



*Front Fork for Yamaha YZF-R1, Yamaha YZF-R6*

# ***FGR 251, FGR 252***

**Owner's Manual/Spare Parts List/Workshop Manual**





*Öhlins Headquarters Upplands Väsby, Sweden*

### **Öhlins Racing AB - The Story**

It was the 1970's, a young man named Kenth Öhlin spent most of his spare time pursuing his favourite sport: motocross.

Being a careful observer, Kenth's attention was continuously drawn to one specific detail - motocross bikes had more engine power than their suspension could handle. It was not long before Kenth realised that better performance could be achieved by improved wheel suspension.

Öhlins Racing was established in 1976, and just two years later the company won its first World Championship title. Despite being in the business for more than 40 years, the search for perfection and new functions is still the main focus of the company.

Congratulations! You are now the owner of an Öhlins product. More than two hundred World Championships and other major world titles are definitive proof that Öhlins products offer outstanding performance and reliability.

Every product has gone through rigorous testing and engineers have spent thousands of hours, doing their very best to use every possible experience from our more than 40 years within the racing sport.

The product that you now have in your possession is pure racing breed that is built to withstand.

By installing this product on your vehicle you have made a clear statement... you are a serious rider with a focus on getting the maximal handling ability and outstanding feedback from your vehicle. Along comes the fact that your Öhlins product will be a long lasting friend, delivering the very best of comfort and performance every time you go for a ride. Go explore!

# SAFETY PRECAUTIONS

## General Warnings

### **Note!**

*The shock absorber/front fork/steering damper is an important part of the vehicle and will affect the stability.*

### **Note!**

*Read and ensure you understand the information in this manual and other technical documents provided by Öhlins, before using the product.*

### **Note!**

*Öhlins Racing AB can not be held responsible for any damage to the shock absorber/front fork/steering damper, vehicle, other property or injury to persons, if the instructions for mounting, usage and maintenance are not followed exactly.*

### **Warning!**

*After installing the Öhlins product, take a test ride at low speed to ensure your vehicle has maintained stability.*

### **Warning!**

*If the suspension makes an abnormal noise, or the function is irregular, or if you notice any leakage from the product, stop the vehicle immediately and return the product to an Öhlins dealer.*

### **Warning!**

*The product warranty shall only apply if the product has been operated and maintained in accordance with recommendations in this manual. If you have any questions regarding usage, service, inspection and/or maintenance please contact Öhlins.*

### **Warning!**

*This product was developed and designed exclusively for a specific vehicle model and shall only be installed on the intended vehicle model in its original condition as delivered from the vehicle manufacturer.*

## SAFETY SYMBOLS

*In this manual, mounting instructions and other technical documents, important information concerning safety is distinguished by the following symbols:*



*The Safety Alert Symbol means: Warning! Your safety is involved.*

### **Warning!**

*The Warning Symbol means: Failure to follow warning instructions can result in severe or fatal injury to anyone working with, inspecting or using the shock absorber/front fork/steering damper, or to bystanders.*

### **Caution!**

*The Caution Symbol means: Special precautions must be taken to avoid damage to the shock absorber/front fork/steering damper.*

### **Note!**

*The Note Symbol indicates information that is important regarding procedures.*

### **Note!**

*When working with the Öhlins product, always read the vehicle service manual.*

### **Note!**

*This manual shall be considered as a part of the product and shall accompany the product throughout its life cycle.*



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# ÖHLINS FRONT FORK FGR 25X

*The product in your hand is an artwork, prepared by our dedicated craftsmen at our Swedish facility in Upplands Väsby, Sweden. Its predecessors have battled their way on numerous race tracks in World Superbike, Supersport, Superstock and AMA, and the legacy continues in your front fork. Thousands of hours have been spent together with some of the best teams in the world to find the optimal design and functionality to give you as much performance as possible. You will feel the difference...be sure.*

For the new FGR 25X Öhlins engineers set out a target to fill the gap between the popular FGRT 200 and our top of the line FGR 300 front fork.

## Design

The FGR 25X, based on Öhlins popular FKR spring pressurized cartridge system, gives a more predictable pressurized feeling. Compression and rebound adjustments separated into each fork leg reduces the time it takes to fine-tune the fork. Micro-polished and TiN-coated inner tubes decrease the friction, increases wear resistance and enables the rider to set faster lap times.

## New features on the FGR 25X

- Stronger and stiffer outer tubes
- New and lighter design
- Low friction
- Predictable pressurized function with spring pressurized cartridge system



# SETTING UP THE FRONT FORK

## 👁 Note!

The front fork is just one part of your motorcycle. To make it work properly, set up your motorcycle according to your vehicle service manual.

## ⚠ Warning!

We strongly recommend to let an authorized Öhlins dealer install this product.

## ⚠ Warning!

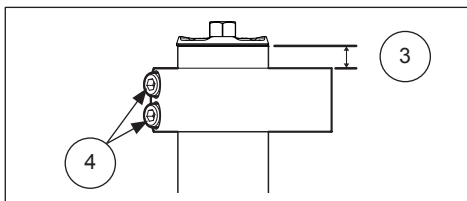
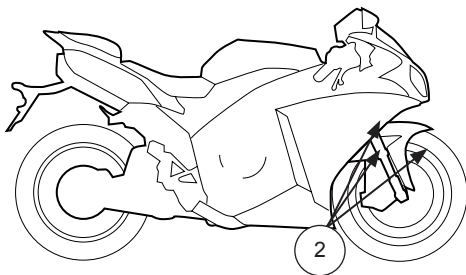
If you work with a lifted vehicle, make sure that it is safely supported to prevent it from tipping over.

## 👁 Note!

When you work with this product, see the vehicle service manual for vehicle specific procedures and important data.

## 👁 Note!

Before you install this product clean the vehicle.



## 1 Mounting instruction

1

Put the motorcycle on a work stand so that the front wheel barely touches the ground.

2

Remove the front fender, brake calipers, speed sensor and the front wheel. Refer to the vehicle service manual for correct procedure.

3

Measure the distance from the top of the outer fork leg to the top of the upper triple clamp. Note this distance.

## 👁 Note!

It is very important that the Öhlins front fork is installed at the exact same position as the OEM front fork.

4

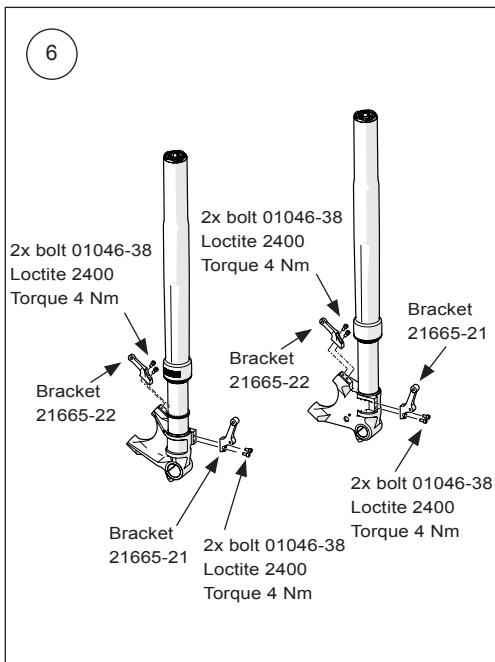
Loosen the bolts to loosen the upper and the lower triple clamps.

5

Remove the fork legs from the motorcycle.

6

Apply Loctite 2400 or similar to the bolts. Install the supplied fender brackets to the fork legs, see figure 6. Tighten the screws to 4 Nm.



# SETTING UP THE FRONT FORK

**7**  
Install the fork legs in the triple clamps at the same position as measured in step 3. The splines facing out from the motorcycle (see figure 7). Turn the handle bars fully from side to side to make sure that nothing restricts the movement, and that the throttle cable and the wire harness run in smooth bends.

**8**  
Tighten:  
Upper triple clamp: 20 Nm  
Lower triple clamp: 10 Nm

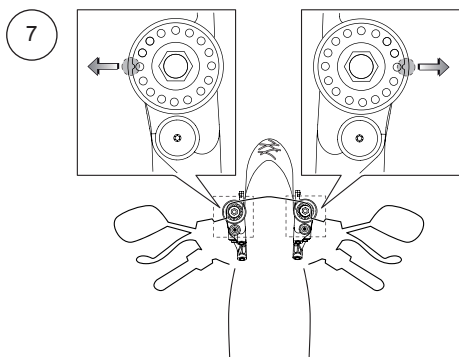
**9**  
Install the front fender, front wheel and the brake calipers. Do not tighten yet.

**11**  
**⚠ Warning!**

*Ensure that the speed sensor cable does not touch the wheel at full lock turns and when the suspension is fully compressed or extended.*

Install the speed sensor bracket. Cable routing according to the figure. Torque and thread locking according to vehicle service manual.

**12**  
Put the vehicle on the ground, apply the front brake and compress the front fork distinctly 3-4 times. This will position the front fork legs parallel.



**13**  
Tighten the front axle, brake calipers and the front fender.  
Front axle pinch bolts torque: 19 Nm

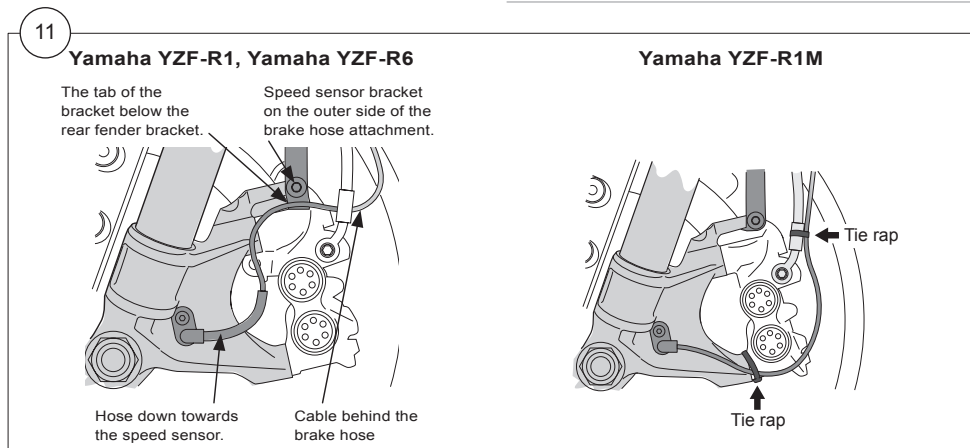
**14**  
Close the compression and rebound adjusters.

**15**  
Compress the front fork as much as possible several times to bleed out the air. Ensure that there is damping on the full stroke.

**16**  
Set the compression and rebound adjusters, see setup data on the next page.

**⚠ Caution!**

*Make sure that you tighten all screws to the correct torque and that nothing fouls or restricts movement of the front fork when the suspension is fully compressed or extended.*



# SETTING UP THE FRONT FORK

## 2 Check Ride Height

### **Note!**

*The following procedure should be performed on a flat surface. We recommend that the following procedure should be performed by two persons.*

#### 2.1

Put the motorcycle on a stand.  
Ensure that the shock absorber is fully extended.

#### 2.2

Measure the distance from a point marked by a piece of tape, immediately above the rear wheel axle, to the wheel axle (R1).

#### 2.3

Make a similar measurement on the front axle, for example, from the bottom of the upper triple clamp to a fixed point, for example the front wheel axle (F1). Make sure that the front fork is fully extended.

#### 2.4

Put the motorcycle on the ground so that the front and the rear suspensions are slightly compressed. Repeat the measuring procedures (R2 and F2).

#### 2.5

Sit on the motorcycle in normal riding position, properly outfitted in your riding gear. Correct riding position is important so that the weight is balanced on the front and rear wheel in the same way as when riding. Repeat the measuring procedure (R3, F3).

#### 3

The measurements should not differ from the following:  
Rear  $30 \pm 5$  mm (**R1-R3**)  
Front  $35 \pm 5$  mm (**F1-F3**)

#### 4

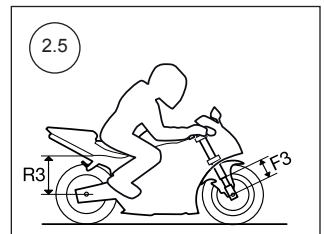
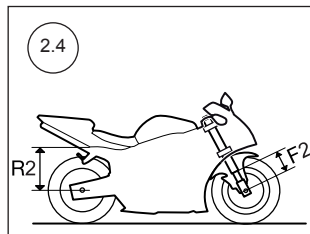
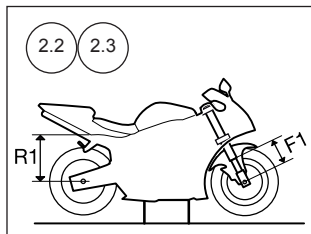
If the measures differ significantly from the measures in step 3, you need to set the spring preload (see below).

### **Note!**

*The spring preload is very important since it affects the height of the motorcycle and the fork angle. Consequently, handling characteristics can be changed, even negatively.*

#### 5

If the measures still differ, you may need to change spring. Contact an Öhlins dealer for advice.





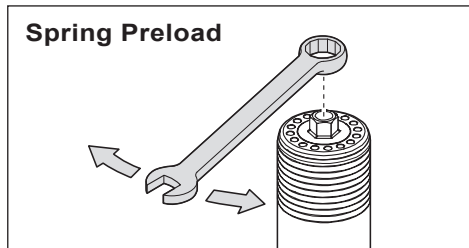
# SETTING UP THE FRONT FORK

## ADJUST SPRING PRELOAD, REBOUND AND COMPRESSION

### Adjust Spring Preload

1. Use a 14 mm wrench.
2. Turn the nut on the top of the fork leg. Turn clockwise to increase spring preload, turn counter clockwise to decrease it.  
1 turn on the adjustment nut will change spring preload 1 mm.

Recommended static sag (F1-F3):  $35 \pm 5$  mm



### Rebound and Compression

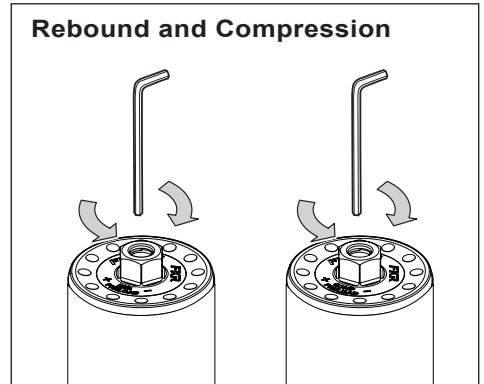
#### Adjusters

- Compression damping adjuster  
Left hand side front fork leg.
- Rebound damping adjuster  
Right hand side front fork leg.

Adjust Compression and Rebound;

Use a 3 mm hex key. Adjustment range from fully closed valve (clockwise) to fully open valve (counterclockwise) is about 30 "clicks".

Recommended adjustment "clicks" from closed position: See spec. card



# TECHNICAL INFORMATION

## FGR 251, FGR 252

Front fork length/stroke 745/120 mm\*\*  
Free spring length 260 mm

\*\* Optional length 755 with stroke 130 mm. See Spare Part List and Work Shop Manual sections for detailed info.

### Adjustment Range

Compression ~30 clicks  
Rebound ~30 clicks  
Spring preload 0-18 mm  
(0-18 turns)

The adjustment range from closed valve (clockwise) to maximum open valve (counter clockwise): approx. 30 clicks

### Spring rate

10.0 N/mm (mark -10) STD 04744-10

### Optional springs

9.0 N/mm (mark -90) 04744-90 or 08790-90  
9.5 N/mm (mark -95) 04744-95\* or 08790-95  
10.5 N/mm (mark -05) 04744-05\* or 08790-05  
11.0 N/mm (mark -11) 04744-11 or 08790-11

\* supplied

08790-xx springs are packed in pairs

### Oil capacity

See specification card. Use Öhlins Front Fork fluid 01309 only.

### Inspection intervals

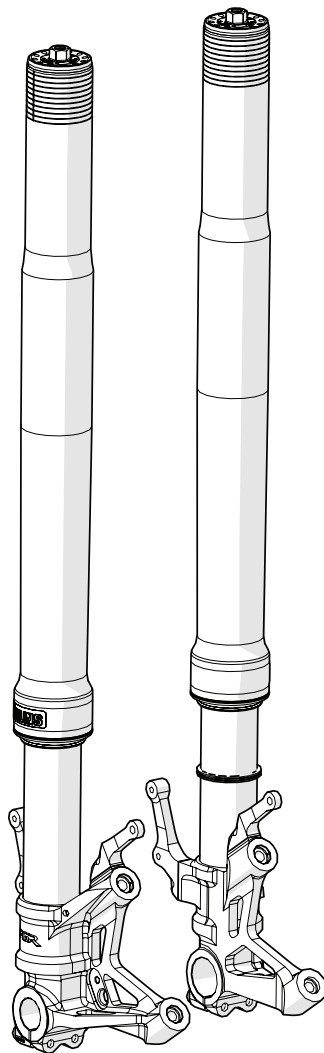
Normal use: Once a year or every 5 000 km  
Racing use: Every 10 hours

### Service intervals

Normal use: Every third year or every 30 000 km  
Racing use: Once a year or every 20 hours  
Service at an authorized Öhlins service center.

### Disposal

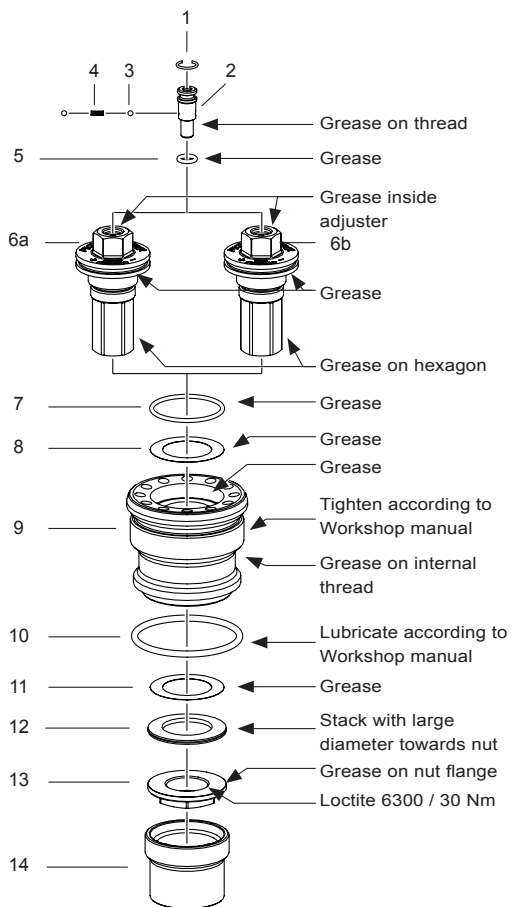
Discarded products should be handed over to an authorized Öhlins Service Centre for proper disposal.



# SPARE PARTS LIST

The number of components is intended for one right hand side fork leg and one left hand side fork leg.

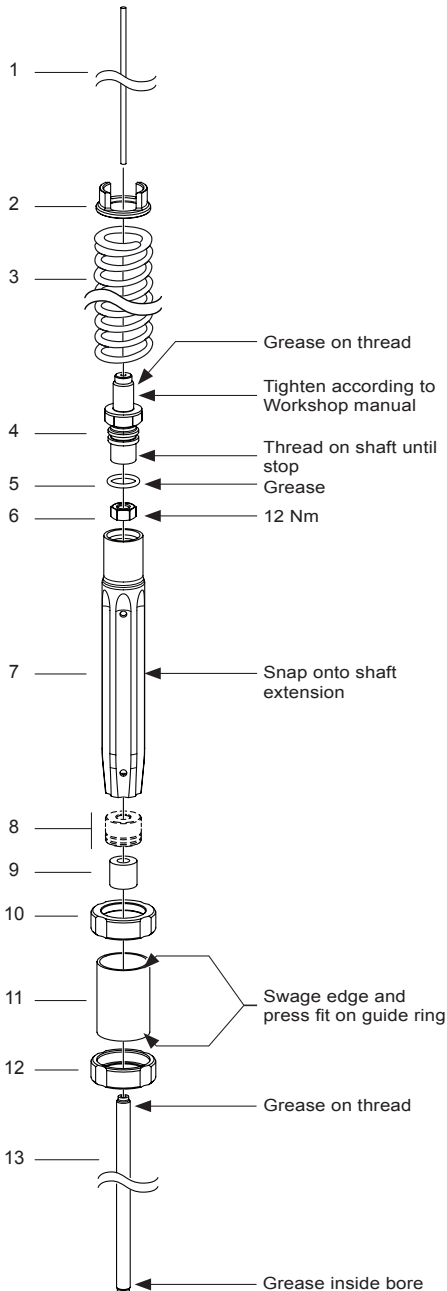
**Figure 1 - Top cap**



Pos	Part No	Pcs	Description	Notes
1-1	01473-01	2	Circlip	
1-2	21819-01	2	Adjustment screw	
1-3	00884-04	4	Ball	
1-4	01474-01	2	Spring	
1-5	00577-01	2	O-ring	
1-6a	21928-03	1	Adjuster	Compression
1-6b	21928-04	1	Adjuster	Rebound
1-7	00338-72	2	O-ring	
1-8	03309-01	2	Shim	
1-9	21932-15	2	Adjustment housing	
1-10	00338-02	2	O-ring	
1-11	03309-01	2	Shim	
1-12	03317-01	8	Spring washer	
1-13	03313-01	2	Nut	
1-14	03315-01	2	Preload socket	

# SPARE PARTS LIST

Figure 2 - Shaft assembly



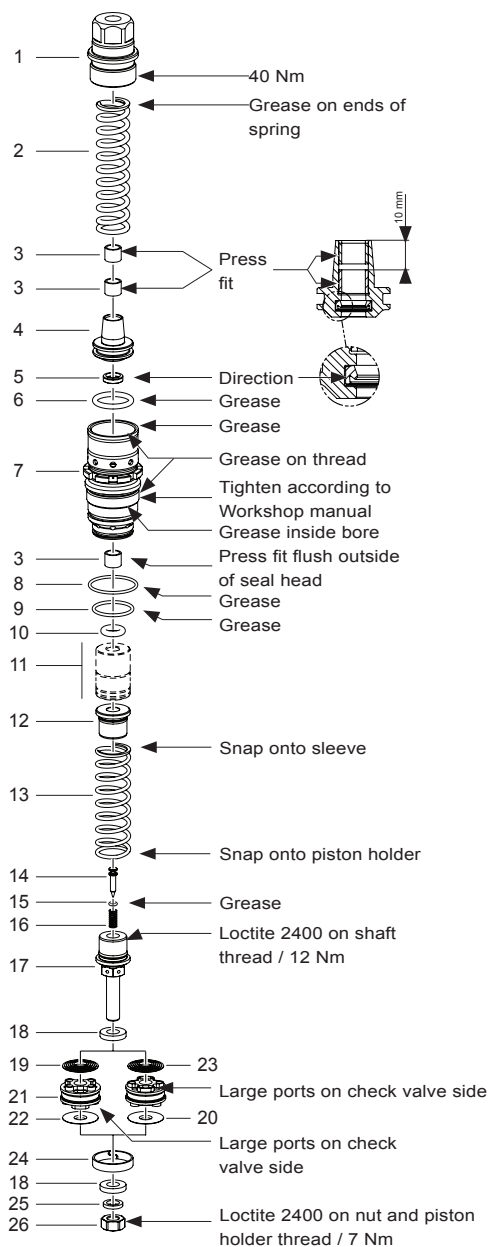
Pos	Part No	Pcs	Description	Notes
2 - 1	15412-25	2	Adjustment rod	
2 - 2	03316-02	2	Spring support	
2 - 3	04744-95	2	Main spring	9.5 N/mm
2 - 3	04744-10	2	Main spring	10.0 N/mm *
2 - 3	04744-05	2	Main spring	10.5 N/mm
2 - 4	01901-09	2	Shaft extension	
2 - 5	00338-76	2	O-ring	
2 - 6	00437-09	2	Nut	
2 - 7	21925-03	2	Guide sleeve	
2 - 8	01582-21	4	Spacer 2 mm	
2 - 9	01580-04	2	Bump rubber	
2 - 10	01438-04	2	Guide ring	
2 - 11	01460-59	2	Preload tube 74 mm	Standard stroke 120 mm*
2 - 11	01460-41	2	Preload tube 83 mm	Optional stroke 130 mm**
2 - 12	01438-04	2	Guide ring	
2 - 13	21812-19	2	Shaft	

\* Installed at delivery

\*\* Supplied in the box with FGR 251-"GYTR" Need to be ordered separate for FGR 252-"FGR".

# SPARE PARTS LIST

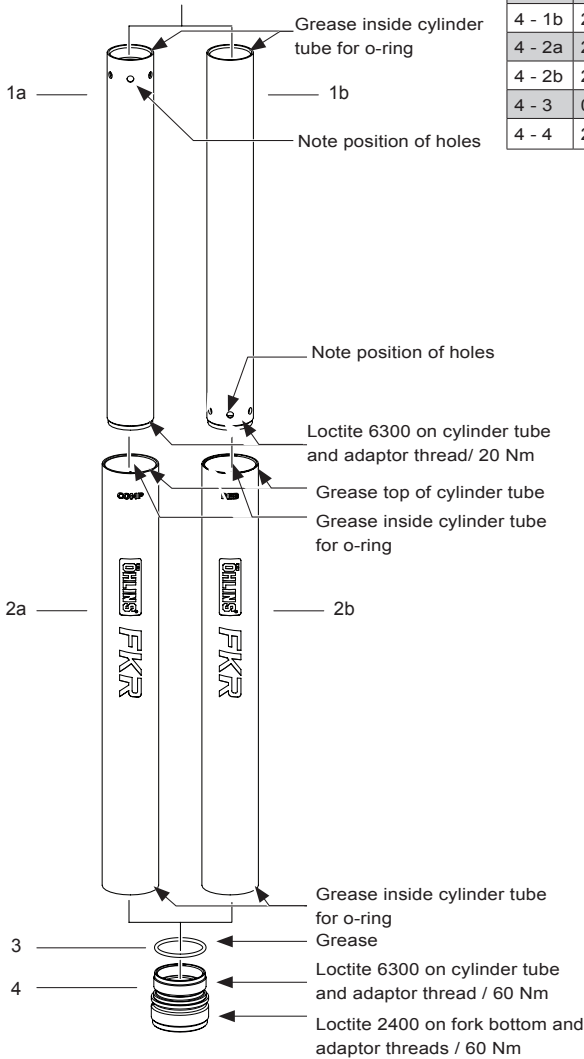
**Figure 3 - Seal head and piston assembly**



Pos	Part No	Pcs	Description	Notes
3 - 1	21922-01	2	Cap seal head	
3 - 2	21927-01	2	Spring	
3 - 3	01056-09	6	Bushing	
3 - 4	21921-01	2	Piston dividing	
3 - 5	15428-01	2	Seal	
3 - 6	00338-25	2	O-ring	
3 - 7	21920-01	2	Seal head	
3 - 8	00338-72	2	O-ring	
3 - 9	00338-27	2	O-ring	
3 - 10	00638-81	2	O-ring	
3 - 11	01582-23	4	Spacer 10 mm	Standard stroke 120 mm Spacers total 20 mm
3 - 11	01582-23	2	Spacer 10 mm	Optional stroke 130 mm Spacers total 10 mm
3 - 12	01653-09	2	Sleeve	
3 - 13	21733-01	2	Spring	
3 - 14	21813-15	2	Needle	
3 - 15	00338-56	2	O-ring	
3 - 16	04727-09	2	Spring	
3 - 17	01654-15	2	Piston holder	
3 - 18	21926-01	4	Washer	
3 - 19	See spec. card	1	Shim stack	Compression
3 - 20	See spec. card	1	Shim stack	Rebound
3 - 21	21923-01	2	Piston	
3 - 22	See spec. card	1	Check valve shim stack	Compression
3 - 23	See spec. card	1	Check valve shim stack	Rebound
3 - 24	01447-02	2	Piston ring	
3 - 25	01674-01	2	Washer	
3 - 26	01657-01	2	Nut	

# SPARE PARTS LIST

**Figure 4 - Cylinder tube assembly**

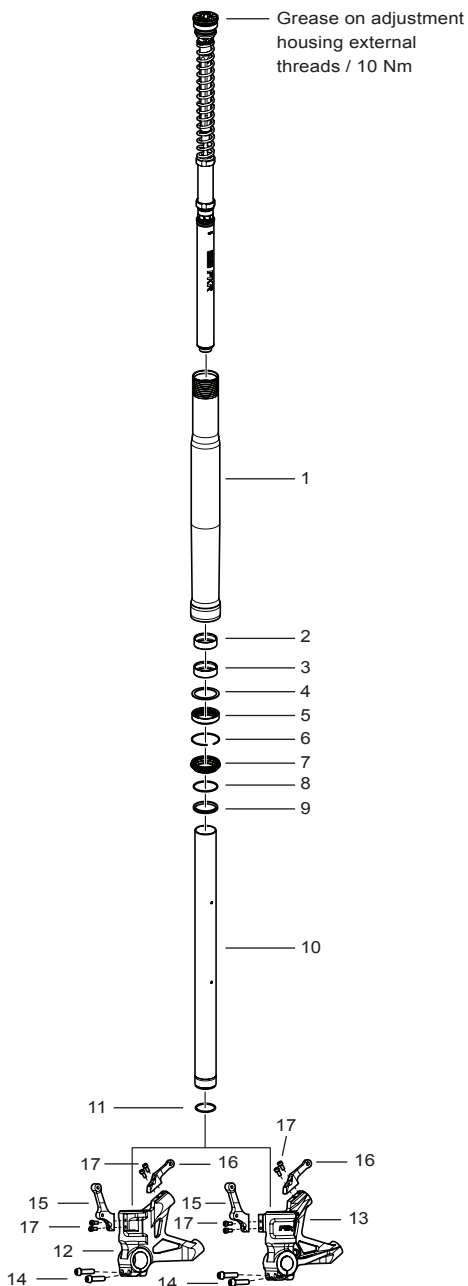


Pos	Part No	Pcs	Description	Notes
4 - 1a	21929-01	1	Cylinder tube	Compression
4 - 1b	21929-02	1	Cylinder tube	Rebound
4 - 2a	21930-01	1	Cylinder tube	Compression
4 - 2b	21930-02	1	Cylinder tube	Rebound
4 - 3	00576-07	2	O-ring	
4 - 4	21924-06	2	Adaptor	

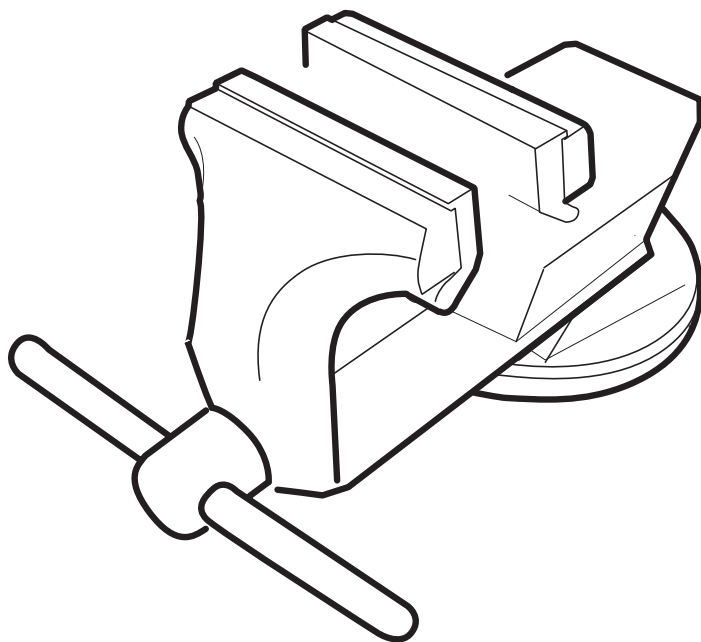
# SPARE PARTS LIST

Figure 5 - External components

Pos	Part No	Pcs	Description	Notes
5-1	01900-17	2	Outer tube	
5-2	01683-04	2	Bushing, upper	
5-3	01684-04	2	Bushing, Lower	
5-4	04758-01	2	Washer	
5-5	04720-02	2	Seal	
5-6	04759-01	2	Circlip	
5-7	04721-03	2	Scraper	
5-8	00338-54	1	O-ring	Right
5-9	01565-04	1	Stroke Indicator	Right
5-10	21634-12	2	Fork leg inner	
5-11	00338-63	2	O-ring	
5-12	21664-52	1	Fork bottom right	FGR 251
	21664-53	1	Fork bottom left	FGR 251
5-13	21664-54	1	Fork bottom right	FGR 252
	21664-55	1	Fork bottom left	FGR 252
5-14	01240-09	4	Screw	
5-15	21665-21	2	Fender bracket	Front
5-16	21665-22	2	Fender bracket	Rear
5-17	01046-38	8	Screw M5x10	Front and rear fender bracket



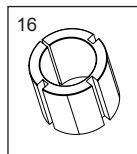
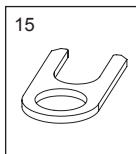
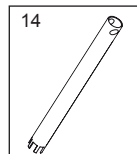
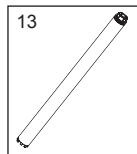
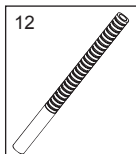
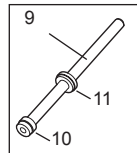
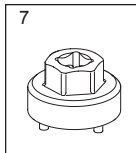
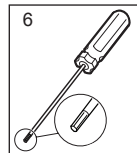
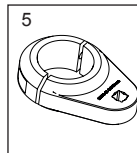
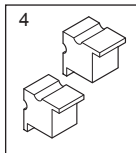
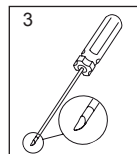
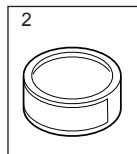
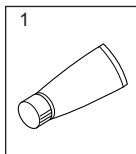
Tools .....	16
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3 Replace seal and bushings .....	21
4 Replace inner/outer tube .....	23
5 Disassemble and assemble shaft assembly .....	25
6 Assemble front fork .....	29





# TOOLS

Pos	Part No	Description	Notes
1	00146-01	Öhlins red grease	
2	01888-01	WD-40	
3	00715-01	Sharp screw driver	
4	00727-06/-12	Soft jaws Ø34	
	00727-08	Soft jaws Ø8	
	00727-09	Soft jaws Ø28 and Ø36	
5	24670-01	Clamp tool	ø 43
6	00794-01	Screwdriver Allen key	3 mm
7	00797-08	Sleeve pin	
8	01309-01	Öhlins Front Fork fluid	
9	01757-01	Attachment bar tool	
10	01758-04	Bar guide	
11	01759-07	Bushing tool	Dismantling
	01759-08	Bushing tool	Installation
12	01765-03	Pull up tool	
13	01797-07	Seal head tool Ø32	
14	01797-04	Seal head tool Ø35	
15	02810-01	Clip	
16	24669-02	Sleeve Ø43	
		Brass wire brush	
		Heat gun	
		Torque Wrench	
	01791-13	Loctite 648	
	01791-25	Loctite 2400	
	01791-27	Loctite 2700	
	01791-23	Loctite 6300	
		Rag	
		Teflon tape	
		Vice	
		Waste fluid container	
		Wire with hook	
		Wrench	13 mm
		Wrench	14 mm
		Wrench	19 mm
		Wrench	20 mm
		Wrench	23 mm
		Socket	13 mm
		Socket	14 mm
		Allen key socket	14 mm



# 1 REPLACE SPRING

## 👁 Note!

*This procedure can be performed with the front fork on the vehicle, front wheel off the ground.*

### 1.1

Release spring preload. Use a 14mm wrench. Turn the Adjustment nut counter clockwise until stop, make a note of position.

## 👉 Caution!

*Do not use the Preload adjuster to tighten or loosen the Top cap assembly.*

### 1.2

Loosen the screws attaching the fork legs in the upper triple clamp.

### 1.3

Loosen Top cap assembly from the Outer tube. Use Sleeve Pin tool (00797-08), lower the front so that the front fork is fully compressed.

### 1.4

Remove Top cap assembly from the Shaft extension. Use a 14 mm wrench on the Top cap and a 19 mm wrench on the Shaft extension.

### 1.5

Remove Spring support and Spring. Use a wire with a hook and carefully pull up Preload tube.

### 1.6

Check oil level according to Chapter *Oil level*.

### 1.7

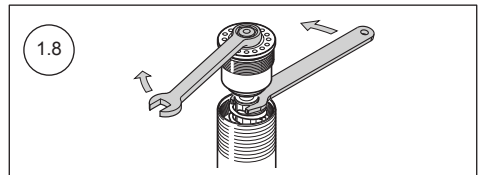
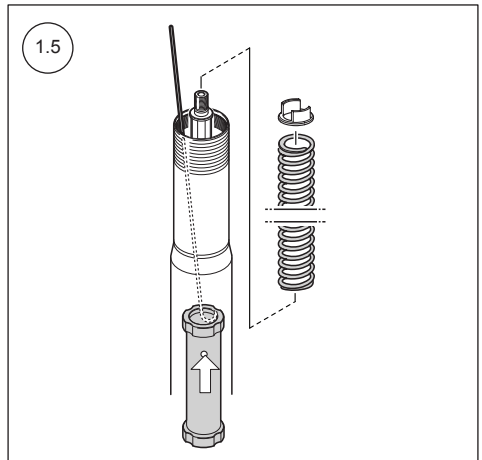
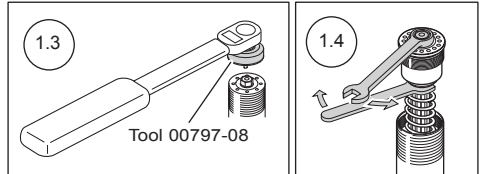
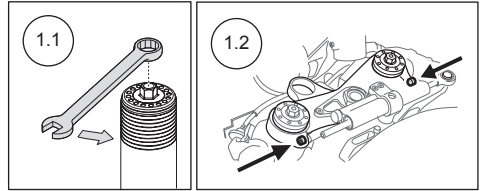
Remount Preload tube, new Spring (marking facing up) and Spring support.

### 1.8

Make sure compression and rebound bleed and preload adjusters are fully opened, counterclockwise, before installing Top cap. Remount the Top cap assembly on the Shaft extension. Tightening torque 20 Nm.

### 1.9

Apply Öhlins Red grease (00146-01) on the Top cap thread and O-ring.



### 1.10

Remount Top cap into the Outer tube, with the fork fully extended. Use sleeve Pin tool (00797-08). See figure 1.3. Tightening torque 10 Nm.

### 1.11

Tighten the upper triple clamp and reset the preload, rebound and compression adjusters, see page 6.

# 2 DISASSEMBLE FRONT FORK

## 2.1

Count and note Adjuster settings. Open the Adjusters to fully open. Loosen the upper clamp screws and loosen the Top cap  $\frac{1}{2}$  turn use tool 00797-08.

Remove the Front fork from the motorcycle.

## 2.2

Fasten the Fork leg in a vice with soft jaws.

## 2.3

Release spring preload. Use a 14 mm wrench. Turn the Adjustment nut counter clockwise until stop, make a note of position.

### **Caution!**

*Do not use the Preload adjuster to tighten or loosen the Top cap assembly.*

## 2.4

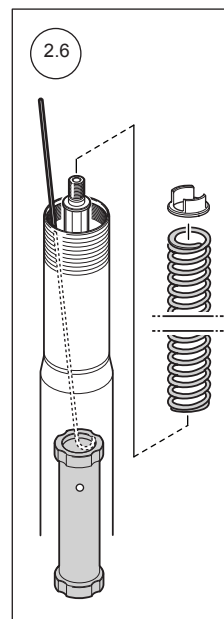
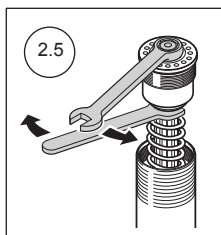
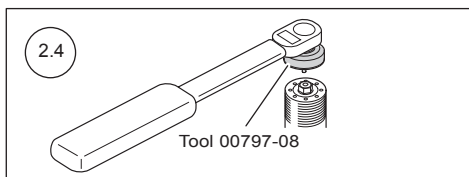
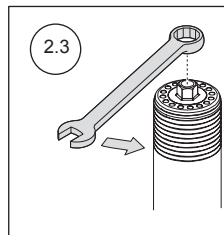
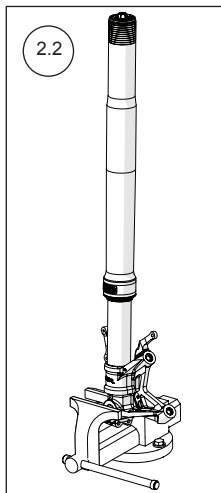
Loosen Top cap assembly from the Outer tube. Use sleeve Pin tool (00797-08), push down the Outer tube.

## 2.5

Remove Top cap assembly from the Shaft extension. Use a 14 mm wrench on the Top cap and a 19 mm wrench on the Shaft extension.

## 2.6

Remove Spring support and Spring. Use a wire with a hook and carefully pull up Preload tube.



# 2 DISASSEMBLE FRONT FORK

## 2.7

Remove Shaft assembly from the fork leg.  
Use Seal Head tool 01797-07.

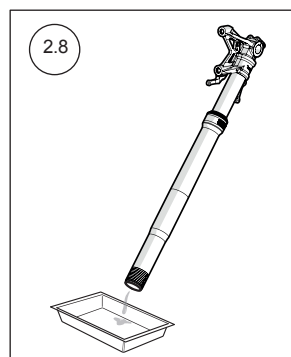
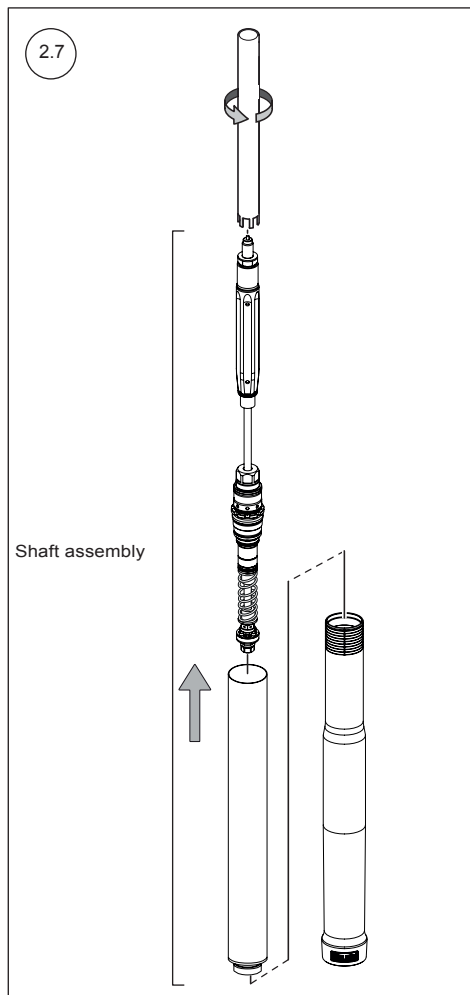
### **⚠ Caution!**

*Shaft assembly is pressurized.*

## 2.8

Drain all oil from the fork leg.

- To Replace Seal an bushings  
go to Chapter 3 *Replace Seal and Bushings.*
- To Disassemble Shaft assembly  
go to Chapter 5 *Disassemble Shaft.*



## 2 DISASSEMBLE FRONT FORK

### 2.9

Remove the cylinder tubes from the fork leg. Use a heat gun to break down the Loctite between the Adaptor and the Fork bottom. Use a 14 mm allen key with extensions to loosen the cylinder tubes and Adaptor from the Fork bottom.

### 2.10

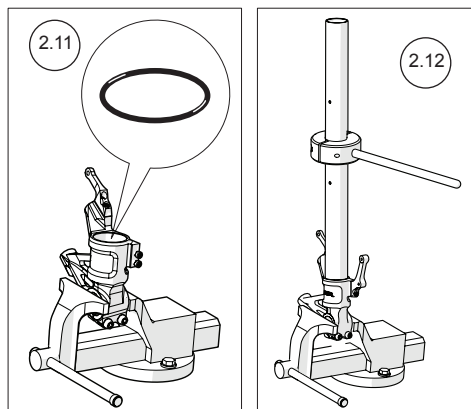
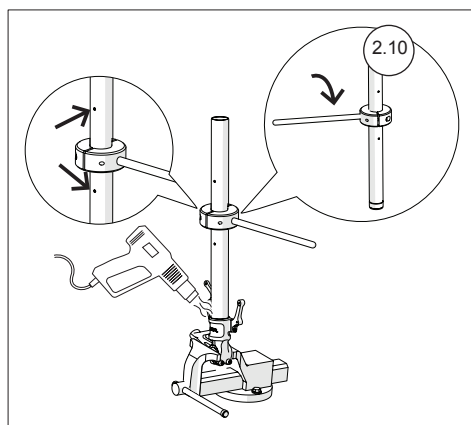
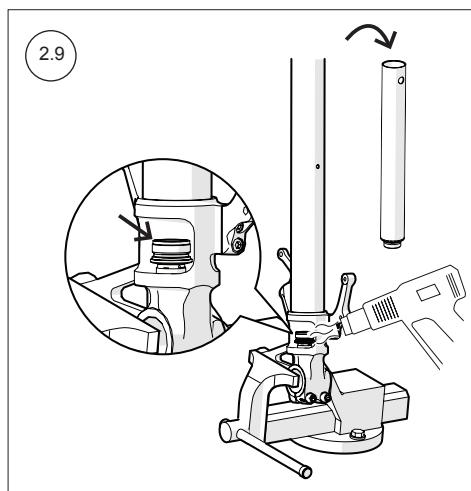
Install the fork tube tool (24670-01 & 24669-02) between the two Ø5 mm holes on the Inner tube. Use a heat gun to break down the Loctite between the Inner tube and the Fork bottom. Loosen and remove the Inner tube from the Fork bottom.

### 2.11

Remove the O-ring from the Fork bottom and examine for damage. Replace if needed.

### 2.12

Clean the Fork bottom. Make sure to remove all grease and Loctite.



# 3 REPLACE SEAL AND BUSHINGS

## 3.1

Remove Top cap and Shaft assembly according to Chapter 2 Disassemble Front Fork.

## 3.2

Remove the Outer tube.

## 3.3

Clean the Scraper and the Seal and check for damage.

## 3.4

If Seal is damaged replace by removing the Scraper, the Circlip, Seal and Washer.

## 3.5

Apply a thin layer of Red grease on the Washer and the outer surface of the Seal.

## 3.6

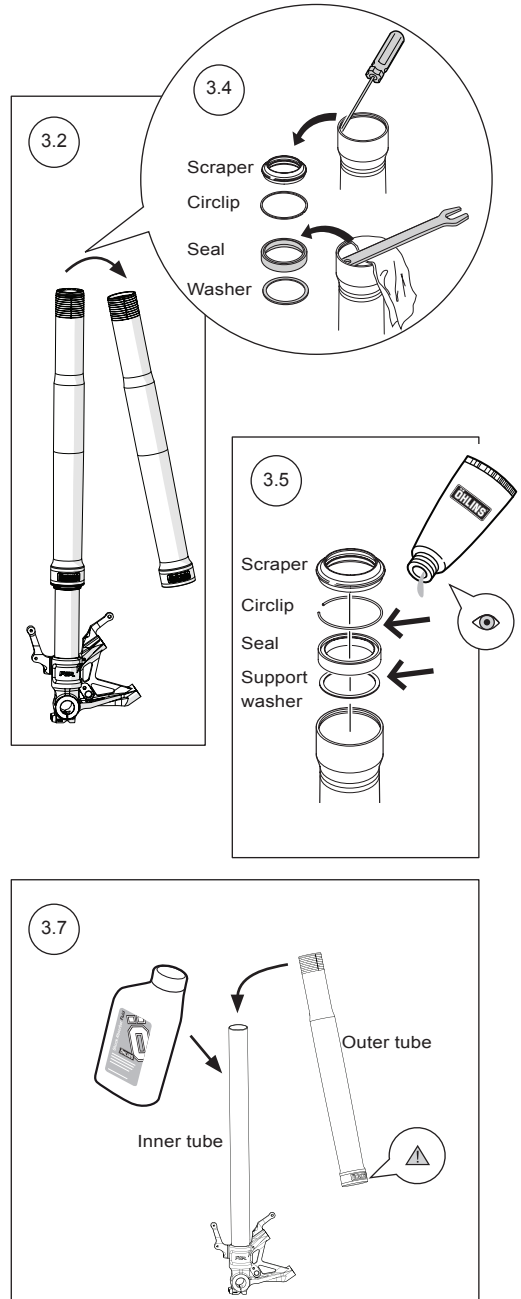
Mount the Washer and the Seal into the Outer tube. Mount the Circlip into the groove.

## 3.7

Apply some Öhlins Front Fork fluid (01309-01) on the inside of the Seal and the outside of the Inner tube, do not use grease inside the Seal. Slide the Outer tube carefully on to the Inner tube.

### **⚠ Warning!**

*Be careful - Not to damage the Fork seal!*



# 3 REPLACE SEAL AND BUSHINGS

## 👁 **Note!**

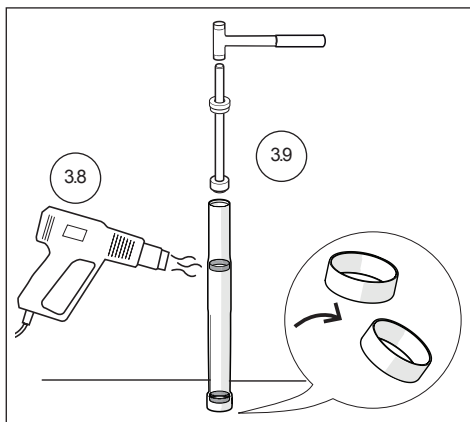
*We recommend to remove and install the bushings while the Outer tube is warm.*

### 3.8

Use a heat gun on the Outer tube to approx 100°C (212°F) at the upper bushing position.

### 3.9

Put the Outer tube with the Seal side down on a soft surface, for example wood. Use the attachment bar (01757-01) and the dismantling sleeve (01759-07) and tap the bar gently with a plastic hammer to remove the upper and the lower Bushing.



### 3.10

Clean all parts.

## Install the upper bushing

### 3.11

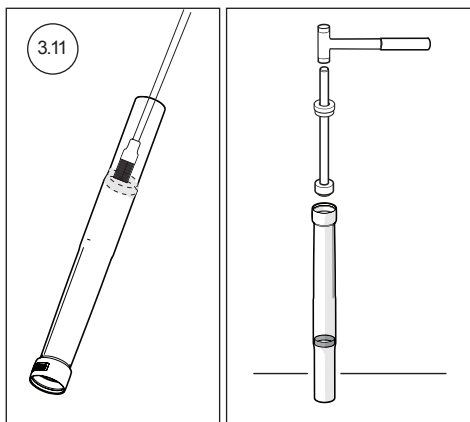
Use a brush to apply Loctite 648 on the upper bushing seat on the Outer tube.

### 3.12

Put the Outer tube on a soft surface with the Seal side up.

### 3.13

Use the attachment bar (01757-01) with the installation sleeve (01759-08) and guide ring (01758-04) to install the upper Bushing. Tap the attachment bar gently with a plastic hammer until the Bushing reaches a solid stop.



## Install the lower bushing

### 3.14

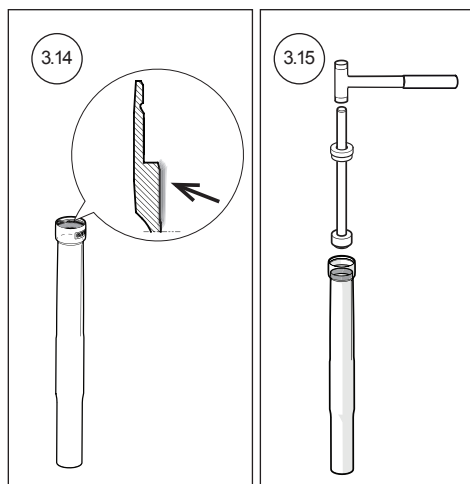
Apply red grease (00146-01) on the lower bushing seat in the Outer tube. No Loctite on the lower Bushing.

### 3.15

Use the installation sleeve (01759-08) and the attachment bar (01757-01) to install the lower Bushing. Tap the attachment bar until the Bushing reaches a solid stop.

→ To reassemble Front Fork

go to Chapter 6 *Assemble Front Fork*



# 4 REPLACE INNER/OUTER TUBE

## 4.1

Remove Top cap and Shaft assembly according to Chapter 2 Disassemble Front Fork.

## 4.2

Remove the Outer tube.

## 4.3

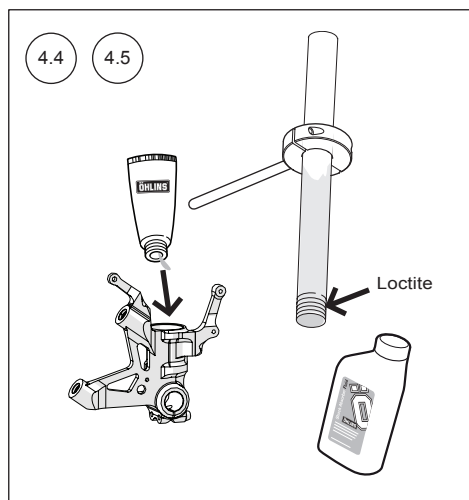
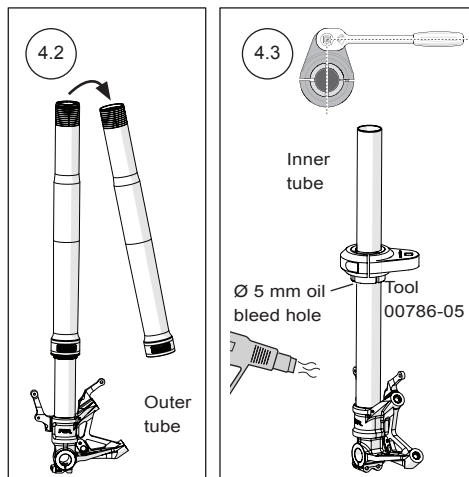
Mount clamp tool and sleeve (24670-01 and 24669-02) on the Inner tube (Make sure both are clean), as high as possible above the lower  $\varnothing 5$  mm oil bleed hole. Use a heat gun to heat up the Fork bottom. Loosen and remove the Inner tube. Clean the thread from all Loctite. We recommend to replace the O-ring (00338-63).

## 4.4

Mount the new Inner tube. Use clamp tool and sleeve (24670-01 and 24669-02) and make sure both tool and tube are clean. Install the tool as high as possible above the lower  $\varnothing 5$  mm oil bleed hole. Apply Red grease on the O-ring on the Cylinder tube extension.

## 4.5

Apply Loctite 2700 on the Inner tube thread. Tightening torque 160 Nm





# 4 REPLACE INNER/OUTER TUBE

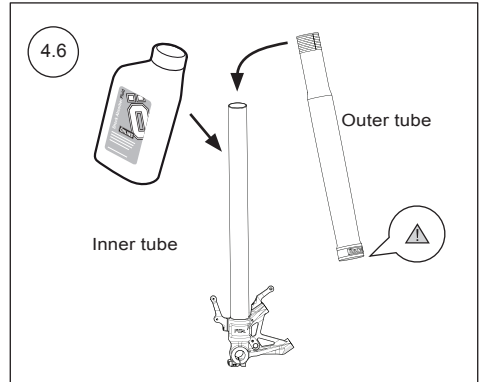
## 4.6

Apply some Öhlins fork fluid (01309-01) on the Inner tubes outer surface and inside the Seal, do not use grease inside the Seal. Slide the Outer tube carefully on to the Inner tube.

### **⚠ Warning!**

*Be careful - Not to damage the Fork seal!*

→ To reassemble Front Fork  
go to Chapter 6 *Assemble Front Fork*



# 5 DISASSEMBLE AND ASSEMBLE SHAFT ASSEMBLY

## Disassemble shaft assembly

### **Note!**

If the guide sleeve and/or shaft extension need to be removed, note that there is an O-ring that keeps the parts tightly together.

### **Note!**

If the top-out spring and/or the sleeve need to be removed, note that the top-out spring is tightly attached to the sleeve.

### 5.1

Remove Top cap and Shaft assembly according to Chapter 2 Disassemble Front Fork.

### 5.2

Pull off the Top-out spring from the Piston holder.

### 5.3

Use the soft jaws (00727-08) and clamp around the Shaft near the Piston holder. Fasten the Shaft and soft jaws in a vise.

### **Caution!**

Do not tighten the jaws too hard, the Shaft can be damaged.

### **Note!**

We strongly recommend that you work with one leg at a time to not mix the parts. Before removal, note in which order the parts are placed and the orientation of each part.

### 5.4

Use a 13 mm socket to remove the Nut from the Piston holder.

If needed, use a heat gun to break down the Loctite on the Nut.

### 5.5

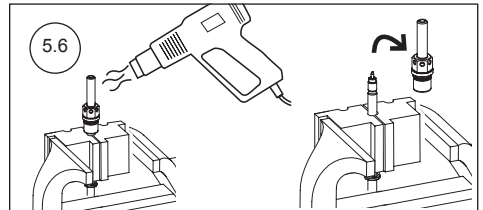
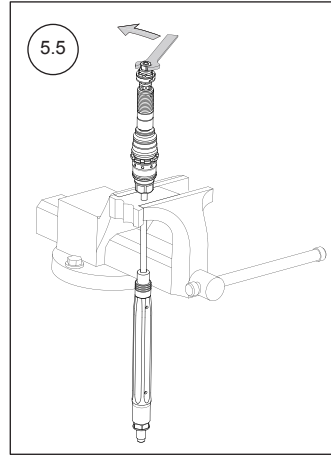
Remove Piston, Shims and setting parts from the Piston holder in one unit.

### 5.6

Use a heat gun to break down the Loctite on the Piston holder. Use a long 14 mm socket to remove the Piston holder from the Shaft. Remove the Top-out spring, Sleeve, spacers and O-ring from the Shaft.

### **Caution!**

Seal head is pressurized.



# 5 DISASSEMBLE AND ASSEMBLE SHAFT ASSEMBLY

## 5.7

Install seal head tool (01797-04) on Seal head. Install pull up tool (01765-03) through seal head tool's Ø22 holes. Fasten the pull up tool in a vise. Use a 23 mm wrench to remove the Cap seal head from the Seal head. Remove the Seal head from the Shaft.

## 5.8

Wrap Teflon tape around the Shaft thread (to protect the Seal) and remove the Piston dividing, Spring and Cap seal head.

## 5.9

Remove the Shaft from the vise.

## 5.10

Use a thin rod or equivalent to push the Adjustment rod into the Shaft, to remove the Needle and Spring from the Shaft.

## 5.11

Remove the Bump rubber, Spacers and Guide sleeve from the Shaft.

## 5.12

Clean all components. Examine all components for wear. Replace if needed.

## 5.13

Use the soft jaws (00727-08) and clamp around the Shaft near the Shaft extension nut. Fasten the Shaft and soft jaws in a vise.

## 5.14

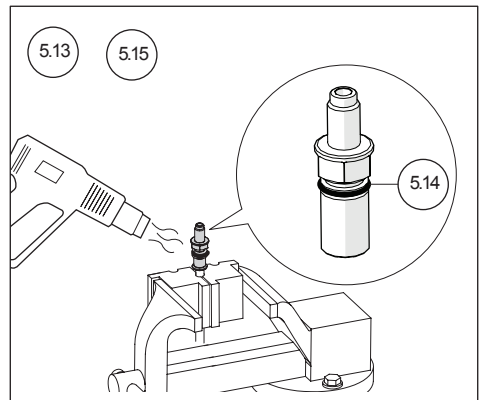
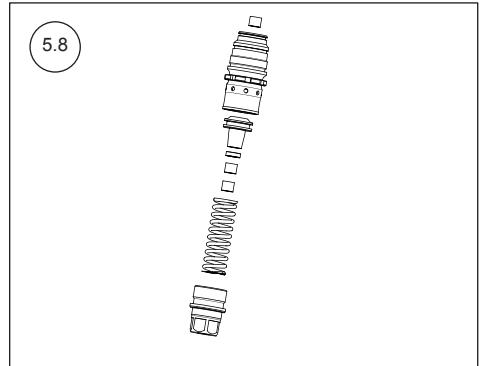
Remove the O-ring from the shaft extension.

## 5.15

Use a 13 mm wrench to loosen the Nut from the Shaft. Use a 19 mm wrench to loosen the Shaft extension from the Shaft.

## 5.16

Replace the shaft and/or shaft extension and/or shaft extension nut.



# 5 DISASSEMBLE AND ASSEMBLE SHAFT ASSEMBLY

## Assemble shaft assembly



### Caution!

*Do not use sharp tools.*

#### 5.17

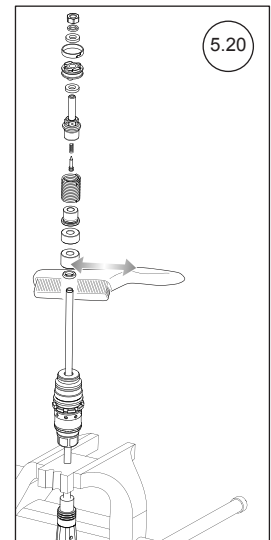
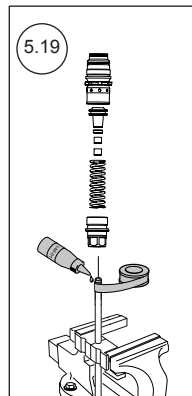
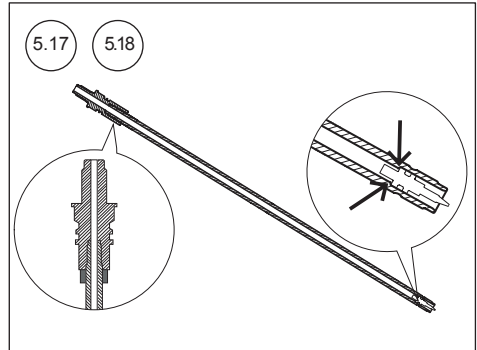
Use the soft jaws (00727-08) and clamp around the Shaft, where the Shaft end that fits the Shaft extension points upwards. Fasten the Shaft and soft jaws in a vise.

#### 5.18

Apply Red grease on the Shaft thread. Thread the Nut on the Shaft until it stops against the Shaft. Thread the Shaft extension on Shaft until it stops against the Shaft. The Shaft extension shall not stop against the Nut. Tighten the Nut against the Shaft extension. Tighten to 12 Nm. Remove the Shaft from the vise. Install the Guide sleeve, spacers and Bump rubber on the Shaft. Apply Red grease on the O-ring and install the O-ring on the Shaft extension. Connect the Guide sleeve on the Shaft extension. You will hear a noticeable click.

#### 5.19

Apply red grease on Seal and Piston dividing O-ring. Install the Seal and bushings in the Piston dividing according to Chapter Spare parts list. Install the O-ring on Piston dividing. Use the soft jaws (00727-08) and clamp around the Shaft, where the Shaft end that fits the piston holder points upwards. Fasten the Shaft and soft jaws in a vise. Wrap Teflon tape around the Shaft thread (to protect the Seal). Apply Red grease on the tape, Shaft end, Seal head thread, inside Seal head bore, Seal head contact surface against Cap seal head, O-rings and spring ends. Remount the Cap seal head, Spring, Piston dividing and Seal head on the Shaft. Remove the Shaft from the vise. Install seal head tool (01797-04) on Seal head. Install pull up tool (01765-03) through seal head tool's  $\varnothing 22$  holes. Fasten the pull up tool in a vise. Use torque wrench on Cap seal head hexagon and tighten to 40 Nm.



# 5 DISASSEMBLE AND ASSEMBLE SHAFT ASSEMBLY

## 5.20

Use a brass wire brush to clean the Shaft from tape.

## 5.21

Install the O-ring, Spacers, Sleeve and the Top-out spring.

## 5.22

Make sure that the Top-out spring is correctly installed on the Sleeve. You will hear a noticeable click.

## 5.23

Clean the Shaft thread and the Needle. Apply red grease (00146-01) on the O-ring. Insert the Needle and Spring together with the O-ring inside the Shaft.

## 5.24

Clean the piston holder. Apply Loctite 2400 on the Shaft thread. Use a long 14 mm socket to install the Piston holder on the Shaft. Tighten to 12 Nm.

## 5.25

To change setting - see <http://world.ohlins.com>. Move the Piston, Shims and setting parts in one unit to the Piston holder. Replace the Piston ring if worn.

## Note!

---

*Make sure to install the parts in the same order and orientation in which they were before disassembly.*

---

## 5.26

Apply Loctite 2400 on the Nut.  
Use a 13 mm socket and tighten to 7 Nm.

## 5.27

Insert the Top-out spring on the Piston holder.  
You will hear a noticeable click.

# 6 ASSEMBLE FRONT FORK

## 6.1

Inner tube and Outer tube are installed according to Chapter 4 Replace Inner/Outer Tube

## 6.2

Apply Loctite 6300 on Cylinder tube M28 threads and Adaptor internal threads. Tighten to 20 Nm.

Apply Loctite 6300 on Cylinder tube M31 thread and Adaptor external threads. Tighten to 60 Nm.

Apply Loctite 2400 on Adaptor M24 thread and fork bottom thread. Use a 14 mm allen key socket with extensions to tighten the Adaptor in the fork bottom. Tighten to 60 Nm.

## 6.3

Pour approximately 0.5 litre Öhlins suspension fluid in front fork leg.

### **⚠ Warning!**

*Fluid level must be approximately 50 mm above top of cylinder tube assembly.*

## 6.4

Install pull up tool (01765-03) on Shaft extension.

## 6.5

Install seal head tool (01797-07) on Seal head.

### **👁 Note!**

*Make sure seal head tool teeth are securely connected to seal head.*

## 6.6

Compress Top-out spring fully and insert clip (02810-01).

### **⚠ Warning!**

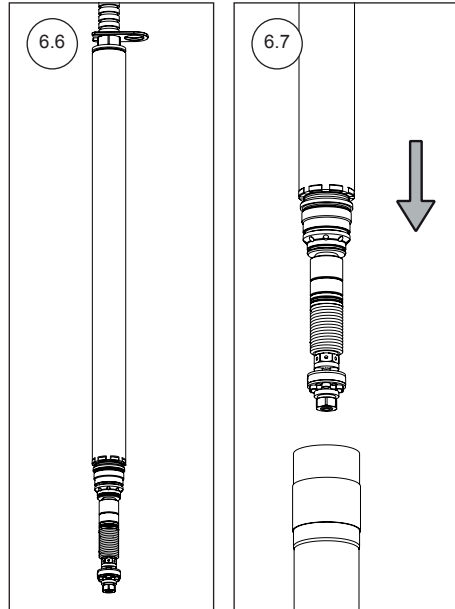
*If top out spring is not completely compressed, adjust shaft extension tool to achieve complete compression of top out spring.*

## 6.7

Apply Red grease on Seal head thread. Insert Shaft assembly in front fork leg.

### **⚠ Warning!**

*Make sure no air is trapped in piston by carefully pumping shaft assembly up and down with piston below fluid surface.*



## 6.8

When no air is trapped in piston, install Shaft assembly and tighten with your hand.

## 6.9

Remove clip and pull up tool.

## 6.10

Tighten Seal head to 30 Nm and remove Seal head tool.

## 6.11

Make sure that Shaft assembly and Outer tube are in their bottom positions. Set suspension fluid level according to Chapter "Setup Data".

# 6 ASSEMBLE FRONT FORK

## 6.12

Install pull up tool (01765-03) on Shaft extension.

Install Preload tube (A), Main spring (B) and Spring support (C) over pull up tool. Select Main spring according to Chapter "Setup Data".

## 6.13

Pull up shaft assembly and grab spring support with a 19 mm wrench.

## 6.14

Remove pull up tool.

## 6.15

Make sure that compression and rebound adjusters are fully open before installing Top cap. Use a 3 mm hex key to open compression and rebound adjusters.

## 6.16

Install o-ring on Top cap. Apply grease on o-ring and Shaft extension thread.

## 6.17

Install Top cap on Shaft extension. Tighten to 20 Nm with a 14 mm socket.

## 6.18

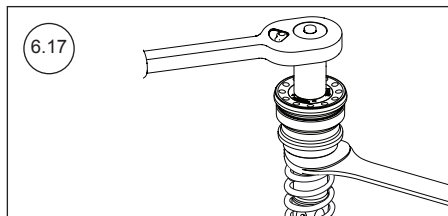
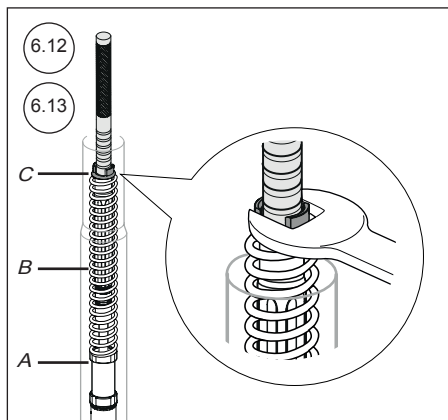
Remove wrench from Spring support.

## 6.19

Pull up Outer tube. Make sure front fork leg is in a fully extended position. Use sleeve pin (00797-08) to tighten Top cap to Outer tube. Tighten to 10 Nm.

## 6.20

Set compression, rebound and main spring adjusters according to chapter "Setup Data". Use a 3 mm hex key for compression and rebound adjusters. Use a 14 mm socket for main spring preload adjuster.



# SETUP DATA

## Recommended setup

Compression adjustment	14	clicks
Rebound adjustment	14	clicks
Suspension fluid level	190	mm
Minimum suspension fluid level	250	mm
Suspension fluid part number	01309-xx	
Front fork leg position	Standard	

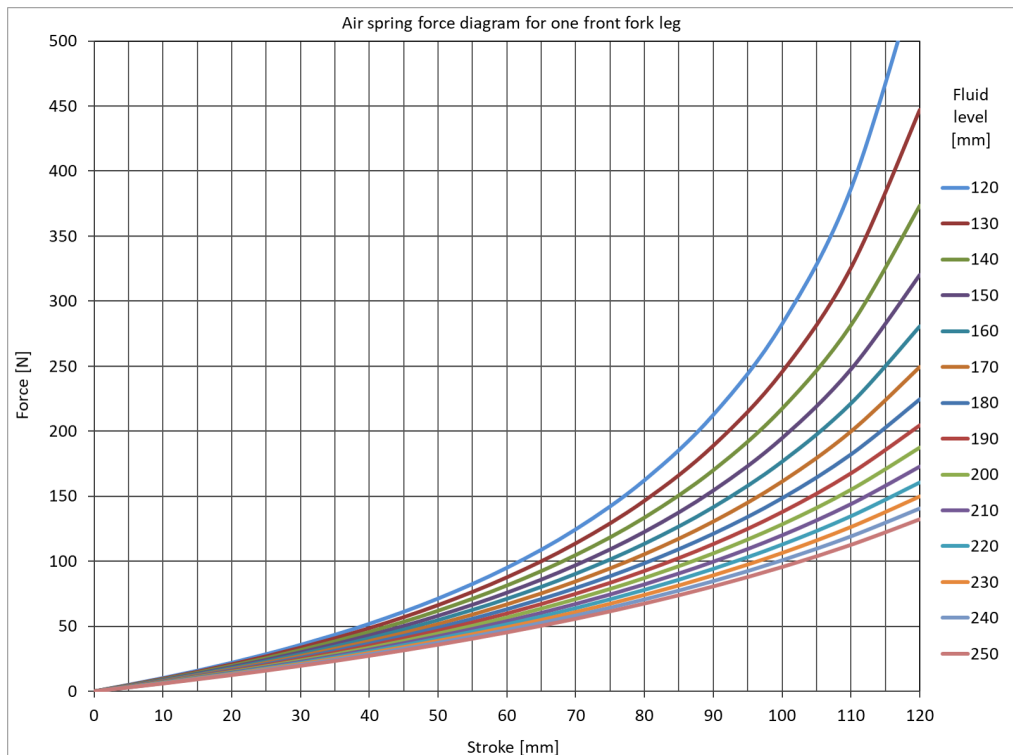
## MAIN SPRING GUIDE

Make sure you choose the correct main spring for your rider weight, driving style and preferences. Below you find a general recommendation of main spring rate for your weight. Contact an authorized Öhlins service center for advice.

Rider weight [kg]	50	60	70	80	90	100	110
Spring rate [N/mm]	9	9	9.5	10	10.5	10.5	11
Preload [mm]	4	6	6	5	5	6	6
Part number (pair)	08790-90	08790-90	08790-95	08790-10	08790-05	08790-05	08790-11
Part number (single)	04744-90	04744-90	04744-95	04744-10	04744-05	04744-05	04744-11

### Note!

Only 8790-xx main springs are packed in pairs.





# TROUBLESHOOTING

## Troubleshooting

The whole motorcycle setup affects the front fork. Make sure you understand how the front fork works, and make adjustments step by step.

### **Note!**

*Adjust only one thing at a time.*

*Below you will find a few examples of how to adjust for the most common stability problems in Road Racing driving.*

**1**

*The front wheel "chatters" entering a corner, the problem goes away, as soon as you let the brakes off, or when you get on the power.*

**A**

The fork is working too low in the travel and reaches the progressive, hard part at the end of the travel.

### **Try one of the following**

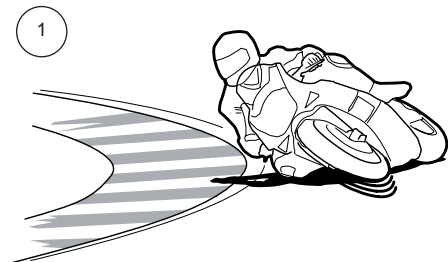
- Increase preload.
- Change to a harder spring.
- If a lot of stroke remains after riding, drop the oil level. See oil level chart.
- Make sure the front fork has no friction.

**B**

Rear ride height is too high, too much rear spring preload.

### **Try one of the following**

- Lower the rear end by taking off preload from rear shock spring.



**2**

*The front wheel is jumping during the last part of braking.*

### **Try one of the following**

- If a lot of stroke remains, the oil level is too high. Lower the oil level.
- If the fork is bottoming, install harder springs and keep the oil level.

**3**

*The front end feels unpredictable and unsafe in the middle of the corner (between braking and getting on power).*

### **Try one of the following**

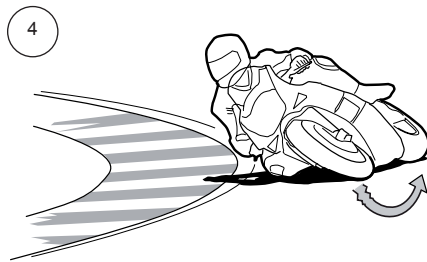
- Not enough rebound damping. Add more damping.
- Too much rebound damping. If it at the same time feels harsh, reduce rebound damping.
- Too much compression damping. Also gives a harsh feeling. Reduce compression damping.

**4**

*The front end loses grip coming out of a corner.*

### **Try one of the following**

- Not enough rebound damping. Add more rebound damping.
- Too much preload. Reduce preload.
- Rear end is too soft. Install harder rear spring.
- Front end is too high. Lower the front end by pulling the fork legs through the triple clamps.





# NOTE



# NOTE

Your Öhlins retailer:

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SE-194 27, Upplands Väsby  
Sweden

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[www.ohlins.com](http://www.ohlins.com)

