



## R45 & R45 Disc Hub Manual

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Chris King hub cone adjusting tool	
Pen knife or dental pick	
2.5mm hex wrench	
5mm hex wrench x 2	
Small flat head screwdriver	
Chris King Ringdrive Lube 2.0	
A light spray lubricant (e.g., WD-40™)	
A lightweight, low viscosity oil, with PTFE (e.g., TriFlow™)	
Bench Vise	
Cassette lockring tool	
BB cup install tool (Centerlock™ tool)	

## 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 rear hubs feature our patented RingDrive™ engagement system spinning around an aluminum axle on four sets of precision made-in-house bearings. This combination, housed in an elegant aluminum shell, provides the performance and reliability that serious cyclists demand. Like all of our components, our R45™ and R45™ Disc hubs are user serviceable.

## Cautions

If your Chris King hub ever fails to engage while riding, it is important to cease riding immediately until either Chris King Precision Components or an Authorized Dealer has addressed the issue and serviced the hub per the manufacturer’s recommendations. Failing to do so may lead to serious personal injury and death.

Chris King R45 100x9mm, 130x10mm, and R45 Disc 100x9mm, and 135x10mm hubs are designed to be used in conjunction with quick-release skewers. It is recommended that the skewer develop a minimum of 4900N of clamping force when set. For best performance, use skewers with steel shafts. Titanium shafted skewers are not recommended.

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

For the aluminum driveshells on the R45 rear hubs we recommend using “spidered”-style cassettes. Avoid using individual cog-style cassettes with aluminum driveshells. We recommend using our aluminum or Ti cassette lock rings when installing 9, 10, and 11-speed drivetrains.

The Campagnolo-compatible R45 hub uses dedicated cassette lockrings. An 11-tooth lockring is included with each hub. A 12-tooth cassette lockring (part # PHB757) is available from any authorized Chris King dealer, or directly from Chris King Precision Components ([www.chrisking.com](http://www.chrisking.com)).

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.

# Preparation

## Wheel building

- **Hub dimensions and restrictions for wheel building are available on pages 12 and 13.**

Chris King R45 and R45 Disc hubs are designed to work with 13, 14 and 15 gauge spokes. We will not be responsible for damaged or destroyed hubs, any consequential damages, or any resulting labor costs due to improper lacing of your R45 and R45 Disc hub. 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 new hub.

# Hub Identification

## Two Piece Axle

The front R45 and front R45 Disc QR hubs use a two-piece axle and adjusting cone to adjust and lock the bearing preload adjustment. Two piece axle disassembly, reassembly and adjustment procedures can found on page 5 and 6.

## One Piece Axle

The rear R45 and rear R45 Disc Hubs use a one piece axle and adjusting clamp to adjust bearing preload. **One piece axle disassembly, reassembly and adjustment procedures can be found on pages 3, 5, 6 and 9.**

# Setup

## R45 and R45 Disc front

Chris King R45 and R45 Disc front hubs are designed to work with 100mm fork dropout spacing. Do not attempt to use your hub with any other dropout spacing.

## R45 and R45 Disc rear

Chris King R45 rear hubs are designed to work with 130mm frame spacing. Chris King R45 Disc rear hubs are designed to work with 135mm QR and 142mm Thru-Axle frame spacing. Do not attempt to use your hub with any other dropout spacing. Hubs 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 and 8, and check the hub before using. Do not modify or alter any Chris King axle system to accept thru-bolt or bolt-on retention devices.

## R45D CenterLock™ hubs

The Chris King Centerlock™ rotor mounting system is licensed from Shimano®. Centerlock™ is a proprietary mounting system that requires a Shimano® lockring to complete installation of rotor. Chris King R45 Disc CenterLock™ hubs are compatible with the following Shimano® lockrings:

- **Front** (Y8K198010) – Typically supplied with genuine Shimano rotor. Optionally, (Y26N98030) can be run to match the required rear lockring (typically sold as an aftermarket part, also available direct through Chris King under part number PHB355).
- **Rear** (Y26N98030) – Typically sold as an aftermarket part, also available direct through Chris King under part number PHB355 (required).

For CenterLock™ rotor installation instructions see page 3.

\*Note rotors should only be installed once wheel build is completed.

## 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. Ride for 5-10 minutes, check for play or binding, and readjust clamp or cone if necessary. Recheck after the first 1-5 hours of riding. Check cassette 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 in the rear while back-pedaling, increase the B-tension (cage tension) on the rear derailleur.

A small amount of grease or oil may seep at the bearing seals during the break-in period.

# Centerlock Rotor Installation

## Front Hubs:

Please follow rotor manufacturer’s installation instructions.

## Rear Hubs:

Before installing the rear Centerlock rotor the adjusting clamp must be removed.

Follow steps below for removal, installation and setting hub preload.

### **Clamp Removal:**

1. Loosen 2.5mm hex bolt on adjusting clamp and then remove R45 QR Insert from main axle assembly by pulling it directly out of the non-driveside of axle. [Note: If the QR Insert is difficult to remove by hand, insert a long P-Handle or L-shaped 5mm hex wrench into the driveside of the axle. The QR Insert should remove with a light tap to the exposed hex wrench from a plastic or rubber mallet.]
2. Unscrew adjusting clamp and remove it from axle. By pulling onto the adjusting clamp, once free from the threads will also remove steel axle end caps on thru axle assemblies. [Note: If the Axle End Cap is difficult to remove using only the adjusting clamp, use a small flat-head screwdriver and insert it into the Axle End Cap slot, twist the screwdriver and the Axle End Cap should come off with the screwdriver.]
3. At this point the Centerlock rotor (or Centerlock to 6-bolt adapter) can be installed. Make sure to follow rotor manufacturer's instructions. (Use Shimano Y26N98030/ Chris King# PHB355 Lockring on rear hubs)

### **Clamp Installation:**

1. Thread adjusting clamp onto the protruding threads on the non-driveside of axle.
2. On QR axles, insert R45 QR insert into non-driveside axle end. On 142mm x 12mm thru axles, ensure steel axle end cap is snapped onto axle by pressing the axle end cap by hand.
3. Snug adjusting clamp up-to bearing.

### **Rear Hub Adjustment:**

The R45D Centerlock rear hub features an adjusting clamp and bearing spacer spring that maintain proper bearing preload and seating.

1. Secure the hub/wheel into the bike or truing stand with quick release or frame thru axle system.
2. Push the hubshell toward the driveside. This compresses the bearing spacer spring in the driveshell and ensures proper bearing seating.
3. While maintaining pressure on the hubshell, tighten the adjusting clamp onto axle until it stops against bearing. Do not over tighten.
4. Once adjusting clamp is in position, tighten adjusting clamp with a 2.5mm hex key to 1.13 Nm (10 inch-pounds).
5. Double check adjustment by attaching wheel to bicycle frame. Check for bearing play or binding, and readjust adjusting clamp if needed.

## **Maintenance**

### **Rear Hub Maintenance schedule**

Chris King R45 and R45 Disc Hubs are designed to provide long life and high performance. Beyond an occasional adjustment, the only maintenance necessary is cleaning and lubricating the RingDrive (see "The RingDrive", pg. 8), and re-lubricating the bearings (see "Service of the bearings", pg. 10). Riding conditions will determine how often to service your hubs. As a beginning guideline, your hubs should be serviced every 12-24 months in normal and dry conditions and every 3-6 months in wet or muddy conditions.

The Chris King bearings in your new hub are of the highest quality. However angular contact bearings will settle and eventually wear in 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. 3, 5, 6 and 9).

### **Notes on RingDrive™ maintenance**

Normal preventative maintenance of the RingDrive is simple and can be performed using basic tools (see "The RingDrive", pg. 8). In many cases, a minor cleaning and reapplication of lubricant is all that may be necessary. The interval to perform this basic maintenance is determined by riding style and conditions. As a beginning guideline, your hubs should be maintained every 12-24 months in normal and dry conditions and every 3-6 months in wet or muddy conditions.

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 R45 Hub Service Tool. See any authorized Chris King dealer for complete service or you may purchase a R45 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 Chris King Customer Service at 800-523-6008 or email us at [info@chrisking.com](mailto:info@chrisking.com) for details.

# Lubrication

## Normal conditions

### Lubrication of the R45 RingDrive™

We recommend using RingDrive Lube 2.0 on the RingDrive assembly and helical splines on the driveshell. RingDrive Lube 2.0 provides optimal low drag, low viscosity lubrication for our R45 and R45 Disc RingDrive system. RingDrive lube is also acceptable. Do not substitute other brands of lubricant as they may be too sticky for the helix of the RingDrive and cause hub engagement problems and premature wear.

## Cold conditions

To ensure proper engagement in sub-freezing conditions, first be sure that there is no water or moisture inside the hubshell. The hub may require an overhaul to ensure that the hub interior is completely water-free. RingDrive Lube 2.0 works well over a wide range of temperatures, even in subzero conditions. **Do not overfill.**

## Wet conditions

Riding in wet conditions necessitates more frequent service. Often this is as simple as removing the axle and driveshell from the hub and removing any moisture from inside the hub shell. 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.

**If you have any additional questions, please call our Technical Services Department at 800.523.6008, or check out our website for tech info and videos: [www.chrisking.com](http://www.chrisking.com)**

## Disassembly of (2-piece axle) front R45 and front QR R45 Disc Hub

1. Insert 5 mm hex wrenches into both ends of axle assembly.
2. Hold right hand stationary and turn left 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. 8.**

### Reassembly of (2-piece) front R45 and front QR R45 Disc Hub

1. Lightly grease threads on axle, adjusting cone and axle end. Apply two drops of lightweight, low viscosity oil, with PTFE ( e.g. TriFlow™ ) to axle O-rings.
2. Insert main axle into the non-driveside 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 and apply a thin layer of waterproof grease to the threads.
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 R45 & R45 Disc”, next.

### Adjustment of 2-piece axle on front R45 and R45 Disc Hub

1. Insert 5 mm hex wrenches into both ends of axle assembly.
2. Hold right hand stationary and turn left 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). For precise adjustment the use of a Chris King Hub Cone Adjusting Tool may be necessary. Hub cone adjusting tools are available from any authorized Chris King dealer, or directly from Chris King Precision Components ([www.chrisking.com](http://www.chrisking.com)).
5. Once preload is set, tighten axle assembly to **12.4Nm (110 inch-pounds)**.
6. Double check adjustment by clamping wheel into fork with quick-release. Check for play or binding, and readjust if needed.

### Reassembly of one-piece axle on R45D front hub

1. Lightly grease threads on adjusting clamp. Apply two drops of Tri-flow™ to axle O-ring.
2. Insert the axle into the hubshell from the disc mount side.

3. Thread the adjusting clamp onto the protruding threads of the axle.
4. Snug the adjusting clamp up to the bearing. Note: R45D 12mm hubs feature a steel axle end cap that must be hand-pressed back onto the end of the axle.
5. Proceed to “Adjustment of one-piece axle on R45D front hub”, below.

#### **Adjustment of one-piece axle on R45D front hub**

The one-piece axle features an adjusting clamp which minimizes over tightening or over pre-loading 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.

## **R45 and R45 Disc basic service**

### **R45 front hub maintenance**

Follow “Disassembly, Reassembly and Adjustment of two piece axle on front R45 and R45 Disc hub” instructions on pages 5 and 6. Hub bearings can be lubricated with RingDrive Lube. For bearing service information see “Service of the bearings”, pg. 8.

### **R45 and R45 Disc rear hub service**

Follow these instructions for a basic cleaning, relubrication, and bearing preload procedure.

Refer to the schematics of this manual for specific part listing.

For a more comprehensive service, including a thorough cleaning, inspection and replacement of parts, and removal of hub bearings, an R45 Hub Service Tool is required. R45 Hub Service Tools are available from any authorized Chris King dealer, or directly from Chris King Precision Components ([www.chrisking.com](http://www.chrisking.com)).

### **Campagnolo-compatible R45 rear hub**

The Campagnolo-compatible R45 and R45 Disc rear hub operates in the same way as the Shimano and SRAM compatible R45 hub, with a few differences. The Campagnolo-compatible R45 hub uses dedicated driveshell, non-disc specific axle, disc specific axle, spacer spring, outboard bearing, bearing sleeves and cassette lockrings. An 11-tooth lock ring is included with each hub. A 12-tooth

cassette lock ring is available from any authorized Chris King dealer, or directly from Chris King Precision Components, ([www.chrisking.com](http://www.chrisking.com)).

### **Disassembly of rear R45 and R45 Disc hub**

1. Remove skewer, cassette lockring, cassette and disc rotor from hub.
2. Loosen 2.5mm hex bolt on adjusting clamp and then remove R45 QR insert or axle end cap on thru axles from main axle assembly by pulling it directly out of the non-driveside of axle.
3. Unscrew adjusting clamp and remove it from axle. [Tech Tip: if adjusting clamp is difficult to loosen, first insert a 5mm hex key into drive side axle end to keep axle stationary. Then insert a 2.5mm hex key into helper hole on adjusting clamp adjacent to 2.5mm hex bolt. Use 2.5mm hex key as a lever to unscrew adjusting clamp.]
4. Remove driveshell and axle by holding hubshell or wheel in one hand and with other hand pull driveshell out of the hubshell assembly while rotating counter clockwise.
5. Remove the axle by following the corresponding instructions below.
  - Shimano/Sram HG: Remove axle from the driveshell by pushing it through from the non-driveside. [Tech note: The outboard driveshell bearing may or may not remain on the axle as it is pushed out of the hubshell assembly.]
  - Campagnolo: Remove axle from the driveshell by pushing it through from the non-driveside. [Tech note: The outboard driveshell bearing will remain on the axle.]
  - XDR: Remove the axle from the driveshell by holding the driveshell securely and pressing the non-driveside axle end against a firm surface. The Driveshell End Cap will be pushed out by the outboard driveshell bearing. The outboard driveshell bearing will remain on the axle. To remove the bearing from the axle, push the bearing toward the non-driveside, exposing the silver Axle Wedge. Remove the silver Axle Wedge from the axle with a pick or flat-head screwdriver. Remove the bearing.
6. Remove the bearing from the axle by following the corresponding instructions below.
  - Shimano/Sram HG: Remove the bearing from the axle by sliding it off toward the non-driveside end of the axle.
  - Campagnolo: Remove the bearing retainer sleeve by pulling it off the driveside of the axle. Once removed, the bearing will slide off the same direction.

- XDR: Push the bearing toward the non-driveside, exposing the silver Axle Wedge. Remove the silver Axle Wedge from the axle with a pick or flat-head screwdriver. Remove the bearing.

### Rear hub basic cleaning

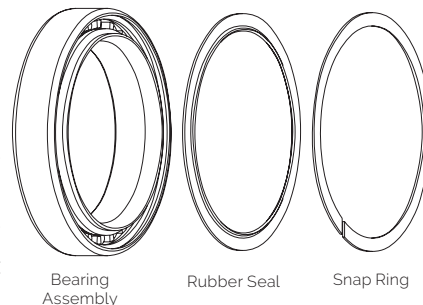
Chris King sealed bearings have removable snap-rings that hold the rubber seals in place, it is recommended bearing and RingDrive service are performed simultaneously. For detailed bearing service steps see “Service of the bearings” below.

1. Once hub is disassembled thoroughly flush the RingDrive assembly with a light solvent-based spray lubricant (e.g., WD-40™). Do not use citrus-based cleansers as they are corrosive and will damage hub parts. 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.
2. Using a toothbrush, scrub bearing surfaces, RingDrive splines and teeth, and helical splines on driveshell to remove hardened grease and contaminants.
3. Flush bearing and RingDrive assembly again with a light solvent-based spray lubricant.
4. Use compressed air to blow all spray lubricant, old grease and contaminants out of the bearings and hubshell. If compressed air is not available, use a clean, lint-free towel to thoroughly wipe out interior of hub assembly and bearing surfaces. Bearings, RingDrive and hub interior must be completely dry and free of solvents before adding new lubrication.
5. Wipe dirt and other contaminants from the seals and snap rings. Avoid cleaning the seals with heavy-duty solvent, which could cause deterioration.

### Service of the bearings

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

1. Carefully, using a very 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. [Tech Tip: Carefully note it's orientation.]
3. Thoroughly flush the bearing with a light spray lubricant (e.g., WD-40™) and blow dry.

**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.**

1. Wipe dirt and other contaminants from the seals and snap rings. Avoid cleaning the seals with solvent, which could cause deterioration.
2. Lubrication of the R45 bearings. For R45 bearings with stainless steel balls, apply enough Premium Bearing Grease to lightly coat the balls inside the bearing (approximately .3ml) of RingDrive Lube 1/4 to 1/2 way around the top of the hub bearings. For R45 bearings with ceramic balls, apply enough RingDrive Lube to lightly coat the balls inside the bearing, using approximately .1ml (a pea-sized amount) of lube. This can be accomplished by applying a light bead of lube 1/8 to 1/4 of the way around the bearing. Rotate the inner race to work the lube throughout the ball area. In wet and/or muddy conditions, apply more lube to the bearings to help seal the bearings from contaminants.
3. Reinstall black rubber seal between inner and outer bearing race. If using the original seal, reinstall using the same orientation as when they were originally installed, as this will minimize drag.
4. Turn inner race of bearing by hand to test for binding. If bearings do not run smooth, repeat steps 1-7. Binding is often a result of improperly seated seals and/or snap rings.

Used snap rings and seals can be reinstalled unless 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 ([www.chrisking.com](http://www.chrisking.com)).

### Rear hub basic lubrication

1. Apply 1 to 2 mL of 10w synthetic oil on the helical splines between the drive and driven rings by depressing the drive ring spring inside the hubshell assembly.
2. Apply a drop of lightweight, low viscosity oil, with PTFE ( e.g. TriFlow™) onto O-ring on driveshell, both O-rings on axle and O-ring on QR adaptor.
3. Apply a thin layer of grease onto clean threads on adjusting clamp and adjusting clamp 2.5 mm hex screw.

## Rear hub basic reassembly

1. 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. To ensure driveshell is fully seated insert small pick or screwdriver into the hub from the non-driveside and push against the spring retainer.
2. If outboard driveshell bearing is separated from axle, slide it onto the axle with the seal and snap ring facing the driveside and the white bearing retainer facing the non-driveside.
  - Shimano/Sram HG: Slide the bearing onto the axle from the non-driveside until it is seated past the axle o-ring.
  - Campagnolo: Slide the bearing onto the axle from the driveside. Slide the Axle Bearing Retainer Sleeve onto the axle from the driveside until it seats into place.
  - XDR: Slide the bearing onto the axle from the driveside. Slide the bearing past the Axle Wedge groove and o-ring. Install the Axle Wedge by sliding it onto the axle from the driveside. Slide the bearing over the o-ring and onto the axle wedge until it seats into place.
3. Insert the Driveshell Spring into the driveshell, followed by the driveshell o-ring.
4. Apply a light film of grease to the inside surface of the driveshell that is still exposed.
5. Insert main axle, threaded (non-driveside) end first into driveshell. Continue until axle is through the hub and driveside end is firmly seated in driveshell.
  - XDR: Inset the Driveshell End Cap. Be sure the Driveshell End Cap is perpendicular to the driveshell opening to avoid damaging the o-ring.
6. Thread adjusting clamp onto the protruding threads on the non-driveside of axle.
7. Insert R45 QR insert into non-driveside axle end (if applicable).
8. Install Axle Ends (if applicable).
9. Snug adjusting clamp up to bearing.

## Rear hub adjustment

The R45 and R45 Disc rear hubs features an adjusting clamp and bearing spacer spring that maintain proper bearing preload and seating.

1. Secure the hub/wheel into the bike or truing stand with quick release or frame thru axle system.

2. Push the hubshell toward the driveside. This compresses the bearing spacer spring in the driveshell and ensures proper bearing seating.
3. While maintaining pressure on the hubshell, tighten the adjusting clamp onto axle until it stops against bearing. Do not over-tighten.
4. Once adjusting clamp is in position, tighten adjusting clamp with a 2.5mm hex key to 10 inch-pounds (1.13 Nn).
5. Double-check adjustment by attaching wheel to bicycle frame. Check for bearing play or binding, and readjust adjusting clamp if needed.

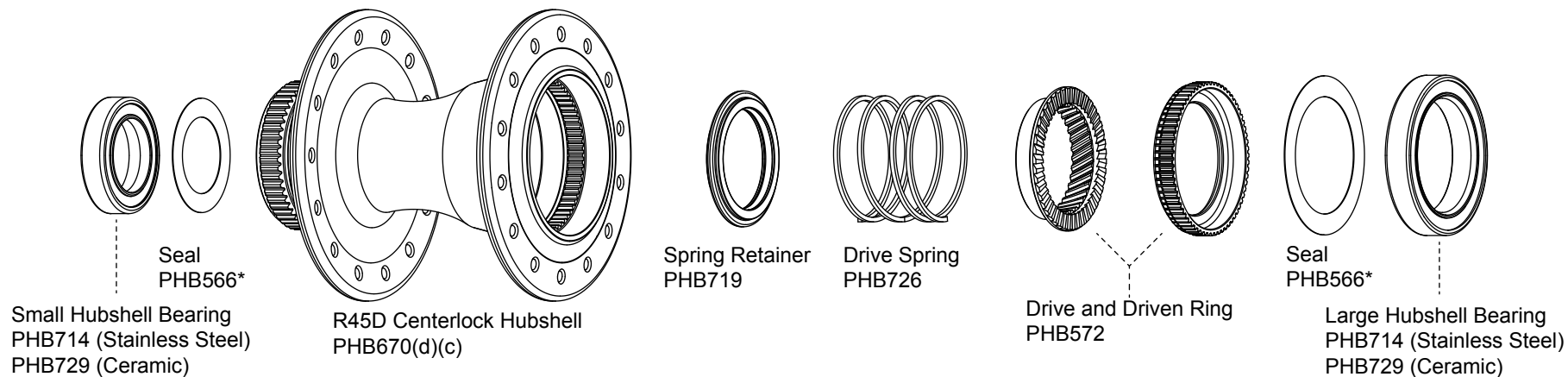
**Note: Correct adjustment of the rear hub is necessary for proper engagement of the RingDrive. If the hub is run loose, the RingDrive may not engage properly and could lead to permanent damage of the internal parts and hubshell.**

## Additional Support

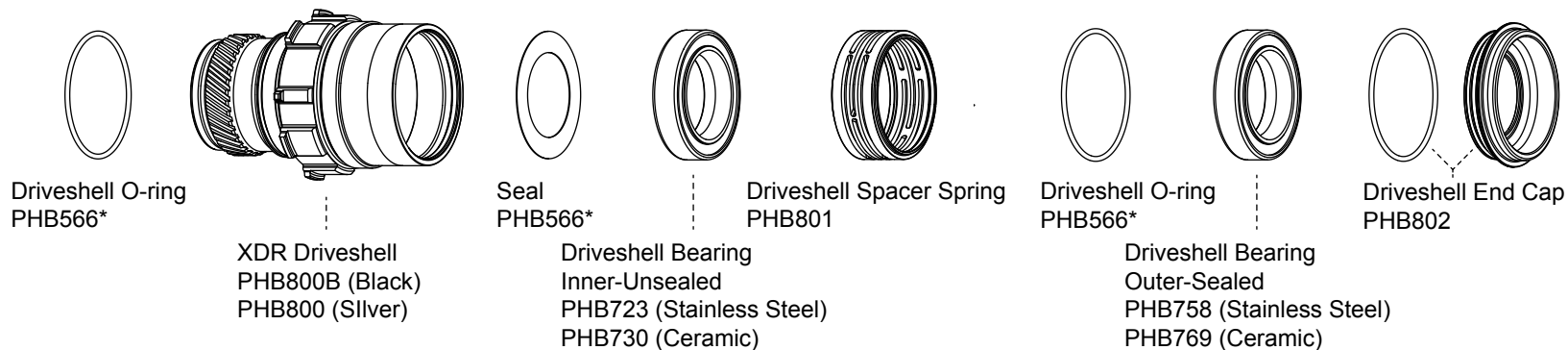
Check our web site often for updated technical information produced in an effort to help you, our customers, stay on your bike.

**Additional questions? Please email us at [info@chrisking.com](mailto:info@chrisking.com) or call Chris King Customer Service at 800-523-6008. Monday through Friday, 8am - 5pm Pacific time.**

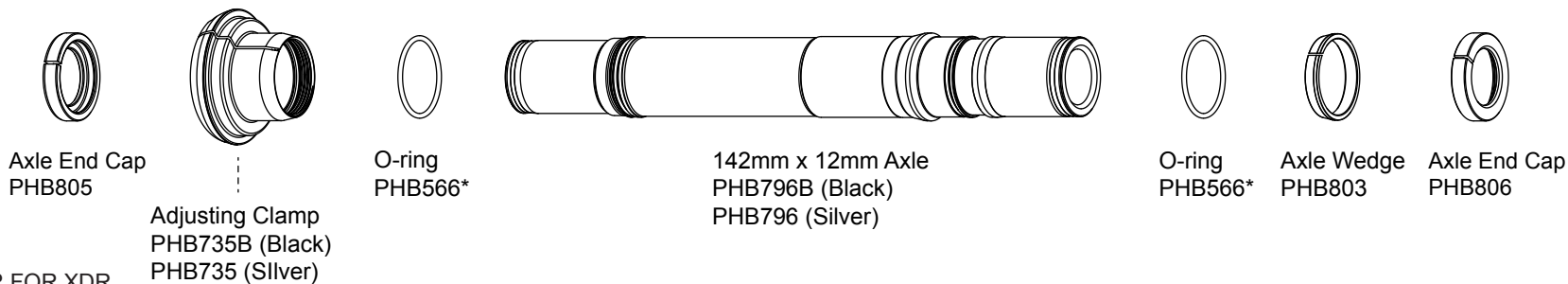
**R45D CENTERLOCK EXPLODED DIAGRAM**



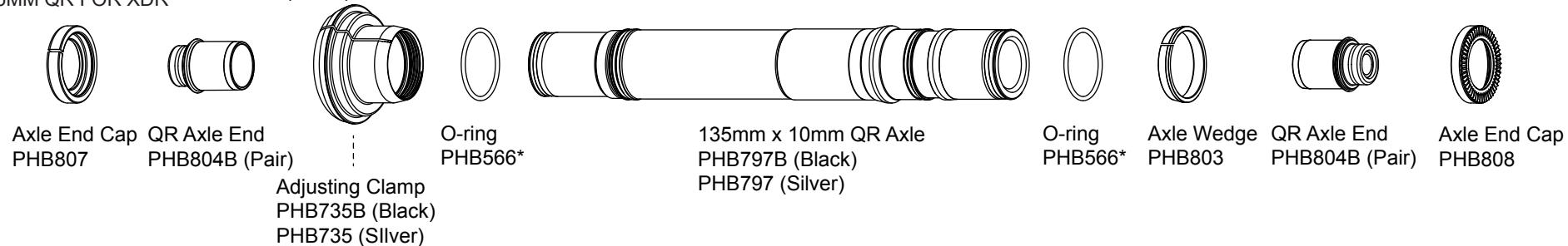
**XDR DRIVESHELL**



**142MM X 12MM (THRU AXLE) FOR XDR**



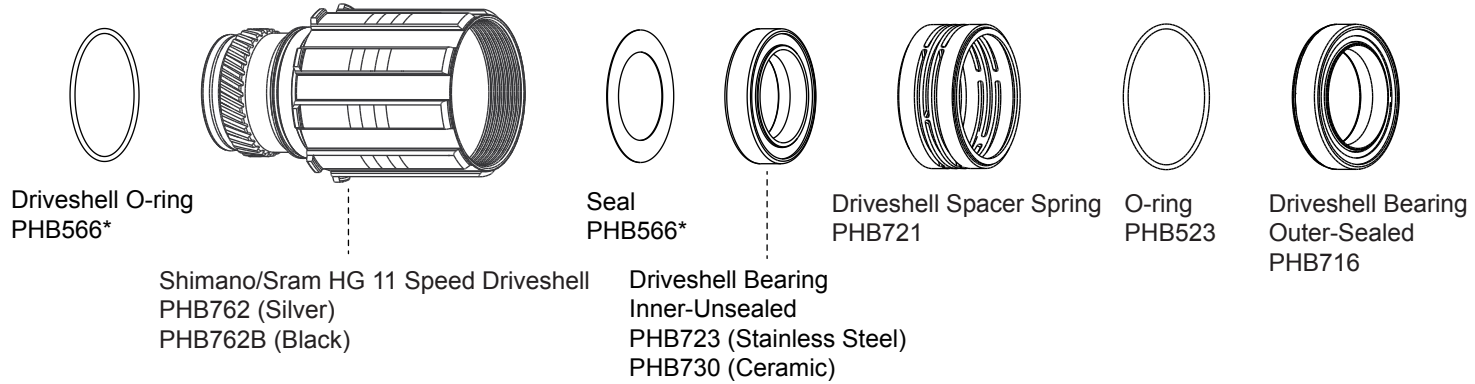
**135MM QR FOR XDR**



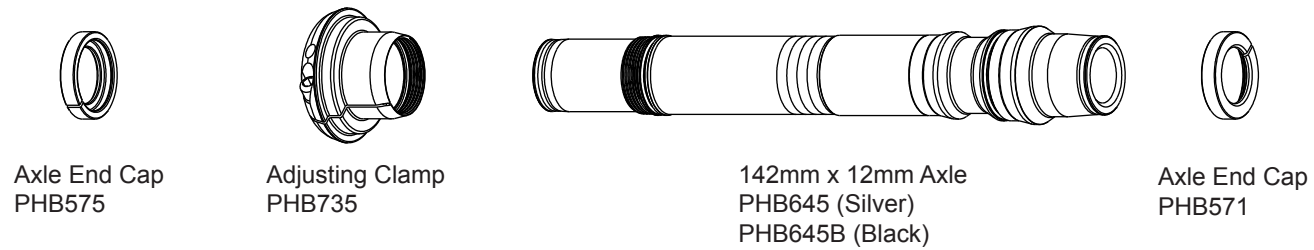


**R45D CENTERLOCK EXPLODED DIAGRAM**

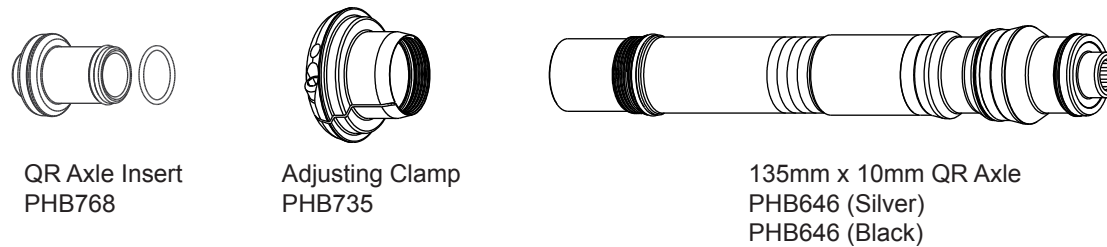
SHIMANO / SRAM HG 11-SPEED



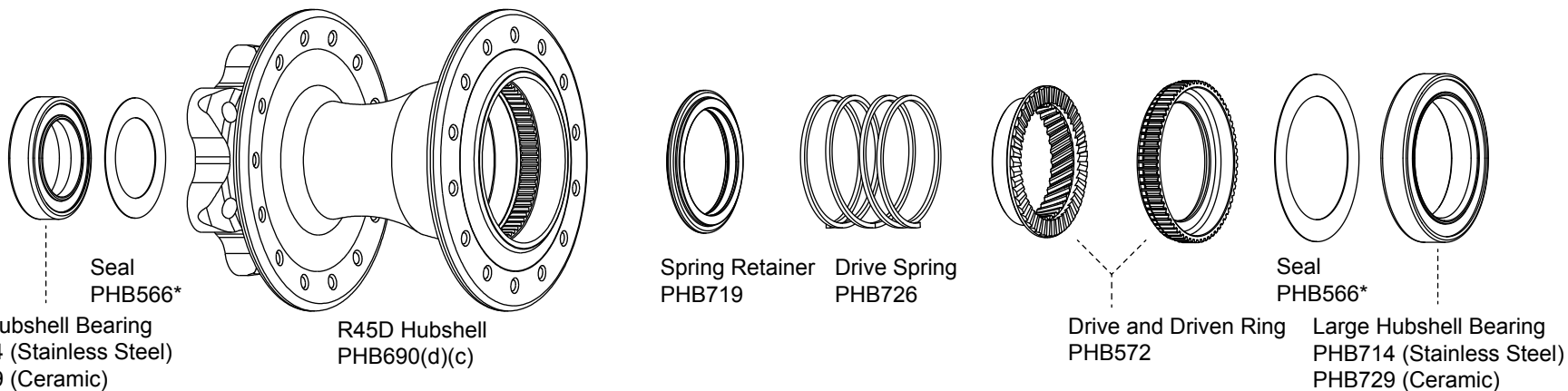
142MM X 12MM (THRU AXLE) FOR SHIMANO/SRAM HG



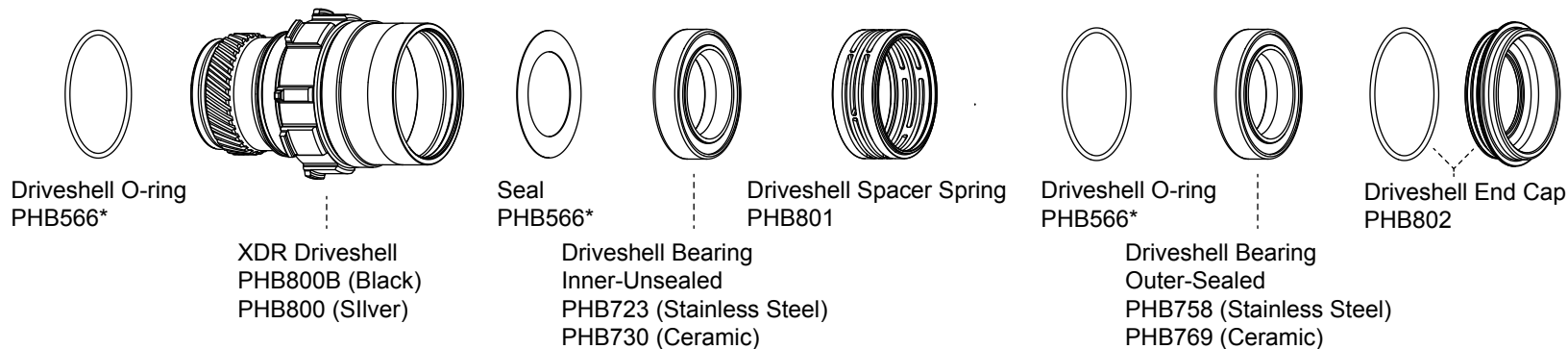
135MM QR FOR SHIMANO/SRAM HG



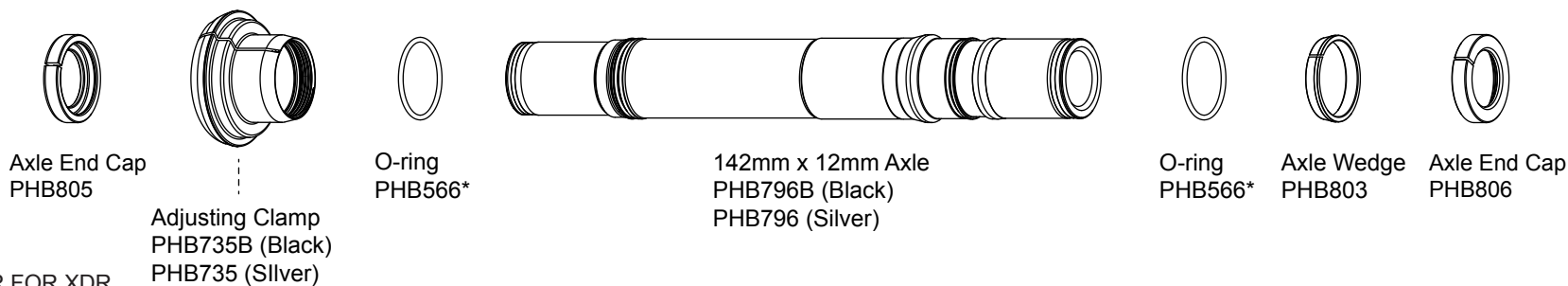
**R45D 6-BOLT Gen. 2 EXPLODED DIAGRAM**



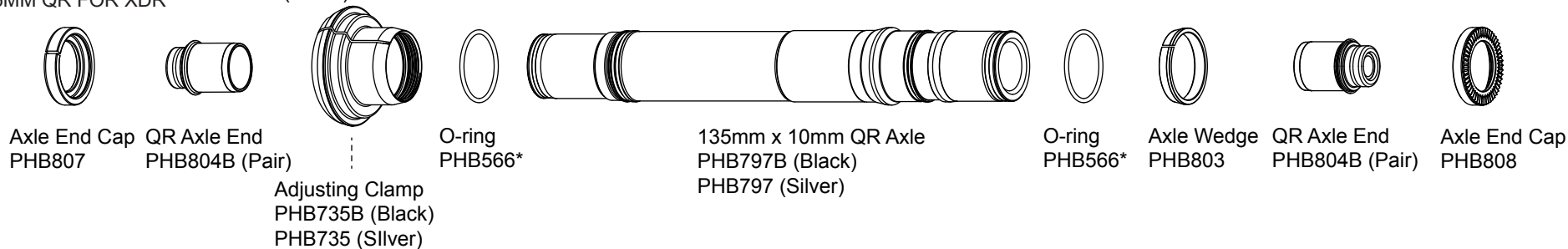
**XDR DRIVESHELL**



**142MM X 12MM (THRU AXLE) FOR XDR**

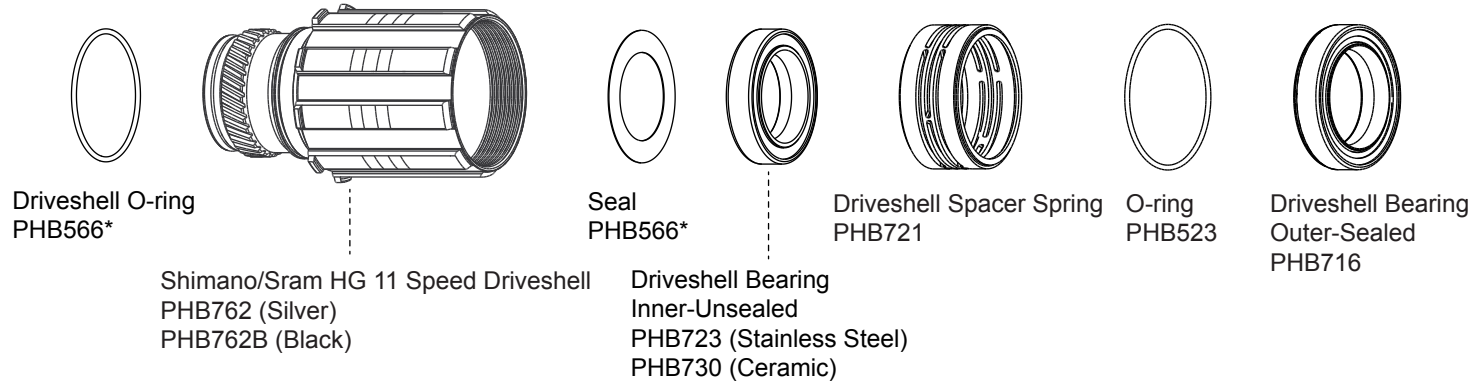


**135MM QR FOR XDR**

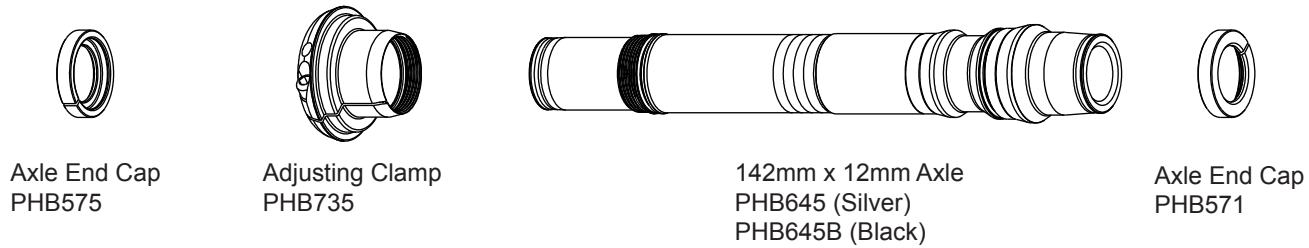


**R45D 6-BOLT Gen. 2 EXPLODED DIAGRAM**

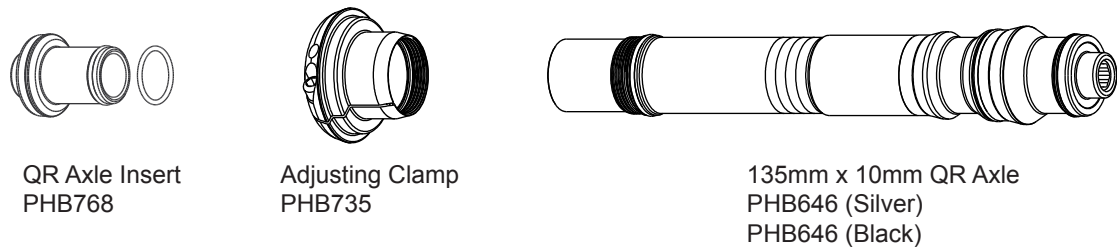
SHIMANO / SRAM HG 11-SPEED



142MM X 12MM (THRU AXLE) FOR SHIMANO/SRAM HG

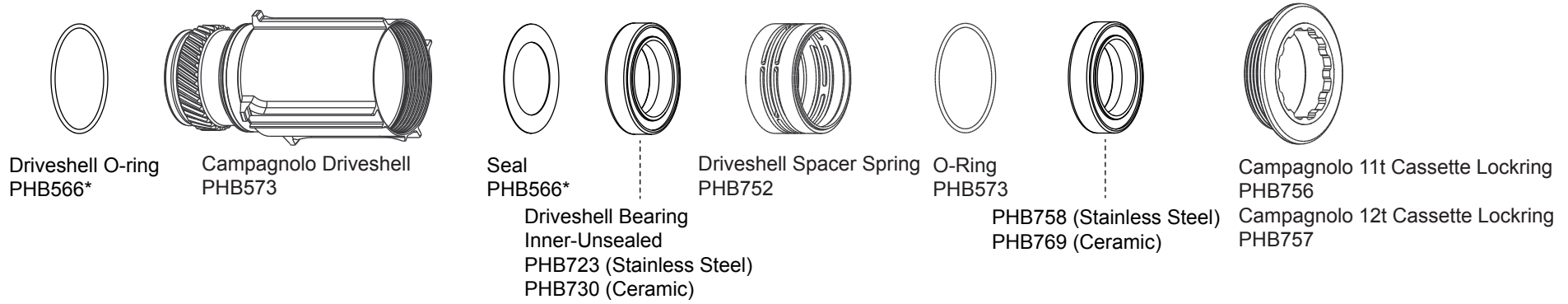


135MM QR FOR SHIMANO/SRAM HG

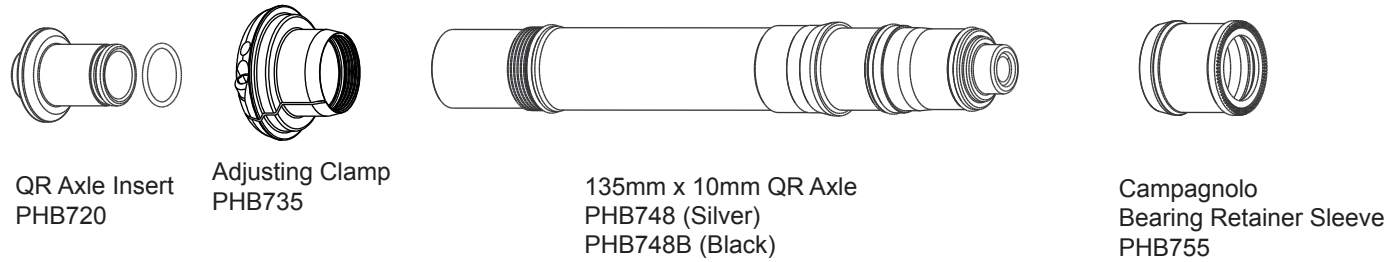


**R45D 6-BOLT Gen. 2 EXPLODED DIAGRAM**

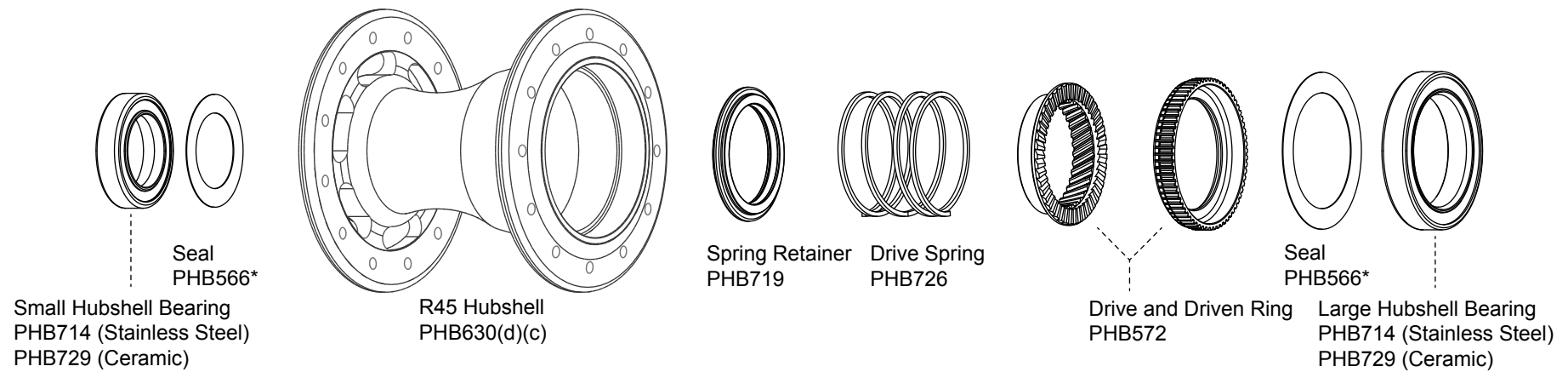
**CAMPAGNOLO**



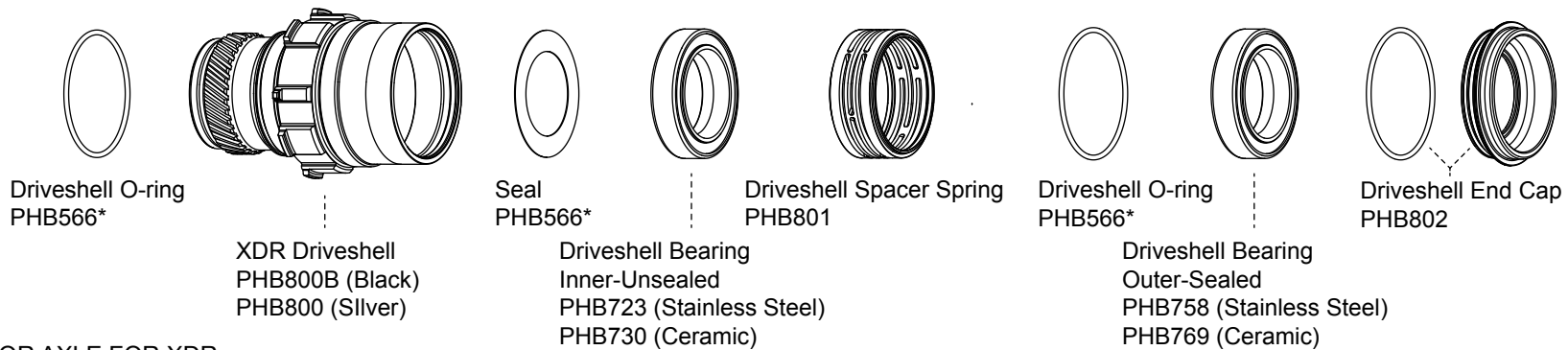
**135MM QR FOR CAMPAGNOLO**



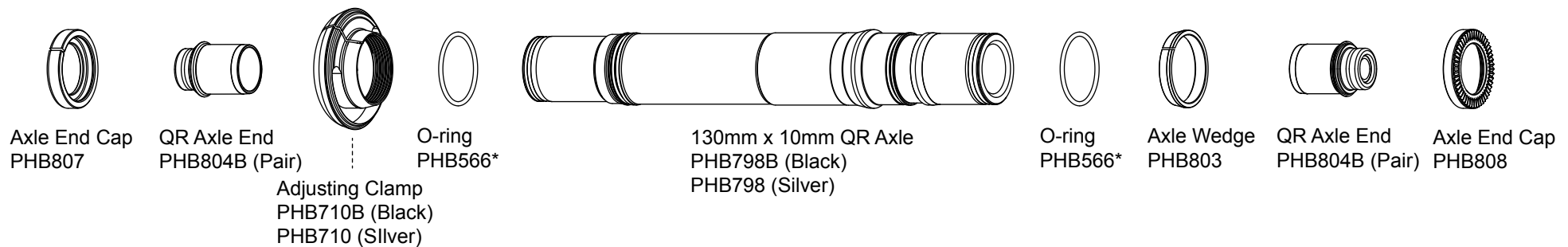
**R45 EXPLODED DIAGRAM**



**XDR DRIVESHELL**

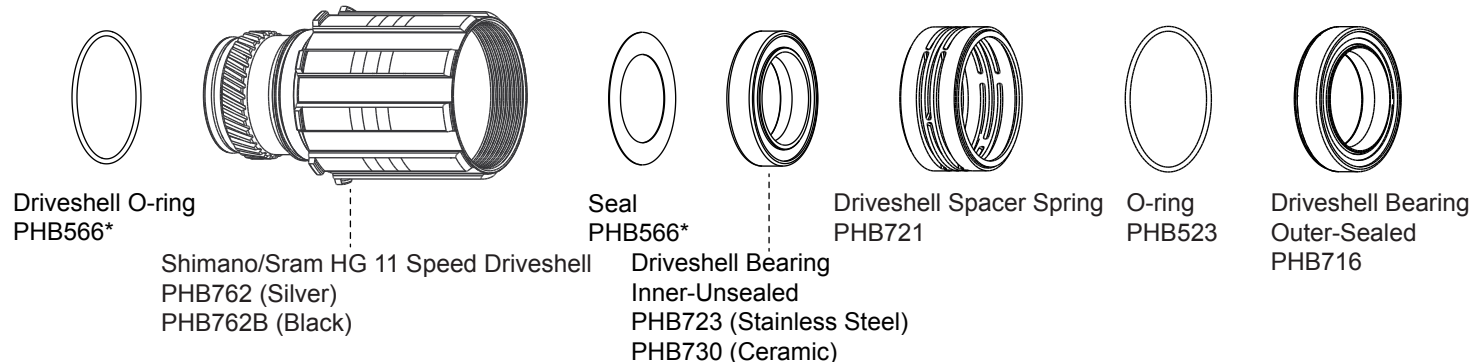


**130MM QR AXLE FOR XDR**

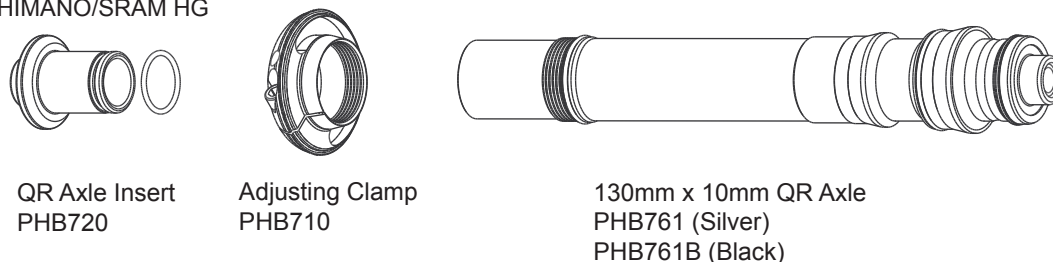


**R45 EXPLODED DIAGRAM**

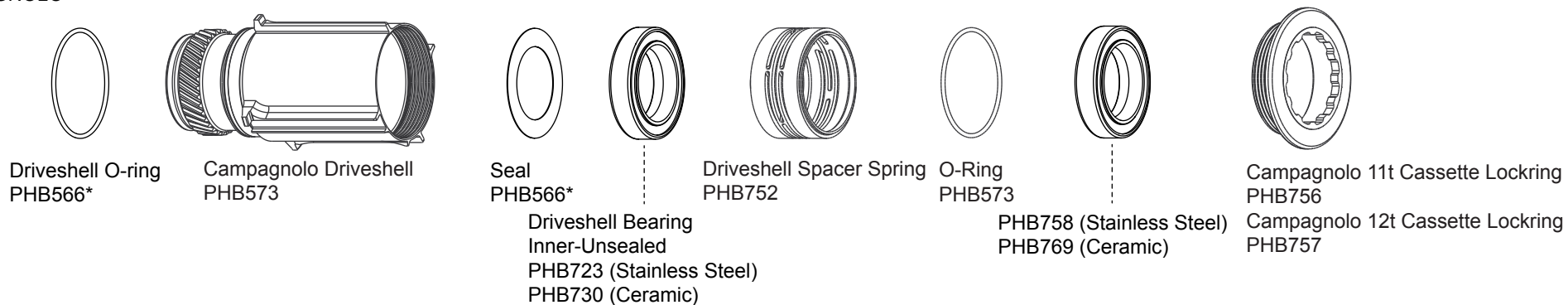
**SHIMANO / SRAM HG 11-SPEED**



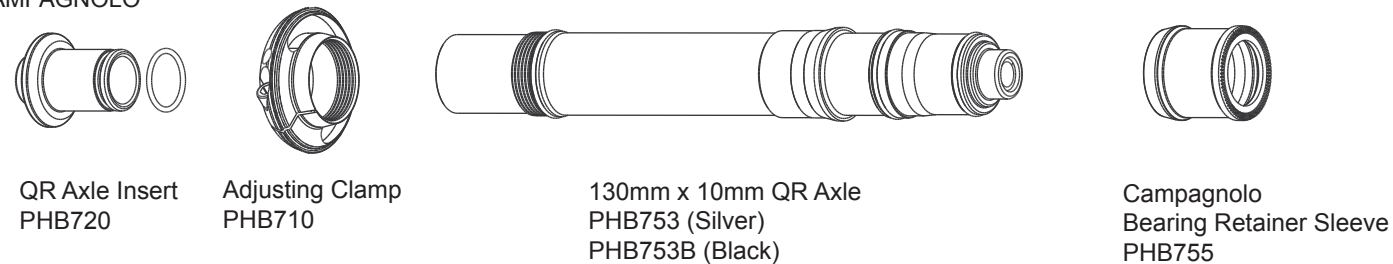
**130MM QR FOR SHIMANO/SRAM HG**



**CAMPAGNOLO**



**130MM QR FOR CAMPAGNOLO**



# R45 and R45D Hub Specifications and Wheel Building Info

Hub Type	Axle Type	Axle Width (mm)	Flange Diameter Drive Side and non-Drive Side(mm)	Center to Flange Drive Side (mm)	Center to Flange Non-Drive Side (mm)	Frame Attachment Options	Available Spoke Hole Drilling	Upgrade and Conversion Options	Weight – Steel (grams)	Weight – Ceramic (grams)
R45 Front	two piece	100	39.8	34.8	34.8	QR	16, 18, 20, 24, 28, 32	-	103	99
R45 Rear	one piece	130	51.0	17.0	34.3	QR	20, 24, 28, 32	1	224	218
R45 Campagnolo Rear	one piece	130	51.0	17.0	36.3	QR	20, 24, 28, 32	-	240 <sup>a</sup>	231 <sup>a</sup>
R45 Disc QR Front	two piece	100	57.4	30.6	22.3	QR	24, 28, 32	2	161	157
R45 Disc 100mm x 12mm TA Front	one piece	100	57.4	30.6	23.3	12mm TA	24, 28, 32	-	160	156
R45 Disc QR Rear (Gen 1)	one piece	135	57.4	19.3	34.3	QR	24, 28, 32	3	276	271
R45 Disc Campagnolo QR Rear (Gen 1)	one piece	135	57.4	19.3	34.3	QR	24, 28, 32	-	295 <sup>a</sup>	286 <sup>a</sup>
R45 Disc 142mm x 12mm Rear (Gen 1)	one piece	142	57.4	19.3	34.3	12mm TA	24, 28, 32	-	274	269
R45 Disc Centerlock QR Front	two piece	100	57.4	30.6	22.2	QR	24, 28, 32	2	144	140
R45 Disc Centerlock 100mm x 12mm TA Front	one piece	100	57.4	30.6	22.2	12mm TA	24, 28, 32	-	143	139
R45 Disc Centerlock 135mm QR Rear	one piece	135	57.4	18.7	33.0	QR	24, 28, 32	3	267	262
R45 Disc Centerlock 142mm x 12mm Rear	one piece	142	57.4	18.7	33.0	12mm TA	24, 28, 32	-	266	261
R45 Disc Centerlock Campagnolo 135mm QR Rear	one piece	135	57.4	18.7	33.0	QR	24, 28, 32	-	277 <sup>a</sup>	272 <sup>a</sup>
R45 Disc 135mm QR Rear (Gen 2)	one piece	135	57.4	18.7	33.0	QR	24, 28, 32	3	278	273
R45 Disc Campagnolo 135mm QR Rear (Gen 2)	one piece	135	57.4	18.7	33.0	QR	24, 28, 32	-	289 <sup>a</sup>	284 <sup>a</sup>
R45 Disc 142mm x 12mm Rear (Gen 2)	one piece	142	57.4	18.7	33.0	12mm TA	24, 28, 32	-	275	270
<b>Weight Details</b>					<b>Upgrade and Conversion Options</b>					
<sup>a</sup> Campagnolo hubs come with an 11-tooth lock ring (5.5g). Optional 12-tooth lock ring available aftermarket.					1. Convertible to Campagnolo driveshell, requires a kit and an axle 2. Convertible to 12mm TA, requires an axle 3. Convertible to 142x12mm TA, requires an axle					
<b>Wheel Building Specifications</b>					<b>Gen 1 &amp; Gen 2 Serial Prefix</b>					
Spoke Gauge: 13, 14, or 15 gauge					Gen 1 - 6510					
R45 Lacing Pattern: Radial Lacing is an acceptable pattern for front wheels and the non-drive side of rear hubs. Drive side of rear hubs must be 2-or-more cross					Gen 2 - 6910					
R45 Disc Lacing Pattern: 2-or-more cross										
Spoke Hole Diameter: 2.5mm										
Spoke Tension:										
Spoke Tension for Radial Lacing:										

## LIMITED WARRANTY

King Cycle Group, Inc. (“King Cycle”) warrants this product purchased (the “Product”) to be free from defects in materials and workmanship under normal use for the applicable following periods from the original date of purchase (these warranties are collectively referred to as our “Limited Warranty”):

This Limited Warranty does not cover damage or failure resulting from misuse, abuse, alteration, neglect, normal and reasonable wear and tear, crash or impact, accidents, failure to perform routine maintenance, improper installation, or use other than that for which the Product was intended. This Limited Warranty does not cover any Product where the serial number has been altered or removed.

**WARRANTY CLAIMS:** In order to make a warranty claim, the Product alone (i.e., not including any other equipment such as cassettes, skewers, steering tubes, etc.), together with a copy of the original receipt showing the date of purchase of the Product, must be returned to and received by King Cycle at the address set forth below, postage prepaid, within the applicable Limited Warranty period.

**EXCLUSIVE REMEDY:** If a defect arises and you return your Product during the applicable Limited Warranty period described above, King Cycle will, in its sole discretion and to the extent permitted by law, either repair the Product using new or refurbished parts, replace your Product with a new or refurbished product functionally at least equivalent to yours, or accept the return of the Product in exchange for a refund of the purchase price you paid for the Product. If King Cycle repairs or replaces the Product, the repaired or replaced product will continue to be warranted for the remaining time of the original warranty period. All returned parts for which you have received a replacement will become the property of King Cycle. Nothing in this Limited Warranty will reduce or otherwise affect your statutory rights in relation to the Product.

THE LIMITED WARRANTY WRITTEN ABOVE IS THE ONLY EXPRESS WARRANTY KING CYCLE PROVIDES FOR THE PRODUCT, AND THE ABOVE REMEDY IS YOUR SOLE REMEDY. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, KING CYCLE EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES AND CONDITIONS OF ANY KIND, WHETHER STATUTORY OR IMPLIED, ARISING FROM COURSE OF CONDUCT OR OTHERWISE, REGARDING THE PRODUCT, EXCEPT THAT ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, NON-INFRINGEMENT, AND OTHERWISE ARE LIMITED IN DURATION TO THE APPLICABLE PERIOD OF THE EXPRESS WARRANTY ABOVE (DEPENDING ON THE TYPE OF PRODUCT).

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

**LIMITATION OF LIABILITY:** YOU EXPRESSLY UNDERSTAND AND AGREE THAT, TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, KING CYCLE AND ITS SUBSIDIARIES AND AFFILIATES (COLLECTIVELY, “KING PARTIES”) SHALL NOT BE LIABLE TO YOU UNDER ANY THEORY OF LIABILITY (WHETHER CONTRACT, TORT (INCLUDING NEGLIGENCE), BREACH OR FAILURE OF ANY WARRANTY OR OTHERWISE) FOR ANY INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL, PUNITIVE, OR EXEMPLARY DAMAGES THAT MAY BE INCURRED BY YOU IN CONNECTION WITH THE PRODUCT OR THESE TERMS, WHETHER OR NOT A KING PARTY OR ITS REPRESENTATIVES HAVE BEEN ADVISED OF OR SHOULD HAVE BEEN AWARE OF THE POSSIBILITY OF ANY SUCH LOSSES ARISING. YOU EXPRESSLY UNDERSTAND AND AGREE THAT, TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, THE KING PARTIES’ TOTAL LIABILITY IN CONNECTION WITH THE PRODUCT OR THIS LIMITED WARRANTY WILL NOT EXCEED THE AMOUNT YOU ACTUALLY PAID FOR THE PRODUCT.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

**GENERAL:** No employee or representative of King Cycle or its affiliates or any third party is authorized to make any modification, extension or addition to this Limited Warranty. If any term of this Limited Warranty is held to be illegal or unenforceable, the remaining terms hereof will remain in full force and effect.

This Limited Warranty is given by King Cycle Group, Inc., an Oregon corporation, whose principal place of business is at 2801 NW Nela St., Portland, Oregon 97210, United States.

You are strongly encouraged to register your King Cycle Product on the website within thirty (30) days of the original date of purchase. Registration will assist us in processing your warranty claim and in expediting our response.

<b>Headsets:</b>	Ten (10) years
<b>Hubs:</b>	Five (5) years
<b>Bottom Brackets:</b>	Five (5) years
<b>Wheels:</b>	The hubs are warranted for a period of five (5) years. All other wheel components that are not manufactured by King Cycle such as, but without limitation, rims, spokes, and nipples, are not warranted by King Cycle.
<b>Accessories:</b>	One (1) year
<b>Soft Goods:</b>	Ninety (90) days