

Dealer's Manual

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

REAR DERAILLEUR

XTR

RD-M9100

RD-M9120

DEORE XT

RD-M8100

RD-M8120

SLX

RD-M7100

RD-M7120

CONTENTS

CONTENTS	2
IMPORTANT NOTICE	3
TO ENSURE SAFETY	4
LIST OF TOOLS TO BE USED	6
INSTALLATION/REMOVAL	7
Installing the rear derailleur.....	7
ADJUSTMENT	9
Adjusting the stroke on the top side.....	9
Installing the chain.....	9
Checking the chain length.....	10
Connection and securing of the inner cable	13
• Outer casing length.....	13
• Connection and securing of the inner cable	15
Adjusting the stroke on the low side	18
Adjusting the end adjustment screw	19
SIS adjustment.....	20
MAINTENANCE	22
Replacing the pulley	22
Replacing the B-axle	23
Replacing the bumper.....	24
Applying grease to the chain stabilizer.....	25
Adjusting friction	27
• Friction adjustment	27
Replacing the plate, plate tension spring, and switch lever.....	30
• Removal	30
• Installation	34

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, consult a place of purchase or a bicycle dealer for their assistance.

- Make sure to read all owner's 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 owner's manuals and dealer's manuals can be viewed on-line on our website (<http://si.shimano.com>).
- Customers who do not use the internet may have to contact their place of purchase to receive a hard copy of the user's manual.




You may print out a user's manual to hand to your customer or you may need to ask the nearest SHIMANO sales office for a hard copy of the user's manual.

- Please observe the appropriate rules and regulations of the country, state or region in which you conduct your business as a dealer.

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

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

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

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


TO ENSURE SAFETY

WARNING

- **Be sure to follow the instructions provided in the owner's manuals when installing the product.**

It is recommended to use SHIMANO genuine 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 your place of purchase or a distributor. The chain may break, and you may fall.

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 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 sliding portions 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 OT-SP41 outer casing 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 fork dropout is aligned. Check whether the cable is clean and greased, and if the outer casing is too long or short.
- Periodically clean the derailleur and lubricate all moving parts (mechanism and pulleys).
- 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

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
	Screwdriver [#2]
	Hexalobular [#27]
	TL-CT12

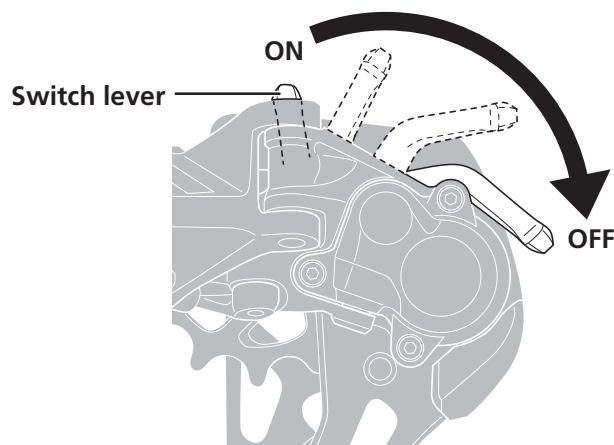
INSTALLATION/REMOVAL

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.

1. Set the switch lever in the OFF position.

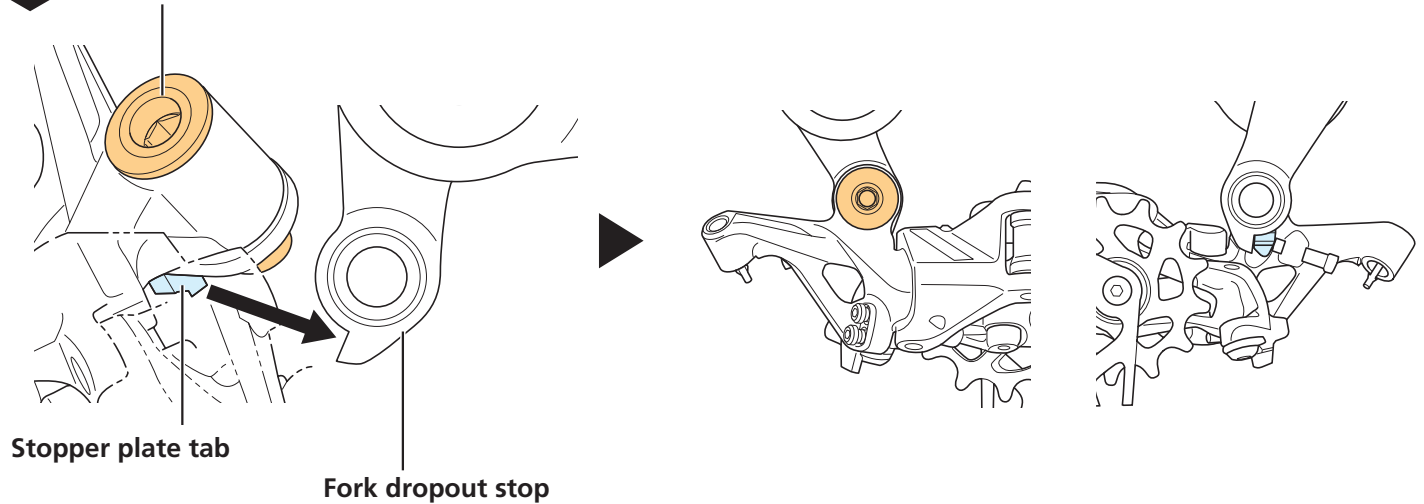


2. Tighten the rear derailleur fixing bolt.

Be careful not to insert rear derailleur fixing bolt in the fork dropout at an angle. In addition, be sure to install the rear derailleur so that the stopper plate tab contacts the B-tension stop, with no gap in between.

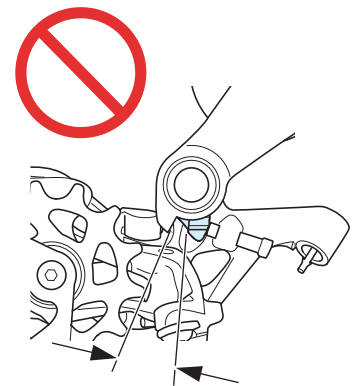
Rear derailleur fixing bolt

5 8 - 10 N·m



NOTICE

- Periodically check to make sure that there is no gap between the B-tension stop and the stopper plate tab. If there is a gap in this location, it may result in a drop in gear shifting performance.

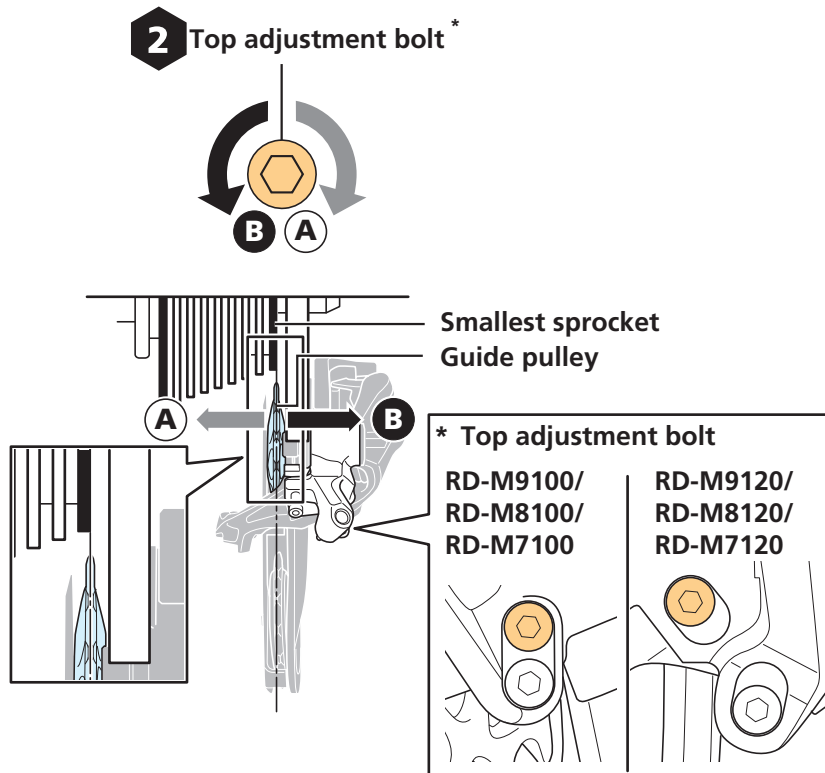


ADJUSTMENT

Adjusting the stroke on the top side

1. Adjust by turning the top adjustment bolt.

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



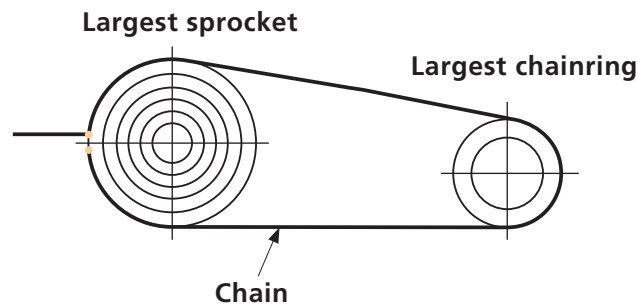
Installing the chain

Refer to the dealer's manual for the chain to install/remove the chain.

Checking the chain length

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

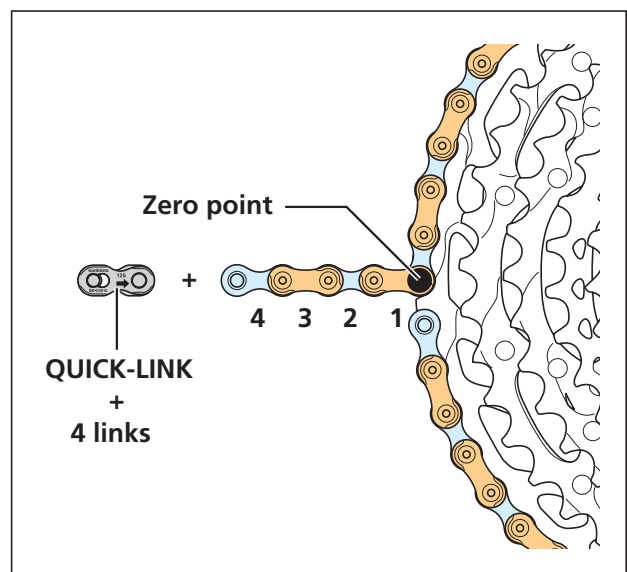
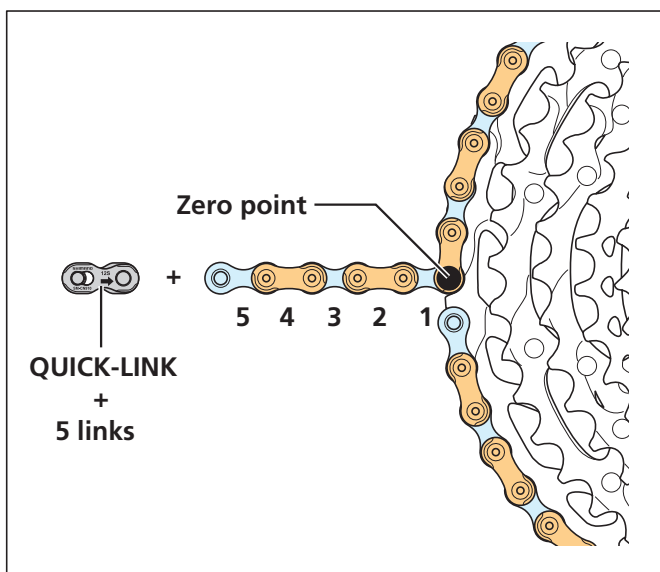
In order to check the length at the rear of the cassette sprocket, mount the chain from the rear of the cassette sprocket as shown in the figure.



2. Check the length of the chain.

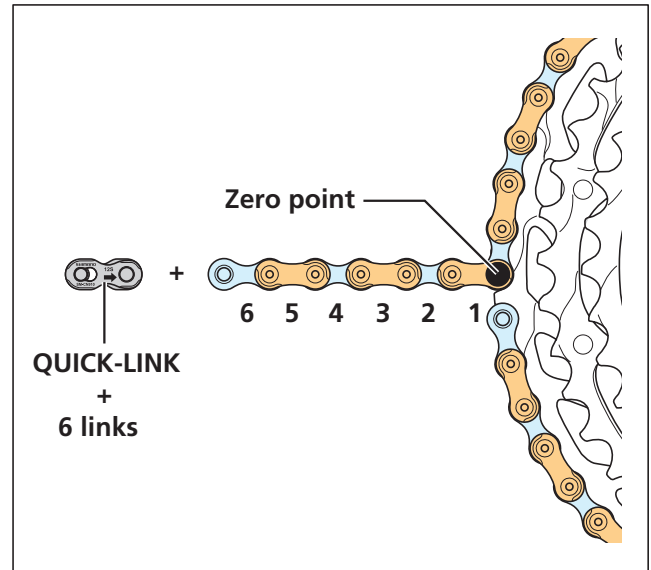
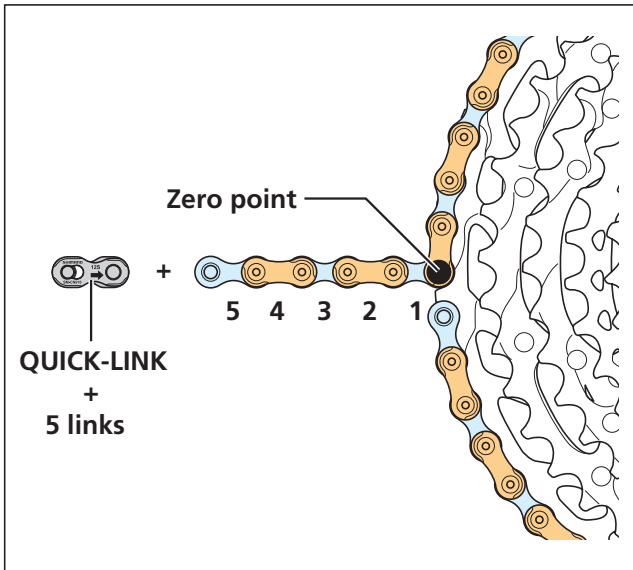
With the zero point set on the largest sprocket as shown in the figure, the proper chain length is equal to the length of the chain with links added according to the bike type.

Hardtail bikes



Full suspension bikes

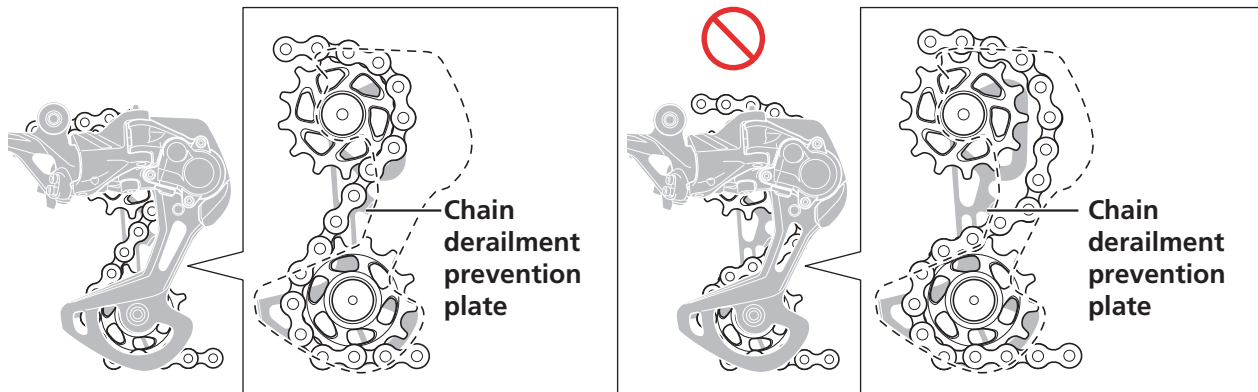
* For full suspension bikes, check the length without any load applied to the suspension.



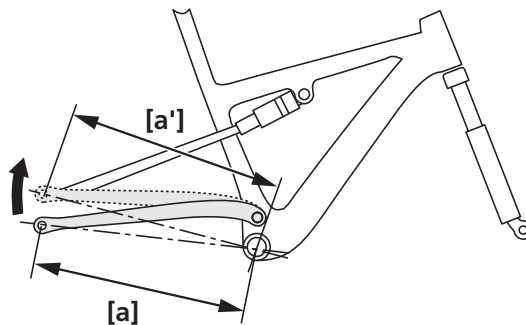
Bike type	Number of links added
Hardtail bikes	4 to 5 links + a QUICK-LINK
Full suspension bikes	5 to 6 links + a QUICK-LINK

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 instead of through the chain derailment prevention plate as shown in the figures.
- If the chain is not passed through the correct position, damage may be caused to the chain or the rear derailleur.



- For full suspension bikes, length [a] will vary according to the movement of the rear suspension. After shifting to the largest chainring and the largest sprocket, make sure that the chain length is not too short when dimension [a] is at its maximum extension. If the length of the chain is too short, an excessive load may be placed on the drive system.

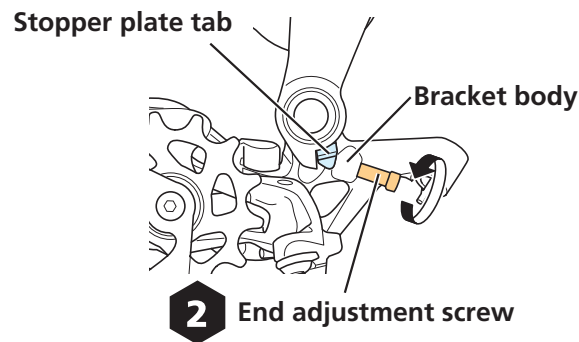


Connection and securing of the inner cable

Outer casing length

1. Loosen the end adjustment screw to the position shown in the figure.

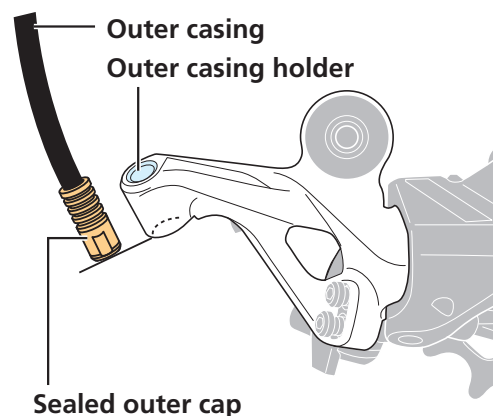
Make sure that the tab of the stopper plate touches the bracket body without leaving a gap.



2. Determine the length of the outer casing.

Align the outer casing to which the sealed outer cap has been fitted with the bottom edge of the outer casing holder on the rear derailleur.

When doing so, make sure to leave enough slack in the outer casing.

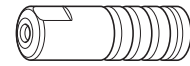


NOTICE

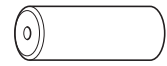
- The length of the outer casing may be insufficient when the rear suspension moves, so determine the length at the point where the length is at its greatest.

TECH TIPS

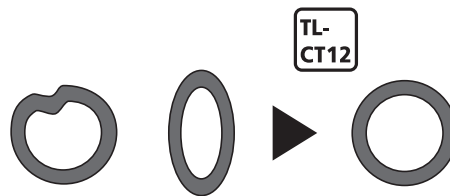
- If the motion of the rear derailleur is extreme, such as in bicycles with a rear suspension, replacing the sealed outer cap with the supplied aluminum type sealed outer cap is recommended.



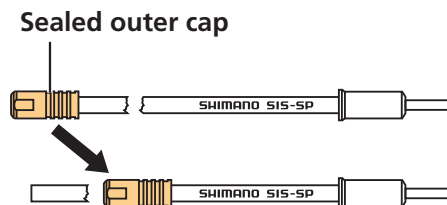
Sealed outer cap

Sealed outer cap
(aluminum type)**3. Cut off any excess outer casing with the cable cutter.**

After cutting, return the outside of the outer casing to a perfect circle so that the inside of the hole has a uniform shape.

**4. Install the sealed outer cap to the end of the outer casing.**

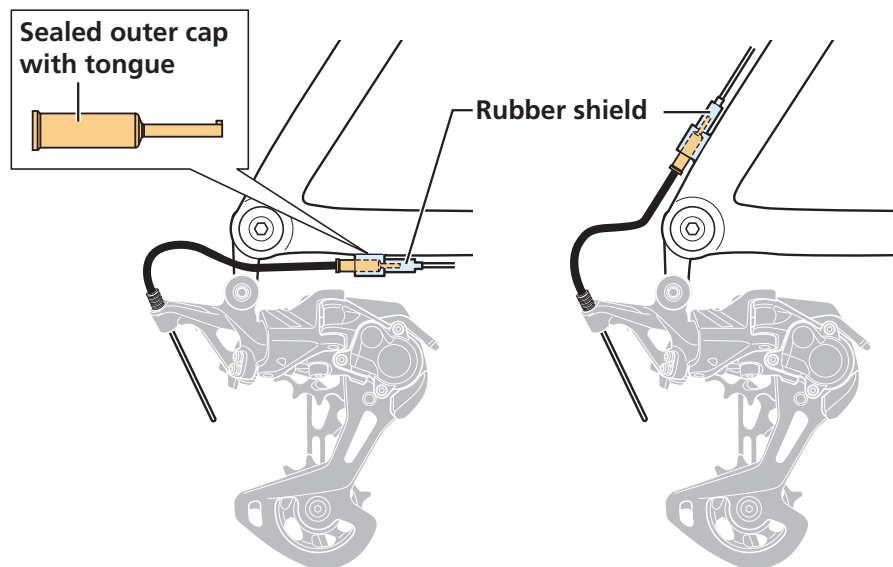
Route the inner cable through the outer casing.



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

For full outer types, this step is not necessary.

Be careful not to bend the tongue.

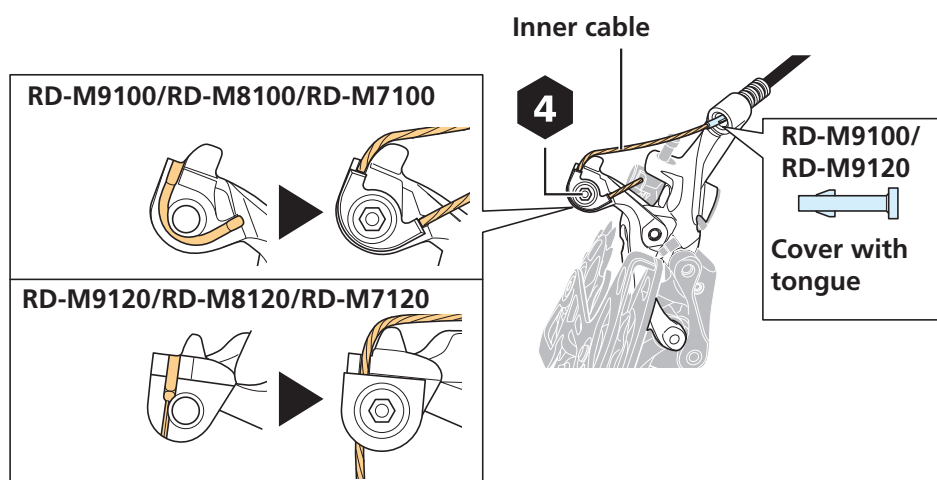


Connection and securing of the inner cable

1. Set the shifting lever in its initial position.

Operate the release lever 11 times or more for a 12-speed or 10 times or more for an 11-speed.

2. Secure the inner cable to the rear derailleur.

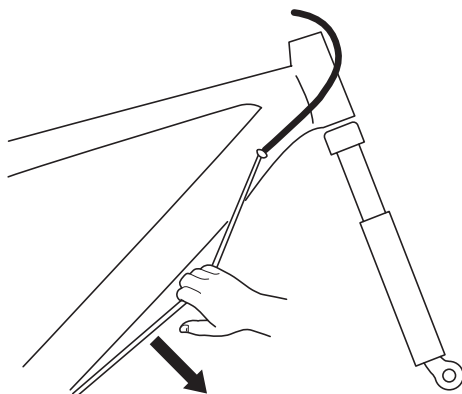


NOTICE

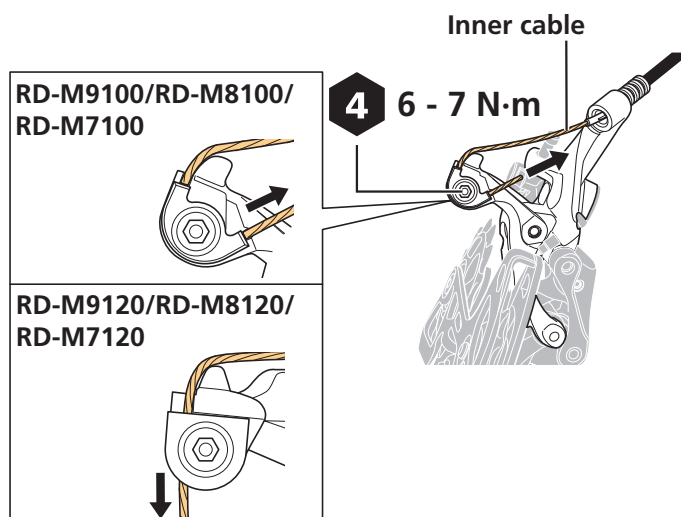
- For RD-M9100/RD-M9120, replacing the cover with tongue is recommended when replacing the inner cable.
- Fuzz may be generated when assembling the inner cable or when the coating is damaged during use, but this will not affect the function of the part.

3. Remove the initial slack from the inner cable as shown in the figure.

For full outer types, secure the rear derailleur so that it will not move, and then operate the main lever several times to remove the initial slack.

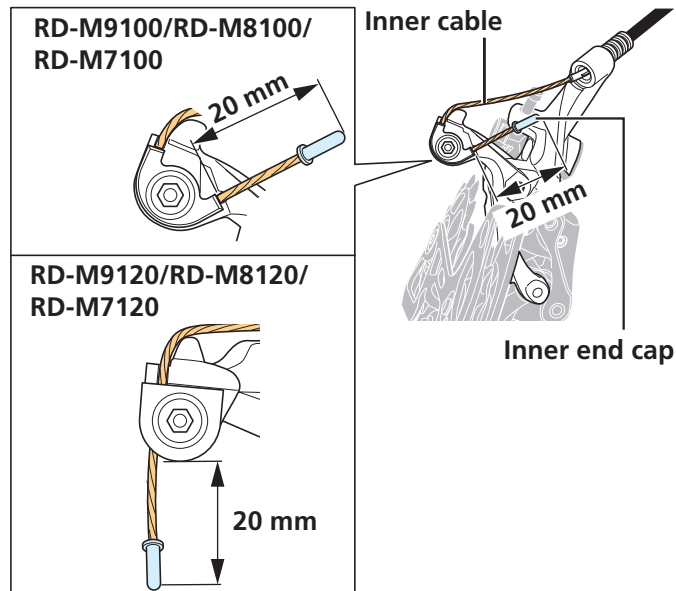
**4. Re-secure the inner cable to the rear derailleur.**

While pulling the inner cable, be sure that it is secured along the groove.



5. Cut the inner cable so that the protruding length is approximately 20 mm.

Install the inner end cap.



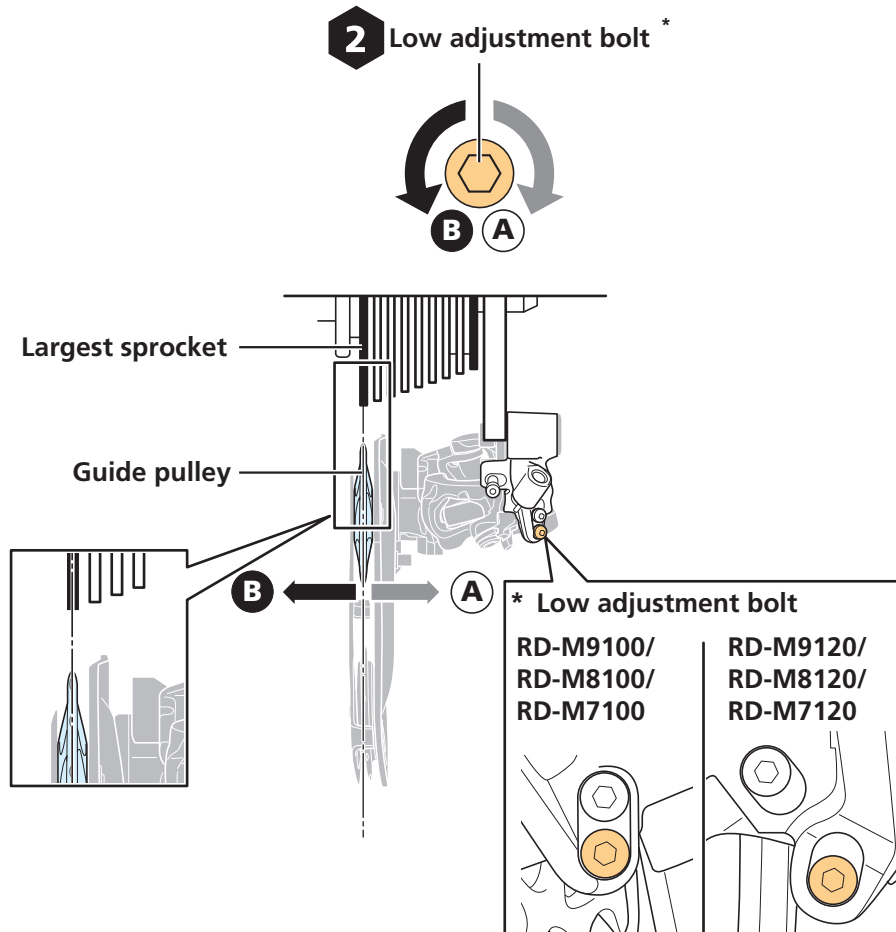
NOTICE

- 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 side

1. Adjust by turning the low adjustment bolt.

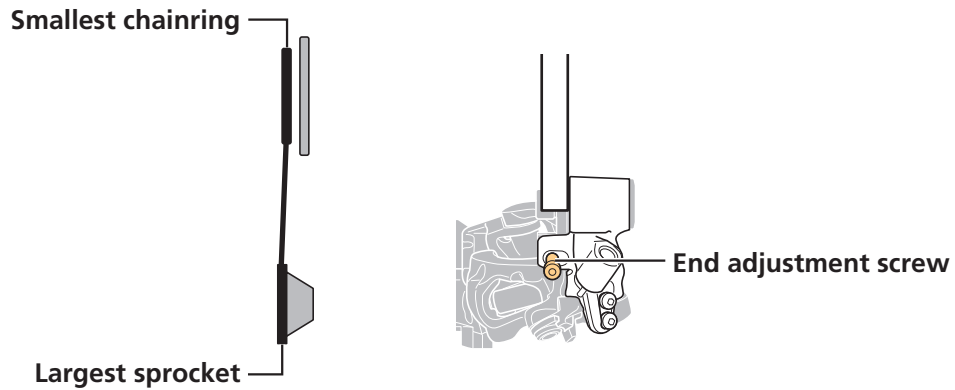
Adjust so that the center of the guide pulley is aligned with the center of the largest sprocket.



Adjusting the end adjustment screw

1. Set the chain on the smallest chainring and the largest sprocket.

Turn the crank arm and shift the gears.



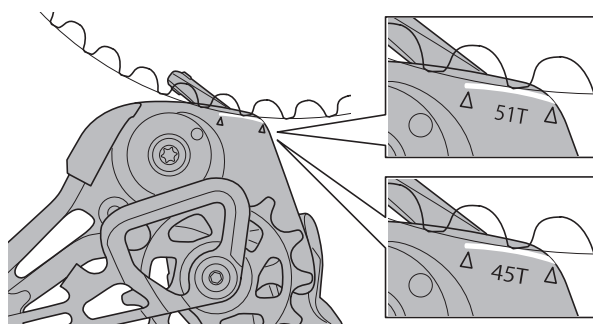
2. Adjust the end adjustment screw.

Adjust it to one of the following settings based on the combination of products being used.

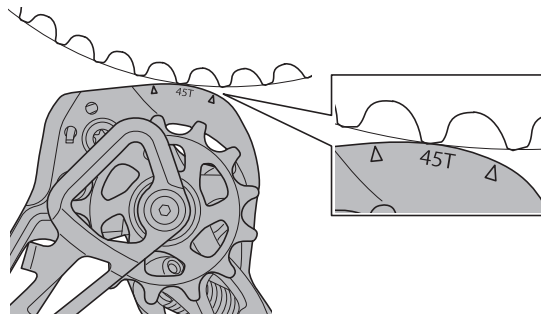
Rear derailleur	Cassette sprocket	
	12-speed, 10 - 45T	12-speed, 10 - 51T
RD-M9100-GS	(A)	-
RD-M9100-SGS/RD-M8100-SGS/ RD-M7100-SGS	-	(A)
RD-M9120-SGS/RD-M8120-SGS/ RD-M7120-SGS	(B)/When using the front chainwheel of a single gear (C)	-

* '-' = (Not compatible)

(A) Align the white line on the inner side of the outer plate with the tip of the highest tooth on the largest sprocket.

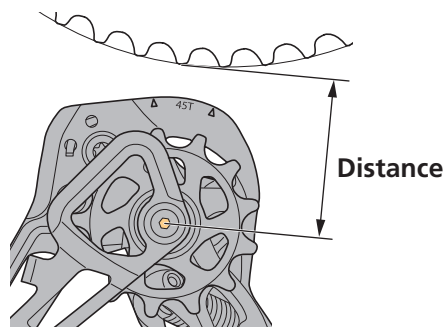


(B) Align the contour of the outer plate and the tip of the highest tooth on the largest sprocket between the triangle marks on the inner side of the outer plate.



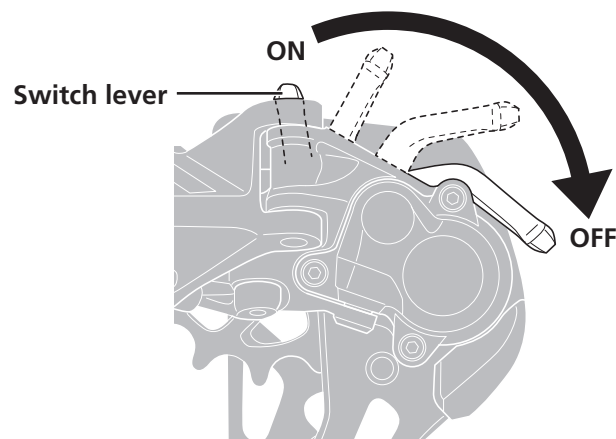
(C) Set the distance between the tip of the highest tooth on the largest sprocket and the center of the guide pulley as listed in the table.

Model	Sprocket	Distance
RD-M9120-SGS/RD-M8120-SGS/ RD-M7120-SGS (Using the front chainwheel of a single gear)	12-speed, 10 - 45T	46 mm



SIS adjustment

1. Set the switch lever in the OFF position.



2. Operate the shifting lever several times to shift the chain to any gear that is five to seven steps from the largest sprocket.

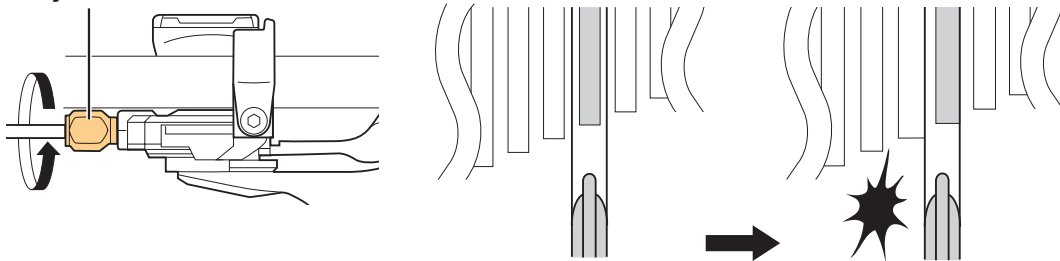
Shift to the largest chainring while turning the crank for bicycles with a front double.

NOTICE

- If the chain touches a sprocket with a large number of teeth in step 2, and it makes noise, tighten the cable adjustment barrel until the noise is no longer present. (Clockwise)

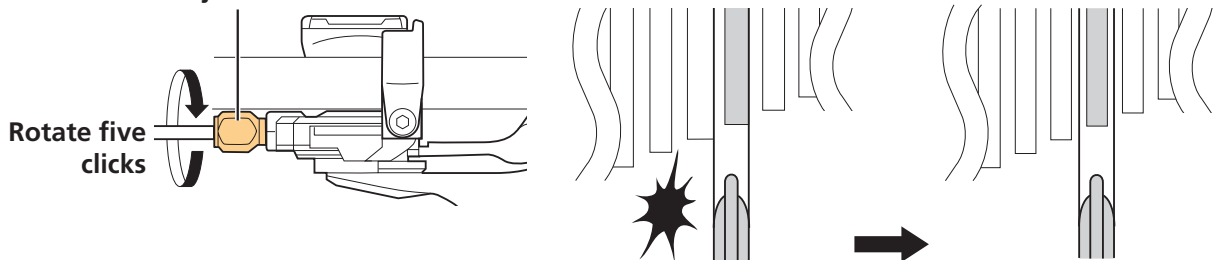
3. Loosen the cable adjustment barrel while turning the crank until there is noise. (Counterclockwise)

Cable adjustment barrel



4. The best setting is when the cable adjustment barrel is rotated five clicks in the tightening direction (clockwise).

Cable adjustment barrel



5. 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.

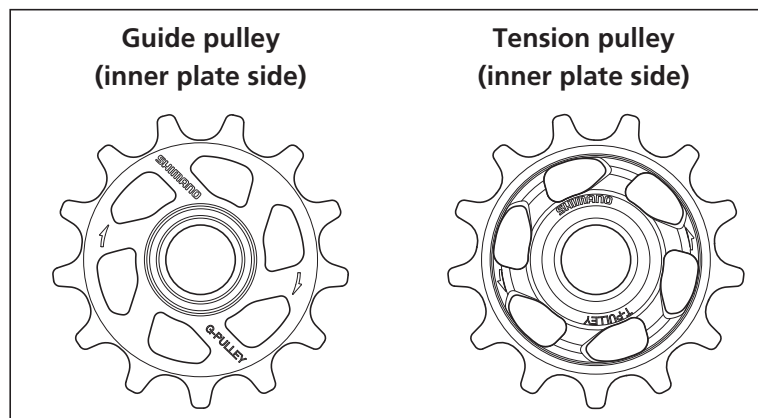
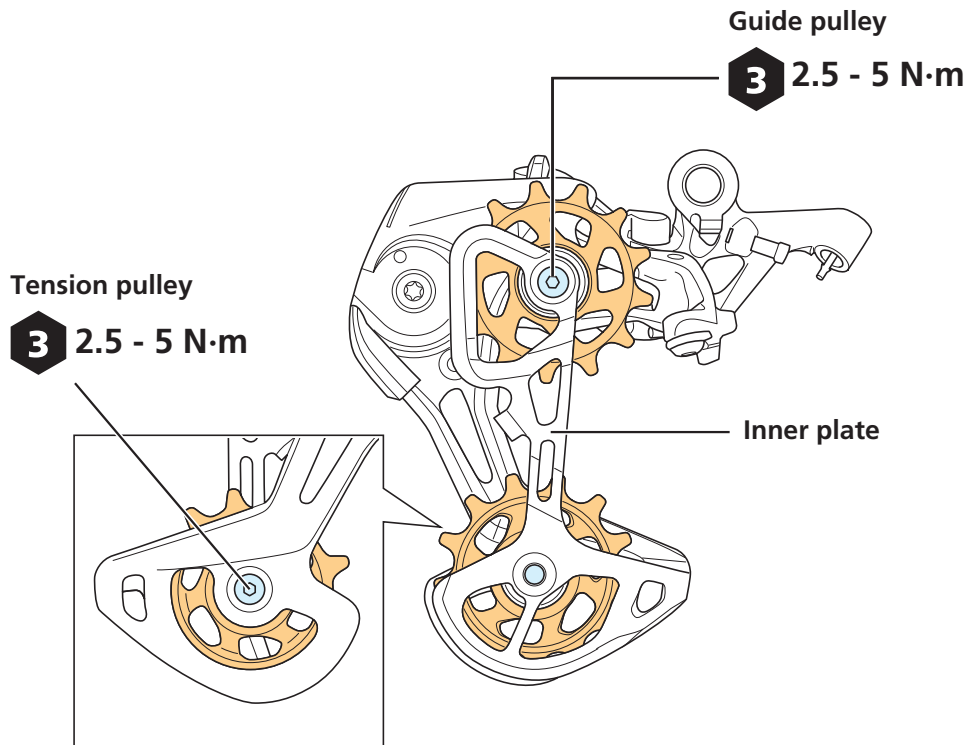
6. Set the switch lever in the ON position, and then check that there are no problems with gear shifting during normal riding conditions.

MAINTENANCE

Replacing the pulley

1. Replace the guide pulley and tension pulley.

Pay attention to the direction of the arrows on the pulleys when installing the pulleys.

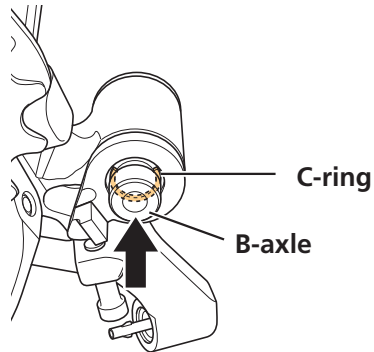


NOTICE

- Depending on the model, the pulleys have arrows on them to indicate the direction of rotation. Install so that the guide pulley moves counterclockwise and the tension pulley moves clockwise when viewed from the outer side of the derailleur.

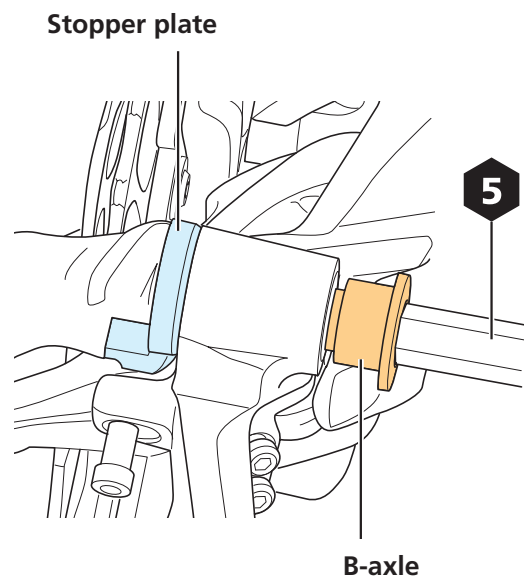
Replacing the B-axle

1. Push the B-axle from the inner side and use a tool such as a slotted screwdriver to widen and remove the C-ring.



2. With the stopper plate held down, remove the B-axle by turning it with a hexagon wrench.

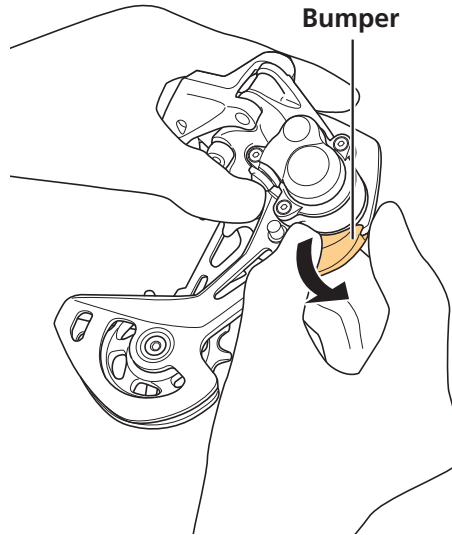
Replace the B-axle with a new one and install it in the reverse order from the removal procedure.



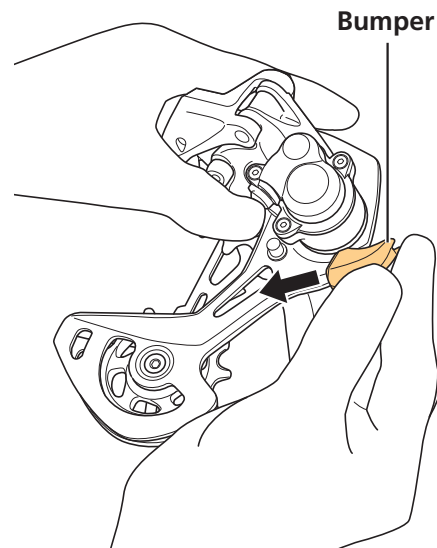
Replacing the bumper

There is no bumper on RD-M9120/RD-M8120/RD-M7120.

1. Remove the bumper so that it flips forward as shown in the figure.



2. Install a new bumper by sliding it on from the side as shown in the figure.

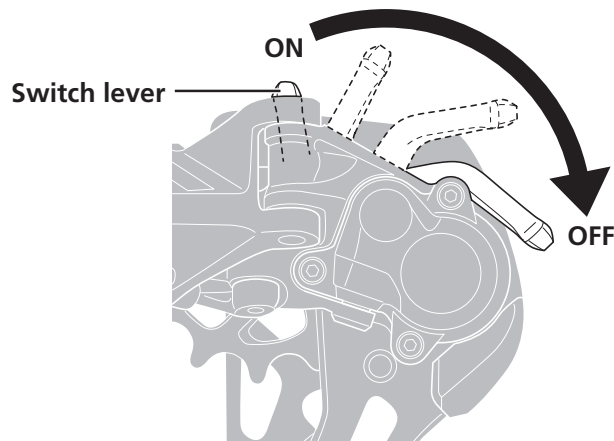


Applying grease to the chain stabilizer

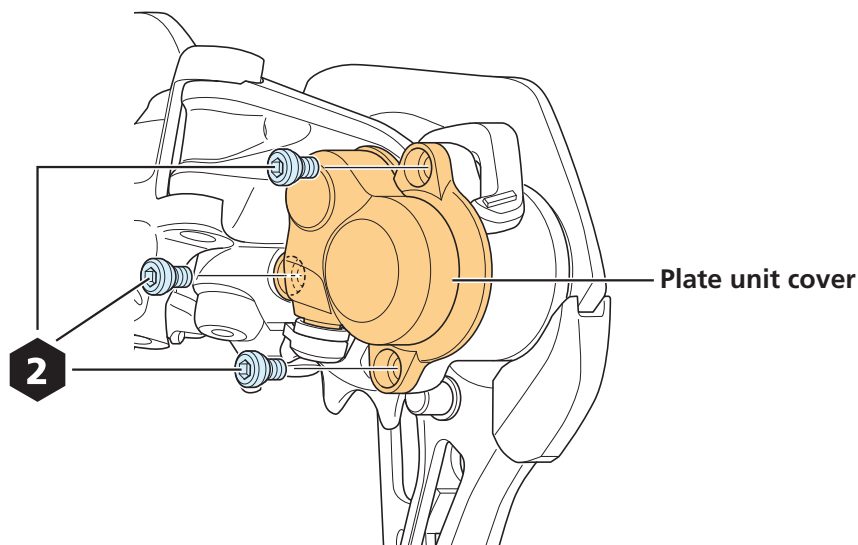
If the friction changes or noise is generated, the grease may be discolored or insufficient. Apply grease.

* Perform the assembly in the reverse order from the disassembly procedure.

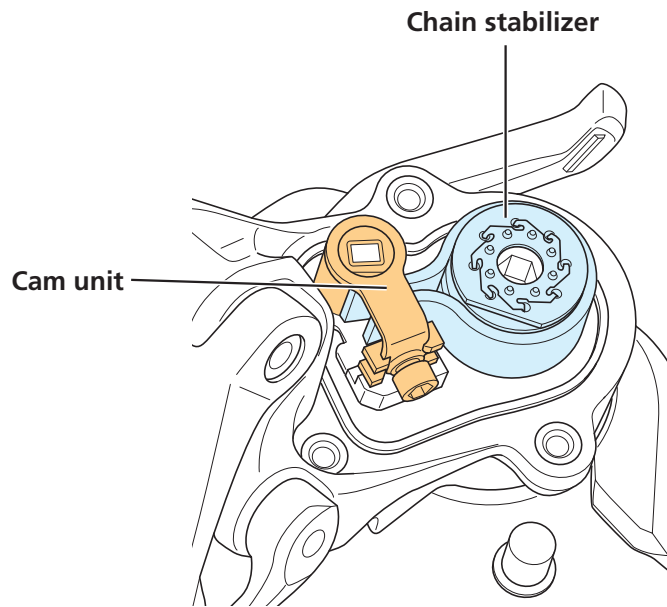
1. Set the switch lever in the OFF position.



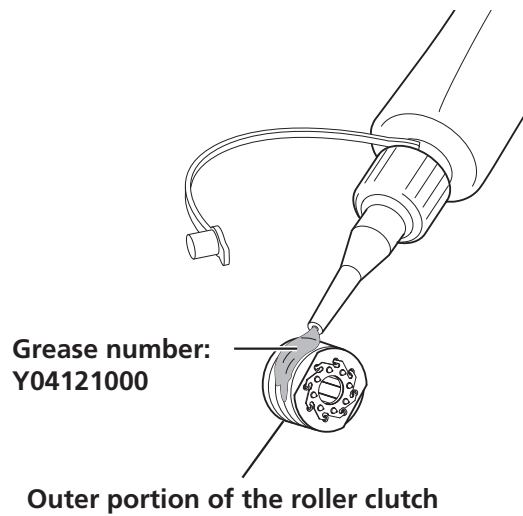
2. Remove the plate unit cover.



3. Remove the cam unit and the chain stabilizer.



4. Apply grease to the outer diameter of the outer portion of the roller clutch.



NOTICE

- Be careful not to get grease inside the roller clutch. If grease gets inside the roller clutch, it will cause the roller clutch to stick or slide and malfunction.

Adjusting friction

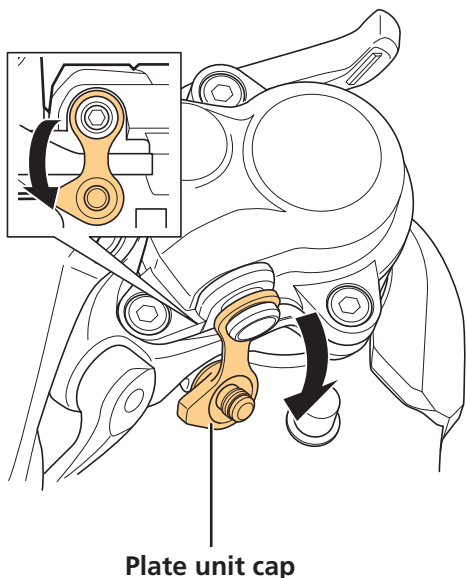
The level of friction can be adjusted as desired. Furthermore, the friction can also be adjusted when it changes during use.

Friction adjustment

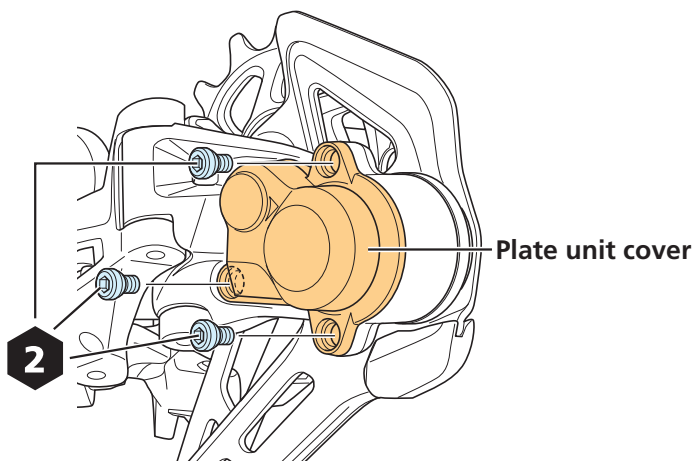
1. Set the switch lever in the ON position.
2. Remove the plate unit cap or plate unit cover as shown in the figure.

The plate unit cap can be removed by hand.

RD-M9100/RD-M9120/RD-M8100/RD-M8120

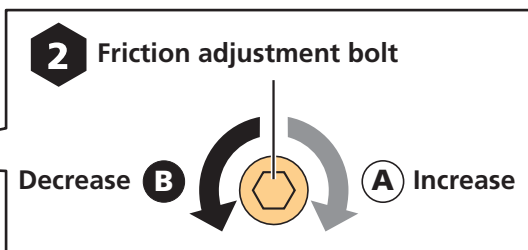
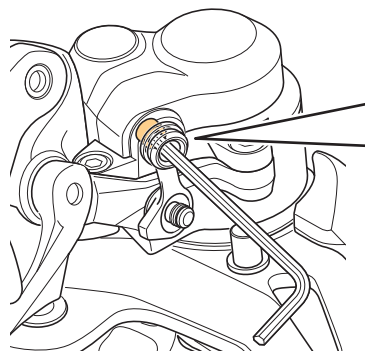


RD-M7100/RD-M7120

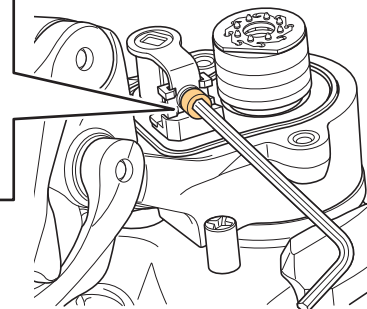


3. Turn the friction adjustment bolt with a hexagon wrench to adjust the friction.

RD-M9100/RD-M9120/
RD-M8100/RD-M8120



RD-M7100/RD-M7120



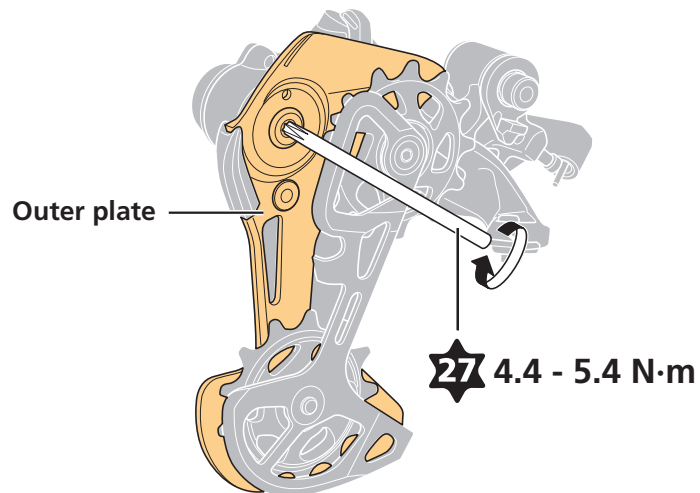
NOTICE

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

4. Check the friction torque.

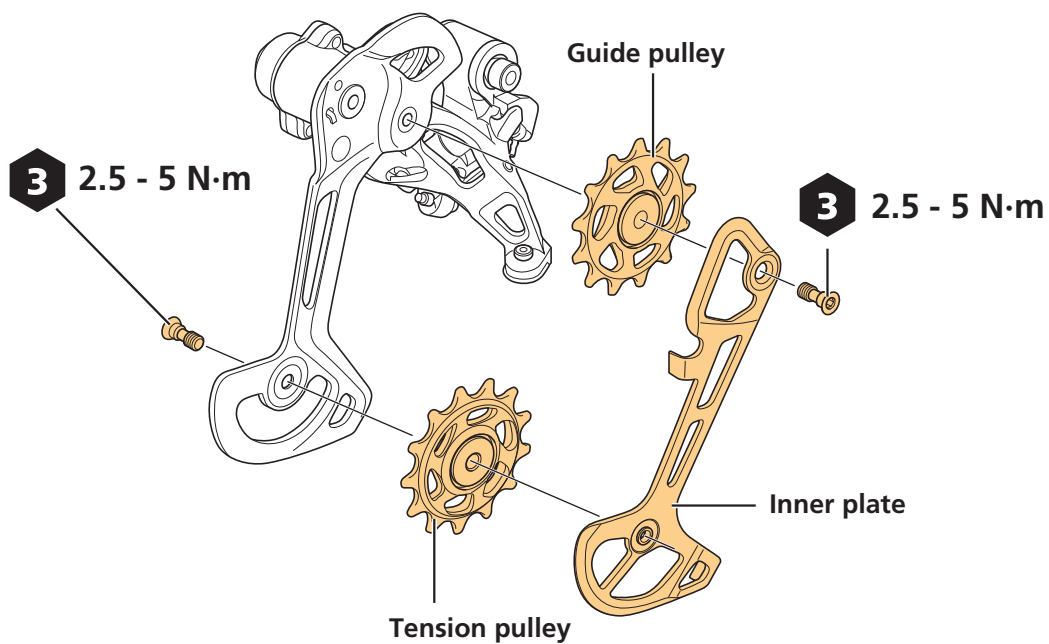
RD-M9100/RD-M8100/RD-M7100

Insert a hexalobular wrench into the outer plate and check the friction torque.

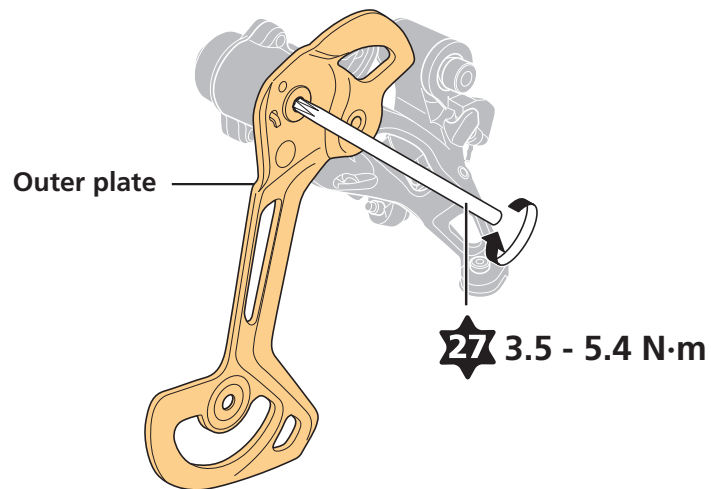


RD-M9120/RD-M8120/RD-M7120

(1) Remove the inner plate, guide pulley, and tension pulley.



(2) Insert a hexalobular wrench into the outer plate and check the friction torque.



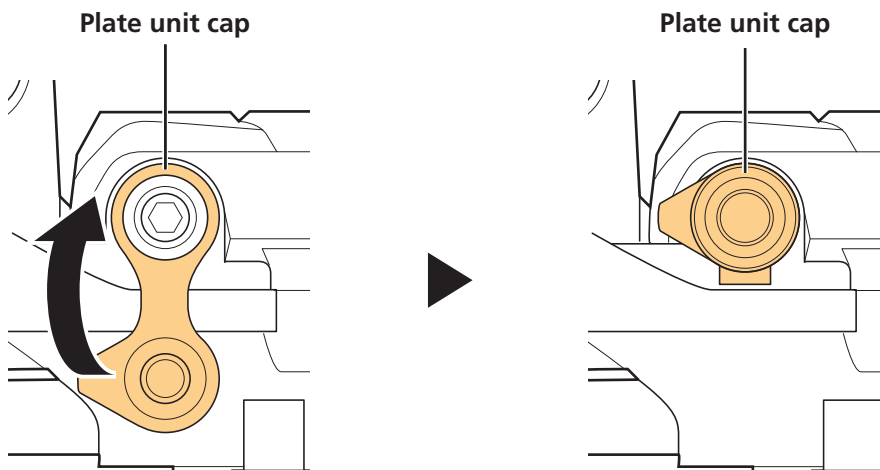
(3) Install the inner plate, guide pulley, and tension pulley.

NOTICE

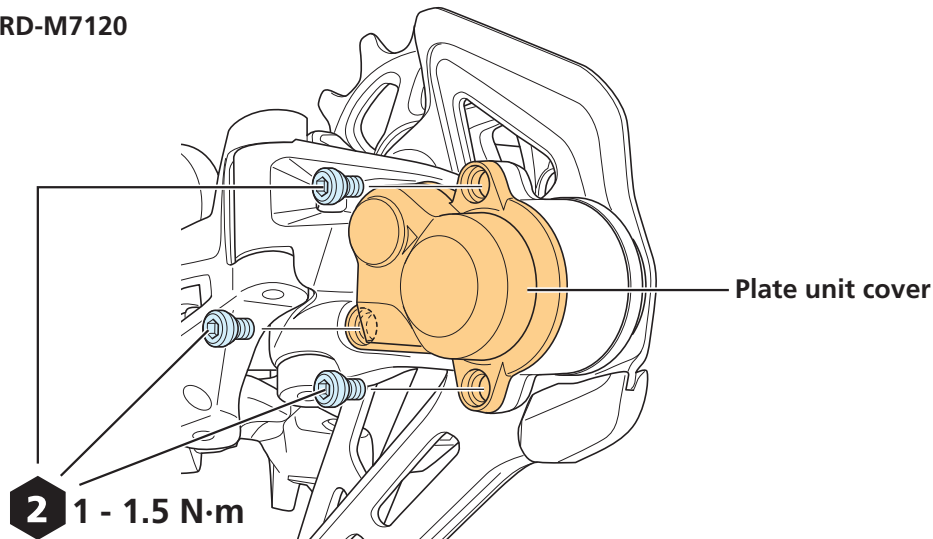
- Refer to "Replacing the pulley" to install the inner plate, guide pulley, and tension pulley.

5. Install the plate unit cap or plate unit cover as shown in the figure.

RD-M9100/RD-M9120/RD-M8100/RD-M8120



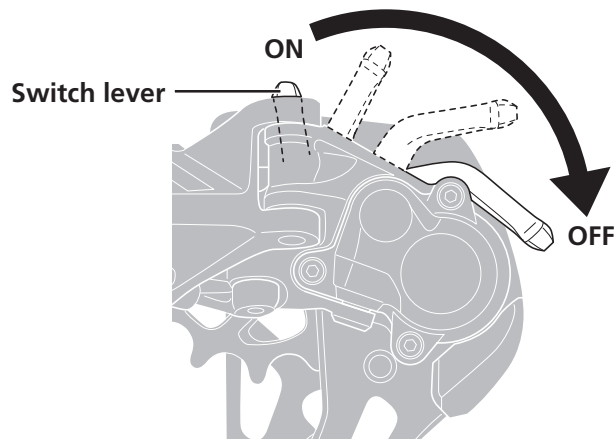
RD-M7100/RD-M7120



Replacing the plate, plate tension spring, and switch lever

Removal

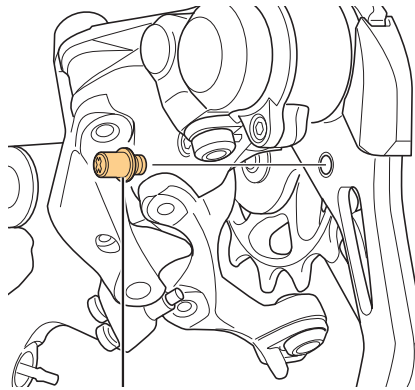
1. Set the switch lever in the OFF position.



NOTICE

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

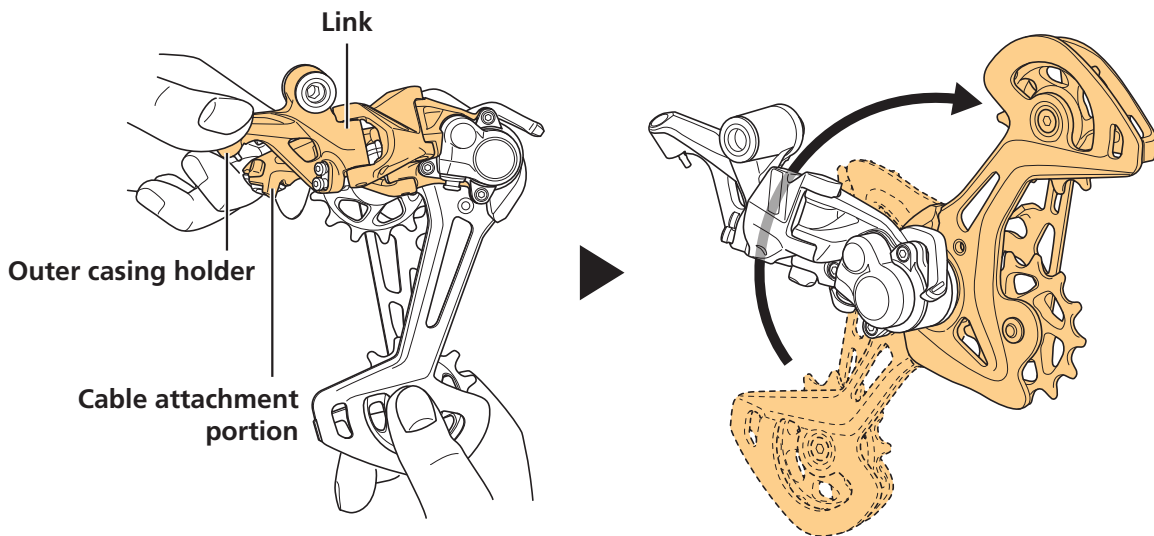
2. Remove the plate stopper pin with a screwdriver.



2 Plate stopper pin

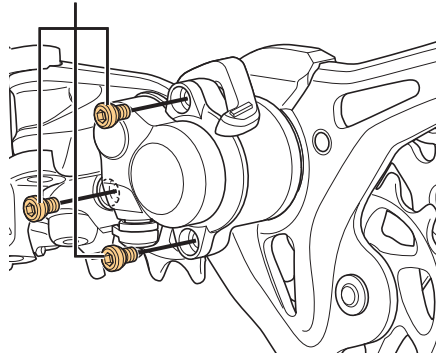
3. Turn the plate to loosen the plate tension spring.

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 bolts.

2 Plate unit cover bolts



5. Remove the plate unit cover.

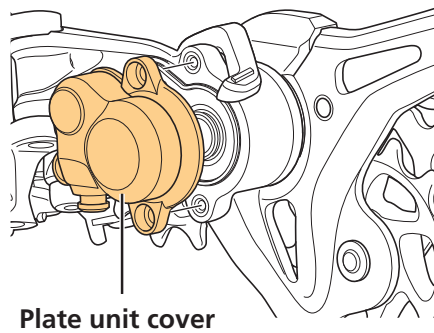
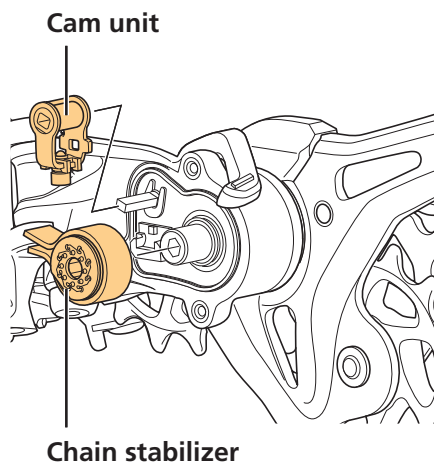


Plate unit cover

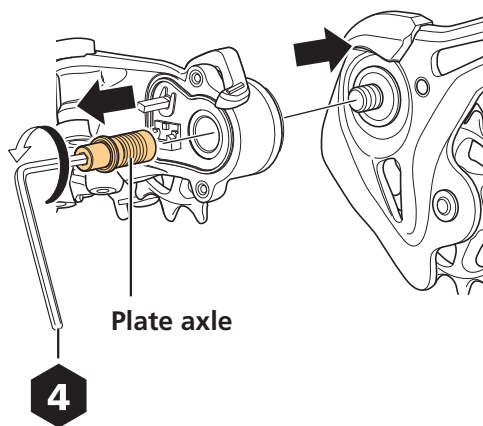
6. Remove the cam unit and chain stabilizer.



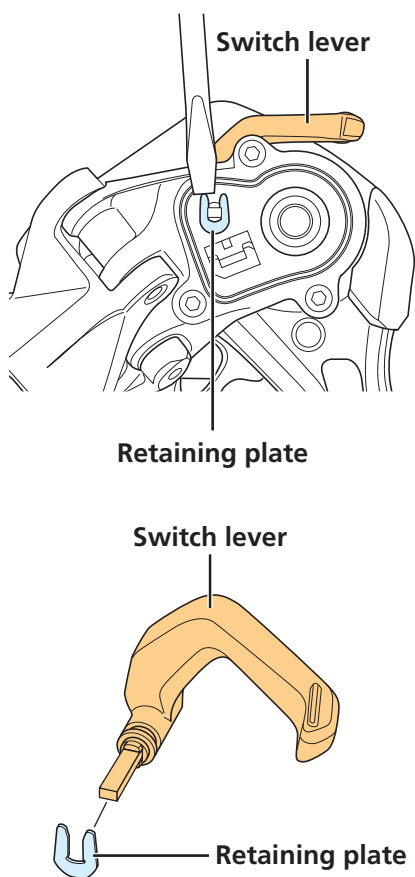
Cam unit

Chain stabilizer

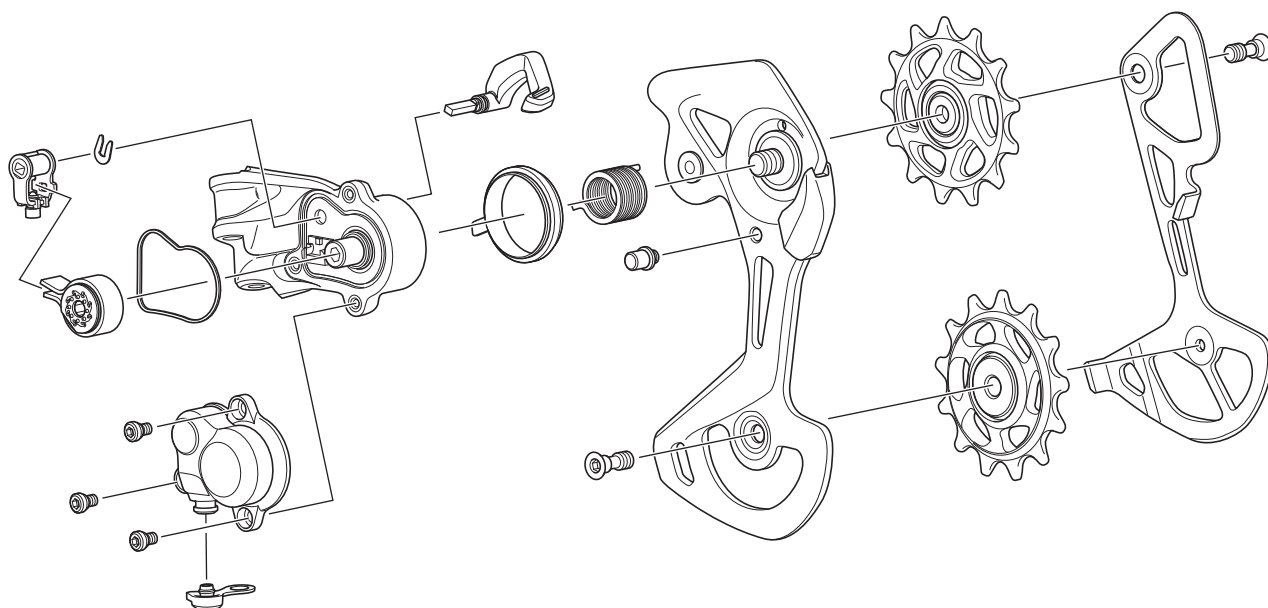
7. Remove the plate axle.



8. Remove the retaining plate and the switch lever.



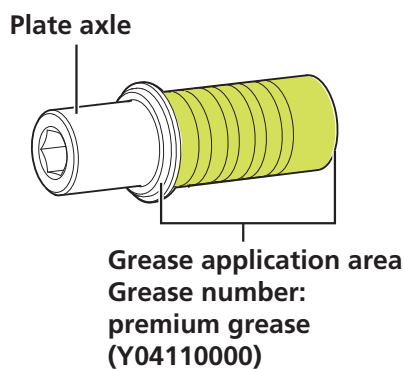
9. The unit can be disassembled as shown in the figure.



Installation

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

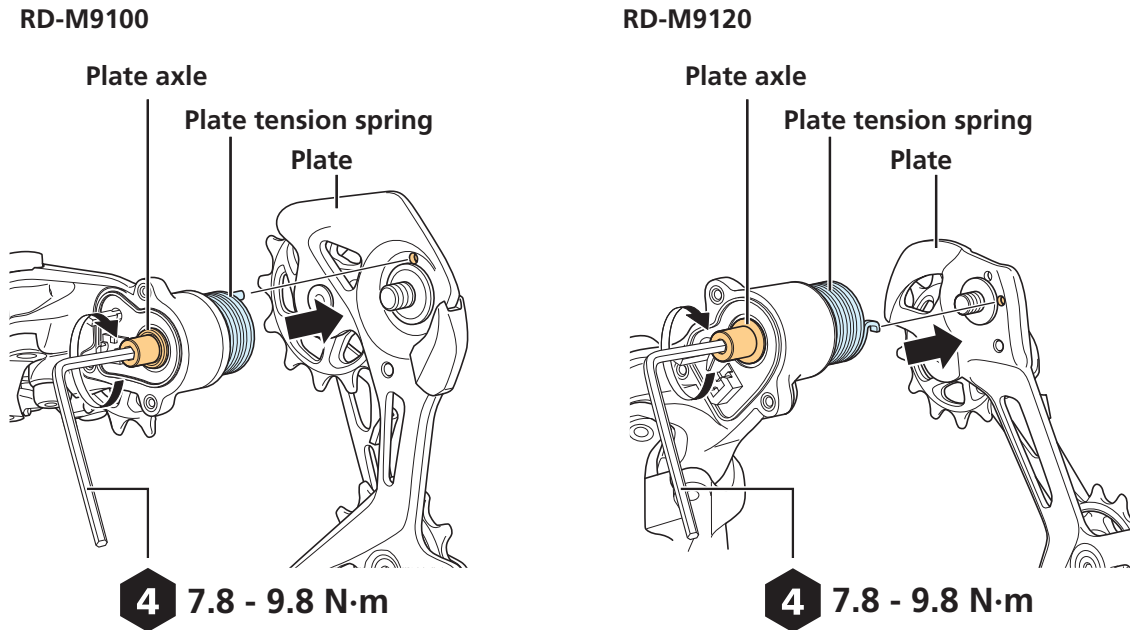
1. Apply grease to the plate axle.



NOTICE

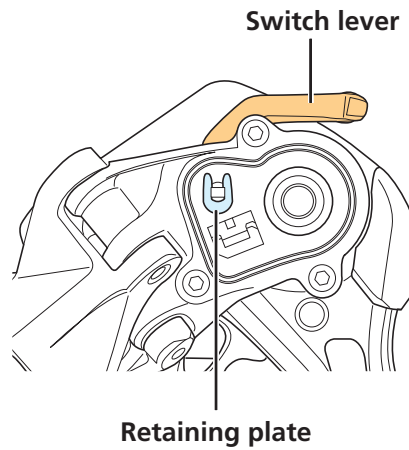
- Do not apply grease outside of the application area indicated above. If grease is applied here, it will get inside the outer portion of the roller clutch and friction will be lost.

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



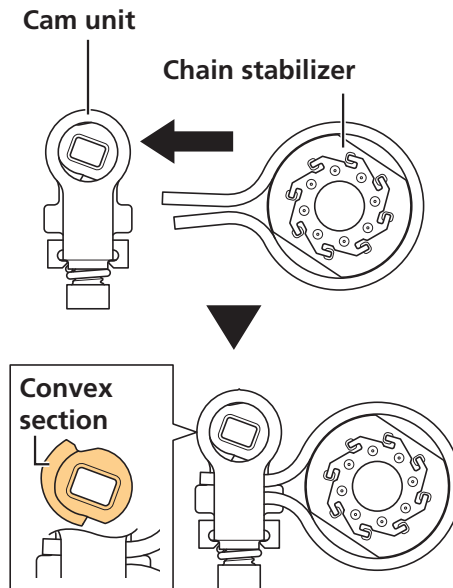
3. Install the switch lever and engage the retaining plate.

Set the switch lever in the OFF position.



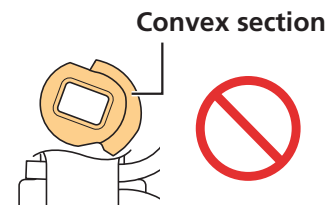
4. Set the chain stabilizer in the cam unit as shown in the figure.

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



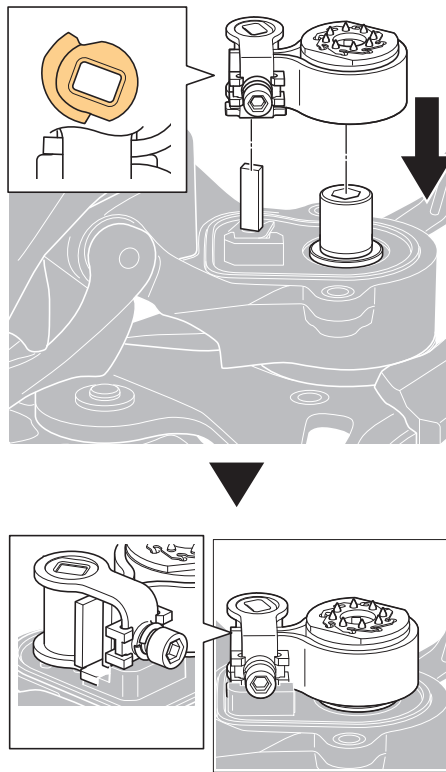
NOTICE

- Do not set it in the cam unit with the convex section positioned as shown in the figure below.



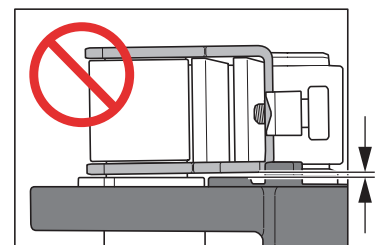
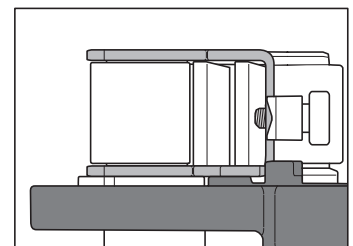
5. Align the holes of the cam unit and chain stabilizer with the protrusions on the plate unit, and then install.

Pay attention to the position of the convex section on the cam unit when installing.



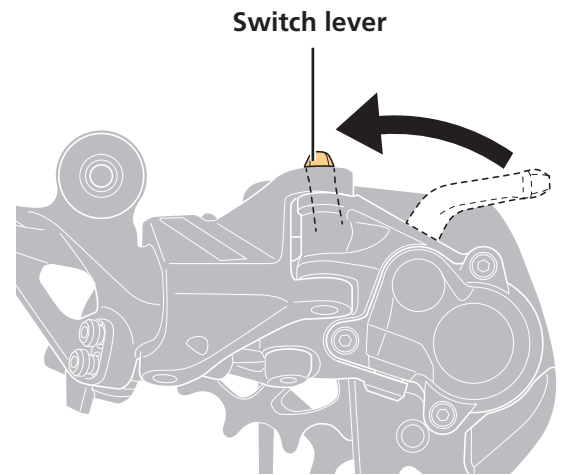
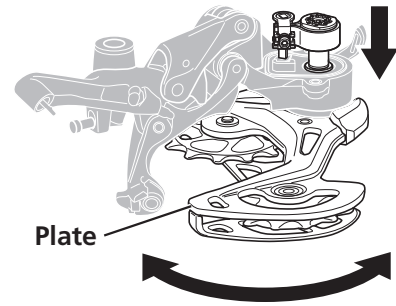
NOTICE

- Do not install the plate unit cover with the cam unit only partially connected to the base of the plate unit. Insufficient sealing may cause rust to form on the internal structure and the plate may become stuck.



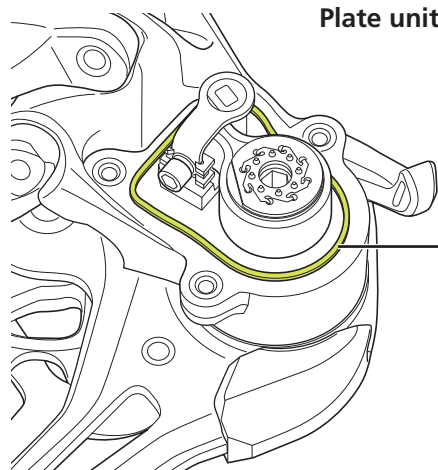
TECH TIPS

- When installing, it helps to move the plate while holding down 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 convex section on the cam unit, and then reinstall the components.



6. Apply grease to the plate unit cover gasket and install.

Check that the plate unit cover gasket is installed along the groove in the plate unit.



Grease number:
premium grease
(Y0411000)

7. Install the plate stopper pin.

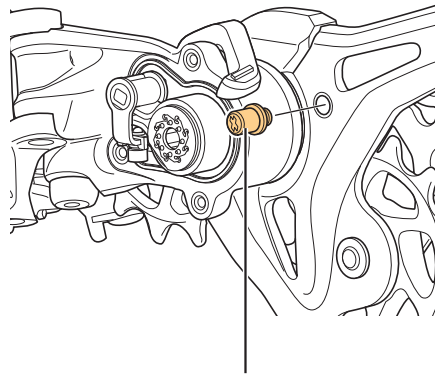


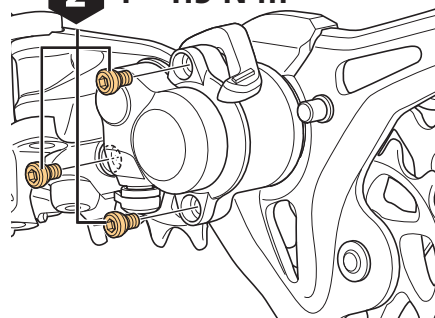
Plate stopper pin

2 1 N·m

8. Install the plate unit cover bolts.

Plate unit cover bolts

2 1 - 1.5 N·m



9. Check the friction, and adjust as necessary.

Refer to "Adjusting friction" for the friction adjustment method.

SHIMANO

SHIMANO NORTH AMERICA BICYCLE, INC.

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

SHIMANO EUROPE B.V.

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

SHIMANO INC.

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

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

© Feb. 2019 by SHIMANO INC. ITP