

CHRIS KING®

PRECISION COMPONENTS



BMX Hub Instructions

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Congratulations

You have just purchased the finest BMX hubset available. With proper care and maintenance you will enjoy many years of the legendary performance you expect from all of Chris King components. This manual is designed to give you the information needed for setting up, using, and maintaining your hubs.

As with all Chris King components these hubs are superbly designed, good looking, and light. Following the lead of our now famous mountain hubs, the BMX hub includes our unique RingDrive™ engagement system. This special design allows for extremely precise pedal positioning at the start gate as well as instantaneous and continuous transfer of your pedal power to the rear wheel. The cassette design also eliminates the screw-on freewheel. A special spline and lock ring have been designed to accept our premium quality steel and aluminum cogs. Gear ratios can be changed easily by installing single cogs ranging from 12t to 20t. This is easy to accomplish with simple tools, and requires less effort than traditional screw-on freewheels.

Cautions

Chris King BMX hubs are supplied with 3/8"-16 X 1" socket cap axle bolts. Replacements can be purchased at most high quality hardware stores. Use a bolt of grade 8 or equivalent. Under no circumstance, should a quick release skewer be substituted for the axle bolts.

Do not use thread-locking compound on any part of your hub(s).

Do not use cogs other than Chris King BMX cogs. The drive shell of the rear hub has a unique symmetrical spline, and is intentionally incompatible with current Shimano, and other aftermarket cogs. Use of other cogs including Shimano Uniglide, may cause chain skipage, or derailment, which could lead to bodily injury.

Chris King hubs feature adjustable bearing preload. The bearings should be kept in proper adjustment for optimum product performance. Do not allow the adjustment to become loose, as this may cause loss of performance that could lead to damage to the hubs, or possible bodily injury.

Preparation

Wheel building

Chris King hubs are designed to work with 14- or 15-gauge spokes. In the rare instance that radial lacing be chosen for the wheel build, special care should be taken in the selection and preparation of spokes for radial lacing (some spokes have small seams under the spoke heads which should be removed and smoothed with a small file). Do to the increased tension required by titanium spokes, titanium spokes should only be laced in a 3 or 4 cross pattern.

Proper wheel building technique is essential in creating a strong wheel. Wheel building is a skill that requires proper training and specialized tools and is best done by a trained professional.

Dimensions for wheel building

<u>Model/flange</u>	<u>Flange diameter</u>	<u>Center to flange</u>
Front/both	40.0 mm	34.0 mm
Rear/drive side	53.0 mm	27.5 mm
Rear/non-drive side	44.0 mm	30.3 mm

Frame preparation

Chris King BMX front hubs are available to work with 100mm fork drop out spacing. Do not attempt to use your hub with drop out spacing different than for which it was intended.

Chris King BMX rear hubs are available to work with 110mm frame drop out spacing. Do not attempt to use your hub with drop out spacing different than for which it was intended.

Check frame and fork dropouts to ensure that they are parallel to each other. Use an appropriate tool such as those made by Park or Campagnolo. Unparallel dropouts may compromise the performance of your new hub.

Setup

The hub(s) come pre-adjusted from the factory. The adjustment has been made anticipating spoke tension and skewer compression. Because of variations in wheel-building practices, a minor adjustment should be performed upon completion of the wheel build. Please see the appropriate **"Adjustment"** section and check the hub before using.

The grease in your hub has been selected to provide optimum performance between 30°-100°F. The bearings and RingDrive™ engagement mechanism come pre-packed with a specially formulated low shear grease. To maintain maximum performance in extreme temperatures see the appropriate section under **"Lubrication Schedule"** (page 3).

KingKogs™

Chris King BMX hubs use a cassette style cog mounting system. Special splines and lock rings have been designed to accept our premium quality steel or aluminum cogs. Cogs are available in sizes from 12t to 20t. Using standard cassette tools you can easily remove and change your cogs.

Cog installation

1. Select desired tooth-count Chris King cog.
2. Slide cog onto drive shell spline. Cogs are symmetrical, and can be installed either side out.
3. Thread lock ring onto drive shell over cog.
4. Insert Shimano HG tool into lock ring, and tighten to 20 ft. lbs.

Cog removal

1. Using a chainwhip, hold cog stationary from counterclockwise rotation.
2. Insert Shimano HG cassette tool into lock ring.
3. Loosen lock ring by rotating it until it is free from drive shell.
4. Glide cog off of spline.

Break-In

Once your new hub is placed in service, some settling may occur. Check adjustment by clamping wheel into frame or fork with the quick-release. Ride for 5-10 minutes, check for play or binding, and readjust if necessary. Recheck after the first 5-10 miles of riding. Check cog lock ring on rear hubs after the first 20 hours of use, and tighten if necessary. Continue monitoring for the first 60 hours of use.

During the first 60 hours of use, above average amounts of drag may be noticed. This is normal as the seals break in, and will soon diminish.

The bearing grease is intentionally overpacked and excess grease may seep at the bearing seals during the break-in period.

Maintenance

Maintenance schedule

Chris King Classic Hubs are designed to provide long life and high performance. Beyond an occasional adjustment, the only maintenance necessary is cleaning, lubricating the RingDrive™ (see “**The RingDrive™ & drive shell**”, page 6), and re-lubricating the bearings (see “**Service of the bearings**”, page 8). Riding conditions will determine how often to maintain your hubs. As a beginning guideline, your hubs should be maintained every 6-12 months in normal and dry conditions and every 3 months in wet or muddy conditions.

The bearings in your new Chris King hubs are of the highest quality available. However, all bearings will settle and eventually wear with use. Since looseness or “play” in the bearing assembly can develop as a result of wear, Chris King hubs have been designed with an adjustable bearing preload mechanism and any normal play can be eliminated (see the appropriate “...**Adjustment**” section).

Notes on RingDrive™ maintenance

Normal preventative maintenance of the RingDrive™ is simple and can be performed using basic tools. (See “**The RingDrive™ & drive shell**”, page 6.) In many cases, a minor cleaning and reapplication of lubricant is all that may be necessary. Judging when to perform this basic maintenance is determined by riding style and conditions. As a beginning guideline, your hubs should be maintained every 6-12 months in normal and dry conditions and every 3 months in wet or muddy conditions.

Periodically (every one to two years) or if foreign debris is detectable in the grease and/or the grease looks hard or dry, a complete servicing (removal and cleaning) of the RingDrive™ should be performed. Complete service includes the removal of the RingDrive™ engagement mechanism and requires the use of our Hub Service Tool. See your local Chris King dealer for complete service or you may purchase a Hub Tool Service Kit from your dealer or directly from Chris King Precision Components.

Lubrication

Normal conditions

In normal riding conditions (30°-110°F), our RingDrive™ grease is recommended for the bearings and the RingDrive™. **Do not substitute other brands of grease, as they may be too sticky for the helix of the RingDrive™ inhibiting proper engagement.**

Cold conditions

To ensure proper engagement in colder riding conditions (below 30°F) mix the grease in the RingDrive™ area with 5-10 drops of Tri-flow™ or a quality 10w synthetic oil. **Do not over fill.** If you plan to ride in subzero conditions, using oil only is the best setup.

Wet conditions

Riding in wet conditions necessitates more frequent service. Often this is as simple as removing the axle and drive shell from the hub, removing any moisture from inside the hub shell, and applying more grease to the needle bearing. This should not replace periodic complete disassembly and maintenance, especially in extreme or prolonged wet conditions.

Note: Since it is nearly impossible to seal a hub from water and still have it spin freely, we have designed our hubs to be able to operate normally with some water intrusion. Although the bearings are stainless steel and will resist water induced corrosion, the lubricant will eventually deteriorate, leading to premature bearing wear and possible failure. High-pressure spray washing, transporting or riding the bicycle in the rain, or submersion in water while riding can all lead to lubricant contamination by water. Be aware of these situations and service more frequently when they occur.

In a pinch...

If Chris King RingDrive™ lube is not available, a quality 10w synthetic oil may be substituted. **Do not substitute other brands of grease, as they may be too sticky for the helix of the RingDrive™.** Running the hub on oil will cause the RingDrive™ to be more audible, yet functionally no different.

If you have any additional questions, please call our Technical Services Department at 800.523.6008.

Disassembly of the front hub (see figure 1)

1. Insert a 3/32" hex wrench into the adjusting clamp pinch bolt, and loosen.
2. With adjusting cone facing towards you, hold opposite end of axle stationary, and rotate cone in a counter clockwise direction. After one complete revolution the adjusting cone should be free from the axle.
3. Slide out axle.

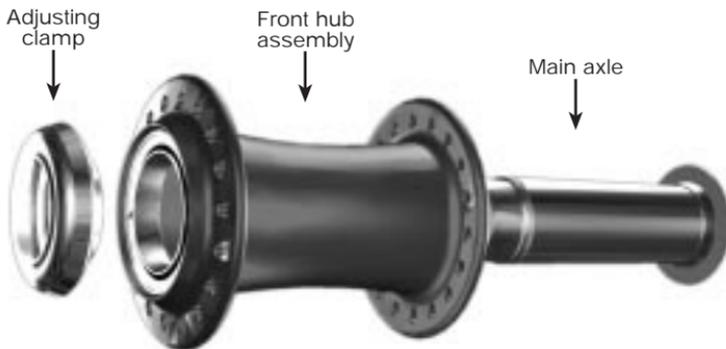


Figure 1

4. Both hub shell bearing assemblies can now be accessed.

Further disassembly requires specialized tools. These come individually or in the Chris King hub tool service kit, which is available from your local bicycle dealer or directly from Chris King Precision Components.

For bearing service information see **"Service of the bearings"** (page 8).

Reassembly of the front hub (see figure 1)

1. Lightly grease main axle O-rings.
1. Insert main axle into hub shell.
2. Thread adjusting clamp onto the protruding threads of axle.
3. Snug adjusting cone up to bearing.
4. Proceed to **"Adjustment of the front hub"** (below).

Adjustment of the front hub

1. Both front and rear BMX hubs feature special adjusting clamps which minimize over tightening or over preloading of the bearings. Normal adjustment is accomplished by finger tightening adjusting ring onto axle until it stops against bearing.
2. Once adjusting clamp is in position, tighten adjusting ring pinch bolt to 10 inch-pounds.
3. Double check adjustment by bolting wheel into fork. Check for play or binding, and readjust if needed. Adjustment may be accomplished while bolted into fork.

Disassembly of the rear hub (see figure 2)

The following instructions assume that the drive shell is facing to the right:

1. Remove cog using a chain whip, and standard Shimano freewheel tool.
2. Insert a 3/32" hex wrench into adjusting clamp pinch bolt, and loosen.
3. With adjusting clamp facing towards you, hold opposite end of axle stationary, and rotate cone in a counter clockwise direction. After one complete revolution the adjusting cone should be free from the axle.
4. Slide out axle.
5. Hold hub or wheel in one hand and pull drive shell with other.
6. Both hub shell and drive shell bearing assemblies can now be accessed.



Figure 2

For bearing service information see “**Service of the bearings**” (page 8).

Further disassembly requires specialized tools. These come individually or in the Chris King hub tool service kit, which is available from your local bicycle dealer or directly from Chris King Precision Components.

The RingDrive™ & drive shell Inspection

Having removed the axle and drive shell (as instructed above), the RingDrive™ is accessible through the large side of the hub shell. Visually inspect the hub's interior. Under normal conditions the grease should look moist and may have darkened slightly. A modest film should coat the moving parts.

As with the rest of the hub, the RingDrive™ is designed to operate with some water contamination. Water intrusion can usually be remedied with basic maintenance.

However, if foreign debris is detectable in the grease and/or the grease looks hard or dry, then a complete removal and servicing of the RingDrive™ is necessary.

Basic maintenance

1. Take a clean, lint free rag and wipe any spent lubricant from inside the hub shell. Be careful not to drag any dirt or debris from outside the hub into the interior area.
2. Once the interior is clean in appearance, locate the helical splines of the drive ring about an inch inside the large bearing.
3. Using a soft toothbrush, pull the bristles across the helix in an outward direction. Work your way all the way around the inner circumference to remove any small particles that may be in the spline grooves.
4. Once completed, wipe the area directly in front of the helix to remove any debris. This method should be used to clean the helix on the drive shell as well. (If compressed air is available, blow across the helixes in line with the spline grooves to remove any debris.)

With the interior wiped down and the helixes brushed clean, a fresh application of lubricant should be applied. The RingDrive™ is designed to work with our specially formulated low shear RingDrive™ grease. **Do not substitute other brands of grease, as they may be too sticky for the helix of the RingDrive™.**

5. Lubricate by reopening a gap between the drive rings, and laying a bead of RingDrive™ grease on the teeth between them.
6. Let the rings spring back together and then wipe up any excess grease that squeezes inward.
7. Apply a few drops of Tri-flow™ or a quality 10w synthetic onto both the helical splines of the movable drive ring and the drive shell.
8. **Before reinserting the drive shell into RingDrive™ area of the hub, the helical splines must be clean of any debris.**
9. Reinsert the drive shell and complete the assembly as per the instructions below.

RingDrive™ service

In addition to the basic maintenance of the RingDrive™, a complete removal and servicing may be necessary. Complete service requires our Hub Service Tool Kit and, as a basic guideline, should be performed at least once every 12 to 24 months. Check with

your local Chris King dealer for complete service or you may purchase the tool kit at your dealer or directly from Chris King Precision Components.

In a pinch...

If you need to do a RingDrive™ service and don't have the Hub Service Tool Kit or can't make it to a dealer, this method may be used for temporary results:

1. Remove the axle and drive shell to access the interior RingDrive™ area.
2. Push the drive ring with helical splines inward to open a gap, exposing the drive teeth and flush the interior with a light solvent-based spray lubricant (e.g., Bullshot™ aerosol or WD-40™) until the area appears clean. Blow off any remaining solvent until completely dry.
3. If contamination is still apparent, repeat flushing and blow completely dry. A complete service of both hub shell bearings should be performed at the same time.
4. Finish by performing the basic maintenance as instructed above.
5. After assembly, carefully hand test hub for smooth operation of the bearings and consistent, positive engagement of the RingDrive™. If performance is not improved to original quality, a complete RingDrive™ removal service must be performed.

Reinstallation of the drive shell assembly

1. Check the helical splines of the drive shell for any particles or debris before proceeding; **the drive shell must be clean before installing!**
2. Apply several drops of Tri-Flow™ on the helical spline, O-ring, and tapered diameter directly adjacent the O-ring.
3. Insert drive shell into hub shell, slowly. As the drive shell enters the RingDrive™ area, it will want to mesh the helical splines of the drive ring. As it begins to mesh, a slight clockwise turning motion of the drive shell will help pull it into the hub shell. Continue twisting as the drive shell pulls itself into the hub shell. At the bottom of its inward movement, an audible “click” or “pop” sound indicates that it has found home and is fully seated. The “click” or “pop” is the spring retainer popping onto the drive shell and the drive shell seating on the bearing, indicating the drive shell is fully inserted. Some pushing pressure on the drive shell may be necessary to pop the spring retainer onto the end of the drive shell.

Note: During removal of the drive shell unit the spring retainer plate can become off-centered. Be sure that the spring retainer is properly centered against the back of the spring area before reinstalling the drive shell.

4. Test engagement by spinning drive shell in both directions. If it does not engage, remove drive shell, check cleanliness and reinsert. Retest.
5. The hub is now ready to have the axle installed.

Reassembly of the rear hub (see figure 2)

The following instructions assume that the drive shell is facing to the right:

1. Lightly grease all O-rings and bearing contact surfaces.

Note: During removal of the drive shell unit the spring retainer plate can become off-centered. Be sure that the spring retainer is properly centered against the back of the spring area before reinstalling the drive shell.

2. Insert drive shell into the hub shell; turn in a clockwise motion while pushing. A

- distinctive click sound will indicate that the drive shell is firmly seated.
- 3. Insert main axle, small end first into drive shell. Continue until axle is through the hub and large end is firmly seated in drive shell.
- 4. Thread adjusting clamp onto the protruding threads of axle.
- 5. Snug adjusting clamp up to bearing.
- 6. Proceed to **“Adjustment of the rear hub”** (below).

Adjustment of the rear hub

The following instructions assume that the drive shell is facing to the right:

1. Both front and rear BMX hubs feature special adjusting rings which minimize over tightening or over preloading of the bearings. Normal adjustment is accomplished by finger tightening adjusting ring onto axle until it stops against bearing.
2. Once adjusting ring is in position, tighten adjusting ring pinch bolt to 10 inch-pounds.
3. Double check adjustment by bolting wheel into fork. Ride for 5-10 minutes, check for play or binding, and readjust if needed. Double check after the first 5-10 miles of riding. Adjustment may be made while wheel is mounted in the bike.

Correct adjustment of the rear hub is necessary for proper engagement of the RingDrive™. If the hub is run loose, the RingDrive™ may not engage properly and could lead to the permanent damage of internal parts.

Service of the bearings (see figure 3)

1. Chris King sealed bearings have removable snap rings that hold the rubber seals in place.
2. Carefully, using a small screwdriver, pick, or penknife, remove the snap ring by inserting tool into split of snap ring. Gently work one end of the snap ring toward bearing center until it is out of its groove. Follow the ring around with the tool until the snap ring is completely dislodged.
3. Lift and remove exposed rubber seal to access the interior of the bearing.
4. Thoroughly flush the bearing with a light spray lubricant (e.g., Bullshot™ aerosol or WD-40™) and blow dry.
5. Wipe dirt and other contaminants from the seals and snap rings. Avoid cleaning the seals with solvent, which could cause deterioration.

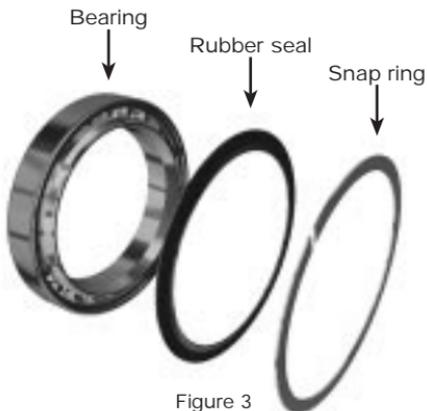


Figure 3

Note: Some solvents, synthetic lubricants, and greases with high-pressure additives may attack and damage seals and other nonmetallic materials. Minimize exposure to these substances and thoroughly dry hub after cleaning.

6. Lay a bead of our RingDrive™ grease (see "**Lubrication Schedule**" page 3), filling the gap between the inner and outer races 1/2 to 3/4 the way around bearing. Rotate the inner race to work grease throughout the ball area.
7. Replace rubber seal between inner and outer bearing race.
8. Insert one edge of snap ring into groove of outer bearing race. Press along entire groove until snap ring is fully seated; a small gap should be visible between both ends of the snap ring.
9. Turn inner race of bearing by hand to test for binding. If bearings do not run smooth, repeat steps 1-9. Binding is often a result of improperly seated seals and/or snap rings.

Used snap rings and seals can be reinstalled unless warped, punctured, or otherwise damaged. If damaged, replacement seals and snap rings are available from your local bike shop or directly from Chris King Precision Components.

Specifications

Cassette compatibility: Chris King's 12t-20t aluminum or stainless KingKogs™

Total weight w/o axle bolts (rear): Alloy cog: 298 grams; Steel cog: 314 grams

Total weight w/o axle bolts (front): 120 grams

Axle diameter: 19.5 mm

Axle width: 100mm front; 110mm rear

Spoke hole diameter: 2.5 mm

Available hole drilling: 28, 32, 36, and 40 – other drilling is available upon request.

Warranty

Chris King Precision Components warrants its bicycle components to be free from defects in materials or workmanship for a period of 5 years from the original date of purchase. Any Chris King product that is found by Chris King Precision Components to be defective in materials or workmanship will be repaired or replaced at the discretion of Chris King Precision Components providing it is returned to the factory freight prepaid. This warranty does not cover damage or failure resulting from misuse, abuse, alteration, neglect, normal and reasonable wear and tear, crash or impact, failure to perform routine maintenance as instructed, or use other than that for which the product was intended.

If a defect is found, our entire liability and your sole remedy shall be, at our option, free repair or replacement. Chris King Precision Components shall not be held liable for any indirect, special or consequential damages. The warranty does not cover any Chris King Precision Components product where the serial number has been altered or removed. This written express warranty is in lieu of all other warranties, implied or expressed, and does not cover any representation or warranty made by dealers beyond the provisions of this warranty. This warranty gives you specific legal rights, and you may also have other rights which vary state to state.

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