

## Dealer's Manual

ROAD	<b>GRAVEL</b>	MTB
E-BIKE	LIFESTYLE	GENERAL

# Hydraulic Disc Brake / Dual Control Lever

### GRX

ST-RX820

ST-RX820-LA

ST-RX810

ST-RX810-LA

ST-RX610

ST-RX600

ST-RX400

BR-RX820

BR-RX810

BR-RX410

BR-RX400

BL-RX820

BL-RX810

BL-RX812

BL-RX610

BL-RX600

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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 each 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

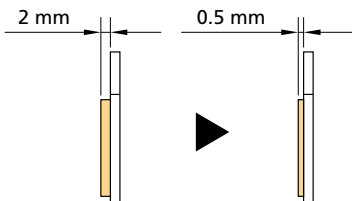
- **Be sure to follow the instructions provided in the manuals when installing the product.**  
Only use SHIMANO genuine parts. If a component or replacement part is incorrectly assembled or adjusted, it can lead to component failure and cause the rider to lose control and crash.
-  Wear approved eye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

Be sure to also inform users of the following:

- Because each bicycle may handle slightly differently depending on the model, be sure to learn the proper braking technique (including brake lever pressure and bicycle control characteristics) and operation of your bicycle. Improper use of your bicycle's brake system may result in a loss of control, which could lead to serious injury due to a fall or collision.
- Keep your fingers away from the rotating rotor. The rotor is sharp enough to inflict severe injury to your fingers if caught.



- Do not touch the calipers or rotor while riding or immediately after dismounting from the bicycle. The calipers and rotor will become hot when the brakes are operated, so you may get burned if you touch them.
- Do not allow any oil or grease to get onto the rotor or pads. Riding the bicycle with oil or grease on the rotor or pads may prevent the brakes from operating and result in serious injury due to a fall or collision.
- Check the thickness of the pads and do not use them if they have a thickness of 0.5 mm or less. Doing so may prevent the brakes from operating and result in serious injury due to a fall or collision.



- Do not use the rotor if it is cracked or deformed. The rotor may break, and result in serious injury due to a fall or collision.
- Do not use the rotor if its thickness is 1.5 mm or less. Also do not use it if the aluminum surface becomes visible. The rotor may break, and result in serious injury due to a fall or collision.
- Do not continuously apply the brakes. Doing so may cause a sudden increase in the brake lever stroke, preventing the brakes from operating and resulting in serious injury due to a fall or collision.
- Do not use the brakes with fluid leaking. Doing so may prevent the brakes from operating and result in serious injury due to a fall or collision.
- Do not apply the front brake too strongly. If you do so, the front wheel may lock and the bicycle may fall forward, and serious injury may result.
- Because the required braking distance will be longer during wet weather, reduce your speed and apply the brakes early and gently. Failure to do so may result in serious injury due to a fall or collision.
- A wet road surface may cause tires to lose traction; therefore, to avoid this, reduce your speed and apply the brakes early and gently. If the tires lose traction, it may result in serious injury due to a fall or collision.

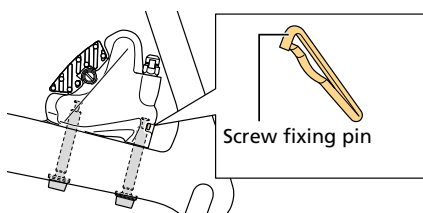
## TO ENSURE SAFETY

- If the quick release lever is on the same side as the rotor, confirm that it does not interfere with the rotor. Otherwise, the bicycle may fall forward, and serious injury may result.

### For installation to the bicycle and maintenance

- Do not use oil other than SHIMANO genuine mineral oil. Doing so may prevent the brakes from operating and result in serious injury due to a fall or collision.
- Use only mineral oil from a container that has been stored in a clean and sealed state. Doing otherwise may prevent the brakes from operating and result in serious injury due to a fall or collision.
- Do not let water or air bubbles get into the brake system. Doing so may prevent the brakes from operating and result in serious injury due to a fall or collision.
- Do not use with a tandem bicycle. Doing so may prevent the brakes from operating and result in serious injury due to a fall or collision.
- When installing the brake caliper using screw fixing pins, be sure to use mounting screws of the appropriate length.

If not, the screw fixing pins may not be securely fastened, and the screws may fall out.

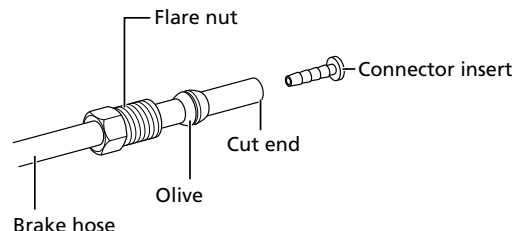


### ■ Brake hose

- Refer to the table below, and do not use an incorrect connector insert. Doing so may prevent the brakes from operating and result in serious injury due to a fall or collision.

Brake hose	Connector insert	
	Length	Color
SM-BH90-JK-SSR	11.2 mm	Silver

- Do not reuse the olive piece or the connector insert when reinstalling. Doing so may prevent the brakes from operating and result in serious injury due to a fall or collision.



- Cut the brake hose so that the cut end is perpendicular to the length of the hose. If the brake hose is cut at an angle, fluid leaks may result. Fluid leaks may prevent the brakes from operating and result in serious injury due to a fall or collision.



### ■ 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.

## CAUTION

Be sure to also inform users of the following:

### ■ Cautions on SHIMANO genuine mineral oil

- Use appropriate eye protection when handling, and avoid contact with eyes. In the event of eye contact, flush with fresh water and seek medical assistance immediately. Contact with eyes may result in irritation.
- Use gloves when handling. In the event of skin contact, wash well with soapy water. Contact with skin may cause a rash and discomfort.
- Cover nose and mouth with a respirator type mask and use in a well ventilated area. Inhalation of mineral oil mist or vapors may cause nausea.
- If mineral oil mist or vapor is inhaled, go immediately to an area with fresh air. Cover up with a blanket. Stay warm and stable and seek professional medical advice.

### ■ Bed-in period

- Disc brakes have a bed-in period, and the braking force will gradually increase as the bed-in period progresses. You may lose control of the bicycle, which can result in serious injury due to a fall or collision.

(The same thing will happen when the pads or rotor are replaced.)

For installation to the bicycle and maintenance

- When using the SHIMANO original tool (TL-FC36, etc.) to remove and install the rotor lock ring, wear gloves and be careful not to touch the outer edges of the rotor with your hands. Failure to do so may result in cuts to your hands.

### ■ Handling SHIMANO genuine mineral oil

- Do not drink. May cause vomiting or diarrhea.
- Keep out of reach of children.
- Do not cut, let near heat, weld or pressurize the SHIMANO genuine mineral oil container. Doing so may cause an explosion or fire.
- Disposal of used oil: Follow local county and/or state codes for disposal. Use caution when preparing the oil for disposal.
- Directions: Keep the container sealed to prevent foreign objects and moisture from getting inside, and store it in a cool, dark area away from direct sunlight or heat. Keep from heat or flame.

### ■ Brake hose

- When cutting the brake hose, handle the knife carefully so as not to cause injury.
- Be careful to avoid injury from the olive.

### ■ When using TL-BH62

- When cutting the brake hose, handle the blade carefully so as not to cause injury.
- Be careful to avoid pinching your fingers between the lever and the tool during operations.
- When replacing the knife blade, handle the knife carefully so as not to cause injury.
- If mineral oil adheres to the brake hose, use isopropyl alcohol to clean the hose and remove the oil.
- Keep the tool and the blades out of reach of children.

## NOTICE

Be sure to also inform users of the following:

- When the bicycle wheel has been removed, it is recommended that pad spacers are installed. Do not depress the brake lever while the wheel is removed. If the brake lever is depressed without the pad spacers installed, the pistons will protrude further than normal. If that happens, consult a place of purchase.
- When conducting maintenance, do not use commercially available brake cleaners or silencing agents, as they can cause damage to parts such as the seals.
- Be sure to keep rotating the crank arm during gear shifting operations.
- Handle the components carefully, and avoid subjecting them to strong shock.
- Do not use the thinners or harsh solvents to clean the products. Such solvents may damage the surface.
- If gear shifting operation does not feel smooth, consult the place of purchase for assistance.
- Products are not guaranteed against natural wear and deterioration from normal use and aging.
- For maximum performance we highly recommend SHIMANO lubricants and maintenance products.

### For installation to the bicycle and maintenance



















- Use a brake hose/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 dual control lever/brake lever does not touch the bicycle frame when the handlebars are turned all the way.
- Use an OT-SP sealed cable and cable guide for smooth operation.
- 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.
- If gear shifting adjustments cannot be carried out, check that the rear derailleur hanger is aligned. Check if the cable is lubricated or if the outer casing is too long or too short.
- Do not remove the lever blade.
- If the brake caliper mounting boss and the dropout are not of standard dimensions, the rotor and caliper may touch.
- When the bicycle wheel has been removed, it is recommended that pad spacers are installed. The pad spacers will prevent the piston from coming out if the brake lever is depressed while the wheel is removed.
- For cleaning brake hoses exposed to mineral oil, or cleaning and maintaining tools, use isopropyl alcohol or a dry cloth. Do not use commercially available brake cleaners. Doing so may cause damage to plastic parts.
- If the brake lever is depressed without the pad spacers installed, the pistons will protrude further than normal. Use a flat-shaped tool to push back the pads, while being careful not to damage the surface of the pads. (If the pads are not installed, use a flat-shaped tool to push the pistons straight back in, while being careful not to damage them.) When pushing back the pads or pistons, do so with an oil funnel attached to the brake lever. Otherwise, the diaphragm of the brake lever may be damaged by the oil pressure.
- Do not remove the pistons when cleaning the calipers.
- The clamp band, mounting screw, and mounting nut are not compatible with other products. Be sure to always use the clamp band, clamp screw and clamp nut which is specific to each product.

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.

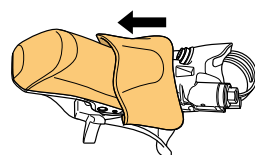
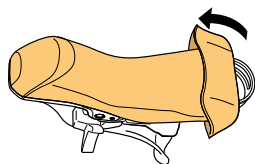
Tool	
	2 mm hexagon wrench
	2.5 mm hexagon wrench
	3 mm hexagon wrench
	4 mm hexagon wrench
	5 mm hexagon wrench
	8 mm hexagon wrench
	8 mm spanner
	7 mm box wrench
	Slotted screwdriver
	Cross head screwdriver [#1]
	Slotted screwdriver (nominal size 0.8 x 4)
	TL-BH62
	TL-BR001 (syringe and tube)
	TL-BR002 (oil funnel and oil stopper)
	TL-CT12
	TL-BT03S
	Micrometer
	Hexalobular [#8]

# Installation / removal

## Installing the dual control lever / brake lever

### 1. Turn over the bracket cover from the back side.

Gently turn over the ends of the bracket cover with both hands and slowly push them down.



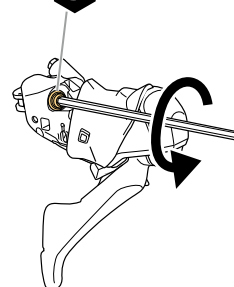
### **NOTICE**

- Forcibly pulling the bracket cover may damage it because of its material properties.

### 2. Loosen the mounting nut.

The mounting nut is found on top of the lever bracket when the bracket cover is turned over.

**5** Mounting nut

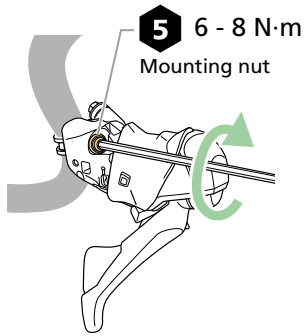


### **NOTICE**

- Loosen the mounting nut sufficiently. Otherwise the handlebar may be damaged when passing the clamp band over the drop handlebar.

### 3. Install the lever to the handlebar.

Tighten the mounting nut.



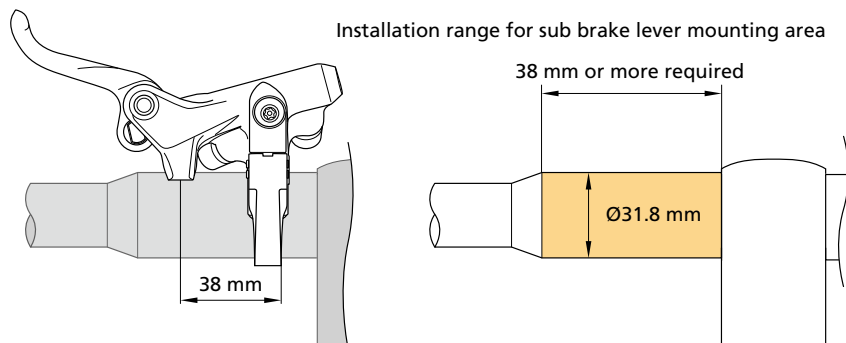
### ***NOTICE***

- Use the parts indicated in the exploded view of the levers when you replace the clamp band, mounting screw, or mounting nut.

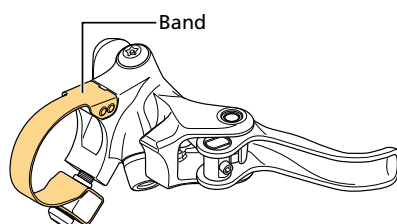
# Installing the sub brake lever

## NOTICE

- The sub brake lever band area is  $\varnothing 31.8$  mm in diameter, and the mounting area is 38 mm wide. Accordingly, install the sub brake lever to the area on the handlebar where the diameter is  $\varnothing 31.8$  mm and the width is 38 mm or more as shown in the figure.

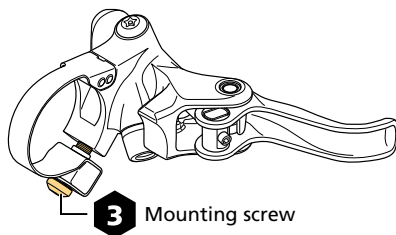


- Do not excessively pull the band, or bend and deform it. This may weaken its attachment to the handlebar and make it difficult to install.

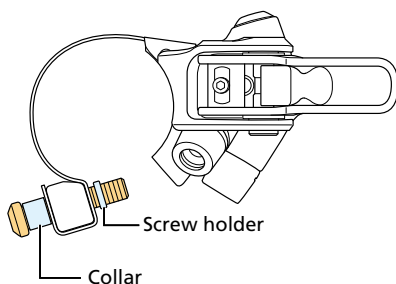


### 1. Loosen the mounting screw on the sub brake lever.

Loosen until the mounting screw is removed.



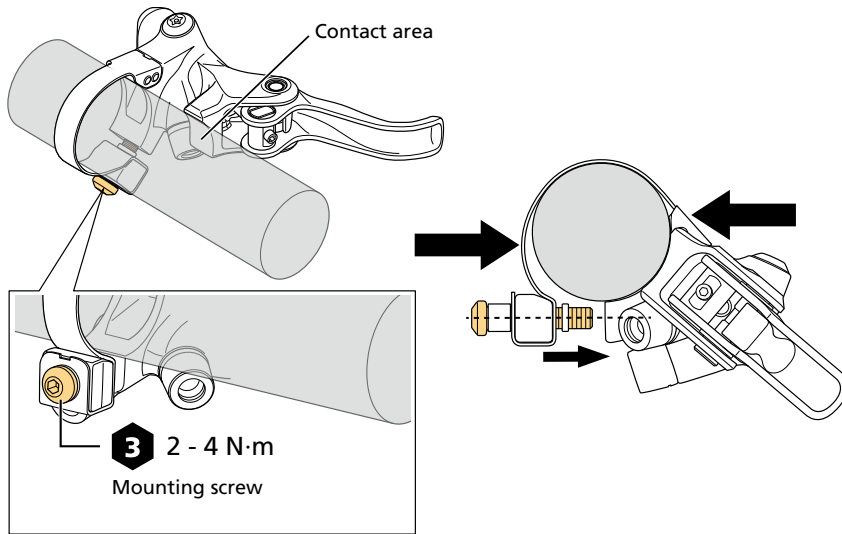
### 2. Set the collar and screw holder as shown in the figure.



### 3. Install the sub brake lever to the handlebar.

Ensure that the contact area of the lever contacts the  $\varnothing 31.8$  mm section of the bar for at least 5 mm. Hold

the band firmly around the handlebar and be sure the mounting screw enters the screw hole straight when fastening the band.



# Installing the rotor

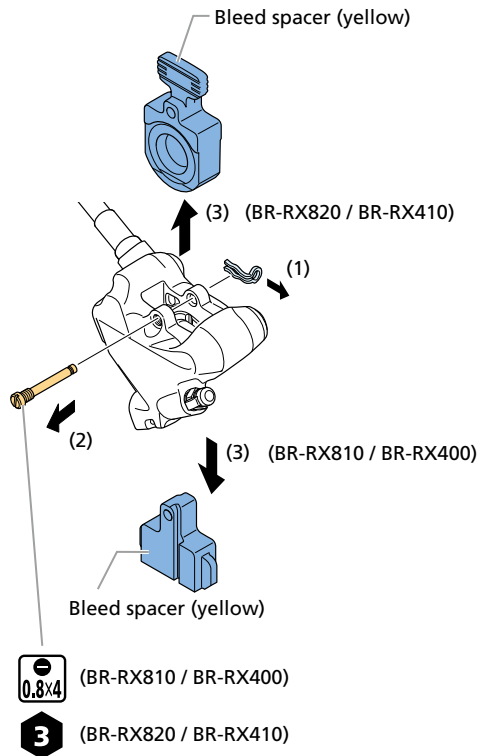
Refer to the [Dealer's Manual for the Wheels](#) to install and remove the rotor.

# Installing the brake calipers

## Installing the pads

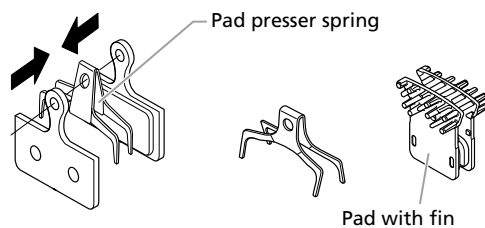
### 1. Remove the bleed spacer (yellow).

- (1) Remove the retaining clip.
- (2) Remove the pad axle.
- (3) Remove the bleed spacer (yellow).



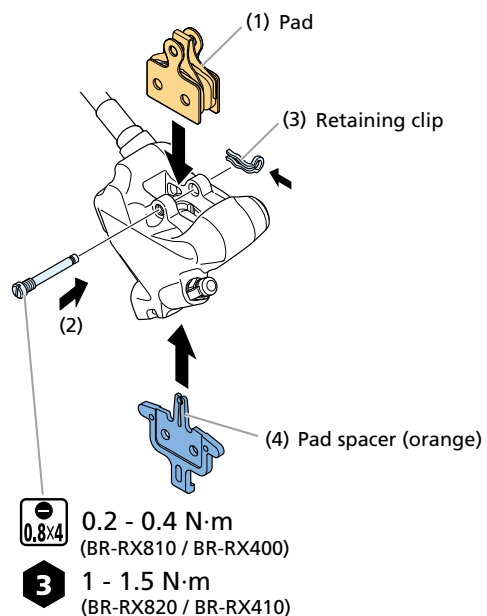
### 2. Set the pad presser spring in the pads.

Set the pads as shown in the figure.



### 3. Install the pads.

- (1) Set the pads in the caliper.
- (2) Install the pad axle.
- (3) Install the retaining clip.
- (4) Install the pad spacer (orange).



## NOTICE

- When using pads with fins, take note of the left (L) and right (R) markings when setting them.

### 4. Depress the brake lever several times.

Perform this operation only after the brake hose has been installed to the dual control lever/brake lever. For instructions, see the section “[Installing the brake hose](#).” Remove the pad spacer (orange) after depressing the brake lever several times.

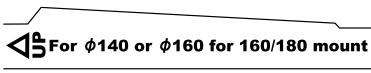
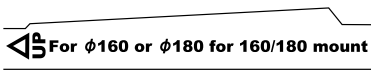
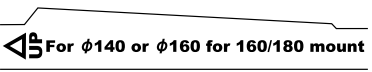

## Installing to the frame

With the pads in place, install the caliper to the frame. The installation method differs according to the rotor used.

**Installation with a mount bracket: When using a Ø140 mm rotor (140/160 mm mount) or a Ø160 mm rotor (160/180 mm mount)**

## NOTICE

- A dedicated mount bracket may be required, depending on the frame and rotor combination.

Rotor size	Fork mount type	
	Flat mount 140/160 front	Flat mount 160/180 front
Ø140 mm (SS)	 For Ø140 or Ø160 for 160/180 mount	-
Ø160 mm (S)	 For Ø160 or Ø180 for 160/180 mount	 For Ø140 or Ø160 for 160/180 mount
Ø180 mm (M)	-	 For Ø160 or Ø180 for 160/180 mount



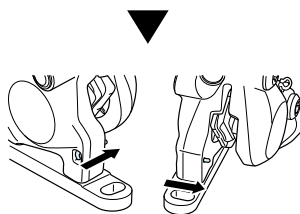
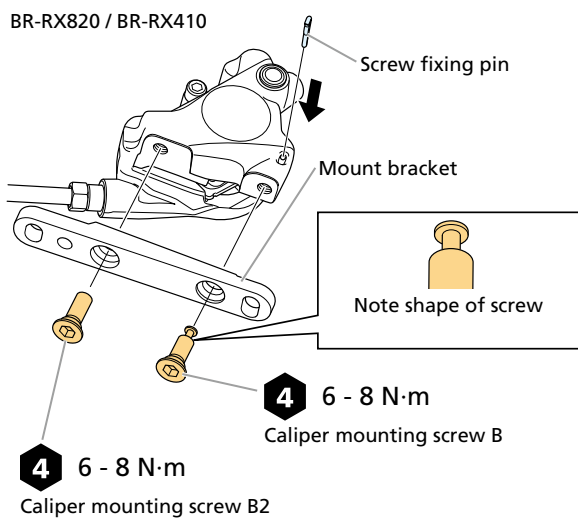
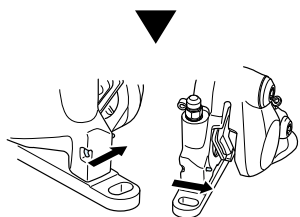
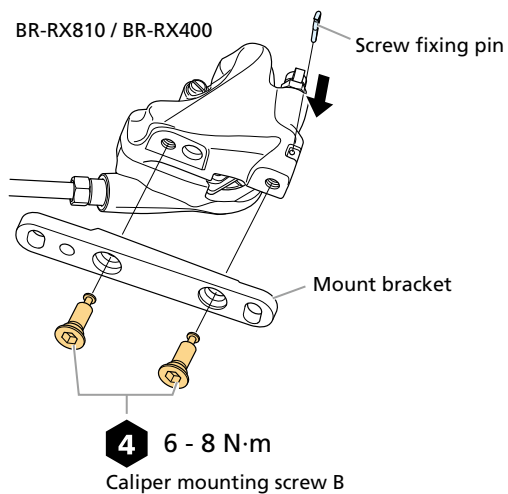
**1. Install the wheel with an attached rotor onto the frame.**

**2. Attach the mount bracket to the brake caliper.**

(1) Tighten it using caliper mounting screws B/B2.

(2) Install the screw fixing pin.

\* Check that the screw fixing pin is fully inserted all the way to the back.

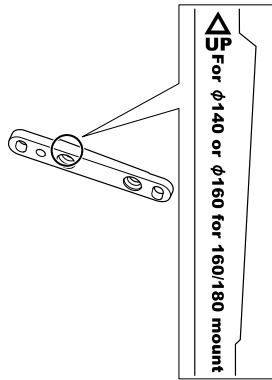


## **⚠ CAUTION**

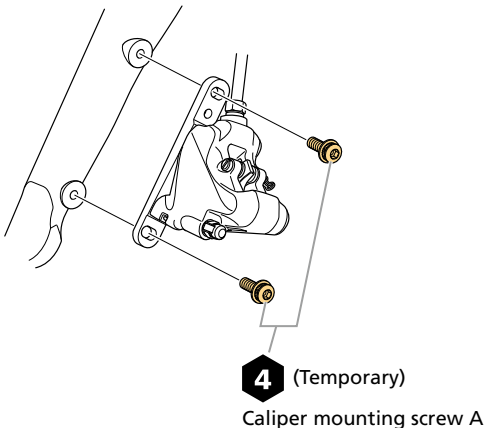
- Correctly install caliper mounting screw B. There are two types of caliper mounting screws, and only caliper mounting screw B can be retained using a screw fixing pin. Failing to install correctly may cause the caliper mounting screws to fall out or lead to insufficient force for holding the brake caliper.

## **NOTICE**

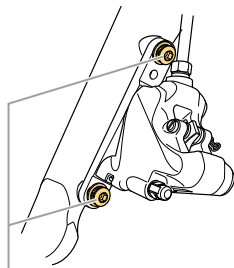
- Pay attention to the marking on the mount bracket when attaching it.



3. Temporarily install the mount bracket to the frame so that it can move left and right.



4. Depress the brake lever so that the rotor is held between the pads, then tighten caliper mounting screws A. Perform this operation only after the brake hose has been installed to the dual control lever/brake lever. For instructions, see the section "[Installing the brake hose](#)."

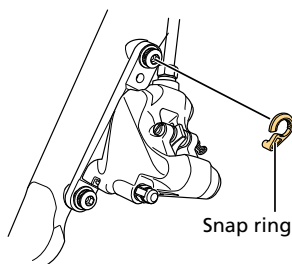


**4** 6 - 8 N·m  
Caliper mounting screw A

## TECH TIPS

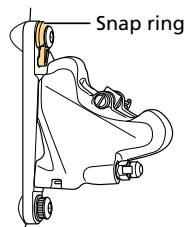
- Bring caliper mounting screws A up to torque in steps, alternating from one screw to the other. This will help keep the brake caliper centered over the rotor.

### 5. Install the snap ring.



## NOTICE

- Install the snap ring at the position specified in the figure.

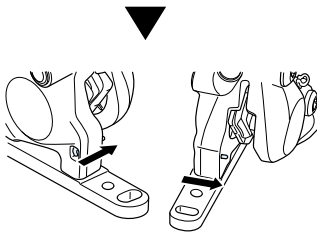
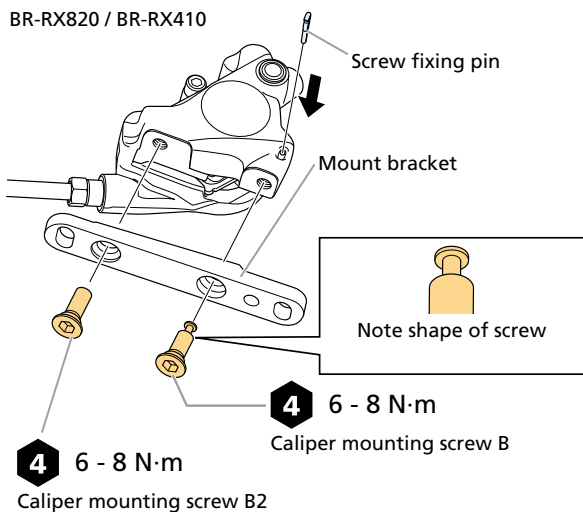
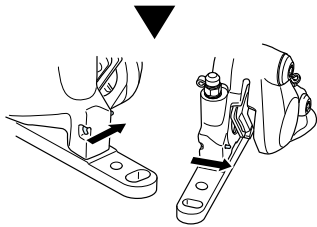
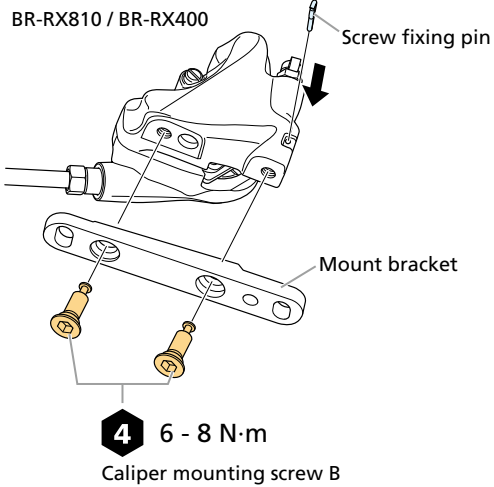


**Installation with a mount bracket: When using a Ø160 mm rotor (140/160 mm mount) or a Ø180 mm rotor (160/180 mm mount)**

1. Install the wheel with an attached rotor onto the frame.
2. Attach the mount bracket to the brake caliper.

- (1) Tighten it using caliper mounting screws B/B2.
- (2) Install the screw fixing pin.

\* Check that the screw fixing pin is fully inserted all the way to the back.

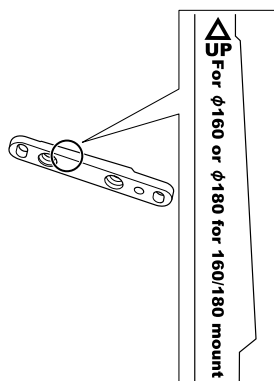


## ⚠ CAUTION

- Correctly install caliper mounting screw B. There are two types of caliper mounting screws, and only caliper mounting screw B can be retained using a screw fixing pin. Failing to install correctly may cause the caliper mounting screws to fall out or lead to insufficient force for holding the brake caliper.

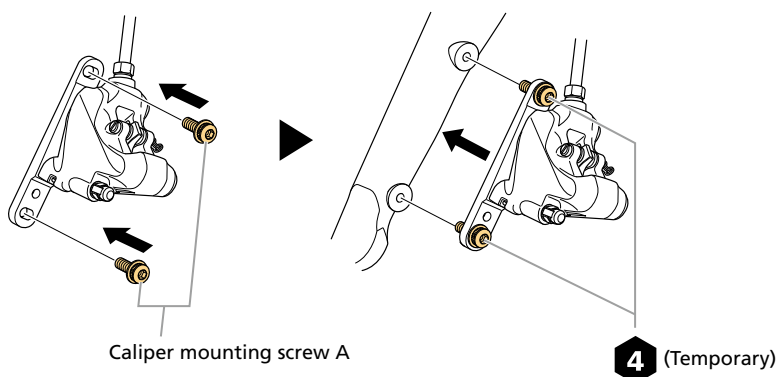
## NOTICE

- Pay attention to the marking on the mount bracket when attaching it.



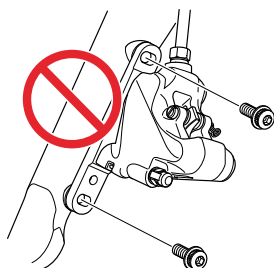
### 3. Temporarily install the mount bracket to the frame so that it can move left and right.

As indicated in the figure, temporarily install the mount bracket to the frame with caliper mounting screws A passed through the holes of the mounting bracket in advance.



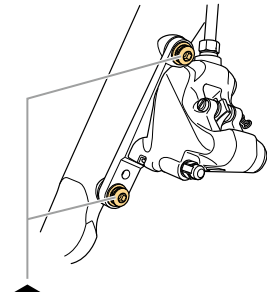
## NOTICE

- Do not install the caliper mounting screws A after the mount bracket has been set against the frame. Doing so may damage the brake caliper due to interference from the brake caliper.



### 4. Depress the brake lever so that the rotor is held between the pads, then tighten caliper mounting screws A.

Perform this operation only after the brake hose has been installed to the dual control lever/brake lever. For instructions, see the section "[Installing the brake hose](#)."

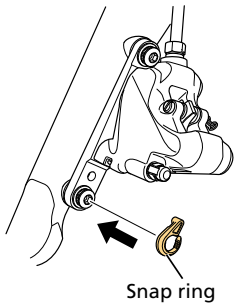


**4** 6 - 8 N·m  
Caliper mounting screw A

## TECH TIPS

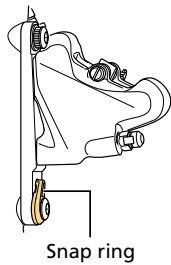
- Bring caliper mounting screws A up to torque in steps, alternating from one screw to the other. This will help keep the brake caliper centered over the rotor.

### 5. Install the snap ring.



## NOTICE

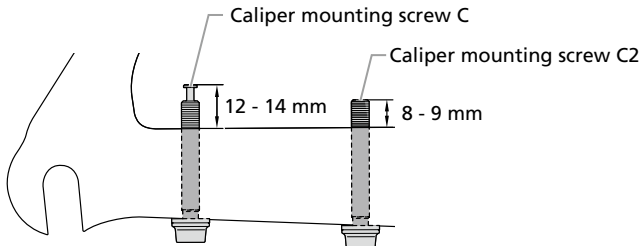
- Install the snap ring at the position specified in the figure.



## Installation with caliper mounting screws C/C2: When using a Ø140 mm rotor (140/160 mm mount) or a Ø160 mm rotor (160/180 mm mount)

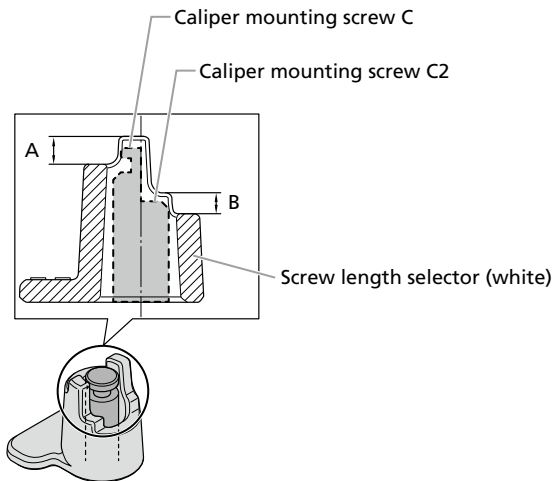
### 1. Insert the caliper mounting screws C/C2 into the frame mount area.

Make sure that the length of the protruding section of the caliper mounting screws C/C2 is the specified length.

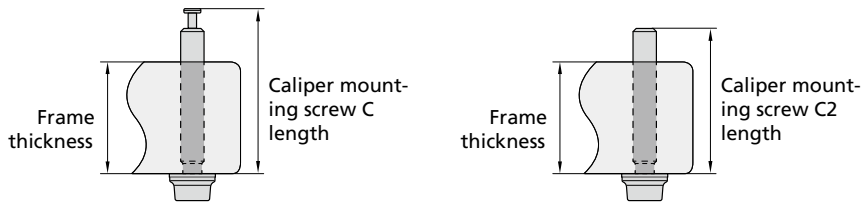


**NOTICE**

- When using a screw length selector (white):
  - Ensure the tip of caliper mounting screw C is within the range of dimension A.
  - Ensure the tip of caliper mounting screw C2 is within the range of dimension B.



- Do not add any additional spacers to caliper mounting screws C/C2 when checking the length.
- The length of the caliper mounting screws C/C2 to use varies depending on the thickness of the frame. Use the caliper mounting screws C/C2 that are appropriate for the thickness of the frame.



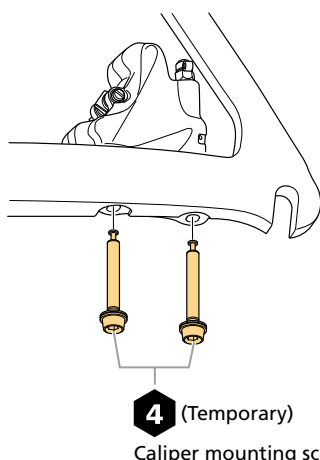
Frame thickness	Caliper mounting screw C length	Caliper mounting screw C2 length
10 mm	23 mm (Y8N208000)	19 mm (Y2J708000)
15 mm	28 mm (Y8N208050)	24 mm (Y2J708050)
20 mm	33 mm (Y8PU08010)	29 mm (Y2HW08010)
25 mm	38 mm (Y8PU08020)	34 mm (Y2HW08020)
30 mm	43 mm (Y8PU08030)	39 mm (Y2HW08030)
35 mm	48 mm (Y8N208040)	44 mm (Y2J708040)

- A dedicated mount bracket may be required, depending on the frame and rotor combination.

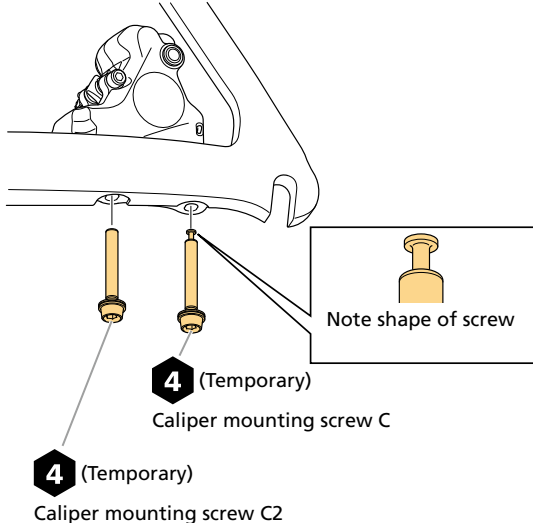
Rotor size	Frame mount type	
	Flat mount 140/160 rear	Flat mount 160/180 rear
Ø140 mm (SS)	Mount bracket not required	-
Ø160 mm (S)	SM-MA-R160 D/D	Mount bracket not required
Ø180 mm (M)	-	SM-MA-R160 D/D

**2. Temporarily install the brake caliper to the frame so that the brake caliper can still move horizontally.**

BR-RX810 / BR-RX400



BR-RX820 / BR-RX410



**⚠ CAUTION**

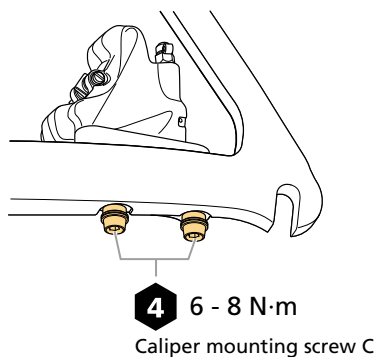
- Correctly install caliper mounting screw C. There are two types of caliper mounting screws, and only caliper mounting screw C can be retained using a screw fixing pin. Failing to install correctly may cause the caliper mounting screws to fall out or lead to insufficient force for holding the brake caliper.

**3. Depress the brake lever so that the rotor is held between the pads, then tighten caliper mounting screws C/ C2.**

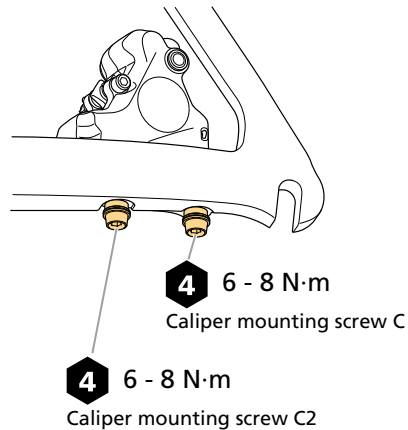
Perform this operation only after the brake hose has been installed to the dual control lever/brake lever. For instructions, see the section "[Installing the brake hose](#)."



BR-RX810 / BR-RX400

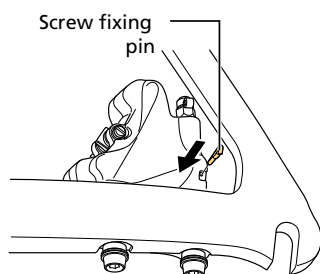


BR-RX820 / BR-RX410



#### 4. Install the screw fixing pin.

Check that the screw fixing pin is fully inserted all the way to the back.



### Installation with caliper mounting screws C/C2: When using a Ø160 mm rotor (140/160 mm mount) or a Ø180 mm rotor (160/180 mm mount)

#### 1. Check the length of caliper mounting screws C/C2.

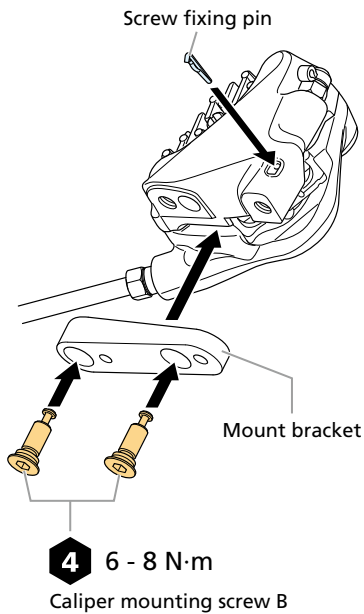
Refer to step 1 in "Installation with caliper mounting screws C/C2: When using a Ø140 mm rotor (140/160 mm mount) or a Ø160 mm rotor (160/180 mm mount)."

#### 2. Attach the mount bracket to the brake caliper.

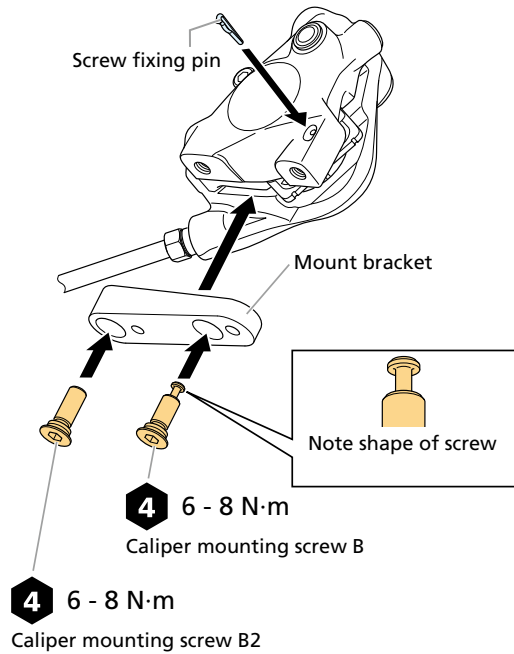
- (1) Tighten it using caliper mounting screws B/B2.
- (2) Install the screw fixing pin.

\* Check that the screw fixing pin is fully inserted all the way to the back.

BR-RX810 / BR-RX400



BR-RX820 / BR-RX410

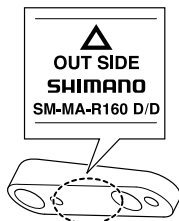


## CAUTION

- Correctly install caliper mounting screw B. There are two types of caliper mounting screws, and only caliper mounting screw B can be retained using a screw fixing pin. Failing to install correctly may cause the caliper mounting screws to fall out or lead to insufficient force for holding the brake caliper.

## NOTICE

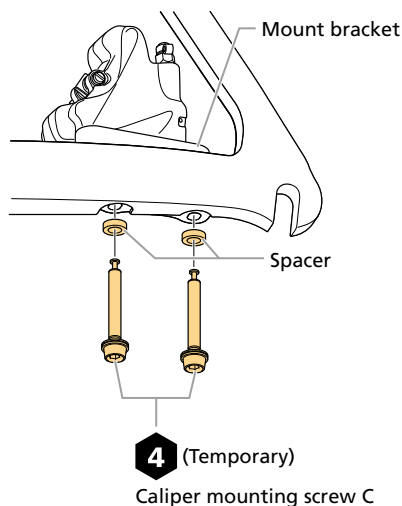
- Pay attention to the marking on the mount bracket when attaching it.



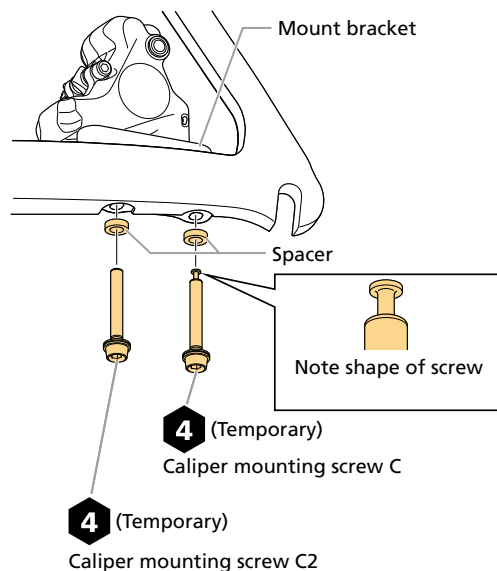
### 3. Temporarily install the mount bracket to the frame so that it can move left and right.

Temporarily install it using caliper mounting screws C/C2 with an additional spacer under each screw head.

BR-RX810 / BR-RX400



BR-RX820 / BR-RX410



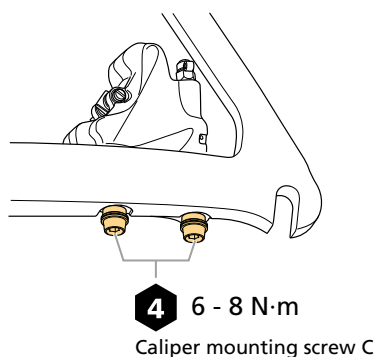
## ⚠ CAUTION

- Correctly install caliper mounting screw C. There are two types of caliper mounting screws, and only caliper mounting screw C can be retained using a screw fixing pin. Failing to install correctly may cause the caliper mounting screws to fall out or lead to insufficient force for holding the brake caliper.

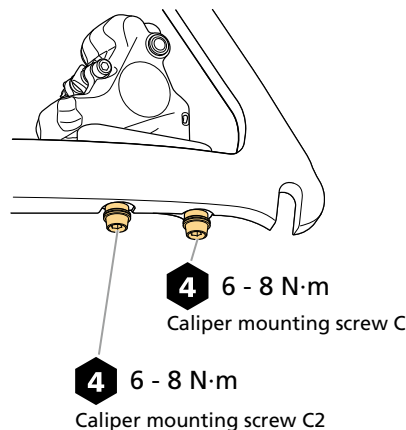
### 4. Depress the brake lever so that the rotor is held between the pads, then tighten caliper mounting screws C/ C2.

Perform this operation only after the brake hose has been installed to the dual control lever/brake lever. For instructions, see the section "[Installing the brake hose](#)."

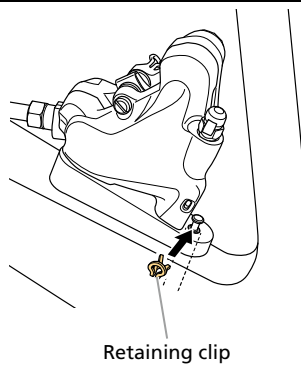
BR-RX810 / BR-RX400



BR-RX820 / BR-RX410

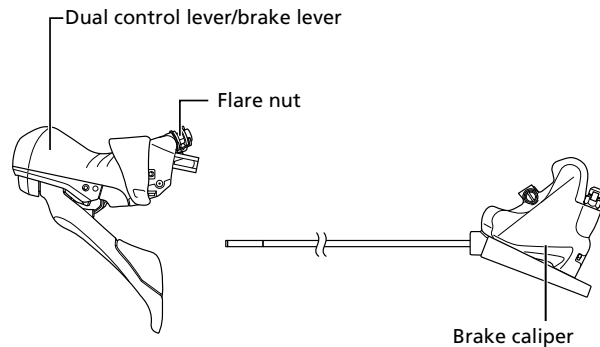


### 5. Install the retaining clip.



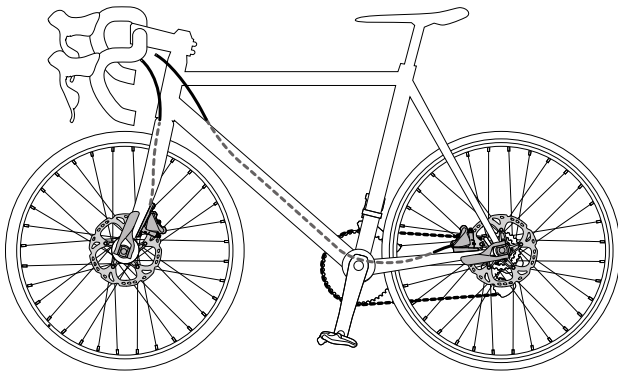
# Installing the brake hose

## Overview of the easy hose joint system



## Checking the length of the hose

1. Route the brake hose into the final installation position.



### NOTICE

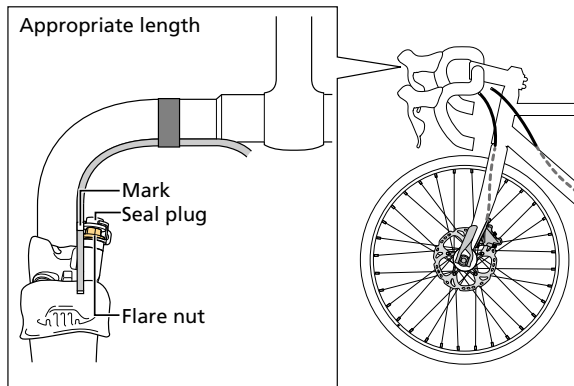
- This figure is only for explanatory purposes. For details on how to route the brake hoses, consult the manufacturer of the bicycle or refer to the bicycle's manual.

2. Check the appropriate length of the brake hose.

Secure the lever in the position used when riding.

Check the mark on the brake hose with the edge of the brake lever flare nut.

- \* If the hose is at the appropriate length, it is not necessary to cut the hose. Proceed to " [Connecting the hose](#) " in "Installing the brake hose."
- \* If the hose needs to be shortened, proceed to " [Cutting the hose](#) " in "Installing the brake hose."
- \* If the hose length is insufficient, replace with a hose that has an appropriate length.



## Cutting the hose

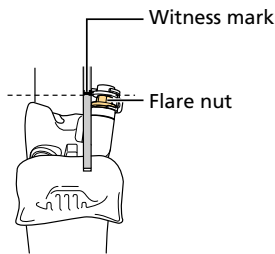
Use care when cutting the hose, as oil may leak when the hose is cut.

### NOTICE

- Make sure to also refer to the manual for TL-BH62.

#### 1. Determine the appropriate length and add a witness mark on the brake hose.

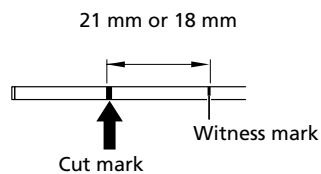
Add the mark so it is aligned with the edge of the flare nut.



#### 2. Add a cut mark.

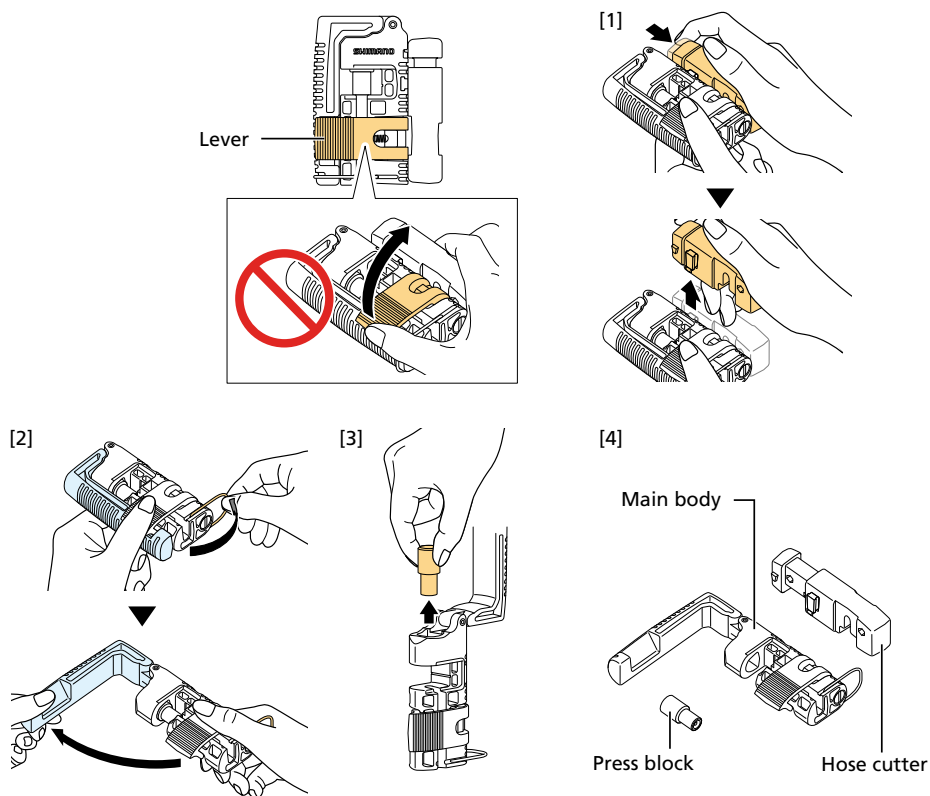
Mark the hose at a position 21 mm from the witness mark towards the end of the hose.

When installing to the flare nut on the sub brake lever, add a mark 18 mm from the witness mark.



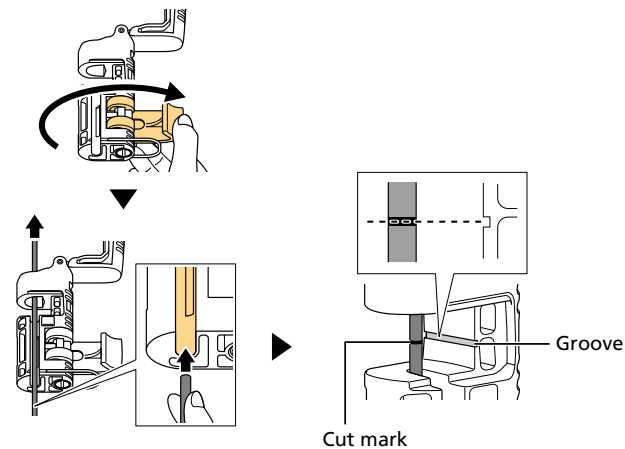
#### 3. Disassemble TL-BH62.

Do not move the lever indicated in the figure before disassembling TL-BH62.

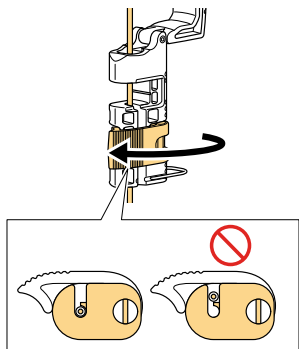


#### 4. Insert the brake hose into the TL-BH62.

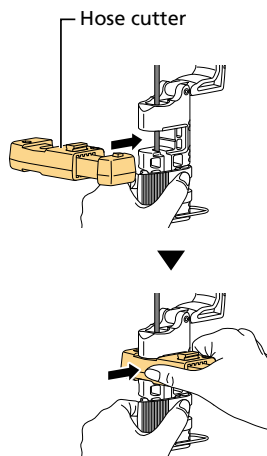
When inserting the brake hose, make sure that the cut mark is parallel with the indicator groove in the tool.



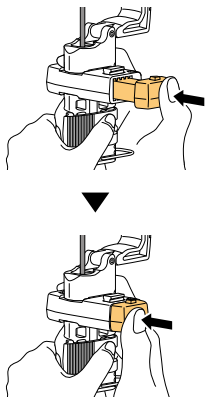
#### 5. Check the cut location and secure the brake hose in place.



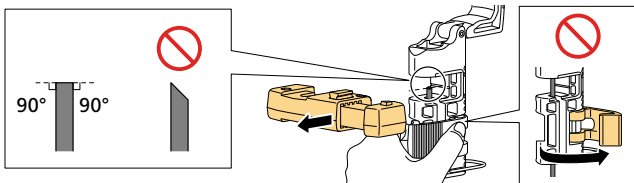
#### 6. Check that the hose is secure, then install the hose cutter.



**7. Press the hose cutter as shown in the figure to cut the brake hose.**

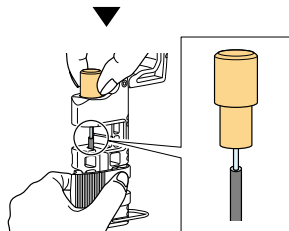
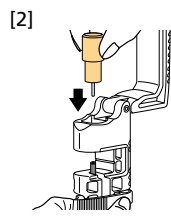
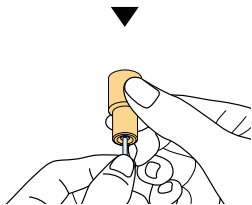
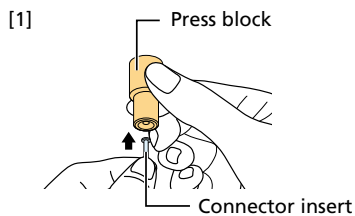


**8. Remove the hose cutter and check that the cut end is even.**



**9. Install the connector insert in the press block, then set the press block in the TL-BH62.**

Make sure that the tip of the connector insert is correctly positioned inside the opening of the brake hose.



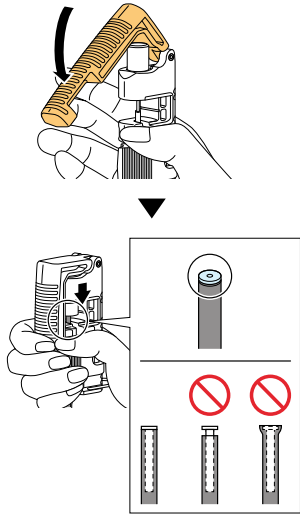


## NOTICE

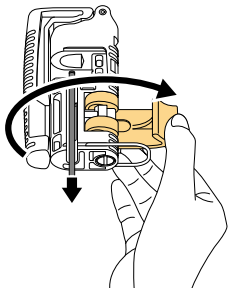
- When connecting with an easy hose joint system, a specific Connector Insert (SHIMANO CODE No.: Y8JA98020/color: silver) must be used. Use of any connector insert other than the specified one may lead to oil leakage and other malfunctions.

### 10. Depress the lever on the TL-BH62 to install the connector insert in the brake hose.

Check that the connector insert is installed correctly.

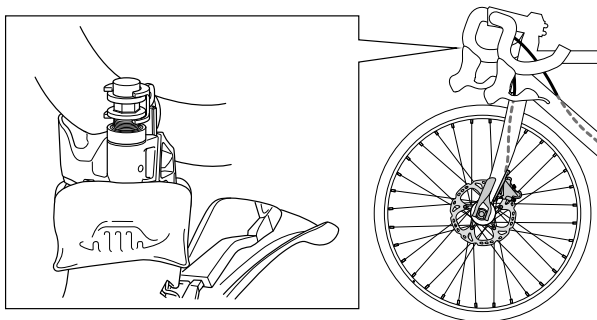


### 11. Remove the brake hose from the TL-BH62.



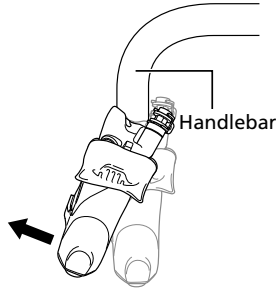
## Connecting the hose

- Secure the lever with the hose connector facing up by changing the angle of the handlebar, etc.

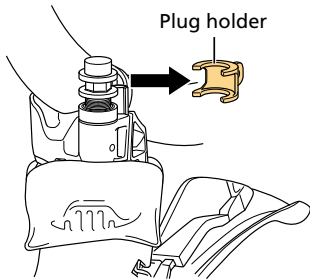


## NOTICE

- You may need to adjust the angle of the lever outward in order to gain clearance for the spanner. At that time, be careful not to damage the handlebar and other parts.

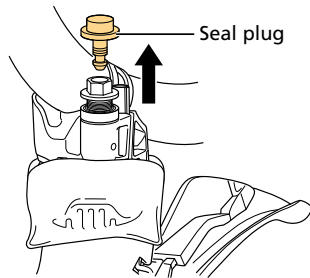


**2. Remove the plug holder.**



**3. Remove the seal plug.**

Use a clean rag to keep oil from dripping off the seal plug.

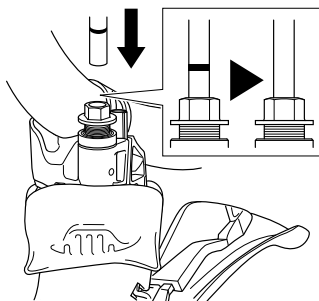


**4. Insert the brake hose into the brake hose connection port.**

The lever comes with a pre-installed olive. When inserting the hose, ensure it does not snag on the olive.

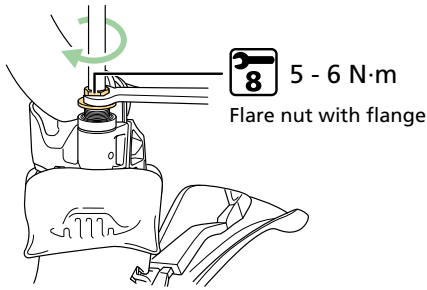
Insert the hose up to the witness mark on the outer hose casing.

Cover with a clean rag while conducting this procedure as some of the internal oil may leak.



**5. Tighten the flare nut with flange.**

Tighten the flare nut with flange while pushing the brake hose in.



## NOTICE

- Make sure to fully insert the brake hose and tighten the flare nut. Otherwise, oil leaks or insufficient braking force may occur.

6. Wipe away any excess oil.
7. Check that the pad spacer is installed in the caliper.
8. Operate the brake lever several times. Check that the pads grip the pad spacer and that the lever becomes stiff.

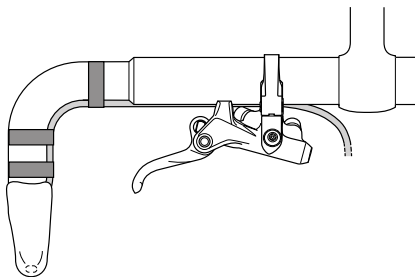
If the lever does not become stiff, refer to " [Adding mineral oil and bleeding air](#) " and bleed the air from the system.

## Installing the brake hose to the sub brake lever

Use care when cutting the hose, as oil may leak when the hose is cut.

1. Install the sub brake lever at the actual installation location and installation angle.

Refer to " [Installing the sub brake lever](#) " for the installation procedure.

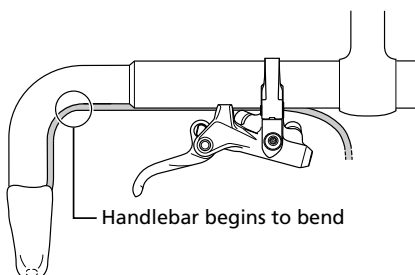


2. Cut the brake hose around where the handlebar begins to bend.

Cut using the TL-CT12 or casing cutter.

Peel off any tape or similar materials holding the brake hose in place.

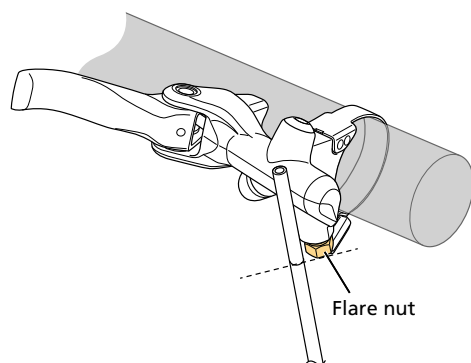
Remove the brake hose from the lever side. Discard the brake hose after removing it. You will reuse the flare nut, so be sure to store it in a safe place (do not discard it).



3. Determine the appropriate length and add a witness mark on the brake hose.

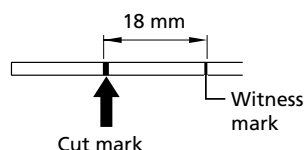
Remove the hose cover from the sub brake lever and add a mark on the end of the flare nut.

There are two flare nuts. When connecting it to the brake caliper, use the flare nuts in the positions shown in the figure.



**4. Add a cut mark.**

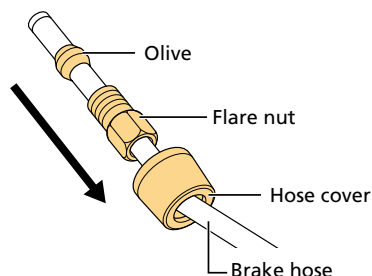
Add a cut mark 18 mm towards the end of the hose from the witness mark.



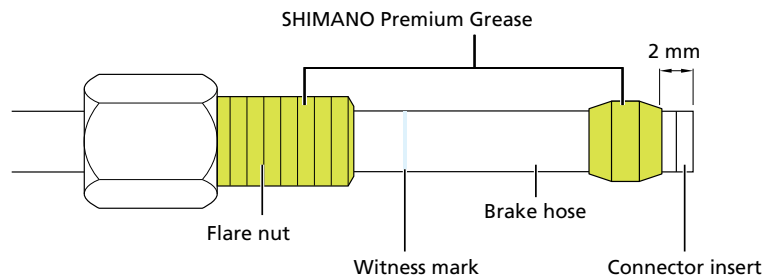
**5. Cut the brake hose and install the connector insert.**

Refer to steps [3](#) - [11](#) from "Cutting the hose" in "Installing the brake hose."

**6. Pass the hose cover, flare nut, and olive over the brake hose.**



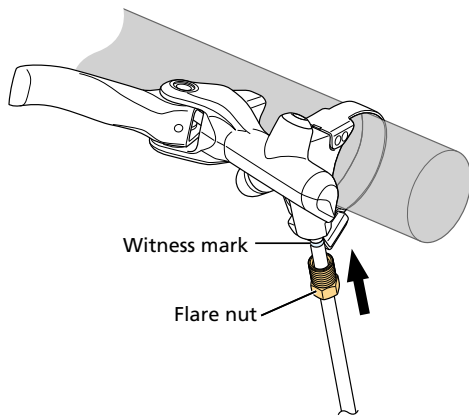
**7. Check that the olive is in the position shown in the figure, then apply SHIMANO Premium Grease to the threads of the flare nut and outer surface of the olive.**



**8. Install the brake hose in the sub brake lever.**

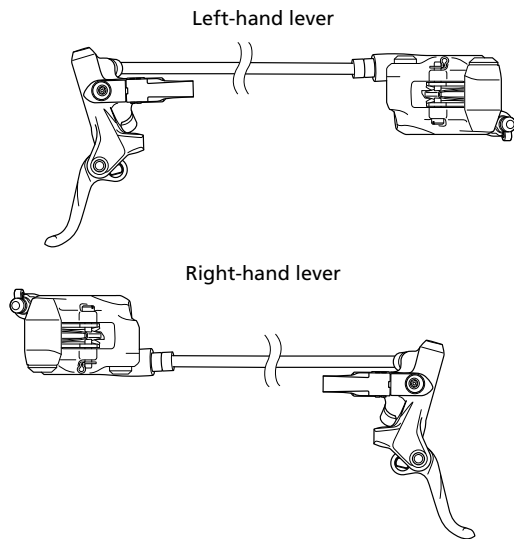
Insert the hose up to the witness mark on the outer hose casing.

Make sure that the brake hose is not twisted.

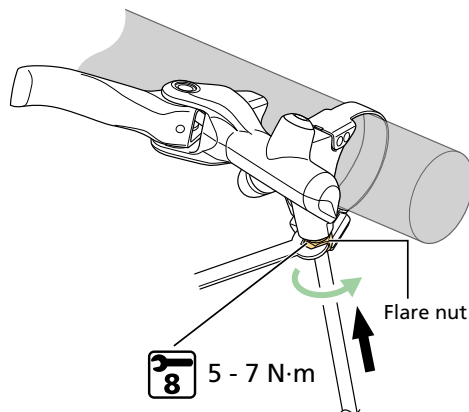


## NOTICE

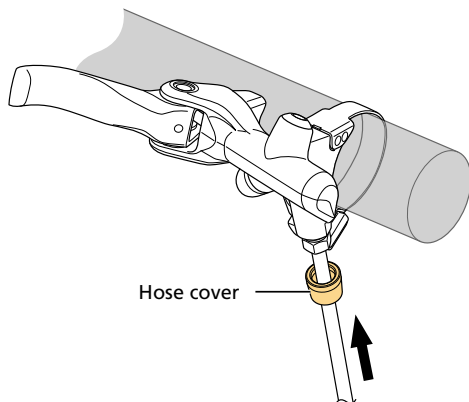
- Do not let the brake hose become twisted when installing it. Check that the brake caliper and sub brake lever are in the positions shown in the figure.



9. Tighten the flare nut while pushing the brake hose in.

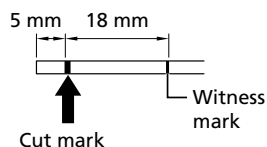


10. Install the hose cover.



**11. Add two marks to one end of the brake hose, as indicated in the figure.**

Use the brake hose included with the sub brake lever.

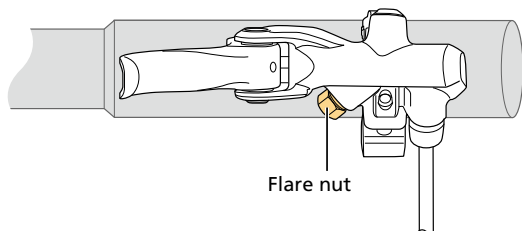


**12. Cut the brake hose and install the connector insert.**

Refer to steps [3](#) - [11](#) from "Cutting the hose" in "Installing the brake hose."

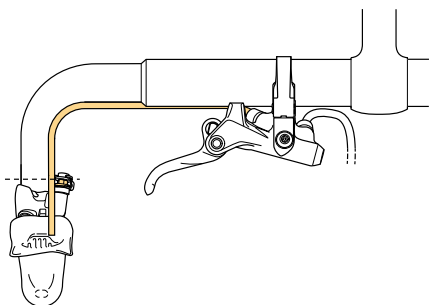
**13. Install the brake hose to the flare nut in the position indicated in the figure.**

Refer to steps [6](#) - [10](#) to install it.



**14. Place the brake hose along the handlebar, check the length when connecting to the lever, then cut the hose.**

Refer to " [Cutting the hose](#) " in "Installing the brake hose" for information on determining the appropriate length and cutting the brake hose.

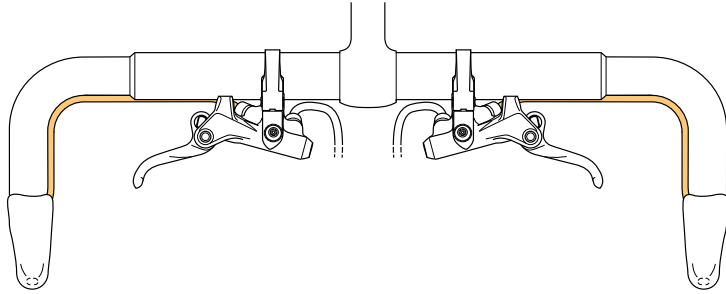


**15. Install the brake hose in the lever.**

Refer to steps [1](#) - [6](#) from "Connecting the hose" in "Installing the brake hose."

**NOTICE**

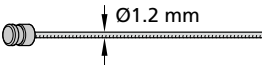
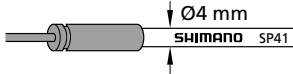
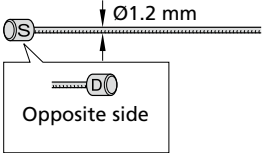
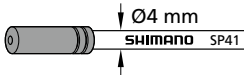
- Do not let the brake hose become twisted when installing it. Check that the lever and sub brake lever are in the positions shown in the figure.



16. After installing the brake hose, refer to “ [SHIMANO genuine mineral oil replacement](#) ” to inject the mineral oil and bleed the air from the system.

# Installing the shift cable / seat post cable

## Cable to be used

Designated inner cable		Recommended outer casing
ST-RX810 / ST-RX820		Outer cap with tongue / SP41 outer casing 
ST-RX600 / ST-RX610 / ST-RX400 / ST-RX810-LA / ST-RX820-LA		Normal outer cap / SP41 outer casing 

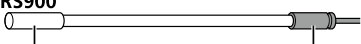
### NOTICE

- 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.

## Outer cap with tongue installation position

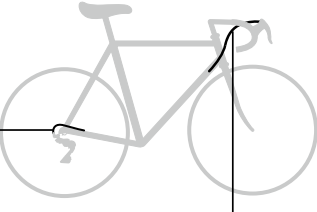
If outer casing longer than 240 mm is required on the rear derailleur side, use OT-SP41 outer casing rather than OT-RS900.

**OT-RS900**

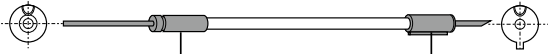


Cap with long tongue

Sealed outer cap (aluminum type) (rear derailleur side)



**OT-SP41**



Cap with long tongue\*      Cap with short tongue (shifter side)

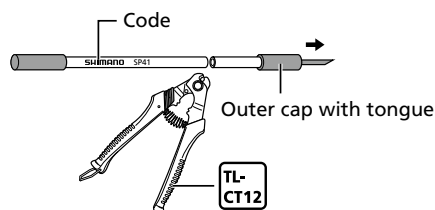
\* Refer to the seat post owner's manual for information on the outer cap on the seat post.



## Cutting the outer casing

### 1. Cut the outer casing using a cable cutter (TL-CT12), etc.

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



#### NOTICE

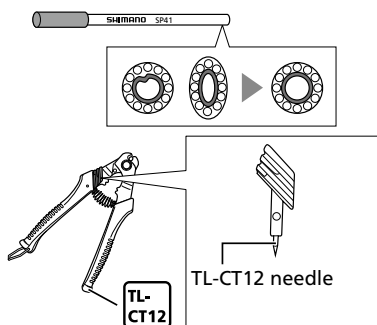
- Cut the outer casing so it still has some length to spare even when the handlebars are turned all the way to either side.

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



### 3. Spread out the tip of the liner (Ø2.2 or more) using a thin tool such as a TL-CT12 needle.

Arrange the cut end into a perfect circle.

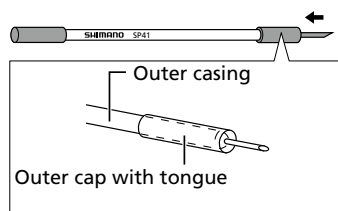


#### NOTICE

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

### 4. Install the outer cap with tongue.

Insert the outer casing until it closely contacts with the seating surface of the outer cap with tongue.



#### NOTICE

- When inserting the outer casing, take care to ensure that the tip of the outer cap with tongue is not damaged.

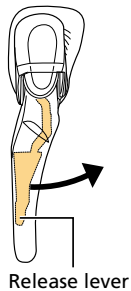
## Installing the inner cable

The illustration shows the right-hand lever.

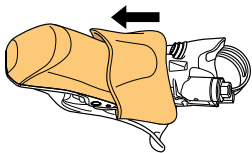
### 1. Set the lever position to the top.

Operate the release lever 10 times or more.

ST-RX810-LA and ST-RX820-LA do not have a release lever, so there is no need to operate it.

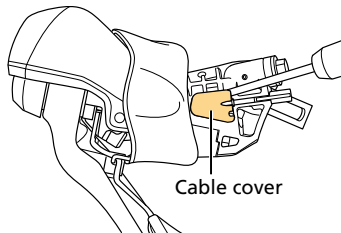


### 2. Turn over the bracket cover from the back side.

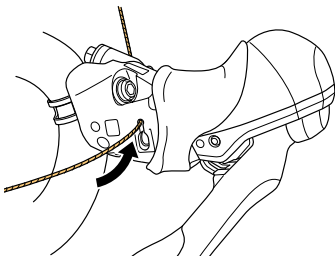


### 3. Remove the cable cover from the bracket.

Remove it using a screwdriver, etc.



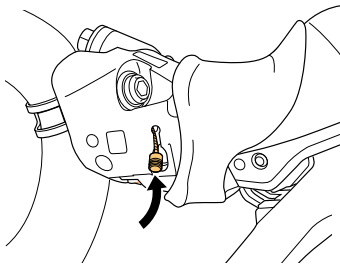
### 4. Install the inner cable through the lever bracket as shown in the figure.



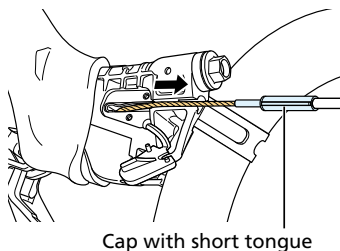
## NOTICE

- Insert the inner cable while being careful not to damage the coating.

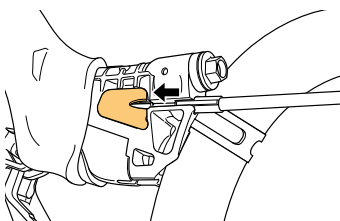
### 5. Insert the cable in such a manner that the inner end is attached to the unit.



6. Install the inner cable through the lever bracket as shown in the figure.



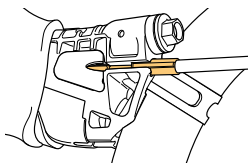
7. Install the cable cover to the bracket.



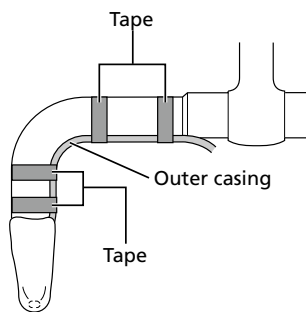
### TECH TIPS

- If the coating is damaged when the inner cable is installed, the coating may become fluffy; however, function will not be affected.

8. Insert the alignment tab of the cap with short tongue into the indicator groove on the lever bracket.



9. Temporarily secure the outer casing to the handlebar (by using tape or a similar material).



10. Wrap the handlebar with handlebar tape.

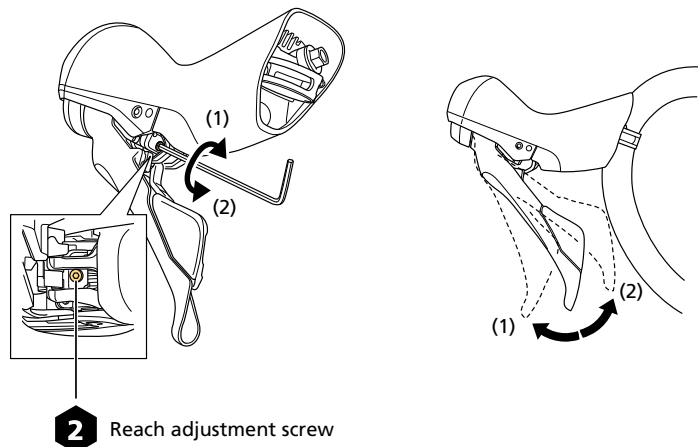
# Adjustment

## Adjusting the reach

1. Turn the reach adjustment screw to adjust the reach.

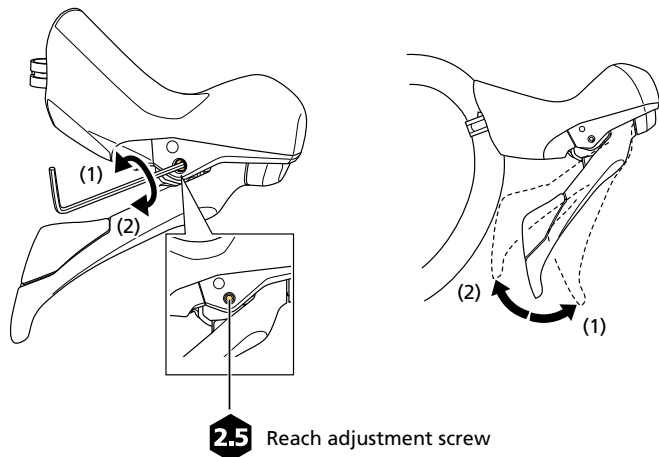
**ST-RX810 / ST-RX820 / BL-RX810 / BL-RX820 / ST-RX810-LA / ST-RX820-LA**

Tightening the reach adjustment screw (clockwise) widens the distance between the position of the lever and the handlebar, while loosening the screw (counterclockwise) narrows it.



**ST-RX400 / ST-RX600 / ST-RX610 / BL-RX600 / BL-RX610**

Tightening the reach adjustment screw (clockwise) narrows the distance between the position of the lever and the handlebar, while loosening the screw (counterclockwise) widens it.



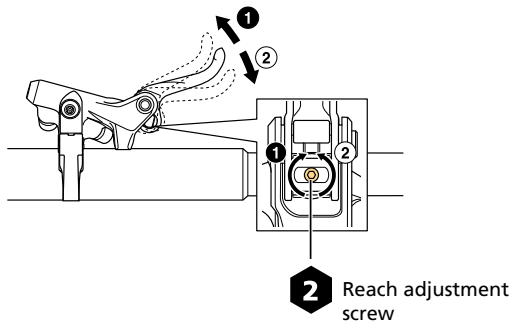
**BL-RX812**

Tightening the reach adjustment screw (clockwise) widens the distance between the position of the lever and the handlebar, while loosening the screw (counterclockwise) narrows it.

## Adjustment

### Adjusting the reach

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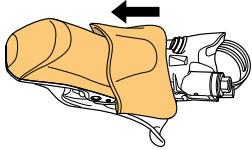
#### ***NOTICE***

- Make sure that braking operates properly after the adjustment. If you are using a sub brake lever, confirm the brake operation using both the main lever and the sub brake lever.

# Adjusting the free stroke

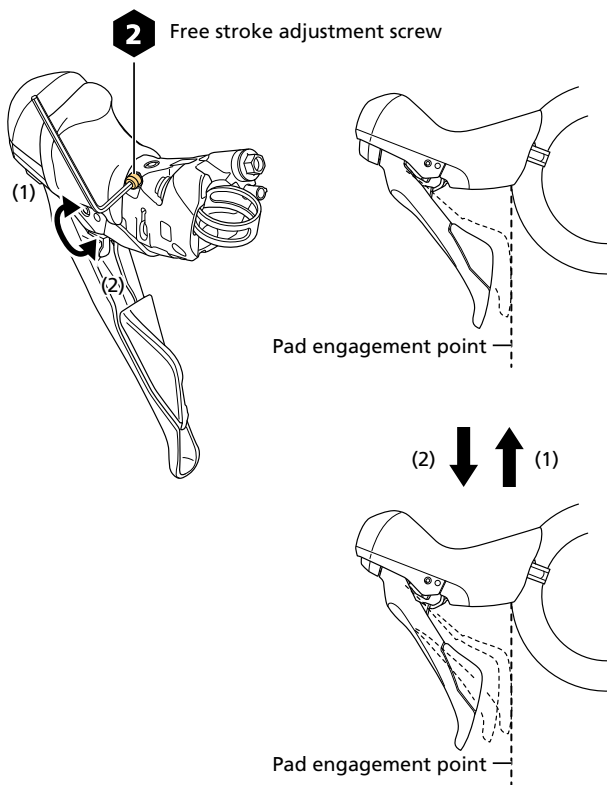
Adjust the range of travel of the lever until the pad and rotor come into contact. The free stroke adjustment moves only the initial position of the lever. If you want to move the pad engagement point relative to the handlebar, you must also perform a reach adjustment.

## 1. Turn over the bracket cover from the back side.



## 2. Turn the free stroke adjustment screw to adjust the stroke.

Tightening the free stroke adjustment screw (clockwise) narrows the range of travel of the lever, while loosening the screw (counterclockwise) widens it.



### NOTICE

- Free stroke cannot be adjusted for the ST-RX400 / ST-RX600 / ST-RX610 / BL-RX600 / BL-RX610 / BL-RX812.
- Stop loosening the free stroke adjustment screw when the free stroke stops increasing. Loosening the free stroke adjustment screw excessively may cause the screw to fall out of the bracket body. Do not forcibly tighten the free stroke adjustment screw. Otherwise, the free stroke adjustment screw may be damaged.
- Do not remove the washer from the free stroke adjustment screw.
- Position the free stroke adjustment screw so that it does not interfere with the bracket cover.

# Maintenance

## Replacing the pads

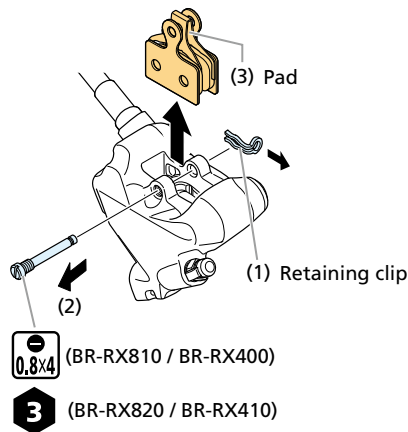
Replace the pads in the following circumstances:

- When the pads become contaminated due to oil, etc.
- When the thickness at the most worn-down part of the pad is 0.5 mm
- When the pad presser spring is interfering with the rotor

**1. Remove the wheel from the frame.**

**2. Remove the pads from the caliper.**

- (1) Remove the retaining clip.
- (2) Remove the pad axle.
- (3) Remove the pads from the caliper.



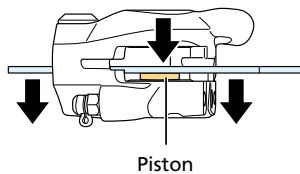
**3. Clean the pistons and the surrounding area.**

**4. Push the pistons straight back as far as they will go.**

This brake system is designed to automatically adjust the gap between the rotor and the pads by the pistons gradually protruding in relation to the wear of the pads. As a result, when the pads are replaced, the pistons need to be pushed back into position.

Use a flat-shaped tool to push the pistons back while being careful not to twist them.

Do not push the pistons with a sharp tool. Doing so may damage the pistons.



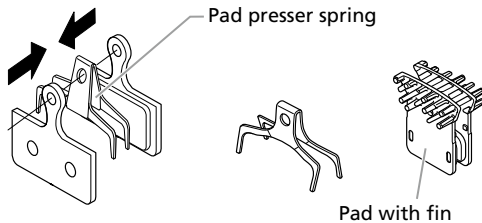
**NOTICE**

- When pushing the pistons back, do so with the oil funnel attached to the dual control lever/brake lever. Otherwise, the diaphragm of the dual control lever/brake lever may be damaged by the oil pressure.

After pushing the pistons back, remove the oil funnel. For instructions on installing/removing the oil funnel, refer to " [Adding mineral oil and bleeding air.](#) "

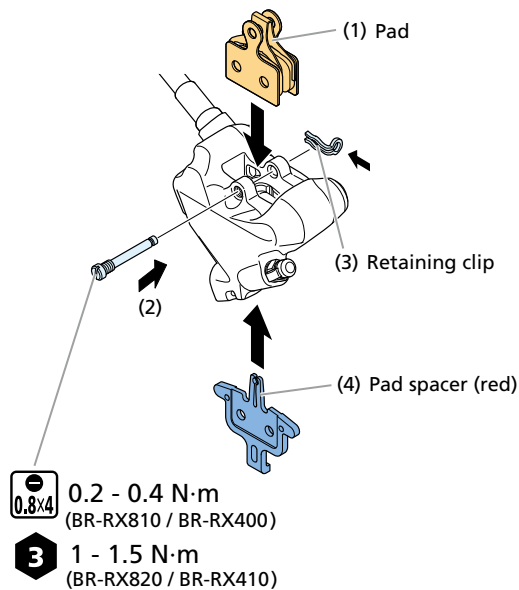
## 5. Set the pad presser spring in the new pads.

Set the pads as shown in the figure.



## 6. Install the pads.

- (1) Set the pads in the caliper.
- (2) Install the pad axle.
- (3) Install the retaining clip.
- (4) Install the pad spacer (red).



## 7. Depress the brake lever a few times and make sure that the lever operation becomes stiff.

## 8. Remove the pad spacer and install the wheel.

## 9. Check that the rotor does not interfere with the pads.

If there is interference, check if the wheel is installed correctly. If there is no problem with the installation of the wheel, refer to " [Installing the brake calipers](#) " and adjust the position of the caliper.

**NOTICE**



- To optimize the performance of the pads and rotor after replacing the pads, perform the bed-in procedure as explained in the steps below:
  - (1) Ride your bicycle in a flat and safe area without obstacles and accelerate to a moderate speed.
  - (2) Operate the brake lever until you slow down to walking speed.

Do this only with one brake lever at a time. Be careful when performing this procedure. Always operate your brake lever with moderation, especially when you bed in the front brake.
  - (3) Repeat steps (1) and (2) at least 20 times for both the front and rear brakes.

While repeating the process, the brake force will increase.

# SHIMANO genuine mineral oil replacement

It is recommended to change the oil when it becomes noticeably discolored.

## Draining the mineral oil

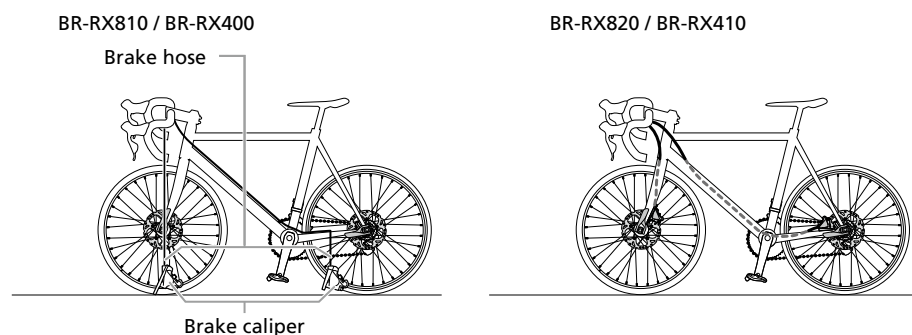
### ⚠ CAUTION

Note the following cautions when handling SHIMANO genuine mineral oil:

- Do not drink. May cause vomiting or diarrhea.
- Keep out of reach of children.
- Do not cut, let near heat, weld or pressurize the SHIMANO genuine mineral oil container. Doing so may cause an explosion or fire.
- Disposal of used oil: Follow local county and/or state codes for disposal.
- Directions: Keep the container sealed to prevent foreign objects and moisture from getting inside, and store it in a cool, dark area away from direct sunlight or heat. Keep from heat or flame.

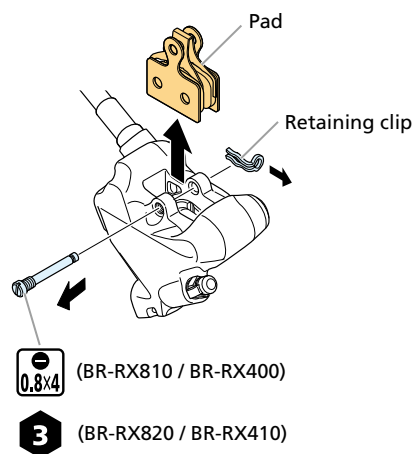
### 1. Position the bicycle as shown in the figure.

The BR-RX820 and BR-RX410 can be worked on while installed to the frame.



### 2. Remove the pads from the caliper.

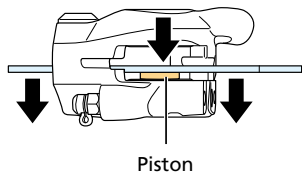
Remove the retaining clip, then remove the pad axle.



### 3. Push the pistons straight back as far as they will go.

Use a flat-shaped tool to push the pistons back while being careful not to twist them.

Do not push the pistons with a sharp tool. Doing so may damage the pistons.



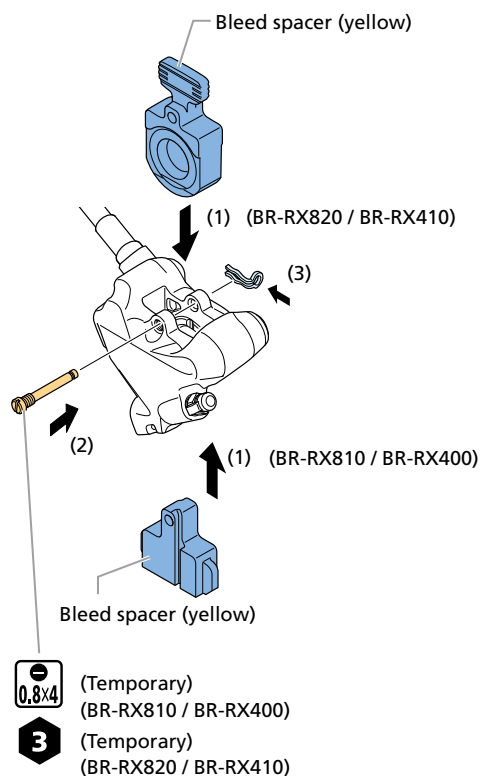
## NOTICE

- When pushing the pistons back, do so with the oil funnel attached to the dual control lever/brake lever. Otherwise, the diaphragm of the dual control lever/brake lever may be damaged by the oil pressure.

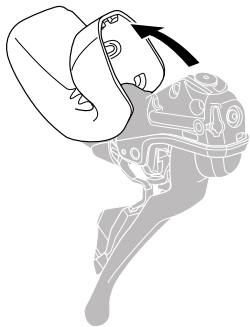
After pushing the pistons back, remove the oil funnel. For instructions on installing/removing the oil funnel, refer to "[Adding mineral oil and bleeding air](#)."

### 4. Install the bleed spacer.

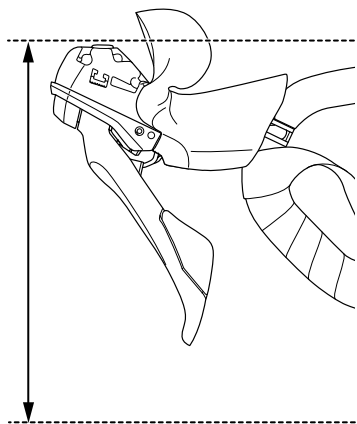
- (1) Set the bleed spacer (yellow) in the caliper.
- (2) Install the pad axle.
- (3) Install the retaining clip.



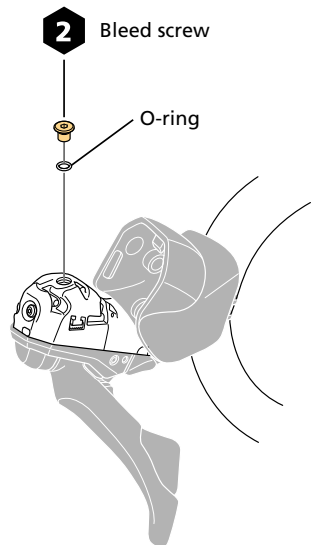
### 5. Turn over the bracket cover from the front side.



6. Set the lever in a position where the top surface of the bleed screw is parallel with the ground.



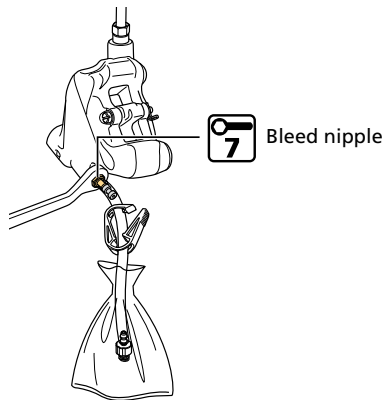
7. Remove the bleed screw and O-ring.



8. Install a bag and tube on the bleed nipple/bleed boss.

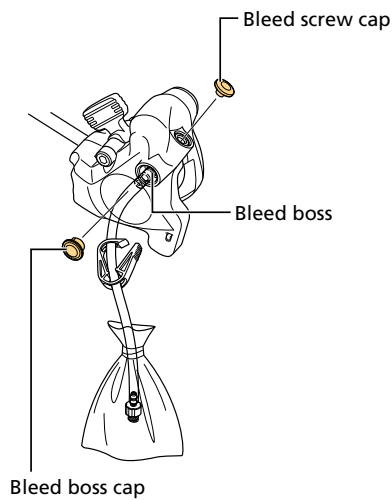
**BR-RX810 / BR-RX400**

- (1) Remove the bleed nipple cap.
- (2) Place a 7 mm box wrench in the position shown in the figure.
- (3) Connect the tube with bag attached to the bleed nipple.



### BR-RX820 / BR-RX410

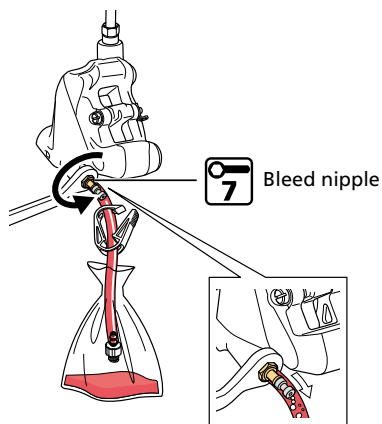
- (1) Remove the bleed boss cap and bleed screw cap.
- (2) After attaching a bag to the tube, connect the tube to the bleed boss.



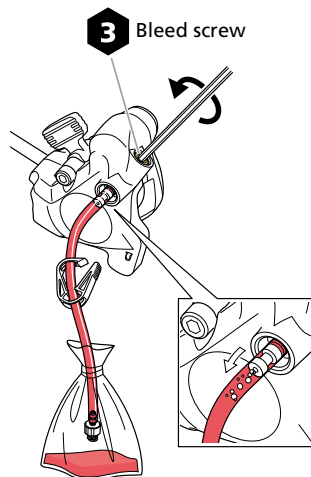
### 9. Loosen the bleed nipple/bleed screw.

The oil will begin to drain. Operating the brake lever while the oil drains will allow the oil to drain more quickly.

BR-RX810 / BR-RX400



BR-RX820 / BR-RX410



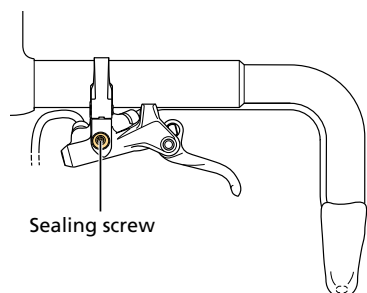
## Adding mineral oil and bleeding air

When adding oil, use only SHIMANO genuine mineral oil.

If you are not using a sub brake lever, the procedures in step [5](#) and [12 - 16](#) are not necessary.

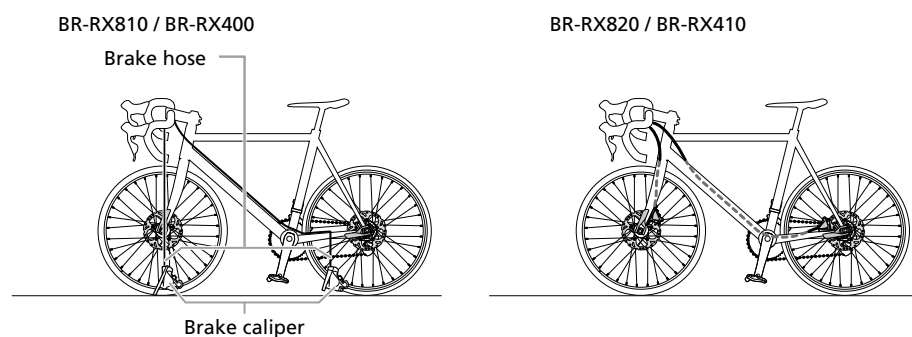
## NOTICE

- Do not loosen the sealing screw on the sub brake lever when replacing the mineral oil.



### 1. Position the bicycle as shown in the figure.

The BR-RX820 and BR-RX410 can be worked on while installed to the frame.

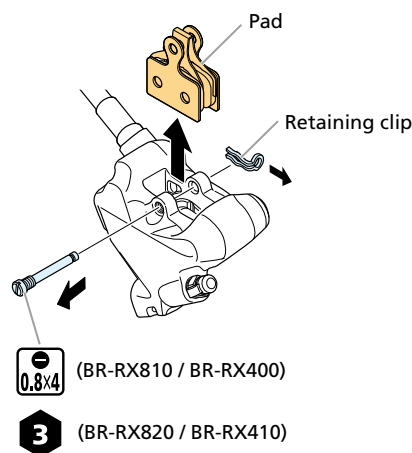


## NOTICE

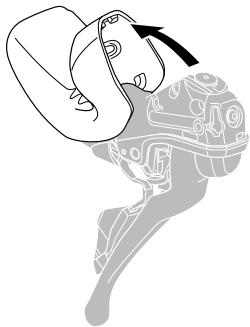
- When bleeding air you will need the TL-BR001 and TL-BR002 SHIMANO original bleed tools.

### 2. Remove the pads from the caliper.

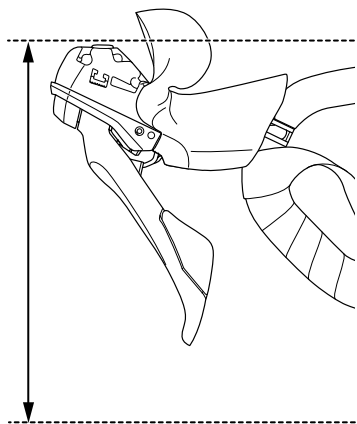
Remove the retaining clip, then remove the pad axle.



### 3. Turn over the bracket cover from the front side.



4. Set the lever in a position where the top surface of the bleed screw is parallel with the ground.

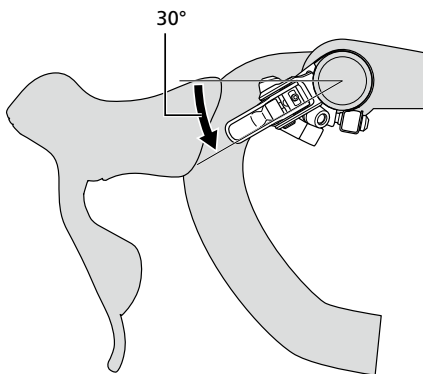


### **NOTICE**

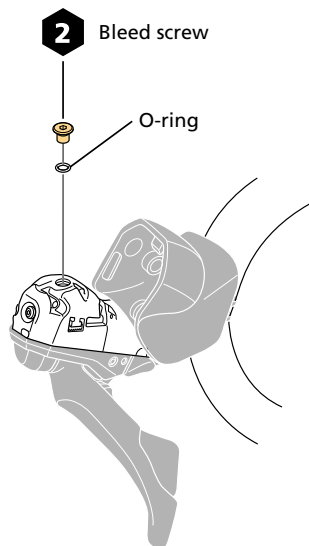
- When adjusting the angle of the brake lever, be careful not to strain the brake hose or shift cable to avoid damage.

5. Tilt the sub brake lever downwards 30° from the horizontal position.

This procedure is not required if no sub brake lever is installed.



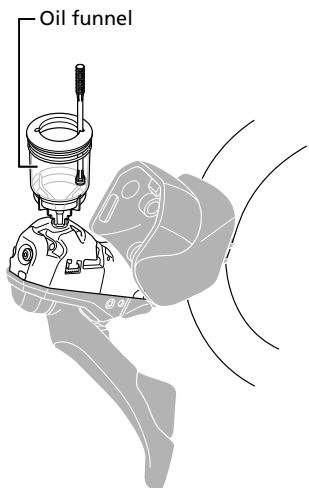
6. Remove the bleed screw and O-ring.



## NOTICE

- Be careful not to drop the bleed screw or O-ring.

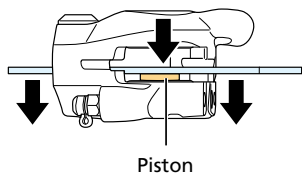
### 7. Mount the oil funnel.



### 8. Push the pistons straight back as far as they will go.

Use a flat-shaped tool to push the pistons back while being careful not to twist them.

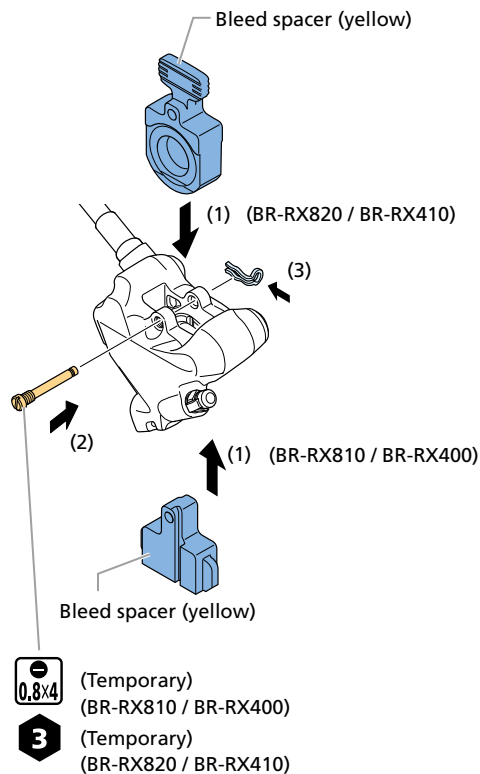
Do not push the pistons with a sharp tool. Doing so may damage the pistons.



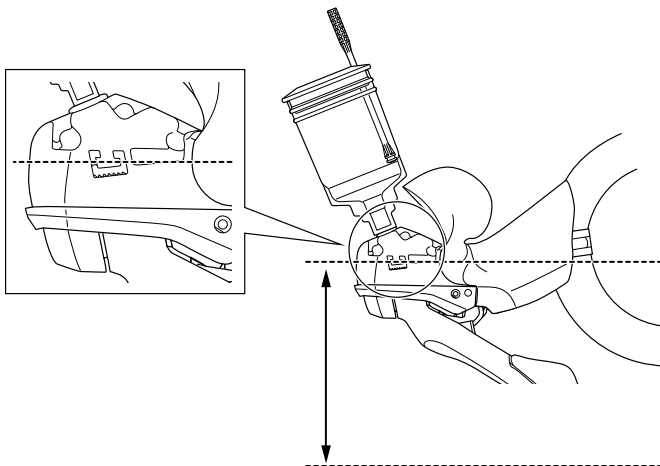
### 9. Install the bleed spacer.

- (1) Set the bleed spacer (yellow) in the caliper.
- (2) Install the pad axle.
- (3) Install the retaining clip.





- 10. Set the lever in a position where the bracket surface indicated in the figure is parallel with the ground.**  
Perform adjustment by changing the angle of the handle, etc.



### NOTICE

- When adjusting the angle of the brake lever, be careful not to strain the brake hose or shift cable to avoid damage.

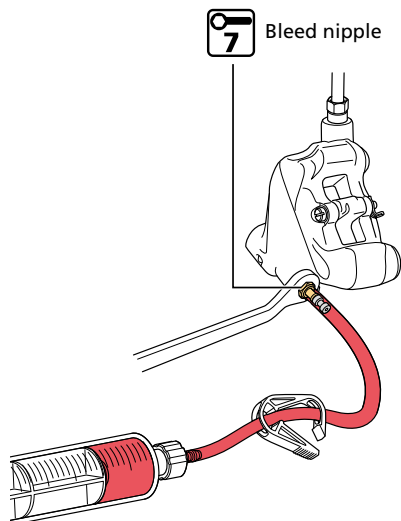
### 11. Add the oil through the bleed nipple/bleed boss.

Do not depress the brake lever while adding oil. Doing so may introduce air bubbles into the system. If the lever was depressed, drain the oil and re-start the process.

#### BR-RX810 / BR-RX400

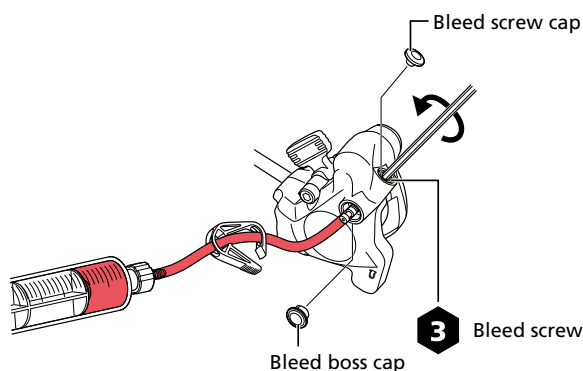
- (1) Remove the bleed nipple cap.

- (2) Place a 7 mm box wrench in the position shown in the figure.
- (3) Fill a syringe with oil, then connect the tube to the bleed nipple.
- (4) Loosen the bleed nipple by 1/8 of a turn.
- (5) Push the piston of the syringe to add the oil.
- (6) Oil will start to come out from the oil funnel. Continue adding the oil until there are no more air bubbles in the oil that is coming out.



#### BR-RX820 / BR-RX410

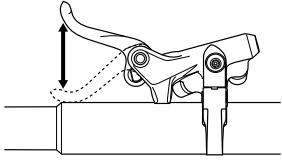
- (1) Remove the bleed boss cap and bleed screw cap.
- (2) Fill a syringe with oil, then connect the tube to the bleed boss.
- (3) Loosen the bleed screw by 1/2 of a turn.
- (4) Push the piston of the syringe to add the oil.
- (5) Oil will start to come out from the oil funnel. Continue adding the oil until there are no more air bubbles in the oil that is coming out.



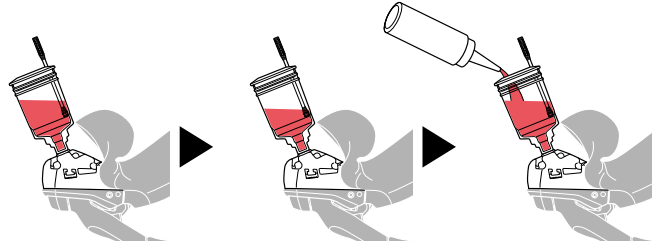
#### 12. Grip and release the sub brake lever around 10 times.

Slowly grip the sub brake lever over 1 to 2 seconds until it makes contact with the handlebar, then slowly release it over 1 to 2 seconds.

Continue to work up until step [17](#) with the syringe connected, without closing the bleed nipple on the brake caliper.



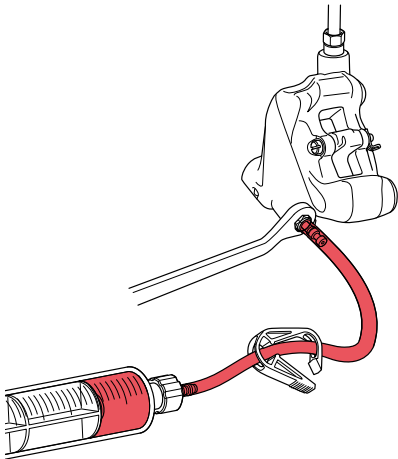
**13. As the oil level drops in the oil funnel, add oil to maintain the oil level and prevent air from getting into the system.**



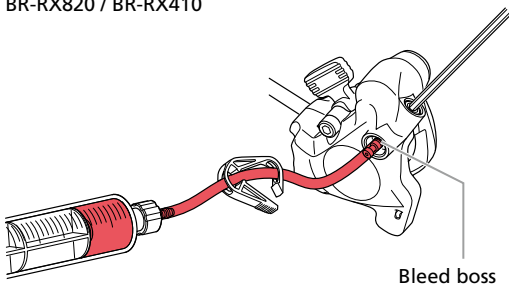
**14. Add the oil through the bleed nipple/bleed boss.**

- (1) Push the piston of the syringe to add the oil.
- (2) Continue adding oil until there are no more air bubbles in the oil that is coming out.

BR-RX810 / BR-RX400

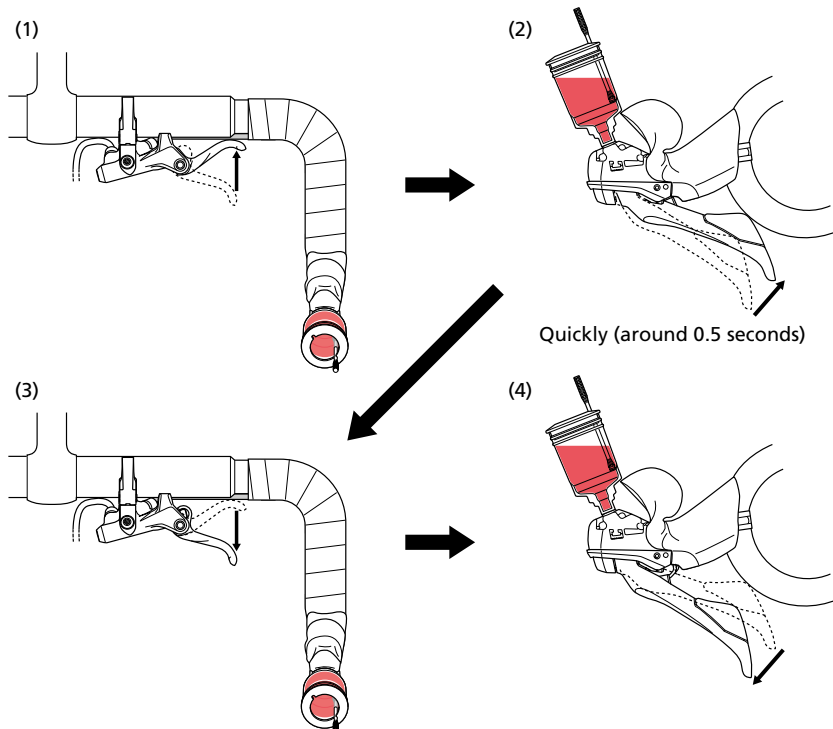


BR-RX820 / BR-RX410



**15. Perform the following lever operation:**

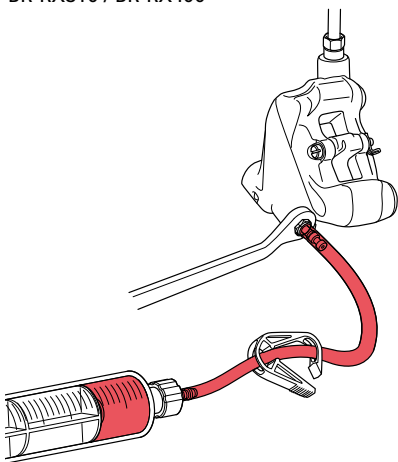
- (1) Grip the sub brake lever until it makes contact with the handlebar.
- (2) While gripping the sub brake lever, quickly grip the main brake lever until it makes contact with the handlebar (around 0.5 seconds).
- (3) Release the sub brake lever.
- (4) Release the main brake lever.



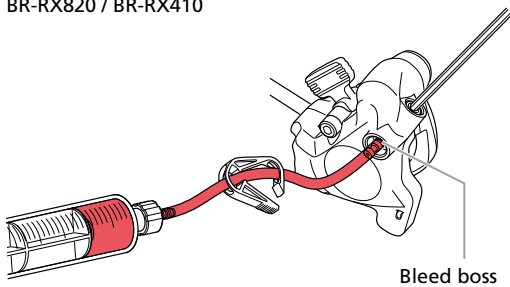
**16. Add the oil through the bleed nipple/bleed boss.**

- (1) Push the piston of the syringe to add the oil.
- (2) Continue adding oil until there are no more air bubbles in the oil that is coming out.

BR-RX810 / BR-RX400

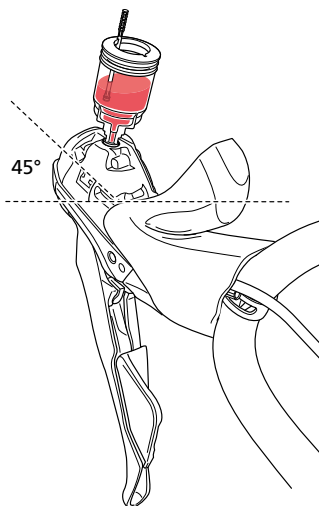


BR-RX820 / BR-RX410



**17. Once there are no more air bubbles mixed in with the oil, set the lever in the position where the bracket is at 45°, as shown in the figure.**

Perform adjustment by changing the angle of the handle, etc.



**18. Fill the oil funnel with oil until there are no more air bubbles mixed in with the oil, and temporarily close the bleed nipple/bleed screw.**

**19. Remove the syringe.**

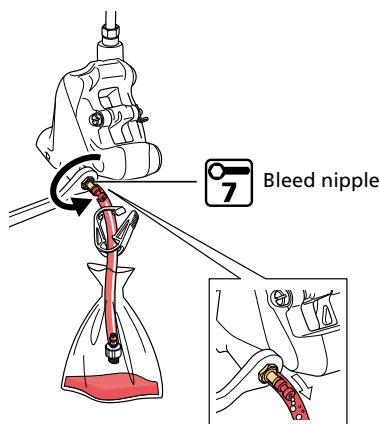
Cover the end of the syringe with a clean rag to prevent spilling any oil.

**20. Bleed the remaining air.**

Most of the air bubbles remaining inside the brake system can be bled by performing the following operation:

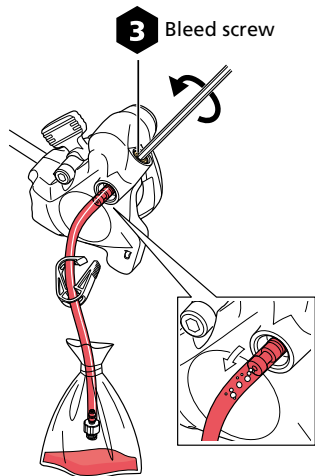
**BR-RX810 / BR-RX400**

- (1) Place a 7 mm box wrench in the position shown in the figure.
- (2) Connect the tube with bag attached to the bleed nipple.
- (3) Loosen the bleed nipple.
- (4) After a little while, the oil and air bubbles will flow naturally from the bleed nipple into the tube.



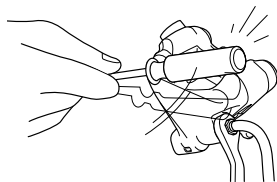
**BR-RX820 / BR-RX410**

- (1) After attaching a bag to the tube, connect the tube to the bleed boss.
- (2) Loosen the bleed screw.
- (3) After a little while, the oil and air bubbles will flow naturally from the bleed boss into the tube.

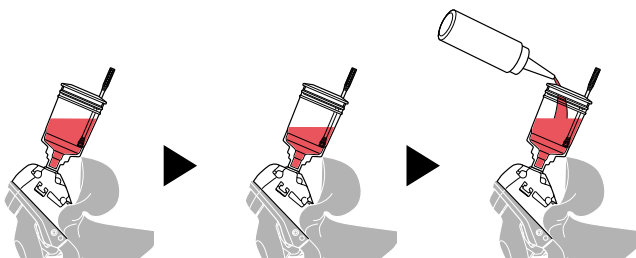


## TECH TIPS

- It may be effective to shake the brake hose gently, to tap the lever bracket or caliper gently with a non-marring screwdriver handle, or to move the position of the calipers.

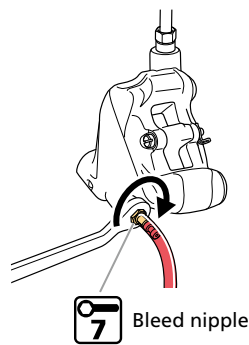


21. As the oil level drops in the oil funnel, add oil to maintain the oil level and prevent air from getting into the system.

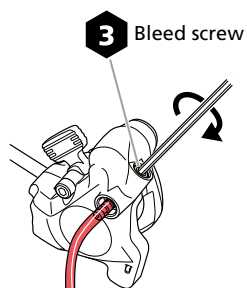


22. Once no more air bubbles come from the bleed nipple/bleed boss, temporarily tighten the bleed nipple/bleed screw.

BR-RX810 / BR-RX400

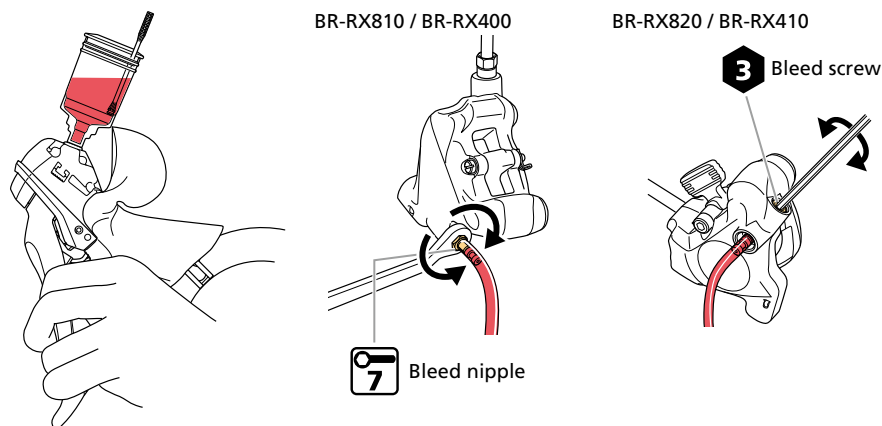


BR-RX820 / BR-RX410

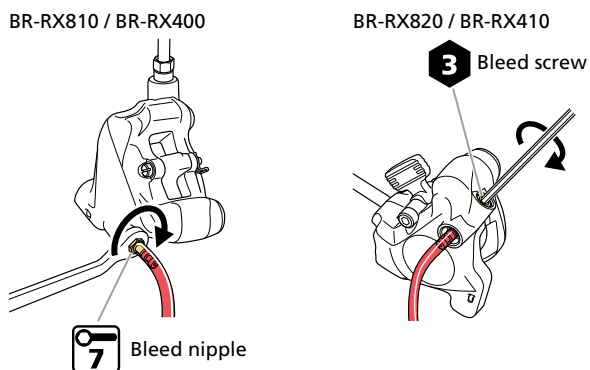


23. With the lever depressed, loosen and tighten the bleed nipple/bleed screw in rapid succession.

Loosen and tighten for approximately 0.5 seconds each time to release any air bubbles inside the caliper.



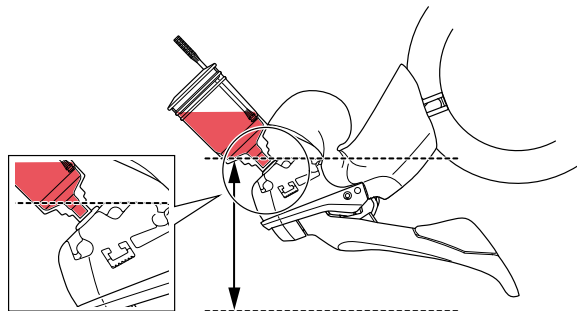
**24. Repeat step 23 two to three times, then tighten the bleed nipple/bleed screw.**



**25. Remove the tube, wipe away any excess oil on the caliper, then install the bleed nipple cap/bleed boss cap/bleed screw cap.**

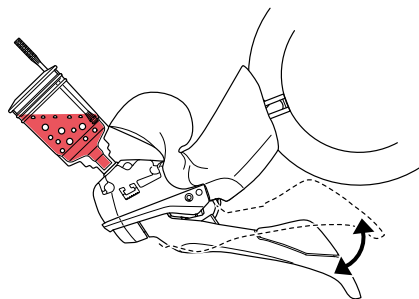
**26. Set the lever in a position where the bracket surface indicated in the figure is parallel with the ground.**

Perform adjustment by changing the angle of the handlebar, etc.



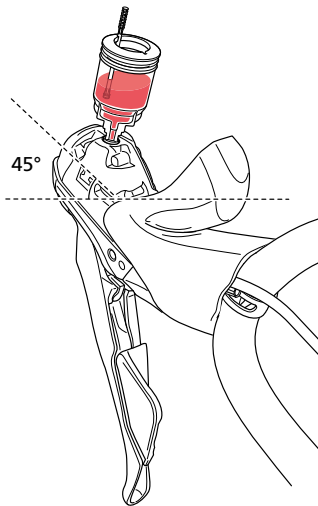
**27. Operate the lever.**

Slowly repeat until no more air bubbles appear.



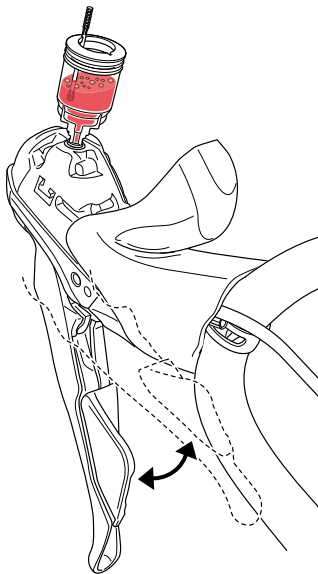
**28. Set the lever in a position where the bracket surface indicated in the figure is at 45° to the ground.**

Perform adjustment by changing the angle of the handle, etc.



**29. Operate the lever.**

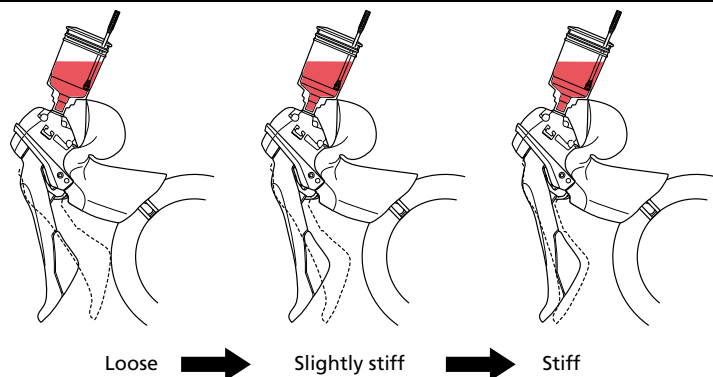
Air bubbles in the system rise up through the port into the oil funnel. Slowly repeat until no more air bubbles appear.



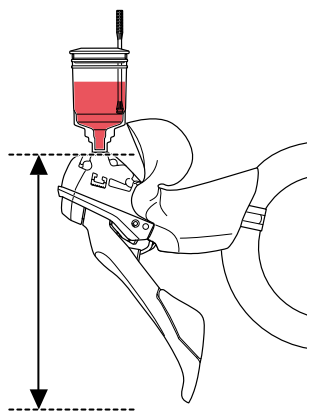
**30. Operate the brake lever several times and check that the pads grip the rotor and that the lever becomes stiff.**

If the lever does not become stiff, repeat the procedures from step [20](#).



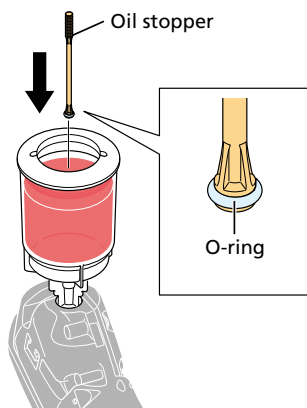


- 31. Set the lever in a position where the top surface of the bleed screw is parallel with the ground.**  
Perform adjustment by changing the angle of the handlebar, etc.



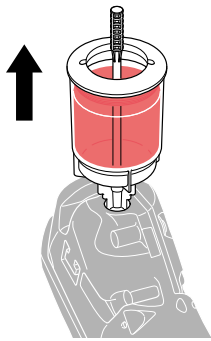
- 32. Plug the oil funnel with the oil stopper.**

Make sure that the side of the oil stopper with the O-ring attached is facing downward.



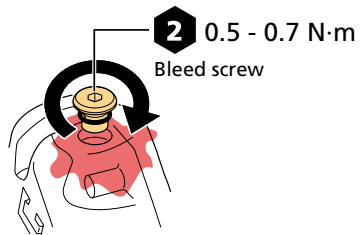
- 33. Remove the oil funnel with the oil stopper still in place.**

Cover the bleed port with a clean rag when removing the funnel to absorb any excess oil that may drip out.

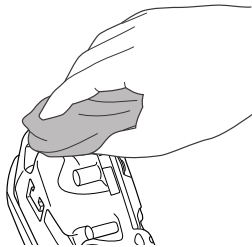


**34. Install a bleed screw with O-ring.**

Tighten until oil overflows to make sure that no air bubbles remain inside the reservoir.  
Do not operate the lever. If operated, there is a risk of air bubbles entering the cylinder.



**35. Wipe away any oil that has overflowed.**



**36. Remove the bleed spacer (yellow), and install the pads.**

Refer to steps [1](#) to [4](#) of “Installing the pads” to perform the procedure.

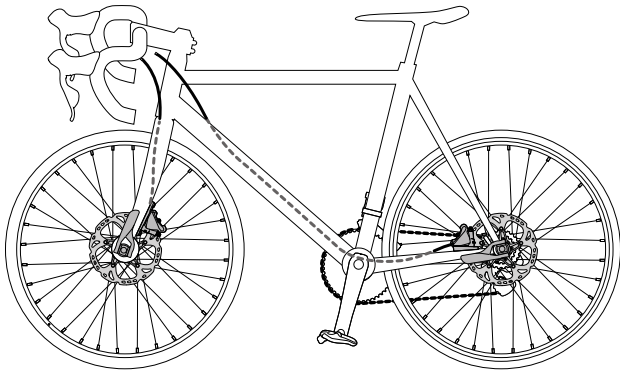
# Replacing the brake hose

After replacing the brake hose, refer to “ [SHIMANO genuine mineral oil replacement](#) ” to inject the mineral oil and bleed the air from the system.

Refer to “ [Installing the brake hose to the sub brake lever](#) ” for information on replacing the brake hose on the sub brake lever side.

## Checking the hose length and cutting the hose

1. Route the brake hose into the final installation position.

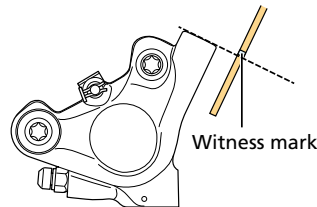
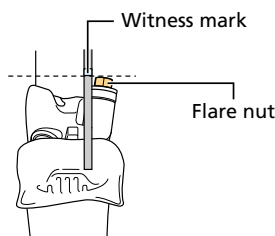


2. After determining the appropriate length, add a witness mark on the brake hose.

Add marks to both the lever side and caliper side of the hose.

Lever side

Caliper side

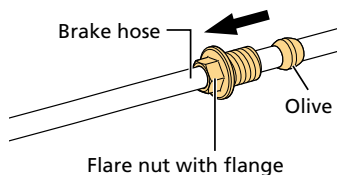


3. Cut the brake hose.

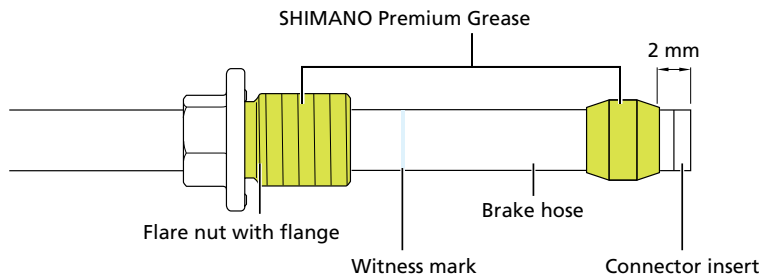
Refer to “ [Cutting the hose](#) ” in “Installing the brake hose.”

## Assembly to the lever

1. Pass the flare nut with flange and olive over the brake hose.

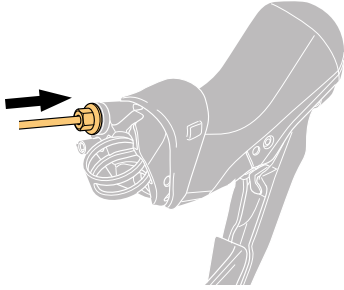


2. Check that the olive is in the position shown in the figure, then apply SHIMANO Premium Grease to the threads of the flare nut and outer surface of the olive.



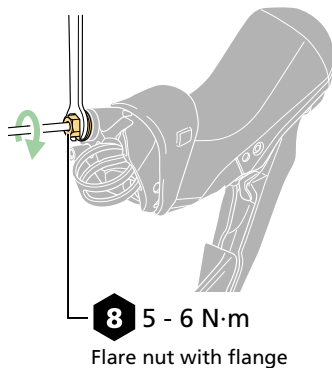
**3. Install the brake hose in the lever.**

Secure the lever to the handlebar or in a vise and insert the brake hose straight.



**4. Tighten the flare nut with flange to the lever while pushing the brake hose.**

Make sure the brake hose is straight when pushing.



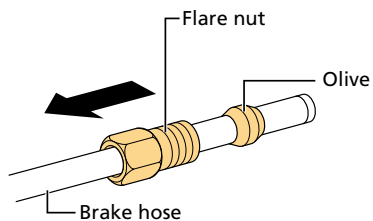
**NOTICE**

- To install the handlebar, adjust the angle of the bracket by tilting the bracket outward from the handlebar so that you can turn the spanner. At that time, be careful not to damage the handlebar and other parts.

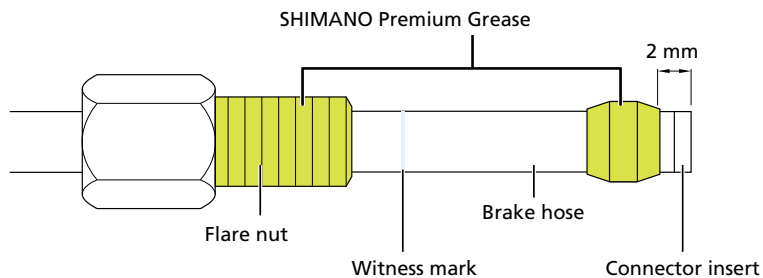
**5. Temporarily secure the brake hose to the handlebar (by using tape or a similar material).**

## Assembly to the brake caliper

**1. Pass the flare nut and olive over the brake hose in the order shown below.**

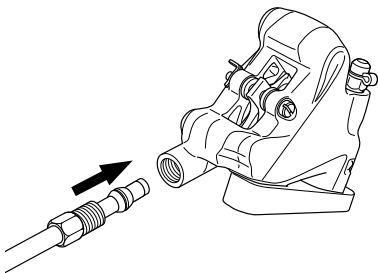


2. Check that the olive is in the position shown in the figure, then apply SHIMANO Premium Grease to the threads of the flare nut and outer surface of the olive.



3. Install the brake hose in the caliper.

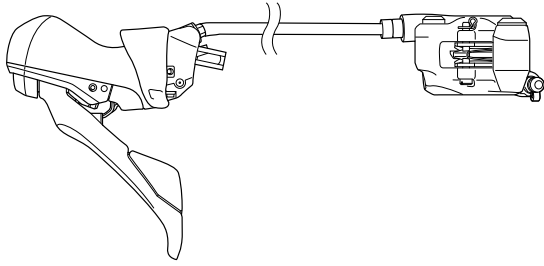
Insert the hose up to the witness mark on the outer hose casing.



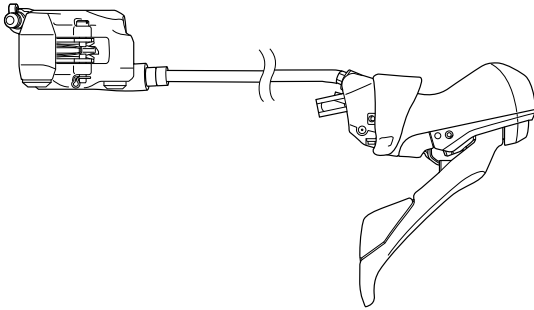
**NOTICE**

- Do not let the brake hose become twisted when installing it.  
Make sure that the calipers and levers are in the positions shown in the figures.

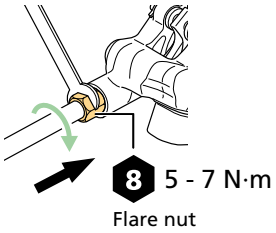
Left-hand lever



Right-hand lever



4. Tighten the flare nut while pushing the brake hose in.

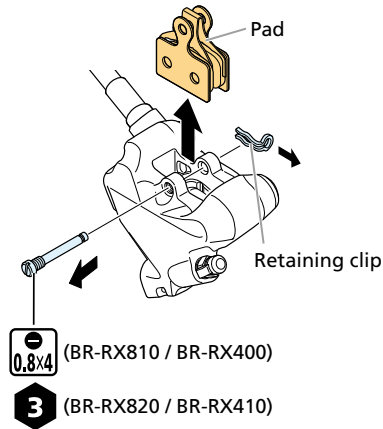


# Caliper piston maintenance

Adjust the pistons with the following procedure if these pistons do not operate properly, if they protrude unevenly, or if the pads remain in contact with the rotor.

1. **Remove the wheel from the frame.**
2. **Remove the pads from the caliper.**

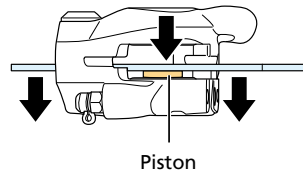
Remove the retaining clip, then remove the pad axle.



3. **Clean the pistons and the surrounding area.**
4. **Push the pistons straight back as far as they will go.**

Use a flat-shaped tool to push the pistons back while being careful not to twist them.

Do not push the pistons with a sharp tool. Doing so may damage the pistons.



## NOTICE

- When pushing the pistons back, do so with the oil funnel attached to the dual control lever/brake lever. Otherwise, the diaphragm of the dual control lever/brake lever may be damaged by the oil pressure.

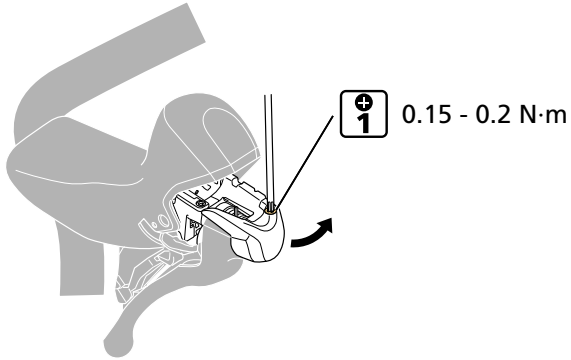
After pushing the pistons back, remove the oil funnel. For instructions on installing/removing the oil funnel, refer to “ [Adding mineral oil and bleeding air.](#)”

5. **Install the pads and pad spacer (red) in the caliper.**
6. **Depress the lever a few times and make sure pistons protrude evenly.**  
If the pistons do not protrude evenly, repeat steps [2](#) to [5](#).
7. **Remove the pad spacer and install the wheel.**
8. **Check that the rotor does not interfere with the pads.**

If there is interference, loosen the mounting screw and adjust until there is no more interference.

## Replacing the name plate

1. Simultaneously perform a braking motion and shifting motion with the lever to expose the screw.
2. Remove the screw, and replace the name plate.



### **NOTICE**

- As the screw is small, be careful not to drop it.

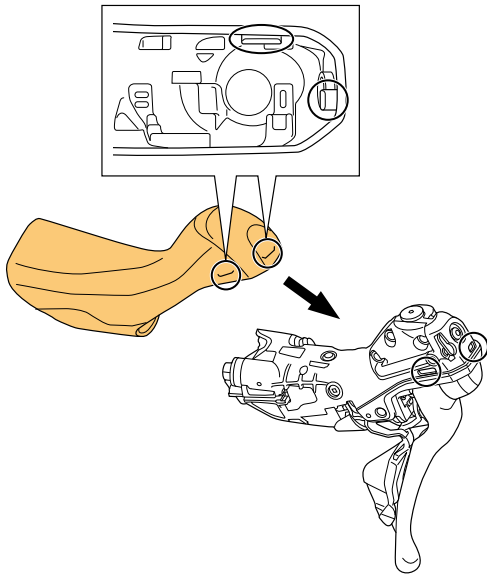


# Replacing the bracket cover

To remove and install the bracket cover, remove the brake hose and shift cable from the lever, then remove the lever from the handlebar. If possible, you may also remove the brake caliper from the frame and leave the brake hose connected. You can then pass the bracket cover over the hose and caliper to remove/install it.

1. **Remove the bracket cover.**
2. **Install a new bracket cover.**

Insert the protrusions on the bracket cover into the recesses in the bracket body when fitting on the bracket cover.



## **NOTICE**

- The inside of the bracket cover has a marking indicating the left side or right side.
- Perform bleeding after removing the brake hose.

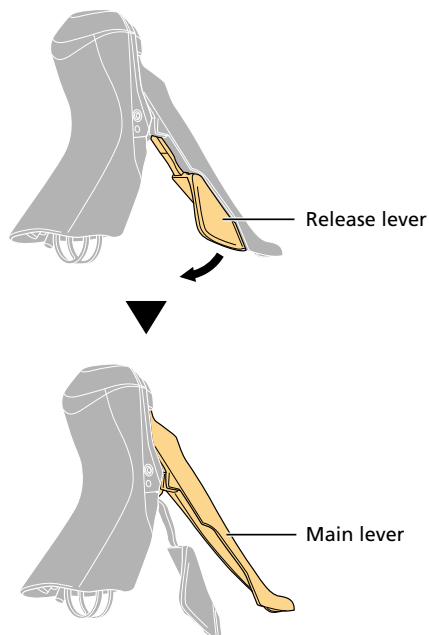
## **TECH TIPS**

- It is easier to perform installation if isopropyl alcohol is applied to the inside of the bracket cover.

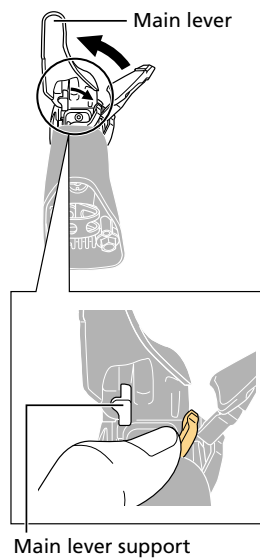
# Replacing the main lever support

1. **Operate the release lever two or more times, then shift the main lever by two gears.**

ST-RX810-LA and ST-RX820-LA do not have a release lever, so there is no need to operate it.

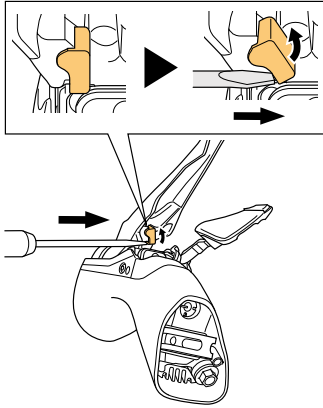


2. **Hold the base of the main lever with your fingers, and return only the main lever to the original position.**

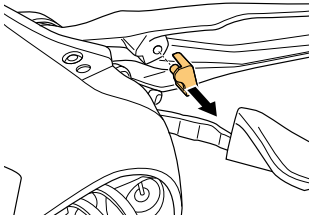


3. **Remove the stopper.**

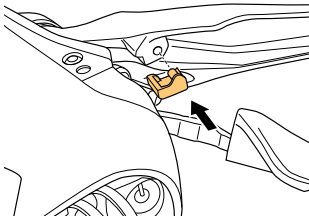
Rotate the main lever support in the direction of the arrow with a slotted screwdriver or similar tool.



**4. Pull out the main lever support.**

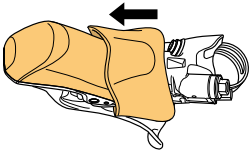


**5. Insert a new main lever support.**



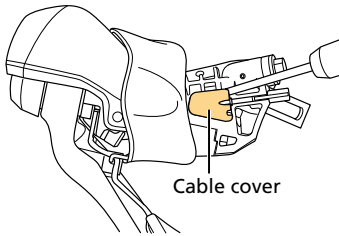
# Replacing the cable cover

1. Turn over the bracket cover from the back side.



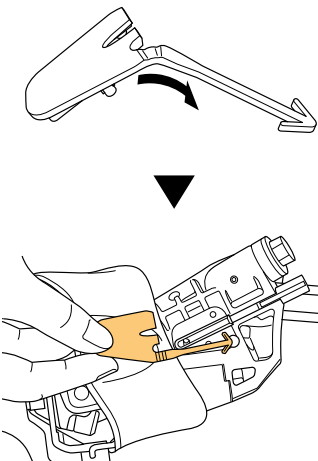
2. Remove the cable cover from the bracket.

Remove it using a screwdriver, etc.



3. Insert a new cable cover into the hole of the bracket.

Before installation, make light folding marks on the cable cover.



# Removing a separated inner end (shift cable)

If it is hard to pull out the inner end, follow the procedure below.

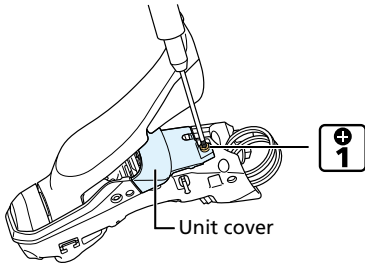
1. Remove the lever from the handlebar, then remove the bracket cover.

## TECH TIPS

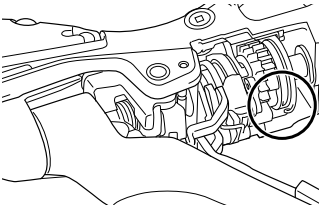
- In order to maintain smooth shifting, it is suggested that a new shift lever cable guide be installed when replacing a separated inner cable.

2. Remove the unit cover.

Remove the screws located at the bottom of the bracket.



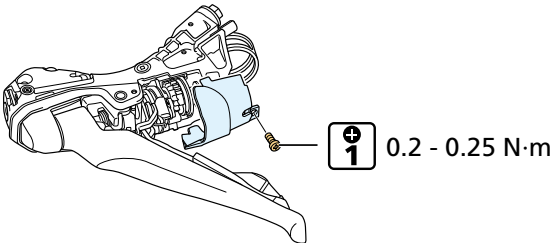
3. Pull out the stuck inner end out of the seat of the shift mechanism.



## NOTICE

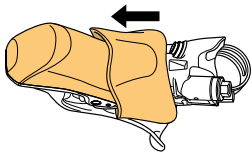
- Be careful not to touch the spring accidentally. Doing so could cause a malfunction.

4. Install the unit cover.



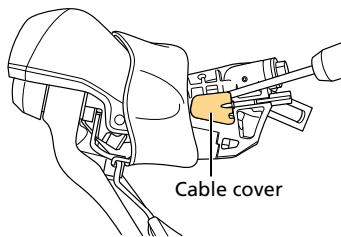
# Replacing the SL cable guide

1. Turn over the bracket cover from the back side.



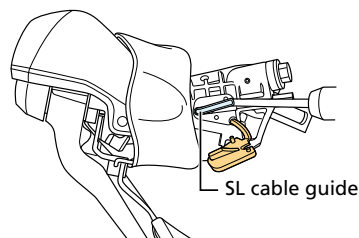
2. Open the cable cover.

Open it using a screwdriver, etc.

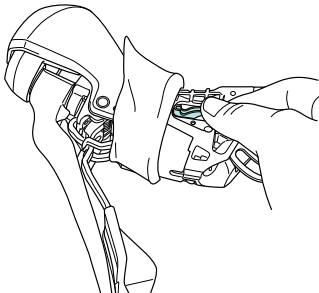


3. Pull out the SL cable guide.

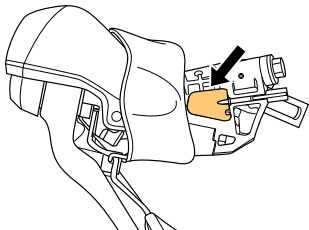
Use a pointed tool to pry it out.



4. Push in the new SL cable guide with your hands.



5. Close the cable cover.

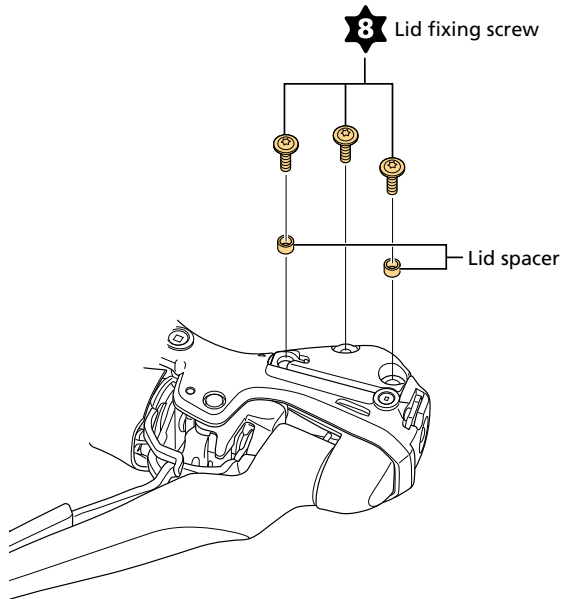


# Replacing the diaphragm

## 1. Remove the bracket cover.

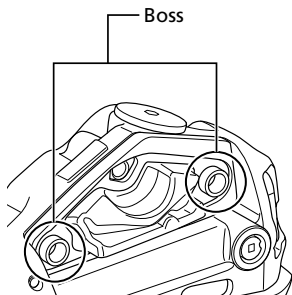
Refer to " [Replacing the bracket cover](#) " to proceed.

## 2. Remove the lid fixing screws and lid spacers.

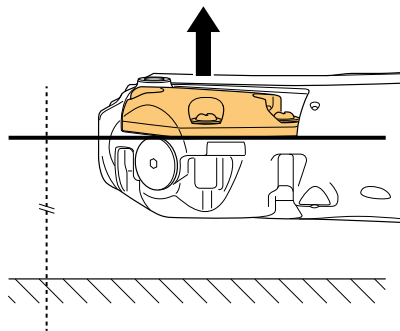


### NOTICE

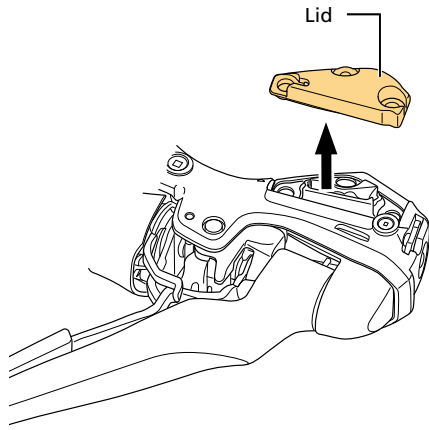
- If the bracket has bosses, the lid spacers are not installed.



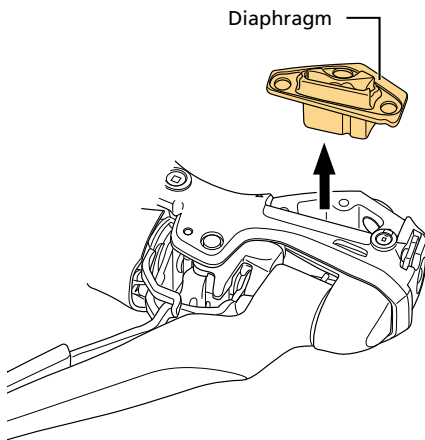
- Perform the replacement procedure with the lever facing the direction in which the lid fixing screws and lid, etc. can be removed straight up. Another direction will cause the oil to spill.



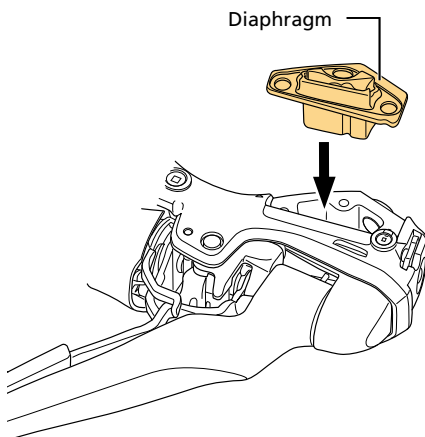
## 3. Remove the lid.



**4. Remove the diaphragm.**



**5. Set the new diaphragm.**



**NOTICE**

- Before setting the diaphragm, check that there is no dirt or dust on the mounting surface of the diaphragm. If there is any dirt or dust, remove it with a clean rag sprayed with parts cleaner.



- Note that the left and right diaphragms are different.



Left diaphragm

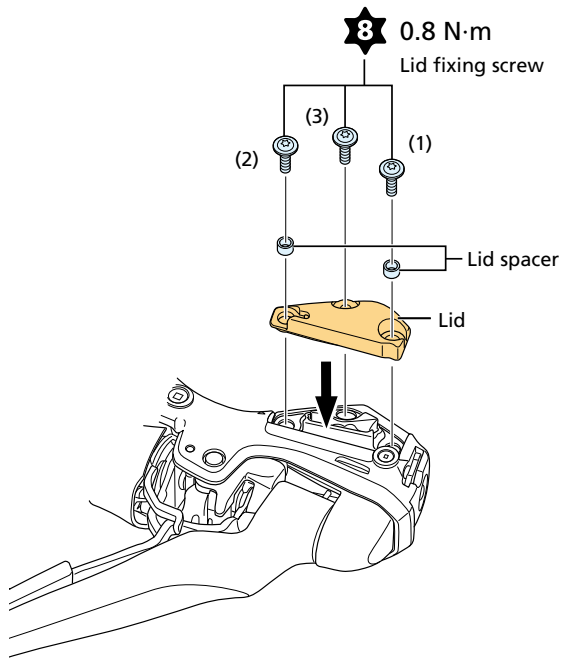


Right diaphragm

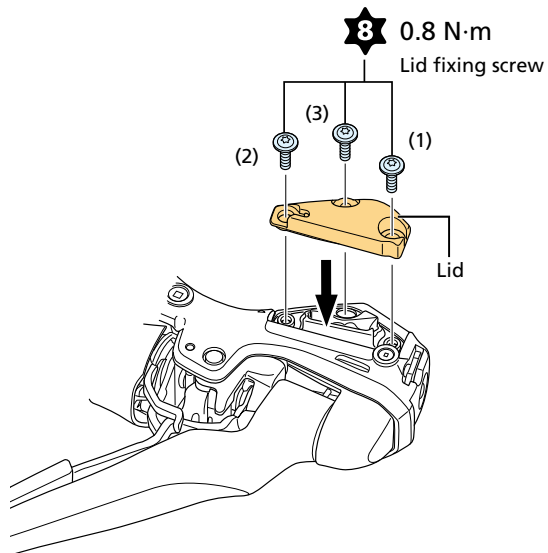
## 6. Install the lid.

Tighten the lid fixing screws in the order (1) to (3).

### Bracket without bosses

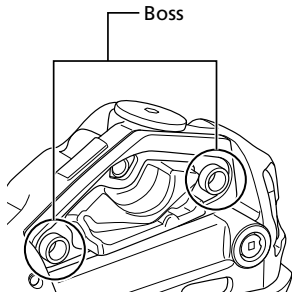


### Bracket with bosses



## NOTICE

- If the bracket has bosses, the lid spacers are not necessary.



- Before installing the lid, check that there is no dirt or dust on the mounting surface of the lid. If there is any dirt or dust, remove it with a clean rag sprayed with parts cleaner.
- If the bracket does not have bosses, ensure that the diaphragm is not caught between the lid spacer and bracket when tightening the lid fixing screws. The diaphragm may be torn.
- A lid spacer is not required for the lid fixing screw indicated by (3).
- After replacing the diaphragm, refer to " [SHIMANO genuine mineral oil replacement](#) " to inject the mineral oil and bleed the air from the system.

# SHIMANO

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