

# OWNER'S MANUAL



# *TRACTIVE*

*suspension*



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# 1 Important Safety Symbols

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



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 bystanders.



The caution symbol means: Special precautions must be taken to avoid damage to the shock absorber.



The note symbol indicates information that is important regarding procedures.

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## Read these Safety Precautions before installing the product.



its original This product was developed and designed exclusively for a specified vehicle and shall only be

installed on the intended vehicle in conditions as delivered from the vehicle manufacturer.



This product contains pressurized nitrogen gas (N<sub>2</sub>). Do not open, service or modify this product without proper education and proper Tractive tools.



After installing this product take a test ride at low speed to make sure that your vehicle has maintained its stability.



If the function of the shock is irregular or if it makes an abnormal noise or if you notice any leakage from the product, stop the vehicle immediately and return the product to a Tractive Suspension retailer.



Read and make sure that you understand the information in this manual and the mounting instructions before you use this product.



Tractive Suspension B.V. cannot be held responsible for any damage to the shock absorber, vehicle, other property or injury to persons, if the instructions

for installing and maintenance are not followed exactly.



When working on this product, always read the Vehicle Service Manual.

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## 2 Shock design and function

All Tractive Suspension shocks in this manual are mono tube type shocks. Your shock can be an emulsion shock (fluid and gas are mixed together) or a shock where the fluid and gas are kept apart by a separation piston. The separation piston can be mounted inside the shock body or in an external reservoir, connected by a hose or fixed directly on top of the shock absorber. Pressurization of the fluid is made with nitrogen. A shock provided with an external reservoir has a better cooling of the fluid giving a longer lifecycle to the components.

Most Tractive Suspension shock absorbers provide the possibility of adjustment. Emulsion shocks and shocks with the separation piston inside the shock body have the possibility of adjusting the rebound action.

The shocks with a reservoir have also the possibility of adjusting the compression action. Most shocks with springs have adjustable preload of the spring action.

### How does a shock absorber work?

Shocks in this manual work with a fluid that is forced through needle valves at a low

rate of flow and through a number of orifices in the piston at a high rate of flow.

The flow through these orifices is regulated by shims (thin steel washers) that at high pressure are deflected to open for the fluid to pass. The needle valve can be adjusted from the outside. By altering the size of the shim-stack the characteristics of the damping action can be changed.



Damping action altering can only be done by an authorized Tractive Suspension retailer.

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## 3 Set-up the vehicle

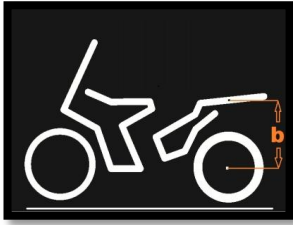


Before riding, always ensure that the basic settings made by Tractive are intact. Adjust in small steps and make only one adjustment at a time.

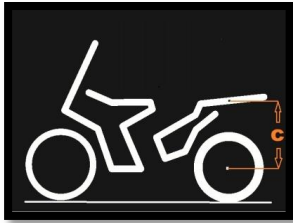
**Spring preload:** spring preload is a crucial part of setting your vehicle since it affects the height of the vehicle and the fork angle.

Follow this procedure to set-up the spring preload.

- a) Lift up the rear to a fully extended position. (when the rear wheel can rotate)
- b) Measure the distance, from a point like a bolt or make this point with a piece of tape above the rear wheel axle.



- c) Put the vehicle back on the wheels. (without rider) and repeat the measuring procedure.



- d) Then take the same measurements with the rider and equipment on the motorcycle. It is important that the rider is balancing on the correct riding posture and repeat the measuring procedure one more time.



## Recommended measures

If no other recommendations are given in the Mounting Instructions follow the measures below:

### Free sag:

Distance (b) minus distance (c) = called the free sag.

Free sag: Is approx. 10% of the wheel travel.

### Ride height:

Distance (b) minus distance (d) = called the ride height.

Ride height: Is approx. 30% of the wheel travel.

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## 4 Adjust spring preload

If your free sag measurements differ significantly from the recommendations then you must adjust the spring retainers. (See chapter-5 How to set the preload).



If after this adjustment your ride height is still not between the recommendations, you may need to change to a softer spring when the ride height is less than 20%. Or to a harder spring when the free sag is more than 40%.

Incorrect spring rate may result in a geometry that is either too steep or too flat.

This can result in a tendency of under or over steering, that could seriously affect the handling characteristics of the vehicle.

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## 5 How to set the preload

Tractive shocks can have 4 different ways to adjust the preload.

1) Mechanical Preload Adjuster. Use the “with the shock” delivered Tractive tool with bit 2,5 mm to open the lock screw (max 2 turns!) on the outside diameter of the spring retainer (see picture).

Use the same Tractive tool with bit d5 mm to in- or decrease the preload. Turn clockwise to increase the preload, turn counter clockwise to decrease it. (See picture) One complete turn is 1,5 mm more or less preload.

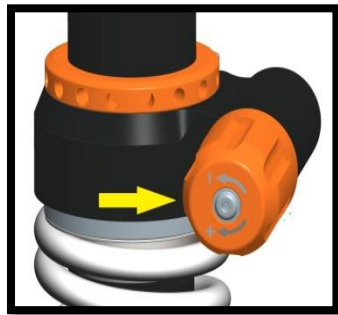
After adjusting the preload you must lock the lock screw again. Rotate it back the same amount of turns you used to open it.



2) Mechanical Preload Adjuster with contra nut. Unlock the contra springretainer with a hookspanner or with a screwdriver. Use the same Tractive tool with bit d5 mm to in- or decrease the preload



3) Hydraulic Preload Adjuster Turn the Hydraulic Adjuster knob to set the preload. Turn clockwise to increase the preload, turn counter clockwise to decrease it. (See picture)



4) Electrical Preload Adjuster Push the button from the Tractive control panel. Push “Hard” to increase the preload and push “Soft” to decrease it. (See picture)





The spring preload is fundamental for the function of the suspension. If the preload is incorrectly set, any other adjustments will not help to get the intended performance from the suspension.

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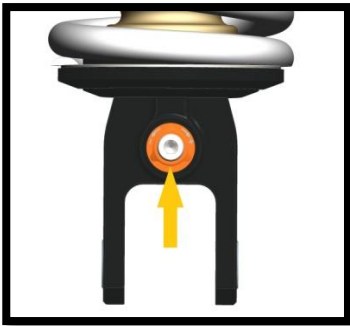
## 6 Rebound damping

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.

### Rebound Damping Adjuster

Turn the hexagon (or screw) adjuster on the end of the piston rod part (See picture) with the Tractive tool delivered with the shock.

Turn clockwise to increase damping and turn counter clockwise to decrease it.



### Reset the adjuster

Turn the adjuster clockwise to fully closed position. The first click you feel is position zero (0). Then, turn counter

clockwise to open it. Count the clicks until you reach the recommended number of clicks. See recommended set-up data in the mounting instructions for the shock absorber.



The recommended number of clicks is mostly somewhere close to click 9. Set the rebound no more than  $\pm 6$  clicks from the original (basic) setting.



Do not use force, when you reach the zero click position to try to reach another click.

Delicate parts can be damaged. And also do not use a lot of force at the end position of the clicker.

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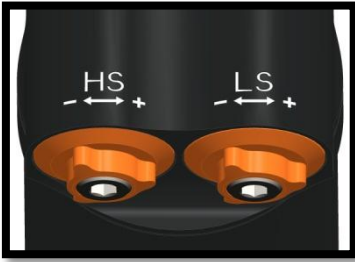
## 7 Compression damping

When you have a shock absorber with a reservoir then it is also possible to adjust the compression. Compression damping controls the energy absorption when the shock absorber is being compressed.

Tractive Suspension shocks have 2 compression controls called LS (low speed) and HS (high speed).

### Compression damping adjuster

Turn the hexagon (or screw) adjusters on the reservoir part (See picture) with the Tractive tool with bit 4 mm delivered with the shock.



Turn clockwise to increase damping and turn counter clockwise to decrease it.

Adjust the LS knob when you encounter damping problems when the shock absorber speed is low. (For example when the shock movement initially is too hard or too soft to provide enough comfort) (More information in chapter “Which adjuster to change”)

Adjust the HS knob when you encounter damping problems when the shock feels to soft or hard when you drive through a hole and the shock has to compress very fast. (More information in chapter “Which adjuster to change”)

### Reset the adjuster

Turn the adjuster clockwise to fully closed position. This is position zero (0). Then, turn counter clockwise to open it. Count the clicks until you reach the recommended number of clicks. See recommended set-up data in the mounting instructions for the shock absorber.



The recommended number of clicks is mostly somewhere close to click 9.

Set the compression no more than  $\pm 8$  clicks from the original (basic) setting.



Do not use force, when you reach the zero click position to try to reach another click.

Delicate parts can be damaged. And also do not use a lot of force at the end position of the clicker.

## 8 Adjustable length option

When you have a shock absorber with adjustable length it is possible to change the ride height without altering the sag of the vehicle.

A shorter shock absorber will result in a lower vehicle. The fork angle as well as the trail will increase, and normally the chain force will be reduced with less anti-squat as a result.

A longer shock absorber will result in a higher vehicle. The fork angle as well as the trail will decrease, and normally the chain force will increase with more anti-squat as a result.



Very small length adjustments can make a big difference.

### Adjust Length.

We advise to remove the shock absorber from the vehicle before adjusting the length.

Use a wrench 27 on the mounting eye part and a wrench 24 to unlock the nut. Turn the end eye/fork to the desired length. One turn is 1mm of shock absorber length.



Locknut Tightening torque: 40 Nm



Check if the rear wheel of the vehicle can rotate free when you use the longest adjustable possible position.



Check the headlight angle of your bike and check if the vehicle is standing save on the side standard when you de-or increase the length of the shock.



Measure the ride height before and after adjusting the length.



Remember to lock the locknut after adjusting the length.



The adjustable end eye/fork must not be threaded out more than that the last groove is fully visible beneath the lock screw. This is the maximum length. More threading out can result in severe or fatal injury.



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## 9 Which adjuster to change?

### Rebound damping

If the spring, preload and ride height is correct, but the vehicle still encounters some problems on rebound please check the following options.

Increase rebound when the bike feels:

- Nervous in corners
- Moving in corners
- High feeling entering corners
- Unstable
- Loose
- Bouncy

Decrease rebound when the bike feels:

- Bike runs low
- Packs down under acceleration bumps
- Lost line
- Lost comfort
- Lost traction
- Hard
- Bumpy

### Compression damping

If the spring, preload and ride height is correct, but the vehicle still encounters some problems on compression please check the following options.

Increase compression when the bike feels:

- Feels soft
- Feels unstable under acceleration
- Feels low under acceleration
- Is bottoming

Decrease compression when the bike feels:

- Harsh
- Hard
- Has bad grip
- Feels unsmooth
- Feels high



When you have sufficient feel of the vehicle you can make further fine adjustments.

Go back where you started to check if the adjustments are really an improvement.



Note that tires and temperature and other relevant factors are also a big influence on the performance of the suspension.

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## 10 Maintenance and inspection

Preventive maintenance and regular inspection reduce the risk of functional disturbance. If there is any need for additional service, please contact an authorized Tractive Suspension Centre.

### Inspection points

Check the piston rod shaft for damage and leaking.

Check the shock absorber body for external damage.

Check the reservoir body for external damage and leakage.

Check the visible rubber components for excessive wear.

Check the ball joints for possible excessive play or stiction.

Check the preload adjuster for leakage.

### Recommended Service Interval

Regular on road use: Every 30.000 km

### Disposal

Discarded Tractive product should be handed over to an authorized Tractive retailer or distributor for proper disposal.



Do not open the nitrogen filling plug. Special charging tools and access to nitrogen is required to fill the shock with pressure again.

Your **TRACTIVE** Suspension retailer:

**OFF  THE ROAD**

OTR-Performance GmbH

Hugo-Junkers-Str. 52-54

50739 Köln

Germany

+49-(0)221-718227-0

info@off-the-road.de

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