

Dealer's Manual

ROAD	GRAVEL	MTB
E-BIKE	LIFESTYLE	GENERAL

Hydraulic Disc Brake (ABS Type)

XTR

BR-M9220
BL-M9220

DEORE XT

BR-M8220
BR-T8120
BL-M8200
BL-T8120

DEORE

BL-M6200

CUES

BL-U8000-ABS

SHIMANO

BR-MT420
BR-MT200
BL-MT402-ABS
BL-MT200-ABS
RT-6B750
RT-CL900
RT-CL800
RT-CL750
RT-CL700
RT-CL300
SM-RT66
SM-RT64
SM-RT30
SM-RT26
SM-RT10
BL-M4100-ABS
BP-B05S-RX
BP-D02S-MX

SHIMANO (E-BIKE)

BS-SS310

BP-D03S-RX
BP-N03A-RF
BP-N04A-MF
BP-P03A-RF
BP-P04C-MF

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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.

	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.**

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:

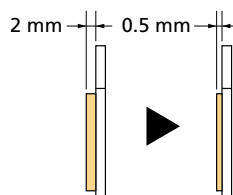
- This product must be used with the predetermined combination of products (caliper, rotor and pad) compatible with BOSCH ABS / BOSCH ABS Pro. Refer to " [About compatibility](#) ." The latest information on compatibility is provided on the [SHIMANO product website](#) .
- A compatible product must be used for the front brake lever of a BOSCH ABS (other than BOSCH ABS Pro). The ABS will not function correctly unless an ABS-type brake lever is used. However, a regular hydraulic disc brake lever can be used for a rear brake lever that is not directly connected to a BOSCH ABS unit.
- Do not reuse the products described in this manual, which are installed to a bicycle compatible with a BOSCH ABS (**other than BOSCH ABS Pro**) , on another bicycle.
- When replacing the brake system and other parts including consumable parts equipped on a bicycle using a BOSCH ABS / BOSCH ABS Pro, make sure to use parts with the same specifications as the parts that came with the bicycle at the time of purchase. Operation is not guaranteed if parts with different specifications are used.
- For safety reasons, never perform repair or maintenance work on the brake system included with a bicycle using a BOSCH ABS / BOSCH ABS Pro. Contact the place of purchase to perform repair or maintenance work.
- Make sure to read the manual for the BOSCH ABS / BOSCH ABS Pro before using the product.
- 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.
- Riders must become accustomed to the higher performance of this brake before riding the bicycle. The 220 mm, 203 mm, and 180 mm rotors provide a higher braking force than the 160 mm rotors. If you ride the bicycle without becoming sufficiently familiar with the braking characteristics, braking may cause you to fall off the bicycle, potentially causing serious injury or a fatal accident.
- 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.

TO ENSURE SAFETY

- 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.
- Check the information on the [supported models for each oil type](#), and use the correct oil for the product. Doing otherwise may prevent the brakes from operating and result in serious injury.
- Do not mix SHIMANO hydraulic mineral oil with SHIMANO low viscosity oil. Doing so may prevent the brakes from operating and result in serious injury.
- 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.
- 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.
- 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.
- 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 specified brake oil. Doing so may prevent the brakes from operating and result in serious injury due to a fall or collision.
- Use only brake 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.

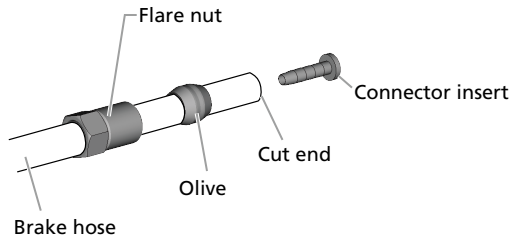
■ Brake hose

- 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	11.2 mm	Silver
SM-BH59	13.2 mm	Gold

TO ENSURE SAFETY

- 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.



CAUTION

Be sure to also inform users of the following:

■ Cautions on SHIMANO low viscosity oil

- Use appropriate eye protection when handling SHIMANO low viscosity oil, 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.
- Wear gloves when handling SHIMANO low viscosity oil. In the event of skin contact, wash well with soapy water. Contact with skin may cause a rash and discomfort.
- When using SHIMANO low viscosity oil, cover your nose and mouth with a respirator type mask and ensure that the area is well-ventilated. Inhalation of oil mist or vapors emitted from SHIMANO low viscosity oil may cause nausea.
- If oil mist or vapor emitted from SHIMANO low viscosity oil is inhaled, go immediately to an area with fresh air. Cover up with a blanket. Stay warm and stable and seek professional medical advice.

■ Cautions on SHIMANO hydraulic mineral oil

- Use appropriate eye protection when handling SHIMANO hydraulic mineral oil, 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.
- Wear gloves when handling SHIMANO hydraulic mineral oil. In the event of skin contact, wash well with soapy water. Contact with skin may cause a rash and discomfort.
- When using SHIMANO hydraulic mineral oil, cover your nose and mouth with a respirator type mask and ensure that the area is well-ventilated. Inhalation of oil mist or vapors emitted from SHIMANO hydraulic mineral oil may cause nausea.
- If SHIMANO hydraulic 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

- When using resin pads, perform bed-in for a longer period of time than metal pads. Resin pads are designed to reduce the amount of noise generated between the pads and the rotor when the brakes are operated. A longer bed-in period is required than for metal pads. For information on how to perform bed-in, refer to the user's manual.

- 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 hydraulic mineral oil / SHIMANO low viscosity 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 hydraulic mineral oil / SHIMANO low viscosity 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 knife 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 SHIMANO low viscosity 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.
- Use soapy water and a dry cloth when cleaning and carrying out maintenance of the brake system. Do not use commercially available brake cleaners 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 be damaged and lose strength.
- 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

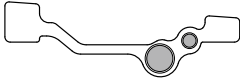
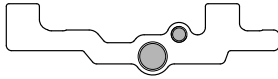
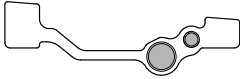
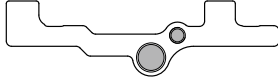
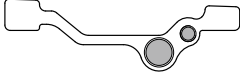
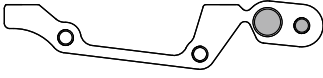
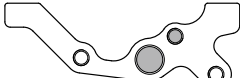
- The 220 mm, 203 mm, and 180 mm rotors have a larger diameter than the 160 mm rotor for cross-country bicycles, and so the warping of these rotors is greater. As a result, they may interfere with the performance of the pads.
- If the brake caliper mounting boss and the dropout are not parallel, the 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.
- 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.
- For cleaning brake hoses exposed to SHIMANO hydraulic mineral oil / SHIMANO low viscosity 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 resin parts.
- Do not remove the pistons when cleaning the calipers.
- If the rotor is worn, cracked or warped, it should be replaced.

- Selecting a mount adapter

Refer to the table below to select a mount adapter compatible with the speed sensor included with the BS-SS310.

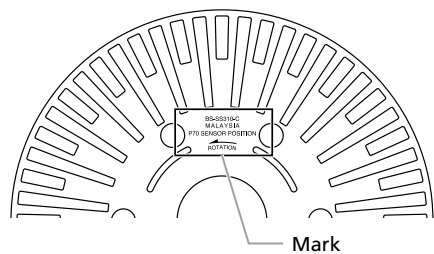
Types for frame brake mounts		Rotor size		
		180 mm	203 mm	220 mm
Post mount	160 mm direct	Type A (MA-F220P / PL2 / ABS)	Type B (MA-F203P / P / ABS)	-
	180 mm direct	-	Type C (MA-F203P / PM / ABS)	Type D (MA-F220P / PM / ABS)
	200 mm direct	-	-	Type A (MA-F220P / PL2 / ABS)
	203 mm direct	-	-	Type E (MA-F220P / PL / ABS)
International-standard mount	For front	Type F (MA-F180P / S / ABS)	-	-
	For rear	Type G (MA-R180P / S / ABS)	-	-

Refer to the table below for the shape of the mount adapter. The areas indicated in gray are the holes for installing the speed sensor.

Type A (MA-F220P / PL2 / ABS)	Type B (MA-F203P / P / ABS)
	
Type C (MA-F203P / PM / ABS)	Type D (MA-F220P / PM / ABS)
	
Type E (MA-F220P / PL / ABS)	Type F (MA-F180P / S / ABS)
	
Type G (MA-R180P / S / ABS)	
	

- Selecting a tone wheel

The type is marked on the tone wheel of the BS-SS310.



- To install a speed sensor for an ABS using the mount adapter of the BS-SS310, select the tone wheel based on the diameter of the rotor.

Rotor size	Mark on compatible tone wheel
Ø180 mm	R58 sensor position
Ø203 mm	R70 sensor position
Ø220 mm	R78 sensor position

- When the method for installing the speed sensor differs because the front fork has a mounting boss for an ABS speed sensor or another reason, follow the instructions of the bicycle manufacturer.

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

Only the tools used in this manual are listed.

Check the tools in the dealer's manuals referred to in this manual. The tools to use may differ for some models, even for the same procedure.

Tool	
	TL-FC36
	Hexalobular[#25]
	TL-BH61
	8 mm spanner
	5 mm hexagon wrench

Installation / removal

About compatibility

WARNING

- Make sure to use a front side brake system with the predetermined combination of products indicated below. This limitation includes the pad and rotor, and limits the rotor size.

When using a two-piston brake caliper with a BOSCH ABS

ABS mode of BOSCH ABS	Touring or Allroad
Combination of brake lever and brake caliper (front side*)	BL-MT200-ABS + BR-MT200
Brake hose	SM-BH59-JK-SS
Pad	BP-B05S-RX
Rotor	SM-RT26 (Ø180 mm), SM-RT10 (Ø180 mm)
Brake oil	SHIMANO hydraulic mineral oil

* The regular combination of BL-MT200 + BR-MT200 is recommended on the rear side.

When using a four-piston brake caliper with a BOSCH ABS

Combination 1

ABS mode of BOSCH ABS	Touring
Combination of brake lever and brake caliper (front side*)	BL-MT402-ABS + BR-MT420
Brake hose	SM-BH90-SS
Pad	BP-D03S-RX, BP-D02S-MX
Rotor	SM-RT30 (Ø180 mm / Ø203 mm), SM-RT64 (Ø180 mm / Ø203 mm), SM-RT66 (Ø180 mm / Ø203 mm), RT-CL300 (Ø180 mm / Ø203 mm)
Brake oil	SHIMANO hydraulic mineral oil

* The regular combination of BL-MT402-3A + BR-MT420 is recommended on the rear side.

Combination 2

ABS mode of BOSCH ABS	Allroad, Trail, or Off
Combination of brake lever and brake caliper (front side*)	BL-MT402-ABS + BR-MT420
Brake hose	SM-BH90-SS
Pad	BP-D03S-RX, BP-D02S-MX

ABS mode of BOSCH ABS	Allroad, Trail, or Off
Rotor	SM-RT30 (Ø203 mm), SM-RT64 (Ø203 mm / Ø220 mm), SM-RT66 (Ø203 mm / Ø220 mm), RT-CL300 (Ø203 mm)
Brake oil	SHIMANO hydraulic mineral oil

* The regular combination of BL-MT402-3A + BR-MT420 is recommended on the rear side.

Combination 3

ABS mode of BOSCH ABS	Touring, Allroad, Trail, or Off
Combination of brake lever and brake caliper (front side*)	BL-U8000-ABS + BR-U8020
Brake hose	SM-BH90-SS
Pad	BP-D03S-RX, BP-D02S-MX, BP-N03A-RF, BP-N04A-MF
Rotor	SM-RT30 (Ø203 mm), SM-RT64 (Ø203 mm / Ø220 mm), SM-RT66 (Ø203 mm / Ø220 mm), RT-CL700 (Ø203 mm), RT-CL300 (Ø180 mm / Ø203 mm)
Brake oil	SHIMANO hydraulic mineral oil

* The regular combination of BL-U8000 + BR-U8020 is recommended on the rear side.

Combination 4

ABS mode of BOSCH ABS	Touring
Combination of brake lever and brake caliper (front side*)	BL-M4100-ABS + BR-MT420
Brake hose	SM-BH90-SS
Pad	BP-D03S-RX, BP-D02S-MX
Rotor	SM-RT30 (Ø180 mm / Ø203 mm), SM-RT64 (Ø180 mm / Ø203 mm), SM-RT66 (Ø180 mm / Ø203 mm), RT-CL300 (Ø180 mm / Ø203 mm)
Brake oil	SHIMANO hydraulic mineral oil

* The regular combination of BL-M4100 + BR-MT420 is recommended on the rear side.

Combination 5

ABS mode of BOSCH ABS	Allroad, Trail, or Off
Combination of brake lever and brake caliper (front side*)	BL-M4100-ABS + BR-MT420
Brake hose	SM-BH90-SS
Pad	BP-D03S-RX, BP-D02S-MX
Rotor	SM-RT30 (Ø203 mm), SM-RT64 (Ø203 mm / Ø220 mm), SM-RT66 (Ø203 mm / Ø220 mm), RT-CL300 (Ø203 mm)
Brake oil	SHIMANO hydraulic mineral oil

* The regular combination of BL-M4100 + BR-MT420 is recommended on the rear side.

Combination 6

ABS mode of BOSCH ABS	Touring, Allroad, Trail, or Off
Combination of brake lever and brake caliper (front side*)	BL-T8120-ABS + BR-T8120
Brake hose	SM-BH90-SS
Pad	BP-D03S-RX, BP-D02S-MX, BP-N03A-RF, BP-N04A-MF
Rotor	SM-RT30 (Ø203 mm), SM-RT64 (Ø203 mm / Ø220 mm), SM-RT66 (Ø203 mm / Ø220 mm), RT-CL700 (Ø203 mm)
Brake oil	SHIMANO hydraulic mineral oil

* The regular combination of BL-T8120 + BR-T8120 is recommended on the rear side.

When using a four-piston brake caliper with BOSCH ABS Pro

Combination 1

ABS mode of BOSCH ABS Pro	Trail Pro, Race, or Off
Combination of brake lever and brake caliper (front side*)	BL-M8200 + BR-M8220 (dedicated kit for BOSCH ABS Pro)
Brake hose	SM-BH90-SBM
Pad	BP-D03S-RX, BP-D02S-MX, BP-P03A-RF, BP-P04C-MF
Rotor	SM-RT66 (Ø203 mm / Ø220 mm), RT-6B750 (Ø220 mm), RT-CL800 (Ø203 mm), RT-CL900 (Ø203 mm), RT-CL700 (Ø203 mm), RT-CL750 (Ø220 mm)
Brake oil	SHIMANO low viscosity oil

* The regular combination of BL-M8200 + BR-M8220 is recommended on the rear side.

Combination 2

ABS mode of BOSCH ABS Pro	Trail Pro, Race, or Off
Combination of brake lever and brake caliper (front side*)	BL-M9220 + BR-M9220 (dedicated kit for BOSCH ABS Pro)
Brake hose	SM-BH90-SBM
Pad	BP-D03S-RX, BP-D02S-MX, BP-P03A-RF, BP-P04C-MF
Rotor	SM-RT66 (Ø203 mm / Ø220 mm), RT-6B750 (Ø220 mm), RT-CL900 (Ø203 mm), RT-CL800 (Ø203 mm), RT-CL700 (Ø203 mm), RT-CL750 (Ø220 mm)
Brake oil	SHIMANO low viscosity oil

* The regular combination of BL-M9220 + BR-M9220 is recommended on the rear side.

Combination 3

ABS mode of BOSCH ABS Pro	Trail Pro, Race, or Off
Combination of brake lever and brake caliper (front side*)	BL-M6200 + BR-M6220 (dedicated kit for BOSCH ABS Pro)

ABS mode of BOSCH ABS Pro	Trail Pro, Race, or Off
Brake hose	SM-BH90-SS
Pad	BP-D03S-RX, BP-D02S-MX
Rotor	SM-RT66 (Ø203 mm / Ø220 mm), RT-6B750 (Ø220 mm), RT-CL900 (Ø203 mm), RT-CL800 (Ø203 mm), RT-CL700 (Ø203 mm), RT-CL750 (Ø220 mm)
Brake oil	SHIMANO low viscosity oil

* The regular combination of BL-M6200 + BR-M6220 is recommended on the rear side.

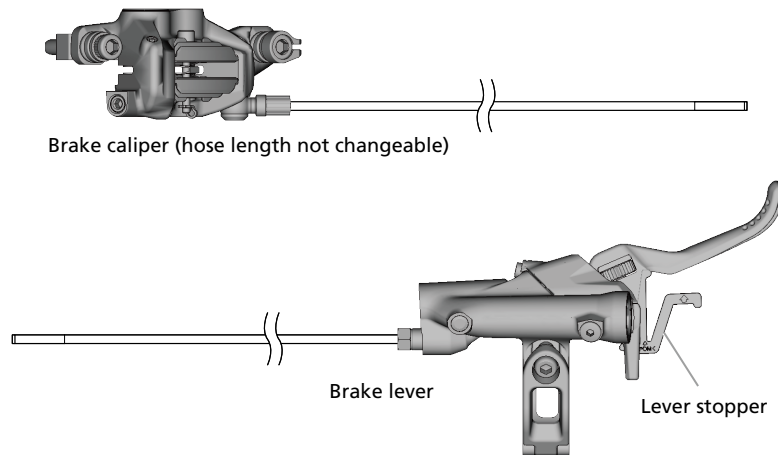
Reference manuals

This manual describes how to connect the SHIMANO hydraulic brake system to the BOSCH ABS unit and install it to the bicycle. Also refer to the following dealer's manuals according to your component.

Reference manual number	Target
DM-MADBR10	BL-M9220, BL-M8200
	BR-M9220, BR-M8220
DM-MBDBR10	BL-M6200
	BR-M6220
DM-MBDBR01	BL-M4100
DM-MBBR001	BL-MT200-ABS, BL-MT402-ABS, BL-MT200, BL-MT402-3A
	BR-MT200, BR-MT420
DM-LADBR01	BL-U8000-ABS, BL-U8000, BL-T8120-ABS, BL-T8120
	BR-U8000, BR-T8120
DM-GN0001	Rotor
DM-SMMA00A	Mount adapter including BS-SS310

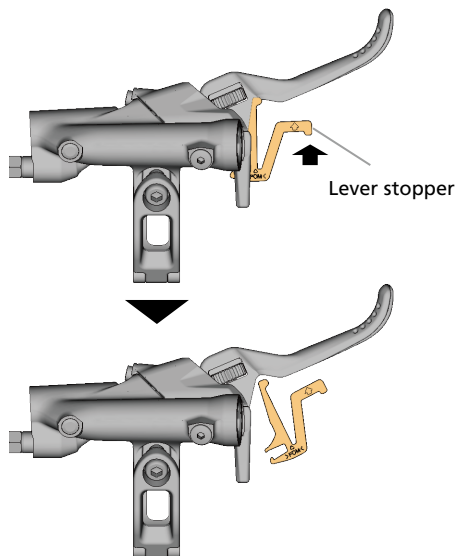
Overview of the easy hose joint system

The easy hose joint system used on the front side for BOSCH ABS Pro / BOSCH ABS differs from regular models as indicated below.



NOTICE

- The easy hose joint system (for BOSCH ABS Pro) of the BL-M9220 differs from the regular BL-M9220 because it has a lever stopper installed. Before installing the BL-M9220 to the handlebar, remove the lever stopper as indicated in the figure.



- Install the ABS unit to a brake system on the front side. The easy hose joint system on the rear side has the same configuration as a regular hydraulic disc brake.

Flow of installation procedure

This manual describes the installation procedure for a brake system on the front side connected to the ABS unit.
For a brake system on the rear side, refer to the [dealer's manual for your brake system](#).

NOTICE

- For a BOSCH ABS, a speed sensor is also required on the rear side. This manual omits the description of installation on the rear side. Also use the mount adapter of the BS-SS310 on the rear side instead of the regular mount adapter, according to the frame type.

1. Install the rotor and tone wheel to the wheel.

Refer to " [Installing the tone wheel](#) ."

2. Check the length of the hose.

Refer to " [Checking the length of the hose](#) ."

3. Connect the brake hose on the brake caliper side to the ABS unit.

Refer to " [Connecting the hose to the ABS unit \(brake caliper side\)](#) ."

4. Temporarily install the brake caliper to the front fork.

- Refer to " [Temporarily installing the brake calipers](#) ."
- For information on installing the ABS unit, see the manual for the BOSCH ABS.

5. Install the brake lever to the handlebar.

Refer to " [Installing the brake lever](#) ."

6. Connect the brake hose on the brake lever side to the ABS unit.

Refer to " [Connecting the hose to the ABS unit \(brake lever side\)](#) ."

7. Secure the brake caliper.

Refer to " [Securing the brake calipers](#) ."

8. Install the speed sensor.

Refer to " [Installing the speed sensor](#) ."

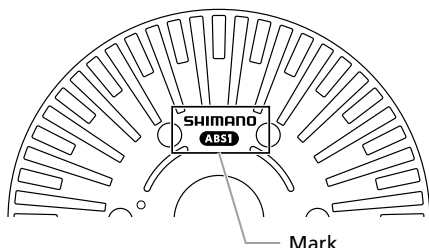
Installing the tone wheel

Install the tone wheel to both the front and rear wheels.

Also refer to the [how to install your rotor](#).

NOTICE

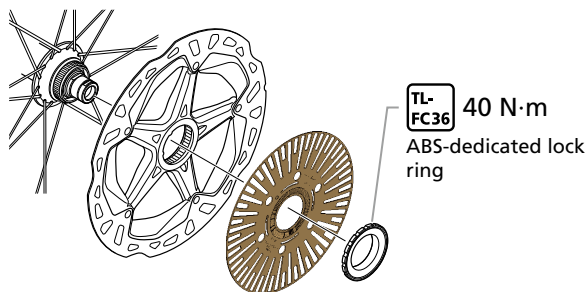
- Ensure that the side with the "ABS1" mark is visible when installing the tone wheel.



CENTER LOCK type

For model: BS-SS310-C

1. Install the tone wheel tightened together with the rotor.

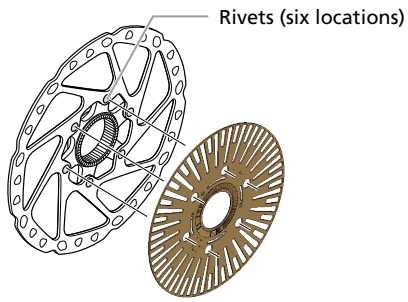


⚠ WARNING

- Be sure to use the lock ring described as ABS-dedicated for installing the CENTER LOCK-type tone wheel. The thread of a regular lock ring is not long enough. Therefore, the lock ring cannot be tightened sufficiently, which can cause it to fall off or damage the thread on the hub side.
 - The ABS-dedicated lock ring is included with the BS-SS310-C.
 - The lock ring washer is installed to the dedicated ABS lock ring and cannot be easily removed.

NOTICE

- The rivets may interfere with the tone wheel for some rotor models. In this case, align the six holes of the tone wheel with the rivets.



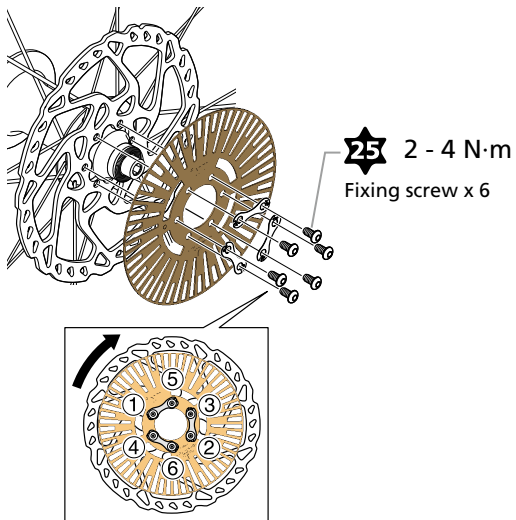
6-bolt type

For model: BS-SS310-S

1. Install the tone wheel tightened together with the rotor.

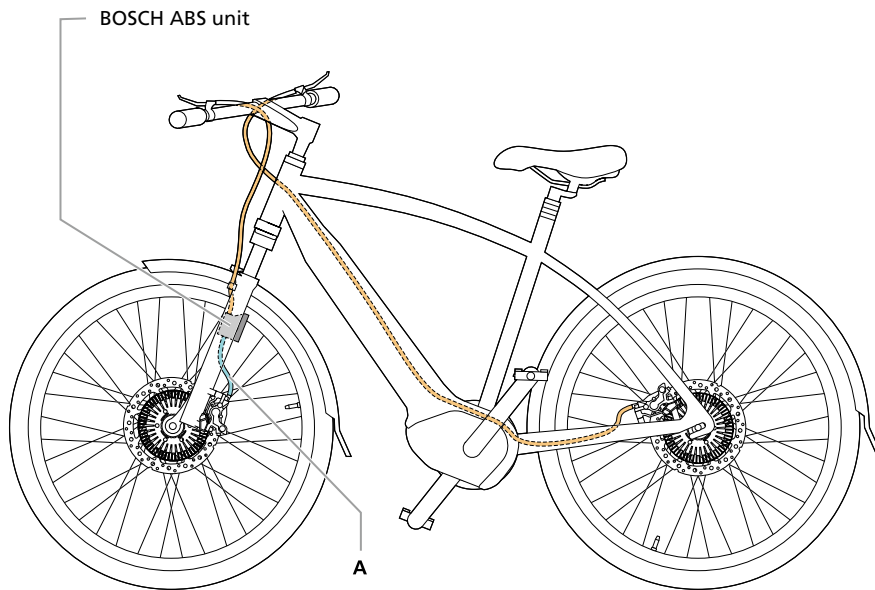
Wear gloves, and tighten the fixing screws while applying force to turn the rotor in the clockwise direction.

Tighten the fixing screws in the order shown in the figure.



Checking the length of the hose

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



⚠ WARNING

- Do not change the length of the hose connected to the brake caliper on the front side. The ABS may not function correctly if you change the length of hose A in the figure. Make sure to confirm that the visible length of the hose connected to the ABS unit from the brake caliper is at least 100 mm.

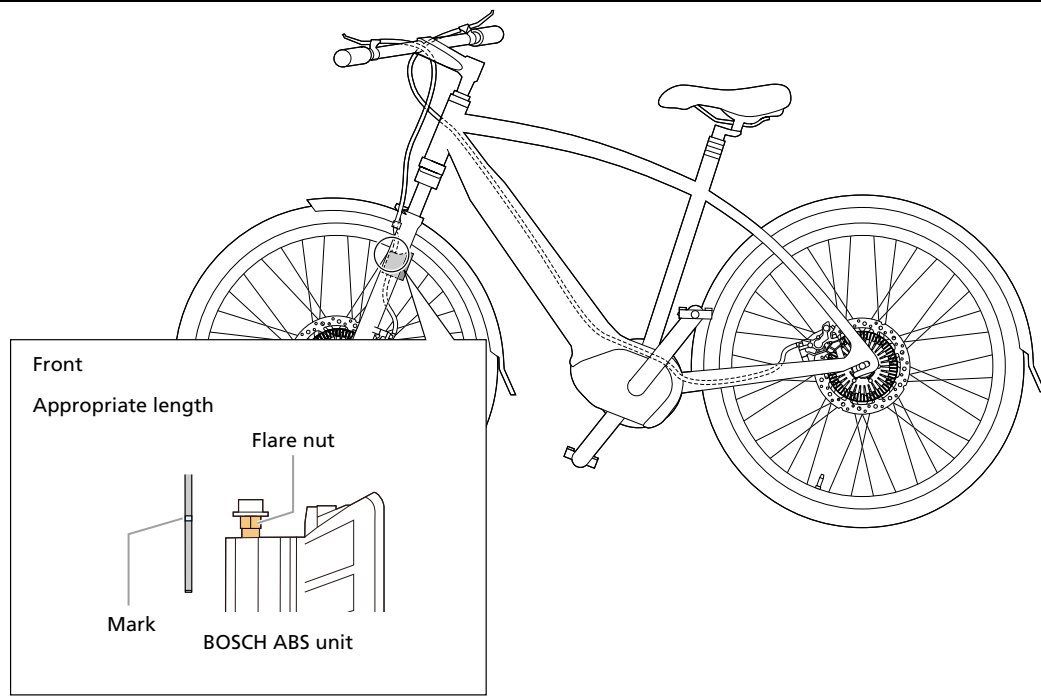
NOTICE

- The figure shows an example. For details on how to route the brake hoses, consult the manufacturer of the bicycle or refer to the bicycle's manual.
- For information on checking the hose length with the BOSCH ABS unit temporarily installed, refer to the manual of the BOSCH ABS or bicycle.
- Some brake lever models cannot be installed to the handlebar without removing the lever stopper.

2. Check the appropriate length of the brake hose.

Secure the brake lever to the ride position and check the length of the brake hose. Use a brake hose which still has some length to spare even when the handlebars are turned all the way to both sides. Carry out the check by aligning the mark on the brake hose with the edge of the flare nut to connect.

- If the hose is at the appropriate length, proceed to "[Connecting the hose to the ABS unit \(brake caliper side\)](#)."
- If the hose is too long, refer to the [dealer's manual for the brake lever or brake caliper](#) to cut the hose. Use care when cutting the hose, as oil may leak when the hose is cut. If you cut the hose, make sure to insert a connector insert into the tip of the hose.
- If the hose is too short, refer to "[Replacing the brake hose](#)."

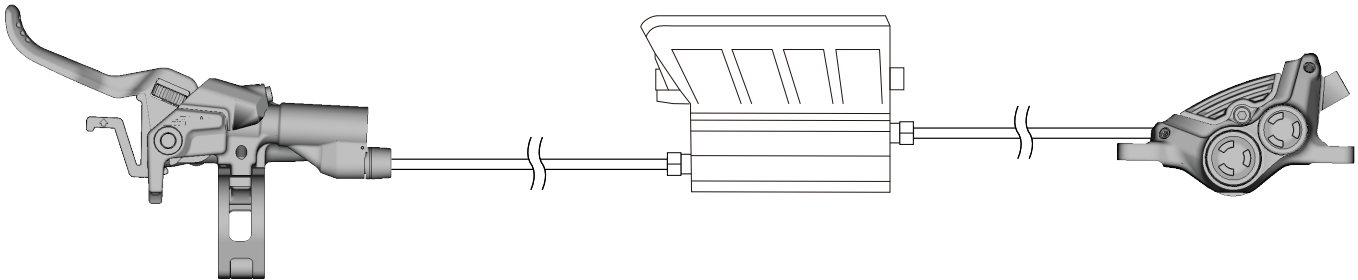


Connecting the hose to the ABS unit (brake caliper side)

Connect the ABS unit and brake caliper on the front side.

NOTICE

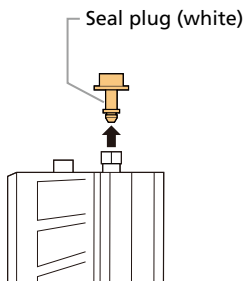
- Align the ABS unit and brake caliper as indicated in the figure. Take care to ensure that the brake hose does not become twisted when installing it. Otherwise, the functionality of the ABS may be adversely affected. To prevent twisting of the hose, use the TL-BH61 to secure the hose to a vise, then tighten the flare nut to the specified torque with the orientation of the ABS unit aligned. When replacing the hose, apply a thin coat of grease (TOP 2000 grease) to the olive on the ABS unit side before installing the hose.



1. Remove the seal plug (white) from the ABS unit.

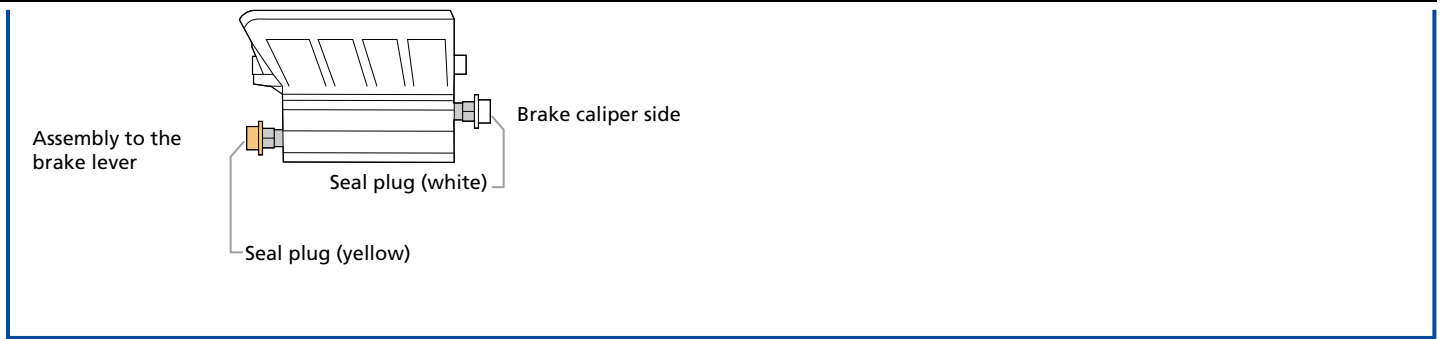
Perform work with the ABS unit held in an adjustable wrench or secured in a vise with the hose connection port facing upward.

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



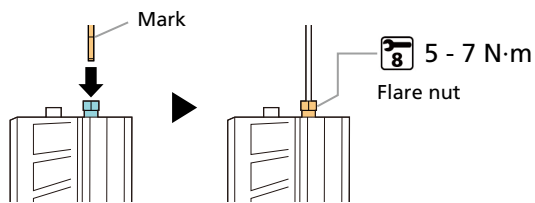
NOTICE

- The ABS unit has two hose connection ports, and specific hoses must be connected to the brake caliper side (white seal plug) and brake lever side (yellow seal plug). Be careful to avoid connecting the wrong hoses.



2. Connect the brake hose of the brake caliper to the ABS unit.

- The ABS unit has an olive embedded inside. When inserting the hose, ensure it does not snag on the olive.
- Insert hose up to the mark on the outer hose casing.
- Cover with a clean rag while conducting this procedure as some of the internal oil may leak.
- Wipe away any spilled oil with a clean rag.



Temporarily installing the brake calipers

This section describes the procedure for using the mount adapter of the BS-SS310 to install the brake caliper. Also refer to the [dealer's manual for your brake system](#).

Post mount type

1. Install the wheel with the rotor and tone wheel to the frame.

2. Connect the brake hose.

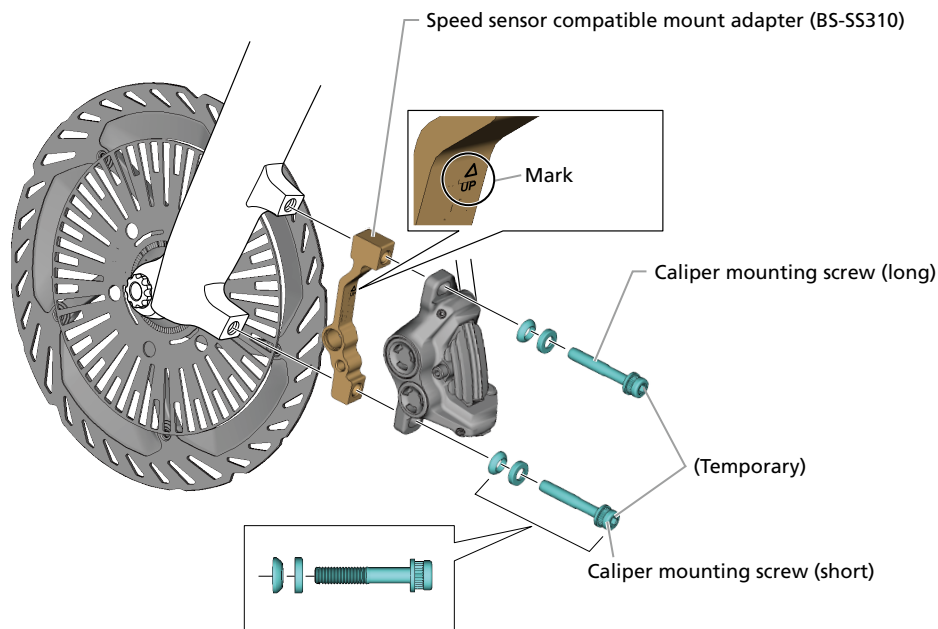
Refer to " [Connecting the hose to the ABS unit \(brake caliper side\)](#)."

- For the front side brake caliper, connect the brake hose to the ABS unit.
- For the rear side brake caliper, connect the brake hose to the brake lever.

3. Remove the bleed spacer from the caliper, then install the pads.

4. Temporarily install the caliper and mount adapter to the frame.

- This section describes an example of using the mount adapter of the BS-SS310 to install the BR-M9220. The installation method is the same for other models.
- Also use the mount adapter of the BS-SS310 to install the caliper and mount adapter on the rear side.



International-standard mount type

1. Install the wheel with the rotor and tone wheel to the frame.

2. Connect the brake hose.

Refer to " [Connecting the hose to the ABS unit \(brake caliper side\)](#)."

- For the front side brake caliper, connect the brake hose to the ABS unit.
- For the rear side brake caliper, connect the brake hose to the brake lever.

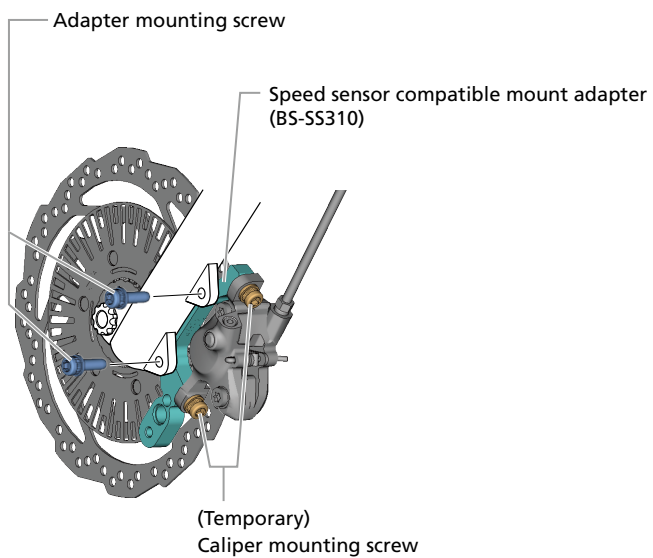
3. Remove the bleed spacer from the caliper, then install the pads.

4. Temporarily install the caliper to the mount adapter, then install it to the frame.

This section describes an example of using the mount adapter of the BS-SS310 to install the BR-MT200-ABS. The installation method is the same for other models.

Installation / removal

Temporarily installing the brake calipers



Installing the brake lever

This section describes the flow of installing the brake lever on the front side. Also refer to the [dealer's manual for your brake system](#).

NOTICE

- Follow the regular procedure to install the brake lever on the rear side. Check the reference above.

1. Temporarily install the brake lever to the handlebar.

If a lever stopper is installed to the brake lever, remove it in advance.

2. Check the length of the brake hose.

Refer to " [Checking the length of the hose](#) ."

3. Remove the brake lever from the handlebar and connect the brake hose to the ABS unit.

Refer to " [Connecting the hose to the ABS unit \(brake lever side\)](#) ."

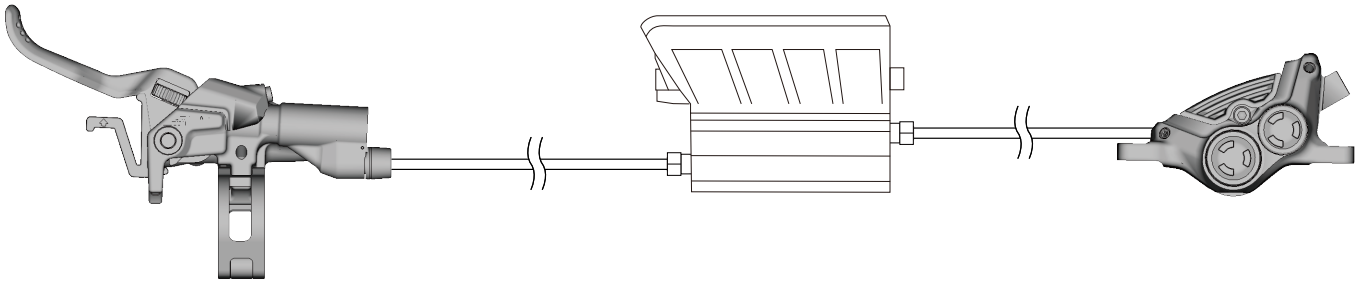
4. Install the brake lever to the desired position on the handlebar.

Connecting the hose to the ABS unit (brake lever side)

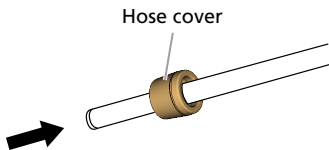
Connect the ABS unit and brake lever on the front side.

NOTICE

- Align the ABS unit and brake lever as indicated in the figure. Take care to ensure that the brake hose does not become twisted when installing it.



1. Install the hose cover to the brake hose of the brake lever.

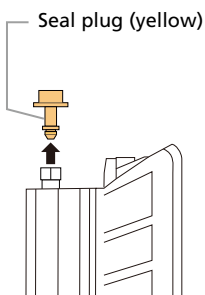


2. Remove the seal plug (yellow) from the ABS unit.

Follow the procedure below to hold the hose connection port of the ABS unit upward:

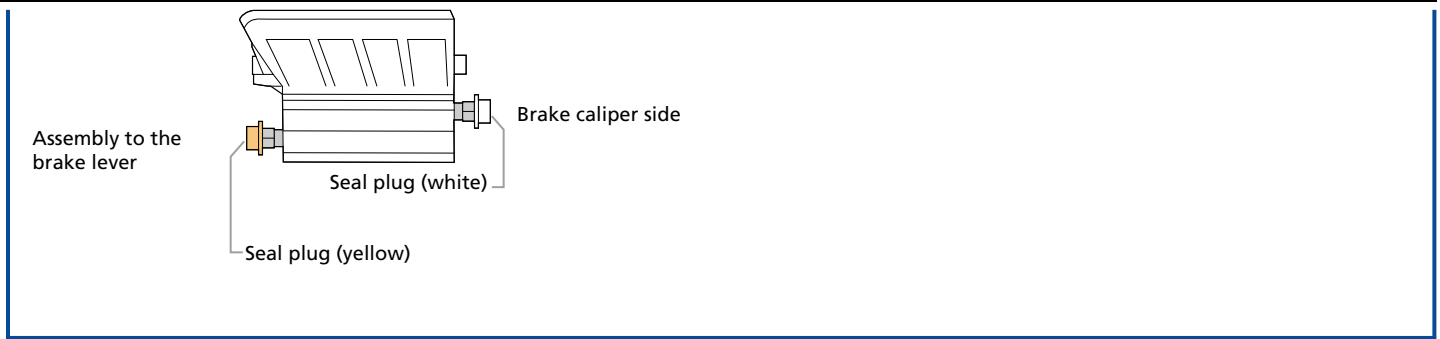
- Install the ABS unit to the front fork, then place the frame on a workbench, etc. Use the workbench to tilt the frame so that the front fork is close to vertical.
- Hold the ABS unit in an adjustable wrench or secured in a vise with the hose connection port facing upward.

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



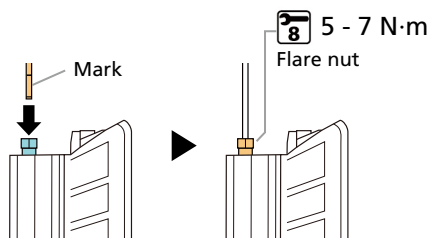
NOTICE

- The ABS unit has two hose connection ports, and specific hoses must be connected to the brake caliper side (white seal plug) and brake lever side (yellow seal plug). Be careful to avoid connecting the wrong hoses.



3. Connect the brake hose to the ABS unit.

- The ABS unit has an olive embedded inside. When inserting the hose, ensure it does not snag on the olive.
- Insert hose up to the mark on the outer hose casing.
- Cover with a clean rag while conducting this procedure as some of the internal oil may leak.
- Wipe away any spilled oil with a clean rag.



Securing the brake calipers

Check the operation of the brake system, then secure the calipers.

TECH TIPS

- It is not necessary to turn the power of the ABS unit ON, because this procedure is not for checking the operation of the ABS. This procedure is for checking whether the brake lever operation is correctly conveyed to the brake calipers.

1. **Check that the pads are installed in the brake caliper, and that the wheel is properly installed with the rotor between the pads.**
2. **Operate the brake lever several times and check that the pads grip the rotor and that the lever becomes stiff.**
If the brake lever does not become stiff, refer to the [dealer's manual for your brake system](#) to bleed the air from the system.
3. **Depress the brake lever so that the rotor is held between the pads, then tighten the caliper mounting screws.**
4. **Secure the caliper mounting screws.**

Installing the speed sensor

Install the speed sensor to the mount adapter of the BS-SS310.

For information on wiring, refer to the manual for the BOSCH ABS.

The BS-SS310 includes the following parts for adjusting the position of and installing the speed sensor:

- Speed sensor mounting screw
- Speed sensor adapters (5.1 mm thick (gray) x 1; 7.2 mm thick (black) x 1)
- Spacers (0.8 mm thick x 4; 0.2 mm thick x 4)

NOTICE

- The procedure for the front side is described here, but the procedure for the rear side is the same.
- Do not add five or more spacers.

1. Install the speed sensor.

- (1) Use the speed sensor adapter (7.2 mm thick (black)) to attach the speed sensor, then check the gap between the speed sensor and the tone wheel.

If the gap between the speed sensor and tone wheel is 0.2 mm to 1.0 mm

Secure the speed sensor.

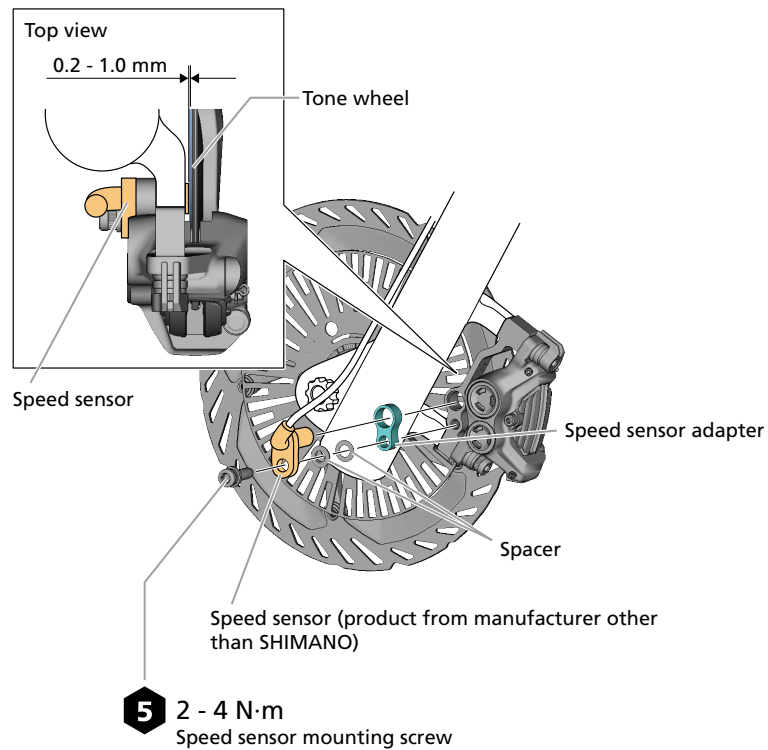
If the gap between the speed sensor and tone wheel is smaller than 0.2 mm

Referring to the figure, use the included washer to adjust the gap between the speed sensor and tone wheel to be between 0.2 mm and 1.0 mm, then secure the speed sensor.

If the gap between the speed sensor and tone wheel is larger than 1.0 mm

Proceed to the next step.

- (2) Use the speed sensor adapter (5.1 mm thick (gray)) to attach the speed sensor, then check the gap between the speed sensor and the tone wheel. Adjust the gap between the speed sensor and the tone wheel as indicated above, then secure the speed sensor.



Adjustment

Adjusting the free stroke

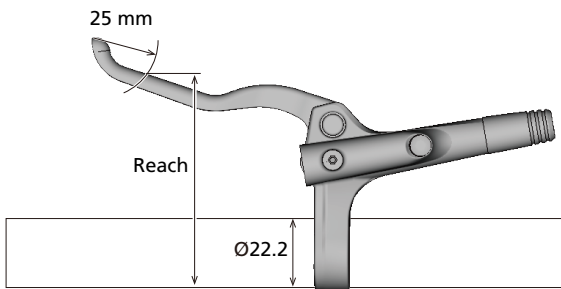
Refer to the [dealer's manual for your brake system](#).

Adjusting the reach

Refer to the [dealer's manual for your brake system](#).

⚠ CAUTION

- Ensure that the reach is not larger than the maximum value indicated below. Also ensure that it is not smaller than the minimum value. Otherwise, failure may occur. Some brake lever models have a narrower range of reach adjustment than regular models due to their structure.



Brake lever	Reach	
	Minimum value (mm)	Maximum value (mm)
BL-MT200-ABS	83	94
BL-MT200 (for reference)	70	100
BL-MT402-ABS	80	98
BL-MT402-3A (for reference)	74	100
BL-U8000-ABS	80.5	100
BL-U8000 (for reference)	78	100
BL-M4100-ABS	60	83
BL-M4100 (for reference)	75	100
BL-T8120-ABS	80.5	100
BL-T8120 (for reference)	78	100
BL-M9220 (for reference)	58	100
BL-M8200 (for reference)		
BL-M6200 (for reference)	60	83

Maintenance

Replacing the pads

Refer to the [dealer's manual for your brake system](#).

WARNING

- Make sure to replace the pads with the specified pads. Ensure that the [combination of products](#) guarantees ABS operation.

NOTICE

- Once the pads have been replaced, it is necessary to perform bed-in. Refer to the user's manual.

Replacing brake oil and bleeding air

There are two types of SHIMANO brake oil, and the oil to use depends on the model.

Refer to the [dealer's manual for your brake system](#).

WARNING

- Check the information on the [supported models for each oil type](#), and use the correct oil for the product. Doing otherwise may prevent the brakes from operating and result in serious injury.
- Do not mix SHIMANO hydraulic mineral oil with SHIMANO low viscosity oil. Doing so may prevent the brakes from operating and result in serious injury.

NOTICE

- It is not necessary to remove the ABS unit to drain or inject brake oil or bleed the air. When bleeding the air, do not tilt the bicycle, and hold it horizontal to the ground on a workbench, etc.

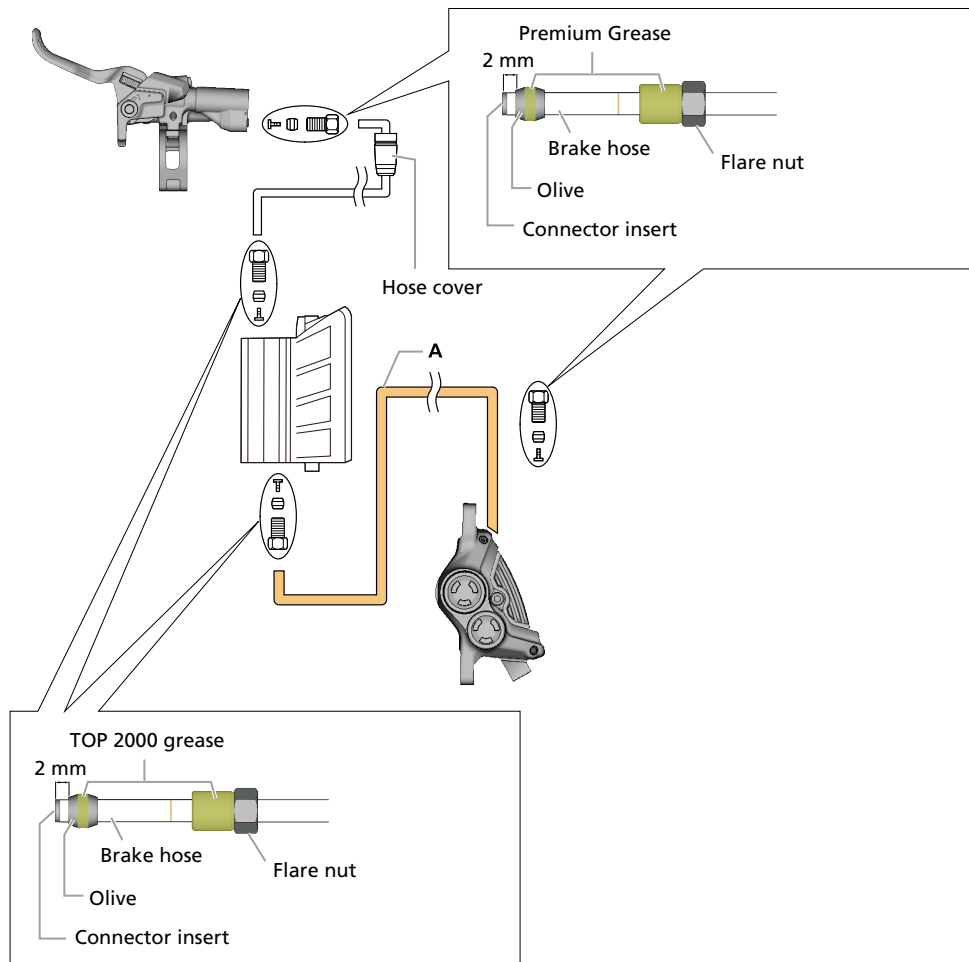
Replacing the brake hose

Also refer to the [dealer's manual for your brake system](#).

⚠ WARNING

- Do not change the length of the hose connected to the brake caliper on the front side. The ABS may not function correctly if you change the length of hose A in the figure. Make sure to confirm that the visible length of the hose connected to the ABS unit from the brake caliper is at least 100 mm.

A connector insert, olive, and flare nut are required on the ABS unit side, as indicated in the figure.



NOTICE

- To prevent twisting of the hose, use the TL-BH61 to secure the hose to a vise, then tighten the flare nut to the specified torque with the orientation of the ABS unit aligned. When replacing the hose, apply a thin coat of grease (TOP 2000 grease) to the olive on the ABS unit side before installing the hose.

Once the brake hose has been replaced, it is necessary to inject brake oil and bleed the air.

Caliper piston adjustment

Refer to the [dealer's manual for your brake system](#).

Replacing the diaphragm

Refer to the [dealer's manual for your brake system](#).

Once the diaphragm has been replaced, it is necessary to inject brake oil and bleed the air.

Replacing the lever blade fixing spring

This procedure only applies to the BL-M9220. Refer to [this link](#).

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