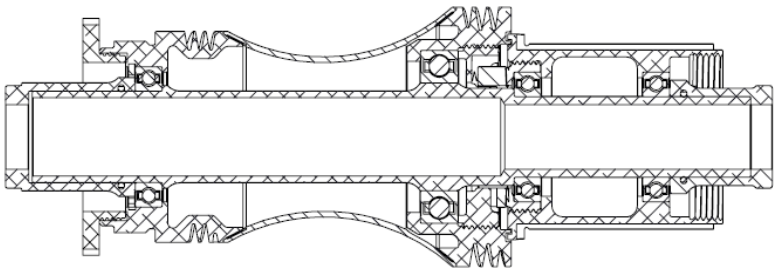
Bearing Service / Replacement

1. Introduction

Thank you for using our service manual to guide you through service or replacement of bearings in your MKII R-Series wheelset. This step-by-step guide will help you complete the task ,and ensure that your wheels are back in optimal working condition. partington hub is not just the connection between your bike's frame and wheels; it is the heart of your bike's drivetrain, responsible for smooth and efficient power transfer.

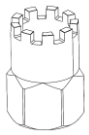


partington hub is designed to be a reliable and long-life component, but requires routine maintenance to ensure reliable, trouble-free operation.

Before you begin, make sure you have the necessary tools and replacement parts available.

2. Tools & parts

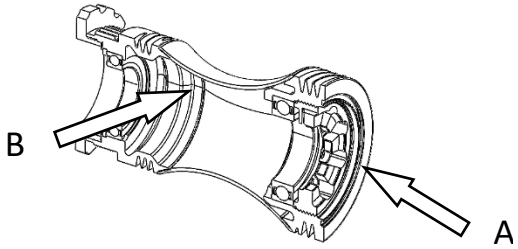
- Tools required:
  - 2.1. Bearing press or bearings puller
  - 2.2. partington oil
  - 2.3. Clean cloth or paper towels
  - 2.4. Assembly tool (301123-T&M-01-PRT-001)
  - 2.5. Vice
  - 2.6. Torque wrench
  - 2.7. Screwdriver width 3mm
  - 2.8. Screwdriver width 7mm
  - 2.9. Loctite 620
  - 2.10. Loctite 263
  - 2.11. Seal bearing ring.
  - 2.12. Grease



Partington tool

- Parts required :

No	*Description*	*Part number*
A	Bearing, 20 ID x 32 OD x 7 width.	S-61804
B	Bearing, 17 ID x 26 OD x 5 width	S-61803



  - 2.13. Snap ring
  - 2.14. Drive body
  - 2.15. 6x ratchet springs.

- Safety equipment:
  We recommend using the following items during the service process for your safety and to avoid any injures.

  - 2.16. Disposable Nitrile Gloves
  - 2.17. Eyewear

Normal cleaning for the bearings

3. Pre-Service Steps

A. Before removal of the wheel from the bike, inspect its operation by observing the free rotation of the wheel. Spin-up the wheel by rotating the crank set to a ~equivalent of ~30km/hr. The intention is to reach a representative speed and observe coast-down. The following should be observed:

3.1. Wheel rolls freely. The wheel should take ~1/2 minute to come to a standstill from a ~30km/hr wheel speed. Ensure the disc rotor is not rubbing as this will affect the result.

3.2. During the spin-down test, wheel run-out should be observed. Partington.cc has an acceptable manufacturing limit of 0.5mm (that is: +/- 0.25mm) in both radial and lateral directions. The radial direction is measured internal to the tire, so cannot be observed during typical spin-down.

3.3. During the spin-down test, crank rotation should be observed. Some crank rotation may be observed in freely rotating cranks, especially in instances where the gear selected includes a small cassette sprocket and a large chain ring. The freewheel should coast with very low drag or chain pull. If the motive forces in driving the chain and therefore the cranks seem excessive, this should be noted as there may be some further investigation required.

3.4. During the spin-down test, chain tension should be observed. The freewheel should coast with very low drag or chain pull. If the motive forces in driving the chain cause the chain to lose tension, this should be noted as there may be some further investigation required. In instances where the gear selected include a small cassette sprocket and a small chain ring, chain tension may by default be low, especially in the instance of a poorly adjusted chain or derailleur selection.

3.5. During the spin-down test, listen for rough bearing sounds that may indicate the need for bearing service or replacement.

3.6. Once the wheel is at rest, grip the rim and/or tire between your thumb and fore finger close to the bottom bracket, above the chain stays. Lightly move the rim from side to side to detect bearing play. **NOTE: Some small bearing play is expected and a healthy attribute of the wheel.**

B. Remove rear wheel from bicycle. **NOTE: tyres, rotor and cassette can remain installed during this service work, but it is important to avoid contamination of the disc rotor which may adversely affect the braking performance and permanently compromise the brake pads.**

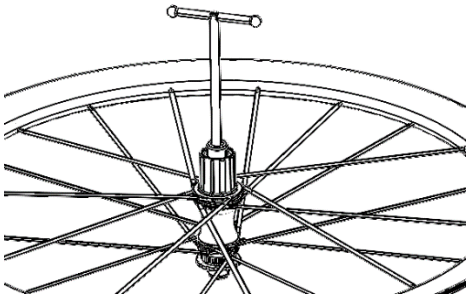
4. Disassembly the hub

4.1. To access the ratchet, the freehub body and freehub side axle endcap need to be removed. Either of the following two methods apply:

Where a cassette **is not** installed:

4.1.1. The best working orientation for the wheel during service is horizontal, with ethe cassette side of the hub facing upwards.

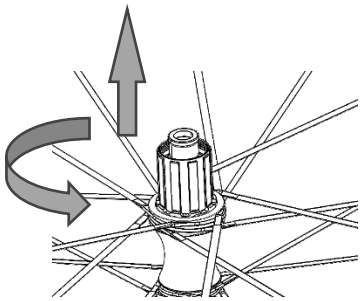
4.1.2. Use of an appropriate endcap removal tool such as UNIOR's 'Hub Genie'. The endcap is retained by a rubber O-ring which may require reasonable force for removal.



4.1.3. Set the endcap aside.

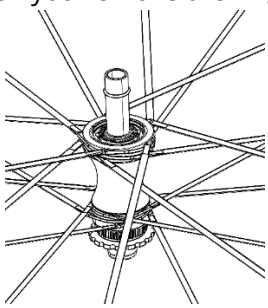
4.1.4. Remove freehub body by pulling in the direction co-linear to the axle.

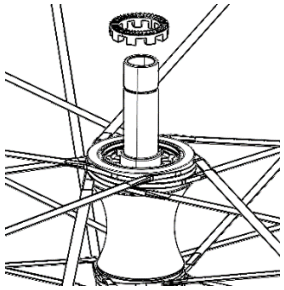
NOTE: Rotate the freehub body in counterclockwise direction during removal and pull it up. Spare ratchet springs are included in the service kit in case damage occurs.



4.1.5. Set the freehub body aside.

4.1.6. Remove the hub-side 'ratchet ring' from the drive body on the hub side. This ratchet ring has 9x 'drive dogs' each with a small drilled in the base. There are 6 springs when you remove the ring, keep them safely.





4.1.7. Set aside the 'ratchet ring'.

4.1.8. Remove the springs and set aside. Inspect for any damage. Coil windings should be uniform, the spring should be a straight cylinder and have a free length of 7.0mm.

4.2. Where a cassette **is** installed:

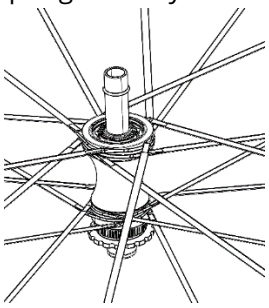
4.2.1. The best working orientation for the wheel during service is horizontal, with the cassette side of the hub facing upwards.

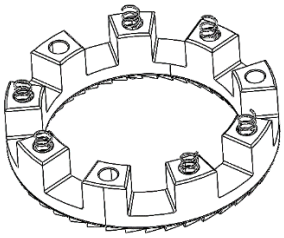
4.2.2. Remove freehub body and endcap by pulling the cassette upwards away from the wheel.
NOTE: As previously 4.1.4

4.2.3. Set the freehub body/cassette assembly aside.

4.2.4. Pic-out the endcap from the end of the cassette and set aside.

4.2.5. Remove the hub-side 'ratchet ring' from the drive body on the hub side. This ratchet ring has 9x 'drive dogs' each with a small hole drilled in the base. There are 6 springs when you remove the ring, keep them safely.





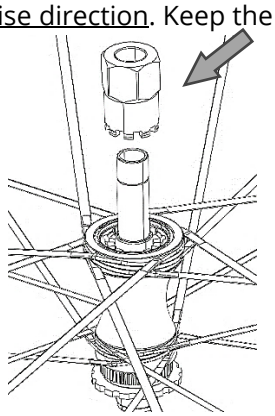
4.2.6. Remove the springs and set aside. Inspect for any damage. Coil windings should be uniform, the spring should be a straight cylinder and have a free length of 7.0mm

4.2.7. Set aside the 'ratchet ring'.

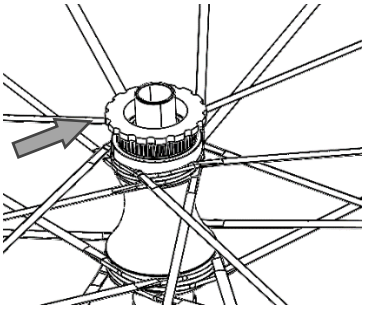
5. Prepare the cleaning of Bearing A & B

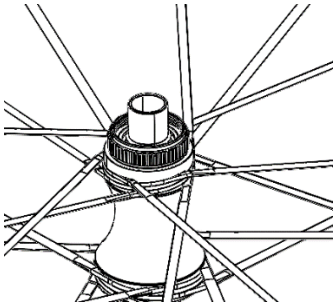
Follow these steps to reach out the bearings :

5.1. Insert the assembly tool (301123-T&M-01-PRT-001) and ensure that the siting is proper then flip the wheel and use a vice to hold the tool and remove the drive body by rotating the wheel in the counterclockwise direction. Keep the drive body in a safe place.



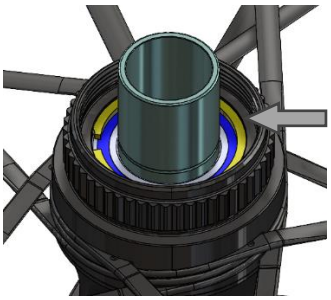
5.2. Now you will have access to bearing A.
5.3. Filp the wheel upside down to access bearing B.
5.4. Unscrew the Lock Ring and remove the disc rotor.

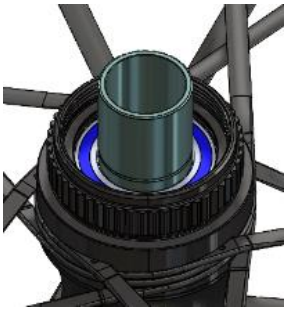




Note: There are two models of the bearing housing, one with a grove to remove the snap ring and the other is without.

5.5. You will find the internal snap ring using the two screwdrivers (3 mm & 7mm width) to get it out. Make sure that you do not damage the inner thread during the process. It may be advisable to re-insert the locking ring to avoid damage to the thread.





5.6. Remove the blue seal ring by using a proper tool and start cleaning the bearing from the inside by following the procedure below.

Note : **(Reference** Bearing Cleaning & Maintenance (www.ceramicspeed.com **)**

To flush and clean CeramicSpeed bearings. UFO Clean Bearings was developed as a non-toxic easy to use bearing cleaner. Use the pipette to add a few drops of cleaner into each bearing (Approx. 0,5 – 2,0mL dependent on the bearing size). Rotate the bearing to cause an 'agitation' effect inside the bearing. After soaking for 3-5 minutes, use compressed air to flush out the grease and contamination. Repeat this process a second time if needed to fully clean the bearing. Once the bearing is visually cleaned out and rotates smoothly, allow the bearing to air dry prior to applying fresh grease. Follow grease selection and application guide at the bottom of this document for best performance and longevity. Once grease is applied, reinstall the face seal by laying it on the bearing (the all-rubber side should face out) and evenly pressing it into the groove on the outer

race. The seal should sit flat and even on the bearing. Be sure to take careful note of the direction on any dust covers when reassembling the parts.

Deep Cleaning

In the event that normal cleaning is not providing an adequate cleaning level, or if the bearings have been neglected well outside of the suggested service intervals, you may need to perform a deeper cleaning process to achieve a smooth functioning bearing again. Carefully remove the bottom bracket cups from the frame or remove the bearings from the hubs or from the frame if there are no cups, and remove all accessible seals. Place the bearings into a suitable container and submerge in UFO Clean Bearings. Agitate the bearings a few times or use a container with a lid and shake to flush the solvent throughout the bearing, letting sit for 3-5 minutes. It is suggested to use protective gloves and eyewear, as well as working in a ventilated area. Remove the bearings from the container and dry with compressed air. If fully cleaned and not permanently damaged the bearings should spin freely and smoothly now. Apply the rear seal and follow the below grease selection and application charts based on your intended use.
Using the correct bearing press & drifts, carefully reinstall the bearings into your frame or hubs, or install the cups into the frame and reassemble the remaining parts per original manufactures specifications.

5.7. Install the new seal ring to the bearings.
5.8. Skip the process of the replacement and follow the rest of the steps to reassemble process.

Note: Normal cleaning is recommended to be applied but in case you hear an ill sound in the bike axle. If it is necessary, you can replace the bearing as follows.

Replacement of the Bearings

6. Remove the old bearings.

6.1. Remove the axle and keep it in a safe place.
6.2. Carefully remove the old bearing from its housing. you may need to use a bearing puller or a suitable alternative to gently push it out.
6.3. Wipe away any dirt or debris from the bearing housing by using a clean cloth and ensure there is no contamination.

7. Install the New Bearings

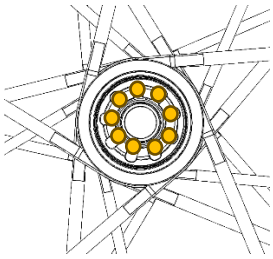
Note: the new bearing should be installed with the writing on the outwardly visible side of the bearing.

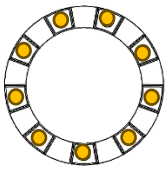
10.1. Install bearing B first, only use dedicated bearing press tooling to install, failure to do so may cause bearing damage and premature failure.
10.2. apply a thin layer of **Loctite 620** to the outer surface of bearing A.
10.3. Apply a thin layer of Loctite 620 to the mating surface of the hub shell.
10.4. Align the bearing with the housing and gently press it into place using a bearing press.
10.5. Double-check that the bearing is properly aligned and seated securely.
10.6. The axile can be installed after you fix the bearings A, B.
10.7. Take the drive body and apply a layer of **Loctite 263** on the outer thread.
10.8. Install the drive body by screwing it then use the torque wrench with **100N.**

Note: Only the Campagnolo hub , there is a spacer required to be installed in between the end cap and the free hub body.

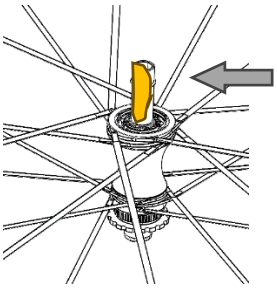
8. Reassembly the hub

7.1. Apply ratchet oil in the areas indicated – one small drop at each site.

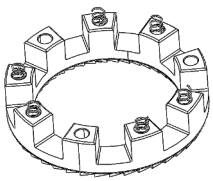




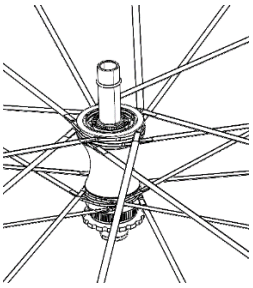
7.2. Apply a thin smear of assembly grease on the axle.



7.3. Assemble the ratchet springs in **a 2,0,2,0,2,0** configuration by using a Tweezer. The applied oil should help retain the springs in place.

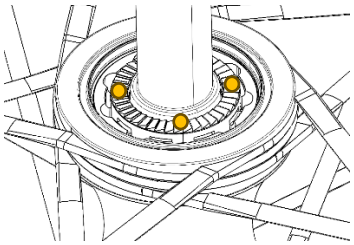


7.4. Place the ratchet ring in the drive body taking care to ensure the springs don't become dislocated on assembly.



7.5. Press the ratchet ring into the drive body to make sure there is free movement in the drive body.

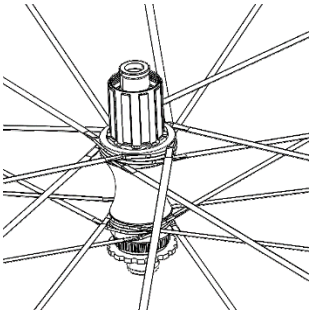
7.6. Apply an additional 3 drops of oil to the ratchet face on the ratchet ring as illustrated below.



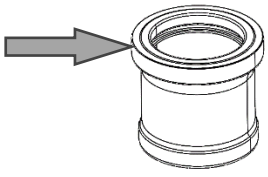
7.7. Assemble the freehub body by inserting over the axle.

NOTE: do not rotate the freehub body during assembly, doing so will damage the ratchet springs and will require replacement. Keep the wheel in the same orientation.

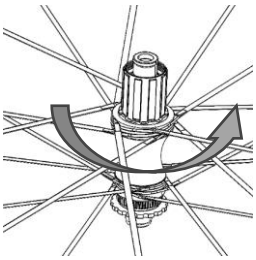
Spare ratchet springs are included in the service kit in case damage occurs.



7.8. Wipe a thin smear of grease on the inside of the endcap and reinstall. Note: make sure the endcap is square when pressing in place. The use of a bearing press set is recommended.



7.9. Once the endcap is installed, rotate the freehub body to check free movement and positive engagement.



NOTE: ALLOW THE LOCATE TO CURE FOR 24 HOURS BEFORE RIDING.

11. Pre- Ride Check

11.1. Insert the wheel in your bike and rotate the wheel to ensure there is no ill sound after installation.

11.2. Inspect the whole bike to ensure the safety condition.

11.3. By following this user manual and the service instructions ensures that your bike will continue to perform optimally. Regularly maintain and lubricate your bike to extend its lifespan and enhance your riding experience.

Congratulations! You have successfully replaced the bearing in your bike.

IF YOU HAVE ANY QUESTIONS OR CONCERNS, PLEASE CONTACT OUR TEAM TO ASSIST YOU.

Email: service-support@partington.com.au

Enjoy the ride!