



**Wren Inverted Suspension Fork
Service Manual
for Stromer E-bikes**

Table of Contents:

Page 3 - Wren Inverted Suspension Fork Components

Page 4 - Tools, Lubricants and Warranty

Page 5 - Safety Information

Page 6 - Safety and Maintenance Instructions

Page 7 - Fork Setup and Performance Tuning

Page 9 - Internal Air Spring Components

Page 10 - Air Side Service Instructions

Page 12 - Damper Side Service Instructions

Page 13 - Wheel and Axle Installation Instructions

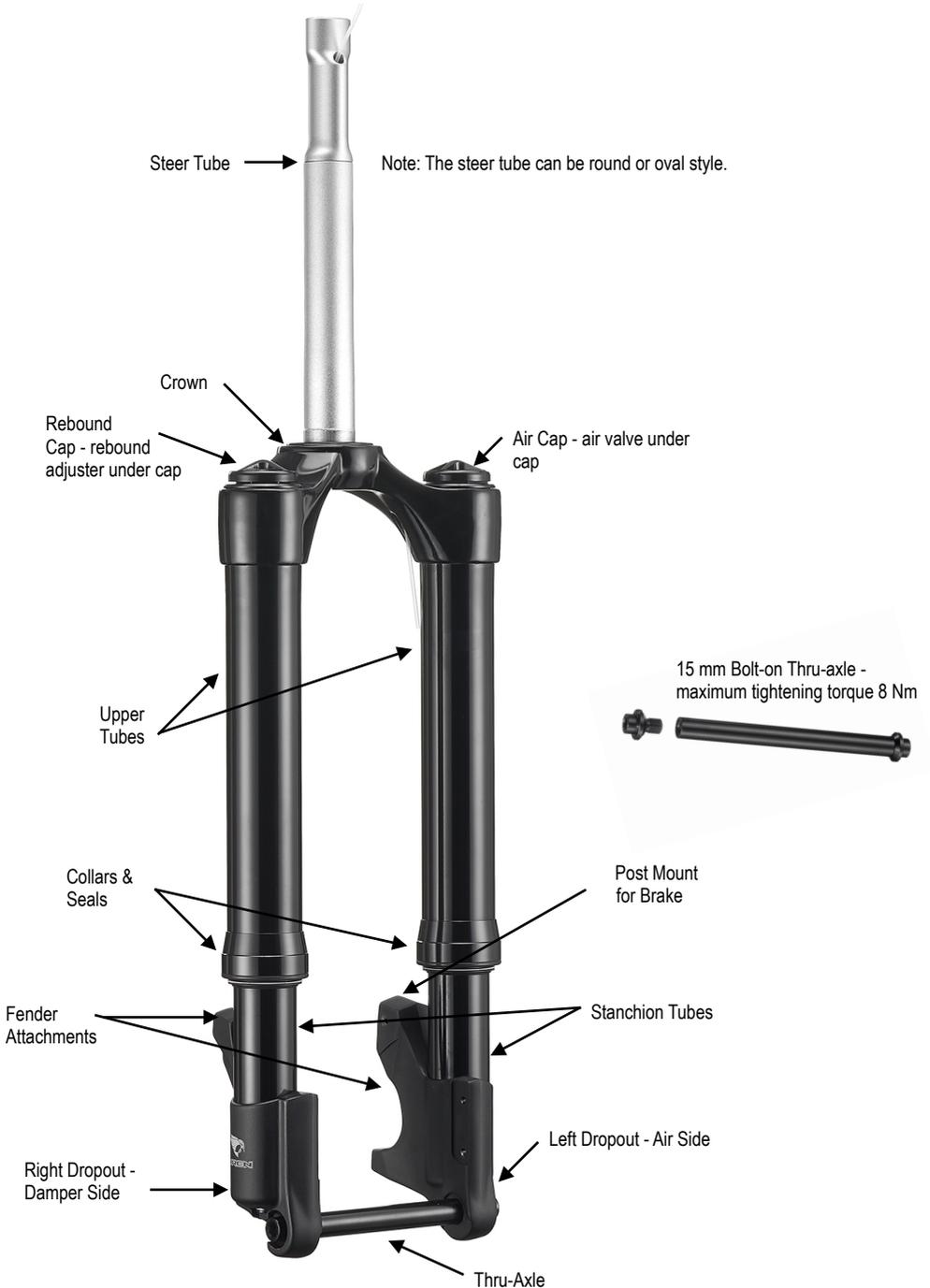
Page 13 - Stanchion Lubrication Instructions

Page 14 - Technical Support



WREN

Wren Inverted Suspension Fork Components



Wren Fork Tool List and Recommended Lubricants:

3.0 mm allen wrench (for rebound adjustment)
2 - 8.0 mm allen wrenches (for bolt-on axle)
9 mm socket
26 mm socket (flat bottom recommended)
27 mm socket (flat bottom recommended)
Torque Wrench (to cover 6 Nm, 8 Nm, 10 Nm and 12.5 Nm)
12 mm open-end wrench
Bent nose pin wrench
Cut piece of old inner tube (for grip on stanchion collars)
Slick Honey grease (for general fork lube)
MolyKote 55 grease (for air spring o-rings only)
Teflon lubricant (for stanchions and seals)

This list of tools is everything needed to do a complete overhaul or any adjustments to the Wren Inverted Suspension Fork.

The lubricants recommended are the lubricants used when building this fork. Any quality suspension grease may be used for the general fork lubrication. We recommend the use of MolyKote 55 on the o-rings of the air spring only as it is specifically formulated to be absorbed by the o-rings. If MolyKote 55 is not available, a lightweight, white grease may be used.

Warranty:

The original manufacturer warrants this Wren fork for a period of two years from the date of purchase to be free from defects in materials or workmanship for the first owner only. During this warranty period we will replace or repair any defective component of the fork at our discretion. Paint, anodizing, bushing or seal damage caused by normal use (“wear and tear”) are not covered by this warranty. We shall not be held liable for any damage caused by a crash, insufficient maintenance or ignorance of the safety and maintenance instructions. We shall not be held liable for normal maintenance. A dated sales receipt must be presented to confirm the fork is still under warranty.

Safety Information:

1. **Be sure the front axle is installed correctly and tightened properly. Always install the axle from the brake side of the fork.** When installing the axle it should slide easily completely through to the opposite side. If the axle binds as you are sliding it through, move one of the fork legs slightly up or down until the axle slides easily and completely through. Thread the bolt into the axle and using 8 mm allen wrenches, tighten the axle to a maximum of 8 Nm.
2. **Do not attempt to repair the damper cartridge.** High pressure inside the cartridge may cause injuries and disassembly may lead to damage. The damper cartridge must be replaced if it is damaged or fails.
3. **Always empty all air from the air spring before removing it from the stanchion.** High pressure inside the air spring may cause injuries if all air is not removed.
4. Avoid applying water pressure directly at the stanchions and/or wipers. This can dissolve necessary lubricants that are needed to keep the fork functioning properly.
5. Be cautious when mounting the bicycle to a carrier. Carriers that hold the bike in trays with the wheels on are preferred. Follow the instructions of the carrier manufacturer. Avoid mounting the bike by fixing it at the dropouts (front wheel removed). The dropouts could be damaged.
6. If the bike is transported by air, release the air pressure from the air spring side of the fork before packing. Deflating the air spring before transport avoids pressure damage during transport.
7. Always use genuine Wren parts. Use of different parts voids the warranty and could cause structural failure of the fork resulting in loss of control of the bike with possible damage and/or injuries.
8. Always use approved safety gear when riding. Obey all local regulations for required safety equipment.
9. Always thoroughly check the entire E-bike for any loose parts, damage or leaks before riding. Failure to do so may result in severe and/or fatal injury.

Important Safety and Maintenance Instructions:

To maintain safety, long life and high performance of the Wren Inverted Suspension Fork, periodic maintenance is required. If frequently ridden in wet, muddy or other extreme conditions, a 50% reduction in recommended maintenance intervals listed below is necessary. This information is included in the owner's manual for the consumer and should be discussed if questions regarding maintenance are asked.

1. After every ride gently clean and dry the exterior of the fork, if necessary.
2. Check that all bolts and nuts are still tightened properly. The areas to check are:
 - a) Remove the air valve cap on top of the air side of the fork and locate the 26 mm nut under the cap. Use a 26 mm socket to **ensure the nut is tightened to 10 Nm.**
 - b) Locate the air chamber spacer fixing bolt on the bottom of the air side stanchion. Use a 9 mm socket to **ensure this bolt is tightened to 6 Nm.**
 - c) Remove the rebound cap on top of the damper side of the fork and locate the 27 mm top of the damper under the cap. Use a 27 mm socket to **ensure the damper is tightened to 12.5 Nm.**
 - d) Locate the damper fixing bolt on the bottom of the damper side stanchion. Use a 9 mm socket to **ensure this bolt is tightened to 6 Nm.**
 - e) Using 8 mm allen wrenches, **ensure the axle is tightened to a maximum of 8 Nm.**
3. Minimum **every 25 hours of riding** you should check the smoothness of your fork. The stanchions need to run smoothly up and down through the seals. If they do not run smoothly, gently clean the stanchions and put 2-3 drops of a Teflon-based oil around the stanchions and around the seal lip and move the stanchions up and down through the compression stroke (this is easier when you release some air pressure through the air valve).
4. Check the stanchion tubes for deep scratches you can feel and also inspect the seals for any wear or tear. If one of the above mentioned parts appears damaged, it should be replaced.
5. **After 400 hours of riding**, the fork should be fully serviced. This entails a complete cleaning and re-lubrication of the internal parts of the fork.

Fork Setup/Performance Tuning:

Please follow these instructions for initial setup of sag and rebound, or if you want to modify the ride or feel of this fork. If you have any questions, you may contact Wren Sports directly at russ@wrensports.com.

You must determine the correct fork setup for the rider's weight and riding style. The fork is installed on the bike with a preset pressure in the air chamber and a preset amount of rebound. **Remember, the following is a guide. The final settings are determined by paying attention to the feel of the fork and making adjustments to air pressure and rebound over the first few rides.**

Single Air Fork Sag Setup:

The Wren fork utilizes a single air valve on top of the air side leg to add or remove air. You should set the sag with the rider wearing whatever gear the rider typically wears or carries when riding. The fork has 30 mm of travel. A typical sag setting is 20% of travel, or in this case, 6 mm of sag.

Remove the black air valve cap and use a suspension pump to pump up the fork to approximately 4 bar / 58 psi air pressure. **Maximum air pressure is 8.2 bar / 120psi.** Now check for the proper sag.

Sag is the amount of travel that is used when a rider sits on the bike and the suspension compresses under the rider's weight. Sag is needed to achieve a well-functioning fork as the fork must not only compress to absorb bumps, but also extend to absorb dropping into holes. Setting sag is easier if you have a second person to help steady the bike and slide the o-ring located on the stanchion, but can be done alone. Sag on this fork should be set at 6 mm. This can be easily measured by first locating the rubber o-ring on the air side stanchion tube. Have the rider sit on the bike with all riding gear and bounce the fork up and down a few times to cycle the damper. Then settle into the riding position and stay as steady as possible. Slide the o-ring up against the seal. Do not bounce/compress the fork while doing this. Carefully dismount being sure not to compress the fork. The fork will rebound as the rider dismounts. Now measure the distance between the o-ring and the seal. If the distance is less than 6 mm, slightly reduce the air pressure in the air spring. If the distance is more than 6 mm, slightly increase the air pressure in the air spring. Continue this method until the correct sag of 6 mm is reached. This setup is now the starting point. Record your sag air pressure so you may return to it easily whenever air is released, such as for service. Adjustments from here need to be done as the owner rides and feels out the new fork. If the fork is bottoming out when going over bumps or drops, add a small amount of air to prevent this. Make a note of the final sag air pressure if adjustments are made.

Rebound Adjustment:

The rebound speed of the hydraulic damper can be fine-tuned to fit any riding style. Rebound damping regulates the speed at which the fork recovers, or bounces back, from an impact and returns to its full travel. The rebound adjuster is located under the black cap on top of the damper leg. Use a 3 mm allen wrench in the bolt to make adjustments. There are approximately 7 turns of adjustment.

Turn the adjuster clockwise for slower rebound. Slower rebound means that the outward movement of the fork after compression is slower (the damping is higher). A slower setting is best if the bike is typically ridden on smooth surfaces.

Turn the knob counter-clockwise for faster rebound. Faster rebound brings the fork back to its original position faster. For bumpy rides, we recommend a fast setting so the fork recovers quicker and is ready to absorb the next bump.

To start, try setting the rebound adjuster to the middle setting. While riding, pay attention to how the fork is reacting and make small adjustments as necessary. If the fork is bouncing while on smooth surfaces, slow the rebound by turning the adjuster clockwise. If the fork is not reacting fast enough to a bumpy surface and is getting lower in the travel (also referred to as “packing”), speed up the rebound by turning the adjuster counter-clockwise.

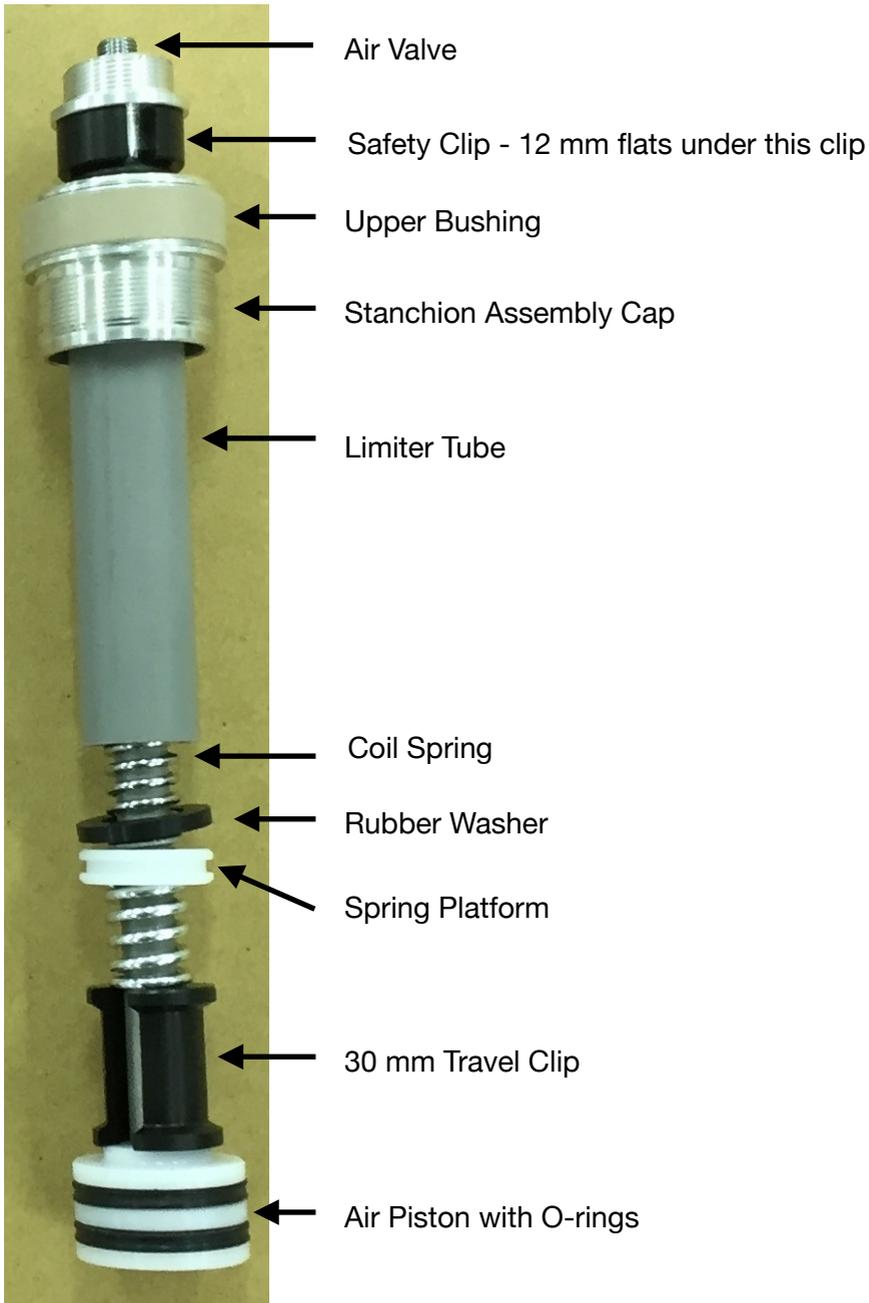
Do not try to force the rebound adjuster past its limits. Squishy sounds in the sealed rebound stages are normal, it’s just the oil flowing back into the compression stage of the cartridge. The fork is working properly. Faster settings will lessen the noise, but the noise is normal, so adjust your fork to achieve the best ride.

First Ride:

It is advised to ride the fork on a flat surface at first in order to make any adjustments necessary to achieve the desired ride. A new fork will have slight seal friction. Seals and stanchions need to break in and after a few hours of riding the fork will move up and down smoother. If this changes the desired feeling, simply readjust the settings.

Wren Inverted Suspension Fork Service Instructions

Internal Air Spring Components:



Air Side Service Instructions:

1. Place the bike in a work stand and remove the front wheel. Remove the front fender. Remove the brake caliper from the post mount.
2. Remove the black air cap from the left leg and release all the air from the air spring.
3. Loosen and carefully remove the air spring assembly nut (large silver nut below the black air cap) with a 26 mm socket. This nut is low profile and care should be taken to firmly engage the socket. We recommend flat bottom sockets to make the fit around the nut easier. DO NOT remove the black air spring assembly cap on top of the fork crown.
4. Unscrew the collar on the stanchion by hand. A piece of old inner tube can be used as a grip. Now the air side stanchion can be pulled out including the air spring from the bottom of the fork.
5. Looking at the top of the air spring, you will see a silver cap with 2 holes. This is the stanchion assembly cap. Check to be sure you have released all air from the air spring. Using a pair of bent nose pliers in the holes, unscrew the cap completely.
6. Grip the top of the air spring firmly and pull it out of the stanchion. This may take some effort.
7. To clean and grease the coil spring, the air spring must be disassembled. To do this, place the air spring in an upright position with the air piston on a flat surface. Grip the stanchion assembly cap and push down to compress the spring. Now slide the black safety clip down to show the 12 mm flats. Place a 12 mm open end wrench on the flats. Lay the air spring down and locate the 6 mm allen bolt under the air piston. Remove this bolt with a 6 mm allen wrench. Now slide all the parts off the rod.
8. Clean all the grease off both coil springs using a lint free towel. Re-grease both springs by rubbing grease across the coils. All coils should be lightly filled, but not tightly packed with grease. If riding in very cold weather, be sure to use a grease specified for use in the temperature you will be riding in. For all around riding, we recommend Slick Honey grease or any quality suspension grease.
9. Now reassemble the air spring in reverse order. Tighten the 6 mm allen bolt securely. Remove the 12 mm open end wrench from the flats and slide the safety clip back up to the top.
10. Clean and lightly grease the air piston O-rings making sure all gaps between the black O-rings and the piston are filled. We recommend using Molykote 55 grease for the air piston O-rings, but a light, white grease can be used.
11. Insert the air spring back into the stanchion. You will have to release air through the top valve as you push the air spring back into the stanchion. CAREFULLY thread the stanchion assembly cap back into the stanchion making sure not to cross-thread the cap and securely tighten with the bent nose pliers. NOTE: Should you need to replace the lower bushing on the stanchion and/or replace the stanchion seals, do the replacements before inserting the air spring back into the stanchion. See steps 14 and 15.

12. Clean out all old grease inside the upper tube of the fork and lightly grease the inside including all channels cut into the upper. These channels are where the stanchion keys slide. If riding in very cold weather, be sure to use a grease specified for use in the temperature you will be riding in. For all around riding, we recommend Slick Honey grease or any quality suspension grease.
13. Wipe all old grease off the upper bushing and the lower bushing found on the stanchion and lightly re-grease, rubbing the grease into the bushing surface. There are two brass keys located in grooves cut into the stanchion. The keys can be easily popped in and out of the grooves should they need to be replaced due to wear. **Do not grease inside these grooves under the keys** as that can prevent the keys from seating into the grooves properly. Re-grease the keys by building up a small amount of grease around all four sides and over the top of the keys so they are completely covered.
14. **To replace the lower bushing** due to wear, with the air spring removed from the stanchion, remove the two brass keys and slide the old lower bushing off the stanchion. Grease the new lower bushing inside and out and slide onto the stanchion. Replace and re-grease the two brass keys. Now insert the air spring into the stanchion following step 11. **To replace the upper bushing** on the stanchion assembly cap, spread the old upper bushing open at the split and slide upward off the cap. Open the new upper bushing at the split **just enough to slide over the stanchion assembly cap** and into the groove. Do not open the bushing too far. Lightly grease the outside of the upper bushing and rub the grease into the bushing surface.
15. **To replace the stanchion seal** due to wear, with the air spring removed from the stanchion, remove the two brass keys and slide the lower bushing off the stanchion. Slide the old collar containing the seal off the stanchion. Slide the new collar containing the seal onto the stanchion with the seal facing down. Re-grease the lower bushing and keys, if necessary. Now insert the air spring into the stanchion following step 11.
16. To insert the stanchion with the air spring installed back into the upper tube, line up the dropout / post mount in the proper direction and slide the stanchion into the upper tube. You may have to twist the stanchion **slightly** to engage the keys into the grooves cut into the upper tube. Slide the stanchion completely up so the threaded top of the air spring is visible through the crown. Thread on the 26 mm nut to hold the stanchion in place. Slide the lower bushing into the upper tube by pushing on the bottom edge. **The lower bushing must slide in and be flush with the bottom of the upper tube.** Clean any grease off the outside of the collar and thread the collar onto the upper tube and **hand tighten** securely. We recommend wrapping a piece of old inner tube around the collar to get a good grip. Do not use a wrench.
17. Torque the 26 mm nut on top of the fork to 10 Nm. Replace the black air cap. Install the front fender and brake caliper. This completes the air side service.

Damper Side Service Instructions:

1. Place the bike in a work stand and remove the front wheel. Remove the front fender.
2. Locate the 9 mm bolt on the bottom of the damper side stanchion. Remove the bolt and washer with a 9 mm socket.
3. Unscrew the collar on the stanchion by hand. A piece of old inner tube can be used as a grip. Now the damper side stanchion can be pulled out of the upper tube.
4. Remove the black rebound cap from the top of the damper side. Loosen and carefully remove the damper with a 27 mm socket. The flats on the damper are low profile and care should be taken to firmly engage the socket. We recommend flat bottom sockets to make the fit around the flats easier. **DO NOT** remove the black damper assembly cap on top of the fork crown. **The damper is a sealed cartridge and is maintenance free. Do not attempt to repair a damper. If it fails, replace the entire damper.**
5. Clean out all old grease inside the upper tube of the fork and lightly grease the inside including all channels cut into the upper. These channels are where the stanchion keys slide. If riding in very cold weather, be sure to use a grease specified for use in the temperature you will be riding in. For all around riding, we recommend Slick Honey grease or any quality suspension grease.
6. Looking at the top of the stanchion you will see a silver cap with two holes. This cap holds the upper bushing. You do not need to remove this cap unless you are replacing the lower bushing and/or stanchion seal (see steps 7 and 8). Wipe all old grease off the upper bushing and the lower bushing found on the stanchion and lightly re-grease, rubbing the grease into the bushing surface. There are two brass keys located in grooves cut into the stanchion. The keys can be easily popped in and out of the grooves should they need to be replaced due to wear. **Do not grease inside these grooves under the keys** as that can prevent the keys from seating into the grooves properly. Re-grease the keys by building up a small amount of grease around all four sides and over the top of the keys so they are completely covered.
7. **To replace the lower bushing** due to wear, remove the stanchion assembly cap, remove the two brass keys and slide the old lower bushing off the stanchion. Grease the new lower bushing inside and out and slide onto the stanchion. Replace and re-grease the two brass keys. **CAREFULLY** thread the stanchion assembly cap back into the stanchion making sure not to cross-thread the cap and securely tighten with the bent nose pliers. **To replace the upper bushing** on the stanchion assembly cap, spread the old upper bushing open at the split and slide upward off the cap. Open the new upper bushing at the split **just enough to slide over the stanchion assembly cap** and into the groove. Do not open the bushing too far. Lightly grease the outside of the upper bushing and rub the grease into the bushing surface.

8. **To replace the stanchion seal** due to wear, with the stanchion assembly cap removed from the stanchion, remove the two brass keys and slide the lower bushing off the stanchion. Slide the old collar containing the seal off the stanchion. Slide the new collar containing the seal onto the stanchion with the seal facing down. CAREFULLY thread the stanchion assembly cap back into the stanchion making sure not to cross-thread the cap and securely tighten with the bent nose pliers. Re-grease the upper and lower bushing and keys, if necessary.
9. Insert the damper back into the top of the fork. Hand tighten the damper.
10. To insert the stanchion back into the upper tube, line up the dropout in the proper direction and slide the stanchion into the upper tube. You may have to twist the stanchion **slightly** to engage the keys into the grooves cut into the upper tube. Looking through the hole in the bottom of the damper side stanchion, slide the stanchion up so the bottom of the damper rod is visible in the hole. Thread the 9 mm bolt with washer into the damper rod and hand tighten. Slide the lower bushing into the upper tube by pushing on the bottom edge. **The lower bushing must slide in and be flush with the bottom of the upper tube.** Clean any grease off the outside of the collar and thread the collar onto the upper tube and **hand tighten** securely. We recommend wrapping a piece of old inner tube around the collar to get a good grip. Do not use a wrench.
11. Using the 27 mm socket, tighten the top of the damper to 12.5 Nm.
12. Using the 9 mm socket, tighten the damper rod bolt to 6 Nm.
13. Replace the black rebound cap. Install the front fender. This completes the damper side service.

Wheel and Axle Installation Instructions:

1. Slide the wheel hub into the dropouts.
2. **Insert the axle from the brake side only.** It must **easily** slide completely through to the damper side. Do not force the axle. If it does not slide easily completely through, move one stanchion up or down slightly for the proper alignment. Inverted fork tubes work independently, so it is important to line them up correctly, otherwise the axle will not seat properly.
3. Thread the bolt into the axle and tighten with 8 mm allen wrenches to 8 Nm.

Stanchion Lubrication Instructions:

1. Carefully clean the exposed stanchions and seals with a soft cloth.
2. Apply a small amount of a high teflon content lube to the stanchions and seals.
3. Compress the fork to distribute the lubrication. This is easier if some air is released from the air spring so the full travel can easily be reached.
4. Re-inflate the air spring to your sag pressure.

Technical Support:

We want your experience with the new Wren Inverted Suspension fork to be trouble free. If you have any questions, please contact Russ Johnson - Wren Tech Support directly at: russ@wrensports.com, or an EU Service Center listed below.

Wren Factory Fork Warranty, Service and Parts Center:

Russ Johnson, Wren Sports, 9 Howard Court, Lebanon, NJ 08833 USA
+1-201-588-5949, russ@wrensports.com

Wren Fork Warranty, Service and Parts Centers for EU:

If you have a service or repair that you are not able to handle, or if you need parts, please contact:

11Motors GmbH, Siemensstraße 12, 63755 Alzenau, Germany
+49 (0) 170 213 6082, constantin@11motors.de

Lemon Shox, Knauerstr. 15, 90443 Nürnberg, Germany
+499127460066, mail@lemonshox.com
<https://www.lemonshox.com>

FigJam Cycles, 12 Keatingstown, Wicklow, County Wicklow, A67 D431, Ireland.
+353 86 883 9406, figjamcycles@yahoo.ie



Wren Sports • 125 Heron Place • Lincoln, CA 95648 • USA
<https://wrensports.com> • info@wrensports.com • +1-7916-409-5406