Noleen Cross-Link Owner's Manual

SMART SHOCK2

PRO-FLEX® #1 IN FULL SUSPENSION BIKES

NOLEEN RACING

K2 BIKE®

1998 NOLEEN CROSS-LINK OWNER'S MANUAL - PDF

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INTRODUCTION

Congratulations on the purchase of your new Noleen Cross-Link™ fork - the most advanced suspension fork on the market. Through its unique linkage design and curved axle path, the Cross-Link addresses the problems telescopic forks ignore.

The inherent torsional rigidity of the Cross-Link can't be matched even by the most rigid telescopic designs. No brake scrub. No pedal pogo. No independent leg movement. Just 3 inches of widely adjustable, plush travel.

YOUR NOLEEN CROSS-LINK



Note: The Noleen Cross-Link comes in a Standard size (for bicycles with 90mm to 125mm head tubes) and a Long size (for bicycles with 126mm to 160mm head tubes). Make sure that you have the correct size Cross-Link. If you have further questions about the correct size, see the Installation section. Also, for any other sizing questions, please contact your K2 Bike / Noleen Dealer.

GENERAL INFORMATION

Note: During the first 2-3 hours of use, your new Noleen Fork may exhibit imperfect ride characteristics. After this break-in period, the fork's damping will stabilize at the proper level.

In this section:

- Read this Manual !
- Precautions

CAUTION: K2 Bike strongly recommends that your fork be installed by a K2 Bike/Noleen dealer or other qualified technician. These instructions are for qualified installers who possess proper training and tools. Improper installation can be extremely dangerous, and can result in failure during use and severe injuries.

Read this manual carefully before attempting to install or service your Noleen Fork. It is important that you follow proper procedure to ensure maximum performance and safety.

CAUTION: The Noleen Fork is a competition off road fork, and as such does not come with reflectors or lights for road use. Adapt proper reflectors and lights if bicycle will see road use at any time.

CAUTION: The Upper Link Mount height is fixed. Installing the incorrect amount of spacers beneath the Link Mount could result in fork failure and severe injury.

CAUTION: In the event of a crash, there could be damage to your fork that may not be visible. Damaged forks can be extremely dangerous, and can result in failure during use and severe injuries. After a crash, take your fork to an authorized K2 Bike/Noleen dealer or other qualified technician to verify its structural integrity.

INSTALLATION

In this section:

- Frame Preparation
- Fork Preparation / Installation

Frame Preparation

Proper frame preparation will make installing your new Noleen Cross-Link fork easier and allow your fork to function properly.

Notes : All Noleen suspension forks require the use of a threadless headset, such as a Dia-Compe Aheadset. If you do not have a threadless headset, you will need to install one before you install your new Noleen fork.

1. Remove the old stem and fork from your bicycle. If you are installing the Noleen fork on a new frame that has never had a fork installed, skip to the next step.
2. In order for the headset on your frame to function properly, the ends of the headtube should be perpendicular to the sides of the headtube. Some headtubes need to be "faced" in order to hold the headset cups properly. If you believe that your headtube needs to be faced, consult your local K2 Bike / Noleen dealer or other qualified bicycle dealer.
3. Lubricate the inside of the frame's headtube and the headset cups and press the upper and lower headset cups into your frame. Make sure that the headtube and headset cups are free of dirt and grime.

NOTE: Headset cups should be installed using a headset press. Do not substitute this tool for anything else. See your local Noleen dealer for assistance installing headset cups. Damage to the frame and/or headset can occur if not installed properly.



Steerer Tube Removal

Fork Preparation / Installation - 6 Easy Steps!

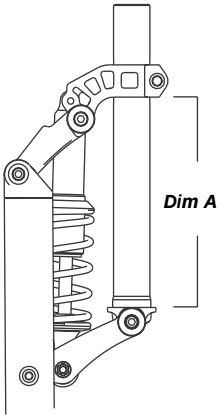
Once you have a properly prepared frame, you can install your Noleen fork. While your Noleen Cross-Link has been assembled with care at the factory, partial **disassembly and reassembly is required for mounting**. **Follow these steps:**

Step #1 - Remove the steerer tube from the fork.

1. Remove the two lower pivot axle bolts from the bottom of the steerer tube. Be careful not to lose any of the seals, pivot axles or bolts that you are removing.
2. Slide the steerer out of the Upper Link Mount. The Upper Link Mount is the large black aluminium piece that clamps to the steerer tube above the headtube, refered to as the **ULM**. It may be necessary to loosen the ULM bolt to do this.

Step #2 - Determine the headset spacers needed. Use the "Critical Measurement"!

Since the pivot points of our linkage forks must be in a fixed position to allow the fork to function properly, the Upper Link Mount needs to be placed in a specific position on the steerer tube. Headset spacers underneath the ULM are used to space the ULM to the proper position. **This ULM position is located at the "Critical Measurement". The "Critical Measurement" on our Cross-Link forks is the distance between the crown race seat and the bottom of the ULM. The Critical Measurements for our forks are:**



"Critical Measurement" Dimension A

Fork / Bike	Size	Critical Measurement
Noleen Cross-Link CS, C, ELT, EXP	Standard	163mm
Noleen Cross-Link CS, C, ELT, EXP	Long	200mm
K2 Bike 5500C, 4500C, 5000, 4000 (with Cross-Link Standard forks)	SM, MD, LG	163mm
K2 Bike 5500C, 4500C, 5000, 4000 (with Cross-Link Long forks)	Way-Big	200mm
K2 Bike 3000, 2000 ((with Cross-Link Standard forks)	SM, MD, LG	153mm*
K2 Bike 3000, 2000 ((with Cross-Link Long forks)	Way-Big	190mm*

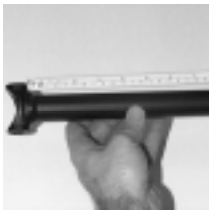
* The K2 Bike 2000 and 3000 use forks with slightly different dimensions. Please note the different measurements.

The two ways to find out exactly how many headset spacers you will need are:

1. **Measure it** - Using a tape measure or ruler, **measure the steerer tube from the crown race seat up to the specified Critical Measurement on the steerer tube. Make a small mark on the steerer tube at that point**. Once the steerer is installed in the bike, you will need to add headset spacers up to this point.

or...

2. **Calculate it - Add the length of your frame's headtube to the stack height of your headset**. The stack height is the total height of the lower and upper parts of the headset. If you do not know the stack height of your headset, consult your dealer or contact the manufacturer of your headset. **Subtract the result from the "Critical Measurement" for your size fork. The number you end up with is the height of the spacer stack between the ULM and the headset. See the example on the following page:**



Measuring Steerer Tube



Installing Crown Race



Installing Headset Spacers



Installing Fork



Recheck "Critical Measurement"

125mm (Headtube Length of Pro-Flex) + 25mm (Headset Stack Height - Kontak DL) = 150mm (Total Height)

163mm ("Critical Measurement" for Std. size fork) - 150mm (Total Height) = 13mm (Headset spacers needed)

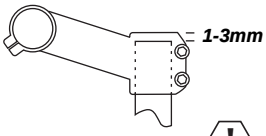
Step #3 - Install the crown race seat and steerer tube.

1. **Make sure that the crown race for your threadless headset will fit onto the crown race seat on the Cross-Link steerer tube.** The crown race should have an inside diameter of 30.0mm (1 1/8" Standard). The crown race should be slightly smaller than the crown race seat so that a press-fit is required to set the race firmly onto the fork.
2. **Place the bottom of the steerer tube on a piece of wood (or other malleable surface) and, using a slide hammer or other crown race installation tool, press the race into place.** Be careful not to let the bottom of the steerer slide around. Two small notches in the piece of wood under the steerer should prevent the steerer from moving. **It may help to place the wood (a 2x4 works well) in a vice.**
3. Inspect the race and make sure that the bottom of the race sits flush with the crown race seat and that the race is firmly in place.
4. **Slide the steerer tube up through the bottom of the headtube and install the upper threadless headset cup or race.** Rotate the steerer and make sure that the headset spins freely.
5. Now that you have determined the correct amount of spacers, install all the needed spacers onto the steerer directly on top of the upper headset cup or race. **Double check the "Critical Measurement" from the crown race seat to the top of this spacer stack.**

Step #4 - Install the rest of the fork.

1. **While supporting the bottom of the steerer tube with your hand, slide the Upper LInk Mount and fork assembly onto the steerer tube until the bottom side of the ULM contacts the spacer stack, or the top of the headset if no spacers are needed.**
2. Line up the lower link with the bottom ofthe steerer and loosely tighten the main pinch bolt on the ULM.
3. Reinstall the lower link onto the bottom of the steerer tube. **Don't forget to grease the seal spacers and install them with the wider side of the seal facing the link / bearing. and not facing the steerer tube.**
4. **Torque the lower pivot bolts to 100 in-lbs.**
5. **While holding the top of the steerer tube, loosen the ULM cinch bolt and press the ULM down onto the headset spacer stack. Press hard enough to tighten the headset, but do not too tight. Tighten ULM cinch bolt to 260 in-lbs.** Keep in mind that you will probably have to readjust the headset after you install the stem.
6. Rotate the fork and check for any binding or grinding in the headset. If the fork rotates smoothly, continue on to the next step. If the fork binds or the headset feels rough, loosen the ULM cinch bolt and repeat #5.
7. **Recheck the "Critical Measurement" on the Cross-Link fork and add or subtract headset spacers as needed.**

Step #5 - Install the stem, handlebar and brakes.



Proper Stem Installation

1. **When installing your stem, the distance between the top edge of the stem clamp must extend above the top of the steerer tube 1-3mm.** If the distance is incorrect, remove the stem and add or remove spacers on top of the ULM to achieve a 1-3mm distance.

CAUTION: Assembly with the top of the stem extending more than 3mm above the top of the top of the steerer tube can result in fork failure during use and severe injury.

2. Insert the threadless headset cap and screw through the top of the stem and into the steerer tube / star-fangled nut and tighten. The headset cap should be used to adjust the bearings in the headet. You will need to loosen the ULM cinch bolt and the stem cinch bolts and adjust the headset cap screw according to the headset manufacturer's instructions.
3. Tighten the two stem cinch bolts to 90-120 in-lbs or refer to the stem manufacturer's torque specs for the stem.



Proper Cable Routing

CAUTION: If the two steerer pinch bolts are not securely tightened, the stem may rotate or pull off of the steerer tube, resulting in loss of control and severe injury.

4. **Install the handlebar, shift and brake levers and front brakes. Adjust the position of the shifter and brake controls and front brakes as needed. Before you check the torque on all the bolts, see Step #6 below.**

Step #6 - Route the cables between the fork legs and install front brake hanger (if needed).

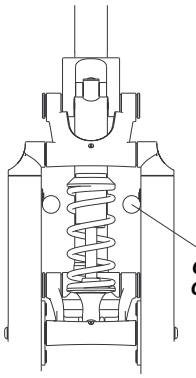


Place Cables Between Fork Legs

The following notes on cable routing are very important. Please follow all of the instructions pertaining to cable routing on Noleen Cross-Link forks. Cable housing lengths should be sized to minimize rubbing on the fork legs. **The rear brake and both derailleur cables must be routed between the shock and the fork leg. The cable guide at the top of each Cross-Link leg is designed to hold the cables and prevent them from becoming entangled in the shock and from rubbing on the fork legs. To route cables without disconnecting them, complete the following steps.**

CAUTION: DO NOT route cables outside of fork legs. Loss of control and serious injury may result. Always route cables between fork leg and head tube.

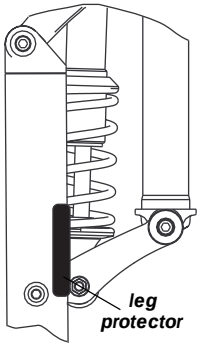
1. Remove the upper fork leg pivot bolt on the side of the bike the cables mount on. In some cases, the cables will be routed on either side of the shock, but still inside the fork legs.
2. Loosen (but do not remove) the lower fork leg pivot bolt on the side the cables mount on.
3. Remove the two cable hanger bolts on the side of the bike the cables route mount on, if using cable hanger.
4. **Pull out and rotate the fork leg forward and move the cables to the inside of the fork leg**. While you have the leg rotated forward, loosen and remove the cable guides from the legs.
5. Rotate the fork back into place and replace the upper fork leg pivot and cable hanger bolts using blue Loc-Tite. **If you are using center-pull cantilever brakes instead of V-brakes, you should install the cable hanger now. See the instructions below for installing the front brake cable hanger.**
6. Tighten the upper and lower fork pivot bolts to 100 in-lbs. Tighten the cable hanger bolts to 40 in-lbs.
7. **Once you have installed both legs, place the cable guides around the cables and attach the guide to the inside of the fork leg**. Torque the cable guide bolt to 40 in-lbs.



Installing Cable Guides

Noleen Cross-Link Forks come set up for Shimano V-Brakes out of the box. We have designed an attachment for center pull cantilever brakes. This piece comes stock with all aftermarket forks. You will need to loosen one fork leg to install the front brake cable hanger. See Step #6 above to loosen leg. Then, please follow the steps below for installation.

1. Place the cable hanger bracket so the slotted center piece is facing away from the fork.
2. Install the four 4mm bolts using blue loc-tite on each bolt. Torque to 40 in/lbs.
3. Install the cable housing into the slotted fitting and adjust front brake.



Installing carbon leg protector plates

NOTE: If you have purchased a Noleen Cross-Link CS or C, you should have received two black aluminium leg protector plates. These plates should be used on the carbon legs to prevent any damage to the legs from hitting the bike frame. They should be placed on the rear outside corner of the leg where the leg contacts the frame. Clean and dry the plate and leg. Attach the double-sided adhesive to the plate and then attach the plate to the fork leg with the top edge 10mm above the point of contact on the frame.

CAUTION: To prevent damage to carbon legs on Cross-Link forks, the leg protector plates should be installed. Failure to install the leg protectors properly can result in failure during use and severe injury.

CAUTION: All Cross-Link fork bolts should be tightened to the proper torque when installation is completed. Failure to torque all bolts properly can result in failure during use and severe injury. Refer to Maintenance: Service Table for all torque, lubrication, and Loc-tite specifications for all Cross-Link bolts.

SUSPENSION TUNING

In this section:

- Tuning Variables
- Tuning Adjustments
- Smart Shock

In this section you will learn how to set up your Noleen Cross-link properly. Our forks are designed to offer wide adjustability for many different riders. It may be necessary to purchase different springs in order to tune your Cross-Link. We offer a wide variety of coil springs for this purpose.

Tuning Variables

All riders are different. Therefore, bicycle suspension needs to be able to adjust to the different needs and desires of many different riders. The following factors should be considered when adjusteing the suspension of a Noleen fork:

Rider Weight

Lighter riders need to have softer springs in order to take full advantage of the travel of the fork. Heavier riders need to use stiffer MCU springs to keep the fork from bottoming out. You may need to adjust the stiffness of springs in your fork for your body weight. See **Suspension Variables: Spring Rate** for the correct springs to use.

Type of Riding

A suspension fork used for high-performance off-road riding should have stiffer suspension than one intended for recreational road use. The severe impacts and high speeds of serious off-road riding demand stiffer springs, while more casual riding is more comfortable with softer springs. In general, the fork should be set up to maximize the use of suspension travel in the conditions to be encountered.

Personal Preference

New suspension riders often prefer stiffer suspensions that feel more like a rigid bikes. However, suspension forks work best when a rider adapts their style to use the suspension fully. A spring that feels soft at first may be exactly what you want after a week of riding.

Tuning Adjustments

Once you have an understanding of the variables affecting suspension tuning, you can now move on to actually adjusting your suspension to fit your needs. The Tuning Adjustments of your Noleen suspension fork are:

Spring Rate

Spring Rate is the amount of load required to compress a coil spring one inch. We suggest different spring rates for our bikes and forks because different riders place different loads on bicycles. The provided spring rate charts are suggested spring rates according to rider weight.

Rider Weight (lbs)	Spring Rate
up to 140	175
130-170	200
160-200	200
190-230	225
over 230	250

Remember, these are recommendations. You may wish to try stiffer or softer springs than recommended due to the terrain you ride, your riding style, and personal preference.

Spring rate has an effect on damping. The higher the spring rate, the more damping will be required to control the motion of the shock. This is why lighter riders feel their shocks may be overdamped while heavier riders may not perceive enough damping. See the notes on **Rebound Damping and Compression Damping** below for a further explanation.

Changing Coil Springs

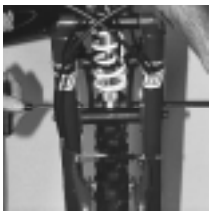


Top Shock Bolt Removal

CAUTION: Noleen strongly recommends that your Cross-Link be disassembled and adjusted by your authorized Noleen dealer. Improperly assembled or adjusted forks can be extremely dangerous, and can result in failure during use and severe injuries.

You may need to change the coil springs on your Noleen fork in order to tune your suspension. We suggest this be done by your local Noleen dealer or other qualified technician using these instructions:

1. Remove the front wheel from the bike (optional).
2. Remove the upper shock bolt where the shock attaches to the Upper Link Mount. Be careful not to lose the two metal shock spacers in the top of the shock body.



Remove Wrist Pin



Changing Coil Springs

3. Remove the wrist pin that holds the bottom of the shock. The best way to do this is to loosen the wrist pin bolt about 5 turns and tap the bolt with a soft mallet to knock the wrist pin loose. You may need to hold the wrist pin from the other end with an 8mm hex wrench to prevent the wrist pin from spinning. Finish removing the wrist pin bolt.

4. To completely remove the wrist pin, you may need to insert a long bolt, such as the upper shock bolt, into the threaded end of the wrist pin and screw it in about 4 turns. Hit the end of the long bolt with a soft mallet to knock the wrist pin loose. Make sure not to loose the two o-rings that hold the bottom of the shock in place.

5. Completely remove the shock from the fork. If your fork is equipped with a Smart Shock, you will need to remove the top two bolts that attach the upper link to the ULM to get the shock out.

6. Loosen the preload adjusting collar from the spring by turning the collar and spring simultaneously. This should allow you to remove the slotted spring clip that holds the spring on the shock.

7. Remove spring and replace with desired spring. **Make sure that the spring is the correct length for the shock. Make sure to preload spring with at least 1-2mm of preload. See WARNING below in the Preload section.**

8. Reinstall the shock on the fork and torque all fork bolts to 100 in-lbs.

Suspension Sag - What is it?

Once you have selected the correct spring for you, you will need to set up your suspension with the proper amount of suspension sag. Suspension sag is the amount a shock compresses under the weight of the rider.

Noleen Cross-Link forks should all be set up properly with a certain amount of sag in order to perform well. **The optimum sag amount for all Noleen Cross-Link forks is 20% of the total shock shaft stroke, or 20% of the total wheel travel. For example:**

Our Cross-Link forks have a total shock shaft travel of 52mm which yields a total wheel travel of 76mm. To calculate the **optimum sag** for this fork, multiply 52mm by .2. The answer gives you a suggested sag , which for the Cross-Link is 10mm at the shock, or 15mm at the wheel. On the Cross-Link fork, we suggest that you measure the amount of sag at the shock instead of the wheel.

Optimum Suspension Sag for all Noleen Cross-Link forks = 10mm (measured at the shock)

NOTE: If you are not getting the correct amount of Sag, you will need to adjust the Preload on the spring. See below.

Preload

Preload is the amount of load placed on a spring to increase the spring rate in the initial part of the travel. All of our shocks feature adjustable preload. **Preload is used to achieve the proper amount of suspension sag for your bike or fork. Remember: You must first start with the proper spring rate in order to get the correct amount of sag.**

NOTE: Never increase the preload on a spring past 5 full turns of the preload adjuster. If you have tightened the preload adjuster over five full turns and are still getting too much sag, move up to the next spring rate.

To adjust the amount of suspension sag with your Noleen Cross-Link, follow these instructions:



Measuring Optimum Suspension Sag

1. Tighten preload adjuster until the spring is held firmly (1 - 2mm) and **measure the distance between the preload adjuster and the bottom spring clip or containment washer**. Next, compress the fork a few times to coat the shock shaft with oil and to overcome any initial friction there may be in the shock.

2. Position the bicycle beside a wall and get on. Place your fingers lightly on the wall to steady yourself, and put your feet on the pedals and sit on the seat. Have a friend **re-measure the new distance between these two points**. **Subtract the seated measurement from the unseated measurement to find the amount of sag**.

3. **If the bike compresses under the rider more than recommended, tighten the preload a bit at a time and re-measure the compression until you hit the right amount of sag. If the bike is compressing less than recommended, loosen the preload to get the right amount of sag, but make sure spring is still held firmly**.

4. **If there is only 1-2mm of preload on the spring and the bike still won't compress enough, you probably need softer springs. If you have preloaded the spring more than five full turns, try stiffer springs**.

WARNING: All coil springs must be preloaded at least 1-2mm in order to hold the spring securely between the preload adjusting collar and the spring clip. Improperly installed coil springs can be extremely dangerous, and can result in failure during use and severe injuries.

Damping

Damping is the action of controlling shock shaft speed. The rate at which a spring compresses and extends can be controlled. Our Noleen Shocks use hydraulics to control the motion of our shocks. There are two types of damping: **rebound** and **compression**.

The first type of damping that effects shock performance is **rebound damping**. Rebound damping controls the rate at which the spring extends back to its optimum sag length. If the spring extends too quickly, the suspension will exhibit a "bouncy" or "overly lively" feel. Too much rebound damping will cause the shock to feel "dead" or "unresponsive". The chart below provides guidelines to adjusting your shock damping.

The second type of damping is **compression damping.** Compression damping assists the spring to control the rate of shock compression. Adjusting the compression damping will make the shock feel essentially harder or softer. Compression damping becomes more important as suspension travel increases and as shock shaft speed increases. Our shocks rely on rebound damping much more than compression damping. Refer to the chart below to see when more or less compression damping is preferred.

Rider Variables	Rebound Damping	Compression Damping
Lighter Riders	need less	need less
Heavier Riders	need more	need more
Aggressive Riders	need more	need more
Recreational riders	need less	need less
many small bumps	need less	need less
big hits	need more	need more
Cross Country riding	need less	need less
Downhill riding	need more	need more

The damping action that a rider is looking for is a **controlled suspension action**. This controlled feeling may vary according to rider preference and terrain. **Experimenting with different levels of damping helps a rider "dial in" the best level of suspension damping**.



Adjusting Damping

The damping on the Cross-Link EXP is not externally adjustable. This fork uses a Noleen NR-1. The NR-1 has a preset amount of rebound and compression damping which is set at the factory. If you wish to have this damping changed, contact your local Authorized Noleen Service Center.

The damping on the Cross-Link CS, C and ELT is externally adjustable. These forks use Noleen NR-2 shocks, and the CS also incorporates Smart Shock Technology which is discussed below. **To adjust the amount of damping on the Noleen NR-2 and Smart Shock, riders should try riding with the damping dial at the full off position and the full on position. The desired adjustment will fall somewhere in between, ending up closer to the full on position. The damping adjuster knob on Noleen NR-2 and Smart Shock mainly adjust rebound damping while affecting compression damping only slightly.** Coil shocks require more rebound damping than compression damping, and this is why the adjuster works in this manner. See the Smart Shock section below to see how this shock controls compression.

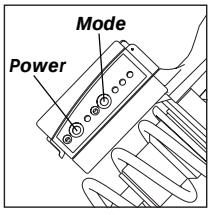
Noleen shocks can also be "revalved" or "customized" to suit a particular rider's needs. This work should only be completed by Noleen or by another authorized Noleen Service Center. Do not attempt to work on the internals of any shock.

Noleen shocks may only be serviced by Noleen or by an authorized Noleen Service Center. Service that is performed by anyone other than Noleen or an Authorized Service Center can damage the shock and result in failure during use and severe injury.

Noleen shocks are pressurized with 200 psi of nitrogen. Attempting to disassemble a charged shock is extremely dangerous and can result in serious injury.

Smart Shock

If you have not read the **Suspension Tuning: Damping** section yet, please do so now. This section will provide you with an understanding of the concepts of shock damping, and specifically, **compression damping**. **The Smart Shock system is an electronic compression damping adjuster which automatically adjusts for more or less compression damping according to shock shaft speed and main piston location which, in turn, automatically adjusts the shock for better performance over big and small hits.**



Smart Shock Controls

If your Cross-Link is equipped with Smart Shock technology, you will probably want to run the mode setting on "Smart" mode most of the time. Smart mode optimizes shock action for ever-changing off-road conditions. In a few cases, the stiff or soft settings may be desirable. For instance, on a long, smooth climb, the stiff setting will reduce suspension motion if desired.

When you stop to take a break, Smart Shock automatically switches to "sleep" mode to save energy. Standard 9-volt batteries power the system, yielding about eight hours of use per charge. Rechargeable batteries are recommended. **If the batteries should run out during the ride, the shock will not cease to function. The Smart Shock will simply revert to a base line compression damping setting that delivers the same high standard of performance Noleen Shock users have come to expect**.

MAINTENANCE

In this section:

- Lubrication - Grease ports
- Seal Replacement
- Bearing Replacement
- Maintenance Schedule
- Torque and Lubrication Table
- Service Kits

Your Noleen Cross-Link requires minimal maintenance due to its long-wearing bushings and user-friendly grease ports. However, you must do the following:

CAUTION: K2 Bike strongly recommends that your Noleen suspension components be disassembled and adjusted by your authorized Noleen dealer. Your authorized Noleen dealer possesses the proper training and tools to service your bicycle. Improperly installed or serviced suspension forks can be extremely dangerous, and can result in failure during use and severe injuries. These instructions are provided for owners having sufficient knowledge and the proper tools to do the job.

WARNING: Before Every Ride - Check all external screws and bolts for tightness. Failure to do so could lead to lose of control during use and severe injuries.

Tools Needed:

- 5 and 6mm Hex Wrench
- K2 Goo (or other Teflon-fortified grease)
- Grease Gun with small nozzle
- Small dowel or socket head
- Drill with 1/8" bit
- In-lb Torque Wrench with 5 and 6mm hex bits
- Thread-locking compound - Loctite Blue #242
- Small flat head screwdriver
- Bench-mounted vice with soft jaw inserts

Lubrication - Grease Ports

The easiest and best thing you can do to keep your Cross-Link performing like it should is greasing the fork. Grease ports in all pivot locations are designed to permit the flow of new grease through the pivots. You will need a grease gun to inject grease into these fittings. Any standard grease gun with a narrow end fitting will work. We suggest that you use K2 Goo, a highly water-repellant, Teflon-fortified grease. The following instructions discuss the proper use of the grease ports.



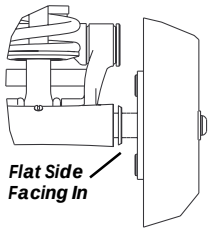
Injecting Grease

1. Clean all of the dirt and grease from the outside of the fork.
2. Loosen all of the link bolts 4-5 turns. You may need to hold one bolt on one side while loosening the other side.
3. **Remove the small flathead screws that cover the grease ports on the front of the links. Don't lose these!**
4. **Taking the grease gun, gently pump the gun until you see grease squirt out from both pivots**. You may need to pull the clear seals away from the links slightly to allow the grease to flow freely.
5. If you notice that the grease is flowing out of one side of the link (front pivot axles, not rear pivots) and not the other side, then tighten the bolts on the side that the grease is flowing out of and continue pumping grease into the fork.
6. **Clean all old grease from the bearing area and retorque all link bolts to 100 in-lbs.**

Seal Replacement and Bearing Greasing

The clear seals (also known as "Extreme Seals") located in each pivot keep contaminants out and keep the links moving smoothly. Over time, they will become worn and lose their effectiveness. When worn, you should replace all the seals on your Cross-Link fork.

It is recommended that when you replace any or all seals that you regrease your pivot bearings. Your fork came with a small amount of K2 Goo Grease used for the application. You may purchase larger amounts of grease at your local K2 Bike / Noleen dealer. **Please read the following seal replacement steps before you continue and familiarize yourself with the procedure.**



Proper Seal Orientation

K2 Bike suggests your Noleen fork be serviced by an authorized K2 Bike / Noleen dealer or other qualified technician. These instructions are for a qualified installer who possesses proper training and tools. Improperly serviced forks can be extremely dangerous, and can result in failure during use and severe injuries. These instructions are provided for owners having sufficient knowledge and the proper tools to do the job.

Important installation instructions: The seals must be installed in a specific direction in relation to the bearing which it is sealing. When installing a seal against any bearing surface, the beveled side of the seal must face away from the bearing. The flat side of the seal will contact the bearings edge.



Replacing Leg Seals

Seal Replacement - Leg Axles

1. Remove the front brake cable hanger, if installed. Remove the front brake cable from brake lever and release the front brake straddle cable.
2. Remove both forks legs by removing the four leg mounting bolts.
3. Remove the old seals located at the end of each axle.
4. Remove the axles out of the upper and lower links. Clean all bearing areas and axles thoroughly
5. Place a small amount of the grease onto both bearing surfaces located in the links and reinstall axles.
6. **Install one seal onto the outside of each link with the flat side facing the link and bearing.**
7. Reinstall each leg and tighten all bolts to 100 in-lbs.

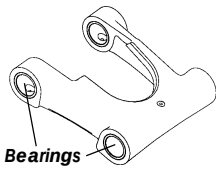


Replacing Rear Pivot Seals

Seal Replacement - Rear Pivots

Each of the rear pivots will require two seals each. **Remember:: the larger, flat side of the seal must face the bearing.**

1. Beginning with the lower rear pivots, loosen and remove the bolts and the pivot axles.
2. Remove the old seals and clean the pivot axles and the bearings in the links thoroughly.
3. Put a small amount of grease on the bearings and on the sides of the bearings.
4. **Install the new seals, flat side facing the bearing in the link.**
5. Grease the pivot axles and reinstall them into the links. Torque bolts to 100 in-lbs.
6. Repeat steps 1-5 to replace the upper rear pivot seals.



Bearings in Links

Bearing and Pivot / Axle Replacement

Your Cross-Link fork has a total of eight small nylon bearings (one in each pivot location), four small pivots and two axles that are designed to last for a long time if serviced properly. You should expect these parts to last a few seasons under normal riding conditions. This will vary, of course, with riding frequency and conditions. Contaminants, such as dirt and sand, will cause these bearings and pivots / axles to wear prematurely. A worn bearing or pivot / axle will exhibit looseness at the pivot and may give the impression of a loose fork. All worn parts should be replaced.

We have designed the bearings to be easily replaceable. They are press-fit into place and can be easily pushed out and replaced with new bearings. **Any new bearings will not be drilled, so the installer will need to drill the bearings in order to utilize the grease ports on the links. Drilling an 1/8" or 2-3mm hole in the side of the bearing will be enough to allow for the proper flow of grease into the pivot**. It will help to closely inspect the old bearings to position the new hole. Follow the instructions below to service your bearings.



Bearing in Vice

K2 Bike strongly suggests that the bearings in your Noleen Cross-Link fork be serviced by an authorized K2 Bike / Noleen dealer or other qualified technician. These instructions are for a qualified installer who possesses proper training and tools. Improperly serviced forks can be extremely dangerous, and can result in failure during use and severe injuries.

1. **To service the bearings in the Cross-Link fork, you must disassemble the fork. You will not, however, have to remove the steerer tube from the bike**. Leaving the steerer tube and ULM installed, remove the shock, fork legs and rear pivot axles to remove the links. **Refer to the previous sections on Spring Replacement and Seal Replacement for these instructions.**
2. Remove the axles from the links as well, and thoroughly clean each link. Replace if the axles are loose in the link.
2. Once you have the two links removed from the fork, **Place each link (one at a time) into a soft vise (do not clamp the links into a hard steel vice with no aluminium or other soft clamping faces) with two bearings exposed**. **Clamp the links over the bearing holes, not on the top/bottom of the links**
3. Knock out all of the bearings using a small dowel rod or a small socket head driver that is slightly smaller than the bearing. **The bearings in the front of the links can only be removed from the inside out, so do not try to remove these bearings by pushing them all the way through the link.**



Removing Worn Bearings



Installing New Bearings



Pressing in Bearings

4. After removing all of the bearings from the links, thoroughly clean the links and grease the inside of the links in the bearing area.

5. Grease the outside of the new bearing and, while lining the drilled hole up with the grease port, **push it into the link with the beveled end first**. You will be able to push the bearing in enough to just hold it in position.

Note: Do not install the new bearings with the flat end first. This will damage the bearing and hurt its performance.

6. To finish installing the new bearing, place the link with the exposed bearing into the soft vice and close the vice until the bearing is completely pressed into place. Be very careful not to close the vice too tightly.

Caution! When pressing new bearings into the Cross-Link links, be very careful not to damage the link. Using excessive force when pressing the bearings in with the vice can damage the link and result in failure during use and severe injuries.

7. **After installing all of the bearings, make sure that the holes in the bearings are lined up with the grease ports. Test this by injecting some grease into each port and see if it comes out on the inside. If it does not, repeat steps 3-6 above.**

8. Grease and install the front axles into the links and reassemble according to the instructions in **Suspension Tuning: Changing Coil Springs and Maintenance: Seal Replacement**. Inspect the fork axles and pivots carefully and replace if needed. There should not be play between the axles / pivots and bearings. Torque all bolts to 100 in-lbs.

Caution! It is very important to retighten all bolts to the specified torque settings. Improperly torqued bolts can be extremely dangerous, and can result in failure during use and severe injuries.

Maintenance Schedule

The following table is a guideline for servicing your Noleen fork. More frequent riding and wetter, muddier conditions will increase the frequency of required serivice. Please take your riding habits and conditions into account when serivcing your Noleen suspension fork.

Required Inspection/Service	Every Ride	Monthly	Yearly
Check torque on all bolts	4		
Check headset adjustment	4		
Check Shock function		4	
Grease seals and bearings		4	
Check / Grease brake pivot posts		4	
Check / Adjust Suspension Sag		4	
Inspect/Service all nylon bearings			4
Inspect / Service Shock			4

Service Table

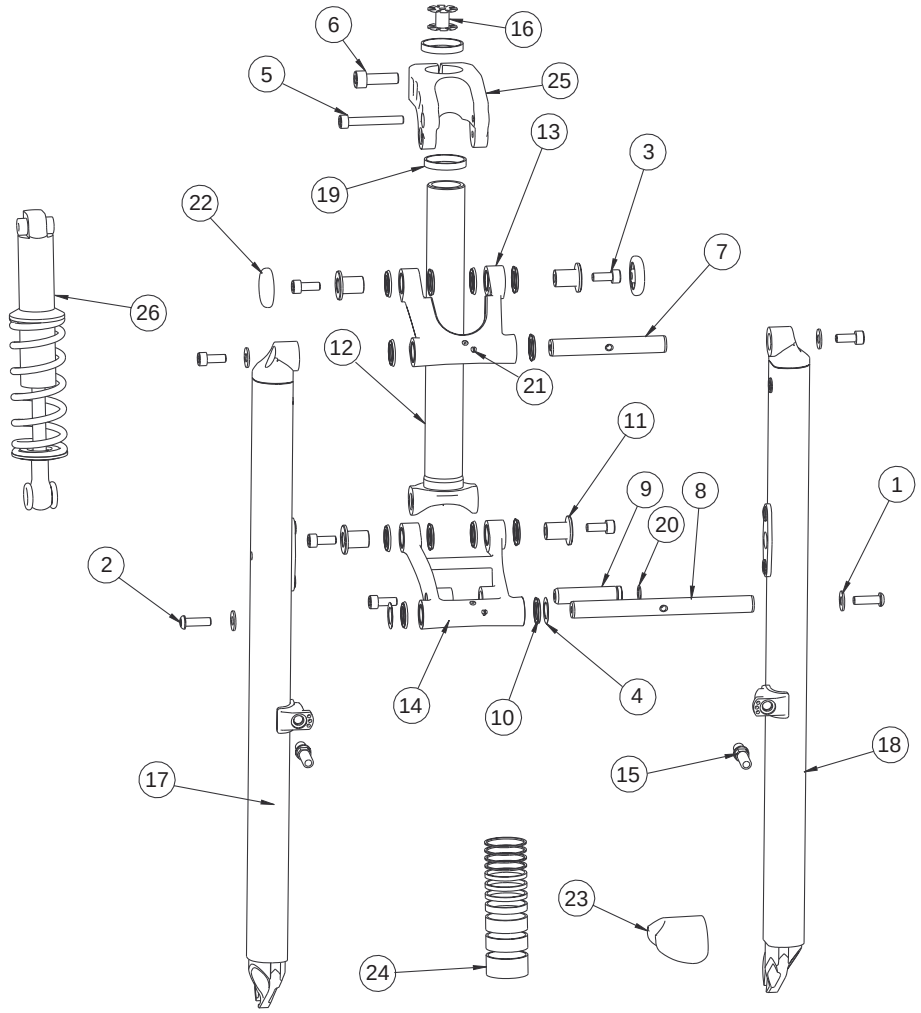
These tables are provided as a reference for qualified technicians to service all Noleen forks.

Frame	Part Name / Location	Size / Description	Torque (in-lbs)	Lubrication	Loctite
Cross-Link fork	Lower Axle	M6 x 1 x 20 BHCS	100	Yes	Blue
	Links, Pivots, Wrist pin	M6 x 1 x 15 SHCS	100	Yes	Blue
	Uppershock	M6 x 1 x 43 SHCS	100	Yes	Blue
	ULM cinch	M8 x 1.25 x 25 SHCS	260	Yes	Blue
	Brake Cable Hanger	M5 x .8 x 15 BHCS	40	Yes	Blue
	Brake pivot	M10 (carbon leg)	60	No	Red
		M8 (alum leg)	60	No	Red

Service Kits

The following Replacement / Service Kits are available from your K2 Bike / Noleen Authorized Dealer. They are intended for use by your K2 Bike / Noleen dealer or other qualified mechanic possesing the proper training and tools.

Cross-Link Seal Kit	Replaces all clear pivot seals ("Extreme Seals") and other parts	RK004
Cross-Link Bearing Kit	Replaces all link bearings	RK006



Item #	Part #	Qty	Description	Item #	Part #	Qty	Description
1	14122-BLK	4	Washer	16	15181	1	Star Fangled Nut
2	14125-BLK	2	M6 x 1 x 20 BHCS (lower axle)	17	15198-x-x	1	Leg, Right Alum.
3	14131-BLK	7	M6 x 1 x 15 SHCS (links, pivots)		15607-1	1	Leg, Right Carbon
4	14180	2	Shim Washer (.005)	18	15203-x-x	1	Leg, Left Alum.
5	14618-BLK	1	M6 X 1 X 43 SHCS (upper shock)		15606-x-x	1	Leg, Left Carbon
6	14856-BLK	1	M8 x 1.25 x 25 SHCS (ULM)	19	15265-X	2	Spacer, 1. 125
7	15098	1	Axle Rod, Upper Pivot	20	15313	1	O-ring (Wrist Pin)
8	15101	1	Axle Rod, Lower Pivot	21	15319	2	M2 Fillister Head screw
9	15108	1	Wrist Pin	22	15460	2	Pivot Bumper (2000, 3000)
10	15128	12	Spacer Washer (Extreme Seal)	23	15487	1	Top Tube Protector (2000, 3000)
11	15129	4	Pivot Axle	24	15505	1	Spacer Kit (AM only)
12	15137-x	1	Steerer Tube	25	15074	1	Upper Link Mount (2000, 3000)
13	15159	1	Upper Link Assembly		15599	1	Upper Link Mount (4000 - 5500C, CS - EXP)
14	15160	1	Lower Link Assembly	26	Shock	1	Shock Assembly, Front
15	14519	2	Brake Pivot Post (10mm-Carbon leg)	Parts not shown:			
	15179	2	Brake Pivot Post (8mm-Alum leg)		14116	8	Sleeve Bearing, undrilled (links)