

## Dealer's Manual

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

# Hydraulic Disc Brake

## SLX

BR-M7000

BL-M7000

## Rotor adapter

SM-RTAD05

## DEORE

BR-M6000

BL-M6000

## Non-Series

BR-MT500

BL-MT500

BL-MT501

BR-MT400

BL-MT400

BR-MT420

BL-MT401

BL-MT401-3A

BL-MT402-3A

BR-MT200

BL-MT200

BL-MT201

## Mount adapter

SM-MA-F180P/P2

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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 local bicycle dealer for their assistance.

- Make sure to read all instruction manuals included with the product.
- Do not disassemble or modify the product other than as stated in the information contained in this dealer's manual.
- All dealer's manuals and instruction manuals can be viewed on-line on our website (<http://si.shimano.com>).
- 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.



### DANGER

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



### WARNING

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



### CAUTION

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


## TO ENSURE SAFETY

### WARNING

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

It is recommended to use genuine Shimano parts only. If parts such as bolts and nuts become loose or damaged, the bicycle may suddenly fall over, which may cause serious injury.

In addition, if adjustments are not carried out correctly, problems may occur, and the bicycle may suddenly fall over, which may cause serious injury.

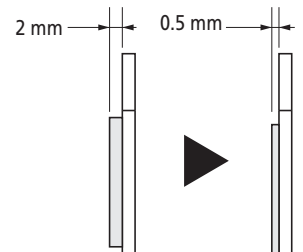
-  Be sure to wear safety glasses or goggles to protect your eyes while performing maintenance tasks such as replacing parts.
- After reading the dealer's manual thoroughly, keep it in a safe place for later reference.

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

- The 203 mm and 180 mm disc brake rotors provide a higher braking force than the 160 mm disc brake rotors. Make sure that you completely understand the braking characteristics before using the brakes.
- Each bicycle may handle slightly differently depending on the model.  
Therefore, 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 or a fall, which could lead to severe injury. For proper operation, consult a professional bicycle dealer or the bicycle's owner's manual. It is also important to practice riding and braking, etc.
- Please make sure to keep your fingers away from the rotating disc brake rotor. The disc brake rotor is sharp enough to inflict severe injury to your fingers if caught in the openings of the disc brake rotor while it is moving.



- The calipers and disc brake rotor will become hot when the brakes are operated; do not touch them while riding or immediately after dismounting from the bicycle. Otherwise you may get burned.
- Be careful not to allow any oil or grease to get onto the disc brake rotor and brake pads. Otherwise the brakes may not work correctly.
- If any oil or grease does get on the brake pads, you should consult a dealer or an agency. Otherwise the brakes may not work correctly.
- If noise occurs during brake operation, the brake pads may have been worn down to the usable limit. Check that brake system temperature has cooled down sufficiently, check the thickness of the brake pad. If the thickness is 0.5 mm or less, the brake pad needs to be replaced with a new one. Consult a dealer or an agency.



- If the disc brake rotor is cracked or deformed, immediately stop using the brakes and consult a dealer or an agency.
- If the disc brake rotor becomes worn down to a thickness of 1.5 mm or less, or if the aluminum surface appears, immediately stop using the brakes and consult a dealer or an agency. The disc brake rotor may break, and you may fall off the bicycle.

- Vapor lock may occur if the brakes are applied continuously. To solve this problem, momentarily release the lever.

Vapor lock occurs when the oil inside the brake system becomes heated, which causes the water or air bubbles inside the brake system to expand. This can then result in a sudden increase in the brake lever stroke.

- The disc brake is not designed to work when the bicycle is upside down. If the bicycle is turned upside down or on its side, the brake may not work correctly, and a serious accident could occur. Before riding the bicycle, be sure to operate the brake lever a few times to check that the brakes operate normally. If the brakes do not operate normally, stop using the brakes and consult a dealer or an agency.
- If you feel no resistance when depressing the brake lever, immediately stop using the brakes and consult a dealer or an agency.
- If fluid leaks occur, immediately stop using the brakes and consult a dealer or an agency.
- If the front brake is applied too strongly, the wheel may lock and the bicycle may fall forward, and cause serious injury.
- Always make sure that the front and rear brakes are working correctly before riding the bicycle.
- The required braking distance will be longer during wet weather. Reduce your speed and apply the brakes early and gently.
- If the road surface is wet, the tires will skid more easily. If the tires skid, you may fall off the bicycle. Reduce your speed and apply the brakes early and gently.
- The lever should never be altered. Otherwise, the lever may break preventing braking operation.
- Check before riding that there is no damage such as cracking. If there is any damage, stop using the bicycle and consult a dealer or an agency. Otherwise, the lever may break preventing braking operation.

#### For Installation to the Bicycle, and Maintenance:

- Please make sure to keep your fingers away from the rotating disc brake rotor during installation or maintenance of the wheel.

The disc brake rotor is sharp enough to inflict severe injury to your fingers if caught in the openings of the disc brake rotor while it is moving.



- If the disc brake rotor is worn, cracked or warped, it should be replaced.
- If the disc brake rotor becomes worn down to a thickness of 1.5 mm or the aluminum surface becomes visible, be sure to replace the disc brake rotor with a new one.
- Check that the brake components have cooled down sufficiently before attempting to adjust the brakes.
- Use only Shimano genuine mineral oil. If other types of oil are used, it may cause problems with brake operation, and cause the system to be unusable.
- Be sure to use only oil from a freshly-opened container, and do not re-use oil which has been drained from the bleed nipple. Old or reused oil may contain water, which could cause vapor lock in the brake system.
- Be careful not to let water or air bubbles get into the brake system. Otherwise, vapor lock may occur. Be particularly careful when removing the cover of the reservoir tank.
- If cutting the brake hose in order to adjust the length of the hose, or when changing over the brake hose from left to right or vice versa, be sure to bleed the air from the hose according to steps given in "Adding Shimano genuine mineral oil and bleeding air".

- When turning the bicycle upside down or on its side, the brake system may have some air bubbles inside the reservoir tank which are still there when the bleed screw is closed, or which accumulate in various parts of the brake system when it is used for long periods. This disc brake system is not designed to work with the bicycle upside down. If the bicycle is turned upside down or on its side, the air bubbles inside the reservoir tank may move in the direction of the calipers. If the bicycle is ridden in this condition, there is danger that the brakes may not operate and a serious accident may occur. If the bicycle has been turned upside down or on its side, be sure to operate the brake lever a few times to check that the brakes operate normally before riding the bicycle. If the brakes do not operate normally, adjust them according to the following procedure.

#### If brake does not seem to work (feels sluggish) when the lever is depressed

Set the brake lever so that it is parallel to the ground, and then gently depress the brake lever several times and wait for the bubbles to return to the reservoir tank. It is recommended that you then remove the reservoir tank cover and fill the reservoir tank with mineral oil until no bubbles remain.

If the brakes are still sluggish, bleed the air from the brake system. (Refer to "Adding Shimano genuine mineral oil and bleeding air")

- If the quick release lever on the hub is on the same side as the disc brake rotor, they may interfere with each other, which is dangerous, so check that they do not.
- Shimano disc brake systems are not compatible with tandem bicycles. Because tandem bicycles are heavier, the stress on the brake system increases during brake operation. If hydraulic disc brakes are used with tandem bicycles, the oil temperature will become too high and vapor locks or ruptures in the brake hoses may occur, causing the brakes to fail.

#### ■ SM-RTAD05 Disc brake rotor adapter

- Disc brake rotors with diameters of up to Ø203 mm can be installed. If disc brake rotors with a larger diameter than this are installed, the braking force may damage the main unit.

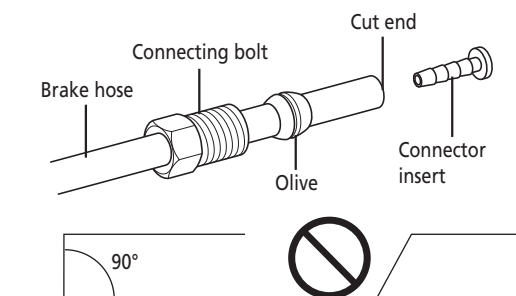
#### ■ Brake hose

- After installing the brake hose to the brake unit, adding Shimano genuine mineral oil and bleeding air bubbles, depress the lever again several times to check that the brakes are operating normally and there are no fluid leaks from the hose or the system.
- Different brake hoses have their own special connector insert. Use an appropriate connector insert according to the following table. Use of a wrong connector insert may cause fluid leaks.

Brake hose	Connector insert	
	Length	Color
SM-BH90	11.2 mm	Silver
SM-BH59/80	13.2 mm	Gold
YM-BH81	13.2 mm	Silver

- Do not reuse the olive piece or the connector insert when reinstalling. A damaged or reused olive, or connector insert, may not provide a secure brake hose connection, possibly causing the brake hose to disconnect from the calipers or brake lever. If the brake hose becomes disconnected, there is danger that the brakes may suddenly stop working.

- 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.



**CAUTION**

Be sure to also inform users of the following:

■ **Cautions on Shimano genuine mineral oil**

- Contact with eyes may result in irritation. In the event of contact with eye, wash with water and seek medical attention immediately.
- Contact with skin may cause a rash and discomfort. In the event of contact with skin, wash well with soap and water.
- Inhalation of Shimano genuine mineral oil mist or vapors may cause nausea. Cover nose and mouth with a respirator type mask and use in a well ventilated area. If Shimano genuine mineral oil mist or vapor is inhaled, cover up with a blanket and go immediately to an area with fresh air. Stay warm and calm, and seek professional medical advice.

■ **Burn-in period**

- Disc brakes have a burn-in period, and the braking force will gradually increase as the burn-in period progresses. Make sure that you are aware of any such increases in braking force when using the brakes during the burn-in period. The same thing will happen when the brake pads or disc brake rotor are replaced.

**For Installation to the Bicycle, and Maintenance:**

- When using the Shimano original tool (TL-FC36) to remove and install the disc brake rotor fixing ring, be careful not to touch the outside of the disc brake rotor with your hands. Wear gloves to protect your hands from getting cut.

■ **Handling Shimano genuine mineral oil**

- Contact with eyes may result in irritation. Use safety glasses when handling, and avoid contact with eyes. In the event of contact with eye, wash with water and seek medical attention immediately.
- Contact with skin may cause a rash and discomfort. Use gloves when handling. In the event of contact with skin, wash well with soap and water.
- Do not drink. May cause vomiting or diarrhea.
- Keep out of reach of children.
- Do not cut, let near heat, weld or pressurize the oil container, as this may cause 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, Petroleum Class III, Danger level III

■ **When cleaning with a compressor**

- If disassembling the caliper body to clean the internal parts using a compressor, note that moisture from the compressed air may remain on the caliper components. Let the caliper components dry sufficiently before reassembling the calipers.

■ **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.

## 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 dealer.
- Use soapy water and a dry cloth when cleaning and carrying out maintenance of the brake system. Do not use commercially available brake cleansers or silencing agents. Such substances can cause damage to parts such as seals.
- In the case of carbon levers, wash them with a soft cloth using a neutral detergent. Otherwise, the material may break down and be damaged.
- Avoid leaving the carbon levers in areas of high temperature. Also keep them well away from fire.
- 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:**

- The 203 mm and 180 mm disc brake rotors have a larger diameter than the 160 mm disc brake rotor for cross-country bicycles, and so the flexing of these disc brake rotors is greater. As a result, they will interfere with the brake pads.
- If the brake caliper mounting boss and the dropout are not of standard dimensions, the disc brake 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.
- If the brake lever is depressed without the pad spacers installed, the pistons will protrude further than is normal. Use a flat-shaped tool to push back the brake pads, while being careful not to damage the surfaces of the brake pads.  
(If the brake pads are not installed, use a flat-shaped tool to push the pistons straight back in, while being careful not to damage them.)  
If it is difficult to push the brake pads or pistons back, remove the bleed screws and then try again. (Note that some oil may overflow from the reservoir tank at this time.)
- Use isopropyl alcohol, soapy water or a dry cloth when cleaning and carrying out maintenance of the brake system. Do not use commercially available brake cleansers or silencing agents. Such substances can cause damage to parts such as seals.
- Do not remove the pistons when disassembling the calipers.
- If the disc brake rotor is worn, cracked or warped, it should be replaced.

**■ SM-RTAD05 Disc brake rotor adapter**

- When using this disc brake rotor adapter to install disc brake rotors, the structure of the adapter means that there will be more play than normal in the disc brake rotor. Because of this, the disc brake rotor may interfere with the brake pads. Furthermore, it may also interfere with the calipers in the radial direction (upward).
- This product cannot be used with the 6-bolt disc brake rotor that is installed with an aluminum adapter (SM-RT86/RT76).












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



## **LIST OF TOOLS TO BE USED**

## LIST OF TOOLS TO BE USED

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

Tool		Tool		Tool	
	2 mm hexagon wrench		5 mm hexagon wrench		Utility knife
	2.5 mm hexagon wrench		8 mm spanner		TL-BH61
	3 mm hexagon wrench		7 mm socket wrench		TL-FC36
	4 mm hexagon wrench		Hexalobular[#15]		

# INSTALLATION

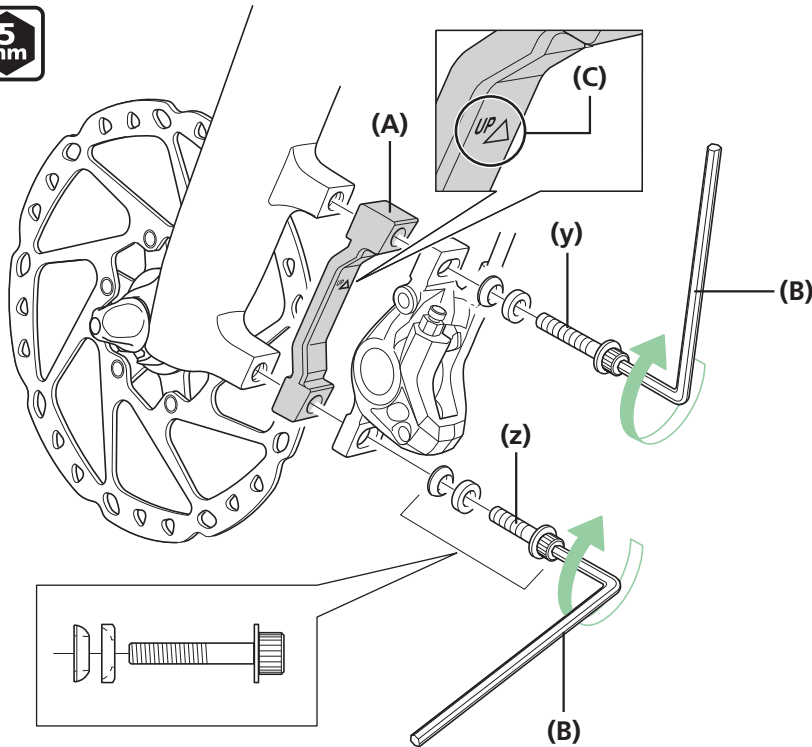
# INSTALLATION

\* Refer to the Disc Brake section of General Operations for how to install the brake caliper, brake lever, and disc brake rotor.

## ■ Disc brake mount adapter (for 180 mm disc brake rotors)

SM-MA-F180P/P2

Place the adapter onto the brake caliper, and then install the adapter to the frame.  
Set the adapter so that the mark is on top.



(y) Long

(z) Short

(A) Mount adapter

(B) 5 mm hexagon wrench

(C) Mark

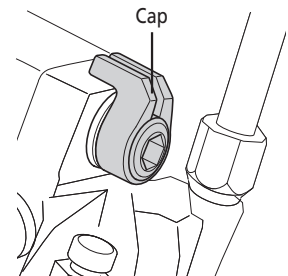
### Tightening torque



6 - 8 N·m

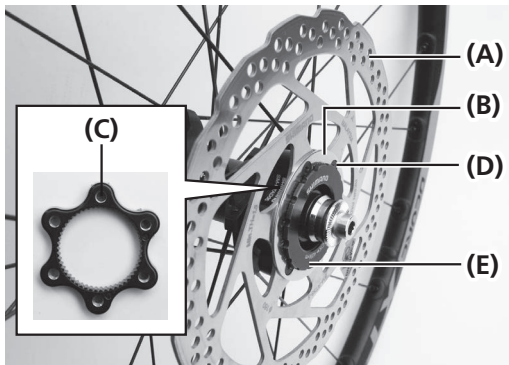
### NOTICE

When installing the brake caliper fixing bolts, be sure to attach the caps to prevent the bolts from coming off.



## Disc brake rotor adapter

SM-RTAD05



This product is an adapter used for installing 6 bolt type disc brake rotors to center lock system hubs/wheels.

- (A) Disc brake rotor
- (B) Washer
- (C) Disc brake rotor adapter
- (D) Disc brake rotor fixing bolt
- (E) Disc brake rotor fixing lock ring

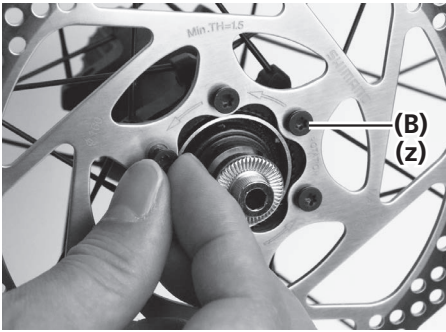


Place the disc brake rotor adapter on to the hub.



1

2



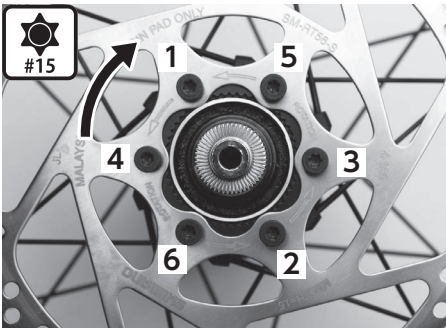
Place the disc brake rotor on to the hub, and then temporarily fix it in place by tightening the disc brake rotor fixing bolts.

(z) Hexalobular[#15]

(A) Disc brake rotor

(B) Disc brake rotor fixing bolt

3



Wear gloves and turn the disc brake rotor clockwise with some force.

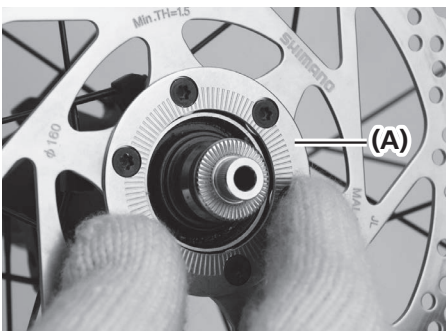
Then, tighten the disc brake rotor fixing bolts in the order shown in the illustration.

Tightening torque



2 - 4 N·m

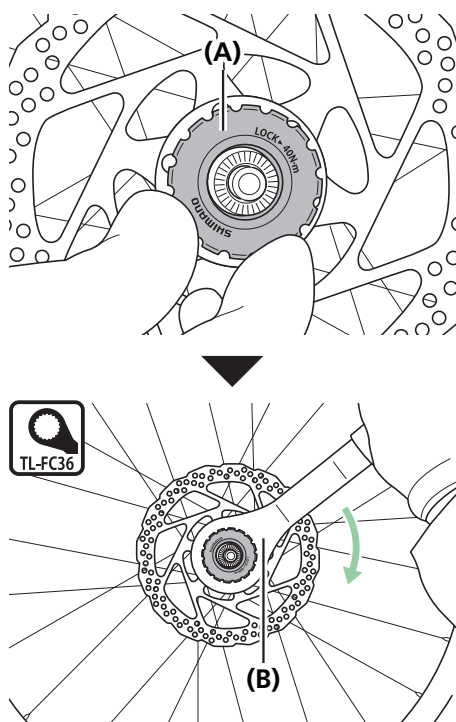
4



Fit the washer.

(A) Washer

5



Tighten the disc brake rotor fixing lock ring.

- (A) Disc brake rotor fixing lock ring
- (B) TL-FC36

### Tightening torque



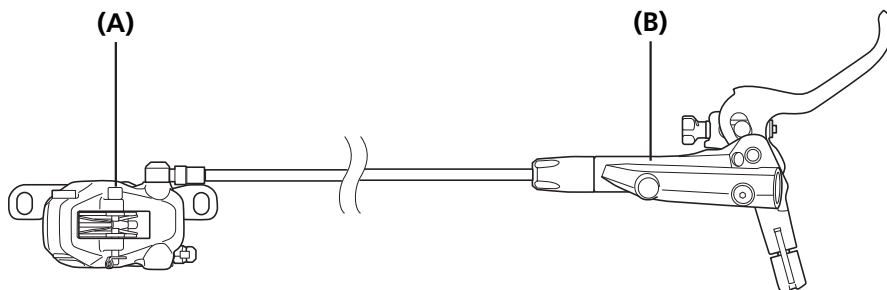
40 N·m

## ■ Brake hose

For information on installing the brake hose, refer to the brake section of General Operations.

Make sure that the calipers and levers are in the positions shown in the illustrations.

Example: BR-M7000/BL-M7000



(A) Brake caliper

(B) Brake lever

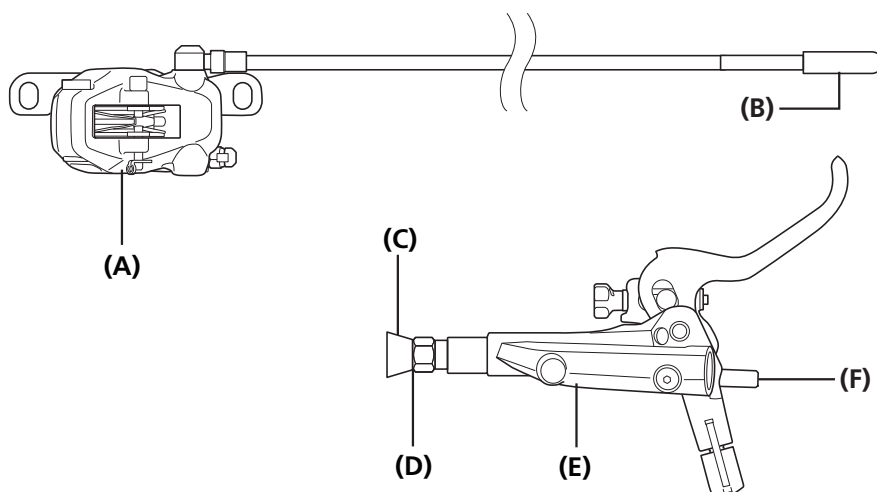
### NOTICE

- The installation position of the brake hose differs depending on the model.
- Do not let the brake hose become twisted when installing it.

## Overview of the easy hose joint system

For information on how to install and replace the brake hose, refer to the brake section of General Operations.

Example: BR-M7000/BL-M7000



(A) Brake caliper

(B) Hose cap

(C) Seal plug

(D) Hose connection port

(E) Brake lever

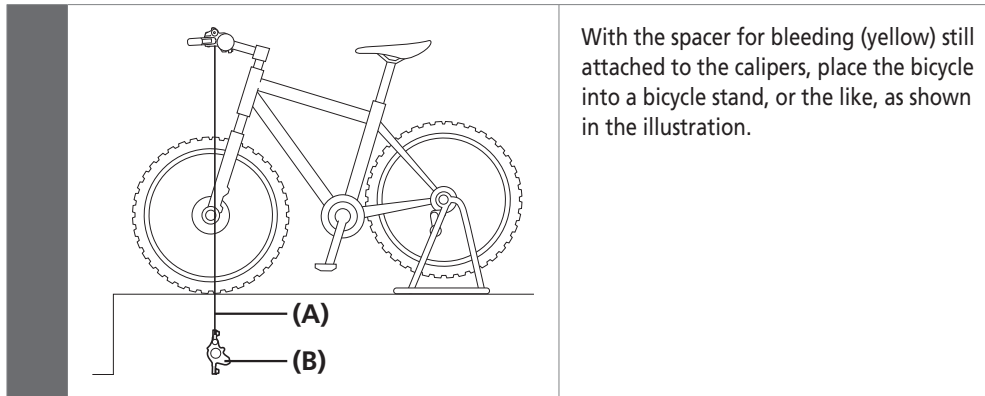
(F) Stopper



# MAINTENANCE

# MAINTENANCE

## ■ Adding Shimano genuine mineral oil and bleeding air

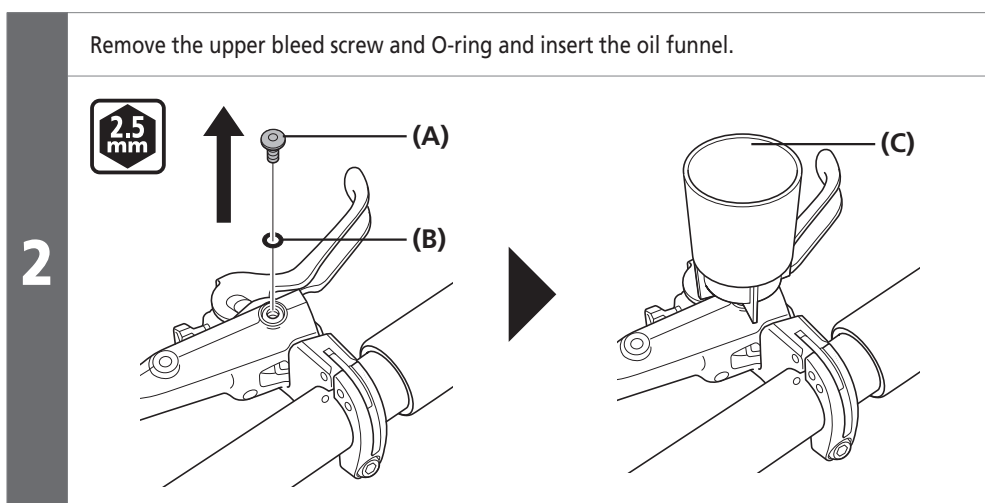
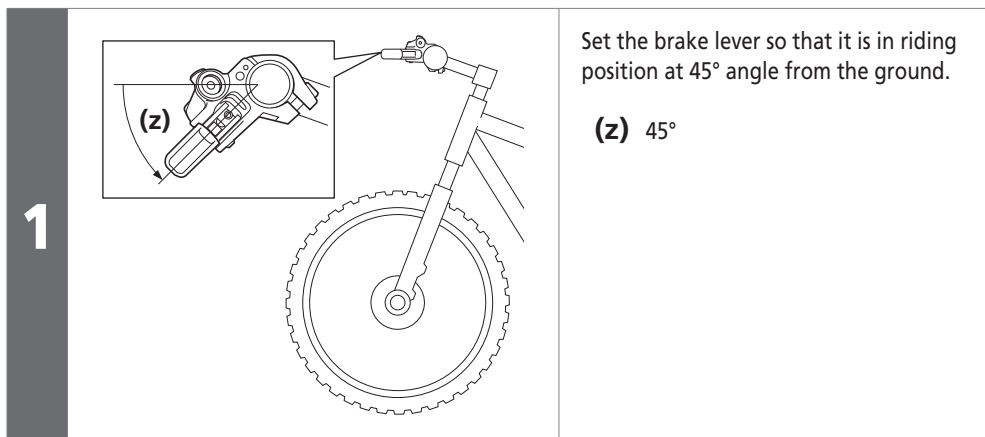


- (A) Hose
- (B) Caliper

### NOTICE

When bleeding the air out of the caliper, you will need the SM-DISC (oil funnel and oil stopper).

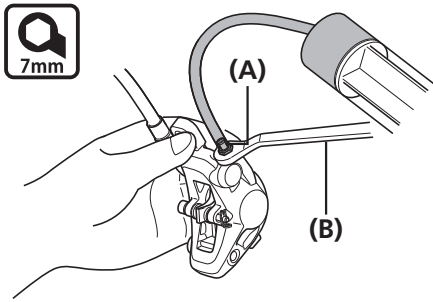
## BR-M7000/BL-M7000



### TECH TIPS

Do not insert the oil stopper at this time.

3



Set a 7 mm socket wrench in place, fill the syringe with oil, connect a tube to the bleed nipple, and then loosen the bleed nipple by 1/8 of a turn to open it.

Push the piston of the syringe to add oil.

The oil will start coming out from the oil funnel.

Continue adding oil until there are no more air bubbles in the oil that is coming out.

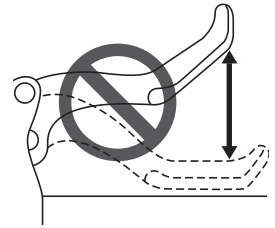
- (A) Bleed nipple
- (B) 7 mm socket wrench

#### NOTICE

**Secure the brake caliper with a clip to prevent the tube from being accidentally disconnected.**

**Do not depress and release the lever repeatedly.**

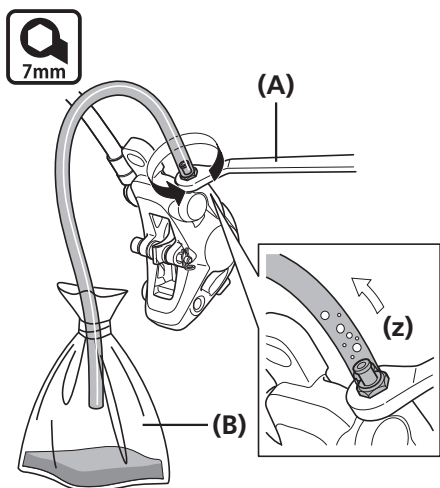
Oil without air bubbles may come out as a result of such operation, but air bubbles may remain in the oil inside the brake caliper, and it will take longer to bleed the air. (If you have depressed and released the lever repeatedly, drain out all of the oil and then add oil again.)



4

Once there are no more air bubbles mixed in with the oil, temporarily close the bleed nipple.

5



Set a 7 mm socket wrench in place as shown in the illustration, and then attach the bag to the tube.

Connect the tube to the bleed nipple and loosen the bleed nipple.

After a little while, the oil and air bubbles will flow naturally from the bleed nipple into the tube.

This way it will be possible to easily extract the greater part of the air bubbles remaining inside the brake system.

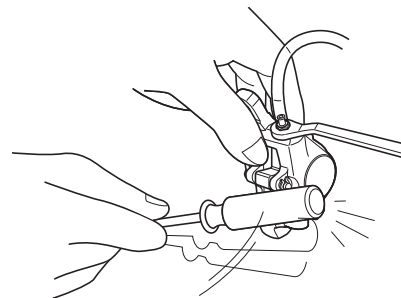
(z) Air bubbles

(A) 7 mm socket wrench  
(B) Bag



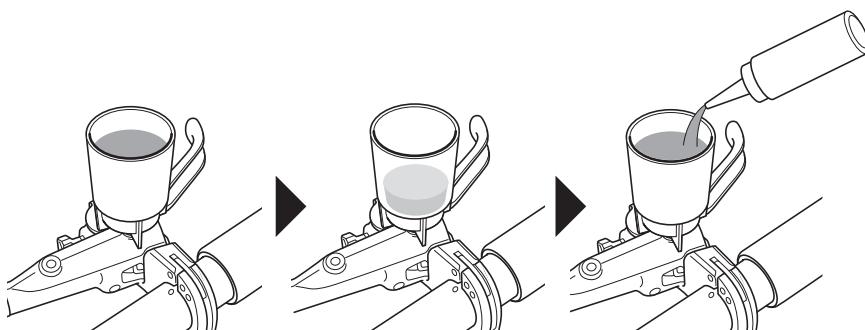
TECH TIPS

It may help to shake the hose gently or to tap the reservoir tank or caliper gently with a screwdriver or move the position of the caliper at this time.

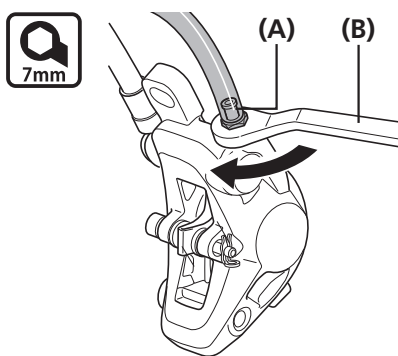


6

The level of liquid inside the funnel will drop at this time, so keep filling the funnel with oil to maintain the level of liquid so that air is not drawn in (air does not get inside).



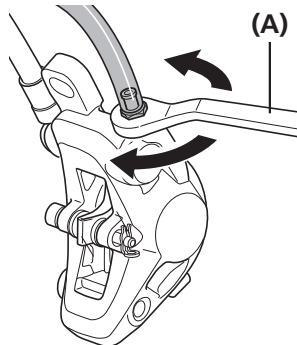
7



Once no more air bubbles come from the bleed nipple, temporarily close the bleed nipple.

(A) Bleed nipple  
(B) 7 mm socket wrench

8



With the brake lever depressed, open and close the bleed nipple in rapid succession (for approximately 0.5 seconds each time) to release any air bubbles which may be in the calipers.

Repeat this procedure about 2 to 3 times.

Then tighten the bleed nipple.

(A) 7 mm socket wrench

Tightening torque



4 - 6 N·m

If the brake lever is then operated, air bubbles in the system will rise up through the port into the oil funnel.

Once the bubbles stop appearing, depress the brake lever as far as it will go.

It is normal for the lever to be stiff at this point.

(x) Loose

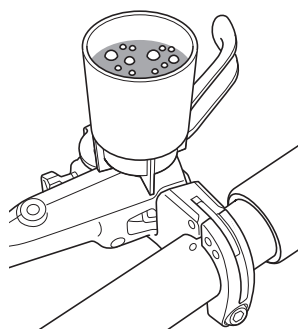
(y) Slightly stiff

(z) Stiff

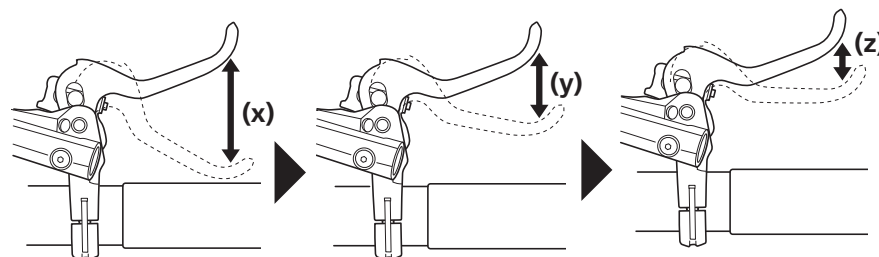
NOTICE

If the lever does not become stiff, repeat the procedures from step 5.

9

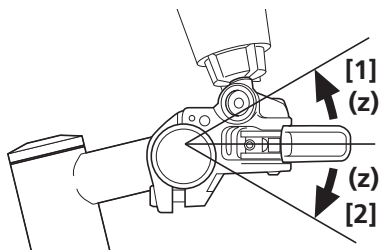


Lever operation



▶▶ Adding Shimano genuine mineral oil and bleeding air

10



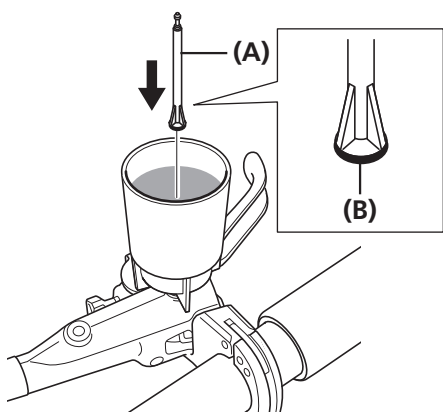
Set the lever unit to the horizontal position as shown in the illustration and tilt it in the direction of [1] by 30°, and then carry out step 9 to check that there is no air remaining.

Next, tilt the lever unit 30° in the direction of [2], and carry out step 9 again to check that there is no air remaining.

If any air bubbles appear, repeat the above procedure until they stop appearing.

(z) 30°

11

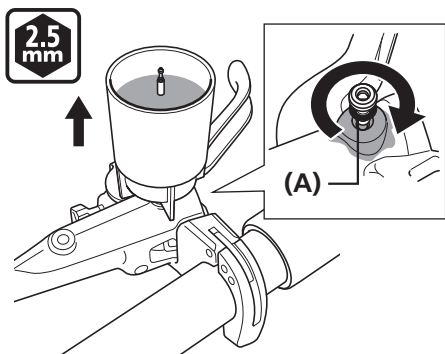


Plug the oil funnel with the oil stopper so that the side with the O-ring attached is facing downward.

(A) Oil stopper

(B) O-ring

12



Remove the oil funnel while it is still being plugged with the oil stopper, and then attach the O-ring to the bleed screw and tighten it until oil flows out to make sure that there are no air bubbles remaining inside the reservoir tank.

(A) O-ring

Tightening torque

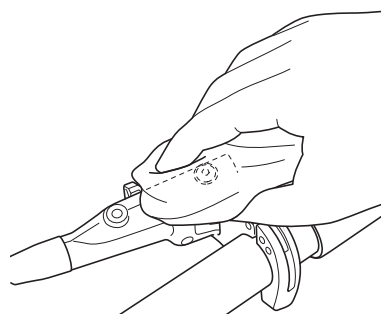


0.5 - 1 N·m

NOTICE

Do not operate the brake lever. If operated, there is a risk of air bubbles entering the cylinder.

13



Wipe away any oil that has overflowed.

## BL-M6000/BR-M6000/BR-MT500/BL-MT500

The illustration uses BR-M6000/BL-M6000 as an example to explain.

1

Mount the bleed spacer (yellow).

(A) Bleed spacer  
(B) Split pin

2

Remove the upper bleed screw and O-ring and insert the oil funnel.

(A) Bleed screw  
(B) O-ring  
(C) Oil funnel

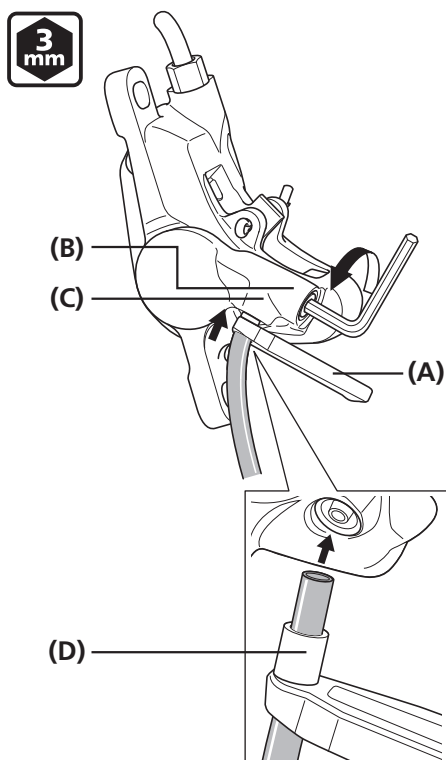
2.5 mm

Do not insert the oil stopper at this time.

3

Secure the brake caliper with a clip while bleeding.

4



Fill the syringe with sufficient oil.

Attach the adapter provided with this product or Shimano original tool to the end of the tube, connect the tube to the bleed boss, and fasten it with the tube holder so that the tube will not be disconnected.

Loosen the bleed screw by 1/8 of a turn to open it.

Push the piston of the syringe to add oil.

The oil then starts coming out from the oil funnel.

Continue adding oil until there are no more air bubbles mixed in with the oil that is coming out.

- (A) Tube holder
- (B) Bleed screw
- (C) Bleed boss
- (D) Adapter

### NOTICE

Secure the brake caliper with a clip to prevent the tube from being accidentally disconnected.

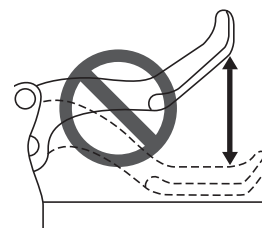
5

Once there are no more air bubbles in the oil in the funnel, close the bleed screw temporarily. Remove the syringe while covering the end of the syringe tube with a waste cloth to prevent oil from spattering.

### NOTICE

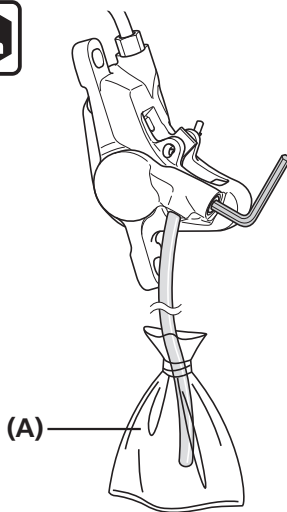
Do not depress and release the lever repeatedly.

Oil without air bubbles may come out as a result of such operation, but air bubbles may remain in the oil inside the brake caliper, and it will take longer to bleed the air. (If you have depressed and released the lever repeatedly, drain out all of the oil and then add oil again.)





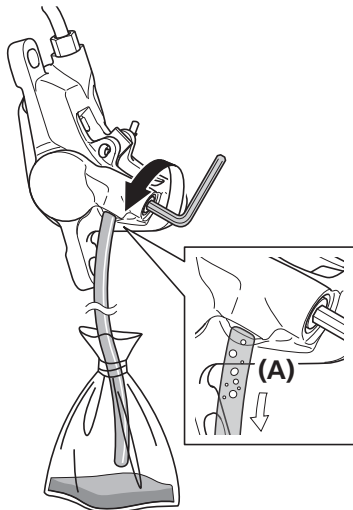
6



Tie the supplied tube and bag with rubber bands, set a 3 mm hexagon wrench as shown in the illustration, and connect the tube to the bleed boss.

(A) Bag

7



Loosen the bleed screw.

At this point, make sure that the tube is secured to the bleed boss.

After a little while, the oil and air bubbles will flow naturally from the bleed boss into the tube.

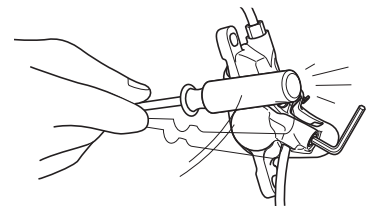
In this way it will be possible to easily extract the greater part of the air bubbles remaining inside the brake system.

(A) Air bubbles



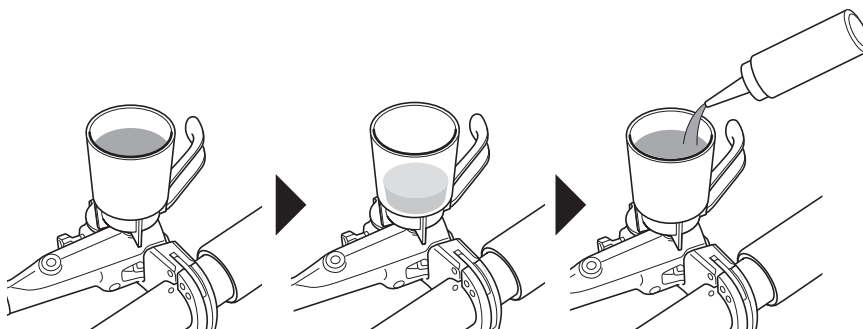
TECH TIPS

It may be effective to shake the brake hose gently, to tap the lever bracket or brake calipers gently with a screwdriver, or to move the position of the calipers at this time.

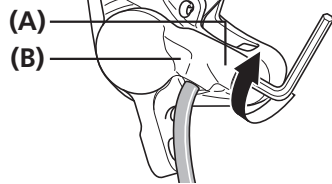


8

The level of liquid inside the funnel will drop at this time, so keep filling the funnel with oil to maintain the level of liquid so that air is not drawn in (air does not get inside).



9

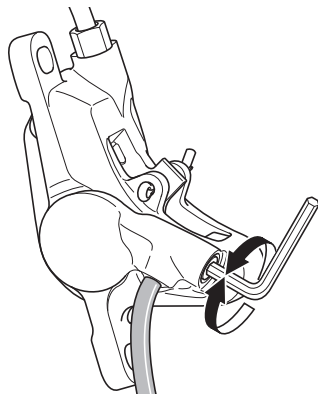
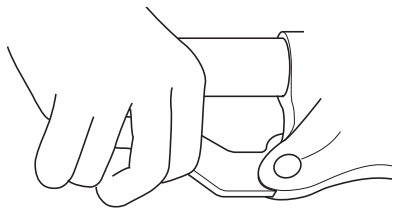


Once no more air bubbles come from the bleed boss, temporarily close the bleed screw.

**(A)** Bleed screw

**(B)** Bleed boss

10



With the brake lever depressed, open and close the bleed screw in rapid succession (for approximately 0.5 seconds each time) to release any air bubbles which may be in the brake calipers.

Repeat this procedure about 2 to 3 times.

Then tighten the bleed screw again.

Tightening torque



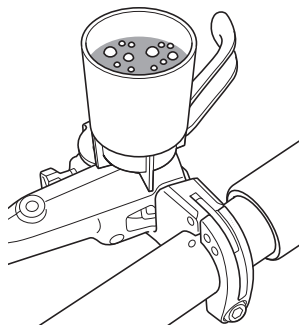
4 - 7 N·m

If the brake lever is then operated, air bubbles in the system will rise up through the port into the oil funnel.

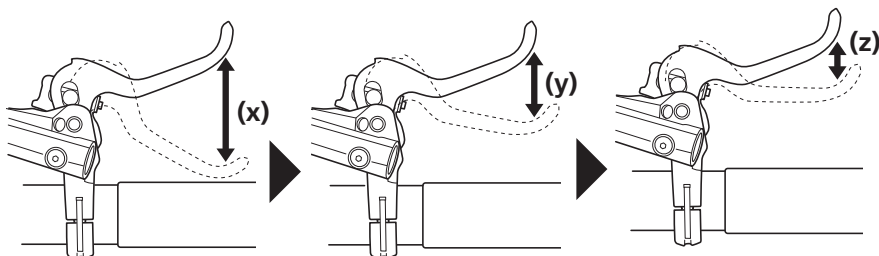
Once the bubbles stop appearing, depress the brake lever as far as it will go.

It is normal for the lever to be stiff at this point.

11



Lever operation



(x) Loose

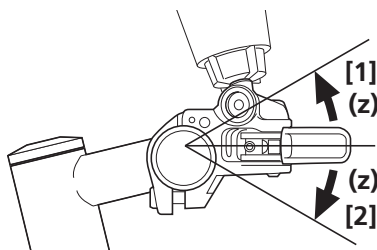
(y) Slightly stiff

(z) Stiff

### NOTICE

If the lever does not become stiff, repeat the procedures from step 7.

12



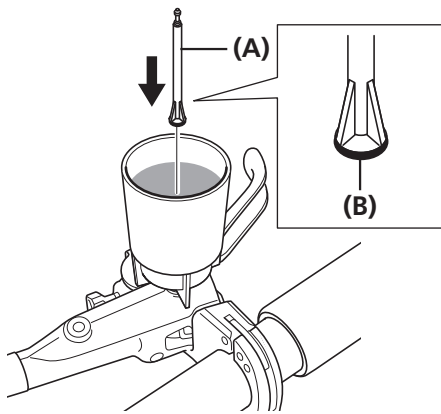
Set the lever unit to the horizontal position as shown in the illustration and tilt it in the direction of [1] by 30°, and then carry out step 11 to check that there is no air remaining.

Next, tilt the lever unit 30° in the direction of [2], and carry out step 11 again to check that there is no air remaining.

If any air bubbles appear, repeat the above procedure until they stop appearing.

(z) 30°

13

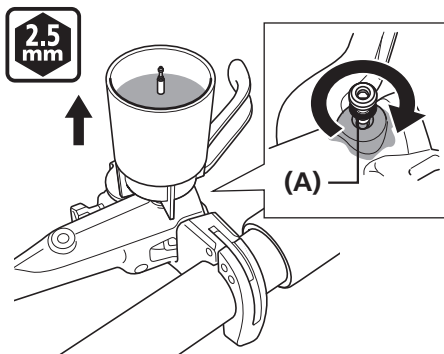


Plug the oil funnel with the oil stopper so that the side with the O-ring attached is facing downward.

**(A)** Oil stopper

**(B)** O-ring

14



Remove the oil funnel while it is still being plugged with the oil stopper, and then attach the O-ring to the bleed screw and tighten it until oil flows out to make sure that there are no air bubbles remaining inside the reservoir tank.

**(A)** O-ring

Tightening torque

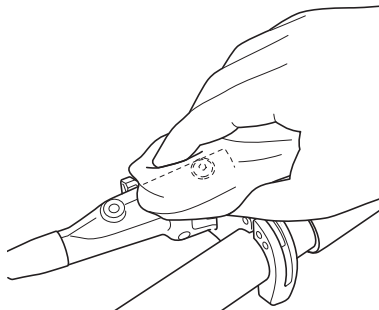


0.5 - 1 N·m

### NOTICE

Do not operate the brake lever. If operated, there is a risk of air bubbles entering the cylinder.

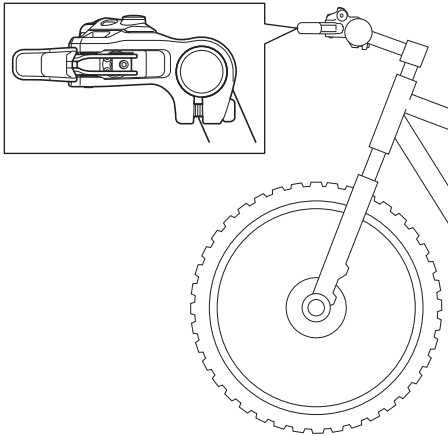
15



Wipe away any oil that has overflowed.

BR-MT200/BL-MT200/BL-MT201/BR-MT400/BL-MT400/BR-MT420/BL-MT401/BL-MT401-3A/BL-MT402-3A

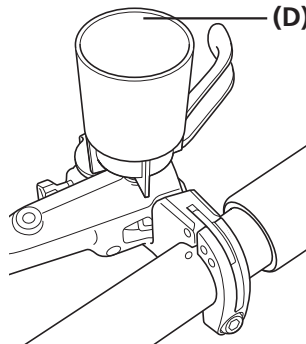
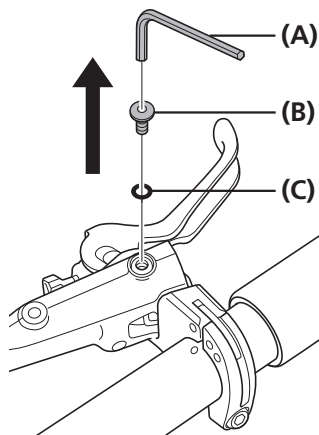
1



Set the brake lever horizontally.

2

Remove the upper bleed screw and O-ring and insert the oil funnel.



**(A)** BL-MT200/BL-MT201:  
2 mm hexagon wrench  
**BL-MT400:**  
2.5 mm hexagon wrench

**(B)** Bleed screw

**(C)** O-ring

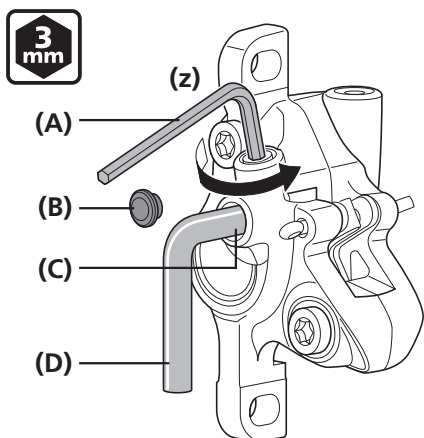
**(D)** Oil funnel



TECH TIPS

Do not insert the oil stopper at this time.

3



Remove the bleed boss cap of the caliper, fill the syringe with oil, and then connect the hose to the bleed boss.

Use a 3 mm hexagon wrench to loosen the bleed screw by 1/8th of a turn to open it.

When the plunger of the syringe is pushed to add oil, oil will start coming out through the oil funnel.

Continue adding oil until there are no more air bubbles mixed in with the oil that is coming out.

(z) 1/8th of a turn

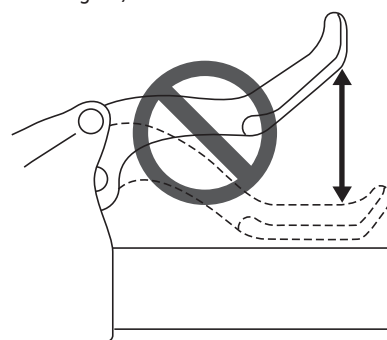
- (A) 3 mm hexagon wrench
- (B) Bleed boss cap
- (C) Bleed boss
- (D) Hose from syringe

**NOTICE**

Secure the brake caliper with a clip to prevent the tube from being accidentally disconnected.

Do not depress and release the lever repeatedly.

Oil without air bubbles may come out as a result of such operation, but air bubbles may remain in the oil inside the brake caliper, and it will take longer to bleed the air. (If you have depressed and released the lever repeatedly, drain out all of the oil and then add oil again.)

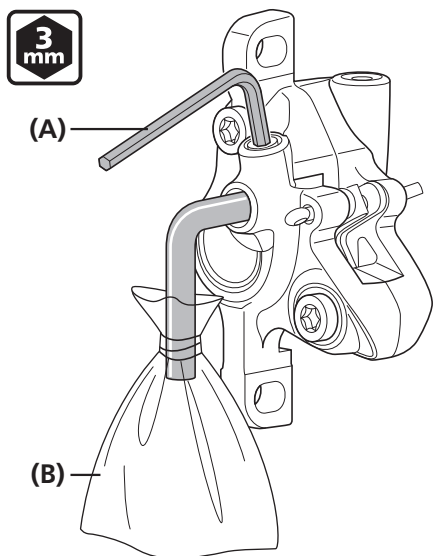


4

Once there are no more air bubbles mixed in with the oil, temporarily close the bleed boss.

Remove the syringe while covering the end of the syringe tube with a waste cloth to prevent oil from spattering.

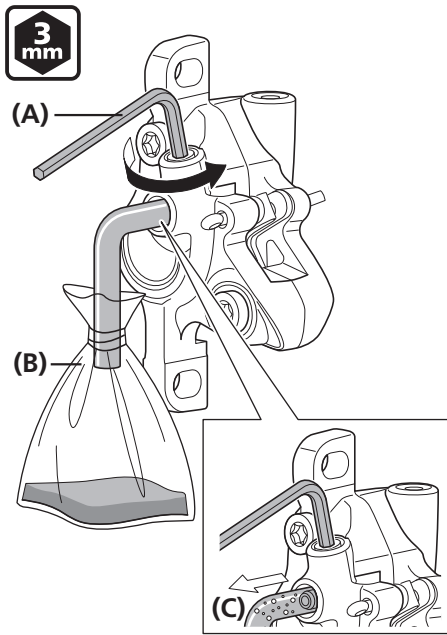
5



Tie the supplied tube and bag with rubber bands, set a 3 mm hexagon wrench as shown in the illustration, and connect the tube to the bleed boss.

- (A) 3 mm hexagon wrench
- (B) Bag

6



Loosen the bleed screw.

After a little while, the oil and air bubbles will flow naturally from the bleed boss into the tube.

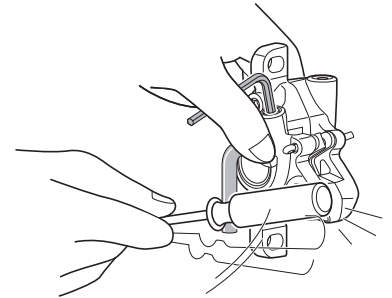
This way it will be possible to easily extract the greater part of the air bubbles remaining inside the brake system.

- (A) 3 mm hexagon wrench
- (B) Bag
- (C) Air bubbles



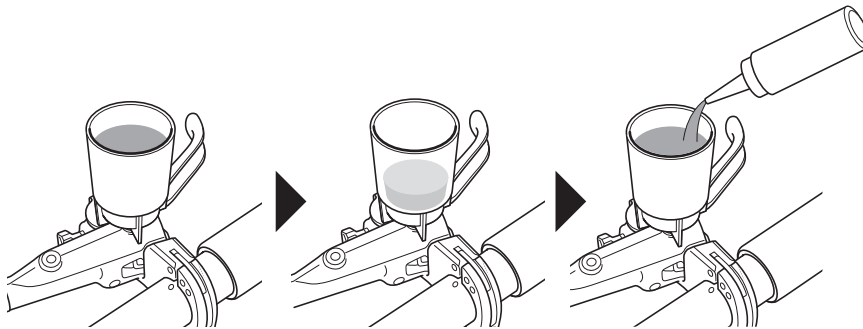
#### TECH TIPS

It may be effective to shake the hose gently, tap the reservoir tank or calipers gently with a screwdriver, or move the position of the calipers at this time.



7

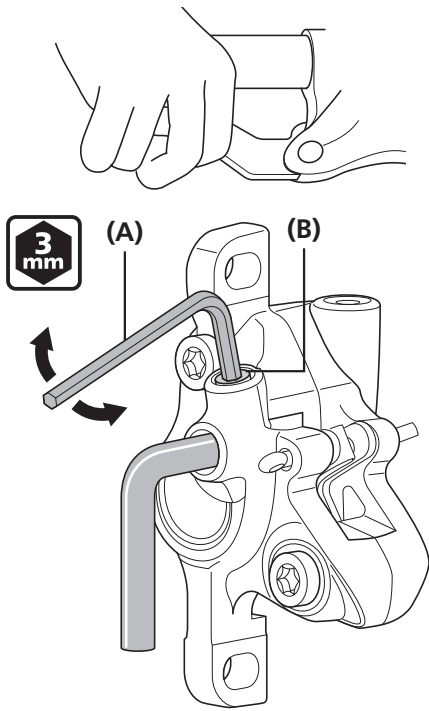
The level of liquid inside the oil funnel drops at this time, so keep filling the funnel with oil to maintain the level of liquid so that air is not drawn in.



8

Once no more air bubbles come out from the bleed boss, temporarily close the bleed screw.

9



With the brake lever depressed, open and close the bleed screw in rapid succession (for approximately 0.5 seconds each time) to release any air bubbles which may be in the brake calipers.

Repeat this procedure about 2 to 3 times.

Then tighten the bleed screw again.

(A) 3 mm hexagon wrench

(B) Bleed screw

Tightening torque



4 - 6 N·m

If the brake lever is then operated, air bubbles in the system will rise up through the port into the oil funnel.

Once the bubbles stop appearing, depress the brake lever as far as it will go.

Under normal conditions, lever action should feel stiff at this point.

(x) Loose

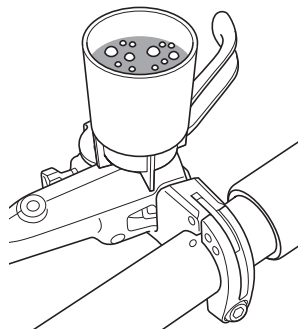
(y) Slightly stiff

(z) Stiff

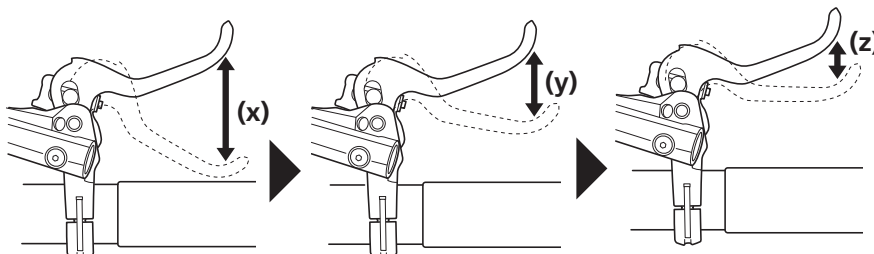
**NOTICE**

If the lever does not become stiff, repeat the process from step 6.

10

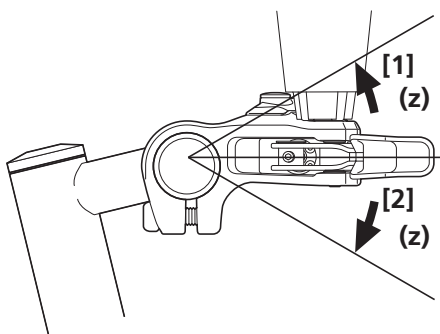


Lever operation





11



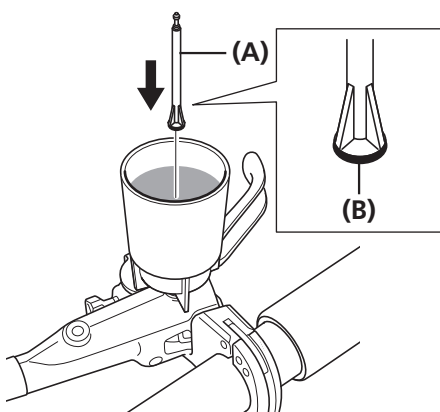
Tilt it by 30 degrees toward [1], carry out step 10, and then check that there is no air remaining.

Next, tilt the lever unit 30 degrees in direction [2], and carry out step 10 again to check that there is no air remaining.

If any air bubbles appear, repeat the above procedure until they stop appearing.

(z) 30°

12

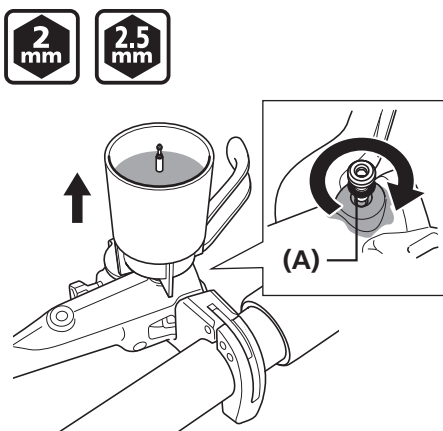


Plug the oil funnel with the oil stopper so that the O-ring mounted side is facing downward.

(A) Oil stopper

(B) O-ring

13



Remove the oil funnel while it is still plugged with the oil stopper, and then attach the O-ring to the bleed screw and tighten it while letting oil flow out to make sure that there are no air bubbles remaining inside the reservoir tank.

At this point, use a waste cloth to prevent oil from flowing out to the surrounding areas.

(A) O-ring

#### BL-MT200/BL-MT201

Tightening torque	
	0.5 - 1 N·m

#### BL-MT400

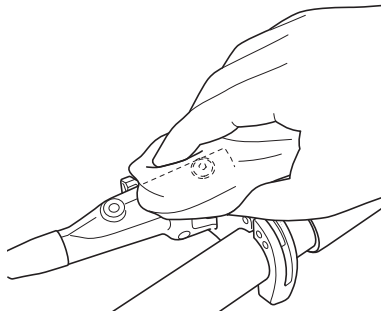
Tightening torque	
	0.5 - 1 N·m

#### NOTICE

Do not operate the brake lever. If operated, there is a risk of air bubbles entering the cylinder.

## ▶▶ Adding Shimano genuine mineral oil and bleeding air

14



Wipe away any oil that has overflowed.

15

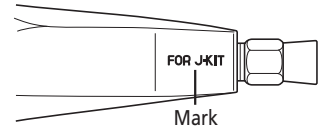
Finally, after removing the bleeding spacer and installing the pads and the pad spacer, depress the brake lever several times to check that the brake lever is operating normally and there are no fluid leaks from the brake hose or the system.

## ■ Replacing the brake hose

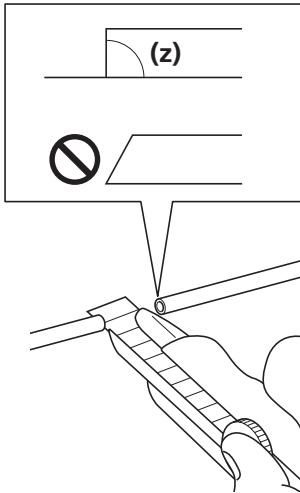
### Brake lever side

#### NOTICE

If there is a marking as shown in the illustration, refer to the section "Replacing the brake hose (easy hose joint system)" in General Operations.



1



Use a utility knife or other cutting tool to cut the brake hose.

**(z)** 90°

#### NOTICE

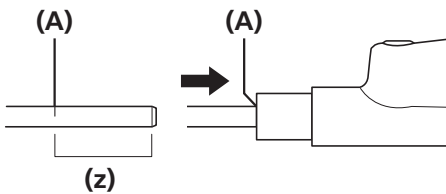
Use the utility knife safely and correctly in accordance with its instruction manual.



#### TECH TIPS

If you are using TL-BH62, refer to the manual accompanying the product.

2



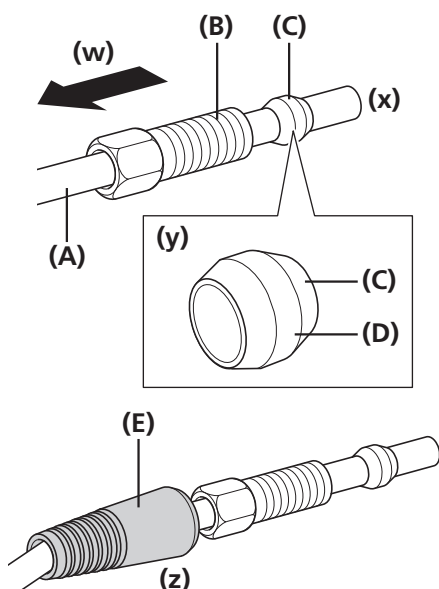
In order to check that the ends of the brake hose are fitted securely into the base of the brake hose mounts of the brake calipers and brake lever, make marks on the brake hose beforehand as shown in the illustration.

(As a guide, the length of brake hose inside the mount should be approximately 11 mm, measured from the cut end of the brake hose.)

**(z)** Approx. 11 mm

**(A)** Mark

3

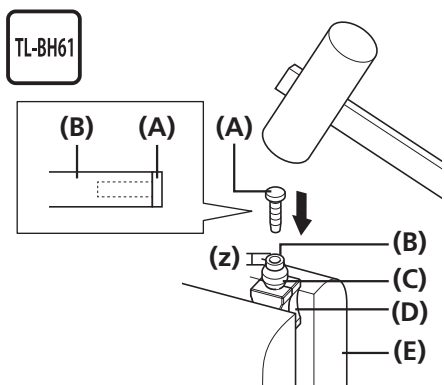


Pass the brake hose through the connecting bolt and olive.

- (w) Direction of insertion
- (x) Cut end
- (y) Grease the outside of the olive.
- (z) Attach the cover to the connecting bolt for the brake lever.

- (A) Brake hose
- (B) Connecting bolt
- (C) Olive
- (D) Premium grease
- (E) Cover

4



Use a tapered tool to smooth out the inside of the cut end of the brake hose, and mount the connector insert.

Attach the brake hose to the TL-BH61 as shown in the illustration, secure the TL-BH61 in a vise, and then use a hammer or similar tool to knock the connector insert in firmly until the base of the connector insert touches the end of the brake hose.

If the end of the brake hose is not touching the base of the connector insert, the brake hose may become disconnected or fluid leaks may occur.

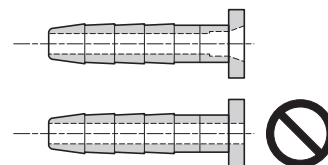
(z) 1 mm

- (A) Connector insert
- (B) Brake hose
- (C) Olive
- (D) TL-BH61
- (E) Vise

#### NOTICE

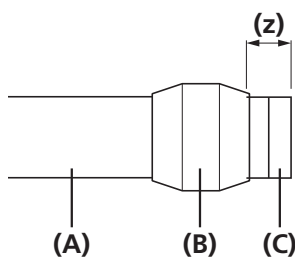
Use the dedicated connector insert supplied with SM-BH59/SM-BH90.

Use of any connector insert other than the one supplied may produce a loose assembly, leading to oil leaks or other problems.



Model No.	Length	Color
SM-BH59	13.2 mm	Gold
SM-BH90	11.2 mm	Silver

5



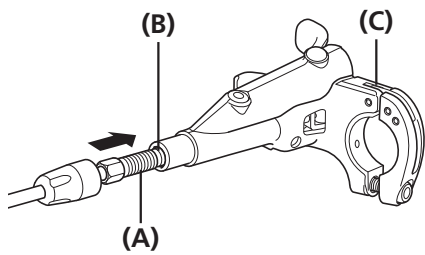
After checking that the olive is positioned as shown in the illustration, apply premium grease to the threads of the connecting bolt.

(z) 2 mm

- (A) Brake hose
- (B) Olive
- (C) Connector insert

▶▶ Replacing the brake hose

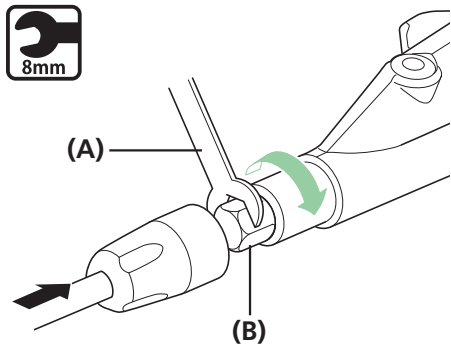
6



Attach the brake hose to the brake lever as shown in the illustration.

- (A) Connecting bolt
- (B) Olive
- (C) Brake lever

7



While pushing the brake hose, tighten the connecting bolt.

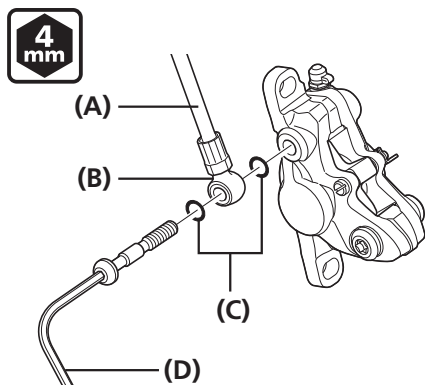
- (A) 8 mm spanner
- (B) Connecting bolt

Tightening torque



5 - 7 N·m

## Caliper side (BR-M7000/BL-M7000)



After checking that both O-rings are fitted in the top groove and bottom groove of the banjo, secure the banjo to the caliper as shown in the illustration. At this point, check that the O-rings are in the grooves. The O-rings are greased.

- (A) Brake hose
- (B) Banjo
- (C) O-ring
- (D) 4 mm hexagon wrench

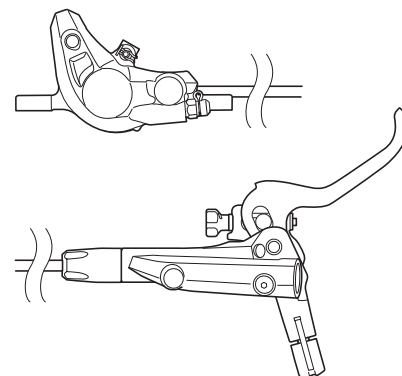
### Tightening torque



8 - 10 N·m

### NOTICE

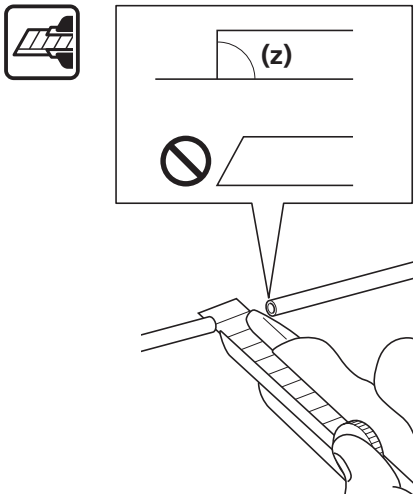
Do not let the brake hose become twisted when installing it.  
Make sure that the calipers and brake levers are in the positions shown in the illustrations.



Caliper side (BL-M6000/BR-M6000/BR-MT500/BL-MT500/BL-MT501/BR-MT200/BL-MT200/BL-MT201/BR-MT400/BL-MT400/BR-MT420/BL-MT401/BL-MT401-3A/BL-MT402-3A)

The illustration uses BR-MT500/BL-MT500 as an example to explain.

1




Use a utility knife or other cutting tool to cut the brake hose.

**(z)** 90°

**NOTICE**

Use the utility knife safely and correctly in accordance with its instruction manual.

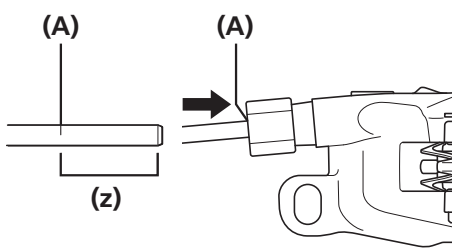
---



**TECH TIPS**

If you are using TL-BH62, refer to the manual accompanying the product.

2



In order to check that the ends of the brake hose are fitted securely into the base of the brake hose mounts of the brake calipers and brake lever, make marks on the brake hose beforehand as shown in the illustration.

(As a guide, the length of brake hose inside the mount should be approximately 11 mm, measured from the cut end of the brake hose.)

**(z)** Approx. 11 mm

**(A)** Mark

---

**(A)** Brake hose

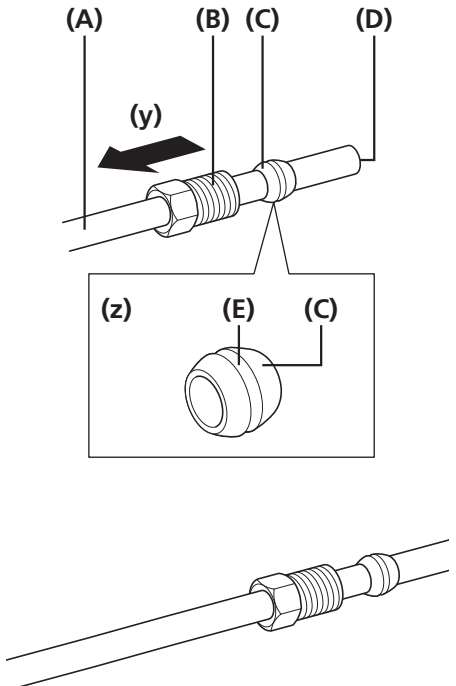
**(B)** Connecting bolt

**(C)** Olive

**(D)** Cut end

**(E)** Grease

3



Pass the brake hose through the connecting bolt and olive, as shown in the illustration.

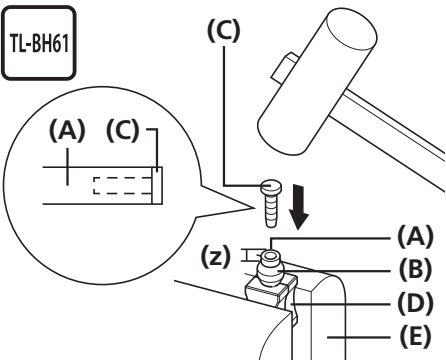
**(y)** Direction of insertion

**(z)** Grease the outside of the olive.

**NOTICE**

For installation to the built-in type frame, first connect to the frame caliper the end of the brake hose to which the banjo is not attached.

4



Use a tapered tool to smooth out the inside of the cut end of the brake hose, and mount the connector insert.

Connect the brake hose to TL-BH61 and secure TL-BH61 in a vise, as shown in the illustration.

Then, hammer down the connector insert until the connector insert mount comes into contact with the end of the brake hose.

(z) SM-BH59/SM-BH90: 1 mm

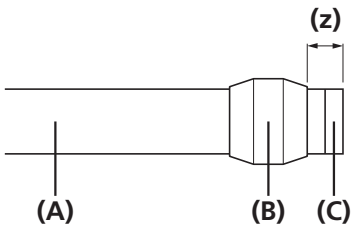
Model No.	Length	Color
SM-BH59	13.2 mm	Gold
SM-BH90	11.2 mm	Silver

- (A) Brake hose
- (B) Olive
- (C) Connector insert
- (D) TL-BH61
- (E) Vise

NOTICE

If the end of the brake hose is not in contact with the connector insert mount, the brake hose may be disconnected or cause fluid leaks.

5



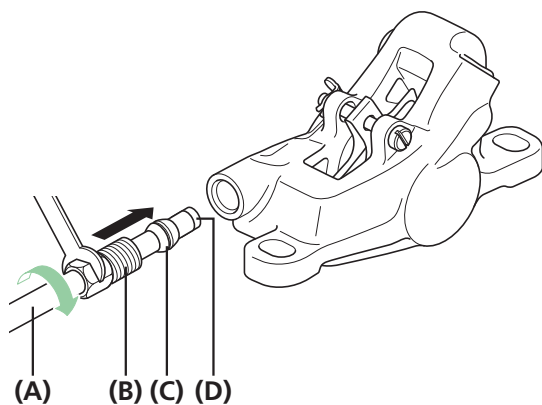
After checking that the olive is positioned as shown in the illustration, grease the screw threads of the connecting bolt.

(z) 2 mm

- (A) Brake hose
- (B) Olive
- (C) Connector insert



Attach the brake hose to the brake calipers as shown in the illustration.



(A) (B) (C) (D)

- (A) Brake hose
- (B) Connecting bolt
- (C) Olive
- (D) Connector insert

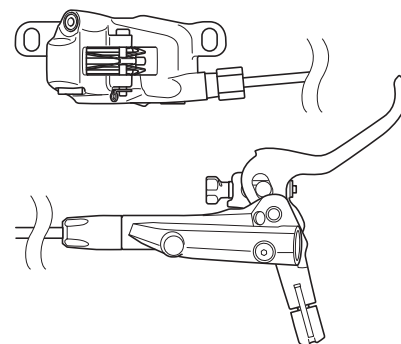
#### Tightening torque



5 - 7 N·m

#### NOTICE

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



## ■ Replacing the brake pads

### NOTICE

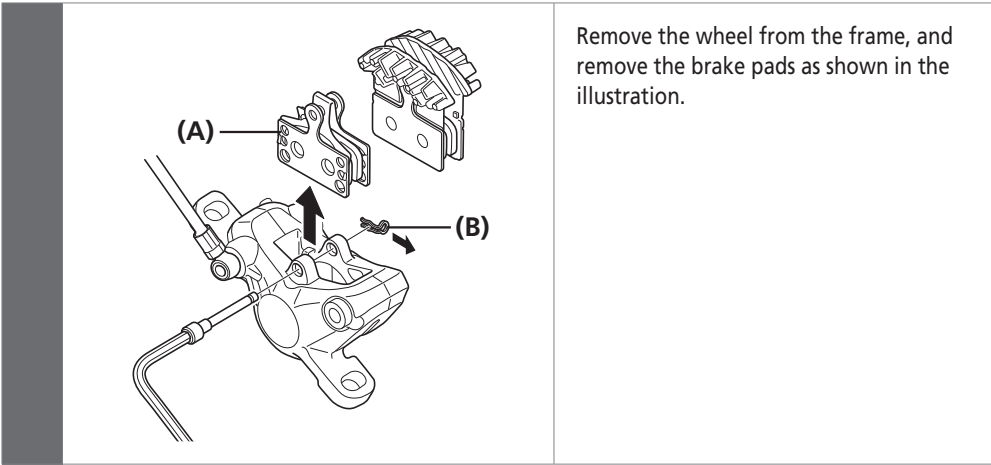
This brake system is designed to automatically adjust the clearance between the disc brake rotor and the brake pads by the piston gradually protruding according to the wear of the brake pads; therefore, when you replace the brake pads, you need to push back the piston.



### TECH TIPS

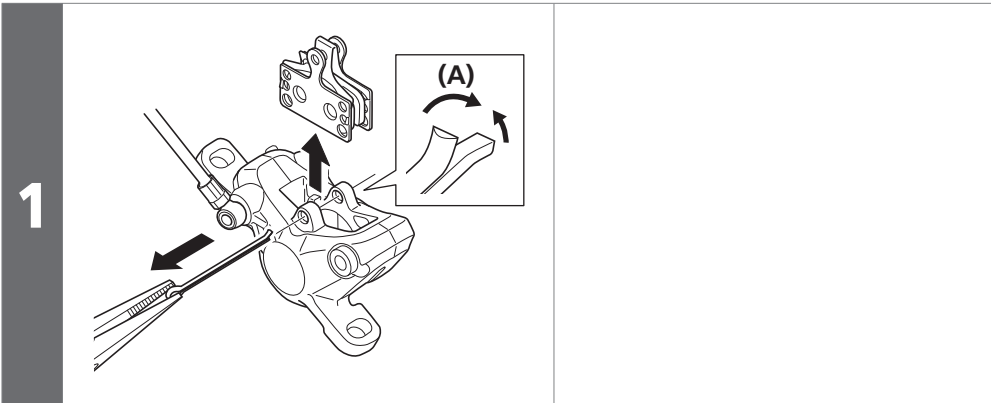
If oil adheres to the brake pads, if the brake pads are worn down to a thickness of 0.5 mm, or if the brake pad presser springs are interfering with the disc brake rotor, replace the brake pads.

The illustration uses BR-M7000 as an example to explain.



- (A) Brake pad
- (B) Snap ring

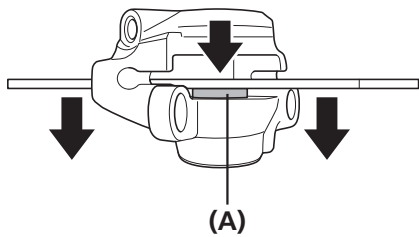
For split pin



- (A) Split pin



3



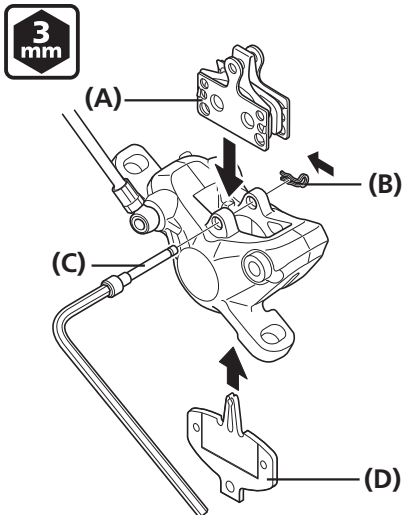
Use a flat-shaped tool to push the pistons straight back in as far as they will go, while being careful not to twist the pistons.

(A) Piston

**NOTICE**

Do not push the pistons with a sharp tool. The pistons may be damaged.

4



Install the new brake pads, the bolt, and the pad spacer (red).

At this point, make sure to install the snap ring as well.

(A) Brake pad

(B) Snap ring

(C) Bolt

(D) Pad spacer (red)

**Tightening torque**

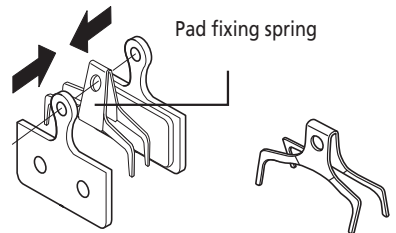


2 - 4 N·m



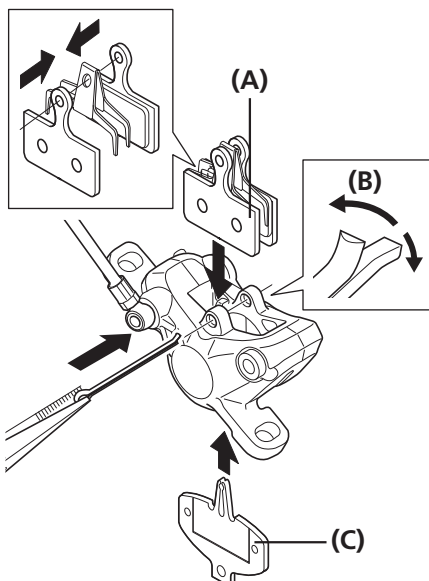
**TECH TIPS**

Install the pad fixing spring as shown in the illustration. (There are left (L) and right (R) marks on the spring.)



**For split pin types**

4



Install the new brake pads the split pin, and then install the pad spacers (red).

After this, bend open the split pin.

(A) Brake pad

(B) Split pin

(C) Pad spacer (red)

**5**

Depress the brake lever several times to check that the operation becomes stiff.

**6**

Remove the pad spacer, install the wheel, and then check that there is no interference between the disc brake rotor and caliper.

If they do touch, adjust while referring to the section "Installation of the calipers and securing the hose" in General Operations.



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

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