REPAIR MANUAL 2013

WWW.KTM.COM

Art. no. 4CSen

INTRODUCTION

It is important that you read this repair manual carefully and completely before the start of work.

Only use **ORIGINAL KTM SPARE PARTS**.

This vehicle can only fulfill the demands placed on it in the long run if the specified service work is performed regularly by qualified experts.

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

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

ISO 9001(12 100 6061)
According to the international quality management standard ISO 9001, KTM uses quality assurance processes that lead to the maximum possible quality of the products.
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REG.NO. 12 100 6061

KTM-Sportmotorcycle AG
5230 Mattighofen, Austria

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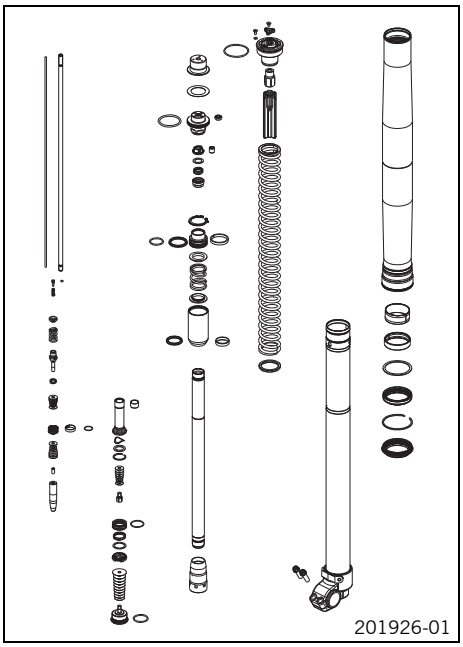


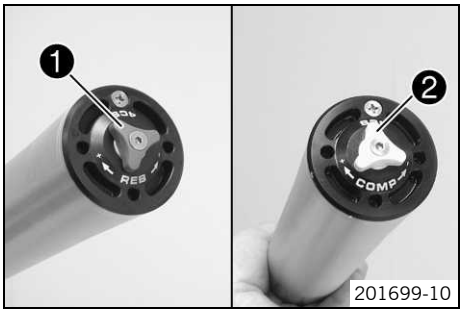
Condition
The fork legs have been removed.

- Disassemble the fork legs. (☛ p. 3)
- Remove the spring. (☛ p. 5)
- Disassemble the cartridge. (☛ p. 6)
- Disassemble the piston rod. (☛ p. 7)
- Disassemble the hydrostop unit. (☛ p. 8)
- Disassemble the seal ring retainer. (☛ p. 8)
- Check the fork legs. (☛ p. 9)
- Assemble the seal ring retainer. (☛ p. 10)
- Assemble the hydrostop unit. (☛ p. 10)
- Assemble the piston rod. (☛ p. 11)
- Assemble the cartridge. (☛ p. 12)
- Install the spring. (☛ p. 13)
- Assemble the fork legs. (☛ p. 14)

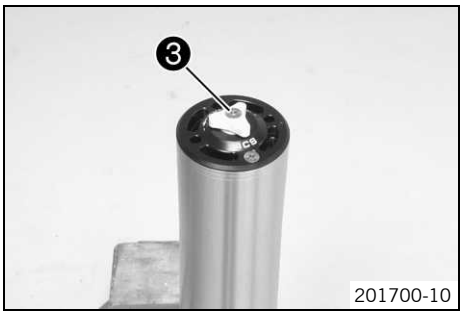
1.2 Disassembling the fork legs

Info
The steps are identical for both fork legs.

Condition
The fork legs have been removed.



- Note down the current state of rebound damping ❶ **REB** (red adjuster of right fork leg).
- Note down the current state of compression damping ❷ **COMP** (white adjuster of left fork leg).
- Fully open the adjusters of the rebound and compression damping.



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

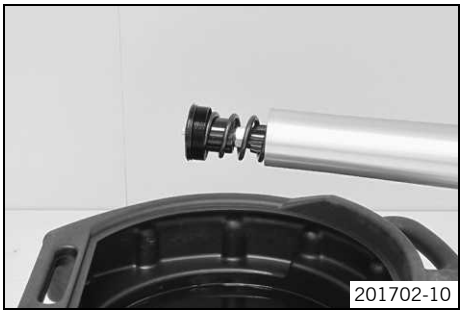
Clamping stand (T1403S) (☛ p. 20)

- Remove screw . Remove adjuster ❸.

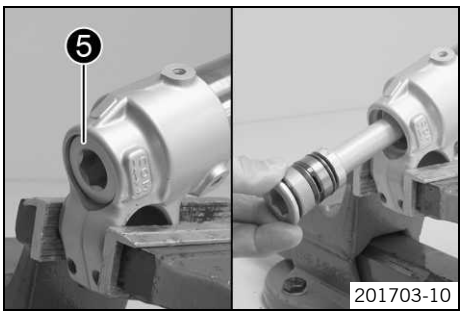
- Release screw cap ❹.

Special socket (T14047) (☛ p. 20)

Info
The cartridge cannot be taken off yet.

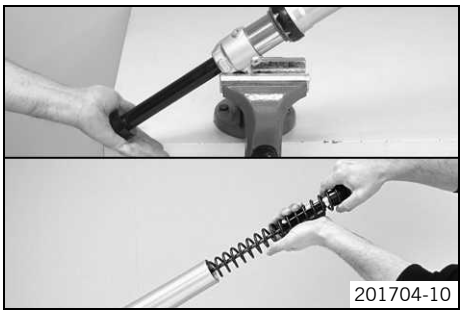


– Unclamp the fork leg.
– Push the outer tube down. Drain the fork oil.



– Clamp the fork leg with the axle clamp.
– Release hydrostop unit ❺ and remove it.

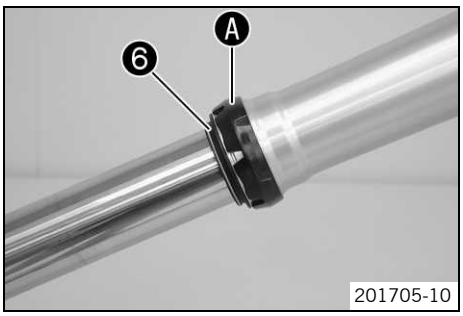
Info
Do not use an impact wrench.
Place a pan underneath since oil will run out.



– Remove the cartridge from the fork leg.

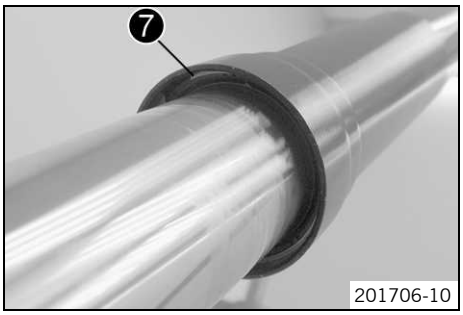
Press-out tool (T14051) (☛ p. 21)

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



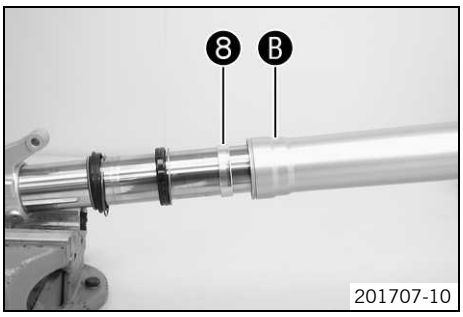
– Remove dust boot ❻.
– Remove fork protection ring Ⓐ.

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



– Remove lock ring ❼.

Info
The lock ring has a ground end against which a screwdriver can be positioned.



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

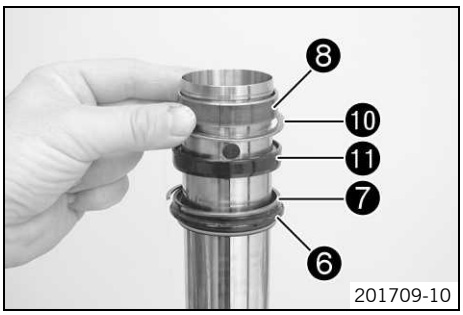
50 °C (122 °F)

– Pull the outer tube forcefully off of the inner tube.

Info
The lower sliding bushing ❽ must be pulled out of its bearing seat.

– Remove the upper sliding bushing ❾.

Info
Do not use a tool; pull the ends apart slightly by hand.



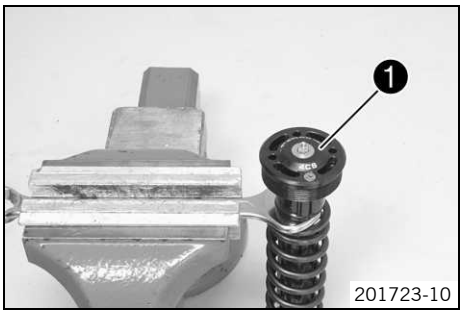
– Take off the lower sliding bushing ❽.
– Take off support ring ❿.
– Take off seal ring ⓫.
– Take off lock ring ❼.
– Take off dust boot ❻.
– Unclamp the fork leg.

1.3 Removing the spring

Info
The steps are identical for both fork legs.

Preparatory work
– Disassemble the fork legs. (☛ p. 3)

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. 20)

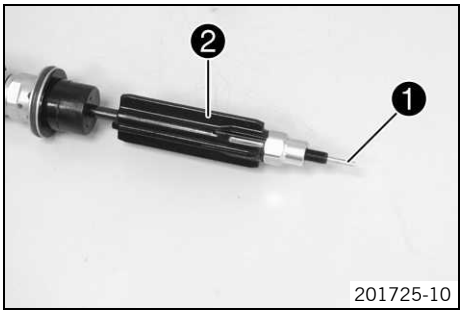
– Pull the spring down. Remove the open end wrench.
– Remove the screw cap.
– Remove spring.

1.4 Disassembling the cartridge

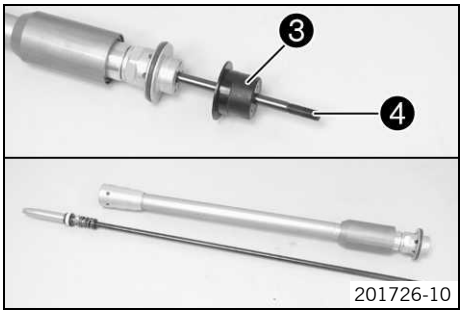
Info
The steps are identical for both fork legs.

Preparatory work
– Disassemble the fork legs. (☛ p. 3)
– Remove the spring. (☛ p. 5)

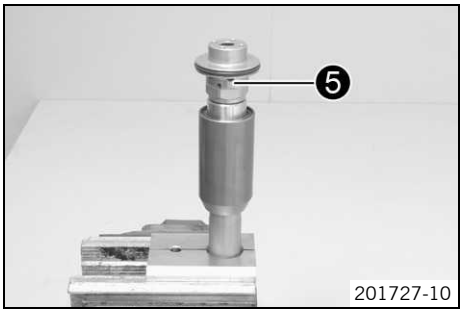
Main work



– Remove adjusting tube ❶. Unscrew spring guide ❷.



– Remove spring seat ❸.
– Pull piston rod ❹ out of the cartridge.

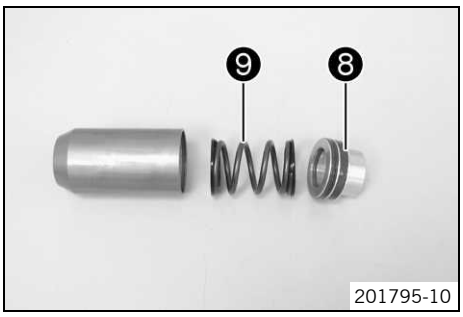


– Clamp the tube of the cartridge into a vise.

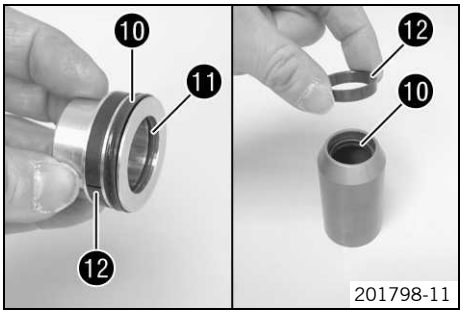
Clamping stand (T14049S) (☛ p. 20)

– Release and remove seal ring retainer ❺.

– Remove lock ring ❻.
– Pull reservoir ❼ off of the tube.



– Pull sleeve ❽ out of the reservoir.
– Remove spring ❾.

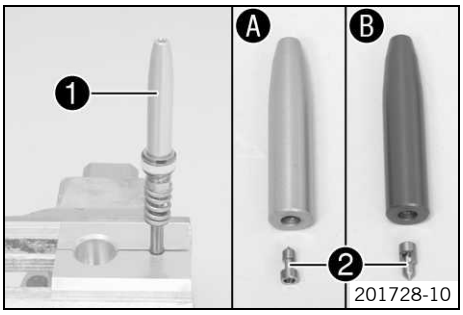


– Remove seal rings ❿ and O-ring ⓫.
– Remove pilot bushings ⓬.

1.5 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. 3)
– Remove the spring. (☛ p. 5)
– Disassemble the cartridge. (☛ p. 6)

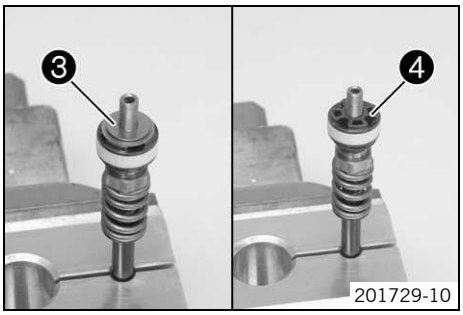


Main work
– Degrease the piston rod.
– Clamp the piston rod with the special tool as far up as possible.

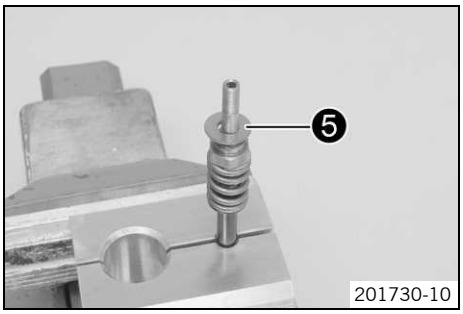
Clamping stand (T14049S) (☛ p. 20)

– Release hydrostop needle ❶ and remove it from the piston rod.
✓ The valve ❷ usually remains in the hydrostop needle.

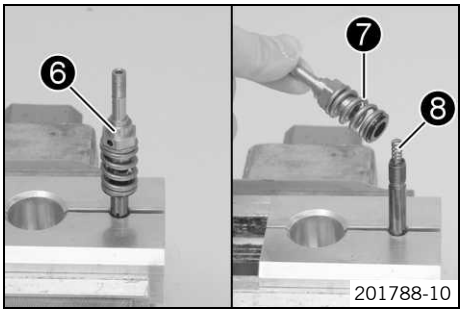
Info
Ⓐ – silver hydrostop needle on compression damping side.
Ⓑ – red hydrostop needle on rebound damping side.



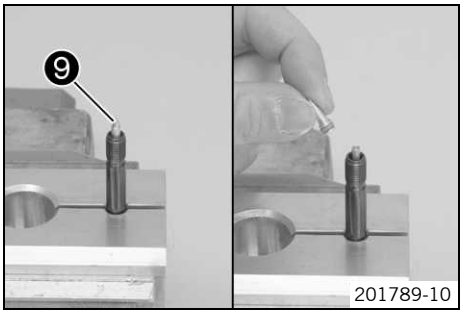
– Remove the rebound shim stack ❸.
– Remove piston ❹.



– Remove the compression shim stack ❺.
– Remove spring.



– Remove adapter ❻ with spring ❼ and washer.
– Remove spring ❽.



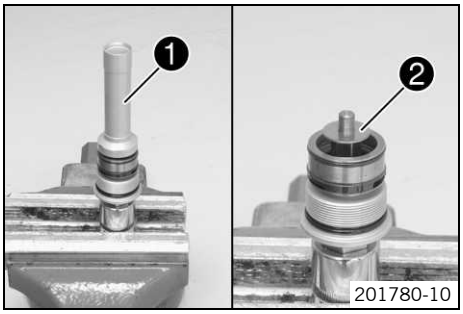
– Remove valve needle ❾ from the piston rod.

Info
The adjusting tube can be used for this.

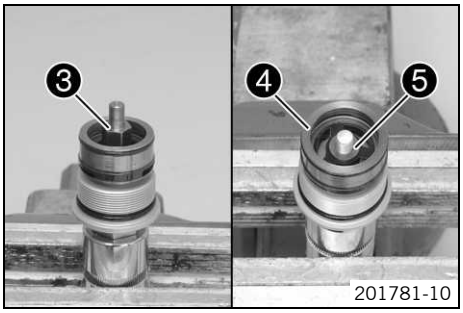
1.6 Disassembling the hydrostop unit

Info
The steps are identical for both fork legs.

Preparatory work
– Disassemble the fork legs. (☛ p. 3)



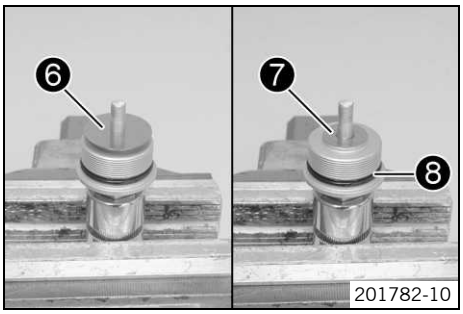
Main work
– Mount the hydrostop unit on a fitting hexagon socket and clamp into a vice.
– Remove sleeve ❶.
– Remove shim stack ❷.



– Remove adapter ❸.
– Remove hub ❹ with washers ❺.

Info
It is possible that only one washer or no washer is present.

– Remove the O-ring from the hub.

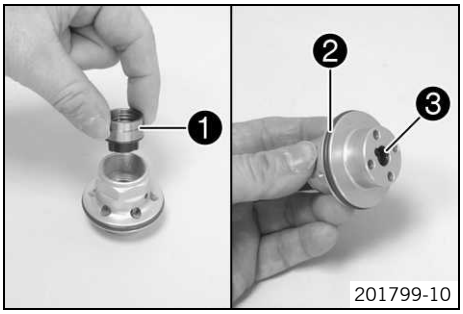


– Remove shim stack ❻.
– Remove washer ❼.
– Remove O-ring ❽.

1.7 Disassembling the seal ring retainer

Info
The steps are identical for both fork legs.

Preparatory work
– Disassemble the fork legs. (☛ p. 3)
– Remove the spring. (☛ p. 5)
– Disassemble the cartridge. (☛ p. 6)



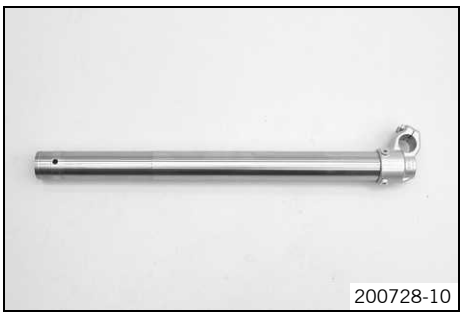
Main work

– Remove pilot bushing support ❶.
– Remove O-ring ❷ and seal ring ❸.

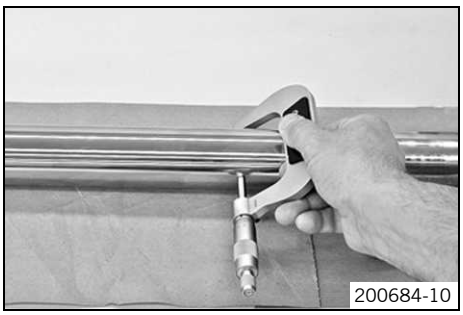
1.8 Checking the fork legs

Condition

The fork legs have been disassembled.



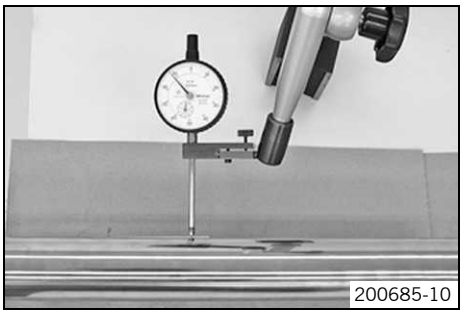
– Check the inner tube and axle clamp for damage.
  » If there is damage:
    – Change the inner tube.



– 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)

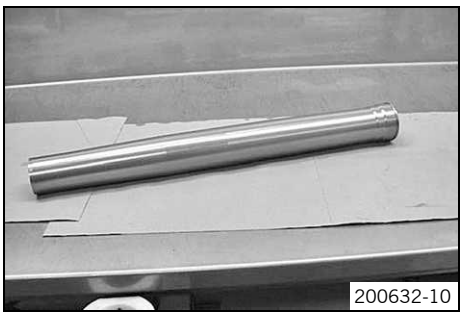
  » If the measured value is smaller than the specified value:
    – Change the inner tube.



– Measure the run-out of the inner tube.

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

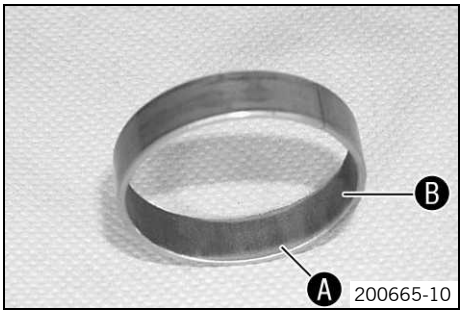
  » If the measured value is larger than the specified value:
    – Change the inner tube.



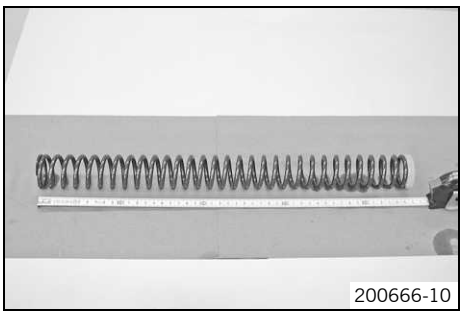
– Measure the inside diameter at multiple locations of the outer tube.

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 Ⓐ under sliding layer Ⓑ is visible or the surface is rough:
    – Change the sliding bushings.



– Check the spring length.

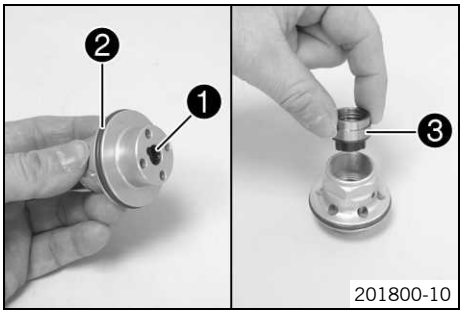
Guideline

Spring length with preload spacer(s)	see Owner´s Manual

  » 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.

1.9 Assembling the seal ring retainer

Info
The steps are identical for both fork legs.



– Mount and grease seal ring ❶.

Lubricant (T158) (☛ p. 19)

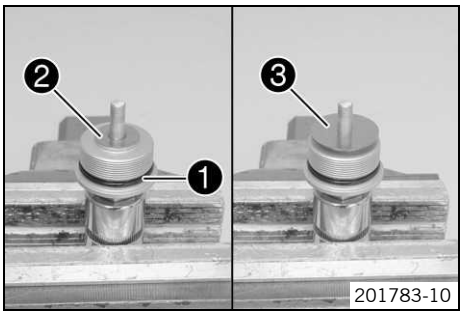
– Mount and grease O-ring ❷.

Lubricant (T158) (☛ p. 19)

– Position pilot bushing support ❸.

1.10 Assembling the hydrostop unit

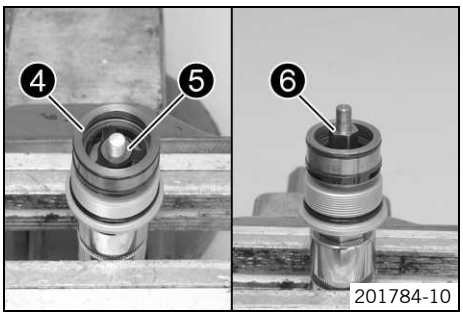
Info
The steps are identical for both fork legs.



– Mount and grease O-ring ❶.

Lubricant (T158) (☛ p. 19)

– Mount washer ❷.
– Mount shim stack ❸ with the smaller washers facing downward.



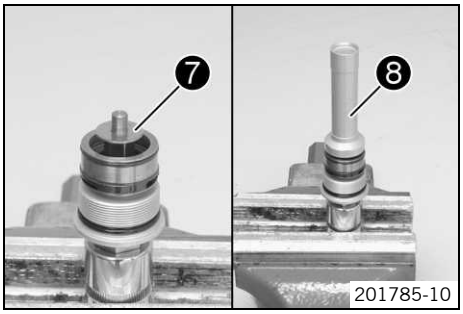
– Mount the new O-ring on hub ❹.
– Mount the hub with washers ❺.

Info
It is possible that only one or no washer is present.

– Mount and tighten adapter ❻.

Guideline

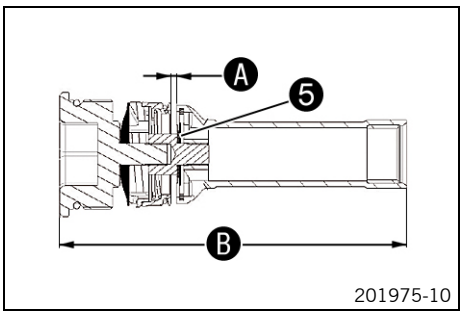
Hydrostop unit adapter	M6x0.5	7 Nm (5.2 lbf ft)



– Mount shim stack ❼ with the smaller washers facing downward.
– Mount and tighten sleeve ❽.

Guideline

Hydrostop unit sleeve	M6x0.5	7 Nm (5.2 lbf ft)



– Check distance Ⓐ and total length Ⓑ of the hydrostop.

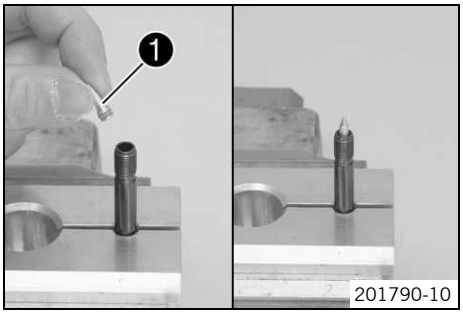
Guideline

Hydrostop distance	≥ 1.5 mm (≥ 0.059 in)
Hydrostop length	108.5... 109.5 mm (4.272... 4.311 in)

» If the dimensions are out of tolerance:
– Add or remove washers ❺.

1.11 Assembling the piston rod

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

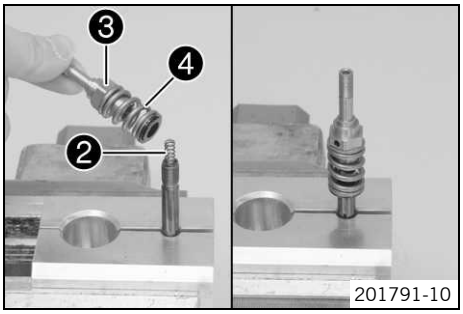


– Degrease the piston rod.
– Clamp the piston rod with the special tool.

Clamping stand (T14049S) (☛ p. 20)

– Lubricate the O-ring. Mount valve needle ❶ in the piston rod.

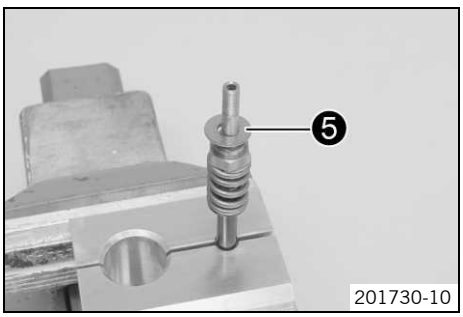
Lubricant (T158) (☛ p. 19)



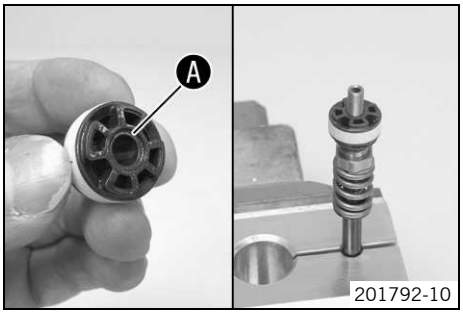
– Mount spring ❷.
– Mount and tighten adapter ❸ with spring ❹ and washer.

Guideline

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



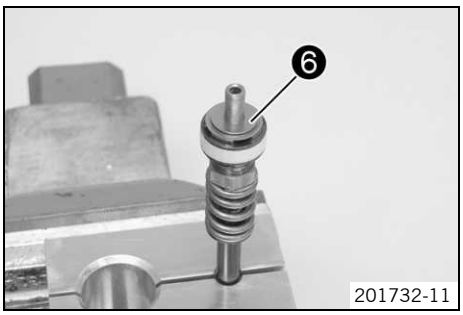
– Position the spring.
– Mount the compression shim stack ❺ with the smaller washers facing downward.



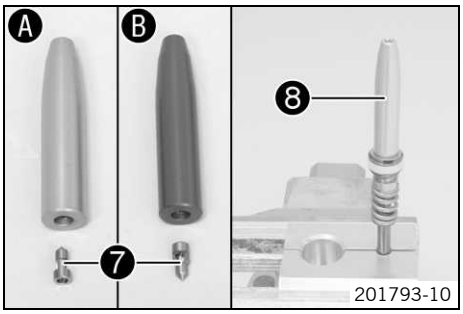
– Grind the piston on both sides on a surfacing plate using 1200 grit sandpaper.
– Clean the piston.
– Lubricate the piston ring.

Fork oil (SAE 4) (48601166S1) (☛ p. 18)

– Mount the piston with chamfer ❹ facing down.



– Mount the rebound shim stack ❻ with the smaller washers facing upward.



– Press the piston downward against the spring.
  ✓ The piston should not squeeze the shims.
– Position valve ❼ in the hydrostop needle ❽. Mount and tighten the hydrostop needle.

  Guideline

Hydrostop needle on piston rod	M6x0.5	7 Nm (5.2 lbf ft)

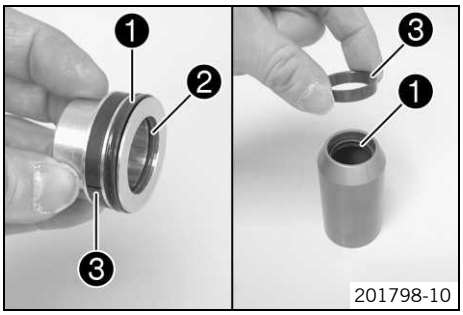
Info
❹ – silver hydrostop needle on compression damping side.
❺ – red hydrostop needle on rebound damping side.

– Unclamp the piston rod.

1.12 Assembling the cartridge

Info
The steps are identical for both fork legs.

Preparatory work
– Assemble the seal ring retainer. (☛ p. 10)
– Assemble the piston rod. (☛ p. 11)

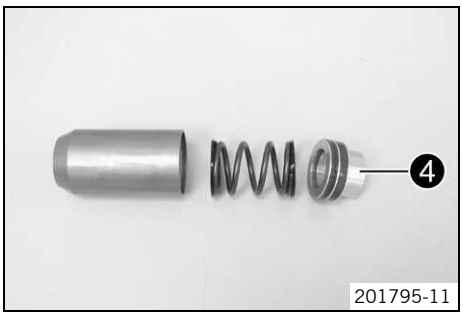


Main work
– Mount and grease seal rings ❶ and O-ring ❷.

Lubricant (T158) (☛ p. 19)

– Mount and lubricate pilot bushings ❸.

Fork oil (SAE 4) (48601166S1) (☛ p. 18)

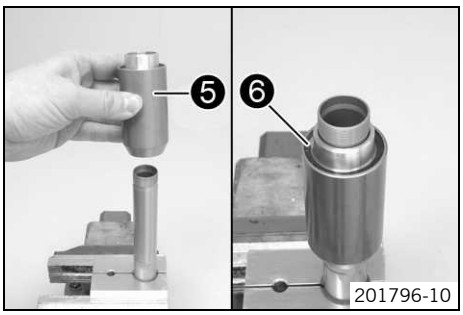


– Check the length of the reservoir spring.

  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.



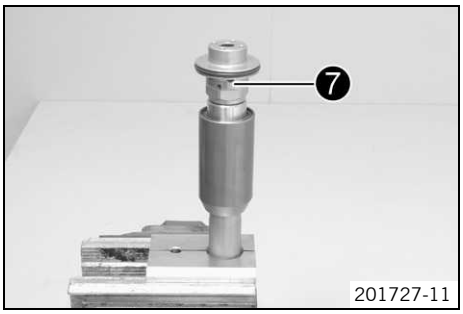
– Position sleeve ❹ in the reservoir.
– Clamp the tube of the cartridge into a vise.

Clamping stand (T14049S) (☛ p. 20)

– Slide reservoir ❺ onto the tube.

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

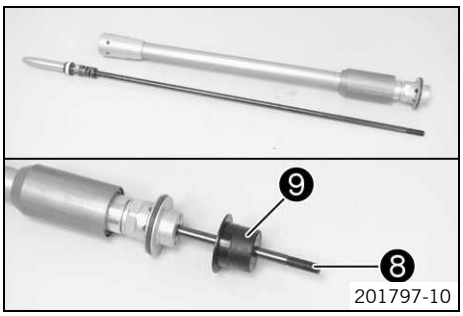
– Mount lock ring ❻.



– Mount and tighten seal ring retainer ❼.
Guideline

Seal ring retainer	M23.5x0.75	46 Nm (33.9 lbf ft)	**Loctite® 2701**

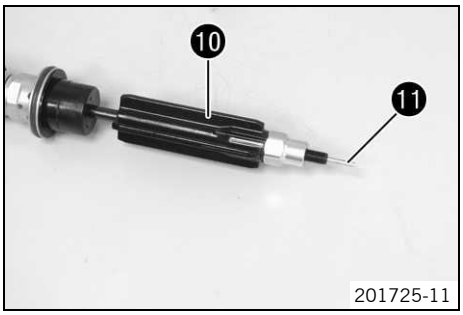
– Unclamp the cartridge.



– Slide piston rod ❽ into the cartridge.

Info
Ensure that the piston ring is seated correctly.

– Mount spring seat ❾.



– Screw spring guide ❿ all the way on.

Info
The nut must be screw tightly against the stop. Do not use a tool.

– Mount adjusting tube ⓫.

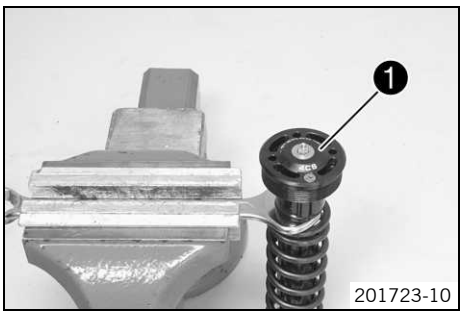
1.13 Installing the spring

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**.

Preparatory work
– Assemble the seal ring retainer. (☛ p. 10)
– Assemble the piston rod. (☛ p. 11)
– Assemble the cartridge. (☛ p. 12)

Main work
– Position the spring.
– Pull the spring down. Mount the screw cap.

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



– Clamp the open end wrench in the vise. Tighten screw cap ❶.

Guideline

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

Special socket (T14047) (☛ p. 20)

– Pull the spring down. Remove the open end wrench.

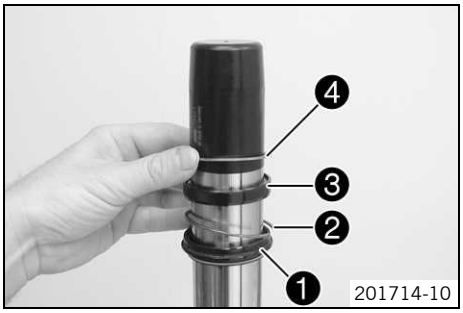
1.14 Assembling the fork legs

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 seal ring retainer. (☛ p. 10)
– Assemble the piston rod. (☛ p. 11)
– Assemble the cartridge. (☛ p. 12)
– Install the spring. (☛ p. 13)
– Assemble the hydrostop unit. (☛ p. 10)



Main work

– Clamp the inner tube with the axle clamp.
– Mount special tool.

Protecting sleeve (T1401) (☛ p. 20)

– Lubricate and mount dust boot ❶.

Lubricant (T511) (☛ p. 19)

Info

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

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

Lubricant (T511) (☛ p. 19)

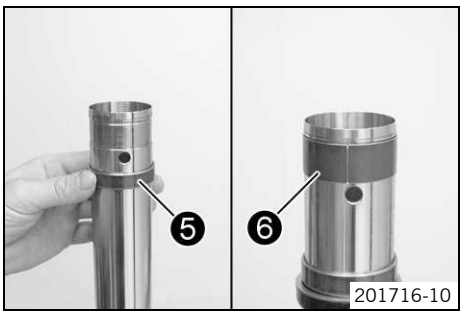
Info

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

– Slide on support ring ❹.
– Remove the special tool.

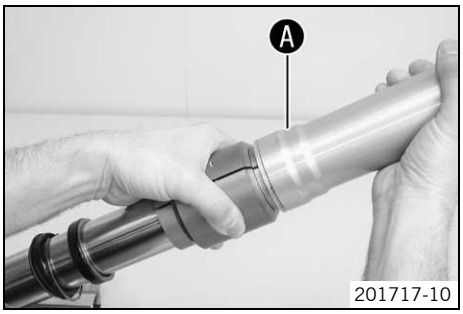
– Grind the edges of the sliding bushings with sandpaper grit 600, clean the bushings and lubricate them.

Fork oil (SAE 4) (48601166S1) (☛ p. 18)



– Slide on the lower sliding bushing ❺.
– Mount the upper sliding bushing ❻.

Info
Do not use a tool; pull the ends apart slightly by hand.



– Slide on the outer tube.
– Warm the outer tube in area Ⓐ of the lower sliding bushing.
Guideline

50 °C (122 °F)

– Hold the lower sliding bushing with the longer section of the special tool.

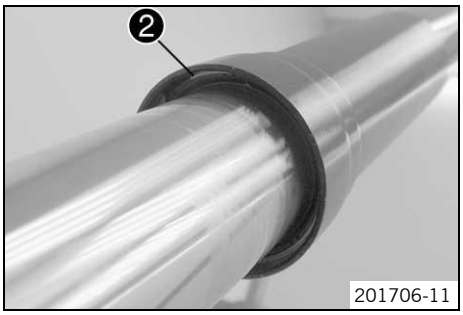
Mounting tool (T14040S) (☛ p. 20)

– Push the outer tube all the way on.

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

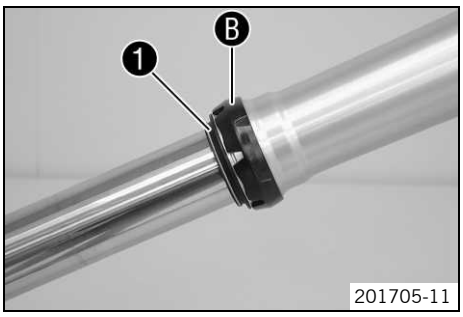
Mounting tool (T14040S) (☛ p. 20)

– Push the outer tube all the way on.



– Mount lock ring ❷.

Info
The lock ring must engage audibly.



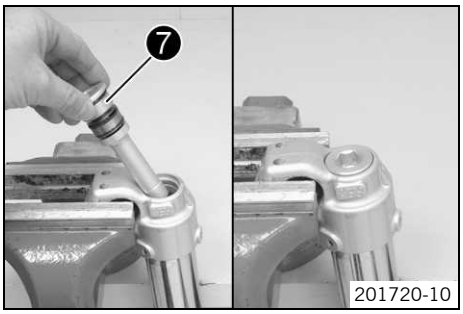
– Mount dust boot ❶.
– Mount fork protection ring Ⓑ.

– Lubricate the O-ring. Slide the cartridge all the way into the fork leg.

Fork oil (SAE 4) (48601166S1) (☛ p. 18)

– Turn the fork. Fill in approx. 75 % of the total filling quantity of fork oil.

Oil capacity per fork leg	see Owner´s Manual	Fork oil (SAE 4) (48601166S1) (☛ p. 18)



– Mount and tighten hydrostop unit ❼.

Guideline

Hydrostop unit	M30x1	40 Nm (29.5 lbf ft)

– Clamp the fork vertically.
– Add the remaining quantity of fork oil.

Oil capacity per fork leg	see Owner´s Manual	Fork oil (SAE 4) (48601166S1) (☛ p. 18)

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

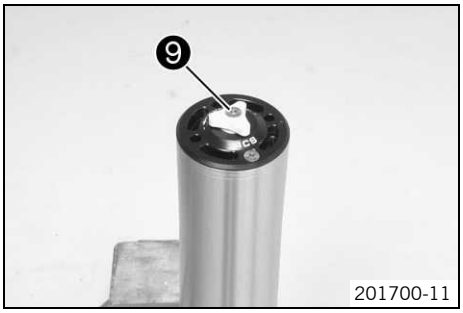
Clamping stand (T1403S) (☛ p. 20)

– Tighten screw cap ❽.

Guideline

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

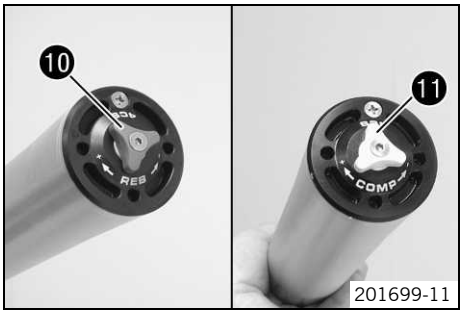
Special socket (T14047) (☛ p. 20)



– Mount the adjuster. Mount and tighten screw ❾.

Guideline

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



Alternative 1

– Turn the adjuster of compression damping ❿ (mark **COMP**) and the adjuster of rebound damping ⓫ (mark **REB**) all the way clockwise.
– Turn counterclockwise by the number of click specified for the fork type.

Alternative 2

Warning

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

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

– Set the adjusters to the positions determined upon removal.

Fork oil (SAE 4) (48601166S1)

According to

– SAE (☛ p. 22) (SAE 4)

Guideline

– Use only oils that comply with the specified standards (see specifications on the container) and that possess the corresponding properties.

Lubricant (T158)

Guideline

– KTM recommends **Lubcon®** products.

Supplier
Lubcon®

– **Turmogrease® PP 300**

Lubricant (T511)

Guideline

– KTM recommends **Lubcon®** products.

Supplier
Lubcon®

– **Turmsilon® GTI 300 P**

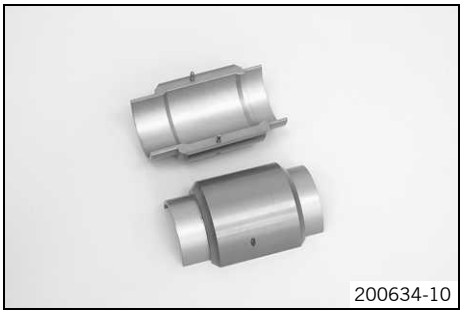
Protecting sleeve

Art. no.: T1401

Clamping stand

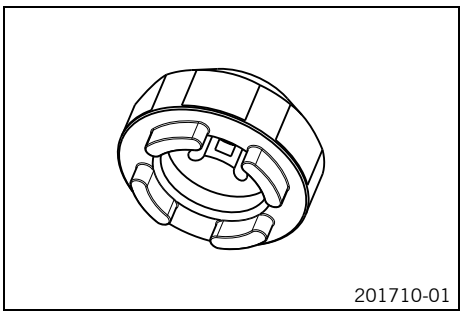
Art. no.: T1403S

Mounting tool



Art. no.: T14040S

Special socket



Art. no.: T14047

Clamping stand

Art. no.: T14049S

Press-out tool

Art. no.: T14051

5 STANDARDS

SAE

The SAE viscosity classes were defined by the Society of Automotive Engineers and are used for classifying oils according to their viscosity. The viscosity describes only one property of oil and says nothing about quality.

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