MINI SERIES

OWNER'S MANUAL

Honda XR/CRF50 Model

Elka suspension

Ride Hard, Ride Fast, Ride Elka.

1585-M, De Coulomb
Boucherville, Quebec, Canada J4B 8J7
Phone: 450-655-4855 • 1-800-557-0552
Fax: 450-655-2821
info@elkasuspension.com
www.elkasuspension.com

Rev. A - 11/11/04

Welcome to Elka Suspension !

Thank you for choosing Elka Suspension for your shock absorbers needs. Elka Suspension is a leader in the design and manufacturing of high-performance shock absorbers. All our products are handcrafted from the highest quality materials available, specifically for each rider, according to his weight, bike geometry and type of riding.

Our experienced team is able to advise and assist you to find the exact setup to meet your personal needs. This owner's manual is your complete guide to install, adjust and fine-tune your shocks for optimum suspension performance. It also offers important information about your maintenance of your shocks. Carefully read this manual before installing your shocks.

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A) Read First For Your Safety:

WARNING !

Shock absorbers are an important part of your motorcycle, and this owner's manual explains how to install your shock absorber properly. If you are uncomfortable installing your shock absorbers or are unsure of the method, have a qualified mechanic install them for you. Unproperly installed shocks might cause serious arm to you and may severely damage your motorcycle. Never take any chance with your safety.

CAUTION !

Before installing your shock absorbers, carefully read this owner's manual to learn the correct installation procedures and avoid the consequences of an incorrect installation.

Riding a motorcycle can be dangerous. Always wear appropriate protective equipment and follow your region's regulations.

Elka Suspension is constantly introducing new products and improving existing ones. For this reason, Elka Suspension reserves the rights to modify products and add accessories with no obligations to make such changes to earlier models.

When your shock absorbers require an oil change or other internal maintenance, your Elka Suspension Service Centre is best qualified to provide the necessary service or repairs.

Elka Suspension shock absorbers are manufactured exclusively for the vehicle that they were ordered for. Switching units between different vehicles may not only decrease performance but might also cause damage to the vehicle and seriously harm the rider. Always call Elka Suspension to verify compatibility before switching units from one vehicle to another.

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B) Elka Suspension Warranty

All Elka Suspension products are guaranteed against any manufacturing defects for a period of one (1) year from the purchase date.

This warranty does not cover damages resulting from any of the following situations:

- Abuse of the product
- Racing accidents
- Improper installation
- Improper reservoir hose routing
- Disassembly or modifications
- Unauthorized oil change
- Damage occuring during transportation (the purchase of full insurance coverage for shipping is recommended)

The shipping box should contain the following:

- Shock absorber(s) ans spring(s)
- Owner's Manual
- Elka Preload tool (to adjust the preload ring)
- One 3mm Allen key (for preload ring stopper)
- Reservoir mounting assembly (for remote reservoir models)

All Elka Suspension shock absorbers are pre-adjusted before packaging and are ready for installation. Fine-tuning might be necessary.

A copy of the original invoice is necessary for any claim or service shipment.

Elka Suspension Inc. reserves the right to make the final decision in all matters pertaining its warranty.

WARNING !

Because Elka Suspension products are designed for use in racing and in extreme driving conditions, Elka Suspension cannot guarantee any of its suspension products, other than from manufacturing defects, because we have no control over how our products are used after installation. In addition, the purchaser assumes full responsibility for the risks of personal injury and/or damage to the purchaser's vehicle or to any third party that may be involved in an incident with the purchaser.

Return Procedures

IMPORTANT: Always keep your invoice as proof of purchase and send a copy with all service or warranty returns.

To obtain service for your shocks and/or for warranty issues, please do the following:

1) Call or go to www.elkasuspension.com to get and fill in a Service Work Order.
2) Carefully package your shock(s) to avoid damage during transportation. Include a copy of your invoice, a brief description of the problem and a return address for shipping and/or invoicing. Please provide a phone number to reach you in case our technicians have questions about the problem.
3) Wait for a confirmation call and a delay approximate when we receive your shocks.

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C) Suspension Basics

Understanding the basic principles behind suspension technology can help you get the most out of your Elka Suspension shock absorbers by allowing you to correctly adjust them according to different riding conditions and ease communications with our service department.

The following pages contain useful information intended to provide you with the basis about off-road vehicle suspension.

After reading this section, you should be able to correctly understand the effect of each adjustment on your shocks and know how to deal with them to suit your personal preferences. You will also be able to diagnose most suspension problems and explain them to our service department when sending your shocks for service.

You will also be able to tell your friends that you know more than them about suspension !

C.1 What is Suspension ?

Basically, a shock absorber consists of two main components:

- Springs are use to support the vehicle and rider's weight and return the system to its original state after an impact.
- A hydraulic suspension damping system uses oil displacement to absorb small and big impacts and thus prevent the rider from feeling them.

The shock absorber can have an external oil reservoir that allows more oil displacement to get more travel and better damping effect. This reservoir is charged with pressurized nitrogen than can compress to allow the oil displacement and then expands to push back the oil into the main chamber in the shock's body. Different valvings in the shock are used to customize the damping effect and knobs allows external adjustment.

C.2 Mini-Bike Suspension Specifics

Mini-Bike riding has its own specific suspension needs. The various types of riding, riding conditions and rider's personal preferences are all factors to take into account when thinking about mini-bike suspension.

Motocross riding usually take place on closed circuits that includes jumps, sharp turns, whoops sections and flat sections to test the rider's abilities and speed. This kind of riding needs a suspension able to absorb big impacts and offer good traction by keeping the wheels on the ground.

Cross-country riding is more oriented towards testing the rider's endurance and speed. Cross-country circuits are often loops including various natural obstacles that require more traction and a softer ride to preserve the rider from getting tired. The suspension must also keep its properties under long use and remain "fade-free". It must also sustain medium-sized jumps while erasing small bumps.

Flat track riding (also known as TT racing) does not require a huge amount of travel because there is no major impacts or jumps on a flat track. For this type of riding, the suspension must be responsive to small bumps and vibrations to provide maximum traction.

The adjustments on your shock absorber should provide enough range for you to be able to fine-tune to your specific riding style and terrain.

Keep in mind that mini-bikes were first created for kids. Therefore, the riding position on the bike and overall comfort was not intended for adults so performance may vary accordingly.

C) Suspension Basics (continued)

C.3 Suspension Terminology

SUSPENSION

Compression:
The stage where the shock compresses under an impact.

Emulsion:
The oil in the shock has microscopic air bubbles in it. When the oil is heated from passing through the valving holes, the air expands and creates foam and air pockets, called emulsion. When a shock gets emulsion inside, it has a sticky feel (stiction), become very soft and can even lose all damping.
Elka Suspension shocks go through a careful bleeding process to avoid emulsion.

Frame Clearance:
The space needed to avoid contact between the frame and the ground.

High-Speed Compression:
The damping circuit that controls the shock's resistance against high-velocity impacts like hitting a rock or multiple small bumps.

Low-Speed Compression:
The damping circuit that controls the shock's resistance against low-velocity compression like landing a jump or turning.

Negative Travel:
The difference between the height of the vehicle at rest with rider sitting on it and the height of the vehicle when the bike is lifted without the wheels leaving the ground. This distance is a portion of the total suspension travel that is used to keep the wheels on the ground when the suspension extends like when hitting holes or between whoops.

Preload:
The force applied to the main springs by screwing in the preload ring to achieve proper sag, usually mesured in millimeters.

Rebound:
The damping circuit that controls the shock's resistance when returning to its initial state after being compressed by an impact. More rebound damping returns the shock slower but increases the chances of "packing". Less pre-load damping returns the shock faster and provides a bouncy ride.

Ride Height:
The height of the vehicle when sagged properly with rider seated. It can be adjusted to suit the rider's personal preference.

Sag:
The portion of the shock's travel used when the rider is seated. Proper sag ensures enough negative travel to keep the wheels on the ground and preserve traction.

Static Sag:
Same as the sag but without the rider on the vehicle. The static sag prevents topping out and provides a more confortable ride.

Stroke:
The total amount of travel allowed by the shock, mesured at the shock's shaft.
Not to be confused with the total travel of the vehicle. The same shock stroke can provide many different wheel travel depending on the geometry of the vehicle.

Travel:
The distance between the suspension fully compressed and fully extended. Can be mesured at the wheels (wheel travel) or at the shock shaft (stroke).

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C) Suspension Basics (continued)

C.3 Suspension Terminology

SHOCK PARTS

Banjo Bolt:
The banjo-shaped bolt used to attach the hose to the reservoir and shock. The banjo shape allows for installation around 360 degrees. Loosening or trying to move this bolt may cause oil leakage and loss in pressure.

Bridge:
The metallic part that links the reservoir to the shock's body on piggyback models.

Bumper:
The rubber part that prevents damaging the shock when bottoming. It's an integral part of the suspension system as it controls the ending of the shock's stroke. A low quality bumper will be harsh on the rider and will not allow full travel.

Crossover:
The spacers between the springs in a multi-springs shock. The crossover cancels the spring it is under when it reaches resistance from the shock's preload ring or another crossover.

Dual-Rate (Twin-Rate):
A shock setup with 2 combined springs with a crossover, each spring having its own rate.

Eyelets:
The ends of the shock where the bolting shaft comes through, running on spherical bearings to allow movement but no torsional resistance.

Fork:
On some models, the lower mounting bracket that replaces the eyelet.

Piggyback:
A shock model with directly attached reservoir using a bridge or one-piece head.

Quadruple-Rate:
A shock setup with 4 combined springs with 3 crossovers, each spring having its own rate.

Remote Reservoir:
A shock model with the reservoir attached to the head by a hose to allow remote location.

Self-Sagging Device (SSD, No-Preload, Zero-Preload):
A spring setup that has one additional light rate spring that lowers the vehicle without applying any preload force to the main spring.

Spring Clip (Spring Ring):
The slotted ring that retains the springs in place. The slot allows to slide out the spring clip for easy spring removal.

Spring Rate:
The force required to compress the spring 1 inch from initial state.
For example, a 600 lb/in spring will require a 600 pounds force to compress 1 inch, a 1200 pounds force to compress 2 inches, a 1800 pounds force to compress 3 inches...

Set Screw:
The tiny Allen screw that prevent the preload ring from loosening. Must be untightened prior to adjusting the preload ring and tightened back after the adjustment.

Triple-Rate:
A shock setup with 3 combined springs with 2 crossovers, each spring having its own rate.

Valving:
A combination of shims that controls the hydraulic flow to create the damping effect. The valving's "recipe" is the main factor for the feel of the suspension.

Wheel Travel:
The total amount of displacement allowed for the wheel from full extension to full compression.

C) Suspension Basics (continued)

C.3 Suspension Terminology

DRIVING AND HANDLING

Bottoming:
Reaching the end of the shock's travel under compression.

Bucking:
The rear end of the vehicle coming up too fast from not having enough rebound damping.

Chatter:
Shaking caused by too much compression damping, usually occuring while braking or when coming out of a corner.

Fading:
The loss of damping efficiency caused by oil expansion from heating after long use and repeated impacts.

Packing:
Packing happens when too much rebound damping is applied to the shock. A packed shock does not return completely to its initial state fast enough to absord properly the next impact.

Spiking:
The locking of the shock's movement when an impact's force exceeds the high speed compression's capacity.

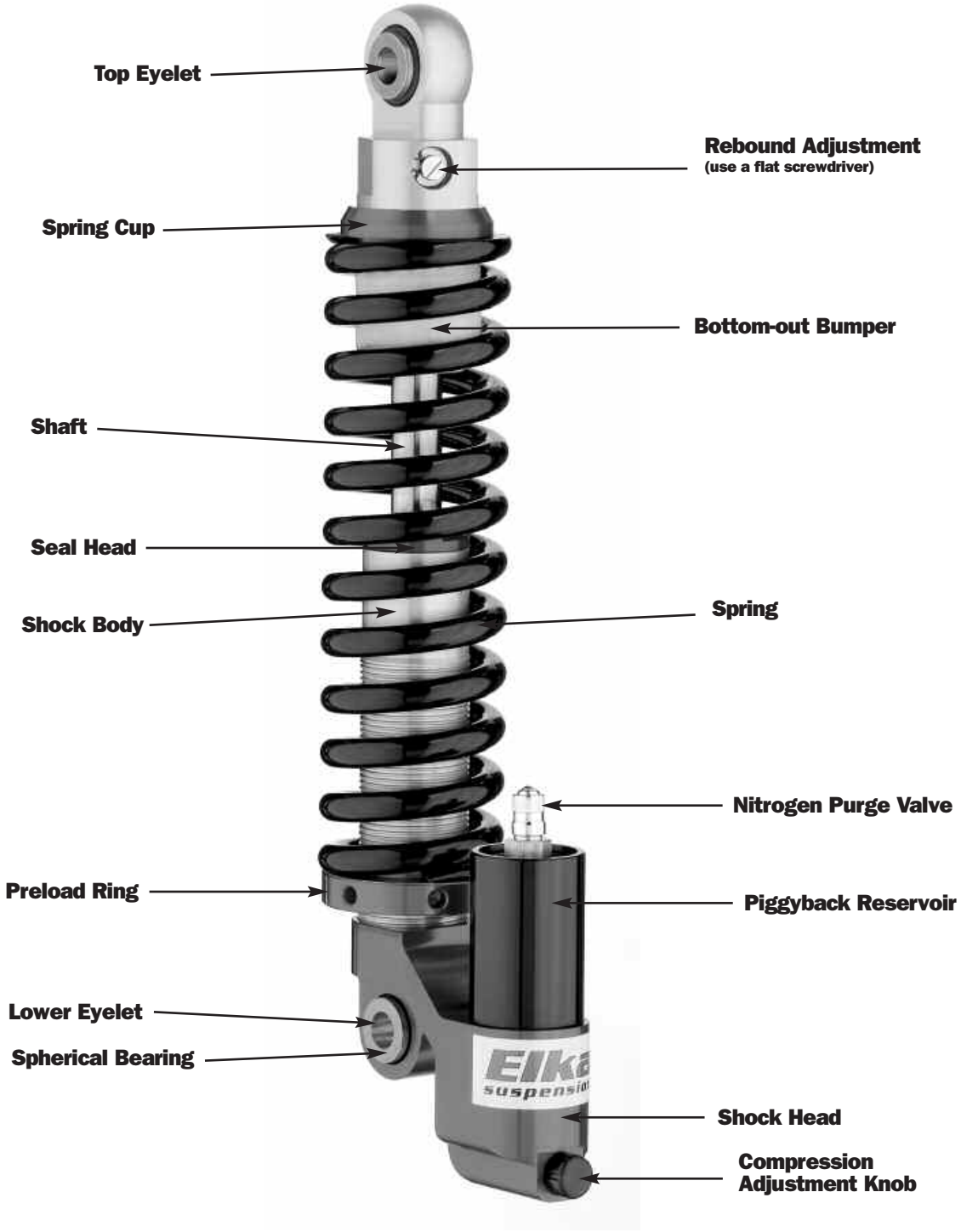
Squat:
The rear end compressing from quick acceleration or when the rider moves his weight to the back. A vehicle squats when it has not enough compression damping or the spring rate is too soft.

Stiction:
The sticky feel when a shock's internals do not slide smoothly because of worn parts or bad assembly.

Topping-out:
Quickly reaching the end of the shock's travel when it's extending back to its initial state.

C) Suspension Basics (continued)

C.4 Shock Absorber Components



D) Installation

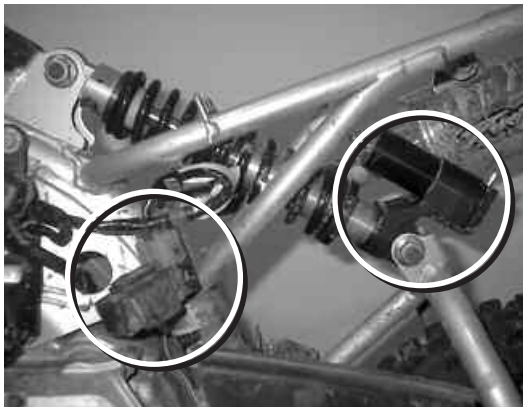
D.1 Installing the shock

PROPER POSITIONING OF THE SHOCK

When installing the shock, it is important to turn the top eyelet in the proper position so the rebound adjuster faces towards the left side of the bike *(see picture 1)*. This will ensure that the adjuster can be reached with the seat in place. It is also very important to put the reservoir end of the shock towards the rear of the bike to allow for proper clearance *(see picture 2)*.

You will also need to move the CDI (rev box) to the left side of the bike, outside the frame *(see picture 2)*. The box can be attached to the frame using zip ties or can be left hanging by the wires. See your bike's owner manual for proper torque chart of the shock's mounting bolts.

Picture #1: The rebound adjuster should face towards the left side of the bike. You might need to rotate the top eyelet to achieve proper positioning.



Picture #2: Reservoir end should face towards the rear of the bike. The CDI (rev box) should be moved to the location as shown.

WARNING !

- Never turn the shock's ends counter-clockwise. This could loosen the seal head.
- Always completely loosen the preload ring prior to remove spring.
- Never try to remove a spring clip when a spring is preloaded.
- Never use more than 4 turns of preload. If more is needed, you should change to a higher rate spring.
- Be sure reservoir stays clear from all moving parts. (Ex : swing arm, chain)
- Make sure that the shock bolts are fastened properly before riding.

E) Adjusting the shock

E.1 Preload adjustment

A preload adjustment ring is located under the head of the shock (see page 8 for details). This ring is used to increase or decrease the initial tension on the spring and therefore, the ride-height of the vehicle, also referred as the frame clearance. The frame clearance is the distance between the ground and the chassis. While the height of the vehicle is a matter of personal driver preference, the bike needs to be as level as possible to be in balance.

INCREASING THE PRELOAD

To increase the preload on your spring, you need to turn the preload ring **counterclockwise**.
- First, you will need to remove the seat to access the preload ring.
- Then loosen the set-screw on the preload ring using the provided 3mm Allen key.
- Finally, turn the preload ring counterclockwise using the provided preload tool.
- When the adjustment is complete, tighten back the set-screw to lock the preload ring.

Increasing the preload will rise the bike and increase the frame clearance. This will result in a more responsive ride. Be careful not to apply too much preload. This can cause “coil binding”, which is when the coils of the spring rub against each other under compression. This can damage the spring, the shock and can be dangerous for the rider.

REDUCING THE PRELOAD

To reduce the preload on your spring, you need to turn the preload ring **clockwise**.
- First, you will need to remove the seat to access the preload ring.
- Then loosen the set-screw on the preload ring using the provided 3mm Allen key.
- Finally, turn the preload ring clockwise using the provided preload tool.
- When the adjustment is complete, tighten back the set-screw to lock the preload ring.

Reducing the preload will lower the bike and decrease the frame clearance. This will result in a smoother ride but the bike might come in contact with the ground more often. The preload should always be enough to keep the spring strongly in place.

WARNING !

- Never use more than 4 turns of preload. If more is needed, you should change to a higher rate spring.

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E) Adjusting the shock

E.2 Compression adjustment

The black knob located on the remote reservoir is the compression adjustment. This adjustment controls the hydraulic resistance to high-speed impacts. A harder compression damping will offer more resistance to impacts but will provide a stiffer rider. A softer compression damping will provide a smoother ride but less resistance on impacts.

If the compression adjustment is correct, the wheels can achieve maximum travel. When the compression damping is too hard, the ride will be stiff and will not be able to absorb average to major impacts. It is preferable to start with a softer damping and add compression until the bike only bottoms out once or twice per lap. This will prevent the rider from getting tired prematurely and will increase comfort and performance.

INCREASING THE COMPRESSION DAMPING

The compression adjustment knob should be located right under the left sideplate. To increase the compression damping, you need to turn the knob **clockwise**. There is a sticker on the knob indicating S and H (soft, hard). Turn towards the H.

You should start in the middle of the adjustment. There are 30 clicks of compression adjustment. To adjust properly, turn the knob one click at a time and take a test ride. The adjustment is more sensitive towards the H than the S.

REDUCING THE COMPRESSION DAMPING

The compression adjustment knob should be located right under the left sideplate. To reduce the compression damping, you need to turn the knob **counterclockwise**. There is a sticker on the knob indicating S and H (soft, hard). Turn towards the S.

WARNING !

IMPORTANT NOTES ABOUT COMPRESSION ADJUSTMENT

It is not possible to check the compression adjustment by only compressing the suspension on the vehicle manually. You must ride the bike over jumps and bumps to assess the setting. The feeling might be right when bouncing on the seat but it could be very diffferent on the track.

Never compensate for a lack of spring strenght by boosting the compression or leaving the knob all the way towards the H setting. If your suspension is too soft with the adjustment above 25 clicks in, you should replace your spring with a higher rate.

If the knob appears to be blocked, do not force it. If necessary, contact Elka's Service Department for advice or repairs.

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E) Adjusting the shock

E.3 Rebound adjustment

The rebound adjustment is located on the gold anodized lower shock mount. You need to use a flat screwdriver to turn the adjuster. This adustment controls the speed the shock will return to its initial extended state after being compressed from an impact.

If the rebound adjustment is correct, the rear wheel should keep maximum traction by tracking the ground without catapulting the rider off the bike.

INCREASING THE REBOUND DAMPING (SLOWER RETURN)

Using a flat screwdriver, turn the adjuster **clockwise**. There is about 50 clicks of rebound adjustment. You should start in the full fast position of the adjustment. To adjust properly, turn the adjuster one click at a time and take a test ride. The adjustment is more sensitive towards the H than the S.

When the rebound setting gets too slow, the shock absorber will not have time to resume to its initial position when a series of close bumps is encountered. In this case, the bike will run out of travel (packing) and may give the impression of a too soft compression adjustment.

REDUCING THE REBOUND DAMPING (FASTER RETURN)

Using a flat screwdriver, turn the adjuster **counterclockwise**. There is about 50 clicks of rebound adjustment. To adjust properly, turn the adjuster one click at a time and take a test ride. The adjustment is more sensitive towards the H than the S.

When the rebound adjustment is too fast, the rear end of the bike will kick and move from side to side after hitting a series of close bumps and the rider will feel catapulted by the bike.

WARNING !

IMPORTANT NOTES ABOUT REBOUND ADJUSTMENT

Elka is one of the few manufacturers that offers a rebound adjustment that does not affect the compression setting.

If the knob appears to be blocked, do not force it. If necessary, contact Elka's Service Department for advice or repairs.

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SERVICE DEPARTMENT

Service Work Order

Read First: Shipping Instructions

1) Fill out this Service Work Order form completely and put it in your package. An incomplete form will cause additional delay.
2) Clean your shocks thoroughly. Use gentle detergent and pay attention to areas where debris can become lodged.
3) Wrap each shock individually before placing them in a box to avoid damage during shipping.
ANY DAMAGE OCCURING DURING SHIPPING IS YOUR RESPONSABILITY. Full shipping insurance is recommended.
4) Send your package to the address below through UPS or Fedex only for a fast turn-around time and to avoid customs problems.
5) Turn-around time is usually between 7 to 10 days from the moment we receive your package.

Step A: Client & Billing Information

Name or Company: _____

Address: _____

City: _____ State: _____ Zip Code / Postal Code: _____

Phone: _____ Fax: _____ Reference Number (if any): _____

Payment method: ❑ Visa ❑ MasterCard ❑ American Express Card #: _____ Exp. Date: _____

Bike Make & Model: _____ Year: _____ A-Arms & Swingarm: _____

Riding Style: ❑ Motocross (MX) ❑ Cross-country (XC) ❑ Desert ❑ Dune ❑ TT ❑ Freestyle ❑ Other: _____

Rider level: ❑ Pro ❑ A ❑ B ❑ C ❑ Expert ❑ Intermediate ❑ Beginner Rider Weight: _____

Step B: Return Shipping Information

Same as billing information (check here): ❑

Name or Company: _____

Address: _____

City: _____ State: _____ Zip Code / Postal Code: _____

Step C: Description of the problem(s)

_____

_____

_____

_____

_____

SHIP TO: ELKA SUSPENSION, SERVICE DEPARTMENT
Ethan Thibodeau, Service Manager
1585-M, De Coulomb, Boucherville, Quebec, Canada J4B 8J7
Phone: 450-655-4855 • 1-800-557-0552 Fax: 450-655-2821
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