

Dealer's Manual

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

Hub Set (Disc Brake)

XTR

HB-M9110
FH-M9111

SHIMANO

HB-MT900
FH-MT901
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

DEORE XT

HB-M8110
FH-M8110
FH-M8130

Tool

TL-FH16

SLX

HB-M7110
FH-M7110
FH-M7130

Non Series

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 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.

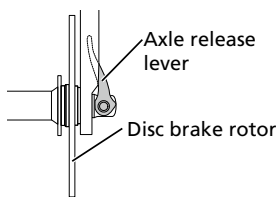
TO ENSURE SAFETY

⚠ 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.
- 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 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 and possibly result in serious injury. 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 disc brake 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 warranted 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 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 freewheel 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 pliers

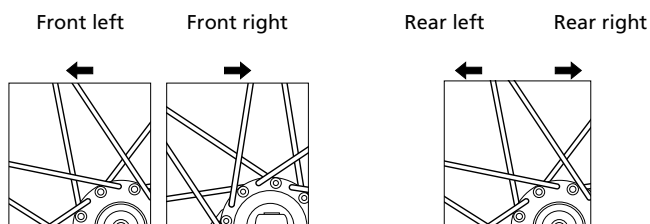
Installation/removal

Spoke lacing

Standard spoke type

1. Lace the spokes as shown in the figure.

Radial lacing is not supported.



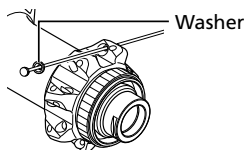
NOTICE

- 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

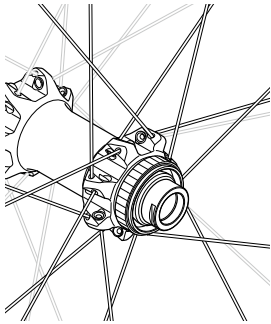
1. Install the washer to the spoke.

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.

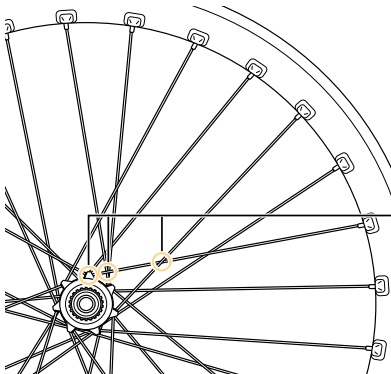


2. Lace the spokes as shown in the figure.

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

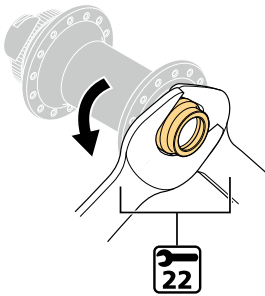
- Use SHIMANO original tools (for the front: TL-HB16, for the rear: TL-FH12) when assembling the wheel.
- Refer to “Specifications” on our website (<https://productinfo.shimano.com>) to obtain detailed specifications for each hub.

Maintenance

Front hub

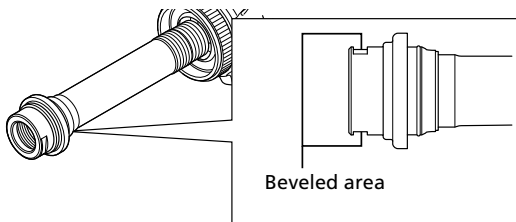
Disassembly

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).



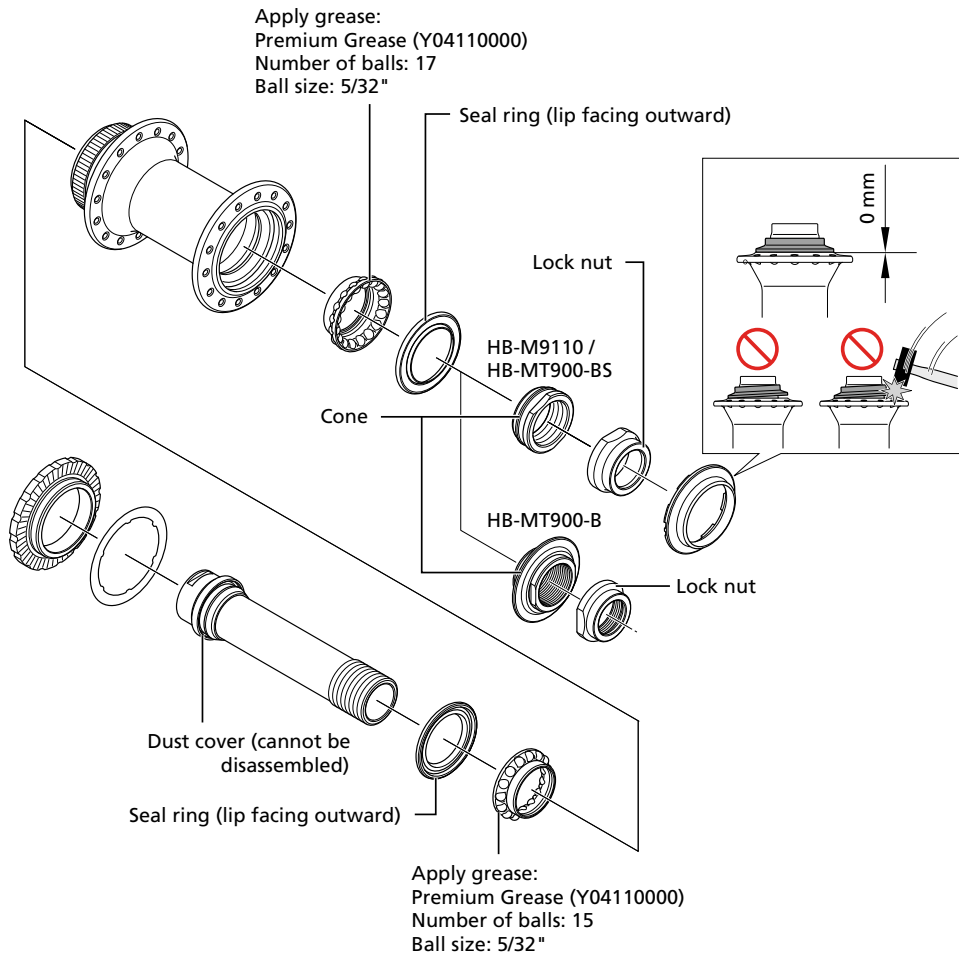
NOTICE

- Be careful not to apply excessive torque to the hub axle left side when loosening the lock nut. The hub axle may be damaged. When securing the beveled area of the left side of the hub axle with a hub spanner, be careful not to apply excessive force.

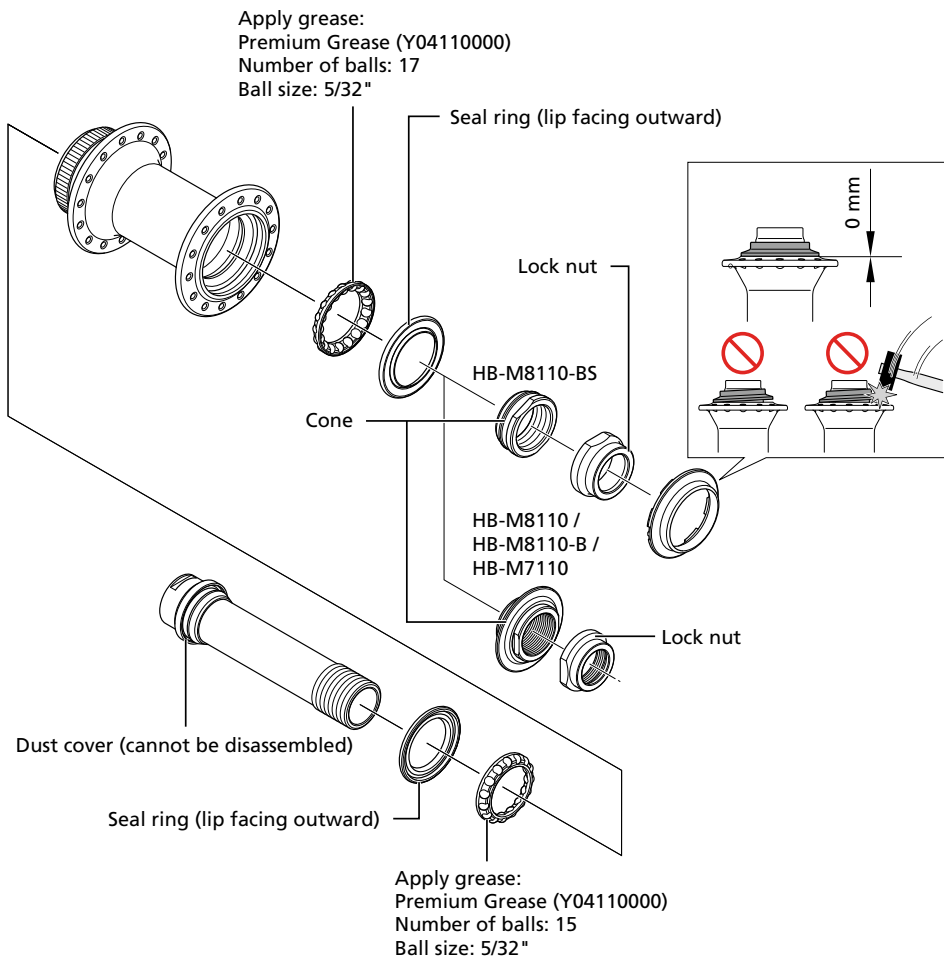


3. The unit can be disassembled as shown in the figure. Apply grease to the indicated parts at periodic intervals.

HB-M9110 / HB-MT900



HB-M8110 / HB-M7110

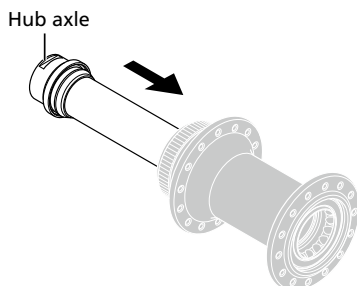


NOTICE

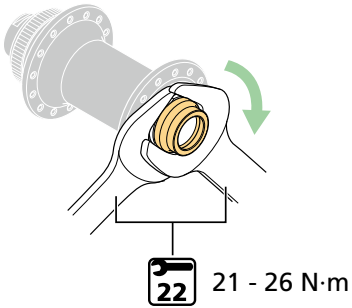
- Conduct the removal and installation of the seal very carefully so that it does not become deformed. When reinstalling the seal, check that it is facing the right way and insert it as far as it will go.

Assembly

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

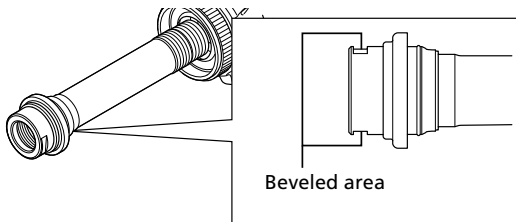


2. After assembling the necessary parts and adjusting the bearing preload, tighten the lock nut to double-lock the assembly.



NOTICE

- Be careful not to apply excessive torque to the hub axle left side when tightening the lock nut. The hub axle may be damaged. When securing the beveled area of the left side of the hub axle with a hub spanner, be careful not to apply excessive force.



Freehub

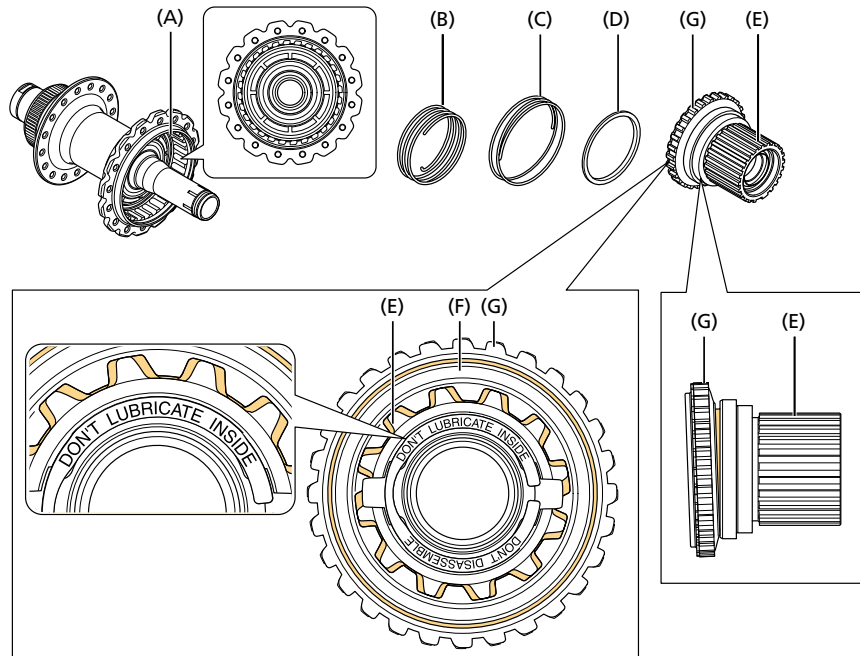
Maintenance

Freehub

Pre-work cautions

⚠ WARNING

- Except for the areas of parts (A) and (G) that contact the applied grease 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 freewheel body unit.



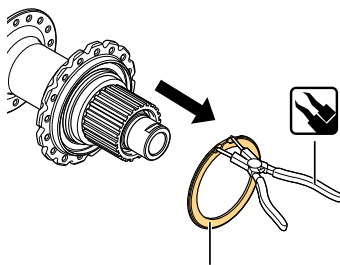
- Do not disassemble the freewheel body unit. The three parts (E), (F) and (G) form one unit (the freewheel body unit). Disassembling them may lead to a malfunction in the freewheel body unit.
- Make sure that the freewheel body unit is operating correctly before riding the bicycle by checking it several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



Disassembly

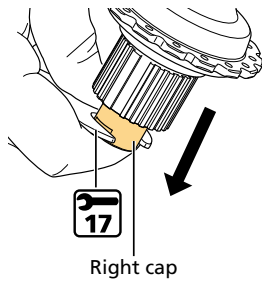
1. Remove the snap ring with outer dust cover.

Remove the snap ring with outer dust cover using snap ring pliers.



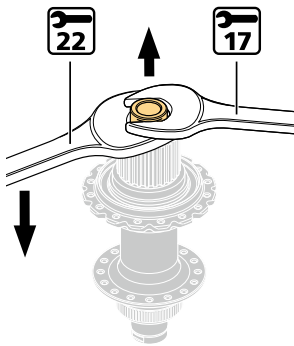
2. Remove the right cap by pulling it outwards off the end of the hub axle.

Do not try to unthread or put any angular load on the cap. Doing so may cause damage.



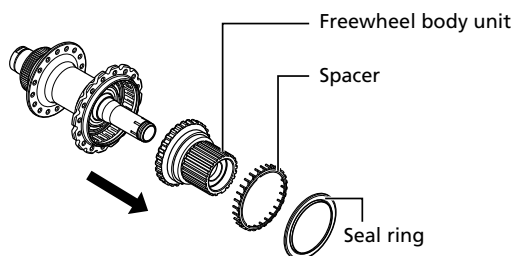
TECH TIPS

- If you cannot remove the right cap, use an additional 22 mm hub spanner as a lever to help pull it off, as shown in the figure. Ensure the 17 mm hub spanner is horizontal and firmly seated in the flats of the right cap.

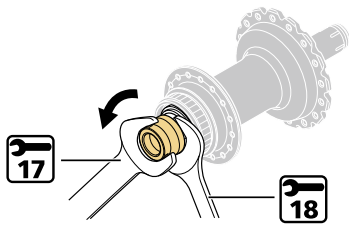


3. Remove the freewheel body unit.

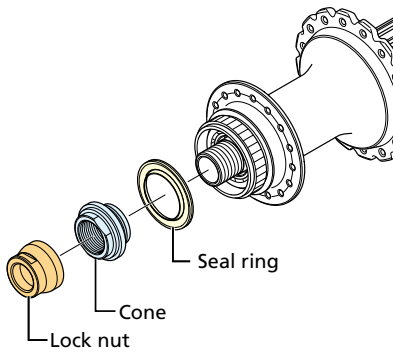
The seal ring and spacer can be removed at the same time by pulling on the freewheel body.



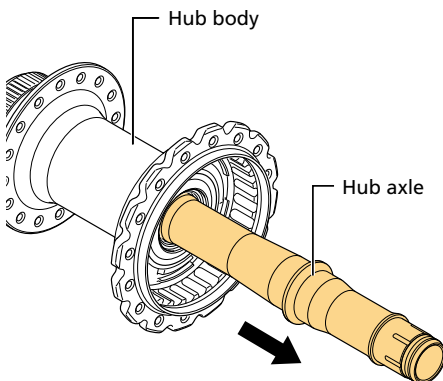
4. Loosen the lock nut on the double-lock section on the left side of the hub body.



5. Remove the lock nut, cone, and seal ring.

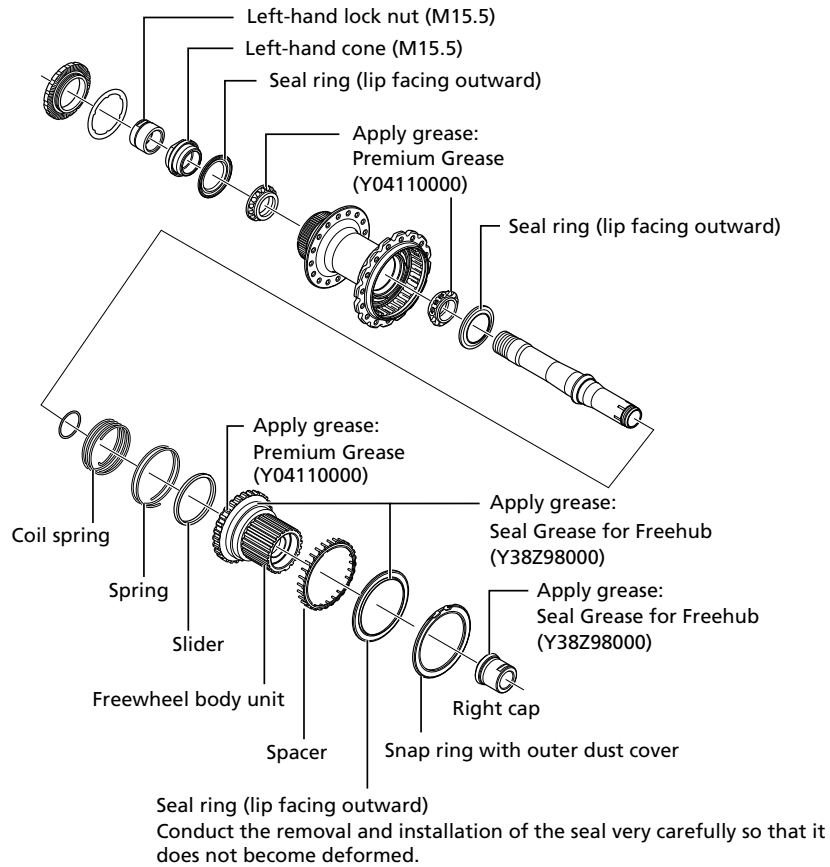


6. Remove the hub axle from the right side of the hub body.



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

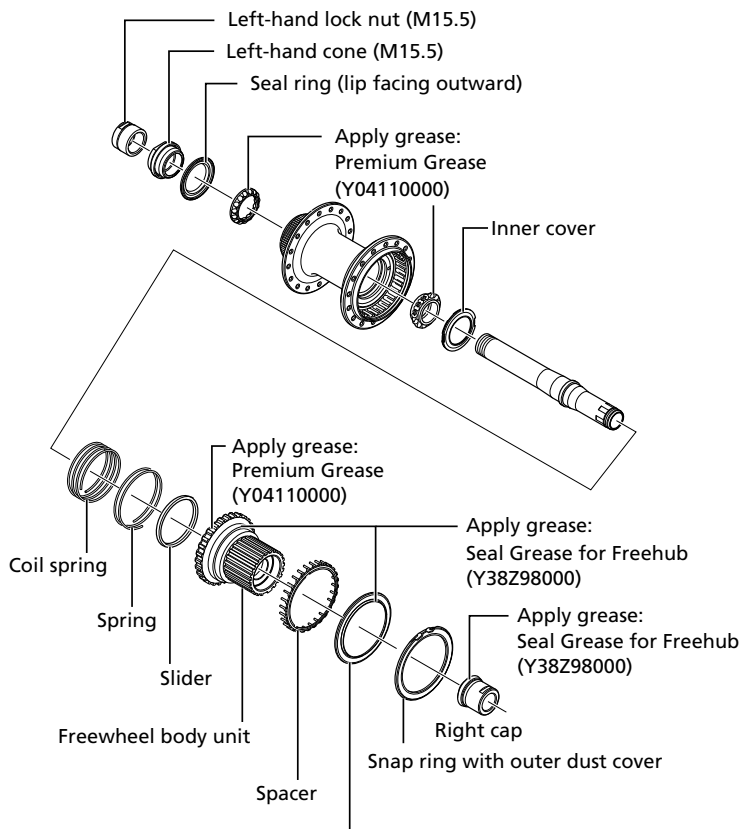
FH-M9111 / FH-MT901



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

Maintenance

Freehub

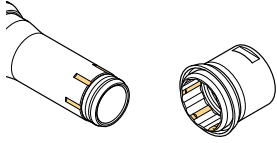


Seal ring (lip facing outward)

Conduct the removal and installation of the seal very carefully so that it does not become deformed.

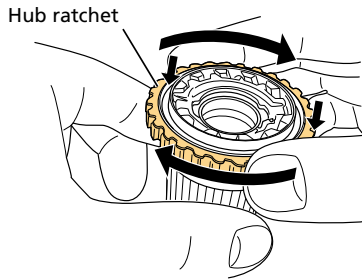
NOTICE

- When attaching the right cap to the hub axle, align the grooves of the hub axle with the protrusions of the right cap.

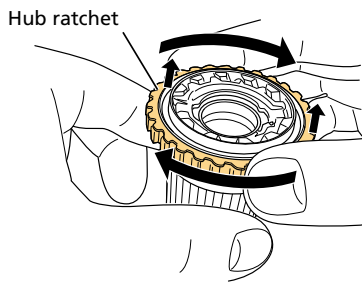


- FH-M9111 / FH-MT901: When replacing the freewheel body unit, hub axle or right cap, make sure to remove any shim rings from inside the parts. Some shim rings may still be inside the hub axle and freewheel body unit.
- FH-M9111 / FH-MT901: When conducting maintenance only, the shim rings can be re-used. When replacing the freewheel body unit, hub axle or right cap, refer to " Adjusting the number of shim rings (FH-M9111 / FH-MT901) " 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.
- Conduct the removal and installation of the seal very carefully so that it 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.

- 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.

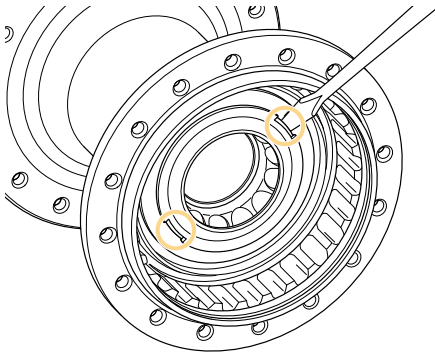


If the two hub ratchets do not engage, reset the position of the ratchets by turning clockwise while pulling up on the hub ratchet, then repeat the previous step. If the rings fail to firmly engage after several attempts, it may be indicative of a fault in the freehub body.



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

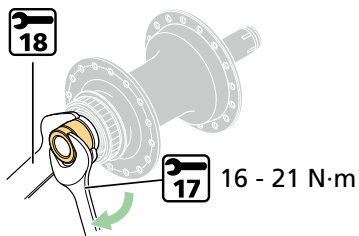
Perform the tasks listed below to assemble the hub.

Installing the hub axle

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

Install it in the reverse order from the disassembly.

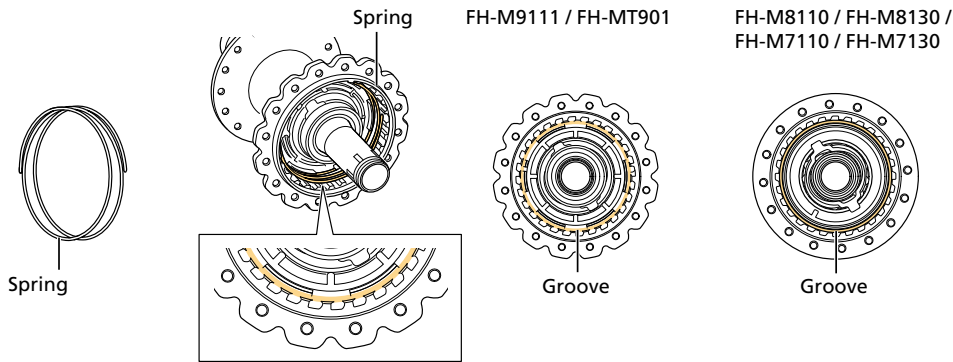
2. After adjusting the bearing preload, tighten the lock nut on the left side of the hub body and double-lock the assembly.



Installing the spring/coil spring

1. Fit the spring into the groove in the hub.

Insert the spring into the groove specified in the figure.



NOTICE

- The coil spring and spring have different shapes.

Coil spring

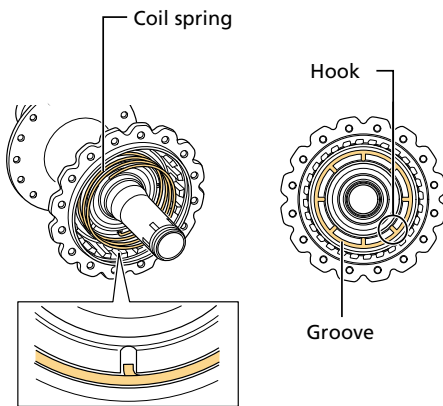


Spring



2. Fit the coil spring into one of the grooves in the hub.

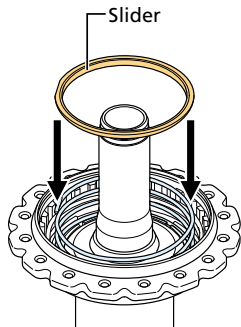
Fit the stopper hook into a hook engagement. There are eight hook engagements in total, and any of them can be used for the installation.



Installing the slider

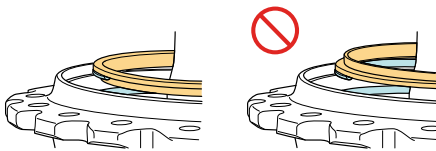
1. Set the slider on top of the coil spring.

Ensure that the slider is not tilted to the coil spring.



NOTICE

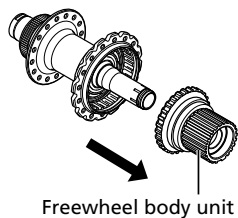
- Note the direction (up and down) of the slider.



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

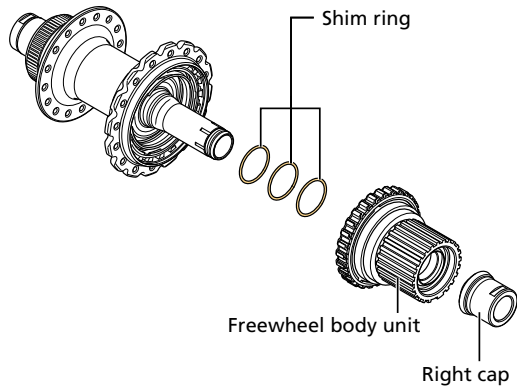
When replacing the freewheel body unit, hub axle or right cap, adjust the number of shim rings.

1. Remove the freewheel body unit.



2. Place three shim rings.

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

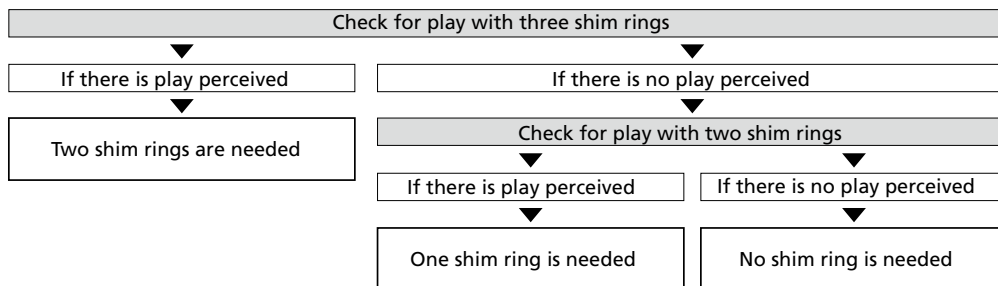
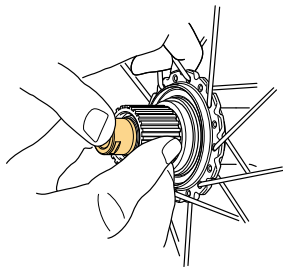


3. Ensure there is a small amount of perceivable play at the freewheel body unit.

A certain amount of play is necessary between the freewheel 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 freewheel body unit.

Use the chart below to determine the correct number of shim rings.



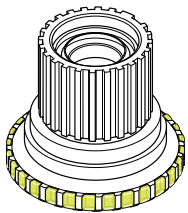
4. Install the necessary number of shim rings on to the axle, then install the freewheel body unit.


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.

Installing the snap ring with outer dust cover

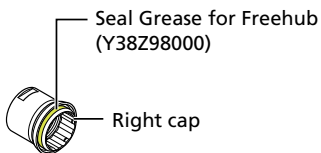
1. Apply grease to the freewheel body unit.



 Premium Grease
(Y04110000)

2. Apply grease to the seal portion of the right cap.

Do not apply grease outside of the indicated areas.

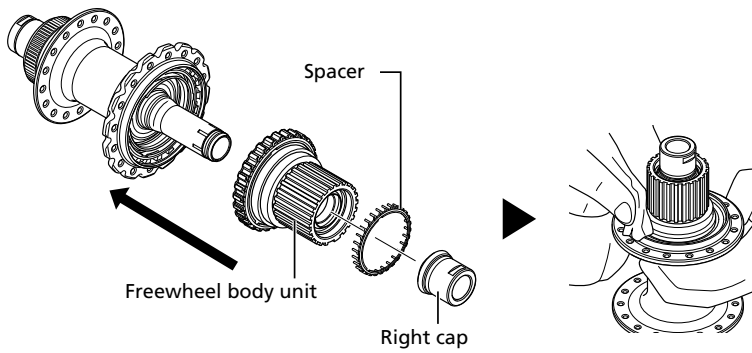


Seal Grease for Freehub
(Y38Z98000)

Right cap

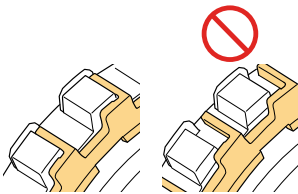
3. Install the freewheel body unit, spacer, and right cap.

Use a clean rag to wipe off excess grease from the freewheel body unit.



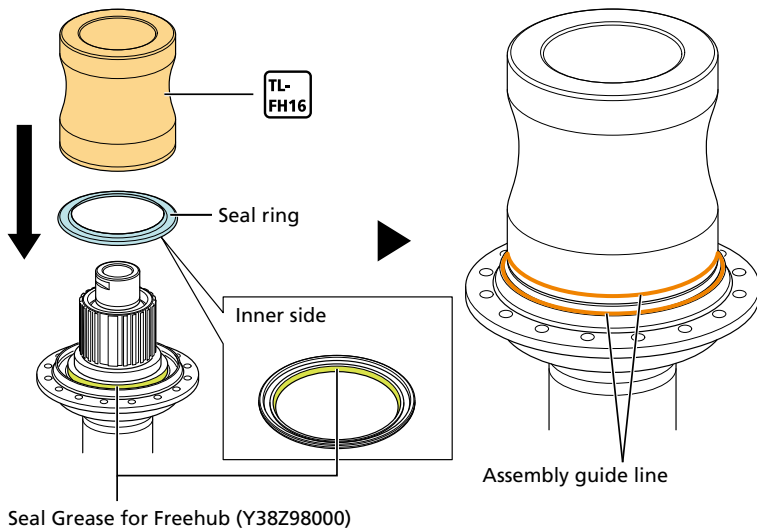
NOTICE

- Pay attention to the position of the spacer.



4. Install the seal ring.

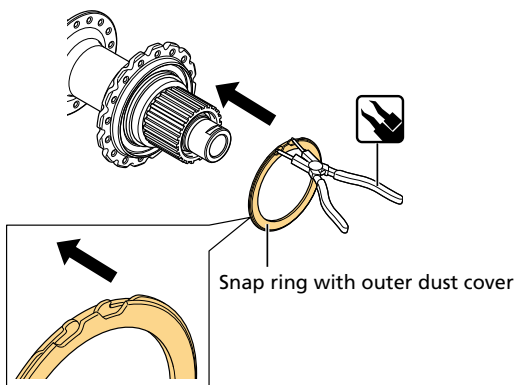
- (1) Apply grease to the seal ring and the seal portion of the freewheel body unit. Do not apply grease outside of the indicated areas.
- (2) Ensure the lip on the inner diameter of the seal ring is facing outwards. Be careful not to damage the seal ring during installation.
- (3) Use TL-FH16 to install the seal ring.



5. Install the snap ring with outer dust cover.

Install the snap ring with outer dust cover using snap ring pliers.

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



6. Double check that the snap ring with outer dust cover is fully seated along the entire circumference of the groove.

Replacing the freewheel body unit

Refer to " Pre-work cautions ", " Disassembly ", and " Assembly " when replacing the freewheel body unit. The procedure from step 4 in "Disassembly" is unnecessary, since the hub axle does not need to be removed.

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