

# Dealer's Manual

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

# Rear Derailleur

## **XTR**

RD-M9000

## **DEORE XT**

RD-M8000

# CONTENTS

<b>IMPORTANT NOTICE .....</b>	<b>3</b>
<b>TO ENSURE SAFETY.....</b>	<b>4</b>
<b>LIST OF TOOLS TO BE USED.....</b>	<b>6</b>
<b>INSTALLATION.....</b>	<b>8</b>
Installation of the rear derailleur.....	8
<b>ADJUSTMENT .....</b>	<b>11</b>
Stroke adjustment.....	11
Installation of the chain.....	12
Securing the cable.....	13
Using the end adjust bolt .....	17
SIS adjustment.....	18
Adjusting friction .....	20
<b>MAINTENANCE.....</b>	<b>23</b>
Replacing the plate and the plate tension spring.....	23
Applying grease to the chain stabilizer .....	28
Replacement of the pulley .....	29

## 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.

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

The following instructions must be observed at all times in order to prevent personal injury and physical damage to equipment and surroundings. The instructions are classified according to the degree of danger or damage which may occur if the product is used incorrectly.

 **DANGER**

Failure to follow the instructions will result in death or serious injury.

 **WARNING**

Failure to follow the instructions could result in death or serious injury.

 **CAUTION**

Failure to follow the instructions could cause personal injury or physical damage to equipment and surroundings.

## TO ENSURE SAFETY

### WARNING

- **Be sure to follow the instructions provided in the manuals when installing the product.**  
It is recommended to use genuine Shimano parts only. If parts such as bolts and nuts become loose or damaged, the bicycle may suddenly fall over, which may cause serious injury.  
In addition, if adjustments are not carried out correctly, problems may occur, and the bicycle may suddenly fall over, which may cause serious injury.
-  Be sure to wear safety glasses or goggles to protect your eyes while performing maintenance tasks such as replacing parts.
- 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 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.

### NOTE

#### 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 cap are installed before riding the bicycle.
- If gear shifting operations do not feel smooth, wash the derailleur and lubricate all moving parts.
- If looseness in the links is so great that gear shifting adjustments cannot be made, replace the derailleur.
- 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.
- Grease the inner cable and the inside of the outer casing before use to ensure that they slide properly.  
Do not let dust adhere to the inner cable. If the grease on the inner cable is wiped off, the application of SIS SP41 grease (Y04180000) is recommended.
- Use an outer casing [OT-SP41] and a cable guide (SM-SP17/SP18) for smooth operation.
- Use an 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.
- If gear shifting adjustments cannot be carried out, check that the rear fork ends are aligned. Check whether the cable is lubricated and clean, and if the outer casing is too long or short.
- Periodically clean the derailleur and lubricate all moving parts (mechanism and pulleys).
- Depending on the model, the guide pulley has arrows on it to indicate the direction of rotation. Install the guide pulley so that the arrows are pointing counterclockwise when looking at the outer side of the derailleur.
- If you hear abnormal noise as a result of looseness 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**

## LIST OF TOOLS TO BE USED

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

Tool		Tool		Tool	
	2mm hexagon wrench		4mm hexagon wrench		Screwdriver[#2]
	3mm hexagon wrench		5mm hexagon wrench		Hexalobular[#30]

# INSTALLATION

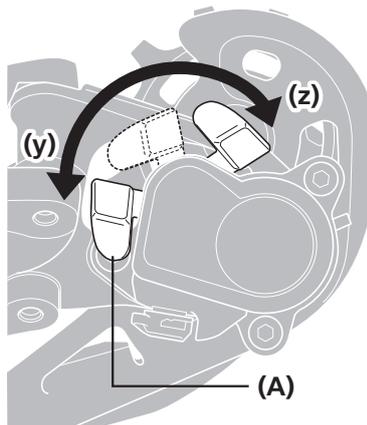
# INSTALLATION

## ■ Installation of the rear derailleur

### Standard type

#### Lever switch setting

1



Make sure that the lever switch is in the OFF position.

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

**(y)** ON  
**(z)** OFF

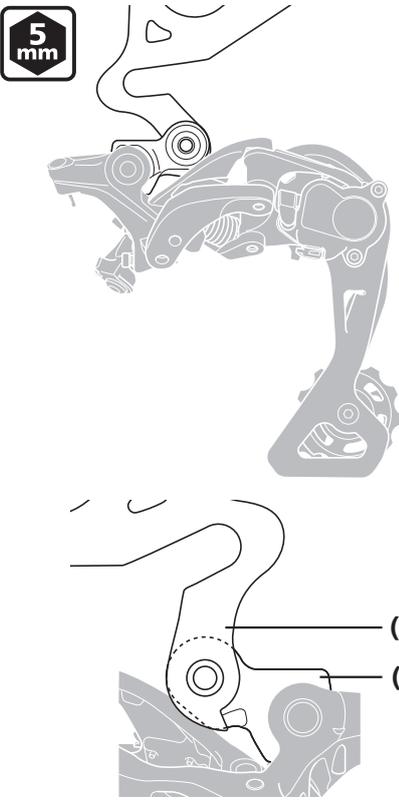
**(A)** Lever switch



**TECH TIPS**

The shape differs depending on the model.

2



Install the rear derailleur.

**(A)** Fork end

**(B)** Bracket

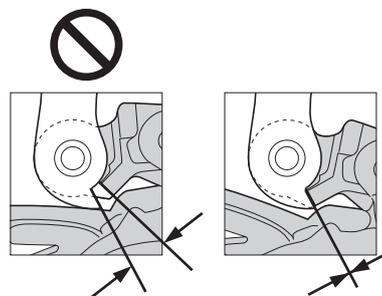
#### Tightening torque



**8 - 10 N·m**

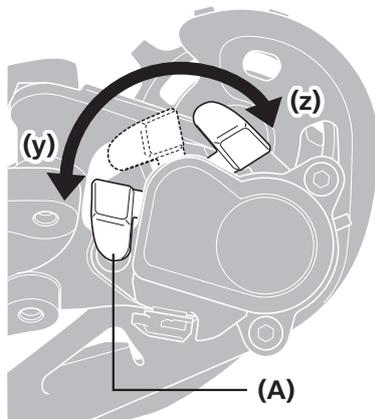
#### NOTE

Periodically check that there is no gap between the fork end and the bracket as shown in the illustration. If there is a gap between these two parts, problems with gear shifting performance may occur.



## Direct mount type

### Lever switch setting



Make sure that the lever switch is in the OFF position.

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

**(y)** ON

**(z)** OFF

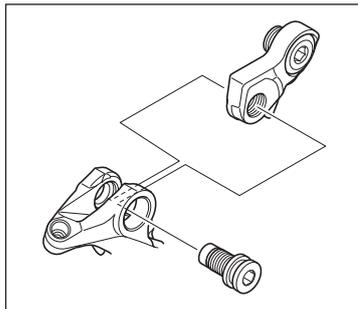
**(A)** Lever switch



**TECH TIPS**

The shape differs depending on the model.

### Replacing with a direct mount type



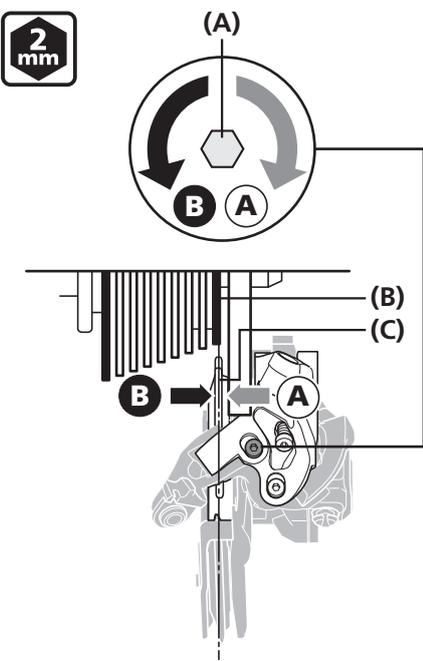
Remove the bracket axle.

# ADJUSTMENT

# ADJUSTMENT

## ■ Stroke adjustment

### Top adjustment

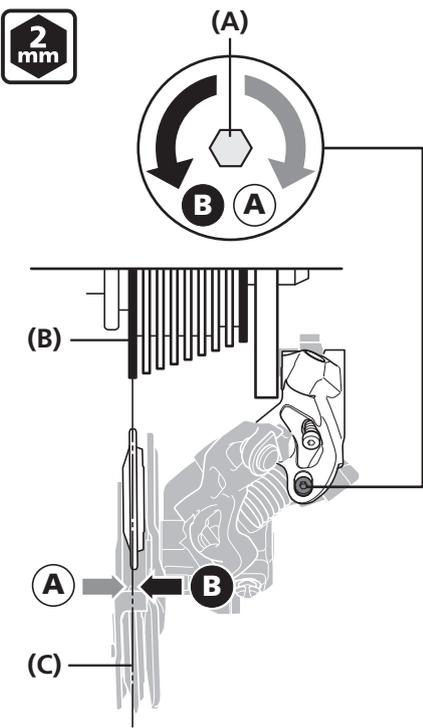


The diagram shows a top-down view of the adjustment mechanism with a 2mm gap indicated. A circular inset shows the adjustment screw (A) being turned to align with the smallest sprocket (B). A side view shows the guide pulley (C) positioned over the sprocket (B).

Turn the top adjustment screw to position the guide pulley over the outer line of the smallest sprocket when seen from the rear side.

- (A)** Top adjustment screw
- (B)** Smallest sprocket
- (C)** Guide pulley

### Low adjustment



The diagram shows a top-down view of the adjustment mechanism with a 2mm gap indicated. A circular inset shows the low adjustment screw (A) being turned to align with the largest sprocket (B). A side view shows the guide pulley (C) positioned directly under the largest sprocket (B).

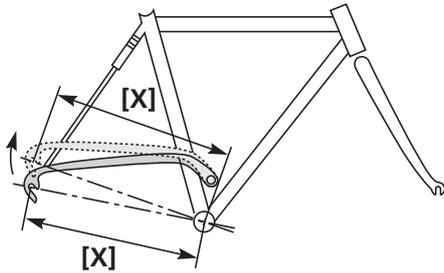
Turn the low adjustment screw to position the guide pulley directly underneath the largest sprocket.

- (A)** Low adjustment screw
- (B)** Largest sprocket
- (C)** Guide pulley

**■ Installation of the chain**

**Chain length**

**1**

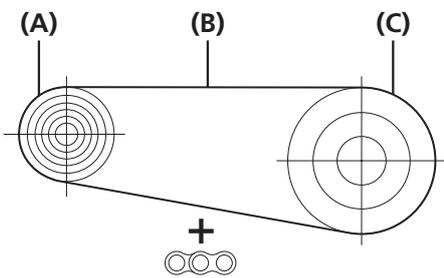


The length of [X] will vary depending on the movement of the rear suspension.

Consequently, an excessive load may be placed on the drive system if the chain length is too short.

The rear suspension operates and stops when [X] reaches its greatest extension.

**2**



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

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

- (A)** Largest sprocket
- (B)** Chain
- (C)** Largest chainring

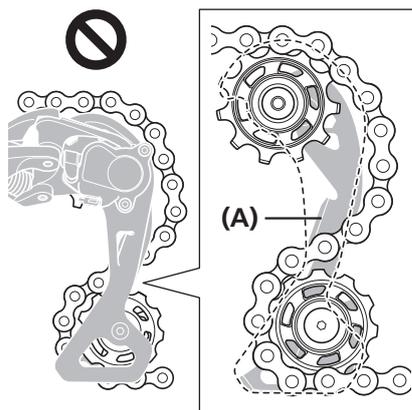
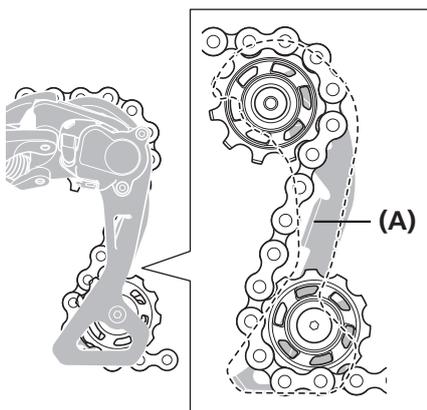
**NOTE**

If there is a lot of movement in the rear suspension, the slack in the chain may not be taken up properly when the chain is on the smallest chainring and smallest sprocket. Add 2 links (with the chain on the largest sprocket and the largest chainring).



**TECH TIPS**

The same chain length checking method applies to the triple front gear, the double front gear, and the single front gear.



- (A)** Chain derailment prevention plate

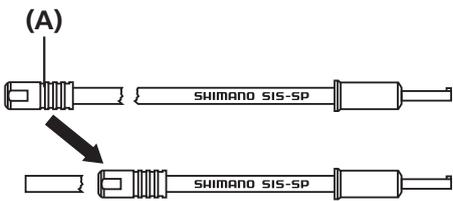
**NOTE**

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.

**■ Securing the cable**

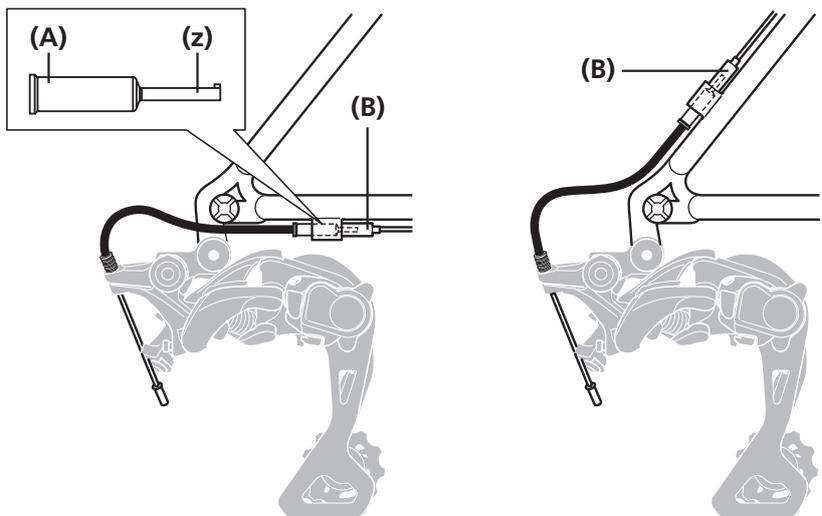
**Cutting the outer casing**

**1**  When cutting the outer casing, cut the end opposite to the end with the marking.  
After cutting the outer casing, make the end round so that the inside of the hole has a uniform diameter.

**2**  After cutting, attach the same sealed outer cap to the end.

**(A)** Sealed outer cap

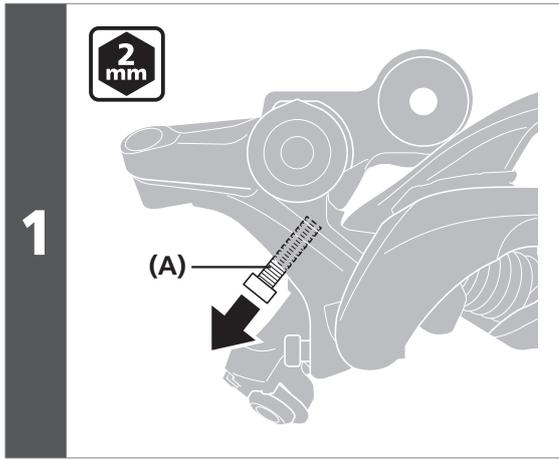
Install the sealed outer cap with tongue and the rubber shield onto the outer casing stopper of the frame.

**3**  **(A)** Sealed outer cap with tongue  
**(B)** Rubber shield

**(z)** Be careful not to bend this section.

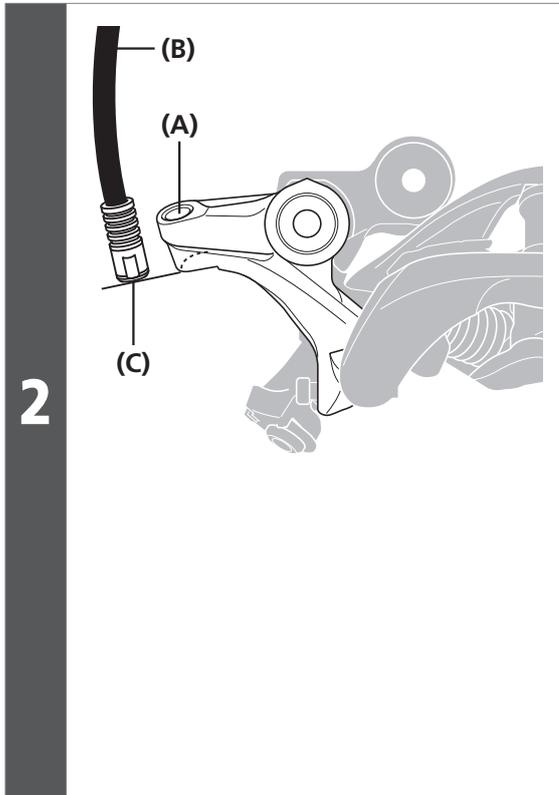
**(A)** Sealed outer cap with tongue  
**(B)** Rubber shield

**Outer casing length**



Loosen the end adjust bolt until it is in the position shown in the illustration.

**(A)** End adjust bolt



Check that there is enough slack in the outer casing.

Next, align the outer casing, on which the sealed outer cap is installed, with the bottom edge of the outer casing holder on the rear derailleur, then cut off any excess length of outer casing.

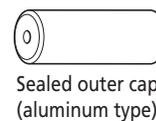
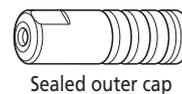
- (A)** Outer casing holder
- (B)** Outer casing
- (C)** Sealed outer cap

**NOTE**

The distance between the outer stopper to the outer casing holder of the rear derailleur may change when the rear suspension moves, so determine the length of the outer casing at the point where this length is at its greatest.

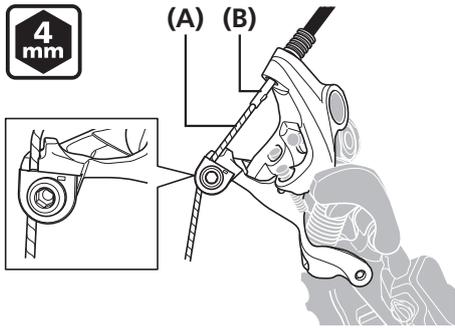
**TECH TIPS**

If the motion of the rear derailleur is extreme, such as in a rear suspension bicycle, replacing it with the aluminum type sealed outer cap provided is recommended.



Connecting and securing the cable

**1**



4 mm

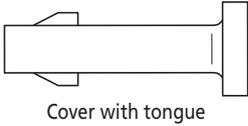
(A) (B)

Connect the inner cable to the rear derailleur.

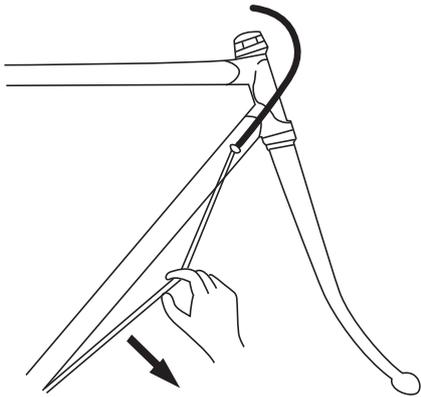
- (A) Inner cable
- (B) Cover with tongue

**NOTE**

- Replacing the cover with tongue is recommended when replacing the inner cable.
- \* RD-M8000 does not have a cover with tongue.
- Fuzz may be generated when the inner cable is installed or when the coating is damaged during use, but this will not affect its functions.

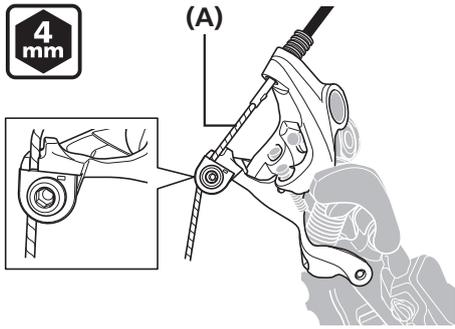


**2**



Remove the initial slack from the cable as shown in the illustration.

**3**



4 mm

(A)

Reconnect the inner cable to the rear derailleur.

Be sure that the cable is securely in the groove.

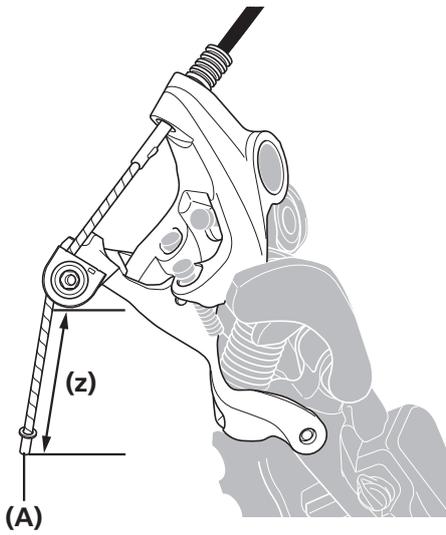
- (A) Inner cable

Tightening torque	
4 mm	6 - 7 N·m

## ADJUSTMENT

### ▶▶ Securing the cable

4



Set the inner cable so that the margin is approximately 30mm or less.

Install the inner end cap.

**(z)** 30mm or less

**(A)** Inner end cap

### NOTE

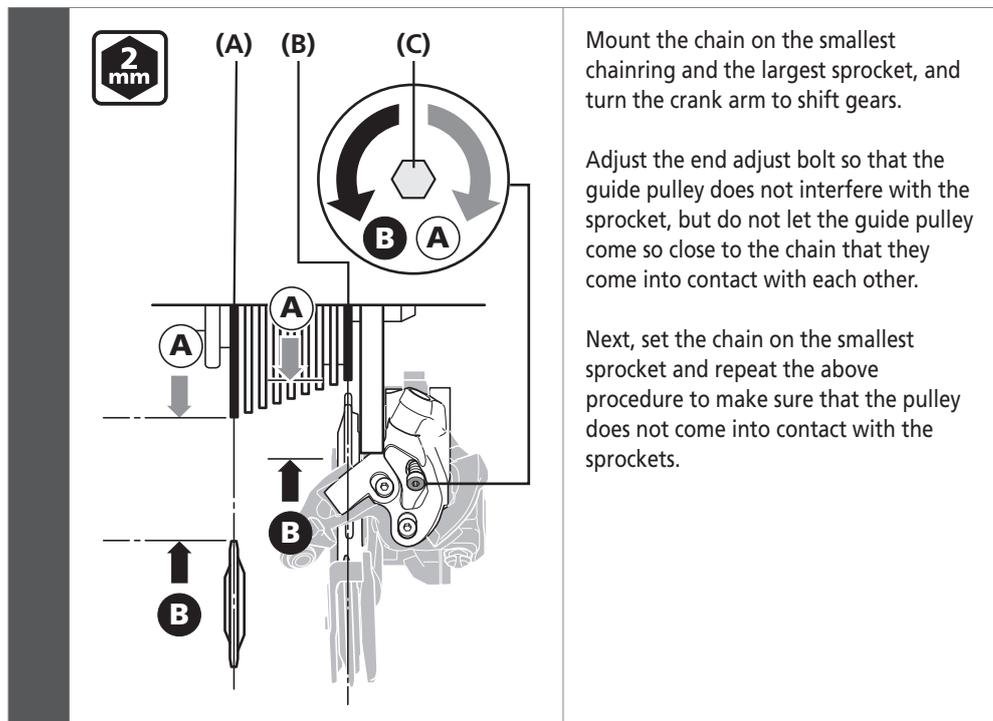
Check that the inner cable does not interfere with the wheel spokes.  
Stop the wheel from turning while carrying out this step.

## ADJUSTMENT

►► Using the end adjust bolt

### ■ Using the end adjust bolt

#### Adjusting the end adjust bolt



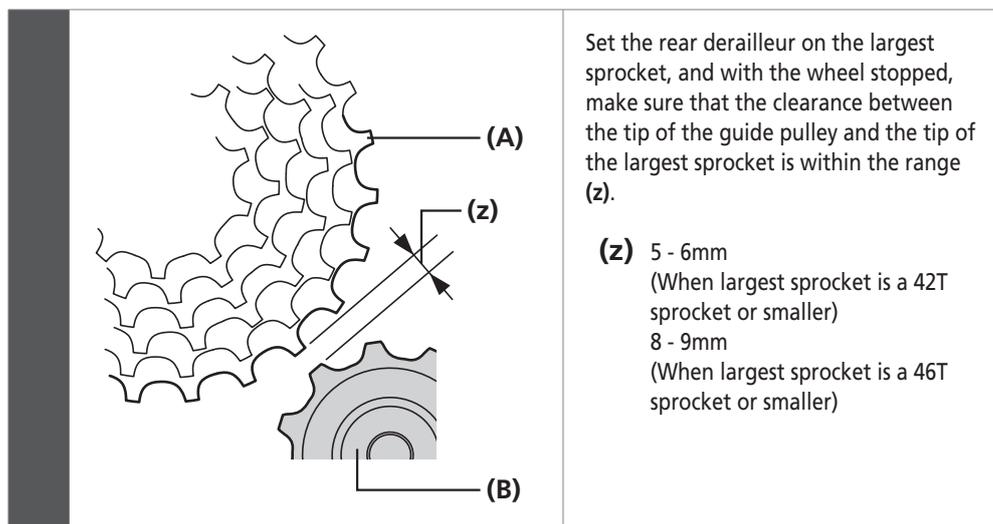
Mount the chain on the smallest chaining and the largest sprocket, and turn the crank arm to shift gears.

Adjust the end adjust bolt so that the guide pulley does not interfere with the sprocket, but do not let the guide pulley come so close to the chain that they come into contact with each other.

Next, set the chain on the smallest sprocket and repeat the above procedure to make sure that the pulley does not come into contact with the sprockets.

- (A) Largest sprocket
- (B) Smallest sprocket
- (C) End adjust bolt

#### Checking the distance between the largest sprocket and the guide pulley



Set the rear derailleur on the largest sprocket, and with the wheel stopped, make sure that the clearance between the tip of the guide pulley and the tip of the largest sprocket is within the range (z).

- (z) 5 - 6mm  
(When largest sprocket is a 42T sprocket or smaller)
- 8 - 9mm  
(When largest sprocket is a 46T sprocket or smaller)

- (A) Largest sprocket
- (B) Guide pulley

#### NOTE

Check the distance between the largest sprocket and the guide pulley with the rear suspension at its greatest extension.

## ADJUSTMENT

### ▶▶ SIS adjustment

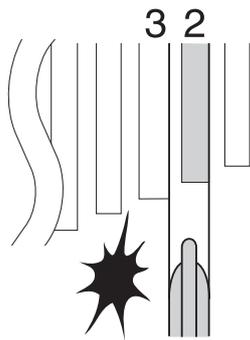
## ■ SIS adjustment

### Confirming positioning on gear

**1** Move the lever switch to the OFF position.

**2** Operate the shifting lever several times to move the chain to the 2nd sprocket counting from the smallest sprocket.  
Then, while operating the lever just enough to close the gap in the lever, turn the crank arm.

**3**

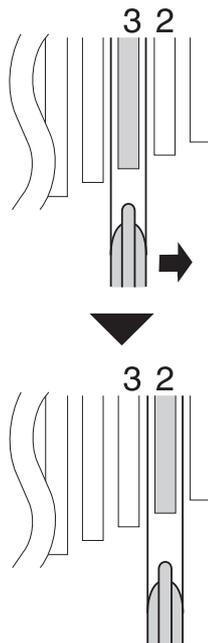
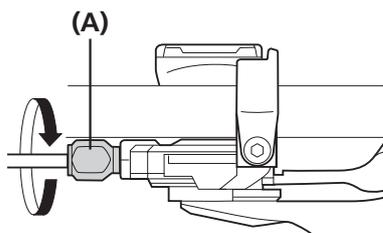


The best setting is when the shifting lever is operated just enough to close the gap in the lever and the chain touches the 3rd sprocket counting from the smallest sprocket and makes noise.

### Adjusting SIS

#### When the chain shifts to the 3rd sprocket from the smallest sprocket

Tighten the cable adjustment barrel until the chain returns to the 2nd sprocket counting from the smallest sprocket. (Clockwise)



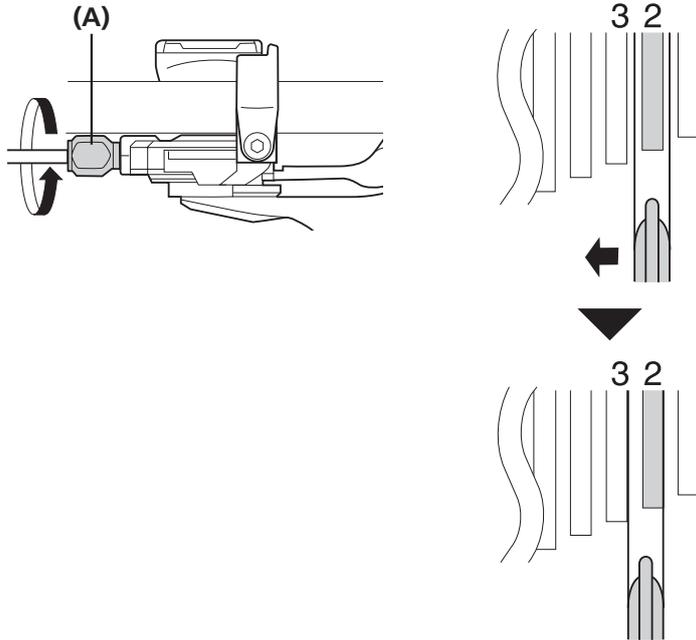
**(A)** Cable adjustment barrel

## ADJUSTMENT

### ▶▶ SIS adjustment

#### When no sound at all is generated

Loosen the cable adjustment barrel until the chain touches the 3rd sprocket counting from the smallest sprocket and makes a noise. (Counterclockwise)



1

Return the lever to its original position (the position where the lever is at the 2nd sprocket setting counting from the smallest sprocket and it has been released) and then turn the crank arm clockwise.

2

Operate the lever to change gears, and check that no noise occurs in any of the gear positions.

3

Set the lever switch to ON, and then ride the bicycle normally and check that there are no problems with gear shifting.

4

(A) Cable adjustment barrel

#### NOTE

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

## ADJUSTMENT

### ▶▶ Adjusting friction

## ■ Adjusting friction

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

### Friction adjustment

**1** Move the lever switch to the ON position.

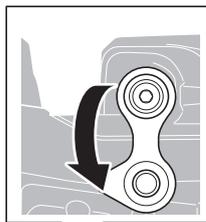
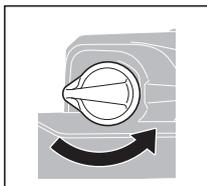
Remove the plate unit cap by hand as shown in the illustration.

(A) Plate unit cap

For RD-M9000

For RD-M9000/M8000

**2**



(A)

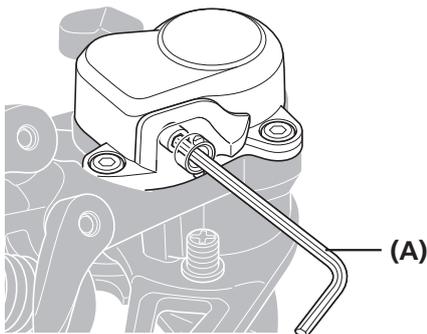
(A)



Turn the friction adjustment bolt with a hexagon wrench to adjust the friction.

(A) 2mm hexagon wrench

**3**



(A)

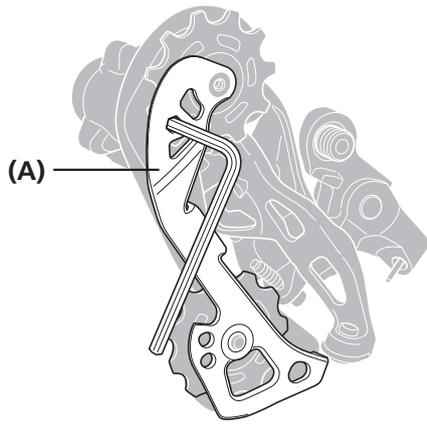
#### NOTE

Do not adjust the friction with torques of 0.25 N·m or higher. Turning the bolt excessively may cause damage.

## ADJUSTMENT

### ▶▶ Adjusting friction

4



Insert a hexagon wrench or hexalobular wrench into the left plate and check the friction torque.

(A) Left plate

#### Friction torque



3.5 - 5.4 N·m

#### NOTE

Check the shape of the hole and use a tool that fits into the hole in the left plate.

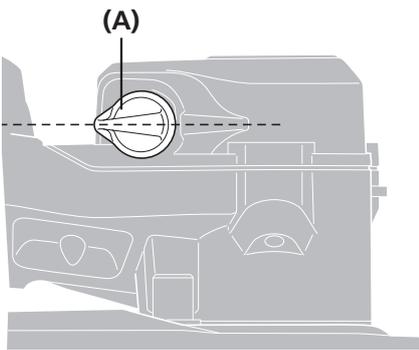
Tool specifications:

- 5mm hexagon wrench
- Hexalobular[#30]

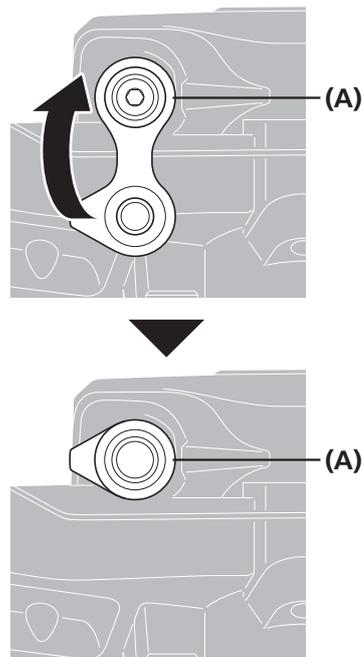
5

Install the plate unit cap so that it is in the position shown in the illustration.

For RD-M9000



For RD-M9000/M8000



(A) Plate unit cap

# MAINTENANCE

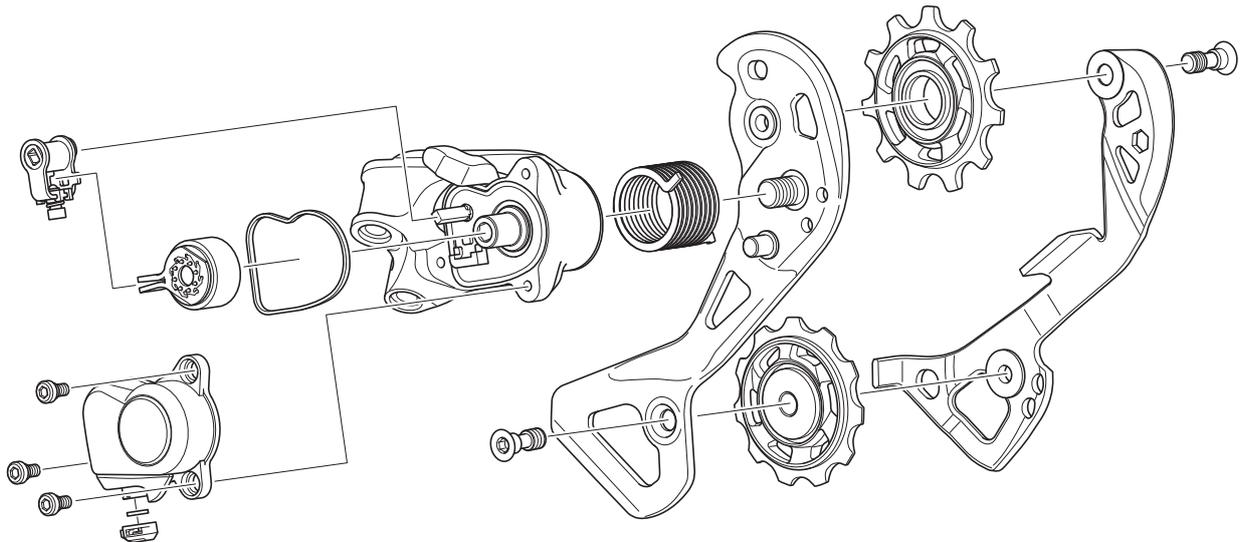
# MAINTENANCE

## ■ Replacing the plate and the plate tension spring

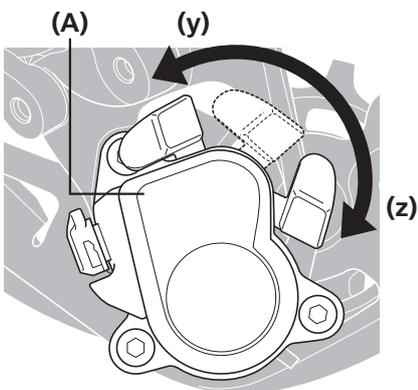
### Removal

RD-M9000/RD-M8000

Exploded view



**1**



Make sure that the lever switch is in the OFF position.

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

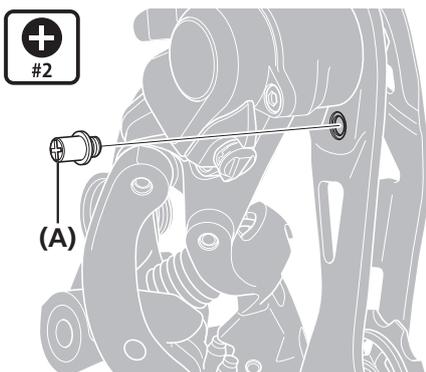
- (y) ON
- (z) OFF

**(A)** Friction unit

**NOTE**

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

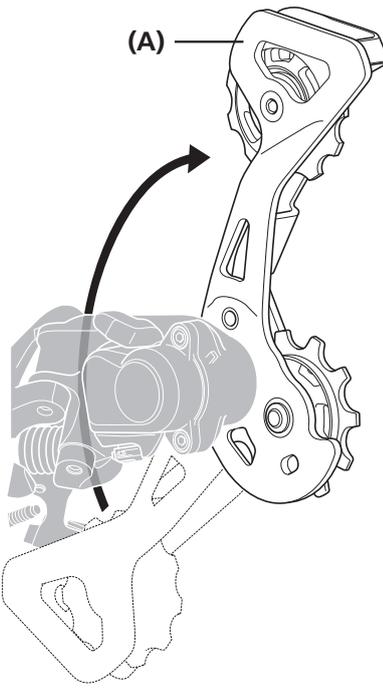
**Tightening torque**



**1 N·m**

▶▶ Replacing the plate and the plate tension spring

**3**

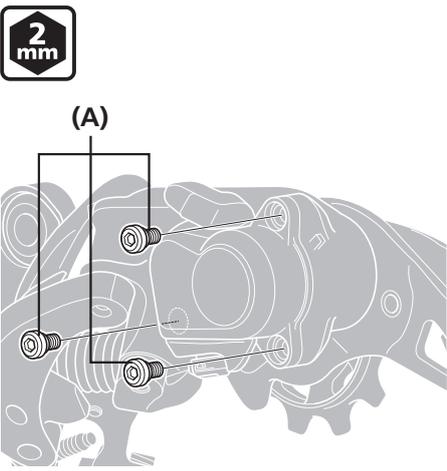


(A)

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

(A) Plate

**4**



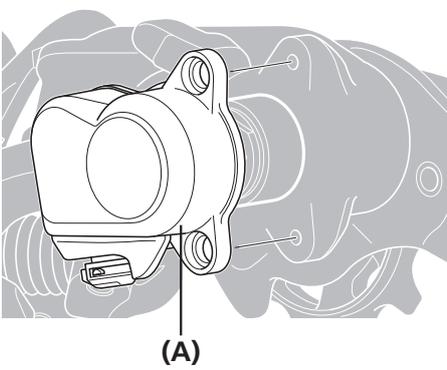
2 mm

(A)

Remove the plate unit cover bolts.

(A) Plate unit cover bolts

**5**



(A)

Remove the plate unit cover.

(A) Plate unit cover

▶▶ Replacing the plate and the plate tension spring

**6**

(A)  
(B)

Remove the cam unit and the chain stabilizer.

- (A) Cam unit
- (B) Chain stabilizer

**7**

4 mm  
(A)

Remove the plate axle.

- (A) Plate axle

Tightening torque	
4 mm	8 - 10 N·m

**Installation**

Carry out the removal procedure in reverse.

**1**

(A)  
(z) (y)

Apply grease to the plate axle.

- (y) Grease application area  
Grease number:  
Premium grease (Y04110000)
- (z) A

- (A) Plate axle

**NOTE**

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**

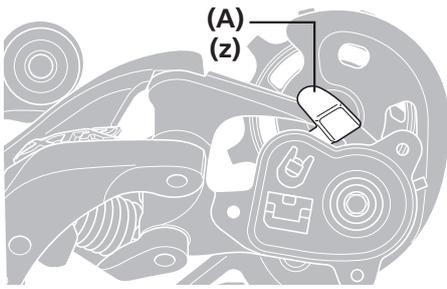
4 mm  
(A) (B)

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

▶▶ Replacing the plate and the plate tension spring

**3**



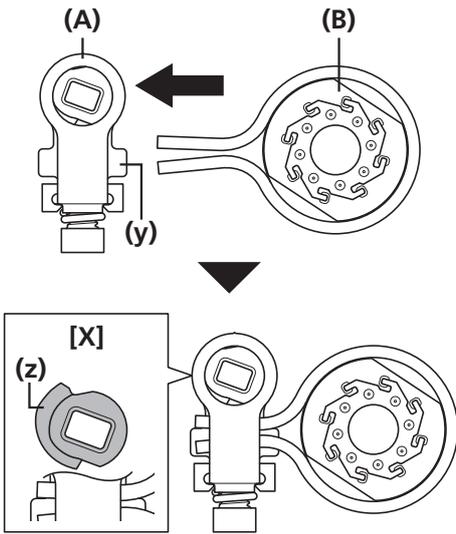
Make sure that the lever switch is in the OFF position.

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

**(z)** OFF position

**(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

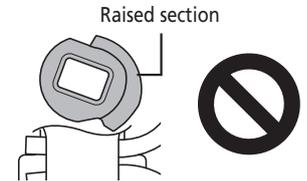
**(z)** Raised section

**(A)** Cam unit

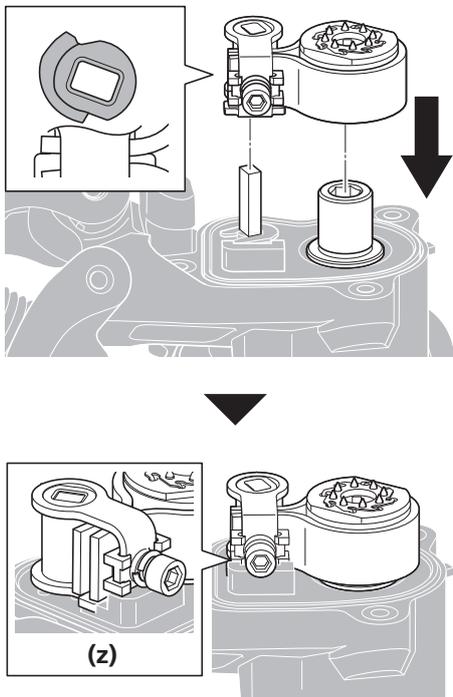
**(B)** Chain stabilizer

**NOTE**

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



**5**



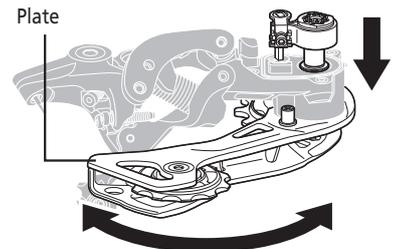
Align the holes in the cam unit and chain stabilizer with the projections on the plate unit and attach as in the illustration.

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

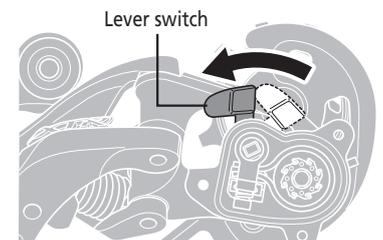
**(z)** Components when attached correctly

**TECH TIPS**

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

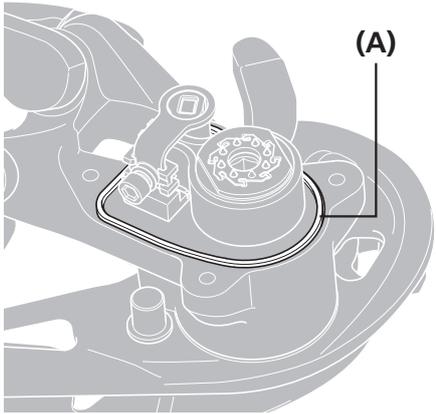


- If there is resistance when moving the lever switch to the ON position, the components are attached correctly. If there is no resistance, check the position of the raised section of the cam unit and then reattach the components.



▶▶ Replacing the plate and the plate tension spring

**6**

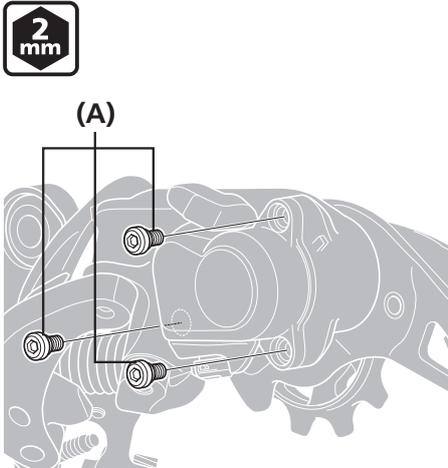


**(A)**

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

**(A)** Plate unit cover gasket

**7**



**(A)**

Install the plate unit cover bolts.

**(A)** Plate unit cover bolts

Tightening torque	
	1 - 1.5 N·m

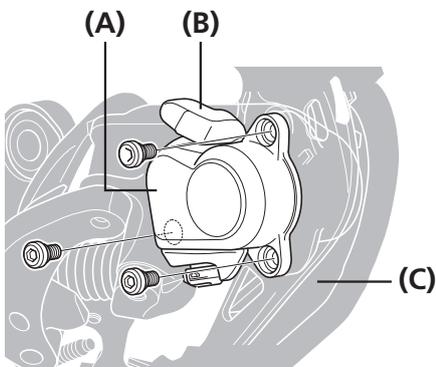
## ■ Applying grease to the chain stabilizer

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**



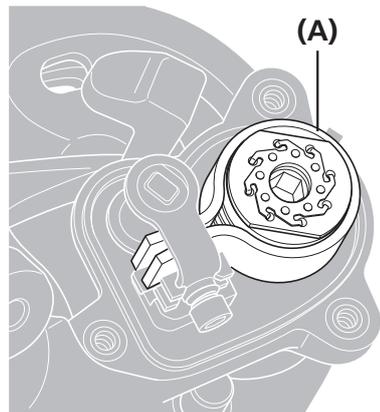
Remove the plate unit cover.

**(A)** Plate unit cover

**(B)** Lever switch

**(C)** Plate unit

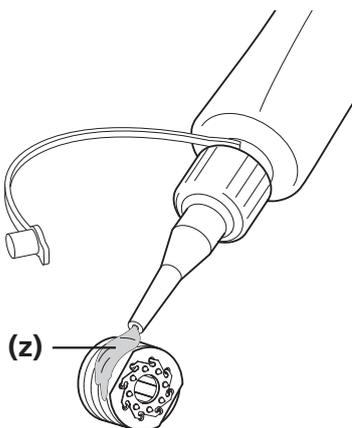
**3**



Remove the chain stabilizer.

**(A)** Chain stabilizer

**4**



Apply grease to the clutch.

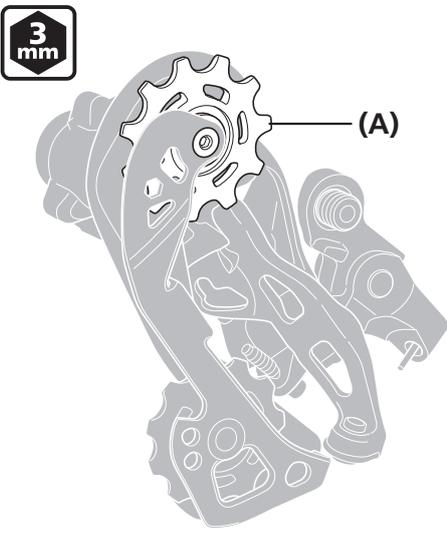
**(z)** Grease number: Y04120800

### NOTE

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.

**■ Replacement of the pulley**

**Guide pulley**



Replace the guide pulley.

**(A)** Guide pulley

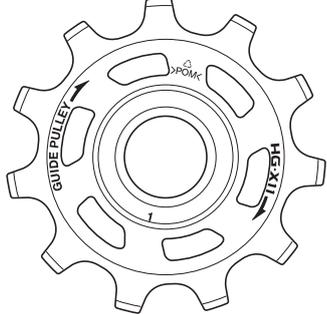
---

Tightening torque	
	2.5 - 5 N·m

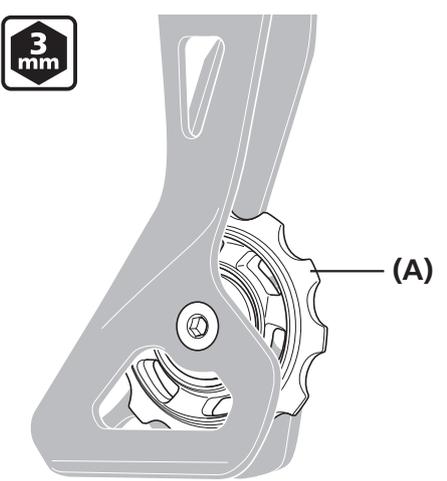
---

**NOTE**

Check the arrow direction on the pulley when installing it.



**Tension pulley**



Replace the tension pulley.

**(A)** Tension pulley

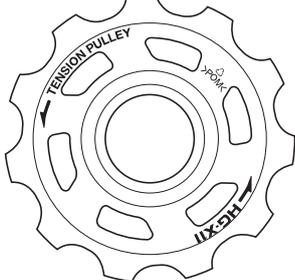
---

Tightening torque	
	2.5 - 5 N·m

---

**NOTE**

Check the arrow direction on the pulley when installing it.



# SHIMANO

## **SHIMANO AMERICAN CORPORATION**

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

## **SHIMANO EUROPE B.V.**

Industrieweg 24, 8071 CT Nunspeet, The Netherlands Phone: +31-341-272222

## **SHIMANO INC.**

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

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

© Jul. 2016 by Shimano Inc. HTR