

Shock absorber

ROAD & TRACK DFV

Owner's Manual

ÖHLINS



Öhlins Group AB | Our Story

In the 1970s, a young man named Kenth Öhlin spent most of his free time on the track, pursuing his favorite sport: motocross.

Being a careful observer, there was one detail that kept catching Kenth's attention: motocross bikes had more engine power than their suspension could handle. It wasn't long before Kenth realized that improving the wheel suspension could lead to better overall performance – and the rest is history.

Öhlins was founded in 1976, and just two years later, the company won its first World Championship title. Now, after 50 years in the business, Öhlins is still rooted in motorsport heritage, driven by a passion for performance and innovation.

Developed, Tested, and Perfected for Your Ride

Congratulations on your new Öhlins product! Backed by over 450 World Championship victories and countless other major titles, our products offer proven performance and reliability.

Every Öhlins product undergoes rigorous testing. Our engineers spend thousands of hours developing products, drawing on five decades of racing experience to achieve the perfect balance of precision, durability, and ride quality.

By choosing Öhlins, you've made a clear statement: you're a genuine riding or driving enthusiast who demands the best possible performance from your vehicle. You don't settle for anything less than exceptional handling ability and confidence-inspiring feedback that turns every ride into an experience.

Your Öhlins product is pure racing pedigree, engineered to endure and deliver ultimate comfort and performance – wherever your ride takes you.

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 Group 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, or to bystanders.

Caution!

The Caution Symbol means: Special precautions must be taken to avoid damage to the product.

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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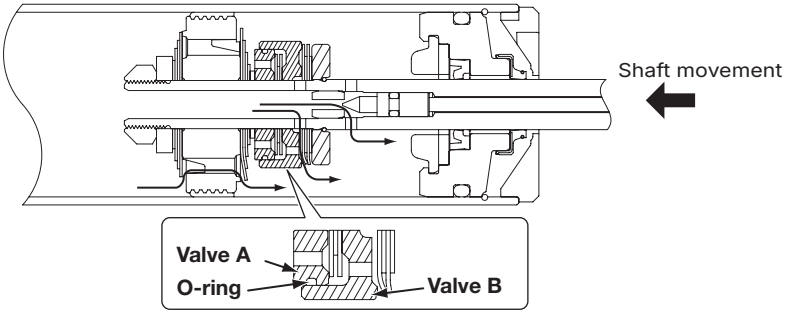


FUNCTIONING

DFV Dual Flow Valve

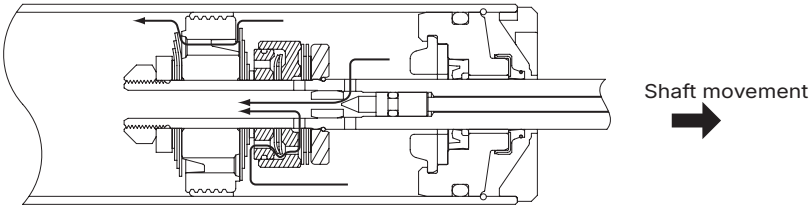
The DFV (Dual Flow Valve) is a sub-piston system, consisting of a compression valve (Valve A) and a rebound valve (Valve B), see figure below. The settings for valve A and B can be changed individually.

Compression Stroke



During a compression stroke, oil flows through 3 different passages as shown in the figure. At low shaft speeds the DFV is closed, and the damping from the bleed valve and the piston shim stack is tailored to give good steering response. When hitting a bump, the DFV opens instantly to absorb the impact.

Rebound Stroke



During a rebound stroke, oil flows through 3 different passages as shown in the figure. At low shaft speed the DFV is closed, and the damping from the bleed valve and the piston shim stack is tailored to give good steering response. When passing a pot-hole or sudden depression in the road, the DFV opens instantly to keep the tyre in contact with the road.

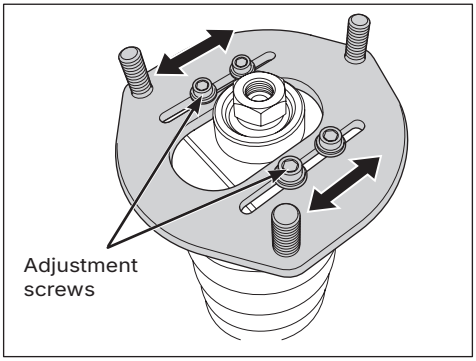
With the extra third valve created by incorporating the DFV, the damping force characteristics can be tailored to improve both handling and comfort at the same time, something that is not possible without the DFV.

CAMBER

Camber

If your suspension is supplied with adjustable top mounts, then it can be moved in relation to the mounting plate. The adjustment screws can be mounted in different holes depending on which camber you want. To adjust camber, loosen the adjustment screws (see figure) and slide the top mount in the slots in the mounting plate until you have the camber you want. If the screws bottom out in the slots, mount the adjustment screws in another set of holes. Tighten the adjustment screws to 12-14 Nm.

The top/nylon nut may come off depending on the suspension type. Apply appropriate screw lock agent if necessary. Tighten the nut carefully.



Caution!

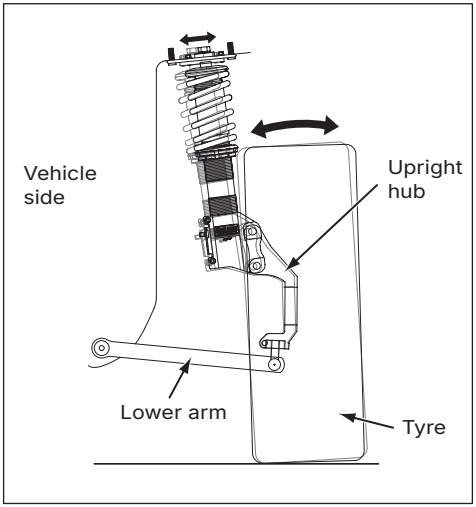
The scales marked on the top mount shall only be used as a reference. The camber shall be measured with appropriate equipment.

Caution!

If the nut is tightened to a higher torque than recommended the shaft may be damaged.

Tightening Torque

Thread	Lock Nut	Regular Nut
M10×1.25	18-24 Nm	25-30 Nm
M12×1.25	30-35 Nm	35-40 Nm
M14×1.5	----------	60-70 Nm



Caution!

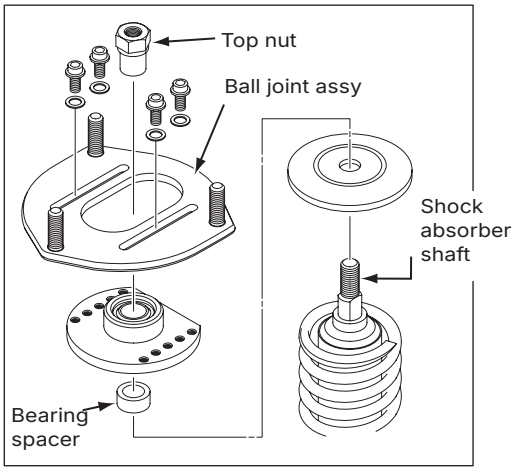
Use the correct bearing spacer. If you do not use the correct bearing spacer the shaft may be damaged.

Caution!

If you drive in severe conditions during a long period of time a knocking sound may occur. Replace the spherical bearing after 2 years/20000km.

Caution!

Do not use any tool to grip the shaft/chrome tube when tightening the top nut. This may cause severe damage.



SPRING PRELOAD

Spring Preload

When adjusting spring preload you move the spring seat. This will decrease or increase the initial spring force, which will lower or raise the vehicle.

If your shock absorber is of the length adjustable type, spring preload and ride height can be changed individually. In this case the preload adjuster shall firstly be used for ride height adjustment within the range of availabe stroke mentioned in the Mounting instruction.

The spring preload affects the height of the vehicle and the wheel angles.

✋ Caution!

By changing the preload, the vehicle stability may be affected.

⚠ Warning!

Before adjusting; raise the vehicle so that the wheels are off the ground, also, remove the wheels. If setting the spring preload with wheels on and loaded suspension there is risk for damage on the suspension parts as well as personal injury. After adjusting, lock the lock nut.

Set the Spring Preload

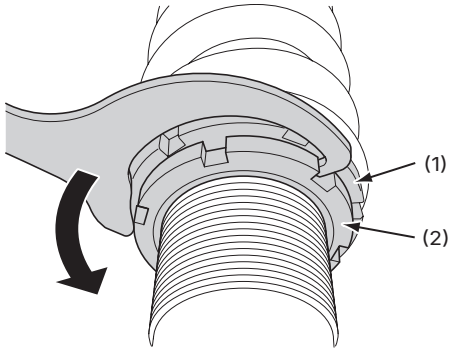
Use a C-spanner. Unlock the lock nut (2). Turn the spring platform nut (1) clockwise to increase the spring preload. Turn counter clockwise to decrease it. Lock the setting with the lock nut (2).

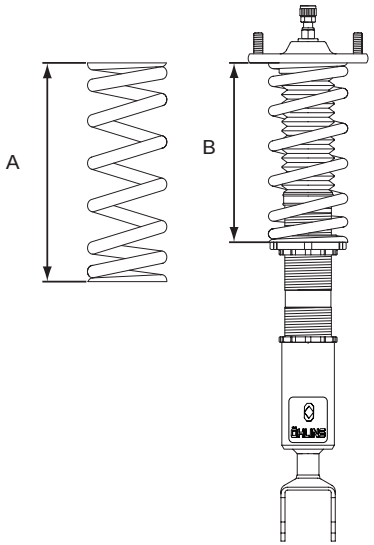
Tightening torque 40-50 Nm.

✋ Caution!

Do not adjust the spring platform so that the spring has a play. It shall always be mounted with preload.

Set the Spring Preload





A Free spring length
B Installed spring length, shock absorber fully extended
A-B = Spring Preload

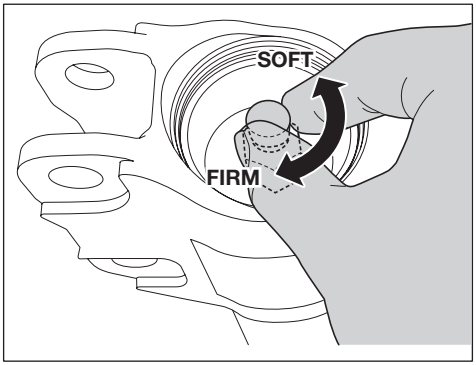
Spring Preload is the difference between the measures A and B.

DAMPING ADJUSTER

Damping Adjustment

Reference position for damping force adjustment:

1. The adjusters are set at 7 clicks from the factory.
2. The adjuster affects both compression and rebound damping simultaneously.

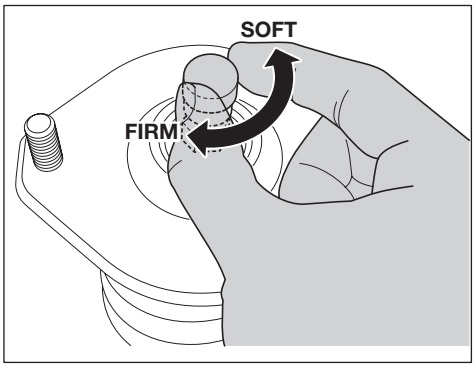


Note!

After mounting the shock absorber, always check the click position of the adjuster.

Adjust Damping

Turn the adjuster clockwise to fully closed position (position zero [0]). Then, turn counter clockwise to open, and count the clicks until you reach the recommended number of clicks. See recommended set-up in the Mounting Instructions for the shock absorber.



Caution!

Do not use force, delicate sealing surfaces may be damaged.

LENGTH ADJUSTER

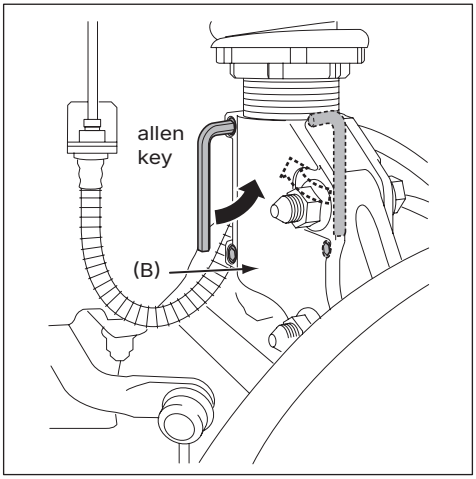
Length Adjuster

⚠ Warning!

Before adjusting; raise the vehicle so that the wheels are off the ground, also, remove the wheels. If setting the spring preload with wheels on and loaded suspension there is risk for damage on the suspension parts as well as personal injury.

⚠ Warning!

When adjusting the vehicle height with the length adjuster (in particular, when lowering the vehicle height by shortening the overall strut or shock absorber length), the tire or suspension arm etc. may easily interfere with the vehicle body or other suspension parts. Therefore, carefully check that there is no interference between parts after adjusting. Always start with the recommended length in the Mounting instruction and make small adjustments from there.

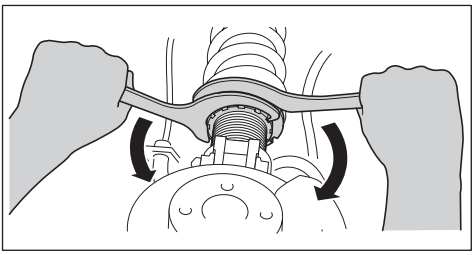


Adjust Strut Length

Adjust strut length with the shock absorber still mounted on the vehicle.

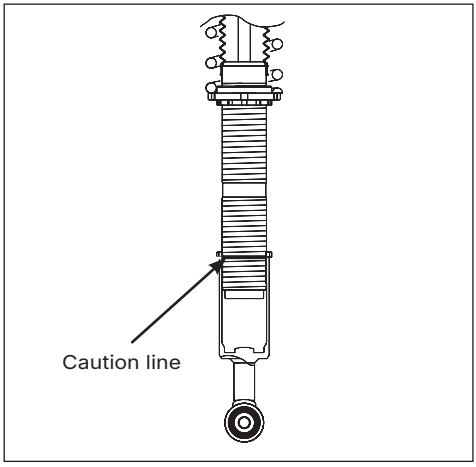
Loosen the two bolts and nuts on the rear side of the upright bracket (B). Use a 5 mm and 6 mm Allen key or use the supplied C-spanner to loosen the lock ring and turn the strut main body to adjust damper length.

If a divorced spring (not coilover) is used, which is very common on cars rear suspension, the damper length adjuster will not change vehicle height, it is used to fine tune available stroke between compression and rebound. If vehicle height is lowered on spring adjuster the damper length can be shortened to keep preload on the spring. Do not adjust outside recommended length in Mounting instruction.



⚠ Warning!

The bracket shall not be adjusted below the caution line as it may come loose or break.



ADJUSTMENT AND SET-UP

The actual vehicle height varies depending on the accessories mounted on the vehicle, weight and/or individual differences of the vehicle. See the Mounting instruction for recommended preload and length adjustments and their adjustment range.

⚠ Warning!

If the lower bracket is set outside the adjustment range it may interfere with suspension or vehicle body parts.

By using the adjustments available on this product, and testing by trial and error, you can learn how the adjustments affect your vehicle. Always begin by taking your vehicle for a test drive with all adjustments at their recommended settings. Choose a short run of varying character with long and sharp bends, hard and soft bumps. Stay to the same round and adjust only one setting at a time.

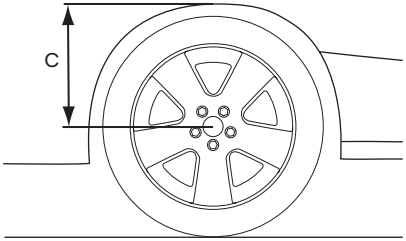
⚠ Warning!

Before driving, always ensure that the basic settings by Öhlins have not been changed during delivery. When adjusting, always make notes, adjust in small steps and make only one adjustment at a time to be able to evaluate correctly.

Revalving

The Öhlins R&T shock absorber can be revalved to adjust the damping force to custom specifications.Please contact your Öhlins dealer for advice.

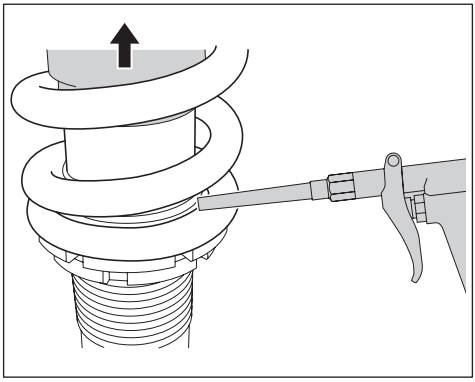
Check vehicle height



Measuring points after assembly.
Wheel centre to wheel arch top (C)

INSPECTION AND MAINTENANCE

Preventive maintenance and regular inspection reduces the risk of functional disturbance. If there is any need for additional service, please contact an authorized Öhlins workshop.



Cleaning

Clean the shock absorber externally with a soft detergent. Use compressed air. Be careful that all dirt is removed. Lift the bump rubber and clean the area below. Keep the shock absorber clean and spray it with oil (WD40, CRC 5-56 or equivalent) after washing. Wipe off excessive oil with a cloth. Some areas of the shock absorber are treated with special surface treatment such as Teflon coating. Do not use strong chemicals, i.e. strong solvents or wheel cleaning detergents, and/or a hard brush for cleaning as it may discolour and change the appearance of the shocks surface treatments.

Inspection

1. Check ball joints for possible excessive play or stiction.
2. Check the piston shaft for leakage and damage.
3. Check the shock absorber body for external damage.
4. Check for excessive wear of rubber components.
5. Check the attachment points of the shock absorber to the vehicle.

Recommended Service Intervals

Racing: Every 15 hours of operation.
Maximum 30 hours of operation without service and oil change.

Regular street use: Every 60 000 km

Disposal

Discarded Öhlins products shall be handed over to an authorized Öhlins workshop or distributor for proper disposal.

👁 Note!

The Öhlins shock absorber shall only be filled with Öhlins High Performance Shock Absorber Fluid. Contact an Öhlins dealer for advice.

⚠ Warning!

Never change gas pressure. Special purpose charging equipment, access to nitrogen and special knowledge is required.

Owner's Manual | Part No. 07451-01_8 | Issued 2026-11-04 | © Öhlins Group AB

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