OWNER'S MANUAL

Öhlins Shock Absorber
TPX/TTX44 Automotive

Rally

Rally Raid

Rally Cross

ÖHLINS
ADVANCED SUSPENSION TECHNOLOGY

Öhlins Racing AB - The Story

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

A careful observer, Kenth's attention was continually 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 30 years, the search for perfection and new functions is still the main focus of the company.

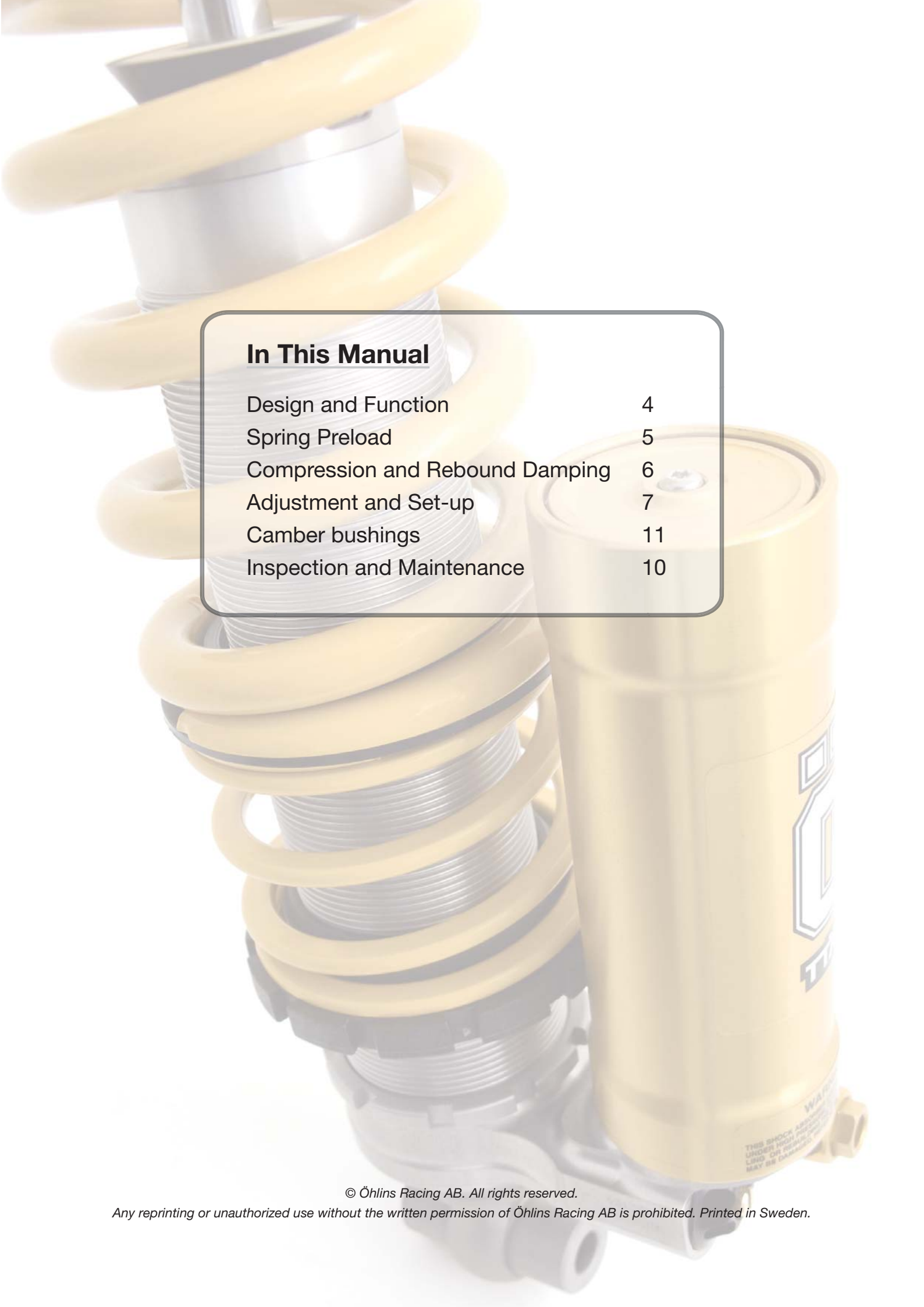
Congratulations

You are now the owner of an Öhlins Shock Absorber. More than one hundred World Championships and other major world titles are definitive proof that Öhlins shock absorbers 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 30 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 an Öhlins shock absorber 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 shock absorber will be a long lasting friend, delivering the very best of comfort and performance every time you go for a ride.

Go explore!



In This Manual

Safety Precautions

Öhlins Racing AB cannot be held responsible for any damage to the shock absorber or vehicle, or injury to persons, if the instructions for installing and maintenance are not followed exactly.

Similarly the warranty will become null and void if the instructions are not followed.

Safety Signals

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

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 shock absorber.

NOTE!

The Note Symbol indicates information that is of importance regarding procedures.

⚠ WARNING!

1. *Installing a shock absorber, that is not approved by the vehicle manufacturer, may affect the stability of your vehicle. Öhlins Racing AB cannot be held responsible for any personal injury or damage that may occur after installing the shock absorber.*

2. *Please study and make certain that you fully understand this manual and the mounting instructions before handling this shock absorber. If you have any questions regarding proper installation procedures or maintenance, please contact an Öhlins dealer.*

3. *Refer to the vehicle service manual when installing this shock absorber!*

NOTE!

Öhlins products are subject to continuous improvement and development. Therefore, although these instructions include the most up-to-date information available at the time of printing, there may be minor differences between your shock absorber and this manual. Please consult your Öhlins dealer if you have any questions regarding the contents of the manual.

Before riding the vehicle, always make sure that the basic settings made by Öhlins are correct. See the Mounting instructions for recommended Set-up data. Contact an Öhlins dealer if you have any questions about setting the shock absorber.

Design and Function

Congratulations on choosing the Öhlins TPX/TTX Rally shock absorber - the most unique and powerful racing shock absorber available today. The TPX 44 is of a McPherson type and TTX 44 is of a twin tube type shock absorber. Both are 3 way adjusted. High and low speed compression with Rebound adjusters. Both are available with the new updated Progressive Damping System (PDS). The TPX/ TTX44 shock absorber design is the culmination of two decades of Öhlins successful participation in World Championship events.

This shock absorber draws on all the expertise developed by Öhlins while winning more than a hundred World Championships.

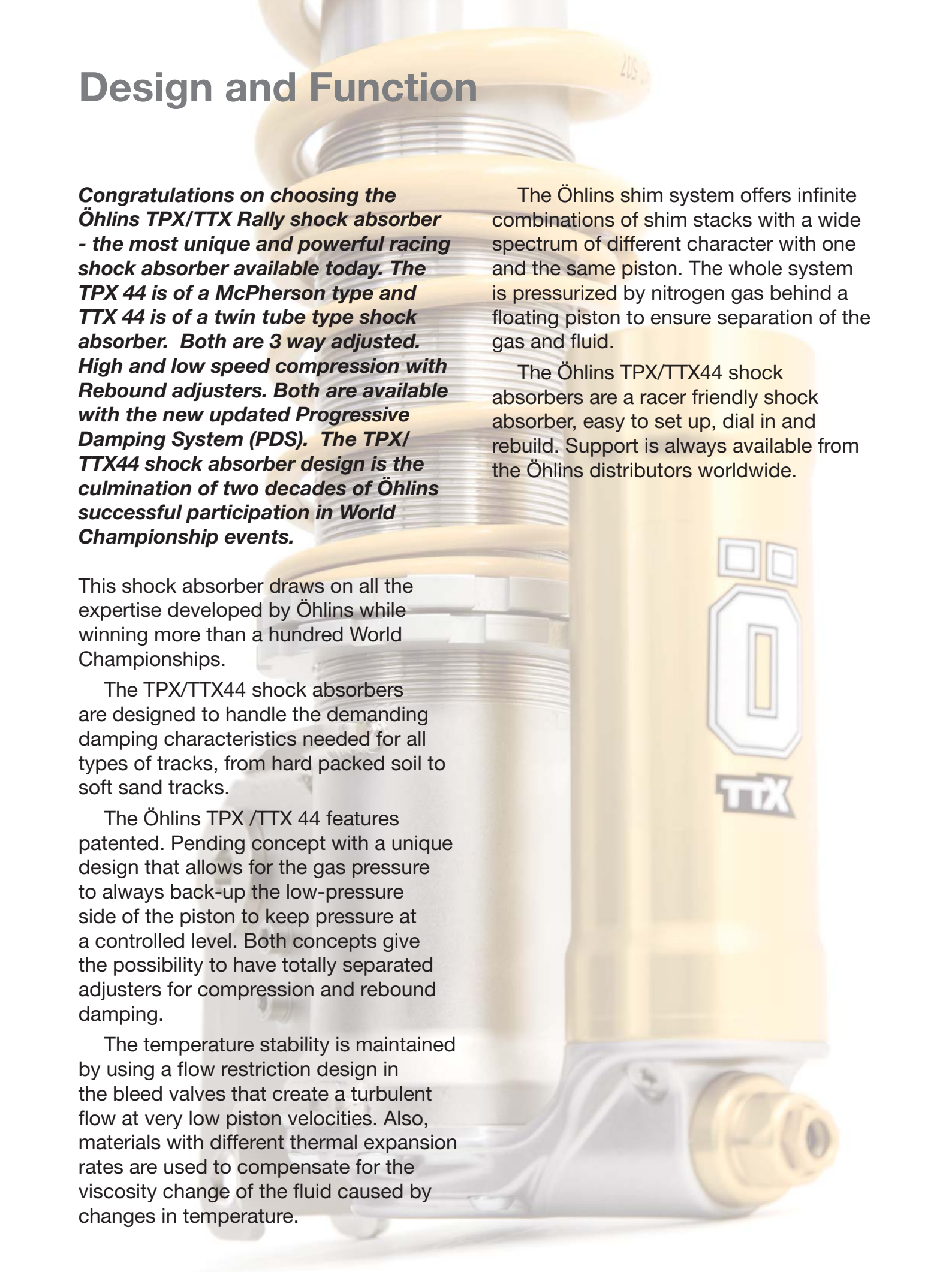
The TPX/TTX44 shock absorbers are designed to handle the demanding damping characteristics needed for all types of tracks, from hard packed soil to soft sand tracks.

The Öhlins TPX /TTX 44 features patented. Pending concept with a unique design that allows for the gas pressure to always back-up the low-pressure side of the piston to keep pressure at a controlled level. Both concepts give the possibility to have totally separated adjusters for compression and rebound damping.

The temperature stability is maintained by using a flow restriction design in the bleed valves that create a turbulent flow at very low piston velocities. Also, materials with different thermal expansion rates are used to compensate for the viscosity change of the fluid caused by changes in temperature.

The Öhlins shim system offers infinite combinations of shim stacks with a wide spectrum of different character with one and the same piston. The whole system is pressurized by nitrogen gas behind a floating piston to ensure separation of the gas and fluid.

The Öhlins TPX/TTX44 shock absorbers are a racer friendly shock absorber, easy to set up, dial in and rebuild. Support is always available from the Öhlins distributors worldwide.



Spring Preload

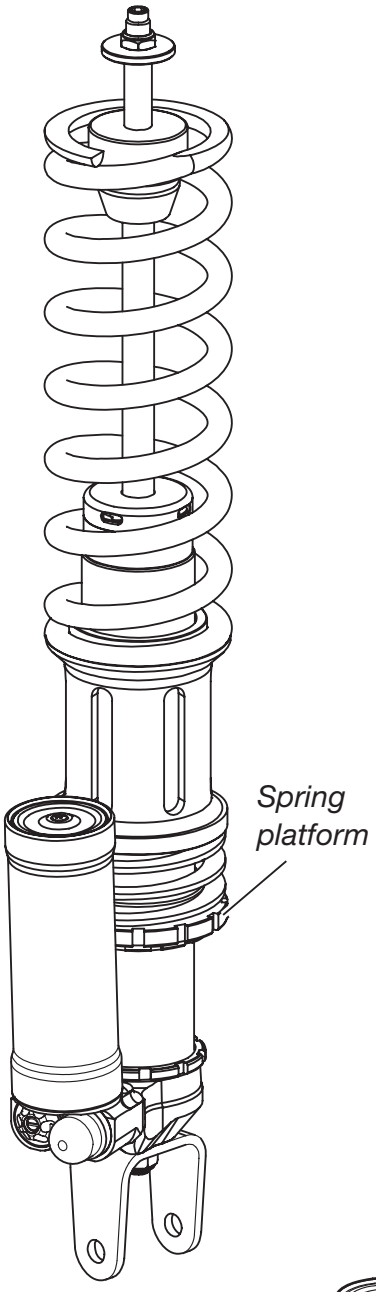
When adjusting the spring preload you move the spring seat. This will lower or raise the vehicle ride height. The ride height is an important criteria for the behavior of your vehicle.

Set the Spring Preload

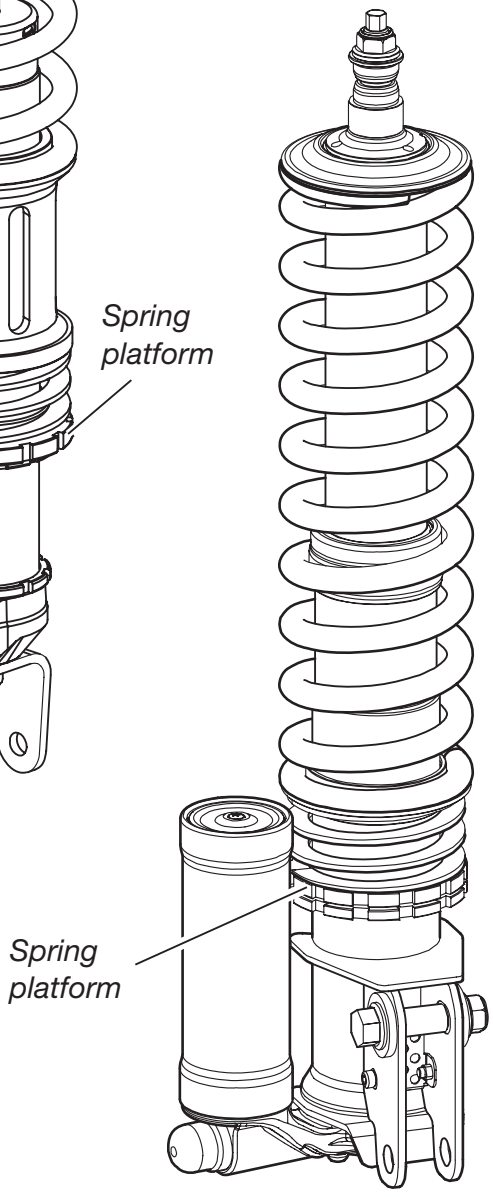
For TTX shock absorber use C-spanner 00710-02 and C-spanner 01796-01 to undo the lock nut and turn the spring platform to the desired position.

For TPX McPherson use 2 C-spanners 01796-01 to undo the lock nut and turn the spring platform to the desired position.

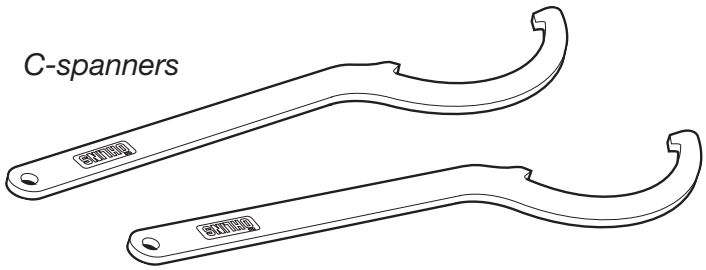
TTX shock absorber



TPX McPherson



C-spanners



Compression and Rebound Damping

Function and Reset

Compression and Rebound Damping

Compression damping controls the energy absorption when the shock absorber is being compressed, thus controls how easy the shock absorber compresses when you hit a bump.

Rebound damping controls the energy absorption when the shock absorber is being extended and controls how fast the shock absorber returns to its normal position after being compressed.

The TPX compression adjuster is located under the reservoir and the rebound is located in centre at the bottom of the damper.

The TTX compression and rebound adjusters are located on the cylinder head close to the reservoir.

To reset the adjuster

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 data in the Mounting Instructions for each shock absorber/strut.

CAUTION!

Do not use force, delicate sealing surfaces can be damaged. Handtighten only.

Compression Damping Adjuster

Low speed compression is mainly used to control chassis movements and response but it also affects the traction. It affects how the car behaves during breaking, turn in and acceleration. Less low speed compression gives more chassis movement but in many cases it can improve traction and grip. Therefore it is possible to balance the car by adjusting the low speed compression.

High speed compression mainly affects how the car absorbs bumps and jumps. In rougher conditions or with a lot of jumps more high speed damping is often necessary to control the big chassis movements.

Rebound Damping Adjuster

Rebound adjuster affects chassis movement in a similar way as the low speed compression but has even more influence on traction. Use this adjuster to control chassis movements over crests or after jumps. More rebound gives less movement and better stability but too much will cause a loss of traction. It is therefore a powerful balance tool together with the low speed compression adjuster.

For slippery conditions when grip levels are low, a softer set up on both rebound and low speed compression is a way to gain more traction.

Adjustments

Compression and Rebound Damping

Rebound Damping Adjuster

Rebound damping on TTX 44 is adjusted by turning the golden slotted screw located in the black end-piece . Total number of clicks on the rebound adjuster is approximately 18-20.

Rebound damping on TPX 44 is adjusted with the special tool (01822-03) which is delivered with the damper. The total number of clicks is more than 60 but the useful range is 20-40. It is recommended to adjust rebound in steps of 2-3 clicks.

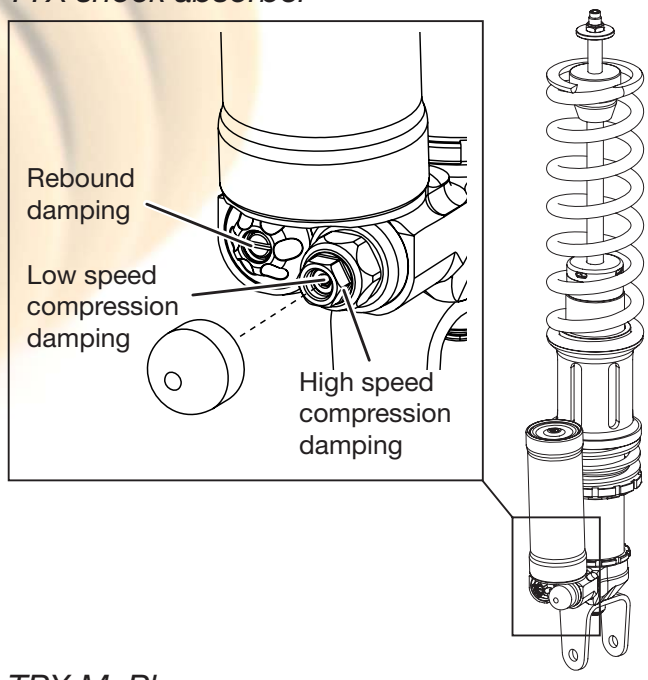
Compression Damping Adjuster

Low speed compression is adjusted by using a 3mm Allen key.

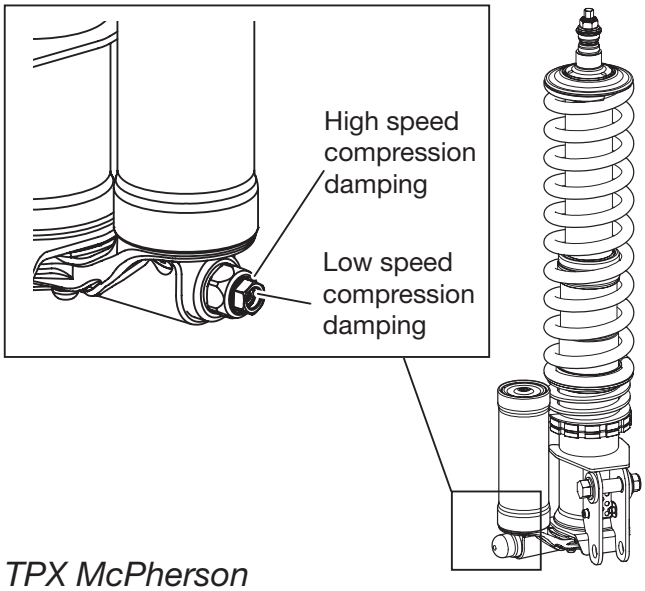
High speed compression is adjusted with a 12 mm wrench.

It is recommended to adjust low speed compression in steps of 2-3 clicks and high speed 3-5 clicks to fine tune the set up. The low speed adjuster has approximately 40 clicks and high speed 50 clicks.

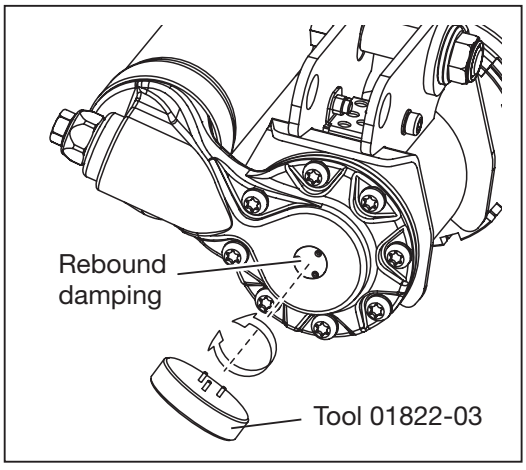
TTX shock absorber



TPX McPherson



TPX McPherson



Adjustments

Shaft jet valve and Spring set-up

Shaft jet valve

On the TTX the fading compensation system is located in the piston shaft. This system is based on a valve that compensates for the viscosity changes of the fluid caused by changes in the temperature.

The Shaft jet valve adjuster is set at an ideal position (18 clicks) from the factory. However, if the limit of the rebound adjuster has reached its minimum or maximum recommended position, is there a possibility to compensate this by either open or close the shaft valve and then go back on the rebound adjuster.

This adjuster is very sensitive and should not be turned more than 1- 2 clicks without consulting an Öhlins service center. The reset procedure for this adjuster is the same as for the compression and rebound adjusters.

Spring set-up

A number of springs are available for both gravel and Tarmac to suit all different conditions. For rougher gravel conditions it is recommended to use one step stiffer springs but also increase ride height 10-20 mm depending on the conditions. It usually gives a better result than to use an even stiffer spring and less ride height change.

For very rough conditions like Middle East rallies even stiffer springs is recommended.

To get support, to find your own optimal set-up, contact your local Öhlins Service Centre. Öhlins also have got a wide assortment of springs. For specific springs to your vehicle please see list in the Öhlins mounting instruction.

Adjustments

Setting up your vehicle and Making adjustments

Setting up your vehicle

Installing new shock absorbers may alter ride height, wheel angles etc. on your vehicle. Therefore, it is wise to do a complete set-up check of the vehicle after you have installed the Öhlins shock absorber.

Perform the following steps and always take notes before using the shock absorber;

Check ride height, front and rear. Adjust if necessary.

If scales are available check corner weight, front and rear. Adjust if necessary.

NOTE!

Always consult your Öhlins dealer if you have any questions regarding settings of the shock absorber/strut.

Making adjustments

Suspension settings are dependent on your vehicles weight, you're driving style, road conditions etc. If you are not happy with our recommended settings, here are a few guidelines and ground rules how to make adjustments.

To make improvements, it is important to understand the function of the shock absorbers and through testing learn how they affect the handling of your vehicle.

NOTE!

Always start with the settings recommended by Öhlins.

NOTE!

Higher click numbers give less damping force.

When making adjustments:

- Take notes, make the adjustments in small steps (2-3 at a time) and not outside the usable click range. See mounting instructions.
- When you think you have made an improvement, go back to what you started with and double check to be sure.
- Pay attention to changes in conditions like tires or temperatures, etc. In general, compression damping changes should be used to influence the vehicle's stability and response, while rebound damping changes should be used to influence comfort and traction.
- When you need more damping force, you should mainly try to increase compression damping and use as little rebound damping as possible. This usually means that you gain comfort and handling performance.

Camber Bushings

Camber bushings

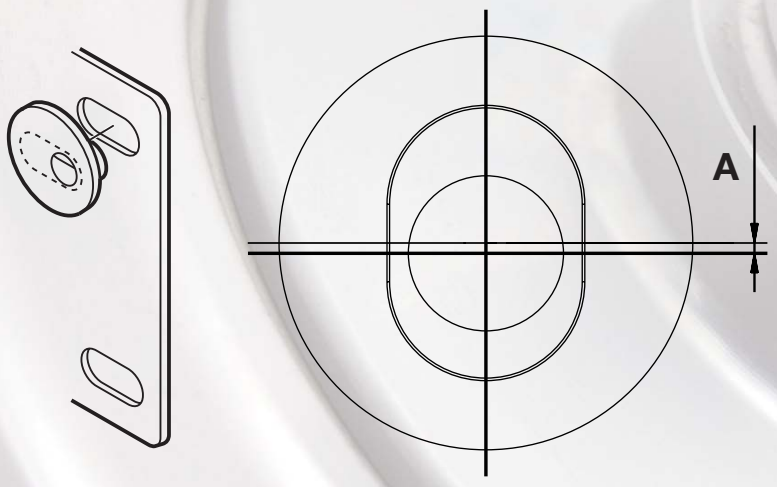
Unlike most standard McPherson shock absorbers, the Öhlins shock absorbers feature camber bushings that enable you to alter the wheel camber.

Depending on how you mount the bushings, with the eccentric hole facing the wheel or away from the wheel, different camber angles will be obtained.

Camber bushing identification

The bushings are as follows:

Part.No	Marking	Distance (A) mm
05794-00	*0*	*3,00*
05794-01	*1*	*2,44*
05794-02	*2*	*1,88*
05794-03	*3*	*1,32*
05794-04	*4*	*0,76*
05794-05	*5*	*0,20*



Eccentric hole on bushing

Inspection and Maintenance

When and how?

Inspection points - Normal use

1. Check ball joints/ brackets for possible excessive play or stiction.
2. Check the piston shaft for damage that can cause leakage.
3. Check the shock absorber body for external damage.
4. Check the external reservoir for damage that can restrict the floating piston from moving freely.
5. Make sure that the reservoir is protected against stone chip.
6. Check the attachment of the shock absorber to the vehicle.

Inspection points - Every 300-400 km *(Mc Pherson shock absorber only)*

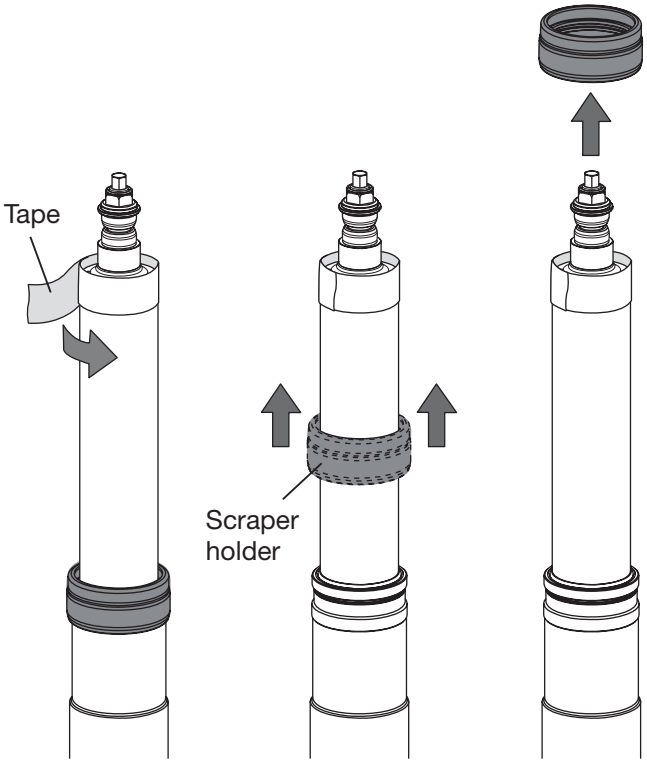
1. Remove the scraper holder from the outer tube with a suitable friction tool. Cover the circlip groove at the top of the cylinder tube with tape and pull the scraper holder off the cylinder tube - see figure.
2. Remove the cartridge from the front outer tube by removing the bottom screws.
3. Clean all parts with a soft detergent.
4. Check scraper and bushings for wear and/or damages and change if necessary.
5. Apply a layer of Öhlins red grease, part no. 00146-01 (100 grams) or 00146-02 (400 grams) on the cylinder tube, scraper and bushings. The space between the bushings in the outer tube should be filled with a layer of Öhlins red grease up to the bushing surface.
6. Assemble the strut and tighten all bottom screws (10 Nm). It is vital to use copper paste on the threads.
7. Install the scraper holder on to the outer tube and handtigthen with a suitable friction tool. Tightening torque maximum 15-20 Nm.

Maintenance

Service your damper(s) at an Öhlins service center every 800-1200 km.
If the dampers are used under more rough conditions, maintenance could be required more frequently.

⚠ WARNING!

Never alter the gas pressure. Special purpose charging equipment and access to nitrogen is required. The gas pressure should normally never be altered.



Removing the scraper holder.

www.ohlins.com

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