clamp **1** using the auxiliary tool.

Pliers for spring band clamp (60029057100) (p. 312)

## Finishing work

- Install the air filter box. (p. 77)
- Mount the side cover. (p. 80)
- Mount the seat. (p. 80)
- Remove the motorcycle from the work stand. (p. 12)



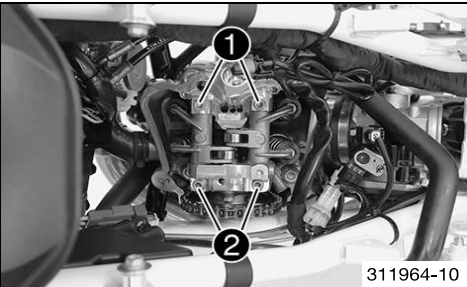
24.2 Adjusting the valve clearance

Preparatory work

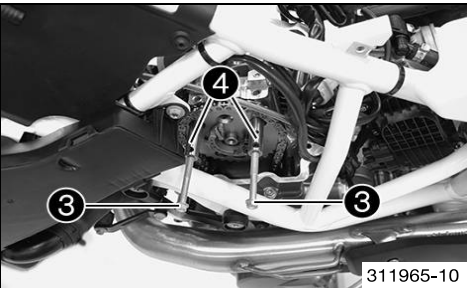
- Raise the motorcycle with the work stand. (📖 p. 12)
- Remove the seat. (📖 p. 79)
- Take off the side cover. (📖 p. 80)
- Remove the air filter box. (📖 p. 75)
- Check the valve clearance. (📖 p. 221)

Main work

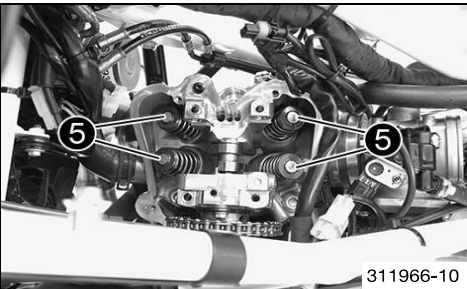
- Remove screws ❶.
- Remove screws ❷.



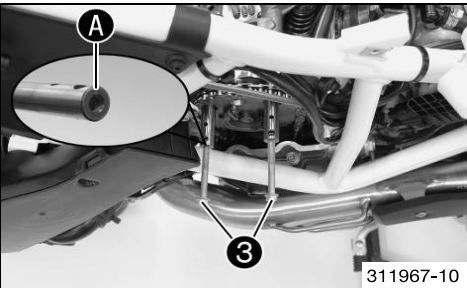
- Screw suitable screws ❸ into the rocker arm shafts ❹.
- Remove the rocker arm shafts and take off the rocker arm.



- Remove shims ❺ and set them down according to the installation position.
- Correct the shims based on the results of the valve clearance check.
- Insert suitable shims.



- Position the rocker arm and mount the rocker arm shaft.
  - ✓ The tapped hole of the rocker arm shaft faces outward.
  - ✓ Drill hole A and the flat surface face upward.
- Remove screws ❸.



- Mount and tighten screws ❶.

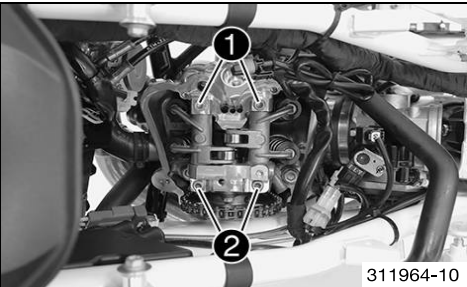
Guideline

Screw, rocker arm shaft	M6	12 Nm (8.9 lbf ft)
-------------------------	----	--------------------

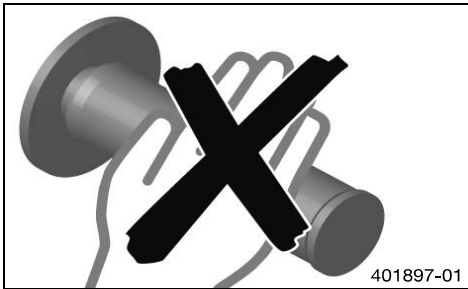
- Mount and tighten screws ❷.

Guideline

Screw, rocker arm shaft	M6	12 Nm (8.9 lbf ft)
-------------------------	----	--------------------



## 25.1 Performing the initialization run



### Condition

The diagnostics tool is connected and running.

- Execute **"Engine electronics" > "Functions" > "Delete adaptation values"**.
  - ✓ The adaptation values are deleted.
- Program the gear position sensor. (📖 p. 209)
- Switch off ignition.
- Disconnect the diagnostics tool.



### 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 without activating the throttle grip.

### Guideline

Coolant temperature	< 25 °C (< 77 °F)
---------------------	-------------------

- Let the engine idle for at least 10 minutes (600 seconds).



### Info

Do not activate the throttle grip during the initialization process.

- Switch off the ignition after 10 minutes (600 seconds).



### Info

If initialization is not completed or if the initialization process was interrupted, the entire process must be restarted.

## 25.2 Resetting the engine electronics control unit



### Condition

The diagnostics tool is connected and running.

### Main work

- Execute **"Engine electronics" > "Functions" > "Delete adaptation values"**.

### Finishing work

- Program the gear position sensor. (📖 p. 209)


**26.1 Engine**

Design	1-cylinder 4-stroke engine, water-cooled
Displacement	690 cm <sup>3</sup> (42.11 cu in)
Stroke	84.5 mm (3.327 in)
Bore	102 mm (4.02 in)
Compression ratio	12.6:1
Control	OHC, 4 valves controlled via rocker arm, chain drive
Valve diameter, intake	40 mm (1.57 in)
Valve diameter, exhaust	34 mm (1.34 in)
Valve play, cold	0.07... 0.13 mm (0.0028... 0.0051 in)
Crankshaft bearing	2 roller bearings
Conrod bearing	Needle bearing
Piston pin bearing	Piston pin with <b>DLC</b> coating
Pistons	Forged light alloy
Piston rings	1 L-ring, 1 tapered compression piston ring, 1 oil scraper ring
Engine lubrication	Semi-dry sump lubrication system with two rotor pumps
Primary transmission	36:79
Clutch	<b>APTC™</b> antihopping clutch in oil bath/hydraulically operated
Transmission	6-gear, claw shifted
Transmission ratio	
1st gear	14:35
2nd gear	16:28
3rd gear	21:28
4th gear	21:23
5th gear	23:22
6th gear	23:20
Mixture preparation	Electronic fuel injection
Ignition	Contactless controlled fully electronic ignition with digital ignition adjustment
Alternator	12 V, 300 W
Spark plug	
Inside spark plug	NGK LKAR8BI-9
Outside spark plug	NGK LMAR7A-9
Spark plug electrode gap	0.9 mm (0.035 in)
Cooling	Water cooling, permanent circulation of coolant by water pump
Idle speed	
Coolant temperature: $\geq 70\text{ }^{\circ}\text{C}$ ( $\geq 158\text{ }^{\circ}\text{F}$ )	1,550... 1,650 rpm
Starting aid	Electric starter, automatic decompressor

**26.2 Engine tolerance, wear limits**

Camshafts - diameter, bearing pin	
Next to exhaust cam	$\geq 39.95\text{ mm}$ ( $\geq 1.5728\text{ in}$ )
Next to inlet cam	$\geq 17.96\text{ mm}$ ( $\geq 0.7071\text{ in}$ )
Valve spring	
Minimum length (without valve spring cap)	42.3 mm (1.665 in)
Valve spring cap - thickness	2.4... 2.5 mm (0.094... 0.098 in)
Valve - valve stem diameter	
Exhaust	$\geq 5.93\text{ mm}$ ( $\geq 0.2335\text{ in}$ )
Intake	$\geq 5.93\text{ mm}$ ( $\geq 0.2335\text{ in}$ )
Valve guide - diameter	
New condition	6.004... 6.016 mm (0.23638... 0.23685 in)



Wear limit	6.050 mm (0.23819 in)
Valve - sealing seat width	
Intake	1.60 mm (0.063 in)
Exhaust	2.00 mm (0.0787 in)
Valve - run-out	
On the valve plate	≤ 0.05 mm (≤ 0.002 in)
On the valve stem	≤ 0.05 mm (≤ 0.002 in)
Cylinder/cylinder head - sealing area distortion	≤ 0.10 mm (≤ 0.0039 in)
Cylinder - bore diameter	
Size I	102.000... 102.012 mm (4.01574... 4.01621 in)
Size II	102.013... 102.025 mm (4.01625... 4.01672 in)
Piston - diameter	
Size I	101.955... 101.965 mm (4.01397... 4.01436 in)
Size II	101.965... 101.975 mm (4.01436... 4.01476 in)
Piston/cylinder - mounting clearance	
New condition	0.035... 0.060 mm (0.00138... 0.00236 in)
Wear limit	0.10 mm (0.0039 in)
Piston ring - groove clearance	≤ 0.08 mm (≤ 0.0031 in)
Piston ring end gap	
Compression rings	≤ 0.80 mm (≤ 0.0315 in)
Oil scraper ring	≤ 1.00 mm (≤ 0.0394 in)
Piston - piston pin hole diameter	20.010... 20.020 mm (0.78779... 0.78819 in)
Piston pin - diameter	19.995... 20.004 mm (0.7872... 0.78756 in)
Connecting rod - axial clearance of lower conrod bearing	0.30... 0.60 mm (0.0118... 0.0236 in)
Connecting rod - radial clearance of lower conrod bearing	0.05 mm (0.002 in)
Crankshaft - axial clearance	0.15... 0.25 mm (0.0059... 0.0098 in)
Crankshaft run-out at bearing pin	≤ 0.10 mm (≤ 0.0039 in)
Balancer shaft axial clearance	0.05... 0.20 mm (0.002... 0.0079 in)
Clutch facing disc - thickness	≥ 2.5 mm (≥ 0.098 in)
Intermediate disk - thickness	≥ 1.35 mm (≥ 0.0531 in)
Clutch spring - length	31.5... 33.5 mm (1.24... 1.319 in)
Clutch basket - contact surface of clutch facing discs	≤ 0.5 mm (≤ 0.02 in)
Oil pressure regulator valve - minimum spring length	25.36 mm (0.9984 in)
Oil pump	
Clearance between external rotor and engine case	≤ 0.20 mm (≤ 0.0079 in)
Clearance between external rotor and internal rotor	≤ 0.20 mm (≤ 0.0079 in)
Axial clearance	0.04... 0.08 mm (0.0016... 0.0031 in)
Engine oil pressure	
Coolant temperature: ≥ 70 °C (≥ 158 °F) Engine speed: 1,500 rpm	≥ 0.4 bar (≥ 6 psi)
Coolant temperature: ≥ 70 °C (≥ 158 °F) Engine speed: 5,000 rpm	≥ 1.5 bar (≥ 22 psi)
Main shaft axial clearance	0.10... 0.40 mm (0.0039... 0.0157 in)
Transmission shaft run-out	≤ 0.025 mm (≤ 0.00098 in)
Shift shaft - play in sliding plate/shift quadrant	0.40... 0.80 mm (0.0157... 0.0315 in)
Fuel pressure	
Under every load condition	3.3... 3.7 bar (48... 54 psi)
Engine oil consumption	
After the vehicle is run-in	≤ 0.7 l/1.000 km (≤ 0.7 qt./600 mi)
<div>  <b>Info</b>  The oil consumption depends on the riding style and on the operating conditions. </div>	

## 26.3 Engine tightening torques

Screw, membrane fixation	M3	2 Nm (1.5 lbf ft)	Loctite® 243™
Hose clamp, intake flange	M4	2.5 Nm (1.84 lbf ft)	–
Oil nozzle for conrod bearing lubrication	M4	2 Nm (1.5 lbf ft)	Loctite® 243™
Locking screw for bearing	M5	6 Nm (4.4 lbf ft)	Loctite® 243™
Remaining screws, engine	M5	6 Nm (4.4 lbf ft)	–
Screw, breather cover on valve cover	M5	6 Nm (4.4 lbf ft)	Loctite® 243™
Screw, clutch spring	M5	6 Nm (4.4 lbf ft)	–
Screw, cover plate for oil return line	M5	6 Nm (4.4 lbf ft)	–
Screw, gear sensor	M5	5 Nm (3.7 lbf ft)	Loctite® 243™
Screw, oil filter cover	M5	6 Nm (4.4 lbf ft)	–
Screw, oil pump cover, top	M5	6 Nm (4.4 lbf ft)	Loctite® 243™
Remaining screws, engine	M6	10 Nm (7.4 lbf ft)	–
Screw in alternator cover	M6	10 Nm (7.4 lbf ft)	–
Screw plug, vacuum connection (EU/AU)	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, alternator cover (chain shaft through-hole)	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, autodecompression	M6	3... 4 Nm (2.2... 3 lbf ft)	Loctite® 243™
Screw, axial lock of camshaft	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, clutch cover	M6	10 Nm (7.4 lbf ft)	–
Screw, clutch slave cylinder	M6x20	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, clutch slave cylinder	M6x35	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, cylinder	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, cylinder head	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, engine case	M6	10 Nm (7.4 lbf ft)	–
Screw, ignition coil	M6	10 Nm (7.4 lbf ft)	–
Screw, ignition pulse generator	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, locking lever	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, oil pump cover, bottom	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, rocker arm shaft	M6	12 Nm (8.9 lbf ft)	–
Screw, shift drum locating	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, shift lever	M6	14 Nm (10.3 lbf ft)	Loctite® 243™
Screw, starter motor	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, stator	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, thermostat housing	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, timing chain guide rail	M6	10 Nm (7.4 lbf ft)	Loctite® 2701™
Screw, timing chain tensioning rail	M6	10 Nm (7.4 lbf ft)	Loctite® 2701™
Screw, valve cover	M6	10 Nm (7.4 lbf ft)	–
Screw, water pump cover	M6	10 Nm (7.4 lbf ft)	–
Screw, water pump wheel	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Oil jet, piston cooling	M6x0.75	4 Nm (3 lbf ft)	Loctite® 243™
Crankshaft clamp screw plug	M8	15 Nm (11.1 lbf ft)	–
Stud, exhaust flange	M8	10 Nm (7.4 lbf ft)	Loctite® 243™

Cylinder head screw	M10	Tightening sequence: Tighten diagonally, beginning with the rear screw on the timing chain shaft. Step 1 15 Nm (11.1 lbf ft) Step 2 30 Nm (22.1 lbf ft) Step 3 45 Nm (33.2 lbf ft) Step 4 60 Nm (44.3 lbf ft)	Lubricated with engine oil
Oil line for oil pressure sensor	M10x1	10 Nm (7.4 lbf ft)	–
Oil pressure sensor	M10x1	10 Nm (7.4 lbf ft)	–
Plug, drain hole of water pump	M10x1	15 Nm (11.1 lbf ft)	–
Screw plug, oil channel	M10x1	15 Nm (11.1 lbf ft)	<b>Loctite® 243™</b>
Screw plug, oil channel, for oil radiator	M10x1	15 Nm (11.1 lbf ft)	–
Screw, unlocking of timing chain tensioner	M10x1	10 Nm (7.4 lbf ft)	–
Spark plug outside	M10x1	11 Nm (8.1 lbf ft)	–
Spark plug inside	M12x1.25	18 Nm (13.3 lbf ft)	–
Coolant temperature sensor on cylinder head	M12x1.5	12 Nm (8.9 lbf ft)	–
Oil drain plug with magnet	M12x1.5	20 Nm (14.8 lbf ft)	–
Oil pressure regulator valve plug	M12x1.5	20 Nm (14.8 lbf ft)	–
Screw plug, oil channel	M14x1.5	15 Nm (11.1 lbf ft)	<b>Loctite® 243™</b>
Engine case stud	M16x1.5	25 Nm (18.4 lbf ft)	<b>Loctite® 243™</b>
Rotor nut	M18x1.5	100 Nm (73.8 lbf ft)	–
Nut, engine sprocket	M20x1.5	80 Nm (59 lbf ft)	<b>Loctite® 243™</b>
Nut, inner clutch hub	M20x1.5	100 Nm (73.8 lbf ft)	<b>Loctite® 243™</b>
Nut, primary gear	M20LHx1.5	90 Nm (66.4 lbf ft)	<b>Loctite® 243™</b>
Plug, oil screen	M20x1.5	15 Nm (11.1 lbf ft)	–
Plug, timing chain tensioner	M20x1.5	25 Nm (18.4 lbf ft)	–
Plug, oil thermostat	M24x1.5	15 Nm (11.1 lbf ft)	–
Screw in alternator cover	M24x1.5	8 Nm (5.9 lbf ft)	–

## 26.4 Capacities

### 26.4.1 Engine oil

Engine oil	1.70 l (1.8 qt.)	Engine oil (SAE 10W/50) (📖 p. 306)
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### 26.4.2 Coolant

Coolant	1.20 l (1.27 qt.)	Coolant (📖 p. 306)
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### 26.4.3 Fuel

Total fuel tank capacity, approx.	13 l (3.4 US gal)	Super unleaded (ROZ 95/RON 95/PON 91) (📖 p. 306)
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Fuel reserve, approx.	2 l (2 qt.)
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**26.5 Chassis**

Frame	Lattice frame made of chrome molybdenum steel tubing, powder-coated
Fork	<b>WP Performance Systems</b> Up Side Down 4860 MXMA 4CS
Shock absorber	<b>WP Performance Systems</b> 4618 with <b>Pro-Lever</b> linkage
Suspension travel	
Front	275 mm (10.83 in)
Rear	275 mm (10.83 in)
Brake system	
Front	Disc brake with dual-piston brake caliper, floating
Rear	Disc brake with single-piston brake caliper, floating
Brake discs - diameter	
Front	300 mm (11.81 in)
Rear	240 mm (9.45 in)
Brake discs - wear limit	
Front	4.5 mm (0.177 in)
Rear	4.5 mm (0.177 in)
Tire air pressure, road, solo	
Front	1.8 bar (26 psi)
Rear	1.8 bar (26 psi)
Tire air pressure with passenger / fully loaded	
Front	2.0 bar (29 psi)
Rear	2.2 bar (32 psi)
Tire air pressure, offroad, single rider	
Front	1.5 bar (22 psi)
Rear	1.5 bar (22 psi)
Secondary drive ratio	15:46
Chain	5/8 x 1/4" X-ring
Steering head angle	63°
Seat height unloaded	950 mm (37.4 in)
Ground clearance unloaded	304 mm (11.97 in)
Weight without fuel, approx.	147 kg (324 lb.)
Maximum permissible front axle load	150 kg (331 lb.)
Maximum permissible rear axle load	200 kg (441 lb.)
Maximum permissible overall weight	350 kg (772 lb.)

**26.6 Electrical system**

Battery	YTZ10S	Battery voltage: 12 V Nominal capacity: 8.6 Ah maintenance-free
Fuse	58011109130	30 A
Fuse	58011109125	25 A
Fuse	75011088015	15 A
Fuse	75011088010	10 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 (EU/AU)	LED	
Turn signal (US)	RY10W/socket BAU15s	12 V 10 W

Brake/tail light	LED	
Brake/tail light (US)	P21/5W / socket BAY15d	12 V 21/5 W
License plate lamp	LED	

### 26.7 Tires

Validity	Front tires	Rear tires
(US)	<b>90/90 - 21 M/C 54R TT</b> Pirelli MT 21 RALLYCROSS	<b>140/80 - 18 M/C 70R TT</b> Pirelli MT 21 RALLYCROSS
Additional information is available in the Service section under: <a href="http://www.husqvarna-motorcycles.com">www.husqvarna-motorcycles.com</a>		

### 26.8 Fork

Fork part number		24.15.7P.10
Fork		<b>WP Performance Systems</b> Up Side Down 4860 MXMA 4CS
Compression damping		
Comfort	15 clicks	
Standard	12 clicks	
Sport	10 clicks	
Rebound damping		
Comfort	15 clicks	
Standard	12 clicks	
Sport	10 clicks	
Spring length with preload spacer(s)		482 mm (18.98 in)
Spring rate		
Medium (standard)	5.2 N/mm (29.7 lb/in)	
Air chamber length		100 mm (3.94 in)
Fork length		915 mm (36.02 in)
Oil capacity per fork leg	630 ml (21.3 fl. oz.)	Fork oil (SAE 4) (48601166S1) (📖 p. 306)

### 26.9 Shock absorber

Shock absorber article number	15.15.7P.10
Shock absorber	<b>WP Performance Systems</b> 4618 with <b>Pro-Lever</b> linkage
Compression damping, high-speed	
Standard	1.5 turns
Compression damping, low-speed	
Standard	15 clicks
Rebound damping	
Standard	15 clicks
Spring preload	22 mm (0.87 in)
Spring rate	
Medium (standard)	69 N/mm (394 lb/in)
Spring length	225 mm (8.86 in)
Gas pressure	10 bar (145 psi)
Static sag	30 mm (1.18 in)
Riding sag	75... 85 mm (2.95... 3.35 in)
Fitted length	401 mm (15.79 in)
Shock absorber fluid	
Shock absorber fluid (SAE 2.5) (50180751S1) (📖 p. 306)	

## 26.10 Chassis tightening torques

Screw, chain guard	EJOT	2 Nm (1.5 lbf ft)	–
Screw, combination instrument	EJOT	1 Nm (0.7 lbf ft)	–
Screw, fan hood	EJOT	2 Nm (1.5 lbf ft)	–
Screw, side cover on spoiler	EJOT	1 Nm (0.7 lbf ft)	–
Screw, side stand switch	EJOT	2 Nm (1.5 lbf ft)	–
Screw, SLS valve	EJOT	2 Nm (1.5 lbf ft)	–
Fitting, side stand switch	M4	2 Nm (1.5 lbf ft)	–
Spoke nipple, front wheel	M4.5	4 Nm (3 lbf ft)	–
Bolt, foot brake lever stub	M5	6 Nm (4.4 lbf ft)	Loctite® 243™
Remaining nuts, chassis	M5	4 Nm (3 lbf ft)	–
Remaining screws, chassis	M5	4 Nm (3 lbf ft)	–
Screw, brake line holder on swingarm	M5	4 Nm (3 lbf ft)	–
Screw, cable on starter motor	M5	3 Nm (2.2 lbf ft)	–
Screw, electrical holder	M5	3 Nm (2.2 lbf ft)	–
Screw, exhaust heat shield	M5	8 Nm (5.9 lbf ft)	Loctite® 243™
Screw, fuel hose clamp on fuel tank	M5	5 Nm (3.7 lbf ft)	–
Screw, fuel level sensor	M5	3 Nm (2.2 lbf ft)	–
Screw, fuel pump	M5	4 Nm (3 lbf ft)	–
Screw, fuel tank closure flange	M5	2.5 Nm (1.84 lbf ft)	–
Screw, headlight mask	M5	5 Nm (3.7 lbf ft)	–
Screw, pressure regulator	M5	4 Nm (3 lbf ft)	–
Screw, radiator guard	M5	4 Nm (3 lbf ft)	–
Screw, throttle grip	M5	3.5 Nm (2.58 lbf ft)	–
Spoke nipple, rear wheel	M5	4 Nm (3 lbf ft)	–
Remaining nuts, chassis	M6	10 Nm (7.4 lbf ft)	–
Remaining screws on fuel tank	M6	5 Nm (3.7 lbf ft)	–
Remaining screws, chassis	M6	10 Nm (7.4 lbf ft)	–
Screw connection, foot brake cylinder	M6	10 Nm (7.4 lbf ft)	–
Screw, ABS control unit	M6	5 Nm (3.7 lbf ft)	–
Screw, air filter box top	M6	2 Nm (1.5 lbf ft)	–
Screw, ball joint of push rod on foot brake cylinder	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, brake fluid reservoir of rear brake	M6	5 Nm (3.7 lbf ft)	–
Screw, chain guard	M6	2 Nm (1.5 lbf ft)	Loctite® 243™
Screw, chain guide	M6	8 Nm (5.9 lbf ft)	–
Screw, chain sliding guard	M6	8 Nm (5.9 lbf ft)	Loctite® 243™
Screw, front brake disc	M6	14 Nm (10.3 lbf ft)	Loctite® 243™
Screw, ignition lock	M6	10 Nm (7.4 lbf ft)	Loctite® 243™
Screw, license plate holder, bottom	M6	8 Nm (5.9 lbf ft)	–
Screw, license plate holder, top	M6	8 Nm (5.9 lbf ft)	–
Screw, lower radiator bracket	M6	8 Nm (5.9 lbf ft)	–
Screw, magnetic holder on side stand	M6	6 Nm (4.4 lbf ft)	Loctite® 243™
Screw, rear brake disc	M6	14 Nm (10.3 lbf ft)	Loctite® 243™
Screw, seat lock	M6	5 Nm (3.7 lbf ft)	–
Screw, side cover	M6	5 Nm (3.7 lbf ft)	–
Screw, upper radiator bracket	M6	10 Nm (7.4 lbf ft)	–
Screw, voltage regulator	M6	8 Nm (5.9 lbf ft)	–
Screw, wheel speed sensor	M6	6 Nm (4.4 lbf ft)	–
Nut, rear sprocket screw	M8	35 Nm (25.8 lbf ft)	Loctite® 2701™
Remaining nuts, chassis	M8	25 Nm (18.4 lbf ft)	–



Remaining screws, chassis	M8	25 Nm (18.4 lbf ft)	–
Screw, bottom triple clamp	M8	12 Nm (8.9 lbf ft)	–
Screw, chain sliding piece	M8	15 Nm (11.1 lbf ft)	–
Screw, connection lever on frame	M8	30 Nm (22.1 lbf ft)	Loctite® 243™
Screw, foot brake lever	M8	25 Nm (18.4 lbf ft)	Loctite® 243™
Screw, fork stub	M8	15 Nm (11.1 lbf ft)	–
Screw, front brake caliper	M8	25 Nm (18.4 lbf ft)	Loctite® 243™
Screw, front footrest bracket	M8	25 Nm (18.4 lbf ft)	–
Screw, fuel tank bracket	M8	15 Nm (11.1 lbf ft)	–
Screw, fuel tank, bottom	M8	25 Nm (18.4 lbf ft)	Loctite® 243™
Screw, fuel tank, top	M8	25 Nm (18.4 lbf ft)	Loctite® 243™
Screw, grab handle	M8	10 Nm (7.4 lbf ft)	–
Screw, handlebar clamp	M8	20 Nm (14.8 lbf ft)	–
Screw, heel protector	M8x12	5 Nm (3.7 lbf ft)	Loctite® 243™
Screw, main silencer clamp	M8	12 Nm (8.9 lbf ft)	Copper paste
Screw, main silencer holder	M8	25 Nm (18.4 lbf ft)	–
Screw, main silencer holder on fuel tank	M8	25 Nm (18.4 lbf ft)	–
Screw, rear footrest bracket	M8x16	25 Nm (18.4 lbf ft)	–
Screw, side stand bracket	M8	25 Nm (18.4 lbf ft)	Loctite® 243™
Screw, spring holder on side stand bracket	M8	25 Nm (18.4 lbf ft)	Loctite® 243™
Screw, steering stem	M8	20 Nm (14.8 lbf ft)	–
Screw, top triple clamp	M8	17 Nm (12.5 lbf ft)	–
Engine carrying screw	M10	45 Nm (33.2 lbf ft)	Loctite® 243™
Remaining nuts, chassis	M10	45 Nm (33.2 lbf ft)	–
Remaining screws, chassis	M10	45 Nm (33.2 lbf ft)	–
Screw, bottom shock absorber	M10	45 Nm (33.2 lbf ft)	Loctite® 243™
Screw, engine bearer on frame	M10	45 Nm (33.2 lbf ft)	–
Screw, handlebar support	M10	45 Nm (33.2 lbf ft)	Loctite® 243™
Screw, side stand	M10	35 Nm (25.8 lbf ft)	Loctite® 243™
Screw, top shock absorber	M10	45 Nm (33.2 lbf ft)	Loctite® 243™
Banjo bolt, brake line	M10x1	25 Nm (18.4 lbf ft)	–
Screw, swingarm pivot	M12	80 Nm (59 lbf ft)	–
Lambda sensor	M12x1.25	25 Nm (18.4 lbf ft)	Copper paste
Nut, linkage lever on swingarm	M14x1.5	100 Nm (73.8 lbf ft)	–
Nut, linkage lever to rocker arm	M14x1.5	100 Nm (73.8 lbf ft)	–
Screw, bottom steering head	M20x1.5	60 Nm (44.3 lbf ft)	Loctite® 243™
Screw, top steering head	M20x1.5	12 Nm (8.9 lbf ft)	–
Screw, front wheel spindle	M24x1.5	45 Nm (33.2 lbf ft)	–
Nut, rear wheel spindle	M25x1.5	90 Nm (66.4 lbf ft)	–

**27.1 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.

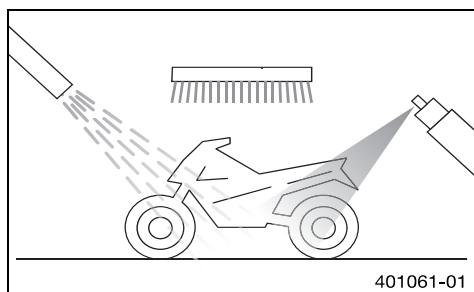
**Warning**

**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**

To maintain the value and appearance of the motorcycle over a long period, clean it regularly.  
Avoid direct sunshine when cleaning the motorcycle.



- Close off the exhaust system to keep water from entering.
- Remove loose dirt first with a soft jet of water.
- Spray very dirty parts with a normal commercial engine cleaner and then brush off with a soft brush.

**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 protection caps of the handlebar controls to allow any water that has penetrated to evaporate.
- After the motorcycle has cooled off, lubricate all moving parts and bearings.
- Clean the chain. (📖 p. 110)
- Treat bare metal (except for brake discs and the exhaust system) with a corrosion inhibitor.

Preserving materials for paints, metal and rubber (📖 p. 307)

- Treat all painted parts with a mild paint care product.

**Info**

Do not polish parts that were matte when delivered as this would strongly impair the material quality.

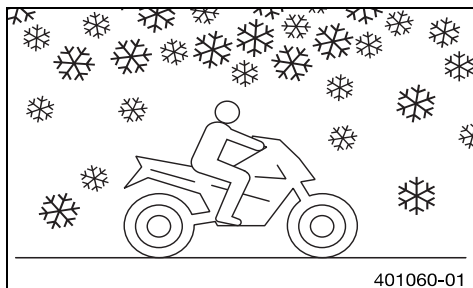
- Treat all plastic parts and powder-coated parts with a mild cleaning and care product.
- Lubricate the ignition/steering lock.

Universal oil spray (📖 p. 307)

**27.2 Checks and maintenance steps for winter operation****Info**

If you use the motorcycle in winter, you must expect salt on the roads. You should therefore take precautions against aggressive road salt.

If the vehicle was operated in road salt, clean it with cold water after riding. Warm water would enhance the corrosive effects of salt.



- Clean the motorcycle. (📖 p. 235)
- Clean the brake system.

**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 use on salted roads, clean the motorcycle thoroughly with cold water and dry it properly.

- Treat the engine, the swingarm, and all other bare or galvanized parts (except brake discs) with a wax-based anti-corrosion substance.

**Info**

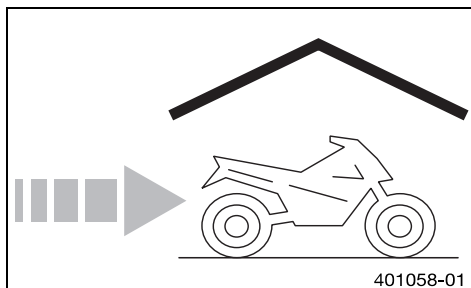
To prevent serious reduction of the braking efficiency, make sure no anti-corrosion substance gets on to the brake discs.

- Clean the chain. (📖 p. 110)

## 28.1 Storage

**i Info**

If you plan to garage the motorcycle for a longer period, perform the following steps or have them performed. Before storing the motorcycle, check all parts for function and wear. If service, repairs, or replacements are necessary, you should do this during the storage period (less workshop overload). In this way, you can avoid long workshop waiting times at the start of the new season.



- When refueling for the last time before taking the motorcycle out of service, add fuel additive.

**i Info**

The fuel additive stabilizes the fuel for longer storage and makes starting easier next time.

- Refuel.
- Clean the motorcycle. (📖 p. 235)
- Change the engine oil and oil filter and clean the oil screens. (📖 p. 215)
- Check the antifreeze and coolant level. (📖 p. 211)
- Check the tire air pressure. (📖 p. 92)
- Remove the battery. (📖 p. 113)
- Recharge the battery.

## Guideline

Storage temperature of battery without direct sunshine	0... 35 °C (32... 95 °F)
--	--------------------------

- Store the vehicle in a dry location that is not subject to large fluctuations in temperature.

**i Info**

Husqvarna Motorcycles recommends raising the motorcycle.

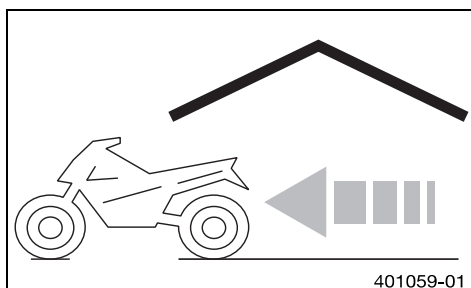
- Raise the motorcycle with a lift stand. (📖 p. 11)
- Cover the vehicle with a tarp or similar cover that is permeable to air.

**i Info**

Do not use non-porous materials since they prevent humidity from escaping, thus causing corrosion.

Avoid running the engine for a short time only. Since the engine cannot warm up properly, the water vapor produced during combustion condenses and causes valves and the exhaust system to rust.

## 28.2 Preparing for use after storage



- Remove the motorcycle from the lift stand. (📖 p. 12)
- Install the battery. (📖 p. 114)
- Set the clock. (📖 p. 130)
- Perform checks and vehicle care when preparing for use.
- Take a test ride.

## 29.1 Additional information

Any further work that results from the required work or from the recommended work must be ordered separately and can be invoiced separately.

## 29.2 Required work

	Every two years				
	Every year				
	Every 20,000 km (12,400 mi)				
	Every 10,000 km (6,200 mi)				
	After 1,000 km (620 mi)				
Read out the fault memory using the Husqvarna Motorcycles diagnostics tool.	○	●	●	●	●
Check that the electrical system is functioning properly.	○	●	●	●	●
Change the engine oil and oil filter and clean the oil screens. (📖 p. 215)	○	●	●	●	●
Check the front brake linings. (📖 p. 120)	○	●	●	●	●
Check the rear brake linings. (📖 p. 124)	○	●	●	●	●
Check the brake discs. (📖 p. 93)	○	●	●	●	●
Check the brake lines for damage and leakage.	○	●	●	●	●
Change the front brake fluid. (📖 p. 123)					●
Change the rear brake fluid. (📖 p. 128)					●
Change the hydraulic clutch fluid. (📖 p. 205)					●
Check the rear brake fluid level. (📖 p. 126)	○	●	●	●	
Check the brake fluid level of the front brake. (📖 p. 121)	○	●	●	●	
Check the free travel of the foot brake lever. (📖 p. 126)	○	●	●	●	●
Check the shock absorber and fork for leaks. Perform a fork service and shock absorber service as needed and depending on how the vehicle will be used.	○	●	●	●	●
Clean the dust boots of the fork legs. (📖 p. 16)		●	●		
Check the play of the steering head bearing. (📖 p. 33)	○	●	●	●	●
Check the tire condition. (📖 p. 92)	○	●	●	●	●
Check the tire air pressure. (📖 p. 92)	○	●	●	●	●
Check the spoke tension. (📖 p. 94)	○	●	●	●	●
Check the rim run-out. (📖 p. 94)	○	●	●	●	●
Check the chain, rear sprocket, engine sprocket, and chain guide. (📖 p. 107)		●	●	●	●
Check the chain tension. (📖 p. 105)	○	●	●	●	●
Change the fuel screen. (📖 p. 81)	○	●	●	●	●
Change the spark plugs.			●		
Check the valve clearance. (📖 p. 221)		●	●		
Check the antifreeze and coolant level. (📖 p. 211)	○	●	●	●	●
Check the cables for damage and routing without sharp bends.		●	●	●	●
Change the air filter. Clean the air filter box.		●	●		
Check the fuel pressure. (📖 p. 80)		●	●	●	●
Check the headlight setting. (📖 p. 130)	○	●	●		
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 after the test ride using the Husqvarna Motorcycles diagnostics tool.	○	●	●	●	●
Check the CO adjustment using the Husqvarna Motorcycles diagnostics tool.		●	●		
Make the service entry in the <b>Husqvarna Motorcycles Dealer.net</b> and in the Service and Warranty Booklet.	○	●	●	●	●

○ One-time interval

● Periodic interval

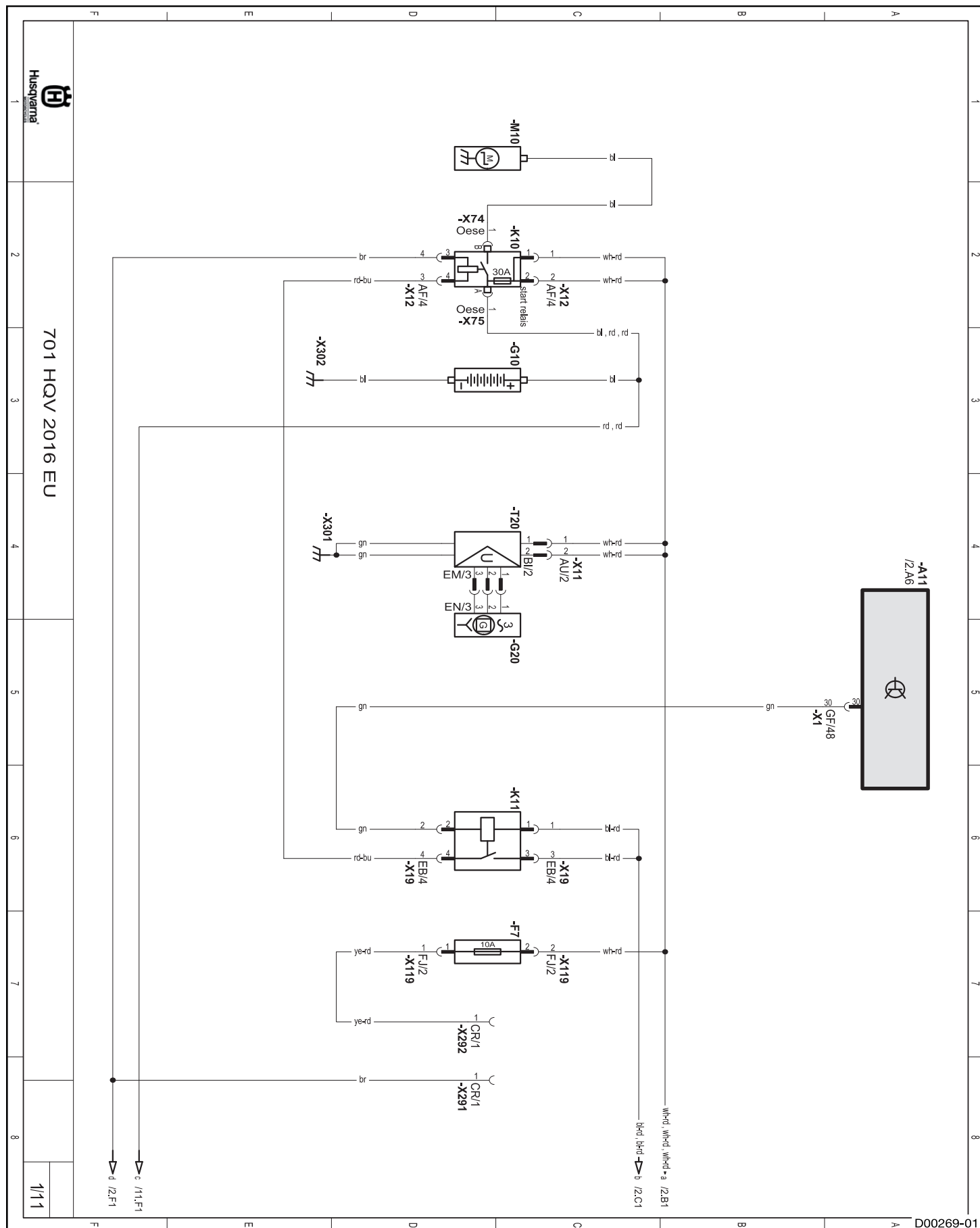
**29.3 Recommended work**

	Every four years			
	Every year			
	Every 10,000 km (6,200 mi)			
	After 1,000 km (620 mi)			
Checking the swingarm bearing for play. (📖 p. 66)		•		
Check the wheel bearing for play. (📖 p. 93)		•		
Empty the drainage hoses. (US)	○	•	•	•
Grease all moving parts (e.g., side stand, hand lever, chain, ...) and check for smooth operation.	○	•	•	•
Check all hoses (e.g. fuel, coolant, bleeder, drainage, etc.) and sleeves for cracking, leaks, and incorrect routing.		•	•	•
Check/correct the fluid level of the hydraulic clutch. (📖 p. 205)		•	•	•
Check the screws and nuts for tightness.	○	•	•	•
Change the coolant.				•

- One-time interval
- Periodic interval

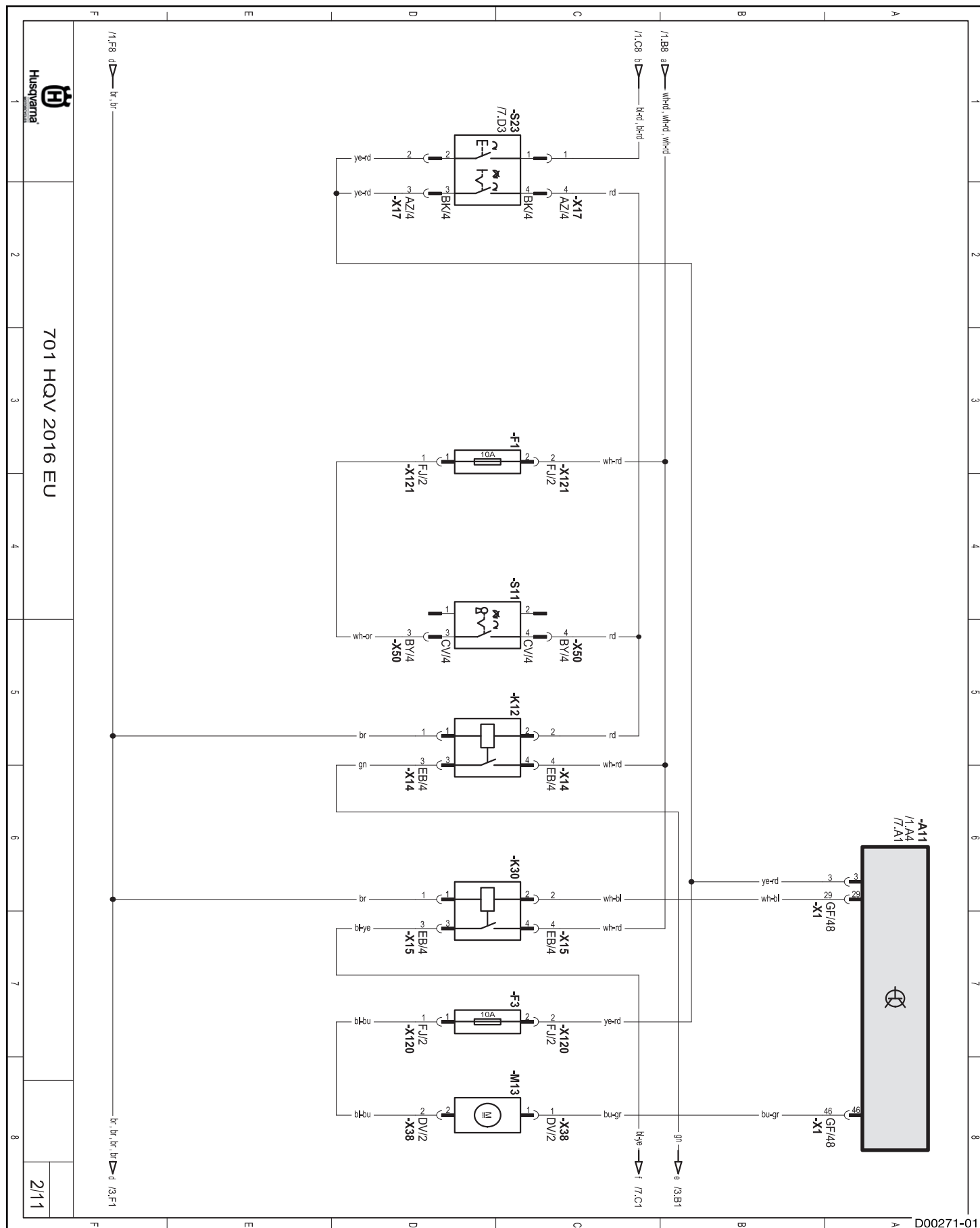


## 30.1 Page 01 of 11 (EU)



**Components:**

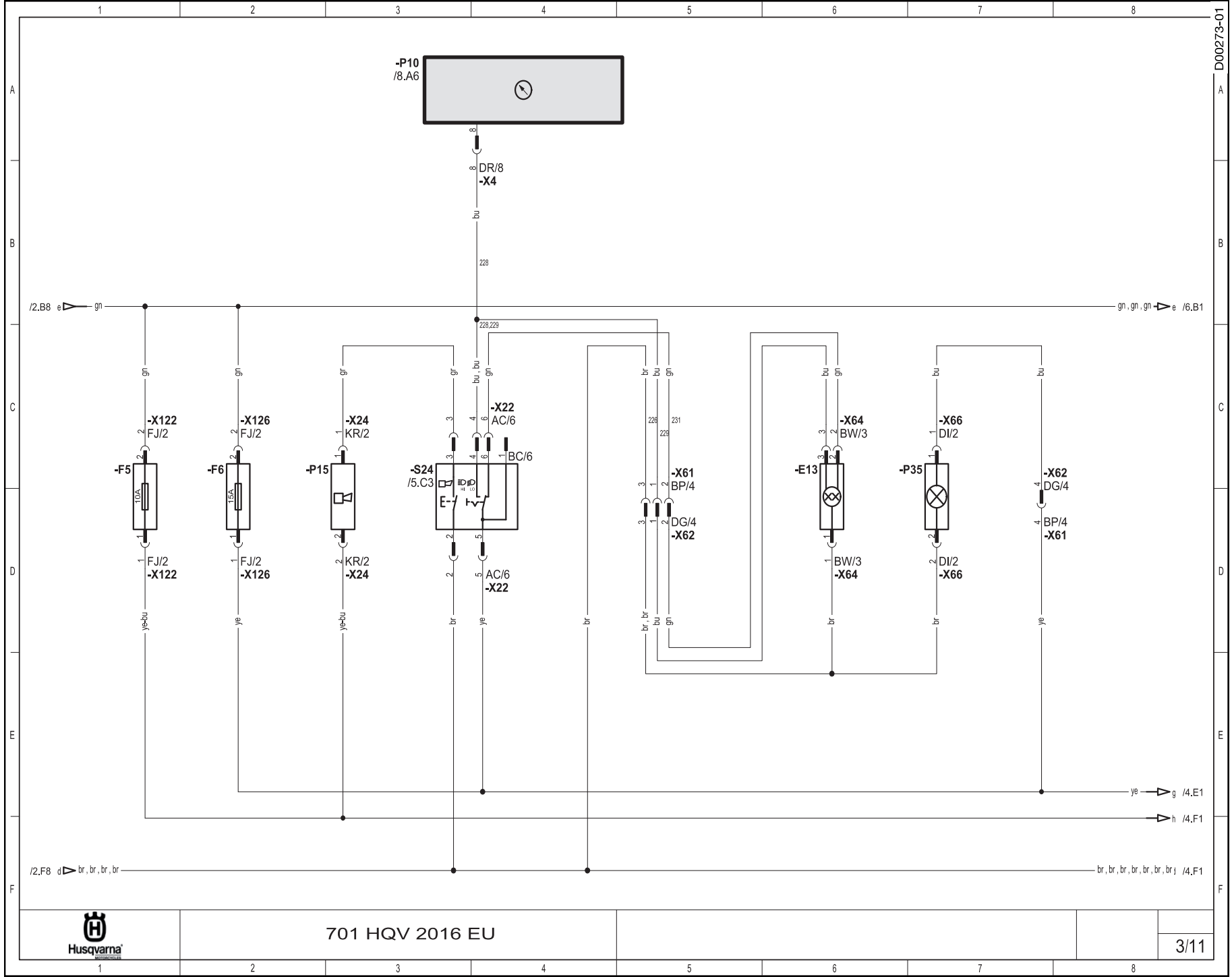
A11	Engine electronics control unit
F7	Fuse
G10	Battery
G20	Alternator
K10	Starter relay with main fuse
K11	Start auxiliary relay
M10	Starter motor
T20	Voltage regulator
X291	Connector for accessory ground (terminal 31) <b>ACC 1</b> (not assigned)
X292	Connector for accessory plus (terminal 30) <b>ACC 1</b> (not assigned)



Components:

A11	Engine electronics control unit
F1	Fuse
F3	Fuse
K12	Light relay
K30	Power relay
M13	Fuel pump
S11	Ignition/steering lock
S23	Emergency OFF switch, electric starter button

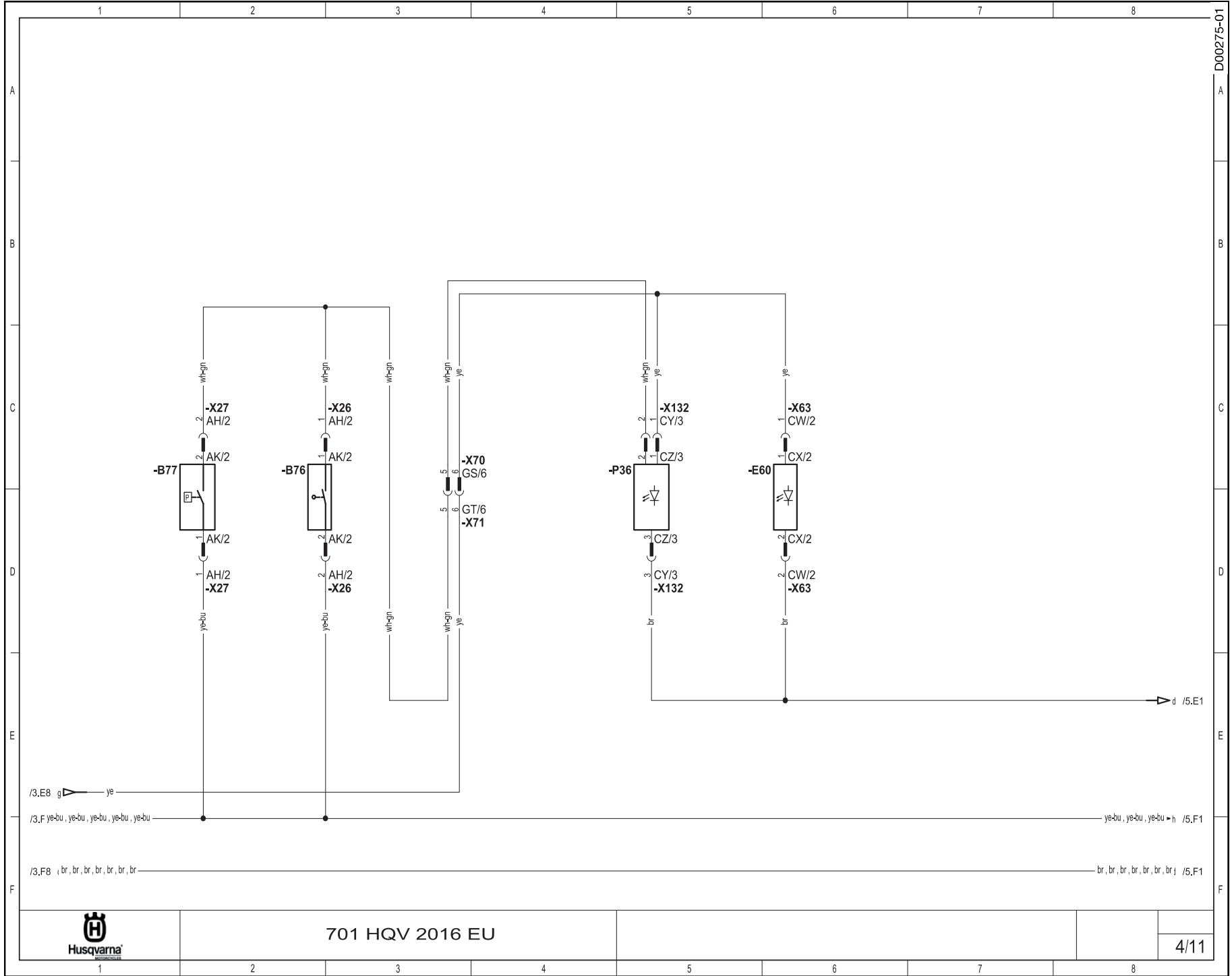
## 30.3 Page 03 of 11 (EU)



Components:

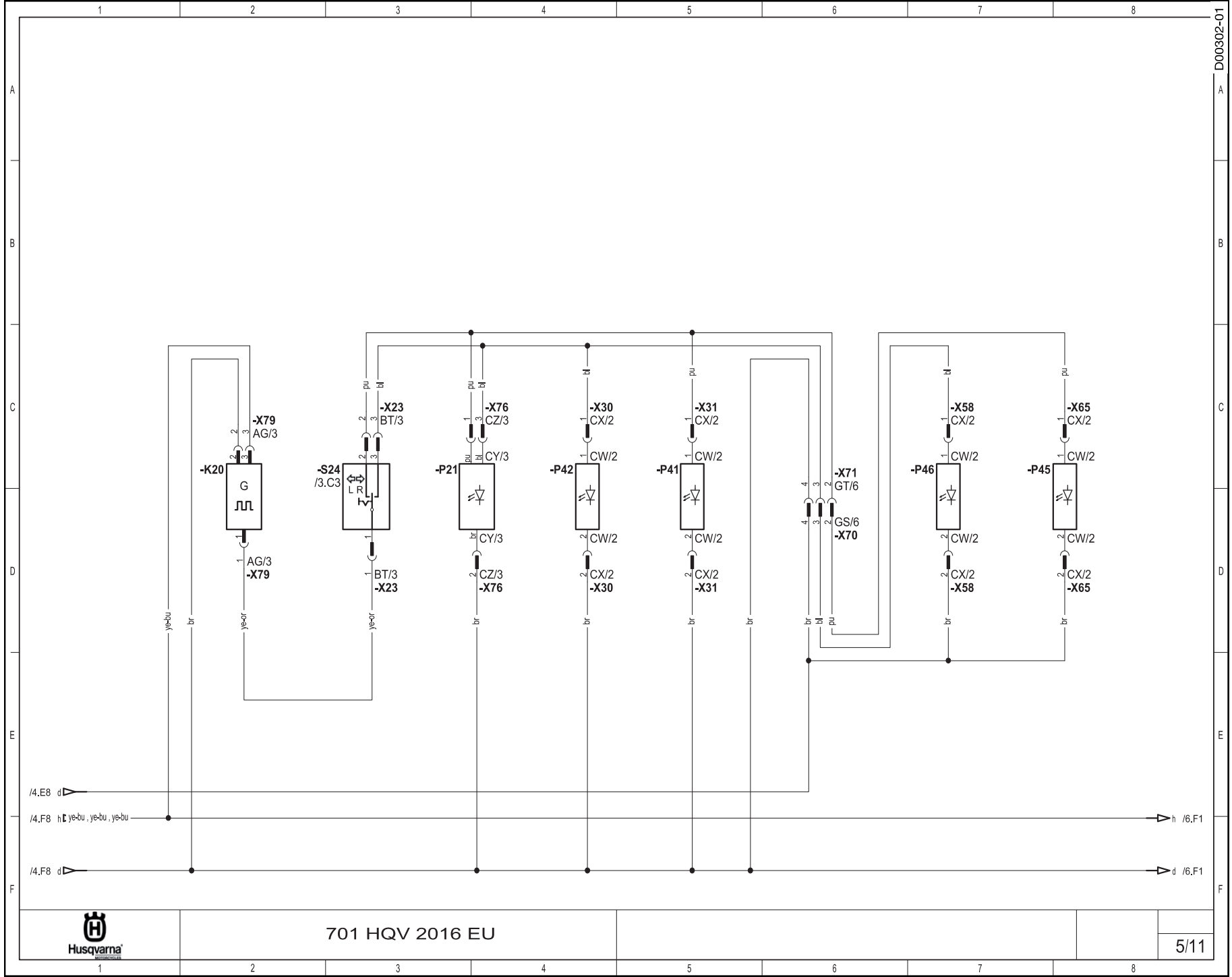
E13	Low beam, high beam
F5	Fuse
F6	Fuse
P10	Combination instrument
P15	Horn
P35	Parking light
S24	Light switch, horn button, headlight flasher switch, turn signal switch





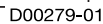
Components:

B76	Front brake light switch
B77	Rear brake light switch
E60	License plate lamp
P36	Brake/tail light



Components:

K20	Turn signal relay
P21	Turn signal indicator light
P41	Front left turn signal
P42	Front right turn signal
P45	Rear left turn signal
P46	Rear right turn signal
S24	Light switch, horn button, headlight flasher switch, turn signal switch

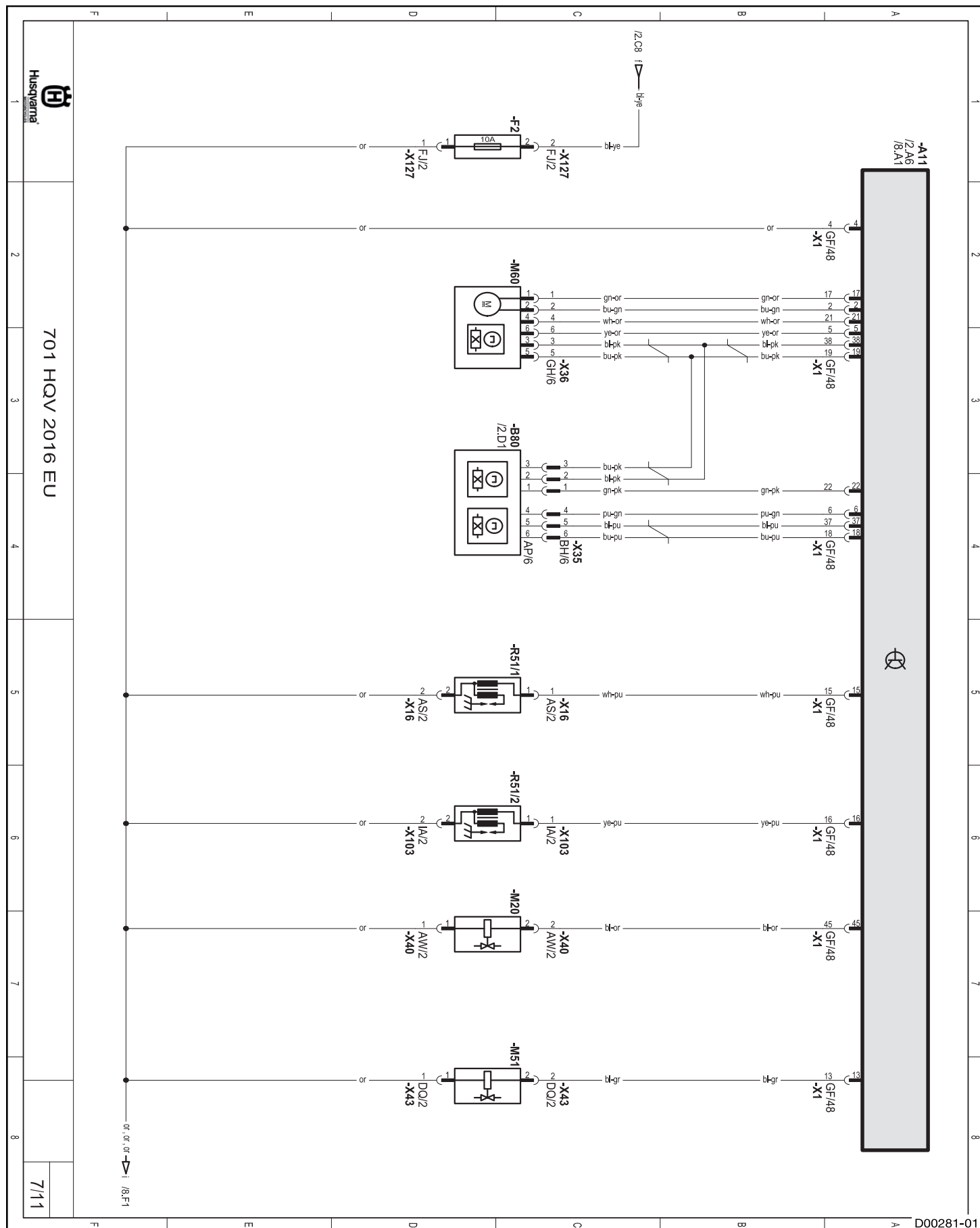


Components:

B33	Radiator fan temperature switch
B35	Oil pressure sensor
F4	Fuse
F8	Fuse
M14	Radiator fan
P27	Oil pressure warning lamp
X293	Connector for accessory ground (terminal 31) <b>ACC 2</b> (not assigned)
X294	Connector for accessory plus (terminal 15) <b>ACC 2</b> (not assigned)

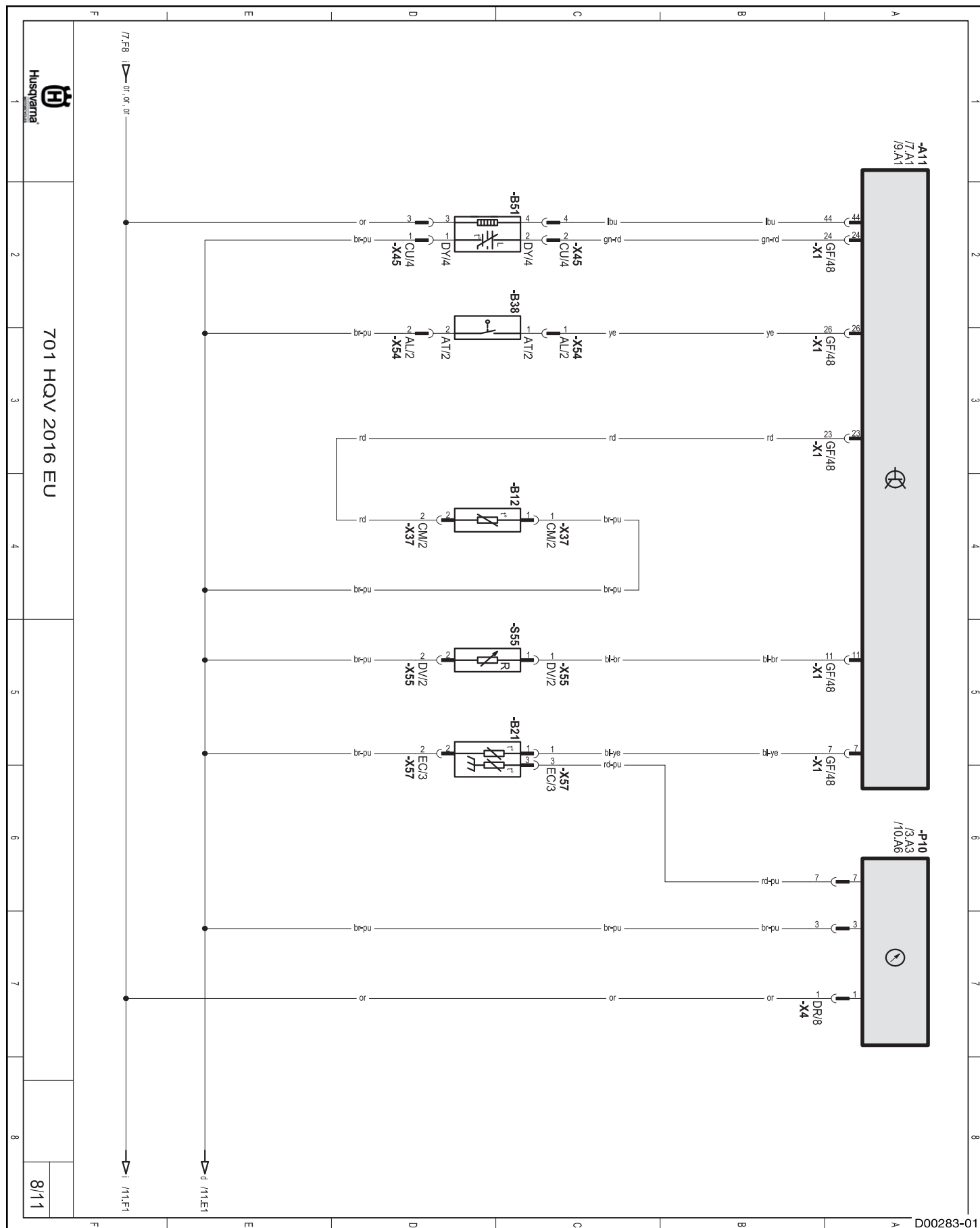


## 30.7 Page 07 of 11 (EU)



Components:

A11	Engine electronics control unit
B80	Accelerator position sensor
F2	Fuse
M20	Fuel evaporation valve (optional)
M51	Injector cylinder 1
M60	Throttle stepper motor
R51/1	Ignition coil 1, (cylinder 1)
R51/2	Ignition coil 2, (cylinder 1)



Components:

A11	Engine electronics control unit
B12	Intake air temperature sensor
B21	Coolant temperature sensor, cylinder 1
B38	Clutch switch
B51	Lambda sensor (cylinder 1)
P10	Combination instrument
S55	<b>Map-Select</b> switch



Components:

A11	Engine electronics control unit
B13	Ambient air pressure sensor
B26	Rollover sensor
B30	Side stand switch
B34	Gear position sensor
B41	Manifold absolute pressure sensor cylinder 1

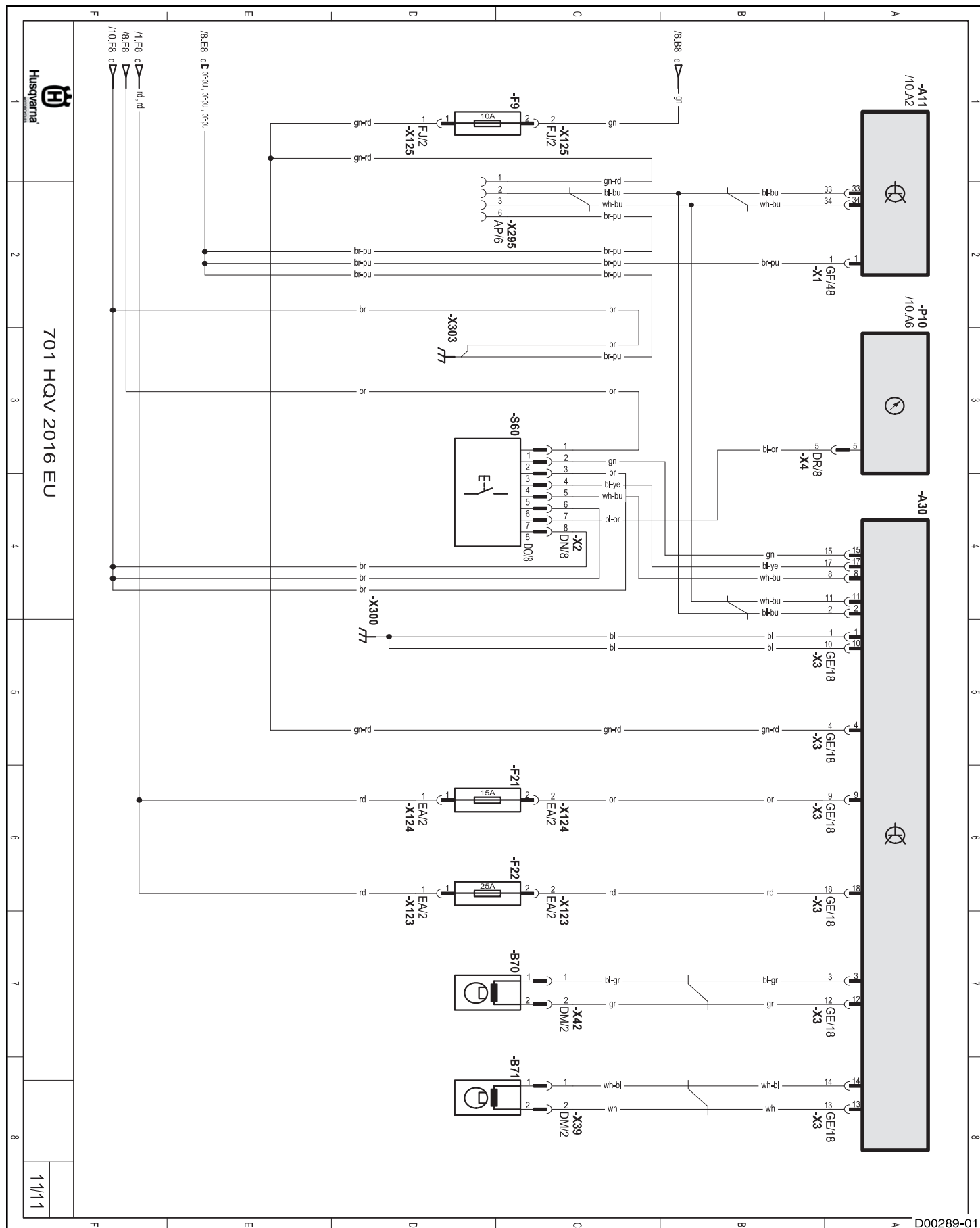




Components:

A11	Engine electronics control unit
B32	Fuel tank sensor
B37	Crankshaft position sensor
P10	Combination instrument
P22	Idling speed indicator lamp

## 30.11 Page 11 of 11 (EU)



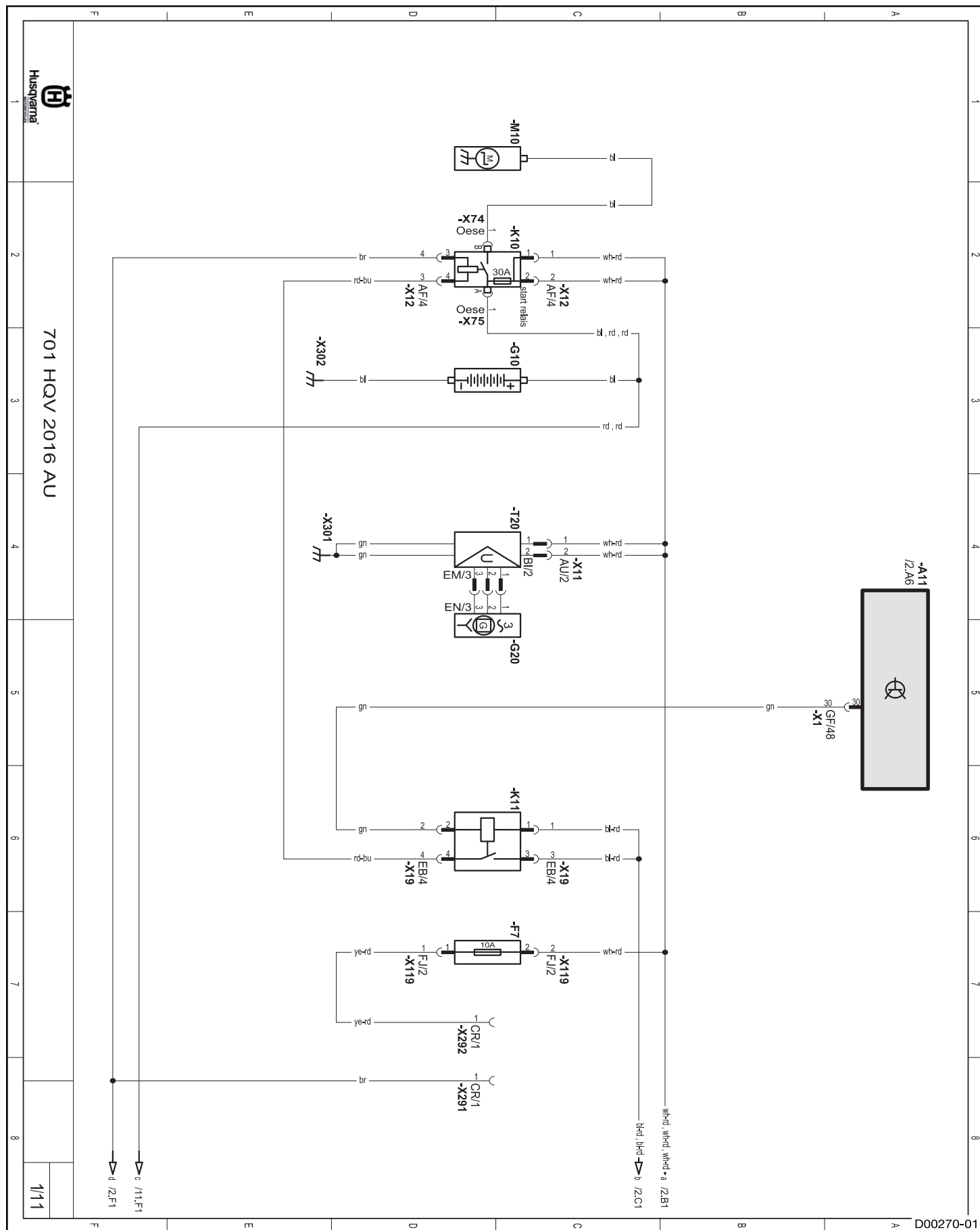
**Components:**

A11	Engine electronics control unit
A30	ABS control unit
B70	Front wheel speed sensor
B71	Wheel speed sensor, rear
F9	Fuse
F21	ABS fuse
F22	ABS fuse
P10	Combination instrument
S60	ABS switch
X295	Diagnostics connector

**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

## 30.12 Page 01 of 11 (AU)

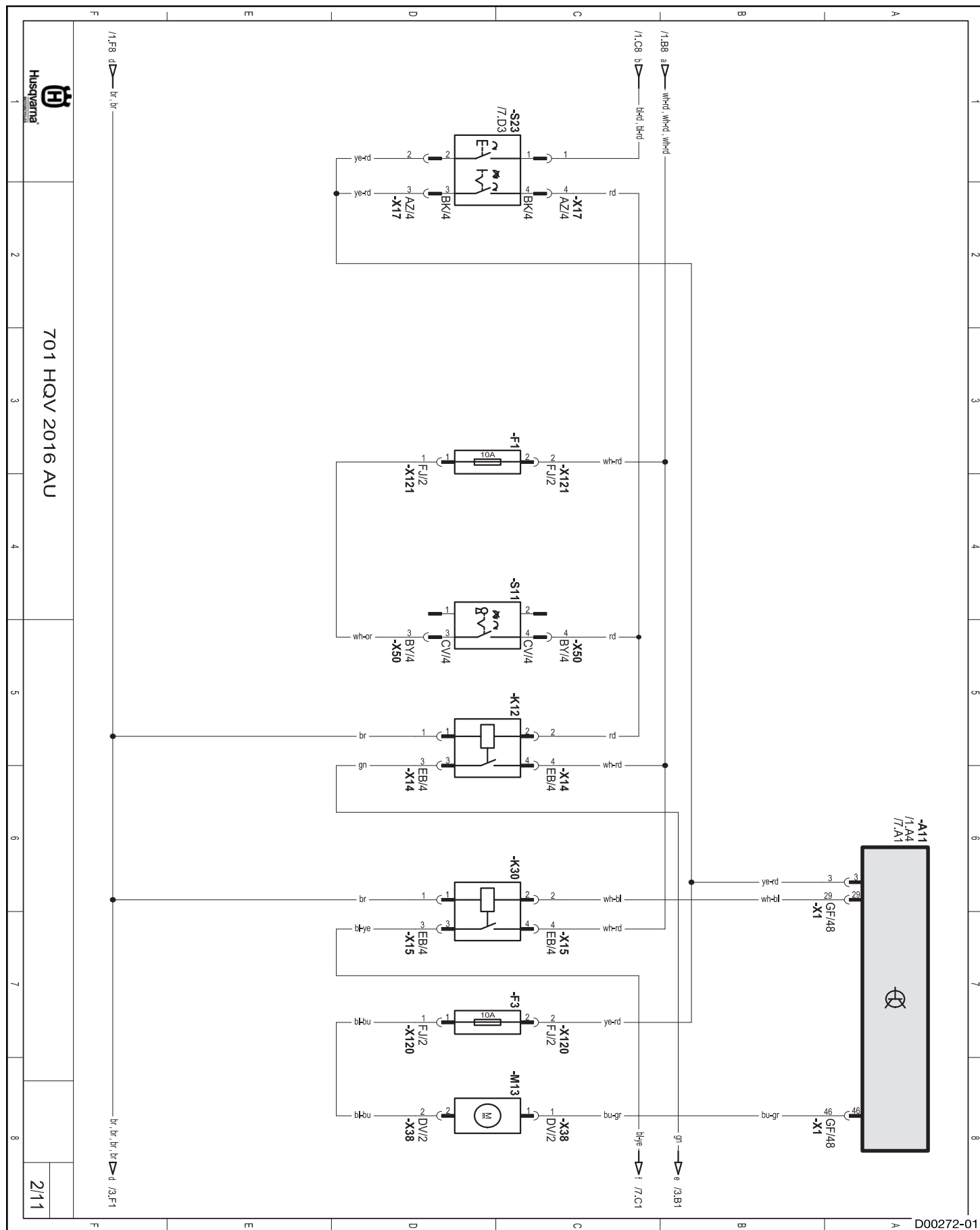


**Components:**

A11	Engine electronics control unit
F7	Fuse
G10	Battery
G20	Alternator
K10	Starter relay with main fuse
K11	Start auxiliary relay
M10	Starter motor
T20	Voltage regulator
X291	Connector for accessory ground (terminal 31) <b>ACC 1</b> (not assigned)
X292	Connector for accessory plus (terminal 30) <b>ACC 1</b> (not assigned)



## 30.13 Page 02 of 11 (AU)



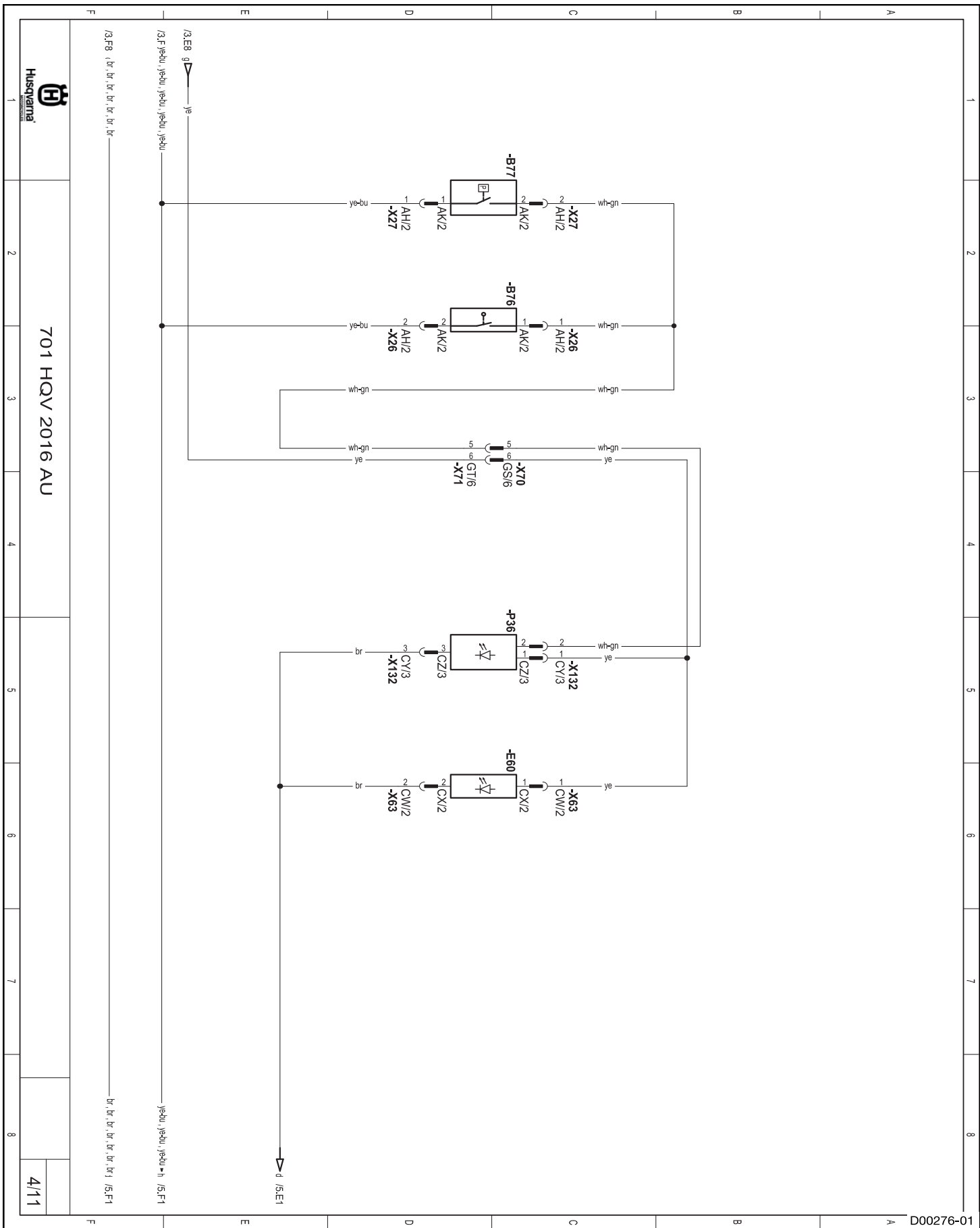
Components:

A11	Engine electronics control unit
F1	Fuse
F3	Fuse
K12	Light relay
K30	Power relay
M13	Fuel pump
S11	Ignition/steering lock
S23	Emergency OFF switch, electric starter button



Components:

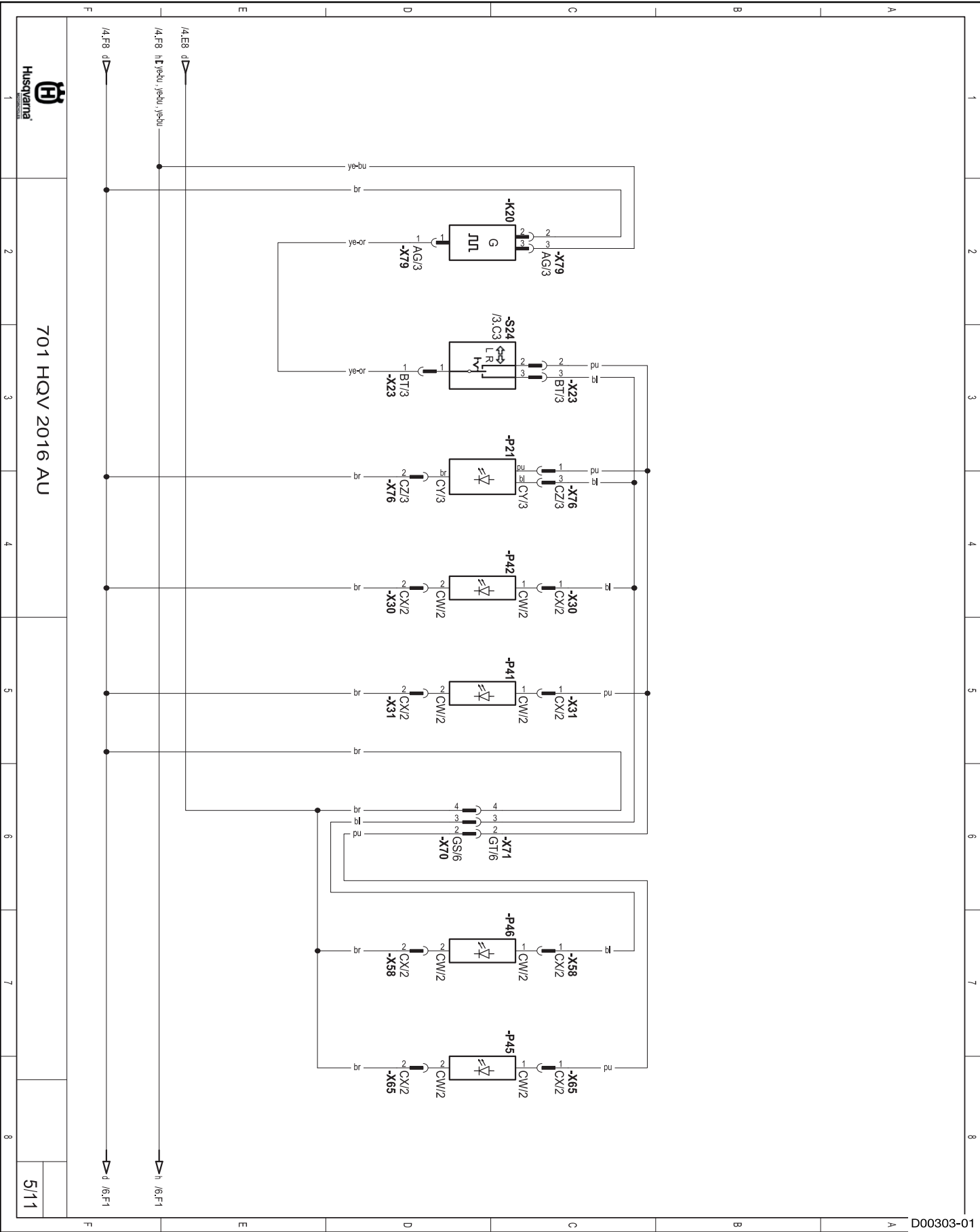
E13	Low beam, high beam
F5	Fuse
F6	Fuse
P10	Combination instrument
P15	Horn
P35	Parking light
S24	Light switch, horn button, headlight flasher switch, turn signal switch



Components:

B76	Front brake light switch
B77	Rear brake light switch
E60	License plate lamp
P36	Brake/tail light

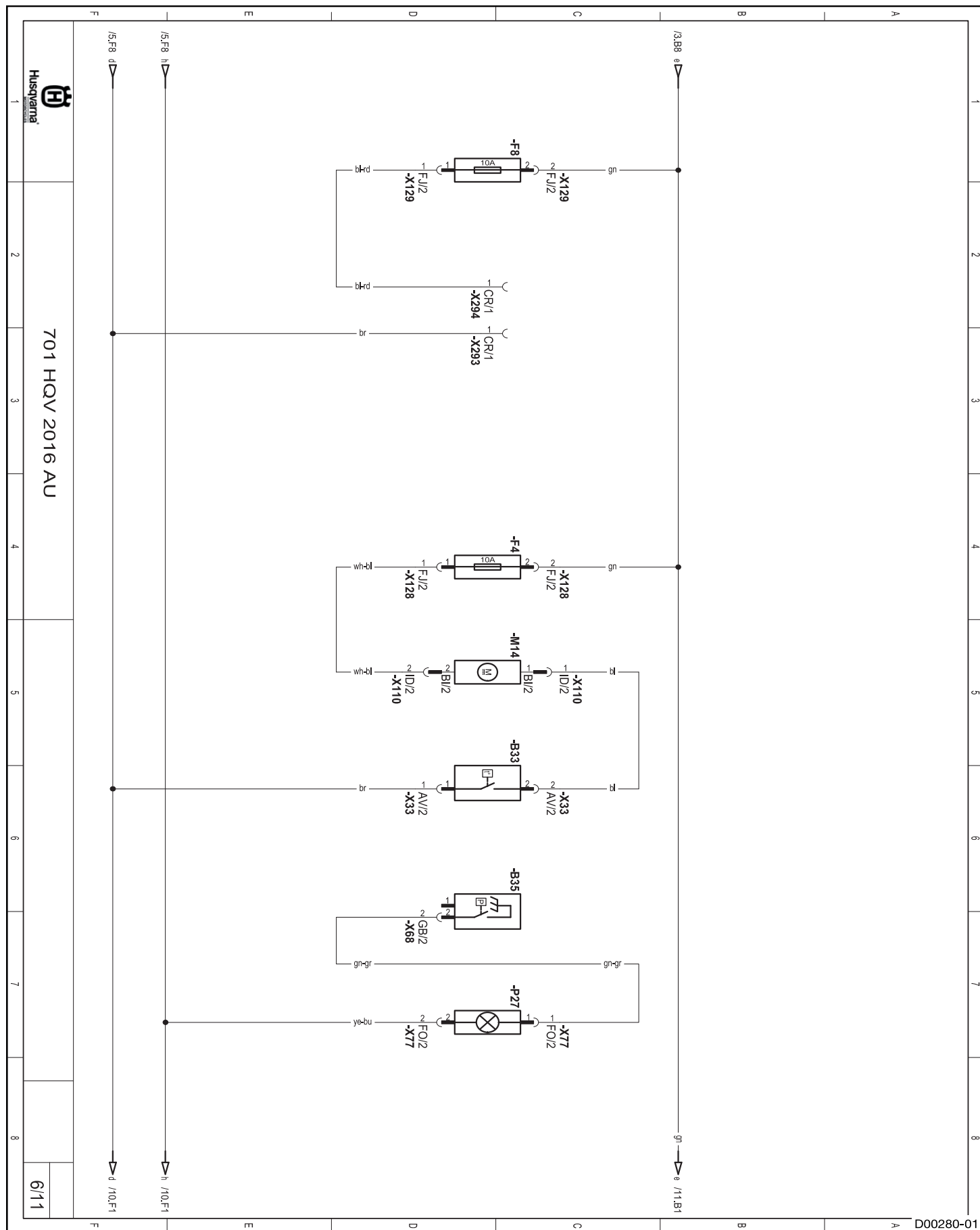




Components:

K20	Turn signal relay
P21	Turn signal indicator light
P41	Front left turn signal
P42	Front right turn signal
P45	Rear left turn signal
P46	Rear right turn signal
S24	Light switch, horn button, headlight flasher switch, turn signal switch

## 30.17 Page 06 of 11 (AU)



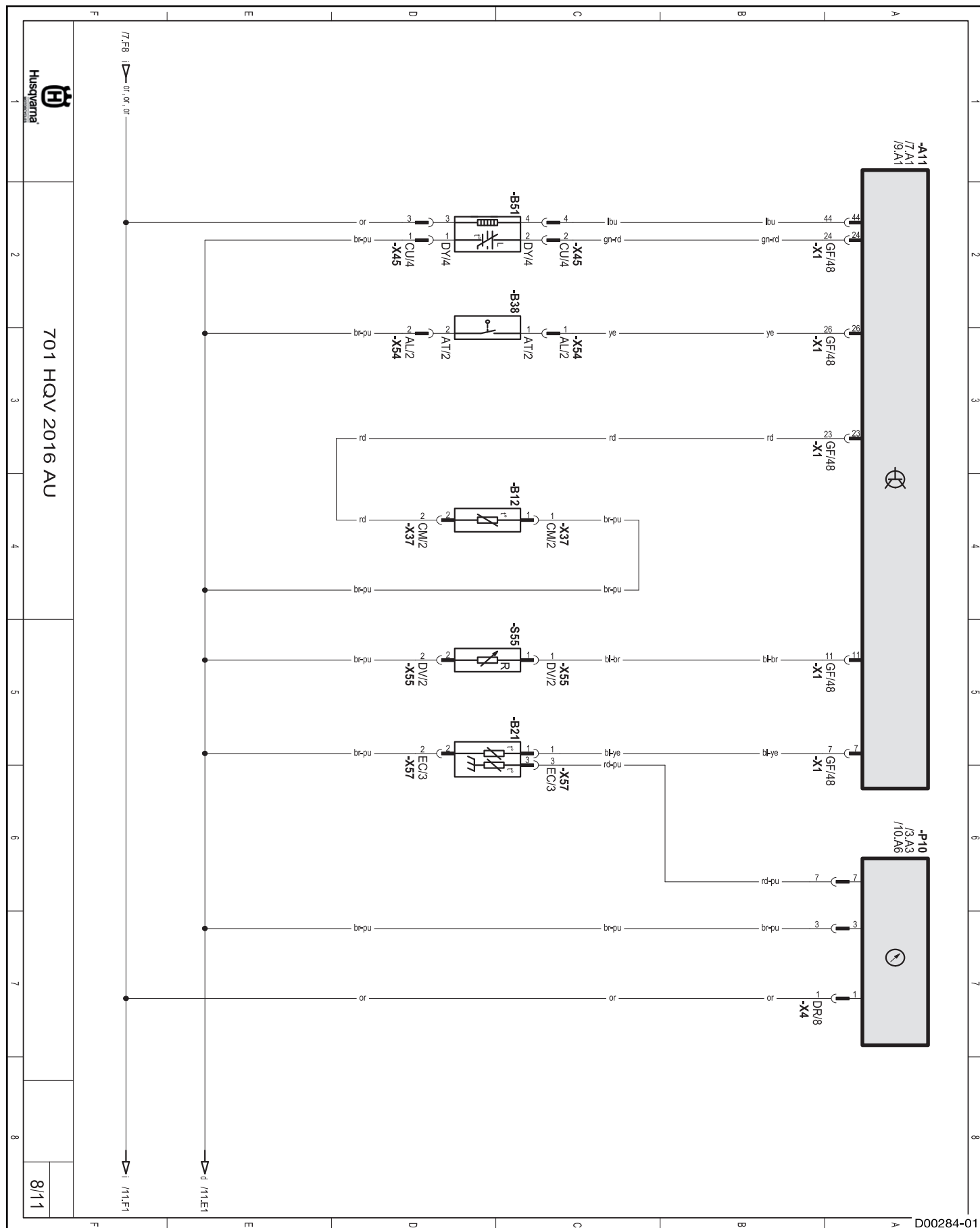
Components:

B33	Radiator fan temperature switch
B35	Oil pressure sensor
F4	Fuse
F8	Fuse
M14	Radiator fan
P27	Oil pressure warning lamp
X293	Connector for accessory ground (terminal 31) <b>ACC 2</b> (not assigned)
X294	Connector for accessory plus (terminal 15) <b>ACC 2</b> (not assigned)



Components:

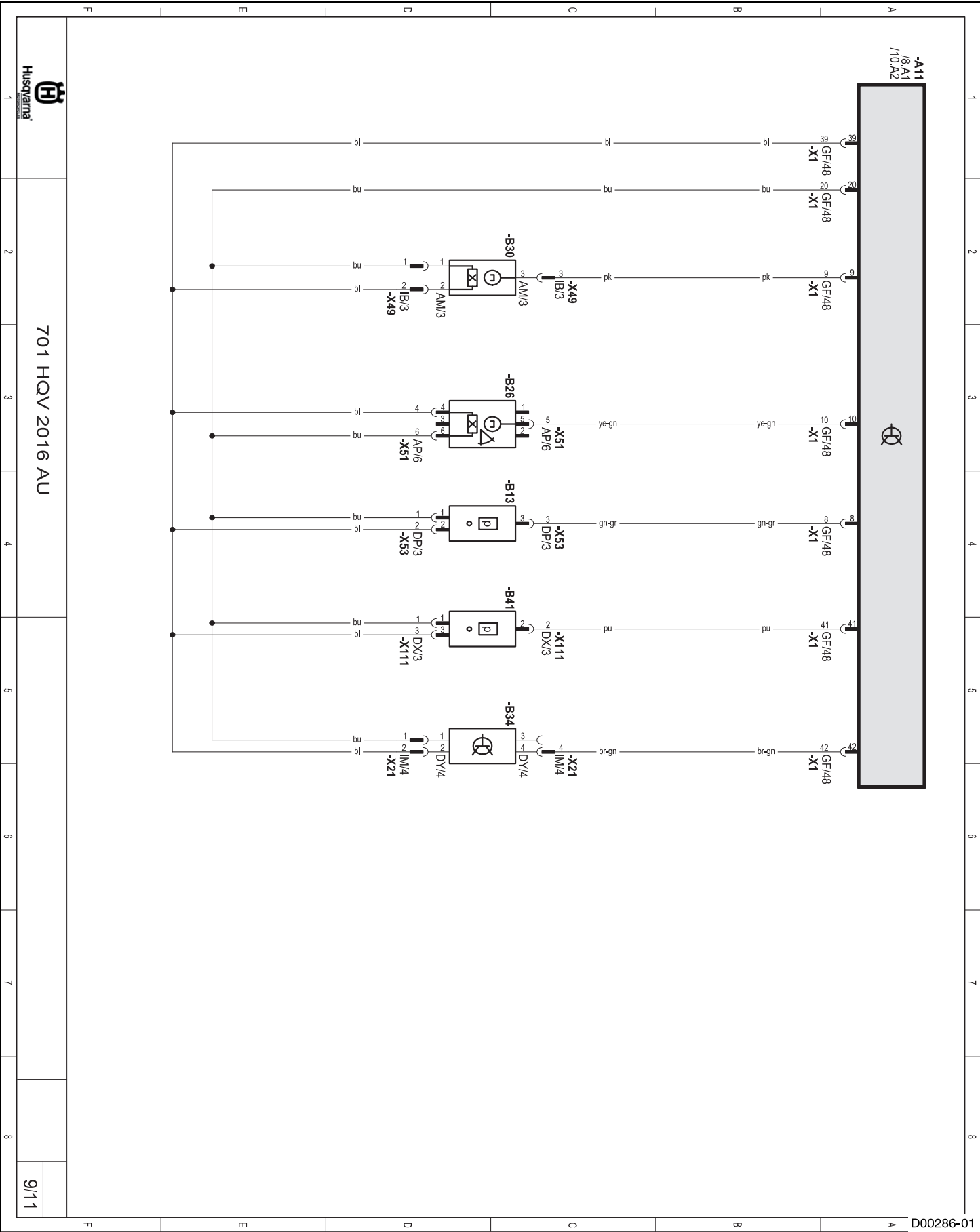
A11	Engine electronics control unit
B80	Accelerator position sensor
F2	Fuse
M20	Fuel evaporation valve (optional)
M51	Injector cylinder 1
M60	Throttle stepper motor
R51/1	Ignition coil 1, (cylinder 1)
R51/2	Ignition coil 2, (cylinder 1)





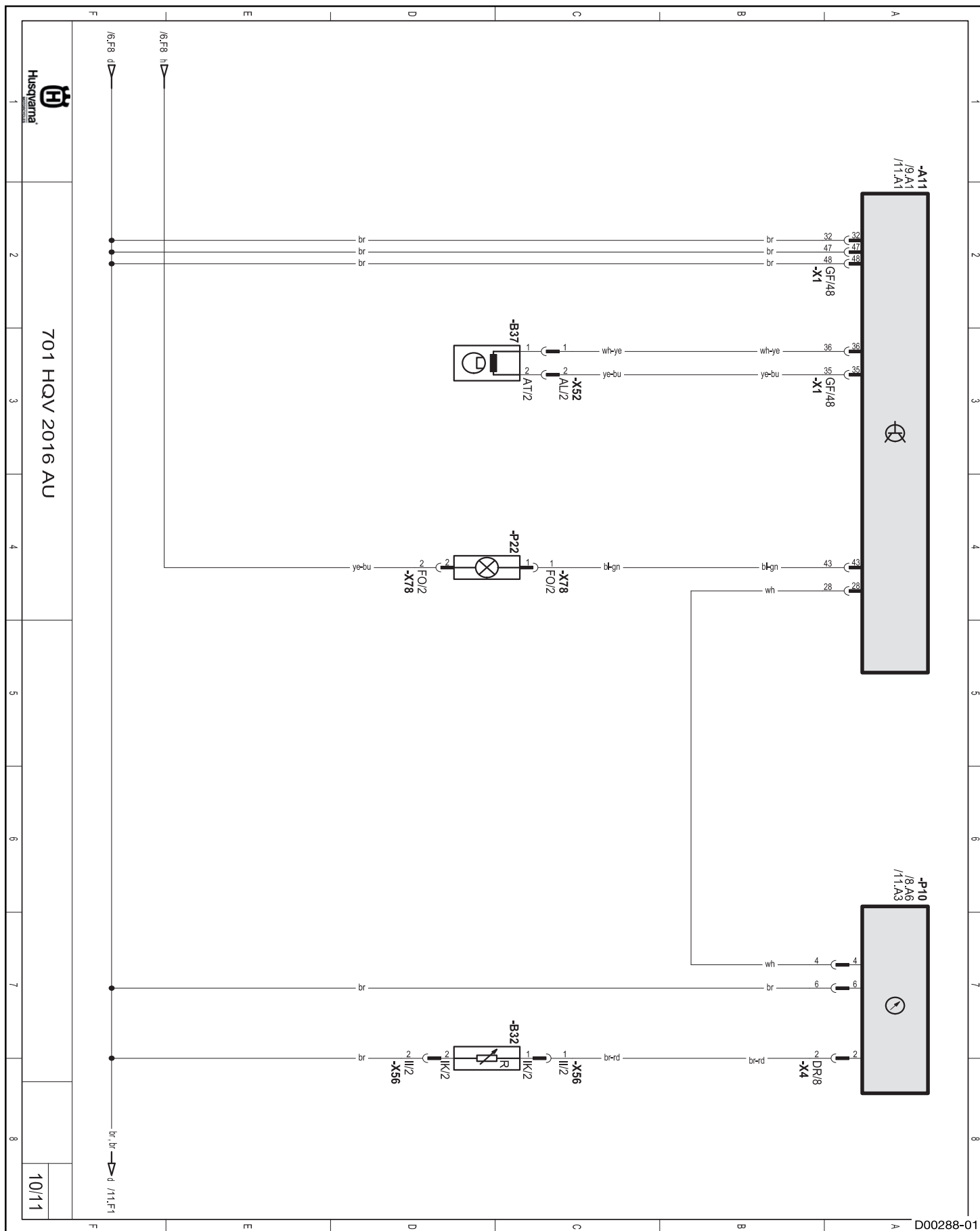
Components:

A11	Engine electronics control unit
B12	Intake air temperature sensor
B21	Coolant temperature sensor, cylinder 1
B38	Clutch switch
B51	Lambda sensor (cylinder 1)
P10	Combination instrument
S55	<b>Map-Select</b> switch



Components:

A11	Engine electronics control unit
B13	Ambient air pressure sensor
B26	Rollover sensor
B30	Side stand switch
B34	Gear position sensor
B41	Manifold absolute pressure sensor cylinder 1



Components:

A11	Engine electronics control unit
B32	Fuel tank sensor
B37	Crankshaft position sensor
P10	Combination instrument
P22	Idling speed indicator lamp



**Components:**

A11	Engine electronics control unit
A30	ABS control unit
B70	Front wheel speed sensor
B71	Wheel speed sensor, rear
F9	Fuse
F21	ABS fuse
F22	ABS fuse
P10	Combination instrument
S60	ABS switch
X295	Diagnostics connector

**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

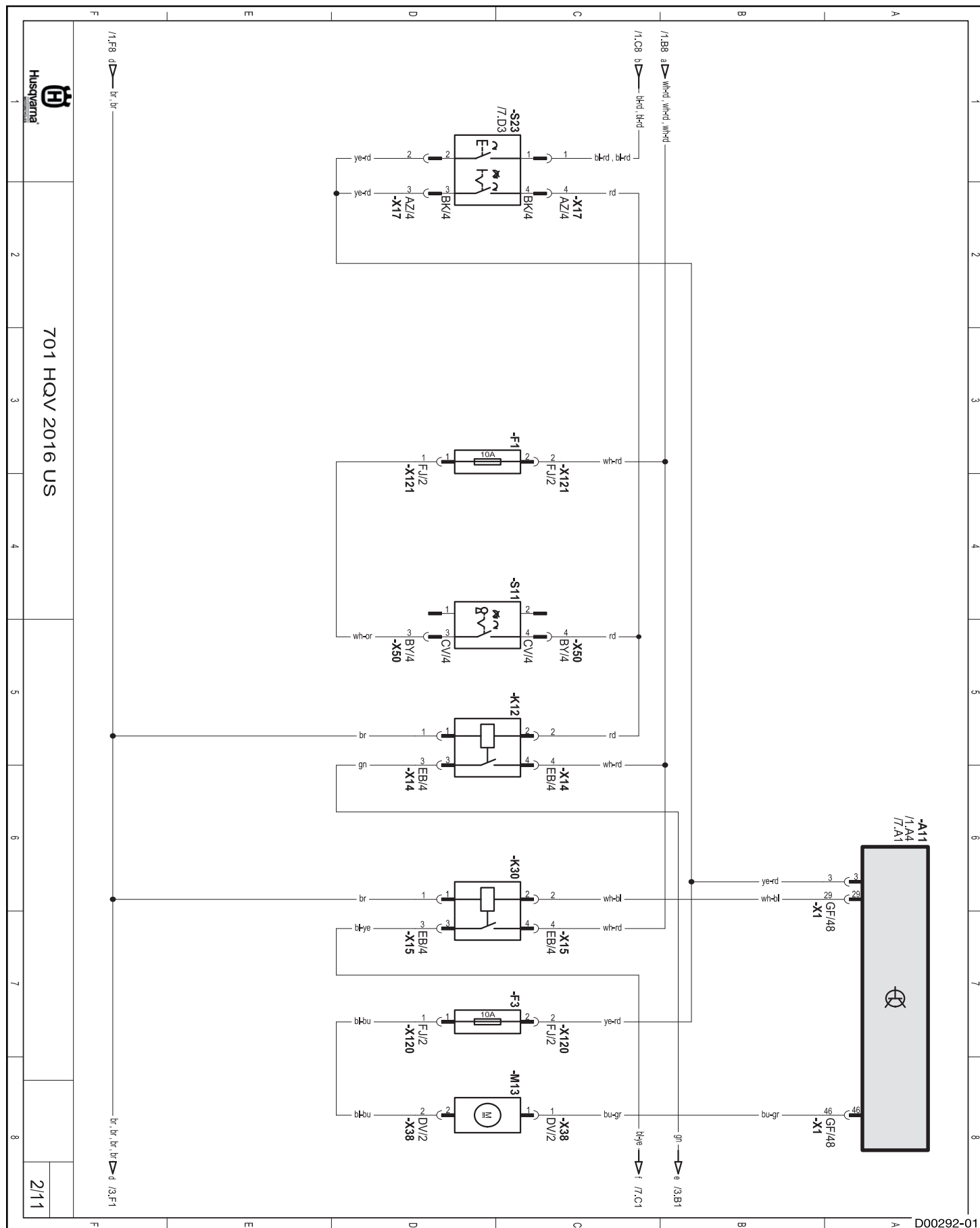




Components:

A11	Engine electronics control unit
F7	Fuse
G10	Battery
G20	Alternator
K10	Starter relay with main fuse
K11	Start auxiliary relay
M10	Starter motor
T20	Voltage regulator
X291	Connector for accessory ground (terminal 31) <b>ACC 1</b> (not assigned)
X292	Connector for accessory plus (terminal 30) <b>ACC 1</b> (not assigned)

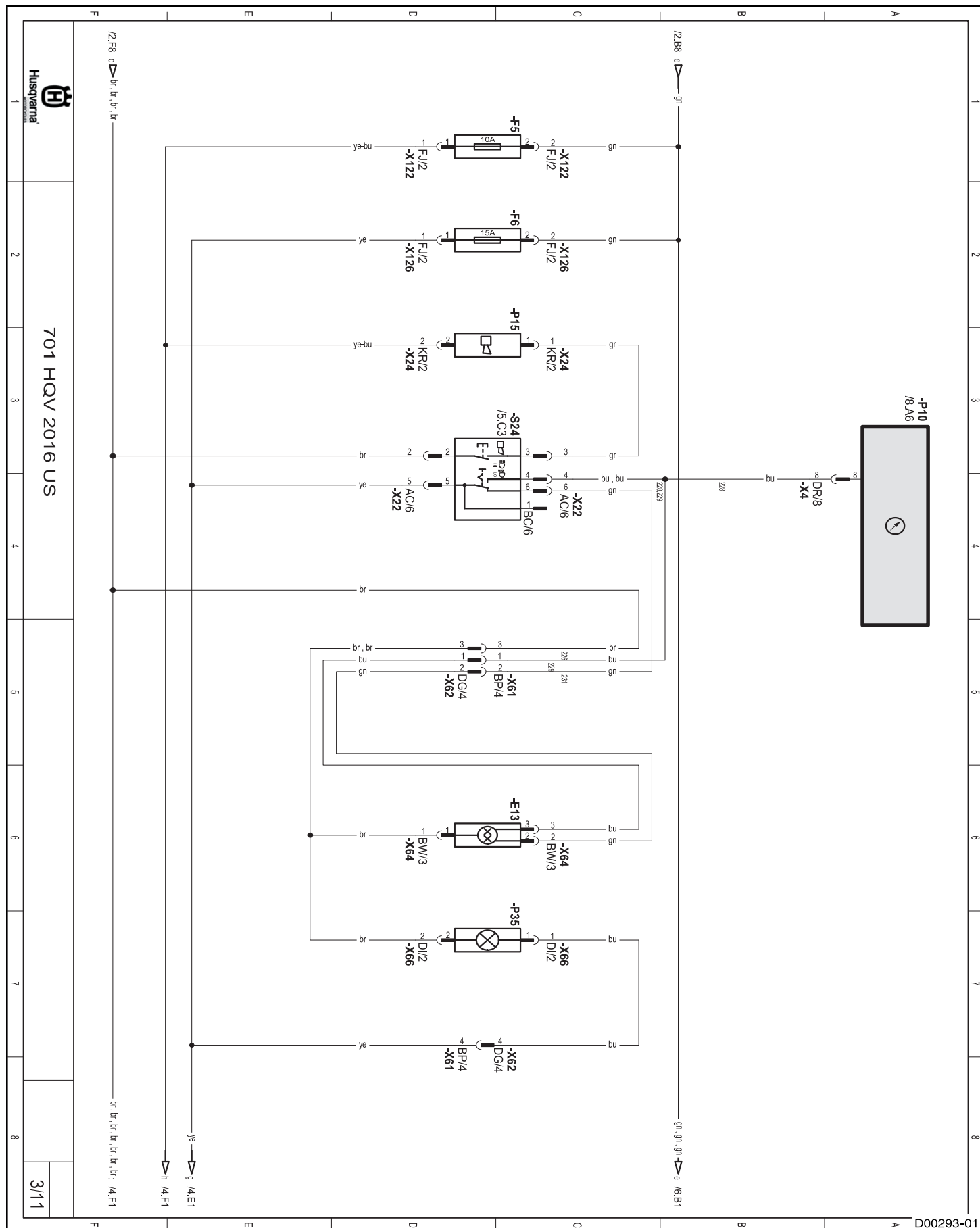
## 30.24 Page 02 of 11 (US)



Components:

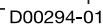
A11	Engine electronics control unit
F1	Fuse
F3	Fuse
K12	Light relay
K30	Power relay
M13	Fuel pump
S11	Ignition/steering lock
S23	Emergency OFF switch, electric starter button

## 30.25 Page 03 of 11 (US)



Components:

E13	Low beam, high beam
F5	Fuse
F6	Fuse
P10	Combination instrument
P15	Horn
P35	Parking light
S24	Light switch, horn button, headlight flasher switch, turn signal switch

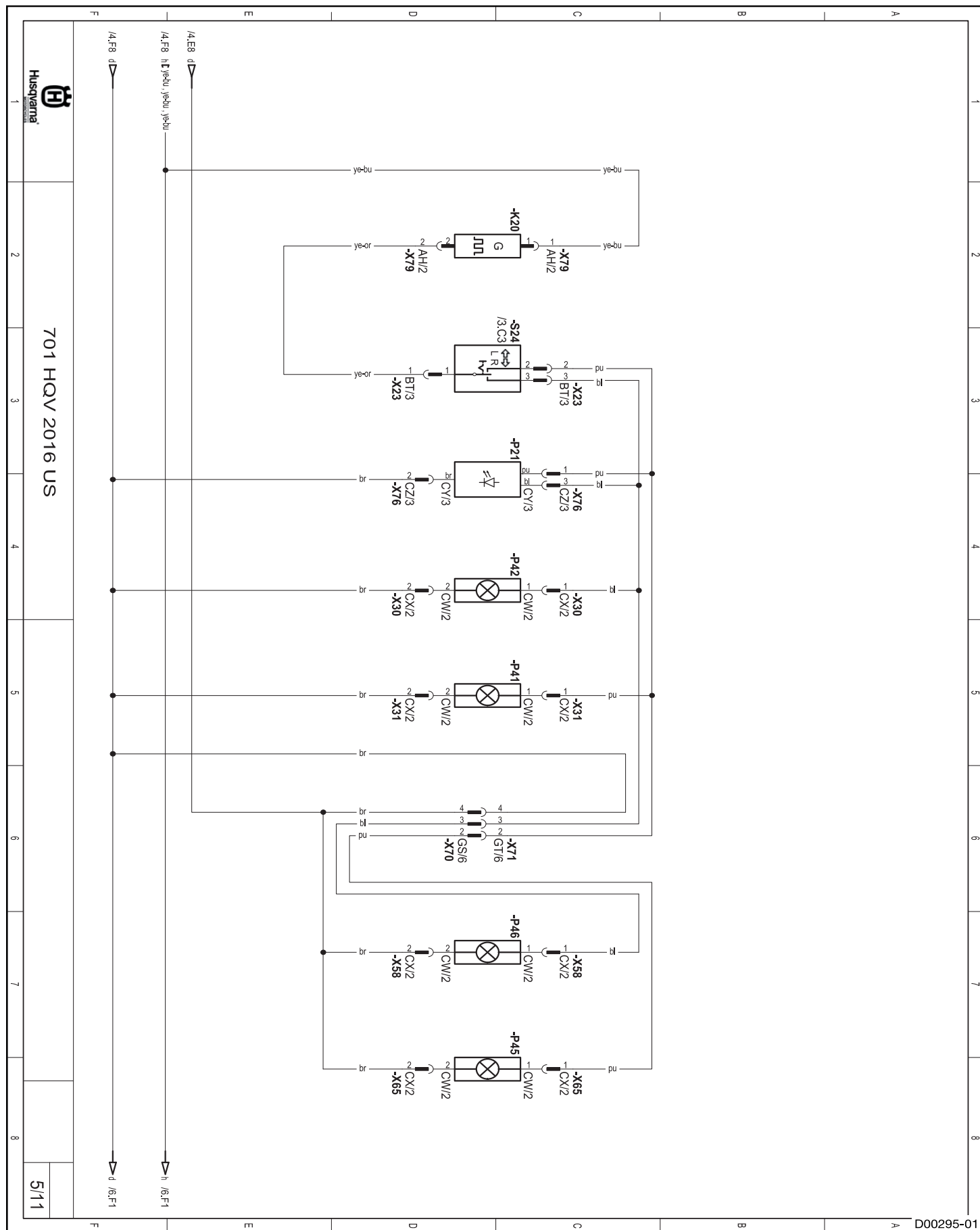




Components:

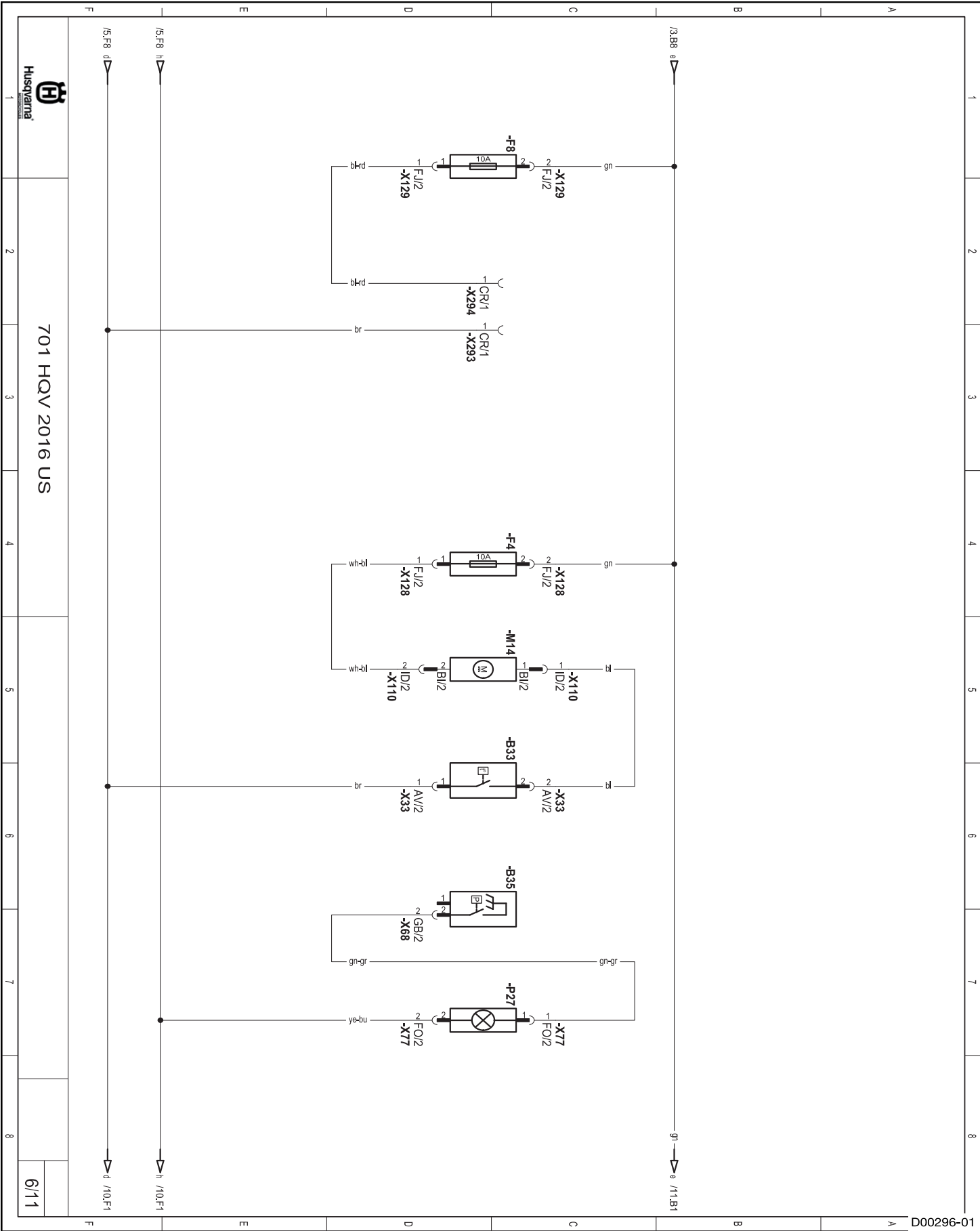
B76	Front brake light switch
B77	Rear brake light switch
E60	License plate lamp
P36	Brake/tail light

## 30.27 Page 05 of 11 (US)



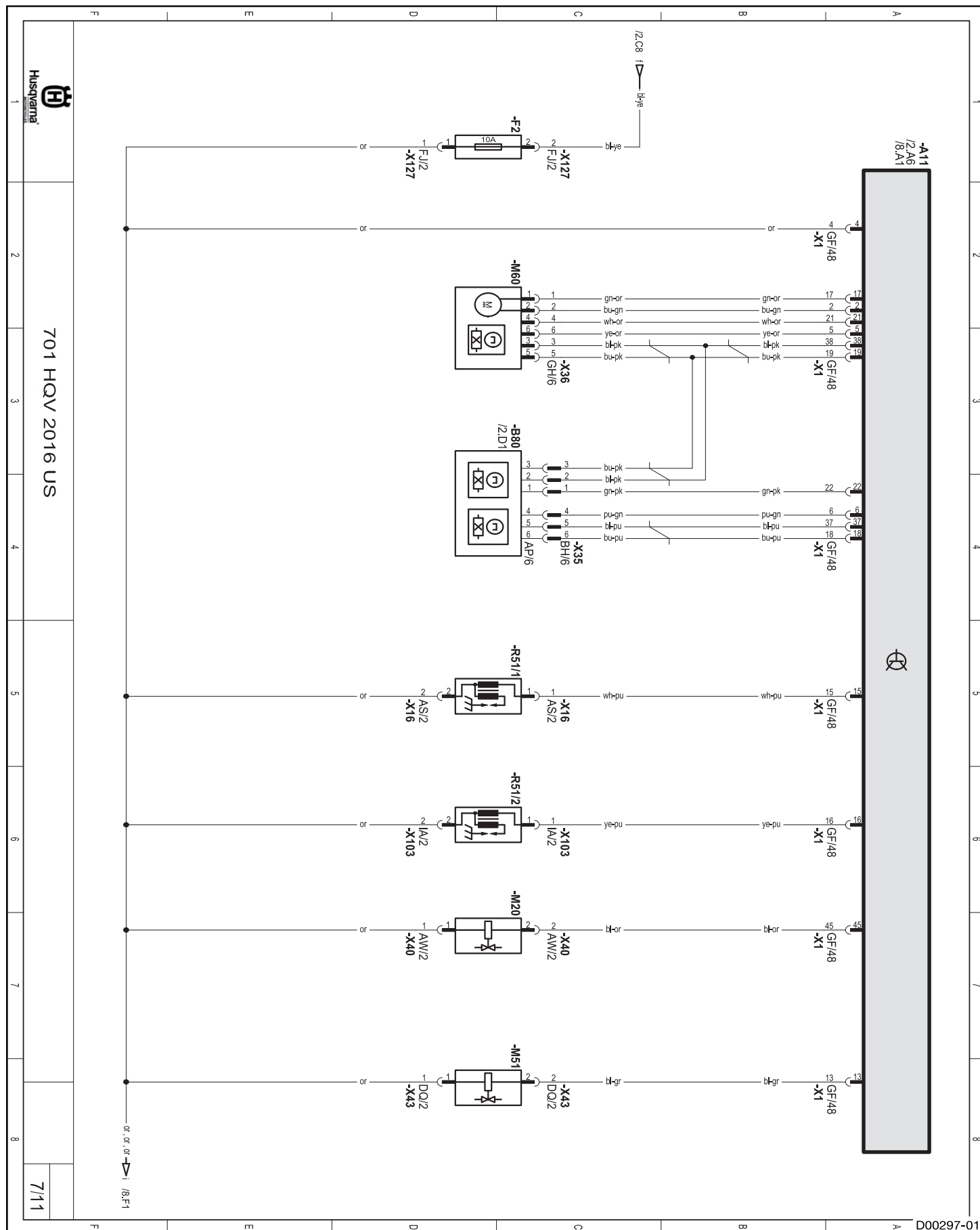
Components:

K20	Turn signal relay
P21	Turn signal indicator light
P41	Front left turn signal
P42	Front right turn signal
P45	Rear left turn signal
P46	Rear right turn signal
S24	Light switch, horn button, headlight flasher switch, turn signal switch



Components:

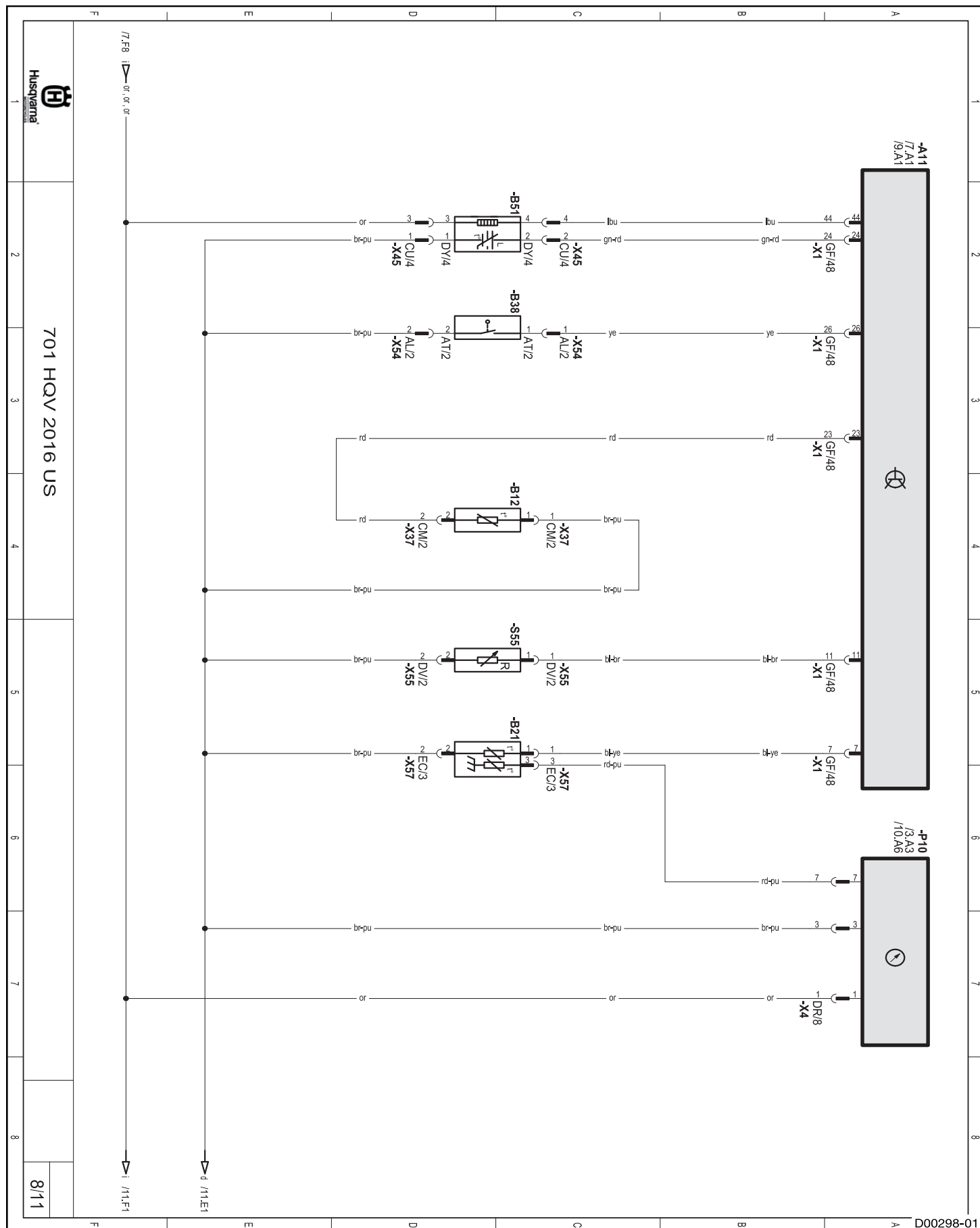
B33	Radiator fan temperature switch
B35	Oil pressure sensor
F4	Fuse
F8	Fuse
M14	Radiator fan
P27	Oil pressure warning lamp
X293	Connector for accessory ground (terminal 31) <b>ACC 2</b> (not assigned)
X294	Connector for accessory plus (terminal 15) <b>ACC 2</b> (not assigned)



Components:

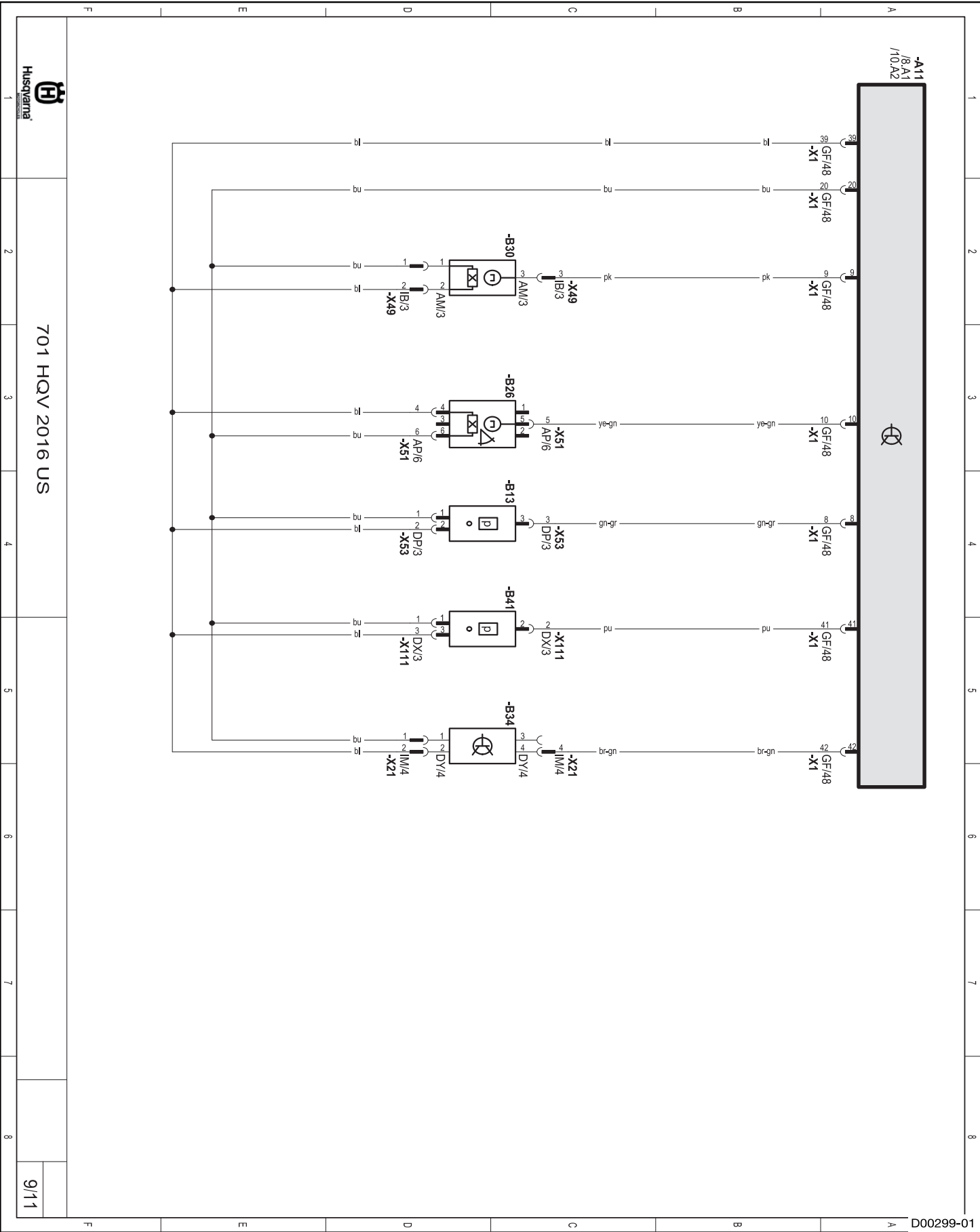
A11	Engine electronics control unit
B80	Accelerator position sensor
F2	Fuse
M20	Fuel evaporation valve
M51	Injector cylinder 1
M60	Throttle stepper motor
R51/1	Ignition coil 1, (cylinder 1)
R51/2	Ignition coil 2, (cylinder 1)





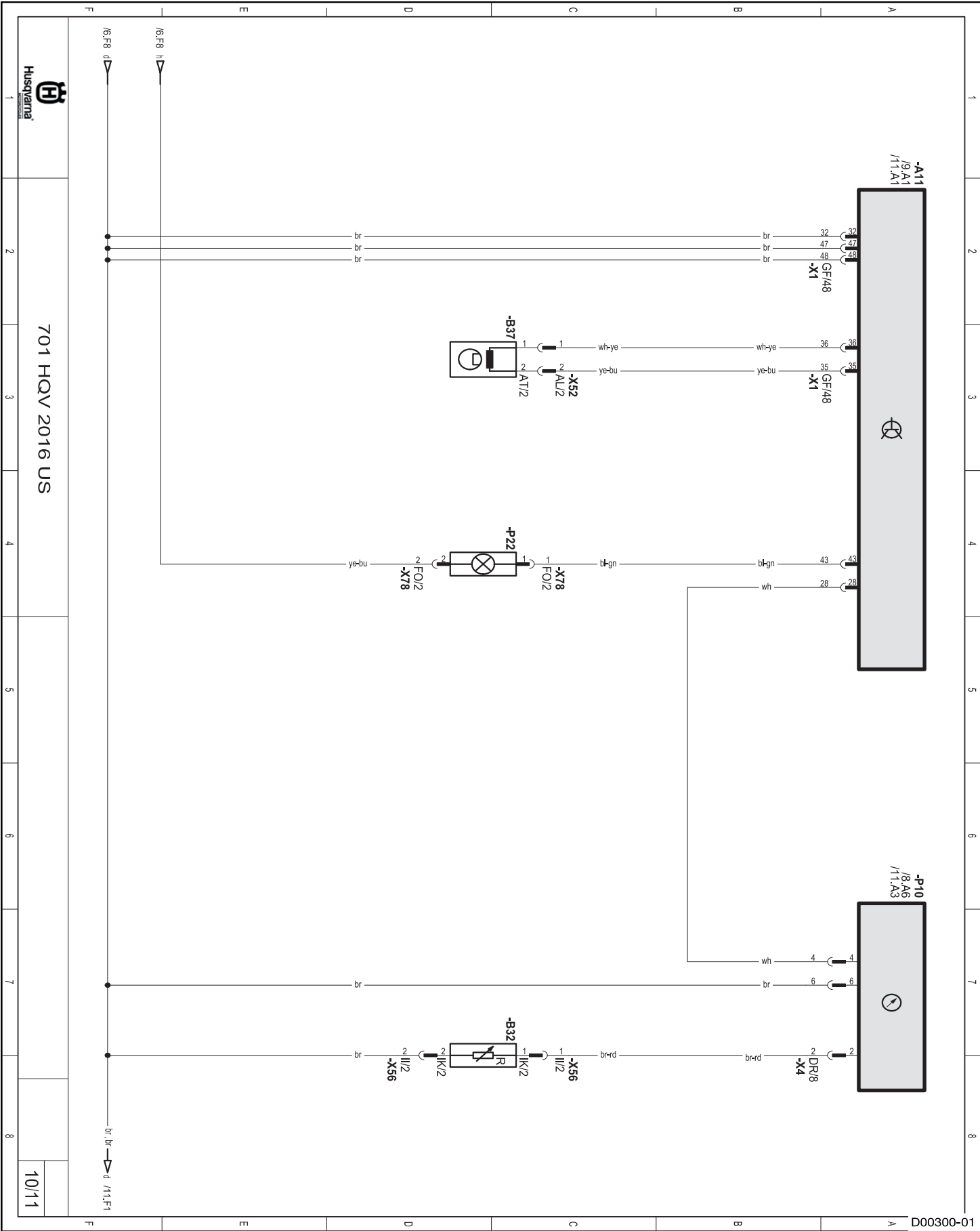
Components:

A11	Engine electronics control unit
B12	Intake air temperature sensor
B21	Coolant temperature sensor, cylinder 1
B38	Clutch switch
B51	Lambda sensor (cylinder 1)
P10	Combination instrument
S55	<b>Map-Select</b> switch



Components:

A11	Engine electronics control unit
B13	Ambient air pressure sensor
B26	Rollover sensor
B30	Side stand switch
B34	Gear position sensor
B41	Manifold absolute pressure sensor cylinder 1
P10	Combination instrument



Components:

A11	Engine electronics control unit
B32	Fuel tank sensor
B37	Crankshaft position sensor
P10	Combination instrument
P22	Idling speed indicator lamp





## Components:

A11	Engine electronics control unit
A30	ABS control unit
B70	Front wheel speed sensor
B71	Wheel speed sensor, rear
F9	Fuse
F21	ABS fuse
F22	ABS fuse
P10	Combination instrument
S60	ABS switch
X295	Diagnostics connector

## 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****Standard/classification**

- DOT

**Guideline**

- Use only brake fluid that complies with the specified standard (see specifications on the container) and that possesses the corresponding properties.

**Recommended supplier****Bel-Ray®**

- **Super DOT 4 Brake Fluid**

**Coolant****Guideline**

- Only use high quality coolant with corrosion inhibitor for aluminum motors (even in countries with high temperatures). Using inferior antifreeze can result in corrosion and foaming.

**Mixture ratio**

Antifreeze protection: -25... -45 °C (-13... -49 °F)	anti-corrosion/antifreeze distilled water
--	--

**Recommended supplier****Bel-Ray®**

- **Moto Chill Racing Coolant**

**Engine oil (SAE 10W/50)****Standard/classification**

- JASO T903 MA (📖 p. 324)
- SAE (📖 p. 324) (SAE 10W/50)

**Guideline**

- Use only engine oils that comply with the specified standards (see specifications on the container) and that possess the corresponding properties.

Synthetic engine oil
----------------------

**Recommended supplier****Bel-Ray®**

- **EXS Synthetic Ester 4T**

**Fork oil (SAE 4) (48601166S1)****Standard/classification**

- SAE (📖 p. 324) (SAE 4)

**Guideline**

- Use only oils that comply with the specified standards (see specifications on the container) and that exhibit the corresponding properties.

**Shock absorber fluid (SAE 2.5) (50180751S1)****Standard/classification**

- SAE (📖 p. 324) (SAE 2.5)

**Guideline**

- Use only oils that comply with the specified standards (see specifications on the container) and that exhibit the corresponding properties.

**Super unleaded (ROZ 95/RON 95/PON 91)****Standard/classification**

- 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).

### High viscosity grease

Recommended supplier

SKF®

- LGHB 2

### Long-life grease

Recommended supplier

Bel-Ray®

- Waterproof Grease

### Lubricant (T158)

Recommended supplier

Lubcon®

- Turmogrease® PP 300

### Lubricant (T511)

Recommended supplier

Lubcon®

- Turmsilon® GTI 300 P

### Lubricant (T625)

Recommended supplier

Molykote®

- 33 Medium

### Offroad chain spray

Guideline

Recommended supplier

Bel-Ray®

- Blue Tac Chain Lube

### Preserving materials for paints, metal and rubber

Recommended supplier

Bel-Ray®

- Silicone Detailer & Protectant Spray

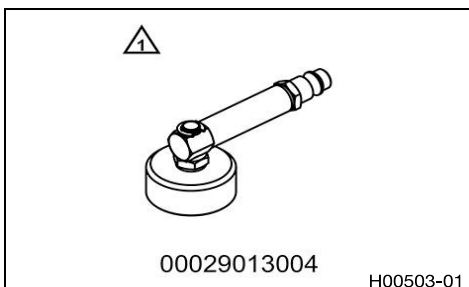
### Universal oil spray

Recommended supplier

Bel-Ray®

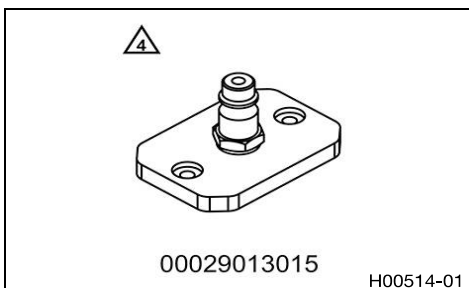
- 6 in 1

## Bleeder cover



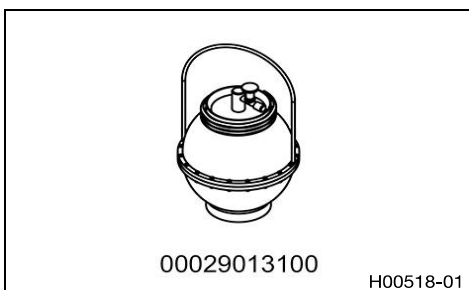
Art. no.: 00029013004

## Bleeder cover



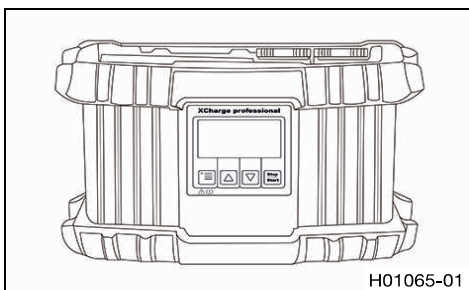
Art. no.: 00029013015

## Bleeding device



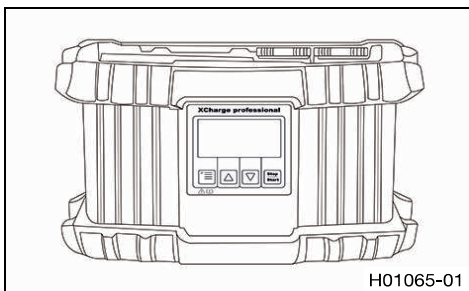
Art. no.: 00029013100

## Battery charger XCharge-professional EU



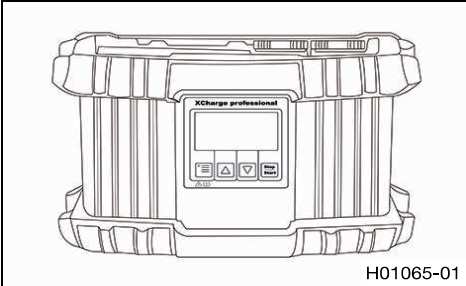
Art. no.: 00029095050

## Battery charger XCharge-professional US



Art. no.: 00029095051

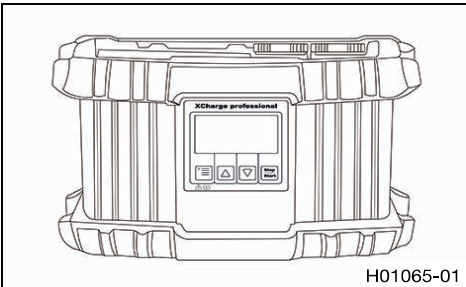
## Battery charger XCharge-professional GB



Art. no.: 00029095052

H01065-01

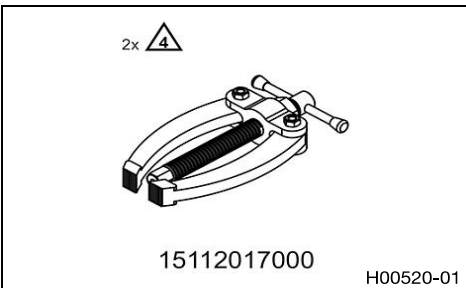
## Battery charger XCharge-professional CH



Art. no.: 00029095053

H01065-01

## Bearing puller

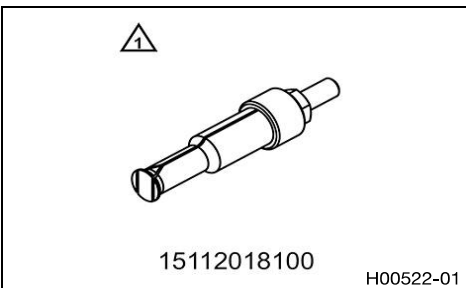


Art. no.: 15112017000

15112017000

H00520-01

## Internal bearing puller



Art. no.: 15112018100

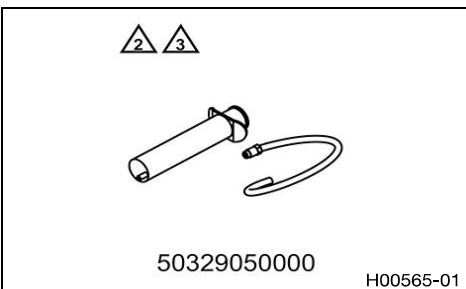
### Feature

18... 23 mm (0.71... 0.91 in)

15112018100

H00522-01

## Bleed syringe

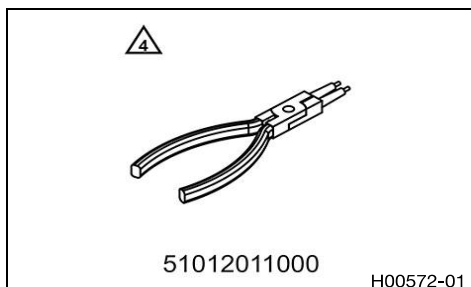


Art. no.: 50329050000

50329050000

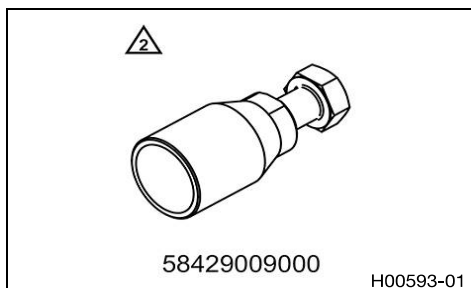
H00565-01

## Circlip pliers reverse



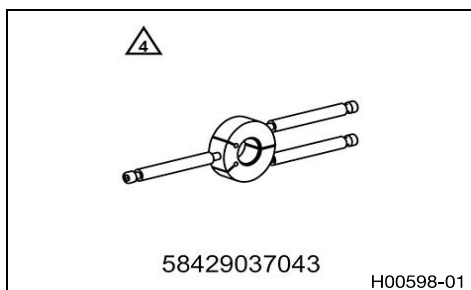
Art. no.: 51012011000

## Extractor



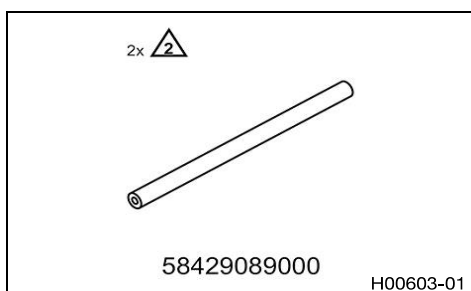
Art. no.: 58429009000

## Tool for inner bearing race



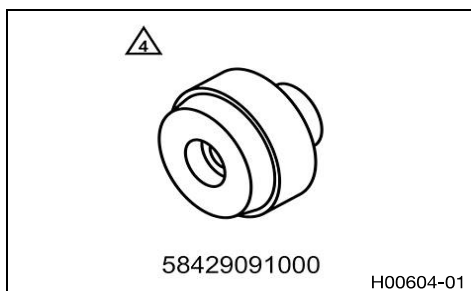
Art. no.: 58429037043

## Tool bracket



Art. no.: 58429089000

## Press-in tool



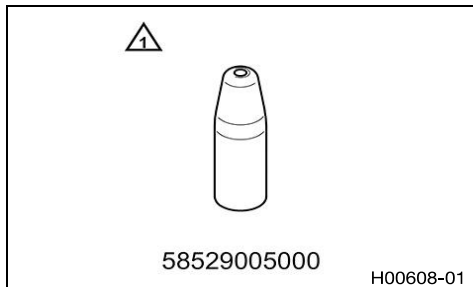
Art. no.: 58429091000

## Press-out tool



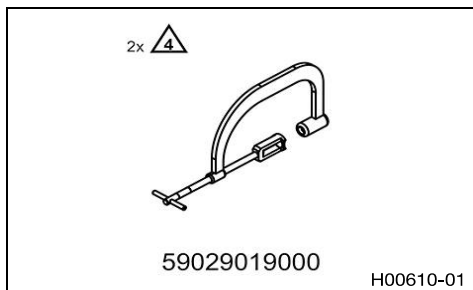
Art. no.: 58429092000

## Mounting sleeve



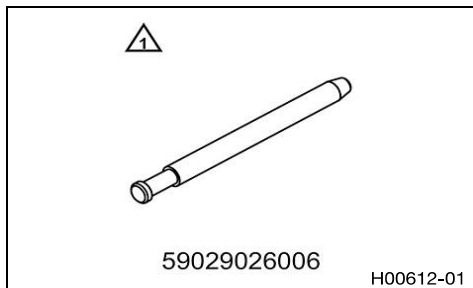
Art. no.: 58529005000

## Valve spring mounter



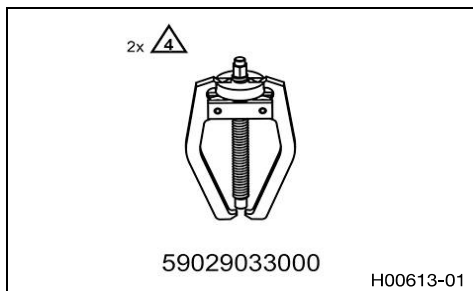
Art. no.: 59029019000

## Limit plug gauge



Art. no.: 59029026006

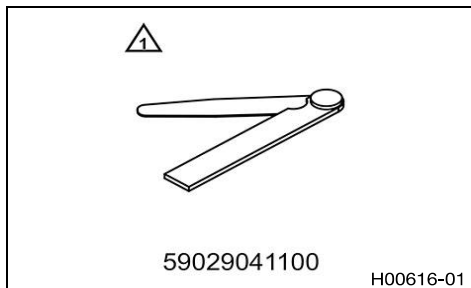
## Extractor



Art. no.: 59029033000

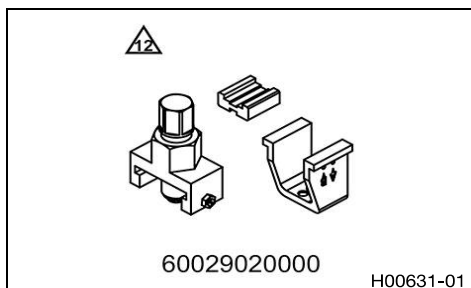


## Feeler gauge



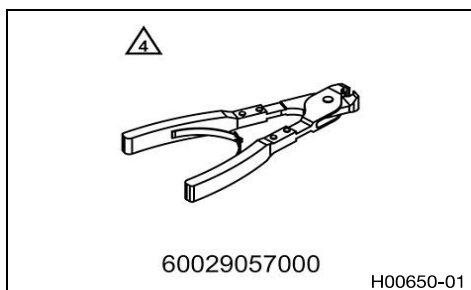
Art. no.: 59029041100

## Chain rivet tool



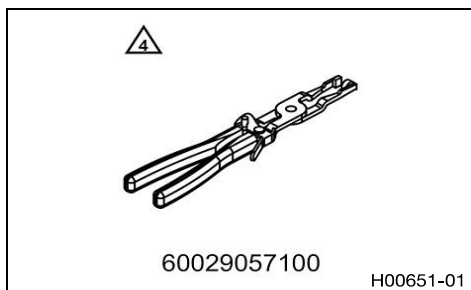
Art. no.: 60029020000

## Hose clamp pliers



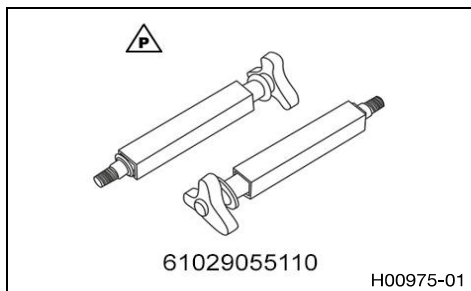
Art. no.: 60029057000

## Pliers for spring band clamp



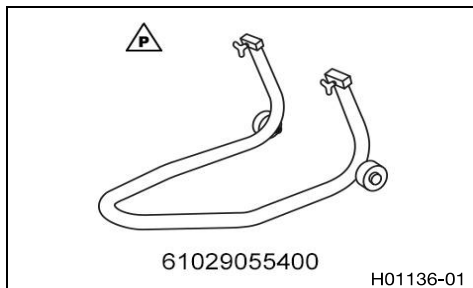
Art. no.: 60029057100

## Adapter



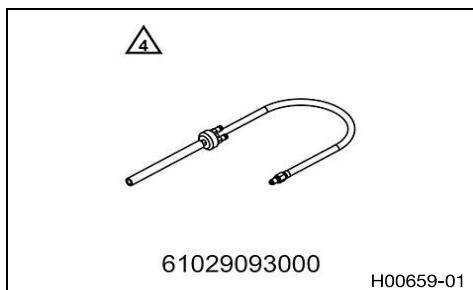
Art. no.: 61029055110

## Lifting gear, rear



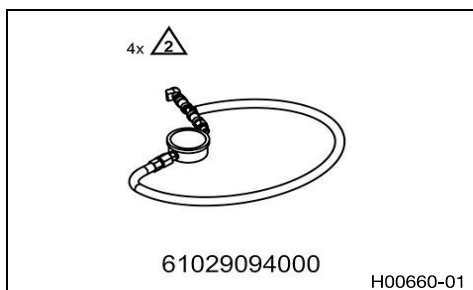
Art. no.: 61029055400

## Testing hose



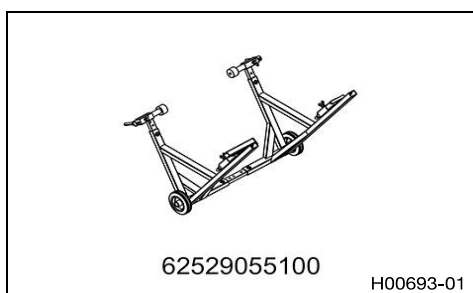
Art. no.: 61029093000

## Pressure tester



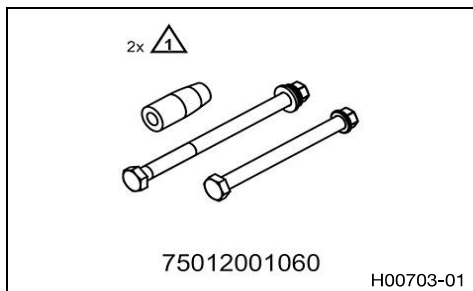
Art. no.: 61029094000

## Work stand



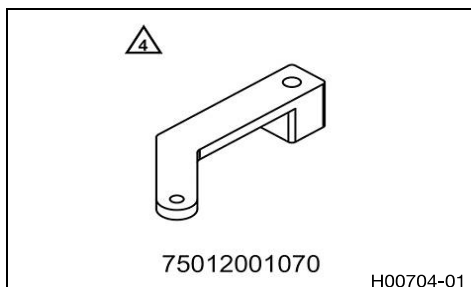
Art. no.: 62529055100

## Support for engine assembly stand



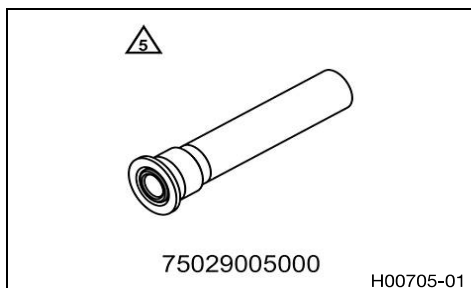
Art. no.: 75012001060

## Holder for engine assembly stand



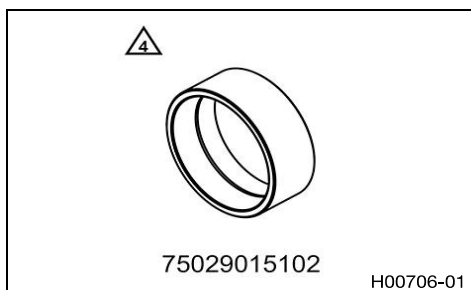
Art. no.: 75012001070

## Mounting tool for lock ring



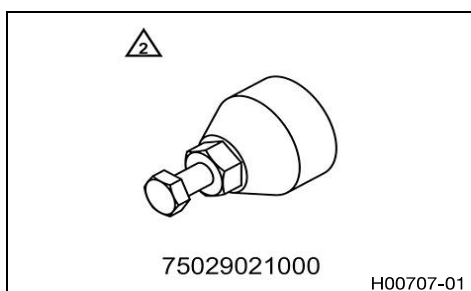
Art. no.: 75029005000

## Piston assembly ring



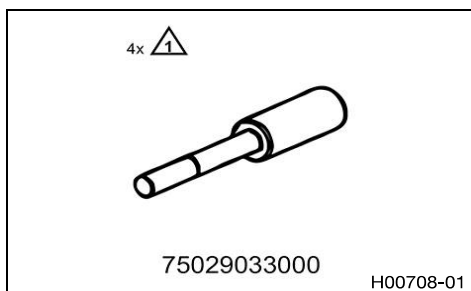
Art. no.: 75029015102

## Extractor



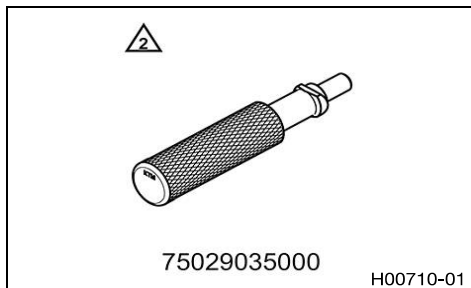
Art. no.: 75029021000

## Assembly screws



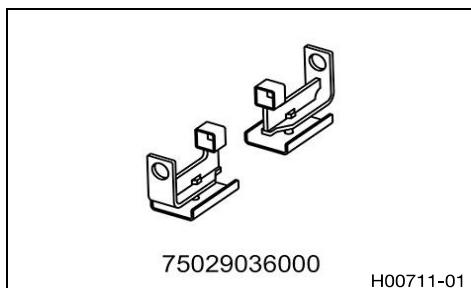
Art. no.: 75029033000

## Insertion tool for piston ring lock



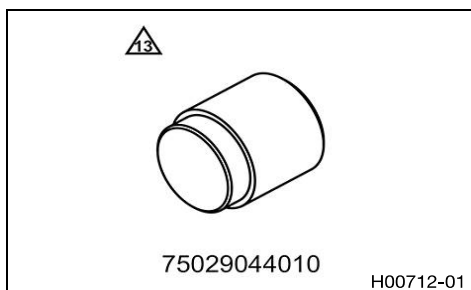
Art. no.: 75029035000

## Work stand adapter



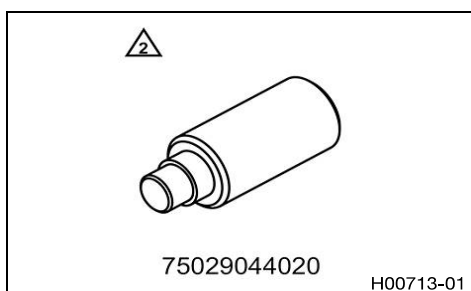
Art. no.: 75029036000

## Push-in drift



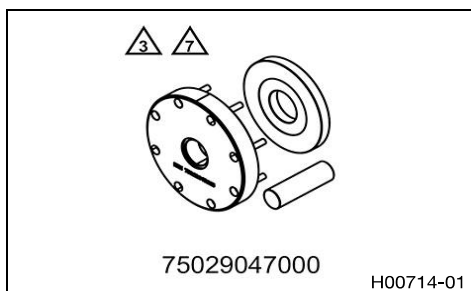
Art. no.: 75029044010

## Push-in drift



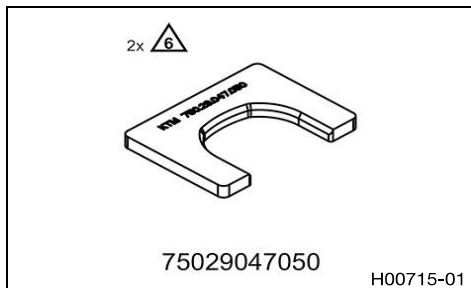
Art. no.: 75029044020

## Pressing tool for crankshaft, complete



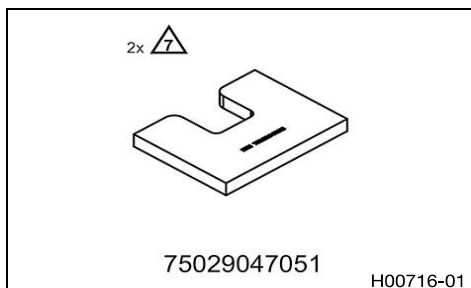
Art. no.: 75029047000

## Press-out plate, top



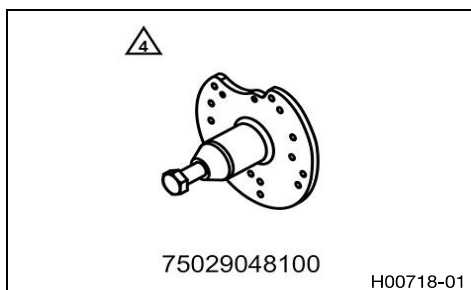
Art. no.: 75029047050

## Press-out plate, base



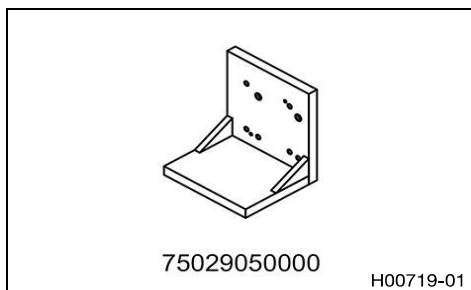
Art. no.: 75029047051

## Extractor



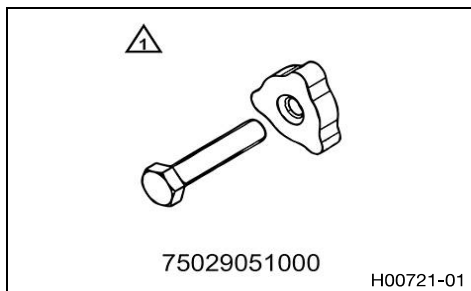
Art. no.: 75029048100

## Clamping plate



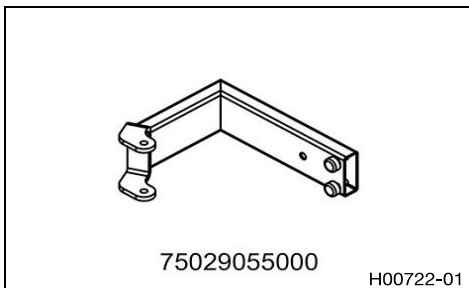
Art. no.: 75029050000

## Push-out drift



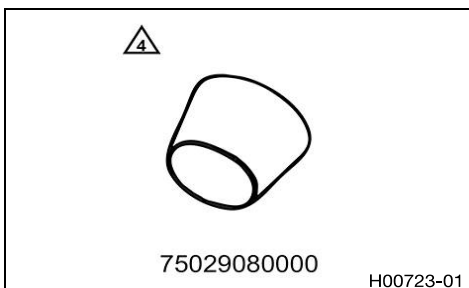
Art. no.: 75029051000

## Floor jack attachment



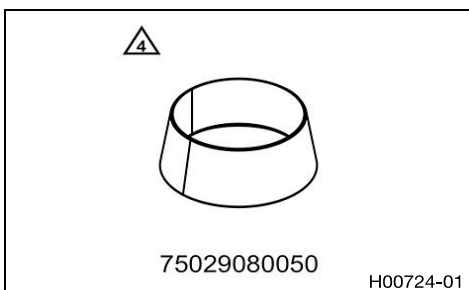
Art. no.: 75029055000

## Mounting sleeve



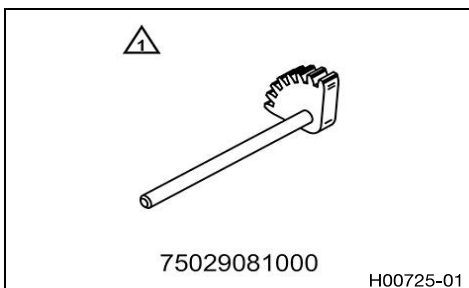
Art. no.: 75029080000

## Mounting sleeve



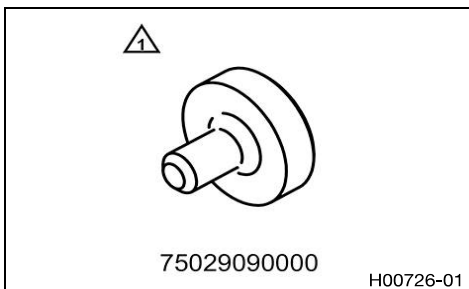
Art. no.: 75029080050

## Gear segment



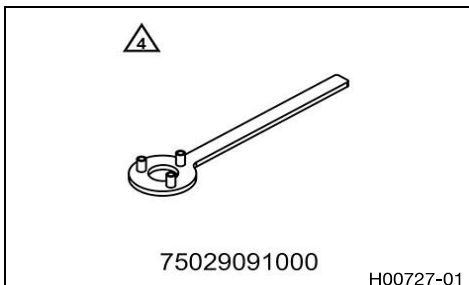
Art. no.: 75029081000

## Protection cap



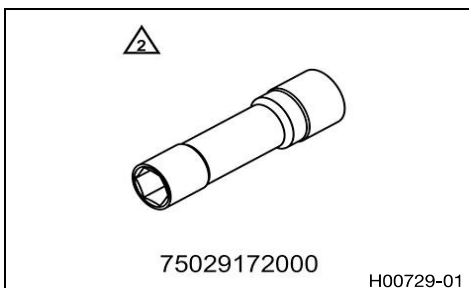
Art. no.: 75029090000

## Holding wrench



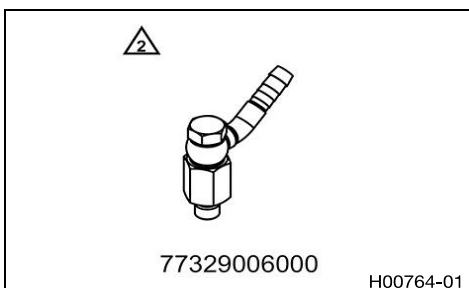
Art. no.: 75029091000

## Spark plug wrench



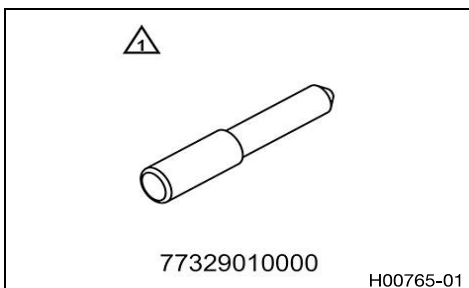
Art. no.: 75029172000

## Oil pressure adapter



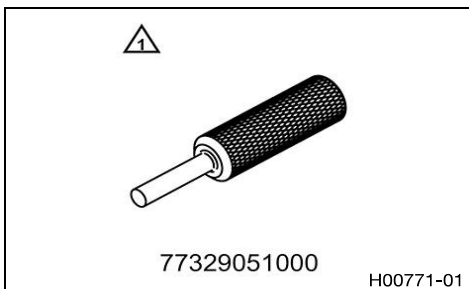
Art. no.: 77329006000

## Engine blocking screw



Art. no.: 77329010000

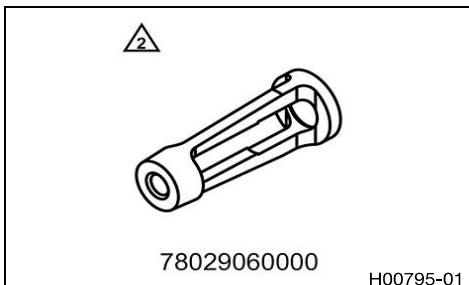
## Release device for timing chain tensioner



Art. no.: 77329051000

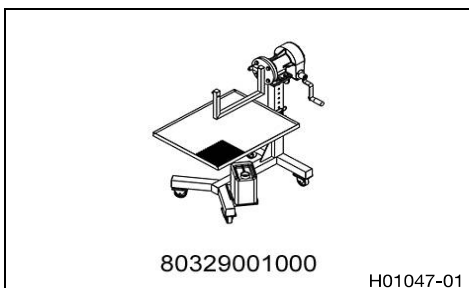


## Insert for valve spring lever



Art. no.: 78029060000

## Engine assembly stand



Art. no.: 80329001000

## XC\_1 NG (DE)



Art. no.: 00029296000DE

## XC\_1 NG (EN)



Art. no.: 00029296000EN

## XC\_1 NG (ES)



Art. no.: 00029296000ES

## XC\_1 NG (FR)



Art. no.: 00029296000FR

## XC\_1 NG (IT)



Art. no.: 00029296000IT

## XC\_1 NG (JP)



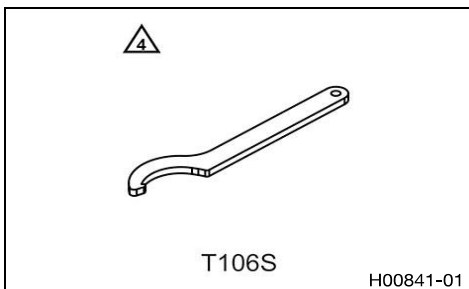
Art. no.: 00029296000JP

## XC\_1 NG (US)



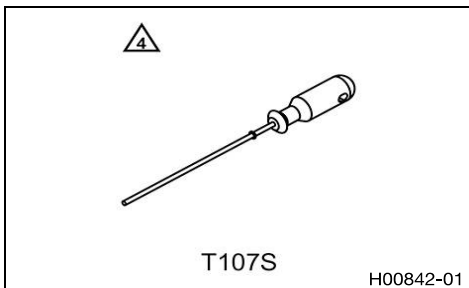
Art. no.: 00029296000US

## Hook wrench



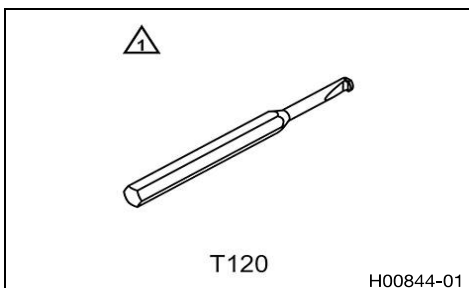
Art. no.: T106S

## Depth micrometer



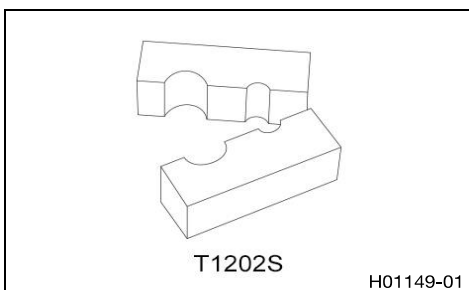
Art. no.: T107S

## Pin



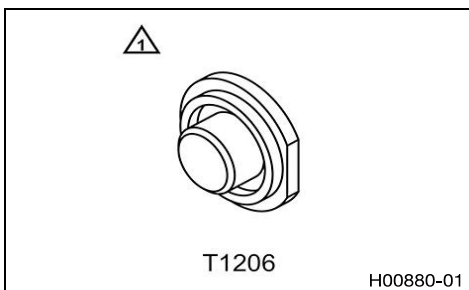
Art. no.: T120

## Clamping stand



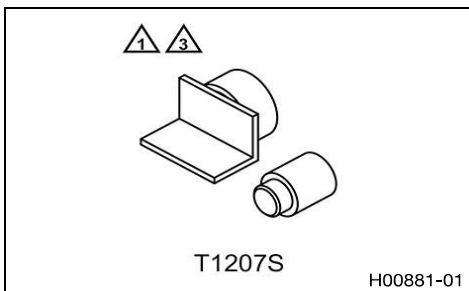
Art. no.: T1202S

## Pressing tool



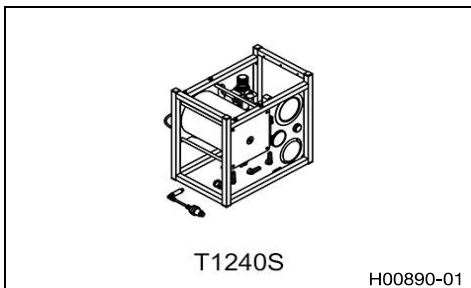
Art. no.: T1206

## Pressing tool



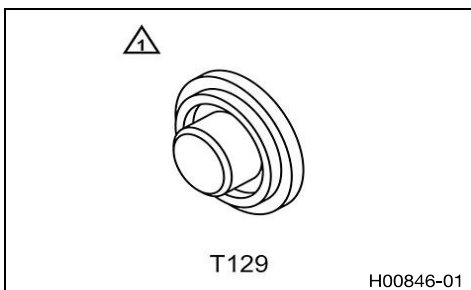
Art. no.: T1207S

## Vacuum pump



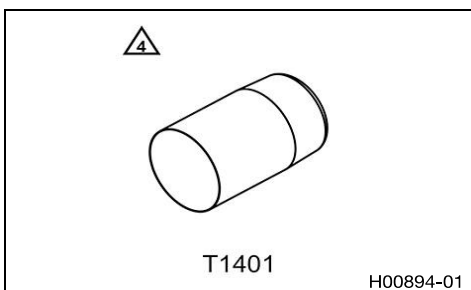
Art. no.: T1240S

## Pressing tool



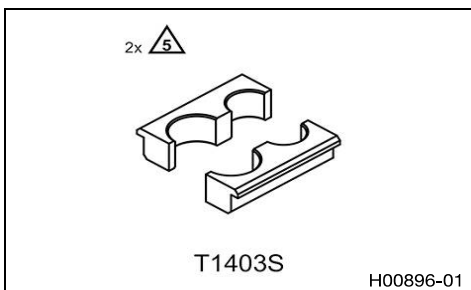
Art. no.: T129

## Protecting sleeve



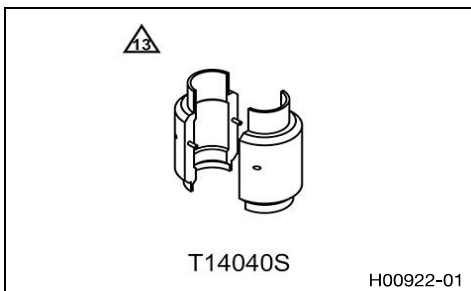
Art. no.: T1401

## Clamping stand



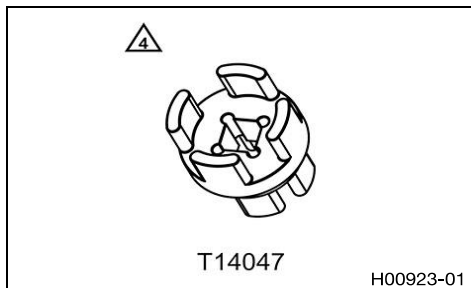
Art. no.: T1403S

## Mounting tool



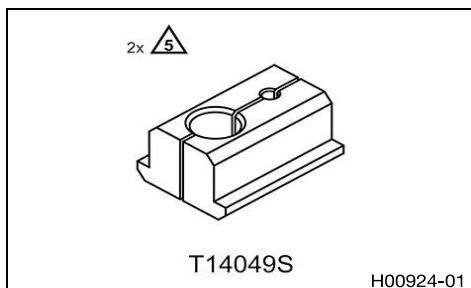
Art. no.: T14040S

## Special socket



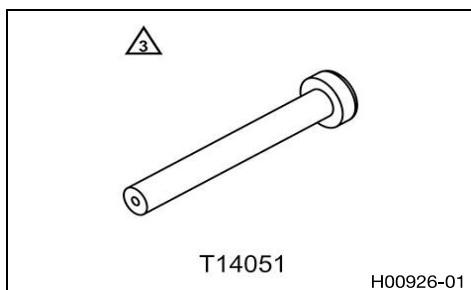
Art. no.: T14047

## Clamping stand



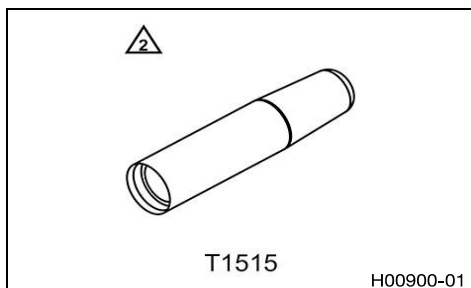
Art. no.: T14049S

## Press-out tool



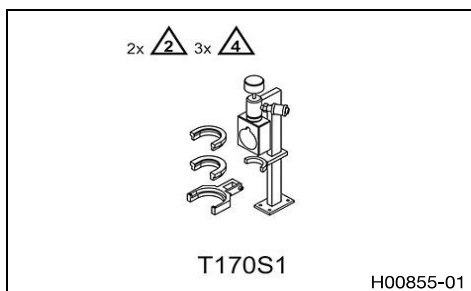
Art. no.: T14051

## Mounting sleeve



Art. no.: T1515

## Nitrogen filling tool



Art. no.: T170S1

### **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.

ABS	ABS	Safety system that prevents locking of the wheels when driving straight ahead without the influence of lateral forces
-----	-----	---

Art. no.	Article number
ca.	circa
cf.	compare
e.g.	for example
etc.	et cetera
i.a.	inter alia
no.	number
poss.	possibly



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Husqvarna Motorcycles GmbH  
Stallhofnerstraße 3 | 5230 Mattighofen | Austria  
[www.husqvarna-motorcycles.com](http://www.husqvarna-motorcycles.com)



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Husqvarna Motorcycles GmbH