



Box Three Prime 9 Drivetrain/Box Four 8 Speed Drivetrain Technical Service Manual

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Service Notes

Tools and Supplies

- Derailleur Hanger Alignment Gauge (Park Tool DAG 2.2)
- Metric Hex Wrench Set
- Torque Wrench with 4 and 5mm Hex Bits
- Cassette Lockring Tool (Park Tool FR-5)
- Cable Cutters
- Masterlink Pliers
- Chain Breaker
- Gloves and Safety Glasses



Cleaning

Do not use a pressure washer or solvents to clean this product. Use only mild degreasers / detergents with water or denatured alcohol to remove debris, dirt and or any buildup.

Online

Please visit <https://boxcomponents.com/collections/support> for downloadable manuals and instructions.

Warranty

Please visit <https://boxcomponents.com/pages/warranty-1> for the current warranty policy.

⚠ WARNING

This product must be installed by a certified professional bicycle technician. Please read these instructions carefully before installation and use.

- Incorrect installation, disassembly or modification of this product will void any warranties, and may lead to injury / death.
- This product's warranty does not cover wear and tear due to normal use.
- Prior to riding, always give your bicycle a safety inspection.
- Regularly check your derailleur hanger for proper alignment and replace it if necessary. A mis-aligned hanger may cause performance issues, damage to components or personal injury.
- Check and clean your chain regularly and replace it if necessary. A worn or damaged chain may cause performance issues, damage to components or personal injury.
- Always wear appropriate safety equipment and follow your local laws.

This Product is Patent Pending

Product Specifications are subject to change without notice.

Cassette Installation

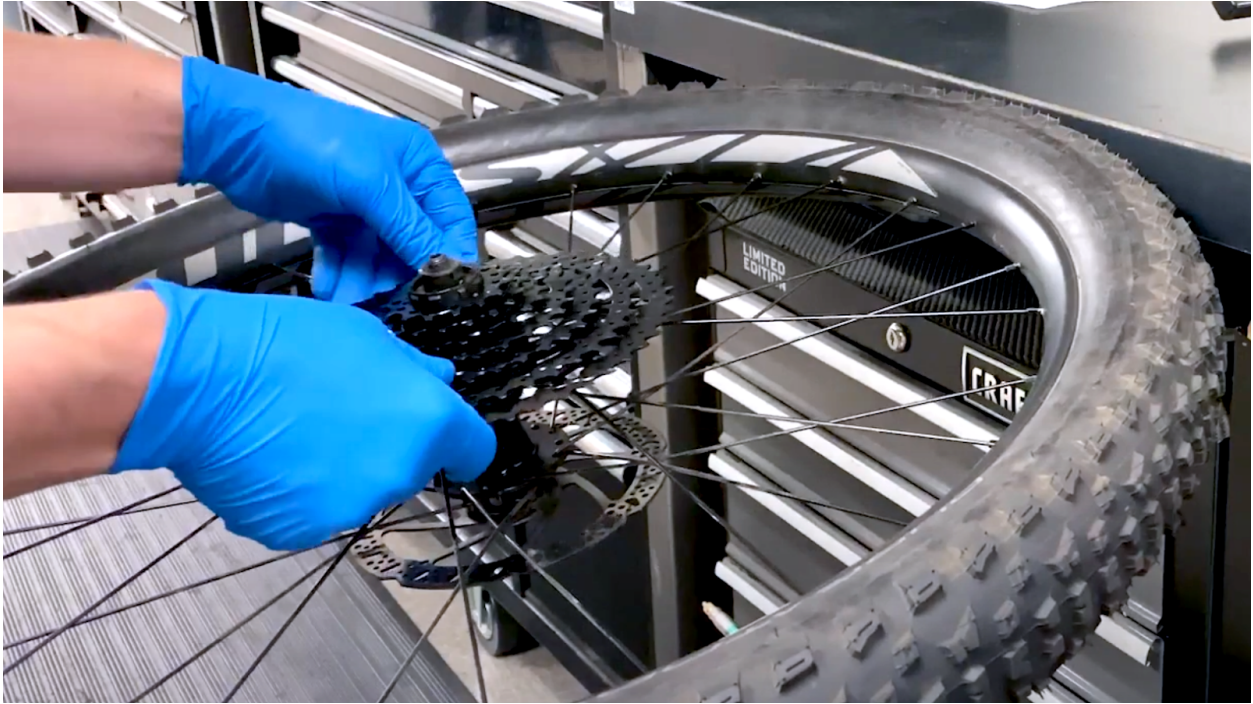
⚠ NOTE

Box Drivetrains are ONLY compatible with 9, 10, 11 speed HG MTB Freehub bodies. Other variants may result in improper fit and poor performance.

1. Locate the largest space between splines on the freehub body.



2. Locate the largest spline on the cassette and align the splines on the cassette to the splines on the freehub body and slide the cassette onto the freehub body.



3. Repeat the alignment for the remaining two cogs and install on the freehub body
4. Thread the lockring on by hand.



5. Using a cassette lockring installation tool, tighten fully to 40Nm.

**⚠ NOTE**

Greasing the splines of the freehub body before installing the cassette can be useful for corrosion resistance on some freehub bodies used in wet conditions.

Derailleur Installation

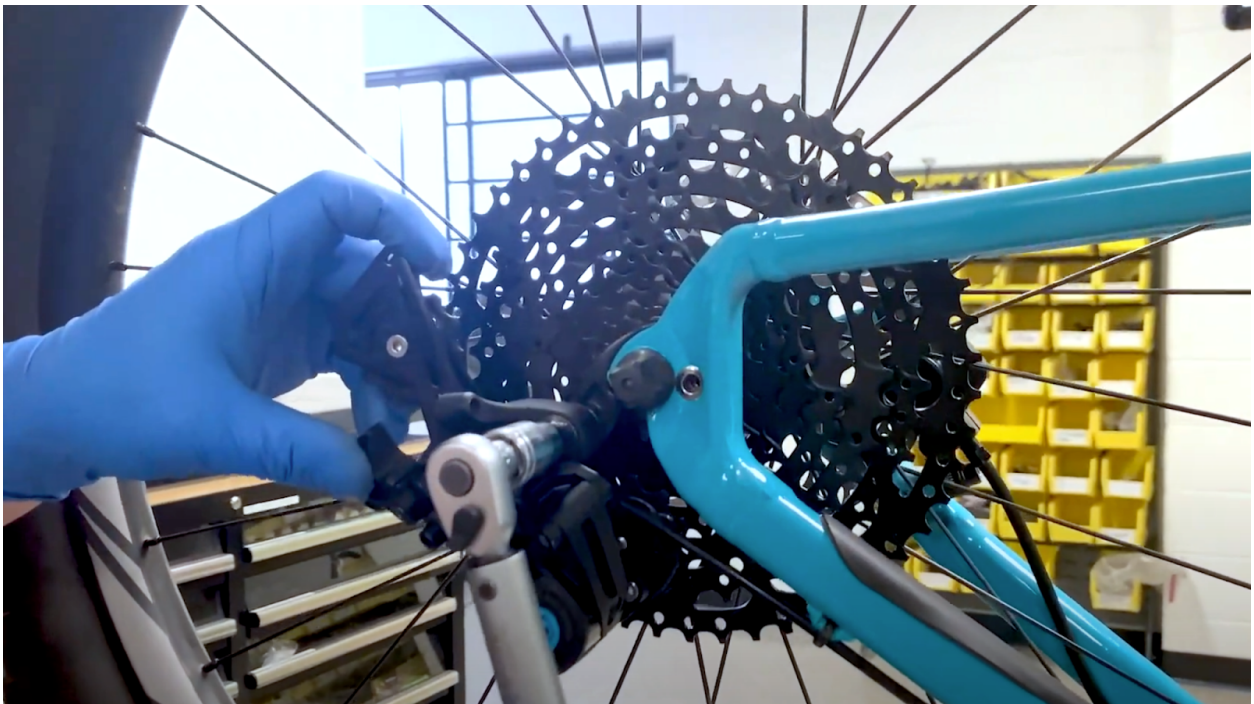
⚠ WARNING

Derailleurs are spring loaded assemblies and can cause personal injury if not handled correctly! Be careful by keeping fingers away from moving parts when servicing.

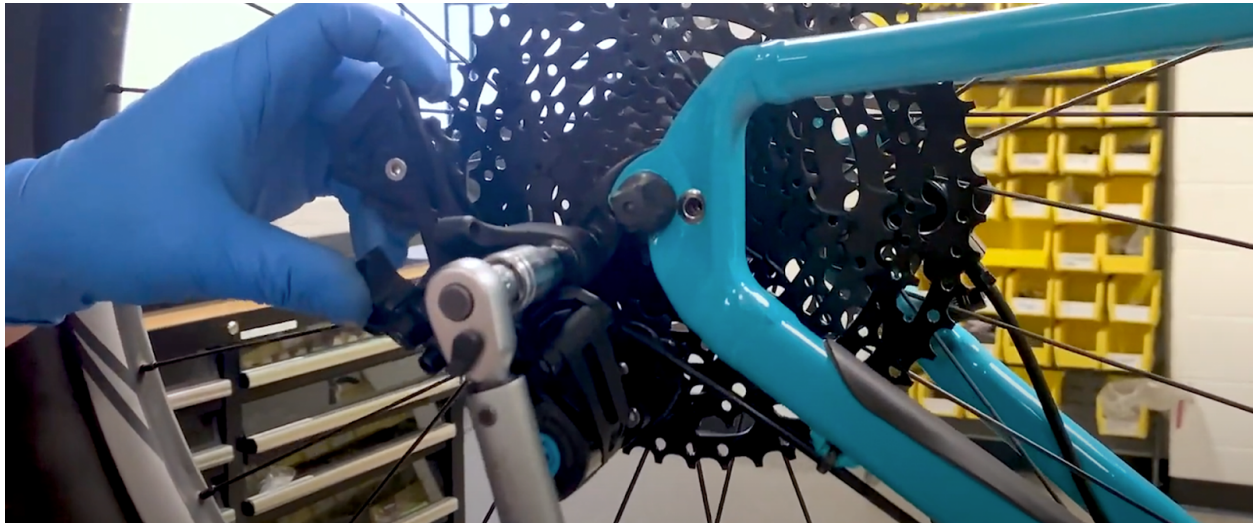
1. Inspect the derailleur hanger for proper alignment.



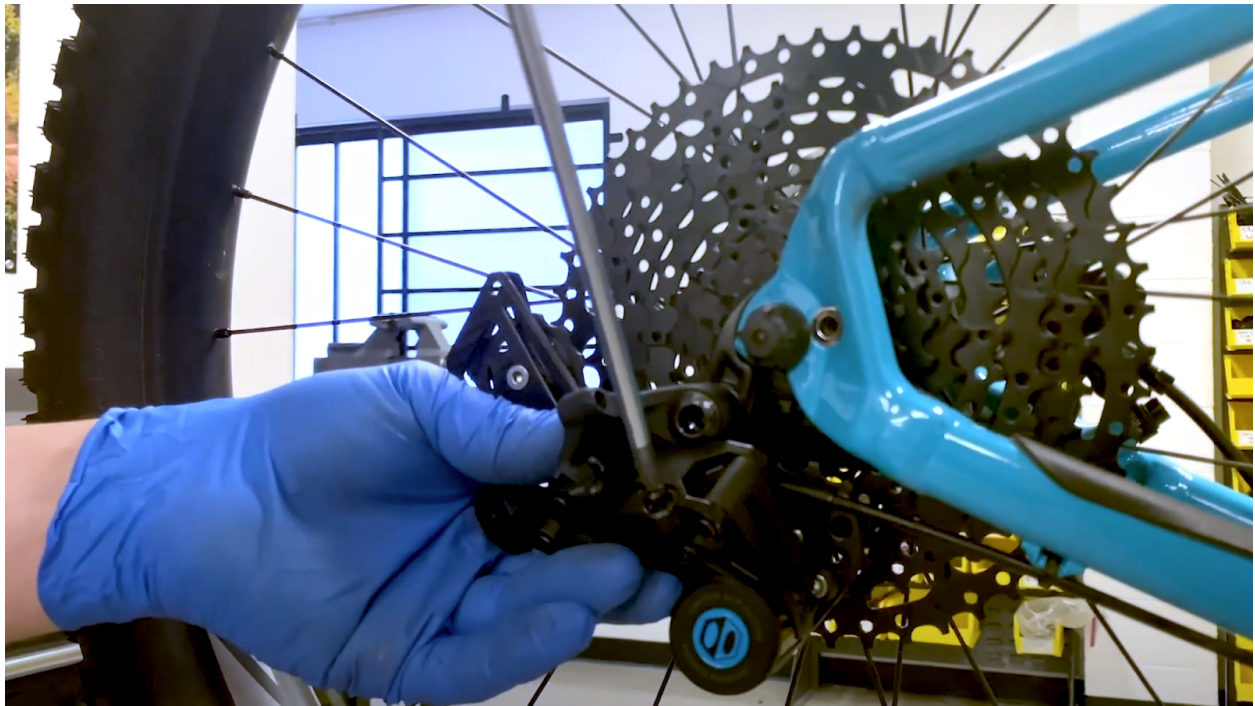
2. Install the rear derailleur to the hanger by using a 5mm Hex Wrench to thread the Derailleur Pivot Bolt onto the hanger. Ensure that the B-Adjust assembly is aligned and set against the derailleur hanger properly.



3. Using a Torque Wrench, fully tighten the Derailleur Pivot Bolt to 8-10Nm. Re-check the B-Adjust assembly to ensure there is no gap between the assembly and the derailleur hanger.



4. Set the High Limit Screw so that the Derailleur's Upper Pulley is inline with the highest cog.



Shifter / Cable Installation

⚠ NOTE

Cable housing is not included in the drivetrain and routing should be done per your Bike / Frame manufacturer's recommended routing. Please refer to your Bike / Frame manufacturer's manual for proper routing instructions.

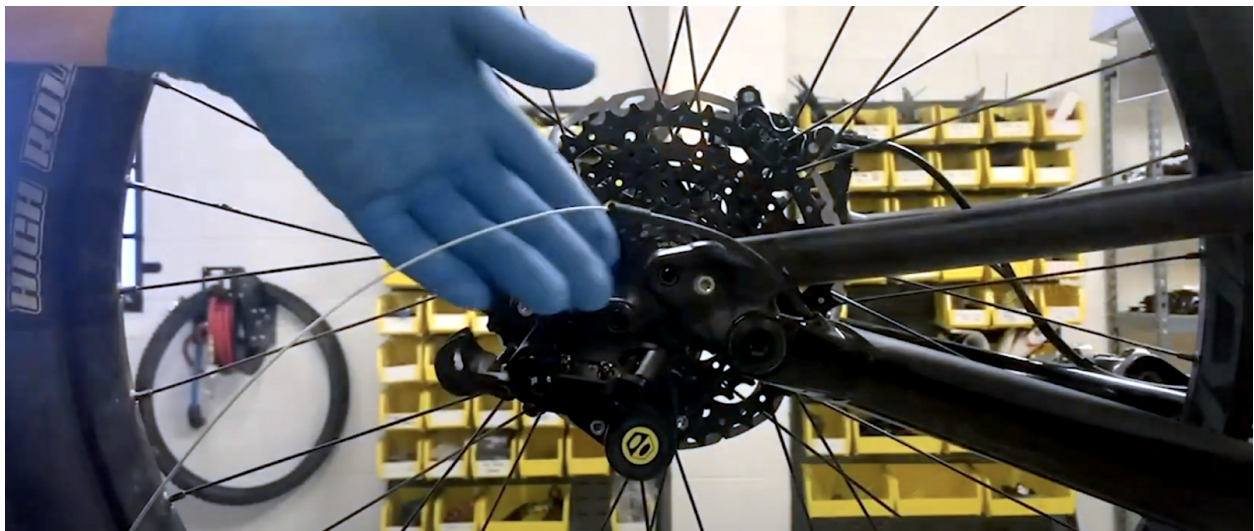
1. Slide the shifter onto the desired position on the handlebars.



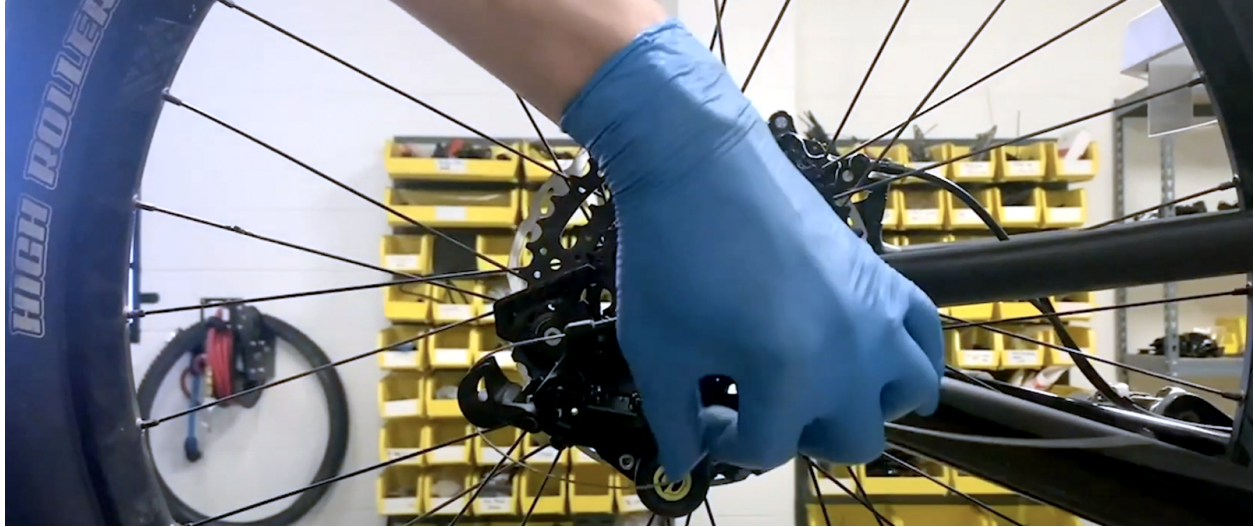
- Using a Torque Wrench with a 5mm Hex Bit, tighten the Clamp Bolt to 3-4Nm.



- Insert the Shifter Inner Cable through the Cable Housing.



- Align the Shifter Inner Cable with the channel in the cable stay arm's clamp washer.



5. Using a Torque Wrench with a 5mm Hex Bit, tighten the Cable stay arm to 4-5 Nm.



6. Using Cable Cutters, cut the excess cable, leaving 1-2 inches of cable remaining.

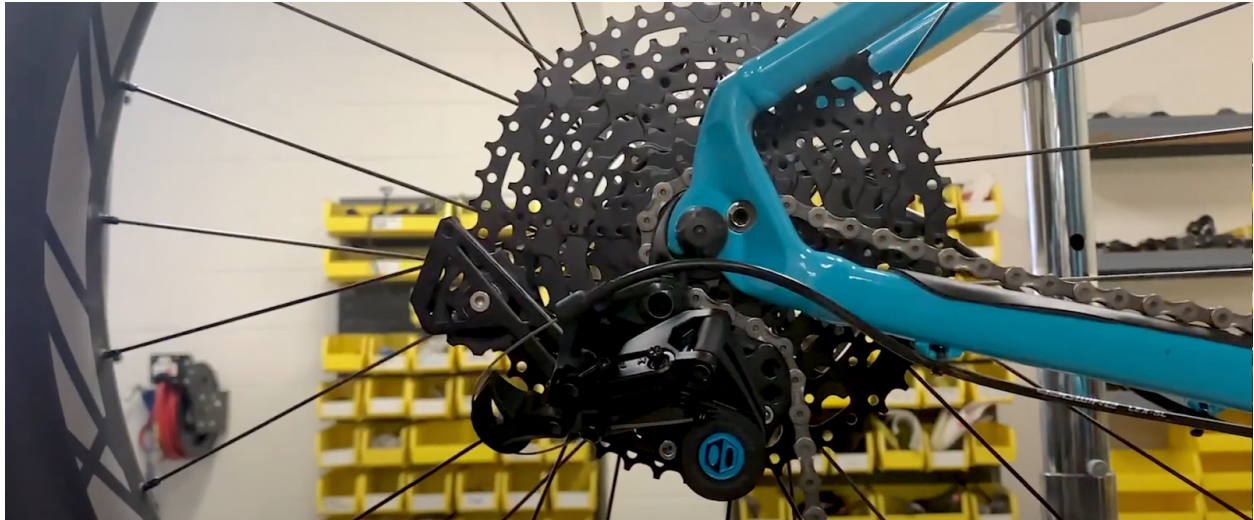


7. Crimp a cable end onto the inner cable to prevent the inner cable from fraying.

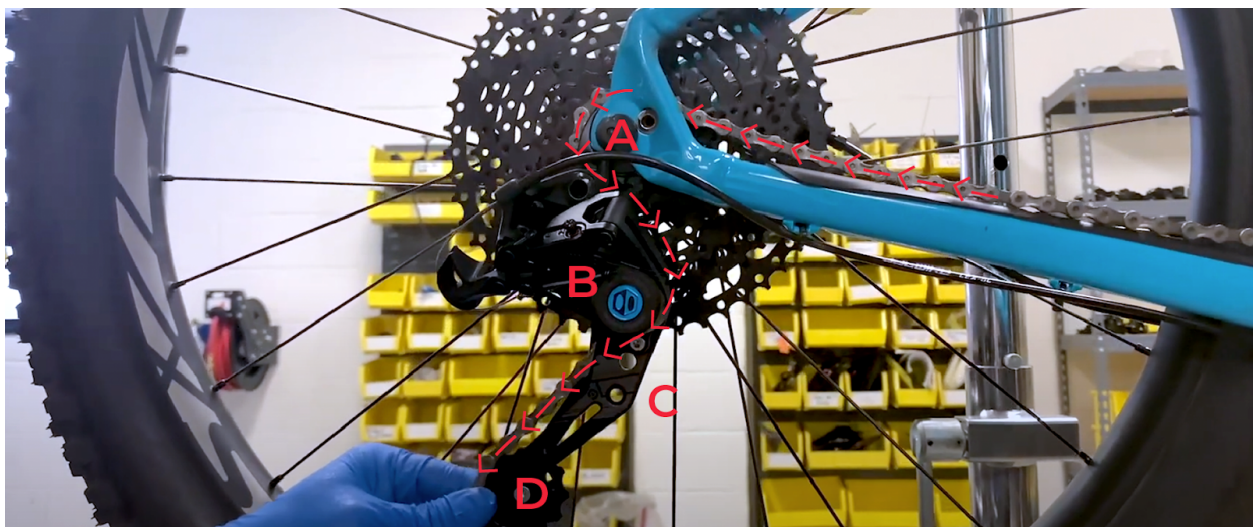


Chain Installation

1. Place the chain onto the top of the chainring and highest cassette cog.



2. Route the chain:
 - A. Counter-Clockwise around the cassette cog.
 - B. Clockwise around the upper pulley.
 - C. Over the anti deraillement tab.
 - D. Counter-clockwise around the lower pulley.



⚠ NOTE

Routing the chain UNDER the anti-derailment tab on the cage will cause chain / derailleur and may cause personal injury. Ensure correct routing when installing your chain.

3. Pull the two ends of the chain together so that the cage rotates slightly and the cage stop screw is not contacting the derailleur (1-3mm distance).



4. With the cage still rotated, identify the two inner links on the chain that meet. Using a marker, mark the link to remove to achieve proper chain length.



5. Using a -Speed Compatible Chain Breaker, press the marked pin completely out.



6. Install the outboard connecting link with the “6-8” (or 9S) facing upright and away from the bike.



7. Pull the two ends of the chain together and loosely connect both sides.

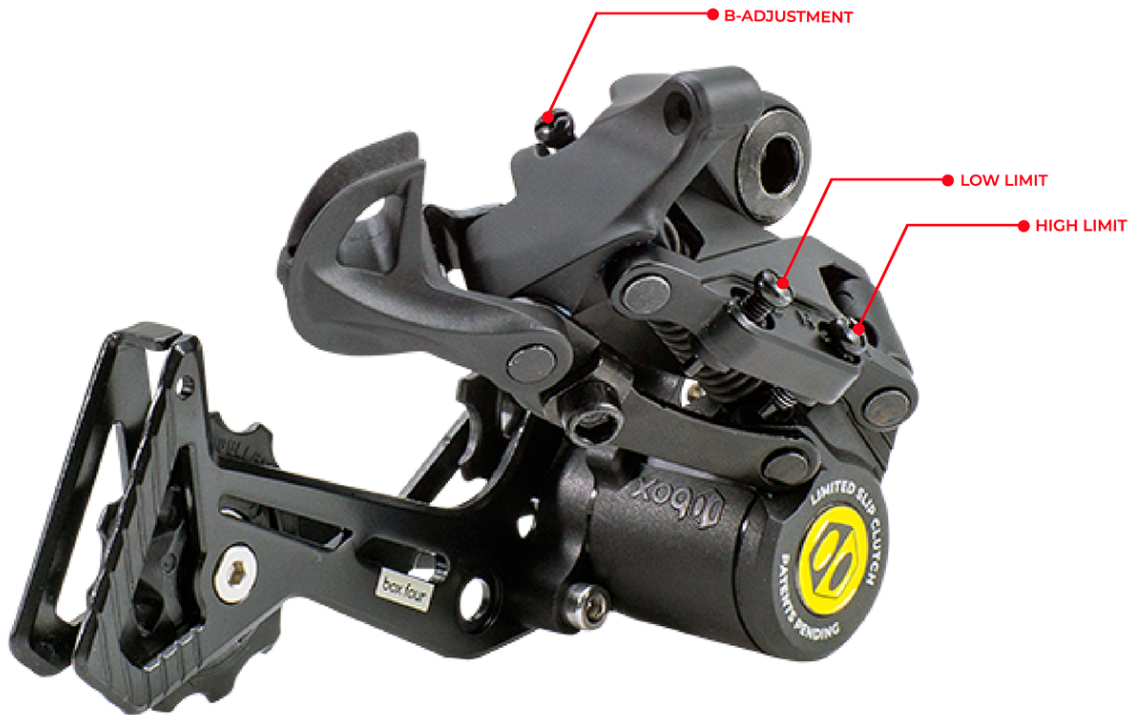


8. Using Master Link Pliers, fully connect the links by pulling the pliers outward.



Derailleur Adjustment

1. Note the location and function of the adjustment screws



2. Carefully / slowly shift towards the lowest (largest) gear, making sure not to allow the derailleur to shift over the lowest gear on the cassette.
3. Using a 3mm Hex Bit, adjust the low limit screw so that when the derailleur is fully extended the upper pulley is inline with the lowest cog and can extend no farther.



4. Ensure shifting performance by shifting between the lowest and second lowest gears. There should be no skipping, popping and the derailleur should not be able to shift over the lowest gear and into the spokes.
5. Carefully shift to the highest gear, making sure not to allow the derailleur to shift over the highest gear on the cassette.
6. Using a 3mm Hex Bit, adjust the high limit screw so that the upper pulley is inline with the highest cog and does not allow the derailleur to pull the chain into the frame off the highest cog.



7. Ensure shifting performance by shifting between the highest and second highest gears. There should be no skipping, popping and the derailleur should not be able to shift over the highest gear and into the frame.
8. Shift to the lowest gear; Using a 3mm Hex Bit, adjust the B-Adjustment screw so that there is a 5-7mm gap between the upper pulley and the lowest cassette cog.



Shifting Adjustments

1. Shift towards the lowest gear, if the derailleur does not complete a shift or shifting is slow in that direction:
 - a. Turn the barrel adjuster on the shifter counter clockwise.
 - b. This will increase cable position and move the derailleur position towards the lower gears.



2. Shift towards the highest gear, if the derailleur does not complete a shift or shifting is slow in that direction:
 - a. Turn the barrel adjuster on the shifter clockwise.
 - b. This will decrease cable position and move the derailleur position towards the higher gears.



Pulley Maintenance

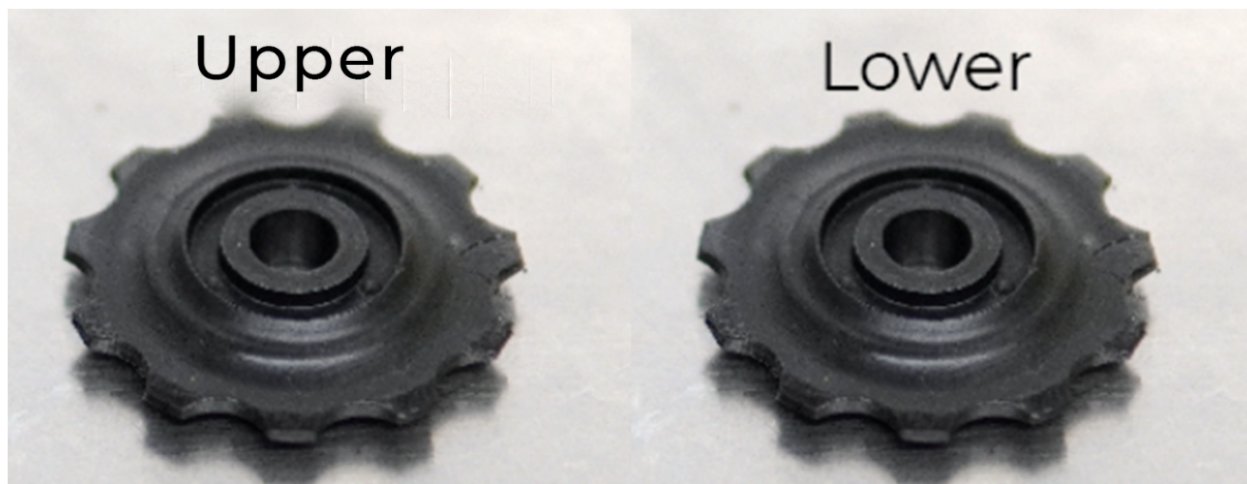
Box Three and Four 9 Rear Derailleur Pulleys are easy to service and should be done whenever there is an excessive build-up of dirt and chain-lube OR a rough feeling from the bearing or bushings.

Service can be easily completed with a 3mm hex bit on a torque wrench, a lint free rag and a mild cleaner.

⚠ NOTE

Ensure correct orientation of pulleys; incorrect orientation may cause performance issues, noise or damage to drivetrain components.

Diagram below shows pulleys in the correct orientation when the derailleur is installed on the bike. The below should face outwards when installed.



Box Three/Four - Sealed Bearing Pulleys

1. Using a 3mm Hex Bit, loosen and remove the bolts that hold the pulleys.



2. Clean the pulleys with mild soap and water or denatured alcohol.



3. Remove the bearing spacers and clean the contacting surfaces.
4. Reinstall the bearing spacers. (See Diagram for Reference)
 - a. The thick spacer pressed into the drive side of the pulley.
 - b. The thin spacers pressed into the non drive side of the pulley.



5. Using a 3mm Hex Bit reinstall the pulleys onto the derailleur's cage, tighten to 2.5-4Nm.