

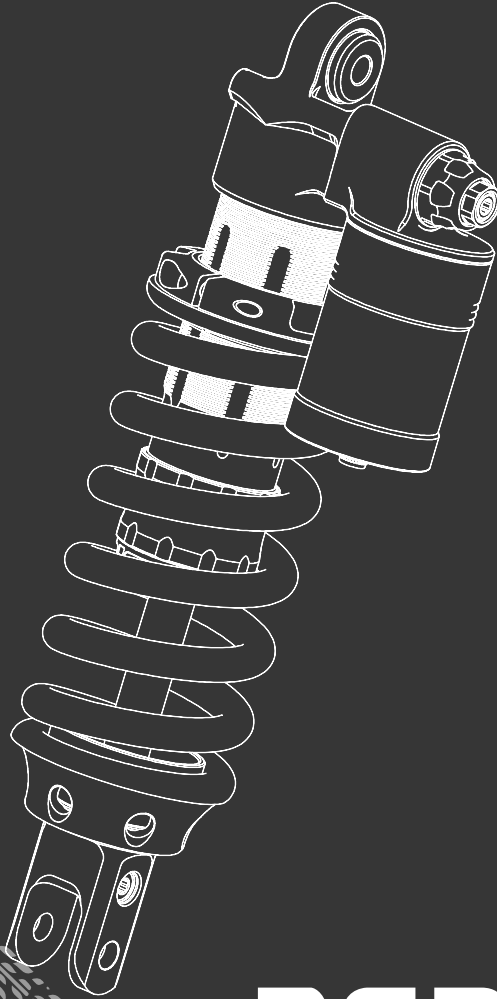
**EXT**  
RACING SHOX

UTV&SSV

ATV

MTB

**E-MX**



**REAR MX**

**USER MANUAL**



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## EXT WORLD

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With over 55 years of collective experience, EXT Racing Shox is one of the most successful European engineering company capable to meet all your need in the field of automotive, two wheeler systems and vehicle dynamics. From F1 to Rally, GT/Le Mans, WTCC/WTCR and motorbikes, off-road applications with special dedicated projects for production cars. EXT is specialized in hydraulic damping systems and has diversified in different industrial applications such as damping motion control, seismic and defense. EXT is most well known for the development of shock absorbers for extreme racing conditions. From the world of F1 to biomechanics the passion is the same, a factor that has set us apart for the last 55 years.

## CONGRATULATIONS

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Thank you for choosing EXT Racing Shox. All EXT products are designed, engineered, machined, assembled, tested and developed by EXT staff in Italy. Every product has gone through rigorous tests and is directly developed through racing. This owner manual contains important information about your shock absorber. Please read it carefully.

## EXT R&D DEPARTMENT

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EXT Research & Development Department designed this shock absorber for one reason: to create the best product in the MX industry, implement the most sophisticated technologies, developing new ones by enclosing in a single shock the essence of our experience within the racing sport. EXT is constantly innovating, creating seemingly impossible products, into reality. With a strong focus on the future, our goal is to be the innovators of tomorrow.

All our shocks are constantly under improvements. We strongly believe in innovation, developing new technologies to reach a new level of absolute performance while assuming the maximum safety. Innovation is our aim and strength.

### SAFETY SYMBOLS

In this manual, instructions and important informations concerning safety or technical documents is distinguished by the following symbols.



YOUR SAFETY IS INVOLVED



IMPORTANT INFORMATION

## SAFETY PRECAUTIONS

The REA-MX contains pressurized gas. Do not open, service or modify this product without proper training and proper tools. Always rely on a qualified professional or an authorized Extreme Biomec dealer, and in any case scrupulously follow the instructions given in this manual. This product is developed and designed for MX motorbikes and must be installed on related vehicles. The shock absorber is not approved by law for use on public roads. The use of the shock absorber is not permitted by law even if installed on approved motorbikes.

DO NOT USE this shock on any vehicle carrying more than one rider. Any improper use, beyond the permitted terms or in the absence of adequate and correct maintenance according to the instructions provided in this manual may result in suspension failure, which could result in an accident, SERIOUS INJURY OR DEATH and / or affect your rights by voiding the warranty.

**This manual may be subject to periodic updates, we suggest to check periodically for any updates at your trusted dealer, or consulting our website [www.extremeshox.com](http://www.extremeshox.com).**

## WARNING

Read and ensure you understand the information in this manual and other technical documents related to this product before using this shock absorber.

Extreme Biomec Srl can not be held responsible for any damage to the shock absorber, bike, other property or injury to persons.

Always use EXT Racing Shox parts. Use of other parts or self built ones void warranty and could cause a structural failure.

If the shock absorber function is irregular, or if you notice any leakage, stop riding immediately and return the product to an EXT authorized service center.

If any information is missing from this manual or the shock purchased is different from the description contained in this manual, ask the dealer or local

authorized EXT service center for information and indications before carrying out any repairs or maintenance.

Impacts, falls, excessive or improper use and / or beyond the expected limits can compromise the integrity of the shock absorber.

Constantly check the state of the shock absorber and replace it if necessary. Have it checked periodically also by an authorized mechanic; if this check detects signs of integrity compromise of the whole shock absorber or of one of its components replace what is necessary (not repair).

The product warranty shall only apply if product has been operated and maintained in accordance with recommendations in this manual. An improperly installed rear shock can be extremely dangerous. We recommended to have it installed by a qualified bike mechanic.

During installation, service and maintenance always wear protective tools and make sure you use suitable tools. Make sure that the shock absorber serial codes and any other signs are present (and not tampered with) product badge.

Before disassembly or service always remove gas pressure.

## **WARRANTY**

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Extreme Biomec Srl, owner of EXT Racing Shox, an Italian limited-liability company based in Viale del lavoro 66/68, 36021 Barbarano Mossano, Vicenza, Italy, applies the following limited warranty conditions to all products.

### **LIMITED TWO (2) YEARS WARRANTY**

EXT guarantees their damper systems are free from origin defects for the period of two (2) years from date of purchase, according to 99/44/EC decree.

Invoice, documents of transport or receipt are proof of warranty start date, and it's mandatory they are presented to EXT for every warranty service required.

In case of a warranty claim, the purchaser can return the product to an EXT authorized dealer, presenting the requested proof of purchase within 2 year period of warranty cover, and specifying the nature of the shock absorber failure and warranty claim.

## WARRANTY EXCLUSION

The warranty applies only to products whose use, installation, maintenance and repair have been carried out in compliance with official manuals, as well as with the specific information and technical literature provided by Extreme Biomec. This warranty does not cover defects like: crash damage, alterations, neglect, improper use, abuse, incorrect use, improper assembly, improper service, improper fixings, use of non EXT spare parts, modifications not allowed unless specifically authorised by EXT in written form.

This warranty does not cover parts subject to wear like hydraulic seals, o-ring seals, sliding bushing, oil, dust seals and oil seals.

This warranty will be immediately voided in case of removal or tampering of serial numbers or they identifying marks.

The shock absorber is not covered by warranty if it is bent or show signs of excessive force.

## DAMAGE

Extreme Biomec srl WILL NOT ASSUME RESPONSIBILITY FOR DAMAGES TO PERSON OR THINGS RESULTING FROM PRODUCT USE.

In some countries this clause is not accepted; this limitation could be not applied to your country.

## DISCLAIMER

This warranty contract is the one and only way for customers to raise a claim on product. No EXT dealer, agent, distributor or employee can modify, extend or amplify this warranty.



## FEATURES



1-HBC (4mm allen key)  
Hydraulic Bottom-out Control

2-LSC (4mm allen key)  
Low speed Compression

3-HSC (12mm spanner)  
High Speed Compression

4-REBOUND

5-PRELOAD  
max 10mm

- 40 mm Ø piston
- 16 mm Ø shaft
- 4-way adjustable (high and low speed compression, HBC, rebound)
- High flow piston design
- High-load spherical bearings
- Large reservoir
- Adjustable HBC (Hydraulic Bottom-Out Control)
- Low pressure reservoir
- Perfect pressure balance for very low hysteresis- Low friction seals

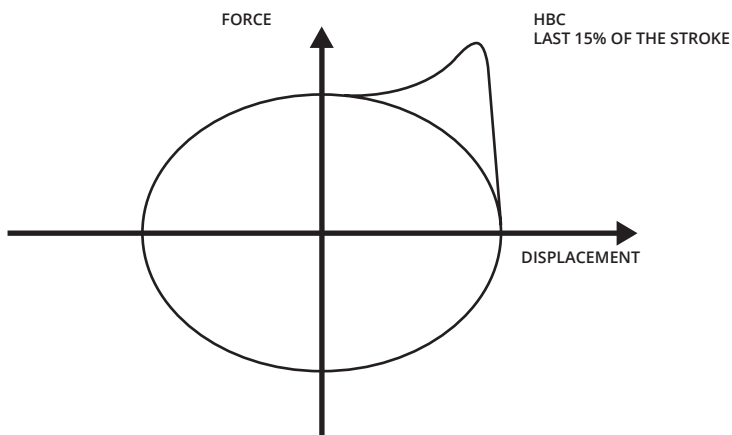


## TECHNOLOGIES

### HYDRAULIC BOTTOM-OUT CONTROL (HBC)

EXT Racing Shox introduced this feature in a World Rally Car in 1994. The Hydraulic Bottom-Out system make the compression progressive and thanks to this it is possible to ride with a softer spring for a better and improved traction. The HBC system controls only the last 15% of the stroke. So you can rely on a very plush feeling and a great support on the last millimeters of your bike's rear travel. More than 50% of dedicated hydraulic force exclusively to control the bottom-out. Thanks to this we are able to use a smaller bumper and you can count on every millimeter of your travel.

On the graph it is shown how HBC controls the last part of the stroke. The peak on the right side is the strength achieved by the shock when the HBC is full closed.



## ULTRA LOW FRICTION COATING

Most of the sliding parts that compose EXT shock are developed with Ultra- Low friction technology. The shaft is treated to increase life, strength, and reduce friction. Sliding bushes are in carbogرافite, the seals are custommade and developed to not fade and keep consistency in the control of damping forces.

## HIGH TURBULENT FLOW

Gas pockets (aeration) and vapour cavitation (“bubbles” or “voids”), which form in the hydraulic fluid due to severe operating conditions are common problems observed in hydraulic shock absorbers. These problems negatively affect bike handling and comfort. To avoid these issues and reduce hysteresis at lowest value we use a new generation valves with a special design that produce a turbulent flow. With this innovative design damping force remains independent from viscosity changes and temperature. Aeration is minimal and the cavitation issues are mostly eliminated.

## EASILY ADJUSTABLE

Thanks to the new layout adjustment knobs are easy to reach. The whole structure is the result of several tests in laboratory and on competition fields.

## THE SOUND OF TECHNOLOGY

EXT Racing Shox may not be the quietest shocks available in the market. Crafting a high-performance shock absorber involves integrating components that work in tandem, creating controlled restrictions in oil flow. These movements, particularly when valves open and close, might produce audible sounds. However, this is a normal occurrence and indicative of your shock operating as intended.



Remember always to use the correct type of tire with the correct pressure. It is a good idea to do some tire pressure testing. You'll be surprised how much grip you can get when your tires and shock are correctly set. Remember that the tyre is an almost undamped linear air spring that also affects steering.

Take note of your setup for any kind of trail, track or weather condition. Take one adjustment at a time.

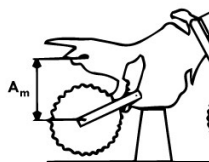
If your weight is more rearward it can be a good idea to set up your damper softer. This will help you in flat turns off camber turns and allow you to ride easily.

Rebound damping control is related to spring rate used. Higher spring rates require more (slower) rebound damping.

## SAG SETTING AND SPRING PRELOAD

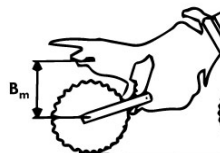
### STEP 1

Firstly, you need to find the length of your rear suspension. Place the motorcycle on the central stand or find an alternative system to keep the rear wheel off the ground. Position a stand under the engine so that the weight (including the motorcycle's own weight) doesn't rest on the rear axle or compress the rear wheel. Measure the distance between the rear axle and a fixed point directly above it, such as an arrow or a tail bolt. Note down this measurement. Do not use a rear stand as the weight of the motorcycle could fall onto the swingarm.



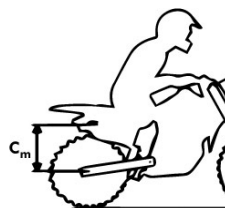
### STEP 2 – STATIC SAG

Next, find the normal “static sag” of your suspension. This measurement is obtained when the suspension compresses under the weight of the motorcycle without a rider. Position the motorcycle on level ground and bounce it up and down 2/3 times. Then measure between the same two points mentioned in step 1 - the rear axle and the fixed point directly above it. Note down this measurement.



### STEP 3 – DYNAMIC SAG

Now, determine the ‘dynamic sag’ of your suspension under full load. This measurement is taken with the rear wheel resting on the ground and the rider seated on the motorcycle in a normal riding position wearing complete motorcycle gear (helmet, suit, boots, and at least 3/4 full tank, etc.). Firstly, bounce up and down on the seat to loosen the suspension. Then return to the normal riding position with all the weight on the motorcycle, placing your feet on the footpegs. Lean the motorcycle against a wall and ask a friend to measure again between the same points as in step 1, that is, the rear axle and the predetermined point.



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**STATIC SAG**

The "Static Sag" is the difference between measures A and B, meaning how much the weight of the motorcycle affects the rear suspension or how much you can lift the rear of the motorcycle without any rider on it, before it reaches its maximum extension.

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**DYNAMIC SAG**

The "Dynamic Sag" is the difference between measures A and C, that is, how much the motorcycle compresses when sitting on it with all your weight.

SAG values can vary depending on your motorcycle and manufacturer. Always check the vehicle's manual to know the right SAG values.

Generally, the higher the amount the bike lowers due to the rider's weight [DYNAMIC SAG], the softer the suspensions will be.

If you experience an excessive lowering due to the weight of the motorcycle on the suspension, you might need stiffer springs. If the lowering is too small or if there's no noticeable lowering, your springs might be too stiff for your weight.

If you need to compromise, try to reach at least some Static SAG to prevent the motorcycle from always being in a fully extended or compressed state.



Adjustable by screwing or unscrewing the preload ring. Then secure the screw on the preload ring with a 4 mm Allen key.



## HYDRAULIC ADJUSTMENTS



Clicks are counted from full closed position. The reason is “full hard” is always an absolute position. “Full soft” will vary depending on tolerances.

Normally the 1st click and/or detent is counted as “zero” position. Just remember maximum clockwise is “full hard” for all adjusters.

To adjust follow this directions:

1. Turn the valve completely clockwise (ZERO POSITION)
2. Start to turn counter clockwise until you find the correct setup. Every different position is signaled by a click.

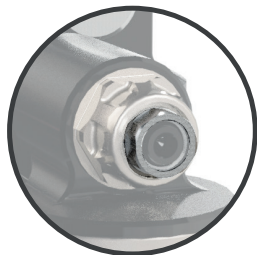
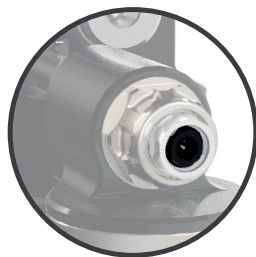
### LOW SPEED COMPRESSION

Low speed compression primarily dissipates smaller forces, like those from braking or accelerating. Increase low speed compression damping by turning the center black adjuster clockwise with a 5 mm Allen key.

MAXIMUM CLICKS

**23**

with +2 clicks tolerance



### HIGH SPEED COMPRESSION

High speed compression primarily dissipates larger forces, like those from impacts or drops. Increase high speed compression damping by turning the nickel-colored hex nut clockwise with a 14 mm wrench (or socket).

MAXIMUM CLICKS

**21**

with +2 clicks tolerance



Don't use excessive strength on the adjuster. This could damage your shock seriously.

## REBOUND

Rebound dissipates return force throughout the stroke. Increase rebound damping by turning the adjuster placed adjacent to the lower shock eyelet with a 5 mm Allen key.



**MAXIMUM CLICKS** 20 with +2 clicks tolerance



## HBC

Hydraulic bump stop control activates an additional compression damping circuit in the last 15% of travel to dissipate very large forces. Increase hydraulic bump stop damping by turning the black adjuster located on top of the compression valve clockwise with a 4 mm Allen key.

**MAXIMUM CLICKS** 13 with +2 clicks tolerance

## SETTING TIPS

<b>REBOUND</b>	Increase rebound damping	If the bike feels: unstable, loose, bouncy
	Decrease rebound damping	If the bike feels: hard, nervous, low traction
<b>LOW SPEED COMPRESSION</b>	Close	If you feel the shock: soft, spongy or the bike feels unstable when going into a corner
	Open	If you feel that the bike feels hard and has poor traction
<b>HIGH SPEED COMPRESSION</b>	Increase compression damping	If the bike feels: soft, low, is bottoming
	Decrease compression damping	If the bike feels: harsh, hard
<b>SUSPENSION BOTTOM</b>	Close the HBC adjuster or high speed compression setting	Bottom on jump landing
	Close the HBC adjuster, faster rebound, increase low and high speed compression	Bottom after continuous bumps

## PRESSURE

EXT shock absorbers work with very low reservoir pressure. This gives the shock the ability to have a very high degree of bump force sensitivity and a very low break away or actuation force. Even at this low pressure the shock does not blow through its travel or suffer from hysteresis even at the shaft speed of 2 m/s.



Never change the factory pressure inside the piggyback reservoir. This could compromise your shock seriously and may result in damage to your bike and/or **SERIOUS INJURY OR DEATH**. If you have any issue with your shock pressure contact your nearest Service Point.



Keep safety, stability and comfort as your priority when setting the shock. This will allow you to ride safer with more confidence and use less energy.



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



## SERVICE & MAINTENANCE

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To preserve maximum performance of your EXT shock absorber you have to follow accurately this indication:

1. Before every ride check your shock visually
2. Inspect shaft and be sure there are no leaks
3. Check bump stop condition
4. Check and inspect spherical bearings every 15 hours riding and replace them if necessary
6. Clean your shock well after the ride and don't wash it with high pressure jet wash



### PROFESSIONAL RACE CONDITION

To ensure maximum performance we suggest a complete service after 25 hours riding (ca. 3 months).

### NON PROFESSIONAL RIDING CONDITION

We suggest a service after 50 hours riding or every 6 months.

A complete service includes: oil change, seals, DU bushings, bump rubber and o-rings. Only EXT or EXT Service Points can perform this operation.

ALWAYS USE ONLY EXT RACING SHOX SPARE PARTS AND SERVICE KITS  
NOT FOLLOWING SUGGESTED SERVICE WILL VOID WARRANTY



**REA AX**

# RACE CHART

DATE

TRACK/LOCATION

BIKE

SHOCK

SPRING RATE	PFELOAD	HSC	LSC	FEB	HBC	TIRE PRESSURE

FORK

RUNS


RUNS


INFO

# RACE CHART

DATE  TRACK/LOCATION

BIKE

SHOCK	SPRING RATE	PRELOAD	HSC	LSC	REB	HBC	TIRE PRESSURE

FORK	

RUNS	

RUNS	

INFO

# SHOCK MONITOR

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HOURS RIDE

LAST SERVICE

BUSHING CHANGE

DU BUSH.CHANGE

INFO

HOURS RIDE

LAST SERVICE

BUSHING CHANGE

DU BUSH.CHANGE

INFO

# SHOCK MONITOR

---

HOURS RIDE

LAST SERVICE

BUSHING CHANGE

DU BUSH.CHANGE

INFO

HOURS RIDE

LAST SERVICE

BUSHING CHANGE

DU BUSH.CHANGE

INFO







**XC**

**MOTORCYCLE**

**FORMULA**

**GT**

**RALLY**



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