SMART FORK

# K2 Smart Fork™ Owner's Manual Addendum

NOLEEN RACING

K2 BIKE

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## INTRODUCTION

Congratulations and thank you for purchasing the best performing, most technologically advanced suspension fork on the planet - The new K2 Smart Fork™. The Smart Fork's electronically-controlled piezo bypass valve provides "big hit" protection while maintaining soft, supple movement over the little stuff. You'll be amazed at the ride of this fork!

K2 Smart Fork: The Smoothest fork on the Planet. Now yours to ride and enjoy.

## YOUR K2 SMART FORK



## GENERAL INFORMATION

Note: The aftermarket K2 Smart Fork™ is available in a 31.8mm / 1 1/8" steerer that is 265mm long. For any other sizing questions, please contact your K2 Bike / Noleen Dealer.

**In this section:**

Please read they Noleen Chubby / Chubby LT Owner's Manual for all precautions and other detailed information. This Addendum is to be used with the Noleen Chubby / Chubby LT manual as a supplement.

- **Read this Manual!**
- **Precautions**

**CAUTION: K2 Bike strongly recommends that your fork be installed by a K2 Bike dealer or other qualified technician. These instructions are for a qualified installer who possesses proper training and tools. Improperly installed forks can be extremely dangerous, and can result in failure during use and severe injury.**

**CAUTION: This K2 Smart 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 be used in low light conditions.**

**CAUTION: Installation of an incorrect length steerer tube could result in fork failure and severe injury. See your authorized K2 Bike / Noleen dealer or other qualified technician to ensure proper installation.**

**CAUTION: In the event of a crash, there could be damage to your K2 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 qualified technician to verify its integrity.**

## INSTALLATION

**In this section:**

- **Frame Preparation**
- **Fork Preparation / Installation**

## Frame Preparation

Please follow the instructions in the Noleen Chubby / Chubby LT for Frame Preparation instructions.

## Fork Preparation / Installation

The installation instructions for the K2 Smart Fork differ slightly from the Noleen Chubby / Chubby LT installation instructions. The K2 Smart Fork is a single-crown fork and does not require any disassembly for installation. Please follow the instructions below to install your K2 Smart Fork.



*Installing Crown Race*

### Step #1 - Install the crown race of the headset

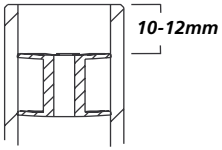
1. Make sure that the crown race for your threadless headset will fit onto the crown race seat on the Smart Fork steerer tube. The crown race should have an inside diameter of 30.0mm (1 1/8" Standard). The crown race should be slightly smaller than the crown race seat so that a press-fit is required to set the race firmly onto the fork.
2. Slide the crown race onto the steerer tube and install the race using a slide hammer or other race installation tool. Be very careful not to damage the race. If you do not have the proper tools to install the race, contact your local dealer.
3. Inspect the race and make sure that the bottom of the race sits flush with the crown race seat on the crown and that the race is firmly in place.

### Step #3 - Install the fork.

1. Slide the steerer tube into the headtube of the bike and, while holding the rest of the fork with your hand, slide the upper cup or race of the headset onto the steerer.
2. Temporarily install the stem and decide if and where you should cut the steerer tube to shorten it.

**NOTE**: **If you will want to cut the steerer tube, make sure that you have enough room for your stem. DO NOT cut the steerer tube too short! REMEMBER: MEASURE TWICE, CUT ONCE!**

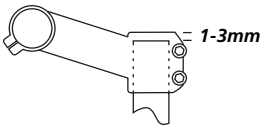
### Step #4 - Install the star-fangled nut, stem, handlebar and brakes. That's it!




*Proper Star-Fangled Nut Installation*

1. Install the star-fangled nut into top of steerer tube 10 - 12mm from the upper surface with star fangled nut installation tool, if it is not installed already. Do not attempt to install the star-fangled nut without the proper tool.
2. 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 upper triple clamp to achieve a 1-3mm distance.

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




*Proper Stem Installation*

3. With the stem installed, insert the Aheadset cap and screw through the top of the stem and into the star-fangled nut. Use the threadless headset cap to adjust the headset as per the manufacturer's instructions. Remember: You will need to loosen all of the stem clamp bolts to adjust the headset.
4. Tighten the stem bolts to 90-120 in-lbs or refer to the stem manufacturer's torque specs for the stem. Install the handlebar and brake / shifter controls. Position as desired and tighten all bolts to manufacturer's torque specification.

**CAUTION: All Smart 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 Smart Fork bolts.**

## SUSPENSION TUNING

**In this section:**

- **Tuning Variables**
- **Tuning Adjustments**

## Tuning Variables

Please refer to the **Noleen Chubby/Chubby LT Owner's Manual** for Tuning Variables.

## 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 K2 Smart Fork suspension are:**

### Spring Rate

The Spring Rate of a spring is the amount of load required to compress that spring one inch. We suggest different spring rates for our bikes and forks because different riders place different loads on bicycles.

Spring selection is also affected greatly by rider preference. More aggressive riders may desire their springs to be stiffer, while a more recreational oriented rider may like a softer ride with softer springs. Experimentation with different spring rates may be necessary to find the correct set up.

### Spring Selection Tables

Consult the tables below to select the spring set that's best for you. 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.

| Rider Weight | Smart Fork (right leg only) |
|---|---|
| up to 140 | Yellow (55 lbs/in) |
| 130-170 | Yellow (55 lbs/in) - increase preload |
| 160-200 | Red (65 lbs/in) |
| 190-230 | Blue (75 lbs/in) |
| over 230 | Blue (75 lbs/in) - increase preload |

### Replacing the Spring on the Smart Fork

**The Smart Fork comes equipped with one high-rate coil spring in the right fork leg.**

1. Unscrew preload adjuster with the supplied wrench and remove spring.
2. When changing the spring, always grease the coil with a suspension grease like Noleen SF3 grease.
3. Install new spring. It is easier to install preload adjuster if the preload is at the lowest setting.

**WARNING: Make sure preload adjuster is installed fully. Failure to do so could lead to fork bottoming out and serious injury.**



*Adjusting Preload*

### 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 telescopic forks feature adjustable preload. Preload is used to help achieve the proper amount of suspension sag for your bike or fork.**

**Suspension sag is the amount a shock compresses under the weight of the rider.** All suspension systems should exhibit some amount of suspension sag. Our forks should all be set up properly with a certain amount of sag. The optimum sag amount for all of our front suspension systems is **20% of the total wheel travel. For example:**

**Our K2 Smart Fork has 75mm / 3 in. of travel. To calculate the optimum sag for this fork, multiply 75mm by .2. The answer gives you a suggested sag , which for the Chubby is 15mm / 2/3 in.**

**K2 Smart Fork optimum suspension sag: 15mm**

To measure the amount of sag:

1. Before you begin measuring, It helps to compress the fork a few times to overcome any initial friction there may be in the shock. This will help in obtaining an accurate measurement.
2. **Measure the distance between a point on the lower leg of the fork (top edge of the lower fork leg, for example) and a point on the upper part of the fork (The bottom of the crown) with no weight on the bike**.

3. **Then measure from the same two points with a rider on the bike**. (You will need some help with this). **The difference between the two measurements is the amount of suspension sag**.

4. **To increase preload on the Smart Fork, turn preload adjuster cap clockwise (towards the "+"). To decrease the preload, turn preload adjuster cap counterclockwise.**

5. If you have increased the preload fully and are still getting too much sag, you may need to change the coil spring in the fork. Remember: The correct amount of preload can only be achieved with the proper suggested coil spring.



*Adjusting Rebound Damping*

## Damping

**Damping is the action of controlling the rate at which a shock compresses and extends**. The rate at which a spring compresses and extends can be controlled by a number of ways. **The K2 Smart Fork features rider-adjustable rebound damping and electronically-controlled compression damping, a technological first in mountain bike suspension and found only in exotic automobile suspension**

## Adjusting Rebound Damping

The first type of damping 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 "lively" feel. Too much rebound damping will cause the shock to feel "dead" or "unresponsive". **To adjust the amount of rebound damping:**

1. Insert a 2.5mm hex wrench into the bottom of the left leg through the hollow bolt at the bottom of the slider.

2. When looking at the bottom of the fork leg, turn the hex wrench to the right until it stops. You have just increased the rebound damping (slower rebound) to the maximum level. **IMPORTANT**: Note the position of the end of the hex wrench. You will use this a a guide to adjust the rebound damping.

3. Test the rebound damping by compressing the fork and riding it for a little while. You will probably want to decrease the amount of rebound damping.

4. To decrease the amount of rebound damping, turn the hex wrench the opposite way 1/4 turn. Test the fork again. Do not make adjustments more than 1/4 turn at a time. The rebound adjuster is very sensitive.



*Turning Smart Shock on*

## Adjusting Compression Damping

The other type of damping is **compression damping. Compression damping assists the spring to control the rate of shock compression**. A fork that has too much compression damping will feel stiff or inactive over small bumps, and a fork with too little compression damping will feel too soft and tend to bottom out quickly.

**The Smart Fork automatically adjusts compression damping with varying trail conditions.** The Smart Chip in the fork commands the piezo bypass valve in the fork to open or close, increasing or decreasing the amount of oil being forced through the compression valving.

**The only thing that you have to do to adjust compression damping in the K2 Smart Shock is turn it on and ride!**

# MAINTENANCE

**In this section:**


- **Tools Needed**
- **Lubrication**
- **Seal Replacement**
- **Bearing Replacement**
- **Maintenance Schedule**
- **Torque and Lubrication Table**
- **Service Kits**


The K2 Smart Fork is designed to be maintained easily. Simple lubrication is usually all that is required to keep the fork working smoothly. The following maintenance should be performed whenever you feel the performance of your fork is deteriorating.

**CAUTION: K2 Bike strongly recommends that your K2 suspension components be disassembled and adjusted by your authorized K2 / Noleen dealer. Your authorized K2 / Noleen dealer possesses the proper training and tools to service your bicycle. Improperly assembled or adjusted bicycles 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: Following any maintenance on your fork, be sure all bolts are checked and torqued to proper spececfication. Failure to do so could result in fork failure and serious injury.**

## Tools Needed:

- 5 Hex Wrench
- 6mm Hex Wrench with long extension
- Noleen SF3 suspension fork grease or other slider-fork grease
- In-lb Torque Wrench with 5mm hex bit

## Lubrication



*Removing Sliders*

### Sliders and Stanchions

Lubrication of the sliders and stanchion tubes is a simple procedure that should be done every month during normal riding conditions. This will allow the two fork tubes to move smoothly, and will reduce friction between the stanchions and sliders.

1. Clean off all dirt and grime from fork and remove front wheel.
2. Disconnect front brake cable from brake lever. This will allow you to leave the brakes on while removing sliders.
3. Remove 5mm hex bolts located on bottom of fork legs. You may experience difficulty when doing this.

**Note: If you have trouble removing the right bottom slider bolt, increase the preload on the spring and try again. If this doesn't work, remove the spring and insert an 6 mm wrench with a long extension into the spring seat to prevent the spring seat from rotating. See Smart Fork diagram for part explanations.**

4. Separate sliders from stanchion tubes with a downward tug.
5. Clean the outside of the stanchion tubes and the inside of the sliders with clean rag.
6. Apply thin layer of grease to stanchion tubes and also to the inside of the wiper seal on the sliders. While you have it out, apply some grease to the coil spring.
7. Push slider up onto stanchions and reinstall lower slider bolts. Make sure not to damage the wiper seals. You can remove the metal spring "o-rings" around the wipers to ease installation of the sliders. Make sure that you leave these "o-rings" on the stanchion tubes while installing the sliders. Torque bottom bolts to 80 in-lbs.

### Hydraulic Cartridge Maintenance

The high-performance damping cartridge in your Smart Fork is designed to operate maintenance-free for 1-2 years, depending on use. This nitrogen-charged cartridge is serviceable only by K2 Bike or by a properly trained K2/Noleen technician. The required maintenance is basic and includes an oil change and replacement of high-wear parts, along with a nitrogen-gas recharge. **Do not attempt to disassemble the Smart Fork damping cartridge. The 200psi nitrogen charge will make quite a mess and send parts flying if you try. So, if you think that your cartridge needs to be serviced, please contact your local K2/Noleen dealer.**

**WARNING: Do not open the damping cartridge in the Smart Fork. The cartridge is pressurized with nitrogen gas and will explode if opened while still charged. This cartridge should only be serviced by K2 Bike or a properly trained K2/Noleen service center. Improperly serviced damping cartridges can be extremely dangerous, and can result in failure during use and severe injuries.**



*Removing Seals*

## Seal Replacement

You may find it necessary to replace the top wiper seals in your Smart Fork after some time. They should both be replaced at the same time.

1. Follow the steps in the previous section to remove the sliders.
2. To replace the wiper seals on the sliders, pry off the old wipers with a small screwdriver, being careful not to damage the tops of the magnesium sliders.
3. Grease the seal and the inside of the slider and align the wiper with the top of the slider.
4. Press wiper seals in place with even pressure from a flat surface. A table corner works well to press the seals in evenly.

## Bearing Replacement

The bearings in the Smart Fork are press-fit teflon / aluminium bearings that are installed in each slider. Servicing these bearings can only be done by your Noleen / K2 Bike Dealer or other qualified mechanic with the proper training and the proper tools.

**CAUTION: Do not attempt to service the bearings that are installed in the sliders of your fork. Improperly serviced K2/Noleen forks are extremely dangerous, and can result in failure during use and severe injuries.**



*Replacing battery*

## Replacing the Battery

The standard 9-volt battery in the Smart Fork is designed to last for approximately 75 riding hours, so your battery should last quite a long time. The circuitry in the fork is designed to work on as little as 5 volts, but if the battery is lower than this, the fork will not turn on. If you need to replace the battery, follow these steps:

1. Open the top cap of the battery compartment and detach the snap-on battery contact from the battery.

**NOTE: It is very important to detach the battery contact from the battery BEFORE removing the battery. Pulling the contact out of the electronics housing with the battery can damage the wiring and electronics and can result in failure of the electronics.**

2. Remove battery and replace with a new 9-volt battery. Make sure that the battery is oriented properly in the housing.

## Troubleshooting

The K2 Smart Fork is designed to be very durable and provide years of great performance if maintained properly. The following tips should help you diagnose any problems with your fork so that you can spend less time in the shop and more time on the trail!

| Problem | Solution |
|---|---|
| Smart Shock doesn't turn on | • Check battery connection; connection may be loose or not connected<br>• Test battery; may be dead or low on power |
| Smart Fork turns on, blinks, and then shuts off | • The battery may be low; change to a new 9 volt battery<br>• There may be a short in the smart circuit; contact your authorized K2/Noleen dealer |
| Fork is too stiff or too soft | • Adjust the spring rate and/or the preload to obtain the proper amount of sag.<br>• Lubricate the fork sliders; see **Lubrication** in this manual |
| Fork rebounds too fast or too slow | • Adjust the rebound damping with the adjuster in the bottom of the left leg<br>• To check damping, remove spring and cycle fork up and down to feel damping |

## 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 service. Please take your riding habits and conditions into account when servicing your Noleen suspension fork.

| Required Inspection/Service | Every Ride | Monthly | Yearly |
|---|---|---|---|
| Check torque on all bolts | ✔ | | |
| Check headset adjustment | ✔ | | |
| Check fork damper function | ✔ | | |
| Grease seals and bearings | | ✔ | |
| Check / grease brake pivot posts | | ✔ | |
| Check / adjust Suspension Sag | | ✔ | |
| Inspect / service all seals and o-rings | | | ✔ |

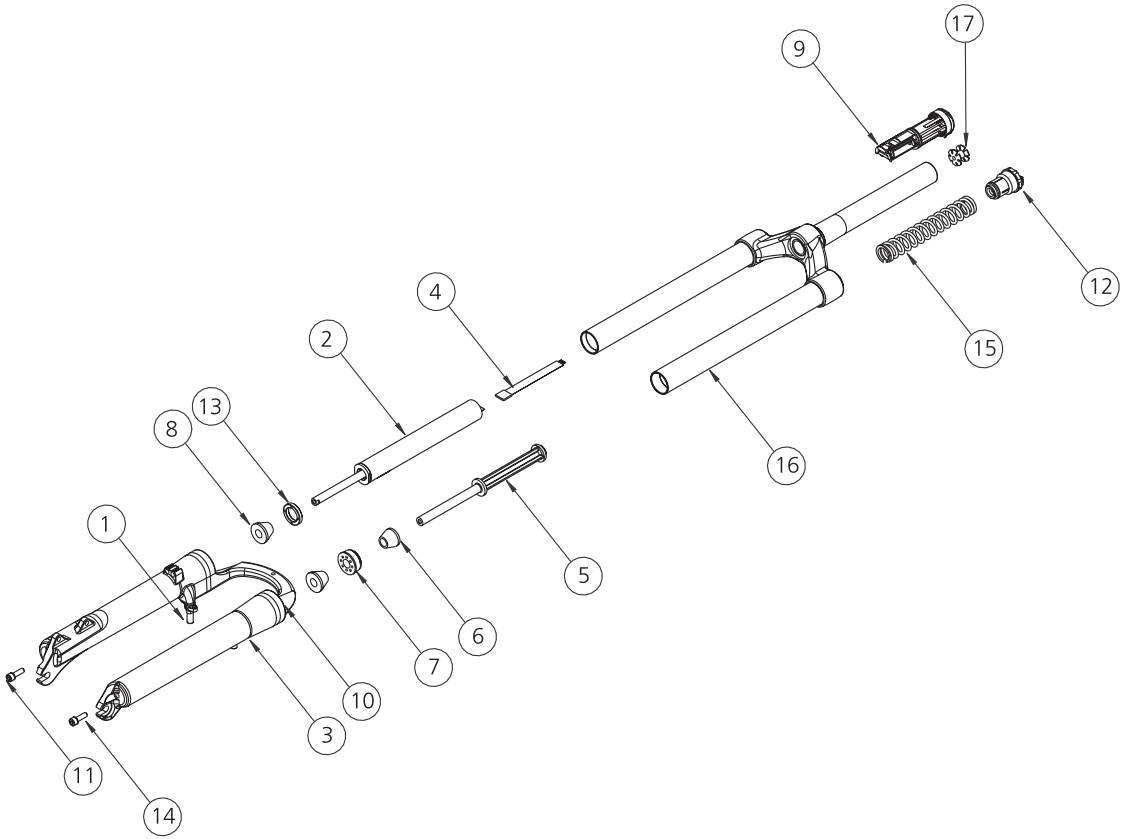
## Torque / Lubrication

| Product | Part Name / Location | Size / Description | Torque (in-lbs) | Lubrication | Loctite |
|---|---|---|---|---|---|
| Smart Fork | Slider bottom | M6 x 1 x 20 SHCS | 75 | Yes | None |
| | Cartridge retainer ring | M8 threaded ring | 50 | Yes | None |

## Service Kits

The following Replacement / Service Kit is available from your K2 Bike / Noleen Authorized Dealer. It is intended to be used by your K2 Bike / Noleen dealer or other qualified mechanic possessing the proper training and tools.

| | |
|---|---|
| Smart Fork Wiper Seal Kit | Contains wiper seals needed for servicing fork |
| Slider fork Bushing Kit | Contains new bushing for the K2 Slider fork |




| Item # | Part # | Qty | Description |
|---|---|---|---|
| 1 | 15179 | 2 | M8 BRAKE PIVOT POST |
| 2 | 16140 | 1 | ASSY, SMART CART. |
| 3 | 16187 | 1 | SLIDER ASSY W/ BEARINGS |
| 4 | 16196 | 1 | FLEX-CABLE, FEMALE |
| 5 | 16204 | 1 | COMPRESSION ROD |
| 6 | 16205 | 1 | TOP OUT BUMPER |
| 7 | 16206 | 1 | THREADED ROD GUIDE |
| 8 | 16207 | 2 | BOTTOM OUT BUMPER |
| 9 | 16214 | 1 | ASSY, BATTERY COMPARTMENT |
| 10 | 16221 | 2 | WIPER SEAL, 99 SLIDER |
| 11 | 16225 | 1 | SCREW, M6 X 1 X 20 HOLLOW SHCS |

| Item # | Part # | Qty | Description |
|---|---|---|---|
| 12 | 16234 | 1 | PRELOAD ADJUSTER |
| 13 | 16248 | 1 | RETAINING NUT, SMART CARTRIDGE |
| 14 | 16267 | 1 | SCREW, M6 X 1 X 20 SHCS W/WASHER |
| 15 | 16202-1 | | SPRING, SLIDER FORK YEL 55LB/IN |
| | 16202-2 | 1 | SPRING, SLIDER FORK RED 65LB/IN (STOCK) |
| | 16202-3 | | SPRING, SLIDER FORK BLU 75LB/IN |
| 16 | 16236-1 | | CROWN STANCHION, OE 215MM (STOCK SM,MD,LG) |
| | 16236-2 | | CROWN STANCHION, OE 250MM (STOCK WB) |
| | 16236-3 | 1 | CROWN STANCHION, AM 265MM |
| 17 | 16276-2 | 1 | STAR NUT |
| Parts not shown: | | | |
| | 16186-1 | 2 | BEARING UPPER, 99 SLIDER FORK |
| | 16186-2 | 2 | BEARING LOWER, 99 SLIDER FORK |