Dealer's Manual

ROAD	GRAVEL	MTB
E-BIKE	LIFESTYLE	GENERAL

Hub Set (Disc Brake)

XTR

HB-M9210-B
FH-M9210-B

Contents

IMPORTANT NOTICE 3
TO ENSURE SAFETY 4
List of tools to be used 6
Installation/removal 7
Spoke lacing 7
Installing the rotor 8
Removing the rotor 9
Maintenance 10
Front hub disassembly 10
Front hub assembly 13
Pre-work cautions 17
Freehub disassembly 18
Freehub assembly 25
Replacing the freewheel body unit 34

IMPORTANT NOTICE

- **This dealer's manual is intended primarily for use by professional bicycle mechanics.**

  Users who are not professionally trained for bicycle assembly should not attempt to install the components themselves using the dealer's manuals.

  If any part of the information on the manual is unclear to you, do not proceed with the installation. Instead, contact your place of purchase or a distributor for assistance.
- Make sure to read all manuals included with each product.
- Do not disassemble or modify the product other than as stated in the information contained in this dealer's manual.
- All manuals and technical documents are accessible online at https://si.shimano.com .
- For consumers who do not have easy access to the internet, please contact a SHIMANO distributor or any of the SHIMANO offices to obtain a hardcopy of the user's manual.
- Please observe the appropriate rules and regulations of the country, state or region in which you conduct your business as a dealer.

For safety, be sure to read this dealer's manual thoroughly before use, and follow it for correct use.

The following instructions must be observed at all times in order to prevent personal injury and physical damage to equipment and surroundings.

The instructions are classified according to the degree of danger or damage which may occur if the product is used incorrectly.

DANGER	Failure to follow the instructions will result in death or serious injury.
WARNING	Failure to follow the instructions could result in death or serious injury.
CAUTION	Failure to follow the instructions could cause personal injury or physical damage to equipment and surroundings.

TO ENSURE SAFETY

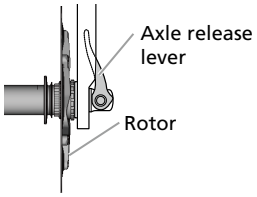
⚠ WARNING

- **Be sure to follow the instructions provided in the manuals when installing the product.**

  Only use SHIMANO genuine parts. If a component or replacement part is incorrectly assembled or adjusted, it can lead to component failure and cause the rider to lose control and crash.
- Wear approved eye protection while performing maintenance tasks such as replacing components.
- When assembling the freewheel body unit, do not apply grease or oil outside of the designated areas. This may cause the freewheel body unit to malfunction.
- Do not wash the freewheel body unit. The internal grease may flow out and cause the freewheel body unit to malfunction.

Be sure to also inform users of the following:

- **Check that the wheels are fastened securely before riding the bicycle. Using the axle release lever incorrectly may cause the wheel to fall off, etc. and lead to serious injury due to a fall or collision.**
- This product can only be used in combination with the special front fork/frame and the through axle. If it is used in combination with any other front fork/frame and through axle, it may cause the wheel to become detached from the bicycle during riding and result in serious bodily injury.
- Confirm that the axle release lever does not interfere with the rotor even when it is fully engaged. If the axle release lever is on the same side as the rotor, there is the danger that it may interfere with the rotor. If it interferes with the rotor, stop using it and consult a place of purchase or a distributor.



- Read the disc brake manual carefully, and keep it in a safe place for later reference.
- For details on the E-THRU axle, refer to the E-THRU axle user's manual.

For installation to the bicycle and maintenance

- When installing the wheel to the front suspension fork/frame, always be sure to follow the instructions given in the manual for the front suspension fork/frame. The securing method and tightening torque for the wheel both vary depending on the type of front suspension fork/frame being used. If the instructions are not followed, the wheel may fall out and possibly result in serious injury. When the wheel is secured in accordance with the tightening torque, the wheel's rotation may become stiff; however, the instructions in the manual for front suspension fork/frame must always be followed.

⚠ CAUTION

For installation to the bicycle and maintenance

- When installing or removing the rotor lock ring, be careful not to touch the outer edges of the rotor with your hands. Wear gloves to protect your hands from getting cut.

NOTICE

Be sure to also inform users of the following:

- This product is not warrantied against damage caused by improper use, abuse, or issues resulting from a crash, unless the circumstance was caused by a manufacturing problem.
- If there are abnormal noises or if the freewheel body unit becomes difficult to engage, consult a place of purchase or a distributor.
- Use a neutral detergent when cleaning hubs. Other cleaners may damage the hubs. Do not clean any areas that have been instructed not to be cleaned.
- Do not clean the hub areas with a high-pressure wash. Water may get inside the hubs, which can degrade performance.
- Products are not guaranteed against natural wear and deterioration from normal use and aging.
- For maximum performance we highly recommend SHIMANO lubricants and maintenance products.

For installation to the bicycle and maintenance

- If the wheel becomes stiff and difficult to turn, perform an inspection.
- Use only the lubricants specified by SHIMANO in this dealer's manual.
- When replacing the E-THRU axle, make sure that the replacement E-THRU axle is of the same model as the current E-THRU axle attached to the frame. A different model may not be mounted properly onto the frame due to differences in axle length, screw size, housing diameter, etc.
- Aluminum is used in the outer material of the freewheel body unit. Use an aluminum lock ring for the cassette. Refer to " Specifications " on our website (https://productinfo.shimano.com/) for aluminum lock ring models.
- When attaching the hubs to a wheel truing stand, use TL-HB16 for the front hub and TL-FH12 for the freehub.

The actual product may differ from the illustration because this manual is intended mainly to explain the procedures for using the product.

List of tools to be used

The following tools are needed for installation/removal, adjustment, and maintenance purposes.

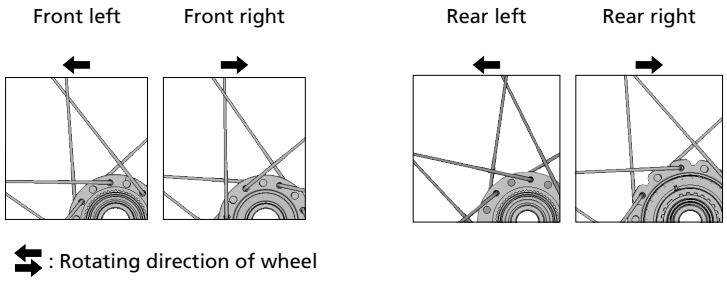
Tool	
	TL-FC36
	TL-FH12
	TL-FH17A
	TL-HB16
	TL-HB017
	Snap ring pliers (recommended diameter: 0.9 - 1.1 mm)
	Bearing press tool
	Slotted screwdriver
	Soft face mallet

Installation/removal

Spoke lacing

1. **Lace the spokes as shown in the figure.**

   Radial lacing is not supported.

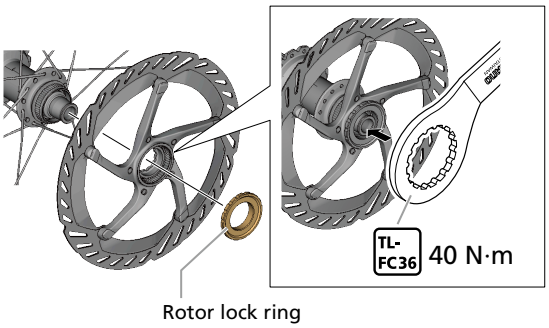


NOTICE

- When assembling the wheels, use the SHIMANO original tool (TL-HB16 hub setting tool for thru axle hub or TL-FH12 hub setting tool for 12 mm thru axle FH).
- Refer to " Specifications " on our website (https://productinfo.shimano.com) to obtain detailed specifications for each hub.

Installing the rotor

1. Set the rotor on to the hub, then secure it with the rotor lock ring.



	External spline type
Rotor lock ring	
Lock ring tightening tool	TL-FC36

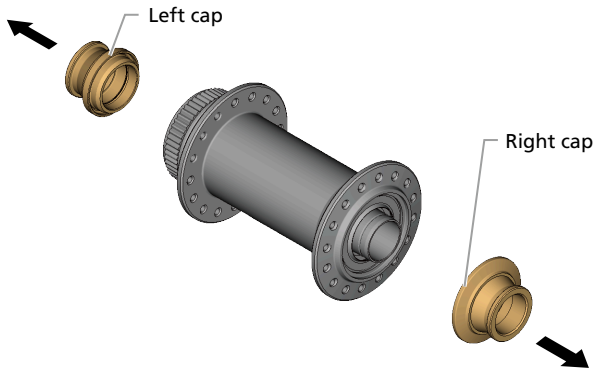
Removing the rotor

Perform the removal of the rotor in the reverse order from the installation procedure.

Maintenance

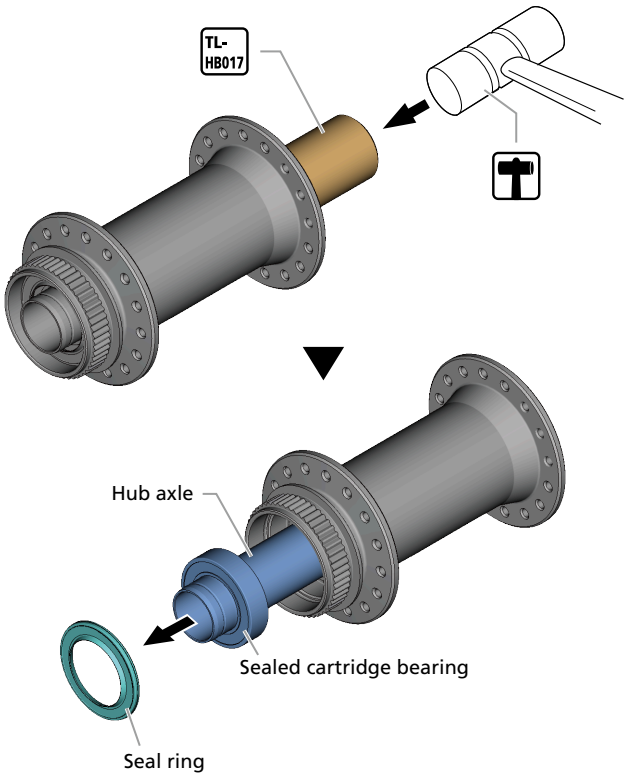
Front hub disassembly

1. **Remove the left and right axle caps by pulling them outwards off the end of the hub.**

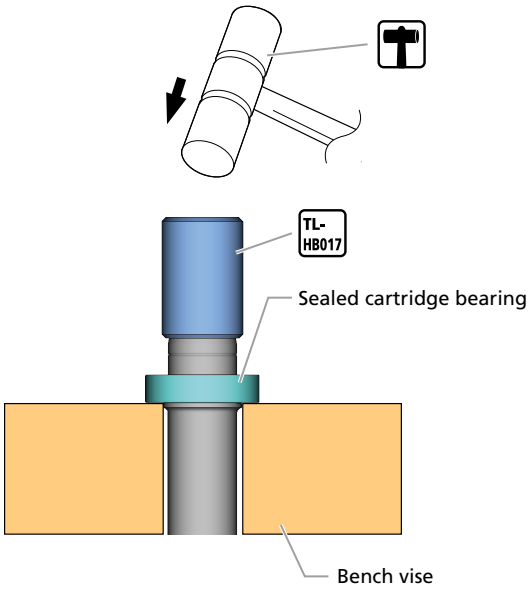


2. **Remove the hub axle, sealed cartridge bearing, and seal ring.**

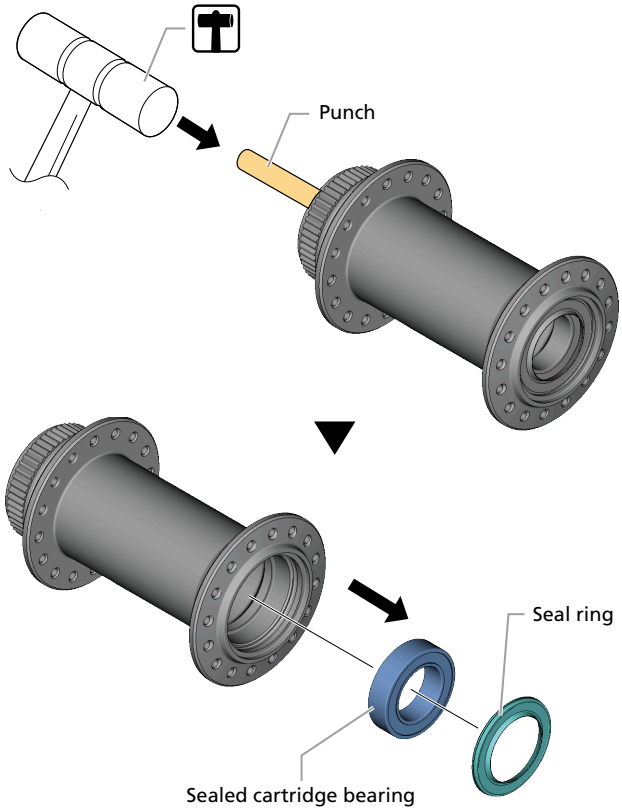
   (1) Set the SHIMANO original tool onto the hub axle, then knock the SHIMANO original tool with a soft face mallet to remove the hub axle, bearing, and seal ring.



   (2) Use a bench vise to remove the bearing from the hub axle.



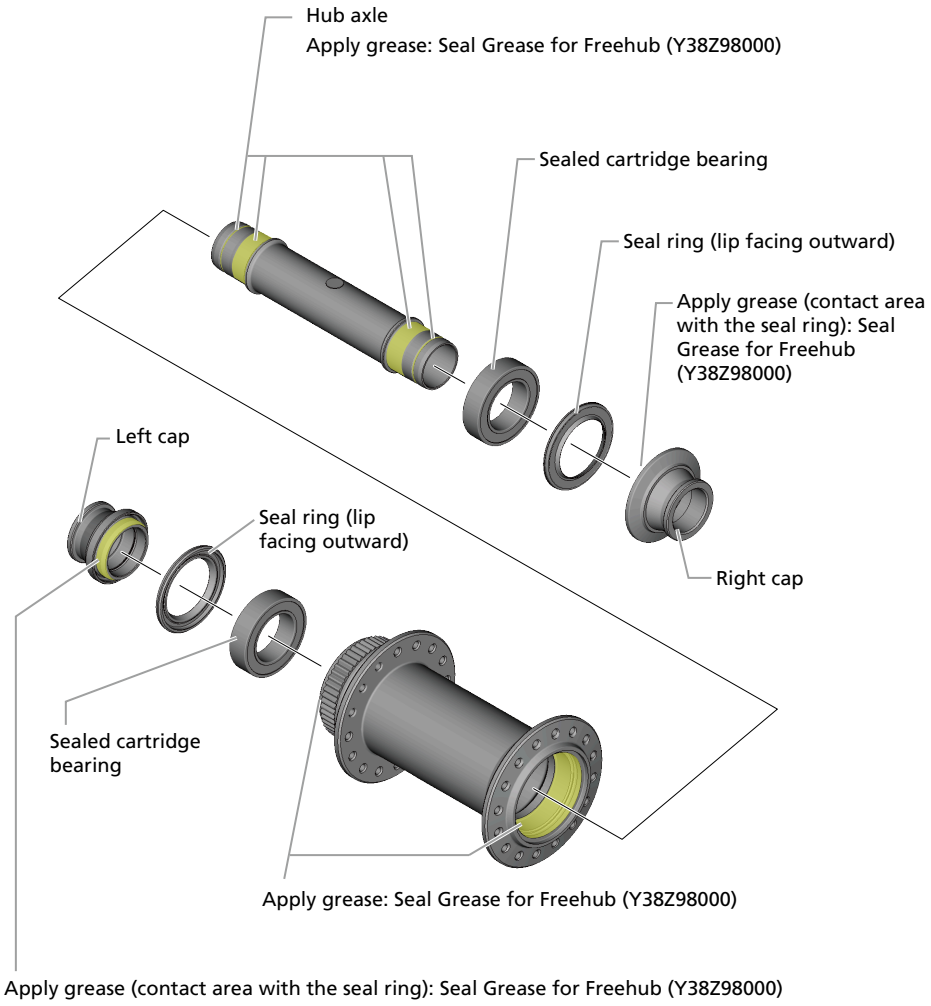
(3) Place a punch (with a recommended diameter of 18 - 25 mm and length of 120 - 150 mm) against the bearing on the opposite side, then strike it with a soft face mallet to remove the bearing and seal ring.



TECH TIPS

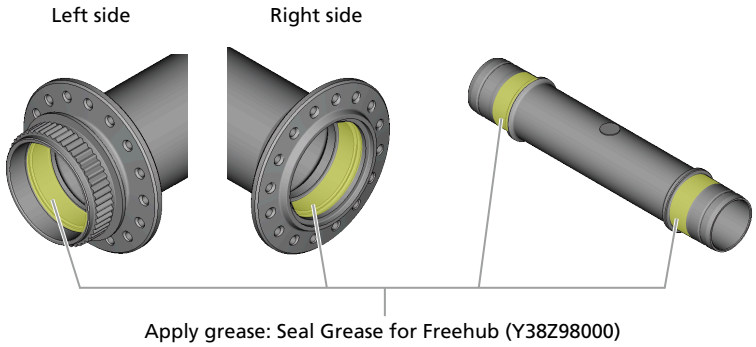
- A hub axle with a SHIMANO original tool (TL-HB017 tool for removing the hub bearing) set can be used instead of the punch.

3. The unit can be disassembled as shown in the figure. Apply grease to the indicated parts at periodic intervals.



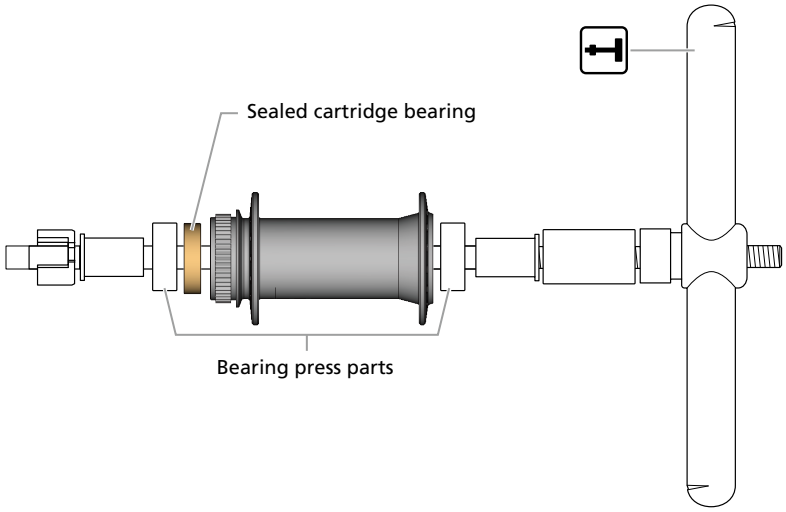
Front hub assembly

1. Apply grease to the hub axle and hub shell.

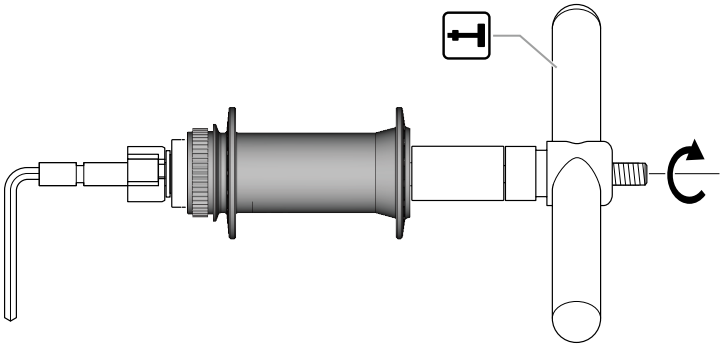


2. Install the sealed cartridge bearing.

(1) Install the bearing and bearing press parts (inner diameter 17 mm, outer diameter 30 mm) to the hub body, and set the bearing press tool.



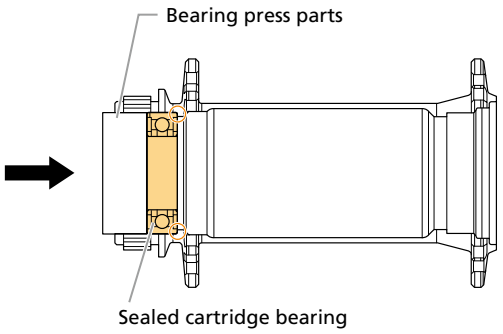
(2) Turn the handle of the bearing press tool, and securely press-fit the bearing as far as it will go.



NOTICE

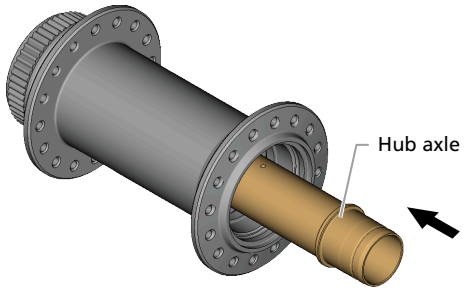
- Make sure to install the bearing on the left side first.
- The bearing press parts should touch both the outer race and inner race of the bearing.

- Press-fit the bearing to the position where the outer race seats securely into the hub body.

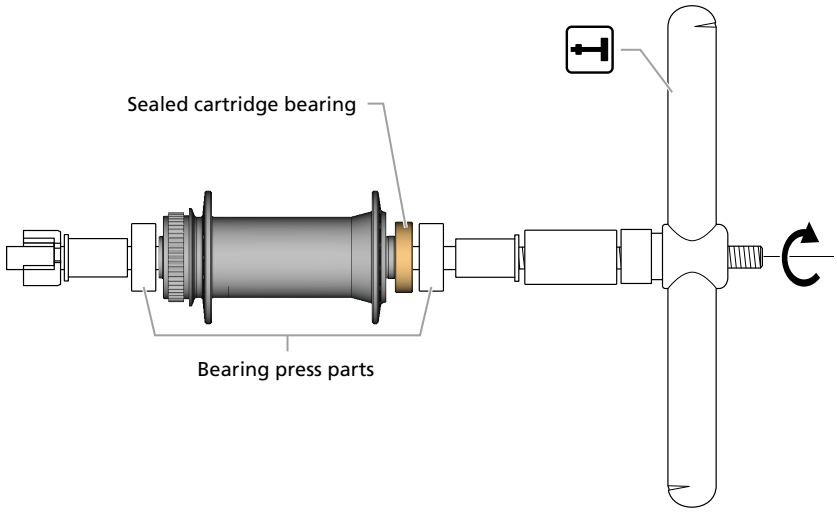


3. Install the bearing and hub axle.

(1) Remove the bearing press tool and bearing press parts, and insert the hub axle from the right side of the hub body.



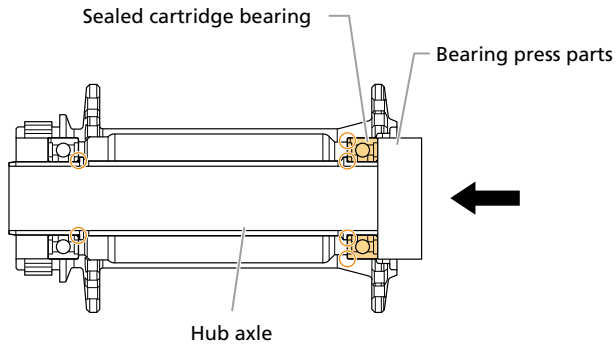
(2) Install the bearing and bearing press parts to the hub body, and set the bearing press tool. Turn the handle of the bearing press tool, and securely press-fit the bearing as far as it will go.



NOTICE

- The bearing press parts should touch both the outer race and inner race of the bearing.

- Press-fit the bearing to the position where the inner race seats securely into the hub axle, and the outer race seats securely into the hub body.

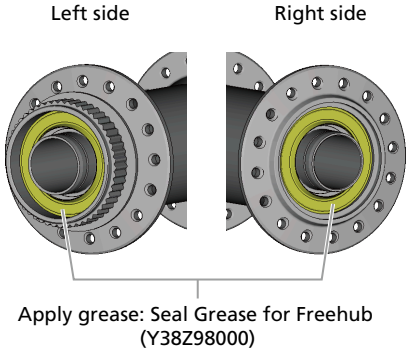


4. Make sure that the bearings are completely installed.

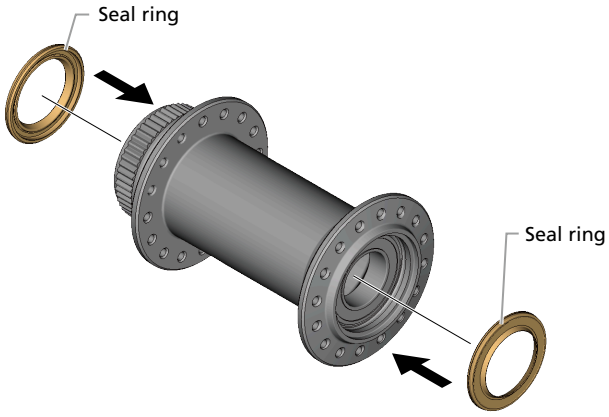
(1) Push the axle left and right to confirm there is no excess play in the bearings. If there is excess play, perform step 3. If there is still excess play, perform step 2.

(2) Hold the hub body with one hand, and rotate one side of the hub axle with the other hand to confirm that it rotates smoothly. If it is not smooth, gently tap the left side of the hub axle with the SHIMANO original tool (TL-HB017) set to loosen the bearing, as when performing disassembly. When loosening, loosen the right bearing first.

5. Apply grease to the left and right bearings.



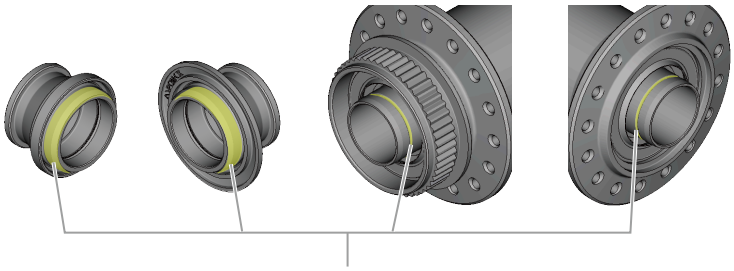
6. Install the left and right seal rings.



NOTICE

- Install the seal rings very carefully so that they are oriented correctly, parallel to the hub, and not deformed.

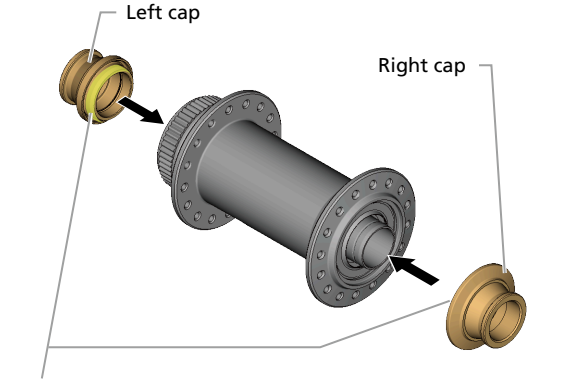
7. Apply grease to the left and right caps and the hub axle.



Apply grease: Seal Grease for Freehub (Y38Z98000)

8. Install the left and right caps.

Be sure to push the caps until they click.

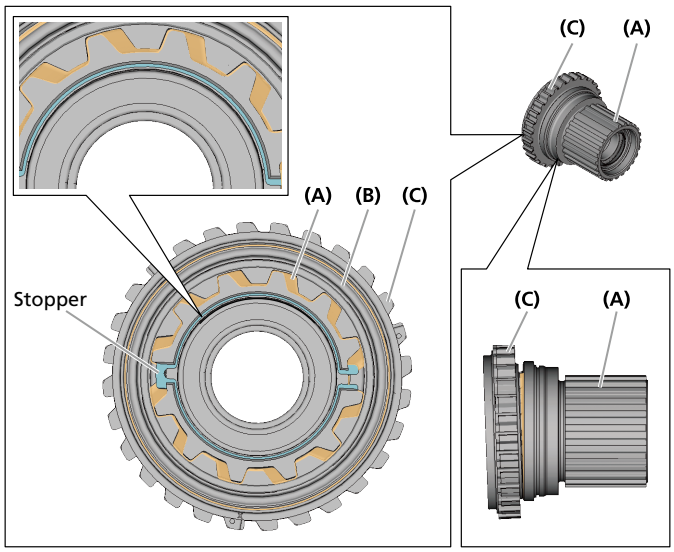


Apply grease (contact area with the seal ring): Seal Grease for Freehub (Y38Z98000)

Pre-work cautions

⚠ WARNING

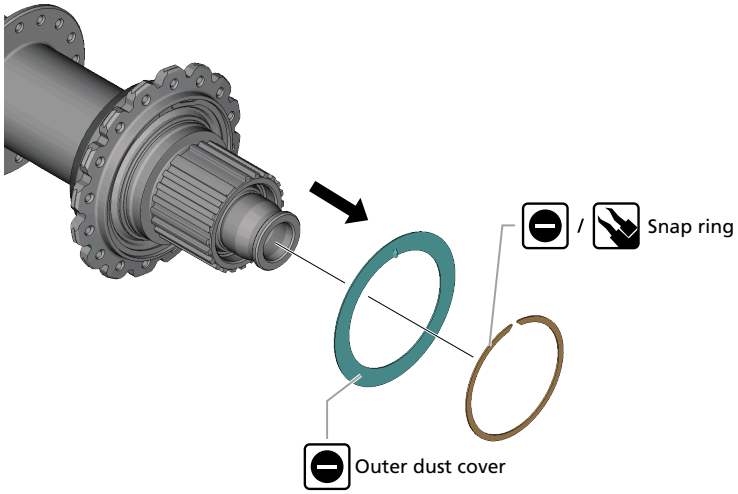
- Apply the special grease (Seal Grease for Freehub) to the areas illustrated in the figure in step 10 of “Freehub disassembly.” Only apply a thin film by hand, and do not mix any other type of grease. If too much grease is used, the wrong grease is used, or grease is applied outside the specified areas, the freewheel body unit may malfunction.
- Do not apply grease or oil to the colored parts in the figure. This may lead to a malfunction in the freewheel body unit.



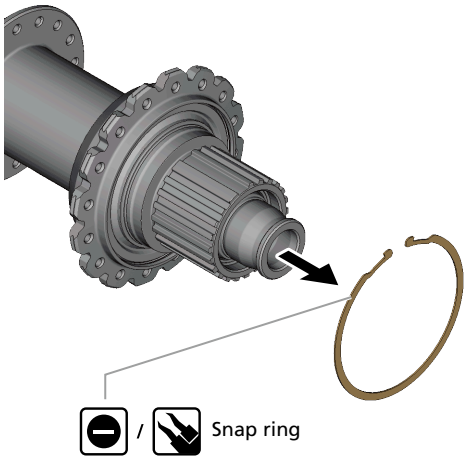
- Do not disassemble the freewheel body unit. The three parts (A), (B) and (C) form one unit (the freewheel body unit). Disassembling them may lead to a malfunction in the freewheel body unit. Do not disassemble the stopper.
- Make sure that the freewheel body unit is operating correctly before riding the bicycle by checking it several times following parts replacement or maintenance. If the freewheel body unit appears to be malfunctioning, replace it.

Freehub disassembly

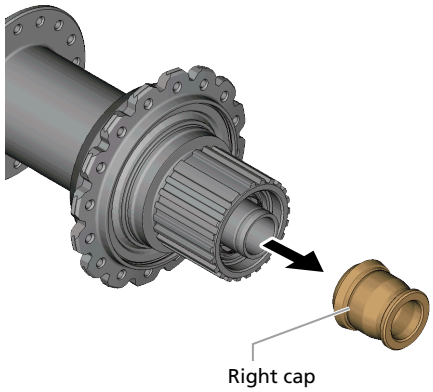
1. **Remove the outer dust cover and snap ring.**



2. **Remove the snap ring.**

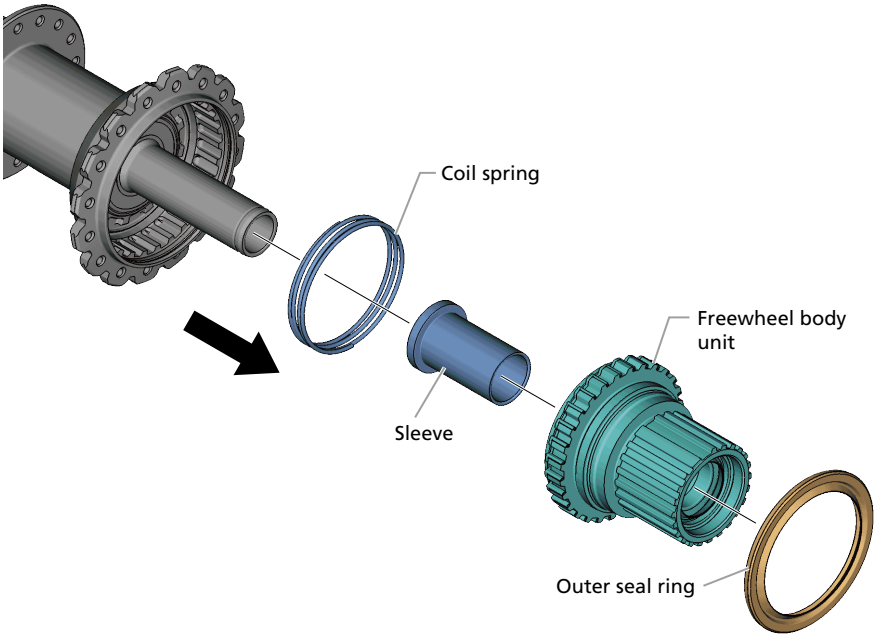


3. **Remove the right cap by pulling it outwards off the end of the hub axle.**

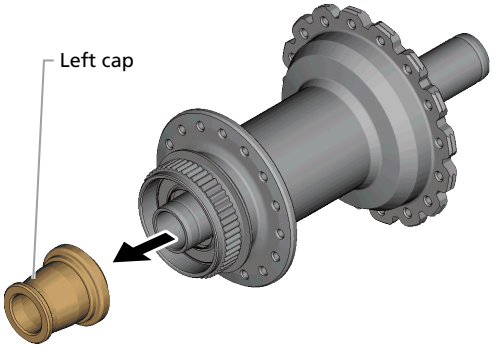


4. **Remove the freewheel body unit and outer seal ring.**

   Also remove the sleeve and coil spring at the same time.

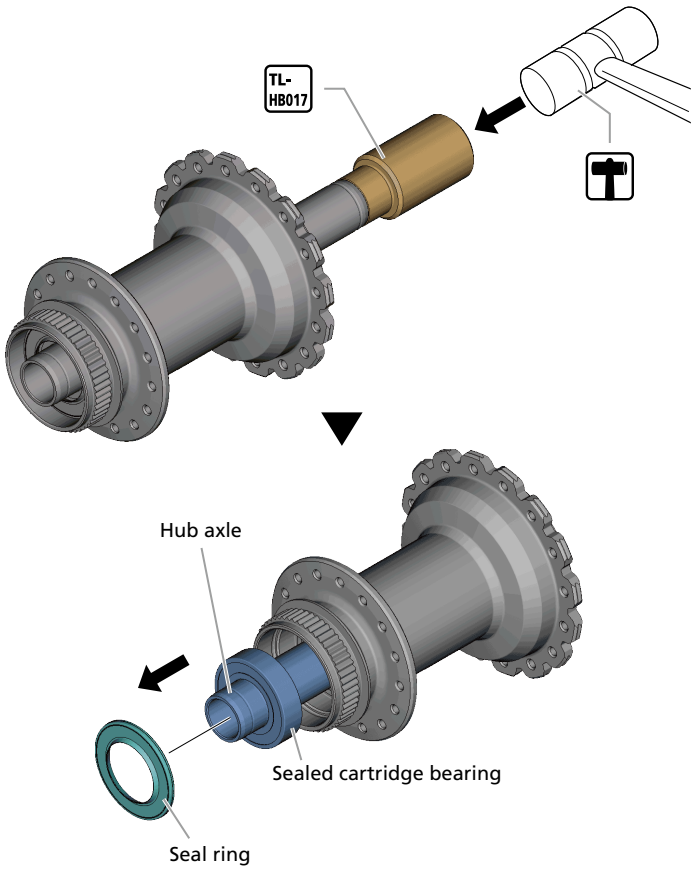


5. Remove the left cap by pulling it outwards off the end of the hub axle.

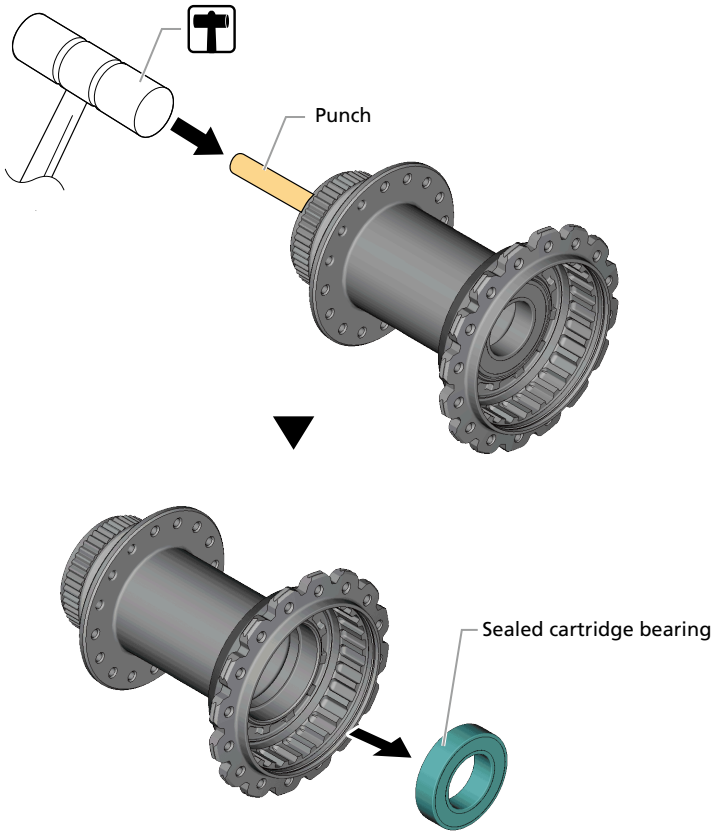


6. Remove the hub axle, sealed cartridge bearing, and seal ring.

(1) Set the SHIMANO original tool onto the hub axle, then knock the SHIMANO original tool with a soft face mallet to remove the hub axle, bearing, and seal ring.



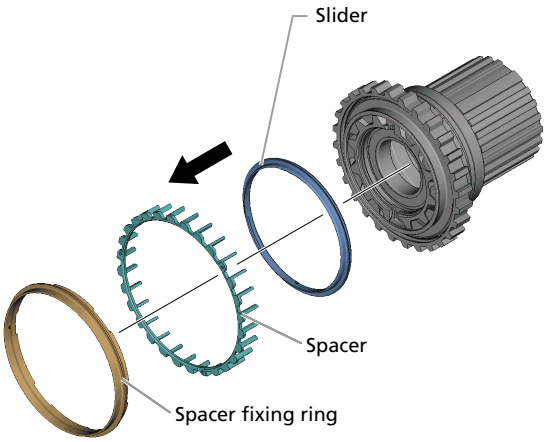
(2) Place a punch (with a recommended diameter of 10 - 15 mm and length of 120 - 150 mm) against the bearing on the opposite side, then strike it with a soft face mallet to remove the bearing.



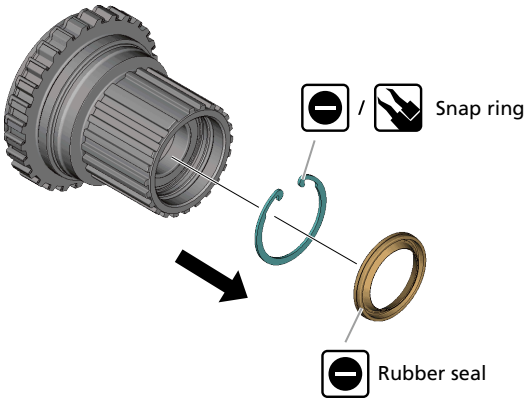
TECH TIPS

- A hub axle with a SHIMANO original tool (TL-HB017 tool for removing the hub bearing) set can be used instead of the punch.

7. Remove the spacer fixing ring, spacer, and slider.

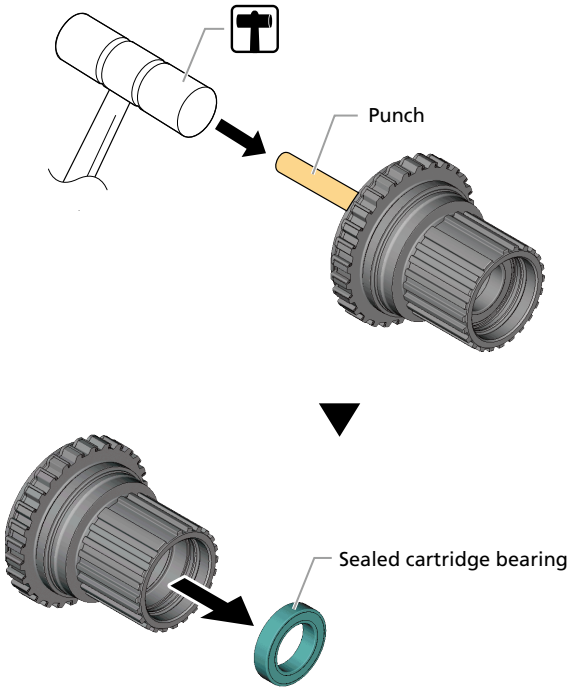


8. Remove the rubber seal and snap ring.

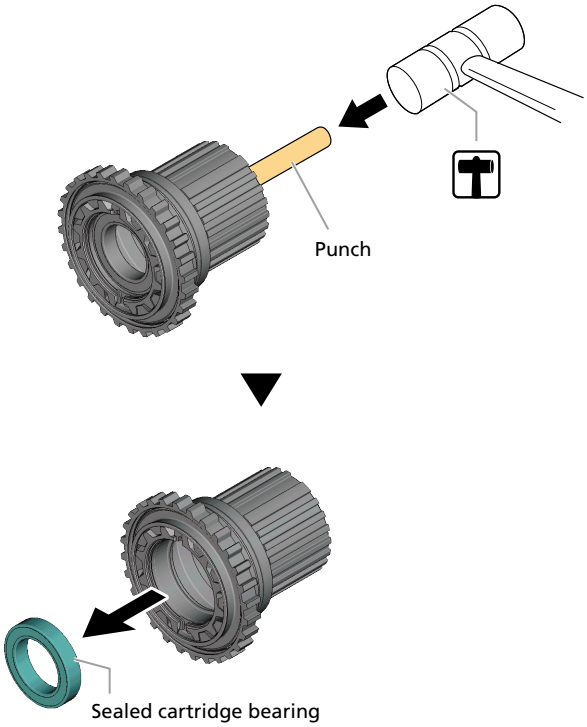


9. Remove the bearing of the freewheel body unit.

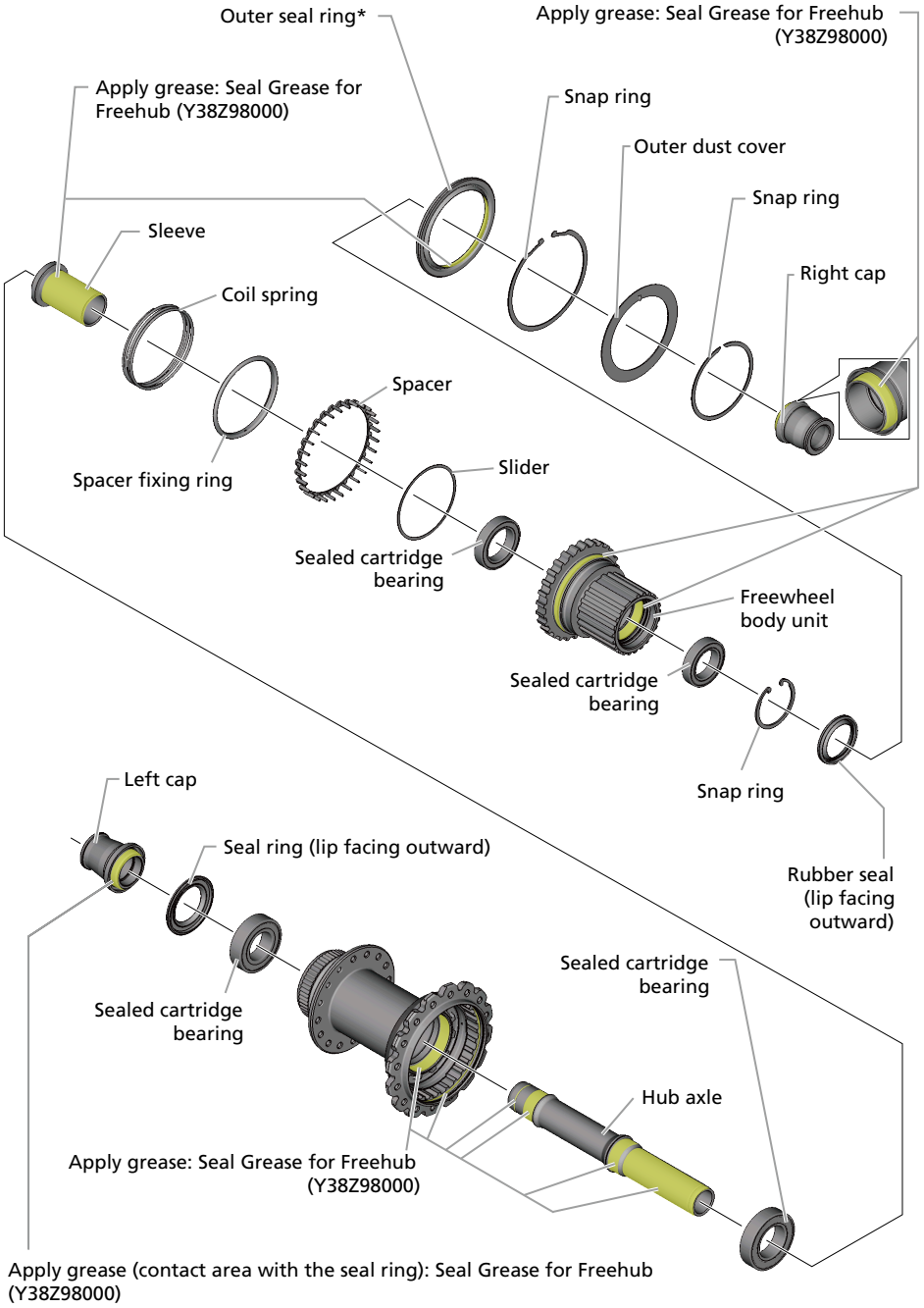
(1) Place a punch (with a recommended diameter of 16 - 17 mm and length of 50 mm or longer) against the bearing, then strike it with a soft face mallet to push out the bearing.



(2) Also push out the bearing on the opposite side in the same manner.



10. The unit can be disassembled as shown in the figure. Apply grease to the indicated parts at periodic intervals.

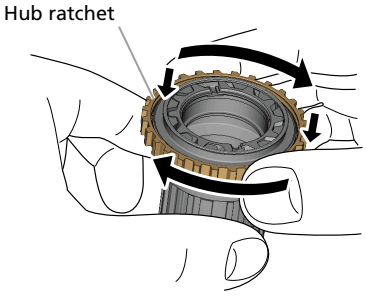


*Check that the outer seal ring orientation is correct when installing it.

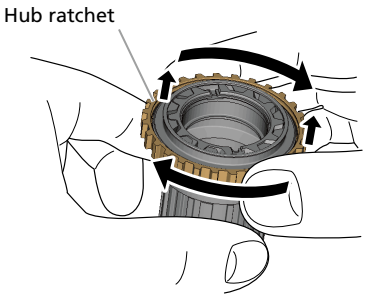
NOTICE

- Do not attempt to disassemble the freewheel body unit. If this is not observed, problems with operation may occur.
- Install/remove the outer seal ring, seal ring and rubber seal very carefully so that they are oriented correctly, parallel to the hub, and not deformed. When reinstalling the outer seal ring, seal ring and rubber seal, check that they are facing the right way and insert them as far as they will go.
- Do not attempt to disassemble the dust cover which is crimped onto the cap.

- Place the freewheel body unit down on a work surface with the hub ratchet facing up. Spin the hub ratchet clockwise while pushing downwards on it, as shown in the figure. Ensure that this firmly engages the hub ratchet, and that the hub ratchet cannot be spun freely.

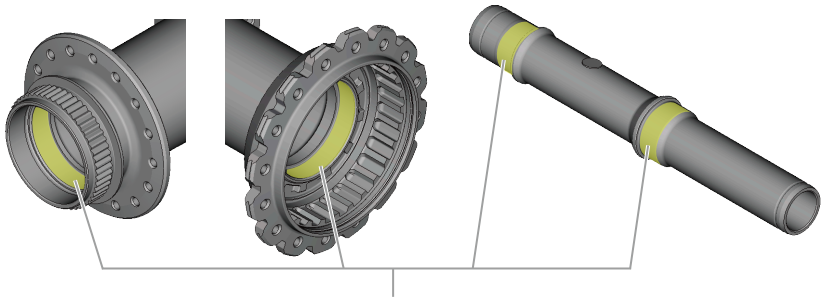


If the two hub ratchets do not engage, reset the position of the ratchets by turning clockwise while pulling up on the hub ratchet, then repeat the previous step. If the rings fail to firmly engage after several attempts, it may be indicative of a fault in the freewheel body unit.



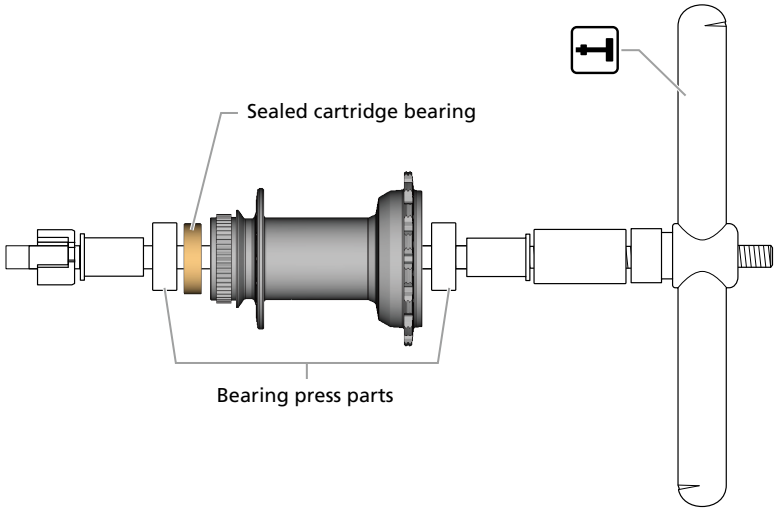
Freehub assembly

1. **Apply grease to the hub body and hub axle.**

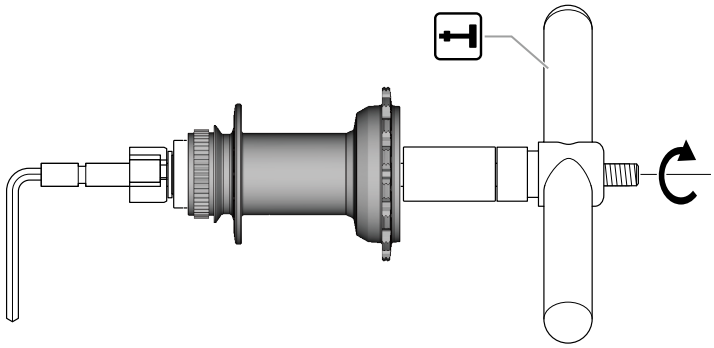


2. **Install the sealed cartridge bearing.**

   (1) Install the bearing and bearing press parts (inner diameter 15 mm, outer diameter 28 mm) to the hub body, and set the bearing press tool.



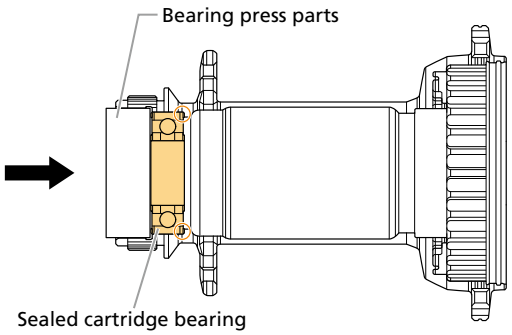
   (2) Turn the handle of the bearing press tool, and securely press-fit the bearing as far as it will go.



NOTICE

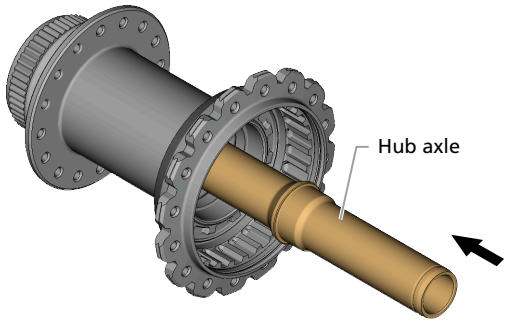
- Make sure to install the bearing on the left side first.
- The bearing press parts should touch both the outer race and inner race of the bearing.

- Press-fit the bearing to the position where the outer race seats securely into the hub body.

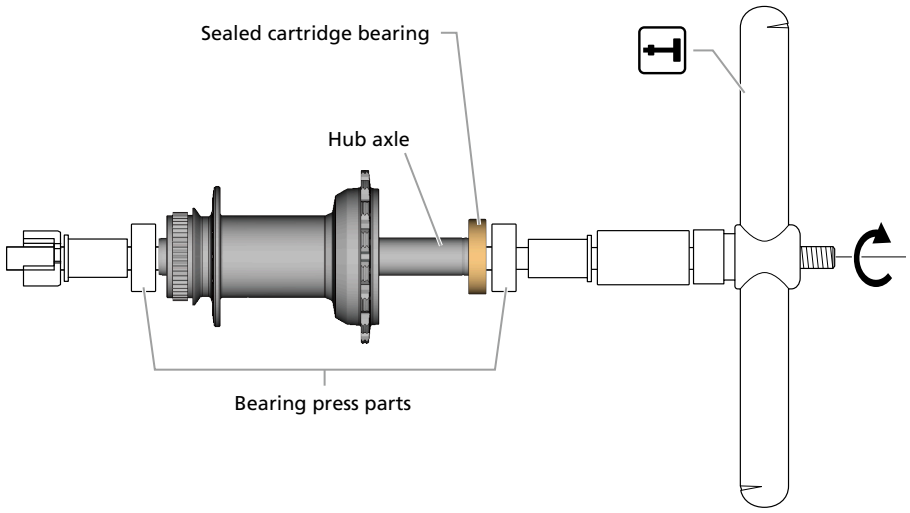


3. Install the hub axle and bearing to the hub body.

(1) Remove the bearing press tool and bearing press parts, and insert the hub axle from the right side of the hub body.



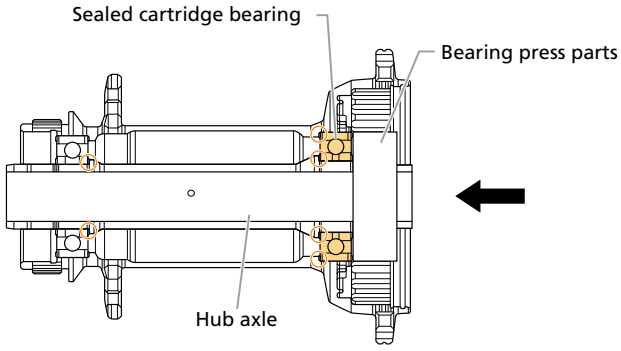
(2) Install the bearing and bearing press parts (inner diameter 17 mm, outer diameter 30 mm) to the hub body, and set the bearing press tool. Turn the handle of the bearing press tool, and securely press-fit the bearing as far as it will go.



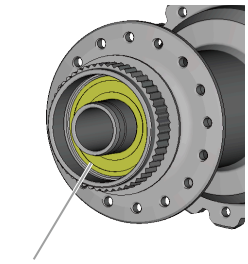
NOTICE

- The bearing press parts should touch both the outer race and inner race of the bearing.

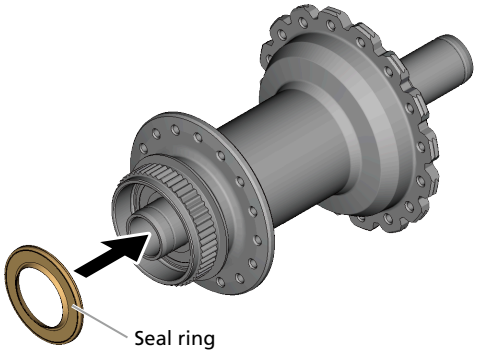
- Press-fit the bearing to the position where the inner race seats securely into the hub axle, and the outer race seats securely into the hub body.



4. **Make sure that the bearings are completely installed.**
   (1) Push the axle left and right to confirm there is no excess play in the bearings. If there is excess play, perform step 2. If there is still excess play, perform step 3.
   (2) Hold the hub body with one hand, and rotate one side of the hub axle with the other hand to confirm that it rotates smoothly. If it is not smooth, set the SHIMANO original tool (TL-HB017) onto the hub axle, then knock the SHIMANO original tool with a soft face mallet to loosen the bearing. When loosening, loosen the right bearing first.
5. **Apply grease to the bearing (seal ring contact area).**



6. **Install the seal ring on the left side of the hub body.**

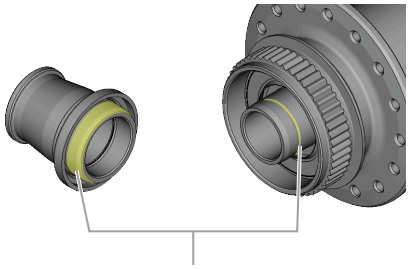


NOTICE

- Make sure to install the seal ring on the left side first.

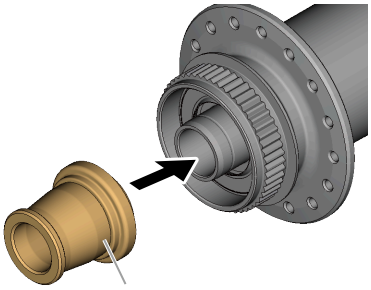
- Install the seal ring very carefully so that it is oriented correctly, parallel to the hub, and not deformed.

7. Apply grease to the left cap and the hub axle.



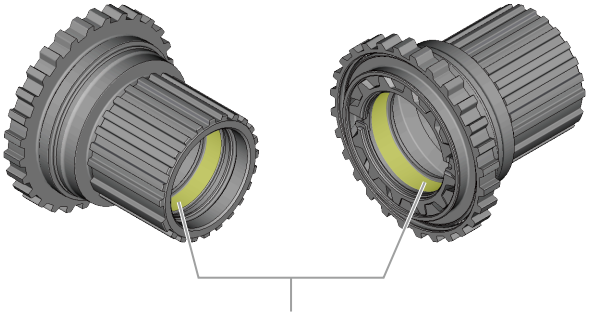
Apply grease: Seal Grease for Freehub (Y38Z98000)

8. Install the left cap to the hub axle.



Left cap

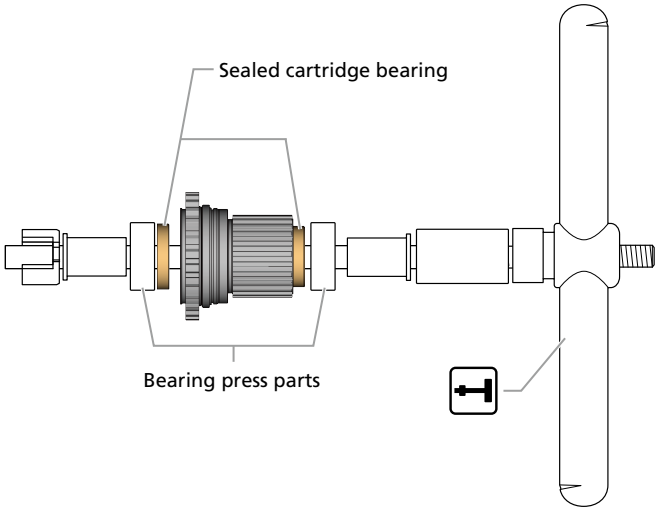
9. Apply grease to the freewheel body unit.



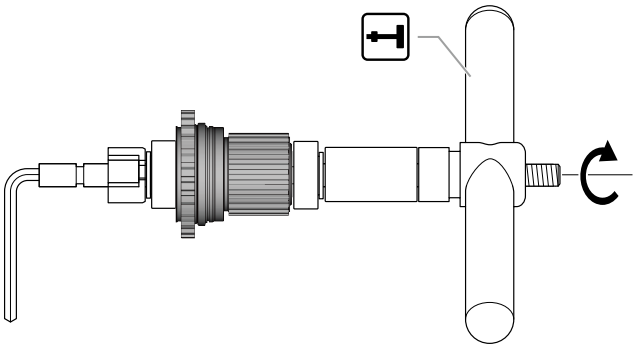
Apply grease: Seal Grease for Freehub (Y38Z98000)

10. Install the bearings.

(1) Install the left and right bearings and bearing press parts (left: inner diameter 17 mm, outer diameter 26 mm; right: inner diameter 15 mm, outer diameter 24 mm) to the freewheel body unit, and set the bearing press tool.



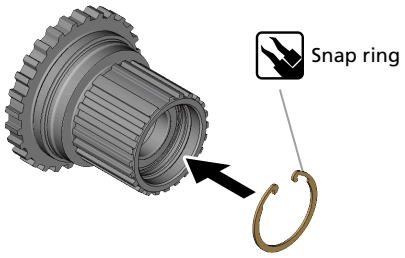
(2) Turn the handle of the bearing press tool, and press-fit the bearings.



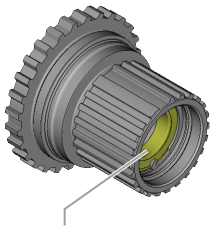
NOTICE

- The bearing press parts should touch both the outer race and inner race of the bearing.

11. Install the snap ring to the freewheel body unit.

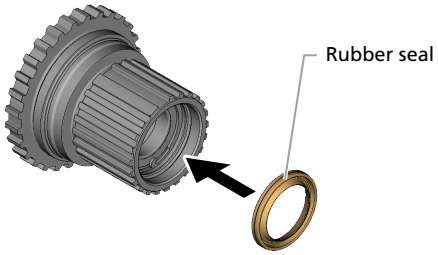


12. Apply grease to the bearings.

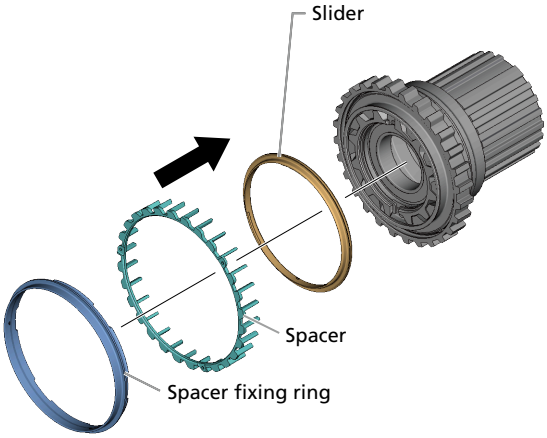


Apply grease: Seal Grease for Freehub (Y38Z98000)

13. Install the rubber seal to the freewheel body unit.

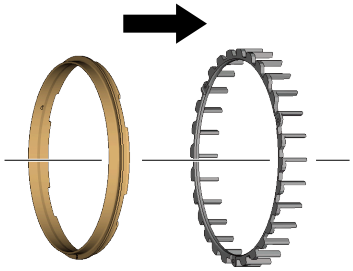


14. Install the slider, spacer, and spacer fixing ring.

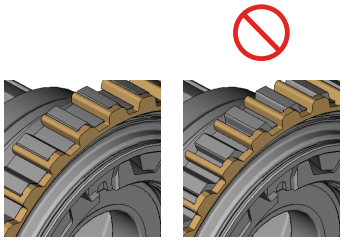


NOTICE

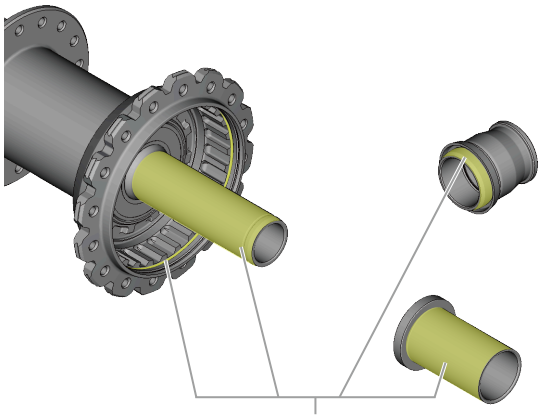
- Pay attention to the orientation of the spacer fixing ring.



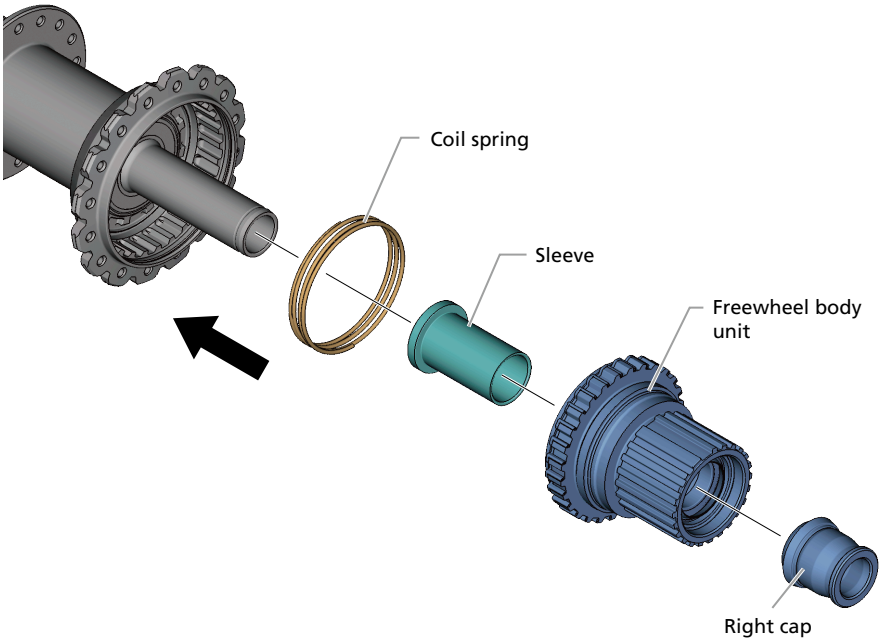
- Pay attention to the position of the spacer.



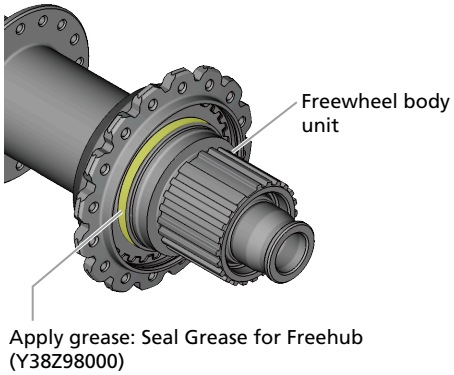
15. Apply grease to the right cap, sleeve, hub axle, and groove in the hub.



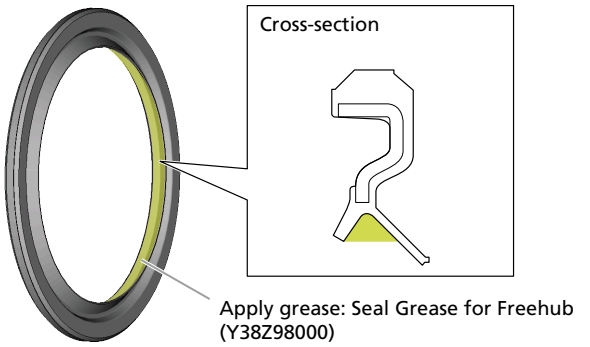
16. Install the coil spring, sleeve, freewheel body unit, and right cap.



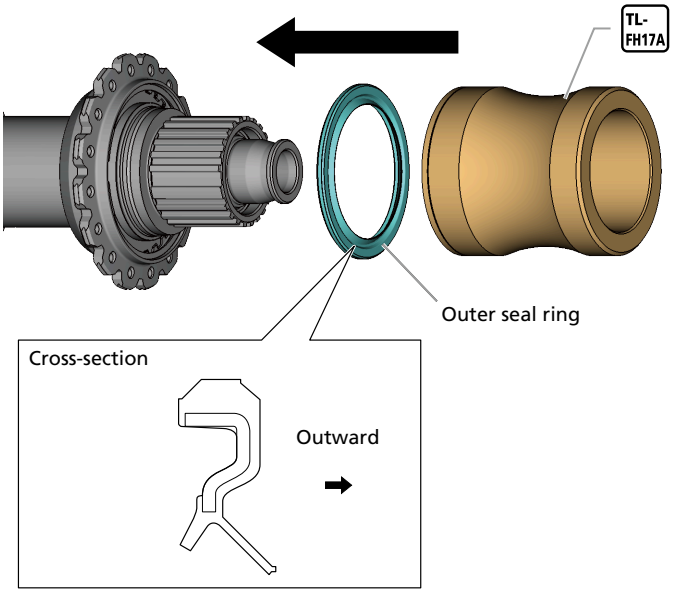
17. Apply grease to the outer seal ring contact area of the freewheel body unit.



18. Apply grease to the groove inside the lip of the outer seal ring.

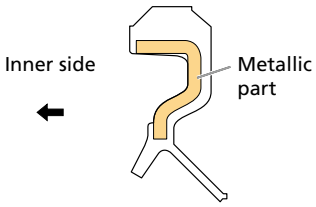


19. Install the outer seal ring.

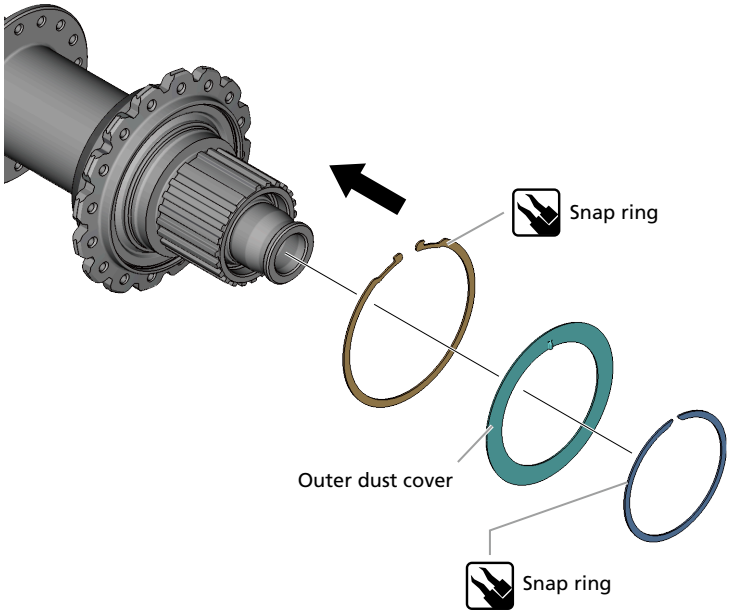


NOTICE

- Install/remove the outer seal ring very carefully so that it is oriented correctly, parallel to the hub, and not deformed. When installing the outer seal ring, check that it is facing the right way.
- Install so that the metallic part of the outer seal ring faces the inner side.



20. Install the snap ring to the hub body. Install the outer dust cover and snap ring to the freewheel body unit.


Snap ring
Outer dust cover
Snap ring

Replacing the freewheel body unit

Refer to “ Pre-work cautions ”, “ Freehub disassembly ”, and “ Freehub assembly ” when replacing the freewheel body unit.

The procedure from step 5 in “Freehub disassembly” is unnecessary, since the hub axle does not need to be removed.

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