

SG-4R31
BR-IM31
ST-4S20
BL-TY21

Inter-4 Hub
Inter-M Brake
Rapidfire Lever
Brake Lever

Before use, read these instructions carefully, and follow them for correct use.

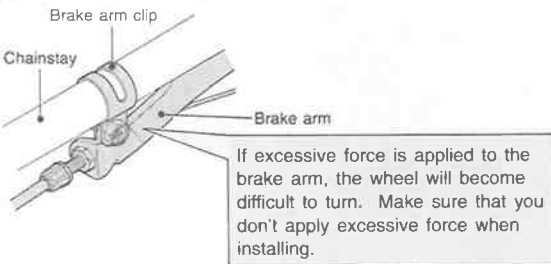
Precautions on use

- In order to get the best performance from the Shimano Inter-M brake, be sure to use Shimano brake cables and brake levers as a set.

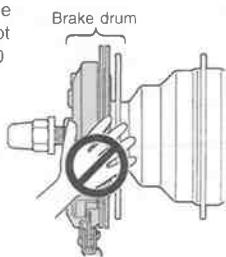


If parts other than those indicated above are used, braking performance will suffer, and the brakes may fail to work.

- Check that the brake arm is securely fastened to the chainstay by the brake arm clip. If it is not installed correctly, braking performance will suffer.



- If the brakes are used frequently, the brake drum may become hot. Do not touch the brake drum for at least 30 minutes after you finish riding the bicycle.



- The Inter-M brake is different from conventional brakes in that the inside of the brake drum is filled with grease. This may cause the turning of the wheel to be slightly heavier than usual, particularly in cold weather.

- If there is insufficient brake grease in the drum, brake noise will be generated and abnormally sudden braking will occur. In such a case, refill the drum with special roller brake grease as soon as possible.

- If the brake cable becomes rusted, braking performance will suffer. If this happens, replace the brake cable with a genuine Shimano brake cable and re-check the braking performance.

- The BR-IM31 brake unit should never be disassembled. If it is disassembled, it will no longer work properly.

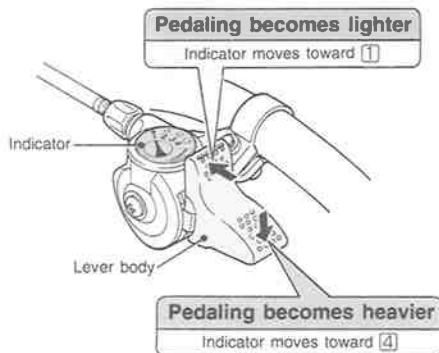


- For new cables and any other maintenance requirements, please contact the place of purchase.

- For any questions regarding methods of handling or adjustment, please contact the place of purchase.

Rapidfire lever operation

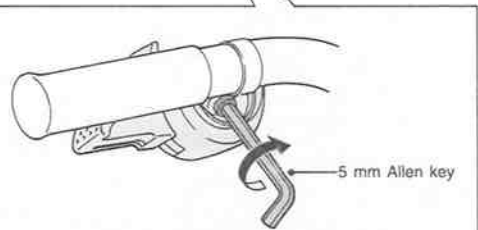
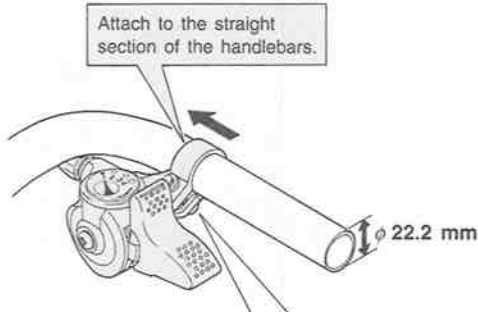
Push the top or bottom of the lever body to shift the gears.



Installation of the lever

Install the lever as shown in the illustration.

● **ST-4S20 Rapidfire Lever**



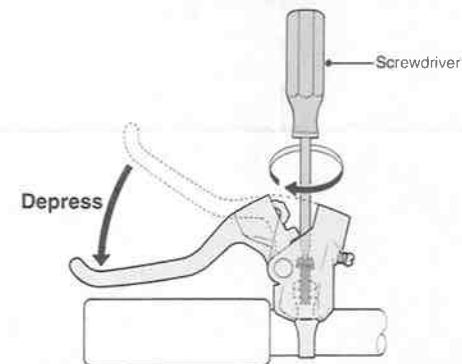
Tightening torque:
2.5 – 3 Nm
{22 – 26 in. lbs.}

The installation angle can be adjusted to one of two positions to suit the shape of the handlebars. Angle adjustment is carried out by loosening the lever body fixing bolt.

- Note:**
- The clearance between the cable adjusting barrel and the handlebars should be 4 – 6 mm.
 - The end of the lever operation section should not hit the grip.

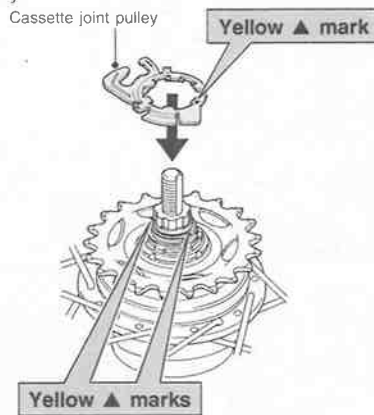
● **BL-TY21 Brake Lever**

Tightening torque:
2.5 – 3 Nm
{22 – 26 in. lbs.}

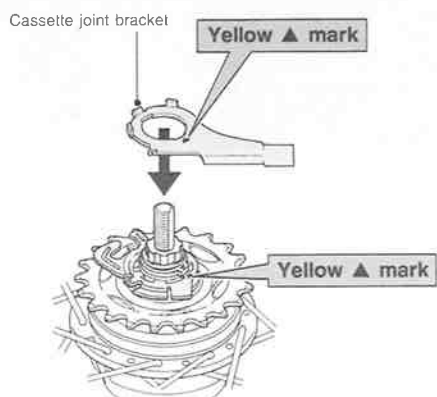


Installation of the cassette joint to the hub

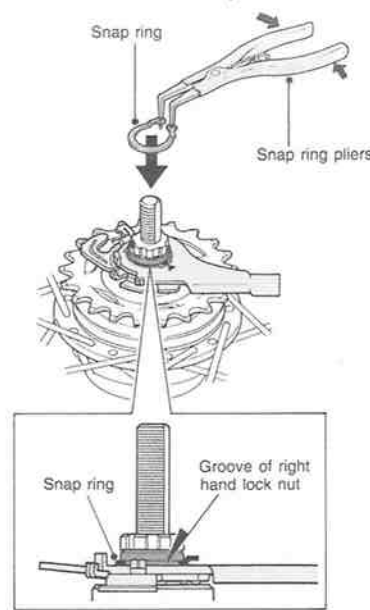
- Align the yellow ▲ mark on the cassette joint pulley with the yellow ▲ marks on the right side of the hub body.



- Align the yellow ▲ mark on the cassette joint bracket with the yellow ▲ mark on the cassette joint pulley.

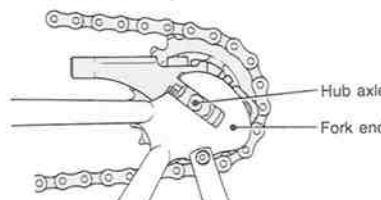


- Secure the cassette joint to the hub with the snap ring. Insert the snap ring securely into the groove of the right hand lock nut at this time.

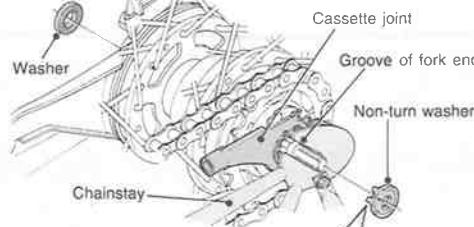


Installation of the hub to the frame

- Mount the chain on the sprocket, and then set the hub axle into the fork ends.



- Install the non-turn washer onto the right side of the hub axle. At this time, turn the cassette joint so that the projecting part of the non-turn washer fits into the groove of the fork end. If this is done, the cassette joint can be installed so that it is almost parallel to the chainstay. Furthermore, install a washer with no projecting part onto the left side of the hub axle.



- Two types of non-turn washer are provided for use with standard and reversed fork ends. Use whichever non-turn washer is suitable.

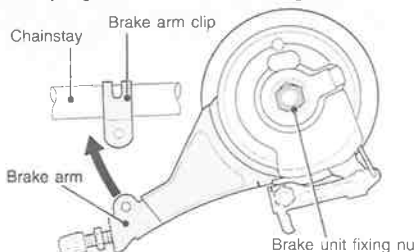
Fork end	Non-turn washer		
	Mark	Color	Size
Standard	1	Black	20° ≤ θ ≤ 38°
Reversed	2	Gold	θ = 0°



- The projecting part should be on the fork end side.
- Install the non-turn washer so that the projecting part is securely in the fork end groove on either side of the hub axle.

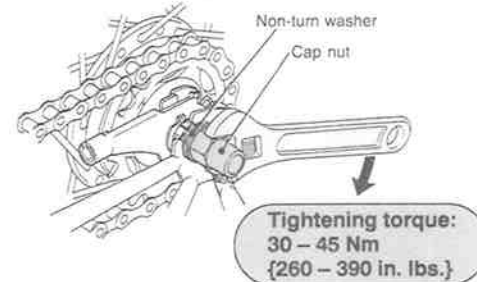
- Install the brake arm of the Inter-M brake to the chainstay with the brake arm clip, provisionally tighten the clip bolt and clip nut, and then tighten the brake unit fixing nut.

Note:
If the brake arm is in the incorrect position as shown in the illustration so that it cannot be provisionally installed to the chainstay, loosen the brake unit fixing nut and turn the brake arm. Then, after provisionally securing the brake arm to the chainstay, tighten the brake unit fixing nut.

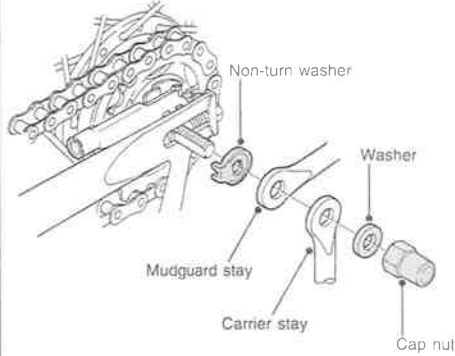


Tightening torque:
20 – 25 Nm {174 – 217 in. lbs.}

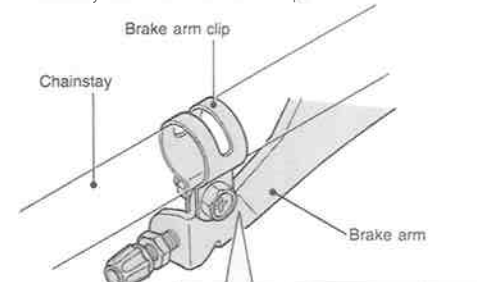
- Take up the slack in the chain and secure the wheel to the frame with the cap nuts.



Note:
When installing a part such as a mudguard stay to the hub axle, install in the order shown in the illustration below.



- Fix the brake arm of the Inter-M brake securely to the chainstay with the brake arm clip.

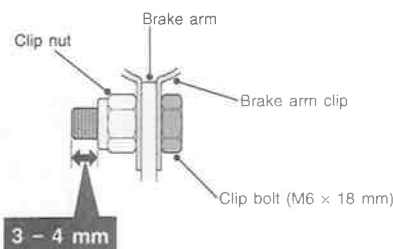


If excessive force is applied to the brake arm, the wheel will become difficult to turn. Make sure that you don't apply excessive force when installing.

- Note:**
- When installing the brake arm clip, securely tighten the clip bolt while holding the clip nut with a 10 mm spanner.

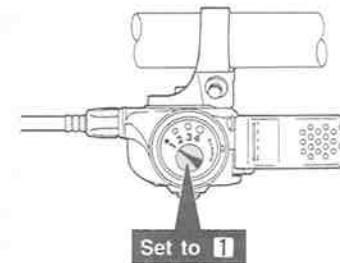
Tightening torque:
2 – 3 Nm
{17 – 26 in. lbs.}

- After installing the brake arm clip, check that the clip bolt protrudes about 3 – 4 mm from the surface of the clip nut.

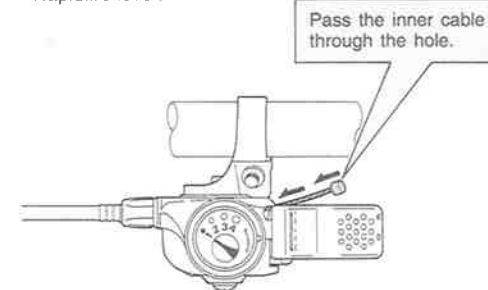


Installation of the shifting cable

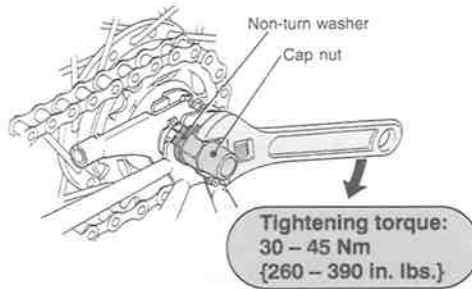
- Set the Rapidfire lever to 1



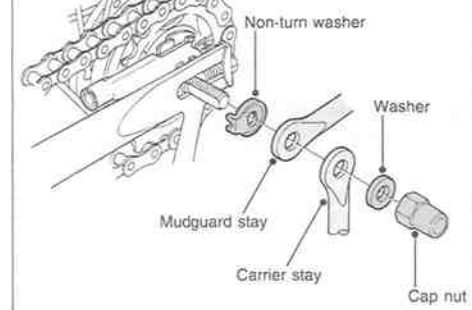
- Pass the inner cable through the hole at the rear of the Rapidfire lever.



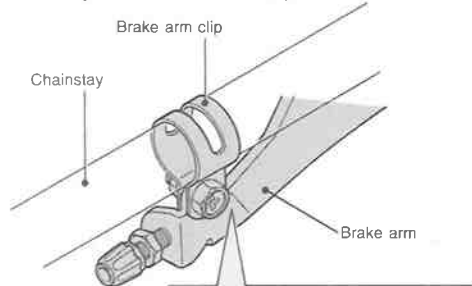
4. Take up the slack in the chain and secure the wheel to the frame with the cap nuts.



Note:
When installing a part such as a mudguard stay to the hub axle, install in the order shown in the illustration below.



5. Fix the brake arm of the Inter-M brake securely to the chainstay with the brake arm clip.

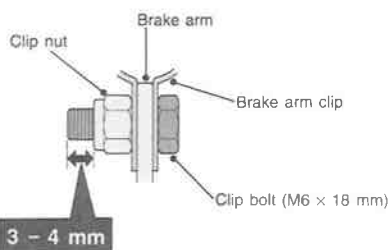


If excessive force is applied to the brake arm, the wheel will become difficult to turn. Make sure that you don't apply excessive force when installing.

Note:
● When installing the brake arm clip, securely tighten the clip bolt while holding the clip nut with a 10 mm spanner.

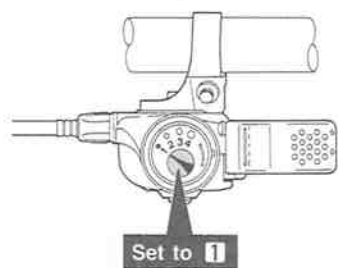
Tightening torque:
2 - 3 Nm
{17 - 26 in. lbs.}

- After installing the brake arm clip, check that the clip bolt protrudes about 3 - 4 mm from the surface of the clip nut.



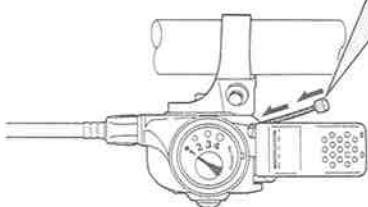
Installation of the shifting cable

1. Set the Rapidfire lever to 1

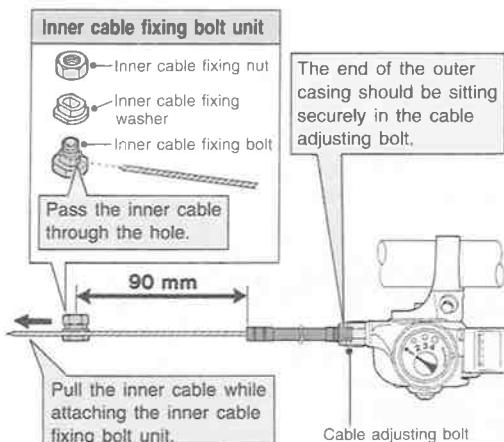


2. Pass the inner cable through the hole at the rear of the Rapidfire lever.

Pass the inner cable through the hole.

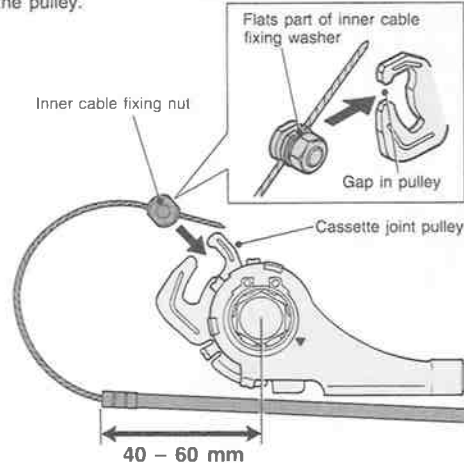


3. Attach the inner cable fixing bolt unit to the inner cable.

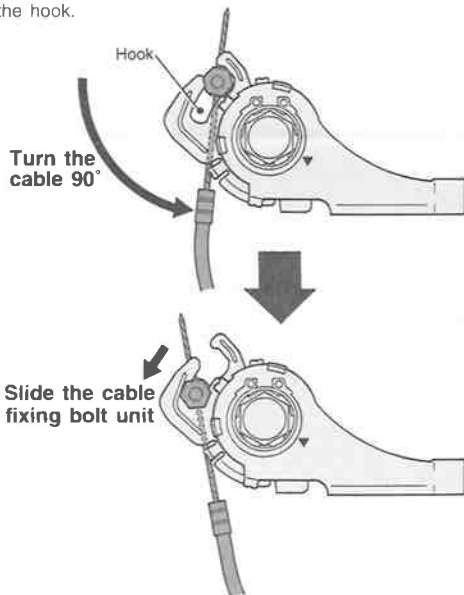


Tightening torque:
4 - 6 Nm {35 - 52 in. lbs.}

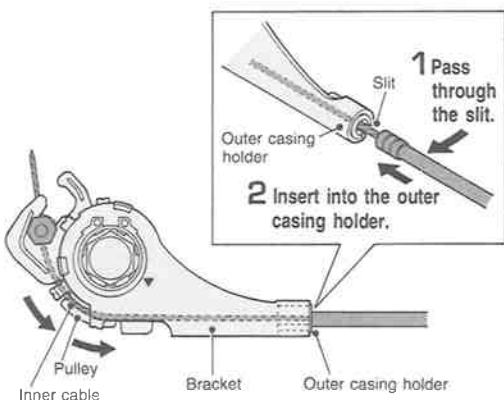
4. Bring the cable around to the cassette joint pulley, hold so that the inner cable fixing nut is facing to the outside (toward the fork end), and then slide the flats part of the inner cable fixing washer into the gap in the pulley.



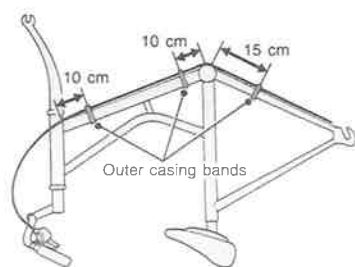
5. Turn the cable 90° counterclockwise and attach it to the hook.



6. Attach the inner cable to the pulley as shown in the illustration, pass the inner cable through the slit in the cassette joint bracket, and then insert the end of the outer casing securely into the outer casing holder.

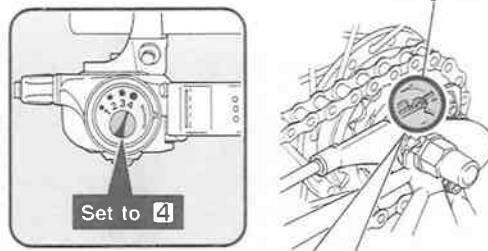


7. Secure the outer casing to the frame with the outer casing bands.

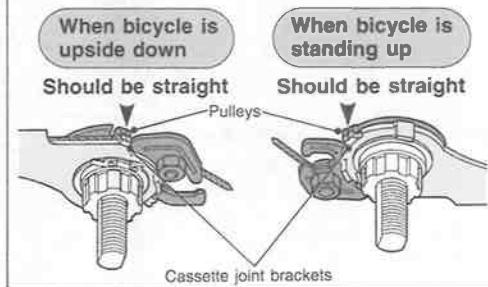


Adjusting the cassette joint

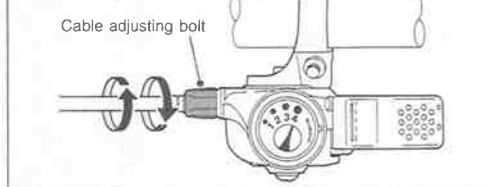
1. Set the Rapidfire lever to 4.
Check to be sure that the red setting lines on the cassette joint bracket and pulley are aligned at this time.



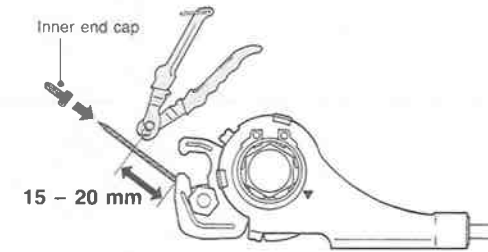
The red setting lines on the cassette joint are located in two places. Use the one that is easiest to see.



If the red setting lines are not aligned, turn the cable adjusting bolt of the Rapidfire lever to align the setting lines. After this, move the Rapidfire lever once more from 4 to 1 and then back to 4, and then re-check to be sure that the red setting lines are aligned.

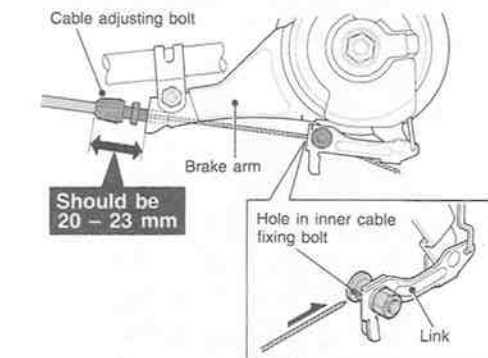


2. After adjusting the cassette joint, cut off the excess length of inner cable and then install the inner end cap.

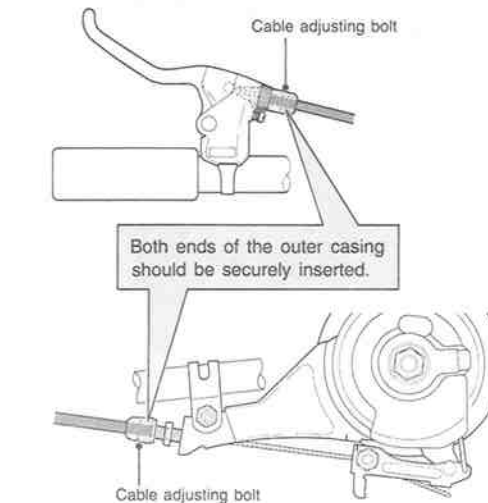


Installing the brake cable

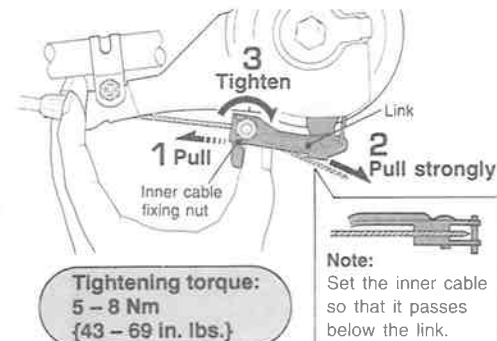
1. Place the cable adjusting bolt so that it is 20 - 23 mm from the end of the brake arm as shown in the illustration, and then pass the inner cable through the hole in the inner cable fixing bolt.



2. Check that both ends of the outer casing are securely inserted into the cable adjusting bolts of both the brake lever and brake arm.



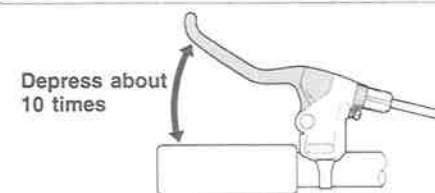
3. Pull the link back until it stops. Then, while pulling the inner cable to apply the full amount of tension to the cable, tighten the inner cable fixing nut.



Adjusting the brake cable

1. After checking that the wheel does not easily turn while the brake cable is being pulled, depress the brake lever about 10 times as far as the grip in order to run in the brake cable.

Note:
If the brake cable is not run in, it will need to be adjusted again after only a short period of use.

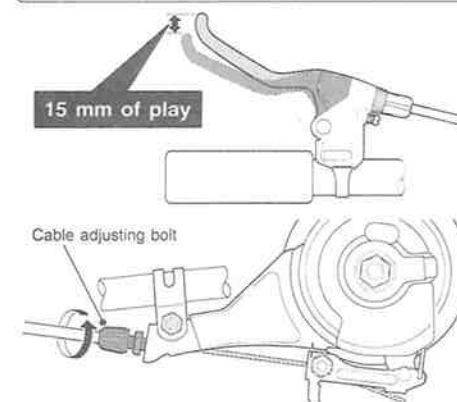


2. There are two methods of adjusting the brake cable: the one below is for use when readjusting just the brake cable, and the other one is for use when replacing the brake unit with a new unit.

When readjusting

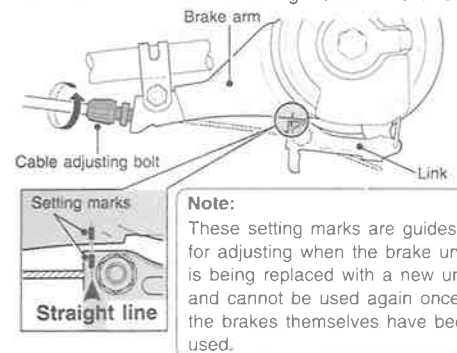
Turn the cable adjusting bolt so that there is about 15 mm of play in the brake lever.

The amount of brake lever play is the distance from the position where the brake lever is not operated to the position where a force is felt suddenly when the brake lever is pulled.

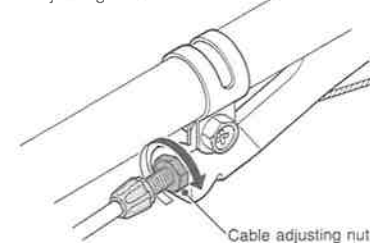


When replacing the brake unit

Turn the cable adjusting bolt to align the setting mark on the brake arm with the setting mark on the link.



3. After depressing the brake lever to check the braking performance, secure the cable adjusting bolt with the cable adjusting nut.



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

SHIMANO
SHIMANO AMERICAN CORPORATION
One Shimano Drive P.O. Box 19815 Irvine California U.S.A. 92713-9815 Phone 714-951-5003
SHIMANO CANADA LTD.
3393 Griffith Street, St. Laurent, Quebec, Canada H4T 1W5 Phone 514-345-8583
SHIMANO INC.
77 Oimatsucho 3-cho Sakai Osaka 590 Japan Phone 0722-23-3243