

## Dealer's Manual

|                               |             |          |
|-------------------------------|-------------|----------|
| ROAD                          | MTB         | Trekking |
| City Touring/<br>Comfort Bike | URBAN SPORT | E-BIKE   |

# Rear Derailleur

### GRX

RD-RX810

RD-RX812

RD-RX400

# Contents

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# IMPORTANT NOTICE

- **This dealer's manual is intended primarily for use by professional bicycle mechanics.** Users who are not professionally trained for bicycle assembly should not attempt to install the components themselves using the dealer's manuals. If any part of the information on the manual is unclear to you, do not proceed with the installation. Instead, contact your place of purchase or a distributor for assistance.
- Make sure to read all manuals included with the product.
- Do not disassemble or modify the product other than as stated in the information contained in this dealer's manual.
- All manuals and technical documents are accessible online at <https://si.shimano.com>.
- For consumers who do not have easy access to the internet, please contact a SHIMANO distributor or any of the SHIMANO offices to obtain a hardcopy of the User's Manual.
- Please observe the appropriate rules and regulations of the country, state or region in which you conduct your business as a dealer.

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


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

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

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

# TO ENSURE SAFETY

## **WARNING**

- **Be sure to follow the instructions provided in the manuals when installing the product.** Only use SHIMANO genuine parts. If a component or replacement part is incorrectly assembled or adjusted, it can lead to component failure and cause the rider to lose control and crash.
-  Wear approved eye protection while performing maintenance tasks such as replacing components.

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

- **Clean the chain and QUICK-LINK with an appropriate chain cleaner regularly. Intervals between maintenance depend on the use and riding circumstances. Never use alkali based or acid based solvents such as rust cleaners. If those solvents are used the chain or QUICK-LINK might break and cause serious injury.**
- Check the chain for any damage (deformation or cracking), skipping, or other abnormalities such as unintended gear shifting. The chain may break, and you may fall. If any problems are found, consult your place of purchase or a distributor.

#### **■ When using TL-CT12:**

- Be careful not to get injured by the blade or needle while working.
- Be careful not to get your fingers pinched by the tool while working.
- Keep the tool out of the reach of small children.

## **NOTICE**

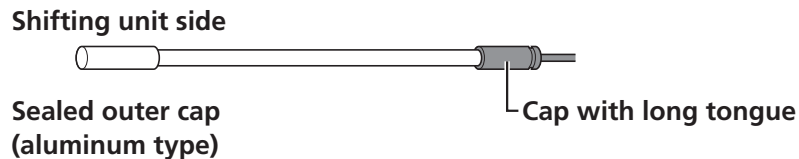
### **Be sure to also inform users of the following:**

- For SHADOW RD+, be sure to check that the plate unit cover and the plate unit rubber cap are installed before riding the bicycle.
- If gear shifting operation does not feel smooth, consult the place of purchase for assistance.
- The gears should be periodically washed with a neutral detergent then lubricated. In addition, cleaning the chain and QUICK-LINK with a neutral detergent and lubricating them can be an effective way of extending the life of the chain and QUICK-LINK.
- 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:

- Depending on the shape of the frame, the rear derailleur may interfere with the chainstay. Use the B-screw to adjust so that the rear derailleur does not interfere with the chainstay.
- Grease with SIS SP41 grease (Y04180000) the inner cable and the sliding portions of the outer casing before use to ensure that they slide properly. Do not let dust adhere to the inner cable.
- To ensure smooth operation, use OT-RS900 outer casing for rear derailleur and a cable guide.
- Use an outer casing which still has some length to spare even when the handlebars are turned all the way to either side. Furthermore, check that the shifting lever does not touch the bicycle frame when the handlebars are turned all the way.
- The end of the outer casing which has the sealed outer cap (aluminum type) should be on the shifting unit side. Refer to the ST-RX810 dealer's manual for details.










- If gear shifting adjustments cannot be carried out, check the alignment of the dropout and check if the cable is lubricated or if the outer casing is too long or too short.
- Periodically clean the shifting unit and lubricate all moving parts (mechanism and pulleys).
- If you hear abnormal noise as a result of excess play in a pulley, you should replace the pulley.

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

# List of tools to be used

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

| Tool  |                             |
|---|-----------------------------|
|    | 2 mm hexagon wrench         |
|    | 3 mm hexagon wrench         |
|    | 4 mm hexagon wrench         |
|    | 5 mm hexagon wrench         |
|    | 5.5 mm spanner              |
|   | Cross head screwdriver [#2] |
|  | TL-CT12                     |

# Installation/removal

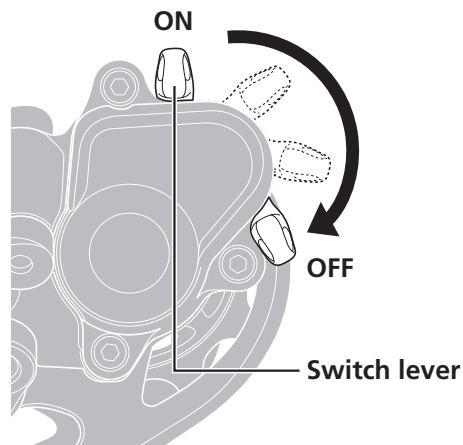
## Installing the rear derailleur

### TECH TIPS

- The rear derailleur will not gear shift properly if the derailleur hanger is not straight. Use TL-RD11 to check whether the derailleur hanger is straight or not.

### Standard type

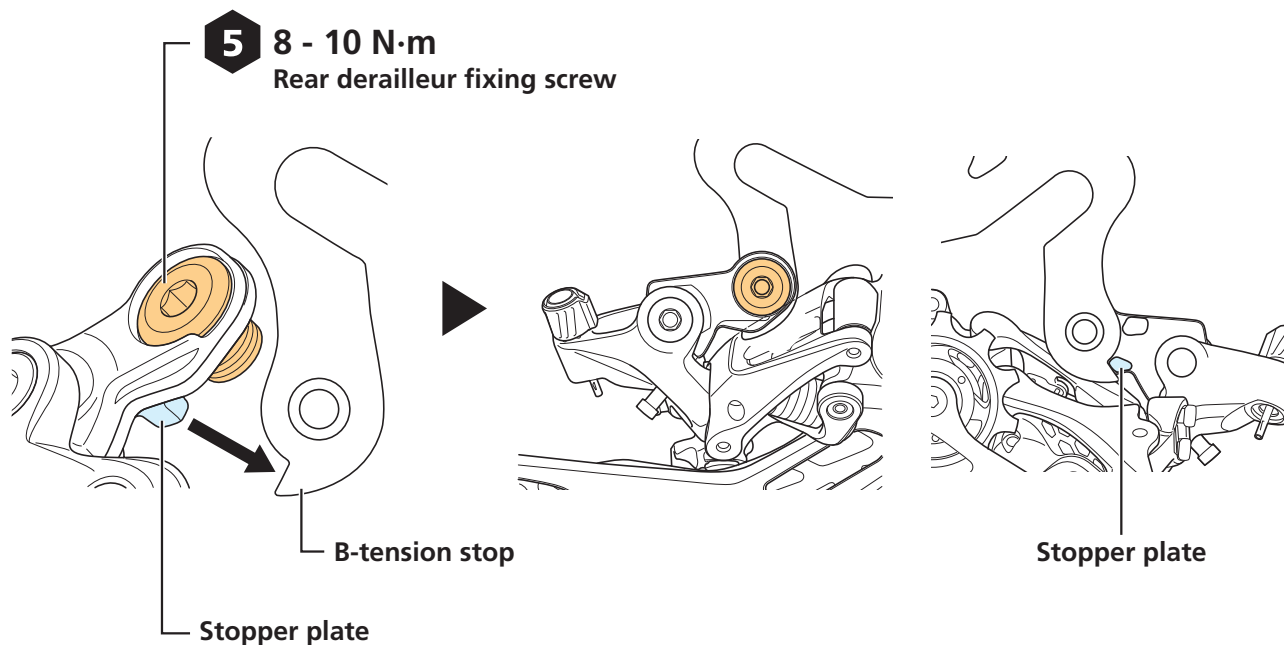
1. Set the switch lever in the OFF position.



## 2. Tighten the rear derailleur fixing screw.

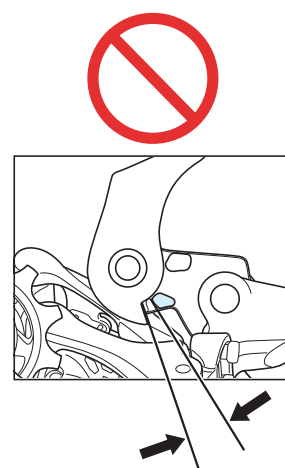
Be careful not to insert the rear derailleur fixing screw in the derailleur hanger at an angle.

In addition, be sure to install the rear derailleur so that the stopper plate contacts the B-tension stop, with no gap in between.



### NOTICE

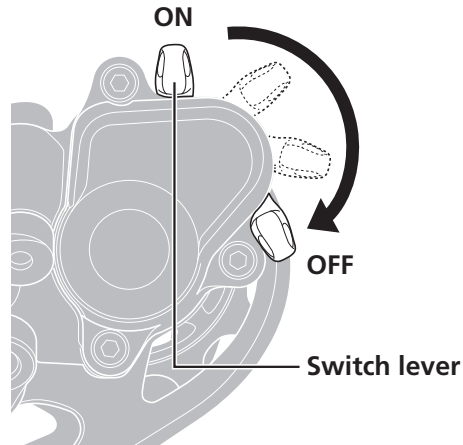
- Periodically check to make sure that there is no gap between the B-tension stop and the stopper plate. If there is a gap between these two parts, problems with gear shifting performance may occur.



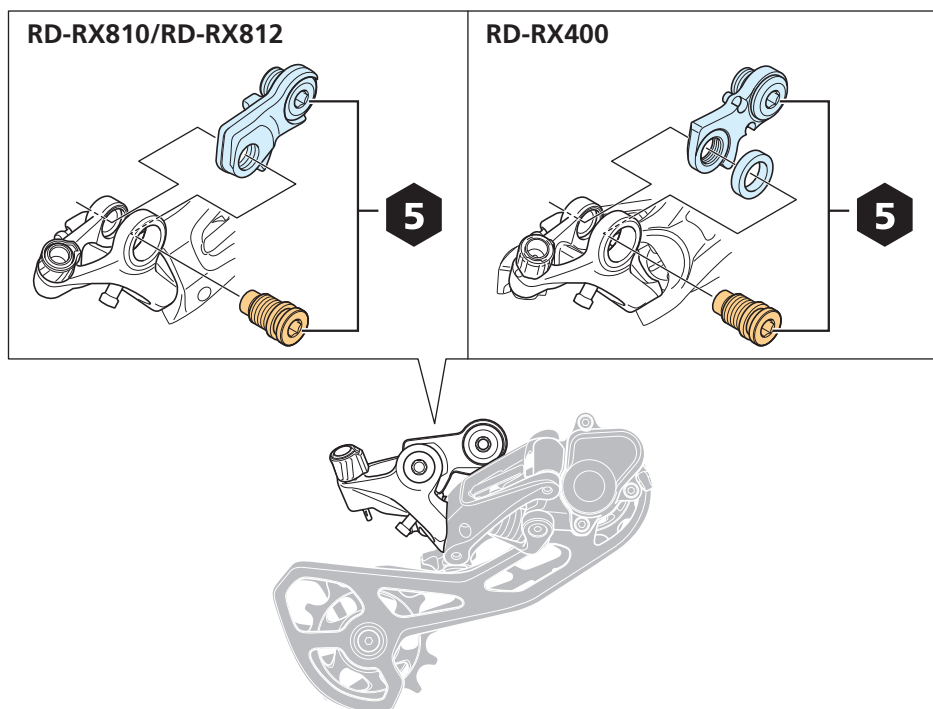


## Direct mount type

### 1. Set the switch lever in the OFF position.



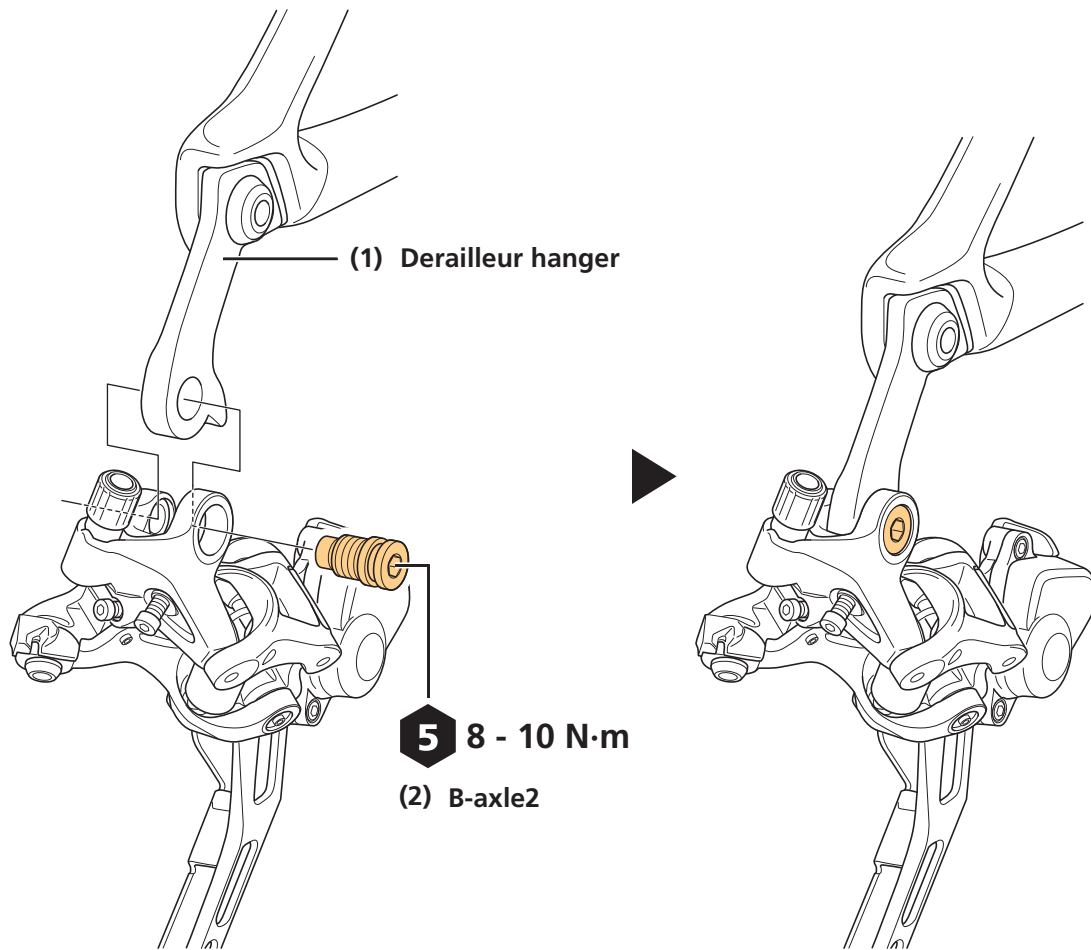
### 2. Remove the bracket axle plate.



### 3. Install the rear derailleur.

- (1) Insert the derailleur hanger into the installation part for direct mount of the rear derailleur.

(2) Install the rear derailleur with the B-axle2.

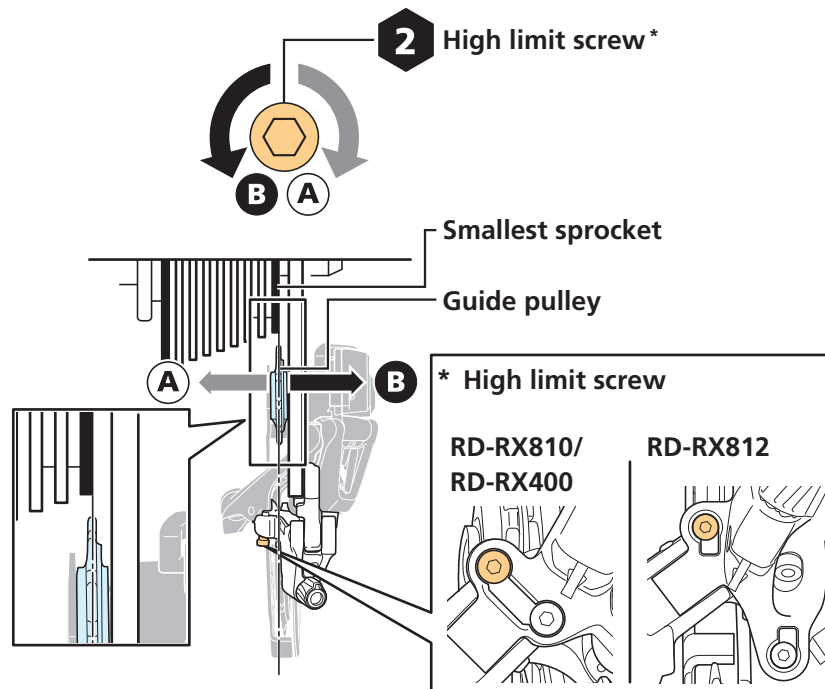


# Adjustment

## Adjusting the stroke on the high limit

### 1. Adjust by turning the high limit screw.

Adjust so that the center of the guide pulley is aligned with the outer face of the smallest sprocket when viewed from the rear side.

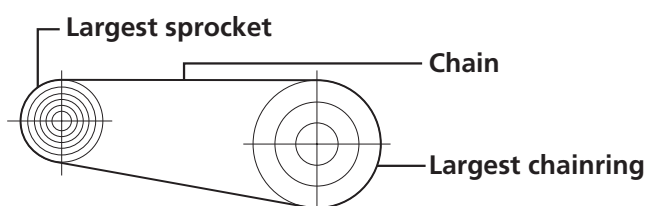


## Installing the chain

Refer to the dealer's manual for the chain to find instructions on installing/removing the chain.

## Checking the chain length

### 1. Mount the chain on the largest sprocket and the largest chainring.



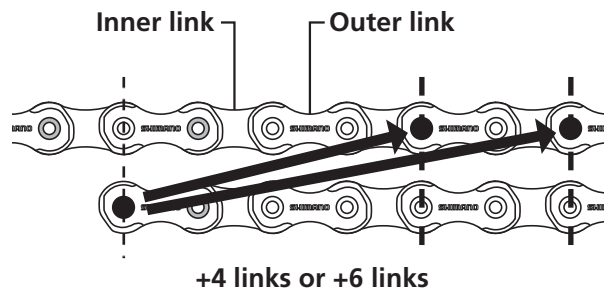
## 2. Check the length of the chain.

Add 4 - 6 links to set the length of the chain as shown in the figure.

**If the inner links and outer links match when mounting the chain**

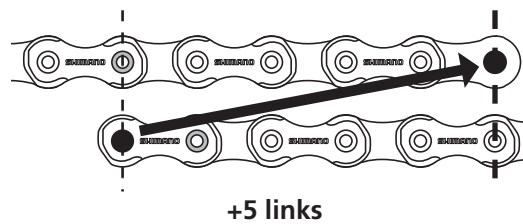
Add 4 or 6 links to set the length.

When setting the chain length with 4 links added, if you are concerned about turbulence in the drivetrain components when the chain is on the largest sprocket and largest chainring, set the chain length with 6 links added.



**If the inner links match together and the outer links match together**

Add 5 links to set the length.

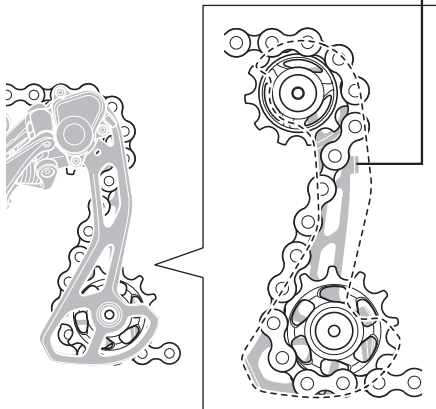


**NOTICE**

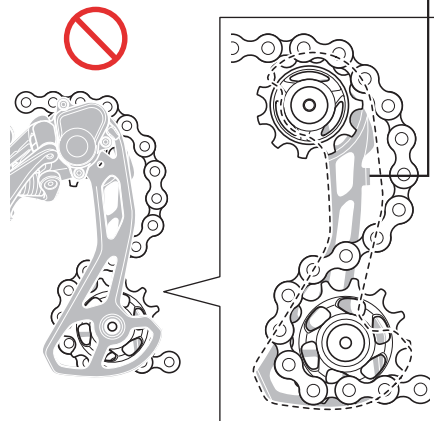
- The rear derailleur plate assembly is equipped with a pin or plate that prevents chain derailment. When passing the chain through the rear derailleur, pass it through the main body of the rear derailleur from the side of the chain derailment prevention plate as shown in the figure.
- If the chain is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

**RD-RX810**

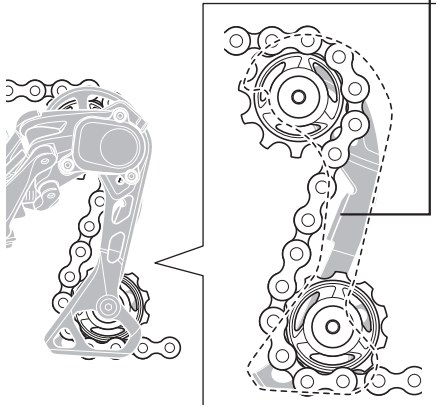
Chain derailment prevention plate



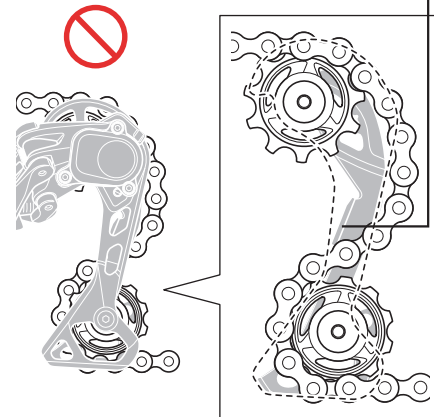
Chain derailment prevention plate

**RD-RX812/RD-RX400**

Chain derailment prevention plate



Chain derailment prevention plate

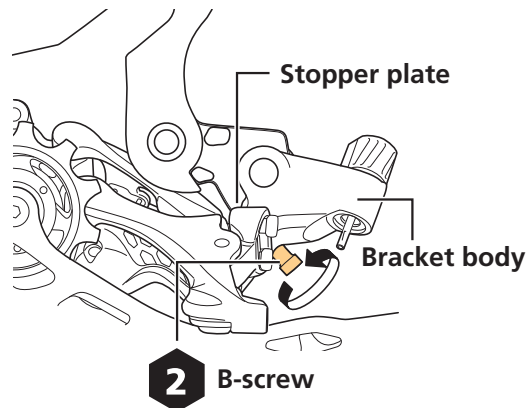


# Connection and securing of the inner cable

## Outer casing length

### 1. Loosen the B-screw to the position shown in the figure.

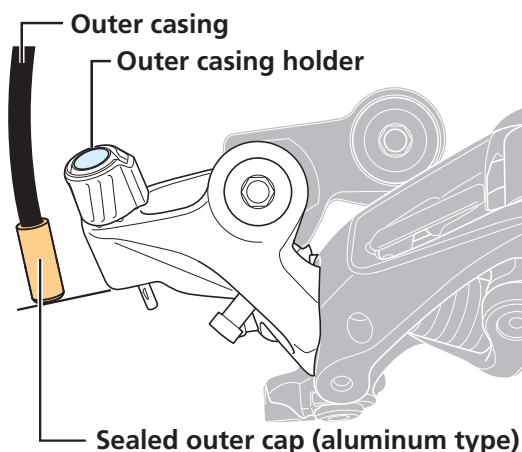
Make sure that the stopper plate touches the bracket body without leaving a gap.



### 2. Determine the length of the outer casing.

Fit a sealed outer cap to the end of the outer casing. Align the end of the outer cap to the bottom edge of the outer casing holder on the rear derailleur.

Make sure to leave enough slack in the outer casing.

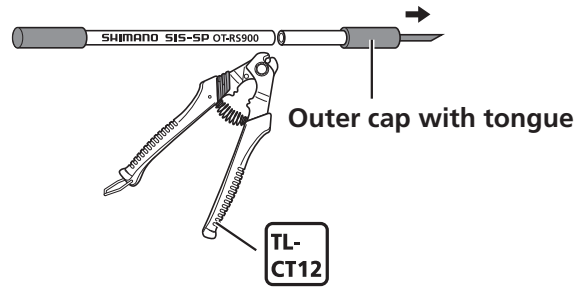


#### NOTICE

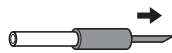
- Make sure to use OT-RS900 for the outer casing.

### 3. Cut off any excess outer casing with the cable cutter.

Cut the end of the outer casing that is opposite to the marking.

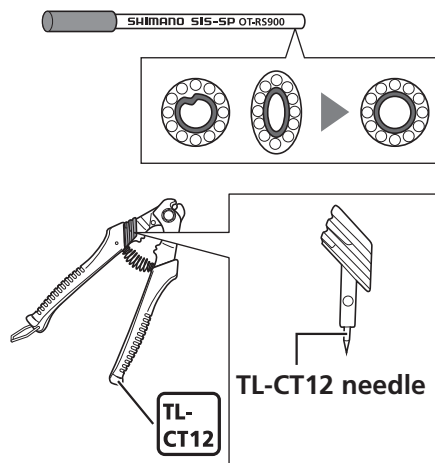


### 4. Remove the outer cap with tongue from the cut outer casing.



### 5. Spread out the tip of the liner using a thin tool such as a TL-CT12 needle.

Arrange the cut end into a perfect circle.



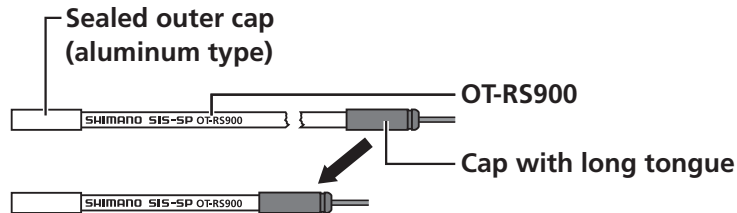
#### **NOTICE**

- Be careful not to hurt your hands with the TL-CT12 needle.

## 6. Install the cap with long tongue to the end.

The end of the outer casing which has the sealed outer cap (aluminum type) should be on the shifting unit side.

Route the inner cable through the outer casing.



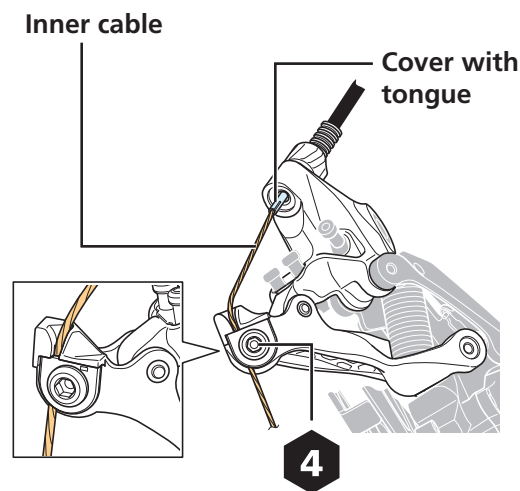
## Connection and securing of the inner cable

### 1. Set the shifting lever in its initial position.

Operate the release lever 10 times or more.

### 2. Secure the inner cable to the rear derailleur.

There is no cover with tongue for RD-RX400.



#### NOTICE

- When replacing the inner cable for RD-RX810/RD-RX812, it is recommended to replace the cover with tongue.
- Cables with a polymer coating may develop a fuzzy appearance or texture through natural wear when used. However, if the cables are installed with care according to the procedures outlined in this manual, this is strictly cosmetic and performance will not be affected where the inner cables are housed by outer casing.

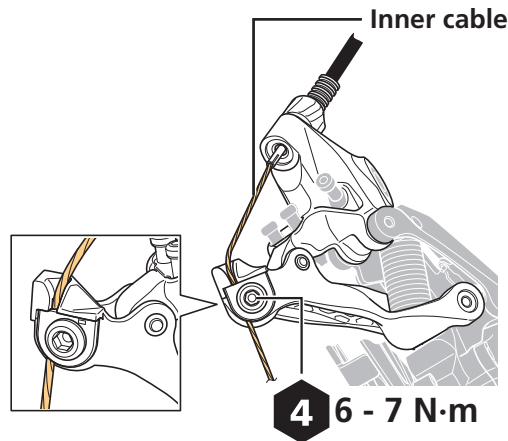


### 3. Remove the initial slack from the inner cable.

Hold the rear derailleur so that it won't move under load from the shift cable. Operate the shifting lever several times in order to tension the shift cable assembly and fully seat all the shift cable components.

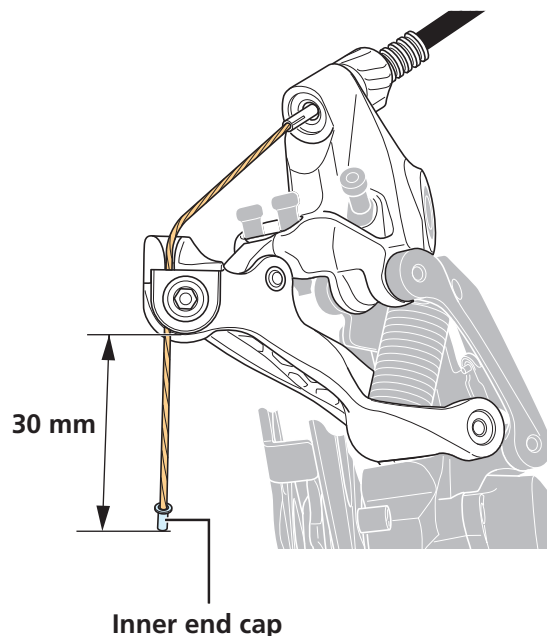
### 4. Re-secure the inner cable to the rear derailleur.

While pulling the inner cable, be sure that it is securely in the cable fixing groove.



### 5. Cut the inner cable so that the protruding length is approximately 30 mm.

Install the inner end cap.



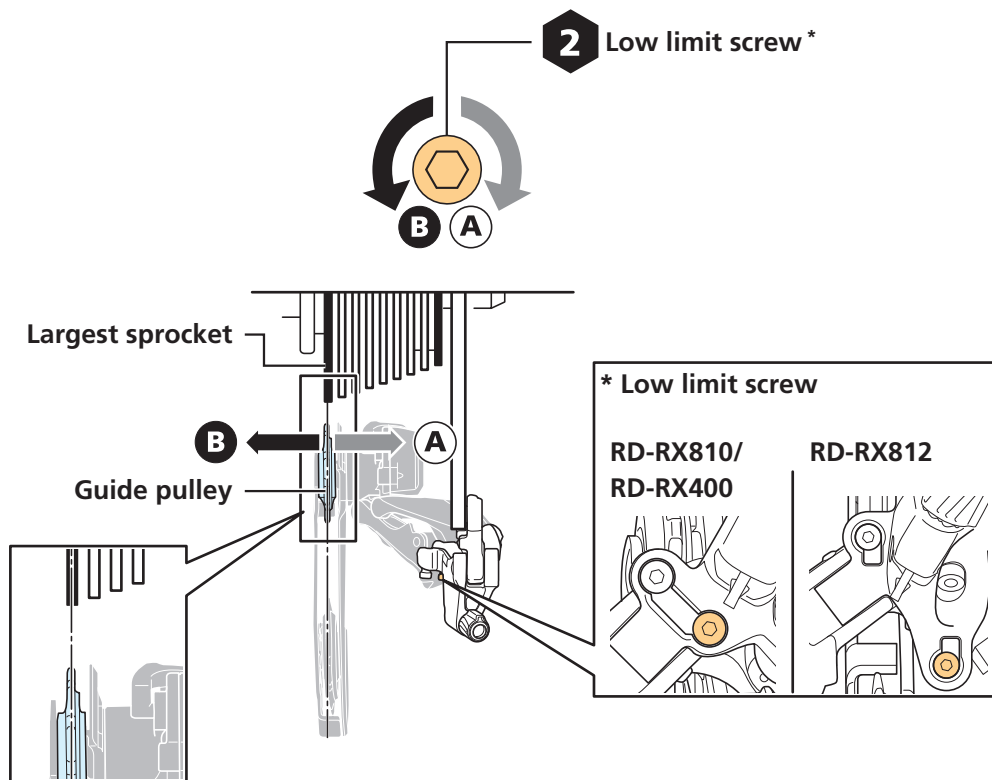
**NOTICE**

- Check that the inner cable does not interfere with the spokes of the wheel.
- Do not allow the wheel to turn while carrying out this step.

# Adjusting the stroke on the low limit

## 1. Adjust by turning the low limit screw.

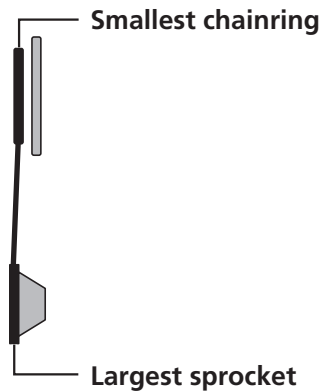
Adjust so that the center of the guide pulley is aligned with the center of the largest sprocket.



# Adjusting the B-screw

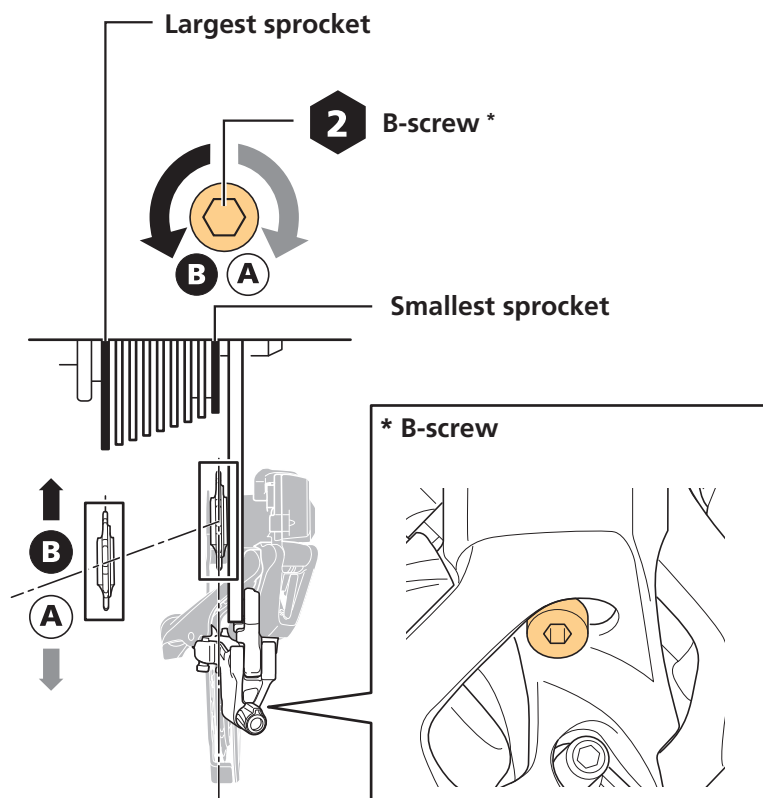
## 1. Shift the chain to the smallest chainring and the largest sprocket.

Turn the crank arm in reverse.



## 2. Adjust the B-screw.

Bring the guide pulley as close to the largest sprocket as possible without any turbulence between the pulley and sprocket.



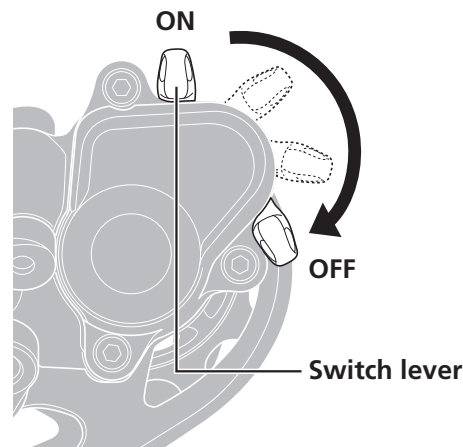
### 3. Check that the chain has running clearance when it is in the smallest rear sprocket.

If the chainstay and rear derailleur interfere, adjust by turning the B-screw until they do not interfere.

If there is some slack in the chain, adjust the B-screw to remove the slack from the chain.

## SIS adjustment

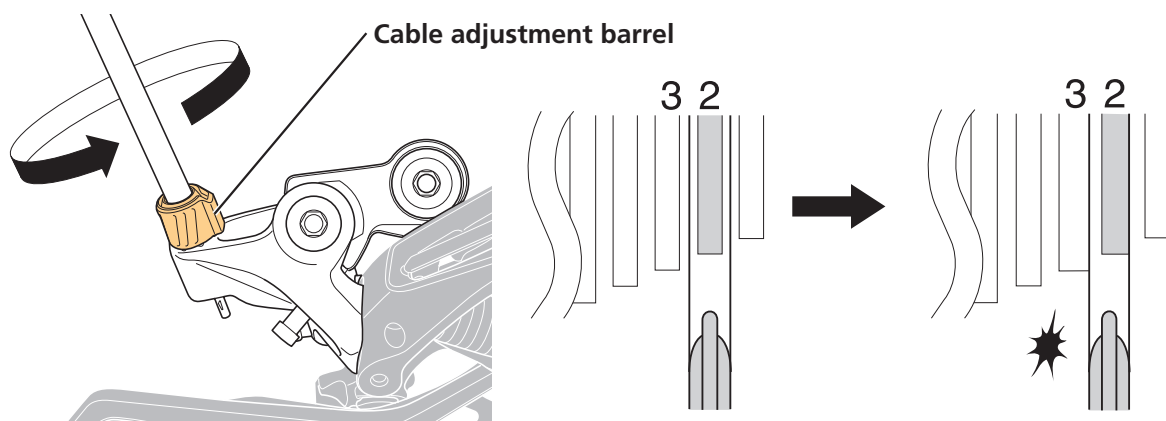
### 1. Set the switch lever in the OFF position.



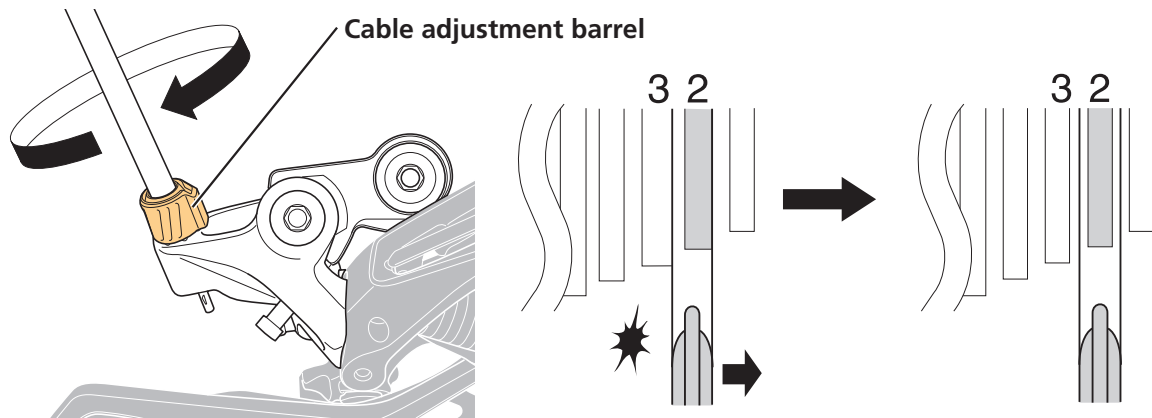
### 2. Operate the shifting lever once to shift to the 2nd sprocket counting from the smallest sprocket.

### 3. Shift to the 2nd from the smallest sprocket. If using a 2x system, also shift to the largest chainring.

### 4. Turn the cable adjustment barrel counterclockwise to add cable tension until you can hear noise from the chain rubbing the 3rd smallest sprocket.



- 5. Turn the cable adjustment barrel clockwise to reduce cable tension until no noise is heard from the chain rubbing the sprocket.**



- 6. Return the shifting lever to its original position (the position of the 2nd sprocket counting from the smallest sprocket, with your finger released from the shifting lever), then turn the crank.**

#### NOTICE

- If it is touching the 3rd sprocket counting from the smallest sprocket and making noise, turn the cable adjustment barrel clockwise slightly to tighten it just enough until the noise stops.

- 7. Operate the shifting lever to change gears while turning the crank, and check that no noise occurs in any of the gear positions.**

#### TECH TIPS

- The rear derailleur will not gear shift properly if the derailleur hanger is not straight. Use TL-RD11 to check whether the derailleur hanger is straight or not.

- 8. Set the switch lever in the ON position and check that the gear shifting is smooth, consistent, and that there is no noise in any of the gear positions while riding the bicycle.**

If gear shifting from the largest sprocket becomes slow with the switch lever in the ON position, adjust the guide pulley slightly further away by turning the B-screw.

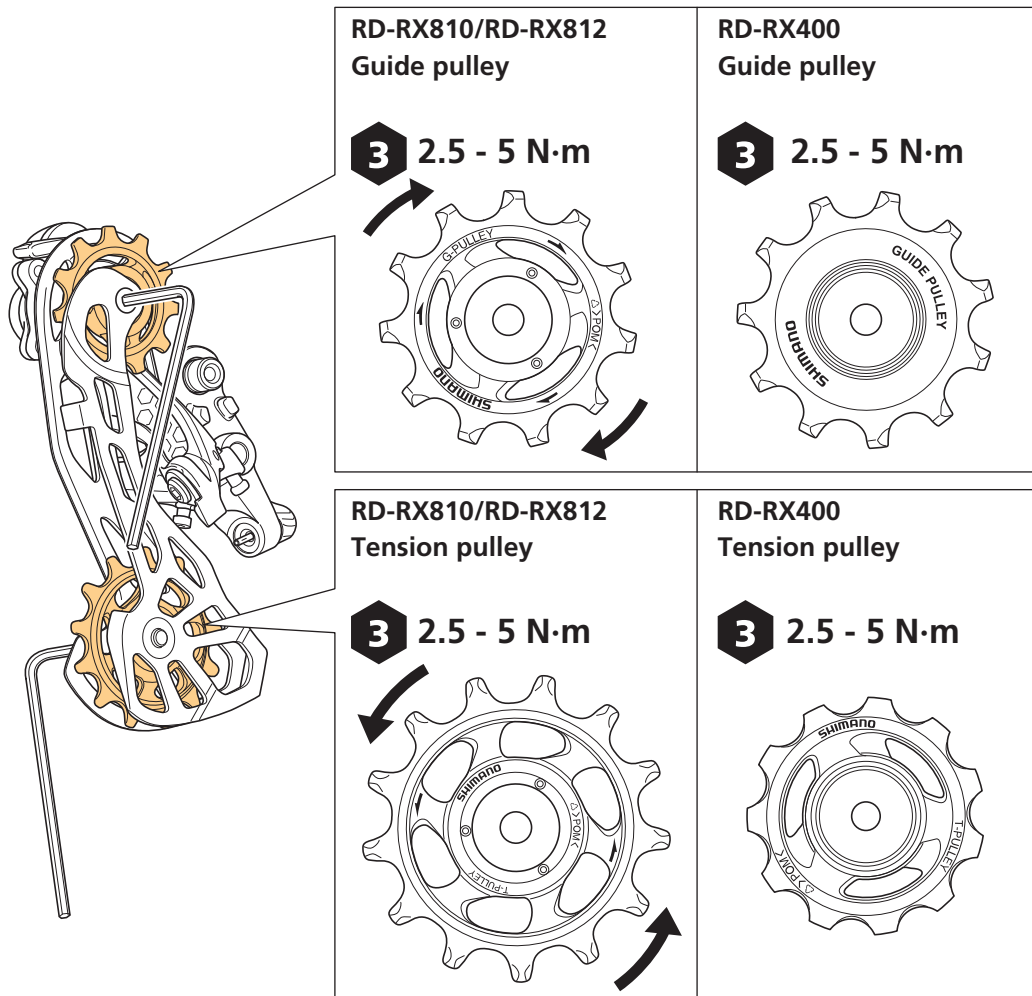
# Maintenance

## Replacing the pulleys

### 1. Replace the guide pulley and tension pulley.

Check the arrow direction on the pulley when installing it.

For RD-RX400, the pulley can be installed in any direction.



#### NOTICE

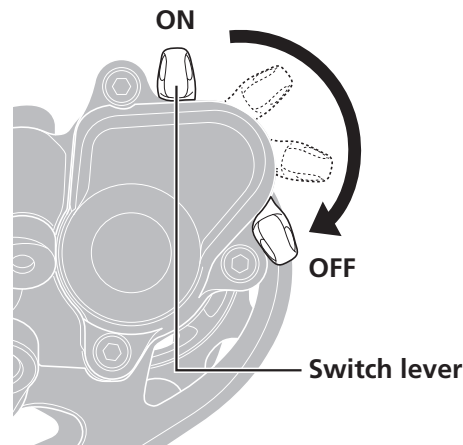
- The pulley for RD-RX810/RD-RX812 has an arrow on it to indicate the direction of rotation. Install so that the guide pulley moves clockwise and the tension pulley moves counterclockwise when viewed from the inner side of the shifting unit.

# Applying grease to the chain stabilizer

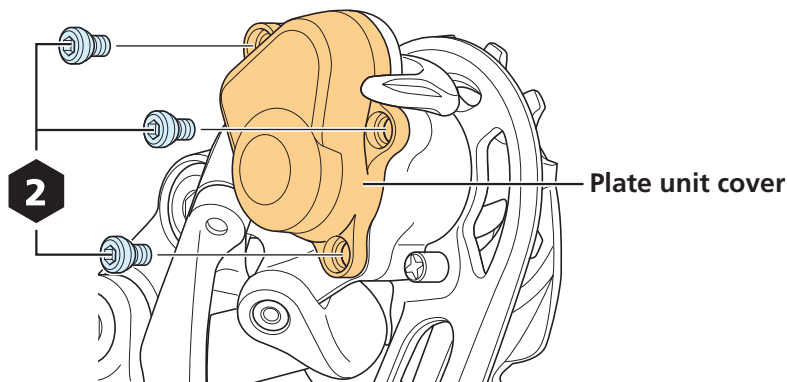
If there is a noticeable change in friction in the chain stabilizer assembly, or if it starts to make noise, you may need to add grease to the chain stabilizer.

\* When assembling, reverse the procedure.

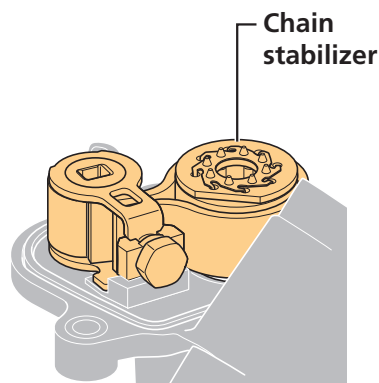
## 1. Set the switch lever in the OFF position.



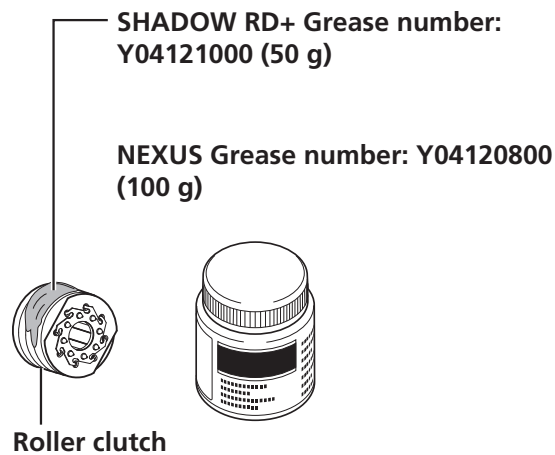
## 2. Remove the plate unit cover.



## 3. Remove the chain stabilizer and cam unit together.



#### 4. Apply the dedicated grease to the outer diameter of the roller clutch.



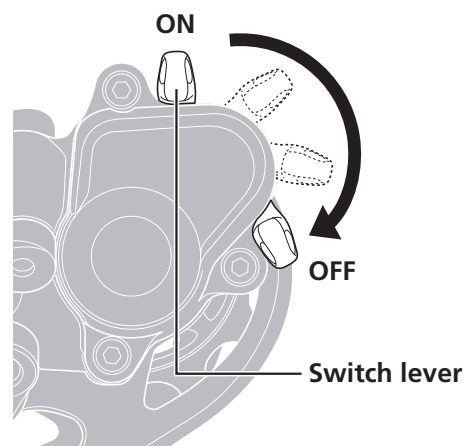
#### **NOTICE**

- Be careful not to get grease inside the roller clutch. Otherwise, the clutch could stick, slip, or otherwise malfunction.

## Adjusting friction

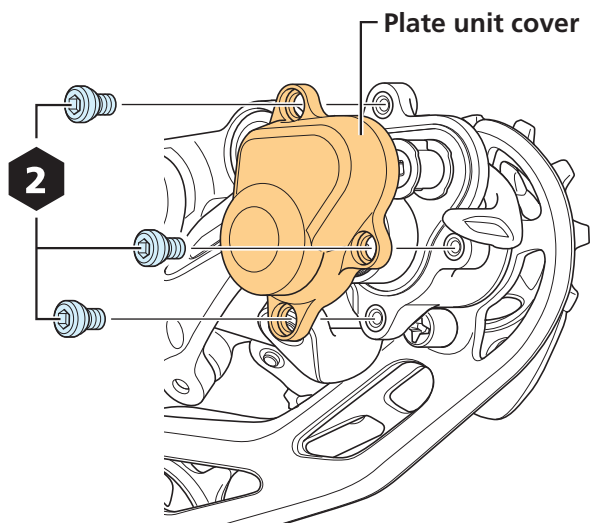
The level of friction can be adjusted as desired. Furthermore, the friction can also be adjusted when it changes during use.

#### 1. Set the switch lever in the OFF position.



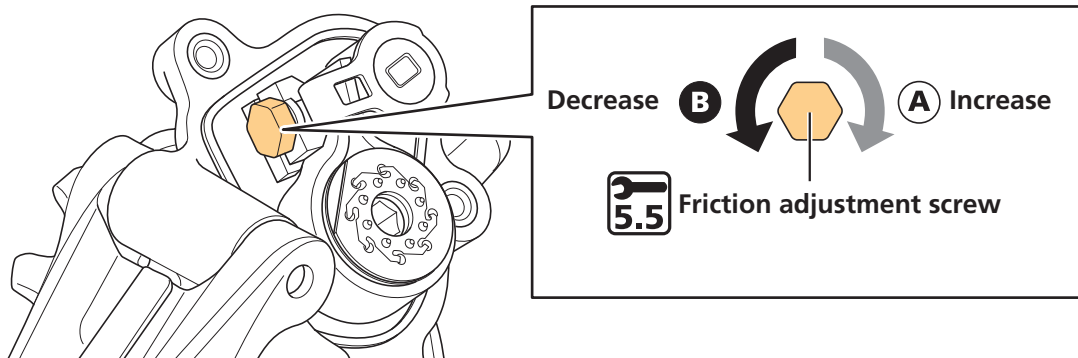


**2.** Use a 2 mm hexagon wrench to remove the plate unit cover.

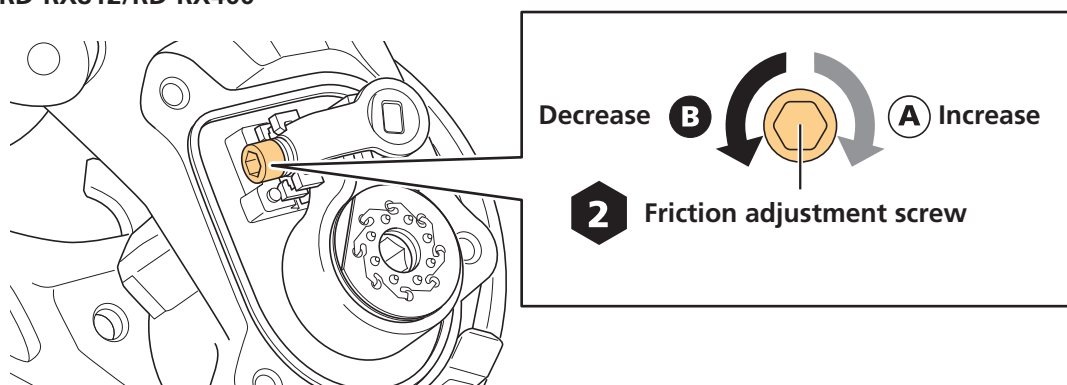


**3.** Turn the friction adjustment screw to adjust the friction.

RD-RX810



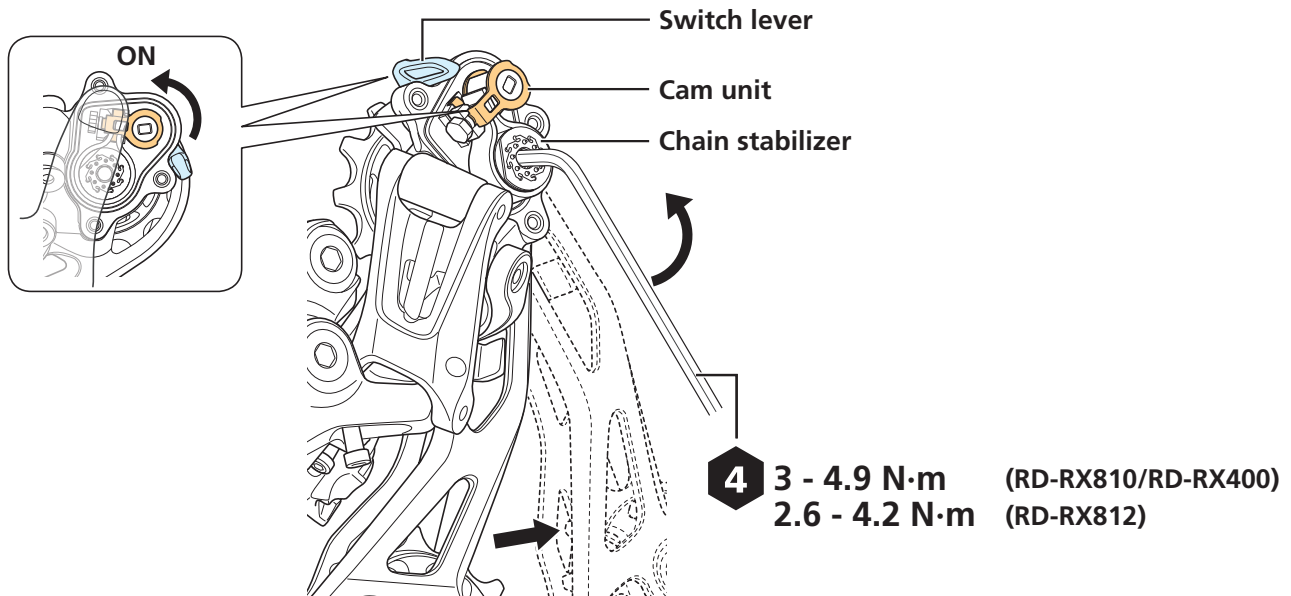
RD-RX812/RD-RX400



## 4. Check the friction torque.

Use your finger to hold the cam unit securely in place, then set the switch lever to the ON position.

Insert a 4 mm hexagon wrench into the chain stabilizer and check the friction torque.

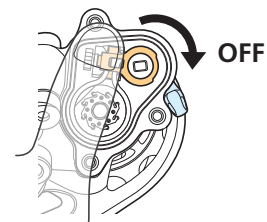


### NOTICE

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

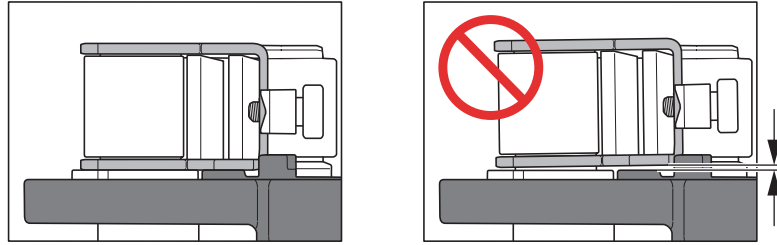
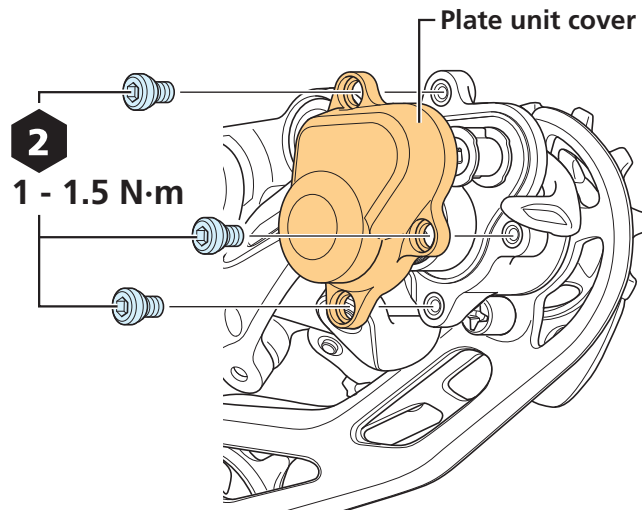
## 5. Set the switch lever in the OFF position.

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



**NOTICE**

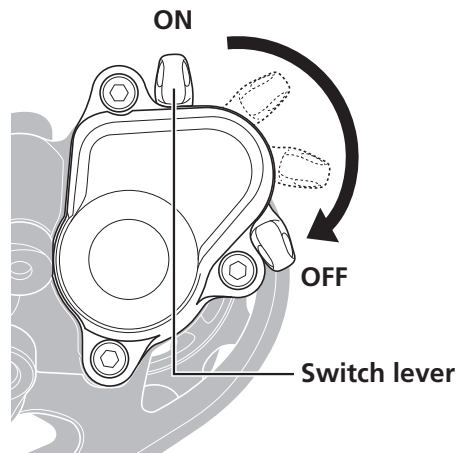
- Do not install the plate unit cover if the plate unit is not fully seated against the switch base. This may result in insufficient sealing, which can lead to corrosion and malfunction of the chain stabilizer assembly.

**6. Install the plate unit cover.**

# Replacement of the plate and the plate tension spring

## Removal

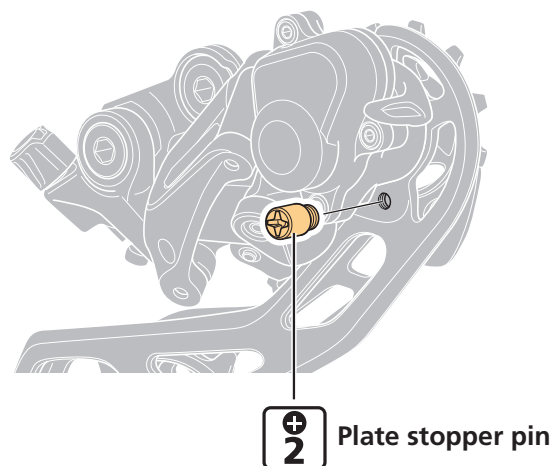
1. Set the switch lever in the OFF position.



### NOTICE

- If operating the switch lever while the plate unit cover is removed, hold the cam unit down with your finger so that it does not slide out.

2. Remove the plate stopper pin with a cross head screwdriver.

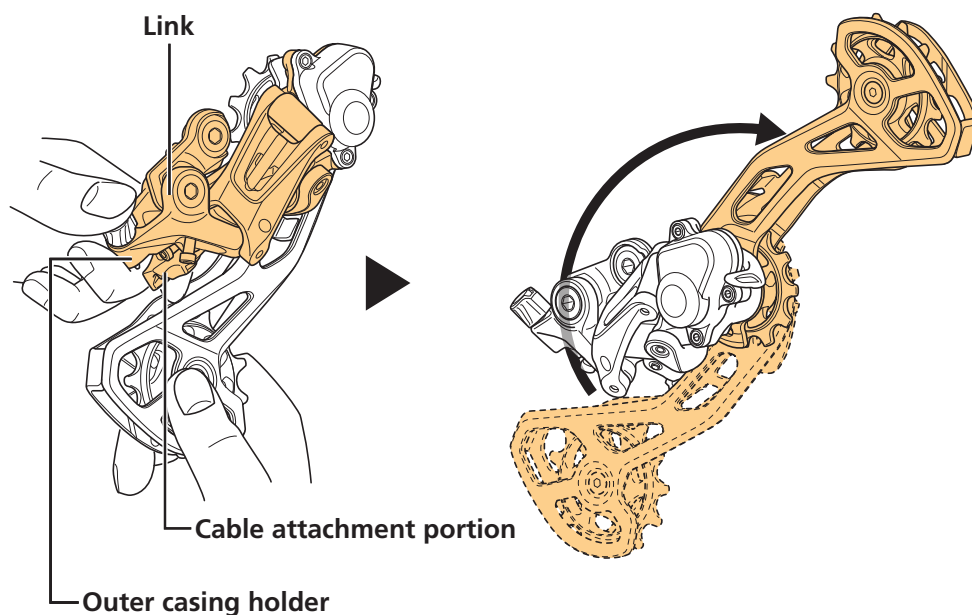
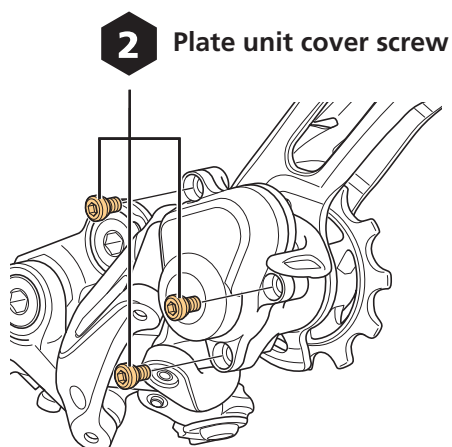


**NOTICE**

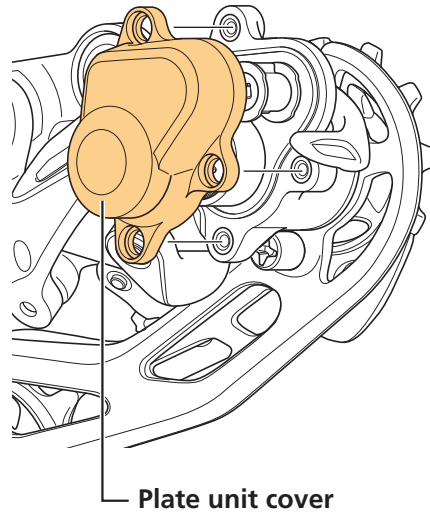
- Hold the plate and rear derailleur body firmly when working, as there is spring tension applied to the plate.

**3. Turn the plate to loosen the plate tension spring.**

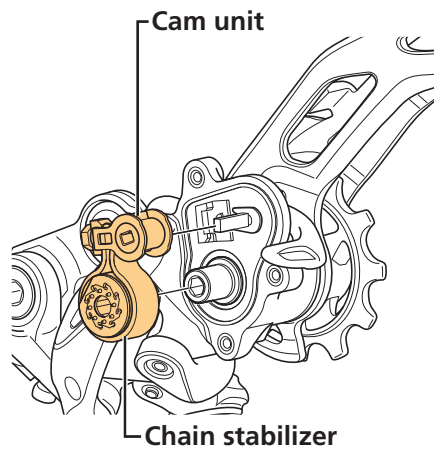
As shown in the figure, squeeze the outer casing holder and cable attachment portion together to move the link and turn the plate.

**4. Remove the plate unit cover screws.**

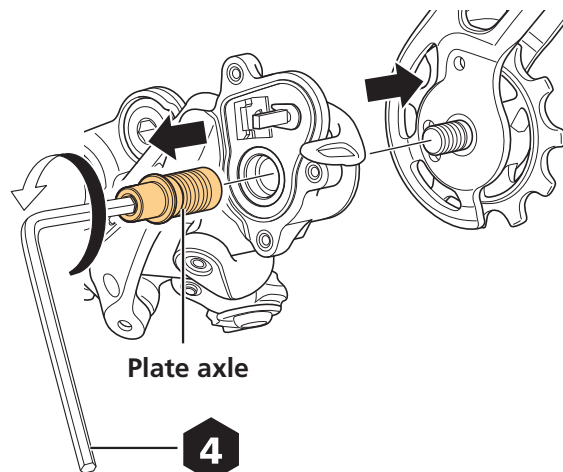
## 5. Remove the plate unit cover.



## 6. Remove the chain stabilizer and cam unit.



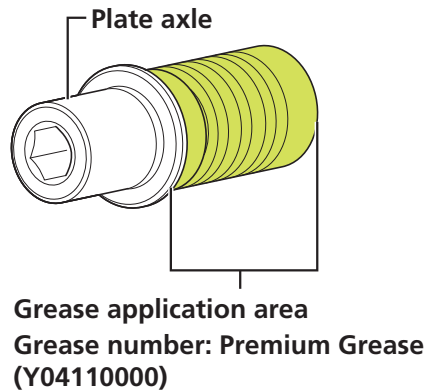
## 7. Remove the plate axle.



## Installation

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

### 1. Apply the dedicated grease to the plate axle.

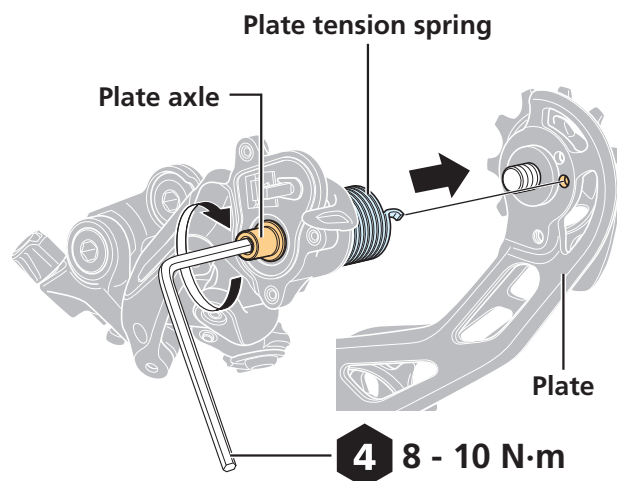


#### NOTICE

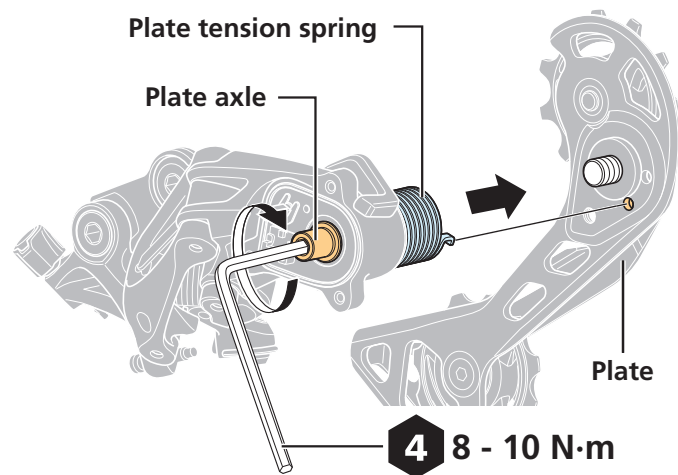
- Do not apply grease outside of the application area indicated above. If grease is applied here, it will get inside the roller clutch and friction will be lost.

### 2. Insert the plate axle, then fit the tip of the plate tension spring in the hole of the plate.

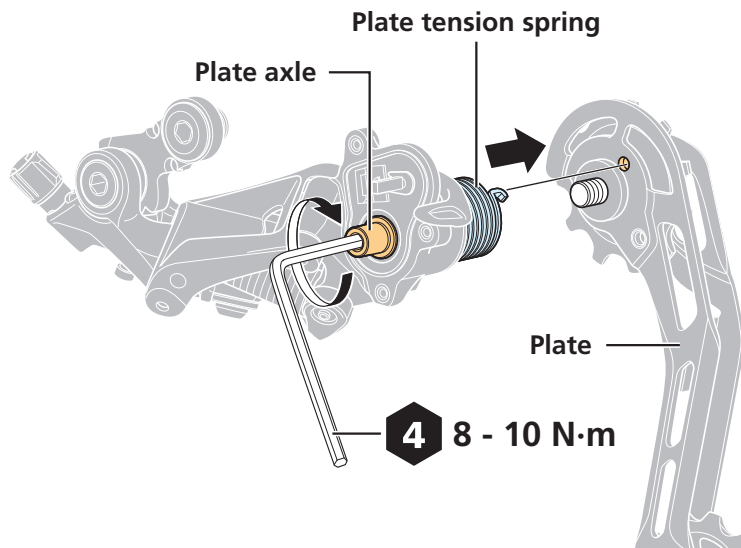
RD-RX810



**RD-RX812**

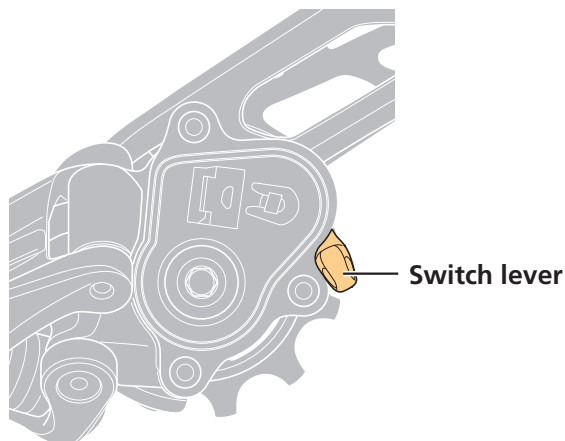


**RD-RX400**



**3. Check that the switch lever is in the OFF position.**

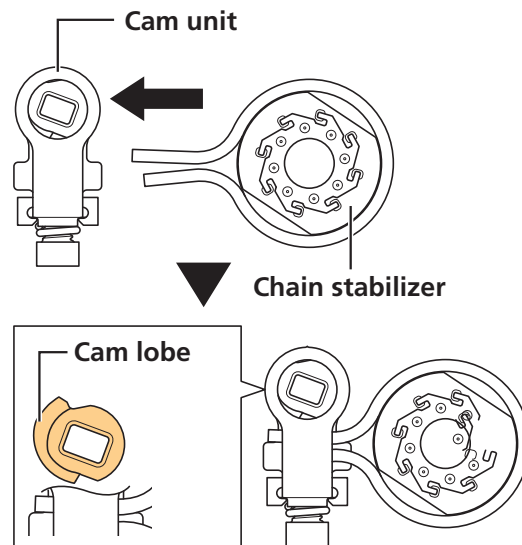
If the switch lever is in the ON position, be sure to set it to the OFF position.





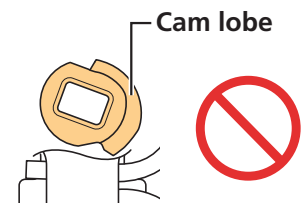
#### 4. Set the chain stabilizer into the cam unit as shown in the figure.

Check that the cam lobe of the cam unit is in the position shown in the figure.



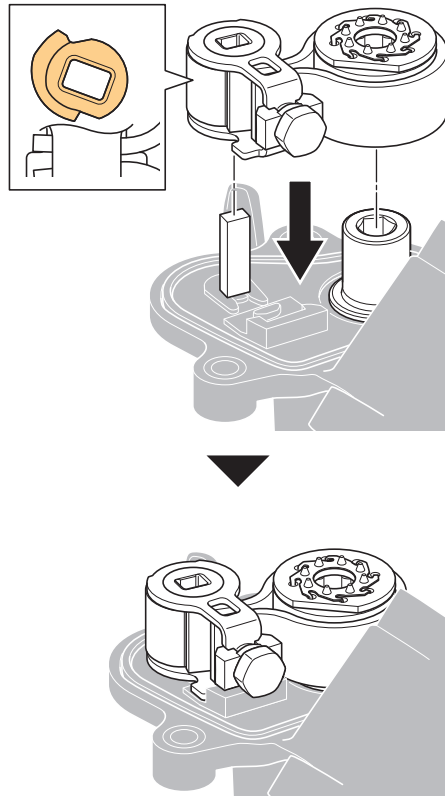
#### NOTICE

- Ensure the cam unit is installed with the cam lobe in the correct position. Do not install it in the position shown in this figure.



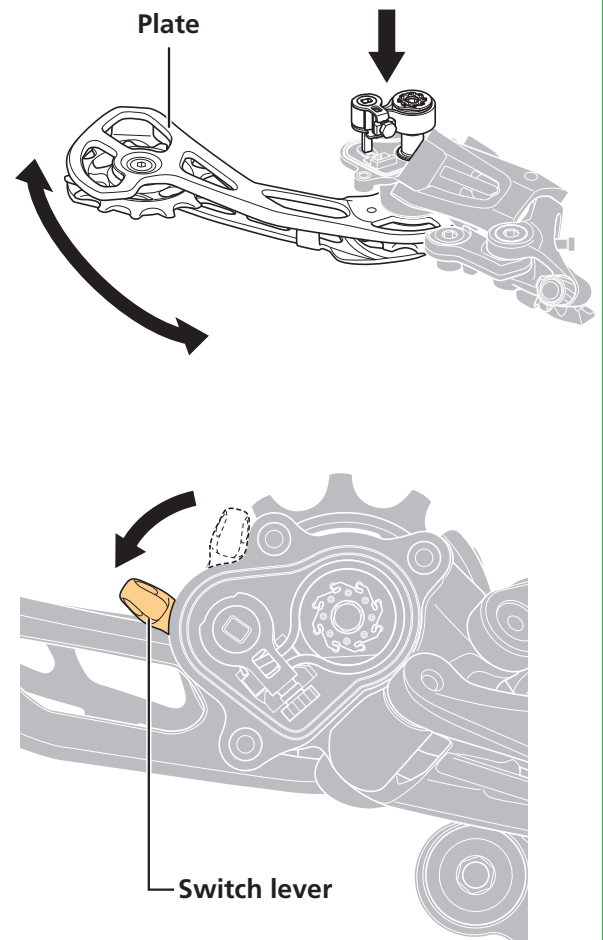
## 5. Install the cam unit and chain stabilizer.

Pay attention to the positioning of the cam lobe of the cam unit.

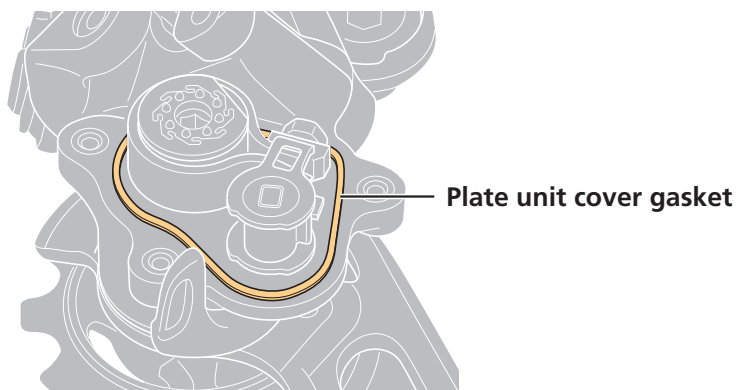


**TECH TIPS**

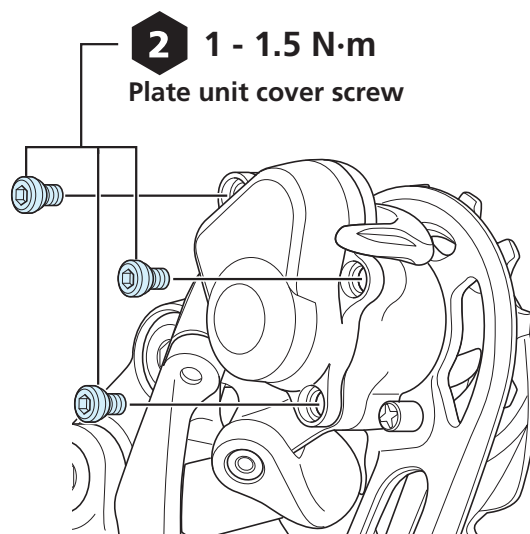
- When installing, it helps to move the plate back and forth while pushing on the cam unit and chain stabilizer.
- If there is resistance when moving the switch lever to the ON position, the components are installed correctly. If there is no resistance, check the position of the cam lobe of the cam unit then reinstall the components.

**6. Install the plate unit cover gasket.**

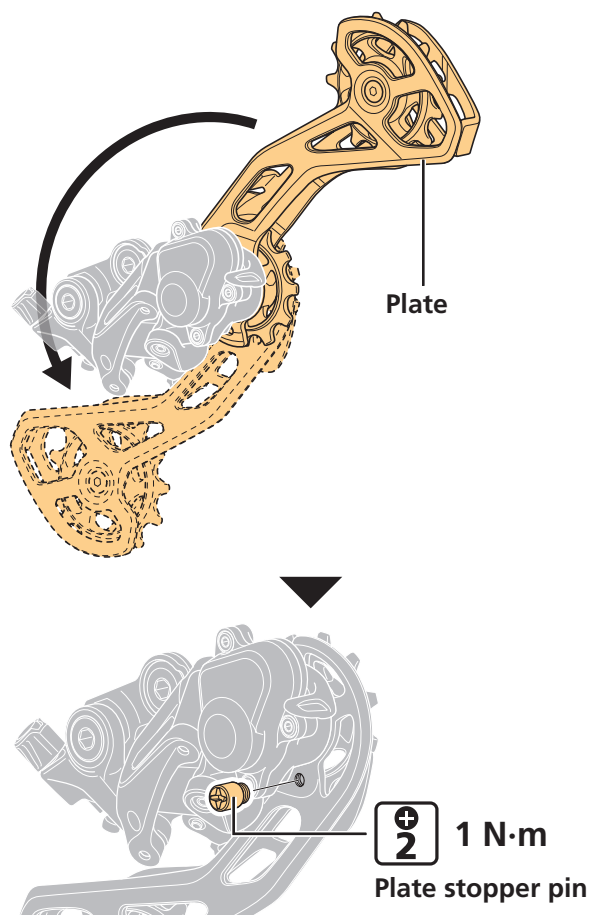
Check that it is installed along the groove in the plate unit.



## 7. Install the plate unit cover screws.



## 8. Twist the plate, install the plate stopper pin.



### NOTICE

- Hold the plate and rear derailleur body firmly when working, as there is spring tension applied to the plate.

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

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