

ISO Hub Instructions



CHRIS KING[®]
PRECISION COMPONENTS

Contents

Introduction and Cautions	1
Preparation	
Wheel building.....	1
Frame preparation.....	2
Installation/Removal of the brake rotor.....	2
Hub identification and Attachment Type.....	2
One Piece Axle.....	2
FunBolts.....	2
QR Adaptors.....	2
Thru Axle.....	2
Two Piece Axle.....	3
Set Up.....	3
Break-in.....	4
Maintenance	
Maintenance schedule.....	4
Notes on RingDrive maintenance.....	4
Lubrication: Normal/Cold/Wet conditions, In a pinch.....	5
Disassembly/Reassembly/Adjustment of two piece axle on front ISO hub.....	6
Disassembly/Reassembly/Adjustment of one piece axle on front ISO hub.....	7
Disassembly/Reassembly/Adjustment of one piece axle on rear ISO hub.....	8
ISO Single Speed rear hub.....	9
Cogs/Chain/Chainline.....	9
Cog Installation/Removal.....	10
Disassembly/Reassembly/Adjustment of two piece axle on rear ISO hub.....	10
The RingDrive: Inspection/Basic Maintenance/Service.....	12
In a pinch.....	13
Reinstallation of the drive shell assembly.....	13
Service of the bearings.....	14
Universal Disc Brake Rotor Adaptors: Installation/Removal.....	15
Hub specifications and wheel building information	16 & 17
Additional support	11 & 17
Warranty and contact information	back cover

Congratulations

You have just purchased the finest hubs available. With proper care and maintenance you will enjoy many years of the legendary performance you have come to expect from all Chris King Precision Components. This manual is designed to give you the information needed for the setup, use, and basic maintenance of your new hubs.

As with all Chris King Precision Components, our hubs are superbly designed and manufactured, responsibly light, and meticulously finished. Our hubs feature our patented RingDrive engagement system spinning around a 19.5mm aluminum axle on four sets of ball and needle bearings. This combination, housed in an elegant aluminum shell, offers the solid and reliable performance demanded by serious cyclists. Like all of our components, our ISO hubs are user serviceable.

Cautions

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

The aluminum driveshells of the rear hubs are softer than the steel shells, and should only be used in conjunction with “spidered”-style cassettes. Avoid using individual cog-style cog sets with aluminum driveshells. **We recommend using our aluminum or Ti cog lock rings when installing 9 and 10 speed drivetrains.**

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 a loss of performance and could lead to damage to the hubs.

Chris King hubs with two piece axles are designed to be used in conjunction with quick-release skewers. It is recommended that the skewer develop a minimum of 1100 lbs. of clamping force when set. For best performance, use skewers with steel shafts. Titanium shafted skewers are not recommended for use with front or rear suspension.

Preparation

Wheel building

Hub dimensions for wheel building are available on pages 16 and 17.

Chris King ISO hubs are designed to work with 13, 14 or 15 gauge spokes. Disc brake wheels must be laced using a 3-or-more-cross lacing pattern. As the torque generated by driving the cassette requires crossed spokes, so does the additional torque on the non-drive side flange generated by the braking action. **Radial lacing your ISO hubs is considered outside of the intended use and will void your warranty.** We will not be responsible for damaged or destroyed hubs, any consequential damages, or any resulting labor costs due to radial lacing your ISO hub.

The front ISO should be laced 3-or-more-cross with the rotor (left) side pulling spokes (relative to braking direction) heads out/elbows in (when laced 3-cross). The final cross of the pulling spoke must be on the outside so that, as braking force is applied, increased pulling spoke tension will pull the crossed spokes towards the center of the hub and away from the caliper. Lace the wheel symmetrically.

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

Frame Preparation

Check frame and fork dropouts to ensure that they are parallel to each other. Use an appropriate tool made by a reputable bicycle tool manufacturer. Non-parallel dropouts may damage or compromise the performance of your hub.

Installation and Removal of the rotor

Please follow your brake manufacturer's specifications for rotor installation and rotor bolt torque specifications.

Hub Identification and Attachment Type

One Piece Axle (see Figure 1)

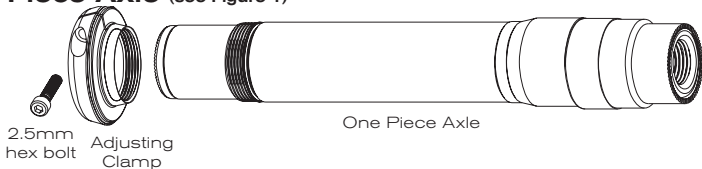


Figure 1

The one piece axle uses an adjusting clamp to adjust the hub bearing preload. Hubs that are factory assembled with the one piece axle include: ISO 135/145/150/160mm rear, ISO Single Speed rear, ISO 15/20/24mm front, and Universal Disc rear. **One piece axle disassembly, reassembly and adjustment procedures can found on pages 7, 8 and 9.**

• FunBolts (see Figure 2)

Chris King FunBolts are hollow, stainless steel bolts that can be used as a retention device in conjunction with standard 10mm slot-width rear dropouts with the 135/145/160mm one piece rear axle. FunBolts should be torqued to **25 foot-pounds** using an **8mm** hex wrench.

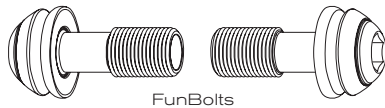


Figure 2



Figure 3

• QR Adaptors (see Figure 3)

Chris King QR Adaptors allow for the use of a skewer-type retention device with the 135/145/160mm one piece threaded rear axle. The adaptors are threaded into both ends of the axle using a **5mm** hex wrench.

• Thru Axle

ISO 15/20mm front and ISO 135 x 10mm, 135 x 12mm, 150 x 10mm and 150 x 12mm rear hubs are attached to the frame with a thru axle. The thru axle is supplied by the fork or frame manufacturer.

Two Piece Axle (see Figure 3)

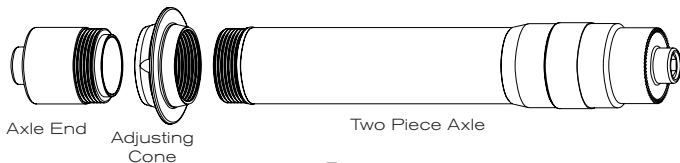


Figure 4

The two piece axle uses an adjusting cone to adjust bearing preload and an axle end to lock the preload adjustment. Hubs that are factory assembled with the two piece axle include: ISO front, Universal Disc front, and Universal Disc 140mm rear. **Two piece axle disassembly, reassembly and adjustment procedures can found on pages 6, 10 and 11.** The two piece axle design (see Fig. 4, pg. 3) is designed for a skewer-type retention device and must not be modified or altered to accept any type of bolt-on retention device.

One piece and two piece axles are interchangeable on ISO 135mm rear hubs. For details on axle conversions, please refer to the hub specifications table on pages 16 and 17, call our Technical Services Department at 800.523.6008, or check out our web site for tech info and videos: www.chrisking.com

Set-Up

Front and rear hubs can be converted to fit many different axle standards and frame mounting configurations. See the Hub Specifications table on pages 16 and 17 for axle conversion options.

• ISO Front

Chris King front ISO hubs are designed to work with 100mm fork drop out spacing. Do not attempt to use your hub with any other dropout spacing. The two piece axle design (see Fig. 4, pg. 3) is designed for a skewer-type retention device and must not be modified or altered to accept any type of bolt-on retention device.

• ISO 15mm, 20mm & 24mm Front

Chris King 15mm and 20mm hubs are designed to be used in conjunction with 15mm and 20mm thru-axles only. The thru axle is supplied by the fork manufacturer. Total axle width is 110mm. Chris King 24mm hubs are designed to be used in conjunction with 24mm clamp-on compatible forks only.

• ISO 135mm Rear

Chris King rear ISO hubs are designed to work with 135mm frame spacing. Do not attempt to use your hub with any other dropout spacing. The one piece axle design (see Fig. 1, pg. 2) can be used with Chris King FunBolts or with our QR adaptors, which allow for the use of a skewer-type retention device. Additionally, 135 x 10mm and 135 x 12mm hubs are designed to be used in conjunction with 10mm and 12mm thru-axles only. The thru axle is supplied by the bicycle frame manufacturer. Total axle width is 135mm.

The earlier two piece axle (see Fig. 4, pg. 3) is designed for exclusive use with a skewer-type retention device and the hub can only be used with FunBolts by replacing the two piece axle with the one piece axle. Do not modify or alter two piece axle systems to accept thru-bolt retention devices.

• ISO 150mm Rear

Chris King 150 x 10mm and 150 x 12mm hubs are designed to be used in conjunction with

10mm and 12mm thru-axes only. The thru axle is supplied by the bicycle frame manufacturer. Total axle width is 150mm.

- **ISO Single Speed Rear**

ISO Single Speed rear hub and cog set-up information can be found on pages 9 and 10.

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. See the appropriate **"Adjustment"** pgs. 6, 7, 9 and 11 and check the hub before using.

The grease in your hub will provide optimum performance between 30°-110°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 appropriate section under **"Lubrication"**, pg. 5.

Break-In

Once your new hub is placed in service, some settling may occur. Check adjustment by clamping wheel into frame with a quick-release skewer or with Chris King FunBolts. Ride for 5-10 minutes, check for play or binding, and readjust if necessary. Recheck after the first 1-5 hours 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. If this causes chain sag while back-pedaling, increase the B-tension (cage tension) on the rear derailleur.

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

Maintenance

Maintenance schedule

Chris King ISO 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"**, pg. 12), and re-lubricating the bearings (see **"Service of the bearings"**, pg. 14). 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. 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, pgs. 6, 7, 9 and 11).

Notes on RingDrive™ maintenance

Normal preventative maintenance of the RingDrive is simple and can be performed using basic tools (see **"The RingDrive"**, pg. 12). 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 any authorized Chris King dealer for complete service or you may purchase a Hub Service Tool Kit from your dealer or directly from Chris King Precision Components.

Chris King Precision Components provides overhaul services at reasonable rates. Contact the Customer Service hotline at 800-523-6008 for details.

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, especially on the helical splines of the drive shell, 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 silical oil (Pedros® SynLube or Mobil 1®) alone 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.

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, or check out our web site for tech info and videos: www.chrisking.com

Disassembly of two piece axle on front ISO hub (see Figure 5)

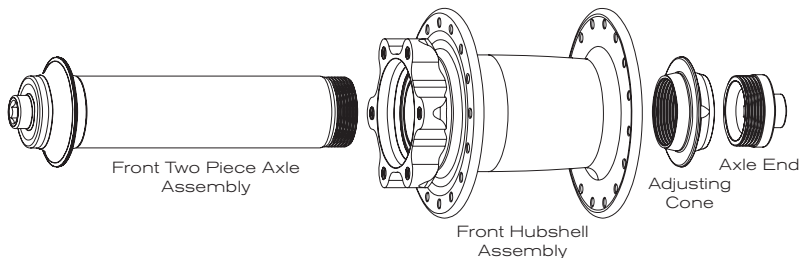


Figure 5

1. Insert 5 mm hex wrenches into both ends of axle assembly.
2. Hold left hand stationary and turn right hand counterclockwise 1/4 turn until assembly is loose.
3. Loosen and unscrew adjusting cone and axle end until they are free from main axle.
4. Slide out main axle.
5. Both hub shell bearing assemblies can now be accessed.

For bearing service information see **“Service of the bearings”**, pg. 14.

Further disassembly requires specialized tools. These come individually or in the Chris King Hub Service Tool Kit, which is available at any authorized Chris King dealer, or directly from Chris King Precision Components.

Reassembly of two piece axle on front ISO hub (see Figure 5)

1. Lightly grease main axle O-ring.
2. Insert main axle into hub shell.
3. If axle end and adjusting cone are assembled as one unit, disassemble by threading axle end out of adjusting cone.
4. Thread adjusting cone onto the protruding threads of main axle.
5. Lightly snug adjusting cone up to bearing.
6. Thread axle end into adjusting cone until it stops.
7. Proceed to **“Adjustment of two piece axle on front ISO hub”**, below.

Adjustment of two piece axle on front ISO hub (see Figure 5)

1. Insert 5 mm hex wrenches into both ends of axle assembly.
2. Hold left hand stationary and turn right hand counterclockwise 1/4 turn until assembly is loose.
3. Hold hex wrenches stationary and adjust bearing preload with adjusting cone.
4. Advance adjusting cone until it just contacts bearing, then back off approximately 1/16 turn (this allows for axle compression while under skewer clamp pressure).
5. Once preload is set, tighten axle assembly to **110 inch-pounds**.
6. Double check adjustment by clamping wheel into fork with quick-release. Check for play or binding, and readjust if needed.

Disassembly of one piece axle on ISO front hub (see Figure 6)

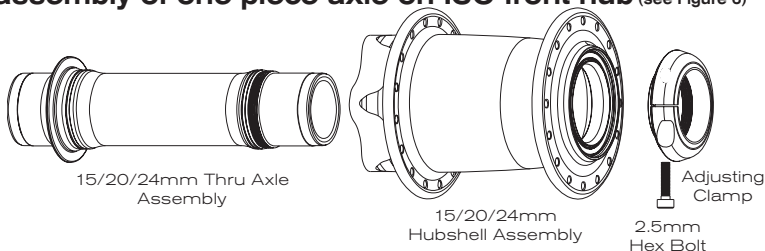


Figure 6

1. Remove the hub from the fork. **Remove the disc brake rotor.**
2. Insert a **2.5mm** hex wrench into adjusting clamp pinch bolt, and loosen.
3. With adjusting clamp facing towards you, hold opposite end of axle stationary, and rotate clamp in a counter clockwise direction. After one complete revolution the adjusting clamp should be free from the axle.
4. Remove the axle from the hubshell. The mechanism is sealed with two o-rings, so a gentle tap may be required to free the axle.

For bearing service information see “**Service of the bearings**”, pg. 14.

Do not attempt to remove bearings from 15/20/24mm hubshell. Bearings can only be removed by the Chris King Technical Service Department. Contact the Customer Service hotline at 800-523-6008 for service details.

7

Reassembly of one piece axle on ISO front hub (see Figure 6)

1. Insert the axle into the hubshell from the disc mount side.
2. Thread the adjusting clamp onto the protruding threads of the axle.
3. Snug the adjusting clamp up to the bearing.
4. Proceed to “**Adjustment of one piece axle on ISO front hub**”, below.

Adjustment of one piece axle on ISO front hub (see Figure 6)

The one piece axle features an adjusting clamp which minimizes over tightening or over preloading of the bearings. Adjustment may be accomplished while the hub is attached to the fork.

1. Loosen the adjusting clamp hex bolt using a **2.5mm** hex wrench.
2. Hand tighten the adjusting clamp onto the axle until it stops against the bearing.
3. Once the adjusting clamp is in position, use a **2.5mm** hex wrench to tighten the adjusting clamp hex bolt to **10 inch-pounds**.
4. Check for play or binding and readjust if needed.

If you have any additional questions, please contact our Technical Service Department at 800-523-6008, or check out our website for tech info and videos: www.chrisking.com

Disassembly of one piece axle on rear ISO hub (see Figure 7)

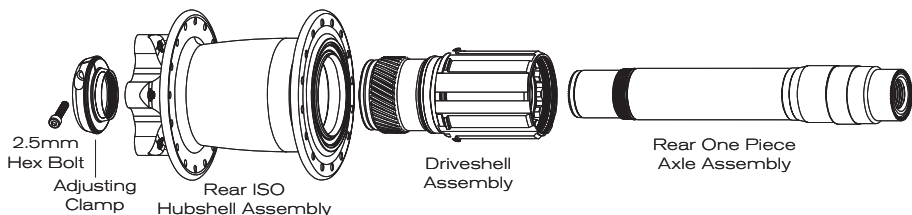


Figure 7

The following instructions assume that the driveshell is facing to the right:

1. Remove cogset lock ring and cogset using a chain whip and HG cogset lock ring removal tool.
2. Insert a **2.5mm** hex wrench into adjusting clamp pinch bolt, and loosen.
3. With adjusting clamp facing towards you, hold opposite end of axle stationary, and rotate clamp in a counter clockwise direction. After one complete revolution the adjusting clamp should be free from the axle.
4. Remove axle by pulling on drive side end of axle.
5. Hold hub or wheel in one hand and pull driveshell with other.
6. Hub shell bearings, RingDrive engagement and driveshell bearing assemblies can now be accessed.

For RingDrive inspection and maintenance information, see “**The RingDrive**”, pg. 12.

For bearing service information see “**Service of the bearings**”, pg. 14

Further disassembly requires specialized tools. These come individually or in the Chris King Hub Service Tool Kit, which is available at any authorized Chris King dealer, or directly from Chris King Precision Components.

Reassembly of one piece axle on rear ISO hub (see Figure 7)

The following instructions assume that the driveshell is facing to the right:

1. Lightly grease all o-rings and bearing contact surfaces.
2. Insert driveshell into the hub shell; turn in a clockwise motion while letting it pull itself in. A distinctive click sound will indicate that the driveshell is firmly seated.
3. Insert main axle, small end first into driveshell. Continue until axle is through the hub and large end is firmly seated in driveshell.
4. Thread adjusting clamp onto the protruding threads of axle.
5. Snug adjusting clamp up to bearing.
6. Proceed to “**Adjustment of one piece axle on rear ISO hub**”, pg. 9.

Note: To improve performance, the axles have been precisely matched with the needle bearings in the driveshell. Be sure to combine only like numbered parts, (e.g., #3 axle with #3 needle bearing race).

Adjustment of one piece axle on rear ISO hub (see Figure 7)

The one piece rear axle assembly features an adjusting clamp that minimizes over tightening or over preloading of the bearings. Adjustment may be accomplished while axle is attached to bicycle frame.

1. Adjustment is accomplished by hand tightening the adjusting clamp onto axle until it stops against bearing.
2. Once adjusting clamp is in position, tighten adjusting clamp pinch bolt to **10 inch-pounds** using a **2.5mm** hex wrench.
3. Double check adjustment by attaching wheel to bicycle frame. Check for play or binding, and readjust if needed.

Note: 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 permanent damage of the internal parts.

ISO Single Speed rear hubs (see Figure 8)

The ISO Single Speed rear hub uses our Single Speed one piece axle design. For disassembly, reassembly and adjustment information, follow the one piece axle instructions on pages 8 and 9 of this manual.

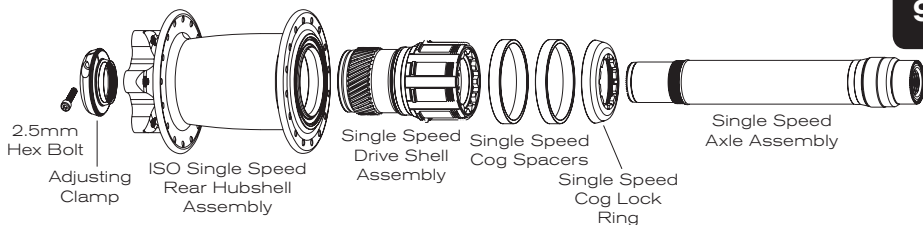


Figure 8

Cogs (see Figure 9)

Chris King Single Speed hubs use a cassette-style cog mounting system. Special splines and lock rings have been designed to accept our premium quality stainless steel and aluminum cogs. Cogs are available in sizes from 12t to 20t in stainless steel. Cogs can easily be removed and changed using standard cassette tools.

Chain

Chris King cogs are designed to be used with an **8-speed or 3/32"** chain.

Chain line

Setting the single speed cog to the proper chain line is essential to achieving the best performance from a bicycle's drivetrain. Our Single Speed rear hub allows for center-to-cog chainlines of 45, 50 and 55mm. To determine the proper chainline on a single speed bicycle with 135mm rear dropout spacing, follow these instructions:



Figure 9

1. Determine the front chain ring position by measuring the distance from the exact middle of the bottom bracket shell to the front chainring.
2. Locate the middle point of the rear ISO Single Speed hub by measuring 67.5mm from the inside face of the rear drop out to the middle of the hub.
3. From that middle point, use the front chain ring position measurement found in step 1, and measure from the hub center out to the drive shell.
4. This point on the driveshell where the rear single speed cog should be located to obtain the proper center-to-cog chainline.
5. Use the Single Speed Cog Spacers and Lock Ring that is included with the hub to secure the cog in the proper position. Proceed to **"Cog Installation"**, below.

Cog installation

1. Slide cog onto driveshell spline. Cogs are symmetrical, and can be installed either side out. Install Single Speed Cog Spacers, making sure cog is set at the proper chain line. To determine proper chain line, see **"Chain Line"** pages 9 and 10.
2. Thread Single Speed Cog Lock Ring onto driveshell.
3. Insert HG cogset lock ring tool into Cog Lock Ring, and tighten to **20 foot pounds**.

Cog removal

1. Using a chainwhip, hold cog stationary from counterclockwise rotation.
2. Insert HG cogset lock ring tool into Cog Lock Ring.
3. Loosen Cog Lock Ring by rotating it until it is free from driveshell.
4. Slide cog from spline.

10

Disassembly of two piece axle on rear ISO hub (see Figure 10)

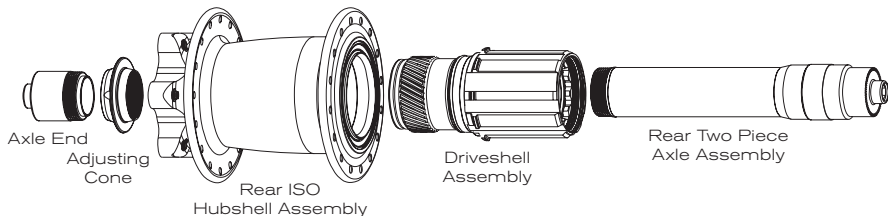


Figure 10

The following instructions assume that the driveshell is facing to the right:

1. Remove cogset lock ring and cogset using a chain whip and HG cogset lock ring removal tool.
2. Insert 5 mm hex wrenches into both ends of axle assembly.
3. Hold left hand stationary and turn right hand counterclockwise 1/4 turn until assembly is loose.
4. Loosen and unscrew adjusting cone and axle end until they are free from the main axle.
5. Remove axle by pulling on drive side end of axle.
6. Hold hub or wheel in one hand and pull driveshell out with the other.
7. Hub shell bearings, RingDrive engagement and driveshell bearing assemblies can now be accessed.

For RingDrive inspection and maintenance information, see **"The RingDrive"**, pg. 12. For bearing service information see **"Service of the bearings"**, pg. 14.

Further disassembly requires specialized tools. These come individually or in the Chris King Hub Service Tool Kit, which is available at any authorized Chris King dealer, or directly from Chris King Precision Components.

Reassembly of two piece axle on rear ISO hub (see Figure 10)

The following instructions assume that the driveshell is facing to the right:

1. Lightly grease all O-rings and bearing contact surfaces.
2. Insert main axle through driveshell. The axle is properly seated when the threaded end appears through the bearing and the end is flush with the end of the hub shell.
3. If axle end and adjusting cone are assembled as one unit, disassemble by threading axle end out of adjusting cone.
4. Thread adjusting cone onto the protruding threads of main axle.
5. Thread axle end into adjusting cone until it stops.
6. Proceed to "**Adjustment of two piece axle on rear ISO hub**", below.

Note: To improve performance, the axles have been precisely matched with the needle bearings in the driveshell. Be sure to combine only like numbered parts, (e.g., #3 axle with #3 needle bearing race).

Adjustment of two piece axle on rear ISO hub (see Figure 10)

The following instructions assume that the driveshell is facing to the right:

1. Insert 5 mm hex wrenches into both ends of the axle assembly.
2. Hold left hand stationary and turn right hand counterclockwise 1/4 turn until the assembly is loose.
3. Hold hex wrenches stationary and adjust bearing preload with the adjusting cone. You may use the hub cone adjusting tool if necessary.
4. Advance adjusting cone until it contacts bearing. The rear hub takes a slightly higher amount of preload than "no play", since some settling may occur while riding.
5. Once preload is set, tighten axle end to **110 inch-pounds**.
6. Check adjustment by clamping wheel into frame with quick-release. Ride for 5-10 minutes, check for play or binding, and readjust as necessary. Double check adjustment after the first 5-10 miles of riding.

Note: 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 permanent damage of the internal parts.

Additional Support

Digital movies are available on our web site to better help you keep your hubs and headsets performing at their best. Some are narrated by Chris King as he demonstrates proper headset and hub maintenance and overhaul procedures. Check our web site often for updated movies and technical information produced in an effort to help you, our customers, stay on your bike. **Visit:** http://chrisking.com/tech/tech_movies.html

Additional questions? Please email us at info@chrisking.com or call the Customer Service hotline at 800-523-6008.

The RingDrive™

Inspection

Having removed the axle and driveshell (as instructed in “**Disassembly...**” pgs. 8 and 10), 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 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 driveshell 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 driveshell.
8. **Before reinserting the driveshell into RingDrive area of the hub, the helical splines must be clean of any debris.**
9. Proceed to “**Reinstallation of the driveshell assembly**”, pg. 13.

Service of the RingDrive™

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. See any authorized Chris King dealer for complete service or you may purchase a Hub Service Tool Kit from your dealer or directly from Chris King Precision Components. **Chris King Precision Components provides overhaul services at reasonable rates. Contact the Customer Service hotline at 800-523-6008 for details.**

In a pinch...

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

1. Remove the axle and driveshell 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., 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. For bearing service information see “**Service of the bearings**”, pg. 14.
4. Finish by performing the “**Basic maintenance**”, pg. 12.
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 driveshell assembly

1. Check the helical splines of the driveshell for any particles or debris before proceeding; **the driveshell 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. Apply a bead of RingDrive lube to the helical splines.
3. Insert driveshell into hub shell, slowly. As the driveshell 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 driveshell will help pull it into the hub shell. Continue twisting as the driveshell 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 driveshell and the driveshell seating on the bearing, indicating the driveshell is fully inserted. Some pushing pressure on the driveshell may be necessary to pop the spring retainer onto the end of the driveshell.

Note: During removal of the driveshell 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 driveshell.

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

Service of the bearings (see figure 11)

Chris King sealed bearings have removable snap rings that hold the rubber seals in place.

1. 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.
2. Lift and remove exposed rubber seal to access the interior of the bearing.
3. Thoroughly flush the bearing with a light spray lubricant (e.g., WD-40™) and blow dry.

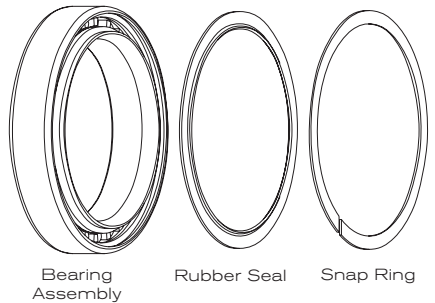


Figure 11

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.

4. Wipe dirt and other contaminants from the seals and snap rings. Avoid cleaning the seals with solvent, which could cause deterioration.
5. Lay a bead of our RingDrive grease (see “**Lubrication**”, pg. 5), filling the gap between the inner and outer races **3/4 the way around bearing**. **Do not overfill bearing with lube, as this may cause excess drag**. Rotate the inner race to work grease throughout the ball area.
6. Replace rubber seal between inner and outer bearing race.
7. 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.
8. Turn inner race of bearing by hand to test for binding. If bearings do not run smooth, repeat steps 1-8. 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 any authorized Chris King dealers or directly from Chris King Precision Components.

Universal Disc Brake Rotor Adaptors

Brake rotor adaptors are used on Universal Disc front and rear hubs to accommodate ISO and other disc brake systems. These various adaptors are offered in different widths to correctly position disc brake rotors. Be sure to use the adaptor designed for your brake system. Do not attempt to modify your adaptor to work with rotors other than those for which they were designed. Mount the brake rotor according to manufacturer's instructions. Rotor mounting bolts should thread 8mm into the rotor adaptor and must not extend through the brake rotor adaptor or contact the hub.

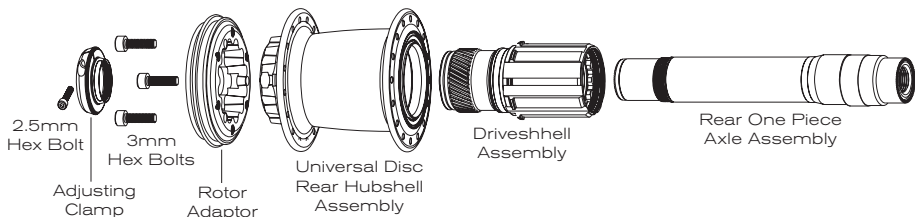


Figure 12

Installation of rotor adaptor (see Figure 12)

Before installation, thoroughly clean both the brake rotor adaptor and the splines on the hub shell. Any debris on the splines may not allow the rotor to run true, inhibiting the performance of the brake.

1. Place the adaptor onto the splines. When snug, the adaptor should leave an even gap approximately the width of a piece of paper between the hub and the adaptor.
2. Insert the three bolts provided. In an alternating pattern, hand tighten adaptor bolts to pull adaptor down evenly.
3. Using a 3mm hex wrench, finish torque to 28 inch pounds. Do not over tighten.

Removal of rotor adaptor (see Figure 12)

1. Remove the disc brake rotor if it covers the three mounting bolts.
2. Remove the three adaptor mounting bolts using a 3mm hex wrench.
3. To remove the rotor adaptor from the tapered splines, pry between the adaptor and the hub using two opposing plastic tire levers (it should pop off easily). Do not use metal objects, such as screw drivers, to release the adaptor.

Hub specifications and

Hub Type	Axle Type	Axle Width (mm)	Flange Diameter Drive Side & non-Drive Side (mm)	Center to Flange Drive Side (mm)
ISO front	two piece	100	57.4	31.3
ISO 15mm SD front	one piece	100	57.4	31.3
ISO 15mm LD front	one piece	100	57.4	31.6
ISO 20mm front	one piece	110	57.4	31.6
ISO 24mm front	one piece	110	57.4	26.5
ISO 135 rear	one piece	135	57.4	20.1
ISO 135 x 10/12mm rear	one piece	135	57.4	20.1
ISO 150 x 10/12mm rear	one piece	150	57.4	25.0
ISO Single Speed rear	one piece	135	57.4	32.3
Universal Disc front	two piece	100	53.0	31.5
Universal Disc rear	one piece	135	53.0	21.0
Universal Disc Single Speed rear	one piece	135	53.0	32.0
Universal Disc rear tandem	two piece	140	53.0	23.5
Universal Disc rear tandem	one piece	145	53.0	26.0
Universal Disc rear tandem	one piece	160	53.0	33.7

Frame Attachment Options

QR: Quick release only

TA: Thru-axle only

QR/FB: Quick release or FunBolts (FunBolts only compatible with rear one piece axle)

Wheel Building Specifications

Spoke Gauge: 13, 14, or 15 gauge

Spoke Lacing Pattern: 3-or-more cross

Spoke Hole Diameter: 2.5mm

Additional Support

Digital movies are available on our website to better help you keep your hubs and headsets performing at their best. Some are narrated by Chris King as he demonstrates proper headset and hub maintenance and overhaul procedures. Check our web site often for updated movies and technical information produced in an effort to help you, our customers, stay on your bike.

Visit: http://chrisking.com/tech/tech_movies.html

wheel building information

Center to Flange non-Drive Side (mm)	Frame Attachment Options	Available Spoke Hole Drilling	Upgrade & Conversion Options	Weight* (grams)
22.2	QR	28, 32, 36	4	166
22.2	15mm TA	32, 36	4	164
23.3	15mm TA	32, 36	5	197
23.3	20mm TA	32, 36	5	207
27.8	24mm TA	32, 36	5	240
33.9	QR/FB	28, 32, 36	1, 3	336
33.9	10/12mm TA	28, 32, 36	1, 3	320**
38.5	10/12mm TA	32, 36	3	336**
31.0	QR/FB	28, 32, 36	-	411***
23.0	QR	32, 36	-	150
34.0	QR/FB	32, 36	1, 3	282
34.2	QR/FB	32, 36	-	427***
31.5	QR	32, 36	2, 3	284
29.0	QR/FB	32, 36	3	366
33.7	QR/FB	32, 36	3	388

Upgrade & Conversion Options

- 1: Convertible to 135mm QR/FB axle, 135 x 10mm TA, 135 x 12mm TA, and 135mm two piece QR axle
- 2: Convertible to 130mm, 135mm, and 140mm axle widths when using a two piece axle
- 3: Convertible to stainless steel driveshell
- 4: Convertible to QR and 15mm thru axle
- 5: Convertible to 15mm and 20mm thru axle, and 24mm axle

Small Parts Weights

- * Add 48g if hub features a stainless steel driveshell
- ** Add 5g if using 10mm thru axle
- *** Weight includes 18t stainless steel cog (37g), single speed cog spacers (6g) single speed cog lock ring (4g) and FunBolts (42g)

Additional questions? Please email us at info@chrisking.com or call the Customer Service hotline at 800-523-6008.

Warranty

Chris King Precision Components warrants its hub products 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 of the Chris King product. 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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