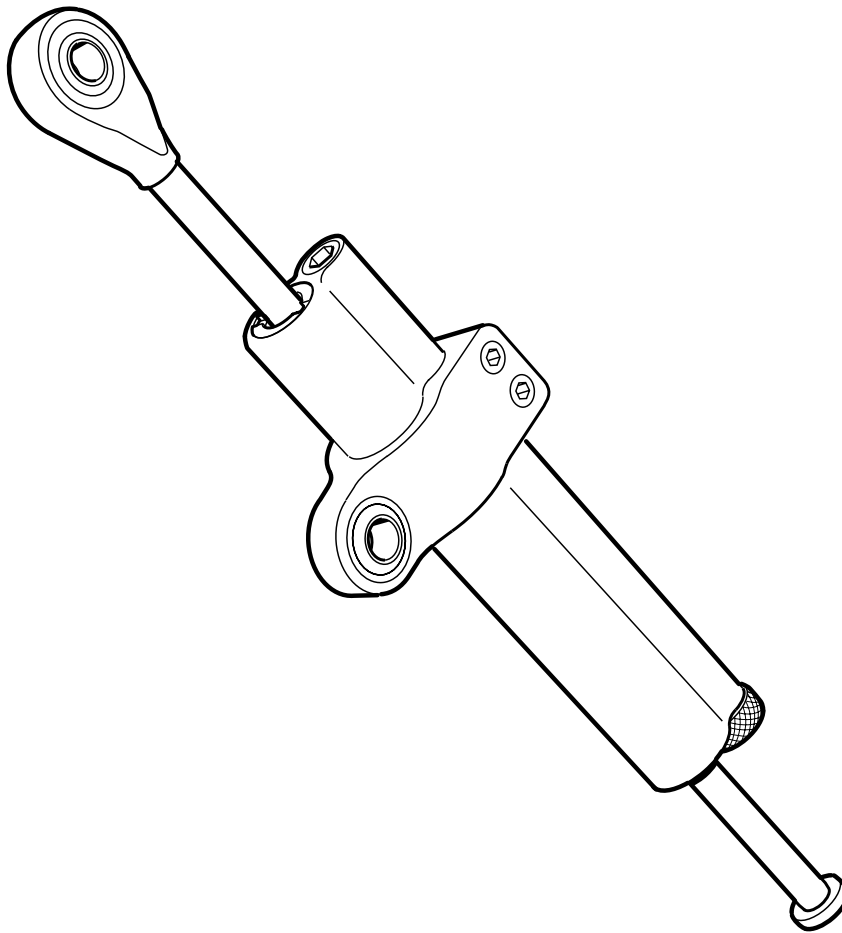


# Work shop manual

## Öhlins Steering damper Road & Track



Including:

Introduction

Safety  
instructions

Dismantling the  
steering damper

Assembling the  
steering damper

Filling oil

## Introduction

All of Öhlins advanced suspension products are adapted to the make and model. This means that damping characteristics, are tested individually just for the vehicle fitted with Öhlins steering damper. When servicing be sure to use the correct spare parts.

The information, illustrations and specifications contained in this manual are the latest product information available at the time of publication. This manual is presented to make the service of the Öhlins steering dampers as easy and as safe as possible with maximum performance out of the serviced steering damper as possible.

## Safety signals

Important information concerning safety is distinguished in this manual by the following notations:

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The Safety alert symbol means:  
Caution. Your safety is involved.

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### **⚠ WARNING!**

Failure to follow warning instructions could result in severe or fatal injury to anyone working with, inspecting or using the suspension, or to bystanders

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### **CAUTION!**

Caution indicates that special precautions must be taken to avoid damage to the suspension.

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### **NOTE!**

This indicates information that is of importance with regard to procedures

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## Before you start

Öhlins Racing AB cannot be held responsible for any damage whatsoever to spare parts, steering damper or vehicle, or injury to persons, if the instructions for fitting and maintenance are not followed exactly. Similarly the warranty will become null and void if the instructions are not adhered to.

Make sure you have all the necessary tools before you start working on the Öhlins steering damper.

### **⚠ WARNING!**

Please study and make certain that you fully understand all the workshop manual before handling this steering damper. If you have any questions regarding proper service procedures, contact an Öhlins dealer or other qualified person.

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### **NOTE!**

Öhlins products are subject to continual improvement and development. Consequently, although these instructions include the most up-to-date information available at the time of printing, there may be minor differences between your steering damper and this manual. Please consult your Öhlins dealer if you have any questions with regard to the contents of the manual.

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## NOTE!

Always remove the steering damper assembly from the motorcycle when servicing. Before releasing note the position of the steering damper bracket on the cylinder.

## Opening of the steering damper and draining of the oil

### 1

Fasten the steering damper in a vice. Use the cylinder bracket positioned 30-40 mm from the cylinder end.

### 2

Use a 6 mm Allen key to remove the reservoir cover. Lift the reservoir out by using a needle.

### 3

Push down the shaft to a stop and close the damper adjuster.

### 4

Pull the shaft rapidly upwards. The valve assembly will be pressed up and out of the reservoir. Remove it from the damper and clean it carefully.

## NOTE!

It is advisable to hold a rag over the steering damper to avoid oil stains and to catch the valve assembly into.

### 5

Turn the damper adjuster to fully open and loosen the cylinder cover. Use tool 1709-01.

### 6

Once more push the shaft down to a stop close the damping adjuster, fill up the oil in the reservoir.

### 7

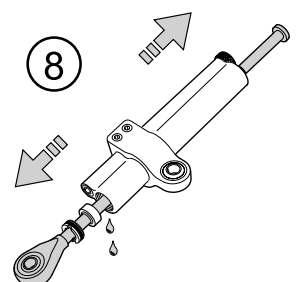
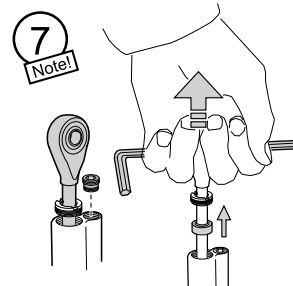
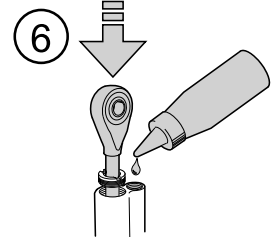
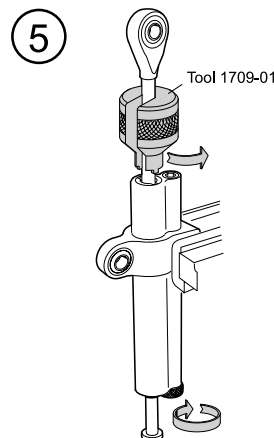
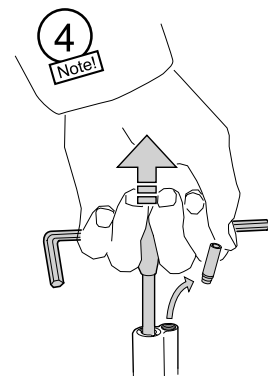
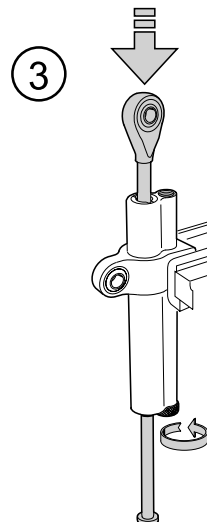
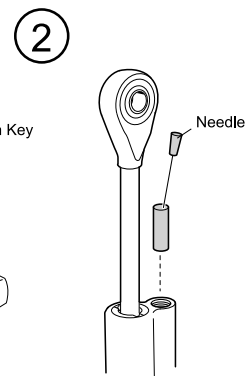
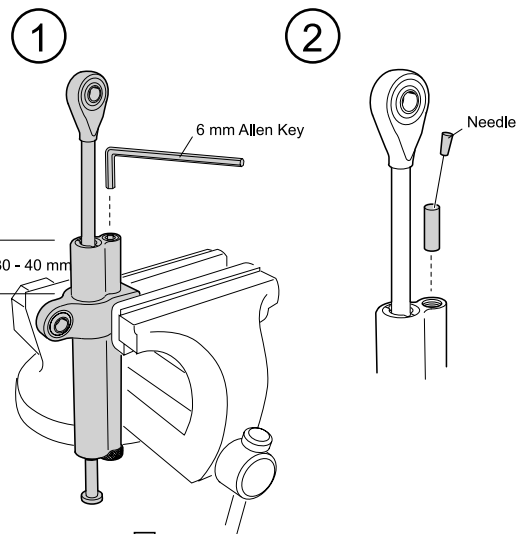
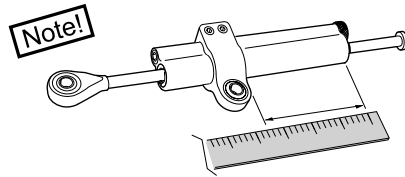
Refit the reservoir cover and pull the shaft rapidly upwards. The shaft seal will then pop out.

## NOTE!

It is advisable to hold a rag over the steering damper to avoid oil stains.

### 8

Remove the damper from the vice. Drain the damper by moving the shaft back and forth, until the damper is out of oil, and clean the steering damper carefully externally.



## Removing the shaft from the steering damper

### 1

Again fasten the damper bracket in a vice with soft jaws. Remove the shaft cover.

### 2

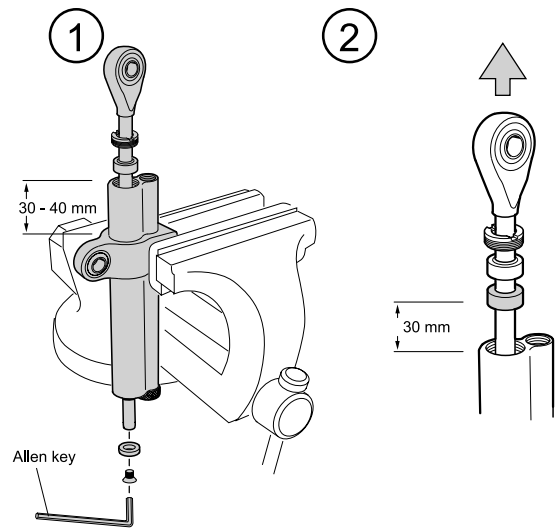
Carefully pull the shaft with shaft seal and the bushing holder with the bushing out of the cylinder. When the shaft is pulled approximately 30 mm out the circlip can be reached.

### 3

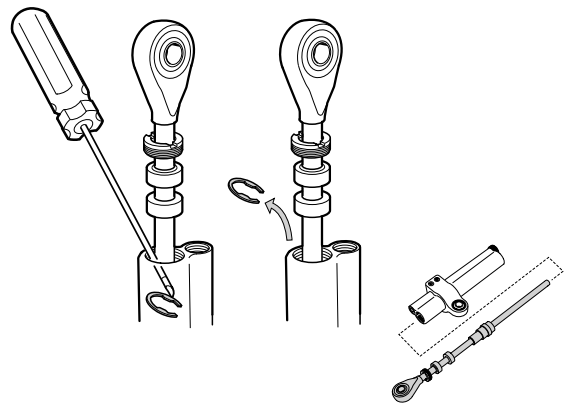
Free the circlip by pushing the open side downwards and remove it upwards. Pull the whole shaft with the piston assembly out of the cylinder and clean it carefully.

#### **NOTE!**

Make sure not to damage or scratch the shaft, bushings and seals.



### 3



## Removing the remaining seal, bushing and the adjuster

### 1

Turn the cylinder in the vice so the adjuster side is directed upwards. Use tool 1709-01 to loosen the reservoir cover.

### 2

Push the remaining seal and bushing out. Use teflon bar 1713-01 to punch the bushing upwards.

### 3

Remove the adjuster wheel by loosening the set screw (2 mm Allen key).

### 4

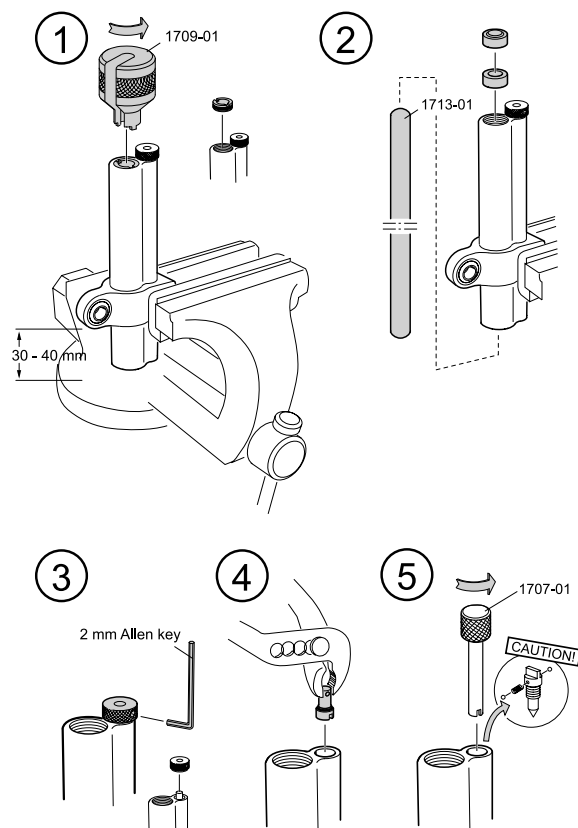
Remove the needle fork with the help of a pair of pliers.

#### **CAUTION!**

Be careful not to drop and lose the small balls and the spring inside the needle at step number 5.

### 5

Use tool 1707-01 to unscrew the adjuster needle and lift it out of the reservoir.



# Dismantling the piston shaft and piston

## 1

Fasten the shaft in a vice by using soft jaws 1712-01.

## 2

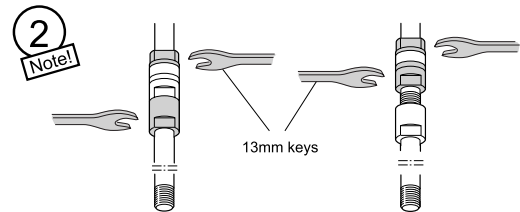
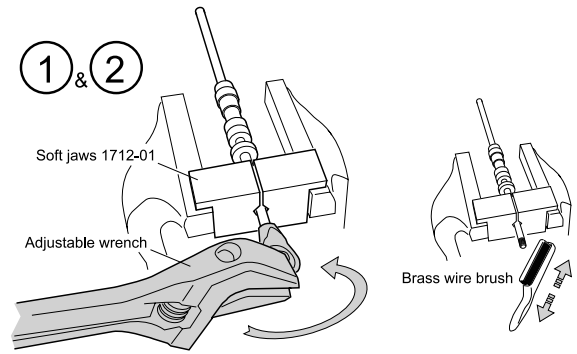
Use an adjustable wrench to loosen the end eye from the shaft. Clean the threads carefully. Use a brass wire brush to remove the remains of Loctite.

## 3

Use two 13 mm keys to loosen the piston. First remove the piston from the lock nut, Then the piston from the sleeve, so the piston band is free. Pull the parts from the shaft.

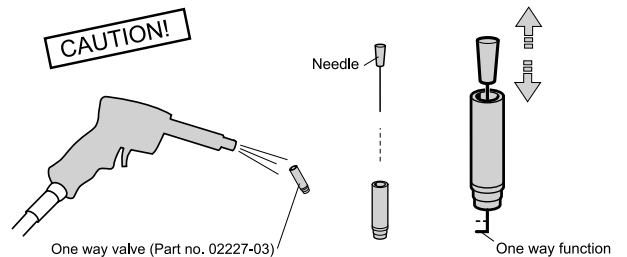
### NOTE!

Examine all the parts carefully and clean the housing carefully. We recommend replacement of following parts: Piston ring, seals, foam reservoir and ball bearings.



### CAUTION!

The function of the one way valve (Part no. 02227-03) must be checked. When the valve is cleaned and dried by pressurized air make sure that the small wire runs smoothly. Check with a needle that the one way function is correct. Otherwise the valve must be replaced.



# Assembling of the steering damper - shaft

## 1

Fasten the shaft in a vice by using soft jaws 1712-01. Refit the piston and the piston band to the sleeve. Tighten to a torque of 10 Nm.

### CAUTION!

Make sure that the piston band can be rotated on the piston.

## 2

Refit the lock nut to fix the piston assy to the circlip on the shaft. Tighten to a torque of 10 Nm.

## 3

Fit the bushing. The chamfered side (the circlip groove) facing the piston.

### CAUTION!

The seal must be positioned correctly, with the deeper recess facing the bushing.

## 4

Wrap some teflon tape round the thread of the shaft, to protect the seal from damages. Apply some red grease 146-01 to the tape and the shaft end.

## 5

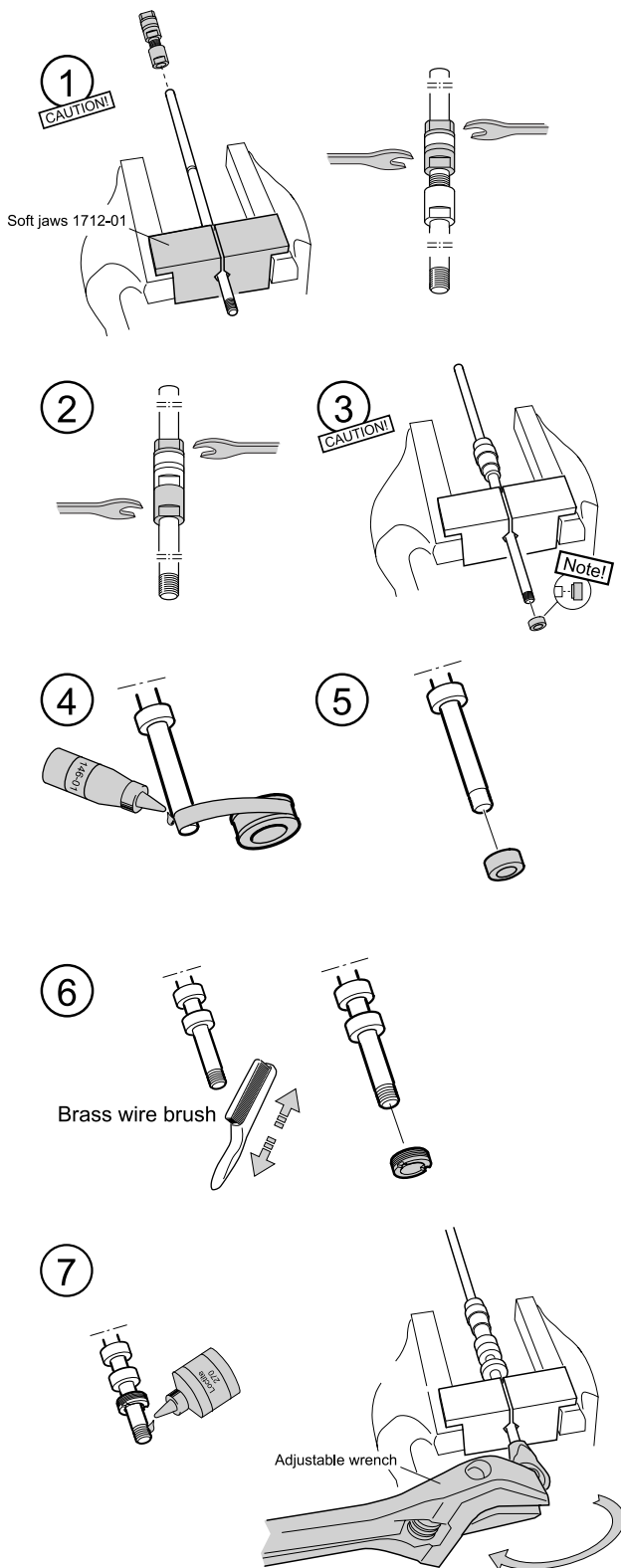
Mount the seal to the shaft with a soft rotating movement.

## 6

Refit the cylinder cover to the shaft.

## 7

Refit the end eye. Apply Loctite 270 to the threads. Tighten to 15 – 18 Nm.



# Assembling of the steering damper – adjuster

## 1

Fasten the cylinder in a vice. Apply some red grease to the needle and fit the spring into the needle.

## 2

Use tool 1707-01 to fit the balls. Insert the needle into the tool so the hole in the tool aligns with the hole in the needle. Push one ball into the needle, rotate the needle 180° and push the other ball into the needle. Turn the needle 90° to keep the balls and spring in locked position.

## 3

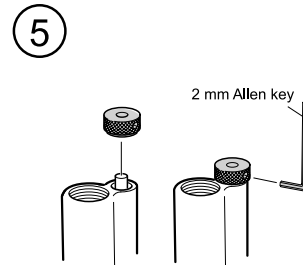
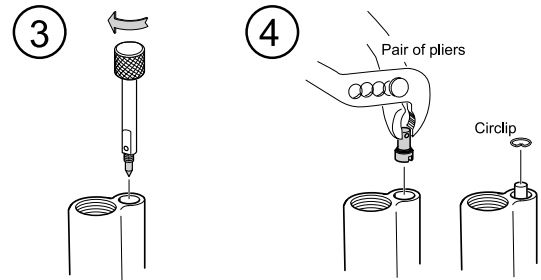
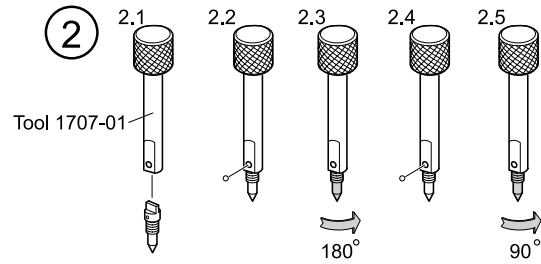
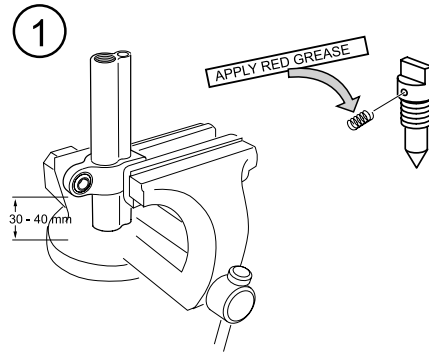
Push the tool with the needle into the reservoir to a stop. Rotate it clockwise so the needle can be threaded into correct position. When it comes to a stop open the adjuster needle 10 clicks by turning the tool counter clockwise.

## 4

Refit the needle fork and secure it with the circlip.

## 5

Refit the adjustment wheel and lock it with the set screw.



# Assembling of the steering damper – cylinder

## 1

Fasten the cylinder vertically in a vice adjustment side up.

## 2

Refit the bushing and the seal to the adjuster side of the cylinder. Use the teflon bar 1713-01 to push them into correct position.

### CAUTION!

Make sure that the circlip is correctly seated in the groove. The bushing must be turned the same way as on the shaft, groove in bushing and recess in the seal facing the piston!

## 3

Refit the reservoir cover. Use tool 1709-01 to tighten the cover and get the seal in correct position. Then loosen the cover, turn it down again gently with your fingers to a stop. Then turn another 90° to fit the position.

## 4

Turn the cylinder 180° in the vice.

## 5

Fit the shaft assembly from above. When the piston is below the circlip groove the circlip is fitted the same way it was removed.

### CAUTION!

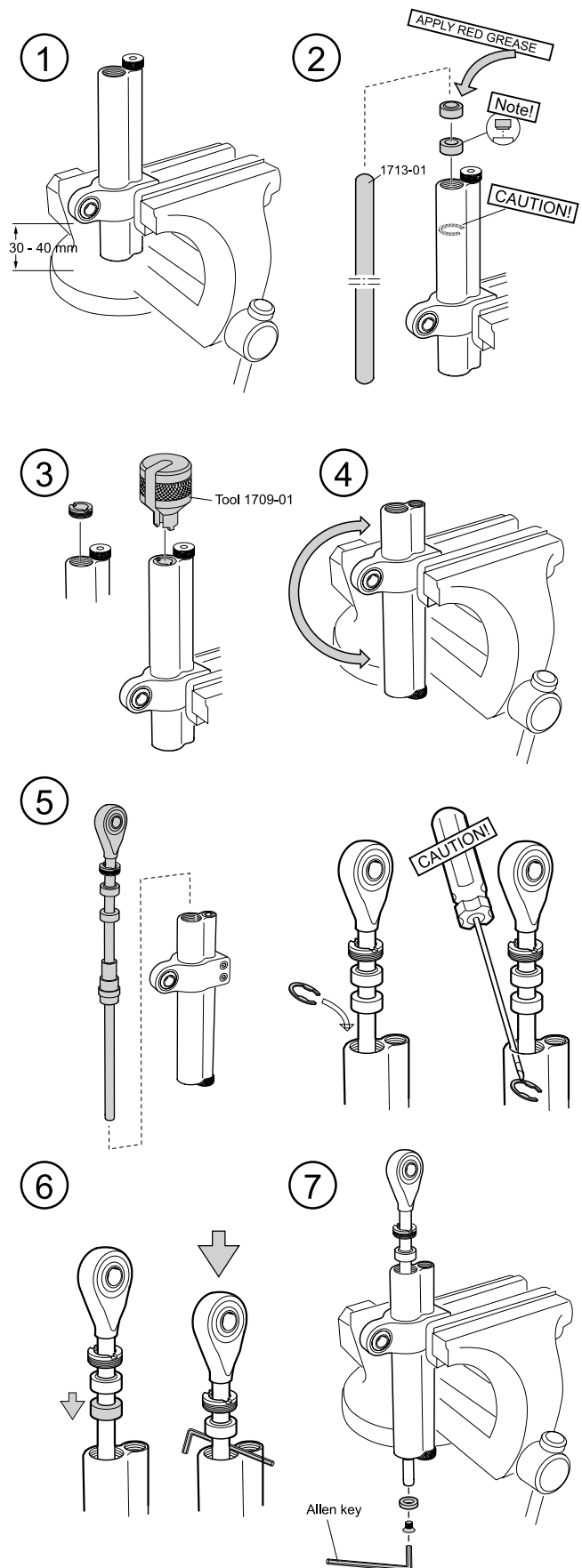
Make sure that the circlip is correctly seated in the groove.

## 6

Push the bushing down. Put a suitable device between the cylinder top and the seal to keep the cylinder open.

## 7

Refit the stop cover to the shaft.





# Assembling of the steering damper – filling of oil

## NOTE!

We recommend the use of Oil Filling Machine 1811-01 in combination with adapter 1820-03. However the following instructions are used when a such not is available.

## 1

Use adapter 1820-03 to connect an oil supply to the reservoir of the steering damper. The connecting hose must be made from transparent plastic, so the trapped air comes visible.

## 2

Let the oil (R&T 43, Part no.1309-01) into the damper until it is filled. Push the shaft gently up and down to release the trapped air. The movement must extend over the whole stroke of the damper.

## NOTE!

It might be necessary to hold the bushing down when moving the shaft.

## 3

Continue to push the shaft up and down, until air movement no longer is visible inside the hose.

## NOTE!

Most of the air will be released if you let the damper wait in upright position connected to the oil supply.

## 4

When the air is released the remaining seal is fitted. Before it is pushed into the cylinder a thin plastic wire or similar should be squeezed between the seal and the shaft. This will prevent more air to be trapped under the seal.

## 5

Push the seal into the cylinder and release the pin.

## 6

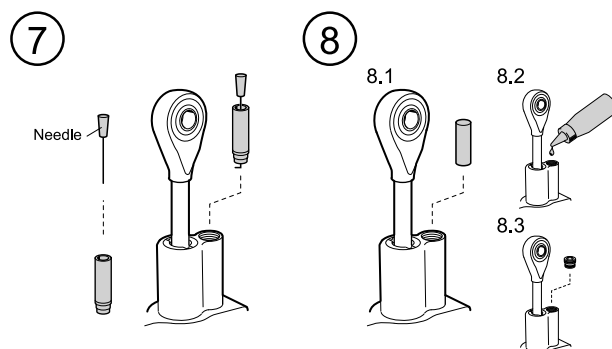
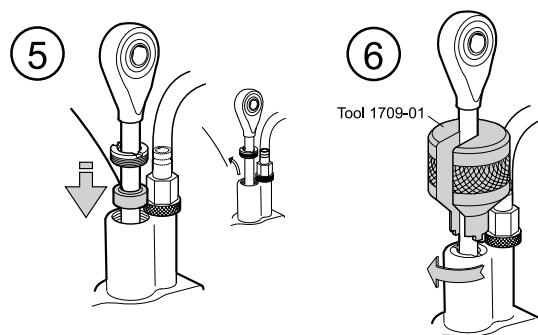
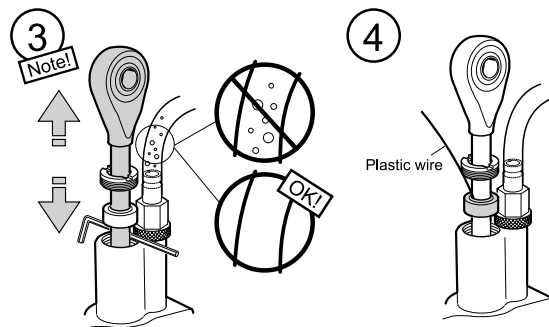
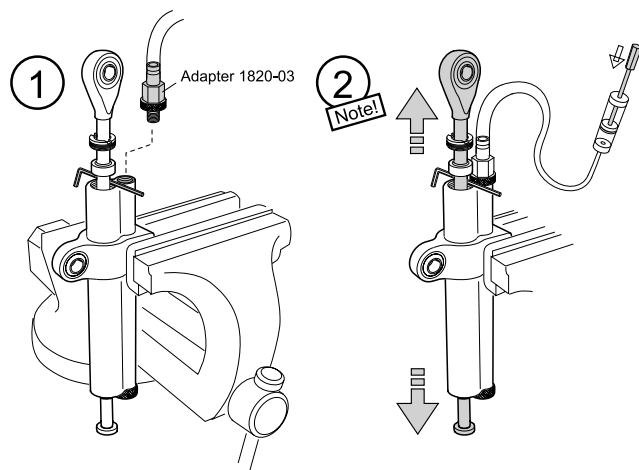
Refit the cylinder cover using tool 1709-01. Tighten it hard and release  $\frac{1}{4}$  turn.

## 7

Remove the oil hose and refit the one way valve. To avoid released air, the valve must be held open when it is pushed into the oil. Use a needle to hold it open.

## 8

Refit the reservoir. Fill more oil, so it reaches the top of the cylinder when the reservoir cover is refitted.



## Assembling of the steering damper – final steps

### 1

Fasten the assembled steering damper horizontally in a vice.

### 2

Push the shaft back and forwards. The piston should run smooth without sticking. The adjustment wheel should be turned easily and not stick in any position of the adjustment range.

### 3

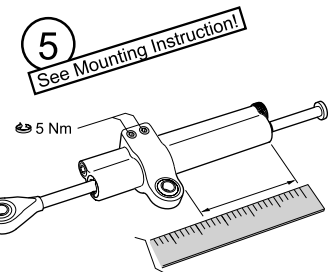
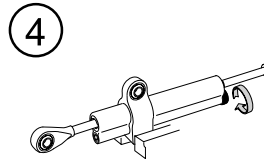
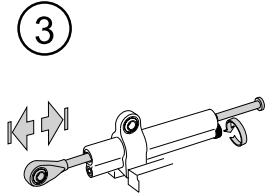
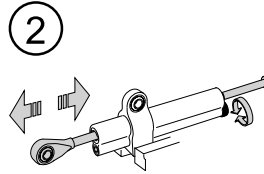
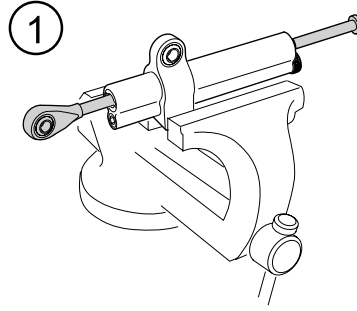
Close the adjuster. In this position the shaft should be nearly stuck in position.

### 4

Open the adjuster to 10 clicks again.

### 5

Adjust the steering damper bracket to correct position on the cylinder (See mounting instructions for correct measurement) Tighten the attachment screws to 5 Nm.



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