

Dealer's Manual

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

Wheel Set
(Disc Brake)

DURA-ACE

- WH-R9170-C60-TU-F12
- WH-R9170-C60-TU-R12
- WH-R9170-C40-TU-F12
- WH-R9170-C40-TU-R12
- WH-R9170-C40-TL-F12
- WH-R9170-C40-TL-R12

- WH-RS770-TL-F12
- WH-RS770-TL-R12
- WH-RS370-TL-F12
- WH-RS370-TL-R12
- WH-RS171-CL-F12
- WH-RS171-CL-R12
- WH-RS170-CL-F12
- WH-RS170-CL-R12

CONTENTS

IMPORTANT NOTICE.....	3
TO ENSURE SAFETY.....	4
LIST OF TOOLS TO BE USED.....	8
INSTALLATION	10
Tire size	10
Installation of cassette sprocket.....	11
Installation of the disc brake rotor	12
MAINTENANCE	14
Spoke lacing	14
Replacing the spokes	17
Replacing tubeless tape.....	24
Disassembly and assembly of the hub	30
Replacement of the freewheel body	43
Cautions on the use of rims for tubular tires	45
Installing and removing tubeless tires.....	46

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 local bicycle dealer for their assistance.

- Make sure to read all instruction 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.



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.**

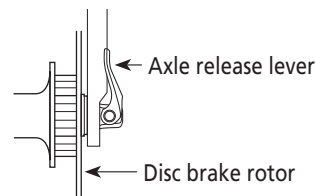
It is recommended to use genuine SHIMANO parts only. If parts such as bolts and nuts become loose or damaged, the bicycle may suddenly fall over, which may cause serious injury.

In addition, if adjustments are not carried out correctly, problems may occur, and the bicycle may suddenly fall over, which may cause serious injury.

-  Be sure to wear safety glasses or goggles to protect your eyes while performing maintenance tasks such as replacing parts.

Be sure to also inform users of the following:

- **Check that the wheels are fastened securely before riding the bicycle. If the wheels are loose in any way, they may come off the bicycle and cause serious injury.**
- Before use, check the wheels to make sure that there are no bent or loose spokes, dents, scratches or cracks on the rim surface. Do not use the wheel if any of these problems are found. The wheel may break, and you may fall. In the case of carbon wheels, check also that there is no carbon peeling or cracking.
- If the wheels are used in harsh conditions such as on unpaved surfaces, they may become bent or damaged, which may then result in accidents.
- These wheels are designed exclusively for use with disc brakes. Do not use these wheels with rim brakes.
- If the axle release lever is on the same side as the disc brake rotor, there is a possibility they may interfere. Make sure that even if the axle release lever is tightened with your palm with all your strength, the axle release lever does not interfere with the disc brake rotor. If the lever interferes with the disc brake rotor, stop using the wheel and consult a dealer or an agency.



- The disc brake calipers and disc brake rotor will become hot when the brakes are operated, so do not touch them while riding or immediately after dismounting from the bicycle. Otherwise you may get burned. Check that the brake components have cooled down sufficiently before attempting to adjust the brakes.
- Be sure to also carefully read the manual for the disc brakes.
- The tires should be inflated to the pressure indicated on the tires or rim before use. If the maximum pressure is prescribed on the tires and rim, be sure not to exceed the lower value shown.
- If the axle release lever is not used correctly, the wheel may come off the bicycle and serious injury could result.
- For details on the E-THRU Axle, refer to the E-THRU Axle user's manual.

F12 (Front 12 mm Axle), R12 (Rear 12 mm Axle) Wheel (THRU Axle)

- This wheel can be used in combination with the special front fork/frame and the fixed axle only. If it is used in combination with any other front fork/frame or fixed axle, it may cause the wheel to become detached from the bicycle while you are riding and result in serious bodily injury.

Tubeless wheel

- The tires should be installed and removed by hand.
If this is difficult, a plastic tire lever for tubeless wheels may be used. In such cases, be sure to check that the rim surface has not been dented, scratched, or cracked as there is a risk of causing damage to the air seal between the tire and the rim, which would result in air leakage. For carbon rims, check that there is no carbon peeling or cracking etc. Finally, make sure there is no air leakage.
- WH-R9170-TL / WH-RS770-TL: Maximum pressure = 8 bar / 116 psi / 800 kPa
WH-RS370-TL: Maximum pressure = 6.5 bar / 94 psi / 650 kPa
A higher pressure than indicated can cause a sudden puncture and / or sudden release of the tire, which can result in serious injury.

■ TU: Tubular wheel

- Before riding, check that the tires are securely glued to the rims. If the tires come off while riding, you may fall and get severely injured.



CAUTION

Be sure to also inform users of the following:

- Note that a higher rim is more affected the wind and makes riding unstable.
- When using a puncture repair agent, consult a dealer or an agency.

Tubeless wheel

- Do not use rim tape if using an inner tube. Rim tape may make it difficult to remove and install the tire, and the tire or tube may become damaged or the tires may suddenly puncture, causing the bicycle to fall over.
- Be sure to use tubeless tape when using these wheels.
- It is recommended to use genuine SHIMANO tubeless tape to prevent punctures and other possible damage.
- When replacing the spokes, do not remove or attach the stainless steel tape directly by hand. Instead, always use the SHIMANO original tool included with the replacement stainless steel tape (service part). The edges of the stainless steel tape could injure your fingers. Be careful that the adhesion surface is not dirtied.
- If you use a tire such as a Tubeless Ready tire that needs to be used with a sealant, use the sealant recommended by the tire manufacturer.

■ Burn-in period

- Disc brakes have a burn-in period, and the braking force will gradually increase as the burn-in period progresses. Make sure that you are aware of any such increases in braking force when using the brakes during the burn-in period. The same thing will happen when the brake pads or disc brake rotor are replaced.

For Installation to the Bicycle, and Maintenance:

- Refer to the tire size table in the Installation section when using tires. Also, read carefully all instruction manuals included with the tire.

■ CL: Clincher wheel

- Use a high-pressure-resistant rim tape for the rim. Otherwise, a sudden puncture may occur, and you may fall off the bicycle.
- When you replace the rim tape, use the one that matches the rim size. If you use a rim tape that does not match the rim size, a sudden puncture may occur, and you may fall off the bicycle.

NOTICE

Be sure to also inform users of the following:

- For the use of the attached nipple wrench tool, ask the shop where you purchased it or the distributor.
- Do not lubricate the internal parts of the hub. Otherwise, grease will flow out.
- It is recommended that you ask a bicycle dealer to adjust the spoke tensions if there is any deviation in the spokes and after the first 1,000 km of riding.
- Optional reflector and spoke protector sets are available. Check the model number on the website specifications, and ensure you are using the appropriate parts.
- Do not use detergent or other chemicals when wiping the wheel, otherwise it may cause the sticker on the rim to peel off.
- 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:

- Use of genuine SHIMANO spokes and nipples is strongly recommended. Otherwise, the area where the spokes fit into the hub body may become damaged.
- Be careful not to overtighten the nipples when adjusting the spoke tensions. If overtightened, damage to the rim may result.
- If the wheel becomes stiff and difficult to turn, lubricate it with grease.
- Special nipple wrenches are available as optional accessories.
- For compatible reflectors and spoke protectors, check the specifications table (<https://si.shimano.com>).
- For information on how to install and remove the wheel, refer to the instruction manual accompanying the wheel.

Tubeless wheel











- Use genuine SHIMANO spokes, nuts, spoke plugs and washers. Otherwise, the area where the spokes fit into the hub body may become damaged.

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

LIST OF TOOLS TO BE USED

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

Tool		Tool		Tool	
	15 mm hub spanner		Adjustable wrench		TL-SR23
	17 mm hub spanner		TL-FC36		15 mm hexagon wrench
	20 mm hub spanner		TL-FH15		
	22 mm hub spanner		TL-LR15		

INSTALLATION

INSTALLATION

■ Tire size

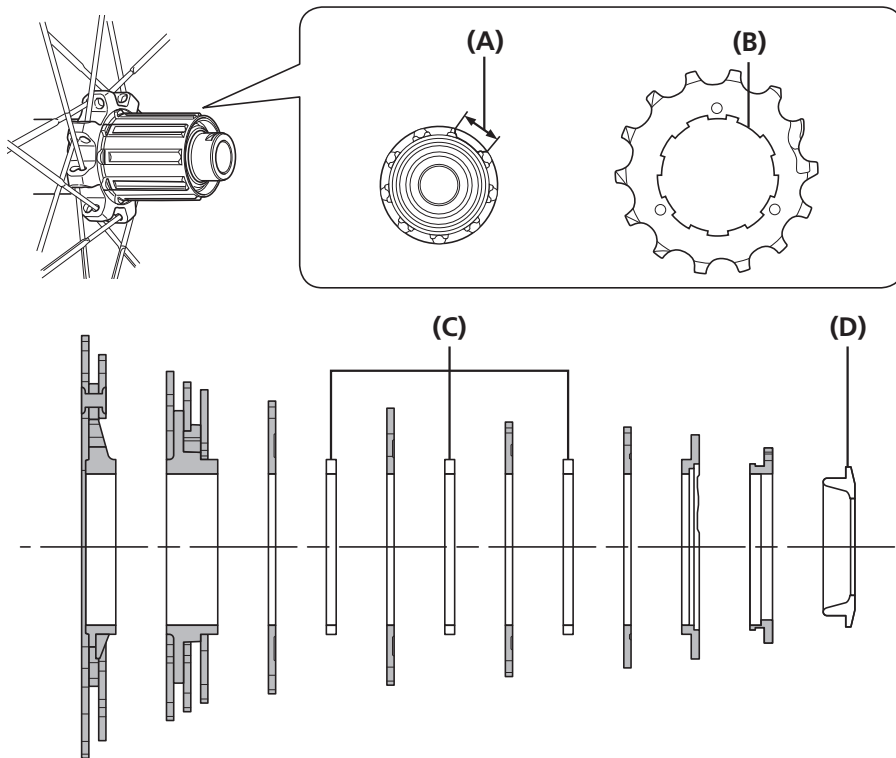
The recommended tire sizes for installation to each wheel are as follows.

	Model No.	Tire size
DURA-ACE	WH-R9170-C60-TU	23-28" - 32-28"
	WH-R9170-C40-TU	
	WH-R9170-C40-TL	23-622 - 32-622
SHIMANO	WH-RS770-TL-F12	25-622 - 38-622
	WH-RS770-TL-R12	
	WH-RS170-CL-F12	
	WH-RS170-CL-R12	
	WH-RS370-TL-F12	28-622 - 45-622
	WH-RS370-TL-R12	
	WH-RS171-CL-F12	28-622 - 42-622 (700C)
	WH-RS171-CL-R12	28-584 - 42-584 (650B)

Installation of cassette sprocket

Place each sprocket with the marked side facing outward.

Install them so that the wide groove in the freewheel is aligned with the wide protrusion on each sprocket.



- (A) Wide groove (freewheel)
- (B) Wide protrusion (sprocket)
- (C) Sprocket spacers
- (D) Lock ring



TECH TIPS

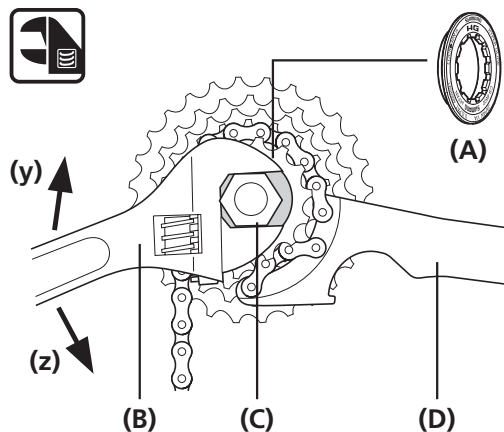
The illustration of the cassette sprocket is an example. For details, refer to the dealer's manual or user's manual of the cassette sprocket to be used.

Installing HG sprockets:

Tighten the lock ring with the SHIMANO original tool TL-LR15.

Replacing HG sprockets:

Remove the lock ring with the SHIMANO original tools TL-LR15 and TL-SR23.



- (y) Assembly
- (z) Disassembly

- (A) Lock ring
- (B) Adjustable wrench
- (C) TL-LR15
- (D) TL-SR23

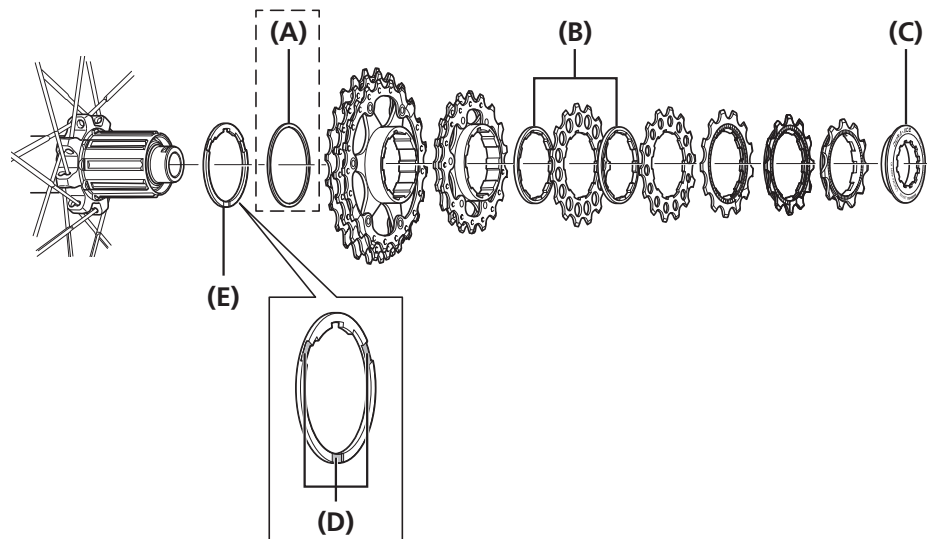
Tightening torque



30 - 50 N·m

Cautions when installing

When installing a 10-speed cassette:
Install the included 1.85 mm low spacer at the position indicated in the figure.
CS-7900/CS-7800/CS-6700/CS-6600/CS-5700/CS-5600:
A 1.0 mm spacer is included with the cassette. Install it.

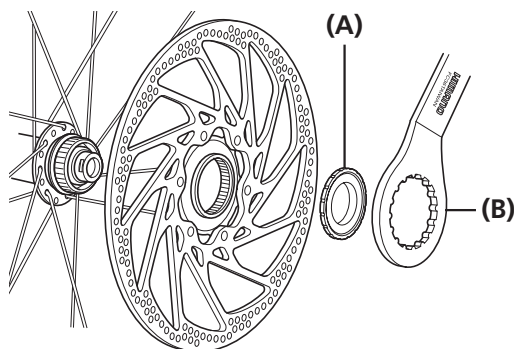


- (A) 1.0 mm spacer
- (B) Sprocket spacers
- (C) Lock ring
- (D) Grooves: Sprocket side
(Some 1.85 mm low spacers do not have grooves.)
- (E) 1.85 mm low spacer



Refer to the Disc Brake section of General Operations for installation of the disc brake rotor.

Installation of the disc brake rotor



- (A) Disc brake rotor fixing lock ring
- (B) TL-FC36

Tightening torque



40 N·m

MAINTENANCE

MAINTENANCE

Spoke lacing

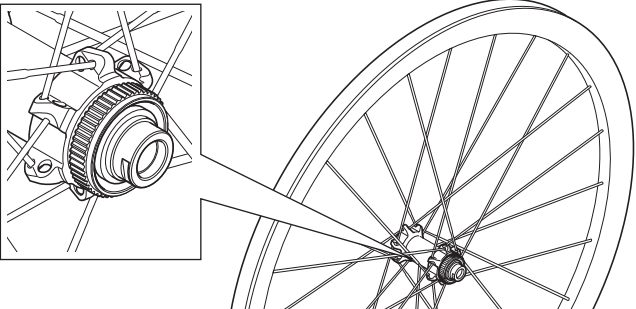
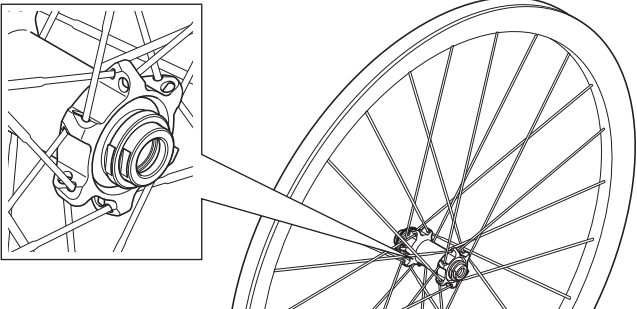
Lace the spokes as shown in the illustration.

* The spoke tension values should be used as a guide only.

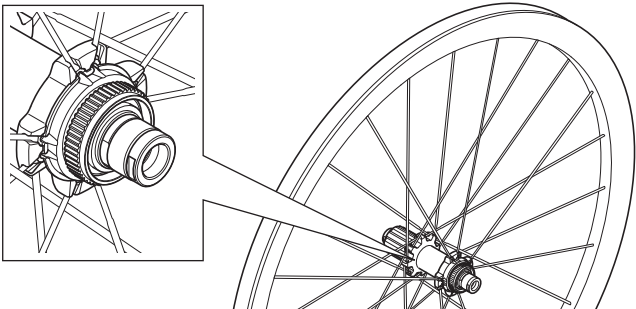
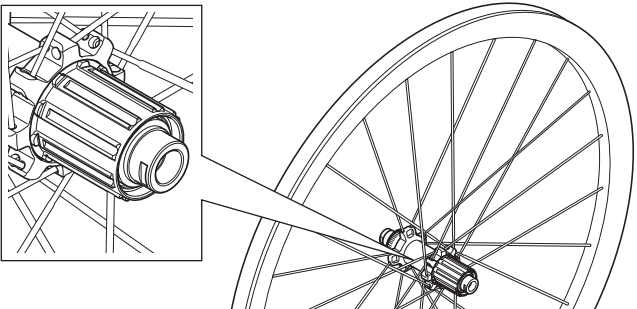
WH-R9170 / WH-RS770-TL

Number of spokes: 24

For front

Left side (Disc brake rotor side)	Right side												
													
<table> <tr> <th colspan="2">Spoke tension value</th></tr> <tr> <th>WH-R9170</th><th>WH-RS770</th></tr> <tr> <td>1,050 - 1,350 N</td><td>1,160 - 1,460 N</td></tr> </table>	Spoke tension value		WH-R9170	WH-RS770	1,050 - 1,350 N	1,160 - 1,460 N	<table> <tr> <th colspan="2">Spoke tension value</th></tr> <tr> <th>WH-R9170</th><th>WH-RS770</th></tr> <tr> <td>651 - 837 N</td><td>720 - 900 N</td></tr> </table>	Spoke tension value		WH-R9170	WH-RS770	651 - 837 N	720 - 900 N
Spoke tension value													
WH-R9170	WH-RS770												
1,050 - 1,350 N	1,160 - 1,460 N												
Spoke tension value													
WH-R9170	WH-RS770												
651 - 837 N	720 - 900 N												

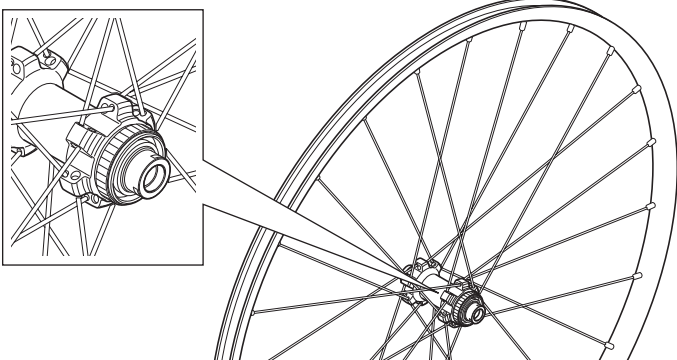
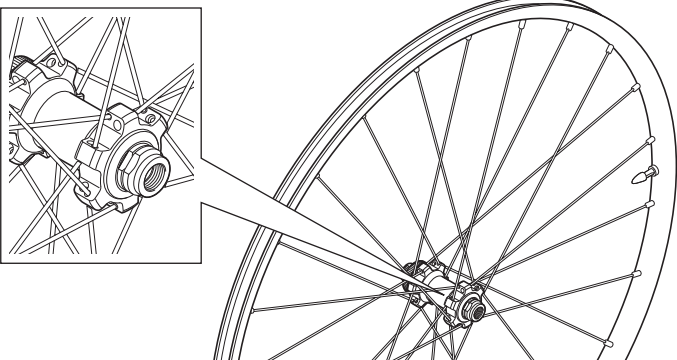
For rear

Left side (Disc brake rotor side)	Right side (Sprocket side)												
													
<table> <tr> <th colspan="2">Spoke tension value</th></tr> <tr> <th>WH-R9170</th><th>WH-RS770</th></tr> <tr> <td>846 - 1,153 N</td><td>885 - 1,200 N</td></tr> </table>	Spoke tension value		WH-R9170	WH-RS770	846 - 1,153 N	885 - 1,200 N	<table> <tr> <th colspan="2">Spoke tension value</th></tr> <tr> <th>WH-R9170</th><th>WH-RS770</th></tr> <tr> <td>950 - 1,250 N</td><td>960 - 1,300 N</td></tr> </table>	Spoke tension value		WH-R9170	WH-RS770	950 - 1,250 N	960 - 1,300 N
Spoke tension value													
WH-R9170	WH-RS770												
846 - 1,153 N	885 - 1,200 N												
Spoke tension value													
WH-R9170	WH-RS770												
950 - 1,250 N	960 - 1,300 N												

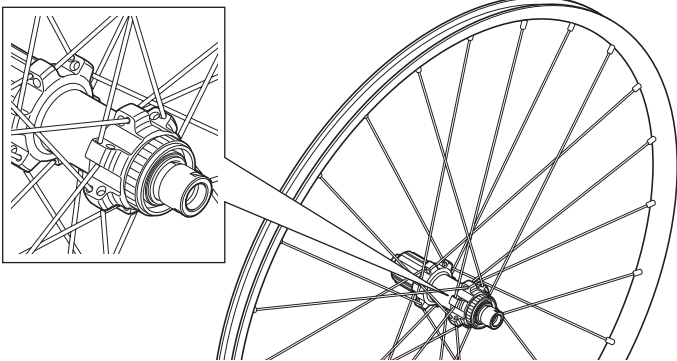
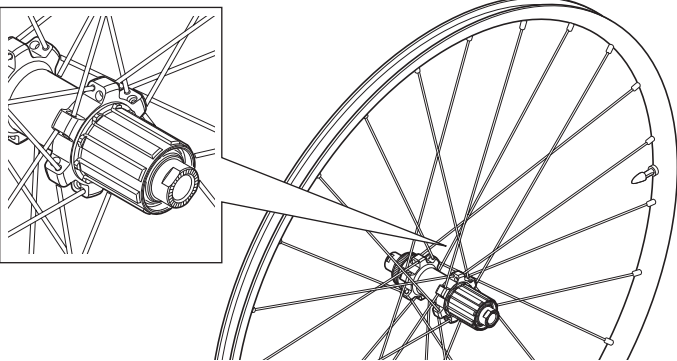
WH-RS370-TL

Number of spokes: 24

For front

Left side (Disc brake rotor side)	Right side
	
<div>Spoke tension value</div> <div>907 - 1,285 N</div>	<div>Spoke tension value</div> <div>600 - 850 N</div>

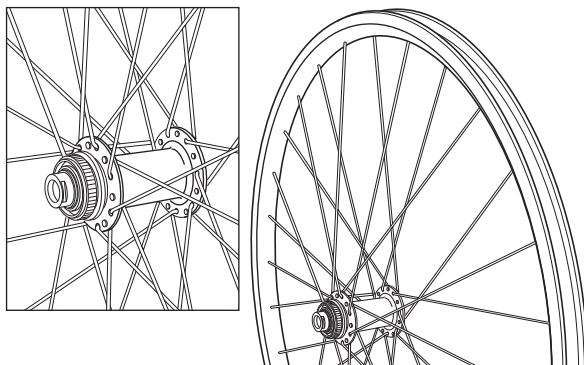
For rear

Left side (Disc brake rotor side)	Right side (Sprocket side)
	
<div>Spoke tension value</div> <div>600 - 850 N</div>	<div>Spoke tension value</div> <div>979 - 1,350 N</div>

WH-RS170-CL / WH-RS171-CL

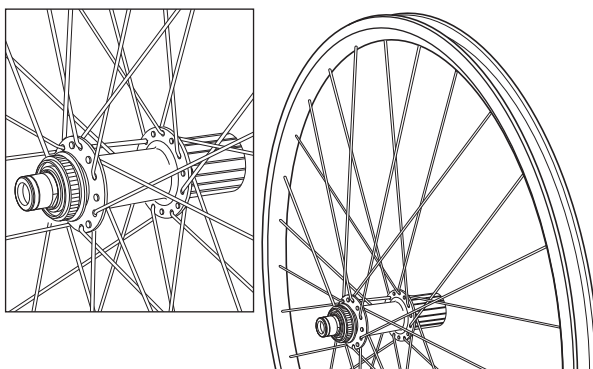
Number of spokes: 28

For front



Spoke tension value			
WH-RS170-CL		WH-RS171-CL	
Left side (Disc brake rotor side)	Right side	Left side (Disc brake rotor side)	Right side
1,000 - 1,400 N	500 - 850 N	903 - 1,303 N	550 - 906 N

For rear



Spoke tension value			
WH-RS170-CL		WH-RS171-CL	
Left side (Disc brake rotor side)	Right side (Sprocket side)	Left side (Disc brake rotor side)	Right side (Sprocket side)
600 - 850 N	1,000 - 1,400 N	600 - 936 N	1,160 - 1,560 N

■ Replacing the spokes

If working on tubeless wheels, remove the tubeless tape before replacing the spokes.
(For instructions on removing or affixing tubeless tape, refer to "Replacing tubeless tape".)

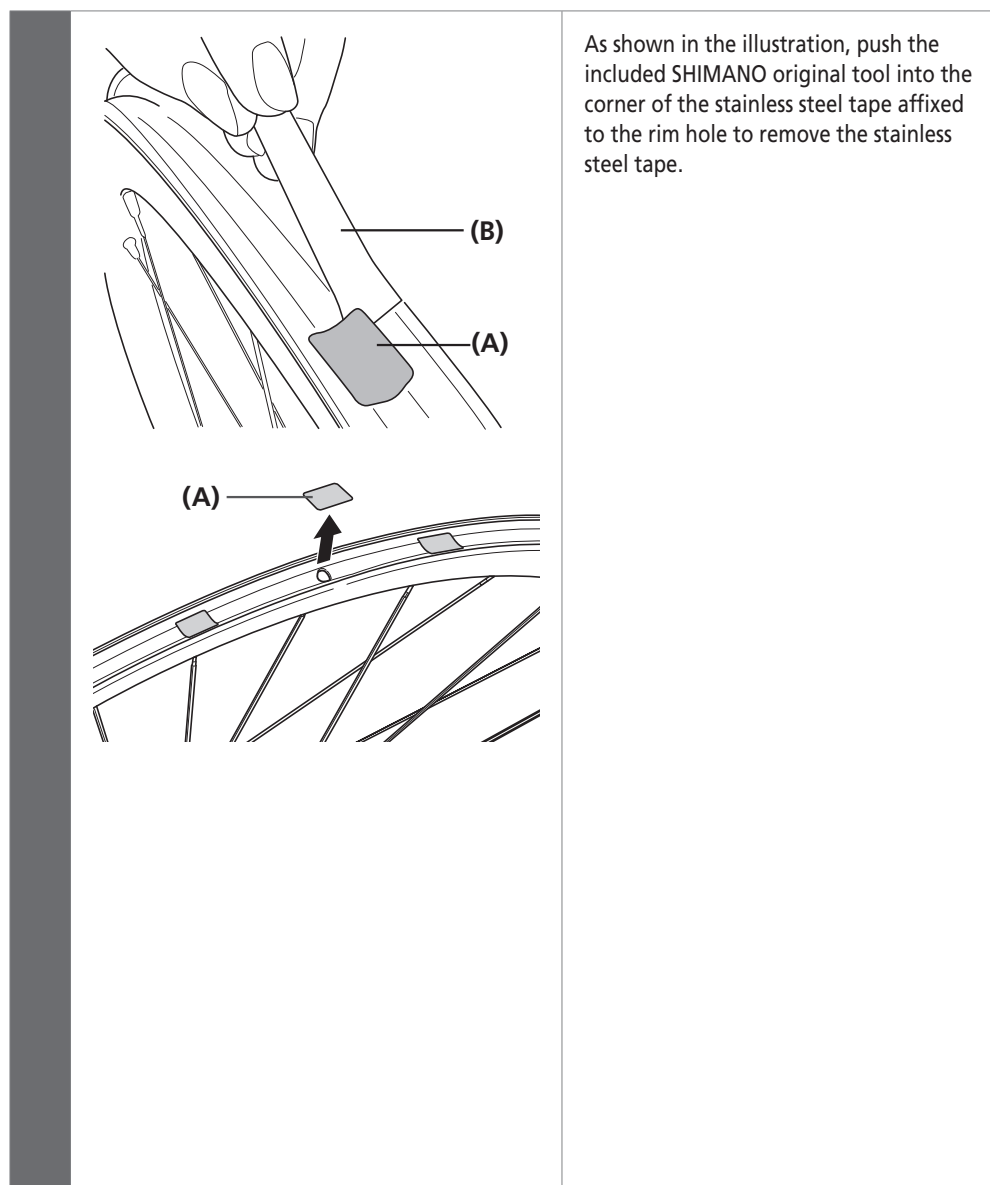
WH-R9170 / WH-RS770-TL

Depending on the type of tape used, the method of installation is different. If using type-B, stainless steel tape is not needed.

Model	Type	Specifications	Tape color
WH-R9170-TL / WH-RS770-TL	Type-A	Tubeless tape + Stainless steel tape	Black
	Type-B	Polyimide tape (Y0AV98060)	Amber

Removing stainless steel tape (WH-R9170-TL / WH-RS770-TL)

You do not need to replace the stainless steel tape attached to locations where you will not replace the spokes.



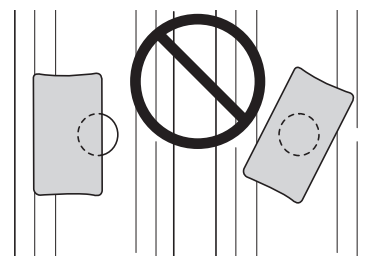
- (A) Stainless steel tape
(B) SHIMANO original tool

CAUTION

When replacing the spokes, do not remove or attach the stainless steel tape directly by hand. Instead, always use the SHIMANO original tool included with the replacement stainless steel tape (service part). The edges of the stainless steel tape could injure your fingers.

NOTICE

- Be careful that the adhesion surface is not dirtied.
- Stainless steel tape cannot be reused. Be sure to use new tape.
- Take care to affix the stainless steel tape properly.



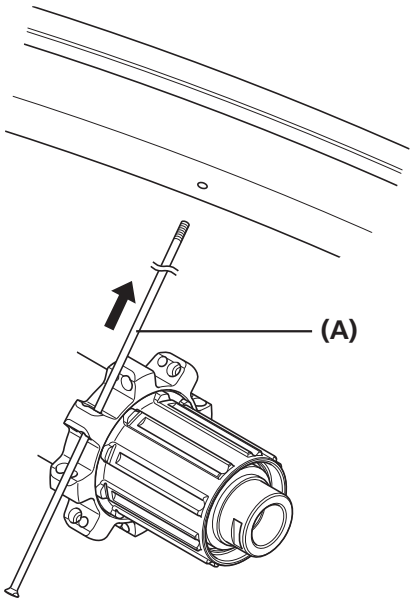
TECH TIPS

Only the WH-R9170-TL / WH-RS770-TL / WH-RS370-TL requires this operation.

Replacing the spokes (WH-R9170 / WH-RS770-TL)

Right side (same for front and rear)

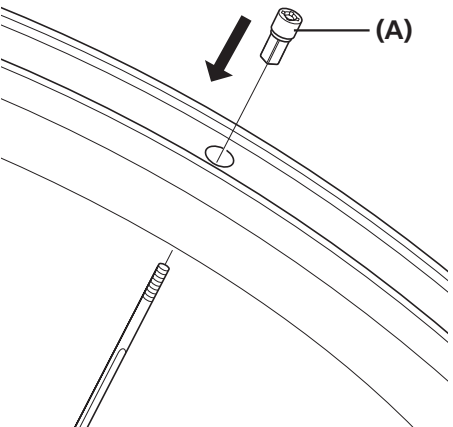
1



Insert the spokes into the holes in the hub flange as shown in the illustration.

(A) Spoke

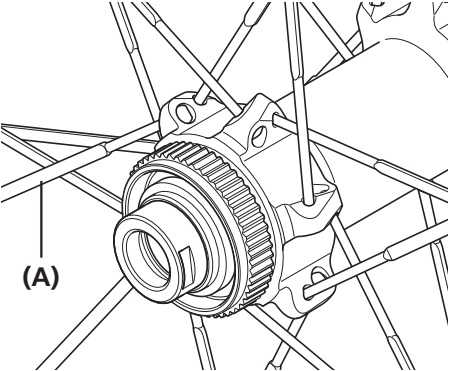
2



Attach the nipples and tighten the spokes to the specified tension.

(A) Nipple

Left side (For front)

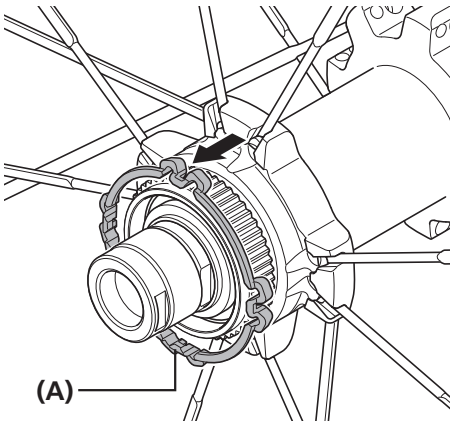


Replacement procedures are the same as for the right side.

(A) Spoke

Left side (For rear)

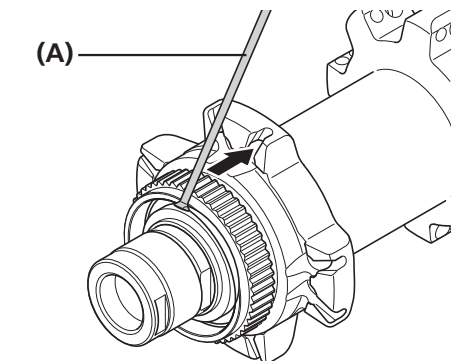
1



Remove the cap using a slotted screwdriver or similar.

(A) Cap

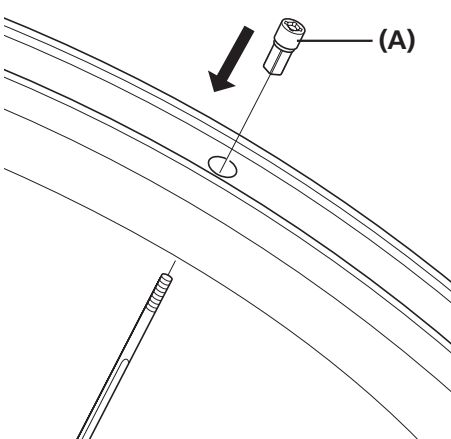
2



Insert a spoke into the groove in the hub flange as shown in the illustration.

(A) Spoke

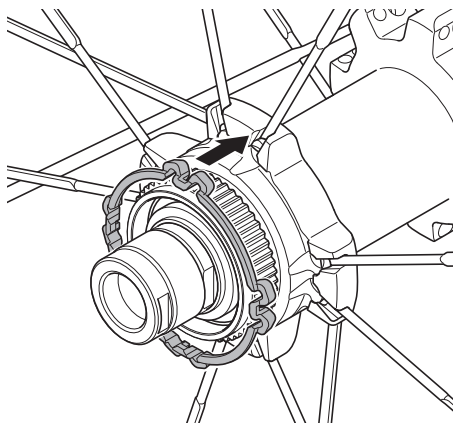
3



Attach the nipples and tighten the spokes to the specified tension.

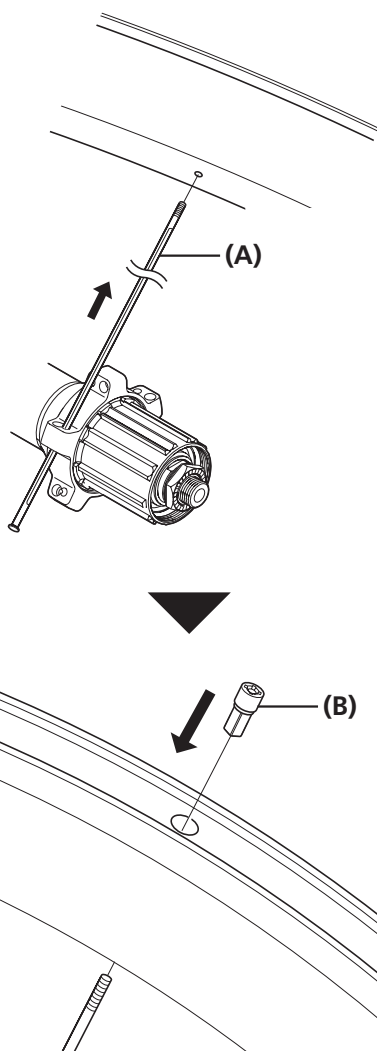
(A) Nipple

4



Finally, attach the cap.

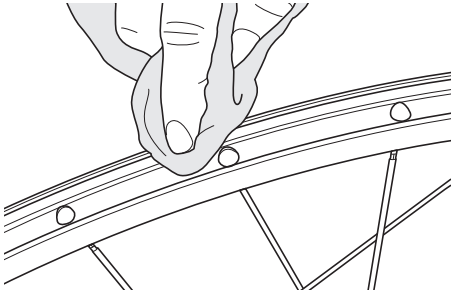
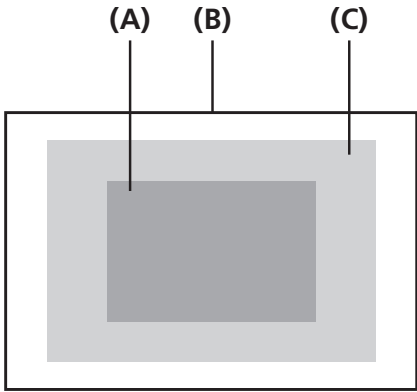
Replacing the spokes (WH-RS370-TL)



Install the spokes by inserting them through the hub as shown in the illustration.

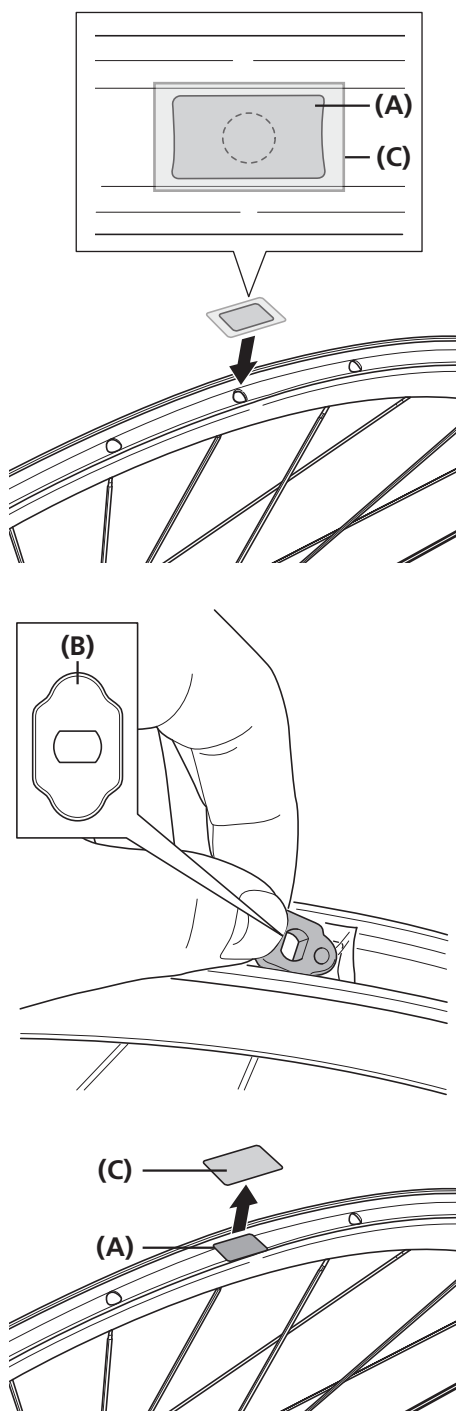
- (A) Spoke
- (B) Nipple

Affixing stainless steel tape (WH-R9170-TL / WH-RS770-TL)

1		<p>Clean the rim hole and the surface where the tape will be affixed.</p>
2		<p>Peel the release film (transparent) from the stainless steel tape.</p>

-
- (A)** Stainless steel tape
 - (B)** Release film (transparent)
 - (C)** Release film (blue)
-

3



As shown in the illustration, affix the stainless steel tape with the surface from which the release film (transparent) was peeled off facing downward, so that it covers the rim hole.

Use the included SHIMANO original tool to securely attach the stainless steel tape to the rim.

Peel off the release film (blue).

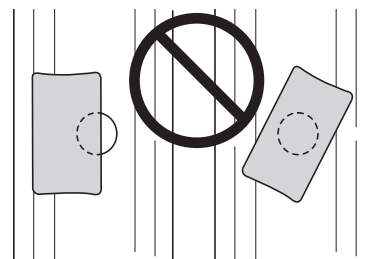
- (A) Stainless steel tape
- (B) SHIMANO original tool
- (C) Release film (blue)

CAUTION

When replacing the spokes, do not remove or attach the stainless steel tape directly by hand. Instead, always use the SHIMANO original tool included with the replacement stainless steel tape (service part). The edges of the stainless steel tape could injure your fingers.

NOTICE

- Be careful that the adhesion surface is not dirtied.
- Stainless steel tape cannot be reused. Be sure to use new tape.
- Take care to affix the stainless steel tape properly.

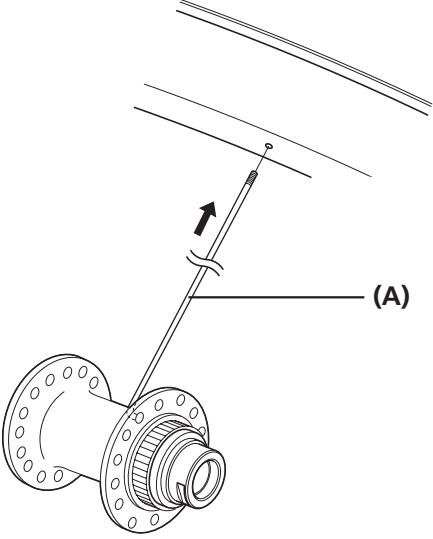
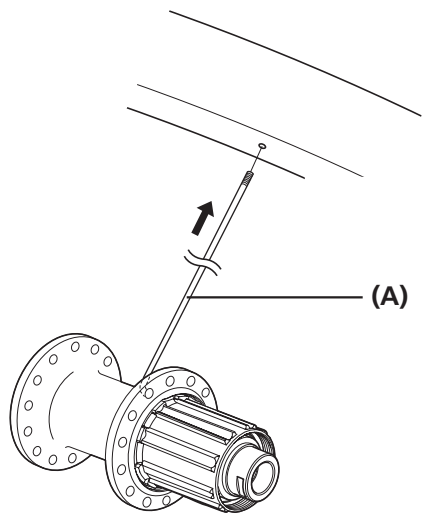
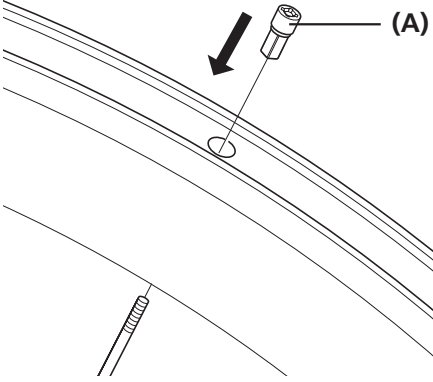


TECH TIPS

Only the WH-R9170-TL / WH-RS770-TL / WH-RS370-TL requires this operation.

WH-RS170-CL / WH-RS171-CL

Same for right side and left side

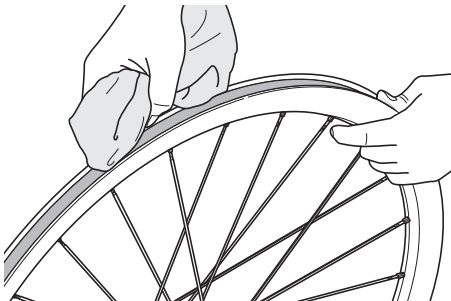
<div data-bbox="92 913 124 967">1</div> <div data-bbox="156 338 276 376">For front</div>  <div data-bbox="156 967 260 1003">For rear</div> 	<p>Insert the spokes into the holes in the hub flange as shown in the illustration.</p>	<div data-bbox="1125 338 1241 376">(A) Spoke</div>
<div data-bbox="92 1787 124 1841">2</div> 	<p>Attach the nipples and tighten the spokes to the specified tension.</p>	<div data-bbox="1125 1619 1246 1657">(A) Nipple</div>

■ Replacing tubeless tape

WH-R9170-TL / WH-RS770-TL

Type-A: Using tubeless tape (black) and stainless steel tape in combination

1

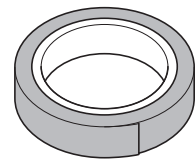


When using a sealant, wipe it off completely.

NOTICE

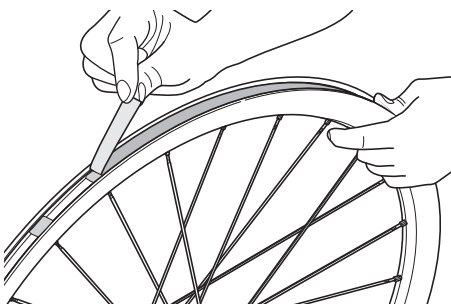
The tubeless tape cannot be reused, so use a new one after replacing it.

- Use a tubeless tape matching the rim width.
- It is recommended that you use genuine SHIMANO tubeless tape to prevent punctures and other possible damages.



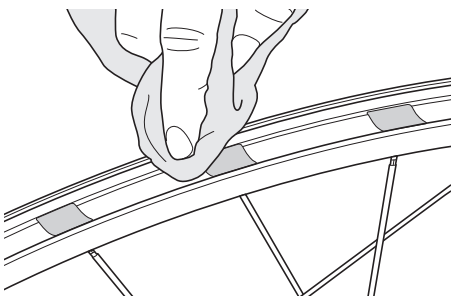
Tubeless tape

2



Remove the tubeless tape.

3

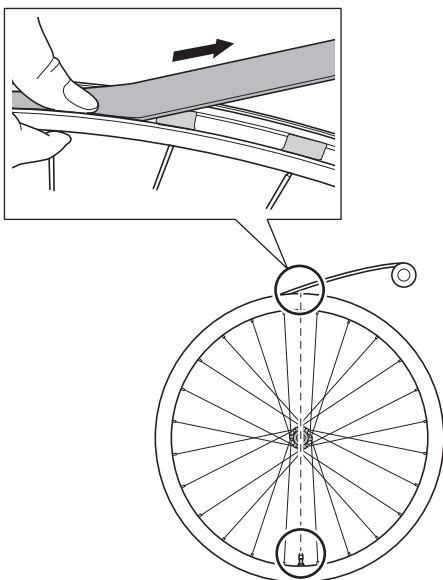


Clean the rim where the tape will be affixed.

⚠ CAUTION

Do not use your bare hands. Instead, use a thick rag or other material. The edges of the stainless steel tape could injure your fingers.

4



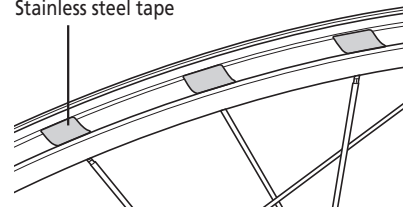
Affix a new tubeless tape.

Start affixing the tape from the opposite side of the valve.

NOTICE

Make sure stainless steel tape has been affixed to the rim hole before affixing tubeless tape.

Stainless steel tape

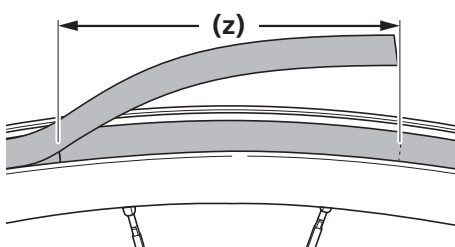


TECH TIPS

- Because the tape may tear, do not use a tool (use your hand) to affix the tape. Pull the tape with your hand to some extent when affixing it.
- Affix the tubeless tape in the middle of the rim, not off to one side, as shown in the following illustration.



5

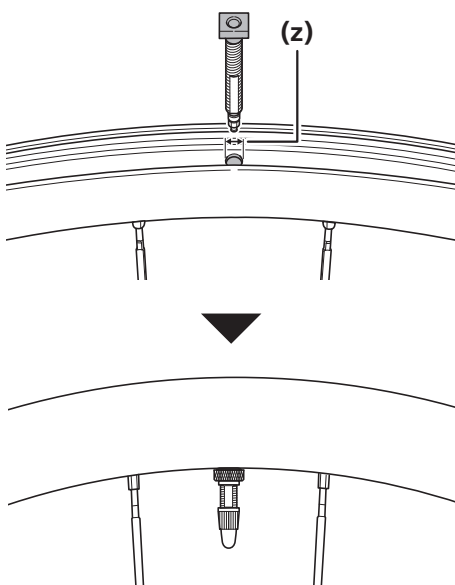


Overlap the ends of the tape by about 10 cm.

Securely attach both ends of the tape to the rim.

(z) Overlapping section (about 10 cm)

6

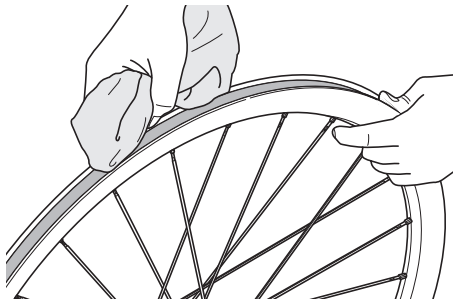


Drill a pilot hole with a diameter of $\varnothing 3$ mm in the valve hole section and then attach the valve.

(z) About $\varnothing 3$ mm in diameter

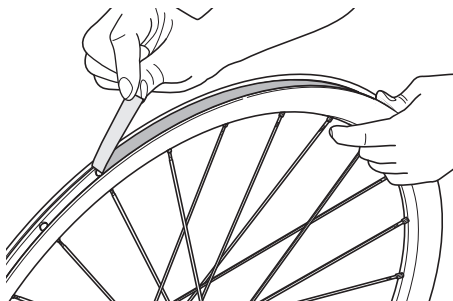
Type-B: Using polyimide tape (amber) only

1



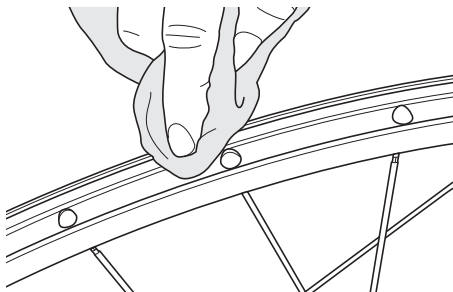
When using a sealant, wipe it off completely.

2



Remove the polyimide tape.

3

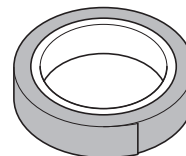


Clean the rim where the tape will be affixed.

NOTICE

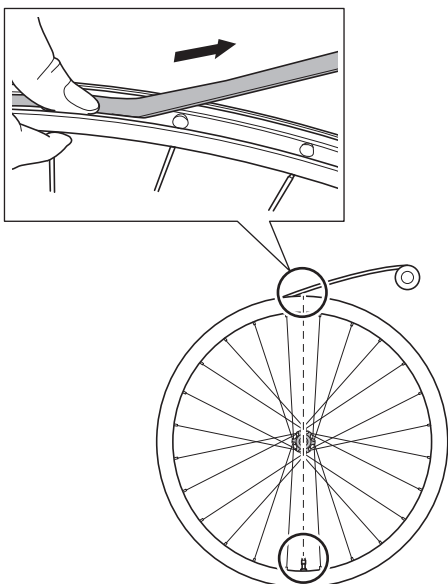
The polyimide tape cannot be reused, so use a new one after replacing it.

- Use a polyimide tape matching the rim width.
- It is recommended that you use genuine SHIMANO polyimide tape to prevent punctures and other possible damages.



Polyimide tape
(Y0AV98060)

4



Affix new polyimide tape (Y0AV98060).

Start affixing the tape from the opposite side of the valve.

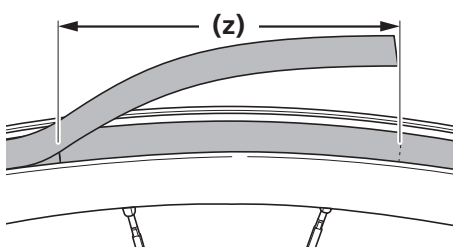


TECH TIPS

- Because the tape may tear, do not use a tool (use your hand) to affix the tape. Pull the tape with your hand to some extent when affixing it.
- Affix the polyimide tape in the middle of the rim, not off to one side, as shown in the following illustration.



5

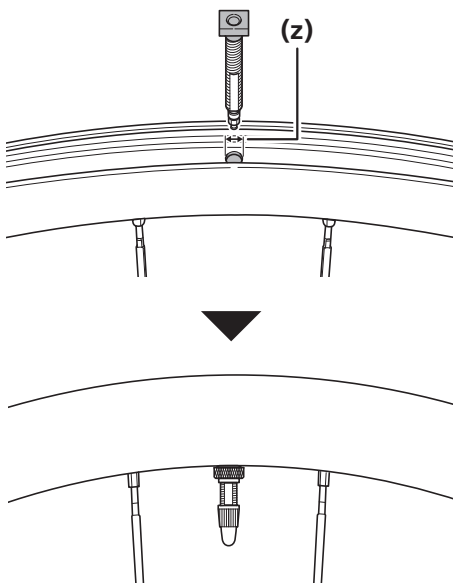


Overlap the ends of the tape by about 10 cm.

Securely attach both ends of the tape to the rim.

(z) Overlapping section (about 10 cm)

6

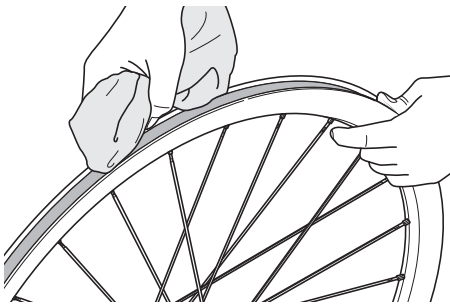


Drill a pilot hole with a diameter of Ø3 mm in the valve hole section and then attach the valve.

(z) About Ø3 mm in diameter

WH-RS370-TL

1

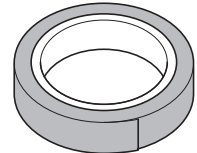


When using a sealant, wipe it off completely.

NOTICE

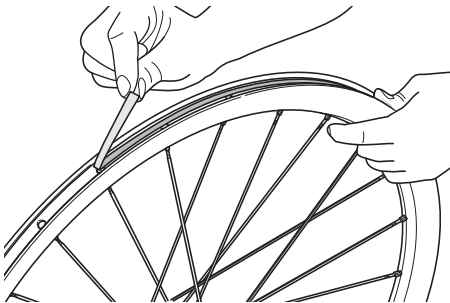
The tubeless tape with polyimide tape cannot be reused, so use a new one after replacing it.

- Use a tubeless tape with polyimide tape that matches the rim width.
- It is recommended to use genuine SHIMANO tubeless tape with polyimide tape to prevent punctures and other possible damage.



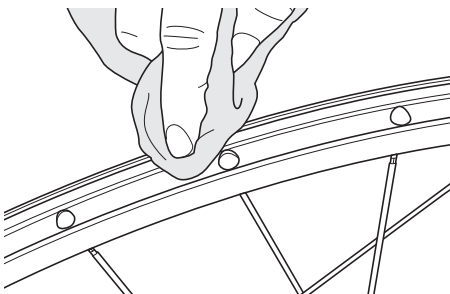
Tubeless tape with polyimide tape

2



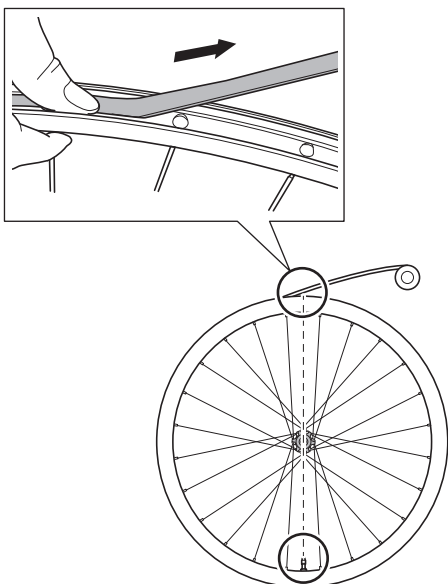
Remove the tubeless tape with polyimide tape.

3



Clean the rim where the tape will be affixed.

4



Affix the new tubeless tape with polyimide tape.

Start affixing the tape from the opposite side of the valve.

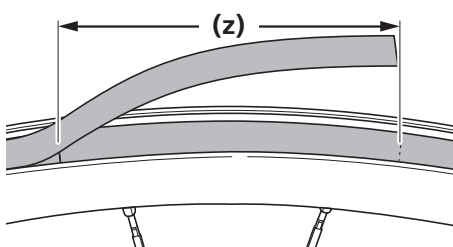


TECH TIPS

- Because the tape may tear, do not use a tool (use your hand) to affix the tape. Pull the tape with your hand to some extent when affixing it.
- Affix the tubeless tape with polyimide tape in the middle of the rim, not off to one side, as shown in the illustration.



5

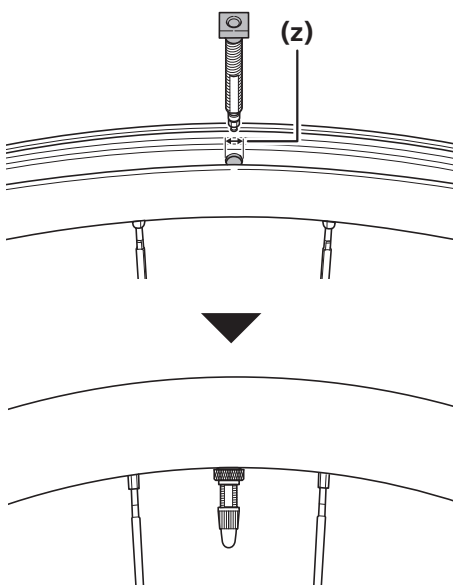


Overlap the ends of the tape by about 10 cm.

Securely attach both ends of the tape to the rim.

(z) Overlapping section (about 10 cm)

6



Drill a pilot hole with a diameter of $\varnothing 3$ mm in the valve hole section and then attach the valve.

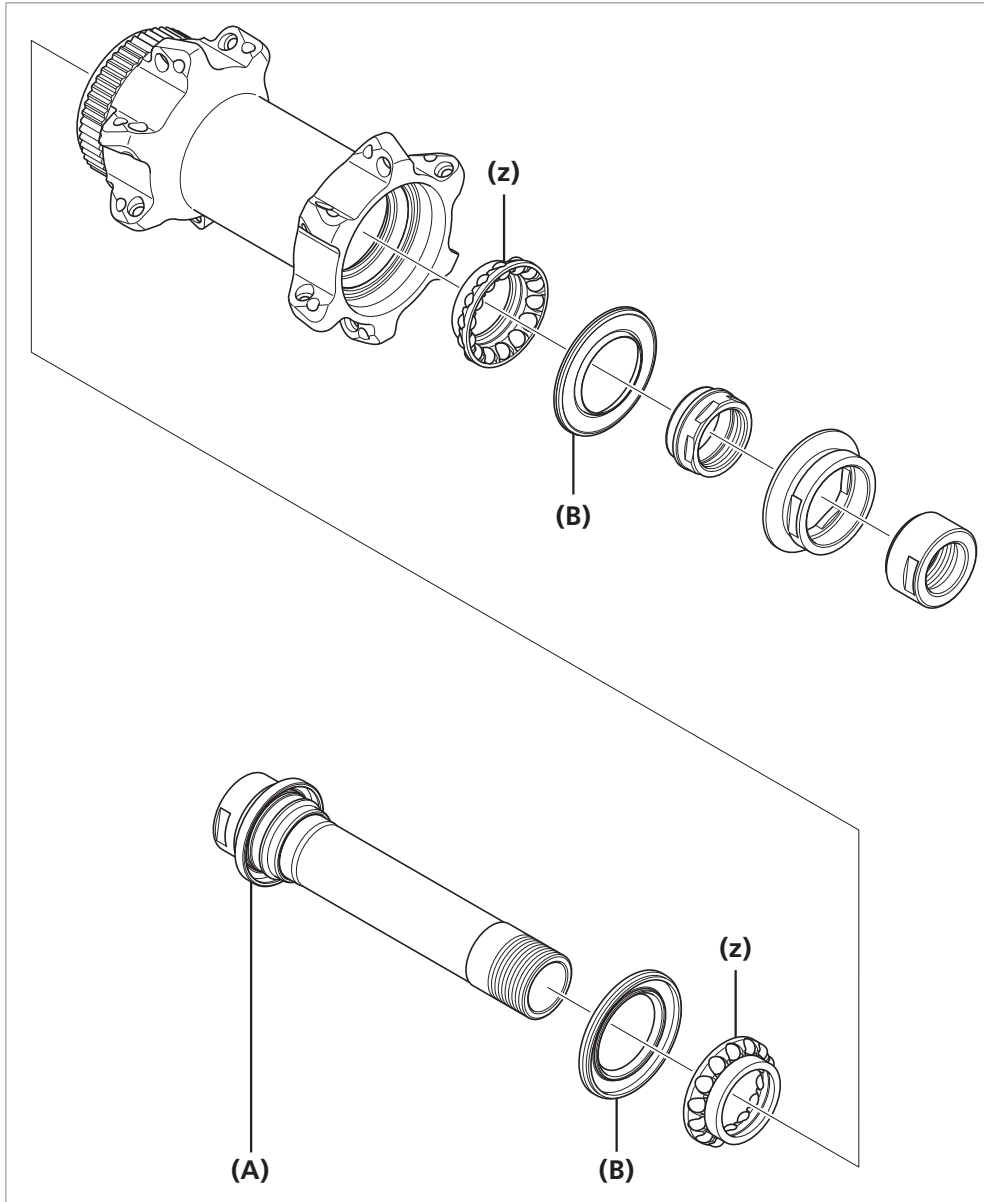
(z) About $\varnothing 3$ mm in diameter

Disassembly and assembly of the hub

Front hub

The unit can be disassembled as shown in the illustration. Apply grease to the various parts at periodic intervals.

WH-R9170



(z) Applying grease:
Premium Grease (Y04110000)
Number of balls: 14
Ball size: 5/32"

(A) Dust cover
(B) Seal (Lip is on the outside)

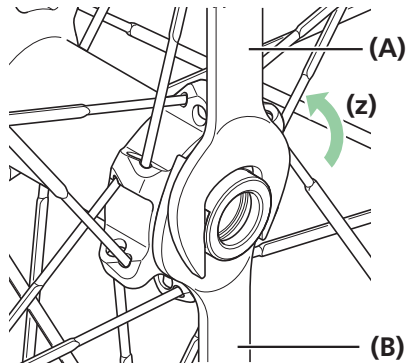
NOTICE

- The front hub can be disassembled as shown in the illustration, however, do not disassemble it any further than this. If it is disassembled any further, it will not be possible to reassemble it.
- The hub cannot be disassembled from the left side of the hub unit (the disc brake rotor fixing spline side).
- When removing and installing the seal, do it very carefully so that the seal does not become bent. When reinstalling the seal, make sure that it is facing the right way, and insert it as far as it will go.
- Do not disassemble the crimped dust cover.

Pulling out the hub axle (Front)

When assembling the hub axle, reverse the procedure.

Use two hub spanners to loosen the double-locked lock nut.



(z) Disassembly

(A) 17 mm hub spanner

(B) 22 mm hub spanner

Tightening torque

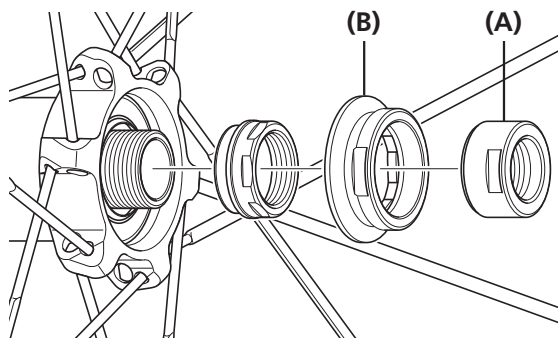


18 - 20 N·m

NOTICE

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

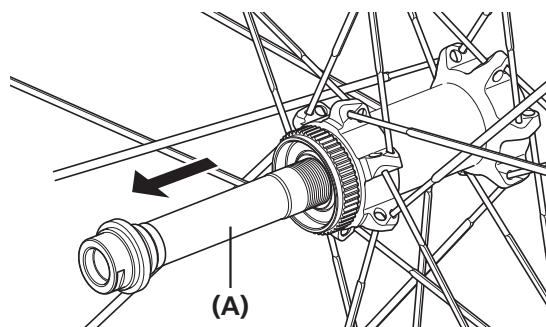
Disassemble as shown in the illustration.



(A) Lock nut

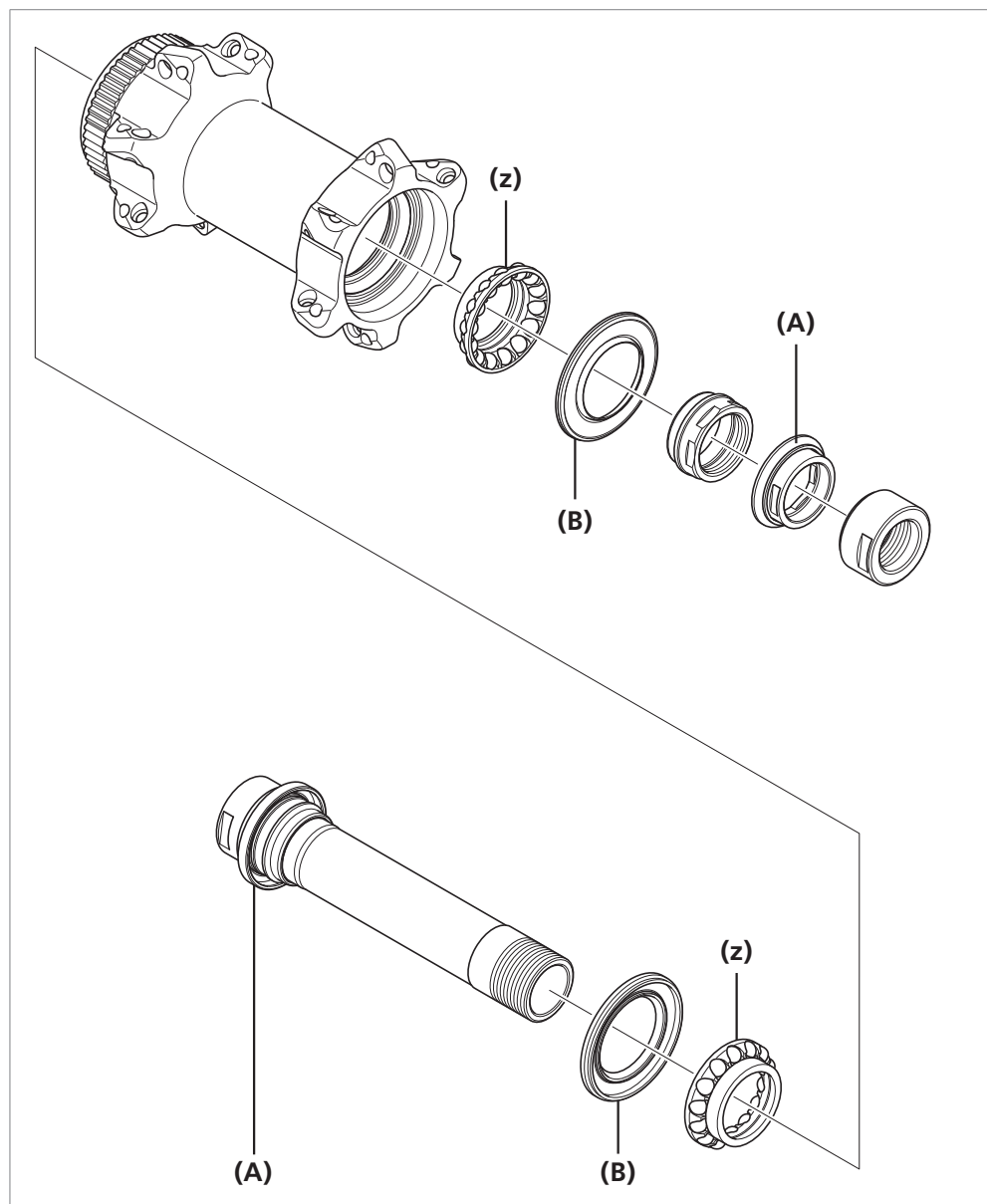
(B) Cone with dust cover
(Cannot be disassembled)

Pull out the hub axle.



(A) Hub axle

WH-RS770-TL



(z) Applying grease:
Premium Grease (Y04110000)
Number of balls: 14
Ball size: 5/32"

(A) Dust cover

(B) Seal (Lip is on the outside)

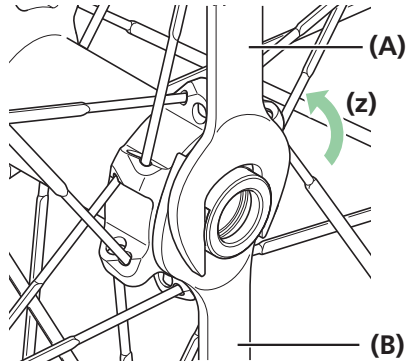
NOTICE

- The front hub can be disassembled as shown in the illustration, however, do not disassemble it any further than this. If it is disassembled any further, it will not be possible to reassemble it.
- The hub cannot be disassembled from the left side of the hub unit (the disc brake rotor fixing spline side).
- When removing and installing the seal, do it very carefully so that the seal does not become bent. When reinstalling the seal, make sure that it is facing the right way, and insert it as far as it will go.
- Do not disassemble the dust cover.

Pulling out the hub axle (Front)

When assembling the hub axle, reverse the procedure.

Use two hub spanners to loosen the double-locked lock nut.



(z) Disassembly

(A) 17 mm hub spanner

(B) 22 mm hub spanner

Tightening torque

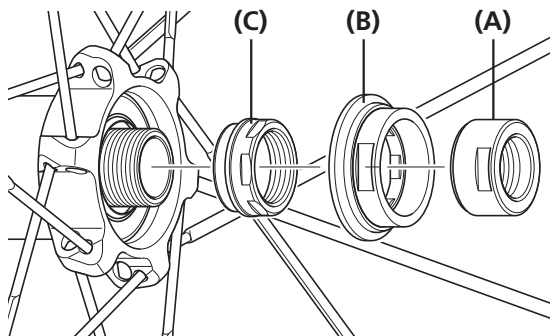


18 - 20 N·m

NOTICE

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

Disassemble as shown in the illustration.

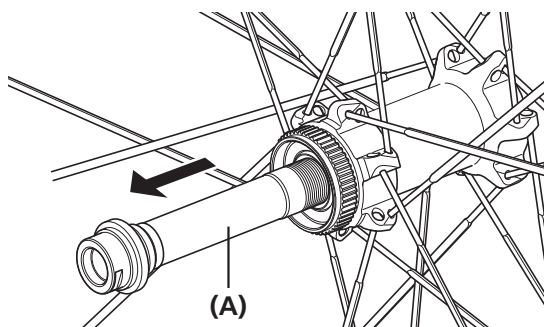


(A) Lock nut

(B) Cone with dust cover
(Cannot be disassembled)

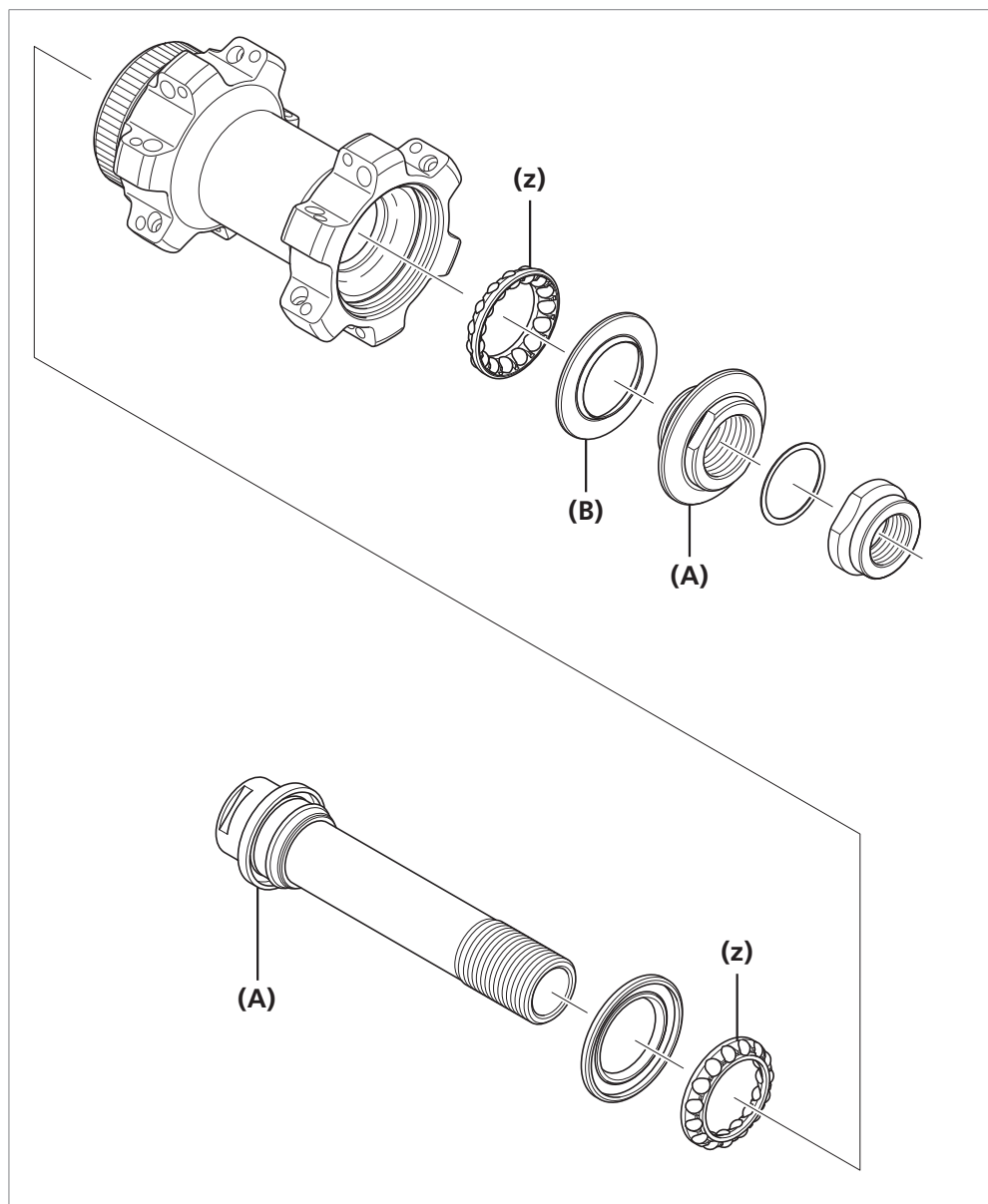
(C) Cone

Pull out the hub axle.



(A) Hub axle

WH-RS370-TL



(z) Applying grease:
Premium Grease (Y04110000)
Number of balls: 15
Ball size: 5/32"

(A) Dust cover

(B) Seal (Lip is on the outside)

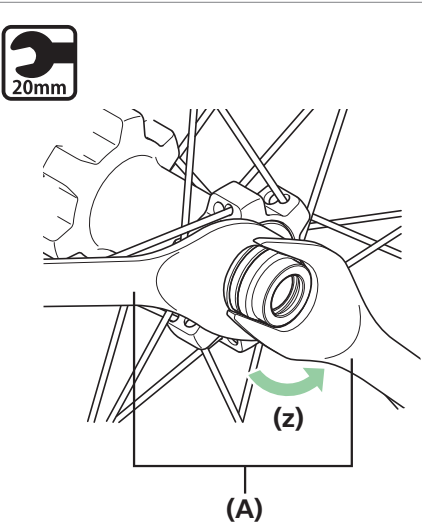
NOTICE

- The front hub can be disassembled as shown in the illustration, however, do not disassemble it any further than this. If it is disassembled any further, it will not be possible to reassemble it.
- The hub cannot be disassembled from the left side of the hub unit (the disc brake rotor fixing spline side).
- When removing and installing the seal, do it very carefully so that the seal does not become bent. When reinstalling the seal, make sure that it is facing the right way, and insert it as far as it will go.
- Do not disassemble the crimped dust cover.

Pulling out the hub axle (Front)


When assembling the hub axle, reverse the procedure.

1

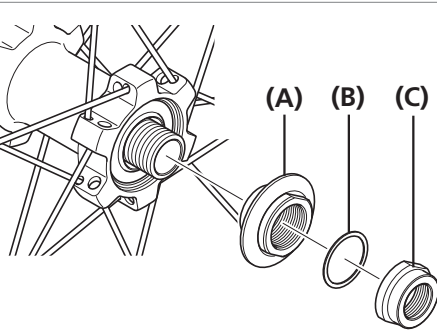


Use the spanner to loosen the lock nut on the double-lock section.

(z) Disassembly

(A) 20 mm spanner	
Tightening torque	
	20 - 25 N·m

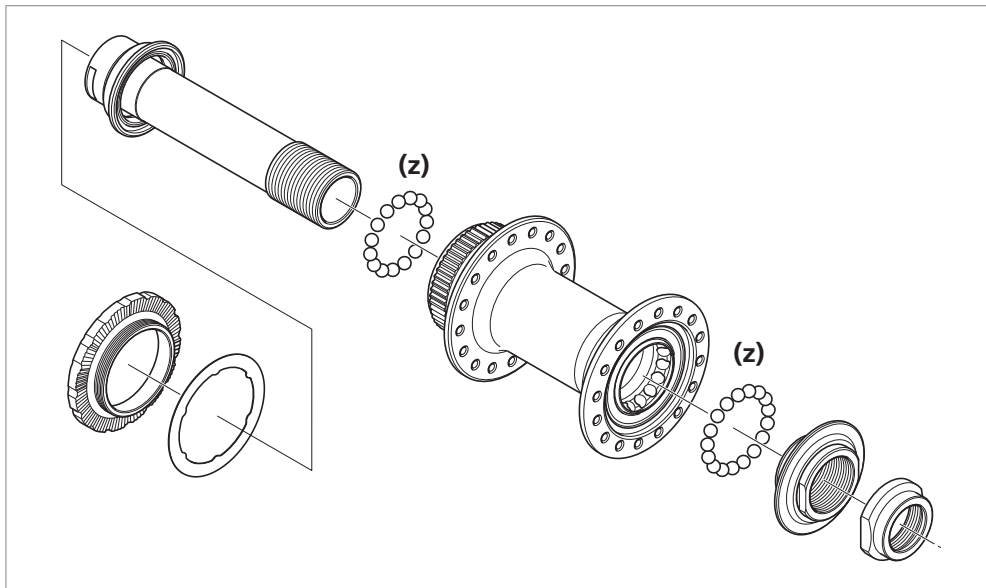
2



Remove as shown in the illustration.

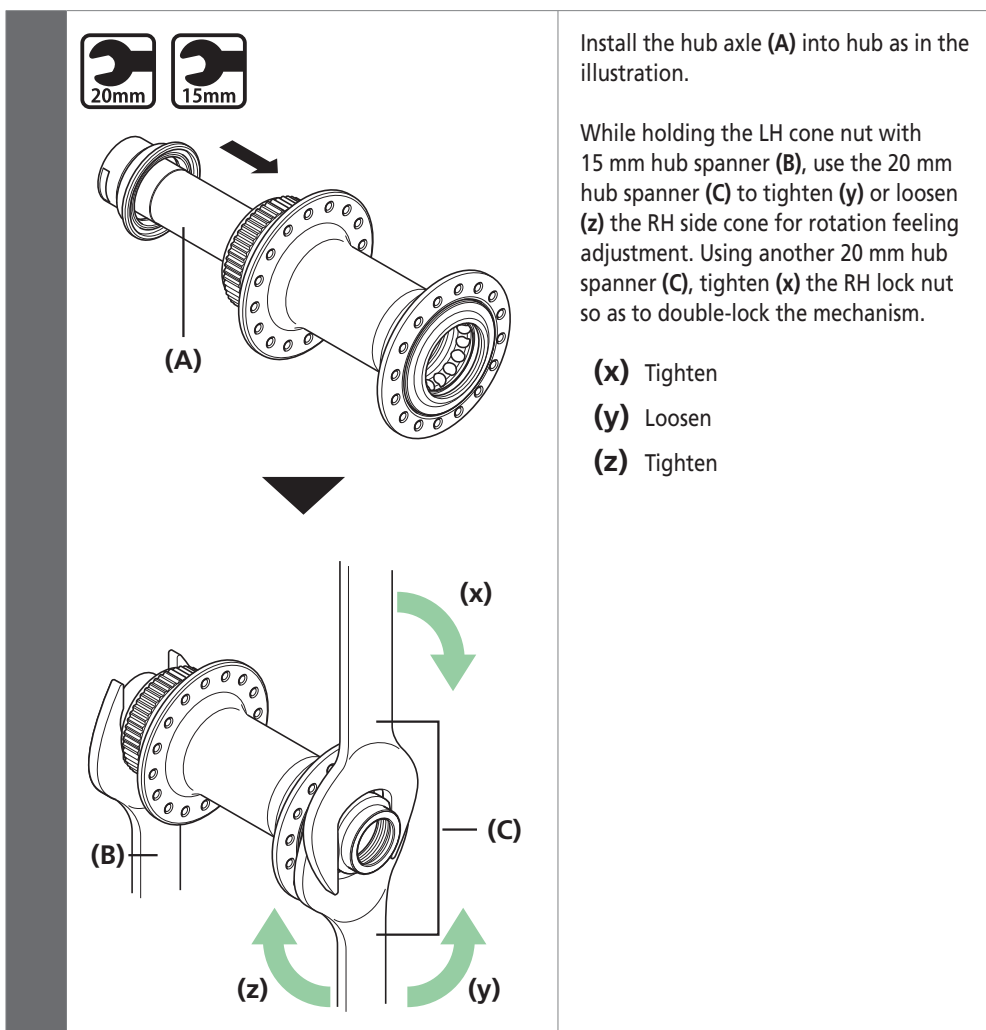
(A) Right-hand dust cap
(B) Washer
(C) Lock nut

WH-RS170-CL / WH-RS171-CL



(z) Apply grease: Premium Grease (Y04110000)

Assembly



Install the hub axle **(A)** into hub as in the illustration.

While holding the LH cone nut with 15 mm hub spanner **(B)**, use the 20 mm hub spanner **(C)** to tighten **(y)** or loosen **(z)** the RH side cone for rotation feeling adjustment. Using another 20 mm hub spanner **(C)**, tighten **(x)** the RH lock nut so as to double-lock the mechanism.

(x) Tighten

(y) Loosen

(z) Tighten

- (A)** Hub axle
- (B)** 15 mm hub spanner
- (C)** 20 mm hub spanner

Tightening torque (x)

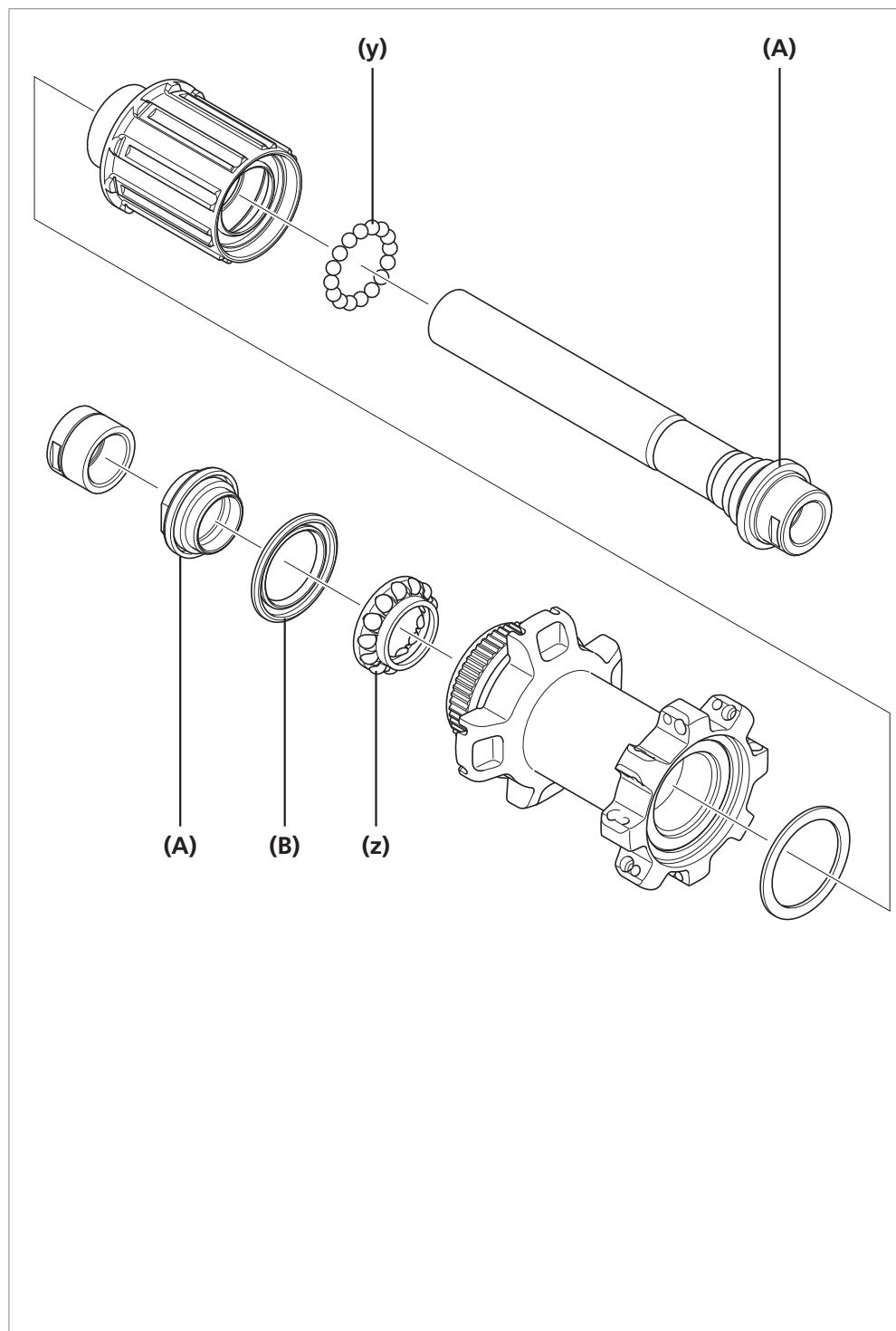


21 - 26 N·m

Freehub

The unit can be disassembled as shown in the illustration. Apply grease to the various parts at periodic intervals.

WH-R9170 / WH-RS770-TL



(y) Applying grease:
Premium Grease (Y04110000)
Number of balls: 16
Ball size: 5/32"

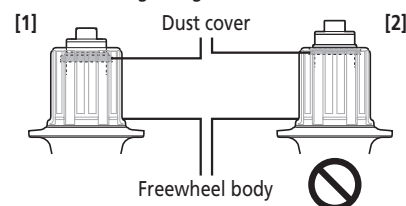
(z) Applying grease:
Premium Grease (Y04110000)
Number of balls: 13
Ball size: 3/16"

(A) Dust cover

(B) Seal (Lip is on the outside)

NOTICE

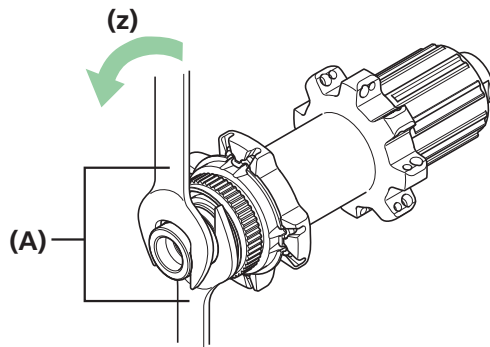
- The freehub can be disassembled as shown in the illustration, however, do not disassemble it any further than this. If it is disassembled any further, it will not be possible to reassemble it.
- When removing and installing the seal, do it very carefully so that the seal does not become bent. When reinstalling the seal, make sure that it is facing the right way, and insert it as far as it will go.
- Do not disassemble the crimped dust cover.
- Do not attempt to disassemble the freewheel body, because it may result in a malfunction.
- The correct position for the dust cover is when it is hidden in the freewheel body, as shown in illustration [1]. If the dust cover is in the position shown in illustration [2], repeat the assembly process from the beginning.



Pulling out the hub axle (Rear)

When assembling the hub axle, reverse the procedure.

Use two hub spanners to loosen the double-locked lock nut.



(z) Disassembly

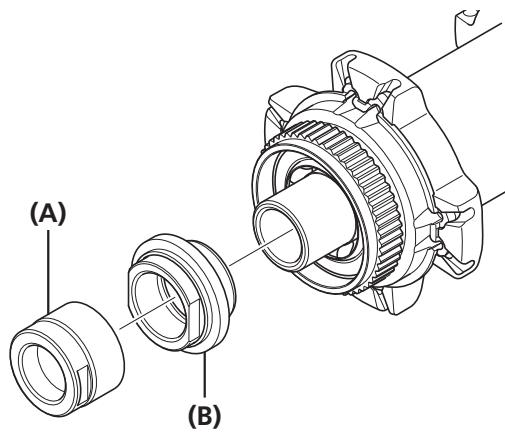
(A) 17 mm hub spanner

Tightening torque



17 - 22 N·m

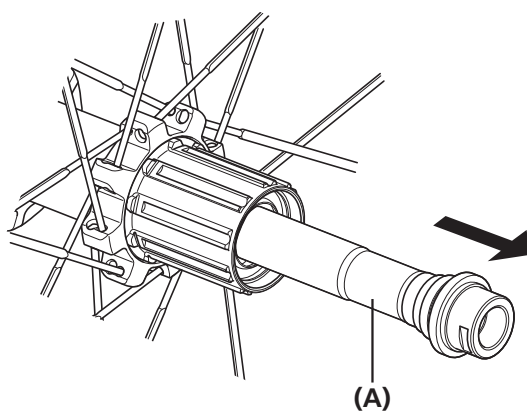
Disassemble as shown in the illustration.



(A) Lock nut

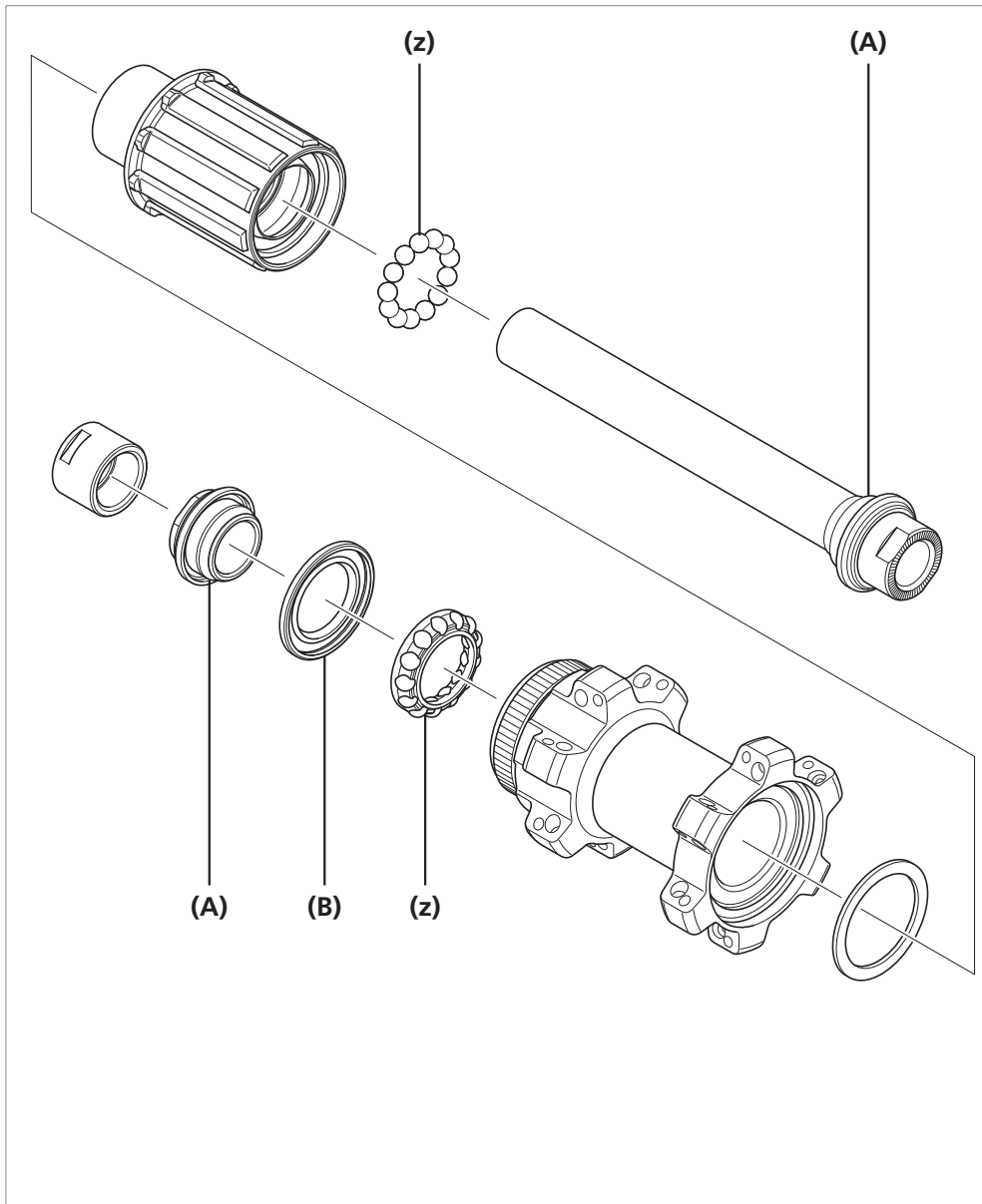
(B) Cone with dust cover
(Cannot be disassembled)

Pull out the hub axle.



(A) Hub axle

WH-RS370-TL



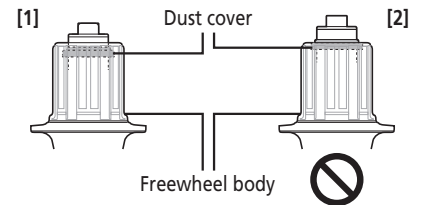
(z) Applying grease:
Premium Grease (Y04110000)
Number of balls: 13
Ball size: 3/16"

(A) Dust cover

(B) Seal (Lip is on the outside)

NOTICE

- The freehub can be disassembled as shown in the illustration, however, do not disassemble it any further than this. If it is disassembled any further, it will not be possible to reassemble it.
- When removing and installing the seal, do it very carefully so that the seal does not become bent. When reinstalling the seal, make sure that it is facing the right way, and insert it as far as it will go.
- Do not disassemble the crimped dust cover.
- Do not attempt to disassemble the freewheel body, because it may result in a malfunction.
- The correct position for the dust cover is when it is hidden in the freewheel body, as shown in illustration [1]. If the dust cover is in the position shown in illustration [2], repeat the assembly process from the beginning.



Pulling out the hub axle (Rear)

When assembling the hub axle, reverse the procedure.

1

Use the spanner to loosen the lock nut on the double-lock section.

(z) Disassembly

(A) 17 mm spanner

Tightening torque

15 - 19 N·m

2

Remove as shown in the illustration.

(A) Lock nut

(B) Cone

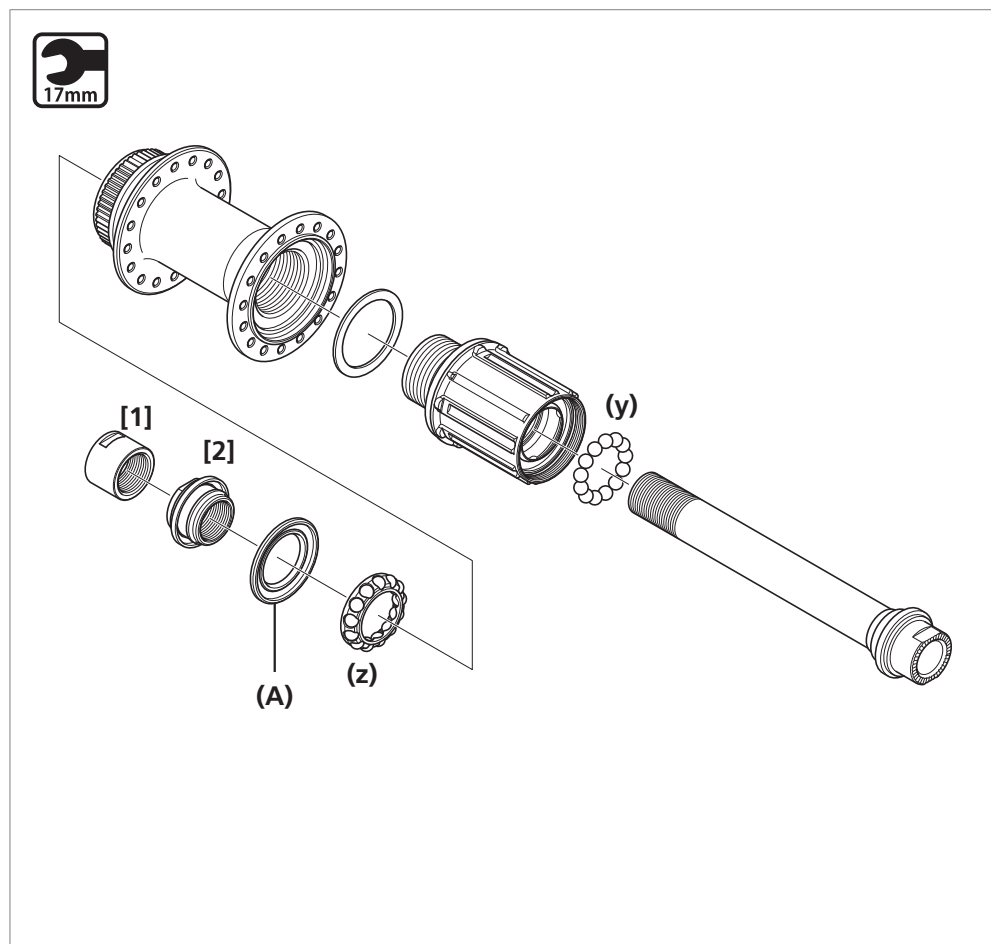
(C) Seal ring

3

Pull out the hub axle from the freewheel body.

(A) Hub axle

WH-RS170-CL / WH-RS171-CL



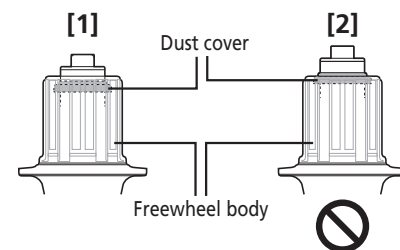
(y) Apply grease: Premium Grease (Y04110000)
Number of balls: 16
Ball size: 5/32"

(z) Apply grease: Premium Grease (Y04110000)
Number of balls: 15
Ball size: 5/32"

(A) Seal (Lip is on the outside)

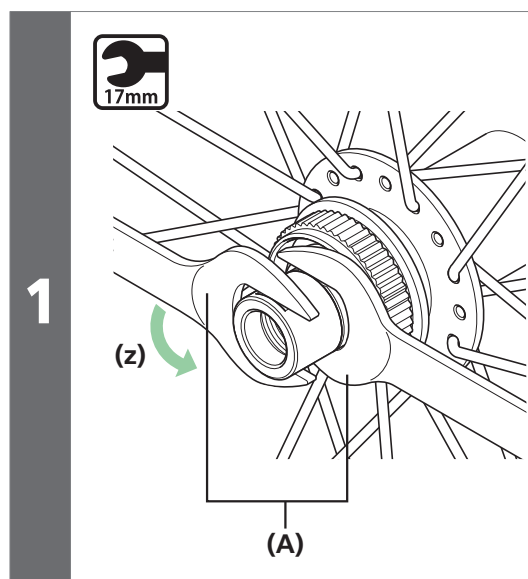
NOTICE

The correct position for the dust cover is where it is hidden in the freewheel body, as shown in illustration [1].
If the dust cover is in the position shown in illustration [2], repeat the assembly process from the beginning.



	Part name	Thread type	Tool	Tightening torque
[1]	Left hand lock nut (M15)	Clockwise thread	17 mm hub spanner	15 - 20 N·m
[2]	Left hand cone (M15)	Clockwise thread	17 mm hub spanner	-

Pulling out the hub axle



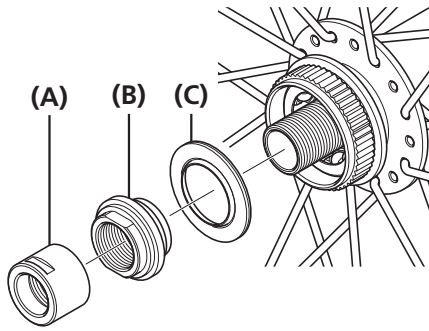
Use the spanner to loosen the lock nut on the double-lock section.

(z) Disassembly

(A) 17 mm hub spanner

Tightening torque	
	15 - 20 N·m

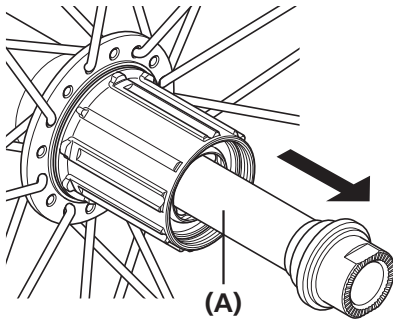
2



Remove as shown in the illustration.

- (A) Lock nut
- (B) Cone with dust cover
(Cannot be disassembled)
- (C) Seal ring

3



Pull out the hub axle from the freewheel body.

- (A) Hub axle

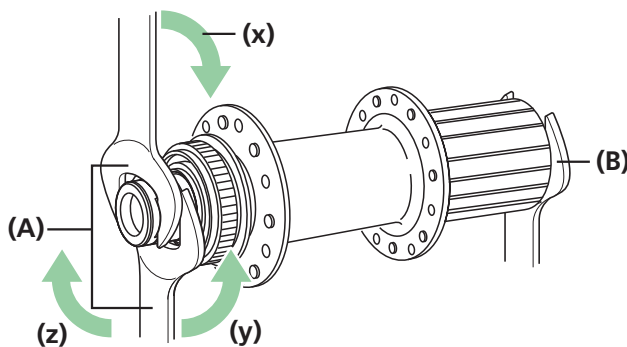
Assembly

1

Reverse the procedure of "Pulling out the hub axle".

2

While holding the RH cone nut with 17 mm hub spanner (B), use the 17 mm hub spanner (A) to tighten (y) or loosen (z) the LH side cone for rotation feeling adjustment. Using another 17 mm hub spanner (A), tighten (x) the LH lock nut so as to double-lock the mechanism.



- (x) Tighten
- (y) Loosen
- (z) Tighten

- (A) 17 mm hub spanner
- (B) 17 mm hub spanner

Tightening torque (x)



15 - 20 N·m

■ Replacement of the freewheel body



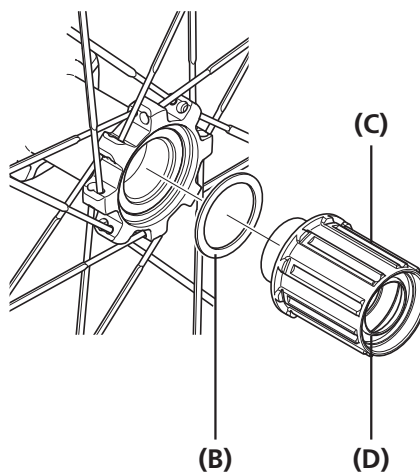
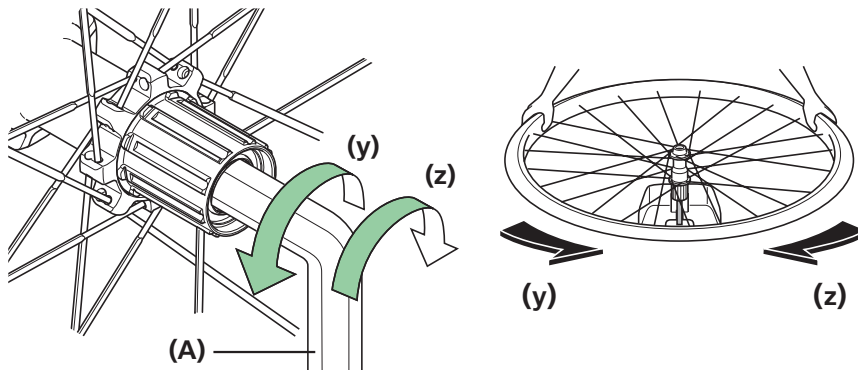
TECH TIPS

For information on how to pull out the hub axle, refer to the section "Freehub".

Replacing the freewheel body

WH-R9170 / WH-RS700-TL / WH-RS170-CL / WH-RS171-CL

Remove and replace the freewheel body as shown in the illustrations.



(y) Disassembly

(z) Assembly

(A) TL-FH15

(B) Freewheel body washer

(C) Freewheel body

(D) Seal (Cannot be removed)

Tightening torque

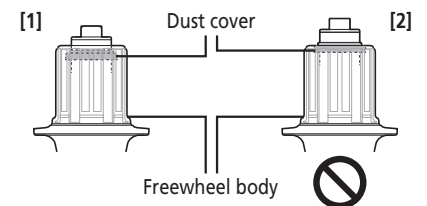


147 - 200 N·m

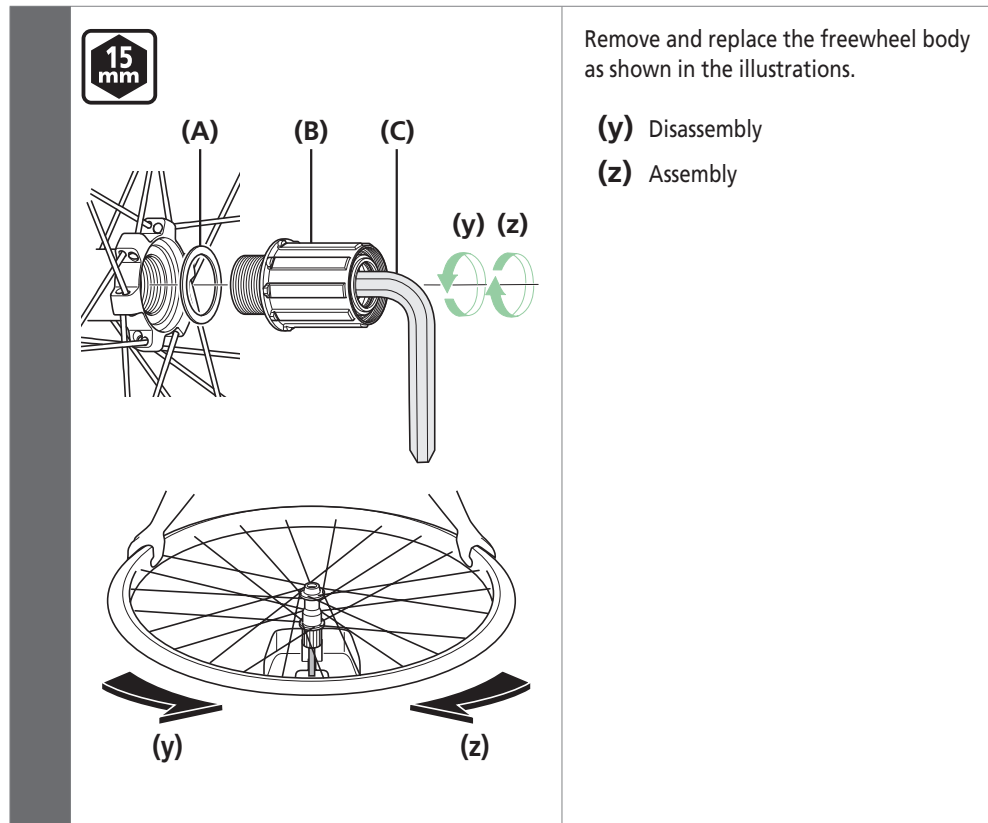
NOTICE

The correct position for the dust cover is when it is hidden in the freewheel body, as shown in illustration [1].

If the dust cover is in the position shown in illustration [2], repeat the assembly process from the beginning.



WH-RS370-TL



Remove and replace the freewheel body as shown in the illustrations.

- (A) Freewheel body washer
(B) Freewheel body
(C) 15 mm hexagon wrench

Tightening torque for E-THRU type

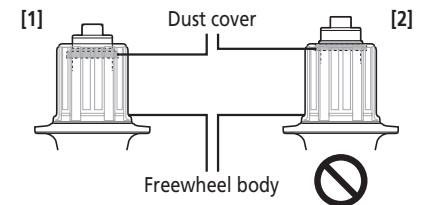


147 - 200 N·m

NOTICE

The correct position for the dust cover is when it is hidden in the freewheel body, as shown in illustration [1].

If the dust cover is in the position shown in illustration [2], repeat the assembly process from the beginning.



■ Cautions on the use of rims for tubular tires

General Safety Information.

WARNING

Tubular tires are widely used in racing bicycles as they are lightweight and have smooth cornering performance. However, compared to clincher-type tires, greater expertise is required when handling them. Additionally, greater care is required in their maintenance. In addition, always inspect the wheels prior to use.

These precautions must be observed in order for the optimum performance features of this product to be obtained; if they are not observed, the tires may come off the rims or damage to the tires may occur resulting in severe injury to the rider.

Make sure that you read and fully understand the following points on using tubular tires. Furthermore, if you are not confident that you have enough knowledge and experience in installing and removing the tires or carrying out maintenance, ask an authorized bicycle dealer or a professional bicycle technician for assistance.

Do not use these tubular tires if you are not confident that they have been installed by someone with an adequate level of knowledge and experience.

- A special adhesive designed exclusively for tubular tires is used to secure the tires to the wheel rims. If any other type of adhesive is used, it might not secure the tires in place with sufficient force, and it may also cause deterioration of the rim material.
- When cleaning the rim surfaces, use only a cleaning agent which is exclusively designed for tubular tires. If any other type of cleaning agent is used, it may cause deterioration of the rim material. If using carbon fiber rims, do not rub the surfaces of the rims vigorously with sandpaper or anything similar. Otherwise, the carbon fiber layer of the rims may peel off when replacing the tires.
- If the adhesive is not applied correctly to the rim surfaces, it may not hold the tires securely in place, and the tires may easily come off the rims. Particularly when using the rims for the first time, always be sure to clean the rim surfaces thoroughly with the correct cleaning agent to remove any traces of grease and other foreign materials, and then apply a thin layer of adhesive to the rim surface to create a secure bond between the rim and the wheel. When this has been done, apply more adhesive evenly to the rim at a thickness which is just sufficient to cover the roughness of the tire and no more, and then install the tire. When using rims which contain carbon fiber material, if the tires are not attached properly, or if the wrong type of adhesive or cleaning agent is used, it may be impossible to obtain the same adhesion force between the rim and the tire as for aluminum rims; this it may also reduce the strength of the carbon fiber rims.
- Depending on the type of adhesive used, there may be large differences in factors such as adhesion force, the time it takes to dry, durability, and the sensitivity to conditions such as temperature and humidity. Therefore, you should pay particular attention to the adhesion force when using the wheels.
- Always check the tires before use by applying force to the tires to make sure they are properly attached to the rims.
- The adhesion force of the tires may deteriorate after long periods of use, therefore it is best to re-apply the adhesive periodically. If using carbon fiber rims, use a rim cement cleaner or similar when replacing the tires to assist in peeling the tires off gently in order to avoid pulling away the carbon fiber layer.
- If you do not apply any adhesive to the adhesion surface of the tire when installing the tire to the rim, the adhesion force between the tire and the rim will be weaker.
If you want the tires to adhere to the rims with greater force (such as when riding in criterium competition races and track races where hard turning and acceleration are required) you can use adhesive to adhere them more firmly.
- If the rims become hot as a result of continuous use of the brakes when riding down long declines, sudden loss of tire adhesion force may occur. If you think that this might happen at some stage, pay particular attention to selecting and re-applying the adhesive at some point. Loss of adhesion force can still occur even if measures are taken to prevent it, so if it still occurs, replace the wheels and discontinue using the tubular type of tires.
- Also check the tires before use. If there are large cracks in the tires, they may burst during use, and so they should be replaced beforehand. In addition, the seam covers may come off the tires after long periods of use, and so check the tires before use.
- If you feel that there are any malfunctions or problems with the system, stop riding the bicycle and contact an authorized bicycle dealer or a professional bicycle technician for advice.
- For any questions regarding methods of installation, adjustment, maintenance or operation, please contact an authorized bicycle dealer.

NOTICE

- If any glue gets on the painting surface of the rim, use a cloth to wipe it off before it dries. Do not use cleaning solvents or chemicals, such as rim cement removers, as they may remove the paint.

■ Installing and removing tubeless tires

General Safety Information

⚠ WARNING

- The tires should be installed and removed by hand. If this is difficult, a plastic tire lever for tubeless wheels may be used. In such cases, be sure to check that the rim surface has not been dented, scratched, or cracked as there is a risk of causing damage to the air seal between the tire and the rim, which would result in air leakage. For carbon rims, check that there is no carbon peeling or cracking etc. Finally, make sure there is no air leakage.

⚠ CAUTION

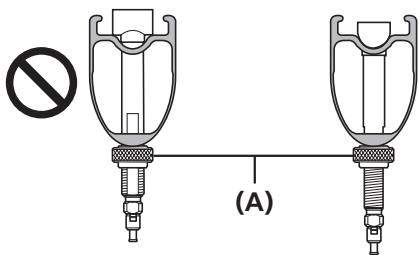
- Do not use rim tape if using an inner tube. Rim tape may make it difficult to remove and install the tire, and the tire or tube may become damaged or the tires may suddenly puncture, causing the bicycle to fall over.
- Do not tighten the valve lock ring too much, otherwise the valve seal may become warped and air leaks may occur.

NOTICE

- If the tires are difficult to fit, use tap water or soapy water to help them slide more easily.
- Products are not guaranteed against natural wear and deterioration from normal use and aging.

How to use

Installing tubeless tire valves



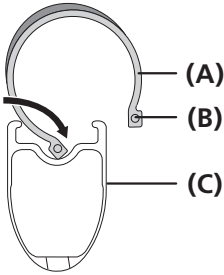
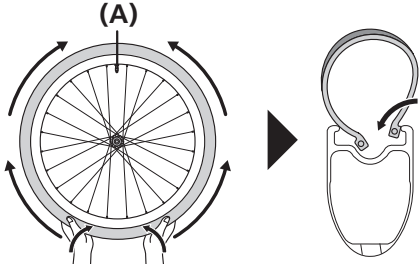
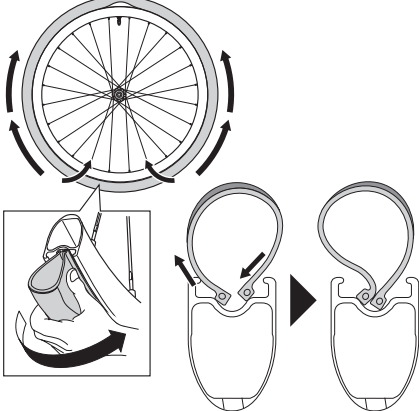
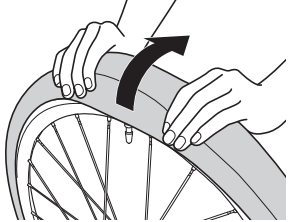
Install the valve so that it faces as shown in the illustration.

(A) Valve lock ring

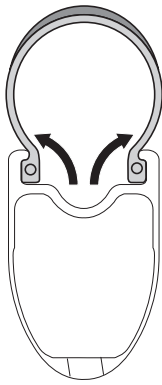
NOTICE

When tightening the valve lock ring, make sure that the valve does not turn together with the nut.

Installing the tires

1		<p>Insert the bead on one side of the tire as shown in the illustration.</p> <p>Check that there are no foreign particles in the tire bead, rim and valve.</p>	<p>(A) Tire</p> <p>(B) Bead</p> <p>(C) Rim</p>
2		<p>Insert the bead on the other side of the tire starting from the point opposite the air valve.</p>	<p>(A) Air valve</p>
3		<p>It will become more difficult to insert the bead at the side of the air valve.</p> <p>In such cases, lift up the bead by hand starting from the opposite side of the tire, and work your way around to the location of the air valve.</p>	
4		<p>Lastly, grip the tire with both hands as shown in the illustration and insert the tire into the rim.</p>	

5



Inflate with air to lock the beads of the tires into the rim as shown in the illustration.

After this, deflate the tire and check that the bead is locked into the rim.

Then re-inflate the tire to the standard air pressure for use.

If the bead is not locked into the rim, the bead may separate from the rim when the tire is deflated.

! WARNING

- The tires should be inflated to the pressure indicated on the tires or rim before use. If the maximum pressure is prescribed on the tires and rim, be sure not to exceed the lower value shown.

WH-R9170-TL / WH-RS770-TL

Maximum pressure

8 bar / 116 psi / 800 kPa

WH-RS370-TL

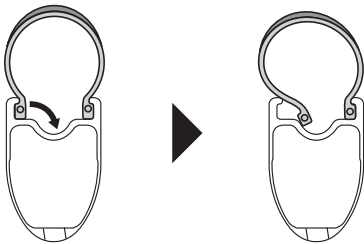
Maximum pressure

6.5 bar / 94 psi / 650 kPa

- A higher pressure than indicated can cause a sudden puncture and / or sudden release of the tire, which can result in serious injury.

Removing the tires

1



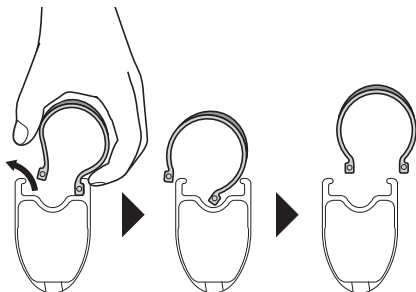
To remove a tire, deflate it and push the bead on one side of the tire into the gorge of the rim as shown in the illustration.



TECH TIPS

Be sure to only push in the bead on one side of the tire.
If you push the beads in on both sides, the tires will be difficult to remove. If you accidentally seat both beads, inflate the tire once more to lock the beads; to remove the tire, restart the procedure from the beginning.

2



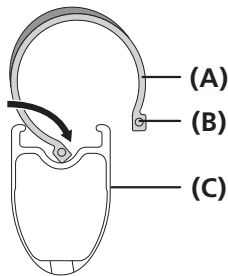
Remove the bead on one side of the tire starting from the point closest to the air valve, and then remove the bead on the other side of the tire.

Notes when using inner tubes

1

Loosen the locking ring of the air valve and remove the air valve.

2



Insert the bead on one side of the tire as shown in the illustration.

- (A) Tire
- (B) Bead
- (C) Rim

3

Liberally moisten the outer edges of the rim and the tire beads, and place the slightly-inflated inner tube inside the tire so that it can slide smoothly.

NOTICE

- Check that the inner tube air valve is appropriate for use with the rim.
- Contact your dealer for the specifications of inner tubes that can be used.

4

Insert the bead on one side of the tire starting from the side of the rim opposite the air valve.

Be careful not to pinch the tube at this time.

If necessary, use soapy water.

5

Inflate the inner tube until the tire locks into place.

NOTICE

Do not use rim tape if using an inner tube. Rim tape may make it difficult to remove and install the tire, and the tire or tube may become damaged or the tires may suddenly puncture, causing the bicycle to fall over.



SHIMANO NORTH AMERICA BICYCLE, INC.

One Holland, Irvine, California 92618, U.S.A. Phone: +1-949-951-5003

SHIMANO EUROPE B.V.

High Tech Campus 92, 5656 AG Eindhoven, The Netherlands Phone: +31-402-612222

SHIMANO INC.

3-77 Oimatsu-cho, Sakai-ku, Sakai City, Osaka 590-8577, Japan

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

© Jan. 2021 by SHIMANO INC. ITP