ZIPP

ZR1 Hubs

SERVICE MANUAL

SRAM® LLC WARRANTY

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AGAINST SRAM, LLC. YOU MAY ALSO HAVE OTHER RIGHTS THAT VARY FROM STATE TO STATE, COUNTRY, OR PROVINCE. THIS WARRANTY DOES NOT AFFECT YOUR STATUTORY RIGHTS. TO THE EXTENT THIS WARRANTY IS INCONSISTENT WITH THE LOCAL LAW, THIS WARRANTY SHALL BE DEEMED MODIFIED TO BE CONSISTENT WITH SUCH LAW. FOR A FULL UNDERSTANDING OF YOUR RIGHTS, CONSULT THE LAWS OF YOUR COUNTRY, PROVINCE, OR STATE.

This warranty applies to SRAM products made under the SRAM®, RockShox®, Truvativ®, Zipp®, Quarq®, Avid® and TIME® brand names.

EXTENT OF LIMITED WARRANTY

Except as otherwise set forth herein, SRAM warrants its bicycle components to be free from defects in materials or workmanship for a period of two (2) years after original purchase of the product.

SRAM warrants all Zipp MOTO Wheels and Rims to be free from defects in materials or workmanship for the lifetime of the product.

SRAM warrants all non-electronic Zipp branded bicycle components, Model Year 2021 or newer, to be free from defects in materials or workmanship for the lifetime of the product.

GENERAL PROVISIONS

This warranty only applies to the original owner and is not transferable. Claims under this warranty must be made through the retailer where the bicycle or the SRAM product was purchased or a SRAM authorized service location. Original proof of purchase is required. All SRAM warranty claims will be evaluated by a SRAM authorized service location whereupon acceptance of the claim the product will be repaired, replaced, or refunded at SRAM's discretion. To the extent allowed by local law claims under this warranty must be made during the warranty period and within one (1) year following the date on which any such claim arises.

NO OTHER WARRANTIES

EXCEPT AS DESCRIBED HEREIN, AND TO THE EXTENT ALLOWED BY LOCAL LAW, SRAM MAKES NO OTHER WARRANTIES, GUARANTIES, OR REPRESENTATIONS OF ANY TYPE (EXPRESS OR IMPLIED), AND ALL WARRANTIES (INCLUDING ANY IMPLIED WARRANTIES OF REASONABLE CARE, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE) ARE HEREBY DISCLAIMED.

LIMITATIONS OF LIABILITY

EXCEPT AS DESCRIBED HEREIN, AND TO THE EXTENT PERMITTED BY LAW, IN NO EVENT SHALL SRAM OR ITS THIRD PARTY SUPPLIERS BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES. SOME STATES (COUNTRIES AND PROVINCES) DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL DAMAGES, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

LIMITATIONS OF WARRANTY

This warranty does not apply to products that have been incorrectly installed, adjusted, and/or maintained according to the respective SRAM user manual. The SRAM user manuals can be found online at sram.com/service.

This warranty does not apply to damage to the product caused by a crash, impact, abuse of the product, non-compliance with manufacturer's specifications of intended usage, or any other circumstances in which the product has been subjected to forces or loads beyond its design.

This warranty does not apply when the product has been modified, including but not limited to, any attempt to open or repair any electronic and electronic related components, including the motor, controller, battery packs, wiring harnesses, switches, and chargers.

This warranty does not apply when the serial number or production code has been deliberately altered, defaced, or removed.

SRAM components are designed for use only on bicycles that are pedal powered or pedal assisted (e-Bike/Pedelec).

Notwithstanding anything else set forth herein, the battery pack and charger warranty does not include damage from power surges, use of improper charger, improper maintenance, or such other misuse.

This warranty shall not cover damages caused by the use of parts of different manufacturers or parts that are not compatible or suitable for use with SRAM components.

This warranty shall not cover damages resulting from commercial (rental) use.

WEAR AND TEAR

This warranty does not apply to normal wear and tear. Wear and tear parts are subject to damage as a result of normal use, failure to service according to SRAM recommendations, and/or riding or installation in conditions or applications other than recommended.

Wear and tear parts include:

- Aero bar pads
- Air sealing o-rings
- Batteries
- Bearings
- Bottomout pads
- Brake pads
- Bushings
- Cassettes
- Chains
- Cleats
- Corrosion
- Disc brake rotors
- Dust seals
- Free hubs, Driver bodies, Pawls
- Foam rings, Glide rings
- Handlebar grips
- Jockey wheels
- Rear shock mounting hardware and main seals
- Rubber moving parts
- Shifter and Brake cables (inner and outer)
- Shifter grips
- Spokes
- Sprockets
- Stripped threads/bolts (aluminum, titanium, magnesium or steel)
- Tires
- Tools
- Transmission gears
- Upper tubes (stanchions)
- Wheel braking surfaces

ZIPP IMPACT REPLACEMENT POLICY

Zipp branded products, Model Year 2021 or newer, are covered under a lifetime impact-damage replacement policy. This policy can be used to obtain a replacement of a product in the event of non-warranty impact damage occurring while riding your bicycle. See www.zipp.com/support for more information.

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SAFETY FIRST!

We care about YOU. Please, always wear your safety glasses and protective gloves when servicing SRAM® products. Protect yourself! Wear your safety gear!

Zipp Service

We recommend that you have your Zipp compononets serviced by a qualified bicycle mechanic. Servicing Zipp compononets requires the use of specialized tools. Failure to follow the procedures outlined in this service manual may cause damage to your component and void the warranty.

Visit www.zipp.com/support for the latest Zipp Spare Parts catalog and technical information. For order information, please contact your local Zipp distributor or dealer.

Information contained in this publication is subject to change at any time without prior notice.

Your product's appearance may differ from the pictures contained in this publication.

For recycling and environmental compliance information, please visit:
https://www.sram.com/en/company/about/environmental-policy-and-recycling

Part Preparation

Remove the component from the bicycle before service.

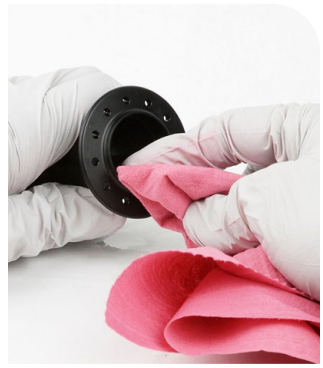
Clean the exterior of the product with mild soap and water to avoid contamination of internal sealing part surfaces.

Service Procedures

The following procedures should be performed throughout service, unless otherwise specified.

Clean the part with isopropyl alcohol and a clean, lint-free shop towel.

Clean the sealing surface on the part and inspect it for scratches.



Wheel Building and Rim Specifications

For spoke lengths, tension, rim ERD, hub dimensions, and technical specifications, please refer the *Zipp Wheel Specifications* document available at sram.com/service.

Component Removal

Prior to service, remove the wheels from the bicycle according to the bicycle manufacturer's instructions and thoroughly clean the exterior of the product to avoid contamination of internal sealing part surfaces.

For additional information about Zipp wheels and hubs, user manuals are available at www.zipp.com.

Parts, Tools, and Supplies

Parts

- Wheel Bearing Kit Front/Rear for Zipp ZR1 Hubs, 61903
- Wheel Freehub Kit - XDR Driver Kit - 12x142 / QR - Zipp ZR1 (optional)
- Wheel Freehub Kit - 11 Speed Driver Kit - 12x142 / QR - Zipp ZR1 (optional)
- Wheel Freehub Kit - Campagnolo Driver Kit - Centerlock Disc / Rim Brake - Zipp ZR1 (optional)

Safety and Protection Supplies

- Apron
- Clean, lint-free shop towels
- Nitrile gloves
- Safety glasses

Lubricants and Fluids

- Isopropyl alcohol
- Zipp Cognition or SRAM Butter grease
- Klüber Staburags NBU30 grease

Zipp/SRAM Tools

- Zipp 61903 Bearing Press Tool (x2)
  or
  Zipp 61903 Bearing Press Tool (x1) *and*
  SRAM 6903 Bearing Press Tool (x1)

Bicycle Tools

- Axle and spindle vise inserts - Park Tool AV-4 or AV-5
- Blind hole bearing puller set
  - 17 mm slotted attachment
- Wheels Manufacturing Press-1 Sealed Bearing Press Kit or similar
  - 6803 26x17/61803 bearing press adapters (x2) (optional)
  - T-handle threaded bearing press

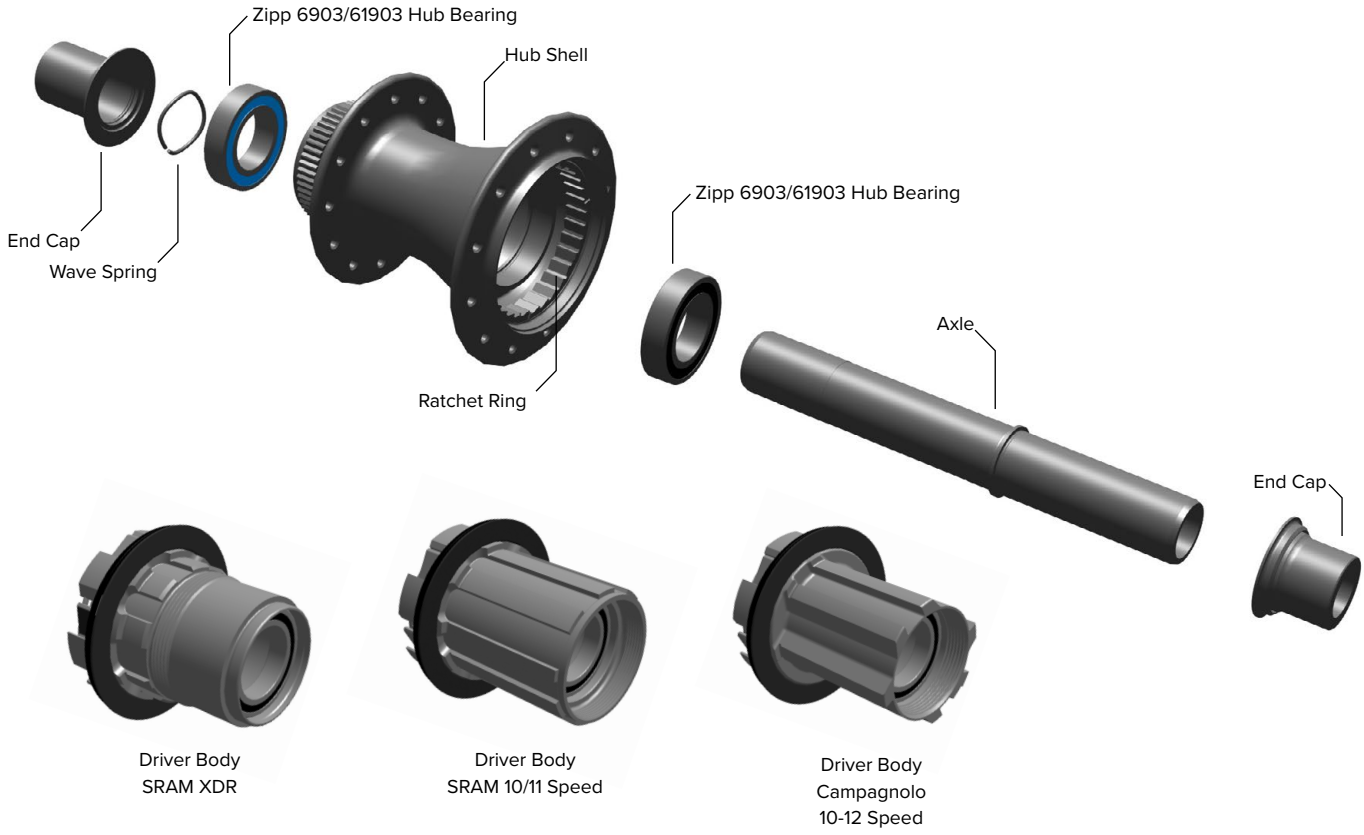
Common Tools

- Bench vise
- Flat blade screwdriver
- Needle-nose pliers
- Grease brush
- Rubber or plastic mallet
- Vise soft jaws (aluminum)

SAFETY INSTRUCTIONS

Always wear nitrile gloves when working with bicycle grease.

Exploded View - Rear Hub



Rear Hub End Caps

The end cap identification number is laser etched onto the end cap.

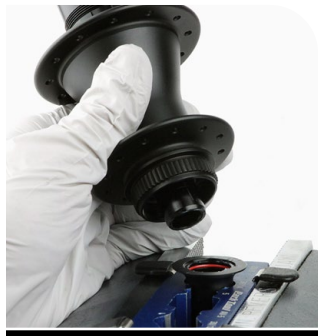
					DRIVE SIDE			NON DRIVE SIDE		
Hub	Variants				Current Identification Text On End Cap	Previous Identification Text On End Cap	Spare Part Kit Number	Current Identification Text On End Cap	Previous Identification Text On End Cap	Spare Part Kit Number
ZR1	REAR	QR	RIM	XDR 11SPD CAMPA	127-000	10x(130/135) DS XD(R)	11.2018.064.006	249-000	—	11.2018.064.006
			CL	XDR 11SPD CAMPA			11.2018.064.015	269-000	—	11.2018.064.015
		12 X 142	CL	XDR 11SPD	151-030	12x(142/148) DS XD(R)	11.2018.064.005	251-000	—	11.2018.064.005
		12 X 142	CL	CAMPA	151-050	—	11.2018.064.019	251-000	—	11.2018.064.019

Rear Hub Bearing Removal

Procedures are the same for rim brake and disc brake rear hubs. Disc brake hub pictured.

1 Insert the Park Tool AV-4 or AV-5 Axle and Spindle Vise Insert tool into a vise. Clamp one end cap into the vise insert tool and pull up on the wheel/hub to remove the end cap.

Repeat to remove the other end cap.



AV-4 / AV-5

AV-4 / AV-5

2 Pull the driver from the hub by hand.

3 Use a soft face mallet to tap the non-drive side end of the axle to remove the axle and bearing from the hub.

Pull the axle and drive side bearing out of the drive side of the hub.

If the drive side bearing was not removed with the axle, it must be removed with the Bearing Puller tool as instructed in step 7.

Plastic Mallet

4 The wave spring installed on the non-drive side of the axle will slide off when the axle is removed. Set the wave spring aside.

NOTICE

Do not discard or misplace the wave spring. It is crucial to hub performance and the hub will not fuction properly without the spring.

5 Place the axle in between flat aluminum vise soft jaws, drive side down, with the bearing resting on top of the soft jaws. Make sure the axle bearing step does not contact the soft jaws. Use a plastic mallet to gently tap on the top of the non-drive end of the axle until it is dislodged from the bearing. Discard the bearing.

Spray isopropyl alcohol onto the axle and clean the axle with a shop towel.

NOTICE

To avoid damage to the axle, do not allow the axle to contact the vise soft jaws. If the axle bearing step is damaged, the axle must be replaced.

Plastic Mallet

6 Clean the axle with isopropyl alcohol and a shop towel.

NOTICE

To prevent damage to the hub surfaces, do not use acetone or similar products to clean parts.

Isopropyl Alcohol Shop Towel

7 Insert the 17 mm Bearing Puller slotted attachment through the drive side bearing. Align the slotted attachment with the bottom of the bearing, and expand it inside the bearing.

Do not over tighten the slotted attachment. For more detailed assembly and usage, see the bearing puller manufacturer's instructions.

Grip the slide hammer and forcefully pull away from the slotted attachment to remove the bearing from the driver.

17 mm Slotted Attachment

8 Insert the 17 mm Bearing Puller slotted attachment through the non-drive side bearing. Align the slotted attachment with the bottom of the bearing, and expand it inside the bearing.

Do not over tighten the slotted attachment. For more detailed assembly and usage, see the bearing puller manufacturer's instructions.

Grip the slide hammer and forcefully pull away from the slotted attachment to remove the bearing from the driver.

17 mm Slotted Attachment

9 Clean the bearing bores with a shop towel.

Isopropyl Alcohol Shop Towel

10 Clean the ratchet ring and hub internals with isopropyl alcohol, a shop towel, and cotton swabs. Do not remove the ratchet ring.

Rear Hub Bearing Installation

NOTICE

To prevent damage when pressing the bearings into the rear hub, make sure that the bearing press tool contacts both the inner and outer races of the bearing.

1 Install a new Zipp 6903/61903 hub bearing into the non-drive side of the hub with the **black** seal facing outward.

Note: Ceramic bearings have **blue** seals on both sides of the bearing; installation orientation is not important.

2 Install a 6903 30x17 tool into the drive-side bearing bore.

Insert the threaded rod through the drive side of the hub shell. Slide a second 6903 30x17 tool onto the threaded rod.

Thread the Press Tool handle onto the threaded rod.

Turn the handle clockwise to press the bearing into the hub until it is hand-tight.

Do not overtighten the bearing.

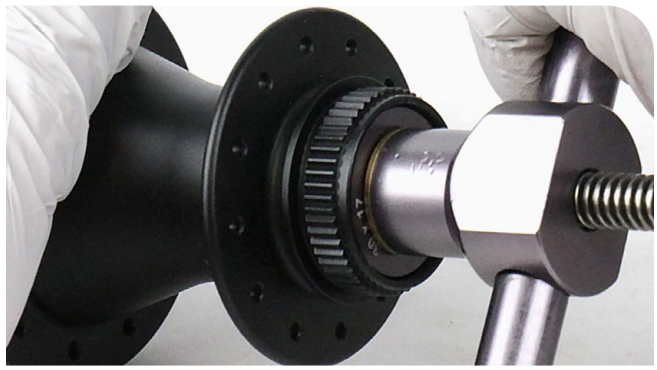
Remove the tools.

NOTICE

To prevent damage when pressing the bearing into the hub, make sure that the bearing press tools contact both the inner and outer bearing races or bearing bores and not the hub shell.

6903 30x17

6903 30x17



3 Install a new bearing onto the longer, non-drive side of the axle, with the **blue** bearing seal facing away from the raised step on the axle.

Note: Ceramic bearings have **blue** seals on both sides of the bearing; installation orientation is not important.

Insert the non-drive side of the axle into a Zipp 61903 tool, with the flat, non-stepped end of the tool against the bearing.

Zipp 61903

4 Use a rubber mallet to tap the drive side of the axle until the raised step on the axle contacts the bearing

Remove the axle from the tool.

Plastic Mallet

5 Apply grease to the non-drive side axle bearing race.

Klüber Staburags NBU30 Grease

6 Insert a SRAM 6903 tool into the non-drive side bearing bore.

Install the non-drive side end of the axle through the hub and into the SRAM 6903 tool.

SRAM 6903

7 Install a Zipp 61903 tool onto the drive side end of the axle with the stepped end of the tool contacting the bearing.

Zipp 61903 Stepped End

8 Use a rubber mallet to tap the drive side of the axle until the raised step on the axle contacts the bearing

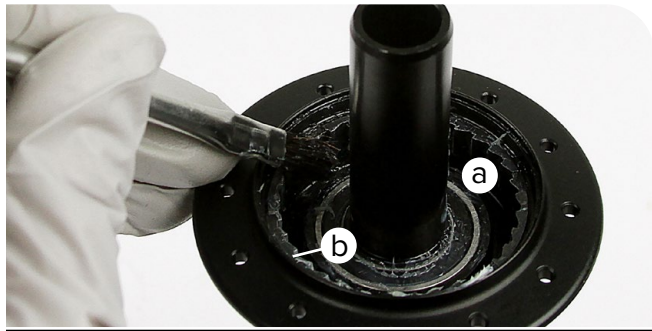
Remove the tool from the axle.

Plastic Mallet

9 Apply grease to the ratchet ring (a) and the seal surface (b) of the hub shell.

NOTICE

If a brush is used to apply grease, confirm there are no loose bristles in the grease or on the part.



SRAM Butter Grease

10 Apply grease to the last 10-15mm of the axle. Installation of the driver will distribute the grease on the entire hub axle.

NOTICE

If a brush is used to apply grease, confirm there are no loose bristles in the grease or on the part.

Klüber Staburags NBU30 Grease

11 Install the driver onto the axle and twist it counter-clockwise to seat the driver and driver seal.

Make sure the driver seal is fully seated into the seal groove.

The installation process is the same for 11 speed and XDR driver bodies.

12 Install the wave spring onto the non-drive side of the axle. You may need a tool to press the wave spring against the bearing face.

NOTICE

Do not scratch the axle when using a tool to install the wave spring.

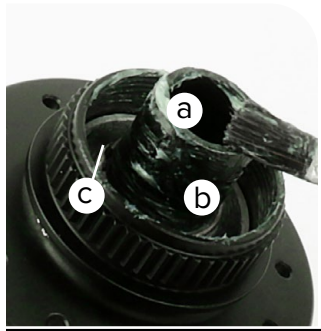
The wave spring is crucial to hub performance and must be installed onto the axle.

13 Apply grease to the following locations on the drive side and non-drive side axle ends:

- Axle front surface (a)
- Axle radial surface (b)
- Bearing front face across bearing seal, inner- and outer ring (c)

NOTICE

If a brush is used to apply grease, confirm there are no loose bristles in the grease or on the part.



Klüber Staburags NBU30 Grease

14 Press the end caps onto the axle.

15 Clean the hub with isopropyl alcohol and a shop towel.

Isopropyl Alcohol Shop Towel

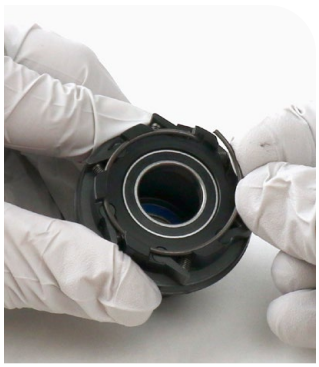
Driver Cleaning (optional) - Coil Spring Driver

NOTICE

Service of an 11 speed driver is identical to the XDR driver service shown below.

1 Inspect the rubber seal for damage. If the seal is damaged, replace the driver.

2 Use your fingers or a small flat blade screwdriver to lift the snap spring from the driver.



3 Use your fingers, a pick, or needle-nose pliers to remove the pawls and coil springs from the driver.

4 Clean the pawl slots with a cotton swab and the driver body with isopropyl alcohol and a shop towel.

5 Using a grease syringe, apply a small amount of SRAM Butter grease to the pawl slots.

SRAM Butter Grease

6 Insert a coil spring into one of the spring slots, then install a pawl into the pawl slot.

Note: The springs and pawls are symmetrical and can be installed in any orientation.

7 Use a small flat blade screwdriver to compress the spring to allow the pawl to drop into the slot, then adjust the spring so that it is perpendicular to the back of the pawl.

Repeat steps 6 and 7 to install the other springs and pawls.

Flat blade screwdriver

8 Orient the end of the snap spring into the hole in the driver and push the snap spring onto the channel of the driver until it is fully seated.

Driver Cleaning (optional) - Leaf Spring Driver

NOTICE

Service of an 11 speed driver is identical to the XDR driver service shown below.

1 Inspect the rubber seal for damage. If the seal is damaged, replace the driver.

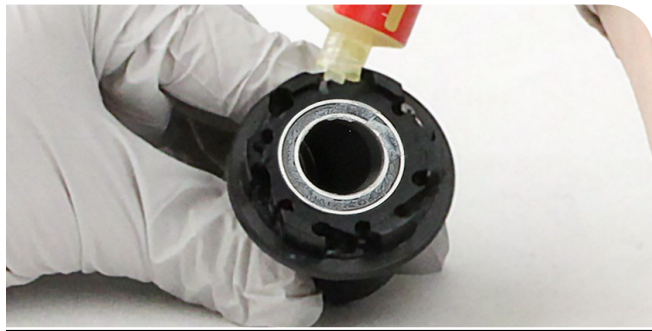
2 Use a small flat blade screwdriver to lift the snap spring from the driver.

Flat Blade Screwdriver

3 Use a pick or needle-nose to remove the pawls and leaf springs from the driver.

4 Clean the pawl slots with a cotton swab and the driver body with isopropyl alcohol and a shop towel.

5 Using a grease syringe, apply a small amount of SRAM Butter grease to the pawl slots.



SRAM Butter Grease

6 Insert the leaf springs into the spring slots. Orient the long edge of each spring along the inside of the carrier so that it points clockwise.

Pick

7 Insert the pawls into the pawl slots. You may need to use a pick or flat blade screwdriver to compress each leaf spring to assist with inserting the pawls.

Pick

8 Orient the end of the snap spring into the hole in the driver and push the snap spring onto the channel of the driver until it is fully seated.

Driver Bearing Replacement (optional)

NOTICE

Service of an 11 speed driver is identical to the XDR driver service shown below.

1 Insert the 17 mm Bearing Puller slotted attachment through the outboard bearing. Align the slotted attachment with the bottom of the bearing, and expand it inside the bearing.

Do not over tighten the slotted attachment. For more detailed assembly and usage, see the bearing puller manufacturer's instructions.

Thread the rod of the bearing puller into the attachment. Grip the slide hammer and forcefully pull away from the slotted attachment to remove the bearing from the driver.

17 mm Slotted Attachment

2 Insert the 17 mm Bearing Puller slotted attachment through the inboard bearing. Align the slotted attachment with the bottom of the bearing and expand it inside the bearing.

Do not over tighten the slotted attachment. For more detailed assembly and usage, see the bearing puller manufacturer's instructions.

Thread the rod of the bearing puller into the attachment. Grip the slide hammer and forcefully pull away from the slotted attachment to remove the bearing from the driver.

17 Slotted Attachment

3 Clean the driver bearing bores with a shop towel and cotton swabs.

4 Place the driver on flat surface, outboard side up. Insert a new Zipp 6803/61803 driver bearing into the outboard side of the driver body, with the **black** seal facing outward.

Note: Ceramic bearings have **blue** seals on both sides of the bearing; installation orientation is not important.

Insert a 6803 26x17 tool onto the bearing.

6803/61803 Driver Bearing

6803 26x17

5 Insert the threaded rod through the outboard side of the driver. Slide a second 6803 26x17 tool onto the threaded rod.

Thread the Press Tool handle onto the threaded rod.

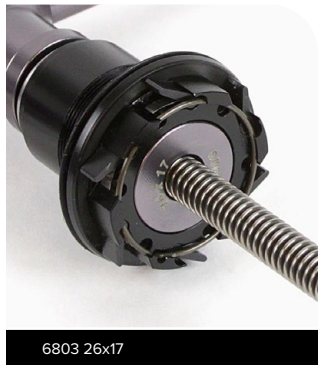
Turn the handle clockwise to press the bearing into the driver body until it is hand-tight.

Do not overtighten the bearing.

Remove the tools.

NOTICE

To prevent damage when pressing the bearing into the driver body, make sure that the bearing press tools contact both the inner and outer bearing races or bearing bores and not the driver body.



6803 26x17

6 Place the driver on a flat surface, inboard side up. Insert a new Zipp 6803/61803 driver bearing into the inboard side of the driver body, with the **black** seal facing outward.

Note: Ceramic bearings have **blue** seals on both sides of the bearing; installation orientation is not important.

Insert a 6803 26x17 tool onto the bearing.

6803/61803 Driver Bearing

6803 26x17

7 Insert the threaded rod through the inboard side of the driver. Slide a second 6803 26x17 tool onto the threaded rod.

Thread the Press Tool handle onto the threaded rod. Turn the handle clockwise to press the bearing into the driver until it is hand-tight.

Do not overtighten the bearing.

Remove the tools.

NOTICE

To prevent damage when pressing the bearing into the driver body, make sure that the bearing press tools contact both the inner and outer bearing races or bearing bores and not the driver body.

6803 26x17

Component Removal

The hub can be serviced while in the wheel. However, if your spokes or rim are damaged, you can remove the hub from the wheel which will make servicing your hub easier. To remove the hub, use a spoke wrench to de-tension the spokes, then use a pair of metal snips to cut the spokes, remove the hub from the wheel, and remove the spoke ends from the hub (not pictured).

For additional information about Zipp wheels and hubs, user manuals are available at www.Zipp.com.

Parts, Tools, and Supplies

Parts

- Wheel Bearing Kit Front/Rear For Zipp ZR1 Hubs, 61903

Safety and Protection Supplies

- Apron
- Clean, lint-free shop towels
- Nitrile gloves
- Safety glasses

Lubricants and Fluids

- Isopropyl alcohol
- Zipp Cognition or Klüber Staburags NBU30 grease

Bicycle Tools

- Axle and spindle vise inserts - Park Tool AV-4 or AV-5
- Blind hole bearing puller set
  - 17 mm slotted attachment
- Wheels Manufacturing Press-1 Sealed Bearing Press Kit or similar
  - 6903 30x17/61903 bearing press adapters (x2)
  - T-handle threaded bearing press

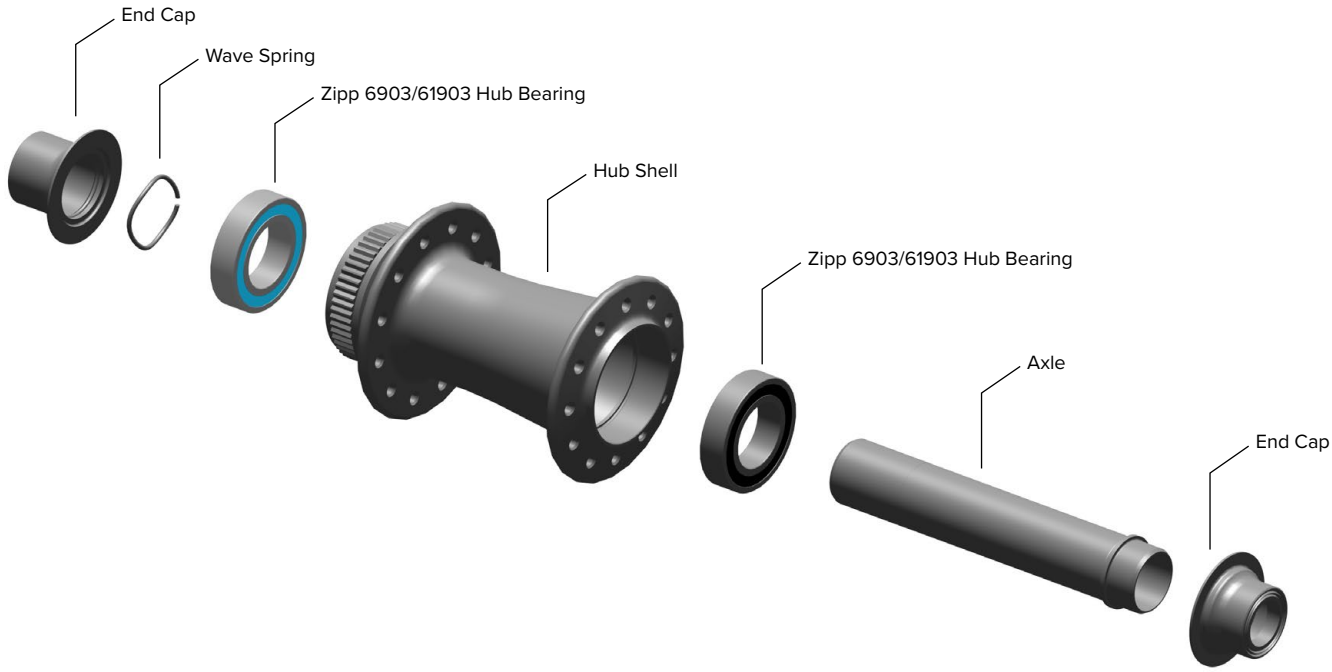
Common Tools

- Bench vise
- Flat blade screwdriver
- Grease brush
- Rubber or plastic mallet

SAFETY INSTRUCTIONS

Always wear nitrile gloves when working with bicycle grease.

Exploded View - Front Hub



Front Hub End Caps

The end cap identification number is laser etched onto the end cap.

					DRIVE SIDE			NON DRIVE SIDE		
Hub	Variants				Current Identification Text On End Cap	Previous Identification Text On End Cap	Spare Part Kit Number	Current Identification Text On End Cap	Previous Identification Text On End Cap	Spare Part Kit Number
ZR1	FRONT	QR	RIM	—	252-000	—	11.2018.064.004	252-000	—	11.2018.064.004
			CL	—		—	11.2018.064.016	270-000	—	11.2018.064.016
		12 X 100		—	165-000	12x100 DS DISC	11.2018.064.003	267-000	—	11.2018.064.003
		15 x 100		—	165-010	15x(100&110) DS DISC	11.2018.064.018	165-010	15x(100&110) DS DISC	11.2018.064.018

Front Hub Bearing Removal

Procedures are the same for rim brake and disc brake rear hubs. Disc brake hub pictured.

1 Insert the Park Tool AV-4 or AV-5 Axle and Spindle Vise Insert tool into a vise. Clamp the non-drive side end cap into the vise insert tool and pull up on the wheel/hub to remove the end cap.

AV-4 / AV-5 36/14

2 Gently tap the exposed axle end with a plastic mallet to dislodge the axle from the hub bearings.

Use your thumb to push the axle through the hub shell and remove the wave spring from the non drive side hub shell.

Remove the front axle from the drive side of the hub.

Plastic Mallet

3 Use your fingers to remove the end cap from the drive side of the axle.

4 Spray isopropyl alcohol onto the axle and clean it with a shop towel.

NOTICE

To prevent damage to the hub surfaces, do not use acetone or similar products to clean parts.

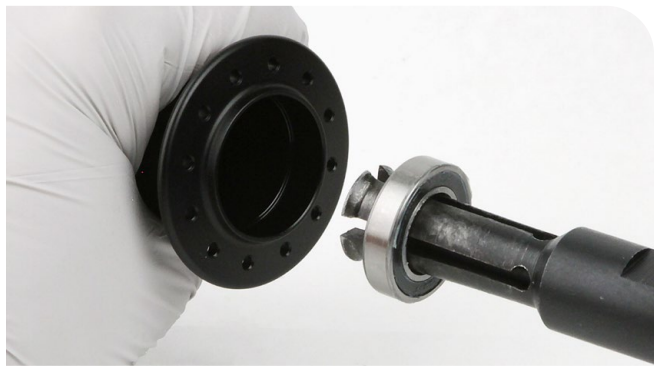
Isopropyl Alcohol

5 Insert the 17 mm Bearing Puller slotted attachment through the drive side bearing. Align the slotted attachment with the bottom of the bearing, and expand it inside the bearing.

Do not over tighten the slotted attachment. For more detailed assembly and usage, see the bearing puller manufacturer's instructions.

Grip the slide hammer and forcefully pull away from the slotted attachment to remove the bearing from the hub shell.

17 mm Slotted Attachment

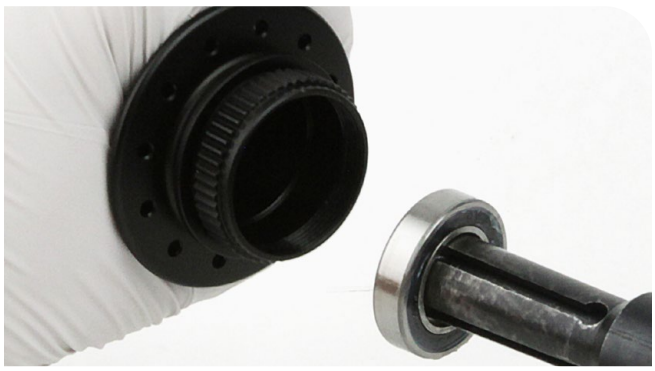


6 Insert the 17 mm Bearing Puller slotted attachment through the non-drive side bearing. Align the slotted attachment with the bottom of the bearing, and expand it inside the bearing.

Do not over tighten the slotted attachment. For more detailed assembly and usage, see the bearing puller manufacturer's instructions.

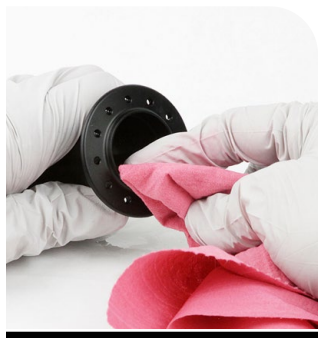
Grip the slide hammer and forcefully pull away from the slotted attachment to remove the bearing from the hub shell.

17 mm Slotted Attachment



7 Clean the hub shell with isopropyl alcohol and a shop towel.

Isopropyl Alcohol



Shop Towel

Front Hub Bearing Installation

1 Install a new Zipp 6903/61903 hub bearing into the drive side of the hub with the **black** seal facing outward.

Note: Ceramic bearings have **blue** seals on both sides of the bearing; installation orientation is not important.

2 Slide a 6903 30x17 tool onto the Press Tool threaded rod.

Insert the threaded rod through the bearing on the drive side of the hub shell. Slide a second 6903 30x17 tool onto the threaded rod.

Thread the Press Tool handle onto the threaded rod.

Turn the handle clockwise to press the bearing into the hub until it is hand-tight.

Do not overtighten the bearing.

Remove the tools.

NOTICE

To prevent damage when pressing the bearing into the hub, make sure that the bearing press tools contact both the inner and outer bearing races or bearing bores and not the hub shell.

6903 30x17 6903 30x17

3 Install a new Zipp 6903/61903 hub bearing into the non-drive side of the hub with the **black** seal facing outward.

Note: Ceramic bearings have **blue** seals on both sides of the bearing; installation orientation is not important.

4 Slide a 6903 30x17 tool onto the Press Tool threaded rod.

Insert the threaded rod through the bearing on the non-drive side of the hub shell. Slide a second 6903 30x17 tool onto the threaded rod.

Thread the Press Tool handle onto the threaded rod.

Turn the handle clockwise to press the bearing into the hub until it is hand-tight.

Do not overtighten the bearing.

Remove the tools.

6903 30x17 6903 30x17

5 Apply grease to the non-drive side axle bearing race.

Klüber Staburags NBU30 Grease

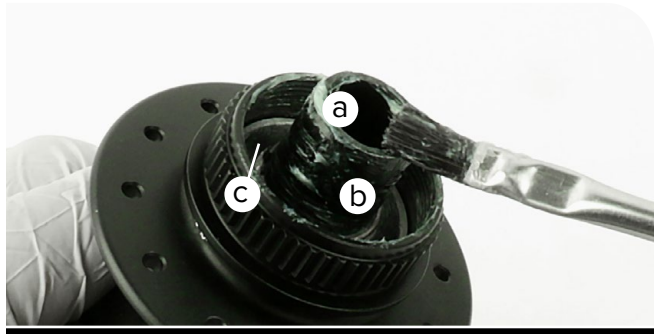
6 Insert the non-drive side end of the axle into the drive side of the hub, through the drive side bearing, through the hub, and through the non-drive side bearing. Press the axle into the hub bearing with your thumb until the axle bearing step fits flush into the bearing.

7 Install the wave spring onto the non-drive side of the axle. You may need a screwdriver or similar tool to press the wave spring against the bearing face.

NOTICE

Do not scratch the axle when using a tool to install the wave spring.

8 Apply grease to the following locations on the drive side and non-drive side axle end:
- Axle front surface (a)
- Axle radial surface (b)
- Bearing front face across bearing seal, inner- and outer ring (c)



Cognition or Klüber Staburags NBU30 Grease

9 Press the end caps onto the axle.

10 Clean the hub with isopropyl alcohol and a shop towel.

Isopropyl Alcohol Shop Towel

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