Dealer's Manual

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

Rear derailleur

RD-RX805

CONTENTS

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 dealer's manuals and instruction manuals can be viewed on-line on our website (**http://si.shimano.com**).
- Please observe the appropriate rules and regulations of the country, state or region in which you conduct your business as a dealer.
- The Bluetooth® word mark and logos are registered trademarks owned by the Bluetooth SIG, Inc. and any use of such marks by SHIMANO INC. is under license.
  Other trademarks and trade names are those of their respective owners.

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

⚠ DANGER

Be sure to also inform users of the following:

■ Lithium ion battery

Be sure to observe the following instructions in order to avoid burns or other injury from fluid leakage, overheating, fire, or explosion.

- Use the designated charger to charge the battery. If any non-specified items are used, fire, overheating or leakage may occur.
- Do not heat the battery or throw it into fire. If this is not observed, fire or bursting may occur.
- Do not deform, modify, disassemble or apply solder directly to the battery. Do not leave the battery in places which may exceed 60°C in temperature, such as places which are exposed to direct sunlight inside vehicles on hot days or near stoves. If this is not observed, leakages, overheating or bursting may cause fire, burns, or other injuries.
- Do not connect the (+) and (-) terminals with metallic objects. Do not carry or store the battery together with metallic objects such as necklaces or hairpins. If this is not observed, short-circuits, overheating, burns or other injury may occur.
- If any liquid leaking from the battery gets into the eyes, immediately wash the affected area with clean water without rubbing the eyes, and then seek medical attention.

■ Battery charger/Battery charger cord

Be sure to observe the following instructions in order to avoid burns or other injury from fluid leakage, overheating, fire, or explosion.

- Do not get the charger wet or use it while it is wet, and do not touch or hold it with wet hands. If this is not observed, problems with operation or electric shocks may occur.
- Do not cover the charger with cloths while it is in use. If this is not observed, heat may build up and the case may become deformed, or fire or overheating may occur.
- Do not disassemble or modify the charger. If this is not observed, electric shocks or injury may occur.
- Use the charger at the specified power supply voltage only. If a power supply voltage other than that specified is used, fire, explosions, smoke, overheating, electric shocks or burns may occur.
- Do not touch metallic parts of the charger or the AC adapter if there is a lighting storm. If lightning strikes, electric shocks may occur.

■ SM-BCR2: Battery charger for SM-BTR2/BT-DN110/BT-DN110-A

- Use an AC adapter with a USB port with a voltage of 5.0 V DC and with a current equal to or higher than 1.0 A DC. If the one with a current lower than 1.0 A is used, the AC adapter may heat up, potentially causing a fire, smoke, overheating, destruction, electric shock, or burns.

⚠ 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.
- This Dealer's Manual is for RD-RX805 only.
  For information on products not covered in this manual, please look up the model on the website (http://si.shimano.com).
- After reading the dealer's manual thoroughly, keep it in a safe place for later reference.

Be sure to also inform users of the following:

- ***Intervals between maintenance depend on the use and riding circumstances. Clean the chain with an appropriate chain cleaner regularly. Never use alkali based or acid based solvents, such as rust cleaners. If those solvents are used the chain might break and cause serious injury.***
- 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.
- Check the chain for any damage (deformation or crack), skipping, or other abnormalities such as unintended gear shifting. If any problems are found, consult a dealer or an agency.
  The chain may break, and you may fall.
- Be careful not to let the hemming of your clothes get caught in the chain while riding. Otherwise you may fall off the bicycle.

■About the multi-shift function

- On this system, the multi-shift function can be configured using E-TUBE PROJECT. The gears will continue to shift when the shifting switch is pressed using the multi-shift function. Shifting speed setting for multi-shift can also be modified. When modifying the gear changing settings for multi-shift, carefully read **"Settings customizable in E-TUBE PROJECT"** in this dealer's manual.
- If crank revolutions are set to low under faster setting of the multi-shift shifting speed, the chain will be unable to follow the movement of the rear derailleur, possibly leading to issues such as the chain slipping over the tip of the cassette sprocket teeth, the cassette sprocket deforming, or the chain breaking.

Item	Multi-shift speed	Characteristics	Usage notes	Crank rotation speed when operating multi-shift
Very fast	High speed	Quick multi-shifting is possible • The crank rotation speed can be adjusted quickly depending on changes in riding conditions. • The speed can be adjusted quickly.	• Over-shifting occurs easily. • If the rotation speed of the crank is low, the chain will be unable to follow the movement of the rear derailleur. The chain may therefore slip over the tip of the cassette sprocket teeth.	High crank rotation speed
Fast				
Normal	Default setting			
Slow				
Very slow	Low speed	Accurate multi-shifting is possible	Multi-shifting takes some time	

By default it is set to **Normal**.
Fully understand the features of the multi-shift speed, and choose a multi-shift gear shifting setting according to the riding conditions (terrain, riding method, etc.).

■ Lithium ion battery

- Do not place the battery into fresh water or sea water, and do not allow the battery terminals to get wet. If this is not observed, fire, bursting or overheating may occur.
- Do not use the battery if it has any noticeable scratches or other external damage. If this is not observed, bursting, overheating or problems with operation may occur.
- Do not throw or subject the battery to strong shock. If this is not observed, bursting, overheating or problems with operation may occur.
- Do not use the battery if leakages, discoloration, deformation or any other abnormalities occur. If this is not observed, bursting, overheating or problems with operation may occur.
- If any leaked fluid gets on your skin or clothes, wash it off immediately with clean water. The leaked fluid may damage your skin.
- The operating temperature ranges for the battery are given below. Do not use the battery in temperatures outside these ranges. If the battery is used or stored in temperatures which are outside these ranges, fire, injury or problems with operation may occur.
  1. During discharge: –10°C - 50°C
  2. During charging: 0°C - 45°C

SM-BTR1: Lithium ion battery (external type)

- If charging is not complete after 1.5 hours, stop charging. If this is not observed, fire, bursting or overheating may occur.

SM-BTR2/BT-DN110/BT-DN110-A: Lithium ion battery (built-in type)

- If the battery does not become fully charged after 4 hours, stop charging. If this is not observed, fire, bursting or overheating may occur.

■ Battery charger/Battery charger cord

SM-BCR1: Battery charger for SM-BTR1

- Hold the power plug when connecting or disconnecting the plug. Failure to do so may cause a fire or electric shock.
- If the following occurs, stop using the device and contact a dealer. A fire or electric shock may occur.
  * If heat or acrid-smelling smoke is coming out from the power plug.
  * There may be a bad connection inside the power plug.
- Do not overload the electrical outlet with appliances beyond its rated capacity, and use only a 100 - 240 V AC electrical outlet. If the electrical outlet is overloaded by connecting too many appliances using adapters, overheating resulting in fire may occur.
- Do not damage the power cord or power plug. (Do not damage, process, let near hot objects, bend, twist or pull them; do not place heavy objects on top or bundle them tightly.) If they are used while damaged, fire, electric shocks or short-circuits may occur.
- Do not use the charger with commercially-available electrical transformers designed for overseas use, as they may damage the charger.
- Always be sure to insert the power plug as far as it will go. If this is not observed, fire may occur.

SM-BCR2: Battery charger for SM-BTR2/BT-DN110/BT-DN110-A

- Do not use any USB cable other than the USB cable which is supplied with the PC linkage device. This may cause a charging error, fire, or failure to connect to PC due to overheating.
- Do not connect the charger to PC when it is on standby. This may cause a PC failure depending on its specifications.
- When connecting or disconnecting the USB cable or the charger, be sure to hold the cable by the plug. Failure to do so may cause a fire or electric shock. If the following occurs, stop using the device and contact a dealer. A fire or electric shock may occur.
  * If heat or acrid-smelling smoke is coming out from the power plug.
  * There may be a bad connection inside the power plug.
- If it thunders while charging with an AC adapter with a USB port, do not touch the device, bicycle, or the AC adapter. If lightning strikes, electric shocks may occur.
- Use an AC adapter with a USB port with a voltage of 5.0 V DC and with a current equal to or higher than 1.0 A DC. If the one with a current lower than 1.0 A DC is used, a charge error may occur or the AC adapter may heat up, leading to a fire.
- Do not use a USB hub when connecting the cable to a computer USB port. This may cause a charging error or fire due to overheating.
- Be careful not to damage the charging cable. (Do not damage, process, let near hot objects, bend, twist or pull them; do not place heavy objects on top or bundle them tightly.) If they are used while damaged, fire, electric shocks or short-circuits may occur.

For Installation to the Bicycle, and Maintenance:

- **When the shifting switch is operated, the motor which drives the front derailleur will operate to the shifting position without stopping, so be careful not to get your fingers caught.**

⚠ CAUTION

Be sure to also inform users of the following:

■ Lithium ion battery

- Store the battery in a safe place away from the reach of infants and pets.

SM-BTR1: Lithium ion battery (external type)

- When you do not use the battery for a long period, remove and charge the battery before storage.

SM-BTR2/BT-DN110/BT-DN110-A: Lithium ion battery (built-in type)

- When you do not use the battery for a long period, charge the battery before storage.

■ Battery charger/Battery charger cord

SM-BCR1: Battery charger for SM-BTR1

- Disconnect the power plug from the electrical outlet before cleaning the charger.

SM-BCR2: Battery charger for SM-BTR2/BT-DN110/BT-DN110-A

- Disconnect the USB cable or the charging cable when performing maintenance.

NOTICE

Be sure to also inform users of the following:

- Be sure to rotate the crank when carrying out any operations which are related to gear shifting.
- Do not keep connecting and disconnecting the small waterproof connector. It may impair the function.
- Be careful not to get water into the E-TUBE port.
- The components are designed to be fully waterproofed to withstand wet weather riding conditions; however, do not deliberately place them into water.
- Do not clean the bicycle with a high-pressure washer. If water gets into any of the components, operating problems or rusting may result.
- Be sure to keep turning the crank during the gear shifting.
- Handle the product carefully, and avoid subjecting it to any strong shocks.
- Do not use thinners or similar substances to clean the products. Such substances may damage the surfaces.
- If gear shifting operations do not feel smooth, wash the derailleur and lubricate all moving parts.
- Keep away from magnetized objects. If this is not observed, the product may be damaged.
  For products that have magnets attached, make sure to install the product, using the attached magnet, in the location that is specified.
- Contact the place of purchase for updates of the component software. The most up-to-date information is available on the Shimano website.
- 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.

■ Lithium ion battery

- Lithium-ion batteries are recyclable, valuable resources.
  For information on used batteries, contact the place of purchase or a bicycle dealer.
- Charging can be carried out at any time regardless of the amount of charge remaining. Always be sure to use the special battery charger to charge the battery until it is fully recharged.
- The battery is not fully charged at the time of purchase. Before riding, be sure to fully charge the battery.
- If the battery has become completely empty, charge it as soon as possible. If you leave the battery without charging it, it will cause the battery to deteriorate.
- The battery is an exhaustible item. The battery will gradually lose its capacity to charging after repeated use.
  If the length of time that the battery can be used becomes extremely short, it has probably reached the end of its life, and so you will need to purchase a new battery.
- The life of the battery will vary depending on factors such as the storage method, the usage conditions, the surrounding environment and the characteristics of the individual battery pack.
- If storing the battery away for a long period, remove it when the battery level is 50% or higher or when the green indicator is illuminating in order to prolong its useful life; and it is recommended that you charge the battery about every six months.

- If the storage temperature is high, the performance of the battery is reduced, and its useable time will be shorter. When you use the battery after a long storage period, store the battery indoors where the battery will not be exposed to direct sunlight or rain.
- If the ambient temperature is low, the battery's usable time will be shorter.

SM-BTR1: Lithium ion battery (external type)

- When storing the battery away, remove the battery from the bicycle and install the terminal cover first.
- The charging time is approximately 1.5 hours. (Note that the actual time will vary depending on the remaining battery charge.)
- If the battery feels difficult to insert or remove, apply specified grease (premium grease) to the part that touches the O-ring at the side.

SM-BTR2/BT-DN110/BT-DN110-A: Lithium ion battery (built-in type)

- After removing the battery from the bicycle for storage, install a dummy plug.
- The charging time of an AC adapter with a USB port is about 1.5 hours, and that of computer USB port type about 3 hours. (Note that the actual time will vary depending on the amount of charge remaining in the battery. Depending on the specifications of the AC adapter, recharging via the AC adapter may require as much time (about 3 hours) as recharging via PC.)

■Battery charger/Battery charger cord

- Use this instrument under the direction of a safety supervisor or the direction for use. Do not allow physically, sensory, or mentally impaired persons, inexperienced persons, or persons with no required knowledge, including children, to use this product.
- Do not allow children to play near the product.

Disposal information for countries outside the European Union

This symbol is only valid within the European Union.
Contact the place of purchase or your nearest Shimano agent for advice on disposing.

- Charge the battery indoors to avoid exposure to rain or wind.
- Do not use outdoors or in environments with high humidity.
- Do not place the battery charger on dusty floors when using it.
- Place the battery charger on a stable surface such as a table when using it.
- Do not place any objects on top of the battery charger or its cable.
- Do not bundle the cables.
- Do not hold the battery charger by the cables when carrying it.
- Do not apply excessive tension to the cables.
- Do not wash the battery charger or wipe it using detergents.

SM-BCR2: Battery charger/PC linkage device for SM-BTR2/BT-DN110/BT-DN110-A

- Connect the PC linkage device directly to a computer, without using an intermediate device such as a USB hub.
- Do not ride the bicycle while the PC linkage device and cable are still connected to it.
- Do not connect two or more of the same units to the same connection point. If this is not done, the units may not operate correctly.
- Do not connect or disconnect units again while unit recognition is in progress or after recognition is complete. If this is not done, the units may not operate correctly.
  Check the procedures which are given in the user's manual for the E-TUBE PROJECT when connecting and disconnecting units.
- The tightness of the PC link cable will tend to drop after repeated connections and disconnections. If this happens, replace the cable.
- Do not connect two or more PC linkage device at the same time. If two or more PC linkage device units are connected, they will not operate correctly. In addition, the PC may need to be restarted if operating errors occur.
- PC linkage devices cannot be used while the charger is connected.

■ Rear derailleur

- If gear shifting operations do not feel smooth, wash the derailleur and lubricate all moving parts.
- If the chain keeps skipping, ask the place of purchase to replace the chainrings, sprockets and/or the chain.
- If there is a large gap in the pulleys which causes a lot of noise, ask the place of purchase to replace the pulleys.
- The gears should be periodically washed with a neutral detergent. In addition, cleaning the chain with neutral detergent and lubricating it can be an effective way of extending the life of the gears and the chain.
- If the amount of looseness in the links is so great that adjustment is not possible, you should replace the derailleur.

For Installation to the Bicycle, and Maintenance:

- Be sure to attach dummy plugs to any unused E-TUBE ports.
- Be sure to use Shimano original tool TL-EW02 to remove the electric wires.
- The motors of the motor unit cannot be repaired.
- Contact Shimano for information regarding the shipment of the battery charger to South Korea and Malaysia.
- Use a brake hose/outer casing which still has some length to spare even when the handlebars are turned all the way to both sides. Furthermore, check that the shifting lever does not touch the bicycle frame when the handlebars are turned all the way.
- Use the specified cable for smooth operation.
- The clamp band, clamp bolt, and clamp nut are not compatible with other products. Do not use with components that are used in other products.

■ Electric wires/Electric wire covers

- Secure the electric wires with a zip tie so that they do not interfere with the chainrings, sprockets or tires.
- The strength of the adhesive is fairly weak to prevent the paint on the frame from being peeled off at when removing the electric wire cover, such as when replacing the electric wires. If the electric wire cover is peeled off, replace it with a new one. When removing the electric wire cover, do not peel it off too vigorously. If so, the paint on the frame will peel off, too.
- Do not remove the wire holders which are attached to the built-in type electric wires (EW-SD50-I). The wire holders prevent the electric wires from moving inside the frame.
- When installing to the bicycle, do not forcibly bend the electric wire plug. It may result in a poor contact.

■ Rear derailleur

- Always be sure to adjust the top adjustment bolt and the low adjustment bolt according to the instructions given in the adjustment section. If these bolts are not adjusted, the chain may become clamped between the spokes and the largest sprocket and the wheel may lock, or the chain may slip onto a smaller sprocket.
- Periodically clean the derailleur and lubricate all moving parts (mechanism and pulleys).
- If gear shifting adjustments cannot be carried out, check the degree of parallel of the rear dropouts.
- The guide pulley and tension pulley are marked on one side with arrows to indicate the direction of rotation. When attaching the pulleys, make sure to orient them so that the sides marked with arrows face toward the bicycle.

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

For Installation to the Bicycle:

■Notes on reinstalling and replacing components

- When the product is reassembled or replaced, it is automatically recognized by the system to allow operation according to the settings.
- If the system does not operate after reassembly and replacement, follow the system power reset procedure below to check the operation.
- If the component configuration changes or malfunction is observed, use the E-TUBE PROJECT software to update the firmware of each component to the latest version and perform a check again. Also make sure that the E-TUBE PROJECT software is the latest version. If the software is not the latest version, the component compatibility or the product functions may not be available.

Be sure to also inform users of the following:

■About used batteries

- Lithium-ion batteries are recyclable, valuable resources.
  For information on used batteries, contact the place of purchase or a bicycle dealer.

■About system power reset

- When the system fails to operate, it may be recovered by resetting the system power.
- After the battery is removed, about one minute is usually required for the system power to reset.

In the case of using SM-BTR1

- Remove the battery from the battery mount. After about one minute, install the battery.

In the case of using SM-BTR2/BT-DN110/BT-DN110-A

- Disconnect the plug from SM-BTR2/BT-DN110/BT-DN110-A. After about one minute, insert the plug.

■Connection and communication with PC

- PC linkage devices can be used to connect a PC to the bicycle (system or components), and an E-TUBE PROJECT can be used to carry out tasks such as customizing single components or the whole system and updating their firmware.
  If your versions of E-TUBE PROJECT software and firmware for each component are not up to date there could be problems operating the bicycle. Check the software version and update it to the latest one.

<table>
<tr><th></th><th>PC linkage device</th><th>E-TUBE PROJECT</th><th>Firmware</th></tr>
<tr><td>SM-BMR2/SM-BTR2</td><td rowspan="2">SM-PCE1/SM-BCR2</td><td rowspan="2">Version 3.3.0 or later</td><td>Version 3.0.0 or later</td></tr>
<tr><td>BT-DN110/BT-DN110-A/
BM-DN100</td><td>Version 4.0.0 or later</td></tr>
</table>

■Connection and communication with smartphone or tablet

- It is possible to customize single components or the system, and update firmware, using E-TUBE PROJECT for smartphones/tablets after connecting the bicycle (system or components) to a smartphone or tablet via Bluetooth LE.
  - E-TUBE PROJECT: app for smartphones/tablets
  - Firmware: software inside each component
- Disconnect Bluetooth LE when not using E-TUBE PROJECT for smartphones/tablets.
  Using the wireless unit without disconnecting Bluetooth LE may result in high battery power consumption.

About compatibility with E-TUBE

- For details on the compatibility and functional limitations of units, refer to the following website.
  (http://e-tubeproject.shimano.com/guide/#guide_list)

LIST OF TOOLS TO BE USED

LIST OF TOOLS TO BE USED

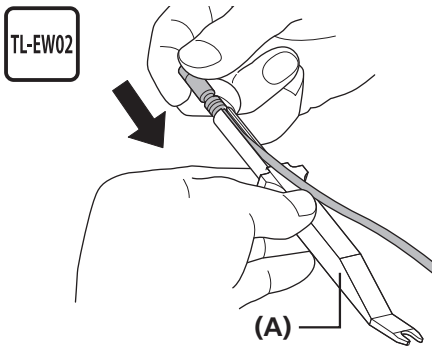
The following tools are needed for installation, adjustment, and maintenance purposes.

Tool		Tool		Tool	
	2 mm hexagon wrench		4 mm hexagon wrench		Screwdriver[#2]
	3 mm hexagon wrench		5 mm hexagon wrench		Shimano original tool TL-EW02

INSTALLATION

INSTALLATION

■ Using the Shimano original tool TL-EW02

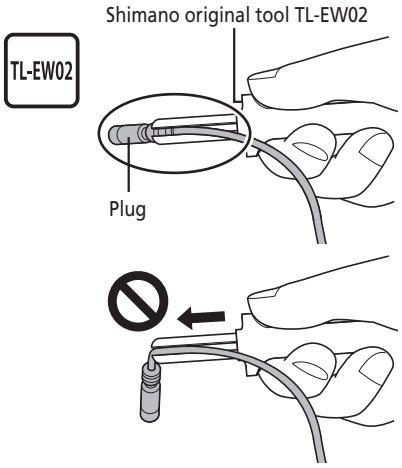


Set so that the projection on the connector is aligned with the groove on the narrow end.

(A) Shimano original tool TL-EW02

NOTICE

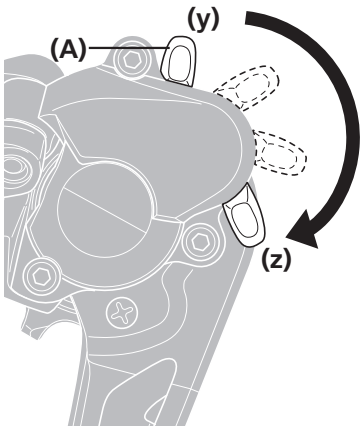
Use the Shimano original tool when connecting/disconnecting the electric wires.
When installing the electric wire, do not forcibly bend the plug.
It may result in a poor connection.
When connecting electric wires, push them in until you feel and hear a click.



■ Installation of the rear derailleur

Standard type

1



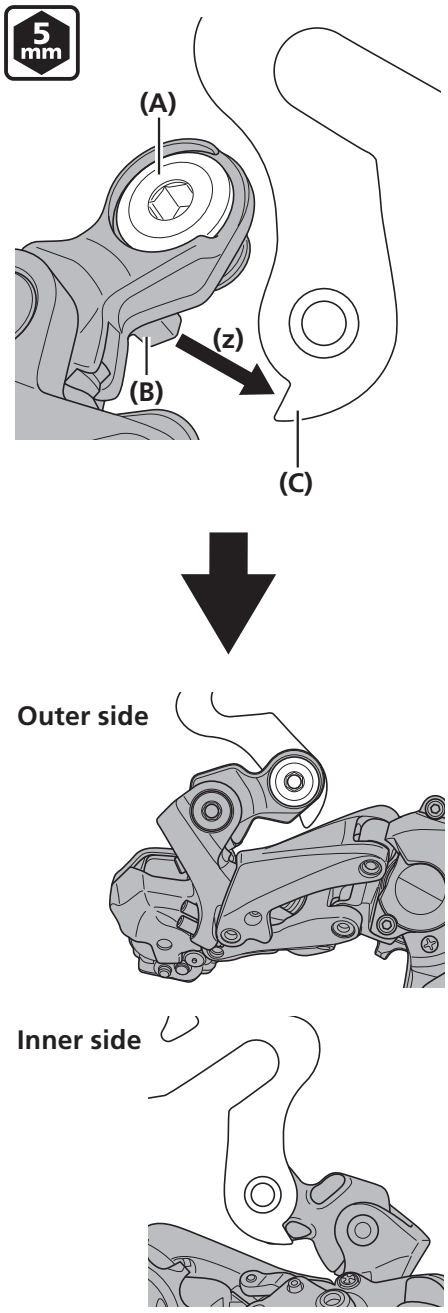
Set the lever switch to OFF.

(y) ON
(z) OFF

(A) Lever switch

To be continued on next page

2



Outer side

Inner side

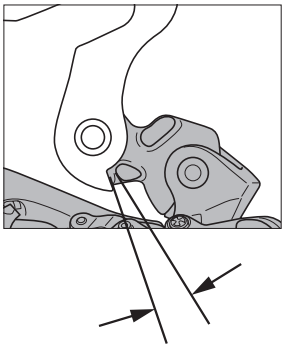
Use a hexagon wrench to tighten the rear derailleur fixing bolt, while being careful that the rear derailleur fixing bolt does not enter the derailleur hanger at an angle.
When doing so, install the rear derailleur so that the projection on the rear of the bracket makes contact with the B-tension stop without any gap.

(A) Rear derailleur fixing bolt
(B) Projection on rear of bracket
(C) B-tension stop

Tightening torque	
5 mm	8 - 1 0 N·m

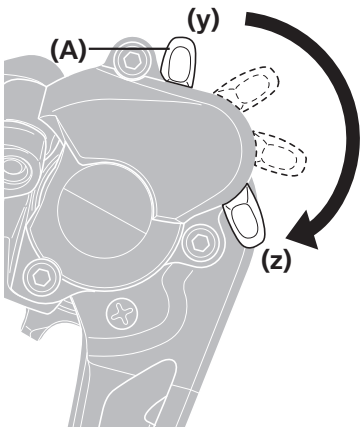
NOTICE

Periodically check that there is no gap between the B-tension stop and the projection on the rear of the bracket. If there is a gap between these two parts, problems with gear shifting performance may occur.



Direct mount type

1



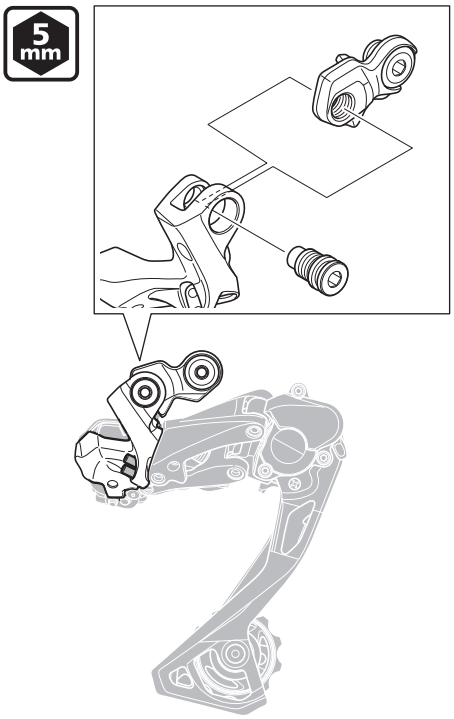
Set the lever switch to OFF.

(y) ON

(z) OFF

(A) Lever switch

2



Remove the bracket axle.

CONNECTION OF ELECTRIC WIRES

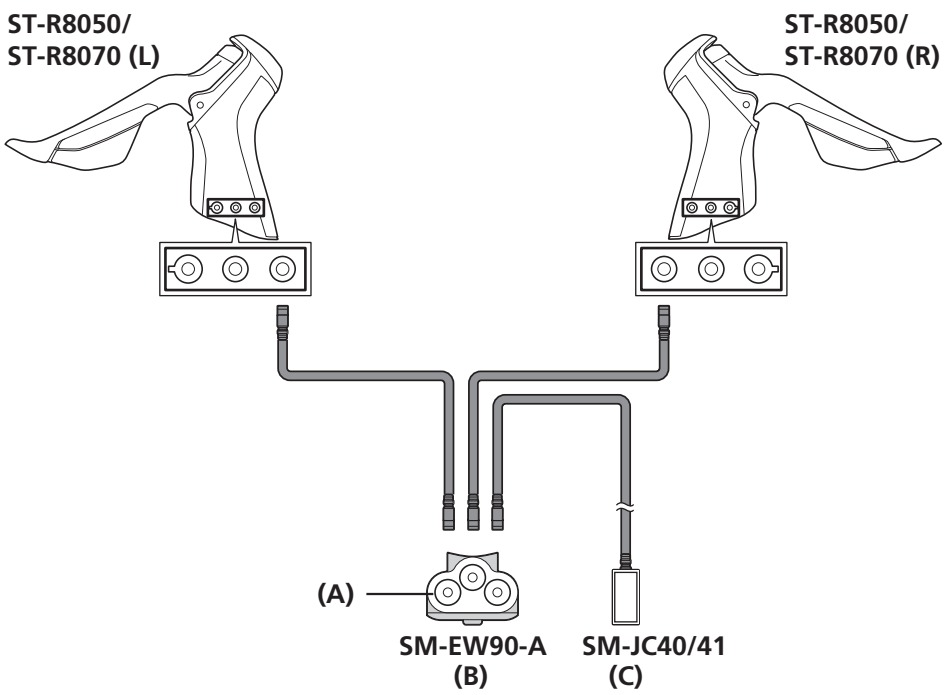
CONNECTION OF ELECTRIC WIRES

For details on using the Shimano original tool TL-EW02, refer to the section "Using the Shimano original tool TL-EW02".

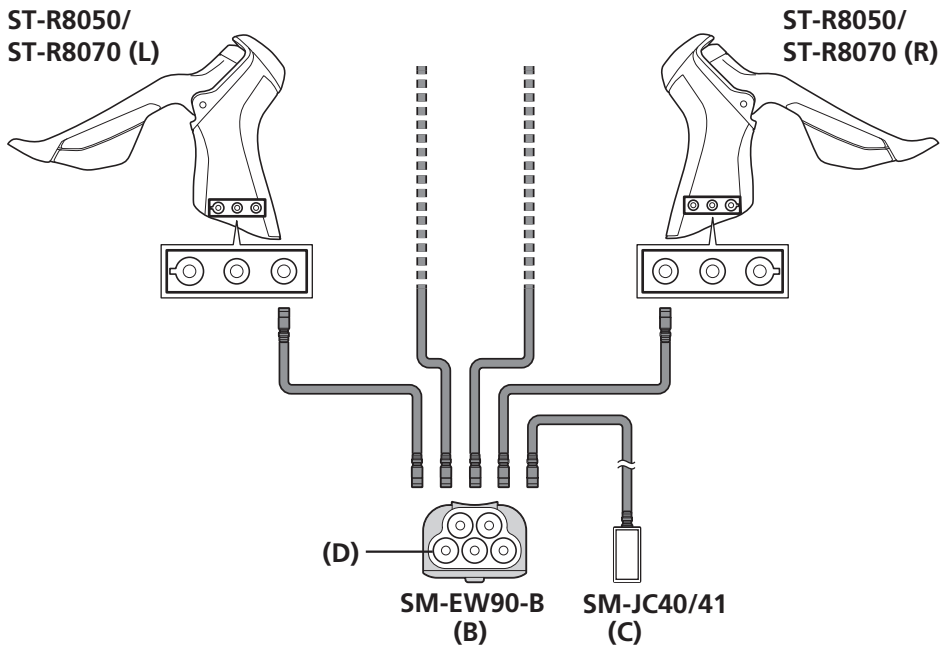
■ Connection of junction A

ST-R8050/ST-R8070 with SM-EW90 routing map

3 port type



5 port type

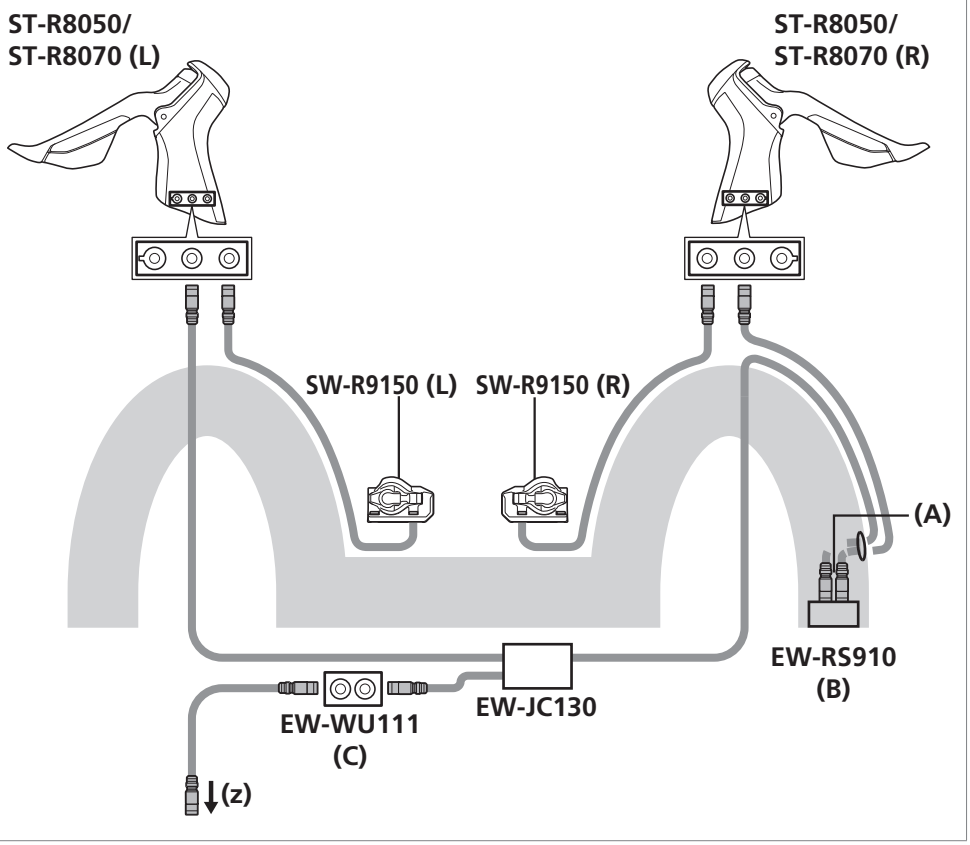


(A) E-TUBE port ×3
(B) Junction A
(C) Junction B
(D) E-TUBE port ×5

TECH TIPS

- ST-R8070 does not have a port for remote sprinter shifter.
- When wiring SM-EW90, consider the positioning of ST-R8050/ST-R8070 and ensure that there is sufficient slack in the wires to allow for the full turning of the handlebar.

ST-R8050/ST-R8070 with EW-RS910 routing map



(z) To frame (Junction B)

(A) E-TUBE port ×2
(B) Junction A
(2 port bar end type junction)
(C) Wireless unit

TECH TIPS

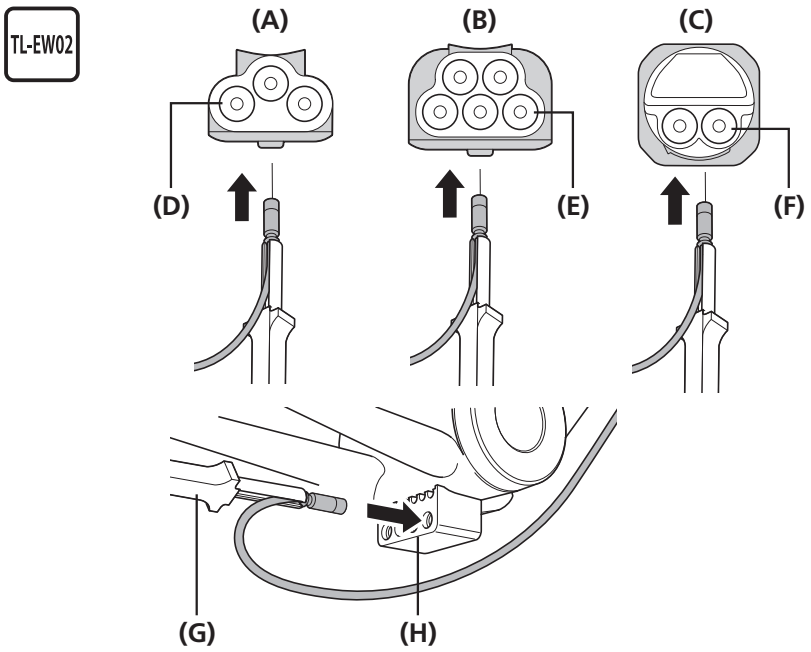
- ST-R8070 does not have a port for remote sprinter shifter.
- When wiring EW-RS910 consider the positioning of ST-R8050/ST-R8070 and ensure that there is sufficient slack in the wires to allow for the full turning of the handlebar.

■ Connection of junction B

External type (SM-JC40)

1

Connect the electric wires to junction A and junction B.



(A) SM-EW90-A Junction A
(B) SM-EW90-B Junction A
(C) EW-RS910 Junction A
(D) E-TUBE port ×3
(E) E-TUBE port ×5
(F) E-TUBE port ×2
(G) Shimano original tool TL-EW02
(H) Junction B

TECH TIPS

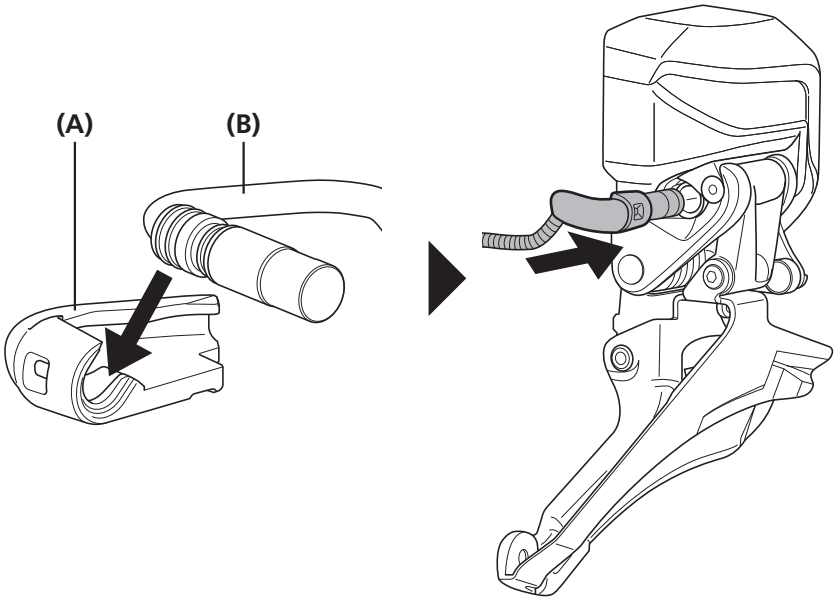
When connecting electric wires, push them in until you feel and hear a click.

Connecting to FD-R8050

2

Attach the plug cover to the electric wire.

Connect the electric wire to the front derailleur together with the plug cover.



(A) Plug cover
(B) Electric wire

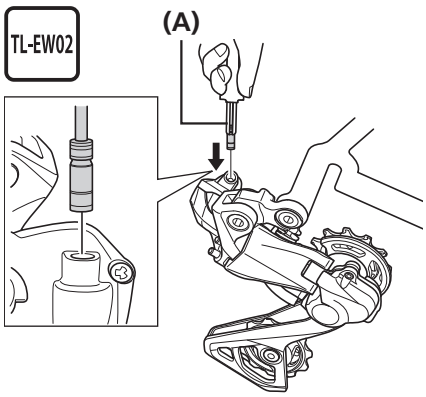
To be continued on next page

Connecting to other parts

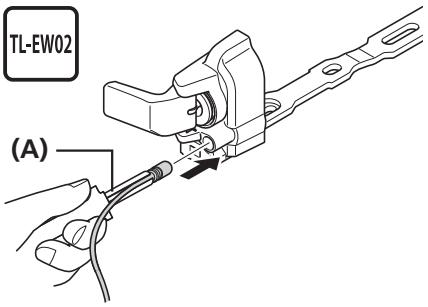
2

Connect the electric wires to the rear derailleur and the battery mount.

Rear derailleur

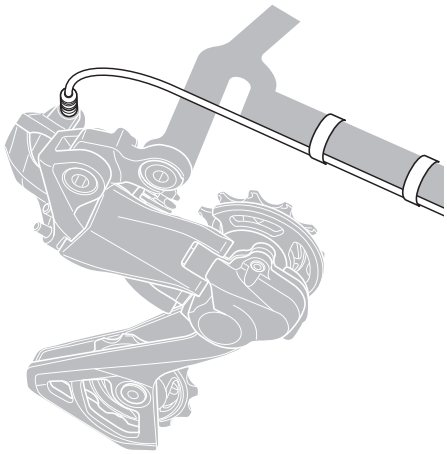


Battery mount



(A) Shimano original tool TL-EW02

3



Temporarily secure the electric wire along the frame with tape, and connect it to junction B.

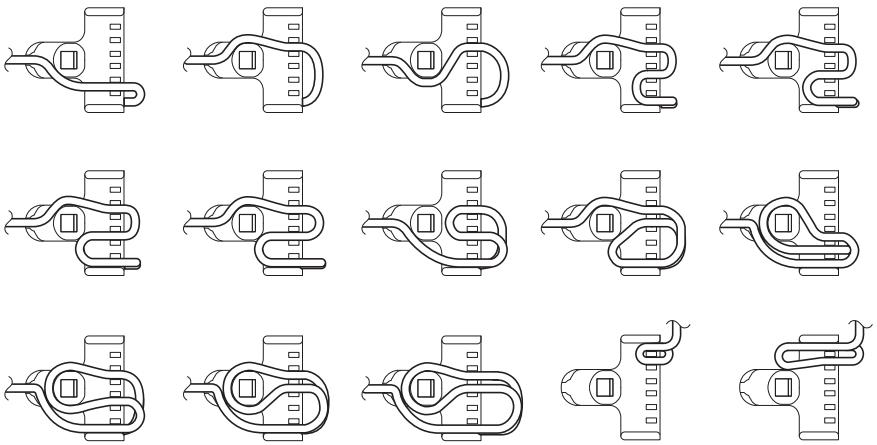
NOTICE

When routing the electric wire to the rear derailleur, be sure to install it to the bottom of the chainstay to avoid any interference between the cable and the chain.

4

Wind any excess length of electric wire inside junction B to adjust the length.

Example of adjusting junction B length



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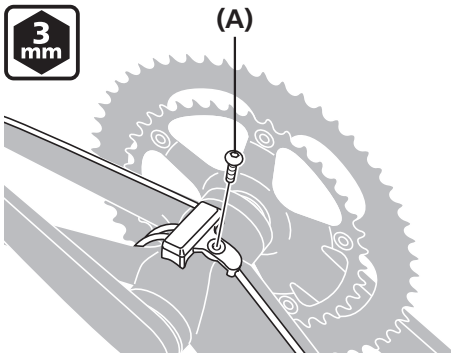
5



Once the electric wires have been routed, secure junction B underneath the bottom bracket shell.

(A) Junction B fixing bolt (10.5 mm or 15 mm)

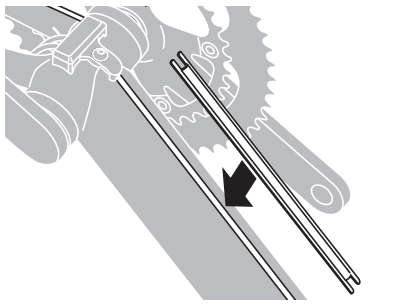
Tightening torque	
3 mm	1.5 - 2 N·m

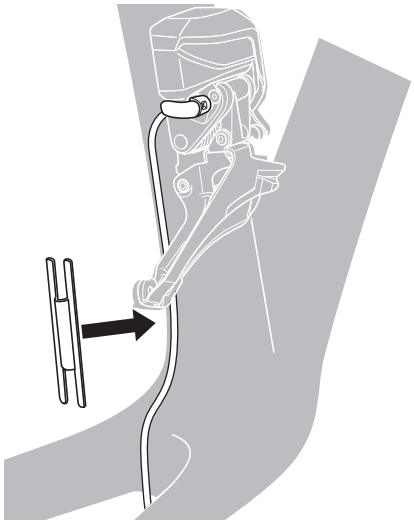
6

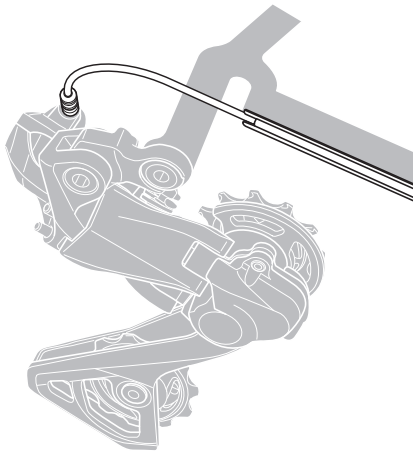
Wipe off the grease on the frame with alcohol or a cleaner.

Next, install the electric wire cover onto the frame.

Place the electric wire cover over the electric wires, and then attach it to the frame.



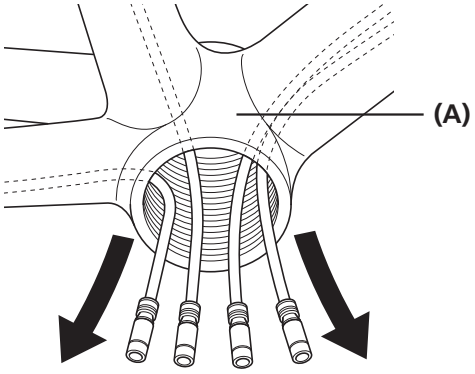




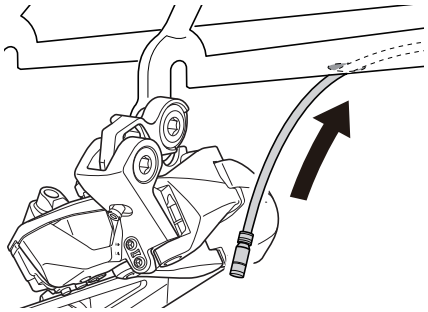
Built-in type (SM-JC41)

1

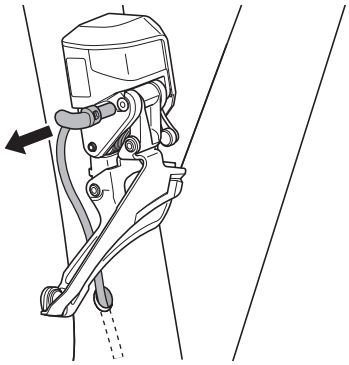
First pass the electric wires for junction A, the battery mount, the front derailleur and the rear derailleur through the holes in the frame into the bottom bracket shell.



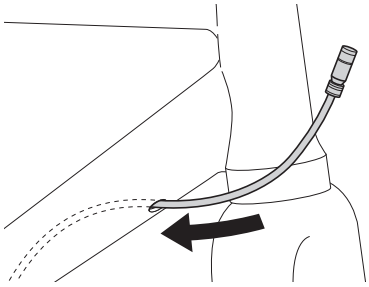
Electric wire for rear derailleur



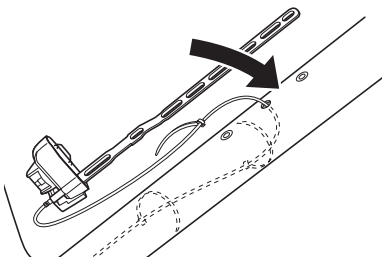
Electric wire for front derailleur



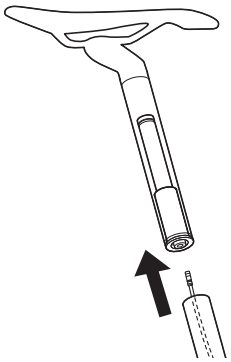
Electric wire for junction A



Electric wire for battery mount [In the case of an external battery (SM-BTR1)]



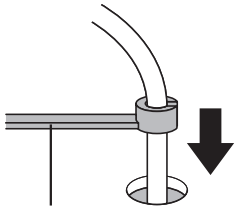
Electric wire for battery mount [In the case of a built-in battery (SM-BTR2/BT-DN110/BT-DN110-A)]

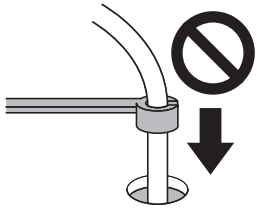


(A) Bottom bracket shell

TECH TIPS

The electric wires for built-in use can be inserted only in one direction.
Make sure that you insert them from the direction shown in the illustration.





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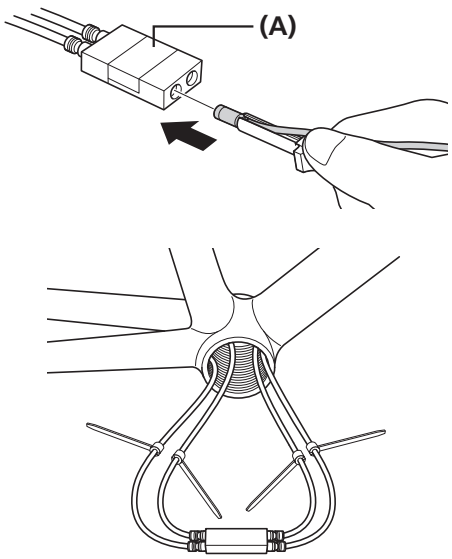
2



Connect each electric wire to junction B.

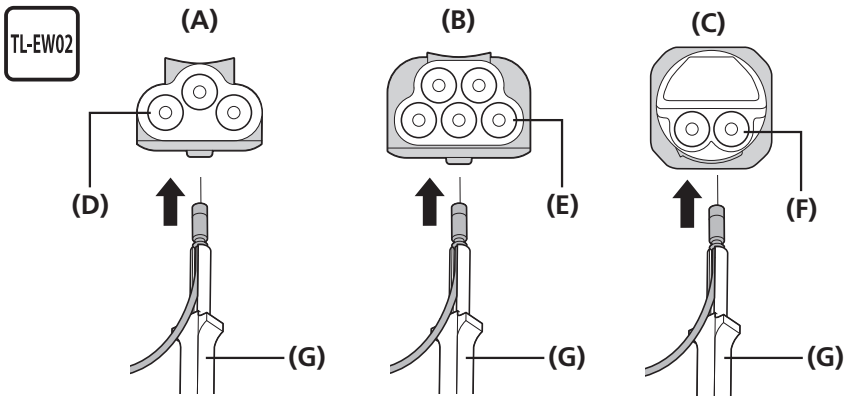
(A) SM-JC40/41 Junction B

TECH TIPS

When connecting electric wires, push them in until you feel and hear a click.

3

Connect the electric wires to junction A.



(A) SM-EW90-A Junction A
(B) SM-EW90-B Junction A
(C) EW-RS910 Junction A
(D) E-TUBE port ×3
(E) E-TUBE port ×5
(F) E-TUBE port ×2
(G) Shimano original tool TL-EW02

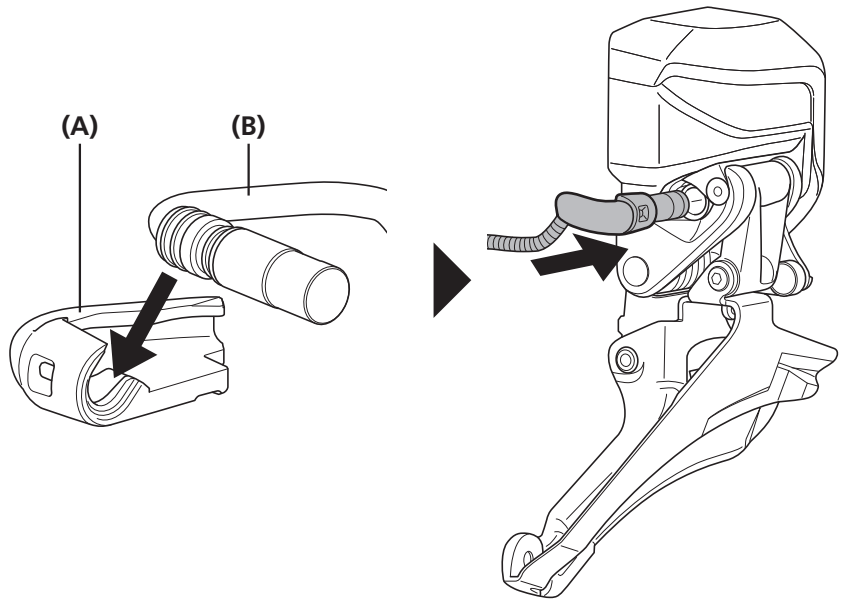
To be continued on next page

Connecting to FD-R8050

4

Attach the plug cover to the electric wire.

Connect the electric wire to the front derailleur together with the plug cover.



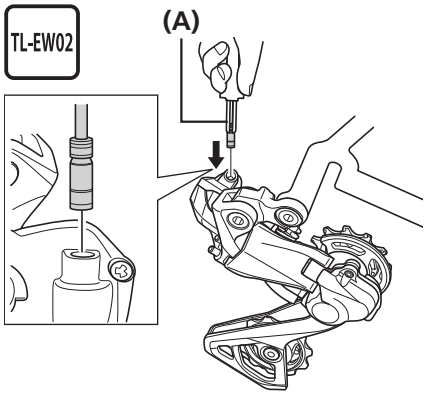
(A) Plug cover
(B) Electric wire

Connecting to other parts

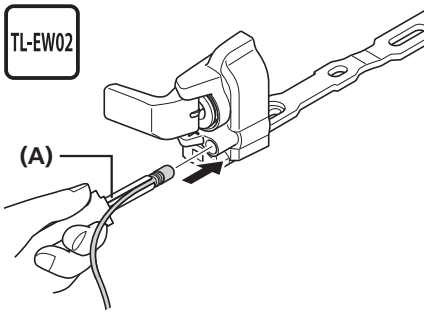
4

Connect the electric wires to the rear derailleur and the battery mount.

Rear derailleur



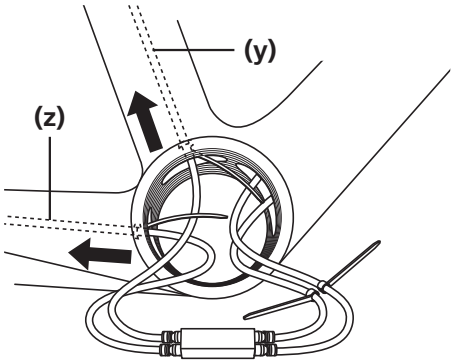
Battery mount



(A) Shimano original tool TL-EW02

■ Routing junction B and the electric wires inside the frame

1

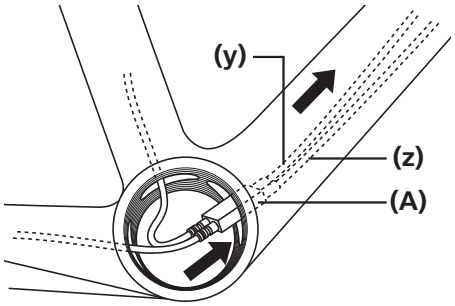


Pass the electric wires for the front derailleur and the rear derailleur through the seat tube and chainstay respectively.

(y) For front derailleur

(z) For rear derailleur

2



Pass the electric wires for junction A, the battery mount, and junction B through the down tube.

(y) For junction A

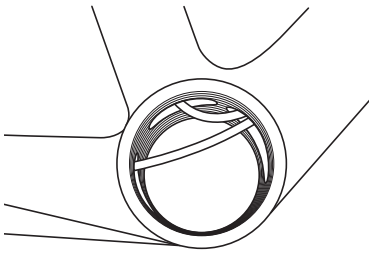
(z) For battery mount

(A) Junction B

NOTICE

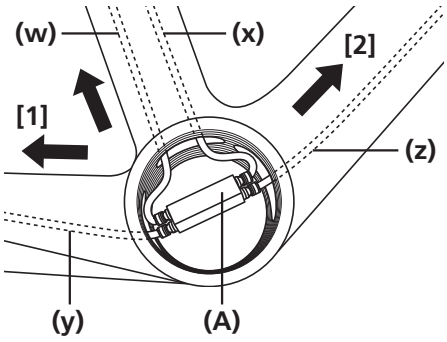
Be careful not to damage any parts with the screws of the bottom bracket shell.

3



Set the electric wires so that only the electric wires for the front derailleur and the rear derailleur are visible inside the bottom bracket shell, and if any extra parts such as wire holders are protruding, push them back inside the frame.

SM-BTR2/BT-DN110/BT-DN110-A



Follow the same procedure when using SM-BTR2/BT-DN110/BT-DN110-A as a battery adapter.

(w) For lithium ion battery (built-in type)

(x) For front derailleur

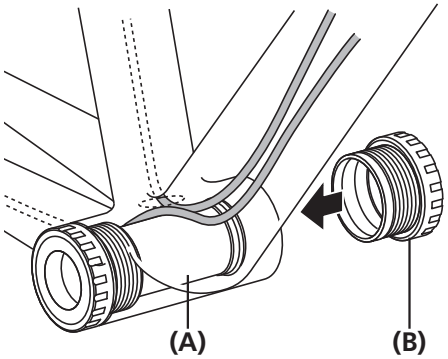
(y) For rear derailleur

(z) For junction A

(A) Junction B

■ Assembly of the bottom bracket

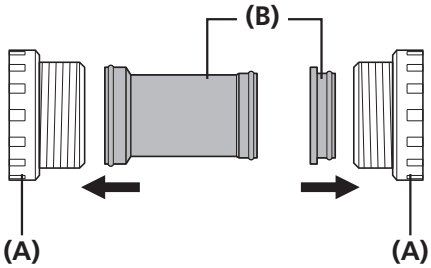
1



When installing the inner cover to the bottom bracket shell, make sure that the electric wires for the front derailleur and the rear derailleur pass over the top of the inner cover.

(A) Inner cover
(B) Adapter

2



Install the inner cover to the bottom bracket adapter.

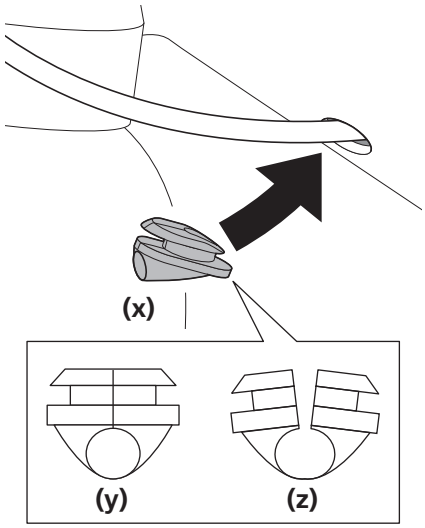
(A) Adapter
(B) Inner cover

TECH TIPS

If using a frame which does not have enough space between the inside of the bottom bracket shell and the inner cover to route the electric wires use an inner cover which is sold separately.

■ Installation of grommets

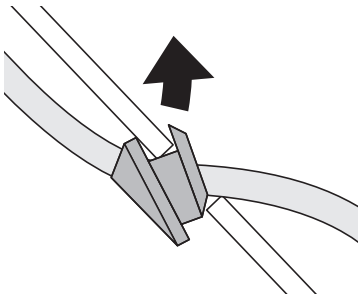
1



Install grommets in appropriate positions for the electric wires.

(x) Junction A side
(y) Close
(z) Open

2

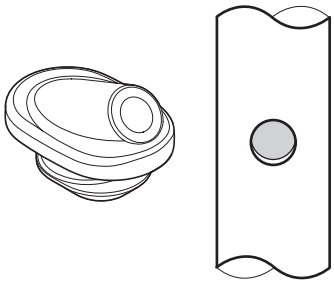


Insert the grommets into the holes in the frame starting with the rear end.

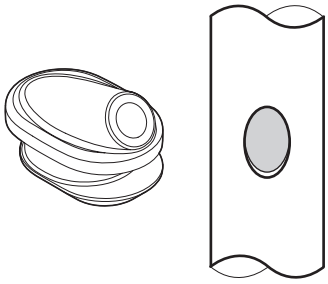
TECH TIPS

There are two types of grommets.
Choose one according to the shape of the hole in the frame.

Circle: SM-GM01



Ellipse: SM-GM02



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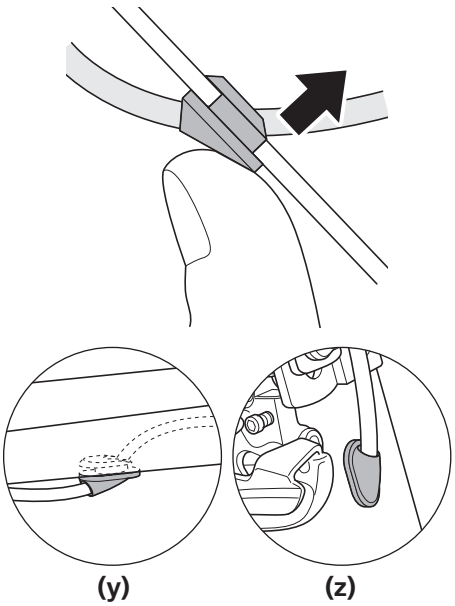
3



Push the other end to set in place.

(y) Rear derailleur

(z) Front derailleur

■ Checking connections

1 After connecting the electric wires to all of the components, install the battery and check the operation.

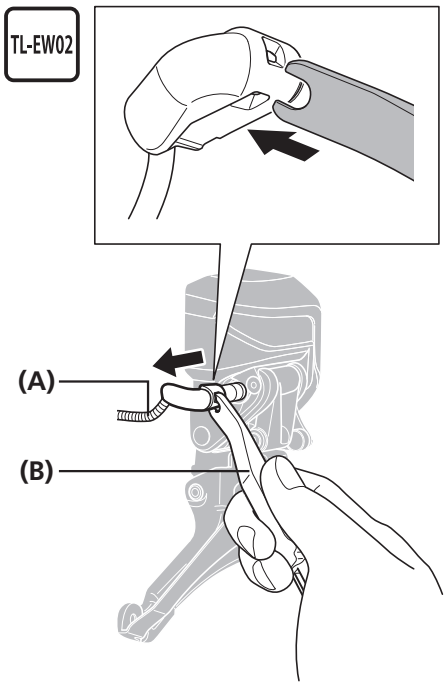
2 Operate the shifting switches and check that the front and rear derailleurs both operate.

⚠ CAUTION

Make sure to remove the battery before performing operations that involve close proximity to the front derailleur, such as installation/uninstallation of the front chainwheel or front derailleur, or installation/adjustment of the chain.
If the front derailleur is activated by accident, there is a risk of your fingers getting caught and injury.

■ Disconnection of the electric wires

FD-R8050



Insert the tips of the wide end of the TL-EW02 Shimano original tool into the holes (2 places) in the plug cover to disconnect the electric wire.

(A) Electric wire
(B) Shimano original tool TL-EW02

NOTICE

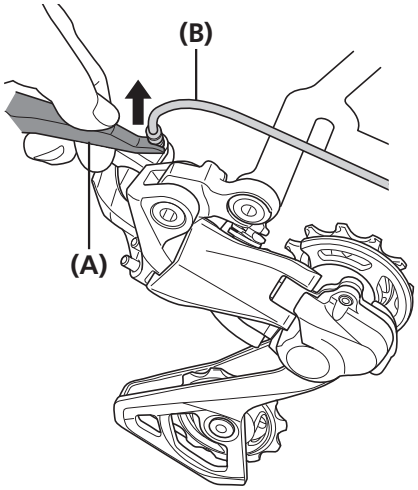
- Do not keep connecting and disconnecting the small waterproof connector. The waterproof section or the connecting section may become worn or deformed, and the function may be affected.
- When removing the electric wire, use the wider end of the Shimano original tool TL-EW02 as shown in the illustration. If you pull too firmly on the connectors, problems with operation may occur.

Disconnection of other parts

With the base portion of the hook firmly held down using the wider end of the Shimano original tool TL-EW02, remove the electric wire.

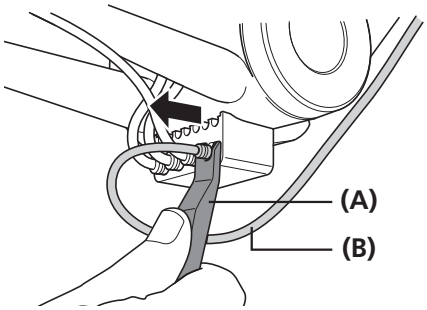
RD-RX805

TL-EW02



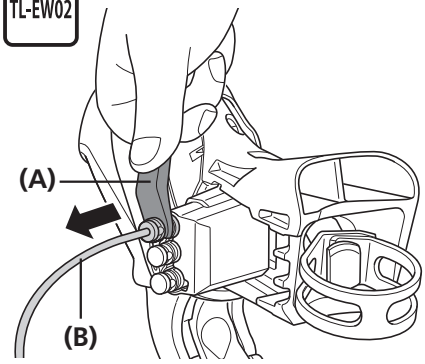
SM-JC40

TL-EW02



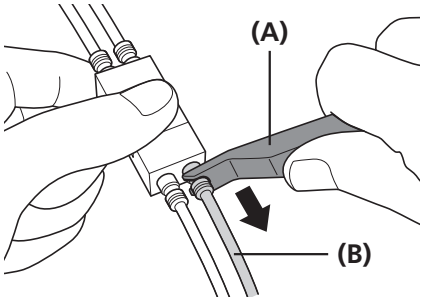
ST-R8050/ST-R8070

TL-EW02



SM-JC41

TL-EW02



(A) Shimano original tool TL-EW02
(B) Electric wire

NOTICE

- Do not keep connecting and disconnecting the small waterproof connector. The waterproof section or the connecting section may become worn or deformed, and the function may be affected.
- When removing the electric wire, use the wider end of the Shimano original tool TL-EW02 as shown in the illustration. If you pull too firmly on the connectors, problems with operation may occur.

TECH TIPS

ST-R8070 does not have a port for remote sprinter shifter.

HOW TO OPERATE

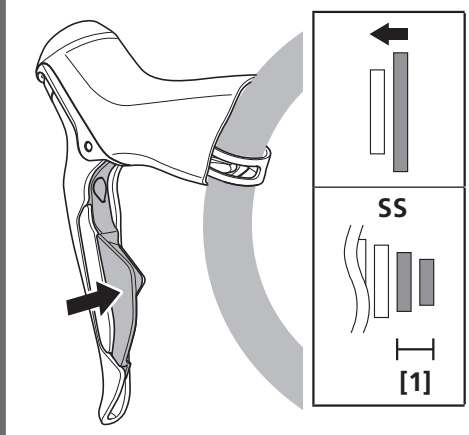
HOW TO OPERATE

■ Gear position control

This gear-shifting system is programmed to prevent shifting into gears that would lower the chain tension.
Therefore, if you try to shift into such gears, shifting may function differently from the basic operations.
The illustration below shows the gear positions that would lower the chain tension and the shifting operations performed when you shift into those gears.

Points to remember when shifting the front derailleur

When you shift into the smallest chainring, shifting is controlled as follows.



When the chain is in the range [1], shown in the illustration
Operating the shifting switch does not shift the front derailleur.

Instead, the rear derailleur is shifted down through two gears.

When the chain is outside the range [1], shown in the illustration
Operating the shifting switch shifts the front derailleur to the smallest chainring.

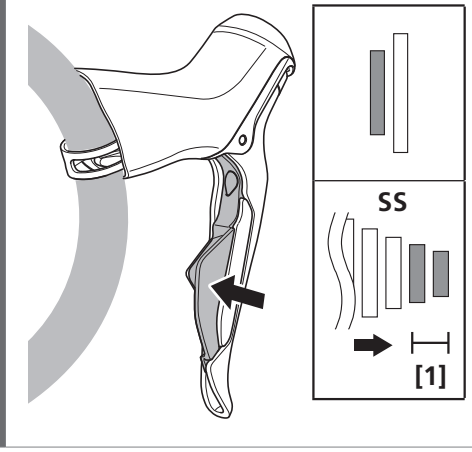
[1] From the smallest to the second sprocket.

NOTICE

- If you use combinations of front and rear derailleurs besides those recommended, the shifting-restricted range may become larger.
- Restrictions on gear position can be disabled via the Customize menu in E-TUBE PROJECT. (Restrictions cannot be disabled for 52–36T or 50–34T.)

Points to remember when shifting the rear derailleur

When the chain position is in the smallest front chainring, gear shifting is controlled as follows.



When shifting the rear in the direction of the smallest sprocket
Operating the shifting switch will not shift the chain into the range **[1]**, shown in the illustration.

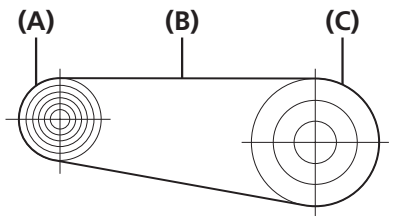
[1] From the smallest to the second sprocket.

ADJUSTMENT

ADJUSTMENT

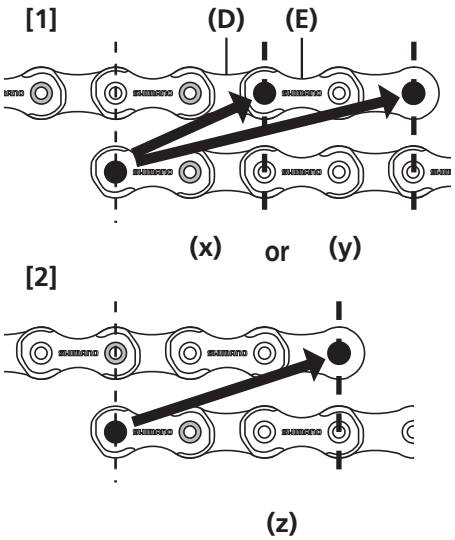
■ Installing the chain

Chain length



Mount the chain on to the largest sprocket and the largest chainring.

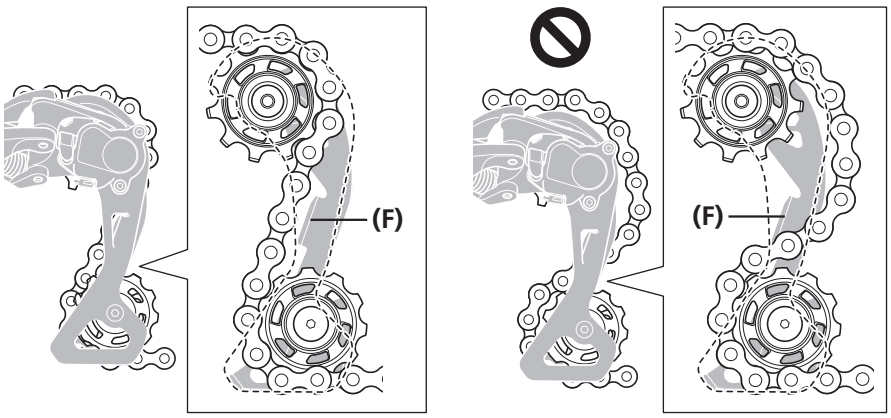
Next, add 2 to 4 links to set the length of the chain.



When mounting the chain, if the inner links and outer links match (as in **[1]**), set it to a length with 2 or 4 links added. When setting to the length with 2 links added (in **[1]**), if you are concerned about drive wandering after mounting the chain on the largest sprocket and largest chainring, set it to a length with another 2 links added.

If the inner links match together and the outer links match together (as in **[2]**), set it to a length with 3 links added.

(x) +2 links
(y) +4 links
(z) +3 links



(A) Largest sprocket
(B) Chain
(C) Largest chainring
(D) Inner link
(E) Outer link
(F) Pin for preventing chain derailment

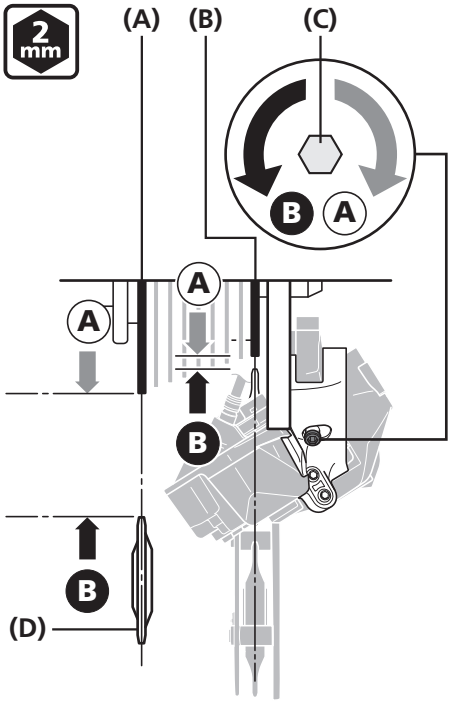
NOTICE

The rear derailleur plate assembly is equipped with a pin or plate that prevents the chain from derailing.
When passing the chain through the rear derailleur, pass it through the rear derailleur body from the side of the chain derailment prevention plate as shown in the illustration.
If the chain is not passed through the correct position, damage may be caused to the chain or rear derailleur.

■ Adjustment of the rear derailleur

1 Install the battery.

2



Adjust the end adjust bolt.

Mount the chain on the largest sprocket, and shift gears turning the crank arm.

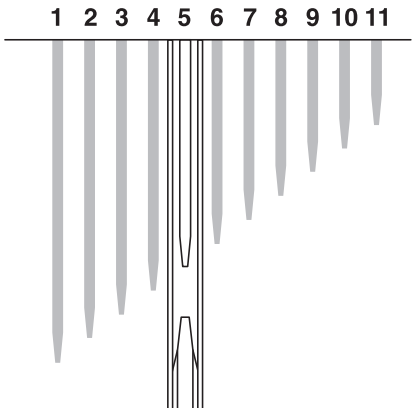
Turn the end adjust bolt to move the guide pulley as close to the sprocket as possible but not so close that the chain gets jammed.

Next, check that the chain does not get jammed when it is on the smallest sprocket.

If there is any slack in the chain when the chain is mounted on the smallest chainring and smallest sprocket, adjust the end adjust bolt to eliminate it.

(A) Largest sprocket
(B) Smallest sprocket
(C) End adjust bolt
(D) Guide pulley

3

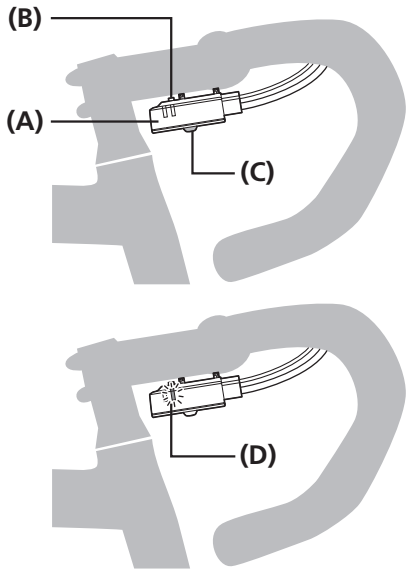


Shift the rear derailleur to the 5th sprocket position.

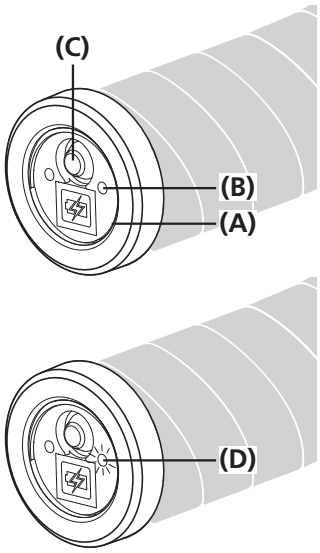
To be continued on next page

4

SM-EW90-A/B



EW-RS910



Press the button at junction A until the button LED illuminates in order to switch from gear shifting mode to adjustment mode.

(A) Junction A
(B) LED window for button
(C) Button
(D) Red LED

NOTICE

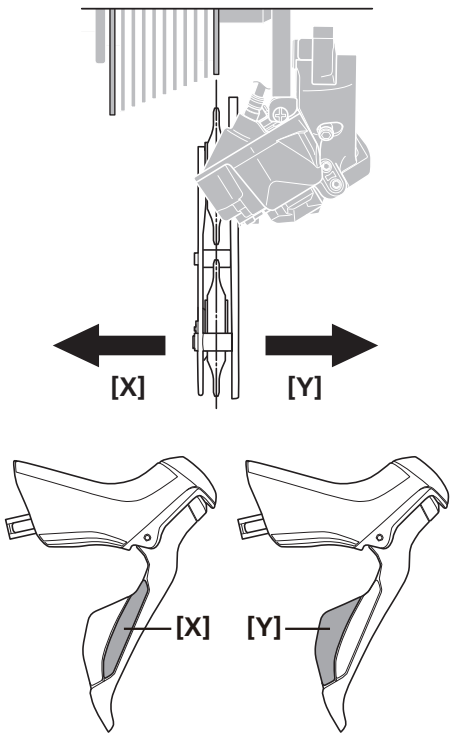
Note that if you keep pressing the button after the button LED has illuminated, RD Protection Reset will begin.

TECH TIPS

For details on RD Protection, refer to "About RD Protection Function" in the user's manual for the rear derailleur (DI2).

To be continued on next page

5

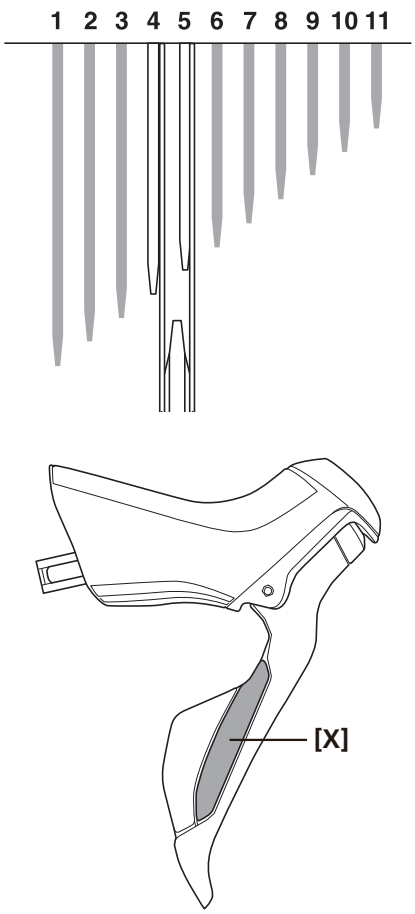


If shifting switch **[X]** is pressed once while the initial setting condition is active, the guide pulley will move one step toward the inside.

If shifting switch **[Y]** is pressed once, the guide pulley will move one step toward the outside.

The guide pulley can move 16 steps inward and 16 steps outward from the initial position, for a total of 32 positions.

6



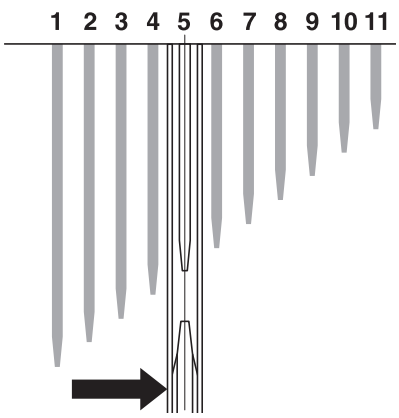
While turning the front chainwheel, operate shifting switch **[X]** to move the guide pulley toward the inside until the chain touches the 4th sprocket and makes a slight noise.

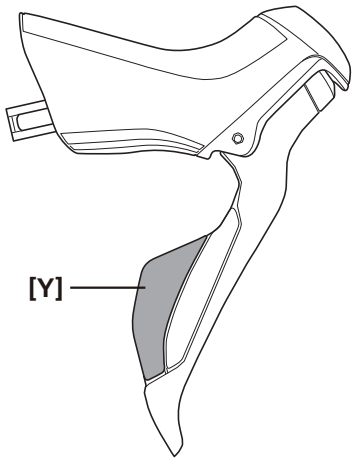
TECH TIPS

When adjusting, the guide pulley will overrun slightly and then move back in an exaggerated movement so that you can check the adjustment direction.
When checking the positions of the guide pulley and the sprocket, check the position where the guide pulley finally stops.

To be continued on next page

7

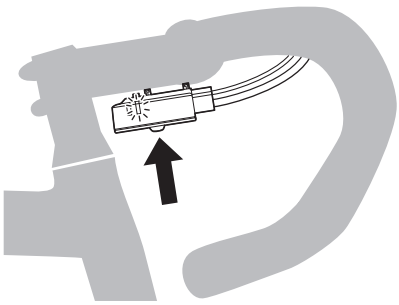




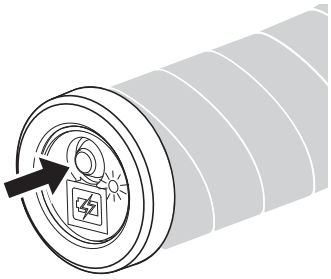
Next, operate shifting switch **[Y]** 4 times to move the guide pulley toward the outside by 4 steps to the target position.

8

SM-EW90-A/B



EW-RS910



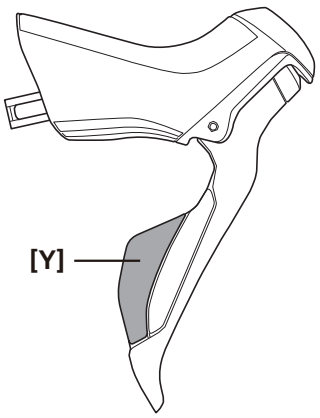
Press the button at junction A until the red LED turns off in order to switch from rear derailleur adjustment mode to gear shifting mode.

Shift to each gear and check that no noise is generated at any gear position.

If adjustment is needed, switch back to adjustment mode and readjust the rear derailleur.

NOTICE

Change to adjustment mode, operate shifting switch **[Y]**, and move the guide pulley outwards until shift shock is alleviated.



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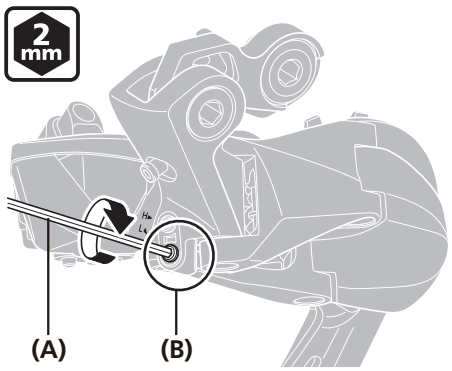
9

Next, adjust the stopper bolt.

Adjustment of the low-side stopper bolt



Shift the rear derailleur to the largest sprocket, and then tighten the low-side stopper bolt until it just touches the left link.

If it is tightened too much, the motor will detect a problem and gear shifting will not operate correctly.

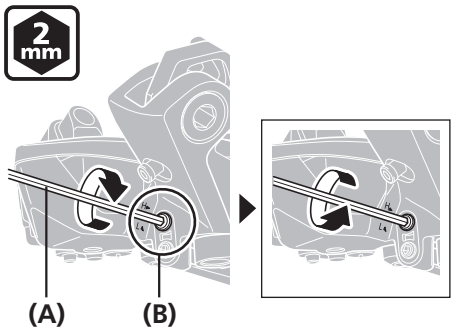
(A) 2 mm hexagon wrench
(B) Low-side stopper bolt

TECH TIPS

Possible occurrences if the adjustment bolt is overtightened

- Gears do not shift to the top/low gear. (Even if you shift gears to the top or low gear, the gear may shift back by one gear after about 5 seconds.)
- Noise does not stop.
- The battery level drops quickly. (Load is being placed on the motor)
- The motor may be damaged. (irreparable)

Adjustment of the top-side stopper bolt



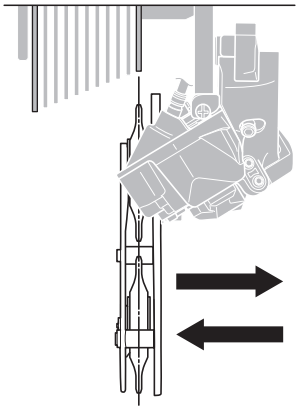
Shift to the smallest sprocket, and then tighten the top-side stopper bolt until it touches the left link at the position where the rear derailleur stops.

From this position, turn the top-side stopper bolt counterclockwise one turn so that an over-stroke allowance can always be maintained.

(A) 2 mm hexagon wrench
(B) Top-side stopper bolt

TECH TIPS

By shifting from the largest sprocket to the smallest sprocket, the rear derailleur will move toward the outside by the over-stroke allowance and then move back.

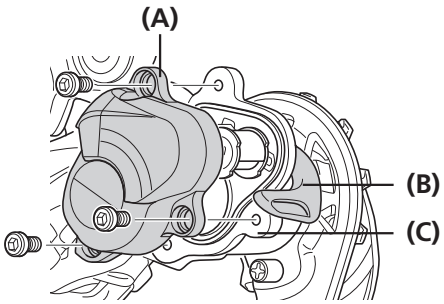


■ Friction adjustment

The friction amount can be adjusted as desired.
Furthermore, you can also adjust after a change of the friction occurs during use.

1 Set the lever switch to OFF.

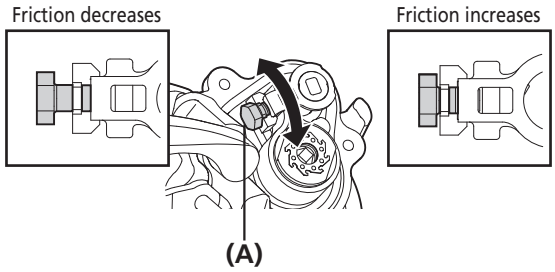
2



Using a 2 mm hexagon wrench, remove the plate unit cover.

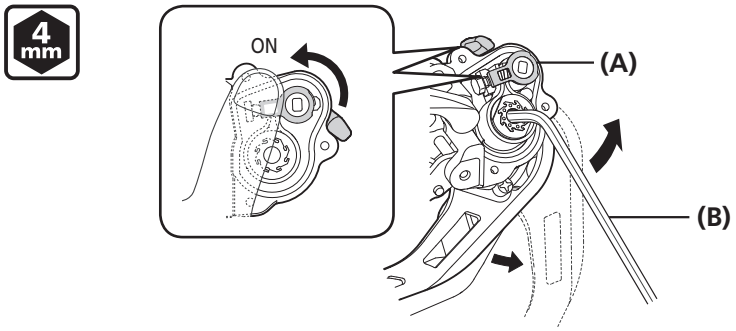
(A) Plate unit cover
(B) Lever switch
(C) Plate unit

3 Using 5.5 mm wrench, move the friction adjustment bolt to adjust the friction.



(A) Friction adjustment bolt

4 Check the friction torque.
- While pressing the friction unit with your finger as shown in the illustration, set the lever switch to the ON position and check the friction torque.



(A) Friction unit
(B) 4 mm hexagon wrench

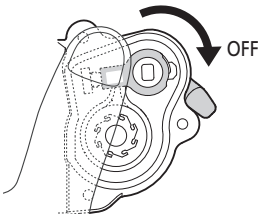
Friction torque	
4 mm	3 - 4.8 N·m

NOTICE

If adjusting the friction once more, be sure to set the lever switch to the OFF position while pressing the friction unit with your finger before making the adjustment.

To be continued on next page

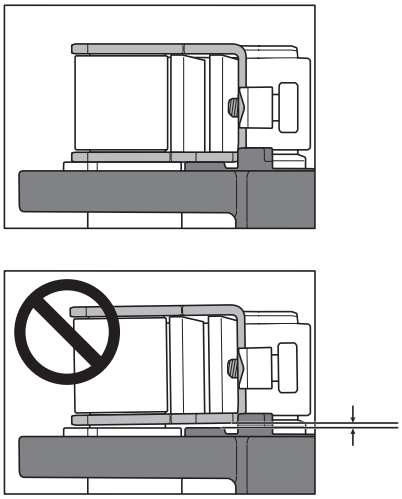
5



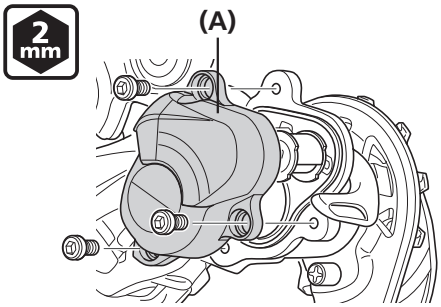
While pressing the friction unit with your finger, set the lever switch to the OFF position. At that time, make sure that the friction unit is in contact with the bottom of the plate unit.

NOTICE

Do not install the plate unit cover with the switch base floating off the bottom of the plate unit. Sufficient sealing performance will not be obtained, which will cause rust to appear in the inner mechanism, potentially resulting in the adhesion of the plate.



6



Install the plate unit cover.

(A) Plate unit cover

Tightening torque	
2 mm	1 - 1.5 N·m

MAINTENANCE

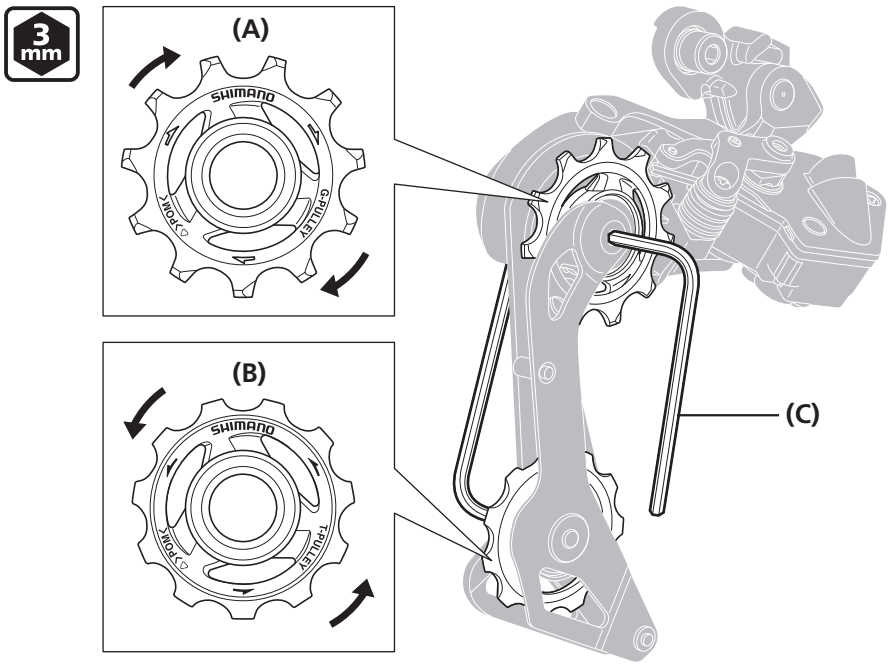
MAINTENANCE

■ Replacement of the pulley

Replace pulleys using a 3 mm hexagon wrench.

The guide pulley and tension pulley are marked on one side with arrows to indicate the direction of rotation.

When attaching the pulleys, make sure to orient them so that the sides marked with arrows are visible when viewed from the reverse side of the derailleur, as shown in the illustration.



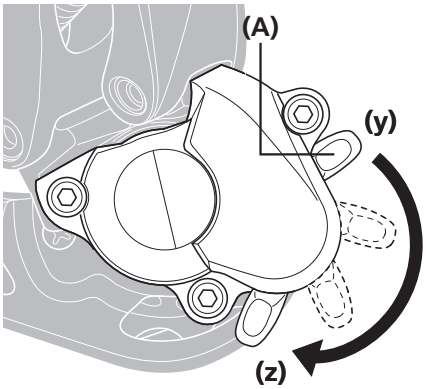
(A) Guide pulley
(B) Tension pulley
(C) 3 mm hexagon wrench

Tightening torque	
3 mm	2.5 - 5 N·m

■ Replacement of the plate and the plate tension spring

Removal

1



Shift into low gear. Move the lever switch to the OFF position.

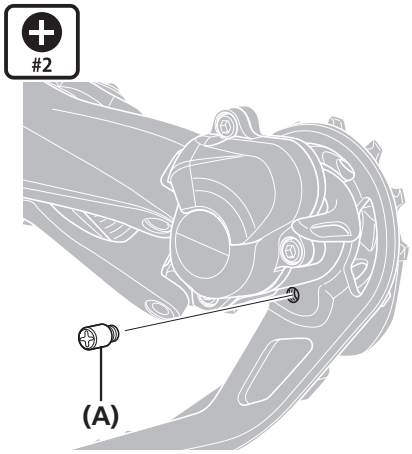
(y) ON
(z) OFF

(A) Friction unit

NOTICE

If operating the lever switch while the plate unit cover is removed, press the friction unit with your finger so that it does not fly out.

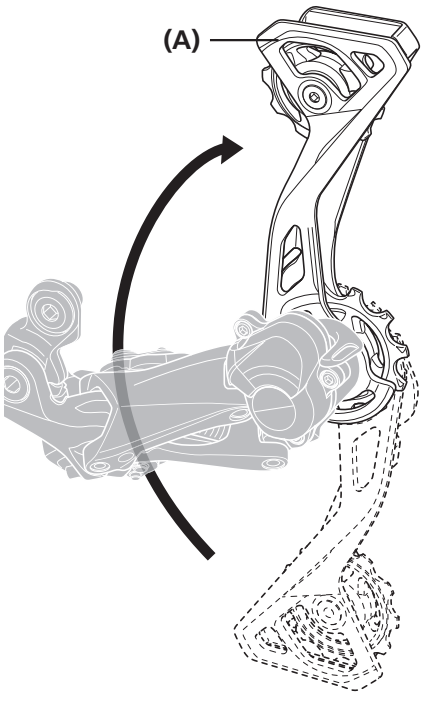
2



Remove the plate stopper pin with a screwdriver.

(A) Plate stopper pin

3

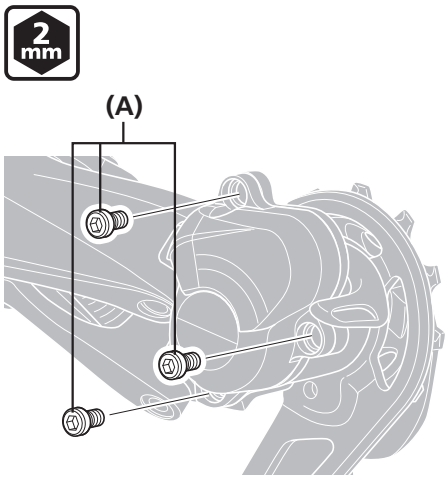


Turn the plate to loosen the plate tension spring as shown in the illustration.

(A) Plate

To be continued on next page

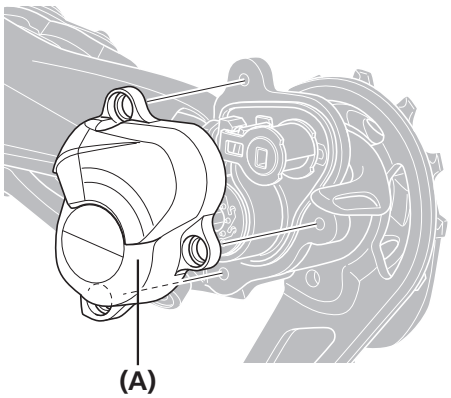
4



Remove the plate unit cover bolts.

(A) Plate unit cover bolts

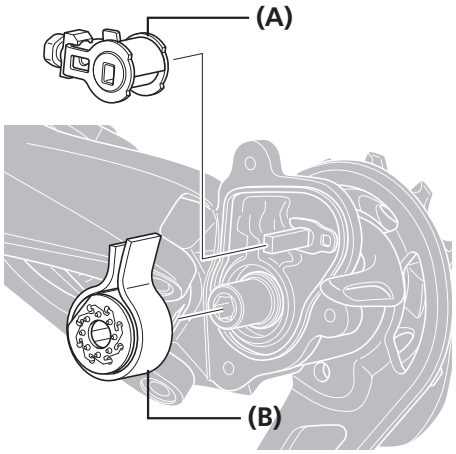
5



Remove the plate unit cover.

(A) Plate unit cover

6

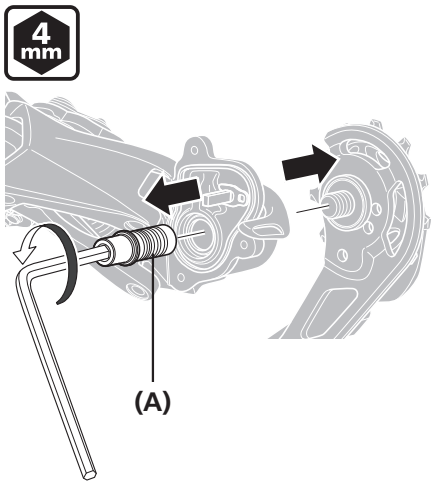


Remove the cam unit and the chain stabilizer.

(A) Cam unit
(B) Chain stabilizer

To be continued on next page

7



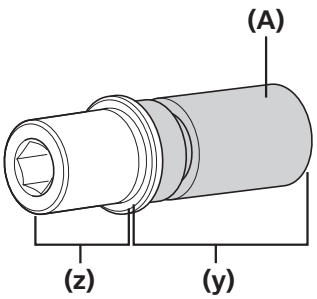
Remove the plate axle.

(A) Plate axle

Installation

Carry out the removal procedure in reverse.

1



Apply grease to the plate axle.

(y) Grease application area
Grease number:
Premium grease (Y04110000)

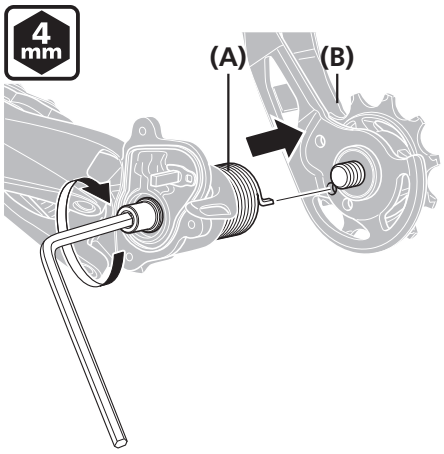
(z) A

(A) Plate axle

NOTICE

Do not apply grease to **A**.
If grease is applied, grease will get on the inner surface of the roller clutch and friction will be lost.

2



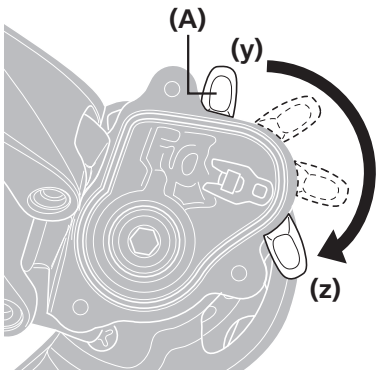
Insert the plate axle and insert the tip of the plate tension spring into the groove of the plate.

(A) Plate tension spring
(B) Plate

Tightening torque	
4 mm	8 - 10 N·m

To be continued on next page

3

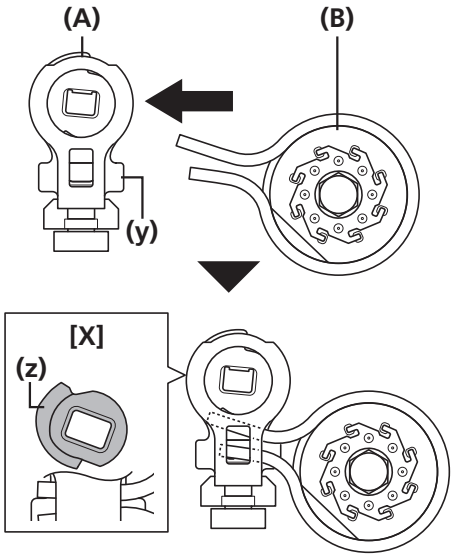


Set the lever switch to OFF.

(y) ON
(z) OFF

(A) Lever switch

4



Set the chain stabilizer into the cam unit as shown in the illustration.

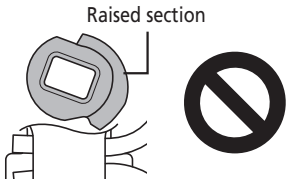
Make sure that the raised section of the cam unit is positioned as in **[X]** at this time.

(y) The end with the protrusions is the bottom
(z) Raised section

(A) Cam unit
(B) Chain stabilizer

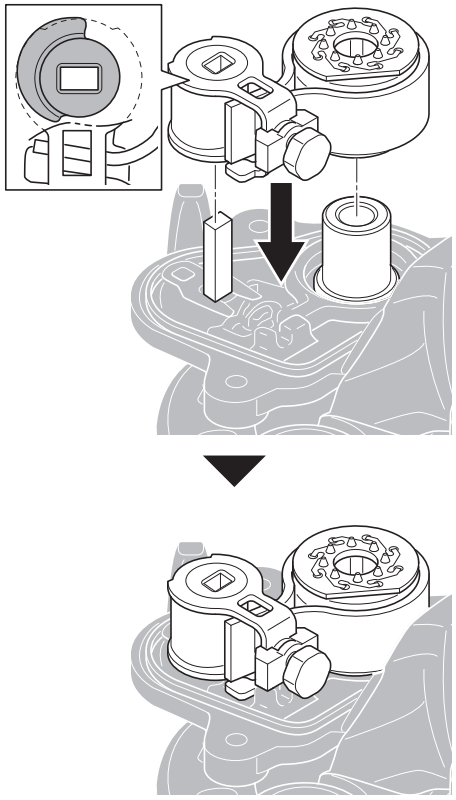
NOTICE

Make sure the cam unit is not set as shown in the following illustration.



To be continued on next page

5

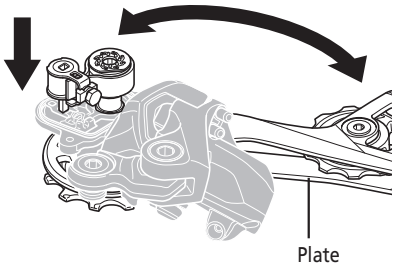


Align the holes in the cam unit and chain stabilizer with the projections on the plate unit and attach as in the illustration.

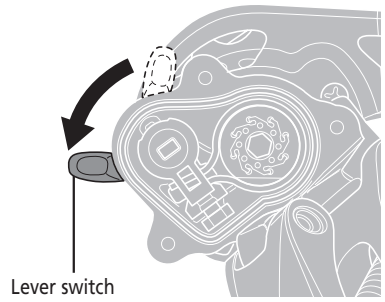
Pay attention to the positioning of the raised section of the cam unit when attaching.

TECH TIPS

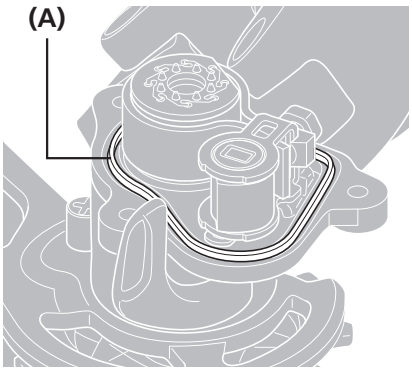
- It helps to move the plate while holding down the cam unit and chain stabilizer when attaching.



- If there is resistance when moving the lever switch to the ON position, the components are attached correctly.
  If there is no resistance, check the position of the raised section of the cam unit and then reattach the components.



6

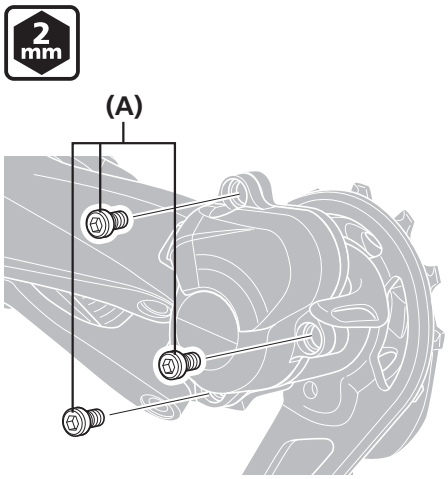


Make sure that the plate unit cover gasket is attached along the grooves in the plate unit.

(A) Plate unit cover gasket

To be continued on next page

7

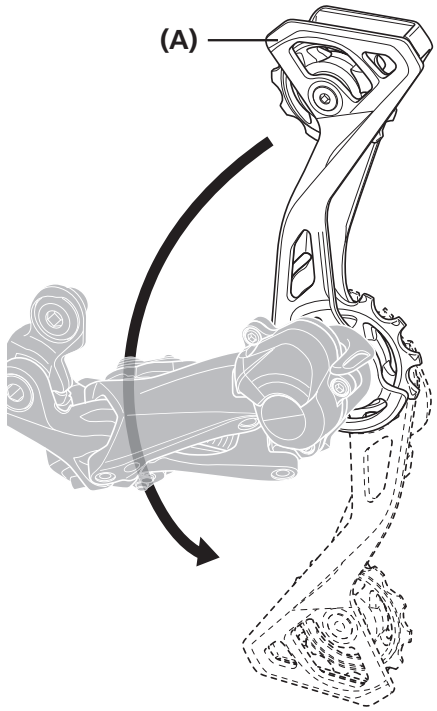


Install the plate unit cover bolts.

(A) Plate unit cover bolts

Tightening torque	
2 mm	1 - 1.5 N·m

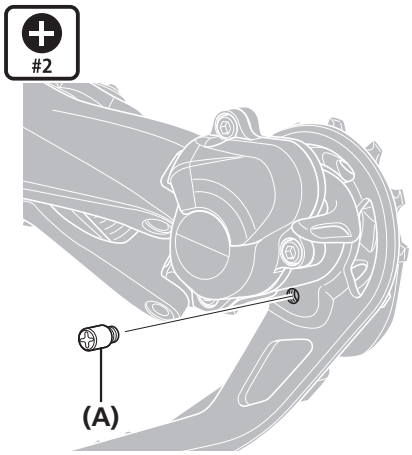
8



Turn the plate in the direction indicated by arrow, tighten the plate tension spring so that it is not loose, and then insert the plate.

(A) Plate

9



Install the plate stopper pin.

(A) Plate stopper pin

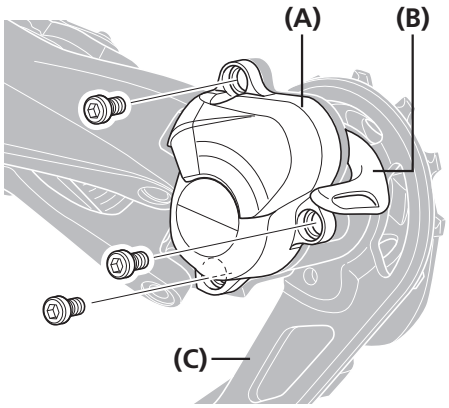
Tightening torque	
#2	1 N·m

■ Applying grease to the chain stabilizer

If the friction changes or noise is generated, the grease may have become discolored or may have disappeared. Apply more grease.
* Reassemble by carrying out the disassembly procedure in reverse.

1 Move the lever switch to the OFF position.

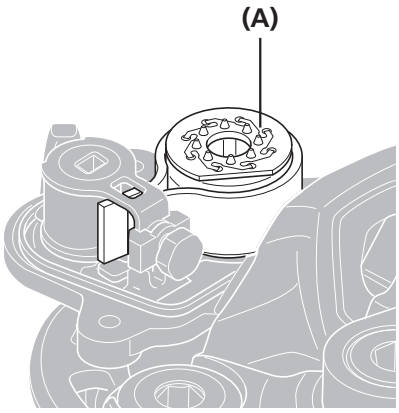
2



Remove the plate unit cover.

(A) Plate unit cover
(B) Lever switch
(C) Plate unit

3



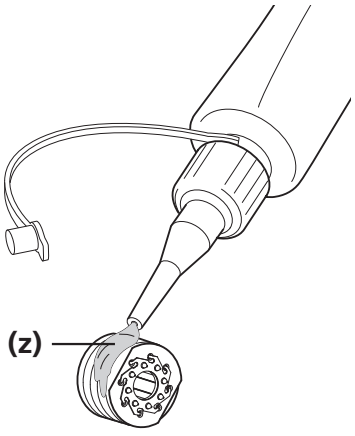
Remove the chain stabilizer.

(A) Chain stabilizer

NOTICE

When installing the chain stabilizer, refer to assembly step 4 in "Replacement of the plate and the plate tension spring."

4



Apply grease to the clutch.

(z) New grease number: Y04121000 (50 g)
Grease number: Y04120800 (100 g)

NOTICE

Be careful not to get grease on the inner surface of the roller clutch. If grease gets inside the clutch, it will cause the clutch to malfunction.

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