

## Dealer's Manual

ROAD	MTB	Trekking
City Touring/ Comfort Bike	URBAN SPORT	E-BIKE

# Hub Set (Disc Brake)

## XTR

HB-M9110  
FH-M9111

## DEORE XT

HB-M8110  
FH-M8110  
FH-M8130

## SLX

HB-M7110  
FH-M7110  
FH-M7130

HB-MT900  
FH-MT901

## E-THRU Axle 12 mm

SM-AX75  
SM-AX76  
SM-AX76-B  
SM-AX78  
SM-AX78-B  
SM-AX65  
SM-AX55  
SM-AX56  
SM-AX56-B  
SM-AX58  
SM-AX58-B  
AX-MT700-142x12  
AX-MT700-148x12  
AX-MT700-157x12  
AX-MT500-142x12  
AX-MT500-148x12  
AX-MT500-157x12

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# 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. Contact your place of purchase or a local bicycle dealer for assistance.
- Make sure to read all manuals included with the 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.

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

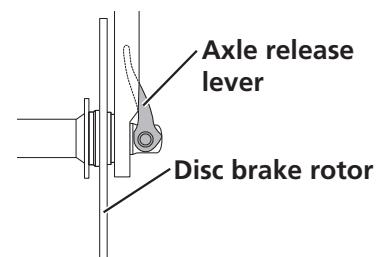
# TO ENSURE SAFETY

## ⚠ 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 freehub body unit, do not apply grease or oil outside of the designated areas. This may cause the freehub body unit to malfunction.
- Do not wash the freehub body unit. The internal grease may flow out and cause the freehub body unit to malfunction.

## Be sure to also inform users of the following:

- Check that the wheels are fastened securely before riding the bicycle. Otherwise, you may fall and be seriously injured.
- Use only in combination with a special frame and through axle. If used with any other type of frame, the wheel may come off while the bicycle is being ridden, and serious injury may occur as a result.
- Make sure that, even if the axle release lever is tightened as much as possible by hand, the axle release lever does not interfere with the disc brake rotor. The axle release lever may interfere with the disc brake rotor if it is on the disc brake rotor side, which is dangerous. If the axle release lever/quick release lever interferes with the disc brake rotor, immediately stop use and contact the place of purchase or a distributor.



## 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 of the suspension fork and serious injury may occur. When the front wheel is tightened onto the front suspension fork/frame in accordance with the tightening torque in the manual, the wheel's rotation may become stiff; however, the instructions 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 disc brake 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 defect.
- If there are abnormal noises or if the free body becomes difficult to engage, consult a place of purchase or a distributor.
- 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 freehub body unit. Use an aluminum lock ring for the cassette sprocket. 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 E-THRU models listed on the cover page of this dealer's manual are not designed for downhill bicycle riding or freeriding.
- If the freehub is making abnormal noises when the pedal is pressed, the spacer may need more grease. Apply grease to the spacer.

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	
	17 mm hub spanner
	18 mm hub spanner
	22 mm hub spanner
	TL-FH12
	TL-FH16
	TL-HB16
	Snap ring plier

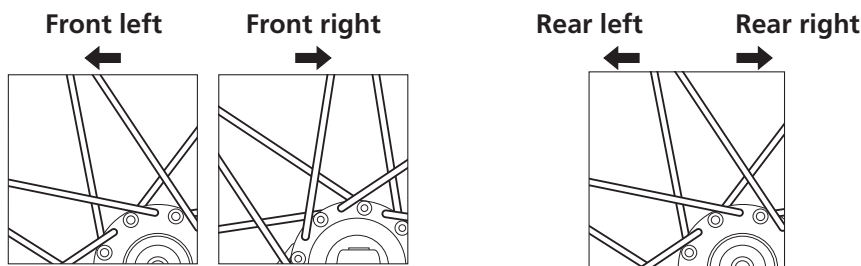
# INSTALLATION/REMOVAL

## Spoke lacing

### Standard spoke type

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

Radial lacing is not supported.



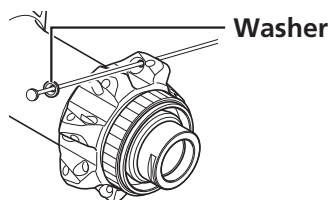
#### NOTICE

- Use SHIMANO original tools (for the front: TL-HB16, for the rear: TL-FH12) when assembling the wheel.
- Refer to "Specifications" on our website (<https://productinfo.shimano.com>) to obtain detailed specifications for each hub.

### Straight spoke type

#### 1. Install the washer to the spoke.

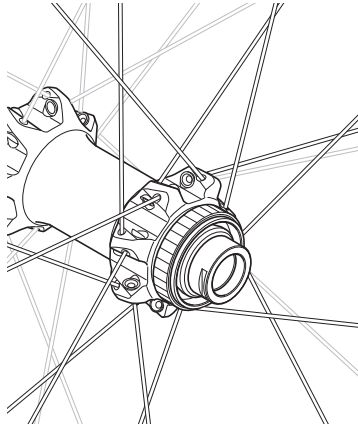
Install the spoke so that the spherical portion of the washer is facing the direction in which it will fit into the indent in the flange.



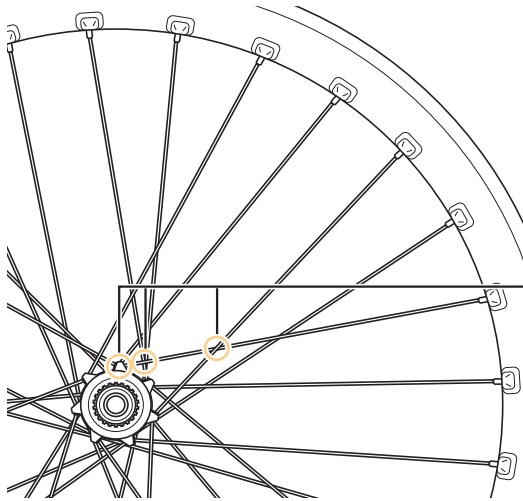


## 2. Lace the spokes as shown in the figure.

Only three-cross lacing can be used.



ERD (Effective Rim Diameter): 550 -  
610 mm  
Rim offset: 0 - 3 mm



Including the flange portion, the spokes will intersect at the three locations shown in the figure.

### NOTICE

- Use SHIMANO original tools (for the front: TL-HB16, for the rear: TL-FH12) when assembling the wheel.
- Refer to "Specifications" on our website (<https://productinfo.shimano.com>) to obtain detailed specifications for each hub.

# MAINTENANCE

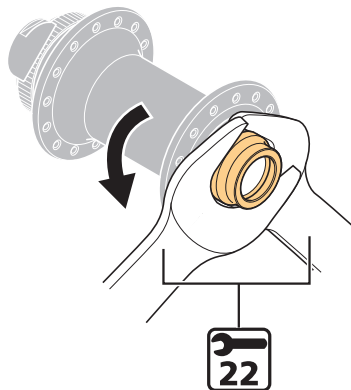
## Front hub

### Disassembly

1. Remove the dust cover.
2. Loosen the lock nut on the double-lock section on the right side of the hub body.

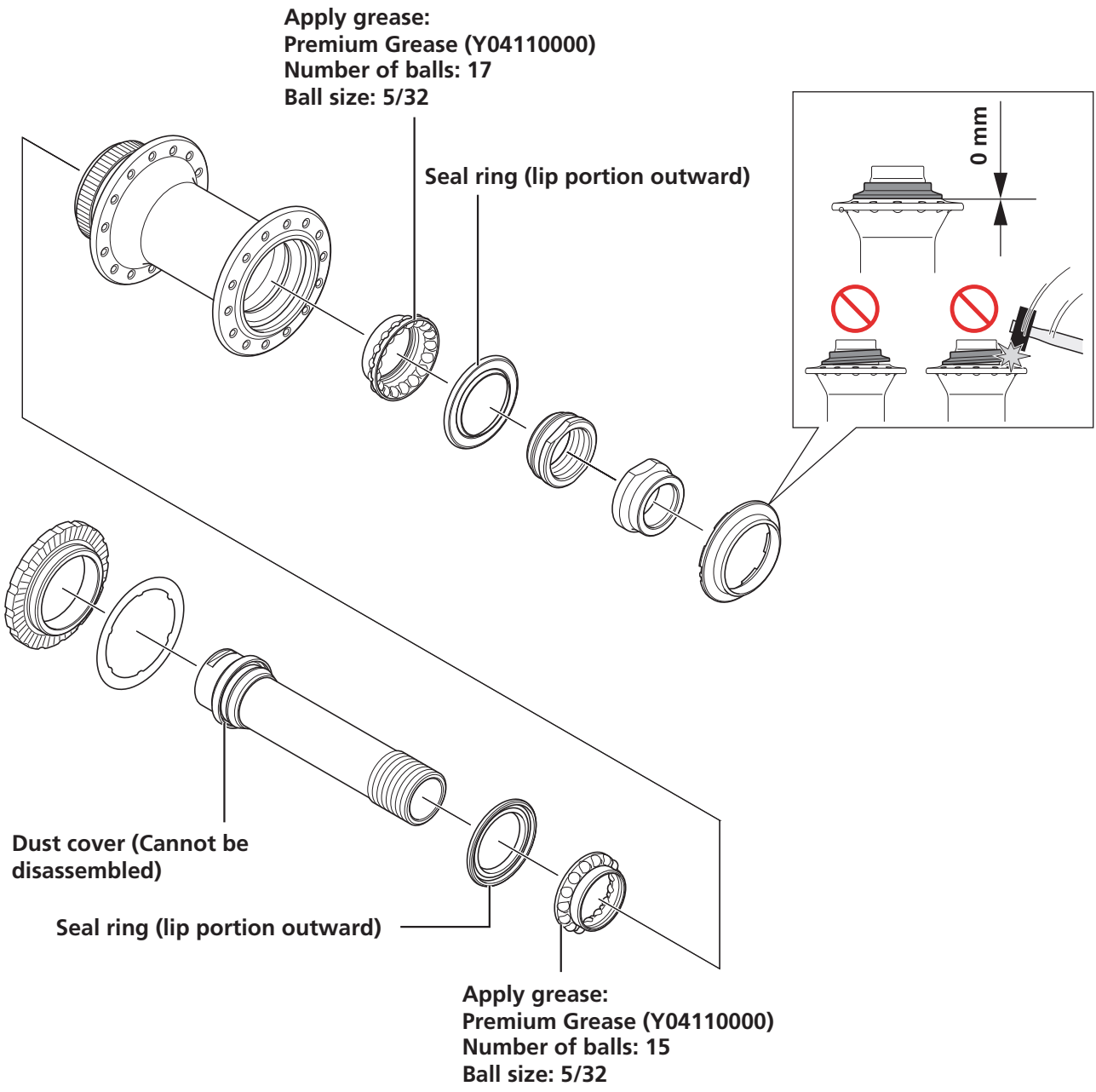
The hub cannot be disassembled from the left side of the hub body (the disc brake rotor fixing spline side).

Be careful not to apply excessive torque to the left cap when loosening the lock nut. Doing so may damage the left cap.

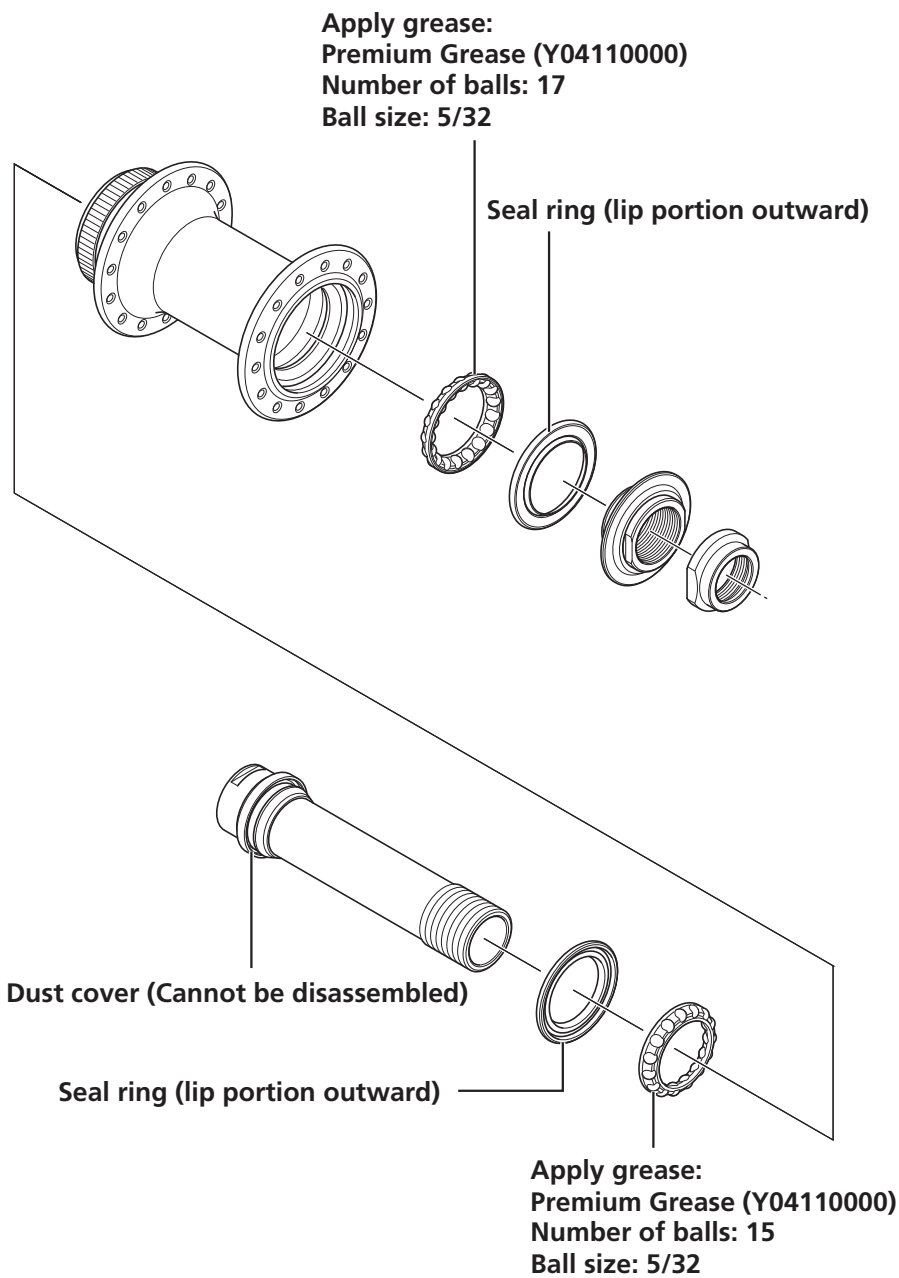


**3.** The unit can be disassembled as shown in the figure. Apply grease to the indicated parts at periodic intervals.

HB-M9110/HB-MT900



**HB-M8110/HB-M7110**

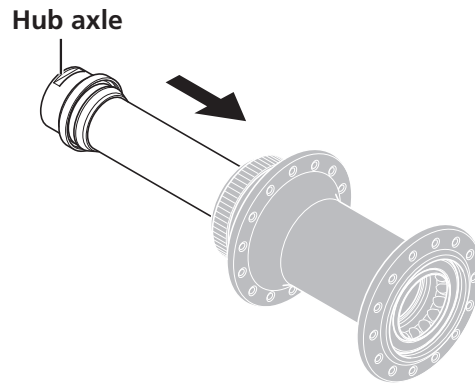


**NOTICE**

- When removing and installing the seal rings, do so very carefully so that the seal portion does not become deformed. When reassembling the freehub, check that the seal is facing the correct way and insert the seal ring as far as it will go.

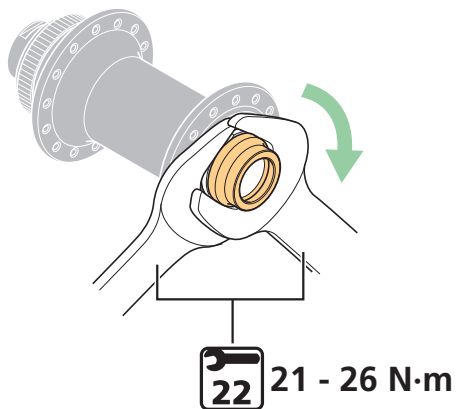
## Assembly

1. Install the hub axle from the left side of the hub body.



2. After assembling the necessary parts and adjusting the rotation, tighten the lock nut to double-lock the assembly.

Be careful not to apply excessive torque to the left cap when tightening the lock nut. Doing so may damage the left cap.

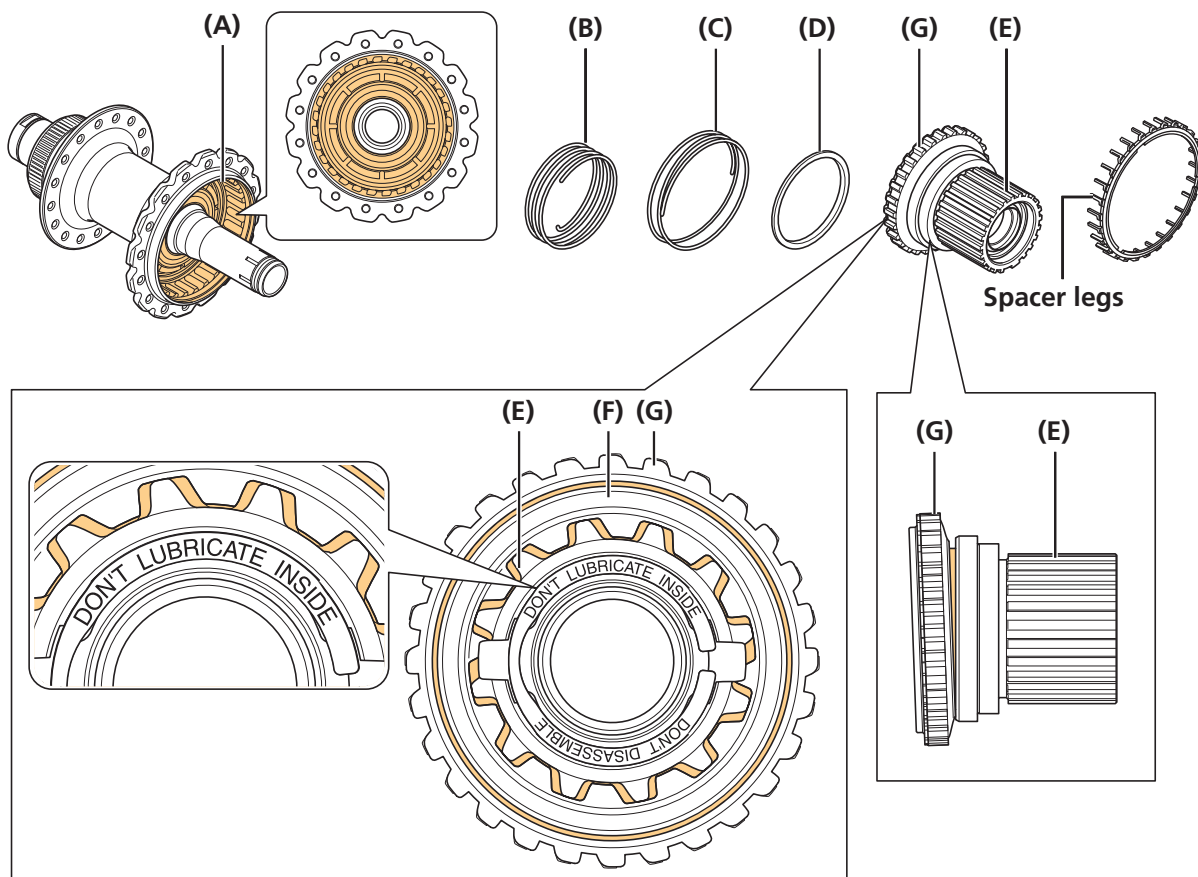


# Freehub

## Pre-work cautions

### ⚠ WARNING

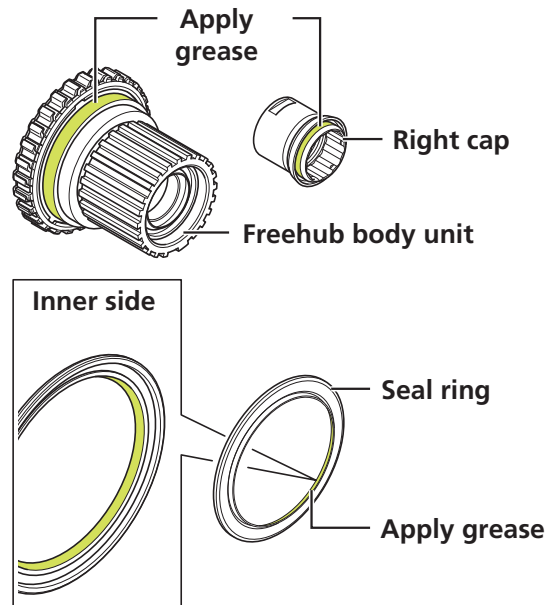
- Except for the areas of parts (A) and (G) that contact the spacer legs and the seal portion of part (E), do not apply grease or oil etc. to parts (A) through (G) or to the colored parts shown in the figure. This may lead to a malfunction in the freehub body unit.



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

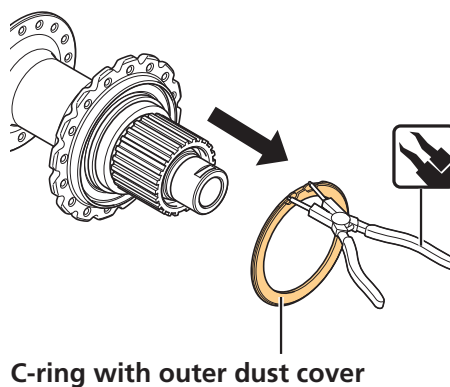
**⚠ WARNING**

- Apply special grease. Special grease (Seal Grease for Freehub) has been applied to the contact area between the freehub body unit and seal ring, and the seal portion of the right cap. Do not mix in any other type of grease. As a guide, use just enough grease to apply lightly by hand. Using the wrong type of grease or applying it in excessive amounts may cause the freehub body unit to malfunction or some other problem. In addition, the freehub body unit may malfunction if grease or oil is applied outside of these areas and the bearing section. (Refer to the steps in freehub "Disassembly.")

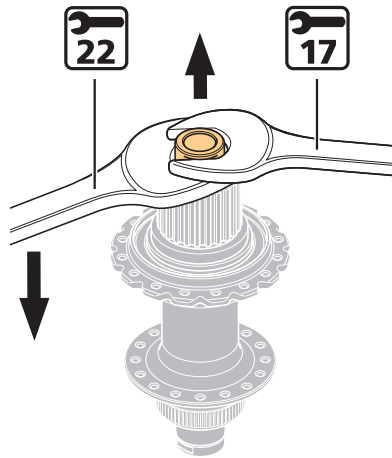


## Disassembly

### 1. Remove the C-ring with outer dust cover.

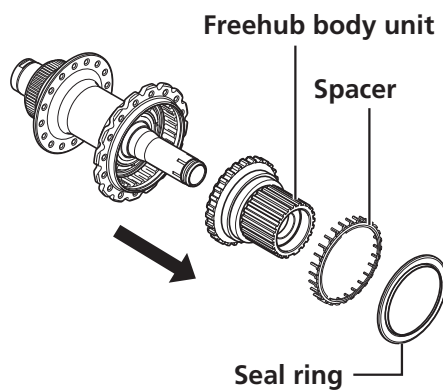


- Using 17 mm and 22 mm hub spanners or similar, remove the right cap as shown in the figure.

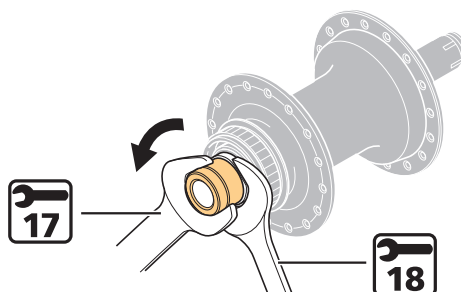


- Remove the freehub body unit.

The seal ring and the spacer can be removed at the same time.



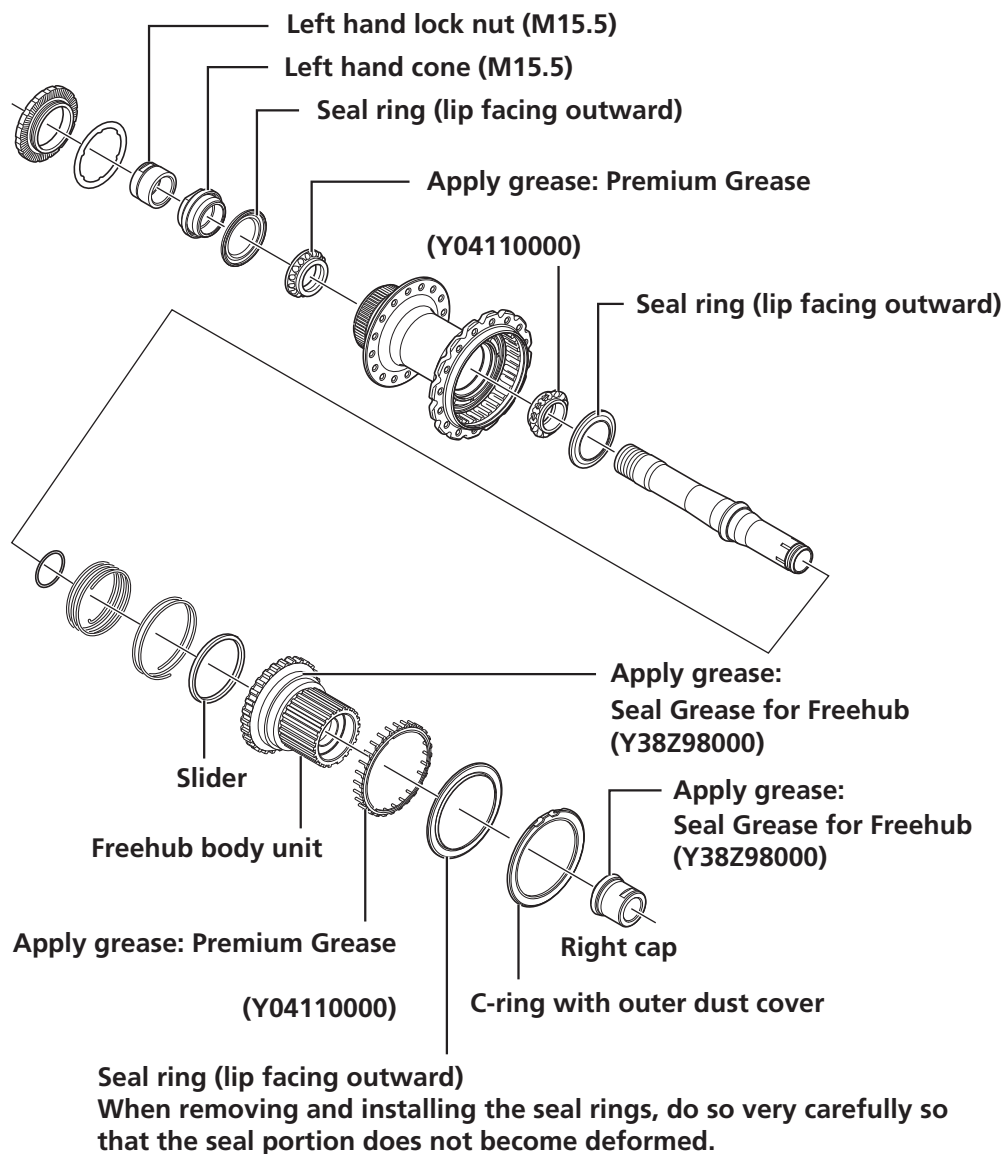
- Loosen the lock nut on the double-lock section on the left side of the hub body.



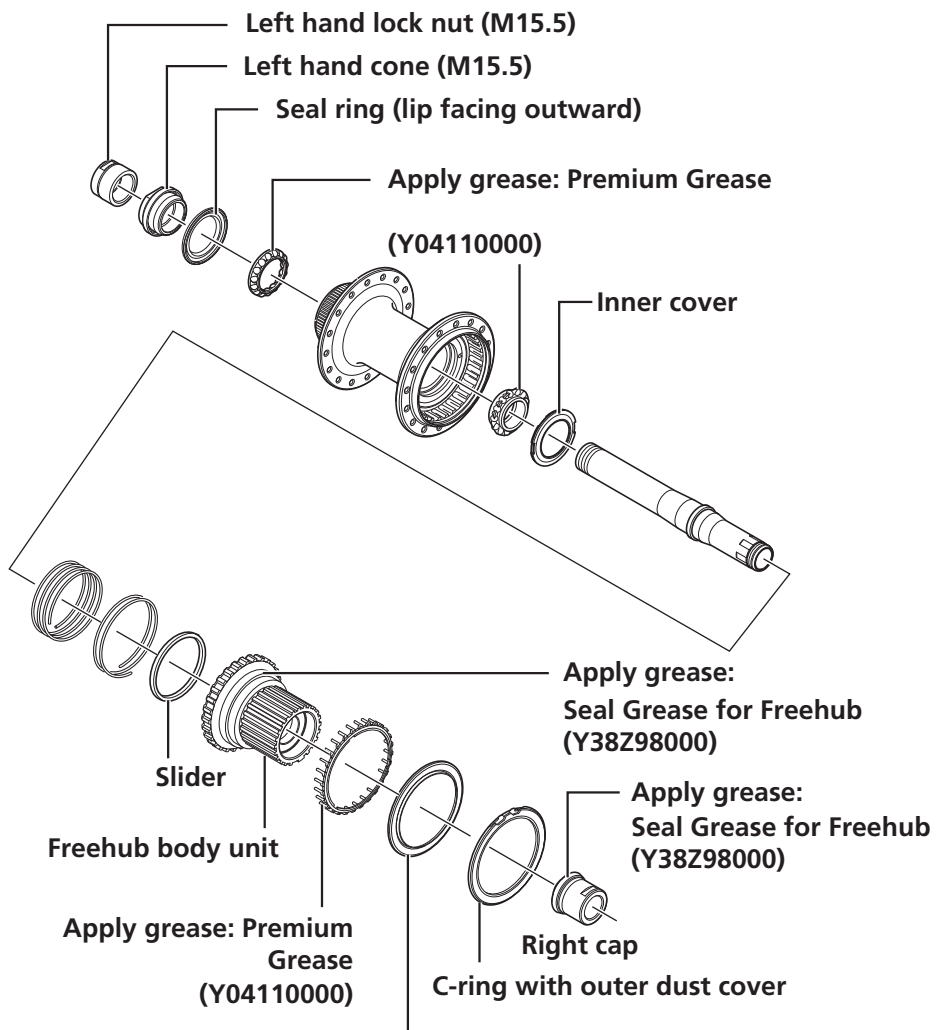


**5.** The unit can be disassembled as shown in the figure. Apply grease to the indicated parts at periodic intervals.

FH-M9111/FH-MT901



FH-M8110/FH-M8130/FH-M7110/FH-M7130

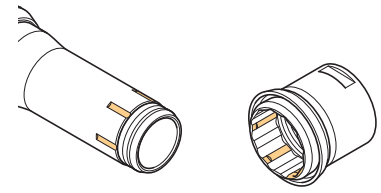


Seal ring (lip facing outward)

When removing and installing the seal rings, do so very carefully so that the seal portion does not become deformed.

**NOTICE**

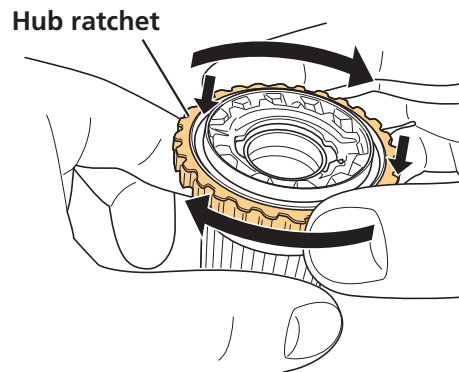
- When attaching the right cap to the hub axle, align the groove of the hub axle and the protrusion part of the right cap.



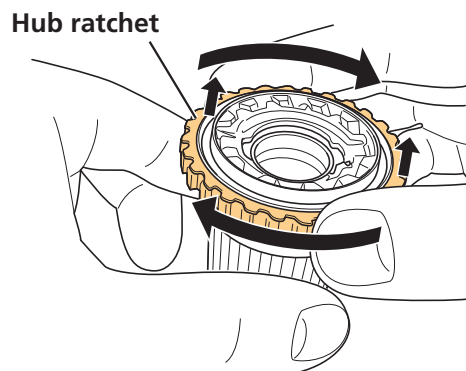
- FH-M9111/FH-MT901: When replacing the freehub body unit, hub axle, or right cap, make sure to remove any shim rings from inside the parts in advance. Some shim rings may still be inside the hub axle and freehub body unit.
- FH-M9111/FH-MT901: When conducting maintenance only, the shim rings can be re-used. When replacing the freehub body unit, hub axle or right cap, refer to “Adjusting the number of shim rings” to adjust the number of shim rings.
- Do not attempt to disassemble the freehub body. If this is not observed, problems with operation may occur.
- When removing and installing the seal rings, do so very carefully so that the seal portion does not become deformed. When reinstalling the seal, check that it is facing the right way and insert it as far as it will go.
- Do not attempt to disassemble the dust cover which is crimped onto the right cap and cone.

**NOTICE**

- Place the freehub body 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.

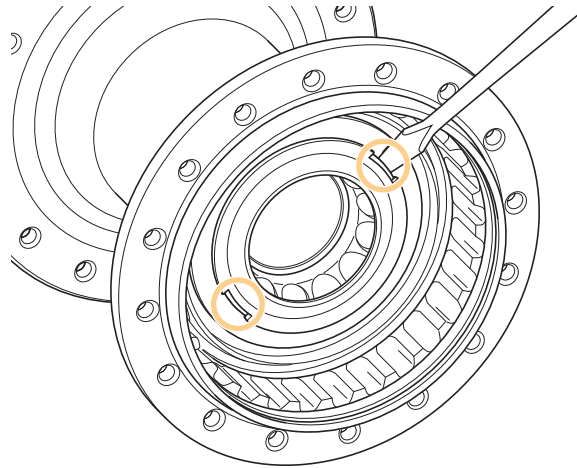


If the two hub ratchets do not engage, reset the position of the ratchets by turning clockwise while pulling up on the hub ratchet, then repeat the previous step. If the rings fail to firmly engage after several attempts, it may be indicative of a fault in the freehub body.



## ► Removing the inner cover (FH-M8110/FH-M8130/FH-M7110/FH-M7130)

1. Remove the inner cover using a tool such as a slotted screwdriver.



## Assembly

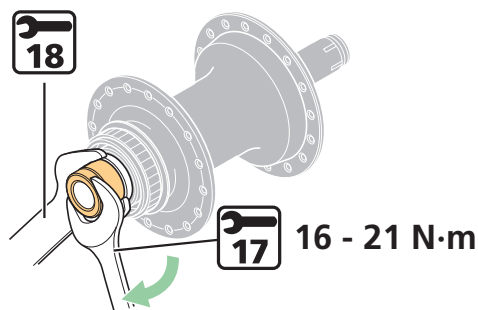
Perform the tasks listed below to assemble the hub.

### ► Installing the hub axle

1. Install the necessary parts such as the hub axle.

Install it in the reverse order from the disassembly.

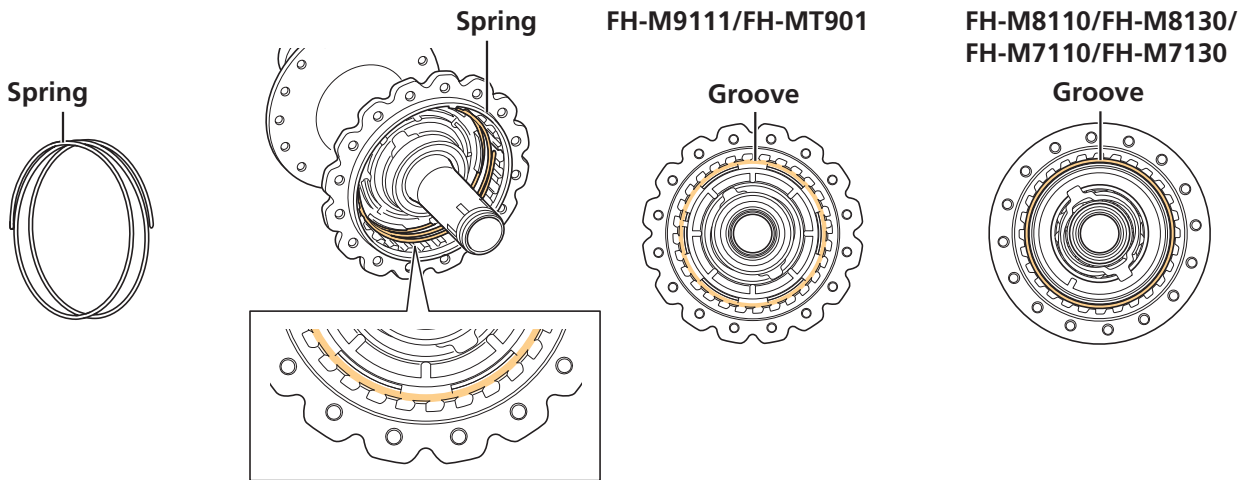
2. Tighten the lock nut on the left side of the hub body to double-lock the assembly.



## ► Installing the spring/coil spring

### 1. Fit the spring into the slot in the hub.

Insert the spring into the slot specified in the figure.



#### NOTICE

- The coil spring and spring have different shapes.

Coil spring



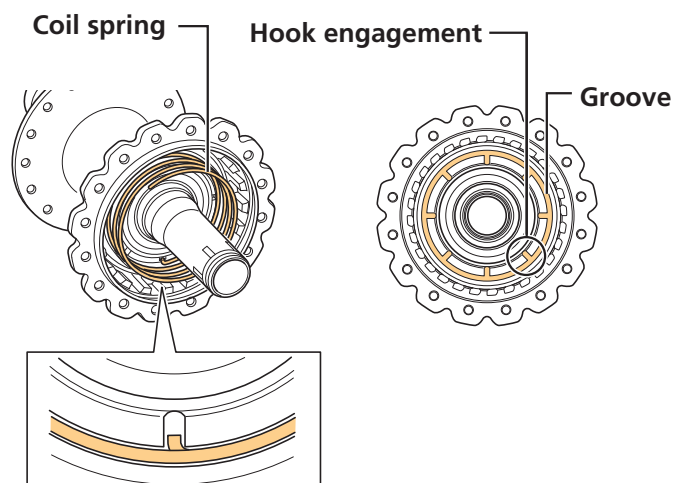
Spring



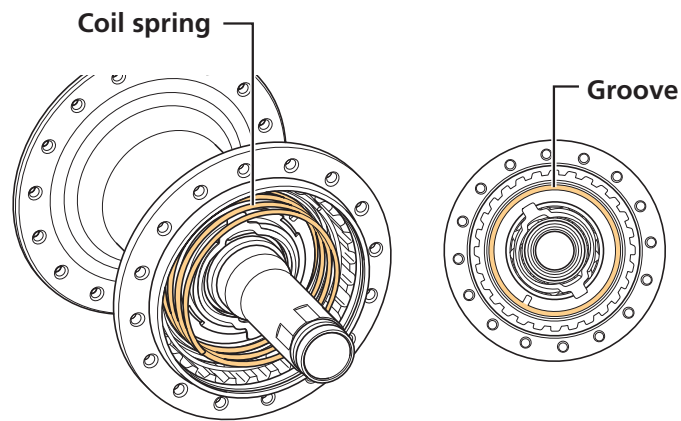
### 2. Fit the coil spring into the slot in the hub.

FH-M9111/FH-MT901

Fit the stopper hook into the hook engagement. There are eight hook engagements in total, and any of them can be used for the installation.

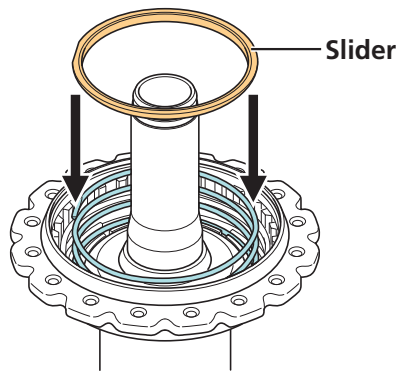


FH-M8110/FH-M8130/FH-M7110/FH-M7130



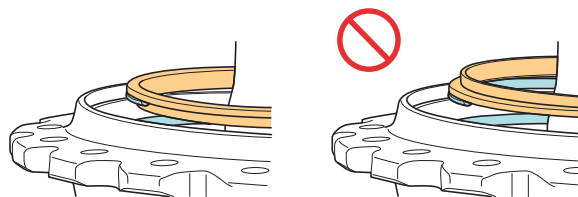
► **Installing the slider**

1. Set the slider on top of the coil spring.



**NOTICE**

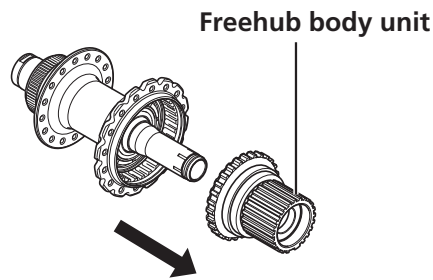
- Note the direction (up and down) of the slider.



► **Adjusting the number of shim rings (FH-M9111/FH-MT901)**

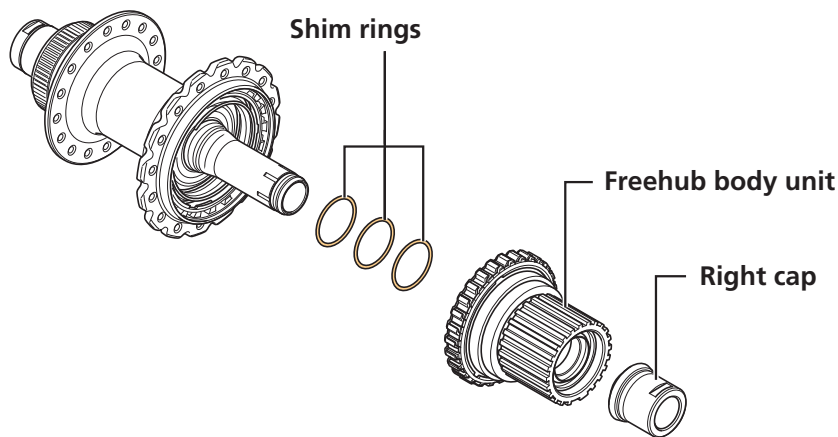
When replacing the freehub body unit, hub axle or right cap, adjust the number of shim rings.

## 1. Remove the freehub body unit.



## 2. Place three shim rings.

Install the freehub body unit and right cap with three shim rings between the freehub body unit and main hub body.

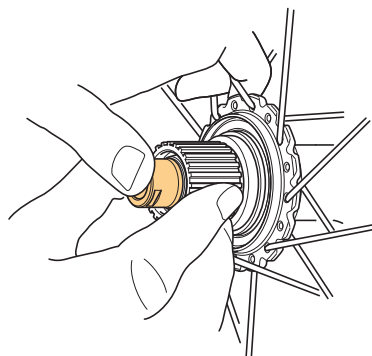


## 3. Ensure there is a small amount of perceivable play at the freehub body unit.

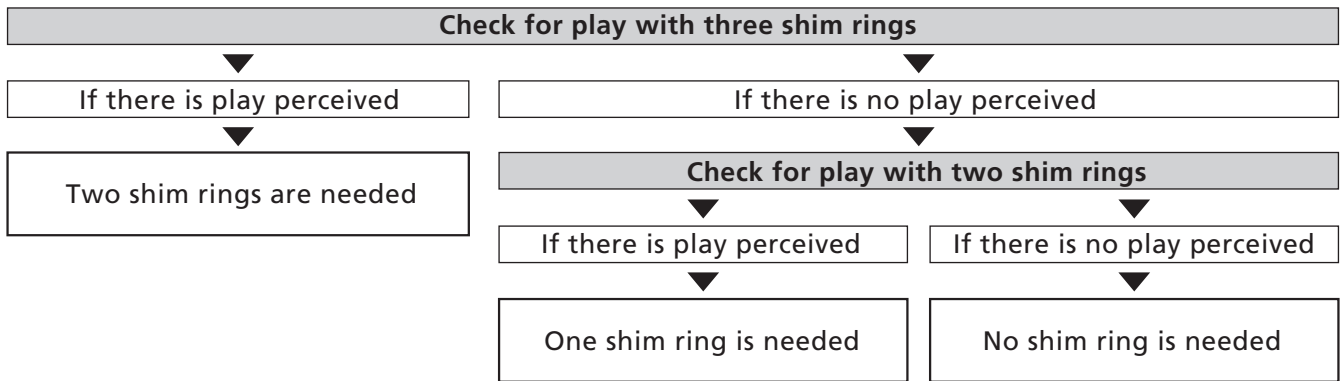
A certain amount of play is necessary between the freehub body unit and hub body.

With three shim rings installed, support the right cap with your thumb as shown in the figure, check for axial play at the freehub body unit.

Use the chart below to determine the correct number of shim rings using this test method.







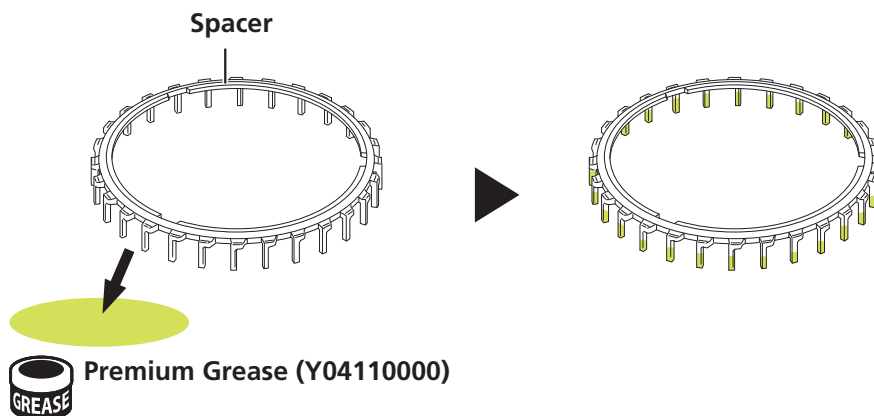
**4. Install the necessary number of shim rings on to the axle, then install the freehub body unit.**

**NOTICE**

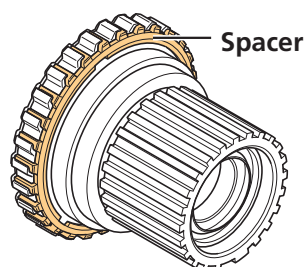
- Using three shim rings is only a step to evaluate the proper adjustment during maintenance. The hub should never be ridden with three shim rings installed.
- When installing the freehub body unit, apply grease to all the spacer tips (approximately 2 mm). For details, refer to “Installing the spacer”.

**▶ Installing the spacer**

**1. Apply grease to all the spacer tips (approximately 2 mm).**

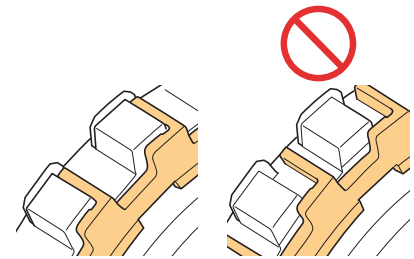


**2. Install the spacer as shown in the figure.**



**NOTICE**

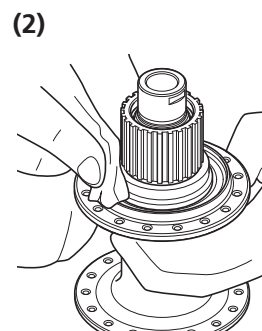
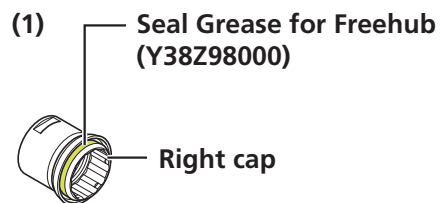
- Pay attention to the position of the spacer.



## ► Installing the C-ring with outer dust cover

### 1. Install the freehub body unit and right cap.

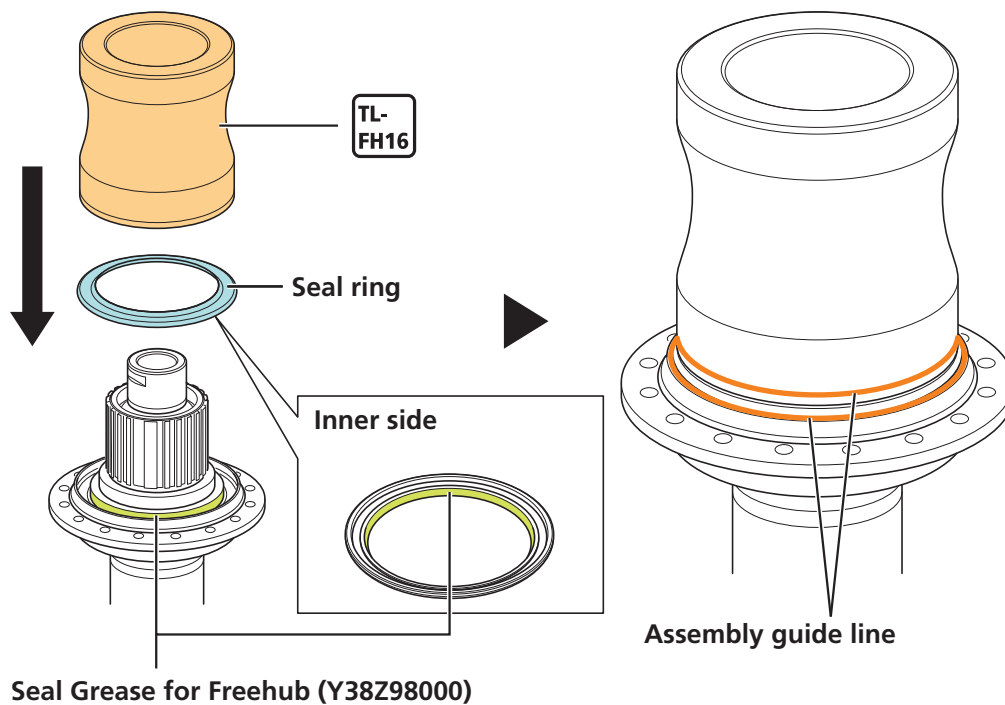
- (1) Apply grease to the seal portion of the right cap. Do not apply grease outside of the indicated areas.
- (2) Install the freehub body unit, spacer, and right cap. Use a clean rag to wipe off excess grease from the spacer.



### 2. Install the seal ring.

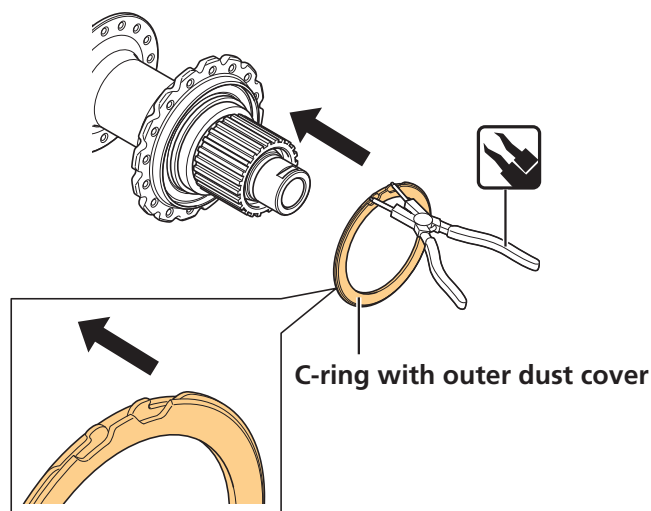
- (1) Apply grease to the seal ring and the seal portion of the freehub body unit. Do not apply grease outside of the indicated areas.
- (2) Ensure the lip on the inner diameter of the seal ring is facing outwards. Be careful not to damage the seal ring during installation.

(3) Use TL-FH16 to install the seal ring.



### 3. Install the C-ring with outer dust cover.

Ensure the tool recess in the C-ring with outer dust cover is facing outwards.



4. Double check that the C-ring with outer dust cover is fully seated along the entire circumference of the groove.

### ▶ Replacing the freehub body unit

Refer to "Pre-work cautions", "Disassembly", and "Assembly" when replacing the freehub body unit.

The procedure from step 4 in "Disassembly" is unnecessary, since the hub axle does not need to be removed.

# SHIMANO

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Please note: specifications are subject to change for improvement without notice. (English)

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